SECTION 01 10 00.0003
TASK ORDER STATEMENT OF WORK

1.0 PROJECT OBJECTIVES

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

Comparison of Military Facilities to Civilian Facilities

Military Facility	Civilian Facility
Warriors in Transition Unit Administration Services (WTUAS)	Office Building
Soldier & Family Assistance Center (SFAC)	Community Center

***Not included in this contract**

It is the Army's objective that these buildings will have a 25-year useful design life before a possible re-use/re-purpose or renovation requirement, to include normal sustainment, restoration, modernization activities and a 50-year building replacement life. Therefore, the design and construction should provide an appropriate level of quality to ensure the continued use of the facility over that time period with the application of reasonable preventive maintenance and repairs that would be industry-acceptable to a major civilian sector project OWNER. The site infrastructure will have at least a 50-year life expectancy with industry-accepted maintenance and repair cycles.

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

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

1.1. SECTION ORGANIZATION

This Section is organized under 6 major “paragraphs”.

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

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

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

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

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

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

2.0 SCOPE

2.1. WARRIORS IN TRANSITION (WT) COMPLEX

The facility floor plans for the Warriors in Transition (WT) facilities are provided in Appendix J. These drawings indicate functional and operational arrangements that meet the user's requirements. The Design/Build (D/B) contractor is required to follow these mandatory designs. Minor plan alterations are permitted to accommodate building system requirements. However, the Minimum Area Requirements shall not be reduced in order to accommodate building system requirements.

Minor plan alterations, not more than eight (8) inches, are permitted only when necessary to accommodate building system requirements. However, the Minimum Area Requirements identified in Chapter 3 shall not be reduced in order to accommodate building system requirements. Office locations shown on the facility floor plans included in this RFP shall not be altered or relocated as they meet the mandatory adjacency requirements.

2.1.1. NOT USED

2.1.2. WTUAS

Provide a standard WTUAS consisting of:

A 94 PN Medium Duplex Two-Company Headquarters (CoHQ), 18,600 gross square feet
and a 24 PN Battalion Headquarters (BnHQ), 8,100 gross square feet

2.1.3. SFAC

Provide a standard Large SFAC. This facility type is to provide various services to soldiers and their family while the soldier is undergoing medical treatment. The facility will also serve as a social gathering place for scheduled activities.

The maximum gross area for the SFAC is 15,000

2.1.4. NOT USED

2.2. SITE:

Appendix J includes a conceptual site plan.

The blank site plan provides the limits of construction for the approved site.

Other concept site plans provide possible facility arrangement, orientation as well as site features and amenities. These plans are included as design development proposals and may have conflicting information. The D/B Contractor may utilize any of the included site plans in order to develop their proposal. However, it is the responsibility of the D/B Contractor to ensure their proposed site plan is in accordance with required functional, operational and building requirements as stated in the Request for Proposal (RFP) for this project. If a conflict exists between any of the concept site plans and the technical requirements of the RFP, the RFP technical requirements shall govern.

The included building renderings and elevations describe the required architectural theme for the WT facilities. These drawings are provided to convey the Government's desired architectural theme that is contextually compatible with the installation's requirements.

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

Include Antiterrorism/Force Protection measures in the facility design in accordance with applicable criteria. The Contractor shall be responsible for all repairs to existing sidewalks, pavements, curb and gutter, utilities, and/or landscaping damaged as a result of his construction activities.

Approximate area available 16.00 acres in the limits of construction, as shown on the site layout plan. Refer to Appendix J - Drawings.

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

Coordinate with Government on GFGI item requirements and provide suitable structural support, brackets for projectors/VCRs/TVs, all utility connections and space with required clearances for all GFGI items. Fire extinguishers are GF/GI personal property, while fire extinguisher brackets and cabinets are Contractor furnished and installed CF/CI. Include tables/cabinets/carts/etc. for GFGI equipment that is not freestanding in furniture design. All Computers and related hardware, copiers, faxes, printers, video projectors, VCRs and TVs microwave ovens, electric ranges, refrigerators, washers, dryers, and fire extinguishers are GFGI.

The following are also GFGI items: The Diswasher in the SFAC

- Vending Machines
- Ice Makers
- Dumpsters

2.4. FURNITURE REQUIREMENTS

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

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

and/or systems furniture desk tops as applicable, the services to install the cable and face plates in the furniture, the coordination with the furniture vendor/installer to accomplish the installation at the appropriate time, and all the final IT connections to the building systems under this contract.

The Government reserves the right to change the method for procurement of and installation of furniture to Contractor Furnished/Contractor Installed (CF/CI). CF/CI furniture will require competitive open market procurement by the Contractor using the Furniture, Fixtures and Equipment (FF&E) package.

2.5. NOT USED

3.0 WARRIORS IN TRANSITION COMPLEX (WT)

3.1. General

WT Complexes are required by the Army to encompass living, training, social interaction and administrative/command operations. This Request for Proposal includes the following facilities in the WT Complex: WTUAS, SFAC, . These facilities with outdoor areas and any additional support facilities shall be arranged on the site as a unit to allow injured or temporarily disabled soldiers to live, eat, train, and work together.

WTUAS are comprised of administration, command operations, special functions, storage and other support areas.

SFAC is a community building for social interaction and special assistance to the soldiers and their families.

3.2. FUNCTIONAL AND AREA REQUIREMENTS

Gross building area shall be calculated in accordance with Appendix Q. Net area is measured to the inside face of the room or space walls. Minimum dimension where stated shall be measured to the inside face of the defining enclosure. Net area requirements for programmed spaces are included in this paragraph. If net area requirements are not specified, the space shall be sized to accommodate the required function and to comply with code requirements, overall gross area limitations, and any other requirement of this RFP. Area requirements for corridors, stairs, electrical rooms, and mechanical rooms will typically be left to the discretion of the offeror but shall be counted in the general authorized gross square footage for each facility. Coordinate column spacing and layout with the building's floor plan so that columns occur within or in alignment with walls where they may be concealed as much as possible. Hold columns occurring within spaces to a minimum and limit them to larger public spaces. Plan column placement such that they do not interfere with the functionality of the space.

3.2.1. ACCESSIBILITY REQUIREMENTS

General Requirements: All buildings in the WT Complex shall be accessible and shall comply with the Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities as currently amended.

"Compliant" Apartment: The Army Standard for WT Complexes requires a minimum of 10% of apartments, based on the total number of apartments constructed, to be fully compliant with the Accessibility Guidelines set forth in the ABA as currently amended.

"Adaptable" Apartment: The Army Standard for WT Complexes requires that 100% of apartments constructed be connected to the building entrance via an accessible route and shall be designed and constructed in such a manner that all contain the following features of adaptable design: (A) An accessible route into and through the apartment; (B) Light switches, electrical outlets, thermostats, and other environmental controls be placed in accessible locations; (C) Reinforcements in bathroom walls to allow later installation of grab bars around the toilet, tub, shower, stall and shower seat where such facilities are provided; and (D) Kitchens and bathrooms such that an individual in a wheelchair can maneuver about the space. Adaptable Design features shall be designed in compliance with the ABA Accessibility Guidelines as currently amended.

Elevators: The Army Standard for WT Complexes requires that an elevator be provided for any building which exceeds one-story (1-Story). The elevator system shall fully comply with ASME A17.1 and ASME A17.2.1 in their entirety, as well as any additional requirements specified herein. Primary elevators shall be centrally located within the facility and shall have a minimum rated load capacity of 3,500 lb (1588 kg), with center opening doors and interior dimensions sized to accommodate a fully extended Emergency Medical Services (EMS) gurney, approximately 24 inches wide by 77 inches long, and four average sized adults. An additional elevator, meeting all specifications outlined above, shall be provided for every additional one-hundred (100) persons, or fraction thereof over the first one-hundred (100) persons the building is designed to accommodate, unless determined otherwise by a foot-traffic analysis. Such foot-traffic analysis shall be included in the general facility Design Analysis. All elevator interior walls, doors, and fixtures shall have a Satin No. 4 Stainless Steel Finish. All elevators shall be furnished with removable hanging protective pads and fixed hooks to facilitate conversion to use for moving freight.

Elevator Machinery Spaces: Elevator pits, penthouses, and other such elevator equipment spaces are exempt from accessibility requirements in accordance with ABA Section F203.6.

Certified Elevator Inspector: The Elevator Inspector shall be certified in accordance with the requirements of ASME A17.1 and ASME QEI-1 and licensed as a Certified Elevator Inspector by the State where the project is constructed. The Certified Elevator Inspector shall inspect the installation of the elevator(s) to assure that the installation conforms to all contract requirements. The Certified Elevator Inspector shall be directly employed by the Prime Contractor and shall be independent of the Elevator System Manufacturer and the Elevator System Installer.

3.2.2. Not Used

3.2.3. CoHQ (Note: Not all offices are included on every building size. See 3.2.3.2 Space Allocation Table).

3.2.3.1. Functional Space Requirements

(a) Commander: Provide a private administrative office.

(b) Executive Officer: Provide a private administrative office.

(c) Supervisory Case Manager: Provide a private administrative office.

(d) Nurse Case Manager: Provide a private administrative office.

(e) Case Manager: Provide a private administrative office.

(f) First Sergeant: Provide a private administrative office.

(g) Platoon Sergeant: Provide a private administrative office.

(h) Squad Leader: Provide a private administrative office.

(i) Social Worker: Provide a private administrative office.

(j) Extra Office: Provide a private administrative office.

(k) Conference Room: Self Explanatory.

(l) Supply Room: Provide room for miscellaneous administrative supplies.

(m) Records Room: Provide room for administrative records storage.

(n) Reception/Waiting Room: Provide a vestibule between the exterior and the reception/waiting room. Provide a minimum of 7 feet clearance between doors. Provide a means for the doors to open automatically via a sensor or push button. Provide a reception station consisting of a built-in reception counter for each company (shall be combined in a multi-company setting). Reception counter shall be capable of serving both able and disabled personnel.

(o) Distribution Center: Provide room for administration personnel to provide support service for the distribution of materials.

(p) Copier and Fax Room: Self explanatory.

(q) Interior Corridors: Provide 6 feet minimum wide corridors.

(r) Men's Restrooms: Provide toilet facilities and one shower stall to serve the public and administrative personnel assigned to the building. Provide a dressing area with a built-in 18 in. bench adjacent to the shower stall. Showers will only be provided in staff restrooms in those buildings where public and staff restrooms are separated.

(s) Women's Restrooms: Provide toilet facilities and one shower stall to serve the public and administrative personnel assigned to the building. Provide a dressing area with a built-in 18 in. bench adjacent to the shower stall. Showers will only be provided in staff restrooms in those buildings where public and staff restrooms are separated.

(t) Janitor Closet: Provide with a 10 in. deep floor mounted stainless steel mop sink with hot and cold service faucet, a four holder mop rack, and two 18 in. deep by 48 in. long heavy duty stainless steel shelves for storage of cleaning supplies. Provide space for storage of buckets and a vacuum.

(u) Open Office Space: Provide space for multiple cubicles for administrative personnel. See 3.2.3.2 Allocation Table for requirements.

(v) Kitchenette: Provide a countertop with both lower and upper storage cabinets (including shelves) with a double sink. Provide space for a microwave oven. Provide space for a full size refrigerator 28 in. wide. Provide seating space for a minimum of two 36 in. x 36 in. (or 36 in. diameter) tables with four chairs each and space for two vending machines.

(w) Mechanical, Electrical, and Telecommunications Rooms: Mechanical rooms shall accommodate space for equipment maintenance/repair access without having to remove other equipment. Mechanical, electrical and telecommunications rooms shall be keyed separately for access by Installation maintenance personnel. First floor exterior access is required for centralized mechanical room. Refer to paragraphs 3.6 MECHANICAL REQUIREMENTS and 3.7 ELECTRICAL AND TELECOMMUNICATIONS REQUIREMENTS for additional information.

3.2.3.2. Space Allocation Table

CoHQ MINIMUM AREA REQUIREMENTS
NET SQ FT (NSF) PER ROOM

NAME	X-Small[2]		Small[2]		Medium[2]		Large[2]	
	Ea	Area	Ea	Area	Ea	Area	Ea	Area
COMMANDER	1	120	1	120	1	120	1	120
EXECUTIVE OFFICER	NR		NR		1	120	1	120
SUPERVISORY CASE MGR	NR		NR		1	120	1	120
CASE MANAGER	1	120	1	120	2	120	4	120
FIRST SERGEANT	1	120	1	120	1	120	1	120
PLATOON SERGEANT	2	120	2	120	3	120	3	120
SQUAD LEADER	3	140	4	140	6	140	6	140
SOCIAL WORKER	1	120	1	120	NR		NR	
NURSE CASE MANAGER	2	120	3	120	4	120	8	120
EXTRA OFFICE	NR		2	120	NR		NR	
MEDICAL NCO - See Note 1	1	48	1	48	NR		1	48
TRAINING SPECIALIST- See Note 1	1	48	2	48	2	48	2	48
OCCUPATIONAL THERAPY ASST- See Note 1	1	48	1	48	1	48	1	48
FINANCIAL TECH SPEC - See Note 1	1	48	2	48	1	48	2	48
MEDICAL SUPPORT ASST- See Note 1	1	48	2	48	1	48	2	48
SUPPLY TECHNICIAN - See Note 1	1	48	1	48	2	48	1	48
HR SPECIALIST- See Note 1	1	48	2	48	1	48	2	48
HR ASSISTANT- See Note 1	NR		NR		3	48	NR	
FAMILY READINESS SUPPORT ASST- See Note 1	1	48	1	48	1	48	1	48
COPIER & FAX	1	96	1	96	1	96	1	96
KITCHENNETTE	1	100	1	100	1	100	1	100
RECORDS ROOM	1	100	1	100	1	100	1	100
DISTRIBUTION CENTER	1	110	1	110	1	110	1	110
CONFERENCE ROOM	1	255	1	255	1	255	1	255
SUPPLY ROOM	1	100	1	100	1	100	1	100
RECEPTION / WAITING ROOM	1	250	1	250	1	250	1	250
JANITOR'S CLOSET	1	20	1	20	1	40	1	40
BUILDING SUPPORT AREAS (Restrooms, Mechanical, Telecomminications, Electrical, etc	As needed		As needed		As needed		As needed	

NR - No Requirement

Notes:

(1) Collocated in “open office” area (cubicles).

(2) Numbers in table are per company.

(3) One per facility when multiple CoHQs are combined

3.2.4. BnHQ

3.2.4.1. Functional Space Requirements

(a) Battalion Commander: Provide a private administrative office.

(b) Executive Officer: Provide a private administrative office.

(c) Command Sergeant Major: Provide a private administrative office.

(d) Lawyer: Provide a private administrative office.

(e) Para-Legal: Provide a private administrative office.

(f) Chaplain: Provide a private administrative office.

(g) Copier and Fax Room: Self explanatory.

(h) Social worker: Provide a private administrative office.

(i) Operations Sergeant: Provide a private administrative office.

(j) Occupational Therapist: Provide a private administrative office.

(k) Open Office Area: Provide space for multiple cubicles for administrative personnel. See 3.2.4.2 Space Allocation Table for requirements.

(l) Conference Room: Self explanatory.

(m) Storage Room: Provide a storage room for miscellaneous administrative items.

(n) SIPRNET Room: Construct room in accordance with AR 380-5, Section III, Chapter 7, Department of the Army Information Security Program. Locate room adjacent to main telecommunications room with direct interior access into room. See paragraph 3.7 ELECTRICAL AND TELECOMMUNICATIONS requirements for additional requirements.

(o) S1 Office: Provide a private administrative office.

(p) S3 Office: Provide a private administrative office.

(q) S4 Office: Provide a private administrative office.

(r) Men's Restrooms: Provide toilet facilities and one shower and stall to serve the public and administrative personnel assigned to the building. Provide a dressing area with a built-in 18 in. wooden bench adjacent to the shower stall.

(s) Women's Restrooms: Provide toilet facilities and one shower and stall to serve the public and administrative personnel assigned to the building. Provide a dressing area with a built-in 18 in. wooden bench adjacent to the shower stall.

(t) Janitor Closet: Provide with a 10 in. deep floor mounted stainless steel mop sink with hot and cold service faucet, a four holder mop rack, and two 18 in. deep by 48 in. long heavy duty stainless steel shelves for storage of cleaning supplies. Provide space for storage of buckets and a vacuum.

(u) Reception/Waiting Room: Provide a vestibule between the exterior and the reception/waiting room. Provide a minimum of 7 feet clearance between doors. Provide a means for the doors to open automatically via a sensor or push button. Provide a reception station consisting of a built-in reception counter for one person. Reception counter shall be capable of serving both able and disabled personnel.

(v) Break Room: Provide a break room with kitchenette. Provide a countertop with both lower and upper storage cabinets (including shelves) with a double sink. Provide space for a microwave oven. Provide space for a full size refrigerator 28 in. wide. Provide seating space for a minimum of two 36 in. x 36 in. (or 36 in. diameter) tables with four chairs each and space for two vending machines.

(w) Interior Corridors: Provide 6 feet minimum wide interior corridors.

(x) Mechanical, Electrical, and Telecommunications Rooms: Mechanical rooms shall accommodate space for equipment maintenance/repair access without having to remove other equipment. Mechanical, electrical and telecommunications rooms shall be keyed separately for access by Installation maintenance personnel. First floor exterior access is required for centralized mechanical room. Refer to paragraphs 3.6 MECHANICAL REQUIREMENTS and 3.7 ELECTRICAL AND TELECOMMUNICATIONS REQUIREMENTS for additional information.

3.2.4.2. Space Allocation Table

BnHQ MINIMUM AREA REQUIREMENTS
NET SQUARE FEET (NSF) PER ROOM

ROOM	EA.	AREA
BATTALION COMMANDER	1	200
EXECUTIVE OFFICER	1	120
CHAPLAIN	1	140
LAWYER	1	120
PARA-LEGAL	1	120
S1	1	120
S3	1	120
S4	1	120
COMMAND SERGEANT MAJOR	1	200
OPERATIONS SERGEANT	1	120
SOCIAL WORKER	6	120
OCCUPATIONAL THERAPIST	1	120
OPEN OFFICES: See Note 1		
• CHAPLAIN ASSISTANT	1	48
• DRIVER	1	48
• IT SPECIALIST	1	48
• FINANCIAL MANAGEMENT SPECIALIST	1	48
• SUPERVISORY MEDICAL SUPPORT ASSISTANT	1	48
• SUPPLY SPECIALIST	1	48
• HR SPECIALIST	1	48
• FAMILY READINESS SUPPORT ASSISTANT	1	48
SIPRNET ROOM	1	AS REQ'D.
RECORDS ROOM	1	100
SUPPLY ROOM	1	100
GENERAL STORAGE ROOM	1	150
COPIER AND FAX	1	100
BREAK ROOM	1	195
CONFERENCE ROOM	1	500
RECEPTION/WAITING ROOM	1	250
JANITOR CLOSET	1	20
BUILDING SUPPORT AREAS (Mechanical, Communications, Electrical, & Restrooms, etc.)	AS NEEDED	

Notes:

(1) Collocate in “open office” area (cubicles)

3.2.5. SFAC

3.2.5.1. Functional Space Requirements

(a) Reception Area: Provide a large waiting/lounge area immediately adjacent to building entry. The large space will be used as a social interaction space for soldiers and their families. It will also serve as a waiting room

for soldiers/families waiting to be assisted by staff members in the administrative areas. Provide a welcoming and warm atmosphere preferably with a visual connection to outside wooded areas and/or courtyard. A central gas-fired fireplace is a mandatory feature of this space. The fireplace shall be back to back type, also serving the exterior courtyard area. Provide a built-in reception desk for 2 people adjacent to administrative office area. Reception desk shall be able to oversee operations around the reception area. Reception desk must be able to serve both able and disabled personnel. Provide space for an ATM kiosk located within the reception area. The kiosk shall be within visual control of the reception desk. Provide a dual height electric water cooler in the vicinity of the public restrooms. The exterior courtyard area shall have roofed seating areas adjacent to building for tables and chairs. Provide a vestibule between the exterior and the reception area. Provide a minimum of 7 feet clearance between interior and exterior doors. Provide a means for the doors to open automatically via a sensor or push button.

(b) Public Computer Access Room: Provide chair-height counter space along room perimeter to accommodate 6 chairs for personnel utilizing individual personal computers.

(c) Multi-Use/Conference Room: Provide a room for social gatherings and conferences. Provide a minimum 100 NSF chair storage room accessible from within the multi-use/conference room.

(d) Nourishment Center: Provide a nourishment center that will serve as a snack bar / food preparation and serving area. Provide a built-in countertop with under/overhead storage cabinets (including shelves), space for a standard size GFGI under the counter dishwasher, space for a GFGI standard size residential oven/4-burner range combo 30 in. wide with hooded exhaust, double stainless steel sink with garbage disposal, shelf for a GFGI microwave, space for a GFGI full size refrigerator 28 in. wide. Provide space for a minimum of two GFGI vending machines and trash/recycle receptacles. Provide a pass-through opening from the nourishment center to the multi-use/conference room.

(e) Provide private and open offices for staff as outlined in 3.2.5.2 Space Allocation Table.

(f) Child Activity Room and Exterior Playground: Provide a room for child activities for different age groups, mainly infants and toddlers. Room shall have its own restrooms designed for each age group population. Provide one diaper changing station measuring 35 ¼” H x 60 ½” W x 24” D minimum with a sink and storage for fourteen (14) underneath storage trays. An exhaust fan is required at the diaper changing station capable of exhausting 100 – 150 cfm. The diaper changing table shall have and integral 6” lip to prevent infant from rolling off and an unbreakable mirror installed along the back wall. The sink at the diaper changing station shall have a Goose-neck faucet with wrist blade handles. Retractable stairs which lock into place are also required. Provide one food preparation area with space for full size refrigerator 30 in. wide, built-in solid surface countertop with microwave, two separate stainless steel sinks and upper and lower cabinets. Provide a built-in sign-in desk located immediately inside the room entrance with power and a data port (See drawings in Appendix J). The built-in desk shall be a minimum of 4 feet long and must contain a lockable coat closet to store coats and personal items. Provide storage cubicles for a population of 24 children and adequate storage shelving for books, magazines, toys, etc. See drawings in Appendix J. Provide a doorbell button in the reception area adjacent to the door leading into the child activity room. Doorbell shall be located inside the child activity room and shall be audible throughout the entire room. Interior door into activity room shall not be capable of being opened by guests within the reception area. See paragraph 3.3 SITE REQUIREMENTS for playground requirements.

(g) Men's Restrooms: Provide toilet facilities to serve the public and administrative personnel assigned to the SFAC.

(h) Women's Restrooms: Provide toilet facilities to serve the public and administrative personnel assigned to the SFAC.

(i) Janitor Closet: Provide with a 10 in. deep floor mounted stainless steel mop sink with hot and cold service faucet, a four holder mop rack, and two 18 in. deep by 48 in. long heavy duty stainless steel shelves for storage of cleaning supplies. Provide space for storage of buckets and a vacuum.

(j) Interior Corridors: Provide 6 feet minimum wide interior corridors.

(k) Mechanical, Electrical, and Telecommunications Rooms: Mechanical rooms shall accommodate space for equipment maintenance/repair access without having to remove other equipment. Mechanical, electrical and telecommunications rooms shall be keyed separately for access by Installation maintenance personnel. Refer to paragraphs 3.6 MECHANICAL REQUIREMENTS and 3.7 ELECTRICAL AND TELECOMMUNICATIONS REQUIREMENTS for additional information.

(l) Camera Room: Provide a room for a video monitoring security equipment rack. Rack is 36 in. wide by 30 in. deep by 84 in. high. Provide 3 feet working clearance behind rack. Provide 2 feet working clearance on at least

one side and in front of rack. Space shall be conditioned with same equipment required for the telecommunications room.

(m) The wall perpendicular to the diaper changing station shall be no more than 54 inches high from the finished floor. There shall be no door at the entrance to the pre-toddler/toddler toilet to allow supervision from the caregiver.

3.2.5.2. Space Allocation Table

SFAC MINIMUM AREA REQUIREMENTS NET SQUARE FEET (NSF) PER ROOM				
NAME	SMALL		LARGE	
RECEPTION AREA	1,650		2,760	
PUBLIC COMPUTER ACCESS	160		240	
MULTI-USE/CONFERENCE ROOM W/ CHAIR STORAGE	450 (400/50)		1095 (1000/95)	
NOURISHMENT CENTER	195		450	
CHILD ACTIVITY ROOM	870		1,400	
STORAGE ROOM	N/A		140	
EXTERIOR COURTYARD - SEE NOTE 1	500		800	
BUILDING SUPPORT AREAS (Cam Room, Mechanical, Communications, Electrical, & Restrooms, etc.)	AS NEEDED		AS NEEDED	
ADMINISTRATIVE OFFICES				
OFFICE	**QTY**		**QTY**	
DIRECTOR	1	140	1	140
FAMILY SUPPORT	1	160	1	230
DISTRIBUTION CENTER	1	140	1	260
STORAGE ROOM	1	140	1	140
STORAGE ROOM			1	40
SOCIAL SERVICES ASSISTANT	1	140	1	140
VOLUNTEER	1	140	-	-
CHAPLAIN	1	140	1	140
TRANSITIONAL EMPLOYMENT	-	-	1	140
DFAS	-	-	2	140
DFAS/TRANSITIONAL EMPLOYMENT	1	140	-	-
MILITARY BENEFITS/ID PROCESSING	1	140	1	140
MILITARY BENEFITS	-	-	1	140
EDUCATION	1	140	2	140
VA	-	-	1	140
TSGLI	-	-	1	140
AW2	-	-	1	140
OUTREACH	-	-	1	140
ACS I & R (INFO EXPL)	-	-	1	140
FINANCIAL COUNSEL	-	-	1	140
OPEN OFFICES (CUBICLES)				
NCOIC	-	-	1	64
ADMINISTRATION	-	-	1	64
LEGAL	-	-	1	64
C & Y SERVICES	-	-	1	64
CPAC	-	-	1	64
VOLUNTEER	-	-	2	64
OPEN	-	-	1	64

Note:

(1) Areas shown are for roofed areas, courtyard may be larger as allowed by overall building area.

(2) Director's Office shall be adjacent to the Reception waiting area and accessible to parents and visitors.

(3) Storage Room (140 sf) in the Large SFAC Reception Area (located behind the reception desk) shall be a conditioned space

(4) Storage Room (140 sf) in the Large and Small SFAC Administrative Office area shall be a conditioned space.

3.2.6. Not Used

3.3. SITE REQUIREMENTS

3.3.1. Walks: Construct pedestrian walks within the designated construction area and connect to existing sidewalks, where applicable.

(a) The geometric design of walks for pedestrian circulation shall adhere to UFC 3-210-01A "Area Planning, Site Planning, and Design".

(b) Sidewalks shall be a minimum of 6 feet wide. Sidewalks designed to support emergency vehicle traffic shall be a minimum of 20 feet wide per NFPA requirements. Sidewalks designed to support service vehicle traffic shall be a minimum of 10 feet wide. Construct walks paralleling buildings beyond the eave drip line and at least 5 feet from the foundation.

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

(d) Sidewalks designed to support emergency and service vehicle traffic will be considered roadway pavements and shall be designed to meet the AASHTO standards. Construct vehicular supported walks of Portland Cement Concrete having a minimum nominal thickness of 7 inches. Design joints uniformly, symmetrical, and in accordance with AASHTO standards. Do not exceed the length to width ratio of 1.25 for non-reinforced pavements.

3.3.2. Site Structures and Amenities

(a) Dumpster Area: The Contractor shall locate, design, and construct the dumpster enclosure area(s) and screening. Dumpster screening shall be aesthetically and architecturally compatible with the building it serves and shall be designed in accordance with Installation Guidelines. Locate the dumpster areas in accordance with UFC 4-010-01 "DoD Minimum Antiterrorism Standards for Buildings". Position the GFGI dumpsters outside of restricted areas to allow for servicing activities.

(b) Not Used

(c) Child Outdoor Play Area: The outdoor play area must meet guidelines contained in the Consumer Products Safety Commission (CPSC) Handbook for Public Playground Safety, the American Society for Testing Materials (ASTM) F-1487-93, UFC 3-210-04 Chapter 7 "Children's Outdoor Play Area, Child Safety Requirements for Outdoor Play Areas", and any ABA guidelines for Play Areas (www.access-board.gov).

Design and construct the play area within allotted programmed funds. The play area shall be a minimum 50 foot by 60 foot area surrounded by a 4 foot high vinyl coated chain-link security type fence. Provide a 3 foot wide gate to allow emergency egress. The gate shall allow keyed entry only and the exit from the playground shall have an adult controlled securing device. Cut off the fence bolts so no more than two threads are exposed and cover the end with plastic caps or silicone caulk. Install the bolts so that the threaded end faces away from the play area.

The play area shall contain four foot (4') wide trike paths/sidewalks, a minimum 12-foot by 12-foot (12' x12') shade structure, a hard surface area with a basketball goal, a composite play system for ages two to five, and benches for viewing each area. Also provide swings if space is available.

Provide a safety surface throughout all use zones and under all play equipment. The safety surface shall be a unitary or poured in place material. The safety surface in the swing zone shall be wood fiber, with approved rubber matting at the foot contact point underneath the swings. Provide a unitary safety surface beneath infant swings.

Provide landscaping. Poisonous plants, plants with thorns, and fruit bearing plants are not permitted.

Provide a frost/freeze protected hose bib 18 inches above finished grade with removable cut off handles and integral vacuum breakers.

3.3.3. Site Functional Requirements

(a) Travel Distance: The CoHQ shall be no more than 160 feet from the WT Barracks. The distance shall be measured based on a pedestrian's path of travel from an entrance of one building to the nearest entrance of the other building.

(b) Privately Owned Vehicle (POV) Parking: The Contractor shall design and construct the POV parking, within the designated construction area. Base the location and design of the POV parking area(s) on the Installation's site constraints. Either consolidate the parking or position it along the perimeter of the complex. The Contractor shall ensure that the location of parking complies with UFC 4-010-01. See paragraph 5.2.3, "VEHICLE PAVEMENTS", for additional information. Provide POV parking as follows:

WTUAS:

Provide POV parking spaces for 90 percent of the personnel plus 10 parking spaces for visitor parking. Provide handicap parking in accordance with the Americans with Disabilities Act Section 4.1.2. The maximum travel distance from POV parking to the buildings shall not exceed a distance of 1200 feet. The maximum travel distance from handicap parking to the buildings shall not exceed a distance of 225 feet.

SFAC:

Provide a minimum 36 [3 are handicap] POV parking spaces.

(c) Service Drives: The Contractor shall provide service drives to each building. Locate the drives in accordance with UFC 4-010-01. Restrict access to the drives, where applicable, as required by UFC 4-010-01. Design the pavements as required by paragraph 5.2.3, "VEHICLE PAVEMENTS". The minimum access drive width shall be 10 feet. The Contractor shall design and construct drives with curbs and gutters when necessary for drainage purposes.

(d) Fire Access Lanes: The Contractor shall provide fire access lanes to each building. Access must be within 33 feet of a building's entrance. Design the fire access lanes in accordance with NFPA 1, UFC-3-600-01, and the installation's requirements.

(e) Drop off Lane: The Contractor shall provide drop off lanes at the WT Barracks and the SFAC. The drop lanes shall be ABA accessible.

3.4. ARCHITECTURAL REQUIREMENTS

3.4.1. Hardware

3.4.1.1. Non-Destructive Emergency Access System: Fire Department Secure Lock-Box: Provide a recessed key vault Knox 3200 series for Fire Department use at exterior wall at each building, including lawn maintenance storage buildings. Locate at entrance closest to fire alarm control panel. Vault keying shall be coordinated with Installation Fire Department. Allow long lead time.

3.4.1.2. Finish Hardware: All requirements for hardware keying shall be coordinated with the Contracting Officer. Extension of the existing Installation keying system shall be provided, the Installation keying system is BestLock. Cores shall have not less than seven pins; cylinders shall have key-removable type cores. Locksets for mechanical, electrical and communications rooms only shall be keyed to the existing Installation Master Keying System. HVAC terminal units that are accessed from a central corridor shall have a deadbolt to minimize protrusion into corridor. Plastic cores are unacceptable.

3.4.1.3. Not Used

3.4.2. Special Acoustical Requirements

3.4.2.1. Exterior walls and roof/floor/ceiling assemblies, doors, windows and interior partitions shall be designed to provide for attenuation of external noise sources such as airfields in accordance with applicable criteria. Provide sound insulation to meet a minimum rating of STC 42 at interior walls and floor/ceiling assemblies. At interior doors provide solid core wood doors in metal frame with sound insulation to meet a minimum rating of STC 25. In addition to the sound insulation required, video teleconferencing areas shall meet a Noise Criteria (NC) 30 rating in accordance with ASHRAE Fundamentals Handbook.

3.4.2.2. Sound conditions and levels for interior spaces, due to the operation of mechanical and electrical systems and devices, shall not exceed levels as recommended by ASHRAE handbook criteria.

3.4.3. Exterior Design Objectives

Provide durable and easily maintainable materials. Do not use exterior materials that require periodic repainting or similar refinishing processes. Material exposed to weather shall be factory pre-finished, integrally colored or provided with intrinsic weathering finish.

3.4.3.1. Exterior Walls: Where Exterior Insulation and Finish Systems (EIFS), or any other material except CMU or other Masonry material is used as exterior finish material, it shall be in conjunction with a CMU wainscot. EIFS shall be “high-impact” type and shall be “drainable” type.

3.4.3.2. Roof: Minimum roof slope for membrane roof systems shall be 1/4 inch per foot.

3.4.3.3. Trim and Flashing: Gutters, downspouts, and fascias shall be factory pre-finished metal and shall comply with SMACNA Architectural Sheet Metal Manual.

3.4.3.4. Bird Habitat Mitigation: The Contractor shall provide details in the design necessary to eliminate the congregating and nesting of birds at, on, and in the facility.

3.4.3.5. Exterior Doors and Frames:

(a) Main Entrance Doors: Provide aluminum storefront doors and frames with Architectural Class 1 anodized finish, fully glazed, with medium or wide stile for entry into lobbies or corridors. Framing systems shall have thermal-break design. Storefront systems shall comply with wind-load requirements of applicable codes and criteria including UFC 4-010-01.

(b) Other exterior Doors: Provide galvanized insulated hollow metal exterior doors for entry to all spaces other than corridors, lobbies, or reception/waiting rooms. Doors and frames shall comply with ANSI A250.8/SDI 100. Doors shall be heavy duty (grade 2) insulated with 18-gage steel cladding; top edge closed flush; A60 galvannealed. Frames shall be 12-gauge, with continuously welded mitered corners and seamless face joints. Doors and frames shall be constructed of hot dipped zinc coated steel sheet, complying with ASTM A653, Commercial Steel, Type B, minimum A40 coating weight; factory primed. Fire-rated openings shall comply with applicable codes, and the requirements of the labeling authority. Door and frame installation shall comply with applicable codes and criteria including UFC 4-010-01.

3.4.3.6. Exterior Windows: Provide insulated, high efficiency window systems, with thermally broken frames complying with applicable codes and criteria including UFC 4-010-01. Curtain wall systems shall be capable of withstanding area wind loads, thermal and structural movement required by location and project requirements, and shall comply with applicable codes and criteria including UFC 4-010-01. Window sills shall be designed to discourage bird nesting.

3.4.3.7. Exterior Louvers: Exterior louvers shall have bird screens and shall be designed to exclude wind-driven rain. Exterior louvers shall be made to withstand wind loads in accordance with the applicable codes. Wall louvers shall bear the Air Movement & Control Association (AMCA) International certified ratings program seal for air performance and water penetration in accordance with AMCA 500-D and AMCA 511. Louver finish shall be factory applied and color shall match adjacent finish.

3.4.4. Interior Design Objectives

Provide sustainable materials and furnishings that are easily maintained and replaced. Maximize use of daylighting. Provide interior surfaces that are easy to clean and light in color. Design WTUAS building(s) with an office ambience.

3.4.4.1. Not Used

3.4.4.2. Bulletin Boards: Provide one bulletin board near the main entrance. Each bulletin board shall be 4 feet high and 6 feet wide and shall have a header panel and lockable, glazed doors.

3.4.4.3. Corner Guards: Provide surface mounted, high impact resistant, integral color, snap-on type resilient corner guards, extending from floor to ceiling for wall and column outside corners in high traffic areas such as corridors, waiting areas, lobbies, conference and multi-purpose rooms. Factory fabricated end closure caps shall be furnished for top and bottom of surface mounted corner guards.

3.4.4.4. Chair Rail: Chair rails shall be installed in areas prone to hi-impact use, such as corridors, waiting areas, lobbies, conference and multi-purpose rooms.

3.4.4.5. Casework: Provide cabinets complying with Architectural Woodwork Institute Quality Standards. Countertops shall have waterfall front edge and integral coved backsplash.

3.4.4.6. Fire Extinguisher Cabinets: Furnish and install fire extinguisher cabinets and mounting brackets as required by applicable codes and criteria.

3.4.4.7. Interior Doors and Frames:

(1) Provide hollow metal doors, or flush solid core wood doors as required. All door frames shall be hollow metal.

(2) Wood Doors: All doors shall be wood doors except noted otherwise Provide flush solid core wood doors conforming to WDMA I.S.-1A. Stile edges shall be non-finger jointed hardwood compatible with face veneer. Provide Architectural Woodwork Institute (AWI) Grade A hardwood face veneer for transparent finished doors.

(3) Insulated Hollow Metal Doors: Comply with ANSI A250.8/SDI 100. Doors shall be minimum Level 2, physical performance Level B, Model 2; factory primed. Provide insulated hollow metal doors for utility rooms, storage rooms and bathrooms.

(4) Hollow Metal Frames: Comply with ANSI A250.8/SDI 100. Frames shall be minimum Level 2, 16 gauge, with continuously welded mitered corners and seamless face joints; factory primed.

(5) Fire-rated and Smoke Control Doors and Frames: Comply with applicable codes, criteria and requirements of labeling authority.

(6) STC ratings shall be of the sound classification required and shall include the entire door and frame assembly.

3.4.4.8. Window Treatment: Provide horizontal mini blinds at all exterior windows. Uniformity of window covering color and material shall be maintained to the maximum extent possible throughout each building.

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

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

(1) Glass mirrors on stainless steel frame and shelf – at each lavatory

(2) Liquid soap dispenser – at each lavatory

(3) Combination recessed mounted paper-towel dispenser/waste receptacle

(4) Sanitary napkin disposal at each female toilet/unisex toilet

(5) Recessed mounted lockable double toilet paper holder – at each water closet

(6) Sanitary toilet seat cover dispenser – one per toilet

(7) Grab bars – as required by ABAAG

(8) Shower curtain rod - curved extra heavy duty

(9) Shower curtain – white anti-bacterial nylon/vinyl fabric shower curtain shall completely close the shower stall width.

(10) Soap dish – built-in in shower

(11) Robe hook – adjacent to shower stall entry

(b) Not Used

(c) Public Toilets: Toilet accessories shall conform to the requirements of the ABA and shall include, but are not limited to the following.

(1) Glass mirrors on stainless steel frame and shelf – at each lavatory

(2) Liquid soap dispenser – at each lavatory

(3) Combination recessed mounted paper-towel dispenser/waste receptacle

(4) Sanitary napkin disposal at each female toilet/unisex toilet

(5) Recessed mounted lockable double toilet paper holder – at each water closet

(6) Sanitary toilet seat cover dispenser – one per toilet

(7) Grab bars – as required by ABAAG

(8) One Wall-mounted Diaper Changing Station

3.4.4.10. Mold and Mildew Mitigation: The Designer of Record shall provide details in the design analysis and design showing steps taken to mitigate the potential growth of mold and mildew in the facility.

3.4.5. Finishes: Finishes Designers are not limited to the minimum finishes listed in this paragraph and are encouraged to offer higher quality finishes

3.4.5.1. Minimum Paint Finish Requirements

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

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

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

3.4.5.2. Minimum Interior Finishes

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

(b) Wall, ceiling and floor finishes shall conform to the requirements of the IBC, NFPA and UFC 3-600-01. Where code requirements conflict, the most stringent code requirement shall apply.

(c) Carpet shall be minimum of 2 yarn ply, modular tile conforming to ISO 2551, ASTM D 418, ASTM D 5793, ASTM D 5848, solution dyed, tufted, cut and loop pile, commercial 100% branded (federally registered trademark) nylon continuous filament. Vinyl composition tile (VCT) shall be minimum 1/8 inch thick, conforming to ASTM F 1066, Class 2, through pattern tile, Composition 1, asbestos free, with color and pattern uniformly distributed throughout the thickness of the tile.

(d) Walls: All gypsum board shall achieve a score of 10, the highest level of performance for mold resistance under the ASTM D 3273 test method. All gypsum board shall be transported, handled, stored and installed in accordance with the GYPSUM ASSOCIATION – Guidelines For Prevention Of Mold Growth On Gypsum Board (GA-238-03). Use impact resistant gypsum board in corridors, storage rooms, stairwells and activity rooms and centralized laundries (if centralized laundries are required by RFP).

(e) Ceiling: All gypsum board shall achieve a score of 10, the highest level of performance for mold resistance under the ASTM D 3273 test method. All gypsum board shall be transported, handled, stored and installed in accordance with the GYPSUM ASSOCIATION – Guidelines For Prevention Of Mold Growth On Gypsum Board (GA-238-03).

3.4.5.3. Not Used

3.4.5.4. CoHQ Interior Finishes

CoHQ INTERIOR FINISHES

	FLOORS						BASE			WALLS				CEILING			REMARKS
	RESILIENT FLOORING	PORCELAIN OR QUARRY TILE	CERAMIC TILE	RECESSED ENTRY MAT	SEALED CONCRETE	CARPET	RESILIENT BASE	PORCELAIN OR QUARRY BASE	CERAMIC BASE	GYPSUM WALL BOARD-PAINT	LAMINATED GLASS, INSUL. CURTAIN WALL SYSTEM	CERAMIC TILE	LAMINATED GLASS, INSUL . STORE FRONT SYSTEM	GYPSUM WALL BOARD-PAINT	ACOUSTICAL CEILING TILE	MINIMUM HEIGHT 8'-0" UNLESS STATED OTHERWISE	REFER TO NOTE
COMMANDER						●	●			●					●		NOTE 5
EXECUTIVE OFFICER						●	●			●					●		NOTE 5
SUPERVISORY CASE MANAGER						●	●			●					●		NOTE 9
CASE MANAGER						●	●			●					●		
FIRST SERGEANT						●	●			●					●		NOTE 5
PLATOON SERGEANT	●						●			●					●		
SQUAD LEADER	●						●			●					●		
SOCIAL WORKER						●	●			●					●		NOTE 5
NURSE CASE MANAGER						●	●			●					●		NOTE 5
EXTRA OFFICE						●	●			●					●		NOTE 8
OPEN OFFICE AREA	●						●			●					●	9'	
COPIER AND FAX	●						●			●					●		
KITCHENETTE	●						●			●					●		NOTE 3 AND 4
RECORDS ROOM	●						●			●					●		
CONFERENCE ROOM						●	●										NOTE 5
SUPPLY ROOM	●						●										
RECEPTION/WAITING ROOM		●						●		●					●	9'	
MESSAGE CENTER	●						●			●					●		

STORAGE ROOM	●						●			●					●		NOTE 10
MEN'S RESTROOM			●						●	●		●		●			NOTE 1 AND 3
WOMEN'S RESTROOM			●						●	●		●		●			NOTE 1 AND 3
JANITOR CLOSET			●						●	●		●		●			NOTE 2
CORRIDORS	●						●			●					●	9'	
VESTIBULES		●		●				●		●	●		●	●		9'	
STAIRS	●				●		●			●				●			NOTE 7
ELEVATOR		●						●		●					●		NOTE 11
PUMP ROOM					●		●			●				●			NOTE 11
MECHANICAL					●		●			●				●			NOTE 6
ELECTRICAL					●		●			●				●			NOTE 6
TELECOMM					●		●			●					●	10'	

1. ALL WET WALLS IN TOILET ROOMS SHALL HAVE 4'-0" HIGH CERAMIC TILE WAINSCOT. ALL SHOWERS SHALL HAVE FULL HEIGHT TILE WALLS.
2. WALLS ADJACENT TO JANITOR'S SINK SHALL HAVE A 4'-0" HIGH CERAMIC TILE WAINSCOT.
3. ALL COUNTERS SHALL HAVE A MINIMUM OF 4" HIGH BACKSPLASH.
4. IN VENDING OR RECYCLABLES STORAGE AREA, MATCH FLOORING, WALL, AND CEILING FINISHES TO THOSE OF ADJACENT AREA.
5. EXTEND PARTITIONS TO DECK. PROVIDE SOUND INSULATION TO MEET A MINIMUM RATING AT DOORS AND WALLS OF STC 49.
6. CEILING MAY BE PAINTED EXPOSED STRUCTURE IF ALLOWED BY APPLICABLE CODE.
7. RISERS SHALL BE PAINTED STEEL. STAIR LANDINGS AND TREADS SHALL HAVE RESILIENT FLOORING OR SEALED CONCRETE. PROVIDE TREADS WITH SLIP RESISTANT NOSING.
8. ONLY USED ON SMALL CoHQ
9. USED ON ALL MEDIUM AND LARGE CoHQs.
10. ONLY USED ON MEDIUM DUPLEX CoHQ.
11. USED ONLY ON MEDIUM STACKED AND LARGE STACKED CoHQs.

3.4.5.5. BnHQ Interior Finishes

BnHQ INTERIOR FINISHES

	FLOORS						BASE			WALLS				CEILING			REMARKS
	RESILIENT FLOORING	PORCELAIN OR QUARRY TILE	CERAMIC TILE	RECESSED ENTRY MAT	SEALED CONCRETE	CARPET	RESILIENT BASE	PORCELAIN OR QUARRY BASE	CERAMIC BASE	GYPSUM WALL BOARD-PAINT	LAMINATED GLASS, INSUL. CURTAIN WALL SYSTEM	CERAMIC TILE	LAMINATED GLASS, INSUL . STORE FRONT SYSTEM	GYPSUM WALL BOARD-PAINT	ACOUSTICAL CEILING TILE	MINIMUM HEIGHT 8'-0" UNLESS STATED OTHERWISE	REFER TO NOTE
BATTALION COMMANDER						●	●			●					●		NOTE 5
EXECUTIVE OFFICER						●	●			●					●		
CHAPLAIN						●	●			●					●		NOTE 5
LAWYER						●	●			●					●		NOTE 5
PARA-LEGAL						●	●			●					●		NOTE 5
S1						●	●			●					●		
S3						●	●			●					●		
S4						●	●			●					●		
COMMAND SERGEANT MAJOR						●	●			●					●		NOTE 5

OPERATIONS SERGEANT						•	•			•					•		
SOCIAL WORKER						•	•			•					•		NOTE 5
OCCUPATIONAL THERAPIST						•	•			•					•		NOTE 5
OPEN OFFICE AREA	•						•			•					•	9’	
STORAGE ROOM	•						•			•					•		
COPIER AND FAX	•						•			•					•		
BREAKROOM	•						•			•					•		NOTES 3 AND 4
CONFERENCE ROOM						•	•			•					•		NOTE 5
RECEPTION/WAITING ROOM		•						•		•					•	9’	
JANITOR CLOSET			•						•	•		•		•			NOTE 2
MEN’S RESTROOM			•						•	•		•		•			NOTES 1 AND 3
WOMEN’S RESTROOM			•						•	•		•		•			NOTES 1 AND 3
OFFICE CORRIDORS	•						•			•					•	9’	
VESTIBULES		•		•				•			•		•	•		9’	
MECHANICAL					•		•			•				•			NOTE 6
ELECTRICAL					•		•			•				•			NOTE 6
TELECOMM					•		•			•					•	10’	
SIPRNET ROOM					•		•			•				•		9’	NOTE 7

1. ALL WET WALLS IN TOILET ROOMS SHALL HAVE 4'-0" HIGH CERAMIC TILE WAINSCOT. ALL SHOWERS SHALL HAVE FULL HEIGHT TILE WALLS.
2. WALLS ADJACENT TO JANITOR’S SINK SHALL HAVE A 4’-0” HIGH CERAMIC TILE WAINSCOT.
3. ALL COUNTERS SHALL HAVE A MINIMUM OF 4" HIGH BACKSPLASH.
4. IN VENDING OR RECYCLABLES STORAGE AREA, MATCH FLOORING, WALL, AND CEILING FINISHES TO THOSE OF ADJACENT AREA.
5. EXTEND PARTITIONS TO DECK. PROVIDE SOUND INSULATION TO MEET A MINIMUM RATING AT DOORS AND WALLS OF STC 49.
6. CEILING MAY BE PAINTED EXPOSED STRUCTURE IF ALLOWED BY APPLICABLE CODE.
7. CONSTRUCT IN ACCORDANCE WITH AR 380-5, SECTION III, CHAPTER 7.

3.4.5.6. SFAC Interior Finishes

Finishes shall be coordinated through the United States Army Corps of Engineers Center of Standardization to ensure use of therapeutic colors, flooring material, and countertop textures.

The Contact address is:
Corps of Engineers – Ft Worth District
CESWF-EC-DA
819 Taylor Street
Room 4A05
Fort Worth, TX 76102

SFAC INTERIORS FINISHES					
	FLOORS	BASE	WALLS	CEILING	REMARKS

	RESILIENT FLOORING	PORCELAIN TILE	RUBBER FLOORING	RECESSED ENTRY MAT	SEALED CONCRETE	CARPET	RESILIENT BASE	WOOD BASE	CERAMIC BASE	GYPSUM WALL BOARD - PAINT	WOOD VENEER WALL COVERING	CERAMIC TILE	VENEER STONE WALL FINISH	LAMINATED GLASS, INSUL. STORE FRONT SYSTEM	GYPSUM WALL BOARD - PAINT	ACOUSTICAL CEILING TILE	LAY-IN WOOD TILE	MINIMUM-HEIGHT 8'-0" UNLESS STATED OTHERWISE	REFER TO NOTE
PUBLIC & SUPPORT SPACES																			
RECEPTION AREA						●	●			●	●		●		●	●	●		
PUBLIC COMPUTER ACCESS						●	●			●						●			
MULTI-USE/CONFERENCE ROOM W/STORAGE						●	●			●					●	●			
NOURISHMENT CENTER		●						●		●					●				
CHILD ACTIVITY ROOM	●		●				●			●					●	●			
STORAGE ROOM						●	●			●					●				
MEN'S RESTROOM		●							●			●			●				
WOMEN'S RESTROOM		●							●			●			●				
TOILET		●							●			●			●				
JANITOR CLOSET		●							●	●		●			●				NOTE 5
MECHANICAL					●		●			●					●				NOTES 3 & 4
ELECTRICAL					●		●			●					●				NOTES 3 & 4
TELECOMM					●		●			●					●			**10'**	
CAM ROOM					●		●			●					●				
ADMINISTRATIVE OFFICES																			
DIRECTOR						●	●			●						●			
FAMILY SUPPORT						●	●			●						●			
DISTRIBUTION CENTER						●	●			●						●			
STORAGE ROOM						●	●			●					●				
SOCIAL SERVICES ASST.						●	●			●						●			
VOLUNTEER						●	●			●						●			NOTE 1
CHAPLAIN						●	●			●						●			
TRANSITIONAL EMPLOYMENT						●	●			●						●			NOTE 2
DFAS						●	●			●						●			NOTE 2
DFAS/TRANSITIONAL EMPLOYMENT						●	●			●						●			
MILITARY BENEFITS/ID PROCESSING						●	●			●						●			
MILITARY BENEFITS						●	●			●						●			NOTE 2
EDUCATION						●	●			●						●			
VA						●	●			●						●			NOTE 2
TSGLI						●	●			●						●			NOTE 2

AW2						●	●			●						●			NOTE 2
OUTREACH						●	●			●						●			NOTE 2
ACS I & R (INFO EXPL)						●	●			●						●			NOTE 2
FINANCIAL COUNSEL						●	●			●						●			NOTE 2
ADMINISTRATIVE OPEN OFFICES																			
NCOIC						●	●			●						●			NOTE 2
ADMINISTRATION						●	●			●						●			NOTE 2
LEGAL						●	●			●						●			NOTE 2
C & Y SERVICES						●	●			●						●			NOTE 2
CPAC						●	●			●						●			NOTE 2
VOLUNTEER						●	●			●						●			NOTE 2
OPEN						●	●			●						●			NOTE 2

Notes:

1. ONLY USED IN SMALL SFAC
2. ONLY USED IN LARGE SFAC
3. WALL PAINT TO BE WATER-BASED EPOXY
4. CEILINGS MAY BE PAINTED EXPOSED STRUCTURE IF ALLOWED BY APPLICABLE CODE
5. WALLS ADJACENT TO JANITOR'S SINK SHALL HAVE A 4"-0" HIGH CERAMIC TILE WAINSCOT

3.4.5.7. Not Used

3.4.5.8. Not Used

3.4.5.9. CoHQ Furniture Chart

CoHQ FURNITURE CHART		
Description	**Comments**	**Furniture Required**
Commander	Private Office	U-shaped executive desk with 2 pedestals, hutch, one 4-drawer lateral file, 2 guest chairs, 1 executive chair
Executive Officer	Private Office	L-shaped double pedestal desk unit, hutch, one 4-drawer lateral file, 2 guest chairs, 1 task chair
First Sergeant	Private Office	L-shaped double pedestal desk unit, hutch, two 4-drawer lateral files, 2 guest chairs, 1 executive chair
Office 1 (See note 1)	Private Office	L-shaped double pedestal desk unit, hutch, two 4-drawer lateral files, 2 guest chairs, 1 task chair
Platoon Sergeant	Shared Office	2 L-shaped modular furniture workstations with work surfaces, file pedestals, and overhead storage, one 4-drawer lateral files, 2 task chairs, 2 guest chairs
Squad Leaders	Shared Office	3 single pedestal desks, 3 task chairs, 3 guest chairs
Open Office (See note 2)	48 NSF Open Workstations	6 x 8 systems furniture workstation with work surfaces, file pedestals, and overhead storage, 1 task chair, 1 guest chair, room enough for wheelchair access into cubical
Conference Room	Commander's Conference Room	Boat-shaped conference table, 12 conference chairs, minimum of 4 side chairs, 1 small storage credenza
Copier and Fax	Copy Room with Fax Machine	1 work surface with storage for paper

CoHQ FURNITURE CHART		
Description	**Comments**	**Furniture Required**
Records Room	Storage	Minimum of five 4-drawer lateral files
Supply Room	Storage	Minimum of 80 linear feet of shelving, Minimum of 1 locking cabinet
Reception/Waiting Room	Building Reception and Waiting Area	1 reception station with task chair(s), minimum of 10 lobby seats with side tables.

Notes:

(1) Office 1 layout applies to Case manager, Nurse Case manager, Social Worker, Extra Office and Supervisor Case Manager.

(2) Open Office workstations apply to Occupational Therapy Assistant, Medical NCO, Financial Tech. Specialist, Training Specialist, Medical Support Assistant, Supply Technician, HR Specialist, HR Assistant and Family Readiness Support Assistant.

3.4.5.10. BnHQ Furniture Chart

BnHQ FURNITURE CHART		
Description	**Comments**	**Furniture Required**
Battalion Commander	Private Office	L-shaped executive desk with 2 pedestals, two 4-drawer lateral files, 1 conference table, 4 conference chairs, 2 guest chairs, 1 executive chair
Executive Officer, Command Sergeant Major	Private Offices	Each office to accommodate L-shaped executive desk with 2 pedestals, one 4-drawer lateral file, 1 book case, 2 guest chairs, 1 managerial chair
Office 1 (See note1)	Private Office	L-shaped executive desk with 2 pedestals, 1 double pedestal credenza, hutch, one 4-drawer lateral file, 2 guest chairs, 1 managerial chair
Chaplain	Private Office	L-shaped executive desk with 2 pedestals, hutch, one 4-drawer lateral file, 1 guest chair, one 3-seat upholstered arrangement, 1 managerial chair
Open Office (See note 2)	48 NSF Open Workstations	6 x 8 systems furniture workstation with work surfaces, file pedestals, and overhead storage, 1 task chair, 1 guest chair, room enough for wheelchair access into cubical
Conference Room	Commander's Conference Room	Boat-shaped conference table, 16 conference chairs, 16 side chairs, 1 small storage credenza
Reception/Waiting Room	Building Reception and Waiting Area	1 reception station with task chair, minimum of 12 guest chairs and 5 side tables
Break Room	Kitchenette	2 square tables, 4 stackable chairs
Copier and Fax	Copy Room with Fax Machine	1 work surface with lockable storage for paper products
Storage Room	General Storage	Minimum of 80 linear feet of shelving, Minimum of 1 locking cabinet

(1) Office 1 layout applies to S-1, S-3, S-4, Operations Sergeant, Occupational Therapist and Social Worker Laywer and Para-Legal.

(2) Open Office workstations apply to IT Specialist, Financial Management Specialist, Supply Specialist, Supervisory Medical Support Assistant, HR Specialist, Family Readiness Support Assistant, Chaplain Assistant and Driver.

3.4.5.11. SFAC Furniture Chart

SFAC FURNITURE CHART (See note 1)		
Description	**Comments**	**Furniture Required**
Office (See note 2)	Private Office	L-shaped systems furniture workstation with 1 pedestal, one 2-drawer lateral file, 2 guest chairs, 1 executive chair
Open Office-Large Only (See note 3)	48 NSF Open Workstations	6 x 8 systems furniture workstation with work surfaces, 2 file pedestals, and overhead storage, 1 task chair, 1 guest chair, room enough for wheelchair access into cubical
Family Support-Small	Private Lounge	One 3-seat upholstered arrangement, one 2-seat upholstered arrangement, 1 upholstered chair, 1 side table, 1 computer table
Family Support-Large	Private Lounge	One 3-seat upholstered arrangement, one 2-seat upholstered arrangement, 2 upholstered chairs, 2 side tables, 1 computer table
Nourishment Center-Small	Food prep area	3 round tables, 6 chairs
Nourishment Center-Large	Food prep area	3 round tables, 10 chairs
Multi-Use/Conference Room-Small	Conference Room	Six 30”x60” training tables, 16 conference chairs, one 24”x75” credenza
Multi-Use/Conference Room-Large	Conference Room	Eight 30”x60” training tables, 20 conference chairs, one 24”x75” credenza
Reception Area-Small	Reception/waiting/dining	Two 3-seat upholstered arrangement, one 2-seat upholstered arrangement, 5 upholstered chairs, 4 side tables, 2 sofa tables, 1 coffee table, 3 round dining tables, 6 dining chairs, U-shaped reception station with work surface, 2 file pedestals, and overhead storage, transaction top, 2 task chairs.
Reception Area-Large	Reception/waiting/dining	Two 3-seat upholstered arrangement, two 2-seat upholstered arrangement, 15 upholstered chairs, 11 side tables, 1 sofa table, 3 round dining tables, 10 dining chairs, L-shaped reception station, with work surface, 2 file pedestals, and overhead storage, transaction top, 2 task chairs.
Public Computer Access	Computer Room	6 task chairs
Courtyard-Small	Open-air dining	7 round tables, 28 chairs
Courtyard-Large	Open-air dining	10 round tables, 29 chairs
General Storage-Small	Storage	Minimum of 162 total linear feet of wire shelving; two 5-high lateral file cabinets and 1 lockable storage cabinet for main storage
General Storage-Large	Storage	Minimum of 90 total linear feet of wire shelving; two 5-high lateral file cabinets and 2 lockable storage cabinets for main storage
Distribution Center-Small	Storage	Minimum of 54 linear feet of wire shelving, two 5-drawer lateral file cabinets, 1 locking cabinet
Distribution Center-Large	Storage	Minimum of 90 linear feet of wire shelving, 3 locking storage cabinets, three 5-drawer lateral file cabinets, two 36” x 60” tables

(1) Coordination with drawings necessary to verify room list per building.

(2) Office layout applies to all hard wall offices. Coordinate with drawings, can include the following: Director, Family Support, Distribution Center, General Storage, Social Services Assistant, Volunteer, Pastoral, Transition

Employment, DFAS, DFAS/Transition Employment, Military Benefits/ID Processing, Military Benefits, Education, VA, TSGLI, AW2, ACS I&R (Reception), ACS I & R (Info Expl) and/or Financial Counsel.

(3) Open Office workstations apply to NCOIC, Administration, Legal, C&Y Services, CPAC, two Volunteers and Open.

3.5. STRUCTURAL REQUIREMENTS

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

3.5.1. Live Loads: Design live loads shall be per the IBC but not lower than the following minimums:

(a)	Elevated slabs	60 pounds per square foot (psf)
(b)	Slabs on grade	150 psf
(c)	Centralized laundry area	150 psf, but not less than actual equipment loads

3.6. MECHANICAL REQUIREMENTS

3.6.1. Plumbing

3.6.1.1. Not Used

3.6.1.2. Not Used

3.6.1.3. Not Used

3.6.1.4. Not Used

3.6.1.5. Not Used

3.6.1.6. WTUAS - Urinals shall be non-water using (waterless, water-free, etc.) type or shall be ultra-low flow type using less than 0.2 gallons per flush.

3.6.1.7. SFAC - Provide sink for built-in diaper changing station with goose neck faucet and wrist blade handles.

3.6.1.7.1. Not Used

3.6.1.7.2. For Child Activity Room pre-toddler/toddler toilet area, provide two pediatric water closets (10 inches to rim above finished floor (AFF)). Water closets shall not use automatic flush valves. Provide floor drain in toilet area. Provide two wall hung child size lavatories mounted 17 inches AFF. Lavatories shall be mounted opposite from water closets. Provide one bubbler water fountain, with guarded stream drinking head, outside pre-toddler/toddler toilet area. Bubbler shall be mounted 17 inches AFF.

3.6.1.7.3. For Child Activity Room preschool/school-age children toilet area, provide one pediatric water closet (13 inches to rim above finished floor (AFF)). Water closet shall not use automatic flush valve. Provide floor drain in toilet area. Provide one wall hung child size lavatory mounted 20 inches AFF. Provide one bubbler water fountain, with guarded stream drinking head, outside preschool/school-age toilet area. Bubbler shall be mounted 20 inches AFF.

3.6.1.8. Not Used

3.6.2. Heating, Ventilating and Air-Conditioning (HVAC)

3.6.2.1. Not Used

3.6.2.2. Not Used

3.6.2.3. Not Used

3.6.2.4. Not Used

3.6.2.5. Not Used

3.6.2.6. WTUAS or SFAC - All air handling units shall be located in mechanical rooms accessible only through an exterior door. Mechanical rooms shall be sized for ease of service, maintenance, and replacement of HVAC equipment. Air filters shall be located in the mechanical room. Occupant control shall also include ability to select heating or cooling mode. HVAC system shall be able to provide for year round heating.

Each conference and multi-purpose room shall be zoned separately. Other space zoning shall be based on exterior envelope exposures. Where VAV systems are used, limit individual zones to a maximum of 2,500 cfm.

Air handling units shall run continuously during occupied hours. Restroom exhaust fans shall be interlocked with the air handling units. Similarly, outdoor ventilation air required by ASHRAE 62.1 shall be continuous during occupied hours.

3.6.2.7. SFAC - Provide continuous exhaust above diaper changing station at a rate of 100-150 cfm.

3.6.2.8. Not Used

3.6.3. Fire Protection

Fire suppression systems shall be designed in accordance with the latest edition of UFC 3-600-01. All facilities as a part of the complex shall be protected throughout by a complete automatic sprinkler system.

3.6.4. COMPLIANCE WITH ENERGY POLICY ACT OF 2005 (EPACT 2005)

3.6.4.1. EPACT 2005 Requirement

The building, including the building envelope, HVAC systems, service water heating, power, and lighting systems shall be designed to achieve an energy consumption that is at least 30% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1-2004 (see paragraph 5.9 Energy Conservation)

3.6.4.2. Prescriptive Path (Use of Technology Solution Set)

The technology solution set shown in the table below achieves the above energy performance and life cycle cost effectiveness requirements for a WT facility in the indicated DOE climatic zone.

Climate Zone 3A, Prescriptive Technology Solution Table

Item	Component	30% Solution
Roof	Attic	R-40
	Surface reflectance	0.27
Walls	Light Weight Construction	R-20
Exposed Floors	Mass	R-10 c.i.
Slabs	Unheated	NR (2)
Doors	Swinging	U-0.70
	Non-Swinging	U-1.45
Infiltration		0.25 cfm/ft^2 @ 75 Pa (3)
Vertical Glazing	Window to Wall Ratio (WWR)	10% - 20%
	Thermal transmittance	U-0.45

	Solar heat gain coefficient (SHGC)	0.31
Interior Lighting	Lighting Power Density (LPD)	0.9 W/ft^2
	Ballast	Electronic ballast
HVAC	Air Conditioner	4-Pipe Fan Coil with central chiller and boiler plus DOAS (4) with 14.0 SEER DX coil (3.52 COP) and HHW coil on central boiler SAT control 55ºF – 62ºF with OAT 75º – 54ºF
	Gas Furnace	none
	ERV	70% - 75% sensible effectiveness
Economizer		no
Ventilation	Outdoor Air Damper	Motorized control
	Demand Control	NR
	Laundry Room	Decoupled (5)
Ducts	Friction Rate	0.08 in. w.c./100 feet
	Sealing	Seal class B
	Location	Interior only
	Insulation level	R-6 (6)
Service Water Heating	Gas storage	90% E_t

Notes for Perscriptive Technology Solution Table:

(1) NOT USED

(2) NR means there is no requirement or recommendation for a component in this climate.

(3) Increased Building Air tightness. Building air leakage (measured in cfm/ft2) is the average volume of air(measured in cubic feet per minute) that passes through a unit area of the building envelope (measured in square feet) when the building is maintained at a specified internal pressure (measured in Pascals). Testing requirements are specified in Chapter 5..

(4) Dedicated Outdoor Air System. A central dedicated outdoor air system (DOAS) providing the following:

(a) Outside air for building indoor air quality and humidity control

(b) Make-up air for bathroom and kitchen exhausts

(c) Building pressurization to prevent infiltration which allows for reduction of heating/cooling and moisture loads on the system.

NOTE: The Central DOAS does not provide sensible heating or cooling. Sensible loads are provided by a complementing heating and cooling system

(5) **Decoupling exhaust and supply systems for laundry rooms**. To reduce unneeded energy use for heating and cooling of the make-up air and for air transportation of supply and exhausted air from the dryers, laundry exhaust and supply systems are separated in the efficient building model from the rest of the building exhaust and supply systems. Laundry exhaust system and corresponding make-up systems operate only when dryers are operating.

(6) The duct and pipe insulation values are from the ASHRAE Advanced Energy Design Guide for Small Offices.

All design features of this EPACT 2005 compliant UEPH not described above will be in accordance with the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1-2007. including conformance with paragraph 5.9.2, which requires purchase of Energy Star and FEMP designated products.

3.6.4.3. Compliance Path

When the “Compliance Path” is selected, the facility design shall include a uniquely developed technology solution set which can be shown by the design analysis (using facility energy simulation software) not to exceed the target energy consumption budget stated in 3.6.2 above and meet all the criteria in the DOE interim final rule: “Energy Conservation Standards for New Federal Commercial and Multi-Family High-Rise Residential Buildings and New Federal Low-Rise Residential Buildings”.

3.6.4.4. Schedules

If a unique technology solution set method of compliance is chosen then the following facility schedules must be used in all facility energy simulations for purposes of showing compliance with 3.6.4. Additionally, for simulation of a baseline building model, the “baseline values” for each component shall be as per ASHRAE Standard 90.1-2004 Building Envelope Requirements table for applicable climate zone and residential construction.

WT Common Area Internal Load Schedules

Hr	Occupancy			Lighting			Washer/Dryer Use			Washer SHW		
	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun
1-6	0.00	0.00	0.00	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00
7-10	0.20	0.20	0.20	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00
11-18	0.00	0.00	0.00	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.80	0.80	0.80	0.00	0.00	0.00	0.00	0.00	0.00
20-21	0.20	0.20	0.20	0.80	0.80	0.80	0.50	0.50	0.50	0.50	0.50	0.50
22-23	0.40	0.40	0.40	0.80	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.00
24	0.20	0.20	0.20	0.80	0.80	0.80	0.50	0.50	0.50	0.50	0.50	0.50
Peak	5 occ/floor			1.0 W/ft^2 (10.8 W/m^2)			8.4 kW/floor			53.3 gal/hr/flr (202 L/hr/flr)		

WT Apartment Unit Internal Load Schedules

Hr	Occupancy			Lighting			Plug Loads			Service Hot Water		
	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun
1-5	0.80	0.75	0.75	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00
6	0.70	0.65	0.75	0.40	0.30	0.20	0.20	0.20	0.20	0.10	0.10	0.10
7	0.60	0.60	0.70	0.70	0.50	0.30	0.40	0.35	0.20	0.40	0.40	0.40
8	0.50	0.50	1.00	0.50	0.50	0.50	0.40	0.40	0.40	0.20	0.20	0.20
9	0.25	0.25	0.00	0.20	0.20	0.20	0.30	0.40	0.40	0.00	0.00	0.00
10-17	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.00	0.00	0.00
18	0.30	0.30	0.30	0.50	0.50	0.50	0.50	0.50	0.50	0.10	0.10	0.10
19	0.50	0.30	0.30	0.70	0.70	0.70	0.50	0.50	0.50	0.10	0.10	0.10
20	0.50	0.50	0.50	0.70	0.70	0.70	0.60	0.50	0.50	0.10	0.10	0.10
21	0.70	0.50	0.50	0.70	0.70	0.70	0.60	0.50	0.50	0.00	0.00	0.00
22	0.70	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.00
23	0.80	0.75	0.75	0.40	0.40	0.40	0.40	0.50	0.50	0.00	0.00	0.00
24	0.80	0.75	0.75	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00
Peak	2 occ/unit			1.1 W/ft^2 (10.8 W/m^2)			1.7 W/ft^2 (18 W/m^2)			40 gal/hr (114 L/hr)		

WT Apartment Unit Internal Load Schedules

Hr	Refrigerator			Range and Oven		
	Wk	Sat	Sun	Wk	Sat	Sun
1-6	1.00	1.00	1.00	0.01	0. 01	0. 01
7-16	1.00	1.00	1.00	0.04	0.04	0.04
17-18	1.00	1.00	1.00	0.05	0.05	0.05
19-20	1.00	1.00	1.00	0.11	0.11	0.11
21-23	1.00	1.00	1.00	0.10	0.10	0.10
24	1.00	1.00	1.00	0.03	0.03	0.03
Peak	76.36 W/unit			68.95 W/unit		

WT Apartment Unit Thermostat Set-Point Schedules

Hr	Heating (°F)			Heating (°C)			Cooling (°F)			Cooling (°C)		
□	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun
1-24	68	68	68	20	20	20	75	75	75	24	24	24

WT Unoccupied Zones (ie stairwells, mechanical rooms) Thermostat Set-Point Schedules

Hr	Heating (°F)			Heating (°C)		
□	Wk	Sat	Sun	Wk	Sat	Sun
1-24	55	55	55	12.8	12.8	12.8

3.7. ELECTRICAL AND TELECOMMUNICATIONS REQUIREMENTS

Select electrical characteristics of the power system to provide a safe, efficient, and economical distribution of power based upon the size and types of loads to be served. Use distribution and utilization voltages of the highest level that is practical for the load to be served. The effect of nonlinear loads such as computers, other electronic equipment and electronic ballasts shall be considered and accommodated as necessary. Voltage drop shall not exceed the maximum allowed per ASHRAE 90.1. Transient voltage surge protection shall be provided on service equipment for WT Barracks, WTUASs, and SFACs.

3.7.1. Power

3.7.1.1. Power shall be provided for all installed equipment requiring power including all government furnished contractor installed equipment and all GFGI equipment. Power poles are not allowed. The following shall also be provided.

3.7.1.1.1. Provide 125-volt duplex receptacles per NFPA 70, in conjunction with the proposed equipment and furniture layouts, and as per other stated requirements elsewhere in the RFP.

3.7.1.1.2. Each CATV outlet shall have a 125-volt duplex receptacle mounted adjacent to it.

3.7.1.1.3. In addition to receptacles required elsewhere in the statement of work provide one 125-volt duplex receptacle per wall in all normally occupied spaces with the exception of WT barracks dwelling units.

3.7.1.1.4. For housekeeping purposes provide a minimum of one 125-volt duplex receptacle per corridor. No point along corridor wall bottom shall be more than 25 feet from a receptacle.

3.7.1.1.5. Provide 125-volt duplex receptacles adjacent to lavatories. Provide a minimum of one for every two adjacent lavatories. Each single lavatory shall also be provided a receptacle.

3.7.1.1.6. Provide a minimum of two 125-volt duplex receptacles in each mechanical room in addition to those required per NFPA 70. In addition, provide a minimum of one receptacle in each electrical room.

3.7.1.2. Not Used

3.7.1.3. WTUAS

3.7.1.3.1. Provide a minimum of two 125-volt duplex receptacles for each designated individual work space (cubicle) in all open office areas. One of which shall be adjacent to the telecommunications outlet.

3.7.1.3.2. Provide two 125-volt duplex receptacles for the CQ workstation adjacent to the telecommunications outlet. Receptacles shall be on a dedicated circuit.

3.7.1.3.3. For housekeeping purposes provide a minimum of one 125-volt duplex receptacle on each wall within reception/waiting room. No point along bottom of walls shall be more than 25 feet from a receptacle.

3.7.1.3.4. Provide a 125-volt duplex receptacle above countertop on either side of the sink in kitchenette. These two receptacles shall be on a dedicated circuit. All remaining receptacles in room shall be on another dedicated circuit.

3.7.1.3.5. Provide 125-volt duplex receptacles above countertop in break room such that no point along countertop is more than 4 feet from a receptacle.

3.7.1.4. SFAC

3.7.1.4.1. Provide a 125-volt duplex receptacle adjacent to each data outlet in public computer access rooms.

3.7.1.4.2. Provide 125-volt duplex receptacles above countertop in nourishment center and child activity room such that no point along countertop is more than 4 feet from a receptacle. In addition, provide a 125-volt duplex receptacle above sign-in countertop in child activity room and above shelf for microwave in Nourishment Center. Receptacles above countertop and above shelf in Nourishment Center shall be on a dedicated circuit.

3.7.1.4.3. Provide two 125-volt duplex receptacles for the reception station adjacent to the telecommunications outlet. Receptacles shall be on a dedicated circuit.

3.7.1.4.4. Provide a minimum of four 125-volt duplex receptacles in courtyard area evenly spaced along perimeter walls.

3.7.1.4.5. Provide a minimum of two 125-volt duplex receptacles in the courtyard mounted at eave height for decorative lighting.

3.7.1.4.6. For housekeeping purposes provide a minimum of one 125-volt duplex receptacle on each wall within reception area. No point along bottom of reception area perimeter walls shall be more than 25 feet from a receptacle.

3.7.1.4.7. Provide a minimum of five 125-volt duplex receptacles along the wall in the older children's area within the child activity room. Mount receptacles 54 in. above finished floor. Locate each receptacle adjacent to a telecommunications outlet.

3.7.1.4.8. Provide a 125-volt duplex receptacle adjacent to the fireplace in the reception area in addition to the requirement stated in paragraph 3.7.1.4.6

3.7.1.4.9. Provide two 125-volt quadraplex receptacles on the back wall of the cam room mounted 36 in. above finished floor. Receptacles shall be on a dedicated circuit.

3.7.1.4.10. Provide a minimum of two 125-volt duplex receptacles for each designated individual work space (cubicle) in all open office areas one of which shall be adjacent to the telecommunications outlet.

3.7.1.4.11. Provide a minimum of four floor recess mounted 125-volt duplex receptacles in the reception area. Receptacle locations shall be coordinated with the furniture layout and placement finalized during design.

3.7.1.4.12. In addition to the receptacles required per the Technical Criteria for I3A in the distribution center, provide two dedicated circuits with a single power receptacle connected to each for copiers. Power requirements for these circuits will not be known until a copier is selected by the Installation during the design phase.

3.7.1.4.13. Provide two 125-volt duplex receptacles in the storage room behind the reception counter and in the storage room adjacent to the AW2 office. Receptacles shall be placed on opposite walls and located adjacent to a dual jack telecommunications outlet.

3.7.1.5. Not Used

3.7.2. Grounding

Provide grounding in accordance with NFPA 70 and the Technical Criteria for I3A.

3.7.3. Lighting

3.7.3.1. General.

3.7.3.1.1. Provide interior lighting controls in accordance with ASHRAE 90.1.

3.7.3.1.2. Provide an illuminance level of 30 foot-candles in mechanical and electrical rooms.

3.7.3.1.3. Compact fluorescent lamps of 12 watts or less shall not be used.

3.7.3.1.4. Electronic ballasts for linear fluorescent lamps shall be the high efficiency programmed start type.

3.7.3.1.5. Provided lighting levels shall be within +/- 10% of required lighting levels.

3.7.3.2. Not Used

3.7.3.3. WTUAS

3.7.3.3.1. Local manual controls shall supplement automatic controls in restrooms, offices, open work spaces, reception/waiting room, and specialized areas such as conference rooms.

3.7.3.3.2. Provide an illuminance level of 20 foot-candles in the reception and waiting area. Provide an illuminance level of 30 foot-candles on the CQ workstation in the reception/waiting room.

3.7.3.3.3. Provide an illuminance level of 10 foot-candles in supply and records rooms. Provide automatic occupancy sensor detection switching for fixtures.

3.7.3.3.4. Provide an illuminance level of 30 foot-candles in kitchenette. Provide automatic occupancy sensor detection switching for fixtures.

3.7.3.3.5. Provide an illuminance level of 30 foot-candles in break room. Provide automatic occupancy sensor detection switching for fixtures.

3.7.3.4. SFAC

3.7.3.4.1. Local manual controls shall supplement automatic controls in restrooms, public computer access rooms, offices, open work spaces, reception area; and specialized areas such as multi-use/conference rooms.

3.7.3.4.2. Provide a minimum illuminance level of 1 foot-candle in courtyards. Decorative lighting fixtures are required. If poles are utilized they are not allowed to be over 10 feet tall. Provide manual switching from inside the SFAC.

3.7.3.4.3. Provide an illuminance level of 30 foot-candles in the child activity room. Lighting shall be compatible with security cameras to ensure area covered by each camera can be clearly seen on the reception

monitor. Contractor shall coordinate camera type and location with the installation thru the contracting officer's representative.

3.7.3.4.4. Provide an illuminance level of 20 foot-candles in the reception area. Provide an illuminance level of 30 foot-candles on reception station within the reception area.

3.7.3.4.5. Provide an illuminance level of 30 foot-candles in the public computer access room and nourishment center.

3.7.3.4.6. Provide an illuminance level of 10 foot-candles in the distribution center.

3.7.3.4.7. Provide separately switched accent lighting on the interior side of the fireplace.

3.7.3.4.8. Provide an illuminance level of 50 foot-candles in the cam room.

3.7.3.4.9. Provide an illuminance level of 30 foot-candles in the storage room behind the reception counter and in the storage room adjacent to the AW2 office.

3.7.3.5. Not Used

3.7.4. Telecommunications System

3.7.4.1. Provide telecommunications outlets per applicable criteria based on functional purpose of the space within the building and in accordance with other provisions of this RFP. Provide voice and data connection capability to all workstations.

3.7.4.2. Not Used

3.7.4.3. WTUAS

3.7.4.3.1. Provide one dual 8-pin modular jack outlet in the CQ workstation, two in the copier and fax room; one in the message center and one at the front of the conference room.

3.7.4.3.2. Provide a dual 8-pin modular jack outlet at each designated individual work space (cubicle) in the open office area.

3.7.4.4. SFAC

3.7.4.4.1. Provide six single 8-pin modular jack outlets for data connectivity in the public computer access room evenly spaced above counter.

3.7.4.4.2. Provide a dual 8-pin modular jack outlet in the reception station and at the front of the conference/multi-use room.

3.7.4.4.3. Provide a dual 8-pin modular jack outlet above the sign-in countertop in the child activity room. Locate adjacent to duplex receptacle.

3.7.4.4.4. Provide a minimum of five single 8-pin modular jack (data) outlets along the wall in the older children's area within the child activity room. Locate each adjacent to a duplex receptacle.

3.7.4.4.5. Provide necessary LAN connection for kiosk.

3.7.4.4.6. Provide connectivity for two pay phones in vestibule. Coordinate requirements with local private telephone company.

3.7.4.4.7. Provide a minimum of four dual 8-pin modular jack outlets in the distribution center.

3.7.4.4.8. Provide two dual 8-pin modular jack outlets in the storage room behind the reception counter and in the storage room adjacent to the AW2 office. Locate adjacent to a duplex receptacle.

3.7.4.4.9. Provide a dual 8-pin modular jack outlet at each designated individual work space (cubicle) in the open office area.

3.7.4.5. Not Used

3.7.5. Video Teleconferencing

Provide an outlet that has both a fiber optic jack and a coaxial jack to provide video teleconferencing connectivity in each conference room. Outlet shall have a 125-volt duplex receptacle mounted adjacent to it in accordance with the Technical Criteria for I3A.

3.7.6. CATV

All CATV outlet boxes, connectors, cabling, and cabinets shall conform to applicable criteria unless noted otherwise. All horizontal cabling shall be homerun from the CATV outlet to the nearest telecommunications room unless noted otherwise. See paragraph 6.0 PROJECT SPECIFIC REQUIREMENTS for possible additional requirements.

3.7.6.1. Not Used

3.7.6.2. WTUAS

3.7.6.2.1. Provide connectivity in conference rooms.

3.7.6.2.2. Provide connectivity in reception/waiting room. Provide a minimum of two outlets.

3.7.6.3. SFAC

3.7.6.3.1. Provide connectivity in multi-use/conference room.

3.7.6.3.2. Provide connectivity in child activity room and reception/waiting room. Provide a minimum of two outlets in each room.

3.7.7. Mass Notification

MNS shall be integrated into the installation's area wide MNS (Giant Voice). See paragraph 6 for possible additional requirements.

3.7.8. Secure Telecommunications

In the BnHQ, provide the same power, lighting, and telecommunications design features within the SIPRNET room as required for telecommunications rooms per the Technical Criteria for I3A with the exception of the cable tray. In addition, provide a 2 in. conduit between SIPRNET room and main telecommunications room.

3.7.9. Observation Cameras Infrastructure (Cameras, CPU's and monitors not in contract)

The infrastructure shall be installed to support GFGI cameras, CPU'S and monitors. Cameras will be installed in child activity room and throughout the playground area to allow for observation of all areas within the room and playground. Cameras will also be installed within all storage areas accessible from within the child activity room. Location of GFGI cameras shall be coordinated with the installation thru the COR and approved by the Family and Morale Welfare and Recreation Command (FMWRC). CPU'S will be located on dedicated equipment racks within the camera room and observation monitors will be located in the reception/waiting room visible to both waiting personnel and the reception desk. A monitor will also be located in the open office area. Infrastructure shall consist of conduit, pull wire and outlet boxes to allow for interconnection of all system components.

3.7.10. Sound System Infrastructure

Provide speakers, conduit, and wiring for a stand alone sound system within the reception area. Wiring and conduits shall be run back to the reception desk to be connected (by others) to a sound system provided by others. Provide 10' of slack for all wiring.

3.7.11. Audio/Visual System

Provide a dual 8-pin modular jack outlet at the front of each conference room and an empty 1" conduit (with pull wire) above the ceiling from each GFGI ceiling mounted projector location to a wall mounted outlet box located adjacent to the dual jack outlet.

3.8. FIRE ALARM REQUIREMENTS

3.8.1. All software, software locks, special tools and any other proprietary equipment required to maintain, add devices to or delete devices from the system, or test the Fire Alarm system shall become property of the Government and be furnished to the Contracting Officer's Representative prior to final inspection of the system.

3.8.2. The fire alarm system shall be designed by a registered professional Fire Protection Engineer and installation shall be supervised by a National Institute for Certification of Engineering Technologies (NICET) Level 3 (minimum) technician.

3.8.3. Not Used

4.0 APPLICABLE CRITERIA

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

4.1. INDUSTRY CRITERIA

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

Table 1: Industry Criteria

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

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

ANSI Z21.10.1	Gas Water Heaters Vol. 1, Storage water Heaters with Input Ratings of 75,000 Btu per Hour or less
ANSI Z124.3	American National Standard for Plastic Lavatories
ANSI Z124.6	Plastic Sinks
ANSI Z21.45	Flexible Connectors of Other Than All-Metal Construction for Gas Appliances
ANSI/IEEE C2-2007	National Electrical Safety Code
ANSI/AF&PA NDS-2001	National Design Specification for Wood Construction
American Society of Civil Engineers (ASCE)	
ASCE 7	Minimum Design Loads for Buildings and Other Structures
ASCE 37	Design and Construction of Sanitary and Storm Sewers, Manuals and Reports on Engineering Practice [sanitary sewer and storm drain design criteria]
ASCE/SEI 31-03	Seismic Evaluation of Existing Buildings [Existing Building Alteration/Renovation]
ASCE/SEI 41-06	Seismic Rehabilitation of Existing Buildings [Existing Building Alteration/Renovation]
American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)	
ASHRAE 90.1	ANSI/ASHRAE/IESNA 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings
ASHRAE Guideline 0	The Commissioning Process
ASHRAE Guideline 1.1	The HVAC Commissioning Process
ASHRAE Handbooks	Fundamentals, HVAC Applications, Systems and Equipment, Refrigeration (Applicable, except as otherwise specified)
ASHRAE Standard 15	Safety Standard for Refrigeration Systems
ASHRAE Standard 62.1	Ventilation for Acceptable Indoor Air Quality
ASHRAE Standard 55	Thermal Environmental Conditions for Human Occupancy

American Society of Mechanical Engineers International (ASME)	
ASME BPVC SEC VII	Boiler and Pressure Vessel Code: Section VII Recommended Guidelines for the Care of Power Boilers
ASME A17.1	Safety Code for Elevators and Escalators
ASME B 31 (Series)	Piping Codes
American Water Works Association (AWWA)	
	Standards [standards for water line materials and construction]
American Welding Society	
	Welding Handbook
	Welding Codes and Specifications (as applicable to application, see International Building Code for example)
Architectural Woodwork Institute (AWI)	
Version 1.2	AWI Quality Standards 7th Edition
Associated Air Balance Council (AABC)	
AABC MN-1	National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems
	AABC Associated Air Balance Council Testing and Balance Procedures
ASTM International	
ASTM C1060-90(1997)	Standard Practice for Thermographic Inspection of Insulation Installations in Envelope Cavities of Frame Buildings
ASTM E 779 (2003)	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
ASTM E1827-96(2002)	Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
Builders Hardware Manufacturers Association (BHMA)	
ANSI/BHMA	American National Standards for Builders Hardware

Building Industry Consulting Service International	
	Telecommunications Distribution Methods Manual (TDMM)
	Customer-Owned Outside Plant Design Manual (CO-OSP)
Code of Federal Regulations (CFR)	
49 CFR 192	Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards
10 CFR 430	Energy Conservation Program for Consumer Products
Consumer Electronics Association	
CEA 709.1B	Control Network Protocol Specification
CEA 709.3	Free-Topology Twisted-Pair Channel Specification
CEA 852	Tunneling Component Network Protocols Over Internet Protocol Channels
Electronic Industries Association (EIA)	
ANSI/EIA/TIA 568	Structured Cabling Series
ANSI/EIA/TIA 569	Commercial Building Standard for Telecommunications Pathways and Spaces (includes ADDENDA)
ANSI/TIA/EIA-606	Administrative Standard for the Telecommunications Infrastructure of Commercial Buildings
J-STD EIA/TIA 607	Commercial Building Grounding and Bonding Requirements for Telecommunications
Federal Highway Administration (FHWA)	
	Manual on Uniform Traffic Control Devices for Streets and Highways [signage and pavement markings for streets and highways]
FHWA-NHI-01-021	Hydraulic Engineering Circular No. 22, Second Edition, URBAN DRAINAGE DESIGN MANUAL
Illuminating Engineering Society of North America (IESNA)	
IESNA RP-1	Office Lighting

IESNA RP-8	Roadway Lighting
IESNA Lighting Handbook	Reference and Application
Institute of Electrical and Electronics Engineers Inc. (IEEE)	
	Standard for Use of the International System of Units (SI): the Modern Metric System
Standard 1100	Recommended Practice for Powering and Grounding Sensitive Electronic Equipment
International Code Council (ICC)	
IBC	International Building Code Note: All references in the International Building Code to the International Electrical Code shall be considered to be references to NFPA 70. All references in the International Building Code to the International Fuel Gas Code shall be considered to be references to NFPA 54 and NFPA 58. All references in the International Building Code to the International Fire Code and Chapter 9 shall be considered to be references to Unified Facilities Criteria (UFC) 3-600-01.
IMC	International Mechanical Code – Note: For all references to “HEATING AND COOLING LOAD CALCULATIONS”, follow ASHRAE 90.1 Note: For all references to “VENTILATION”, follow ASHRAE 62.1
IRC	International Residential Code
IPC	International Plumbing Code
IEC	Energy Conservation Code (IEC) –Applicable only to the extent specifically referenced herein. Refer to Paragraph 5, ENERGY CONSERVATION requirements.
IGC	International Gas Code - not applicable. Follow NFPA 54, National Fuel Gas Code and NFPA 58, Liquified Petroleum Gas Code.
International Organization for Standardization (ISO)	
ISO 6781:1983	Qualitative detection of thermal irregularities in building envelopes –

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

NFPA 14	Standard for the Installation of Standpipes and Hose Systems
NFPA 20	Installation of Centrifugal Fire Pumps
NFPA 24 NFPA 25	Standard for the Installation of Private Fire Service Mains and Their Appurtenances [underground fire protection system design] Inspection, Testing And Maintenance Of Water-Based Fire Protection Systems
NFPA 30	Flammable and Combustible Liquids Code
NFPA 30A	Motor Fuel Dispensing Facilities and Repair Garages
NFPA 31	Installation of Oil Burning Equipment
NFPA 54	National Fuel Gas Code
NFPA 58	Liquefied Petroleum Gas Code
NFPA 70	National Electrical Code
NFPA 72	National Fire Alarm Code
NFPA 76	Fire Protection of Telecommunications Facilities
NFPA 80	Standard for Fire Doors and Fire Windows
NFPA 90a	Installation of Air Conditioning and Ventilating Systems
NFPA 96	Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
NFPA 101	Life Safety Code
NFPA 780	Standard for the Installation of Lightning Protection Systems
National Roofing Contractor's Association (NRCA)	
	Roofing and Waterproofing Manual
National Sanitation Foundation, International	
NSF/ANSI Std. 2, 3, 4, 5, 6, 7, 8, 12, 13, 18, 20, 21, 25, 29, 35, 36, 37, 51, 52, 59,	Food Equipment Standards

169	
ANSI/UL Std. 73, 197, 471, 621, 763	Food Equipment Standards
CSA Std. C22.2 No. 109, 120, 195	Food Equipment Standards
Occupational Safety and Health Administration (OSHA)	
Title 29, Part 1926	OSHA Construction Industry Standards, Title 29, Code of Federal Regulations, Part 1926, Safety and Health Regulations for Construction
Plumbing and Drainage Institute (PDI)	
PDI G 101	Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data
PDI WH201	Water Hammer Arrestors
Precast Concrete Institute	
PCI Design Handbook	Precast and Prestressed Concrete
Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)	
SMACNA HVAC Duct Construction Standards	HVAC Duct Construction Standards - Metal and Flexible
SMACNA Architectural Manual	Architectural Sheet Metal Manual
SMACNA HVAC TAB	HVAC Systems - Testing, Adjusting and Balancing
State/Local Regulations	
	State Department of Transportation Standard Specifications for Highway and Bridge Construction
	Sedimentation and Erosion Control Design Requirements
	Environmental Control Requirements
	Storm Water Management Requirements
Steel Door Institute (SDI)	

ANSI A250.8/SDI 100	Standard Steel Doors and Frames
Steel Deck Institute	
	SDI Diaphragm Design Manual
Steel Joist Institute	
	Catalog of Standard Specifications and Load Tables for Steel Joists and Joist Girders
Underwriters Laboratories (UL)	
UL 96A	Installation Requirements for Lightning Protection Systems
UL 300	Standard for Safety for Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas
UNITED STATES ACCESS BOARD: U.S. ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD	
ADA and ABA Accessibility Guidelines for Buildings and Facilities	ABA Accessibility Standard for DoD Facilities Derived from the ADA and ABA Accessibility Guidelines: Specifically includes: ABA Chapters 1 and 2 and Chapters 3 through 10. Use this reference in lieu of IBC Chapter 11. Excluded are: (a) Facilities, or portions of facilities, on a military installation that are designed and constructed for use exclusively by able-bodied military personnel (See Paragraph 3 for any reference to this exclusion). (b) Reserve and National Guard facilities, or portions of such facilities, owned by or under the control of the Department of Defense, that are designed and constructed for use exclusively by able-bodied military personnel. (See paragraph 3 for any reference to this exclusion).
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES	
	FDA National Food Code
U.S. GREEN BUILDING COUNCIL (USGBC)	
LEED-NC	Green Building Rating System for New Construction & Major Renovations
	Application Guide for Multiple Buildings and On-Campus Building Projects

4.2. MILITARY CRITERIA

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

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

4.2.2. Executive Order 12770: Metric Usage In Federal Government

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

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

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

4.2.5. Deleted.

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

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

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

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

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

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

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

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

5.0 GENERAL TECHNICAL REQUIREMENTS

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

5.1. SITE PLANNING AND DESIGN

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

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

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

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

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

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

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

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

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

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

5.2. SITE ENGINEERING

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

5.2.2. SOILS:

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

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

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

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

5.2.3.2. Parking Requirements.

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

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

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

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

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

any 15 minute period. Configure all meters to transmit at least daily even if no receiver for the data is currently available at the time of project acceptance. For privatized utilities, coordinate with the privatization utility(ies) for the proper meter base and meter installation.

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

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

5.2.7.1. Irrigation Potable Water Use Reduction. Reduce irrigation potable water use 50 percent using LEED credit WE1.1 baseline, except where precluded by other project requirements.

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

5.3. ARCHITECTURE AND INTERIOR DESIGN:

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

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

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

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

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

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

5.3.5. BUILDING INTERIOR

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

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

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

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

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

5.3.5.6. Window Treatment: Interior window treatments with adjustable control shall be provided in all exterior window locations for control of day light coming in windows or privacy at night. Uniformity of treatment color and material shall be maintained to the maximum extent possible within a building.

5.3.6. COMPREHENSIVE INTERIOR DESIGN

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

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

5.4. STRUCTURAL DESIGN

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

5.4.2. GENERAL: The structural system needs to be compatible with the intended functions and components that allows for future flexibility and reconfigurations of the interior space. Select an economical structural system based upon facility size, projected load requirements and local availability of materials and labor. Base the structural design on accurate, site specific geotechnical information and anticipated loads for the building types and geographical location. When modular units or other pre-fabricated construction is used or combined with stick-built construction, fully coordinate and integrate the overall structural design between the two different or interfacing construction types. If the state that the project is located in requires separate, specific licensing for structural engineers (for instance, such as in Florida, California and others), then the structural engineer designer of record must be registered in that state.

5.4.3. LOADS: See paragraph 3 for facility specific (if applicable) and paragraph 6 for site and project specific structural loading criteria. 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".

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

5.5. THERMAL PERFORMANCE

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

5.5.2. BUILDING ENVELOPE SEALING PERFORMANCE REQUIREMENT. Design and construct the building envelope for office buildings, office portions of mixed office and open space (e.g., company operations facilities), dining, barracks and instructional/training facilities with a continuous air barrier to control air leakage into, or out of, the conditioned space. Clearly identify all air barrier components of each envelope assembly on construction documents and detail the joints, interconnections and penetrations of the air barrier components. Clearly identify the boundary limits of the building air barriers, and of the zone or zones to be tested for building air tightness on the drawings.

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

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

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

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

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

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

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

5.5.2.8. Provide a motorized damper in the closed position and connected to the fire alarm system to open on call and fail in the open position for any fixed open louvers such as at elevator shafts.

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

5.5.2.10. Compartmentalize garages under buildings by providing air-tight vestibules at building access points.

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

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

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

(b) Test the completed building using Infrared Thermography testing. Use infrared cameras with a resolution of 0.1deg C or better. Perform testing on the building envelope in accordance with ISO 6781:1983 and ASTM C1060-90(1997). Determine air leakage pathways using ASTM E 1186-03 Standard Practices for Air Leakage Site

Detection in Building Envelopes and Air Barrier Systems, and perform corrective work as necessary to achieve the whole building air leakage rate specified in (a) above.

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

5.6. PLUMBING

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

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

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

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

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

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

5.6.7. URINALS: Urinals shall be vitreous china, wall-mounted, wall outlet, non-water using, with integral drain line connection, and with sealed replaceable cartridge or integral liquid seal trap. Either type shall use a biodegradable liquid to provide the seal and maintain a sanitary and odor-free environment. Install, test and maintain in accordance with manufacturer's recommendations. Slope the sanitary sewer branch line for non-water use urinals a minimum of 1/4 inch per foot. Do not use copper tube or pipe for drain lines that connect to the urinal. Manufacturer shall provide an operating manual and on-site training to installation operations personnel for the proper care and maintenance of the urinal. For complexes, non-water using urinals are not required for barracks type spaces.

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

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

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

5.7. ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

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

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

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

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

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

5.7.5. LIGHTING: 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 cutoff type exterior luminaries.

5.7.6. TELECOMMUNICATION SYSTEM: All building telecommunications cabling systems (BCS) and OSP telecommunications cabling system shall conform to APPLICABLE CRITERIA to include I3A Technical Criteria. An acceptable BCS encompasses, but is not limited to, copper and fiber optic (FO) entrance cable, termination equipment, copper and fiber backbone cable, copper and fiber horizontal distribution cable, workstation outlets, racks, cable management, patch panels, cable tray, cable ladder, conduits, grounding, and labeling.. Items included

under OSP infrastructure encompass, but are not limited to, manhole and duct infrastructure, copper cable, fiber optic cable, cross connects, terminations, cable vaults, and copper and FO entrance cable.

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

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

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

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

5.8. HEATING, VENTILATING, AND AIR CONDITIONING

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

5.8.2. DESIGN CONDITIONS.

5.8.2.1. Outdoor and indoor design conditions shall be in accordance with UFC 3-410-01FA. Outdoor air and exhaust ventilation requirements for indoor air quality shall be in accordance with ASHRAE 62.1.

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

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

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

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

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

5.8.3. BUILDING AUTOMATION SYSTEM. Provide a Building Automation System consisting of a building control network , a Utility Monitoring and Control System (UMCS) , 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.

The UMCS shall use the IP network to perform supervisory control and monitoring of a ANSI/CEA-709.1B (LonWorks) network using LonWorks Network Services (LNS). The UMCS shall communicate with building control systems using ANSI/CEA-852 only.

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. Provide a supervisory “Utility Monitoring and Control System” (UMCS) which meets the following requirements:

(a) The UMCS shall perform supervisory control and monitoring of a base-wide ANSI/CEA-709.1B (LonWorks) network using LonWorks Network Services (LNS).

(b) The UMCS shall be DIACAP certified have a Certificate of Networthiness and shall use the installation’s basewide IP network to provide connectivity between building control systems. DIACAP, Networthiness and access to the IP network shall be coordinated with the installation’s IT organization (NEC) and the DPW.

(c) The UMCS monitoring and control (M&C) software shall be a LonWorks Network Services (LNS)-compatible client-server software package that performs supervisory monitoring and control functions including but not limited to Scheduling, Alarm Handling, Alarm Generation, Trending, Report Generation and Electrical Peak Demand Limiting. The software shall be expandable in both number of points and number of clients supported in order to support system expansion. The M&C Software may include drivers to other (non-ANSI/CEA-709.1B) protocols.

(d) The software shall be capable of scheduling SNVTs such that it can change the value of a SNVT according to an internal schedule.

(e) The software shall be capable of handling alarms by providing an alarm notification via a pop-up to a user display, printing to a printer, sending an email and sending a numeric page.

(f) The system shall include a web based Graphical User Interface which allows for hierarchical graphical navigation between systems, graphical representations of systems, access to real-time data for systems, ability to override points in a system, and access to all supervisory monitoring and control functions. Each system display shall clearly distinguish between the following point data types and information: Real-time data, User-entered data, Overridden or operator-disabled points, Devices in alarm (unacknowledged), and Out-of-range, bad, or missing data. The software shall allow the user to create, modify, and delete displays and graphic symbols. Data on graphics pages shall be no more than 10 seconds behind real time.

(g) Provide a network configuration tool. This software shall use LonWorks Network Services (LNS) for all network configuration and management of ANSI/CEA-709.1B devices, be capable of executing LNS plug-ins, and be capable of performing network database reconstruction of an ANSI/CEA-709.1B control network.

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

- Configure M&C Software functionality including: graphical pages for System Graphic Displays including overrides, alarm handling, scheduling, trends for critical values needing long-term or permanent monitoring via trends, and demand limiting.
- Install IP routers or ANSI/CEA-852 routers as needed to connect the building control network to the UMCS IP network. Routers shall be capable of configuration via DHCP and use of an ANSI/CEA-852 configuration server but shall not rely on these services for configuration. All communication between the UMCS and building networks shall be via the ANSI/CEA-709.1B protocol over the IP network in accordance with ANSI/CEA-852.

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

- The latest version of all software and user manuals required to program, configure and operate the system.
- Points Schedule drawing that shows every DDC Hardware device. The Points Schedule shall contain the following information as a minimum:
    - Device address and NodeID.
    - Input and Output SNVTs including SNVT Name, Type and Description.
    - Hardware I/O, including Type (AI, AO, BI, BO) and Description.
    - Alarm information including alarm limits and SNVT information.
    - Supervisory control information including SNVTs for trending and overrides.
    - Configuration parameters (for devices without LNS plug-ins) Example Points Schedules are

available at https://eko.usace.army.mil/fa/besc/

- Riser diagram of the network showing all network cabling and hardware. Label hardware with ANSI.CEA-709.1 addresses, IP addresses, and network names.
- Control System Schematic diagram and Sequence of Operation for each HVAC system.
- Operation and Maintenance Instructions including procedures for system start-up, operation and shut-down, a routine maintenance checklist, and a qualified service organization list.
- LONWORKS® Network Services (LNS®) database for the completed system.
- Quality Control (QC) checklist (below) completed by the Contractor's Chief Quality Control (QC) Representative

Table 5-1: QC Checklist

Instructions: Initial each item, sign and date verifying that the requirements have been met.		
#	Description	Initials
1	All DDC Hardware is installed on a TP/FT-10 local control bus.	
2	Communication between DDC Hardware is only via EIA 709.1B using SNVTs. Other protocols and network variables other than SNVTs have not been used.	
3	All sequences are performed using DDC Hardware.	
4	LNS Database is up-to-date and accurately represents the final installed system	
5	All software has been licensed to the Government	
6	M&C software monitoring displays have been created for all building systems, including all override and display points indicated on Points Schedule drawings.	
7	Final As-built Drawings accurately represent the final installed system.	
8	O&M Instructions have been completed and submitted.	
9	Connections between the UMCS IP network and ANSI/CEA-709.1B building networks are through ANSI/CEA-852 Routers.	
By signing below I verify that all requirements of the contract, including but not limited to the above, been met.		
Signature:_____ Date:_____		

Instructions: Initial each item, sign and date verifying that the requirements have been met.		
#	Description	Initials
1	All DDC Hardware is installed on a TP/FT-10 local control bus.	
2	Communication between DDC Hardware is only via EIA 709.1B using SNVTs. Other protocols and network variables other than SNVTs have not been used.	
3	All sequences are performed using DDC Hardware.	
4	LNS Database is up-to-date and accurately represents the final installed system	
5	All software has been licensed to the Government	
6	M&C software monitoring displays have been created for all building systems, including all override and display points indicated on Points Schedule drawings.	
7	Final As-built Drawings accurately represent the final installed system.	
8	O&M Instructions have been completed and submitted.	
9	Connections between the UMCS IP network and ANSI/CEA-709.1B building networks are through ANSI/CEA-852 Routers.	
10	LonWorks Network Services (LNS) based M&C software was provided	
11	The M&C software is covered under a DIACAP and has a certificate of Networthiness	
By signing below I verify that all requirements of the contract, including but not limited to the above, been met.		
Signature:_____ Date:_____		

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

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

5.8.3.13. Provide training at the project site on the installed building system and UMCS 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. Operation of the UMCS includes but is not limited to

- Configuring and managing alarms
- Configuring schedules
- Creation and modification of trends
- Creation of reports
- Performing operator overrides.

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

5.8.5. COMMISSIONING: Commission all HVAC systems and equipment, including controls, and all systems requiring commissioning for LEED Fundamental commissioning, in accordance with ASHRAE Guideline 1.1, ASHRAE Guideline 0 and LEED. Do not use the sampling techniques discussed in ASHRAE Guideline 1.1 and in ASHRAE Guideline 0. Commission 100% of the HVAC controls and equipment. The Contractor shall hire the Commissioning Authority (CA), certified as a CA by AABC, NEBB, or TABB, as described in Guideline 1.1. The CA will be an independent contractor and not an employee or subcontractor of the Contractor or any other subcontractor on this project, including the design professionals (i.e., the DOR or their firm(s)). The Contracting Officer’s Representative will act as the Owner’s representative in performance of duties spelled out under OWNER in Annex F of ASHRAE Guideline 0.

5.9. ENERGY CONSERVATION

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

5.9.2. Design all building systems and elements to meet the minimum requirements of ANSI/ASHRAE/IESNA 90.1. Design the buildings, including the building envelope, HVAC systems, service water heating, power, and lighting systems to achieve an energy consumption that is at least 30% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1. Energy calculation methodologies and substantiation requirements are defined in Section 01 33 16, Design After Award.

5.9.3. Purchase Energy Star or FEMP designated products. The term “Energy Star product” means a product that is rated for energy efficiency under an Energy Star program. The term “FEMP designated product” means a product

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

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

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

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

5.10. FIRE PROTECTION

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

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

5.10.3. Fire Extinguisher Cabinets: Provide fire extinguisher cabinets and locations for hanging portable fire extinguishers in accordance with NFPA 10 Standard for Portable Fire Extinguishers.

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

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

5.11. SUSTAINABLE DESIGN

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

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

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

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

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

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

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

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

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

5.11.9. BIOBASED AND ENVIRONMENTALLY PREFERABLE PRODUCTS. Except where precluded by other project requirements, use materials with biobased content, materials with rapidly renewable content, FSC certified wood products and products that have a lesser or reduced effect on human health and the environment over their lifecycle to the maximum extent practicable.

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

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

5.13. SECURITY (ANTI-TERRORISM STANDARDS): Unless otherwise specified in Project Specific Requirements, only the minimum protective measures as specified by the current Department of Defense Minimum

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

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

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

(c) Progressive collapse resistance for all facilities 3 stories or higher

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

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

6.0 PROJECT SPECIFIC REQUIREMENTS

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.

<Amend4>

1.) Appendix CC: Demarcation Matrix

Fire Water Distribution: Admin Facilities Contract Scope/Limit of Work

Modify first sentence of second paragraph to the following: "Contractor to locate CWW ~~provided~~ **approved** BFP and PIV."

2.) Appendix CC: Demarcation Matrix

Communications Duct Bank: Admin Facilities Contract Scope/Limit of Work

Modify first sentence to the following: "Contractor will provide duct bank **(with a minimum of three (3), four (4) inch conduits)** and cabling from the building construction limit into the communications room of each building."

3.) 01 10 00 Section 3.6.1.6 shall be modified to the following:

WTUAS - Urinals shall be non-water using (waterless, water-free, etc.) type.

4.) 01 10 00 Section 3.6.1.7.2 shall be modified to the following:

For Child Activity Room pre-toddler/toddler toilet area, provide two pediatric water closets (10 inches to rim above finished floor (AFF)). Water closets shall not use automatic flush valves. Provide **<amend4>self-priming</amend4>** floor drain in toilet area. Provide two wall hung child size lavatories mounted 17 inches AFF. Lavatories shall be mounted opposite from water closets. **<Amend4>For sinks in the toilet area (Not the sinks in the Food Prep area), faucets shall be pre-mixed single push control that meets ABA requirements. Water shall run for 15 seconds.</Amend4>** Provide one bubbler water fountain, with guarded stream drinking head, outside pre-toddler/toddler toilet area. Bubbler shall be mounted 17 inches AFF.

5.) 01 10 00 Section 3.6.1.7.3 shall be modified to the following:

For Child Activity Room preschool/school-age children toilet area, provide one pediatric water closet (13 inches to rim above finished floor (AFF)). Water closet shall not use automatic flush valve. Provide **<Amend4>self-priming</Amend4>** floor drain in toilet area. Provide one wall hung child size lavatory mounted 20 inches AFF. **<Amend4>For sinks in the toilet area (Not the sinks in the Food Prep area), faucets shall be pre-mixed single push control that meets ABA requirements. Water shall run for 15 seconds.</Amend4>** Provide one bubbler water fountain, with guarded stream drinking head, outside preschool/school-age toilet area. Bubbler shall be mounted 20 inches AFF.

6.) 01 10 00 Section 2.1.2 WTUAS shall be modified to the following:

Provide a standard WTUAS consisting of:

A 94 PN Medium Duplex Two-Company Headquarters (CoHQ), **<Amend4>18,800</Amend4>** gross square feet and a 24 PN Battalion Headquarters (BnHQ), **<Amend4>8,400 </Amend4>** gross square feet.

</Amend4>

6.3. SITE PLANNING AND DESIGN

6.3.1. General:

6.3.1.1 The Design Build (D/B) Contractor is responsible for design and construction of the Warriors in Transition Unit Administration Services (Admin Facilities) to include a “combo” building, consisting of a Company Headquarters and Battalion Headquarters (CoHQ+BnHQ), a Soldier & Family Assistance Center (SFAC) and the necessary site work associated with each specified facility. The Admin Facilities are part of a WT Complex at Ft. Benning that includes a WT Barracks. The parking, paving and site work for the overall site complex is a separate contract (Barracks and Site Contract). The D/B Contractor is responsible for coordinating with the Barracks and Site Contractor for site availability. The D/B Contractor is responsible for coordinating the building's Architectural Theme with the Barracks and Site Contractor. The D/B Contractor's limit of construction is designated on the Site Plan, included in Appendix J. This plan also delineates the overall site construction limits for the facilities being constructed by others. These lines are approximate and not meant to define a hard line as to the limits of responsibility. A demarcation matrix, Appendix CC is provided within this RFP to help define the responsibilities of each contractor. The D/B Contractor shall be responsible for coordinating with the Barracks and Site Contractor, who is responsible for designing the overall site including overlot grading and utilities, except those utility related site improvements specifically identified as the responsibility of the privatized utility owner. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.3.1.2 The proposed site is located along Marne Road, west of the existing hospital and adjacent to the proposed hospital site. The site is currently wooded with a gravel trail and intermittent fitness equipment. The site has been approved by Ft. Benning. Street access is adequate.

6.3.1.3 Operational/Functional Requirements: This criterion regards the location of the facilities relative to each other and to other facilities at Ft. Benning. Several functional relationships need to be addressed.
• The WT Barracks shall be the focus of the complex.
• Fire and maintenance access to each facility.
• Proper standoff distances to meet Anti-Terrorism/ Force Protection (ATFP) requirements.
• Campus-like atmosphere to encourage walking and relaxing.

6.3.1.4 The master plan for adjacent projects can be provided by the installation for information and coordination purposes. The future hospital site is directly adjacent to this project and will be under construction concurrently. The D/B Contractor shall design and construct this project in coordination with

the adjacent projects (i.e. grading, contour lines, finish floor elevations, storm drainage, roads, sidewalks, POV parking, utilities, water, sewer, etc). D/B Contractor will submit for review and approval a Site Plan which shows all the facilities to DPW and the Barracks and Site Contractor.

6.3.1.5 The D/B Contractor shall follow the submittal Distribution per Appendix DD

6.3.2. Site Structures and Amenities

6.3.2 Site Structures and Amenities - The Barracks and Site Contractor is responsible for providing walls, site amentities and dumpster enclosures for the Admin Facilities in accordance with the construction limits. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.3.3. Site Functional Requirements:

6.3.3.1. Stormwater Management (SWM) Systems.

6.3.3.1 Stormwater Management Systems

6.3.3.1.1 The Barracks and Site Contract is responsible for preparing an overall Erosion, Sedimentation and Pollution Control Plan (ESPC). The D/B Contractor is responsible adhering to said plan as a secondary permittee. The D/B Contractor is also responsible for roof drainage on the buildings included in this contract. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.3.3.1.2 The storm drainage system will consist of gutters, downspouts and roof drain systems on each building. All drainage will be directed to the storm sewer system either existing or proposed by the Barracks and Site Contractor. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.3.3.2. Erosion and Sediment Control

All local, state, and federal regulations will be adhered to in the design and implementation of erosion and sediment control measures. The State of Georgia requires a 3 phase Erosion, Sedimentation and Pollution Control Plan (ESPC). All land disturbances on Ft. Benning are required to submit an ESPC to the DPW and NRCS for review and approval. The ESPC complies with the conditions of the National Pollutant Discharge Elimination System (NPDES) General Permit for any disturbance greater than one acre. Construction must comply with all applicable rules and regulations of the Department of Water Quality Stormwater BMP Manual and the ESPC. Please reference the Georgia Soil and Water Conservation Commission website for design requirements: HYPERLINK "http://gaswcc.georgia.gov/00/topic_index_channel/0,2092,28110777_29155149,00.html"http://gaswcc.georgia.gov/00/topic_index_channel/0,2092,28110777_29155149,00.html

The Barracks and Site Contractor will be the primary applicant on these permits. The D/B Contractor is responsible for adhering to those permits and shall be included as a secondary permittee. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.3.3.3. Vehicular Circulation.

The roadways and parking are to be designed and constructed by the Barracks and Site Contractor.

6.4. SITE ENGINEERING

6.4.1. Existing Topographical Conditions

6.4.1.1 A three dimensional digital topographic and two dimensional utility survey for the existing site has been prepared by the Government and included in Appendix G. The D/B Contractor shall obtain final grading and utility plans from the Barracks and Site Contractor when completed.

6.4.1.2 It is the D/B Contractor's responsibility to verify the Government furnished survey and obtain all additional survey information that may be required for design and construction of the project. Any discrepancies which are found in the Government furnished survey shall be brought to the immediate attention of the Government for clarification. If the D/B Contractor requires additional survey data beyond what is provided by the Government, the D/B Contractor shall perform the survey as part of his design and construction activities.

6.4.1.3 The format for additional survey shall be three dimensional digital topographic and two dimensional utility surveys and shall match the coordinate system and datum used by the Government provided survey.

6.4.1.5 Staging: The D/B Contractor shall coordinate all staging area and lay-down areas, with the Barracks and Site Contractor. The lay-down and staging areas are to be located within the construction limits unless approved by the EMD prior to construction. Final location will be determined at the pre-construction conference.

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

6.4.2.1 A boring location map, and the raw data on the subsurface conditions described in paragraph 5.2.2.2 are furnished in Appendix A. The D/B Contractor shall accept the site as is and be solely responsible for any geotechnical investigations required to accommodate his proposed foundation and other site features, as required by his final geotechnical report and to be submitted to DPW.

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

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

6.4.3.1 No Fire Flow test was conducted. There is an adjacent water tower currently under construction that will change the existing flow information. The fire flow data included in Appendix D is design flow information from the Water Tower project. The D/B Contractor shall be responsible for the fire flow test used in his design and construction.

6.4.3.2 The D/B Contractor shall verify the water flow test information, including available static water pressure, the residual pressure and associated flow, and the identification of the test hydrant and flow hydrants in his design analysis. The design analysis shall be submitted to the contracting officer. Individual meters are required for each building. Design of the water main and services shall be completed by the D/B contractor in compliance with all applicable standards and specifications of CWW. These standards and specifications are available online. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.4.4. Pavement Engineering and Traffic Estimates:

6.4.4.1 Traffic and pavement are not a part of this contract. Barracks and Site contract is responsible for Traffic estimates and pavement design and construction.

6.4.4.2 The foundation is site specific and must be designed upon known geotechnical considerations by an engineer knowledgeable of the local conditions, e.g. highly expansive soils, groundwater levels. The structural engineer does not have to know local conditions, what type of soil or the depth of the ground water levels, The soils report will tell you all that and what type of foundation required for that particular site.

6.4.5. Traffic Signage and Pavement Markings

Traffic Signage - Traffic signage is not a part of this contract. Barracks and Site contract is responsible for Traffic Signage.

6.4.6. Base Utility Information

6.4.6.1 Utility Coordination: Prior to the start of construction, the D/B Contractor shall conduct utility coordination meetings with the Contracting Officer's Representative (COR), private utilities, Ft. Benning's Directorate of Logistics and Engineering (DLE) and the Barracks and Site Contractor. Contact **<Amend4>**~~Mark Graham~~ **Kyle Fricks**, Columbus Water Works (CWW), at ~~(706) 587-0409~~ **(706) 689-2643</Amend4>,** for water and wastewater information. Contact Omer McCants, Atmos Energy, at (803) 751-3823, for gas information. Contact Walker Fricks, Flint Energies at (478) 988-3510, for electric information. Contact James Kerr, Windjammer Cable (256) 297-0835 E-Mail:jkerr@wjcable.net, for Cable TV information. Contact Terry Gross, AT&T, at 706-571-3669, for phone and communication information. COR and DPW personnel shall be informed of subsequent discussions between the D/B Contractor and the various utilities.

6.4.6.2 Base Utility Information will be coordinated and planned with the private utilities, the Ft. Benning DLE and the COR. The Utility Plan, located within Appendix C, provides utility main routing and general orientation for points of connection for each facility. Specific connection locations are noted below and on the demarcation matrix, Appendix CC.

6.4.6.3 Local conditions
• Grease Traps – where required, ensure trap has adequate capacity and is located where it is serviceable and out of site from the main entrances and important architectural view points of the buildings.
• All buildings are typically metered separately. All utilities shall be metered and interface with the building and Ft. Benning TAC control systems. Meters shall provide controls systems with up to date consumption for gas, domestic water, etc. Metering shall be provided so that Ft. Benning can monitor and control the new building(s) from their remote location without Ft. Benning having to add any equipment to make the existing and new systems interface.

6.4.6.4 Relocation of Existing Utilities: Utility relocation is included in the Barracks and Site Contract. Utilities shall be located outside of the proposed Admin Buildings as defined by the Barracks and Site Contract site plan.

6.4.6.5 Temporary Utilities: Utility service will be available for the D/B Contractor's use during construction from the existing utilities in the area of the site as described in sections 6.4.6. All utilities shall be metered. Refer to Specification Section [00 73 10], paragraph [8], for current rate information. The D/B Contractor is required to coordinate with the Contractors for the Barracks and Site, the COR and

the DLE within 14 days of the receipt of the Notice to Proceed. Generators shall be allowed for on-site electrical service but are not permitted once the facility is connected to the grid.

6.4.6.6 Electrical: Refer to Appendix C for the Electrical System Master Plan maps. Existing electric lines are owned and operated by Flint Energies. Initial investigation concluded that the existing power at the project site is adequate. Connection to the existing lines will be coordinated with Flint Energies and DPW. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.4.6.7 Communications: Refer to Appendix C for System Master Plan maps. The D/B Contractor shall determine requirements and capacity for each facility per the I3A Technical Guide and provide this information to the Barracks and Site Contractor, and Ft. Benning's Directorate of Information Management (DOIM), through the COR. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.4.6.8 Water: Refer to Appendix C for the Water System Master Plan maps. Existing water mains for domestic and fire are owned and operated by CWW and are available to the site. Existing mains run adjacent to the southeast corner of the site. The Barracks and Site Contractor will verify the existing flow data and shall coordinate testing with Columbus Water Works (CWW) and DPW.

6.4.6.9 The D/B Contractor shall determine the following for each building in the project: (a) The required capacity of domestic water for the building, (b) The domestic water service line size, (c) The required capacity of the fire service line for the building, (d) The fire service line size, (e) The location of the entrances to the building of the domestic water and fire service lines.

6.4.6.10 Water mains and services shall be installed by the Barracks and Site contractor in coordination with CWW. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.4.6.11 The D/B Contractor is responsible for furnishing his utility demand requirements and calculations to the Barracks and Site Contractor. Provide CWW with as-builts after the completion of the construction.

6.4.6.12 Plumbing Systems General: The plumbing systems will be designed to meet the requirements of the RFP reference documents, the International Plumbing Code and applicable NFPA Standards. In addition, the plumbing design will meet the LEED Silver rating and incorporate energy and water conservation strategies and design techniques to meet the Silver Rating. Cathodic protection will be provided were required per the RFP. All domestic hot storage systems, where used, shall store water at a minimum of 140 degrees F and will utilize a mixing valve to temper the water for domestic use.

6.4.6.13 Chilled Water – There is no chilled water available in the site area. Underground chilled water piping at Ft. Benning shall be prefabricated pre-insulated welded black steel. Chilled water service characteristics are as follows: temperature range is 42 - 44 deg. F Leaving Water Temperature (LWT) and 55 – 56 deg F Entering Water Temperature (EWT) and line pressure is approximately 100 psig. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.4.6.14 Piping Invert Elevations: All building under slab piping elevations shall be coordinated with the civil engineer’s connection pointes. Verify that the pipe elevations do not conflict with the building structural footings and foundation walls.

6.4.6.15 The D/B Contractor shall provide the following for the SFAC: All domestic water supply plumbing system components shall be NSF 61 certified. No component of the domestic water plumbing system shall contribute to action levels in the domestic water as established by CFR 50.12 Part 141.80(c)(1).

6.4.6.16 In addition to tests required by the IPC, perform testing for lead in the SFAC. Testing shall be as follows: after system disenfection and flushing, the domestic water system shall be allowed to sit for 24 hours and then shall be tested at all drinking fountains and faucets for lead in the potable water. Unless more stringent local requirements exist, lead shall not exceed 15 parts per billion (15ppb) per 40 CFR 50.12 Part 141.80(c)(1). Water supply to the building shall also be tested separately for lead contamination.

6.4.6.17 Sanitary Sewer – Refer to Appendix C for the Wastewater System Master Plan maps. Existing sanitary sewer is owned and operated by Columbus Water Works (CWW) and is available to the site. Design of the sanitary services shall be completed in compliance with all applicable standards and specifications of CWW. These standards and specifications are available online. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.4.6.18 Natural Gas: Refer to Appendix C for the Natural Gas System Master Plan maps. Existing natural gas lines are owned and operated by ATMOS and are available to the site along Marne Road. The existing line is a 10" and located on the south side of Marne Road. Service to the site will go below Marne Road into the proposed site area. Estimated pressure within the existing line is 25-30 psi. This shall be verified with ATMOS during design. Natural gas installation will be done by ATMOS to a smart meter at the building wall. Any services greater than 300 ft in length shall be charged per linear foot to the D/B Contractor. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.4.6.19 Local Telephone and Cable TV: Cable TV service is owned and operated by Windjammer Cable. Pay telephone is owned and operated by AT&T. The Barracks and Site Contractor will coordinate cable TV Service and phone service. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.4.7. Cut and Fill

No additional requirements

6.4.8. Borrow Material

6.4.8.1 Borrow soil may be obtained from an on-Post location or off Post at the D/B Contractor's option. If an on-Post borrow area is to be used the D/B Contractor shall be responsible for the development of the borrow area. The borrow area shall be included in the erosion control plan. On-Post borrow use must be approved by DLE prior to use. The existing borrow area located within the development area of the new hospital may not be large enough to provide adequate fill.

6.4.8.2 All permits and fee required for the borrow pit shall be at the D/B Contractor's expense.

6.4.8.3 Stockpiles and borrow areas shall be designated on the SWPPP. Coordinate with the Barracks and Site Contractor.

6.4.9. Haul Routes and Staging Areas

An Installation map with available haul routes, construction entrance gate, and project location is provided within the Appendix J. Routing of haul roads shall be coordinated with the COR and the DLE. All material hauled off site shall be taken to approved disposal sites. All permits and fees associated with disposal shall be at the D/B Contractor's expense.

6.4.10. Clearing and Grubbing:

Clearing and Grubbing - Overlot clearing, grubbing and grading operations will be completed by the Barracks and Site Contractor. Any additional clearing, grubbing and grading operations are the responsibility of the D/B Contractor.

6.4.11. Landscaping:

6.4.11.1 Proposed plantings must be reviewed to ensure that site conditions (soil, topography, adjacent uses, and architecture) and climatic criteria (sun, shade, and moisture requirements) are considered in the desired plant design and selection (i.e., form, texture, color, size). The uses and users of the site must also be considered. All plantings must be in accordance with ATFP requirements. Please reference the

demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.4.11.2 Entry Landscaping: Landscaping at buildings shall provide a positive sense of arrival. Pavement and proper placement of trees, shrubs, and groundcover are to direct pedestrian to the entrance. The character of the plantings of the adjacent areas is to be considered as well as streetscape plantings. A key goal is to provide emphasis for important buildings while harmonizing with surrounding area. Emphasis shall be on primary entrances with secondary entrances treated as scaled down versions of primary.

6.4.11.3 Plant List: The plant list and categories are designed to help the designer choose the best plant for each particular set of design requirements. See Appendix I for Acceptable Plant List.

6.4.12. Turf:

Contractor shall install turf according to installation guidelines. The acceptable planting list is included in Appendix I for reference. Contractor shall indicate the limits of turf planting on the Erosion Control documents and their Final Landscape plans.

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 Benning**’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 Benning’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 use durable, low-maintenance materials. Configure building massing and use exterior elements and material detailing to provide human scale. Exterior must be visually compatible with surrounding 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 Appendix F for exterior colors that apply to Architectural character at Fort Benning. 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

[Not Supplied - PS_Architecture : ARCHITECTURE]

6.5.3. Programmable Electronic Key Card Access Systems:

Not Used

6.5.4. INTERIOR DESIGN

Interior Design Objectives:

a. Ceramic Tile: Comply with ANSI A137.1 and the recommendations of Tile Council of America (TCA) Handbook for Ceramic Tile Installation.

b. Silica Based Sealant for tile floors.

Interior building signage requirements:

No additional requirements.

6.6. STRUCTURAL DESIGN

6.6.1 General

Consider mission effectiveness, the most economical system in the locality, life-cycle economics, and space adaptability in choosing the structural systems. Space adaptability includes future reorganization or reallocation of space.

Analyze, design, and detail each building as a complete structural system. Design structural elements to preclude damage to finishes, partitions, and other frangible, nonstructural 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 (BIA).

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. All concrete shall be a minimum of 3,000 psi and shall be reinforced. Place floor mounted mechanical and electrical equipment on a 4” minimum concrete pad.

In addition to gravity, seismic, and lateral loads, design ancillary building items, e.g. doors, window jambs and connections, overhead architectural features, equipment bracing, 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.

6.6.2 Applicable Standards, Codes, and Criteria

The structural design shall fully comply with the following listed criteria in addition to the provisions provided in Section 01 10 00 paragraph 4.0 Applicable Criteria. Use the latest edition of the International Building Code (IBC) for design guidance, and coordinate design with UFC 4-010-01. For buildings three stories and taller, design for progressive collapse in accordance with UFC 4-023-03, Design of Buildings to Resist Progressive Collapse.

6.6.3 Project Specific Design Loads:

6.6.3.1. Ground Snow: 5 psf
6.6.3.2. Wind Speed: 95 mph
6.6.3.3. Frost Penetration: 0 inches
6.6.3.4. Seismic Design Data: The mapped maximum considered earthquake (MCE) spectral response accelerations for site class B are:

Ss (at short periods) = 15 % g
S1 (at 1-second period) = 7 % g.

The acceleration values identified are for the general location of the facility. Verify and use site specific criteria based on the final site location of the facility. Adjust site class per IBC to match specific site information in geotechnical report.

6.6.3.5 Antiterrorism/Force Protection loads and minimum requirements are per UFC 4-010-01. For design of structural components subjected to dynamic loads, the U.S. Army Corps of Engineers Protective Design Center (PDC) developed SBEDS, Single-Degree-of-Freedom Blast Effects Design Spreadsheets (SBEDS). SBEDS is available at the software tab of the PDC website, HYPERLINK "https://pdc.usace.army.mil/"https://pdc.usace.army.mil/.

6.6.4 Foundation

The foundation is site specific and must be designed upon known geotechnical considerations by an engineer knowledgeable of the local conditions, e.g. highly expansive soils, groundwater levels. Coordinate the need for a vapor barrier with the architectural floor finishes and requirements of the geotechnical report. All slab-on-grade to receive a coating (e.g. epoxy) or to receive an overlaying finish (e.g. carpet or tile), shall be underlain by a vapor barrier system with a minimum 10-mil polyethylene membrane.

6.6.5 Site Features – Retaining Walls/Bridges/etc.

Design site features, e.g. retaining walls, culverts, bridges, in accordance with the appropriate American Association of State Highway and Transportation Officials (AASHTO) criteria including AASHTO LRFD Bridge Design Specifications, AASHTO Standard Specifications for Highway Bridges, and AASHTO Guide Specifications for Design of Pedestrian Bridges. Consider operation and maintenance requirements, e.g. painting, mowing, inspecting, routine maintenance. Design site features to drain properly in order to meet loading assumptions.

6.6.6 Design Analysis

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. Results must include an output listing for maximum/minimum stresses/forces and deflections for each element and the reactions for each loading case and combination.

6.7. THERMAL PERFORMANCE

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

6.8. PLUMBING

6.8.1 Piping Invert Elevations: All building under slab piping elevations shall be coordinated with the civil engineer’s connection pointes. Verify that the pipe elevations do not conflict with the building structural footings and foundation walls.

6.8.2 Wall Hydrants: Provide a minimum of 4 exterior wall hydrants, at least one per face of the building. These shall have a removable key and freeze protection. Wall hydrants shall be mounted 2 feet above finished grade and will be spaced around the building perimeter to allow watering of all grass areas with no greater than 100 feet of garden hose.

6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.9.1 The primary distribution system is owned and operated by Flint Energies. The design, procurement, and installation of the primary voltage distribution system shall be the responsibility of Flint Energies. Flint Energies will also furnish and install the pad-mounted transformers and make the secondary terminations at the transformers. Metering will be provided by Flint Energies. The demolition, relocation and replacement of primary distribution lines impacted by this project shall likewise be the responsibility of Flint Energies. Please reference the demarcation matrix for additional information on the D/B Contractors limits of responsibility.

6.9.2 All schedules shall be coordinated to insure that all projects are completed without compromising the Beneficial Occupancy Date.

6.9.3 The D/B Contractor shall coordinate with the electric utility company and the Barracks and Site contractor on all electrical design, demolition and construction work including schedules, electrical loads, equipment selection, equipment locations, utility routing, installation, and final connections.

6.9.4 The D/B Contractor shall be responsible for installing secondary service to the secondary compartment of the transformer. The cables shall be of sufficient length to facilitate their connection to the secondary lugs of the transformer. Installation of the cable terminators and connection to the transformer shall be done by the electric utility company. The D/B Contractor shall coordinate transformer sizes and obtain transformer impedances from the privatized electric utility company to perform electrical calculations.

No Additional Requirements.

6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.10.1 The Mass Notification system shall be capable of accepting controls to announce all pre-recorded messages as well as live messages from a remote site by way of dry contacts and 600 ohm audio inputs.

6.10.1.2 Linear fluorescent lamps shall be T8 or T5.

6.10.1.3 Lighting is required in the attic areas.

6.10.2 Provide a transition connection between the interior and exterior for CATV - see Demarcation Matrix Appendix CC for D/B Contractor responsibility.

6.10.3 Provide a transition connection between the interior and exterior for telecommunications - See Demarcation Matrix Appendix CC for D/B Contractor responsibility.

6.11. HEATING, VENTILATING, AND AIR CONDITIONING

6.11.1 ECONOMIZERS: If economizer features are used, outside air intake shall be limited to 50%.

6.11.2 MECHANICAL ROOM AND UTILITY SPACE HEATING AND VENTILATION: Mechanical, fire protection, electrical, and storage spaces shall be automatically ventilated to limit space temperatures to 10 degrees F above design outdoor air temperature. Additionally, mechanical and fire protection and any other space containing piping or liquids , including chilled and heating hot water, shall be minimally heated for freeze protection.

6.11.3 EQUIPMENT COORDINATION: For Variable Air Volume (VAV) systems, if provided, limit size of any individual VAV box to approximately 2500 cfm to promote better zoning and fit of equipment to space available. All mechanical systems and equipment shall be coordinated with space available to prevent conflict with other building systems.

6.11.4 UMCS REQUIREMENTS: Ft. Benning currently maintains two Utility Monitoring and Control Systems (UMCS) in Building 262. The systems are Invensys Enterprise Server (Niagara Framework) and Johnson Metasys. The building level controllers shall utilize LonWorks technology. Utility meters shall be LonMark certified. The buildings shall be integrated into either UMCS located in building 262. The integration includes:

(a) Connecting the building network to the UMCS network

(b) Merging the building database with the UMCS database

(c) Binding network variables between the building and the UMCS

(d) Configure the UMCS software (graphic displays, alarms, scheduling, and trending)

The installation and integration shall be by contractors authorized by Johnson Controls or TAC Americas. The contractor shall submit documentation to verify that he is an authorized dealer and installer of the control system he is proposing.

Primary purpose of UMCS is to detect equipment on/off alarm status to determine equipment needing service or repair.

6.11.5 WATER QUALITY ANALYSIS AND TREATMENT: Contractor shall coordinate with water treatment contractor to confirm water data and current water treatment methods to obtain the required quantity and types of chemicals to be initially introduced into the closed loop heating and chilled water systems if used. Treatment will be required for use as make-up water in HVAC equipment. Water Quality tests shall be performed by the contractor. As a minimum, the following data shall be determined:

Chlorides: ____ ppm
Total Alkalinity: ____ ppm
Total Hardness: ____ ppm (CaCO3)
ph: _____
Silica: ____ ppm (SiO2)
Iron: ____ Reactive (this is leaving the plant)
Total Dissolved Solids: ____ ppm

6.11.6 EQUIPMENT RESTART REQUIREMENTS: All mechanical equipment shall automatically restart after a power outage; provide equipment such as, boiler low water boiler cut-offs and controls that can restart in a normal mode after power is restored. All mechanical equipment and controls shall be protected against power surges and low and high supply voltage situations. Power loss, surges or low or high voltage shall not in any way effect HVAC or plumbing equipment or controls, set points, controls bindings etc.

6.11.7 HVAC AND OTHER EQUIPMENT

6.11.8.1 Boiler equipment shall be gas-fired high efficiency units.

6.11.8.2 Water Chilling Equipment: For above 200 tons, chillers shall be water cooled, centrifugal or screw chillers. For water cooled chillers over 500 tons, provide a skimmer sand filter system to filter water in the cooling tower basin. The sand filter system will remove all foreign materials that fall into the cooling tower basin. Cooling plant equipment shall be commercial/industrial quality. Residential quality units are not allowed.

6.11.8.3 HVAC systems: For air-conditioned core and related areas (central core lobbies, offices, etc.), heating, ventilating and air-conditioning systems shall provide appropriate zoning and number of zones to allow comfort in spaces with varying occupancy (by time of day, etc.), exterior exposures, and internal loads due to equipment, door usage, etc. The expectation is for more rather than less zones to create an optimum balance of initial cost versus occupant comfort for peak human efficiency based upon temperature setpoints and thermal comfort requirements of this RFP. System complexity: provide integrated HVAC air handling system or systems that are only complex enough to meet all energy, quality and system longevity requirements and other goals of this RFP; this may entail economizers that will

require proper air filtration provisions, etc. Additionally, systems shall be fully accessible for maintenance and shall be easily and completely replaceable via removal through mechanical room doors, etc. HVAC system cooling shall occur within the HVAC air handling system(s) and be provided by electric refrigerated means, such as electric direct expansion, chilled water or other refrigerated cooling system. Evaporative cooling systems of any type or form, for the air-conditioned areas of the barracks, shall not be used.

6.11.8.4 Refrigerant Requirements: Refrigerants for cooling systems shall be R-134A, R-407C, or R-410A.

6.11.8.5 Piping Materials HVAC Piping: Above ground pressure piping shall be copper Type L. Underground pressure pipe shall be copper Type K. Copper Type M shall not be used.

6.11.8.6 Equipment Placement: Air handling equipment shall be either within the building spaces (i.e. equipment rooms or plants, etc.) which are sound isolated, within exterior on-grade equipment yards which are enclosed with screen walls, or within enclosed roof penthouses. Vents, stacks, grilles, and placement of mechanical or electrical service fixtures shall be organized into locations which do not provide visually negative design impacts.

6.11.8.7 Equipment Pads: Floor or on-grade mounted equipment shall be elevated on 6 inch thick concrete pads to prevent accumulation of water and metal corrosion.

6.11.9 The goal of the government is to obtain facilities that do not promote or create an environment for the growth of mold and mildew during the facilities expected life (minimum 25 years). Designs shall address methods to prevent these situations. The attached document, labeld Appendix BB provides items for consideration by the "designer of record", as information only.

6.12. ENERGY CONSERVATION

6.12.1. General

Coordinate with the customer on their plans to implement the Energy Policy Act of 2005 (Public Law 109-58); for estimating purposes, assume no additional requirements for adding alternative fueling stations.

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

[Not Supplied - PS_EnergyConservation : RENEWABLE_ENERGY_FEATURES]

6.13. FIRE PROTECTION

6.13.1 HVAC EQUIPMENT RESTART: After a fire alarm shut-down is cleared at fire alarm panel, affected mechanical equipment shall automatically restart.

6.13.2 RISER LOCATION: Fire risers shall be installed in dedicated space or mechanical room with external access for fire department.

6.13.3 POST INDICATOR VALVE (PIV): The PIV for the building fire sprinkler will be provided by the D/B Contractor.

6.13.4 FIRE SPRINKLER SEISMIC DESIGN: Fire sprinkler systems shall be designed for protection of

piping against damage from earthquakes as per NFPA 13.

6.13.5 FIRE SPRINKLER BACKFLOW PREVENTION: As per local and state cross connection backflow requirements.

6.13.6 Sprinkler systems must comply with both NFPA 13 and UFC 3-600-01.

6.13.7 The Sprinkler System Installer shall be regularly engaged in the installation of the type and complexity of system required, and shall have served in a similar capacity for at least three systems that have performed in the manner intended for a period of not less than 6 months.

6.13.8 FIRE ALARM SYSTEMS: There shall be one complete Class A, addressable Fire Alarm System for each building. This system shall consist of a Fire Alarm Panel, a 911 telephone interface Mastermind Accountability System, initiating devices and notification devices. Pull stations shall be dual-action, non-glass rod type.

6.13.9 The telephone dialing system shall be compatible with the Fort Benning Fire Department's Mastermind Accountability System (MAS) and shall be coordinated with post Fire Chief and/or AHJ.

6.13.10 The information sent to the Fire Department receiving system shall be zone by zone information.

6.13.11 All tamper devices shall be sent to the Fire Department system as a supervisory tamper.

6.13.12 All initiating devices shall be connected, Style D, to signal line circuits (SLC), Style 6.

6.13.13 All alarm appliances shall be connected to notification appliance circuits (NAC), Style Z.

6.13.14 A looped conduit system shall be provided so that if the conduit and all conductors within are severed at any point, all NAC and SLC will remain functional.

6.13.15 Post Indicator Valve (PIV) and Fire Department Connection (FDC): The PIV and FDC for the building fire sprinkler will be provided and installed by the D/B contractor and located outside the buildings or on the buildings (thru-the-wall type). The PIV will also be electronically monitored by the fire alarm control panel. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.13.16. Fire Sprinkler Backflow Prevention: Backflow prevention will be per state and local cross-connection control requirements. Please reference the demarcation matrix, Appendix CC for additional information on the D/B Contractors limits of responsibility.

6.13.17. There shall be one complete addressable manual and automatic Fire Alarm System for each building within this contract. This system shall consist of a Fire Alarm Control/Annunciation Panel, a communication device, initiating devices and notification devices. The fire Alarm Control Panel shall be located within 20 feet of the main door. Class A addressable systems shall be provided as manufactured by Honeywell type XLS-140 with XLS-DVC Mass Notification system or approved equal. The fire alarm system shall be UL tested and listed or FM approved for intended use.

6.13.18. Radio transmitter and interface with Ft. Benning supervising station system shall be provided and shall be Monaco BT-XF type or approved equal.

6.13.19. The KNOX box shall be located on the front building near the main entrance. The D/B contractor shall install the box between the 4'-5' mark. When the KNOX box is ordered, specify that it is for the Fort Benning Military Installation so it is keyed correctly. The KNOX box shall be 3200 series, hinged door model. Contact Ryan Earwood at (706) 604-2238 or ryan.earwood@conus.army.mil with questions.

6.13.20. FD connections shall be marked as a "Fire Lane" with no POV or military parking and that no landscaping will hamper the use of the FD connections. PIV's, fire hydrants and any other exterior equipment shall be painted in accordance with installation guidelines.

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: [Not Supplied - PS_SustainableDesignGeneral : SD_EXEMPT_FACILITIES].

6.14.3. Credit Validation: The project is the site work and building(s) portion of a multiple contractor Combined Project. 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 Contractor. Administration/team management of the online project will be . Administration/team management of the online project will be by the Contractor per Appendix LEED Requirements for Multiple Contractor Combined Projects. Validation of credits will be accomplished by the Government. LEED certification of the project by the Contractor is not required. The Government may choose to seek LEED certification of the project, in which case the Government will pay certification fees and coordinate with GBCI and the Contractor will furnish audit data as requested at no additional cost.

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.

MR Credit 2 Construction Waste Management.

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

See LEED Multiple Contractor Responsibilities Table(s) for additional information.

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. Multiple Contractor Combined Project. When site work and building(s) are accomplished by separate contractors, it is a Multiple Contractor Combined Project for purposes of LEED scoring and documentation. This project is part of a Multiple Contractor Combined Project that includes site work and building(s) accomplished by separate contractors. See Appendix LEED Requirements for Multiple Contractor Combined Projects and Appendix LEED Multiple Contractor Responsibilities Table(s) for special requirements for this project.

6.14.8. Additional Information

[Not Supplied - PS_SustDesign_Additional : MR2]

6.15. ENVIRONMENTAL

Environmental: The contractor shall comply with all Federal, State, and local environmental requirements, see also Appendix E –Fort Benning Environmental Information. Paragraph 6 of Section 01 10 00 shall govern if conflicts exist with Appendix E.

6.15.1 The job site has been evaluated for potential environmental concerns, including site contamination. The site is located in a traditionally non hazardous location. The installation has no reason to suspect contamination. There are wetlands located on the north side of the site. The site shall be designed to limit the amount of impact on the existing wetlands. All impacts are to be mitigated and permitted by the D/B Contractor.

6.15.2 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, the Contractor shall 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 the Contractor 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. Clean up the contaminated site prior to directing the Contractor to resume work. The COR will determine whether the 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 (FIXEDPRICE) (SHORT FORM) or FAR 52.249-2 - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE) - ALTERNATE I as applicable.

6.16. PERMITS

6.16 PERMITS
The Government has not obtained any permits/licenses related to this project. It shall be the responsibility of the Contractor to obtain all permits/licenses required for this project. Permitted work shall be in accordance with the associated permit. Copies of the permits shall be submitted to the Contracting Officer. Copies of permit amendments shall also be provided to the Contracting Officer. The Contractor shall be responsible for determining the fee basis and paying all filing fees. The known permit forms are provided in Appendices.

The Contractor shall 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, the Contractor shall provide all necessary assistance to resolve the outstanding issue. All permit/license applications must indicate the following address as the owner:

U.S. Army – Directorate of Public Works (DPW): Mr. Dean Miller
Burr Street, Building 6, Room 318
Fort Benning, GA 31905

The Contractor shall comply with provisions of Installation permits, compliance agreements and plans with regulating authorities/agencies.

6.16.1 AIR PERMITS

The D/B Contractor shall be responsible for coordinating with Fort Benning's Environmental Management Division (EMD) staff in obtaining all required and applicable permits as part of the design process and shall secure all permits necessary for construction of this project. Fort Benning operates under a Title V Air Permit for air quality requirements, and the contractor is required to 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. D/B Contractor is required to develop required air permit application(s) and/or coordinate with EMD on any on-going permit applications. D/B Contractor is responsible for all air permitting fees and all required permits shall be obtained prior to construction of any new sources. D/B Contractor is responsible for complying with all State regulatory requirements for boilers fired by either natural gas or distillate oil, and insuring 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. The Contractor is required to have an air permit 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 Installations Title V Air Permit cannot be changed unilaterally by the Contractor, and the Contractor shall coordinate any and all changes/modifications through the designated EMD staff.

6.16.1.1 Air Permit Submittal Requirements (Boilers and Domestic Water Heaters)

Pursuant to satisfying requirements under the Clean Air Act, at or before the 60 percent design stage, the A-E shall submit the following to the installation's environmental office:

(1) Listing of boilers and domestic hot water heaters that will be fired by natural gas, propane, and/or fuel oil

(2) Fuel or fuels (primary and backup, if applicable) that will be utilized for each piece of equipment

(3) Quantity of each particular size

(4) Respective input firing rate. The document shall also 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. Furthermore, two copies of the document shall also be sent to the Savannah District, one to the Project Manager for placement in Central Files, and another to the Mechanical Section.

(5) This document shall not be sent 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, an updated copy of said document shall be submitted per the guidance above.

(6) Additionally, the Proposer is responsible for incorporating 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 Proposer's concept 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, the Contractor shall submit to EMD copies of all required Federal and/or State certifications associated with emission units, i.e. visible

emissions certifications. The dates that the certifications are turned into EMD shall be noted in the remarks section of form DD 1354.

6.16.1.2 Proposers shall 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).

6.16.2 The contractor shall comply with all Federal, State, and local environmental requirements, see also Appendix AA – Permit Submittal Requirements.

6.16.2.1 D/B Contractor shall comply with all Federal, State, and Local permitting requirements. All permit prepares shall be registered/qualified in the State of Georgia. The D/B Contractor will be responsible for obtaining all applicable permits as part of the design and construction process. The D/B Contractor shall be responsible for all fees and fines associated with this project, at no additional expense to the Government. Listed below are some, but not limited to, permits required. Permits pertaining to the site shall be the responsibility of the Barracks and Site Contractor with the D/B Contractor for the Admin Facilities as co-signer.

6.16.2.2 All permits and plans will be provided to the COR. Completed plans are to be submitted to the DPWL for review and approval.

6.16.2.3 A SWPPP will be prepared by the Barracks and Site Contractor that includes the Admin Facilities to be completed under a separate contract. Coordinate with the Barracks and Site Contractor on projected construction timeline as it relates to SWPPP.

6.16.2.4 Notice of Intent (NOI) Requirements: The NOI for stormwater runoff from construction activities, and all fees required, shall be filed by the contractor prior to construction start. The contractor shall be responsible for all requirements of the permit, to include signing the NOI, development of the SWPPP, submitting the NOI and the annual fee, required inspections, obtaining Contractor certifications, maintaining all on-site files, submitting the Notice of Termination, etc. The contractor shall coordinate these efforts and provide copies to the installation Environmental Department.

6.16.2.5 Dust Permit: Contractor is required to prepare and follow a Fugitive Dust Control Plan (FDCP). The FDCP shall include dust suppression techniques, such as wetting the exposed soil, to prevent generation of dust.

6.16.2.6 The proposed facilities and associated parking will disturb more than one acre, therefore, a Soil Erosion Control Plan (SECP) shall be developed by the D/B Contractor, for the entire site area.

6.16.2.7 An installation digging permit is required.

6.16.2.8 NPDES Construction Permit is required.

6.17. DEMOLITION

Demolition is included in the Barracks and Site contract. There is no demolition in this contract.

6.18. ADDITIONAL FACILITIES

There are no additional facilities in this contract.

End of Section 01 10 00.0003

SECTION 01 33 00.0003
SUBMITTAL PROCEDURES
(DESIGN-BUILD TASK ORDERS)

1.0 GENERAL

1.13. GOVERNMENT APPROVED OR CONCURRED WITH SUBMITTALS

1.14. INFORMATION ONLY SUBMITTALS

1.0 GENERAL

1.1.1. This section contains requirements specifically applicable to this task order. The requirements of Base ID/IQ contract Section 01 33 30 apply to this task order, except as otherwise specified herein.

1.13. GOVERNMENT APPROVED OR CONCURRED WITH SUBMITTALS

Upon completion of review of submittals requiring Government approval or concurrence, the Government will stamp and date the submittals as approved or concurred. The Government will retain two (2) copies of the submittal and return one (1) copy(ies) of the submittal.

1.14. INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe. The Government will retain two (2) copies of information only submittals.

End of Section 01 33 00.0003

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

ATTACHMENT G DESIGN SUBMITTAL DIRECTORY AND SUBDIRECTORY FILE ARRANGEMENT

1.0 GENERAL INFORMATION

1.1. INTRODUCTION

1.1.1. The information contained in this section applies to the design required after award. After award, the Contractor will develop the accepted proposal into the completed design, as described herein.

1.1.2. The Contractor may elect to fast track the design and construction that is, proceed with construction of parts of the sitework and facilities prior to completion of the overall design. To facilitate fast tracking, the Contractor may elect to divide the design into no more than ten (10) design packages per major facility type and no more than three (3) design packages for site and associated work. Designate how it will package the design, consistent with its overall plan for permitting (where applicable) and construction of the project. See Sections 01 33 00 SUBMITTAL PROCEDURES and 01 32 01.00 10 PROJECT SCHEDULE for requirements for identifying and scheduling the design packaging plan in the submittal register and project schedule. See also Sections 01 10 00 STATEMENT OF WORK and 01 57 20.00 10 ENVIRONMENTAL PROTECTION for any specified permit requirements. If early procurement of long-lead item construction materials or installed equipment, prior to completion of the associated design package, is necessary to facilitate the project schedule, also identify those long-lead items and how it will assure design integrity of the associated design package to meet the contract requirements (The Contract consists of the Solicitation requirements and the accepted proposal). Once the Government is satisfied that the long-lead items meet the contract requirements, the Contracting Officer will allow the Contractor to procure the items at its own risk.

1.1.3. The Contractor may proceed with the construction work included in a separate design package after the Government has reviewed the final (100%) design submission for that package, review comments have been addressed and resolved to the Government's satisfaction and the Contracting Officer (or the Administrative Contracting Officer) has agreed that the design package may be released for construction.

1.1.4. INTEGRATED DESIGN. To the maximum extent permitted for this project, use a collaborative, integrated design process for all stages of project delivery with comprehensive performance goals for siting, energy, water, materials and indoor environmental quality and ensures incorporation of these goals. Consider all stages of the building lifecycle, including deconstruction.

1.2. DESIGNER OF RECORD

Identify, for approval, the Designer of Record (“DOR”) that will be responsible for each area of design. One DOR may be responsible for more than one area. Listed, Professional Registered, DOR(s) shall account for all areas of design disciplines shall be accounted for by a listed. The DOR’s shall stamp, sign, and date each design drawing and other design deliverables under their responsible discipline at each design submittal stage (see contract clause Registration of Designers). If the deliverables are not ready for release for construction, identify them as "preliminary" or "not for release for construction" or by using some other appropriate designation. The DOR(s) shall also be responsible for maintaining the integrity of the design and for compliance with the contract requirements through construction and documentation of the as-built condition by coordination, review and approval of extensions of design, material, equipment and other construction submittals, review and approval or disapproval of requested deviations to the accepted design or to the contract, coordination with the Government of the above activities, and by performing other typical professional designer responsibilities.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. PRE-WORK ACTIVITIES & CONFERENCES

3.1.1. Design Quality Control Plan

Submit for Government acceptance, a Design Quality Control Plan in accordance with Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL before design may proceed.

3.1.2. Post Award Conference

3.1.2.1. The government will conduct a post award contract administration conference at the project site, as soon as possible after contract award. This will be coordinated with issuance of the contract notice to proceed (NTP). The Contractor and major sub-contractor representatives shall participate. All designers need not attend this first meeting. Government representatives will include COE project delivery team members, facility users, facility command representatives, and installation representatives. The Government will provide an agenda, meeting goals, meeting place, and meeting time to participants prior to the meeting.

3.1.2.2. The post award conference shall include determination and introduction of contact persons, their authorities, contract administration requirements, discussion of expected project progress processes, and coordination of subsequent meetings for quality control (see Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL), Partnering (see below and SCR: Partnering), and the initial design conference (see below).

3.1.2.3. The government will introduce COE project delivery team members, facility users, facility command representatives, and installation representatives. The DB Contractor shall introduce major subcontractors, and other needed staff. Expectations and duties of each person shall be defined for all participants. A meeting roster shall be developed and distributed by the government with complete contact information including name, office, project role, phone, mailing and physical address, and email address.

3.1.3. Partnering & Project Progress Processes

3.1.3.1. The initial Partnering conference may be scheduled and conducted at any time with or following the post award conference. The Government proposes to form a partnership with the DB Contractor to develop a cohesive building team. This partnership will involve the COE project delivery team members, facility users, facility command representatives, installation representatives, Designers of Record, major subcontractors, contractor quality control staff, and contractor construction management staff. This partnership will strive to develop a cooperative management team drawing on the strengths of each team member in an effort to achieve a quality project within budget and on schedule. This partnership will be bilateral in membership and participation will be totally voluntary. All costs, excluding labor and travel expenses, shall be shared equally between the Government and the Contractor. The Contractor and Government shall be responsible for their own labor and travel costs. Normally, partnering meetings will be held at or in the vicinity of the project installation.

3.1.3.2. As part of the partnering process, the Government and Contractor shall develop, establish, and agree to comprehensive design development processes including conduct of conferences, expectations of design development at conferences, fast-tracking, design acceptance, Structural Interior Design (SID)/ Furniture, Fixtures & Equipment (FF&E) design approval, project closeout, etc. The government will explain contract requirements and the DB Contractor shall review their proposed project schedule and suggest ways to streamline processes.

3.1.4. Initial Design Conference

The initial design conference may be scheduled and conducted at the project installation any time after the post award conference, although it is recommended that the partnering process be initiated with or before the initial design conference. Any design work conducted after award and prior to this conference should be limited to site and is discouraged for other items. All Designers of Record shall participate in the conference. The purpose of the meeting is to introduce everyone and to make sure any needs the contractor has are assigned and due dates established as well as who will get the information. See also Attachment F, BUILDING INFORMATION MODELING REQUIREMENTS for discussion concerning the BIM Implementation Plan demonstration at this meeting. The DB Contractor shall conduct the initial design conference.

3.1.5. Pre-Construction Conference

Before starting construction activities, the Contractor and Government will jointly conduct a pre-construction administrative conference to discuss any outstanding requirements and to review local installation requirements for start of construction. It is possible there will be multiple Pre-Construction Conferences based on the content of the design packages selected by the Contractor. The Government will provide minutes of this meeting to all participants.

3.2. STAGES OF DESIGN SUBMITTALS AND OVER THE SHOULDER PROGRESS REVIEWS

The stages of design submittals described below define Government expectations with respect to process and content. The Contractor shall determine how to best plan and execute the design and review process for this project, within the parameters listed below. As a minimum, the Government expects to see at least one interim design submittal, at least one final design submittal before construction of a design package may proceed and at least one Design Complete submittal that documents the accepted design. The Contractor may sub-divide the design into separate packages for each stage of design and may proceed with construction of a package after the Government accepts the final design for that package. See discussion on waivers to submission of one or more intermediate design packages where the parties partner during the design process. See also Attachment F, BUILDING INFORMATION MODELING REQUIREMENTS for discussion concerning BIM and the various stages of design submittals and over-the-shoulder progress reviews**.**

3.2.1. Site/Utilities

To facilitate fast-track design-construction activities the contractor may submit a final (100%) site and utility design as the first design submittal or it may elect to submit interim and final site and utility design submittals as explained below. Following review, resolution, and incorporation of all Government comments, and submittal of a satisfactory set of site/utility design documents, after completing all other pre-construction requirements in this contract and after the pre-construction meeting, the Government will allow the Contractor to proceed with site development activities, including demolition where applicable, within the parameters set forth in the accepted design submittal. For the first site and utility design submission, whether an interim or final, the submittal review, comment, and resolution times from this specification apply, except that the Contractor shall allow the Government a 14 calendar day review period, exclusive of mailing time. No on-site construction activities shall begin prior to written Government clearance to proceed.

3.2.2. Interim Design Submittals

The Contractor may submit either a single interim design for review, representing a complete package with all design disciplines, or split the interim design into smaller, individual design packages as it deems necessary for fast-track construction purposes. As required in Section 01 32 01.00 10 PROJECT SCHEDULE, the Contractor shall schedule its design and construction packaging plan to meet the contract completion period. This submission is the Government's primary opportunity to review the design for conformance to the solicitation and to the accepted contract proposal and to the Building Codes at a point where required revisions may be still made, while minimizing lost design effort to keep the design on track with the contract requirements. The requirements for the interim design review submittals and review conferences are described hereinafter. This is not necessarily a hold point for the design process; the Contractor may designate the interim design submittal(s) as a snapshot and proceed with design development at its own risk. See below for a waiver, where the parties establish an effective over-the-shoulder progress review procedure through the partnering process that would eliminate the need for or expedite a formal intermediate design review on one or more individual design packages.

3.2.3. Over-the-Shoulder Progress Reviews

To facilitate a streamlined design-build process, the Government and the Contractor may agree to one-on-one reviewer or small group reviews, electronically, on-line (if available within the Contractor's standard design practices) or at the Contractor's design offices or other agreed location, when practicable to the parties. The Government and Contractor will coordinate such reviews to minimize or eliminate disruptions to the design process. Any data required for these reviews shall normally be provided in electronic format, rather than in hard copy. If the Government and Contractor establish and implement an effective, mutually agreeable partnering procedure for regular (e.g., weekly) over-the shoulder review procedures that allow the Government reviewers the opportunity to keep fully informed of the progress, contents, design intent, design documentation, etc. of the design package, the Government will agree to waive or to expedite the formal intermediate design review period for that package. The Contractor shall still be required to submit the required intermediate design documentation, however the parties may agree to how that material will be provided, in lieu of a formal consolidated submission of the package. It should be noted that Government funding is extremely limited for non-local travel by design reviewers, so the maximum use of virtual teaming methods must be used. Some possible examples include electronic file sharing, interactive software with on-line or telephonic conferencing, televideo conferencing, etc. The Government must still perform its Code and Contract conformance reviews, so the Contractor is encouraged to partner with the reviewers to find ways to facilitate this process and to facilitate meeting or bettering the design-build schedule. The Contractor shall maintain a fully functional configuration management system as described herein to track design revisions, regardless of whether or not there is a need for a formal intermediate design review. The formal intermediate

review procedures shall form the contractual basis for the official schedule, in the event that the partnering process determines that the formal intermediate review process to be best suited for efficient project execution. However, the Government pledges to support and promote the partnering process to work with the Contractor to find ways to better the design schedule.

3.2.4. Final Design Submissions

This submittal is required for each design package prior to Government acceptance of that design package for construction. The requirements for the final design submittal review conferences and the Government's acceptance for start of construction are described herein after.

3.2.5. Design Complete Submittals

After the final design submission and review conference for a design package, revise the design package to incorporate the comments generated and resolved in the final review conferences, perform and document a back-check review and submit the final, design complete documents, which shall represent released for construction documents. The requirements for the design complete submittals are described hereinafter.

3.2.6. Holiday Periods for Government Review or Actions

Do not schedule meetings, Government reviews or responses during the last two weeks of December or other designated Government Holidays (including Friday after Thanksgiving). Exclude such dates and periods from any durations specified herein for Government actions.

3.2.7. Late Submittals and Reviews

If the Contractor cannot meet its scheduled submittal date for a design package, it must revise the proposed submittal date and notify the government in writing, at least one (1) week prior to the submittal, in order to accommodate the Government reviewers' other scheduled activities. If a design submittal is over one (1) day late in accordance with the latest revised design schedule, or if notification of a proposed design schedule change is less than seven (7) days from the anticipated design submission receipt date, the Government review period may be extended up to seven (7) days due to reviewers' schedule conflicts. If the Government is late in meeting its review commitment and the delay increases the Contractor's cost or delays completion of the project, the Suspension of Work and Defaults clauses provide the respective remedy or relief for the delay.

3.3. DESIGN CONFIGURATION MANAGEMENT

3.3.1. Procedures

Develop and maintain effective, acceptable design configuration management (DCM) procedures to control and track all revisions to the design documents after the Interim Design Submission through submission of the As-Built documents. During the design process, this will facilitate and help streamline the design and review schedule. After the final design is accepted, this process provides control of and documents revisions to the accepted design (See Special Contract Requirement: Deviating From the Accepted Design). The system shall include appropriate authorities and concurrences to authorize revisions, including documentation as to why the revision must be made. The DCM data shall be available to the Government reviewers at all times. The Contractor may use its own internal system with interactive Government concurrences, where necessary or may use the Government's "DrChecks Design Review and Checking System" (see below and Attachment C).

3.3.2. Tracking Design Review Comments

Although the Contractor may use its own internal system for overall design configuration management, the Government and the Contractor shall use the DrChecks Design Review and Checking System to initiate, respond to, resolve and track Government design compliance review comments. This system may be useful for other data which needs to be interactive or otherwise available for shared use and retrieval. See Attachment C for details on how to establish an account and set-up the DrChecks system for use on the project.

3.3.3. Design and Code Checklists

Develop and complete various discipline-specific checklists to be used during the design and quality control of each submittal. Submit these completed checklists with each design submittal, as applicable, as part of the project documentation. See Section 01 45 04.00 10 Contractor Quality Control, Attachment D for a Sample Fire Protection and Life Safety Code review checklist and Attachment E for LEED SUBMITTALS.

3.4. INTERIM DESIGN REVIEWS AND CONFERENCES

3.4.1. General

At least one interim design submittal, review and review conference is required for each design package (except that, per paragraph 3.2.1, the Contractor may skip the interim design submission and proceed directly to final design on the sitework and utilities package). The DB Contractor may include additional interim design conferences or over-the-shoulder reviews, as needed, to assure continued government concurrence with the design work. Include the interim submittal review periods and conferences in the project schedule and indicate what part of the design work is at what percentage of completion. The required interim design conferences shall be held when interim design requirements are reached as described below. See also Paragraph: **Over-the-Shoulder Progress Reviews** for a waiver to the formal interim design review.

3.4.2. Procedures

After receipt of an Interim Design submission, allow the Government fourteen (14) calendar days after receipt of the submission to review and comment on the interim design submittal. For smaller design packages, especially those that involve only one or a few separate design disciplines, the parties may agree on a shorter review period or alternative review methods (e.g., over-the–shoulder or electronic file sharing), through the partnering process. For each interim design review submittal, the COR will furnish, to the Contractor, a single consolidated, validated listing of all comments from the various design sections and from other concerned agencies involved in the review process using the DrChecks Design Review and Checking System. The review will be for conformance with the technical requirements of the solicitation and the Contractor's RFP proposal. If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he/she must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after receipt of these comments in order that the comment can be resolved. Furnish disposition of all comments, in writing, through DrChecks. The Contractor is cautioned that if it believes the action required by any comment exceeds the requirements of this contract, that it should take no action and notify the COR in writing immediately. The Interim Review conference will be held for each design submittal at the installation. Bring the personnel that developed the design submittal to the review conference. The conference will take place the week after the receipt of the comments by the Contractor. For smaller fast-track packages that involve only a few reviewers, the parties may agree to alternative conferencing methods, such as teleconferencing, or televideo, where available, as determined through Partnering.

3.4.3. Conference Documentation

3.4.3.1. In order to facilitate and accelerate the Government code and contract conformance reviews, identify, track resolution of and maintain all comments and action items generated during the design process and make this available to the designers and reviewers prior to the Interim and subsequent design reviews.

3.4.3.2. The DB Contractor shall prepare meeting minutes and enter final resolution of all comments into DrChecks. Copies of comments, annotated with comment action agreed on, will be made available to all parties before the conference adjourns. Unresolved problems will be resolved by immediate follow-on action at the end of conferences. Incorporate valid comments. The Government reserves the right to reject design document submittals if comments are significant. Participants shall determine if any comments are critical enough to require further design development prior to government concurrence. Participants shall also determine how to proceed in order to obtain government concurrence with the design work presented.

3.5. INTERIM DESIGN REQUIREMENTS

Interim design deliverables shall include drawings, specifications, and design analysis for the part of design that the Contractor considers ready for review.

3.5.1. Drawings

Include comments from any previous design conferences incorporated into the documents to provide an interim design for the “part” submitted.

3.5.2. Design Analyses

3.5.2.1. The designers of record shall prepare and present design analyses with calculations necessary to substantiate and support all design documents submitted. Address design substantiation required by the applicable codes and references and pay particular attention to the following listed items:

3.5.2.2. For parts including sitework, include site specific civil calculations.

3.5.2.3. For parts including structural work, include structural calculations.

(a) Identify all loads to be used for design.

(b) Describe the method of providing lateral stability for the structural system to meet seismic and wind load requirements. Include sufficient calculations to verify the adequacy of the method.

(c) Provide calculations for all principal roof, floor, and foundation members and bracing and secondary members.

(d) Provide complete seismic analyses for all building structural, mechanical, electrical, architectural, and building features as dictated by the seismic zone for which the facility is being constructed.

(e) Computer generated calculations must identify the program name, source, and version. Provide input data, including loads, loading diagrams, node diagrams, and adequate documentation to illustrate the design. The schematic models used for input must show, as a minimum, nodes/joints, element/members, materials/properties, and all loadings, induced settlements/deflections, etc., and a list of load combinations. Include an output listing for maximum/minimum stresses/forces and deflections for each element and the reactions for each loading case and combination.

(f) See also the Security (Anti-Terrorism) requirements below for members subject to Anti-Terrorist Force Protection (ATFP) and Progressive Collapse requirements.

(g) Fully coordinate and integrate the overall structural design between two different or interfacing construction types, such as modular and stick-built or multistory, stacked modular construction. Provide substantiation of structural, consolidation/settlement analysis, etc., as applicable, through the interfaces.

3.5.2.4. For Security (Anti-Terrorism): Provide a design narrative and calculations where applicable, demonstrating compliance with each of the 22 standards in UFC 4-010-01, which includes Design of Buildings to Resist Progressive Collapse (use the most recent version of UFC 4-023-03, regardless of references to any specific version in UFC 4-010-01). Where sufficient standoff distance is not being provided, show calculations for blast resistance of the structural system and building envelope. Show complete calculations for members subjected to ATFP loads, e.g., support members of glazed items (jambs, headers, sills) connections of windows to support members and connections of support members to the rest of the structure. For 3 story and higher buildings, provide calculations to demonstrate compliance with progressive collapse requirements.

3.5.2.5. For parts including architectural work, include building floor area analysis.

3.5.2.6. For parts including mechanical work, include HVAC analysis and calculations. Include complete design calculations for mechanical systems. Include computations for sizing equipment, compressed air systems, air duct design, and U-factors for ceilings, roofs and exterior walls and floors. Contractor shall employ commercially available energy analysis techniques to determine the energy performance of all passive systems and features. Use of hourly energy load computer simulation is required (see paragraph 3.5.5.2 for list of acceptable software). Based on the results of calculations, provide a complete list of the materials and equipment proposed with the manufacturer's published cataloged product installation specifications and roughing-in data.

3.5.2.7. For parts including life safety, include building code analysis and sprinkler and other suppression systems. Notwithstanding the requirements of the Codes, address the following:

(a) A registered fire protection engineer (FPE) must perform all fire protection analyses. Provide the fire protection engineer’s qualifications. See Section 01 10 00, paragraph 5 for qualifications.

(b) Provide all references used in the design including Government design documents and industry standards used to generate the fire protection analysis.

(c) Provide classification of each building in accordance with fire zone, building floor areas and height and number of stories.

(d) Provide discussion and description of required fire protection requirements including extinguishing equipment, detection equipment, alarm equipment and water supply. Alarm and detection equipment shall interface to requirements of Electronic Systems.

(e) Provide hydraulic calculations based on water flow test for each sprinkler system to insure that flow and pressure requirements can be met with current water supply. Include copies of Contractor's water flow testing done to certify the available water source.

3.5.2.8. For parts including plumbing systems:

(a) List all references used in the design.

(b) Provide justification and brief description of the types of plumbing fixtures, piping materials and equipment proposed for use.

(c) Detail calculations for systems such as sizing of domestic hot water heater and piping; natural gas piping; LP gas piping and tanks, fuel oil piping and tanks, etc., as applicable.

(d) When the geotechnical report indicates expansive soils are present, indicate in the first piping design submittal how piping systems will be protected against damage or backfall/backflow due to soil heave (from penetration of slab to the 5 foot building line).

3.5.2.9. For elevator systems:

(a) List all criteria codes, documents and design conditions used.

(b) List any required permits and registrations for construction of items of special mechanical systems and equipment.

3.5.2.10. For parts including electrical work, include lighting calculations to determine maintained foot-candle levels, electrical load analysis and calculations, electrical short circuit and protective device coordination analysis and calculations and arc fault calculations.

3.5.2.11. For parts including telecommunications voice/data (including SIPRNET, where applicable), include analysis for determining the number and placement of outlets

3.5.2.12. For Cathodic Protection Systems, provide the following stamped report by the licensed corrosion engineer or NACE specialist with the first design submission. The designer must be qualified to engage in the practice of corrosion control of buried or submerged metallic surfaces. He/she must be accredited or certified by the National Association of Corrosion Engineers (NACE) as a NACE Accredited Corrosion Specialist or a NACE certified Cathodic Protection Specialist, or must be a registered professional engineer with a minimum of five years experience in corrosion control and cathodic protection, Clearly describe structures, systems or components in soil or water to be protected. Describe methods proposed for protection of each.

3.5.3. Geotechnical Investigations and Reports:

3.5.3.1. The contractor’s licensed geotechnical engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal. Make this information available as early as possible during the over-the-shoulder progress review process. Summarize the subsurface conditions and provide recommendations for the design of appropriate utilities, foundations, floor slabs, retaining walls, embankments, and pavements. Include compaction requirements for fill and backfill under buildings, sidewalks, other structures and open areas. Recommend foundation systems to be used, allowable bearing pressures for footings, lateral load resistance capacities for foundation systems, elevations for footings, grade beams, slabs, etc. Provide an assessment of post-construction settlement potential including total and differential. Provide recommendations regarding lateral earth pressures (active, at-rest, passive) to be used in the design of retaining walls. Include the recommended spectral accelerations and Site Class for seismic design along with an evaluation of any seismic hazards and recommendations for mitigation, if required. Include calculations to support the recommendations for bearing capacity, settlement, and pavement sections. Include supporting documentation for all recommended

design parameters such as Site Class, shear strength, earth pressure coefficients, friction factors, subgrade modulus, California Bearing Ratio (CBR), etc. Provide earthwork recommendations, expected frost penetration, expected groundwater levels, recommendations for dewatering and groundwater control and the possible presence of any surface or subsurface features that may affect the construction of the project such as sinkholes, boulders, shallow rock, old fill, old structures, soft areas, or unusual soil conditions. Include pH tests, salinity tests, resistivity measurements, etc., required to design corrosion control and grounding systems. Include the raw field data. Arrange a meeting with the Government subsequent to completion and evaluation of the site specific geotechnical exploration to outline any differences encountered that are inconsistent with the Government provided preliminary soils information. Clearly outline differences which require changes in the foundation type, or pavement and earthwork requirements from that possible and contemplated using the Government furnished preliminary soils investigation, which result in a change to the design or construction. Any equitable adjustment is subject to the provisions of the contract's Differing Site Conditions Clause.

3.5.3.2. Vehicle Pavements: The Contractor's geotechnical report shall contain flexible and rigid pavement designs, as applicable for the project, including design CBR and modulus of subgrade reaction and the required compaction effort for subgrades and pavement layers. Provide Information on the types of base course materials available in the area and design strengths.

3.5.3.3. The Contractor and the professional geotechnical engineer consultant shall certify in writing that the design of the project has been developed consistent with the Contractor's final geotechnical report. The certification shall be stamped by the consulting professional geotechnical engineer and shall be submitted with the first design submission. If revisions are made to the initial design submission, a new certification shall be provided with the final design submission.

3.5.4. LEED Documentation:

Assign a LEED Accredited Professional, responsible to track LEED planning, performance and documentation for each LEED credit through construction closeout. Incorporate LEED credits in the plans, specifications and design analyses. Develop LEED supporting documentation as a separable portion of the Design Analysis and provide with each required design submittal. Include the LEED Project checklist for each non-exempt facility (one checklist may be provided for multiple facilities in accordance with the LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects and the LEED SUBMITTALS (Attachment E, herein) with each submittal. Final design submittal for each portion of the work must include all required design documentation relating to that portion of work (example - all site credit design documents with final site design). Submittal requirements are as indicated in Attachment E, LEED SUBMITTALS. Submit all documentation indicated on Attachment E as due at final design at final design submittal (for fast-track projects with multiple final design submittals, this shall be at the last scheduled final design submittal). All project documentation related to LEED shall conform to USGBC requirements for both content and format, including audit requirements and be separate from other design analyses. Maintain and update the LEED documentation throughout project progress to construction closeout and shall compile product data, receipts, calculations and other data necessary to substantiate and support all credits claimed. The Government may audit any or all individual credits. Audit documentation is not required to be submitted unless requested. These requirements apply to all projects. If the project requires the Contractor to obtain USGBC certification, the Contractor shall also be responsible for obtaining USGBC certification and shall provide written evidence of certification with the construction closeout LEED documentation submittal. Install the USGBC building plaque at the location indicated by the Government upon receipt. If Contractor obtains USGBC interim design review, submit the USGBC review to the Government within 30 days of receipt for information only.

3.5.4.1. LEED Documentation for Technology Solution Set. If the Solicitation provides a Prescriptive Technology Solution Set, use of the Technology Solution set has no effect on LEED documentation requirements. Provide all required LEED documentation, including energy analysis, in accordance with LEED requirements when using the Technology Solution Set.

3.5.5. Energy Conservation:

3.5.5.1. Refer to Section 01 10 00, Paragraph 5. Interim and Final Design submittals shall demonstrate that each building including the building envelope, HVAC systems, service water heating, power, and lighting systems meet the Mandatory Provisions and the Prescriptive Path requirements of ASHRAE 90.1. Use Compliance Documentation forms available from ASHRAE and included in the ASHRAE 90.1 User's Manual for this purpose. The Architectural Section of the Design Analysis shall include completed forms titled "Building Envelope

Compliance Documentation Parts I and II". The Heating Ventilating and Air Conditioning (HVAC) Section of the Design Analysis shall include a completed form titled "HVAC Simplified Approach Option - Part I" if this approach is allowed by the Standard. Otherwise, the HVAC Section of the Design Analysis shall include completed forms titled "HVAC Mandatory Provisions - Part II" and "HVAC Prescriptive Requirements - Part III". The Plumbing Section of the Design Analysis shall include a completed form titled "Service Water Heating Compliance Documentation". The Electrical Section of the Design Analysis shall include an explanatory statement on how the requirements of ASHRAE 90.1-2004 Chapter 8 Power were met. The Electrical Section of the Design Analysis shall also include a completed form titled "Lighting Compliance Documentation".

3.5.5.2. Interim and Final Design submittals which address energy consuming systems, (heating, cooling, service hot water, lighting, power, etc.) must also include calculations in a separate Energy Conservation Section of the Design Analysis which demonstrate and document (a) the baseline energy consumption for the facility or facilities under contract, that would meet the requirements of ANSI/ASHRAE/IESNA Standard 90.1 and (b) the energy consumption of the facility or facilities under contract utilizing the materials and methods required by this construction contract. Use the USGBC Energy and Atmosphere (EA) Credit 1 compliance template / form or an equivalently detailed form for documenting compliance with the energy reduction requirements. This template / form is titled PERFORMANCE RATING METHOD and is available when the project is registered for LEED. The calculation methodology used for this documentation and analysis shall follow the guidelines set forth in Appendix G of ASHRAE 90.1, with two exceptions: a) receptacle and process loads may be omitted from the calculation; and b) the definition of the terms in the formula for Percentage Improvement found in paragraph G1.2 are modified as follows: Baseline Building Performance shall mean the annual energy consumption calculated for a building design intended for use as a baseline for rating above standard design meeting the minimum requirements of the energy standard, and Proposed Building Performance shall mean annual energy consumption calculated for the proposed building design intended for construction. This calculation shall address all energy consuming systems in a single integrated methodology. Include laboratory fume hoods and kitchen ventilation loads in the energy calculation. They are not considered process loads. Individual calculations for heating, cooling, power, lighting, power, etc. systems will not be acceptable. The following building simulation software is acceptable for use in calculating building energy consumption: Hourly Analysis Program (HAP) by Carrier Corp., TRACE 700 by Trane Corp., DOE-2 by US Department of Energy, EnergyPlus by DOD/DOE.

3.5.6. Specifications

Specifications may be any one of the major, well known master guide specification sources (use only one source) such as MASTERSPEC from the American Institute of Architects, SPECTEXT from Construction Specification Institute or Unified Facility Guide Specifications (UFGS using MASTERFORMAT 2004 numbering system), etc. (including specifications from these sources). Manufacturers' product specifications, utilizing CSI's Manu-Spec, three part format may be used in conjunction with the selected specifications. The designers of record shall edit and expand the appropriate Specifications to insure that all project design requirements, current code requirements, and regulatory requirements are met. Specifications shall clearly identify, where appropriate, specific products chosen to meet the contract requirements (i.e., manufacturers' brand names and model numbers or similar product information).

3.5.7. Building Rendering

Present and provide a draft color computer, artist, or hand drawn rendering with the conceptual design submittal of the building exterior. Perspective renderings shall include a slightly overhead view of the entire building to encompass elevations and the roof configuration of the building. After Government review and acceptance, provide a final rendering, including the following:

Three (3) 18" x 24" color prints, framed and matted behind glass with project title underneath the print.

One (1) Image file (high resolution) in JPG format on CD for those in the submittal distribution list.

3.5.8. Interim Building Design Contents

The following list represents what the Government considers should be included in the overall completed design for a facility or project. It is not intended to limit the contractor from providing different or additional information as needed to support the design presented, including the require design analyses discussed above. As the Contractor develops individual design packages and submits them for Interim review, include as much of the applicable

information for an individual design package as is developed at the Interim design level for review purposes. These pieces shall be developed as the design progresses toward the design complete stage.

3.5.8.1. Lawn and Landscaping Irrigation System

3.5.8.2. Landscape, Planting and Turfing

3.5.8.3. Architectural

(a) Design Narrative

(b) Architectural Floor Plans, Typical Wall and Roof Sections, Elevations

(c) Finish schedule

(d) All required equipment

(e) Special graphics requirements

(f) Door and Window Schedules

(g) Hardware sets using BHMA designations

(h) Composite floor plan showing all pre-wired workstations

(i) Structural Interior Design (SID) package: See ATTACHMENT A for specific requirements

(j) Furniture, Fixtures & Equipment (FF&E) design package: See ATTACHMENT B for specific requirements

3.5.8.4. Structural Systems. Include:

(a) Drawings showing principal members for roof and floor framing plans as applicable

(b) Foundation plan showing main foundation elements where applicable

(c) Typical sections for roof, floor, and foundation conditions

3.5.8.5. Plumbing Systems

(a) Show locations and general arrangement of plumbing fixtures and major equipment

(b) Plan and isometric riser diagrams of all areas including hot water, cold water, waste and vent piping. Include natural gas (and meter as required), (natural gas and meter as required), (LP gas), (fuel oil) and other specialty systems as applicable.

(c) Include equipment and fixture connection schedules with descriptions, capacities, locations, connection sizes and other information as required

3.5.8.6. HVAC Systems

(a) Mechanical Floor Plans: The floor plans shall show all principle architectural features of the building which will affect the mechanical design. The floor plans shall also show the following:

(1) Room designations.

(2) Mechanical legend and applicable notes.

(3) Location and size of all ductwork and piping.

(4) Location and capacity of all terminal units (i.e., registers, diffusers, grilles, hydronic baseboards).

(5) Pre-Fabricated Paint Spray Booth (where applicable to project scope)

(6) Paint Preparation Area (where applicable to project scope)

(7) Exhaust fans and specialized exhaust systems.

(8) Thermostat location.

(9) Location of heating/cooling plant (i.e., boiler, chiller, cooling tower, etc).

(10) Location of all air handling equipment.

(11) Air balancing information.

(12) Flue size and location.

(13) Piping diagram for forced hot water system (if used).

(b) Equipment Schedule: Provide complete equipment schedules. Include:

(1) Capacity

(2) Electrical characteristics

(3) Efficiency (if applicable)

(4) Manufacturer's name

(5) Optional features to be provided

(6) Physical size

(7) Minimum maintenance clearances

(a) Details: Provide construction details, sections, elevations, etc., only where required for clarification of methods and materials of design.

(b) HVAC Controls: Submit complete HVAC controls equipment schedules, sequences of operation, wiring and logic diagrams, Input/Output Tables, equipment schedules, and all associated information. See the Statement of Work for additional specific requirements.

3.5.8.7. Fire Protection and Life Safety.

(a) Provide plan for each floor of each building that presents a compendium of the total fire protection features being incorporated into the design. Include the following types of information:

(1) The location and rating of any fire-resistive construction such as occupancy separations, area separations, exterior walls, shaft enclosures, corridors, stair enclosures, exit passageways, etc.

(2) The location and coverage of any fire detection systems

(3) The location and coverage of any fire suppression systems (sprinkler risers, standpipes, etc.)

(4) The location of any other major fire protection equipment

(5) Indicate any hazardous areas and their classification

(6) Schedule describing the internal systems with the following information: fire hazard and occupancy classifications, building construction type, GPM/square foot sprinkler density, area of operation and other as required

(b) Working plans and all other materials submitted shall meet NFPA 13 requirements, with respect to required minimum level of detail.

3.5.8.8. Elevators. Provide:

(a) Description of the proposed control system

(b) Description, approximate capacity and location of any special mechanical equipment for elevators.

3.5.8.9. Electrical Systems.

(a) Electrical Floor Plan(s): Show all principle architectural features of the building which will affect the electrical design. Show the following:

(1) Room designations.

(2) Electrical legend and applicable notes.

(3) Lighting fixtures, properly identified.

(4) Switches for control of lighting.

(5) Receptacles.

(6) Location and designation of panelboards. Clearly indicate type of mounting required (flush or surface) and reflect accordingly in specifications.

(7) Service entrance (conduit and main disconnect).

(8) Location, designation and rating of motors and/or equipment which requires electrical service. Show method of termination and/or connection to motors and/or equipment. Show necessary junction boxes, disconnects, controllers (approximate only), conduit stubs, and receptacles required to serve the motor and/or equipment.

(b) Building Riser Diagram(s) (from pad-mounted transformer to unit load center panelboard): Indicate the types and sizes of electrical equipment and wiring. Include grounding and metering requirements.

(c) Load Center Panelboard Schedule(s): Indicate the following information:

(1) Panelboard Characteristics (Panel Designation, Voltage, Phase, Wires, Main Breaker Rating and Mounting.

(2) Branch Circuit Designations.

(3) Load Designations.

(4) Circuit Breaker Characteristics. (Number of Poles, Trip Rating, AIC Rating)

(5) Branch Circuit Connected Loads (AMPS).

(6) Special Features

(d) Lighting Fixture Schedule(s): Indicate the following information:

(1) Fixture Designation.

(2) General Fixture Description.

(3) Number and Type of Lamp(s).

(4) Type of Mounting.

(5) Special Features.

(e) Details: Provide construction details, sections, elevations, etc. only where required for clarification of methods and materials of design.

3.5.8.10. Electronic Systems including the following responsibilities:

(a) Fire Detection and Alarm System. Design shall include layout drawings for all devices and a riser diagram showing the control panel, annunciator panel, all zones, radio transmitter and interfaces to other systems (HVAC, sprinkler, etc.)

(b) Fire Suppression System Control. Specify all components of the Fire Suppression (FS) System in the FS section of the specifications. Clearly describe how the system will operate and interact with other systems such as the fire alarm system. Include a riser diagram on the drawings showing principal components and interconnections with other systems. Include FS system components on drawing legend. Designate all components shown on floor plans “FS system components” (as opposed to “Fire Alarm components”). Show location of FS control panels, HVAC control devices, sensors, and 120V power panel connections on floor plans. Indicate zoning of areas by numbers (1, 2, 3) and detectors sub-zoned for cross zoning by letter designations (A and B). Differentiate between ceiling mounted and under floor detectors with distinct symbols and indicate sub-zone of each.

(c) Public Address System

(d) Special Grounding Systems. Completely reflect all design requirements in the specifications and drawings. Specifications shall require field tests (in the construction phase), witnessed by the Government, to determine the effectiveness of the grounding system. Include drawings showing existing construction, if any.

(e) Cathodic Protection.

(f) Intrusion Detection, Card Access System

(g) Central Control and Monitoring System

(h) Mass Notification System

(i) Electrical Power Distribution Systems

3.5.8.11. Information Systems including the following responsibilities:

(a) Telecommunications Cabling

(b) Supporting Infrastructure

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

(a) Include a layout of the voice/data outlets (including voice only wall & pay phones) on telecommunication floor plan drawing, location of SIPRNET data outlets (where applicable), and a legend and symbol definition to indicate height above finished floor. Show size of conduit and cable type and size on Riser Diagram. Do not show conduit runs between backboard and outlets on the floor plans. Show underground distribution conduit and cable with sizing from point of presence to entrance facility of building.

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

(c) Communication Equipment Rooms - Plan Views - Tech and AMEP/Elevations - Racks and Walls. Elevations with a detailed look at all telecomm rooms. Indicate technology layout (racks, ladder-racks, etc.), mechanical/electrical layout, rack elevation and backboard elevation. They may also be an enlargement of a congested area of T1 or T2 series drawing.

3.6. FINAL DESIGN REVIEWS AND CONFERENCES

A final design review and review conference will be held upon completion of final design at the project installation, or – where equipment is available - by video teleconference or a combination thereof, for any design package to receive Government acceptance to allow release of the design package for construction. For smaller separate design packages, the parties may agree on alternative reviews and conferences (e.g., conference calls and electronic file sharing, etc.) through the Partnering process. Include the final design conference in the project schedule and shall indicate what part of the design work is at 100% completion. The final design conference will be held after the Government has had seven (7) calendar days after receipt of the submission to review the final design package and supporting data. For smaller packages, especially those involving only one or a few design disciplines the parties may agree on a shorter period.

3.7. FINAL DESIGN REQUIREMENTS

Final design deliverables for a design package shall consist of 100% complete drawings, specifications, submittal register and design analyses for Government review and acceptance. The 100% design submission shall consist of drawings, specifications, updated design analyses and any permits required by the contract for each package submitted. In order to expedite the final design review, prior to the conference, ensure that the design configuration management data and all review comment resolutions are up-to-date. Include the 100% SID and 100% FF&E binders for government approval. The Contractor shall have performed independent technical reviews (ITR's) and back-checks of previous comment resolutions, as required by Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL, including providing documentation thereof.

3.7.1. Drawings

3.7.1.1. Submit drawings complete with all contract requirements incorporated into the documents to provide a 100% design for each package submitted.

3.7.1.2. Prepare all drawings with the Computer-Aided Design and Drafting (CADD)/Computer-Aided Design (CAD) system, organized and easily referenced electronically, presenting complete construction information.

3.7.1.3. Drawings shall be complete. The Contractor is encouraged to utilize graphics, views, notes, and details which make the drawings easier to review or to construct but is also encouraged to keep such materials to those that are necessary.

3.7.1.4. Provide detail drawings that illustrate conformance with the contract. Include room finish schedules, corresponding color/finish/special items schedules, and exterior finish schedules that agree with the submitted SID binders.

3.7.1.5. The design documents shall be in compliance with the latest version of the A/E/C CADD Standard, available at https://cadbim.usace.army.mil/CAD. Use the approved vertical Corps of Engineers title blocks and borders on all drawings with the appropriate firm name included within the title block area.

3.7.1.6. CAD System and Building Information Modeling (BIM) (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order.)

All CAD files shall be fully compatible with MicroStation V8 or higher. Save all design CAD files as MicroStation V8 or higher files. All submitted BIM Models and associated Facility Data shall be fully compatible with Bentley BIM 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. Drawing files with external references or special fonts are not acceptable. All displayed graphic elements on all levels of the drawing files shall be part of the project drawing image. The drawing files shall not contain any graphic element that is not part of the drawing image.

(d) Deliver BIM Model and associated Facility Data files in their native format. At a minimum, BIM files shall address major architecture design elements, major structural components, mechanical systems and electrical/communication distribution and elements as defined in Attachment F. See Attachment F for additional BIM requirements.

(e) Drawing Index: Provide an index of drawings sheet in CAD as part of the drawing set, and an electronic list in Microsoft Excel of all drawings on the CD. Include the electronic file name, the sheet reference number, the sheet number, and the sheet title, containing the data for each drawing.

(f) Hard Copies: Plot submitted hard copy drawings directly from the "electronic drawing files" and copy for quantities and sizes indicated in the distribution list at the end of this specification section. The Designers of Record shall stamp, sign and date original hard copy sheets as Released For Construction, and provide copies for distribution from this set.

3.7.2. Design Analyses

3.7.2.1. The designers of record shall update, finalize and present design analyses with calculations necessary to substantiate and support all design documents submitted.

3.7.2.2. The responsible DOR shall stamp, sign and date the design analysis. Identify the software used where, applicable (name, version, vendor). Generally, provide design analyses, individually, in an original (file copy) and one copy for the assigned government reviewer.

3.7.2.3. All disciplines review the LEED design analysis in conjunction with their discipline-specific design analysis; include a copy of the separable LEED design analysis in all design analysis submittals.

3.7.2.4. Do not combine multi-disciplined volumes of design-analysis, unless multiple copies are provided to facilitate multiple reviewers (one copy per each separate design analysis included in a volume).

3.7.3. Specifications

Specifications shall be 100% complete and in final form.

3.7.4. Submittal Register

Prepare and update the Submittal Register and submit it with the 100% design specifications (see Specification Section 01 33 00, SUBMITTAL PROCEDURES) with each design package. Include the required submittals for each specification section in a design package in the submittal register.

3.7.5. Preparation of DD Form 1354 (Transfer of Real Property)

This form itemizes the types, quantities and costs of various equipment and systems that comprise the project, for the purpose of transferring the new construction project from the Corps Construction Division to the Installation's inventory of real property. The Government will furnish the DB Contractor's design manager a DD Form 1354 checklist to use to produce a draft Form 1354. Submit the completed checklist and prepared draft Form DD 1354 with the 100% design in the Design Analysis. The Corps will use these documents to complete the final DD 1354 upon completion of construction.

3.7.6. Acceptance and Release for Construction

3.7.6.1. At the conclusion of the Final Design Review (after resolutions to the comments have been agreed upon between DOR and Government reviewers), the Contracting Officer or the ACO will accept the Final Design Submission for the design package in writing and allow construction to start for that design package. The Government may withhold acceptance until all major corrections have been made or if the final design submission requires so many corrections, even though minor, that it isn't considered acceptably complete.

3.7.6.2. Government review and acceptance of design submittals is for contract conformance only and shall not relieve the Contractor from responsibility to fully adhere to the requirements of the contract, including the Contractor’s accepted contract proposal, or limit the Contractor’s responsibility of design as prescribed under Special Contract Requirement: “Responsibility of the Contractor for Design” or limit the Government’s rights under the terms of the contract. The Government reserves the right to rescind inadvertent acceptance of design submittals containing contract deviations not separately and expressly identified in the submittal for Government consideration and approval.

3.8. DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS

After the Final Design Submission and Review Conference and after Government acceptance of the Final Design submission, revise the design documents for the design package to incorporate the comments generated and resolved in the final review conference, perform and document a back-check review and submit the final, design complete documents. Label the final design complete documents “FOR CONSTRUCTION” or use similar language. In addition to the final drawings and specifications, the following deliverables are required for distribution and field use. The deliverable includes all documentation and supporting design analysis in final form, as well as the final review comments, disposition and the back-check. As part of the quality assurance process, the Government may perform a back-check of the released for construction documentation. Promptly correct any errors or omissions found during the Government back-check. The Government may withhold retainage from progress payments for work or materials associated with a final design package until this submittal has been received and the Government determines that it is complete.

3.9. SUBMITTAL DISTRIBUTION, MEDIA AND QUANTITIES

3.9.1. Submittal Distribution and Quantities

General: The documents which the Contractor shall submit to the Government for each submittal are listed and generally described in preceding paragraphs in this Section. Provide copies of each design submittal and design substantiation as follows (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order):

Activity and Address	Drawing Size (Full Size) **22 X 34** Full Sets/ *Partial Sets	Design Analyses & Specs Full Sets/ *Partial Sets	Drawing Size (Half Size) **11 X 17** Full Sets/ *Partial Sets	Non-BIM Data CD-ROM or DVD as Necessary (PDF& **.dgn**)	Furniture Submittal (FFE)	Structural Interior Design Submittal	BIM Data DVD (Per Attach F)
Commander, U.S.Army Engineer District **Corps of Engineers - Savannah District**	1/1	4/2	4/2	4	1	1	4
Commander, U.S.Army Engineer District, Center of Standardization **Fort Worth District**	1/0	4/2	4/2	4	4	2	4
Installation	4/0	4/2	4/2	4	4	4	4
U.S.Army Corps of Engineers Construction Area Office	0/0	0/0	0/0	0	0	0	0
Information Systems Engineering Command (ISEC)	0/0	0/0	0/0	1	1 (Electronic only)	N/A	1
Other Offices	0/0	0/0	0/0	0	0	0	0

***NOTE: For partial sets of drawings, specifications and design analyses, see paragraph 3.9.3.3, below.**

****NOTE: When specified below in 3.9.2, furnish Installation copies of Drawings as paper copies, in lieu of the option to provide secure web-based submittals.**

3.9.2. Web based Design Submittals

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 twenty (20) different addresses. Assemble drawing sheets, specs, design analyses, etc. into individual sets; do not combine duplicate pages from individual sets so that the government has to assemble a set.

3.9.3.2. Each design submittal shall have a transmittal letter accompanying it indicating the date, design percentage, type of submittal, list of items submitted, transmittal number and point of contact with telephone number.

3.9.3.3. Provide partial sets of drawings, specifications, design analyses, etc., as designated in the Table in paragraph 3.9.1, to those reviewers who only need to review their applicable portions of the design, such as the various utilities. The details of which office receives what portion of the design documentation will be worked out after award.

3.10. AS-BUILT DOCUMENTS

Provide as-built drawings and specifications in accordance with Section 01 78 02.00 10, CLOSEOUT SUBMITTALS. Update LEED design phase documentation during construction as needed to reflect construction changes and advancing project completion status (example - Commissioning Plan updates during construction phase) and include updated LEED documentation in construction closeout submittal.

ATTACHMENT A
STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS

1.0 GENERAL INFORMATION

Structural Interior Design includes all building related elements and components generally part of the building itself, such as wall finishes, ceilings finishes, floor coverings, marker/bulletin boards, blinds, signage and built in casework. Develop the SID in conjunction with the furniture footprint.

2.0 STRUCURAL INTERIOR DESIGN (SID) REQUIREMENTS FOR THE INTERIM AND FINAL DESIGN SUBMITTALS

2.1. FORMAT AND SCHEDULE

Prepare and submit for approval an interior and exterior building finishes scheme for an interim design submittal. The DOR shall meet with and discuss the finish schemes with the appropriate Government officials prior to preparation of the schemes to be presented. Present original sets of the schemes to reviewers at an interim design conference.

At the conclusion of the interim phase, after resolutions to the comments have been agreed upon between DOR and Government reviewers, the Contractor may proceed to final design with the interior finishes scheme presented.

The SID information and samples are to be submitted in 8 ½" x 11" format using three ring binders with pockets on the inside of the cover. When there are numerous pages with thick samples, use more than one binder. Large D-ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Fold out items must have a maximum spread of 25 ½". Provide cover and spine inserts sheets identifying the document as "Structural Interior Design" package. Include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

Design submittal requirements include, but are not limited to:

2.1.1. Narrative of the Structural Interior Design Objectives

The SID shall include a narrative that discusses the building related finishes. Include topics that relate to base standards, life safety, sustainable design issues, aesthetics, durability and maintainability, discuss the development and features as they relate to the occupants requirements and the building design.

2.1.2. Interior Color Boards

Identify and key each item item on the color boards to the contract documents to provide a clear indication of how and where each item will be used. Arrange finish samples to the maximum extent possible by room type in order to illustrate room color coordination. Label all samples on the color boards with the manufacturer's name, patterns and colors name and number. Key or code samples to match key code system used on contract drawings.

Material and finish samples shall indicate true pattern, color and texture. Provide photographs or colored photocopies of materials or fabrics to show large overall patterns in conjunction with actual samples to show the actual colors. Finish samples must be large enough to show a complete pattern or design where practical.

Color boards shall include but not be limited to original color samples of the following:

All walls finishes and ceiling finishes, including corner guards, acrylic wainscoting and wall guards/chair rail finishes

All tile information, including tile grout color and tile patterns.

- All flooring finishes, including patterns.
- All door, door frame finishes and door hardware finishes
- All signage, wall base, toilet partitions, locker finishes and operable/folding partitions and trim

- All millwork materials and finishes (cabinets, counter tops, etc.)
- All window frame finishes and window treatments (sills, blinds, etc.)

Color board samples shall reflect all actual finish textures, patterns and colors required as specified. Patterned samples shall be of sufficient size to adequately show pattern and its repeat if a repeat occurs.

2.1.3. Exterior Color Boards

Prepare exterior finishes color boards in similar format as the interior finishes color boards, for presentation to the reviewers during an interim design conference. Provide original color samples of all exterior finishes including but not limited to the following:

- All Roof Finishes
- All Brick and Cast Stone Samples
- All Exterior Insulation and Finish Samples
- All Glass Color Samples
- All Exterior Metals Finishes
- All Window & Door Frame Finishes
- All Specialty Item Finishes, including trim

Identify each item on the exterior finishes color boards and key to the building elevations to provide a clear indication of how and where each item will be used.

2.2. STRUCTURAL INTERIOR DESIGN DOCUMENTS

2.2.1. General

Structural interior design related drawings must indicate the placement of extents of SID material, finishes and colors and must be sufficiently detailed to define all interior work. The following is a list of minimum requirements:

2.2.2. Finish Color Schedule

Provide finish color schedule(s) in the contract documents. Provide a finish code, material type, manufacturer, series, and color designations. Key the finish code to the color board samples and drawings.

2.2.3. Interior Finish Plans

Indicate wall and floor patterns and color placement, material transitions and extents of interior finishes.

2.2.4. Furniture Footprint Plans

Provide furniture footprint plans showing the outline of all freestanding and systems furniture for coordination of all other disciplines.

2.2.5. Interior Signage

Include interior signage plans or schedules showing location and quantities of all interior signage. Key each interior sign to a quantitative list indicating size, quantity of each type and signage text.

2.2.6. Interior Elevations, Sections and Details

Indicate material, color and finish placement.

ATTACHMENT B
FURNITURE, FIXTURES & EQUIPMENT (FF&E) REQUIREMENTS

1.0 FF&E REQUIREMENTS FOR THE INTERIM AND FINAL DESIGN SUBMITTALS

1.1. FORMAT AND SCHEDULE

Prepare and submit for approval a comprehensive FF&E scheme for an interim design submittal. The Contractor's interior designer, not a furniture dealer, shall develop the design. FF&E is the selection, layout, specification and documentation of furniture includes but is not limited to workstations, seating, tables, storage and shelving, filing, trash receptacles, clocks, framed artwork, artificial plants, and other accessories. Contract documentation is required to facilitate pricing, procurement and installation. The FF&E package is based on the furniture footprint developed in the Structural Interior Design (SID) portion of the interior design. Develop the FF&E package concurrently with the building design to ensure that there is coordination between the electrical outlets, switches, J-boxes, communication outlets and connections, and lighting as appropriate. In addition, coordinate layout with other building features such as architectural elements, thermostats, location of TV's, GF/GI equipment (for example computers, printers, copiers, shredders, faxes), etc. Locate furniture in front of windows only if the top of the item falls below the window and unless otherwise noted, do not attach furniture including furniture systems to the building. If project has SIPRNET and/or NIPRNET, coordinate furniture layout with SIPRNET and NIPRNET separation requirements. Verify that access required by DOIM for SIPRNET box and conduit is provided. The DOR shall interview appropriate Government personnel to determine FF&E requirements for furniture and furnishings prior to preparation of the scheme to be presented. Determine FFE items and quantities by, but not limited to: (1) the number of personnel to occupy the building, (2) job functions and related furniture/office equipment to support the job function, (3) room functions, (4) rank and grade. Present original sets of the scheme to reviewers at an interim design conference upon completion of the interim architectural submittal or three months prior to the submittal of the final FF&E package (whichever comes first).

Design may proceed to final with the FF&E scheme presented at the conclusion of the interim phase, after resolutions to the comments have been agreed upon between DOR and Government reviewers.

Provide six copies of the electronic versions of all documents upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first), to ensure adequate time for furniture acquisition. Provide unbound, electronic drawings in CAD and BIM. Provide all files needed to v,/iew complete drawings. Submit all text documents in Microsoft Word or Excel..

Submit three copies of the final and complete FF&E information and samples in 8 ½" x 11" format using three ring binders with pockets on the inside of the cover upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first). Use more than one binder when there are numerous pages with thick samples. Large D-ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out for upholstery and finish boards. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Fold out items must have a maximum spread of 25 ½". Provide cover and spine inserts sheets identifying the document as "Furniture, Fixtures & Equipment" package and include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

Provide electronic copies of all documents upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first), to ensure adequate time for furniture acquisition. Provide six compact disks with all drawings files needed to view the complete drawings unbound and in the latest version AutoCAD. Provide six additional compact disks of all text documents in Microsoft Word or Excel.

Design submittal requirements include, but are not limited to:

1.1.1. Narrative of Interior Design Objectives

Provide a narrative description of the furniture, to include functional, safety and ergonomic considerations, durability, sustainability, aesthetics, and compatibility with the building design.

1.1.2. Furniture Order Form

Prepare one Furnishings Order Form for each item specified in the design. This form identifies all information required to order each individual item. In addition to the project name and location, project number, and submittal phase, the order form must include:

(a) Furniture item illustration and code

(b) Furniture item name

(c) Job name, location, and date

(d) General Services Administration (GSA) FSC Group, part, and section

(e) Manufacturer, Product name and Product model number or National Stock Number (NSN)

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

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

(h) Dimensions

(i) Item location by room number and room name

(j) Quantity per room

(k) Total quantity

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

(m) Written Product Description: include a non-proprietary paragraph listing the salient features of the item to include but not limited to:

(1) required features and characteristics

(2) ergonomic requirements

(3) functional requirements

(4) testing requirements

(5) furniture style

(6) construction materials

(7) minimum warranty

The following is an example for “m” features and characteristics, ergonomic requirements and functional requirements:

Chair Description:

(1) Mid-Back Ergonomic Task Chair

(2) Pneumatic Gaslift; Five Star Base

(3) Mesh Back; Upholstered Seat

(4) Height and Width Adjustable Task Arms:

a. Arm Height: 6”- 11” (+-1/2”)

b. Arm Width: 2”– 4” adjustment

(5) Height Adjustable Lumbar Support

(6) Adjustable Seat Height 16”-21” (+- 1”)

(7) Sliding Seat Depth Adjustment 15”-18” (+-1”)

(8) Standard Hard Casters (for carpeted areas)

(9) Overall Measurements:

a. Overall width: 25” - 27”

b. Overall depth: 25”– 28”

(10) Must have a minimum of the following adjustments (In addition to the above):

a. 360 Degree Swivel

b. Knee-Tilt with Tilt Tension

c. Back angle

d. Forward Tilt

e. Forward Tilt and Upright Tilt Lock

For projects with systems furniture, also provide a written description of the following minimum requirements:

(1) Type furniture systems (panel, stacking panels, spine wall, desk based system, or a combination)

(2) Minimum noise reduction coefficient (NRC)

(3) Minimum sound transfer coefficient (STC)

(4) Minimum flame spread and smoke development

(5) UL testing for task lighting and electrical system

(6) Panel widths and heights and their locations (this may be done on the drawings)Worksurface types and sizes (this may be done on the drawings)

(7) Worksurface edge type

(8) Varying panel/cover finish materials and locations (locations may be shown on the drawings)

(9) Storage requirements

(10) Keyboard requirements

(11) Lock and keying requirements

(12) Accessory components (examples: tack boards, marker boards, paper management)

(13) Electrical and communication raceway requirement; type, capacity and location (base, beltline, below and/or above beltline)

(14) Locations of communication cables (base, beltline, below and/or above beltline, top channel)

(15) Types of electrical outlets

(16) Types of communication jacks; provided and installed by others

(17) Locations of electrical outlets and communication jacks (this may be done on the drawings)

(18) Type of cable (examples: Cat. 5, Cat. 6, fiber optic; UTP or STP, etc.) system needs to support; provided and installed by others

1.1.3. Alternate Manufacturer List

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

1.1.4. FF&E Procurement List

Provide a table that lists all FF&E furniture, mission unique equipment and building Contractor Furnished/Contractor Installed (CF/CI) items. Give each item a code and name and designate whether item will be procured as part of the FF&E furniture, mission unique equipment or the building construction contract. Use the item code to key all FF&E documents including location plans, color boards, data sheets, cost estimate, etc.

1.1.5. Points of Contact (POCs)

Provide a comprehensive list of POCs needed to implement the FF&E package. This would include but not be limited to appropriate project team members, using activity contacts, interior design representatives, construction contractors and installers involved in the project. In addition to name, address, phone, fax and email, include each contact's job function. Divide the FF&E package into different sections based on this listing, applies to order forms and cost estimates.

1.1.6. Color Boards

Provide color boards for all finishes and fabrics for all FF&E items. Finishes to be included but not limited to paint, laminate, wood finish, fabric, etc.

1.1.7. Itemized Furniture Cost Estimate

Provide an itemized cost estimate of furnishings keyed to the plans and specifications of products included in the package. This cost estimate should be based on GSA price schedules. The cost estimate must include separate line items for general contingency, installation, electrical hook-up for systems furniture or other furniture requiring hardwiring by a licensed electrician, freight charges and any other related costs. Installation and freight quotes from vendors should be use in lieu of a percentage allowance when available. Include a written statement that the pricing is based on GSA schedules. An estimate developed by a furniture dealership may be provided as support information for the estimate, but must be separate from the contractor provided estimate.

1.2. INTERIOR DESIGN DOCUMENTS

1.2.1. Overall Furniture and Area Plans

Provide floor Plans showing locations and quantities of all freestanding, and workstation furniture proposed for each floor of the building. Key each room to a large scale Furniture Placement Plan showing the furniture configuration, of all furniture. Provide enlarged area plans with a key plan identifying the area in which the building is located. Key all the items on the drawings by furniture item code. Do not provide manufacturer specific information such as product names and numbers on drawings, Drawings shall be non-proprietary. This is typical for FFE on all plans, including those mentioned below.

1.2.2. Workstation Plans

Show each typical workstation configuration in plan view, elevations or isometric view. Drawings shall illustrate panels and all major components for each typical workstation configuration. Identify workstations using the same numbering system as shown on the project drawings. Key components to a legend on each sheet which identifies and describes the components along with dimensions. Provide the plan, elevations and isometric of each typical workstation together on the same drawing sheet.

1.2.3. Panel Plans

Show panel locations and critical dimensions from finished face of walls, columns, panels including clearances and aisle widths. Key panel assemblies to a legend which shall include width, height, configuration of frames, panel fabric and finishes (if there are different selections existing within a project), powered or non-powered panel and wall mount locations.

1.2.4. Desk Plans

Provide typical free standing desk configurations in plan view, elevation or isometric view and identify components to clearly represent each desk configuration.

1.2.5. Reflected Ceiling Plans

Provide typical plans showing ceiling finishes and heights, lighting fixtures, heating ventilation and air conditioning supply and return, and sprinkler head placement for coordination of furniture.

1.2.6. Electrical and Telecommunication Plans

Show power provisions including type and locations of feeder components, activated outlets and other electrical componentsShow locations and quantities of outlets for workstations. Clearly identify different outlets, i.e. electrical, LAN and telecommunication receptacles indicating each type proposed. Show wiring configuration, (circuiting, switching, internal and external connections) and provide as applicable.

1.2.7. Artwork Placement Plans

Provide an Artwork Placement Plan to show location of artwork, assign an artwork item code to each piece of artwork. As an alternative, artwork can be located on the Furniture Plans. Provide a schedule that identifies each piece by room name and number. Provide installation instructions; include mounting height.

1.2.8. Window Drapery Plans

Provide Interior Window Drapery Plans. Key each drapery treatment to a schedule showing color, pattern, material, drapery size and type, draw direction, location and quantities.

1.3. FURNITURE SELECTION

1.3.1. Select furniture from the GSA Schedules. Specify furniture available open market when an item is not available on the GSA Schedules. Provide justification fort items not available on the GSA Schedules.

1.3.2. To the greatest extent possible when specifying furniture work within a manufacturer's family of furniture for selections, example: Steelcase, Turnstone, Brayton International, Metro, and Vecta are all Steelcase companies. Each alternate should also be specified from a manufacturer's family of furniture, example: first set of alternates would be specified from Knoll's family of furniture and the second from Herman Miller family of furniture. It may be necessary to make some selections from other than a manufacturer's family of furniture if costs are not reasonable for particular items, some items are not available or appropriate for the facility or the items are not on GSA Schedule. If this occurs, consider specifying product from an open line that is accessible by numerous dealerships. Select office furniture including case goods, tables, storage, seating, etc. that is compatible in style, finish and color. Select furniture that complies with ANSI/BIFMA and from manufacturer's standard product line as shown in the most recent published price list and/or amendment and not custom product.

1.4. CONSTRUCTION

1.4.1. Provide knee space at workstations and tables that is not obstructed by panels/legs that interfere with knee space of seated person and provide desks, storage and tables with leveling devices to compensate for uneven floors.

1.4.2. Provide worksurface tops constructed to prevent warpage. Provide user friendly features such as radius edges. Do not use sharp edges and exposed connections and ensure the underside of desks, tables and worksurfaces are completely and smoothly finished. Provide abutting worksurfaces that mate closely and are of equal heights when used in side-by-side configurations in order to provide a continuous and level worksurface.

1.4.3. Drawers shall stay securely closed when in the closed position and protect wires from damage during drawer operation. Include a safety catch to prevent accidental removal when fully open

1.4.4. Unless otherwise noted, specify lockable desks and workstations and storage of steel construction. Use tempered glass glazing when glazing is required.

1.5. FINISHES AND UPHOLSTERY

1.5.1. Specify neutral colors for casegoods, furniture systems, storage and tables. Specify desk worksurfaces and table tops that are not too light or too dark in color and have a pattern to help hide soiling. Accent colors are allowed in break and lounge areas. Keep placement of furniture systems panel fabric accent colors to a minimum. All finishes shall be cleanable with ordinary household cleaning solutions.

1.5.2. Use manufacturer's standard fabrics; including textile manufacturers fabrics that have been graded into the furniture manufactures fabric grades and are available through their GSA Schedule. Customers Own Material

(COM) can be used in headquarter buildings in command suites with executive furniture. Coordinate specific locations with Corps of Engineers Interior Designer.

1.5.3. Specify seating upholstery that meets Wyzenbeek Abrasion Test, 55,000 minimum rubs. Specify a soil retardant finish for woven fabrics if Crypton or vinyl upholstery is not provided for seating in dining areas. Use manufacturer's standard fabrics. This includes textile manufacturers fabrics that have been graded into the furniture manufactures fabric grades and are available through their GSA Schedule. Specify upholstery and finish colors and patterns that help hide soiling. Specify finishes that can be cleaned with ordinary household cleaning solutions.

1.6. ACCESSORIES

1.6.1. Specify all accessories required for completely finished furniture installation. Provide filing cabinets and storage for office supplies. Provide tack surfaces at workstations with overhead storage. Provide tackable surfaces at workstations with overhead storage.

1.6.2. Not Used.

1.6.3. Workstations are to be equipped with stable keyboard trays that have height adjustability, tilting capability, including negative tilt, have a mouse pad at same height as the keyboard tray that can accommodate both left and right handed users, and retractable under worksurface.

1.7. MISSION UNIQUE EQUIPMENT

Funding for FF&E furniture items and mission unique equipment (MUE) items are from two different sources. Separate the designs and procurement documentation for FFE items and MUE. MUE includes, but is not limited to, items such as industrial shelving, workbenches, appliances, fitness equipment, IT equipment and supporting carts. The User will purchase and install mission unique equipment items, unless otherwise noted. Identify locations of known MUE items such as industrial shelving, workbenches, appliances, etc. for space planning purposes.

1.8. SUSTAINABILITY

1.8.1. For all designs provided regardless of facility type, make every effort to implement all aspects of sustainability to the greatest extent possible for all the selections made in the FF&E package. This includes but is not limited to the selection of products that consider: **Material Chemistry and Safety of Inputs** (What chemicals are used in the construction of the selections?); **Recyclability** (Do the selections contain recycled content?); **Disassembly** (Can the selections be disassembled at the end of their useful life to recycle their materials?).

1.8.2. Make selections to the greatest extent possible of products that possess current McDonough Braungart Design Chemistry (MBDC) certification or other "third-party" certified Cradle to Cradle program, Forest Stewardship Council (FSC) certification, GREENGAURD certification or similar "third-party" certified products consisting of low-emitting materials.

1.9. FURNITURE SYSTEMS

1.9.1. General.

Where appropriate, design furniture systems in open office areas. Coordinate style and color of furniture systems with other storage, seating, etc. in open office areas. Minimize the number of workstation typicals and the parts and pieces required for the design to assist in future reconfiguration and inventorying.

1.9.2. Connector Systems.

Specify a connector system that allows removal of a single panel or spine wall within a typical workstation configuration without requiring disassembly of the workstation or removal of adjacent panels. Specify connector system with tight connections and continuous visual seals. When Acoustical panels are used, provide connector system with continuous acoustical seals. Specify concealed clips, screws, and other construction elements, where possible.

1.9.3. Panels and Spine Walls

Specify panels and spine walls with hinged or removable covers that permit easy access to the raceway when required but are securely mounted and cannot be accidentally dislodged under normal conditions. Panels shall be capable of structurally supporting more than 1 fully loaded component per panel per side. Raceways are to be an integral part of the panel and must be able to support lay-in cabling and have a large capacity for electrical and IT. Do not thread cables through the frame.

1.9.4. Electrical And Information/Technology (IT)

Design furniture with electrical systems that meets requirements of UL 1286 when powered panels are required and UL approved task lights that meet requirements of NFPA 70. Dependent on user requirements and Section 01 10 00, paragraph 3 requirements, it is recommended that workstation electrical and IT wiring entry come from the building walls to eliminate the use of power poles and access at the floor. Design electrical and IT systems that are easily accessed in the spine wall and panels without having to move return panels and components. Electrical and IT management will be easily accessible by removable wall covers which can be removed while workstation components are still attached. Specify connector system that has continuation of electrical and IT wiring within workstations and workstation to workstation.

1.9.5. Pedestals

Specify pedestals that are interchangeable from left to right, and right to left, and retain pedestal locking system capability.

1.10. EXECUTIVE FURNITURE

1.10.1. Design for executive furniture in command areas, coordinate specific locations with Corps of Engineers Interior Designer. Use upgraded furniture, upholsteries and finishes in command suites. This includes but is not limited to wood casegoods, seating and tables. Select executive furniture casegoods from a single manufacturer and style line, to include workstations, credenzas, filing, and storage, etc.

1.10.2. Specify furniture with wood veneer finish (except worksurfaces) with mitered solid wood edge of same wood type. Provide worksurface plastic laminate that closely matches adjacent wood veneer. Other executive office furniture such as seating, tables, executive conference room furniture, etc. shall be compatible in style, finish and color with executive furniture casegoods.

1.11. SEATING

1.11.1. General

Specify appropriate chair casters and glides for the floor finish where the seating is located. Universal casters that are appropriate for both hard surface flooring and carpet are preferred. All seating shall support up to a minimum of 250 lbs.

1.11.2. Desk and Guest Seating

Select ergonomic desk chairs with casters, non-upholstered adjustable arms, waterfall front, swivel, tilt, variable back lock, adjustable back height or adjustable lumbar support, pneumatic seat height adjustment, and padded, contoured upholstered seat and back. Desk and guest chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Depending on scale of desk chair provide seat pan forward and back adjustment to increase or decrease depth of seat pan. All desk chairs shall have an adjustable seat height range of 4 1/2", range to include 16 1/2-20". Select guest chairs that are compatible in style, finish and color with the desk chairs.

1.11.3. Conference Room Seating

At tables, select ergonomic conference seating with casters, non-upholstered arms, waterfall front, swivel, tilt, pneumatic seat height adjustment, and padded, contoured seat and back, unless otherwise noted. Select arm height and/or design that allows seating to be moved up closely to the table top. Conference chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Perimeter conference chairs shall be compatible in style, finish and color with conference seating at the tables.

1.11.4. Lounge, Waiting and Reception Area Seating

Select seating with arms and cushioned, upholstered seat and back. In heavy use areas, arms shall be easily cleaned such as non-upholstered arms or upholstered arms with wood arm caps unless otherwise noted.

1.11.5. Break Room Seating

Select stackable seating that is easily cleaned. Seating shall be appropriate for table and counter heights as applicable with non-upholstered arms if arms are required. Chairs shall have metal legs and composite materials for seats.

1.11.6. Lounge, Waiting and Reception Furniture.

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

1.12. FILING AND STORAGE.

Select storage and shelving units that meet customer's functional load requirements for stored items. Specify counterweights for filing cabinets when required by the manufacturer for stability. File drawers shall allow only one drawer to be opened at a time. Provide heavy duty storage and shelving if information is not available.

1.13. TRAINING TABLES.

Don't use plastic laminate self edge. Training tables shall be reconfigurable, moveable and storable; lighter weight folding with dollies or castered as necessary. Specify dollies if required.

1.14. FURNITURE WARRANTIES.

Specify manufacturer's performance guarantees or warranties that include parts, labor and transportation as follows:

Furniture System, unless otherwise noted – 10 year minimum
Furniture System Task Lights – 2 year minimum, excluding bulbs
Furniture System Fabric – 3 year minimum
Desks - 10 year minimum
Seating, unless otherwise noted - 10 year minimum
Seating Mechanisms and Pneumatic Cylinders - 10 years
Fabric - 3 years minimum
Filing and Storage - 10 year minimum
Tables, unless otherwise noted - 10 year minimum
Table Mechanisms – 5 year
Table Ganging Device - 1 year
Items not listed above - 1 year minimum

ATTACHMENT C
TRACKING COMMENTS IN DRCHECKS

1.0 General

The Government and DB Contractor shall set up the project in Dr Checks. Throughout the design process, the parties shall enter, track, and back-check comments using the DrChecks system. Government reviewers enter design review comments into DrChecks. Designers of Record shall annotate comments timely and specifically to indicate exactly what action will be taken or why the action is not required. Comments considered critical by the conference participants shall be flagged as such.

2.0 DrChecks Review Comments

The Contractor and the Government shall monitor DrChecks to assure all comments are annotated and agreed to by the designers and reviewers prior to the next submittal. The DrChecks comments and responses shall be printed and included in the design analysis for record.

2.1. Conference participants (reviewers) will expect coordination between Design Analysis calculations and the submitted design. Reviewers will also focus on the design submittal's satisfaction of the contract requirements.

2.2. The Designers of Record shall answer each comment in DrChecks with a formal response prior to the next submittal, clearly indicating what action will be taken and what drawing/spec will change. Designers of Record are encouraged to directly contact reviewers to discuss and agree to the formal comment responses rather than relying only on DrChecks and review meetings to discuss comments. With the next design conference, reviewers will back-check answers to the comments against the submittal, in addition to reviewing additional design work.

2.3. Comments that, in the DB Contractor's opinion, require effort outside the scope of the contract shall be clearly indicated as such in DrChecks. The DB Contractor shall not proceed with work outside the contract until a modification to the contract is properly executed, if one is necessary.

3.0 DrChecks Initial Account Set-Up

To initialize an office's use of DrChecks, choose a contact person within the office to call the DrChecks Help Desk at 800-428-HELP, M-F, 8AM-5PM, Central time. This POC will be given an office password to distribute to others in the office. Individuals can then go to the hyperlink at http://www.projnet.org and register as a first time user. Upon registration, each user will be given a personal password to the DrChecks system.

3.1. Once the office and individuals are registered, the COE’s project manager or lead reviewer will assign the individuals and/or offices to the specific project for review. At this point, persons assigned can make comments, annotate comments, and close comments, depending on their particular assignment.

4.0 DrChecks Reviewer Role

The Contractor is the technical reviewer and the Government is the compliance reviewer of the DB designers design documents. Each reviewer enters their own comments into the Dr Checks system. To enter comments:

4.1. Log into DrChecks.

4.2. Click on the appropriate project.

4.3. Click on the appropriate review conference. An Add comment screen will appear.

4.4. Select or fill out the appropriate sections (particularly comment discipline and type of document for sorting) of the comment form and enter the comment in the space provided.

4.5. Click the Add Comment button. The comment will be added to the database and a fresh screen will appear for the next comment you have.

4.6. Once comments are all entered, exit DrChecks by choosing “My Account” and then Logout.

5.0 DrChecks Comment Evaluation

The role of the designers of record is to evaluate and respond to the comments entered by the Government reviewers and by the DB Contractor. To respond to comments:

5.1. Log into DrChecks.

5.2. Click on the appropriate project.

5.3. Under “Evaluate” click on the number under “Pending”.

5.4. Locate the comments that require your evaluation. (Note: If you know the comment number you can use the Quick Pick window on your home page in DrChecks; enter the number and click on go.)

5.5. Select the appropriate evaluation (concur, non-concur, for information only, or check and resolve) and add the response.

5.6. Click on the Add button. The evaluation will be added to the database and a fresh screen will appear with the next comment.

5.7. Once evaluations are all entered, exit DrChecks by choosing “My Account” and then Logout.

6.0 DrChecks Back-check

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

6.1. Log into DrChecks.

6.2. Click on the appropriate project.

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

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

6.5. If you do not agree with the designer’s response or the submittal does not reflect the response given, select “Issue Open”, enter additional information.

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

6.7. Once back-checks are all entered, exit DrChecks by choosing “My Account” and then Logout. The design is completed and final when there are no pending comments to be evaluated and there are no pending or open comments under back-check.

ATTACHMENT D
SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

Instructions: Use the information outlined in this document to provide the minimum requirement for development of Fire Protection and Life Safety Code submittals for all building projects. Additional and supplemental information may be used to further develop the code review. Insert N/A after criteria, which may be "not applicable".

1.0 SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

1.1. Project Name (insert name and location)

1.2. Applicable Codes and Standards

1.2.1. Unified Facilities Criteria (UFC): 3-600-01, Design: Fire Protection Engineering For Facilities

1.2.2. International Building Code (IBC) for fire resistance requirements, allowable floor area, building height limitations and building separation distance requirements, except as modified by UFC 3-600-01.

1.2.3. National Fire Protection Association (NFPA) 101 Life Safety Code (latest edition), for building egress and life safety and applicable criteria in UFC 3-600-01.

1.2.4. ADA and ABA Accessiblity Guidelines. For Buildings and Facilities See Section 01 10 00, Paragraph 3 for facility specific criteria.

1.3. Occupancy Classification
IBC chapters 3 and 4

1.4. Construction Type
IBC chapter 6

1.5. Area Limitations
IBC chapter 5, table 503

1.6. Allowable Floor Areas
IBC section 503, 505

1.7. Allowable area increases
IBC section 506, 507

1.8. Maximum Height of Buildings
IBC section 504

1.9. Fire-resistive substitution

1.10. Occupancy Separations
IBC table 302.3.2

1.11. Fire Resistive Requirements

1.11.1. Exterior Walls - [_____] hour rating, IBC table 601, 602

1.11.2. Interior Bearing walls - [_____] hour rating

1.11.3. Structural frame - [_____] hour rating

1.11.4. Permanent partitions - [_____] hour rating

1.11.5. Shaft enclosures - [_____] hour rating

1.11.6. Floors & Floor-Ceilings - [_____] hour rating

1.11.7. Roofs and Roof Ceilings - [_____] hour rating

1.12. Automatic Sprinklers and others used to determine the need for automatic Extinguishing Equipment, Extinguishing Systems, Foam Systems, Standpipe

1.12.1. UFC 3-600-01, chapters 4 and 6 systems, wet chemical systems, etc. State which systems are required and to what criteria they will be designed.

1.12.2. UFC 3-600-01, Appendix B Occupancy Classification. Note the classification for each room. This may be accomplished by classifying the entire building and noting exceptions for rooms that differ (E.g. The entire building is Light Hazard except boiler room and storage rooms which are [_____], etc.)

1.12.3. UFC 3-600-01, Chapter 3 Sprinkler Design Density, Sprinkler Design Area, Water Demand for Hose Streams (supply pressure and source requirements).

1.12.4. UFC 3-600-01, Chapter 4 Coverage per sprinkler head. Extended coverage sprinkler heads are not permitted.

1.12.5. Available Water Supply. Provide the results of the water flow tests showing the available water supply static pressure and residual pressure at flow. Based on this data and the estimated flow and pressure required for the sprinkler system, determine the need for a fire pump.

1.12.6. NFPA 13, Para. 8.16.4.6.1. Provide backflow preventer valves as required by the local municipality, authority, or water purveyor. Provide a test valve located downstream of the backflow preventer for flow testing the backflow preventer at full system demand flow. Route the discharge to an appropriate location outside the building.

1.13. Kitchen Cooking Exhaust Equipment

Describe when kitchen cooking exhaust equipment is provided for the project. Type of extinguishing systems for the equipment should be provided. per NFPA 96. Show all interlocks with manual release switches, fuel shutoff valves, electrical shunt trips, exhaust fans, and building alarms.

1.14. Portable Fire Extinguishers, fire classification and travel distance. per NFPA 10

1.15. Enclosure Protection and Penetration Requirements. - Opening Protectives and Through Penetrations

1.15.1. IBC Section712, 715 and Table 715.3. Mechanical rooms, exit stairways, storage rooms, janitor [_____] hour rating. IBC Table 302.1.1

1.15.2. Fire Blocks, Draft Stops, Through Penetrations and Opening Protectives

1.16. Fire Dampers. Describe where fire dampers and smoke dampers are to be used (IBC Section 716 and NFPA 90A}. State whether isolation smoke dampers are required at the air handler.

1.17. Detection Alarm and Communication. UFC 3-600-01, (Chapter 5); NFPA 101 para. 3.4 (chapters 12-42); NFPA 72

1.18. Mass Notification. Describe building/facility mass notification system (UFC 4-021-01) type and type of base-wide mass notification/communication system. State whether the visible notification appliances will be combined with the fire alarm system or kept separate. (Note: Navy has taken position to combine visible notification appliances with fire alarm).

1.19. Interior Finishes (classification). NFPA 101.10.2.3 and NFPA 101.7.1.4

1.20. Means of Egress

1.20.1. Separation of Means of Egress, NFPA 101 chapters 7 and 12-42; NFPA101.7.1.3

1.20.2. Occupant Load, NFPA101.7.3.1 and chapters 12-42.

1.20.3. Egress Capacity (stairs, corridors, ramps and doors) NFPA101.7.3.3

1.20.4. Number of Means of Egress, NFPA101.7.4 and chapters 12-42.

1.20.5. Dead end limits and Common Path of Travel, NFPA 101.7.5.1.6 and chapters 12-42.

1.20.6. Accessible Means of Egress (for accessible buildings), NFPA101.7.5.4

1.20.7. Measurement of Travel Distance to Exits, NFPA101.7.6 and chapters 12-42.

1.20.8. Discharge from Exits, NFPA101.7.7.2

1.20.9. Illumination of Means of Egress, NFPA101.7.8

1.20.10. Emergency Lighting, NFPA101.7.9

1.20.11. Marking of Means of Egress, NFPA101.7.10

1.21. Elevators, UFC 3-600-01, Chapter 6; IBC and ASME A17.1 - 2000,(Safety Code for Elevators and Escalators)

1.22. Accessibility Requirements, ADA and ABA Accessibility Guidelines for Buildings and Facilities

1.23. Certification of Fire Protection and Life Safety Code Requirements. (Note: Edit the Fire team membership if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features for this project in accordance with the attached completed form(s).

1.24. Designer of Record. Certification of Fire protection and Life Safety Code Requirements. (Note: Edit the Fire team members if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features of this project.

Fire Protection Engineer of Record:

_____

Signature and Stamp

Date

OR

Architect of Record:

_____

Signature and Stamp

Date

Mechanical Engineer of Record:

_____

Signature and Stamp

Date

Electrical Engineer of Record:

_____

Signature/Date

ATTACHMENT E
LEED SUBMITTALS

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	**LEED-NC 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

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

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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 02-03-2010

BUILDING INFORMATION MODELING REQUIREMENTS

1.0 Section 1 - Submittal Format

1.1. Design Deliverables. Develop all designs using Building Information Modeling (BIM) and Computer Aided Design (CAD) software. Design submittal drawings shall be 22 X 34 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 Bentley V8 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 Fort Worth 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.

3.2. 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 04.00 10
CONTRACTOR QUALITY CONTROL

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 Savannah District, Savannah, GA. 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:

  Area Office designated laboratory

  Not Applicable

  Not Applicable

  Not Applicable
- For other deliveries:

  Area Office designated laboratory

Not Applicable

Not Applicable

Not Applicable

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 02.0003
TEMPORARY CONSTRUCTION FACILITIES

1.0 OVERVIEW

1.1. GENERAL REQUIREMENTS

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.0 OVERVIEW

1.1. GENERAL REQUIREMENTS

1.1.1. This section contains requirements specifically applicable to this task order. The requirements of Base ID/IQ contract Section 01 50 02 apply to this task order, except as otherwise specified herein.

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.3.1. Bulletin Board (As Specified in Base contract)

1.3.2. Project and Safety Signs (Added to Stress standardization of signs, in the event that the Base ID/IQ Section 01 50 02 does not contain this information)

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.

End of Section 01 50 02.0003

SUBSURFACE EXPLORATION
AND
GEOTECHNICAL ENGINEERING REPORT
(PRELIMINARY)

WARRIOR IN TRANSITION
BARRACKS COMPLEX
PN 69999, FY2009
Fort Benning, Georgia

By
Geotechnical & HTRW Branch
U.S. Army Engineer District, Savannah

JULY 2009

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SUBSURFACE EXPLORATION
AND
GEOTECHNICAL ENGINEERING REPORT
(PRELIMINARY)

WARRIOR IN TRANSITION
BARRACKS COMPLEX
PN 69999, FY2009
Fort Benning, 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 ground-water conditions, with detailed descriptions at widely-spaced boring locations.

2. QUALIFICATION OF REPORT. The preliminary field explorations performed for this report were made to determine the subsurface soil and ground-water conditions and were not intended to serve as an assessment of site wetlands, environmental, or contaminant conditions. No effort was made to define, delineate, or designate any areas 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 on which to base the contractor's proposal. The preliminary findings and evaluation presented in this report are based on widely-spaced explorations performed at the project site. We recommend the performance of additional explorations after the locations of the buildings and pavements are determined. Any additional subsurface investigations and laboratory analyses conducted to better characterize the site and to 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 design submittal.

3. PROJECT DESCRIPTION. The project consists of the design and construction of a complex that will include a barracks facility, company operations facility, battalion headquarters and a soldier and family assistance center. The company operations facility and battalion headquarters will be combined into one building. Supporting facilities will include utilities; roads, parking, walks, curbs and gutters; storm drainage; site improvements; and anti-terrorism/force protection (AT/FP) measures. More specific details regarding the project and the buildings are presented in the RFP Technical Provisions. Since the project will be constructed under a design-build contract, detailed structural information for the proposed buildings is unavailable.

4. FIELD EXPLORATION PROCEDURES.

a. Site Reconnaissance. Prior to the field explorations, the proposed project site

and surrounding areas were visually inspected by a geotechnical engineer. The observations were used in planning the explorations, in determining areas of special interest, and in relating site conditions to known geologic conditions in the area.

b. Soil Test Borings.

(1) Subsurface conditions at the proposed project site were explored by a total of 19 widely-spaced soil test borings, (designated B-01 through B-24, excluding B-03, B-06, B-10, B-16, and B-22, which were not drilled). The locations of the soil borings are shown on the Boring Location Plan included in Appendix A; depths of the borings ranged from 10 to 45 feet.

(2) Boring locations were established in the field by an engineer using a hand-held Global Positioning System (GPS) device having plus or minus 25 feet accuracy. The ground surface elevation at each boring location was determined by interpolation from the site topography survey, therefore, the elevation shown on the boring log should be considered approximate.

(3) The soil test borings were drilled by Geotechnical & Environmental Consultants (GEC), Columbus, Georgia, under contract to the Savannah District. The borings were drilled with a track-mounted CME 45 drill rig equipped with an automatic hammer; a 2 ¼ inch hollow stem auger (HSA) was used to advance the boreholes.

(4) Split-barrel sampling with Standard Penetration Testing (SPT) was performed in the soil test borings 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 1⅜-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-pound 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. Water levels were measured in the boreholes at the time of drilling and generally again 24 hours after termination of drilling. The results of the water level measurements are included on the logs.

(5) The soil samples obtained from the soil test borings were examined and visually field classified by the geologist or technician inspector. Representative portions of the soil samples taken in the field were sealed in airtight containers and transported to the driller’s office. The classification of the soil shown on the boring logs was determined by a combination of field inspection and examination of the soil samples by an engineer in the office. 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, except where samples were subjected to laboratory testing, as described below.

(6) Logs of the soil test borings graphically depicting soil descriptions, standard penetration resistances, and observed ground-water levels are included in Appendix B.

c. Shear Wave Velocity Testing. Shear wave velocity (V_s) profiles were determined for four traverses at the project site. The profiles were determined by Geo-Hydro Engineers, Inc., Kennesaw, Georgia, for the purpose of performing a shear wave velocity profile analysis to determine the IBC 2006 *Site Class* for the project site. The shear wave velocity profiles for the site were determined using advanced refraction microtremor (ReMi) technology. The traverse locations and results of the testing and analysis are included in Appendix C.

5. LABORATORY SOILS TESTING.

a. Index Properties Testing. Eleven soil samples obtained during the field investigations were subjected to index properties testing; the testing generally consisted of moisture content, Atterberg limits and grain-size distribution. The tests were performed in substantial accordance with the applicable ASTM standards. The results are included in Appendix D.

b. Compaction Testing. Two bulk samples were obtained for compaction testing. The two samples were obtained from borings B-04 and B-08 which are located in the southern upland portion of the site, where excavation would be most probable. Modified Proctor compaction tests were performed on the samples in accordance with ASTM D 1557. The test results indicate the soils have maximum dry densities of 125.5 and 114.0 pounds per cubic foot (pcf) at optimum moisture contents of 9.5 and 16.0 percent, respectively. Natural moisture contents of the samples were 9.5 and 18.3 percent, respectively. The test results are included in Appendix D.

c. Corrosivity Testing. The bulk soil sample from boring B-08 was subjected to pH and resistivity testing to provide information regarding soil corrosion potential for underground metal piping. The soil sample was tested in accordance with Florida DOT test procedures FM 5-550 and FM 5-551, respectively. The results are included in the index properties testing results in Appendix D.

6. SITE AND SUBSURFACE CONDITIONS.

a. Site Description. The proposed project site is located along the north side of Marne Road west of the existing Martin Army Community Hospital (MACH). The site

is immediately adjacent to the southern boundary of the site of the proposed MACH replacement hospital. A water tower is currently under construction in the extreme southeast corner of the project site. The site is currently rather heavily wooded with several gravel or dirt trails and sporadically spaced fitness stations. The site slopes from a high point of elevation 405 in the southeast corner to a low point of elevation 310 in the northwest corner. The site has average overall slopes of 12 to 15 percent with some localized areas having slopes greater than 20 percent. The utilities on the site are minimal. There is a 24-inch CMP storm drain pipe in the northeast corner and an aerial cable TV line running through the southern portion parallel to Marne Road. There is a large amount of construction debris (concrete pieces, CMP, brick, wood, etc.) piled immediately north of the water tower that will require removal and disposal.

b. Regional and Site Geology.

(1) Fort Benning is located in the Coastal Plain physiographic province immediately south of the Fall Line, the demarcation separating the Coastal Plain from the Piedmont province. The Fall Line runs roughly east to west along the northern boundary of the base. The base is located in the Fall Line Zone where Cretaceous age sedimentary formations of the Coastal Plain overlap the deeply weathered metamorphic and igneous rocks of the Piedmont. In the Fort Benning area, the Cretaceous system includes, from oldest to youngest, the Tuscaloosa Formation, Eutaw Formation, Blufftown Formation, Cusseta Sand, and the Ripley Formation. The formations consist of poorly consolidated marine deposits of coarse to fine sands, gravel, micaceous clays, and shales. Soils derived from the Coastal Plain formations occupy about 85 percent of the land surface of Fort Benning.

(2) The site is underlain at the surface by the Blufftown Formation which in turn is underlain at depth by the Eutaw Formation. Because of the expansive nature and high plasticity of the soils, the Eutaw has been the cause of numerous construction problems within the Fort Benning area.

c. Subsurface Conditions.

(1) Natural soils were encountered in all of the borings. Underlying a veneer of forest litter, there is a layer of silty sand ranging in thickness from 4 to 12 inches which contains organic matter and topsoil.

(2) The generalized soil profile at the project site consists of a thick layer of silty sand (SM) underlain and occasionally interrupted by silt (ML and MH) and clay (CL and CH). Some of the samples taken in the sand were determined to be clayey sand (SC), so there are clayey zones probably scattered throughout the sand. The Eutaw Formation, which can classify as a silt or clay, was encountered in borings B-13, B-14, B-17, B-23 and B-24. The top elevation of the formation ranges from 308 to 313, or, from 17 feet

below ground surface (bgs) in B-17 to 32 feet bgs in each of the other borings. Standard penetration resistances, or N-values, in the sand ranged from zero (weight of hammer and drill rods) to "Refusal" which indicate densities of very loose to very dense. The upper 5 feet of sand is generally very loose to loose with N-values ranging from zero to 8. N-values in the silt and clay ranged from 8 to "Refusal".

(4) 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 boring locations. Variations may occur and should be expected between boring locations. The stratification lines shown on the boring logs represent the approximate boundaries between the subsurface materials; the actual transitions are typically more gradual.

d. Ground-Water Conditions.

(1) Water levels were measured in the boreholes at the time of drilling and generally again 24 hours after termination of drilling. No longer-term measurements were obtained. Water was encountered during drilling in only four borings, B-13, B-14, B-23 and B-24. The water levels ranged from 23 to 26 feet bgs; these depths correspond to elevations 316 to 322. Boring B-14 had a water level during drilling of 25 feet bgs, whereas, at 24 hours the water level was at 20.9 feet. Borings B-02 and B-17 were dry at time of drilling, but had 24-hour water level readings of 15.2 and 13.2, respectively. These depths correspond to 341.8 and 311.8, respectively. The remainder of the borings were dry during drilling and "caved dry" at varying depths at 24 hours. Even though the borings caved dry, they may have caved due to the presence of water in close proximity below the cave depth.

(2) The variation in water levels could be due to "perched water" conditions. A "perched water" condition occurs when water seeping downward is blocked by an impermeable soil layer, such as clayey sand, silt or clay, and saturates the more permeable soil above it. The true ground-water level can be several to many feet below the perched water level. Due to the prevalence of interbedded sands, clayey sands, silts and clays at the project site, perched water conditions could be encountered in the more permeable zones (cleaner sand layers) during construction.

(3) It should be noted that ground water conditions, including perched water, vary during periods of prolonged drought and excessive rainfall as well as seasonally. Therefore, fluctuations in perched water conditions and in the elevation of the ground water should be anticipated with changing climatic and rainfall conditions.

7. GEOTECHNICAL EVALUATION.

a. General. Based on the results of the preliminary geotechnical investigation, our understanding of the proposed construction, and our experience with similar subsurface conditions at Fort Benning, we believe the site is adaptable for construction of the proposed project from a geotechnical standpoint. It is emphasized that the preliminary findings and evaluation presented in this report are based on widely-spaced explorations performed at the project site. We recommend the performance of additional explorations after the locations of the buildings and pavements are determined to confirm the subsurface conditions encountered by the preliminary explorations so that final engineering recommendations and design parameters can be established.

b. Eutaw Formation Soils.

(1) The soil borings indicate that the proposed project site is underlain by silty and clayey soils of the Eutaw Formation at depths of 17 to 32 feet bgs. It would appear at these depths the project could be constructed without encountering the material; however, the problematic characteristics of the material will be discussed. The soils are composed of micaceous fine sand and montmorillinitic clay. Because of the high plasticity, expansive nature and low shear strength; the Eutaw has been the cause of numerous construction problems within the Fort Benning area, including slope failures and heaved foundations and floor slabs. The soils are unsuitable for the direct support of building foundations and for use in the subgrades of pavements. Structures can be built over the soils; however, there should be an appropriate thickness of suitable non-expansive soil between the expansive soils and the foundations. Accordingly, where the soils are encountered in pavement subgrades, the soils should be excavated and replaced to an appropriate depth with suitable non-expansive soil. Alternately, the expansive behavior of the subgrade soils can be modified by chemical stabilization used in conjunction with good moisture-density control. Prudence must also be taken in the design of constructed slopes due to the low shear strength of the soils.

(2) The Eutaw soils can be utilized in structural fills; however, special moisture-density control measures must be exercised. We recommend that consideration be given to using these soils only in the lower portions of fills. Due to the high plasticity and high moisture content of some of the soils, increase and decrease of the moisture content in these soils will probably require considerable effort. Furthermore, excavation of the soils generally produces chunks and clods. Considerable manipulation and working with disc harrows will probably be required to produce a fill of uniform moisture content and texture free of chunks and clods and having adequate compaction.

c. **Loose Surficial Sands.** The loose surficial sands should be densified before construction on the materials; the sands should be densified after grade has been obtained in cut areas and prior to fill placement where grades are to be raised. The majority of the surface sands can likely be moisture conditioned and densified in place with a heavy

vibratory compactor. Following densification, any remaining loose or unstable areas can be identified through proof rolling. Should high fills be required in construction of the project, it is recommended that settlement plates be installed to monitor the anticipated settlements in the subgrade soils due to the added fills.

d. Seismic Considerations. The shear wave velocity profile analysis performed for the proposed site determined a weighted average V_s for the upper 100 feet of the subsurface soil profile of 1075 feet per second. This value yields a *Site Class D* per Table 1613.5.2 of the IBC 2006.

e. Corrosivity Potential. The bulk soil sample from boring B-08 had a pH of 5.1 and minimum resistivity of 43,000 ohms/cm . Based on these results, the soils are considered to be very mildly corrosive.

f. Impact of Weather on Project Soils. The soils encountered in the soil borings are susceptible to moisture changes, will be easily disturbed, and will be difficult to compact under wet weather conditions. Drying and reworking of the soils are likely to be difficult during the wetter winter months. Additionally, construction during wet weather may also create unnecessary delays and undercutting of subgrades due to disturbance by construction traffic. We recommend that the earthwork phases of the project be performed during the warmer, drier periods of the year to minimize the potential for disturbance of the soils.

g. Excavation. We anticipate that the soils at the site can be removed with conventional excavating equipment. Thin layers and seams of cemented sandstone may be encountered at isolated locations but are expected to be removable with conventional equipment.

h. Erosion Control. The sandy soils at the site are highly susceptible to erosion. We recommend a conservative approach to the design of erosion control measures at the site.

8. QUALITY CONTROL OF EARTHWORK AND FOUNDATION CONSTRUCTION.

The contractor shall ensure that proof rolling operations (for subgrade suitability); fill placement and compaction operations, including associated testing for soil properties, optimum moisture and laboratory maximum density, and field density; and footing inspections are overseen and directed on a full-time basis by his licensed project design geotechnical engineer. The inspection, testing and documentation of the earthwork construction shall be performed by a Corps of Engineers validated geotechnical testing firm. All subgrades (fill, pavement, floor slab, or foundation) shall be inspected, evaluated and approved by the licensed geotechnical engineer, or his authorized representative, prior to placement of overlying construction materials, as appropriate.

9. 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. This report shall summarize the subsurface conditions; provide recommendations for the design of appropriate foundations, floor slabs, retaining walls, embankments, and pavements. The report shall recommend the type foundation system to be used, lateral load resistance capacities for foundation systems, 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, 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, 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.

APPENDIX A

LOCATION PLAN OF SOIL TEST BORINGS

PROJECT LIMITS

PROVIDED ENVIRONMENTAL POLYGON

ORIGINAL PROJECT LIMITS

MARNE ROAD

B01 N 863,853.49 E 2,059,530.69
B02 N 863,972.87 E 2,059,762.25
B04 N 863,867.051 E 2,059,698.039
B05 N 863,913.609 E 2,059,819.709
B07 N 863,832.49 E 2,060,452.57
B08 N 863,950.247 E 2,060,060.353
B09 N 863,967.93 E 2,060,168.64
B11 N 864,123.126 E 2,060,037.733
B12 N 864,034.38 E 2,059,962.54
B13 N 864,019.33 E 2,059,580.87
B14 N 864,131.23 E 2,059,652.34
B15 N 864,062.87 E 2,059,701.87
B17 N 864,270.978 E 2,059,585.225
B18 N 864,144.303 E 2,059,890.555
B19 N 864,237.480 E 2,060,007.797
B20 N 864,241.331 E 2,060,117.049
B21 N 863,998.29 E 2,060,588.30
B23 N 864,354.701 E 2,059,686.164
B24 N 864,346.42 E 2,059,817.32

LEGEND

PROP. BUILDING SITE

BORING LOCATION — BXX NORTHING / EASTING

OVERALL SITE LIMIT

NOTE

BORINGS B03, B06, B10, B16 AND B22 WERE NOT DRILLED.

N

60′ 30′ 0 60′

SCALE: 1′′ = 60′-0″

US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY:
DWN BY:
CKD BY:
SUBMITTED BY: TENG
FILE NAME:
DATE:
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE: 721-12-01
PLOT DATE: JUNE 25, 2009
SIZE: 24" X 22"
PLOT SCALE: 1" = 60'

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG
TENG & ASSOCIATES, INC.
ENGINEERS / ARCHITECTS / PLANNERS
CHICAGO, ILLINOIS

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

EXHIBIT
BORING LOCATION PLAN

PLATE REFERENCE NUMBER
EXH-BOR

SHEET

C:\IC-WORKSPACE\GARCIAAZ\M-FS-0044,D-USACE\TENG\20682-002\CIVIL\DGN\SITE2\EXHIBITS\EXH-BORINGS.DGN
6-23-2009, 8:28:02
GARCIAAZ

APPENDIX B

LOGS OF SOIL TEST BORINGS

SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-1**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +358
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 29, 2009
Water Level: dry at time of boring; caved dry at 5.2' after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		very loose, brownish tan-orange, fine to medium, **SAND (SM)**; silty, (very loose to dense)	SS-1		2
			SS-2		6
			SS-3		18
			SS-4		37
10			SS-5		12
			SS-6		20
20		very stiff, light yellowish-tan, fine to medium, sandy **SILT (MH)**	SS-7		16
			SS-8		18
30		**BORING TERMINATED AT 30.0ft**			
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

GEOTECH CLG-09-23 WARRIOR IN TRANSITION.GPJ GEC.GDT 5/8/09

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-2**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +357
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: dry at time of boring; 15.2 ft after 24 hours	Engineer/Geologist:

Water Level (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
▼	0		very loose, light brownish-orange, fine to medium, **SAND (SM)**; silty, (very loose to dense)	SS-1		2
				SS-2		3
				SS-3		16
	10			SS-4		32
				SS-5		26
	20			SS-6		16
				SS-7		18
			BORING TERMINATED AT 25.0ft			
	30					
	40					
	50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-4**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +364
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: May 27, 2009
Water Level: dry at time of boring; caved dry at 7.3' after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		very loose, brownish reddish-orange, fine to medium, **SAND (SM)**; silty, (very loose to medium)	SS-1		4
			SS-2		4
			SS-3		8
			SS-4		16
10			SS-5		24
			SS-6		21
20		**BORING TERMINATED AT 20.0ft**			
30					
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-5**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +372
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: dry at time of boring; caved dry at 10.5' after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		very loose, light brownish-orange, fine to medium, **SAND (SM)**; silty, (very loose to medium dense)	SS-1		0
			SS-2		2
			SS-3		28
			SS-4		27
10			SS-5		14
			SS-6		9
20		**BORING TERMINATED AT 20.0ft**			
30					
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-7**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +408
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: dry at time of boring	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		loose, dark reddish-orange, fine to medium, **SAND (SM)**; silty, (loose to medium dense)	SS-1		9
			SS-2		15
			SS-3		17
			SS-4		27
10		**BORING TERMINATED AT 10.0ft**			
20					
30					
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-8**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +389
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: May 27, 2009
Water Level: dry at time of boring; caved dry at 22.3' after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		very loose, brownish reddish-orange, fine to medium, **SAND (SM)**; silty, (very loose to medium)	SS-1		2
			SS-2		8
			SS-3		23
10		very stiff, yellowish-orange, fine, sandy **SILT (ML)**	SS-4		25
		dense, reddish-orange, fine to medium, **SAND (SM)**; silty, (dense to medium dense)	SS-5		35
20			SS-6		21
			SS-7		17
			SS-8		18
30		**BORING TERMINATED AT 30.0ft**			
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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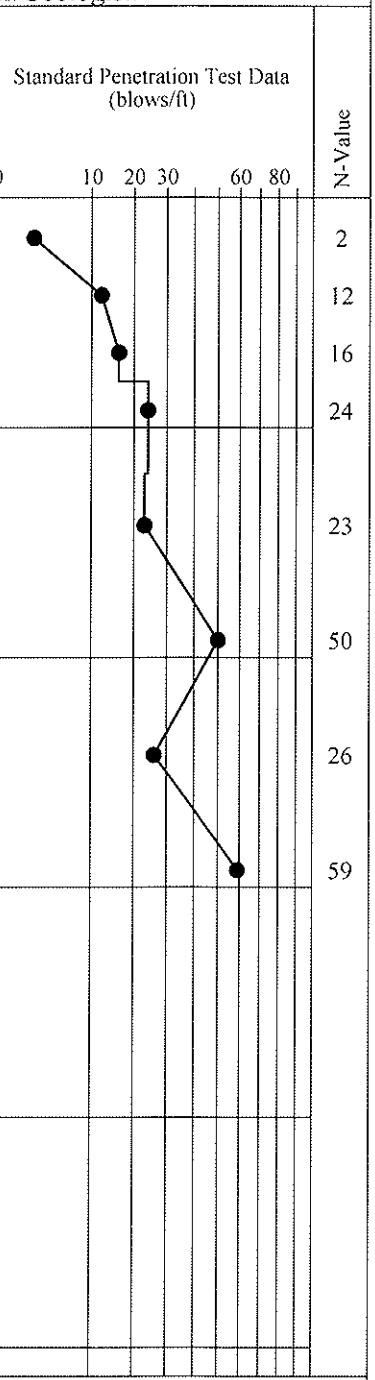
SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-9**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: ±390
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: dry at time of boring; caved dry at 14.1' after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	N-Value
		very loose, brownish reddish-orange, fine to medium, **SAND (SM)**; silty, (very loose to medium dense)	SS-1	2
			SS-2	12
			SS-3	16
10		very stiff, yellowish tan-red, clayey **SILT (ML)**	SS-4	24
		medium dense, light yellowish-tan, fine to medium, **SAND (SM)**; silty, (medium to dense)	SS-5	23
20			SS-6	50
			SS-7	26
30		**BORING TERMINATED AT 30.0ft**	SS-8	59
40				
50				



- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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C O N S U L T A N T S

SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-11**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +373
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 27, 2009
Water Level: dry at time of boring; caved dry at 14.9 after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		very loose, brownish reddish-orange, fine to medium, **SAND (SM)**; silty, (very loose to medium dense)	SS-1		0
			SS-2		3
			SS-3		20
			SS-4		15
10			SS-5		18
			SS-6		21
20		**BORING TERMINATED AT 20.0ft**			
30					
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-12**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +368
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: dry at time of boring; caved dry at 15.8' after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		very loose, brownish reddish-orange, fine to medium, **SAND (SM)**; silty, (very loose to medium dense)	SS-1		2
			SS-2		4
			SS-3		10
			SS-4		21
10			SS-5		10
			SS-6		18
20			SS-7		10
			SS-8		13
30		**BORING TERMINATED AT 30.0ft**			
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-13**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: ±345
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: May 27, 2009
Water Level: 23.0 ft at time of boring	Engineer/Geologist:

Water Level (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
			very loose, brownish reddish-orange, fine to medium, **SAND (SM)**; silty, (very loose to medium dense)	SS-1		2
				SS-2		2
				SS-3		10
				SS-4		16
	10			SS-5		30
				SS-6		20
▽				SS-7		3
			firm, tan-yellow, fine, sandy **SILT (MH)**	SS-8		8
	30		firm, dark grey, clayey **SILT (MH)**	SS-9		6
			BORING TERMINATED AT 35.0ft			
	40					
	50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-14**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +341
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: 25.0 ft at time of boring; 20.9 ft after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	N-Value
		very loose, brownish tan-orange, fine to medium, **SAND (SM)**; silty, (very loose to firm)	SS-1	1
			SS-2	3
			SS-3	14
			SS-4	21
10				
			SS-5	18
			SS-6	13
20				
		very stiff, light yellow, fine, sandy **SILT (MH)**	SS-7	16
		medium dense, light tan-white, fine, **SAND (SM)**; silty, (medium dense)	SS-8	14
30				
		hard, dark grey, silty **CLAY (CL)**	SS-9	59
			SS-10	37
40				
			SS-11	32
		BORING TERMINATED AT 45.0ft		
50				

Standard Penetration Test Data (blows/ft): 0, 10, 20, 30, 60, 80

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-15**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +352
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: dry at time of boring; caved dry at 6.3' after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		very loose, brownish yellowish-orange, fine to medium, **SAND (SM)**; silty, (very loose to medium dense)	SS-1		2
			SS-2		2
			SS-3		14
			SS-4		22
10			SS-5		27
			SS-6		18
20		stiff, light orangish-tan, fine, sandy **SILT (MH)**	SS-7		13
			SS-8		10
30		**BORING TERMINATED AT 30.0ft**			
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-17**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: ±325
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: May 27, 2009
Water Level: dry at time of boring; 13.2 ft after 24 hours	Engineer/Geologist:

Water Level (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
▼	0		very loose, brownish reddish-orange, fine to medium, **SAND (SM)**; silty, (very loose to dense)	SS-1		4
				SS-2		2
				SS-3		27
	10			SS-4		31
				SS-5		15
			very stiff, greyish-tan, clayey **SILT (ML)**	SS-6		19
	20		**BORING TERMINATED AT 20.0ft**			
	30					
	40					
	50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-18**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +362
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: dry at time of boring; caved dry at 4.3' after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		very loose, brownish tan, fine to medium, **SAND (SM)**; silty, (very loose to medium dense)	SS-1		2
			SS-2		2
			SS-3		18
		PARTIALLY WEATHERED ROCK	SS-4	>>	50/4
10		not able to retrieve a sample			
		medium dense, yellowish reddish-orange, fine to medium, **SAND (SM)**; silty, (medium dense)	SS-5		12
			SS-6		18
20		**BORING TERMINATED AT 20.0ft**			
30					
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-19**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +354
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: dry at time of boring; caved dry at 17.5' after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		very loose, brownish reddish-white, fine to medium, **SAND (SM)**; silty, (very loose to medium dense)	SS-1		2
			SS-2		5
			SS-3		9
			SS-4		16
10			SS-5		13
			SS-6		24
20			SS-7		12
			SS-8		14
30		**BORING TERMINATED AT 30.0ft**			
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

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SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-20**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: ±355
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: dry at time of boring; caved dry at 6.1' after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		loose, brownish orangish-tan, fine to medium, **SAND (SM)**; silty, (loose to medium dense)	SS-1		10
			SS-2		14
			SS-3		10
			SS-4		13
10			SS-5		14
			SS-6		7
20		**BORING TERMINATED AT 20.0ft**			
30					
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

GEOTECH CLG-09-23 WARRIOR IN TRANSITION.GPJ GEC.GDT 5/8/09

514 Hillcrest Industrial Blvd., Macon, GA 31204
5031 Milgen Court, Columbus, GA 31907

GEC
GEOTECHNICAL & ENVIRONMENTAL
CONSULTANTS

SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-21**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +384
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: dry at time of boring; caved dry at 7.3' after 24 hours	Engineer/Geologist:

Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
		very loose, brownish reddish-orange, fine to medium, **SAND (SM)**; silty, (very loose to medium dense)	SS-1		4
			SS-2		3
			SS-3		18
			SS-4		24
10					
			SS-5		14
		BORING TERMINATED AT 15.0ft			
20					
30					
40					
50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

GEOTECH CLG-09-23 WARRIOR IN TRANSITION.GPJ GEC.GDT 5/8/09

514 Hillcrest Industrial Blvd., Macon, GA 31204
5031 Milgen Court, Columbus, GA 31907

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GEOTECHNICAL & ENVIRONMENTAL
CONSULTANTS

SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-23**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +343
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 30, 2009
Water Level: 26.0 ft at time of boring	Engineer/Geologist:

Water Level (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
			very loose, brownish reddish-orange, fine to medium, **SAND (SM)**; silty, (loose to medium dense)	SS-1		4
				SS-2		9
				SS-3		15
	10			SS-4		21
				SS-5		12
				SS-6		9
	20			SS-7		15
▽				SS-8		11
	30		very stiff, dark grey, silty **CLAY (CL)**; (very stiff to hard)	SS-9		29
				SS-10		34
	40			SS-11		36
	50		**BORING TERMINATED AT 45.0ft**			

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

GEOTECH CLG-09-23 WARRIOR IN TRANSITION.GPJ GEC.GDT 5/8/09

514 Hillcrest Industrial Blvd., Macon, GA 31204
5031 Milgen Court, Columbus, GA 31907

GEC
GEOTECHNICAL & ENVIRONMENTAL
C O N S U L T A N T S

SOIL BORING RECORD

Project: **Warrior In Transition Complex**	Boring No: **B-24**
	Project No: CLG-09-2384
Location: **Ft. Benning, Georgia**	GS Elevation: +341
Driller/Equipment: Nick/Shawn/ CME 45 ATV - Auto Hammer	Drilling Date: April 29, 2009
Water Level: 25.0 ft at time of boring; caved dry at 12.8' after 24 hours	Engineer/Geologist:

Water Level (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
			loose, brownish reddish-orange, fine to medium, **SAND (SM)**; silty, (loose to medium dense)	SS-1		6
				SS-2		11
				SS-3		23
				SS-4		21
	10			SS-5		11
				SS-6		8
	20			SS-7		17
▽				SS-8		9
	30		very stiff, dark grey, silty **CLAY (CL)**; (very stiff to hard)	SS-9		29
				SS-10		34
	40		hard, dark grey, silty **CLAY (CH)**	SS-11		35
			BORING TERMINATED AT 45.0ft			
	50					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Borehole advanced with 2.25" ID hollow stem auger.

GEOTECH CLG-09-23 WARRIOR IN TRANSITION.GPJ GEC.GDT 5/8/09

514 Hillcrest Industrial Blvd., Macon, GA 31204
5031 Milgen Court, Columbus, GA 31907

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CONSULTANTS

APPENDIX C

SHEAR WAVE VELOCITY TESTING

Mr. Ben C. Foreman
U.S. Army Corps of Engineers
P.O. Box 889
Savannah, Georgia 31402-0889

June 8, 2009

Report of Shear Wave Velocity Profile Analysis
Warrior in Transition Complex
Fort Benning, Georgia
Geo-Hydro Project Number 090250.00

Dear Mr. Foreman:

Geo-Hydro Engineers, Inc. has completed the authorized shear wave velocity profile analysis for the above referenced project. The purpose of this work was to determine the IBC 2006 *Site Class* using advanced shear wave velocity profile analysis (SWVPA).

Project Information

The Warrior in Transition Complex site is located on the north side of Marne Road west of the Martin Army Community Hospital in Fort Benning, Georgia. Figure 1 in the Appendix shows the approximate site location.

Plans for the site include three buildings as well as associated parking and asphalt drives. We understand that the project is still in a conceptual phase and will be designed as part of a design/build process. The buildings are expected to be four to five stories tall. We understand that the final building locations may change. The results of this report pertain to the building footprints as they are shown on Figure 2 in the Appendix. If the building footprints are shifted during the design process, please allow us the opportunity to revisit our findings and determine if they are valid for the new building footprints. The site is currently wooded.

Four seismic refraction microtremor traverses were performed within the proposed building footprints to obtain geophysical data for determining the average shear wave velocity of the upper 100 feet of overburden. The traverse locations are shown on Figure 2 in the Appendix.

Method of Analysis

The 2006 International Building Code (IBC 2006) allows three methods for determination of the *Site Class* in accordance with section 1613. These methods include determining the average shear wave velocity in the upper 100 feet of overburden, using standard penetration test N-values to determine the average N for the same depth, or determining the average undrained shear strength for the upper 100 feet of the soil/rock profile. Of these methods, measurement of the shear wave velocity (V_s) is regarded as the preferred method for determining the *Site Class*. IBC 2006 *Site Class* determination using V_s

1000 Cobb Place Boulevard, Suite 290 • Kennesaw, Georgia 30144
Phone 770.426.7100 Fax 770.426.5209

requires calculation of a weighted average of V_s based on equation 16-41 (IBC 2006). The weighted V_s average is subsequently used in Table 1613.5.2 to determine the *Site Class*.

Geo-Hydro determined the shear wave velocity profiles for this site using advanced refraction microtremor technology. This method consists of recording microtremor seismic energy and environmental source noise utilizing an L-shaped array of eleven high-sensitivity, low-resonant-frequency geophones. A liner array of twelve high-resonant-frequency geophones was used to record source noise created using a sledgehammer and aluminum plate. The resulting data was combined and processed using proprietary, third-party software to produce a shear wave velocity profile.

Findings

The representative shear wave velocity profiles for the Warrior in Transition Complex are shown on Figures 3 through 6 in the Appendix. Based on equation 16-41 (IBC 2006), the weighted average V_s for the upper 100 feet of the subsurface profile across the site is 1,075 feet per second (ft/s). This value yields a *Site Class D* per Table 1613.5.2. The weighted average V_s for the upper 100 feet of the subsurface profile for each traverse can be found in the following table.

	V_s (ft/s)
Traverse 1	1,070
Traverse 2	1,095
Traverse 3	1,075
Traverse 4	1,050

Usage Limitations

This report has been prepared for the exclusive use of the U.S. Army Corps of Engineers. This report applies to the Warrior in Transition Complex site only. More specifically, this report applies to the building locations shown on Figure 2 in the Appendix. If the building footprints are shifted during design, please allow us to determine if the results apply to the new building footprints as well. The report was prepared using generally accepted geotechnical engineering standards for the State of Georgia. No other warranties are expressed or implied.

* * * * *

We appreciate the opportunity to serve as your geotechnical consultant for this project, and are prepared to provide any additional services you may require. If you have any questions concerning this report or any of our services, please call us.

Sincerely

GEO-HYDRO ENGINEERS, INC.

A. Marty Peninger, E.I.T.
Staff Engineer
Email: *mpeninger@geohydro.com*

Mason F. Berryman, P.E.
Principal Engineer

GEORGIA REGISTERED No. 25932 PROFESSIONAL ENGINEER MASON F. BERRYMAN

AMP/MFB/sh/090250.00 - Warrior in Transition Complex - SWVPA

APPENDIX

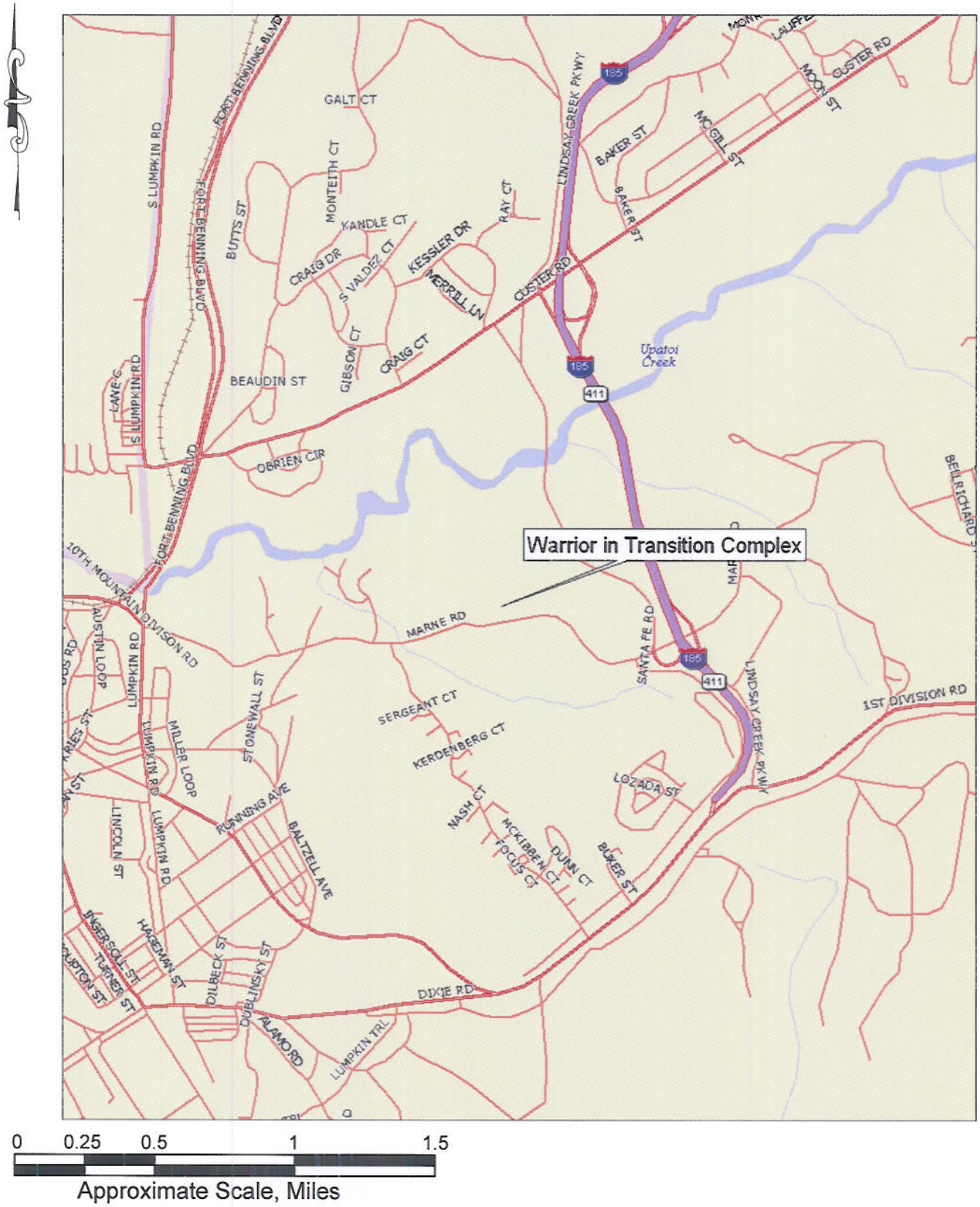
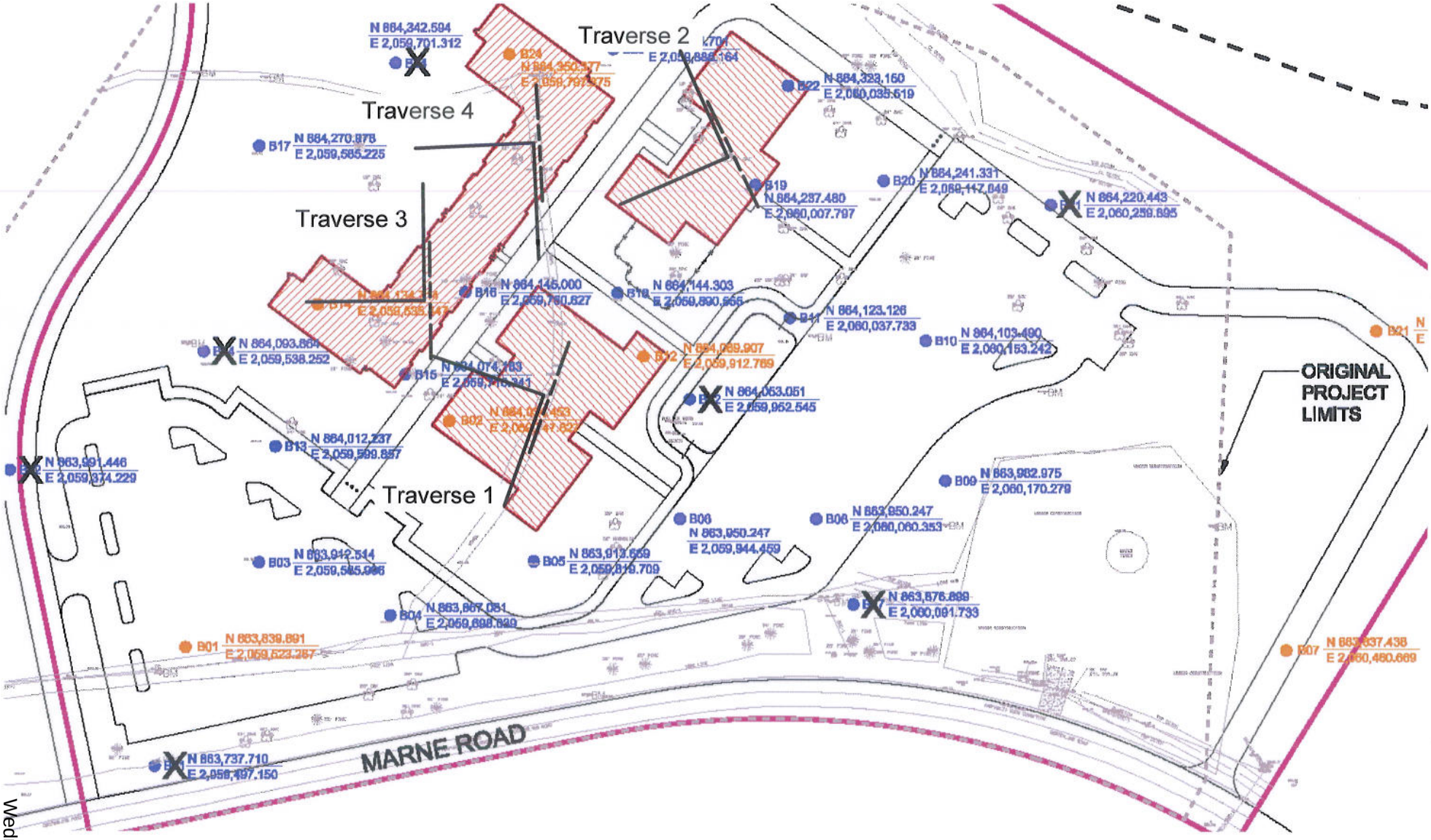


Figure 1: Site Location Plan

Warrior in Transition Complex
Fort Benning, Georgia
Geo-Hydro Project Number 090250.00



LEGEND: —— Shear Wave Velocity Traverse

60 120 240 360

Approximate Scale: 1"=120'

Figure 2: Test Location Plan

Warrior in Transition Complex
Fort Benning, Georgia
Geo-Hydro Project Number 090250.00

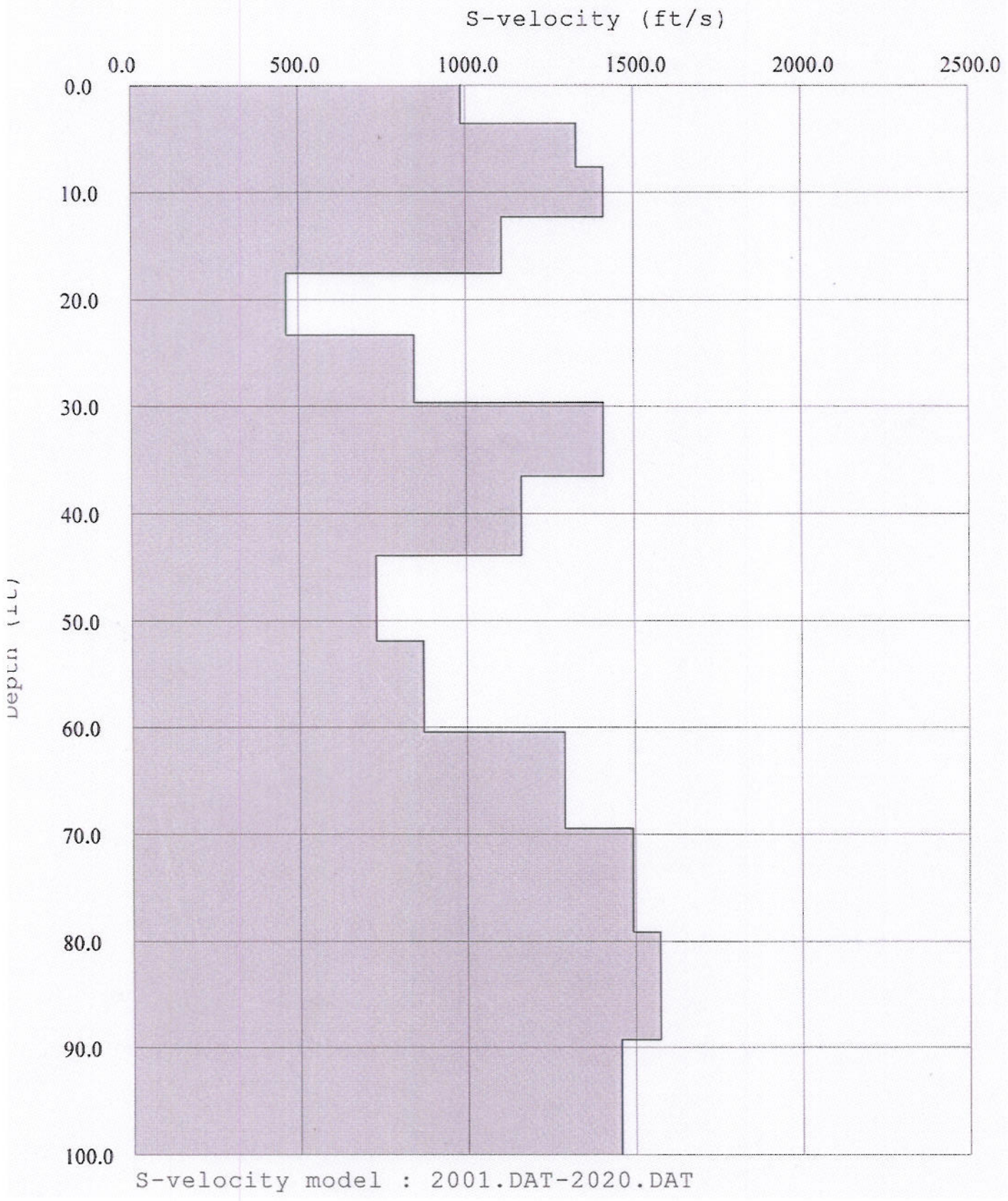


Figure 3: Shear Wave Velocity Profile
(Traverse 1)

Warrior in Transition Complex
Fort Benning, Georgia
Geo-Hydro Project Number 090250.00

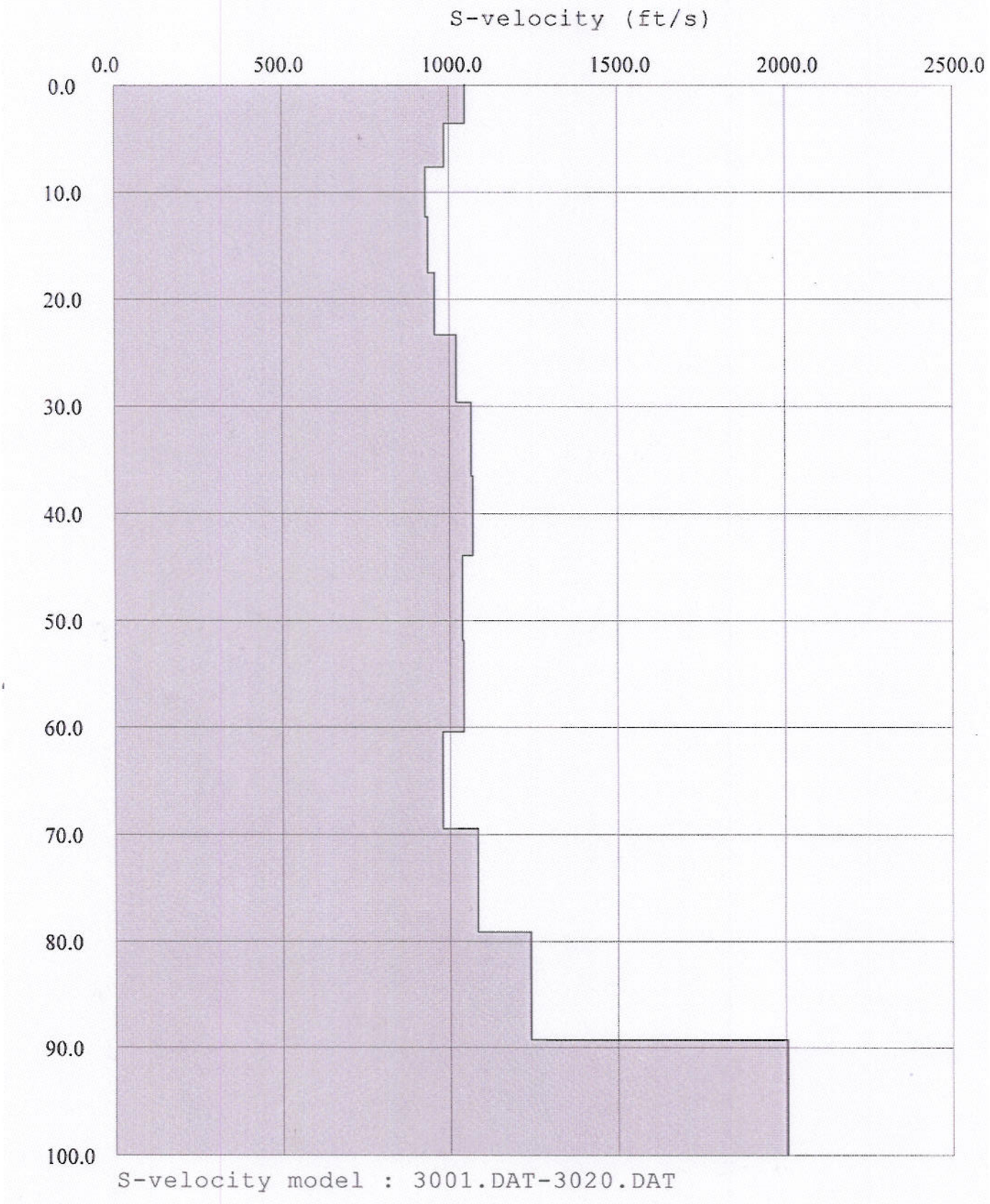


Figure 4: Shear Wave Velocity Profile
(Traverse 2)

Warrior in Transition Complex
Fort Benning, Georgia
Geo-Hydro Project Number 090250.00

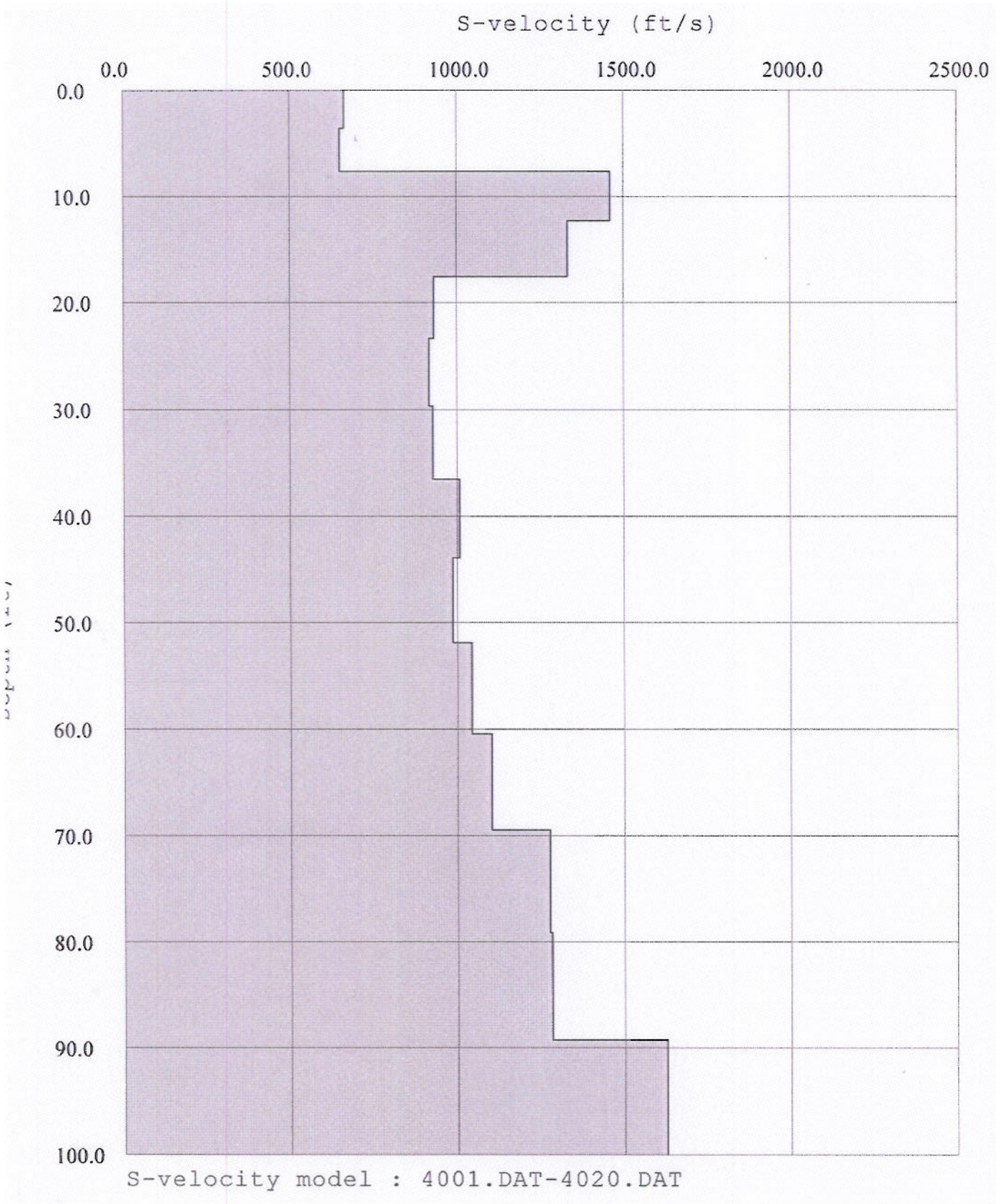


Figure 5: Shear Wave Velocity Profile
(Traverse 3)

Warrior in Transition Complex
Fort Benning, Georgia
Geo-Hydro Project Number 090250.00

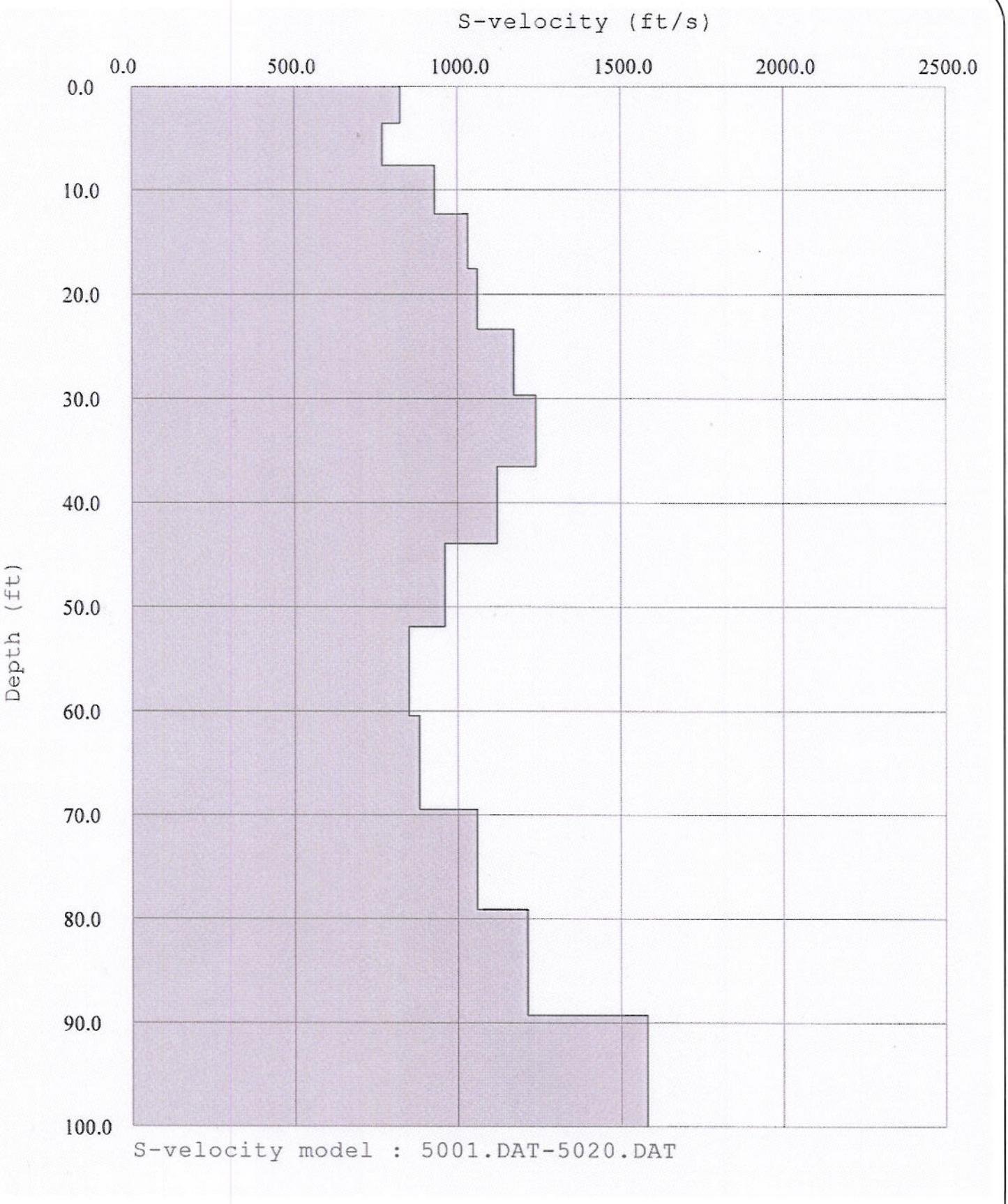


Figure 6: Shear Wave Velocity Profile
(Traverse 4)

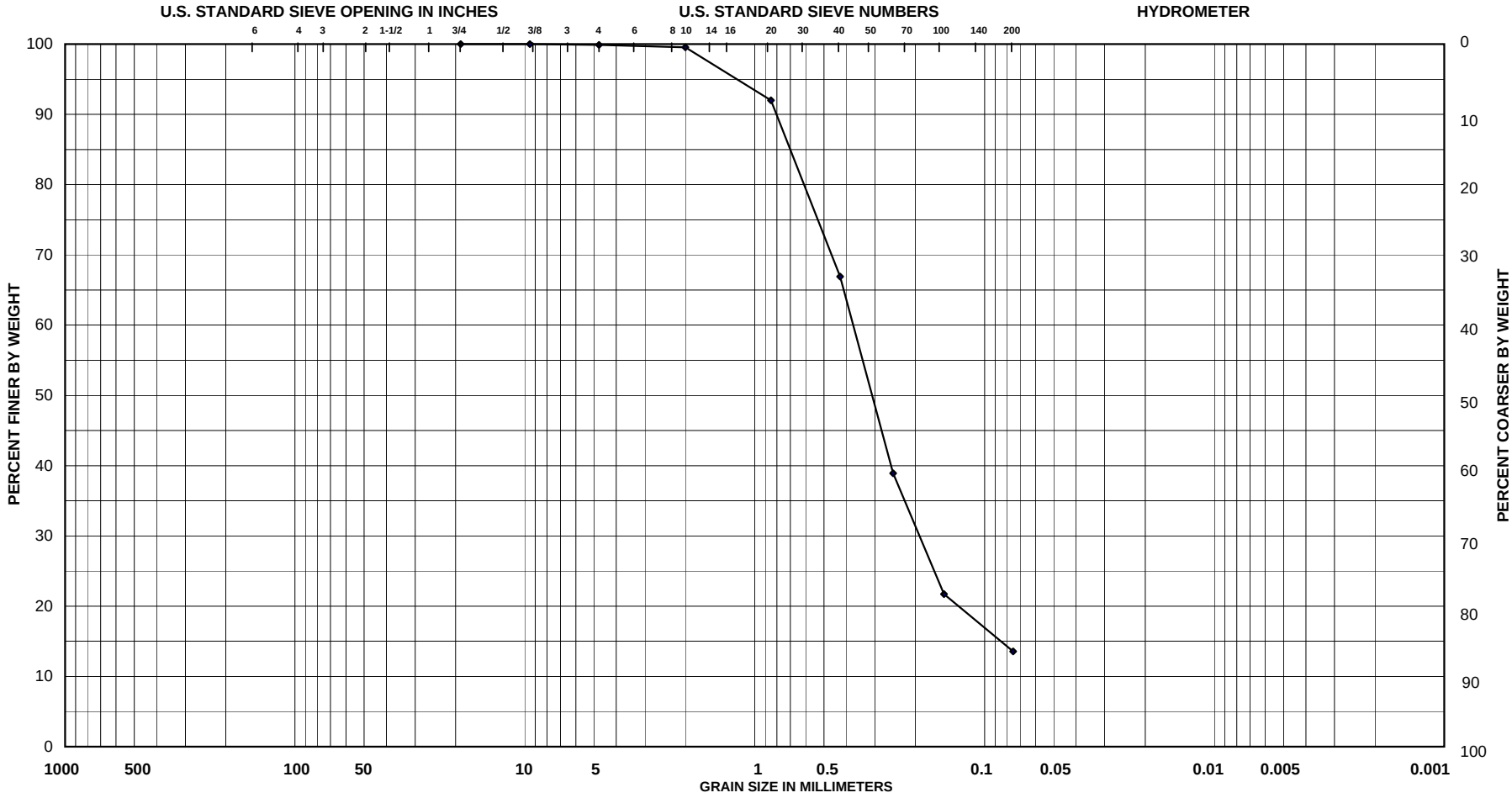
Warrior in Transition Complex
Fort Benning, Georgia
Geo-Hydro Project Number 090250.00

APPENDIX D

LABORATORY SOILS TESTING

INDEX PROPERTIES TESTING

Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 2	3.5'- 5.0'	SAND, clayey, mostly medium to fine-grained quartz, little clay, trace rock fragments, strong brown 7.5YR 5/6 (SC)			5			

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-05
Date 6/9/2009

GRADATION CURVES

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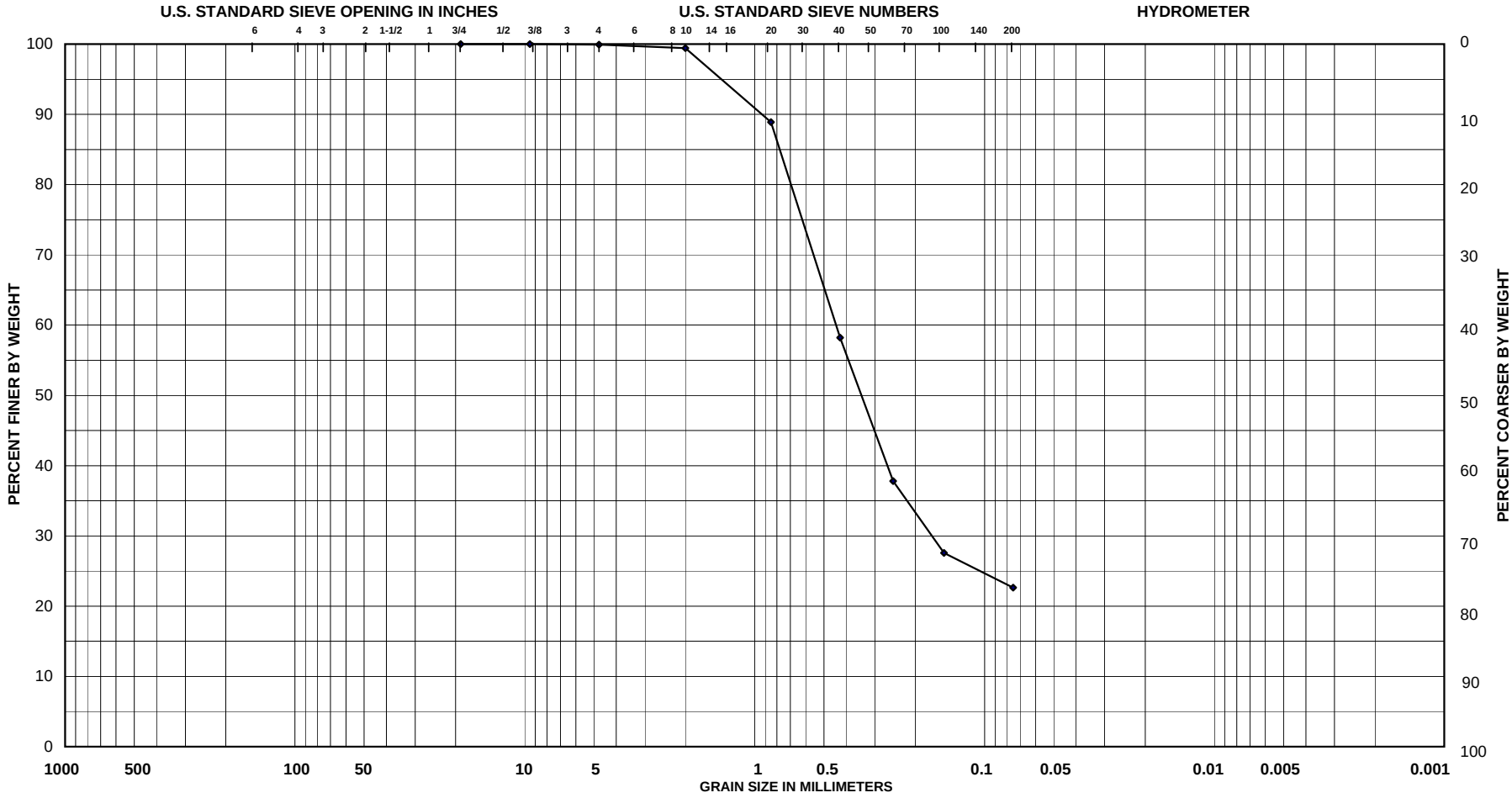
Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 4	8.5'- 10.0'	SAND, clayey, mostly medium to fine-grained quartz, little clay, trace rock fragments, red 2.5YR 4/8 (SC)			12.3	32	22	10

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-05
Date 6/9/2009

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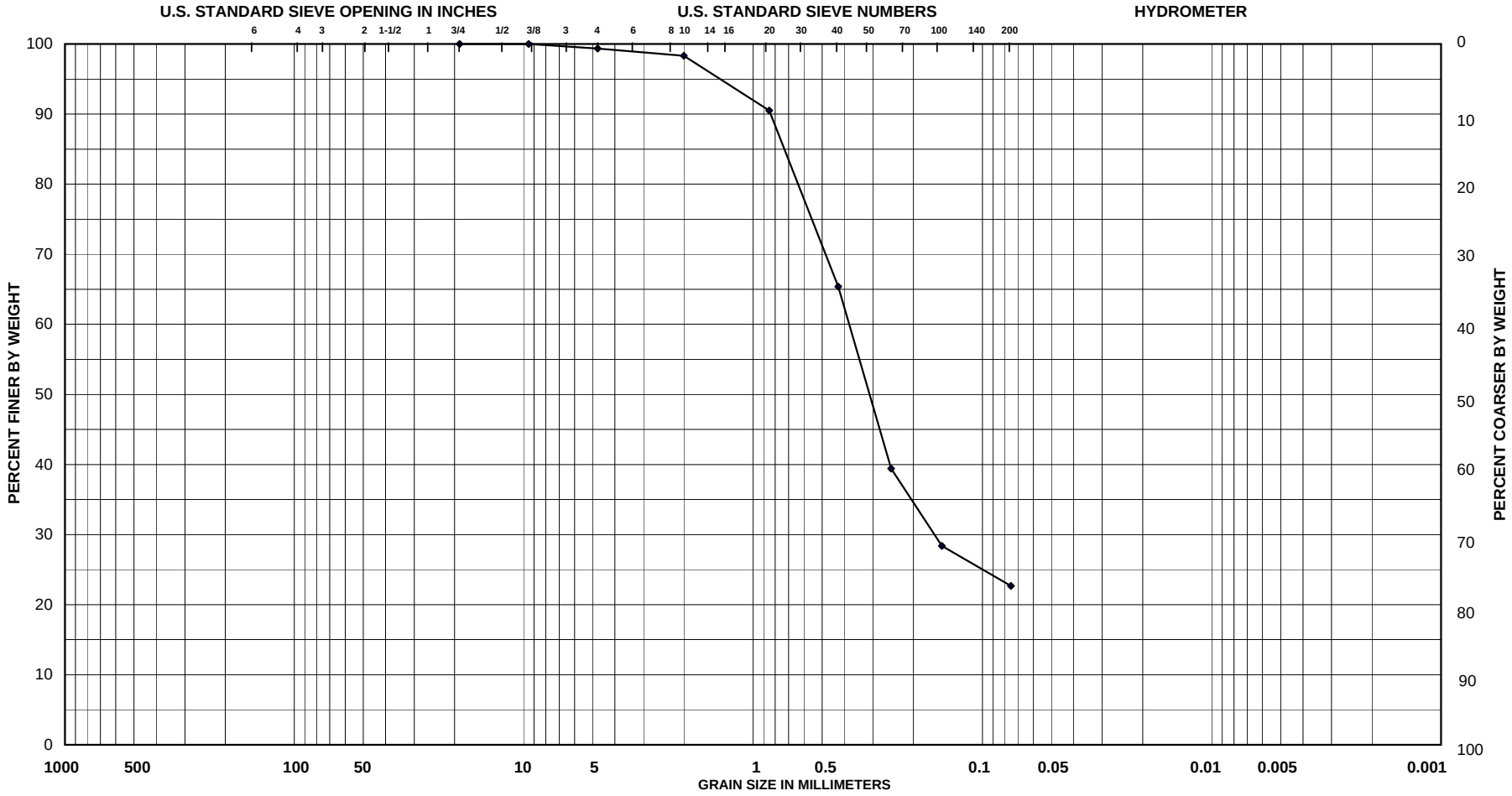
Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 1	1.0'- 2.5'	SAND, clayey, mostly medium to fine-grained quartz, little clay, trace rock fragments, dark red 2.5YR 3/6 (SC)			8.7	27	18	9

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-07
Date 6/9/2009

GRADATION CURVES

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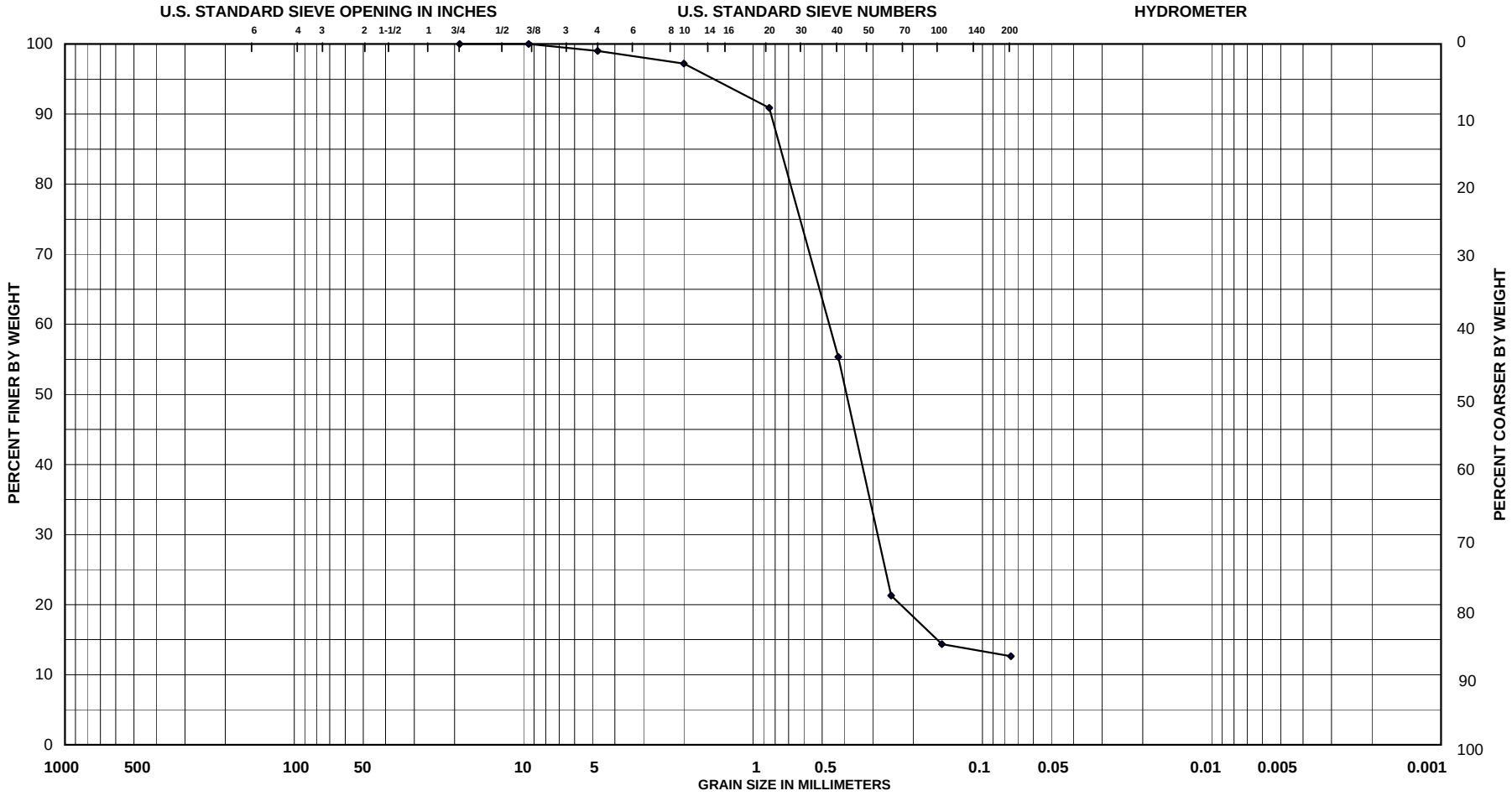
Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 2	3.5'- 5.0'	SAND, silty, mostly medium to fine-grained quartz, little silt, trace rock fragments, dark red 2.5YR 3/6 (SM)			6.9	21	18	3

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-07
Date 6/9/2009

GRADATION CURVES

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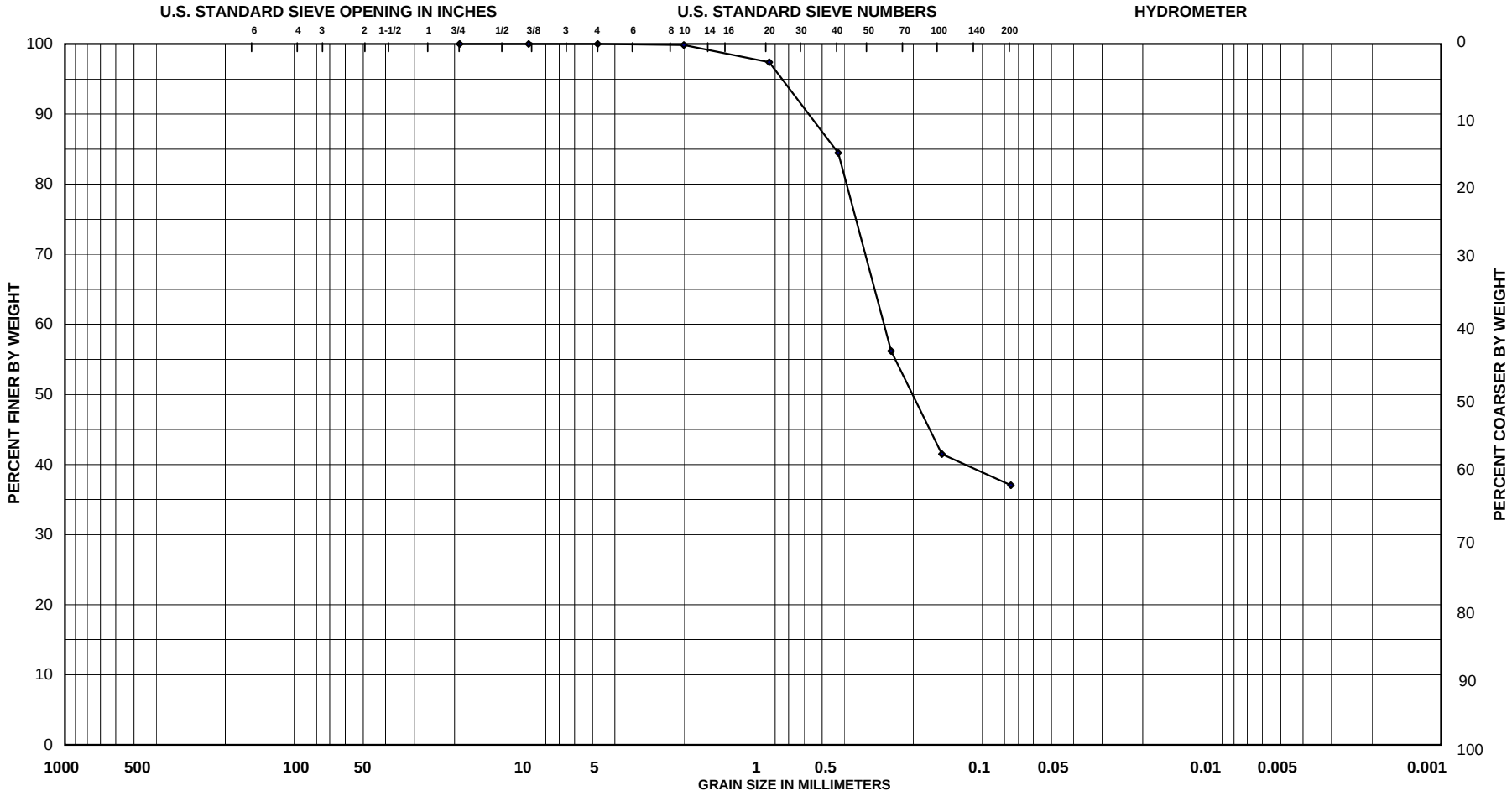
Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 2	3.5'- 5.0'	SAND, clayey, mostly medium to fine-grained quartz, some clay, trace rock fragments, yellowish red 5YR 5/8 (SC)			15	38	18	20

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-09
Date 6/9/2009

GRADATION CURVES

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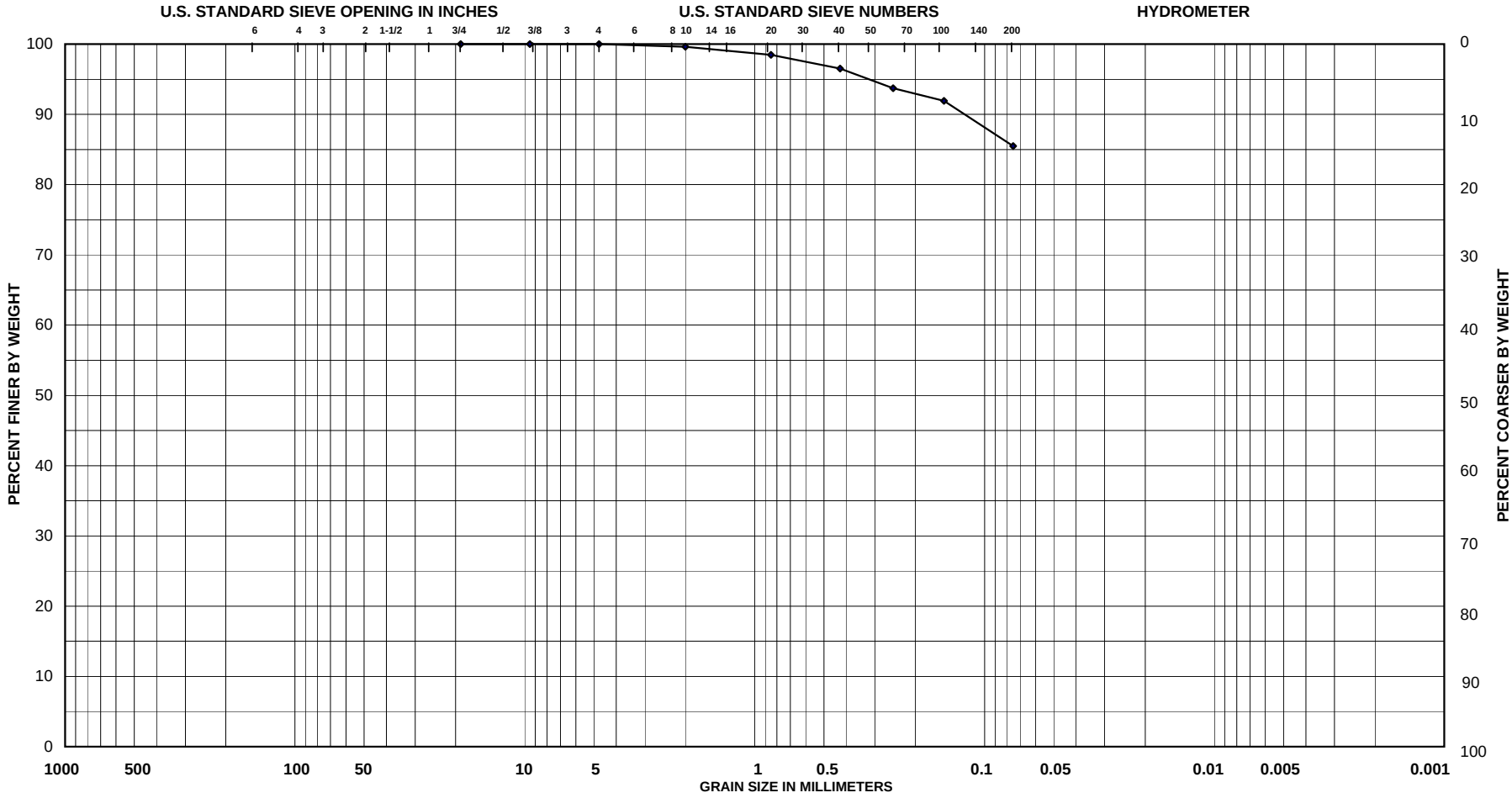
Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 4	8.5'- 10.0'	CLAY, inorganic-L, little medium to fine-grained quartz, strong brown 7.5YR 5/8 (CL)			21.0	38	21	17

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-09
Date 6/9/2009

GRADATION CURVES

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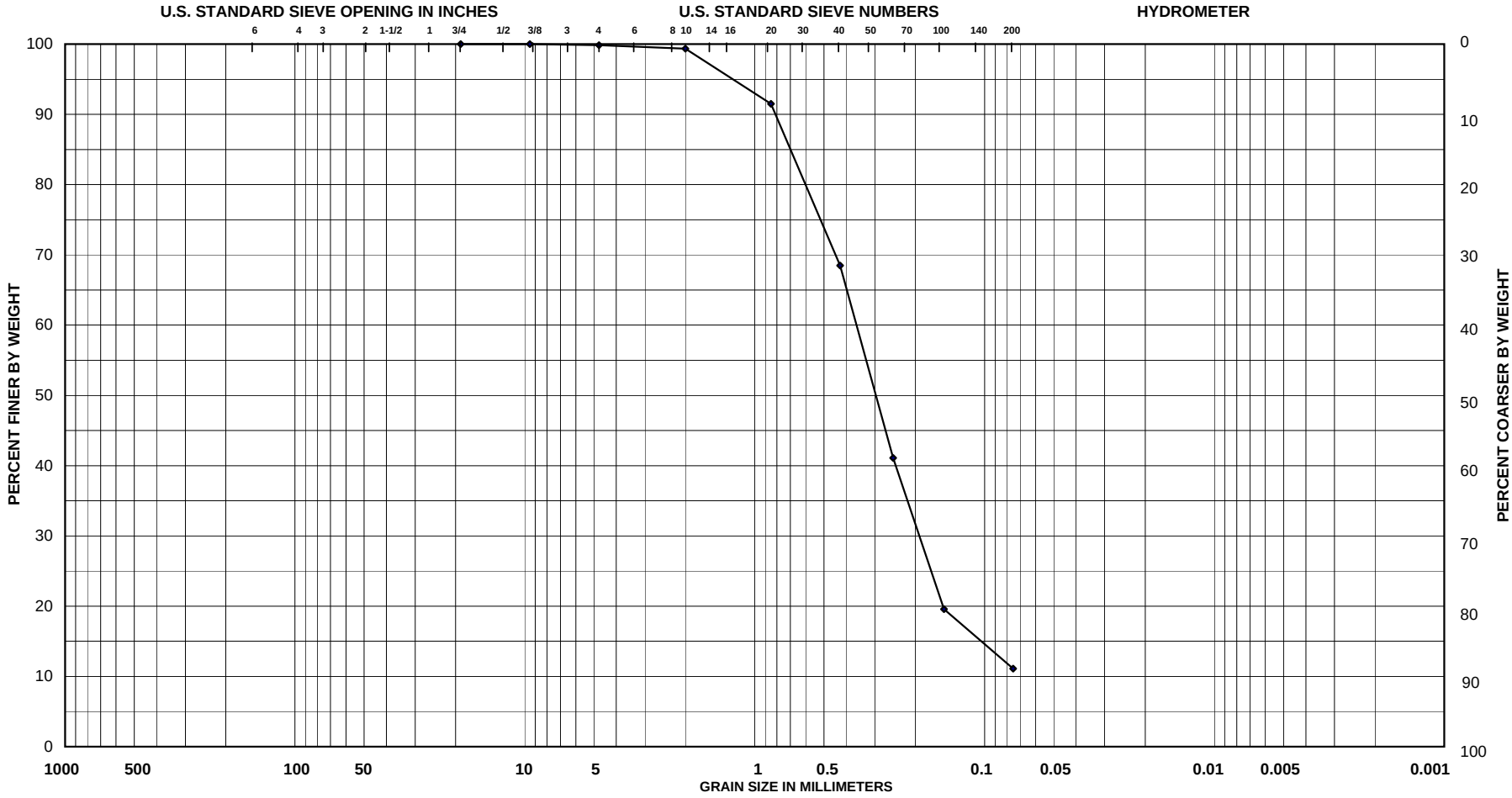
Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 2	3.5'- 5.0'	SAND, poorly-graded with clay, mostly medium to fine-grained quartz, few clay, trace rock fragments, yellowish brown 10YR 5/6 (SP-SC)			12.6			

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-12
Date 6/9/2009

GRADATION CURVES

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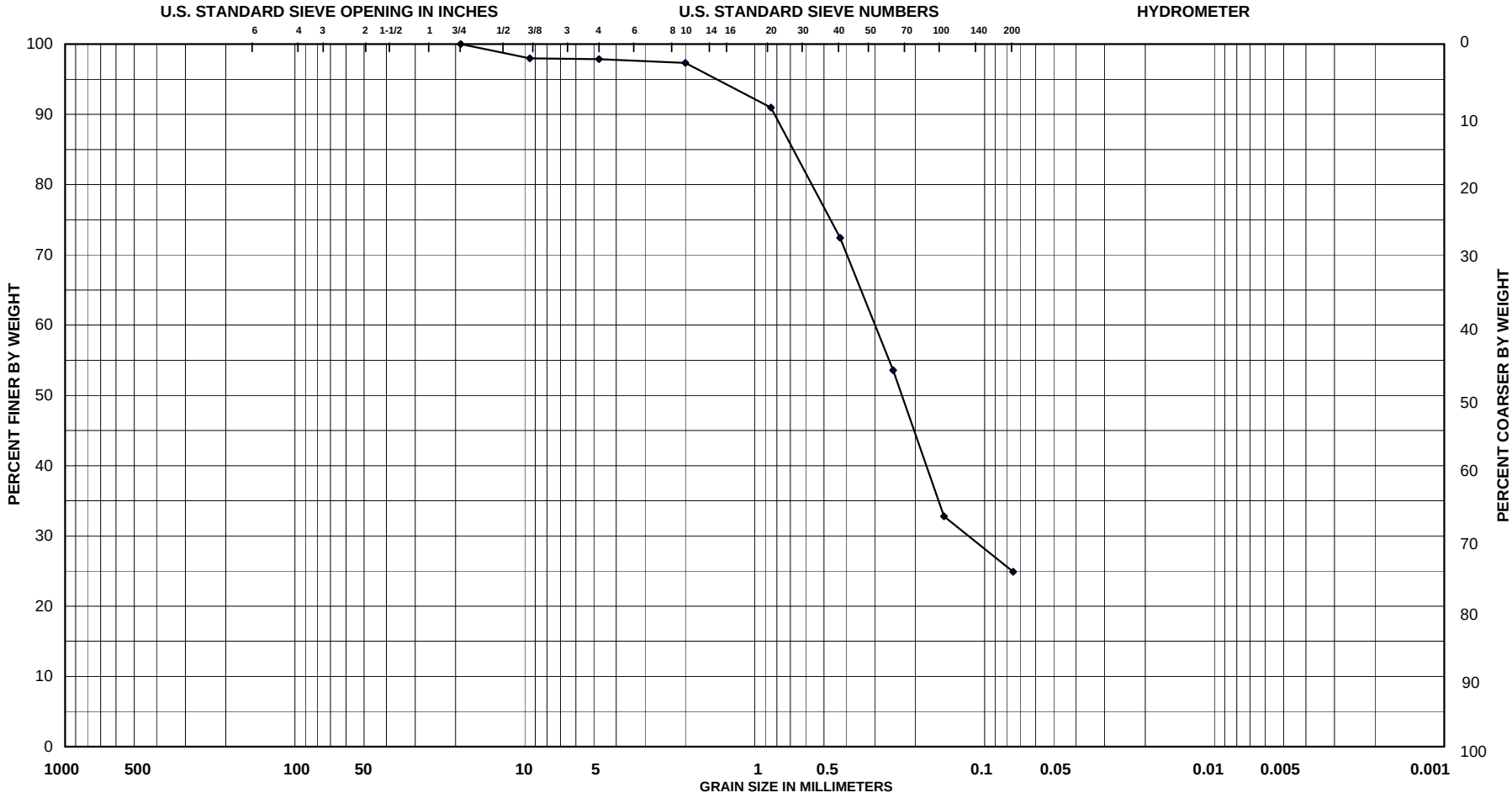
Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 3	6.0'- 7.5'	SAND, clayey, mostly medium to fine-grained quartz, little clay, trace rock fragments, red 2.5YR 4/8 (SC)			17.3	25	17	8

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-12
Date 6/9/2009

GRADATION CURVES

ENG FORM 2087
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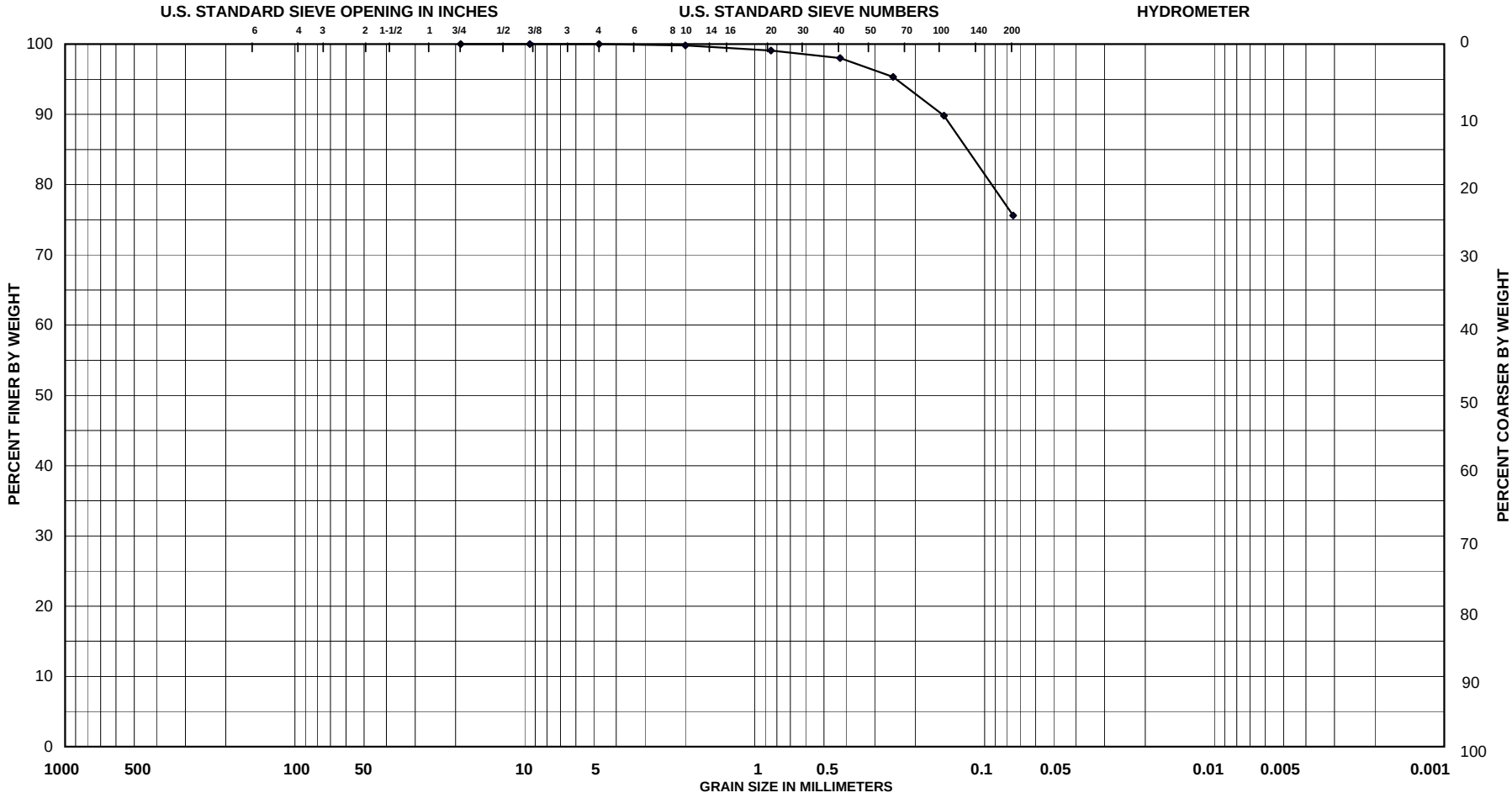
Section:



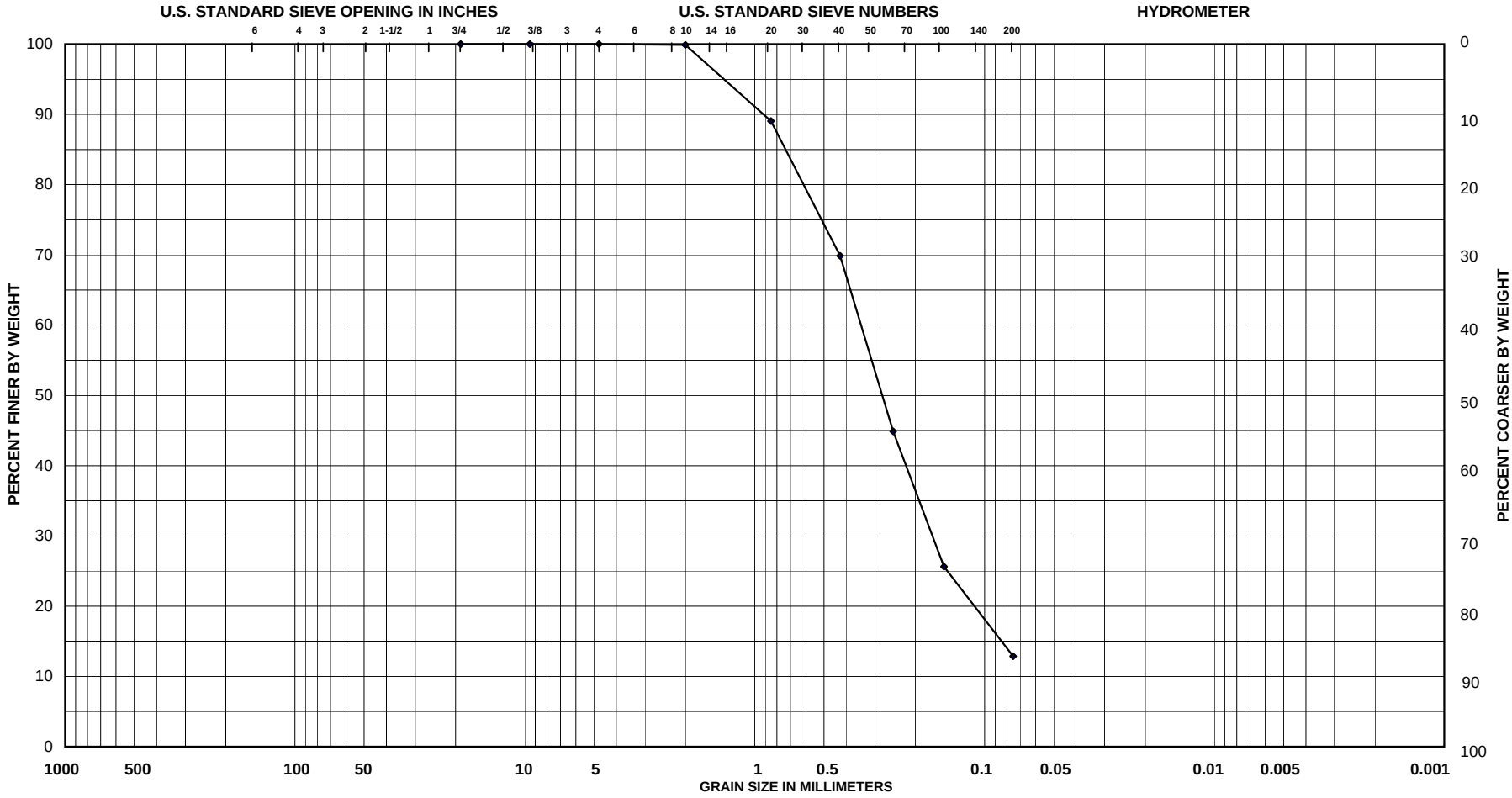
Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 10	38.5'- 40.0'	CLAY, inorganic-H, little medium to fine-grained quartz, dark greenish gray 10Y 4/1 (CH)			38.8	102	42	60

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-14
Date 6/9/2009

GRADATION CURVES

ENG FORM 2087
MAY 63

Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 2	3.5'- 5.0'	SAND, clayey, mostly medium to fine-grained quartz, little clay, yellowish brown 10YR 5/6 (SC)			6.5			

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-21
Date 6/9/2009

GRADATION CURVES

ENG FORM 2087
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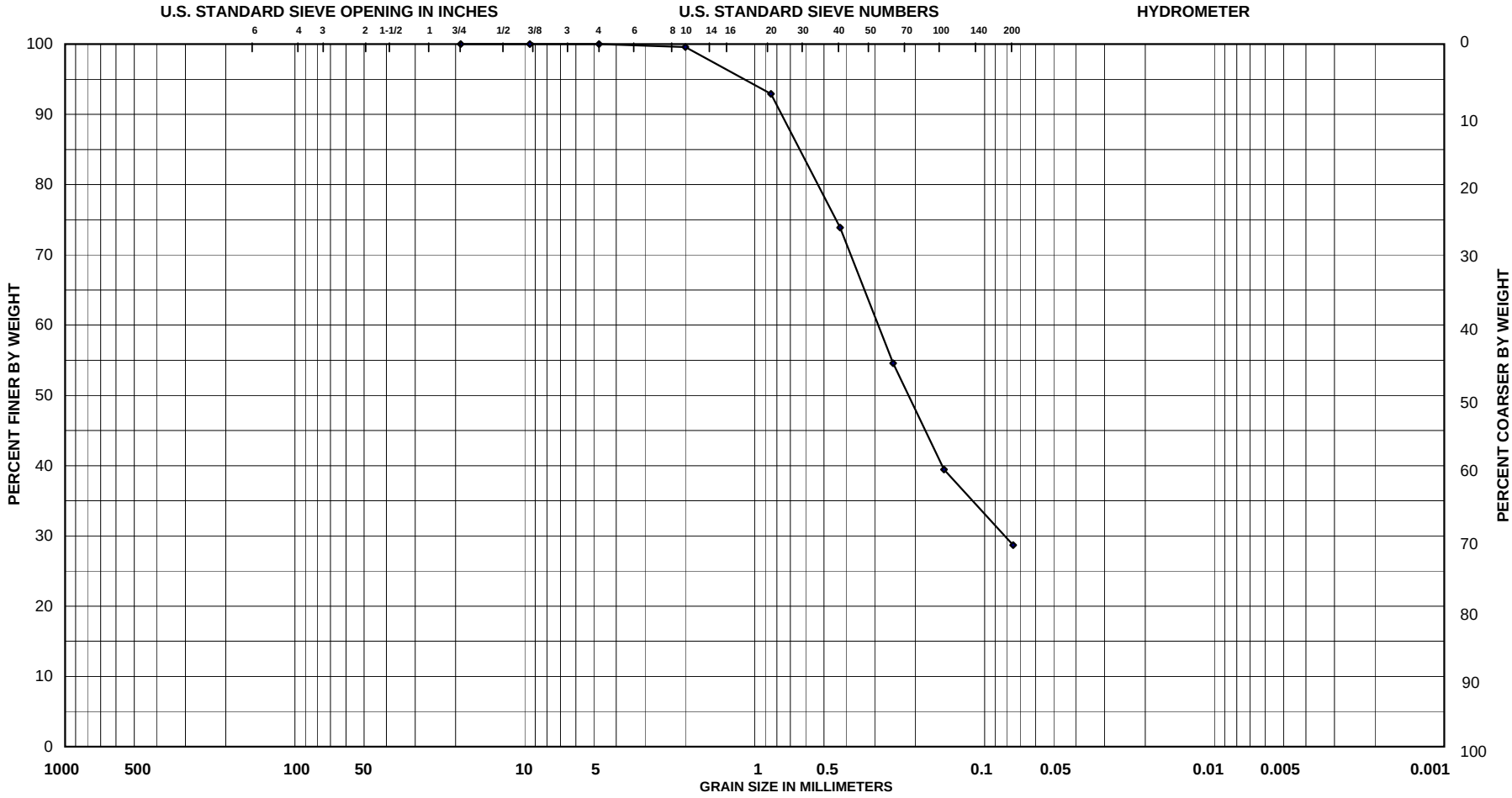
Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 3	6.0'- 7.5'	SAND, silty, mostly medium to fine-grained quartz, little silt, yellowish red 5YR 4/6 (SM)			14.0	26	23	3

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-21
Date 6/9/2009

GRADATION CURVES

ENG FORM 2087
MAY 63

MACTEC

REPORT OF SOIL TESTING

Project: Warrior in Transition Complex

MACTEC Project Number: 6738-08-4909-04

Client: Wolf WPC, Inc.

Date : June 5, 2009

As requested, MACTEC Engineering and Consulting, Inc. has completed resistivity and pH testing of soil samples delivered to our Jacksonville office on June 3, 2009. The samples were tested in general accordance with FDOT FM 5-551 and 5-550 respectively. The results are outlined below.

BORING B-08
SAMPLE 1
DEPTH: 0-10'

Resistivity 43000 ohms/cm

pH 5.1

Reviewed by

Rajni Sukhwani

Rajni Sukhwani, E.I.

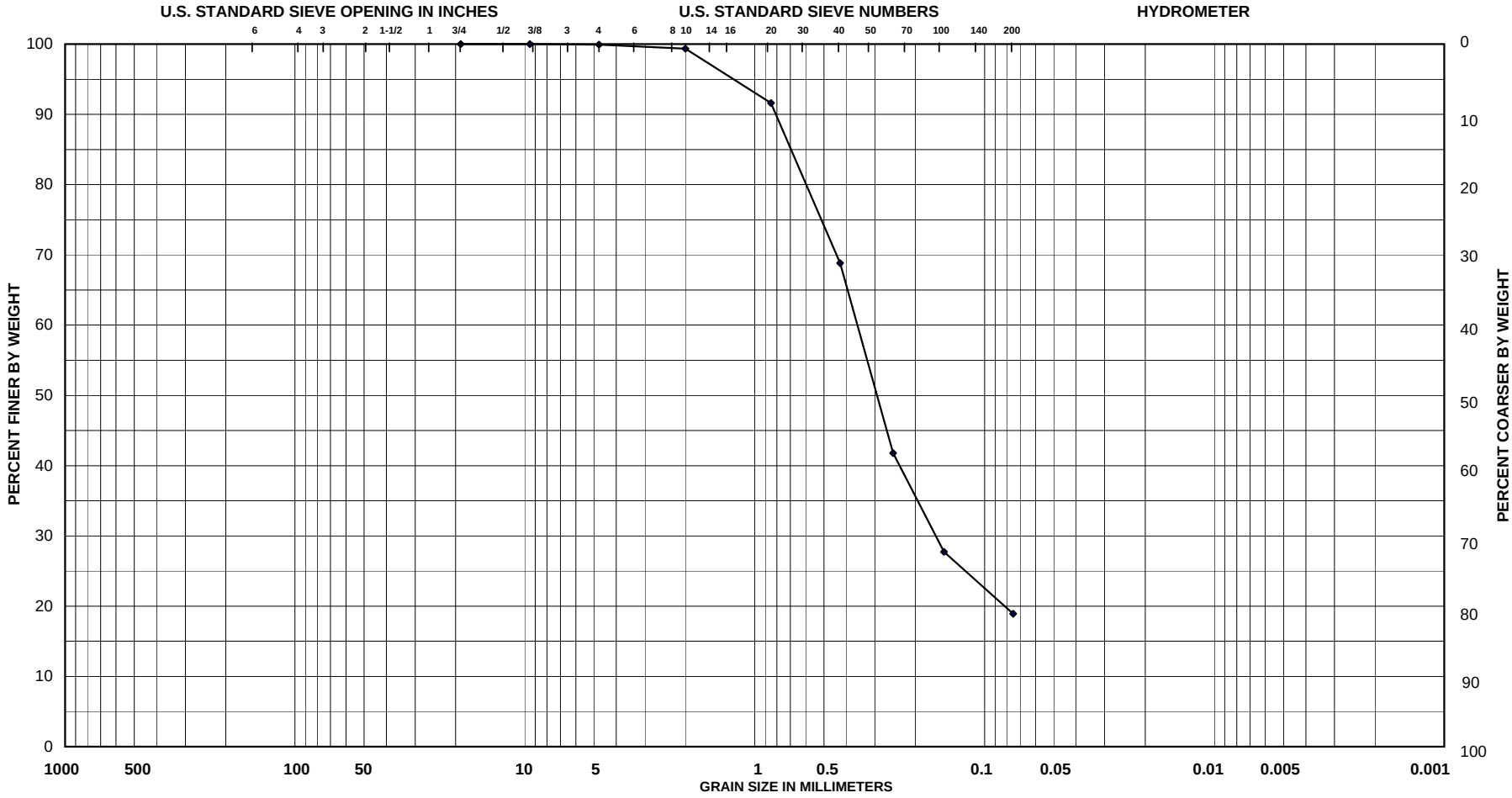
MACTEC Engineering and Consulting, Inc.
3901 Carmichael Avenue
Jacksonville, Florida 32207
(904) 396-5173

APPENDIX D

LABORATORY SOILS TESTING

COMPACTION TESTING

Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 1	10.0'- 20.0'	SAND, silty, mostly medium to fine-grained quartz, little silt, trace rock fragments, yellowish red 5YR 4/6 (SM)		2.656	9.47	0	0	NP

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-04
Date 6/9/2009

GRADATION CURVES

ENG FORM 2087
MAY 63

COMPACTION TEST REPORT

Curve No.: B-04

Project No.: 6309.00030 **Date:**

Project: Warrior In Transition Complex

Client: USACE- Savannah District

Source of Sample: B-04 **Depth:** 10.0'- 20.0'

Sample Number: 1

Remarks:

MATERIAL DESCRIPTION

Description: SAND, silty, mostly medium to fine-grained quartz, little silt, trace rock fragments, yellowish red 5YR 4/6 (SM)

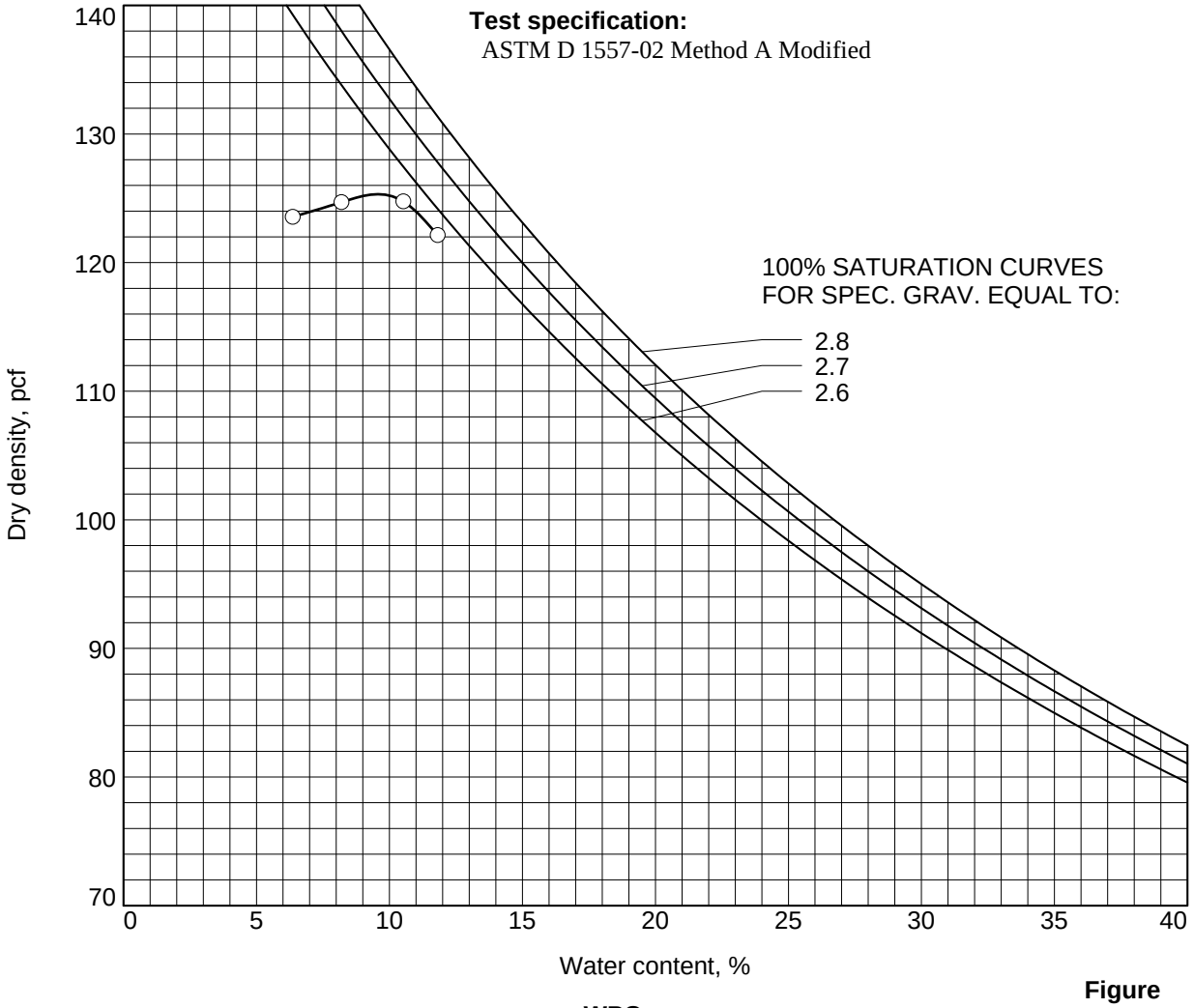
Classifications - **USCS:** **AASHTO:**

Nat. Moist. = **Sp.G. =**

Liquid Limit = NV **Plasticity Index =** NP

% < No.200 =

TEST RESULTS
Maximum dry density = 125.5 pcf
Optimum moisture = 9.5 %



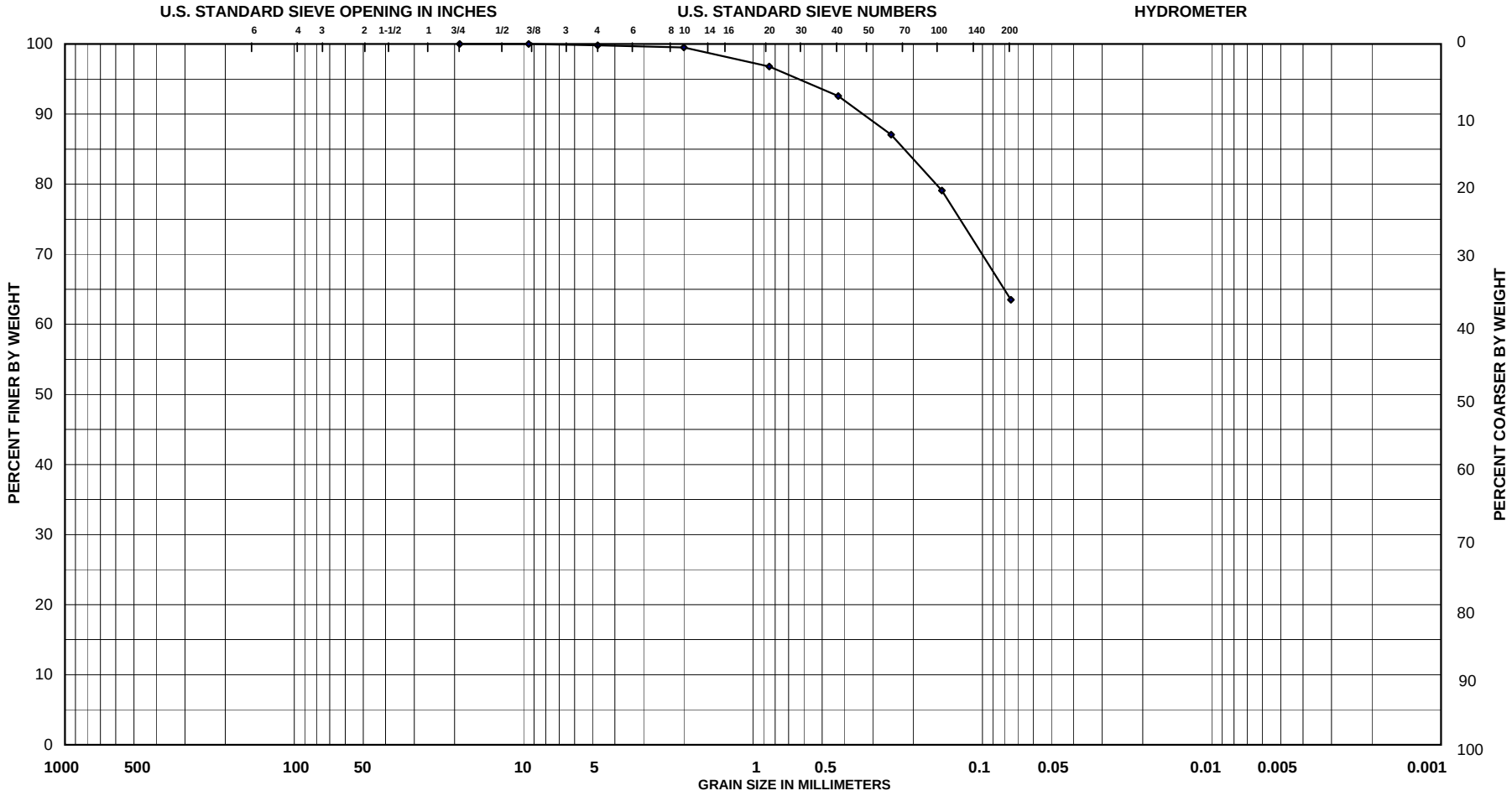
Figure

WPC

Tested By: CRMJr. **Checked By:** C. Martin Sr.

Wednesday, July 28, 2010

Section:



Sample No.	Elev. Or Depth	Classification	% CO_3	G_s	Nat w%	LL	PL	PI
◆ 1	0.0'- 10.0'	CLAY, inorganic-L, some medium to fine-grained quartz, trace rock fragments, red 2.5YR 4/8 (CL)		2.680	18.3	40	17	23

Project Warrior In Transition Complex
Ft. Benning, GA
Area
Boring No. B-08
Date 6/9/2009

GRADATION CURVES

ENG FORM 2087
MAY 63

COMPACTION TEST REPORT

Curve No.: B-08

Project No.: 6309.00030 **Date:**

Project: Warrior In Transition Complex

Client: USACE- Savannah District

Source of Sample: B-08 **Depth:** 0.0'- 10.0'

Sample Number: 1

Remarks:

MATERIAL DESCRIPTION

Description: CLAY, inorganic-L, some medium to fine-grained quartz, trace rock fragments, red 2.5YR 4/8 (CL)

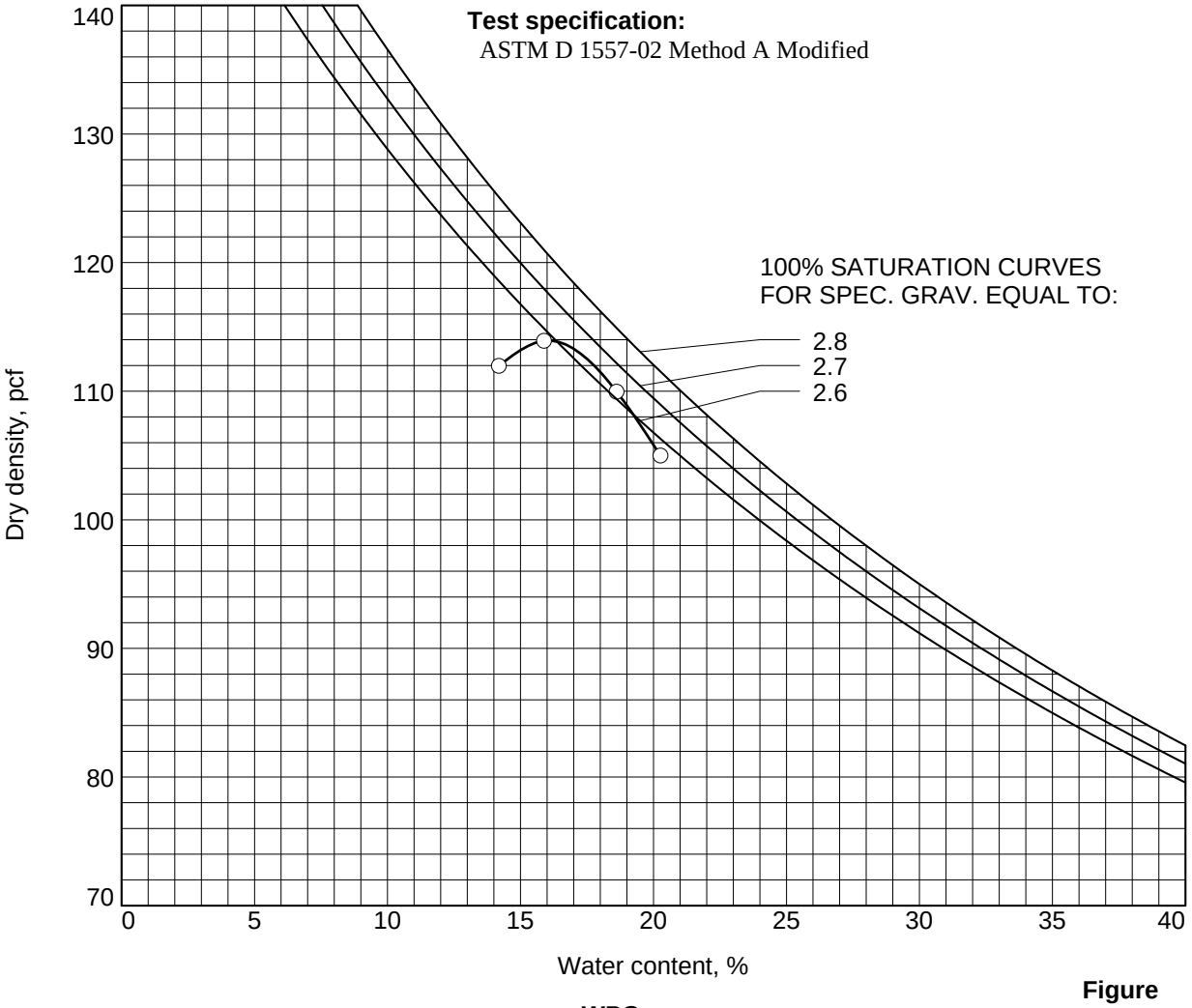
Classifications - **USCS:** CL **AASHTO:**

Nat. Moist. = **Sp.G. =**

Liquid Limit = 40 **Plasticity Index =** 23

% < No.200 = 63 %

TEST RESULTS
Maximum dry density = 114.0 pcf
Optimum moisture = 16.0 %



Figure

WPC

Tested By: CRMJr. **Checked By:** C. Martin, Sr.

Wednesday, July 28, 2010

Drawing List

69999 FY-09
Ft Benning Admin Facilities Contract

	Plate No.	Sheet No.	DGN File	Title
Appendix C				
	U-101	1	NFMCU101WA	Water Utility Map
	U-102	2	NFMCU102EL	Electrical Utility Map
	U-103	3	NFMCU103ST	Storm Sewer Utility Map
	U-104	4	NFMCU104TV	Cable TV Utility Map
	U-105	5	NFMCU105SS	Sanitary Sewer Utility Map
	U-106	6	NFMCU106NG	Natural Gas Utility Map
Appendix J				
	GI001	1	NFMGI001CSA	Cover Sheet and Index of Drawings
	GI002	2	NFMGI002SLA	Site Location Map
	CS101	3	NFMCS101EXA	Existing Conditions
	CG101	4	NFMCG101GRA	Grading Plan
	CU101	5	NFMCU101UTA	Utility Plan
	DD401	1	NFMDD401HR	Haul Route
	SH-14	1		Medium Company Headquarters (Duplex) + Battalion Headquarters (Centered Stack) First Floor Plan
	SH-15	2		Medium Company Headquarters (Duplex) + Battalion Headquarters (Centered Stack) Second Floor Plan
	SF-2	3		Large SFAC Floor Plan

1 2 3 4 5

D C B A

N

100′ 50′ 0 100′

SCALE: 1′′= 100′-0″

PROJECT SITE LOCATION

WATER TOWER (CURRENTLY UNDER CONSTRUCTION BY OTHERS)

MARNE ROAD

MARTIN LP

PARKING

PARKING

WALL

8″

6″

10″

12″

14″

3/4″

US ARMY CORPS OF ENGINEERS SAVANNAH

BY	DATE	DESCRIPTION	SYMBOL

DESIGNED BY: AG	DATE: 06/18/09
DWN BY: AG	CKD BY: JS
SUBMITTED BY: TENG	SOLICITATION NO.: #
FILE NAME: NFMCU101WA.DGN	CONTRACT NO.: #
SIZE: 34" X 22"	PLOT SCALE: 1"=100'
	CATEGORY CODE: 721-12-01
	PLOT DATE: 06-18-09

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG

TENG & ASSOCIATES, INC.
ENGINEERS/ARCHITECTS/PLANNERS
CHICAGO, ILLINOIS

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

WATER UTILITY MAP

PLATE REFERENCE NUMBER
U-101

SHEET 1 OF 6

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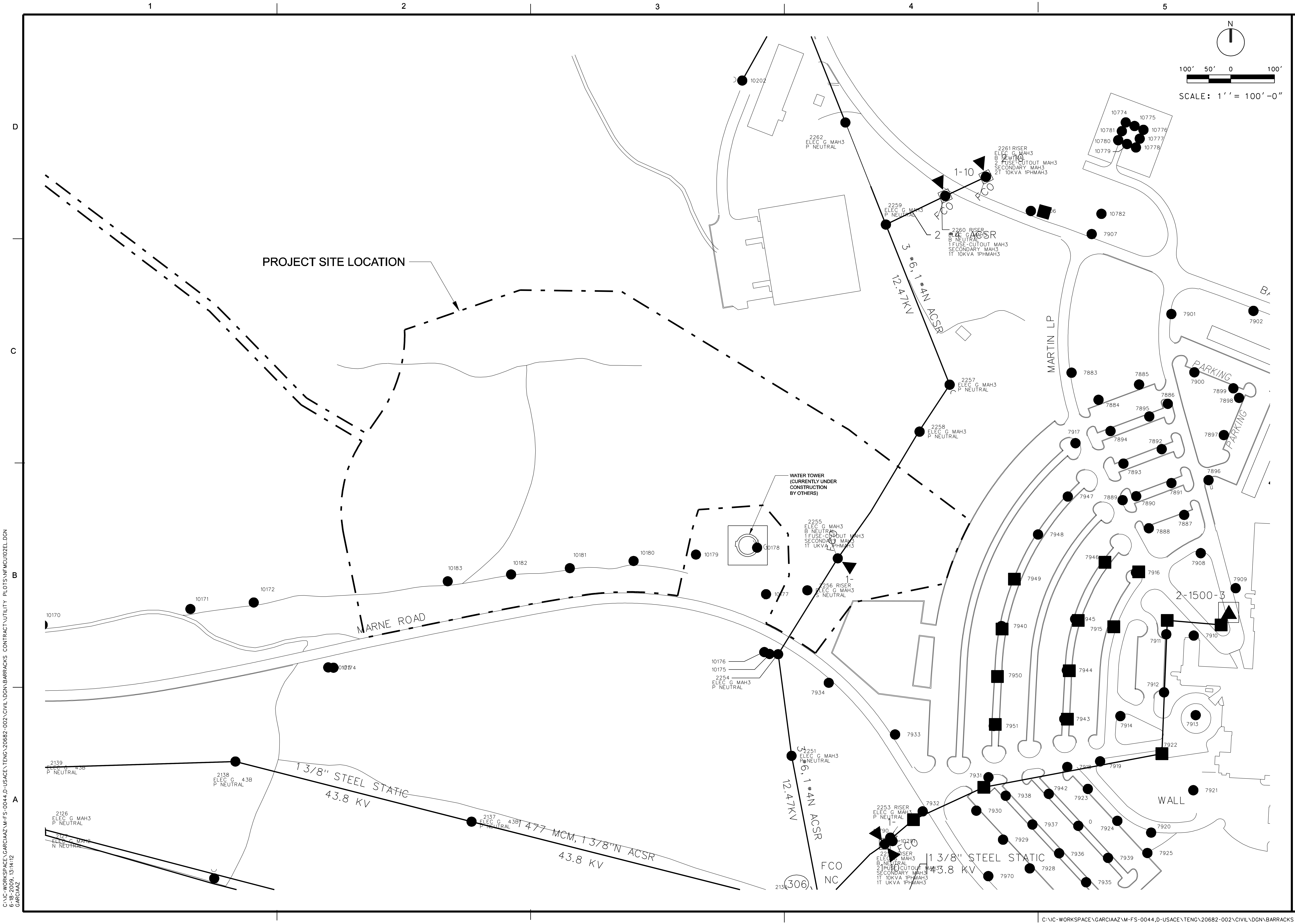

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

US ARMY CORPS
OF ENGINEERS
SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

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DWN BY: AG	CKD BY: JS	SOLICITATION NO.: #
SUBMITTED BY: TENG		CONTRACT NO.: #
FILE NAME: NFMCU102EL.DGN		CATEGORY CODE: 721-12-01
SIZE: 34" X 22"	PLOT SCALE: 1"=100'	PLOT DATE: 06-18-09

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FORT BENNING, GEORGIA

ELECTRICAL UTILITY MAP

PLATE
REFERENCE
NUMBER
U-102
SHEET 2 OF 6

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Wednesday, July 28, 2010

1 2 3 4 5

D C B A

N

100′ 50′ 0 100′

SCALE: 1′′ = 100′-0″

PROJECT SITE LOCATION

MARNE ROAD

WATER TOWER (CURRENTLY UNDER CONSTRUCTION BY OTHERS)

MARTIN LP

PARKING

WALL

UP11B

UP11B2

UP11C

UP13B1

UP13B2

UP09E1

18" C 12" C 15" C 24" C 24" CM 30" CM

799 798 797 796 795 794 793 792 791 790 789 789A 787 786 785 784 783 782 781 780 779 778 777 776 775 774 773 772 804 803 802 801 801A 800 23 23A 22 22A 21 21A 21B 21C 29D 29E 29C 28 27 27A 27B 25S 25T 910

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SAVANNAH

BY	DATE	DESCRIPTION	SYMBOL

DESIGNED BY: AG
DWN BY: AG
CHD BY: JS
SUBMITTED BY: TENG
DATE: MAY 09
SOLICITATION NO.: #
CONTRACT NO.: #
CATEGORY CODE: 721-12-01
FILE NAME: NFMCU103ST.DGN
SIZE: 34" X 22"
PLOT SCALE: 1"=100'
PLOT DATE: 06-18-09

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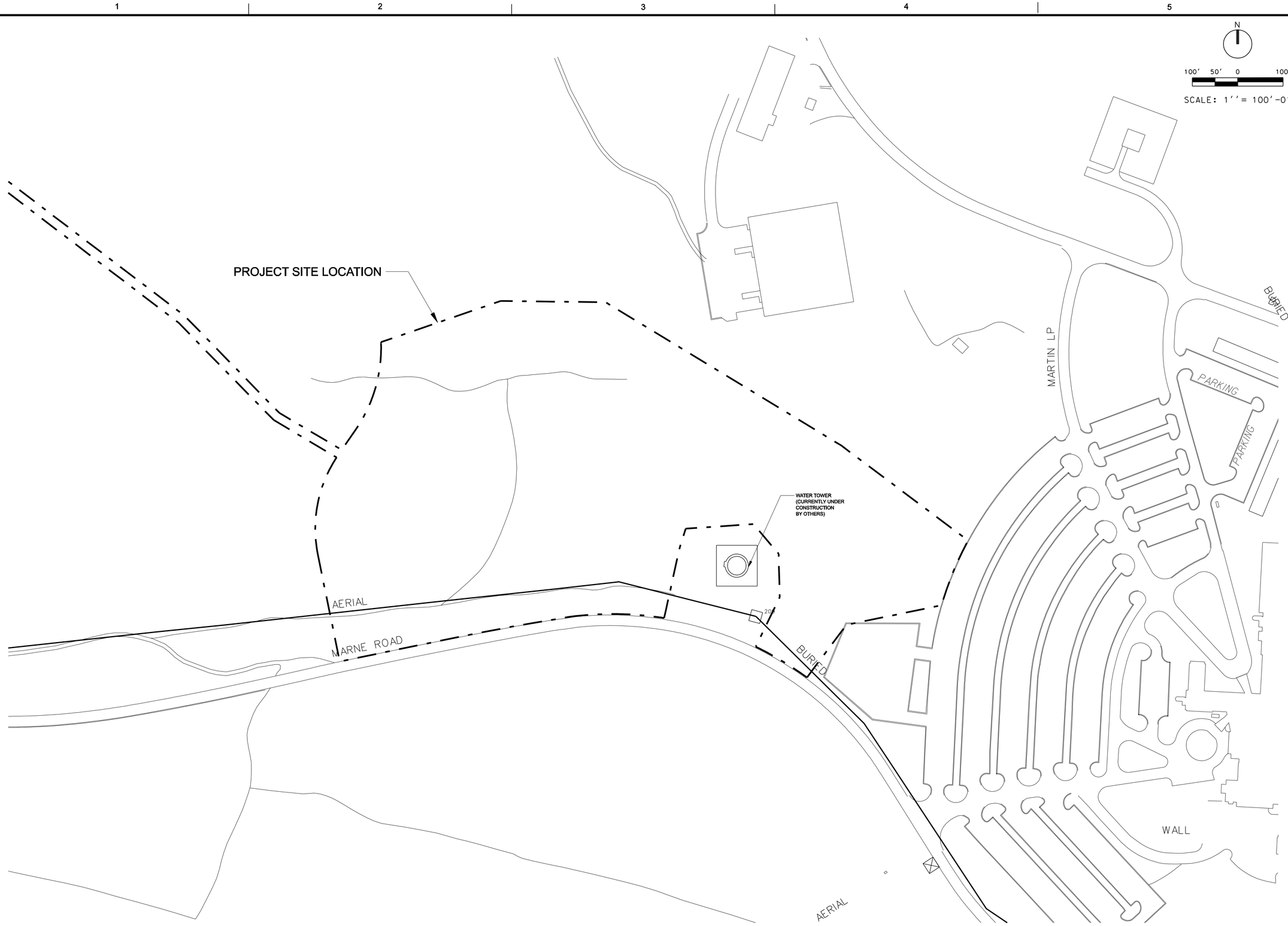
WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

STORM WATER UTILITY MAP

PLATE REFERENCE NUMBER
U-103

SHEET 3 OF 6



US ARMY CORPS OF ENGINEERS SAVANNAH

BY	DATE	DESCRIPTION	SYMBOL

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SUBMITTED BY: TENG		CONTRACT NO.: #	
FILE NAME: NFMCU104TV.DGN		CATEGORY CODE: 721-12-01	
SIZE: 34" X 22"	PLOT SCALE: 1"=100'	PLOT DATE: 06-18-09	

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WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

CABLE TV UTILITY MAP

PLATE REFERENCE NUMBER
U-104

SHEET 4 OF 6

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PROPOSED GRAVITY SANITARY SEWER LINE

EXISTING SANITARY SEWER LINE

PROJECT SITE LOCATION

EXISTING SANITARY SEWER LINE

WATER TOWER (CURRENTLY UNDER CONSTRUCTION BY OTHERS)

MARNE ROAD

MARTIN LP

N

100′ 50′ 0 100′

SCALE: 1′′= 100′-0″

US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

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DWN BY: AG	CKD BY: JS
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FILE NAME: NFMCU105SS.DGN	CONTRACT NO.: #
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	PLOT DATE: 06-18-09

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WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

SANITARY SEWER UTILITY MAP

PLATE REFERENCE NUMBER
U-105

SHEET 5 OF 6

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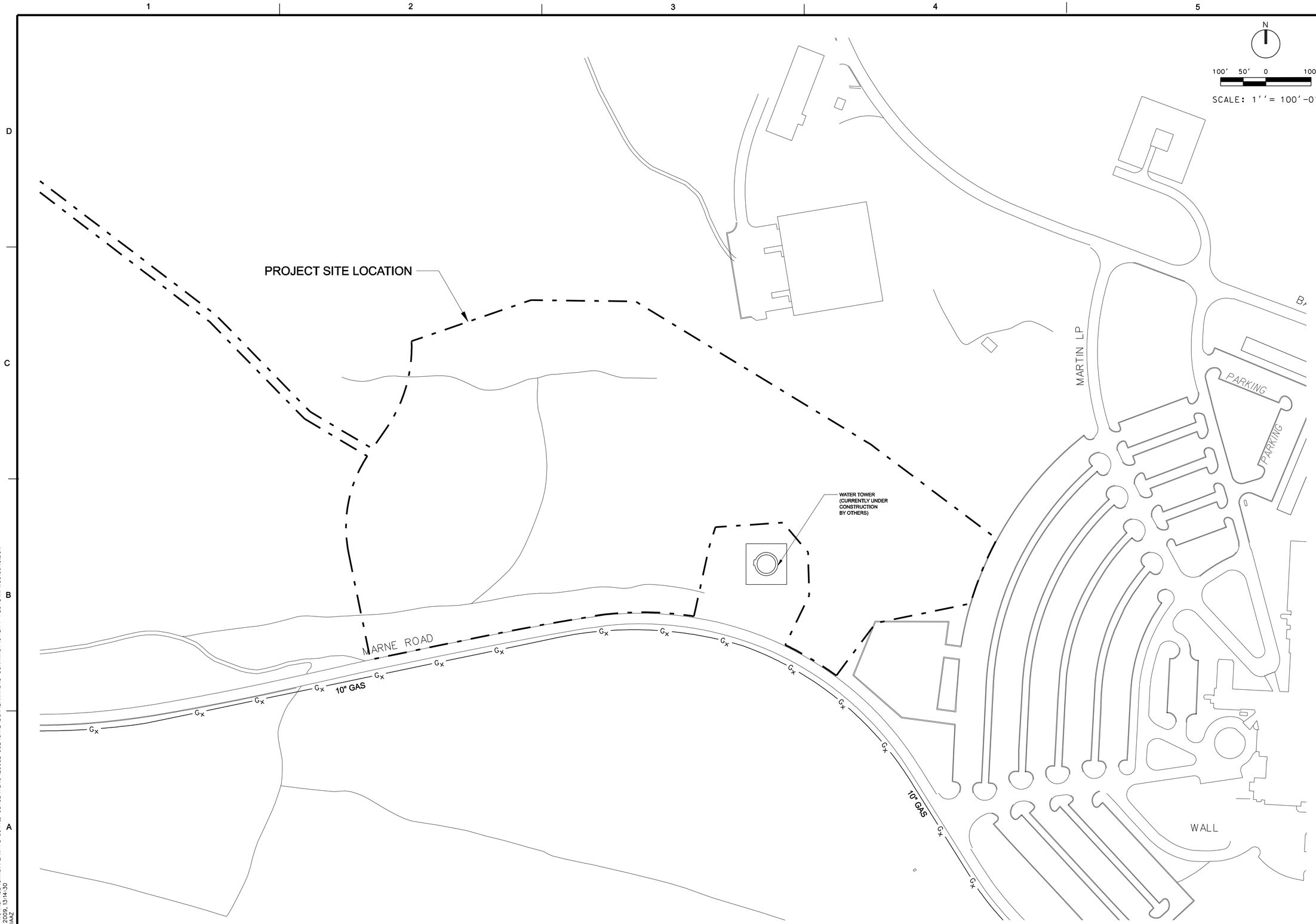

US ARMY CORPS OF ENGINEERS
SAVANNAH

BY	DATE	DESCRIPTION	SYMBOL

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SUBMITTED BY: TENG		CONTRACT NO.: #	
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SIZE: 34" X 22"	PLOT SCALE: 1"=100'	PLOT DATE: 06-18-09	

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SAVANNAH DISTRICT

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TENG & ASSOCIATES, INC.
ENGINEERS/ARCHITECTS/PLANNERS
ENGINEERING & PLANNING

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

NATURAL GAS UTILITY MAP

PLATE REFERENCE NUMBER
U-106

SHEET 6 OF 6

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ARCHITECTURE KREBS ENGINEERING

TECHNICAL MEMORANDUM

PREPARED FOR: TENG & Associates, Inc.
PREPARED BY: Krebs Architecture & Engineering, Inc.
DATE: May 15, 2009
RE: COE Project No. 69999, Warriors in Transition Center Hydraulic Analysis
Krebs Job No. 09022

In May of 2009, Krebs Architecture & Engineering, Inc. (Krebs) was contracted by TENG & Associates, Inc. (TENG) to determine potential pressures for designated flows at the COE Project No. 69999 Warriors in Transition Center site along Marne Road. Enclosed to this memorandum is a drawing supplied by TENG showing the project location.

The pressures for designated flows were determined based on the use Columbus Water Works' (CWW) Hydraulic Network Computer model. It is our understanding that TENG will provide the information listed below in an RFP for design/build contractors to use in sizing the potable water system at the project site.

Krebs completed a hydraulic analysis for two scenarios:

1. Pressures for designated flows at the project site as it relates to the Fort Benning and CWW Water Distribution System using peak day (PD) demands for the year 2012 (BRAC build-out). The elements and arrangement of the water distribution system in the hydraulic network model for the year 2012 is assumed to be as described in CWW's Master Plan update in 2009.
2. Pressures for designated flows at the project site as it relates to the Fort Benning and CWW Water Distribution System using peak day demands from the year 2007 with addition of the new Martin Army Hospital Tank and Martin Army Hospital WTM. The other elements and arrangement of the water distribution system is assumed to be as described for year 2007 in CWW's Master Plan update in 2009.

Table 1 – Pressures for flows for 2012 BRAC Buildout PD demands

Flow (GPM)	Pressure (psi)
1000	50-55
2000	47-52
3000	43-48

Table 2 – Pressures for flows for 2007 PD demands with New MAH Tank and WTM

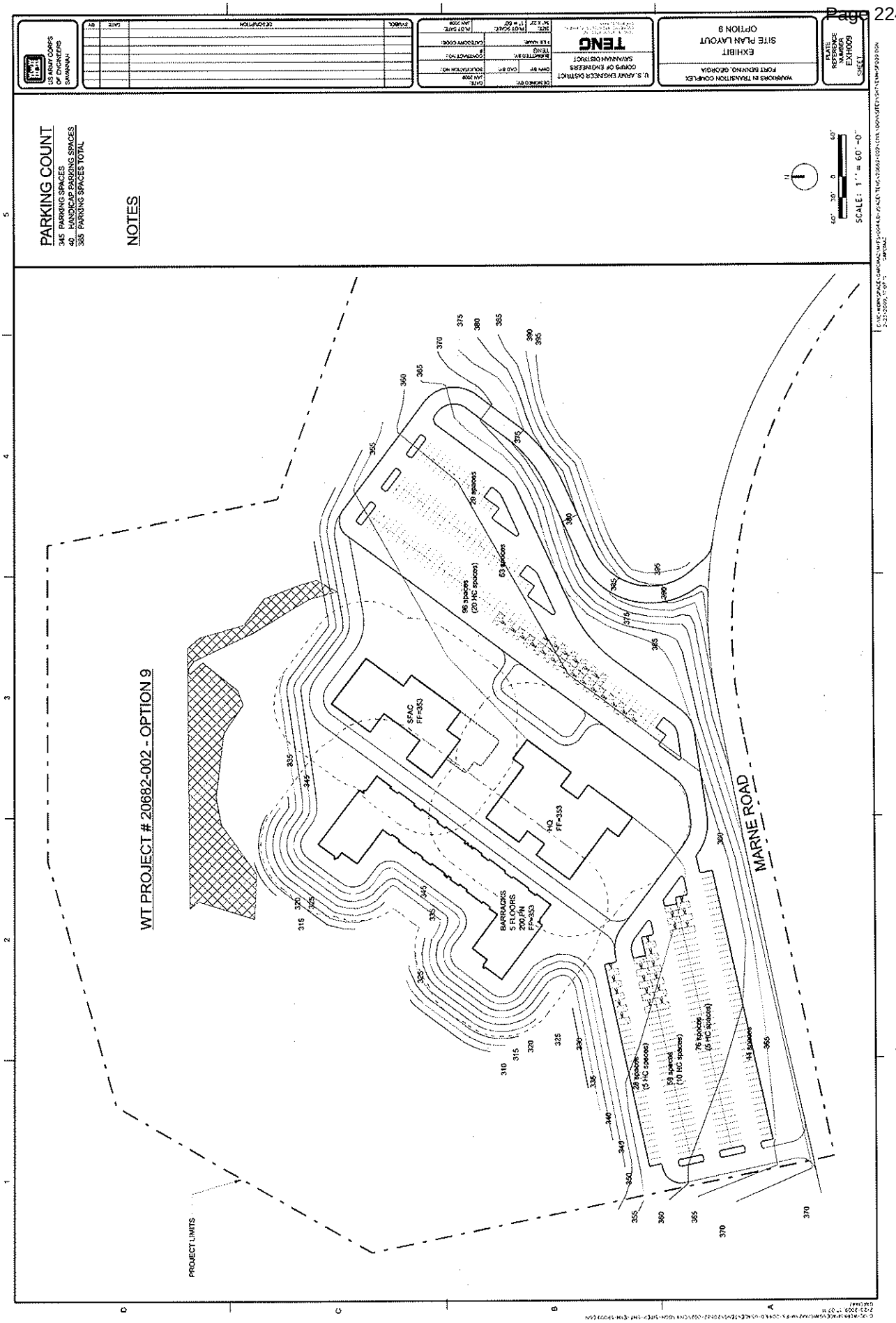
Flow (GPM)	Pressure (psi)
1000	35-40
2000	15-20
3000	N/A*

*locations surrounding the project site could be without potable water service

It should be noted that the pressures supplied in this document are subject to change based upon the schedule of completion of projects (infrastructure and building) at Fort Benning. Krebs has not been provided any updated information (after to Summer of 2007) concerning the schedule of any construction of the facilities (other than water distribution projects associated with CWW) at the time of preparation of this report.

Krebs File No. 09022/A1

Cc: Tom Horn, CWW
Kirk Mills, Krebs


US ARMY CORPS OF ENGINEERS SAVANNAH
DESCRIPTION
DATE
BY
WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA
EXHIBIT
SITE PLAN LAYOUT
OPTION 9
PLATE NO.
EXH009
SHEET
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA
TENG
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:
DATE:
JUN 2009
PROJECT NO.
CONTRACT NO.
CAD DWG FILE NO.
PARKING COUNT
345 PARKING SPACES
40 HANDICAP PARKING SPACES
385 PARKING SPACES TOTAL
NOTES
SCALE: 1" = 60'-0"
WT PROJECT # 20682-002 - OPTION 9
MARNE ROAD
PROJECT LIMITS
SFAC FF=353
HQ FF=353
BARRACKS 5 FLOORS 200 PN FF=353
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20 spaces
63 spaces
28 spaces (5 HC spaces)
59 spaces (10 HC spaces)
76 spaces (5 HC spaces)
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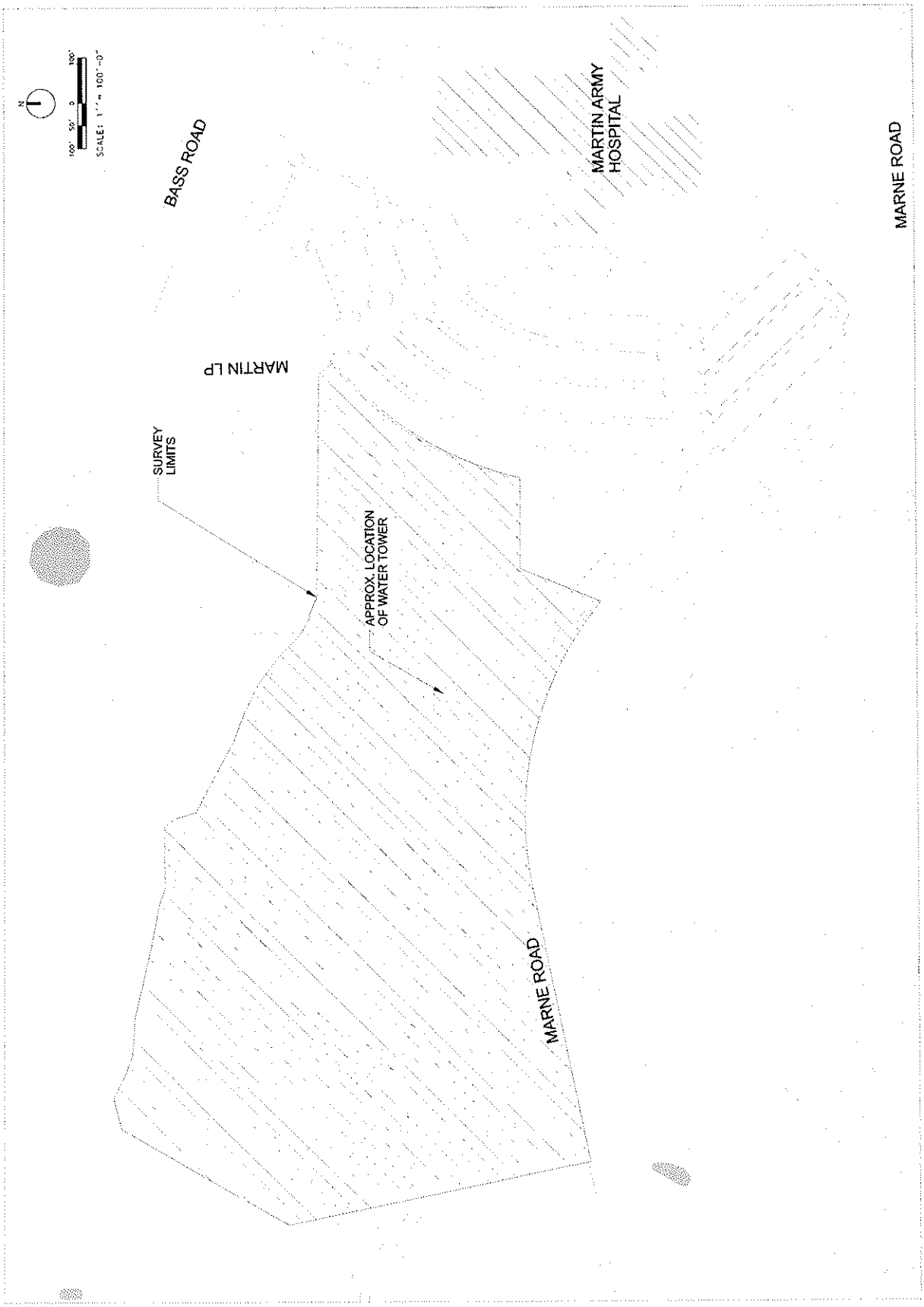

N
100' 50' 0 100'
SCALE: 1" = 100'-0"
BASS ROAD
MARTIN ARMY HOSPITAL
MARNE ROAD
MARTIN LP
SURVEY LIMITS
APPROX. LOCATION OF WATER TOWER
MARNE ROAD

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01355A

ENVIRONMENTAL PROTECTION
05/05

--End of Section Table of Contents--

SECTION 01355A

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

STATE OF GEORGIA ENVIRONMENTAL PROTECTION DIVISION (EPD)

General NPDES Permit General NPDES Permit No. GAR100001

THE NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

33 CFR 328	Definitions of Waters of the United States
40 CFR 110	Discharge of Oil - Spill Contingency Plan (SCP)
40 CFR 112	Oil Pollution Prevention - Spill Prevention, Control and Countermeasures
40 CFR 136	NPDES Stormwater Sampling Guidance Document
40 CFR 152 - 186	Pesticide Programs
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification

40 CFR 355	Emergency Planning and Notification
40 CFR 68	Chemical Accident Prevention Provisions
49 CFR 171 - 178	Hazardous Materials Regulations

U.S. ARMY (DA)

AR 200-5 (1999)	Pest Management

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (1996)	Safety and Health Requirements Manual
WETLAND MANUAL	Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 833-B-92-001	NPDES Stormwater Sampling Guidance Document

1.2 DEFINITIONS

1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and

contaminated pesticide equipment rinse water.

1.2.4 Installation Pest Management Coordinator

Installation Pest Management Coordinator (IPMC) is the individual officially designated by the Installation Commander to oversee the Installation Pest Management Program and the Installation Pest Management Plan.

1.2.4 Project Pesticide Coordinator

The Project Pesticide Coordinator (PPC) is an individual that resides at a Civil Works Project office and that is responsible for oversight of pesticide application on Project grounds.

1.2.5 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

1.2.6 Pesticide

Pesticide is defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

1.2.7 Pests

The term "pests" means arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

1.2.8 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

1.2.9 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

1.2.10 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND

MANUAL.

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.5 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations and supplemental environmental projects negotiated for resolution of any violations or non-compliance.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Environmental Protection Plan; G

The environmental protection plan.

1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval to the Facility's Environmental Management Division (EMD) via the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the

Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.7.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.7.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

d. Description of the Contractor's environmental protection personnel training program.

e. An Erosion, Sedimentation, and Pollution Control Plan (ESPCP) must be prepared and certified in accordance with the General NPDES Permit No. GAR100001. The plan will identify an appropriate and comprehensive system and design of Best Management Practices (BMPs) required to control erosion and sedimentation runoff from construction activities and sampling and monitoring requirements. The plan also must identify all potential sources of pollution and describe practices to prevent/reduce pollutants in storm water discharges. This includes measurements to meet SPCC requirements. The ESPCP must be in accordance with Georgia Water Quality Control Act (GWQCA) of 1964 and the Manual for Erosion and Sediment Control in Georgia (Latest Edition).

f. 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.

g. 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.

h. 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.

i. Drawing showing the location of borrow areas.

j. 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 110, 40 CFR 112, 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and Facility Environmental Office if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

k. 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. 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.

m. 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.

n. 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.

o. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

p. 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.

q. 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 Project Office 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.

1.7.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.8 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 shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.9 SPECIAL ENVIRONMENTAL REQUIREMENTS

The Contractor shall comply with the special environmental requirements listed here and included at the end of this section.

1.10 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Facility's Environmental Management Division via the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.11 NOTIFICATION

The Facility's Environmental Management Division will notify the Contractor

in writing, via the Contracting Officer, 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.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, Regional, and local environmental laws and regulations.

3.2 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.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Landscape

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.

3.2.3 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 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) as indicated on the drawings and as specified in Section 01356A STORM WATER POLLUTION PREVENTION MEASURES. 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. The Contractor's best management practices shall also be in accordance with the Manual for Erosion and Sediment Control in Georgia (Latest Edition) and the General NPDES Permit No. GAR100001. The plan shall be available at the construction site until a notice of termination is filed. Any temporary measures shall be removed after the
area has been stabilized.

3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.3 WATER RESOURCES

The Contractor shall 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, sampling, monitoring of outfalls, and reporting must be implemented as described in the General NPDES Permit No. GAR100001 to include required turbidity samples. All samples must be in accordance with NPDES Stormwater Sampling Guidance Document, EPA 833-B-92-001 and 40 CFR 136.

3.3.1 Cofferdams, Diversions, and Dewatering Operations

Construction operations for dewatering, removal of cofferdams, and diversion ditches shall be controlled at all times to maintain compliance with existing State water quality standards and designated uses of the surface water body. The Contractor shall comply with the State of Georgia water quality standards and anti-degradation provisions and the Clean Water Act Section 404, Individual Permit maybe required for this project.

3.3.2 Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and local governments. Construction of stream crossing structures shall be in compliance with Clean Water Act Section 404. Individual Permit maybe required for this project.

3.3.3 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands except as authorized herein. Wetlands shall be stalked staked by the Contractor before clearing. The Contractor shall be responsible for the protection of wetlands shown on the drawings in accordance with paragraph ENVIRONMENTAL PERMITS, REVIEWS, AND APPROVALS. Authorization to enter specific wetlands identified shall not relieve the Contractor from any obligation to protect other wetlands within, adjacent to, or in the vicinity of the construction site and associated boundaries. Regulated stream bank buffers also must be marked and protected.

3.4 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.

3.4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, 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. Sprinkling shall only dampen the disturbed area and shall not precipitate any runoff from the site. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.4.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State of Georgia rules.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.5.1 Solid Wastes

Solid wastes shall be 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 all solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for 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.

3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. Implementation of SPCC requirements where hazardous materials/chemicals are stored/used/managed will prevent/minimize pollution of ground and water sources. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

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 and shall manage and store hazardous waste in accordance with the Installation hazardous waste management plan. 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 within 60 days 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's Environmental Management Division at 706-545-9879. 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. The Contractor shall coordinate the disposition of hazardous waste with the Facility's Hazardous Waste Manager and the Contracting Officer.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. Storage of fuel on the project site shall be accordance with all Federal, State, and local laws and regulations. Implementation of SPCC requirements where fuel and lubricants are stored/used/managed will prevent/minimize pollution of ground and water sources. This is a requirement under Ft. Benning SPCC Plan and the ESPCP under the General NPDES Permit GAR100001. As part of construction operations, pollutants include, but not limited to: POL products (fuel, oil, lubricants), solvents, paints, pesticides, herbicides, fertilizers, chemicals, etc. Other pollutants considered under NPDES include litter and biological waste. Sources of these pollutants include fuel tanks, drums, cans, heavy equipment, and the materials used for construction.

3.5.5 Waste Water

Disposal of waste water shall be as specified below.

a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water off-Government property in accordance with all Federal, State, Regional and Local laws and regulations or by collecting and placing it in a retention pond where suspended material can be settled out and/or the water can evaporate to separate pollutants from the water. The site for the retention pond shall be coordinated and approved with the Contracting Officer. The residue left in the pond prior to completion of the project shall be removed, tested, and disposed off-Government property in accordance with Federal, State, and local laws and regulations. The area shall be backfilled to the original grade, top-soiled and seeded/sodded. The water in the retention pond shall be tested for in accordance with requirements of the NPDES permit and the results reviewed and approved by the Contracting Officer, prior to being discharged or disposed off-Government property.

b. For discharge of ground water, the Contractor shall obtain a State or Federal permit specific for pumping and discharging ground water prior to surface discharge in accordance with the requirements of the NPDES or State STORM WATER DISCHARGES FROM CONSTRUCTION SITES permit. Land application shall be in accordance with all Federal, State, Regional, and/or Local laws and

regulations for pumping and land applying ground water.

c. Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing shall be land applied in accordance with all Federal, State, and local laws and regulations for land application.

3.6 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.

3.7 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste diversion and disposal of construction and demolition debris. The Contractor shall submit a report to the Facility's Environmental Management Division, Recycling Department via the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that non-hazardous solid waste has been generated. The following shall be included in the report:

a. Construction and Demolition (C&D) Debris Disposed = _____ in cubic yards or tons, as appropriate.

b. Construction and Demolition (C&D) Debris Recycled = _____ in cubic yards or tons, as appropriate.

c. Total C&D Debris Generated = _____ in cubic yards or tons, as appropriate.

d. Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount) = _____ in cubic yards or tons, as appropriate.

3.8 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 and the EMD Cultural Resource Manager so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such

resources.

3.9 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.10 INTEGRATED PEST MANAGEMENT

In order to minimize impacts to existing fauna and flora, the Contractor, through the Contracting Officer, shall coordinate with the Installation Pest Management Coordinator (IPMC) at the earliest possible time prior to pesticide application. The Contractor shall discuss integrated pest management strategies with the IPMC PPC and receive concurrence from the IPMC through the COR prior to the application of any pesticide associated with these specifications. Installation Project Office 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. For termiticide requirements see Section 02360
SOIL TREATMENT. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.10.1 Pesticide Delivery and Storage

Pesticides shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses. Pesticides shall be stored according to manufacturer's instructions and under lock and key when unattended.

3.10.2 Qualifications

For the application of pesticides, the Contractor shall use the services of a subcontractor whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.10.3 Pesticide Handling Requirements

The Contractor shall formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions and shall use the clothing and personal protective equipment specified on the labeling for use during all phases of the application. Material Safety Data Sheets (MSDS) shall be available for all pesticide products.

3.10.4 Application

Pesticides shall be applied by a State Certified Pesticide Applicator in accordance with EPA label restrictions and recommendation. The Certified Applicator shall wear clothing and personal protective equipment as specified on the pesticide label. Water used for formulating shall only come from locations designated by the Contracting Officer. The Contractor shall not allow the equipment to overflow. Prior to application of pesticide, all equipment shall be inspected for leaks, clogging, wear, or

damage and shall be repaired prior to being used.

3.11 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

3.12 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.13 MILITARY MUNITIONS

In the event the Contractor discovers or uncovers military munitions as defined in 40 CFR 260, the Contractor shall immediately stop work in that area and immediately inform the Contracting Officer.

3.14 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.15 CONTAMINATED MEDIA MANAGEMENT

Contaminated environmental media consisting of, but not limited to, ground water, soils, and sediments shall be managed in accordance with Section 01355A.

3.16 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

-- End of Section --

IMSE-BEN-PWF-F

MEMORANDUM FOR RECORD **26 Jan 2009**

SUBJECT: Permanent Retention/Detention Pond Policy – Fort Benning, GA

1. Design considerations for storm water management at Fort Benning shall avoid the implementation of permanent storm detention / retention ponds, unless otherwise approved by the DPW.

2. Permanent detention ponds take away valuable real estate property that may otherwise be used for other mission related requirements. Since budgets are always lacking, we need to focus on more economical solutions other than ponds. In addition, ponds are unsightly, create added maintenance expenses, and pose numerous safety hazards. However, in cases where an existing storm water system downstream is deemed inadequate to handle the increased flows, the DPW may agree that a pond is necessary.

3. This policy memorandum in no way relieves the designer from the responsibility of managing post-development runoff and preventing soil erosion and sedimentation in the design of the project in accordance with the Clean Water Act and NPDES regulations. The recommended methods to be utilized are: a.) Level spreaders; b.) Wide grassed swales; and c.) On-site runoff infiltration. Note that a modified level spreader in some cases may be preferred over the basic Level Spreader (Lv) as shown in the GA Field Manual. See attached detail on modified level spreader.

4. Points of contact for this action are Clayton Hayes, P.E., DPW Master Planning Division, (706) 575-6798, and Bill Gordy, P.E., DPW Engineering Design Branch (706) 577-6485.

Craig Taylor
Director of Public Works

Concurred By:

B. Mirabal, Dpty DPW / Ch Eng Div _____

J. Brent, Ch Environmental Division _____

K. Holloway, Ch Master Planning Div _____

Project Number: 69999

PRELIMINARY ENVIRONMENTAL QUESTIONNAIRE

Purpose: This questionnaire provides Ft. Benning Directorate of Public Works Design, Construction, Renovation, Demolition and Real Estate Project Managers (DPW-PM) a guidance document to prevent costly delays and/or violations of Environmental Laws and Regulations. The questionnaire is designed to improve coordination between project managers and individual Environmental/Natural Resources Program managers as well as the A/E firm. Project Managers should coordinate directly with individual Environmental/Natural Resources Program managers to provide necessary information to modify permits and/or coordinate with regulatory agencies. Once completed by the DPW-PM and A&E and returned to the Environmental Project Coordinator (EPC), a checklist based on questionnaire responses will be generated and provided to the DPW-PM within (10) working days. That checklist provides a complete list of regulatory requirements for a specific project. The EPC will keep a master of the both questionnaire and checklist with the project folder. If a question is answered "yes", the appropriate Environmental/Natural Resources Program Manager shall be contacted and the PM will maintain a copy of related correspondence in the Project File.

Questionnaire must be completed at NLT Pre-Design (OMA)/Planning Charrette (MCA)

PROJECT DESCRIPTION

Project Title: WT Barracks Complex	Funding Year FY: 10	Original Date of Survey 10/08 (Hospital)	Revised Date of Survey: Not Yet Complete

DPW-PM Name: Dean Miller Phone: (706) 545-3229	USACE-PM Name: Ruben Del Rio Phone: (912) 547-4298	A&E or Contractor: Teng and Associates POC Name: Matt Mann/Jamie Setter Phone No: (312) 616-7516/(312) 616-4136

Type of Contract:
- ☐ IDC(Indefinite Delivery of Contract)
- ☐ Design-Bid-Build
- ☒ Design-Build
- ☐ Permission Only

Estimate Date for :
- Advertisement for Bids October 2010
- Notice of Award (NOA) February 2010
- Start of Construction March 2010
- Construction Completion September 2011

Description of Project (Scope of work): Design/Build 0f 200PN Barracks, SFAC and Combo BN HQ/COF's and associated site improvements.

Project Phase ☒ 1391 ☐ 4283 ☐ Final RFP Review

☒ Planning Charrette ☐ Design Charrette ☐ Prelim (35%) ☐ Actual (60%)
☐ Actual (95%) ☐ Un-corrected Final (100%) ☐ Corrected Final (100%)

Location of Proposed Activity (Provide address or nearest intersection and attach map) Located off Marne Road, west of the existing hospital. Please see attached map.

Type of Action/Activity *(Check all that apply)*	What is the exact size (acres, square feet, linear feet) of the project clearing limits including roads, utilities, laydown area?	What are project coordinates? [4 project corners, boundaries]
☐ *Demolition* ☐ *Modification or expansion* ☒ *New construction* ☐ *Replacement* ☐ *Repair*	16.2 Acres + 1800 LF Utility Cooridor	NAD 1983 UTM Zone 16N Please see attached exhibit.

What is the intended purpose of construction/activity and time of use?
The WT facilities will house soldiers temporarily while they are recuperating from injuries sustained during their service in the United States and overseas fighting the Global War on Terror (GWoT). These facilities will provide the best accommodations the Army can build in gratitude for their service and sacrifice. The WT Complexes will include separate barracks, administrative and Soldier Family Assistance Centers (SFAC) and are completely handicap accessible.

SECTION II.	Yes	No	N/A	Maybe	No Change	DPW PM, A&E, Contractor Comments
DESIGN & CONSTRUCTION:						
1. Has the project scope changed in anyway since last submittal?		X				This is the first submittal for this site.
2. Have alternative locations been considered? If so where? Why were they eliminated? (For projects 5 or more acres)	X					Re-sited off a closed landfill. At this location, several site layouts were considered based on user needs, site impacts, required grading, cost and enviro. impacts.
3. Is there any ground disturbance associated with this project?	X					There is significant regrading required as part of this project.
4. Will project impact undisturbed area?	X					The site area is currently wooded with an gravel exercise trail.
5. Will the project require tree removal? If known, provide the type? How many? What size Diameter Breast Height (DBH)	X					Part of the site is old growth trees.
6. Are streams, lakes, stormwater drainage, or wet (drainage) areas within the project area?	X					There are wetlands and a defined drainage way located north of the site.
7. Is there a landscape plan?	X					A landscape plan will be completed with design.
8. Will there be water line extension?	X					There is a water line available at the southeast corner of the site.
9. Will there be sewer line extension?	X					The sewer line will run approximately 1800 lf to an existing line, north of the site.
10. Will there be any septic tank installation/modification/removal?		X				
11. Will project require sanitary sewer?	X					
12. Will there be other utility extensions? (electrical, telecom, etc.)	X					There will be electric, communications and gas connections. Comm. is available approx. 2000 lf from the site.
13. Will the project install an oil/water separator?		X				
14. Will the project demolish or replace an existing oil/water separator?		X				
15. Will any boilers be removed, replaced or installed? Provide boiler sizes, (heat input) and fuel(s)?	X					Boilers may be sized and provided by the D/B Contractor for the new buildings.
16. Is anti-idling language referenced in the Contract?		X				

			N/A	Maybe	No Change	DPW PM, A&E, Contractor Comments
17. Will emergency generators be removed, replaced or installed? Provide (new) generator(s) electrical output, fuel, and location (nearest or supported bldg Number)		X				
18. Are there other possible air emission sources to be built or demolished? (Paint booths, shot blasting operation, engine testing, woodworking, cyclones, and bag-houses?)		X				
19. Will any above-ground tanks (AST) or underground tanks (UST) be part of the facility or construction? Are there any fueling operations?		X				
20. Will there be any tank removal, closure, modification, or abandonment? Will there be any change in type of the existing fuel that is being stored? (i.e. JP-8 to diesel or MOGAS)		X				
21. Will temporary fuel tanks be erected for construction equipment refueling?		X				
22. Will this project require LEED rating? If no, state why not. If yes, what is target?	X					Silver
23. Will the project install/renovate/remove/replace/repair fire suppression system containing Halon?		X				
24 Does the project include Lead Based Paint abatement?		X				
25. Will contractor/customer store hazardous material/oils?		X				
26. Will hazardous waste be a part of the facility activity? (weapons storage facility)		X				
27. Will the project require pesticides insecticides, herbicides, fungicides, or rodenticides application?		X				
28. Will this project be located near or adjacent to a known Solid Waste Management Unit (SWMU) or monitoring wells?		X				
29. Will there be installation/retrofit/ replacement of refrigeration equipment containing Freon?		X				
30. Have you checked the Noise zone associated with this project? Is the Noise zone acceptable for this project?	X					The site is located in Noise Zone III. That is acceptable for this project.

DEMOLITION / RENOVATION FOR CONSTRUCTION:						
	Yes	No	N/A	Maybe	No Change	DPW PM, A&E, Contractor Comments
31. Will the project remove any HVAC systems or equipment? Class I or II refrigerants? Does the HVAC system contain refrigerants 50 lbs or greater?		X				
32. Will there be any renovation/demolition of an existing building? What is the building number?		X				
33. Has an asbestos survey been conducted?		X				There are no existing buildings on site.
34. Will the construction or demolition include shot blasting, odorous emissions, dust clouds or thick smoke-producing activities?		X				
35. Will the project generate construction waste?	X					Shall conform to Army requirement for 50% diversion rate.
36. Will demolition material be recycled?	X					The trail equipment is to be removed and reused.
37. Will a waste management area be built on site?		X				
38. Will the project generate hazardous waste?		X				
39. Will any universal wastes be generated? (e.g. fluorescent lamps, batteries, ballasts, thermostats.)		X				
40. Will solid waste segregation containers be required or available?		X				

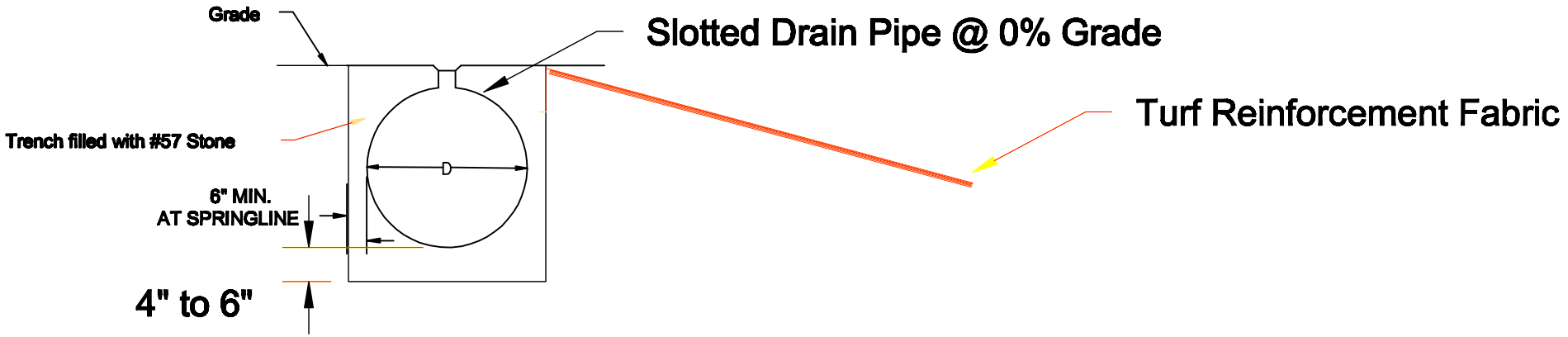
Remarks/Additional Information

Printed Name of Person Completing This Questionnaire		
Signature of Person Completing This Questionnaire	Telephone No. 706-545-9226	Date:

Environmental/Natural Resources Program Managers

The following is Fort Benning Directorate of Public Works Environmental/Natural Resources Program Managers; Subject Matter Experts (SMEs) contact information. DPW-PMs are encouraged to contact SMEs to properly complete this questionnaire as well as to continue to improve coordination between project managers and individual Environmental/Natural Resources Program managers. Continuous coordination between the two will increase the more sustainably designed and constructed facilities on Fort Benning.

Environmental/Natural Resources Program Managers, SMEs	Contact Information
AIR QUALITY/NOISE	
Bonnie Storey (Noise)	706.545.6427
ASBESTOS & LEAD BASED PAINT (LBP)	706.545.7549
CULTURAL RESOURCES	
Chris Hamilton	706.545.2377
Peter Drake	706.545.1857
	706.545.1471
EMS/Sustainable Project Rating Tool /Leadership in Energy and Environmental Design (LEED)	
Tom Tuten	706.545.1298
(EMS)	706.545.1960
Peter Lukken (LEED)	706.545.1812
INSTALLATION RESTORATION (IR)	
Neil Pearce	706.545.7188
HAZARDOUS MATERIALS& HAZARDOUS WASTE	
Ted Williams	706.545.7579
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)	
John Brown	706.545.7549
Henry Haas (BRAC Project Coordinator)	706.545.9226
Tracy Ferring (Analyst)	706.545.9878
Jodi Williams (Analyst)	706.545.7580
Joice Linander (NEPA Technician 144R Process)	706.545.2128
NATURAL RESOURCES	
Michael Barron (RCW)	706.544.7080
Mark Thornton (T&E)	706.544.7079
Gary Hollon (Wetlands)	706.544.7070
James Parker (Forrester)	706.544.7081
POLLUTION PREVENTION	
Dorinda Morpeth	706.545.5337
SOLID WASTE	
Dorinda Morpeth	706.545.5337
STORM-WATER/NPDES/SPCC/EPRCA	
Felix Seda	706.545.9879
UNDERGROUND/ABOVEGROUND STORAGE TANKS (UST/AST) & PESTICIDES	
Ted Williams	706.545.7579
WATER QUALITY	
Joseph Wilkins	706.545.2400



MODIFIED LEVEL SPREADER DETAIL

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05/05

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ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

STATE OF GEORGIA ENVIRONMENTAL PROTECTION DIVISION (EPD)

General NPDES Permit General NPDES Permit No. GAR100001

THE NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

33 CFR 328 Definitions of Waters of the United States

40 CFR 110	Discharge of Oil - Spill Contingency Plan (SCP)
40 CFR 112	Oil Pollution Prevention - Spill Prevention, Control and Countermeasures
40 CFR 136	NPDES Stormwater Sampling Guidance Document
40 CFR 152 - 186	Pesticide Programs
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
40 CFR 68	Chemical Accident Prevention Provisions
49 CFR 171 - 178	Hazardous Materials Regulations

U.S. ARMY (DA)

AR 200-5 (1999)	Pest Management

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (1996)	Safety and Health Requirements Manual
WETLAND MANUAL	Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 833-B-92-001	NPDES Stormwater Sampling Guidance Document

1.2 DEFINITIONS

1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat

disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

1.2.4 Installation Pest Management Coordinator

Installation Pest Management Coordinator (IPMC) is the individual officially designated by the Installation Commander to oversee the Installation Pest Management Program and the Installation Pest Management Plan.

1.2.4 Project Pesticide Coordinator

The Project Pesticide Coordinator (PPC) is an individual that resides at a Civil Works Project office and that is responsible for oversight of pesticide application on Project grounds.

1.2.5 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

1.2.6 Pesticide

Pesticide is defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

1.2.7 Pests

The term "pests" means arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

1.2.8 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

1.2.9 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

1.2.10 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND MANUAL.

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.5 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations and supplemental environmental projects negotiated for resolution of any violations or non-compliance.

1.6 SUBMITTALS

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

SD-01 Preconstruction Submittals

Environmental Protection Plan; G

The environmental protection plan.

1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval to the Facility's Environmental Management Division (EMD) via the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary,

shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.7.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.7.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

d. Description of the Contractor's environmental protection personnel training program.

e. An Erosion, Sedimentation, and Pollution Control Plan (ESPCP) must be prepared and certified in accordance with the General NPDES Permit No. GAR100001. The plan will identify an appropriate and comprehensive system and design of Best Management Practices (BMPs) required to control erosion and sedimentation runoff from construction activities and sampling and monitoring requirements. The plan also must identify all potential sources of pollution and describe practices to prevent/reduce pollutants in storm water discharges. This includes measurements to meet SPCC requirements. The ESPCP must be in accordance with Georgia Water Quality Control Act (GWQCA) of 1964 and the Manual for Erosion and Sediment Control in Georgia (Latest Edition).

f. 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.

g. 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.

h. 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.

i. Drawing showing the location of borrow areas.

j. 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 110, 40 CFR 112, 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and Facility Environmental Office if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

k. 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.

l. 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.

m. 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.

n. 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.

o. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

p. 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.

q. 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 Project Office 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.

1.7.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.8 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 shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.9 SPECIAL ENVIRONMENTAL REQUIREMENTS

The Contractor shall comply with the special environmental requirements listed here and included at the end of this section.

1.10 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Facility's Environmental Management Division via the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.11 NOTIFICATION

The Facility's Environmental Management Division will notify the Contractor in writing, via the Contracting Officer, 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.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, Regional, and local environmental laws and regulations.

3.2 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.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Landscape

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.

3.2.3 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 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) as indicated on the drawings and as specified in Section 01 57 23.00 10 STORM WATER POLLUTION
PREVENTION MEASURES. 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. The Contractor's best management practices shall also be in accordance with the Manual for Erosion and Sediment Control in Georgia (Latest Edition) and the General NPDES Permit No. GAR100001. The plan shall be available at the construction site until a notice of termination is filed. Any temporary measures shall be removed after the
area has been stabilized.

3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.3 WATER RESOURCES

The Contractor shall 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, sampling, monitoring of outfalls, and reporting must be implemented as described in the General NPDES Permit No. GAR100001 to include required turbidity samples. All samples must be in accordance with NPDES Stormwater Sampling Guidance Document, EPA 833-B-92-001 and 40 CFR 136.

3.3.1 Cofferdams, Diversions, and Dewatering Operations

Construction operations for dewatering, removal of cofferdams, and diversion ditches shall be controlled at all times to maintain compliance with existing State water quality standards and designated uses of the surface water body. The Contractor shall comply with the State of Georgia water quality standards and anti-degradation provisions and the Clean Water Act Section 404, Individual Permit maybe required for this project.

3.3.2 Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and local governments. Construction of stream crossing structures shall be in compliance with Clean Water Act Section 404. Individual Permit maybe required for this project.

3.3.3 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands except as authorized herein. Wetlands shall be stalked staked by the Contractor before clearing. The Contractor shall be responsible for the protection of wetlands shown on the drawings in accordance with paragraph ENVIRONMENTAL PERMITS, REVIEWS, AND APPROVALS. Authorization to enter specific wetlands identified shall not relieve the Contractor from any obligation to protect other wetlands within, adjacent to, or in the vicinity of the construction site and associated boundaries. Regulated stream bank buffers also must be marked and protected.

3.4 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.

3.4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, 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. Sprinkling shall only dampen the disturbed area and shall not precipitate any runoff from the site. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work

proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.4.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State of Georgia rules.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.5.1 Solid Wastes

Solid wastes shall be 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 all solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for 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.

3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. Implementation of SPCC requirements where hazardous materials/chemicals are stored/used/managed will prevent/minimize pollution of ground and water sources. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

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 and shall manage and store hazardous waste in accordance with the Installation hazardous waste management plan. 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 within 60 days

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's Environmental Management Division at 706-545-9879. 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. The Contractor shall coordinate the disposition of hazardous waste with the Facility's Hazardous Waste Manager and the Contracting Officer.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. Storage of fuel on the project site shall be accordance with all Federal, State, and local laws and regulations. Implementation of SPCC requirements where fuel and lubricants are stored/used/managed will prevent/minimize pollution of ground and water sources. This is a requirement under Ft. Benning SPCC Plan and the ESPCP under the General NPDES Permit GAR100001. As part of construction operations, pollutants include, but not limited to: POL products (fuel, oil, lubricants), solvents, paints, pesticides, herbicides, fertilizers, chemicals, etc. Other pollutants considered under NPDES include litter and biological waste. Sources of these pollutants include fuel tanks, drums, cans, heavy equipment, and the materials used for construction.

3.5.5 Waste Water

Disposal of waste water shall be as specified below.

a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water off-Government property in accordance with all Federal, State, Regional and Local laws and regulations or by collecting and placing it in a retention pond where suspended material can be settled out and/or the water can evaporate to separate pollutants from the water. The site for the retention pond shall be coordinated and approved with the Contracting Officer. The residue left in the pond prior to completion of the project shall be removed, tested, and disposed off-Government property in accordance with Federal, State, and local laws and regulations. The area shall be backfilled to the original grade, top-soiled and seeded/sodded. The water in the retention pond shall be tested for in accordance with requirements of the NPDES permit and the results reviewed and approved by the Contracting Officer, prior to being discharged or disposed off-Government property.

b. For discharge of ground water, the Contractor shall obtain a State or Federal permit specific for pumping and discharging ground water prior to surface discharge in accordance with the requirements of the NPDES or State STORM WATER DISCHARGES FROM CONSTRUCTION SITES permit. Land application shall be in accordance with all Federal, State, Regional, and/or Local laws and

regulations for pumping and land applying ground water.

c. Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing shall be land applied in accordance with all Federal, State, and local laws and regulations for land application.

3.6 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.

3.7 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste diversion and disposal of construction and demolition debris. The Contractor shall submit a report to the Facility's Environmental Management Division, Recycling Department via the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that non-hazardous solid waste has been generated. The following shall be included in the report:

a. Construction and Demolition (C&D) Debris Disposed = _____ in cubic yards or tons, as appropriate.

b. Construction and Demolition (C&D) Debris Recycled = _____ in cubic yards or tons, as appropriate.

c. Total C&D Debris Generated = _____ in cubic yards or tons, as appropriate.

d. Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount) = _____ in cubic yards or tons, as appropriate.

3.8 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 and the EMD Cultural Resource Manager so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.9 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal

and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.10 INTEGRATED PEST MANAGEMENT

In order to minimize impacts to existing fauna and flora, the Contractor, through the Contracting Officer, shall coordinate with the Installation Pest Management Coordinator (IPMC) at the earliest possible time prior to pesticide application. The Contractor shall discuss integrated pest management strategies with the IPMC PPC and receive concurrence from the IPMC through the COR prior to the application of any pesticide associated with these specifications. Installation Project Office 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. For termiticide requirements see Section 31 31 16 SOIL TREATMENT FOR SUBTERRANEAN TERMITE CONTROL. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.10.1 Pesticide Delivery and Storage

Pesticides shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses. Pesticides shall be stored according to manufacturer's instructions and under lock and key when unattended.

3.10.2 Qualifications

For the application of pesticides, the Contractor shall use the services of a subcontractor whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.10.3 Pesticide Handling Requirements

The Contractor shall formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions and shall use the clothing and personal protective equipment specified on the labeling for use during all phases of the application. Material Safety Data Sheets (MSDS)shall be available for all pesticide products.

3.10.4 Application

Pesticides shall be applied by a State Certified Pesticide Applicator in accordance with EPA label restrictions and recommendation. The Certified Applicator shall wear clothing and personal protective equipment as specified on the pesticide label. Water used for formulating shall only come from locations designated by the Contracting Officer. The Contractor shall not allow the equipment to overflow. Prior to application of pesticide, all equipment shall be inspected for leaks, clogging, wear, or damage and shall be repaired prior to being used.

3.11 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

3.12 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length

of time construction activities create the particular pollutant.

3.13 MILITARY MUNITIONS

In the event the Contractor discovers or uncovers military munitions as defined in 40 CFR 260, the Contractor shall immediately stop work in that area and immediately inform the Contracting Officer.

3.14 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.15 CONTAMINATED MEDIA MANAGEMENT

Contaminated environmental media consisting of, but not limited to, ground water, soils, and sediments shall be managed in accordance with Section 01355A.

3.16 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

-- End of Section --

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05/05

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SECTION 01 57 23.00 10

STORM WATER POLLUTION PREVENTION MEASURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 4439 (2002)	Geosynthetics
ASTM D 4491 (1999a)	Water Permeability of Geotextiles by Permittivity
ASTM D 4533 (1991; R 1996)	Trapezoid Tearing Strength of Geotextiles
ASTM D 4632 (1991; R 1996)	Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751 (1999a)	Determining Apparent Opening Size of a Geotextile
ASTM D 4873 (2002)	Identification, Storage, and Handling of Geosynthetic Rolls and Samples

STATE OF GEORGIA ENVIRONMENTAL PROTECTION DIVISION (EPD)

General NPDES Permit	General NPDES Permit No. GAR100001

THE NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 136	NPDES Stormwater Sampling Guidance Document

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 833-B-92-001	NPDES Stormwater Sampling Guidance Document

1.2 GENERAL

The Contractor shall implement the storm ESPCP as specified in this section in a manner which will meet the requirements of Section 01 57 20.00 10 ENVIRONMENTAL PROTECTION, and the requirements of the National Pollution Discharge Elimination System (NPDES) General Permit No. GAR100001.

1.3 SUBMITTALS

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

SD-07 Certificates

Mill Certificate or Affidavit; G, PO

Certificate attesting that the Contractor has met all specified requirements.

1.4 EROSION AND SEDIMENT CONTROLS

All erosion and sedimentation control measures and/or Best Management Practices (BMP) shall be planned, and implemented in accordance with the General NPDES Permit No. GAR100001, the ESPCP, and the Manual for Erosion and Sediment Control in Georgia (Latest Edition). Any deviation from this must be approved by the State or designated agency during the revision of the plan.

All requirements identified in the General NPDES Permit No. GAR100001 must be implemented during the construction activities. All specifications of BMPs must be in accordance with the Manual for Erosion and Sediment Control in Georgia (Latest Edition).

The controls and measures required by the Contractor are described below.

1.4.1 Stabilization Practices

The stabilization practices to be implemented shall include mulching, geotextiles, erosion control matting, protection of trees, preservation of mature vegetation, etc. On his daily CQC Report, the Contractor shall record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, embankment, and grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs UNSUITABLE CONDITIONS and NO ACTIVITY FOR LESS THAN 21 DAYS, stabilization practices shall be initiated as soon as practicable, but no more than 14 days, in any portion of the site where construction activities have temporarily or permanently ceased.

1.4.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity temporarily or permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable.

1.4.1.2 No Activity for Less Than 21 Days

Where construction activity will resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then stabilization practices do not have to be initiated on that portion of the site by the fourteenth day after construction activity temporarily ceased.

1.4.2 Structural Practices

Structural practices shall be implemented to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Structural practices shall include the following devices. Location and details of installation and construction are shown on the drawings.

1.4.2.1 Silt Fences

The Contractor shall provide silt fences as a temporary structural practice

to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Silt fences shall be installed in the locations indicated on the drawings. Final removal of silt fence barriers shall be upon approval by the Contracting Officer.

1.4.2.2 Straw Bales

The Contractor shall provide bales of straw as a temporary structural practice to minimize erosion and sediment runoff. Bales shall be properly placed to effectively retain sediment immediately after completing each phase of work (e.g., clearing and grubbing, excavation, embankment, and grading) in each independent runoff area (e.g., after clearing and grubbing in a area between a ridge and drain, bales shall be placed as work progresses, bales shall be removed/replaced/relocated as needed for work to progress in the drainage area). Areas where straw bales are to be used are shown on the drawings. Final removal of straw bale barriers shall be upon approval by the Contracting Officer. Rows of bales of straw shall be provided as follows:

a. Along the downhill perimeter edge of all areas disturbed.

b. Along the top of the slope or top bank of drainage ditches, channels, swales, etc. that traverse disturbed areas.

c. Along the toe of all cut slopes and fill slopes of the construction areas.

d. Perpendicular to the flow in the bottom of existing drainage ditches, channels, swales, etc. that traverse disturbed areas or carry runoff from disturbed areas. Rows shall be spaced a maximum of 200 feet apart as shown on the drawings.

e. Perpendicular to the flow in the bottom of new drainage ditches, channels, and swales. Rows shall be spaced a maximum of 200 feet apart as shown on the drawings.

f. At the entrance to culverts that receive runoff from disturbed areas.

1.4.2.3 Diversion Dikes

Diversion dikes shall have a maximum channel slope of 2 percent and shall be adequately compacted to prevent failure. The minimum height measured from the top of the dike to the bottom of the channel shall be 18 inches. The minimum base width shall be 6 feet and the minimum top width shall be 2 feet. The Contractor shall ensure that the diversion dikes are not damaged by construction operations or traffic. Diversion dikes shall be located as shown on the drawings.

1.4.2.4 Brush Barriers

The Contractor shall provide brush barriers as a temporary structural practice to minimize erosion and sediment runoff. Brush should be wind-rowed on the contour as nearly as possible and may require compaction. Brush barriers shall be installed in the areas shown on the drawings and shall be in accordance with the details shown in the drawings.

PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

The geotextile shall comply with the requirements of ASTM D 4439, and shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	100 lbs. min.
Elongation (%)		30 % max.
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

2.1.2 Silt Fence Stakes and Posts

The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 inches by 2 inches when oak is used and 4 inches by 4 inches when pine is used, and shall have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 feet.

2.1.3 Mill Certificate or Affidavit

A mill certificate or affidavit shall be provided attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. The mill certificate or affidavit shall specify the actual Minimum Average Roll Values and shall identify the fabric supplied by roll identification numbers. The Contractor shall submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

2.1.4 Identification Storage and Handling

Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873.

2.2 COMPONENTS FOR STRAW BALES

The straw in the bales shall be stalks from oats, wheat, rye, barley, rice, or from grasses such as byhalia, bermuda, etc., furnished in air dry condition. The bales shall have a standard cross section of 14 inches by 18 inches. All bales shall be either wire-bound or string-tied. The Contractor may use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose, shall have a minimum dimensions of 2 inches x 2 inches in cross section and shall have a minimum length of 3 feet. Steel posts (standard "U" or "T" section) utilized for securing straw bales, shall have a minimum weight of 1.33

pounds per linear foot and a minimum length of 3 feet.

PART 3 EXECUTION

3.1 INSTALLATION OF SILT FENCES

Silt fences shall extend a minimum of 16 inches above the ground surface and shall not exceed 34 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post, with a minimum 6 inch overlap, and securely sealed. A trench shall be excavated approximately 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The 4-inch by 4-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed upon approval by the Contracting Officer.

3.2 INSTALLATION OF STRAW BALES

Straw bales shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. Straw bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked and chinked (gaps filled by wedging with straw), the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier. Loose straw shall be scattered over the area immediately uphill from a straw bale barrier to increase barrier efficiency. Each bale shall be securely anchored by at least two stakes driven through the bale. The first stake or steel post in each bale shall be driven toward the previously laid bale to force the bales together. Stakes or steel pickets shall be driven a minimum 18 inches deep into the ground to securely anchor the bales.

3.3 MAINTENANCE

The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures.

3.3.1 Silt Fence Maintenance

Silt fences shall be inspected in accordance with paragraph INSPECTIONS. Any required repairs shall be made promptly. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall be seeded in accordance with Section 02921A SEEDING.

3.3.2 Straw Bale Maintenance

Straw bale barriers shall be inspected in accordance with paragraph INSPECTIONS. Close attention shall be paid to the repair of damaged bales,

end runs and undercutting beneath bales. Necessary repairs to barriers or replacement of bales shall be accomplished promptly. Sediment deposits shall be removed when deposits reach one-half of the height of the barrier. Bale rows used to retain sediment shall be turned uphill at each end of each row. When a straw bale barrier is no longer required, it shall be removed. The immediate area occupied by the bales and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall be seeded in accordance with Section 32 92 19 SEEDING.

3.3.3 Diversion Dike Maintenance

Diversion dikes shall be inspected in accordance with paragraph INSPECTIONS. Close attention shall be paid to the repair of damaged diversion dikes and necessary repairs shall be accomplished promptly. When diversion dikes are no longer required, they shall be shaped to an acceptable grade. The areas disturbed by this shaping shall be seeded in accordance with Section 32 92 19 SEEDING.

3.4 INSPECTIONS

3.4.1 General

The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every seven (7) calendar days and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Where sites have been finally stabilized, such inspection shall be conducted at least once every month. All required inspections, monitoring, sampling, and reporting during construction shall be implemented in accordance with General NPDES Permit No. GAR100001.

3.4.2 Inspections Details

Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected by the Contractor for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the ESPCP shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site shall be inspected for evidence of offsite sediment tracking.

3.4.3 Inspection Reports

For each inspection conducted, the Contractor shall prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the ESPCP, maintenance performed, and actions taken. The report shall be furnished to the Contracting Officer within 24 hours of the inspection as a part of the Contractor's daily CQC REPORT. A copy of the inspection report shall be forwarded to the Environmental Management Division and be maintained on the job site.

3.4.4 Monthly Inspection Report and Certification Form for Erosion and Sediment Controls

The Contractor shall submit a summary of monitoring results to GA EPD by the 15th day of the month following each month during which samples are collected. The Contractor shall retain all detailed monitoring information including laboratory bench sheets, instrument readouts, etc. The report

should be sent to the following address:
West Central District Office
Georgia Environmental Protection Division
2640 Shurling Drive
Macon, GA 31211-3576
(478) 757-6612

On the first working day of each month the Contractor shall furnish copies of the completed form submitted to the GA EPD (one to the Contracting Officer and on to the Facility's Environmental Management Division)and as part of the Contractor's daily CQC Report and attach a copy of the completed form to the Plan. Unless otherwise notified by the GA EPD, the Contractor shall submit the Monthly Inspection Report and Certification Forms for an additional two months after the final completion of all storm water pollution prevention measures required in this contract have been implemented.

3.5 SAMPLING

Sampling shall be in accordance with Part IV, D., 5 of the General NPDES Permit No. GAR100001. Other references include 40 CFR 136 and EPA 833-B-92-001.

-- End of Section --

SECTION 31 00 00

EARTHWORK
08/03

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WATER WORKS ASSOCIATION(AWWA)

AWWA C600	(1999) Installation of Ductile-Iron Water Mains and Their Appurtenances

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2002) Structural Welding Code - Steel

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C2	(2001) Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes
AWPA P5	(2002) Standard for Waterborne Preservatives

ASTM INTERNATIONAL (ASTM)

ASTM A 139	(2000) Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and Over)
ASTM A 252	(1998; R 2002) Welded and Seamless Steel Pipe Piles
ASTM C 136	(2001) Sieve Analysis of Fine and Coarse Aggregates
ASTM C 33	(2003) Concrete Aggregates
ASTM D 1140	(2000) Amount of Material in Soils Finer than the No. 200 (75-micrometer) Sieve
ASTM D 1556	(2000) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(2002) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 2434	(1968; R 2000) Permeability of Granular Soils (Constant Head)

ASTM D 2487	(2000) Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2937	(2000e1) Density of Soil in Place by the Drive-Cylinder Method
ASTM D 422	(1963; R 2002) Particle-Size Analysis of Soils
ASTM D 4318	(2000) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(1996) Safety and Health Requirements Manual

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 530/F-93/004	(1993; Rev O; Updates I, II, IIA, IIB, and III) Test Methods for Evaluating Solid Waste (Vol IA, IB, IC, and II) (SW-846)
EPA 600/4-79/020	(1983) Methods for Chemical Analysis of Water and Wastes

1.2 OMITTED
1.3 OMITTED

1.4 DEFINITIONS

1.4.1 Satisfactory Materials

1.4.1.1 Earthwork, Roadwork, and Utilities Systems (except beneath buildings)

Satisfactory materials shall comprise any materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SP, SM, SW-SM, SC, SW-SC, SP-SM, SP-SC, CL, ML, and CL-ML. Satisfactory materials for grading shall be free from roots and other organic matter, trash, debris, frozen material, and stones larger than 75 mm(3 inches) in any dimension.

1.4.1.2 Beneath Buildings

a. Natural Insitu Soil: Satisfactory materials for natural insitu soil supporting building foundations and/or slabs shall be limited to materials classified in ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SP, SM, SW-SM, SC, SW-SC, SP-SM, SP-SC, CL, ML, CL-ML, CH, MH, and shall be free of trash, debris, roots or other organic matter, frozen material, and stones larger than 75 mm(3 inches) in any dimension.

b. Foundation Fill or Backfill: Satisfactory materials for fill or backfill supporting building foundations and/or slabs shall be limited to materials classified in ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SP, SM, SW-SM, SC, SW-SC, SP-SM,

SP-SC, CL, ML, CL-ML, and shall be free of trash, debris, roots or other organic matter, frozen material, and stones larger than 75 mm(3 inches) in any dimension.

c. Fill or Backfill Adjacent to Walls: Satisfactory materials for fill or backfill adjacent to walls shall be limited to cohesionless, free draining materials classified in ASTM D 2487 as GW, GP, GM, SW, SP, SM, and SP-SM, and shall be free of trash, debris, roots or other organic matter, frozen material, and stones larger than 75 mm(3 inches) in any dimension.

1.4.2 Unsatisfactory Materials

1.4.2.1 Earthwork, Roadwork, and Utilities Systems (except beneath buildings)

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills; trash; refuse; backfills from previous construction; demolition debris; and material classified as satisfactory which contains root and other organic matter or frozen material. The Contracting Officer shall be notified of any contaminated materials.

1.4.2.2 Beneath Buildings

a. Natural Insitu Soil: Unsatisfactory materials for fill or backfill supporting building foundations and/or slabs shall be materials classified in ASTM D 2487 as Pt, OH, and OL and any other materials not defined as satisfactory. The Contracting Officer shall be notified of any contaminated materials.

b. Foundation Fill or Backfill: Unsatisfactory materials for fill or backfill supporting building foundations and/or slabs shall be materials classified in ASTM D 2487 as Pt, OH, OL, CH, and MH.

c. Fill or Backfill Adjacent to Walls: Unsatisfactory materials for fill or backfill adjacent to walls shall be materials classified in accordance with ASTM D 2487 as Pt, OH, OL, GC, SC, CL, CH, ML and MH, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW-SM, SC, SW-SC, SP-SC, CL, ML, and CL-ML.

d. Wet of Soft Materials: Materials determined by the Contracting Officer as too wet or too soft to provide a stable subgrade, foundation, or fill will be classified as unsatisfactory regardless of classification. However, if such materials do meet the appropriate ASTM D 2487 classification, the Contractor shall at no additional cost to the Government, recondition the materials.

1.4.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, CH, GP-GC, GM-GC, SW-SC, SP-SC, and CL-ML and the unsatisfactory organic materials Pt, OL, and OH. Materials classified as GM, GP-GM, GW-GM, SW-SM, SP-SM, and SM will be identified as cohesionless only when the fines are nonplastic (plasticity index of zero); otherwise they will be considered

cohesive. Testing required for classifying materials shall be in accordance with ASTM D 4318, ASTM C 136, ASTM D 422, and ASTM D 1140.

1.4.4 Degree of Compaction

Degree of compaction is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 abbreviated as a percent of laboratory maximum density.

1.4.5 Omitted

1.4.6 Topsoil

Material suitable for topsoil shall be obtained from required stripping of the project site and/or areas off the installation. Material obtained from off-installation areas suitable for topsoil shall meet the requirements specified for topsoil in Section . Amend topsoil pH range to obtain a pH of 5.5 to 7.

1.4.7 Hard/Unyielding Materials

Unyielding material shall consist of rock and gravelly soils with stones greater than 75 mm(3 inches) in any dimension or as defined by the pipe manufacturer, whichever is smaller.

1.4.8 Rock

Solid homogeneous interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which can be removed without systematic drilling and blasting, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders, buried masonry, or concrete other than pavement exceeding [0.375] [_____] cubic meter ([1/2] [_____] cubic yard) in volume. Removal of hard material will not be considered rock excavation because of intermittent drilling and blasting that is performed merely to increase production.

1.4.9 Unstable Material

Unstable material shall consist of materials too wet to properly support the utility pipe, conduit, or appurtenant structure.

1.4.10 Select Granular Material

Select granular material shall consist of well-graded sand, gravel, crushed gravel, crushed stone, or crushed slag composed of hard, tough, and durable particles, and shall contain not more than 10 percent by weight of material passing a 75 micrometers(No. 200) mesh sieve and no less than 95 percent by weight passing the 25 mm(1 inch) sieve. The maximum allowable aggregate size shall be 40 mm(1.6 inches), or the maximum size recommended by the pipe manufacturer, whichever is smaller.

1.4.11 Initial Backfill Material

Initial backfill shall consist of select granular material or satisfactory materials free from rocks 75 mm (3 inches) or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer,

whichever is smaller. When the pipe is coated or wrapped for corrosion protection, the initial backfill material shall be free of stones larger than 25 mm (1 inch) in any dimension or as recommended by the pipe manufacturer, whichever is smaller.

1.4.12 Omitted
1.4.13 Omitted
1.4.14 Omitted

1.4.15 Maximum Dry Density

The maximum dry density is expressed as the maximum density obtained when the soil is compacted in accordance with ASTM D 1557, abbreviated as laboratory maximum dry density.

1.4.16 Optimum Moisture Content

The optimum moisture content is the moisture content corresponding to the maximum dry density obtained by the test procedure presented in ASTM D 1557.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

[Shoring; G, [_____]]

[Dewatering Work Plan; G, [_____]]

[Blasting; G, [_____]]

Submit 15 days prior to starting work.

1.5.1 General Earthwork and Roadwork

SD-03 Product Data

Earthwork; G, RE

Procedure and location for disposal of unused satisfactory material. Blasting plan when blasting is permitted. Proposed source of borrow material.

Notification of Earthwork; G, RE

Notification of encountering rock in the project. Advance notice on the opening of excavation or borrow areas. Advance notice on shoulder construction for rigid pavements.

SD-06 Test Reports

Testing

Within 24 hours of conclusion of physical tests, three copies of test results.

SD-07 Certificates

Testing; G, RE

Qualifications of the commercial testing laboratory.

1.5.2 Earthwork Beneath Buildings

SD-06 Test Reports

Field Density Tests
Testing of Fill and Backfill Materials

Copies of all laboratory and field test reports within 24 hours of the completion of the test. Each report shall be properly identified. Test methods used and compliance with specified test standards shall be described. Summary sheets specified herein shall be submitted as indicated.

SD-07 Certificates

Certificates of Compliance

Certificates of compliance indicating conformance with specified requirements shall be furnished for capillary water barrier materials.

Testing; G, RE

Testing facilities for the performance of laboratory soil tests must be approved by the Contracting Officer prior to work being performed.

1.5.3 Earthwork for Utilities Systems

SD-04 Samples

Tracer Wire; G, RE

Sample of tracer wire, including manufacturer's descriptive technical literature, specifications, and installation instructions. Sample and information shall be submitted at least 60 days prior to the initial installation of any tracer wire.

SD-06 Test Reports

Field Density Tests
Testing of Fill and Backfill Materials

Copies of all laboratory and field test reports within 24 hours of the completion of the test.

SD-07 Certificates

Testing; G, RE

Qualifications of the commercial testing laboratory.

1.6 SUBSURFACE DATA

Subsurface [soil boring logs,][CPT soundings,][test pit logs,][and][soil laboratory test data] are shown on the drawings. These data represent the best subsurface information available; however, variations may exist in the subsurface between boring locations. The water level data indicate only the conditions at the particular time or times the information was obtained and may not indicate variations such as those caused by periods of drought or increased rainfall, seasonal fluctuations in rainfall, changes in the surface drainage pattern, or application of irrigation water.

1.7 CLASSIFICATION OF EXCAVATION

No consideration will be given to the nature of the materials, and all excavation will be designated as unclassified excavation.

1.7.1 Omitted
1.7.2 Omitted

1.7.3 Blasting

Blasting will not be permitted.

1.8 CRITERIA FOR BIDDING

Base bids on the following criteria:

a. Surface elevations are as indicated.

b. Pipes or other artificial obstructions, except those indicated, will not be encountered.

c. Ground water elevations indicated by the boring log were those existing at the time subsurface investigations were made and do not necessarily represent ground water elevation at the time of construction.

d. Material character is indicated by the boring logs.

1.9 DEWATERING WORK PLAN

Submit procedures for accomplishing dewatering work.

1.10 TERMITE PROTECTION

Termite protection is specified under Section 02360 SOIL TREATMENT FOR SUBTERRANEAN TERMITE CONTROL.

PART 2 PRODUCTS

2.1 REQUIREMENTS FOR OFFSITE SOILS

All soils, other than Government furnished borrow, brought in for use as backfill shall be tested for TPH, BTEX and full TCLP including ignitability, corrosivity and reactivity. Backfill shall contain less than 100 parts per million (ppm) of total petroleum hydrocarbons (TPH) and less than 10 ppm of the sum of Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) and shall not fail the TCPL test. TPH concentrations shall be determined by using EPA 600/4-79/020 Method 418.1. BTEX concentrations shall be determined by using EPA 530/F-93/004 Method 5030/8020. TCLP shall be performed in accordance with EPA 530/F-93/004 Method 1311. Provide Borrow Site Testing for TPH, BTEX and TCLP from a composite sample of material from the borrow site, with at least one test from each borrow site. Material shall not be brought on site until tests have been approved by the Contracting Officer.

2.2 BURIED WARNING AND IDENTIFICATION TAPE

[Polyethylene plastic] [and] [metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic] warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, 75 mm (3-inch) minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Color and printing shall be permanent, unaffected by moisture or soil.

Warning Tape Color Codes

[Yellow: Electric]
[Yellow: Gas, Oil; Dangerous Materials]
[Orange: Telephone and Other Communications]
[Blue: Water Systems]
[Green: Sewer Systems]
[White: Steam Systems]
[Gray: Compressed Air]

2.2.1 Warning Tape for Metallic Piping

Acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of tape shall be 0.08 mm (0.003 inch). Tape shall have a minimum strength of 10.3 MPa (1500 psi) lengthwise, and 8.6 MPa (1250 psi) crosswise, with a maximum 350 percent elongation.

2.2.2 Detectable Warning Tape for Non-Metallic Piping

Polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of the tape shall be 0.10 mm (0.004 inch). Tape shall have a minimum strength of 10.3 MPa (1500 psi) lengthwise and 8.6 MPa (1250 psi) crosswise. Tape shall be manufactured with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to 920 mm (3 feet) deep. Encase metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

2.3 DETECTION WIRE FOR NON-METALLIC PIPING

Detection wire shall be insulated single strand, solid copper with a minimum of 12 AWG.

2.4 MATERIAL FOR RIP-RAP

Provide [bedding material] [grout] [filter fabric] and rock conforming to [these requirements] [DOT] [SSS-[_____] State Standard] for construction indicated.

2.4.1 Bedding Material

Consisting of sand, gravel, or crushed rock, well graded, [or poorly graded] with a maximum particle size of 50 mm (2 inches). Material shall be composed of tough, durable particles. Fines passing the 75 micrometers (No. 200) standard sieve shall have a plasticity index less than six.

2.4.2 Grout

Composed of cement, water, an air-entraining admixture, and sand mixed in proportions of one part portland cement to [two] [_____] parts of sand, sufficient water to produce a workable mixture, and an amount of admixture which will entrain sufficient air to produce durable grout, as determined by the Contracting Officer. Mix grout in a concrete mixer. Mixing time shall be sufficient to produce a mixture having a consistency permitting gravity flow into the interstices of the rip-rap with limited spading and brooming.

2.4.3 Rock

Rock fragments sufficiently durable to ensure permanence in the structure and the environment in which it is to be used. Rock fragments shall be free from cracks, seams, and other defects that would increase the risk of deterioration from natural causes. The size of the fragments shall be such that no individual fragment exceeds a weight of [68] [_____] kg ([150] [_____] pounds) and that no more than 10 percent of the mixture, by weight, consists of fragments weighing 0.91 kg (2 pounds) or less each. Specific gravity of the rock shall be a minimum of [2.50] [_____]. The inclusion of more than trace [1 percent] [_____] quantities of dirt, sand, clay, and rock fines will not be permitted.

2.5 CAPILLARY WATER BARRIER

Capillary Water Barrier shall consist of clean, crushed, nonporous stone, crushed gravel, or uncrushed gravel conforming to the requirements of ASTM C 33 for coarse aggregate grading size 57, 67, 7, or 78.

2.6 PIPE CASING

2.6.1 Casing Pipe

ASTM A 139, Grade B, or ASTM A 252, Grade 2, smooth wall pipe. Casing size shall be of the outside diameter and wall thickness as indicated. Protective coating is not required on casing pipe.

2.6.2 Wood Supports

Treated Yellow Pine or Douglas Fir, rough, structural grade. Provide wood with nonleaching water-borne pressure preservative (ACA or CCA) and treatment conforming to AWPA P5 and AWPA C2, respectively. Secure wood supports to carrier pipe with stainless steel or zinc-coated steel bands.

PART 3 EXECUTION

3.1 STRIPPING OF TOPSOIL

Where indicated or directed, topsoil shall be stripped to full depth. Topsoil shall be spread on areas already graded and prepared for topsoil, or transported and deposited in stockpiles convenient to areas that are to receive application of the topsoil later, or at locations indicated or specified. Topsoil shall be kept separate from other excavated materials, brush, litter, objectionable weeds, roots, stones larger than 50 mm (2 inches) in diameter, and other materials that would interfere with planting and maintenance operations. Any surplus of topsoil from excavations and grading shall be removed from the site and disposed of in designated areas approved for surplus material storage or designated waste disposal areas as directed.

3.2 GENERAL EXCAVATION

The Contractor shall perform excavation of every type of material encountered within the limits of the project to the lines, grades, and elevations indicated and as specified. Grading shall be in conformity with the typical sections shown and the tolerances specified in paragraph FINISHING. Satisfactory excavated materials shall be transported to and placed in fill or embankment within the limits of the work. Unsatisfactory materials encountered within the limits of the work shall be excavated below grade and replaced with satisfactory materials as directed. Such excavated material and the satisfactory material ordered as replacement shall be included in excavation. Surplus satisfactory excavated material not required for fill or embankment shall be disposed of in areas approved for surplus material storage or designated waste areas. Unsatisfactory excavated material shall be disposed of in designated waste or spoil areas. During construction, excavation and fill shall be performed in a manner and sequence that will provide proper drainage at all times. Material required for fill or embankment in excess of that produced by excavation within the grading limits shall be excavated from the borrow areas indicated or, if no borrow areas are indicated, from other approved areas selected by the Contractor as specified.

3.2.1 Ditches, Gutters, and Channel Changes

Excavation of ditches, gutters, and channel changes shall be accomplished by cutting accurately to the cross sections, grades, and elevations shown. Ditches and gutters shall not be excavated below grades shown. Excessive open ditch or gutter excavation shall be backfilled with satisfactory, thoroughly compacted, material to grades shown. Material excavated shall be disposed of as shown or as directed, except that in no case shall material be deposited less than 1 meter (4 feet) from the edge of a ditch. The Contractor shall maintain excavations free from detrimental quantities of leaves, brush, sticks, trash, and other debris until final acceptance of the work.

3.2.2 Drainage Structures

Excavations shall be made to the lines, grades, and elevations shown, or as directed. Trenches and foundation pits shall be of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Rock or other hard foundation material shall be cleaned of loose debris and cut to a firm, level, stepped, or serrated surface. Loose disintegrated rock and thin strata shall be removed. When concrete or masonry is to be placed in an excavated area, the bottom of the excavation shall not be disturbed. Excavation to the final grade level shall not be made until just before the concrete or masonry is to be placed.

3.2.3 Drainage

Provide for the collection and disposal of surface and subsurface water encountered during construction. Completely drain construction site during periods of construction to keep soil materials sufficiently dry. The Contractor shall establish/construct storm drainage features (ponds/basins) at the earliest stages of site development, and throughout construction grade the construction area to provide positive surface water runoff away from the construction activity and/or provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified herein. It is the responsibility of the Contractor to assess the soil and ground water conditions presented by the plans and specifications and to employ necessary measures to permit construction to proceed.

3.2.4 Dewatering

Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. French drains, sumps, ditches or trenches will not be permitted within 1 m (3 feet) of the foundation of any structure, except with specific written approval, and after specific contractual provisions for restoration of the foundation area have been made. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in situ material. While the excavation is open, the water level shall be maintained continuously, at least 0.6 m(2 feet) below the working level. The Contractor shall provide drainage and dewatering as required to ensure that all footing excavations are accomplished with the subgrade soils remaining dry and firm until after the footings are placed and backfilled. [Operate dewatering system continuously until construction work below existing water levels is complete. Submit performance records weekly.] [Measure and record performance of dewatering system at same time each day by use of observation wells or piezometers installed in conjunction with the dewatering system.] [Relieve hydrostatic head in previous zones below subgrade elevation in layered soils to prevent uplift.]

3.2.5 Trench Excavation Requirements

The trench shall be excavated as recommended by the manufacturer of the pipe to be installed. Trench walls below the top of the pipe shall be sloped, or

made vertical, and of such width as recommended in the manufacturer's installation manual. Where no manufacturer's installation manual is available, trench walls shall be made vertical, except that trench construction shall be in accordance with OHSA. Trench walls more than 3 feet deep shall be cut back, excavated to at least the angle of repose of the soil. Special attention shall be given to slopes which may be adversely affected by weather or moisture content. The trench width below the top of pipe shall not exceed 600 mm(24 inches) plus pipe outside diameter (O.D.) for pipes of less than 600 mm(24 inches) inside diameter and shall not exceed 900 mm (36 inches) plus pipe outside diameter for sizes larger than 600 mm(24 inches) inside diameter. Where recommended trench widths are exceeded, redesign, stronger pipe, or special installation procedures shall be utilized by the Contractor. The cost of redesign, stronger pipe, or special installation procedures shall be borne by the Contractor without any additional cost to the Government.

3.2.5.1 Bottom Preparation

The bottoms of trenches shall be accurately graded to provide uniform bearing and support for the bottom quadrant of each section of the pipe. Bell holes shall be excavated to the necessary size at each joint or coupling to eliminate point bearing. Stones of 75 mm(3 inches) or greater in any dimension, or as recommended by the pipe manufacturer, whichever is smaller, shall be removed to avoid point bearing.

3.2.5.2 Removal of Unyielding Material

Where unyielding material is encountered in the bottom of the trench, such material shall be removed 100mm(4 inches) below the required grade and replaced with suitable materials as provided in paragraph BACKFILLING AND COMPACTION.

3.2.5.3 Removal of Unstable Material

Where unstable material is encountered in the bottom of the trench, such material shall be removed to the depth directed and replaced to the proper grade with select granular material as provided in paragraph BACKFILLING AND COMPACTION. When removal of unstable material is required due to the Contractor's fault or neglect in performing the work, the resulting material shall be excavated and replaced by the Contractor without additional cost to the Government.

3.2.5.4 Excavation for Appurtenances

Excavation for manholes, catch-basins, inlets, or similar structures shall be sufficient to leave at least 300 mm(12 inches) clear between the outer structure surfaces and the face of the excavation or support members and of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Removal of unstable material shall be as specified above. When concrete or masonry is to be placed in an excavated area, special care shall be taken not to disturb the bottom of the excavation. Excavation to the final grade level shall not be made until just before the concrete or masonry is to be placed.

3.2.5.5 Jacking, Boring, and Tunneling

Unless otherwise indicated, excavation shall be by open cut except that sections of a trench may be jacked, bored, or tunneled if, in the opinion of the Contracting Officer, the pipe, cable, or duct can be safely and properly installed and backfill can be properly compacted in such sections.

3.2.6 Underground Utilities

Movement of construction machinery and equipment over pipes and utilities during construction shall be at the Contractor's risk. [Perform work adjacent to non-Government utilities as indicated in accordance with procedures outlined by utility company.] [Excavation made with power-driven equipment is not permitted within [600] [_____]mm ([2] [_____] feet) of known Government-owned utility or subsurface construction. For work immediately adjacent to or for excavations exposing a utility or other buried obstruction, excavate by hand. Start hand excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Support uncovered lines or other existing work affected by the contract excavation until approval for backfill is granted by the Contracting Officer.] Report damage to utility lines or subsurface construction immediately to the Contracting Officer.

3.2.7 Structural Excavation

Excavation shall conform to the dimensions and elevations indicated for each building, structure, and footing except as specified, and shall include trenching for utility and foundation drainage systems to a point 1.5 m(5 feet) beyond the building line of each building and structure, excavation for outside grease interceptors and all work incidental thereof. Excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms. Excavations below indicated depths will not be permitted except to remove unsatisfactory material. Unsatisfactory material encountered below the grades shown shall be removed as directed and replaced with satisfactory material; and payment will be made in conformance with the CHANGES clause of the CONTRACT CLAUSES. Satisfactory material removed below the depths indicated, without specific direction of the Contracting Officer, shall be replaced, at no additional cost to the Government, with satisfactory materials to the indicated excavation grade. Satisfactory material shall be placed and compacted as specified in paragraph FILLING AND BACKFILLING. Determination of elevations and measurements of approved overdepth excavation of unsatisfactory material below grades indicated shall be done under the direction of the Contracting Officer.

3.3 SELECTION OF BORROW MATERIAL

Borrow material shall be selected to meet the requirements and conditions of the particular fill or embankment for which it is to be used. Borrow material shall be obtained from the borrow areas shown on drawings or from approved private sources, selected by the Contractor. Unless otherwise provided in the contract, the Contractor shall obtain from the owners the right to procure material, pay royalties and other charges involved, and bear the expense of developing the sources, including rights-of-way for hauling. Borrow material from approved sources on Government-controlled land may be obtained without payment of royalties. Unless specifically provided, no borrow shall be obtained within the limits of the project site without prior written approval. Necessary clearing, grubbing, and

satisfactory drainage of borrow pits and the disposal of debris thereon shall be considered related operations to the borrow excavation.

3.4 OPENING AND DRAINAGE OF EXCAVATION AND BORROW PITS

Except as otherwise permitted, borrow pits and other excavation areas shall be excavated providing adequate drainage. Overburden and other spoil material shall be transported to designated spoil areas or otherwise disposed of as directed. Borrow pits shall be neatly trimmed and drained after the excavation is completed. The Contractor shall ensure that excavation of any area, operation of borrow pits, or dumping of spoil material results in minimum detrimental effects on natural environmental conditions.

3.5 SHORING

3.5.1 General Requirements

When shoring is required, the Contractor shall submit a Shoring and Sheeting plan for approval 15 days prior to starting work. Submit drawings and calculations, certified by a registered professional engineer, describing the methods for shoring and sheeting of excavations.

3.5.2 Geotechnical Engineer

The Contractor is required to hire a Professional Geotechnical Engineer to provide inspection of excavations and soil/groundwater conditions throughout construction. The Geotechnical Engineer shall be responsible for performing pre-construction and periodic site visits throughout construction to assess site conditions. The Geotechnical Engineer shall update the excavation, sheeting and dewatering plans as construction progresses to reflect changing conditions and shall submit an updated plan if necessary. A written report shall be submitted, at least monthly, informing the Contractor and Contracting Officer of the status of the plan and an accounting of the Contractor's adherence to the plan addressing any present or potential problems. The Geotechnical Engineer shall be available to meet with the Contracting Officer at any time throughout the contract duration.

3.6 GRADING AREAS

Where indicated, work will be divided into grading areas within which satisfactory excavated material shall be placed in embankments, fills, and required backfills. The Contractor shall not haul satisfactory material excavated in one grading area to another grading area except when so directed in writing. Stockpiles of satisfactory shall be placed and graded as specified. Stockpiles shall be kept in a neat and well drained condition, giving due consideration to drainage at all times. The ground surface at stockpile locations shall be cleared, grubbed, and sealed by rubber-tired equipment, excavated satisfactory and unsatisfactory materials shall be separately stockpiled. Stockpiles of satisfactory materials shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. If the Contractor fails to protect the stockpiles, and any material becomes unsatisfactory, such material shall be removed and replaced with satisfactory material from approved sources at no additional cost to the Government. Locations of stockpiles shall be subject to prior approval of the Contracting Officer.

3.7 FINAL GRADE OF SURFACES TO SUPPORT CONCRETE

Excavation to final grade shall not be made until just before subgrade materials, capillary water barrier, or concrete is to be placed. All surfaces shall be protected from erosion resulting from ponding or flow of water.

3.8 GROUND SURFACE PREPARATION

3.8.1 General Requirements

Ground surface on which fill is to be placed shall be stripped of live, dead, or decayed vegetation, rubbish, debris, and other unsatisfactory material; plowed, disked, or otherwise broken up to a depth of 200 mm(8 inches); pulverized; moistened or aerated as necessary to plus or minus 2.5 percent of optimum moisture; thoroughly mixed; and compacted to at least 92 percent laboratory maximum density. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. The prepared ground surface shall be scarified and moistened or aerated as required just prior to placement of embankment materials to assure adequate bond between embankment material and the prepared ground surface.

3.8.1.1 Subgrade Preparation for Building Sites

Unsatisfactory material in surfaces to receive fill or in excavated areas shall be removed and replaced with satisfactory materials as directed by the Contracting Officer. The surface shall be scarified to a depth of 150 mm(6 inches) before the fill is started. Sloped surfaces steeper than 1 vertical to 4 horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When subgrades are less than the specified density, the ground surface shall be broken up to a minimum depth of 150 mm (6 inches), pulverized, and compacted to the specified density. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 300 mm (12 inches) and compacted as specified for the adjacent fill. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted. Material shall be moistened or aerated as necessary to plus or minus 2.5 percent of optimum moisture. Minimum subgrade density shall be as specified in paragraph FILLING AND BACKFILLING.

3.8.2 Frozen Material

Material shall not be placed on surfaces that are muddy, frozen, or contain frost. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted. Material shall be moistened or aerated as necessary to plus or minus 2.5 percent of optimum moisture. This prohibition encompasses all foundation types, including the natural ground, all prepared subgrades (whether in an excavation or on an embankment) and all layers of previously placed and compacted earth fill which become the foundations for successive layers of earth fill. All material that freezes or has been subjected to freeze-thaw action during the construction work, or during periods of temporary shutdowns, such as, but not limited to, nights, holidays, weekends, winter shutdowns, or earthwork operations, shall be removed to a depth that is acceptable to the Contracting Officer and

replaced with new material. Alternatively, the material shall be thawed, dried, reworked, and recompacted to the specified criteria before additional material is placed. The Contracting Officer will determine when placement of fill shall cease due to cold weather. The Contracting Officer may elect to use average daily air temperatures, and/or physical observation of the soils for his determination. Fill material shall not contain frozen clumps of soil, snow, or ice. Minimum subgrade density shall be as specified in paragraph TESTING.

3.9 UTILIZATION OF EXCAVATED MATERIALS

Unsatisfactory materials removed from excavations shall be disposed of in designated waste disposal or spoil areas. Satisfactory material removed from excavations shall be used, insofar as practicable, in the construction of fills, embankments, subgrades, shoulders, bedding (as backfill), and for similar purposes. No satisfactory excavated material shall be wasted without specific written authorization. Satisfactory material authorized to be wasted shall be disposed of in designated areas approved for surplus material storage or designated waste areas as directed. No excavated material shall be disposed of to obstruct the flow of any stream, endanger a partly finished structure, impair the efficiency or appearance of any structure, or be detrimental to the completed work in any way.

3.10 MOISTURE CONTENT

Satisfactory materials in each layer of fill shall contain the amount of moisture within the limits specified below. Materials that are not within the specified limits after compaction shall be reworked regardless of density. The moisture content after compaction shall be as uniform as practicable throughout any one layer and shall be within the limits of 2.5 percentage points above optimum moisture content and 2.5 percentage points below optimum moisture content. Materials which are too wet shall be disked, harrowed, plowed, bladed, or otherwise manipulated to reduce the moisture content to within the specified limits. Materials which are too dry shall be broken up, sprinkled, and thoroughly mixed to bring the moisture content uniformly up to within specified limits of moisture content specified above, the Contractor shall either adjust the moisture content to bring it within the specified limits or remove it from the fill.

3.11 GENERAL EARTHWORK

3.11.1 Earth Embankments

Earth embankments shall be constructed from satisfactory materials free of organic or frozen material and rocks with any dimension greater than 75 mm (3 inches). The material shall be placed in successive horizontal layers of loose material not more than 200 mm (8 inches) in depth. Each layer shall be spread uniformly on a soil surface that has been moistened or aerated as necessary, and scarified or otherwise broken up so that the fill will bond with the surface on which it is placed. After spreading, each layer shall be plowed, disked, or otherwise broken up; moistened or aerated as necessary; thoroughly mixed; and compacted to at least 92 percent laboratory maximum density. Compaction requirements for the upper portion of earth embankments forming subgrade for pavements shall be identical with those requirements specified in paragraph SUBGRADE PREPARATION. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

3.11.2 Subgrade Preparation

3.11.2.1 Proof Rolling

Proof rolling shall be done on an exposed subgrade free of surface water (wet conditions resulting from rainfall) which would promote degradation of an otherwise acceptable subgrade. [After stripping,] proof roll the existing subgrade of the [_____] with six passes of a [dump truck loaded with 6 cubic meters (4 cubic yards) of soil] [13.6 meter tons (15 ton), pneumatic-tired roller.] Operate the [roller] [truck] in a systematic manner to ensure the number of passes over all areas, and at speeds between 4 to 5.5 km/hour (2 1/2 to 3 1/2 mph). [When proof rolling, one-half of the passes made with the roller shall be in a direction perpendicular to the other passes.] Notify the Contracting Officer a minimum of 3 days prior to proof rolling. Proof rolling shall be performed in the presence of the Contracting Officer. Rutting or pumping of material shall be undercut [as directed by the Contracting Officer] [to a depth of [_____]mm (inches)] and replaced with [fill and backfill] [select] material. [Bids shall be based on replacing approximately [_____]square meters (square yards), with an average depth of [_____]mm(inches) at various locations.]

3.11.2.2 Construction

Subgrade shall be shaped to line, grade, and cross section, and compacted as specified. This operation shall include plowing, disking, and any moistening or aerating required to obtain specified compaction. Materials shall be moistened or aerated as necessary to plus or minus 2.5 percent of optimum moisture. Soft or otherwise unsatisfactory material shall be removed and replaced with satisfactory excavated material or other approved material as directed. Rock encountered in the cut section shall be excavated to a depth of 150 mm (6 inches) below finished grade for the subgrade. Low areas resulting from removal of unsatisfactory material or excavation of rock shall be brought up to required grade with satisfactory materials, and the entire subgrade shall be shaped to line, grade, and cross section and compacted as specified. When the subgrade is in cut, the top 200 mm(8 inches) of subgrade shall be scarified, windrowed, moistened or aerated as necessary to plus or minus 2.5 percent of optimum moisture, thoroughly blended, reshaped, and compacted. The elevation of the finish subgrade shall not vary more than 15 mm (0.05 foot) from the established grade and cross section.

3.11.2.3 Compaction

Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

3.11.2.4 Subgrade for Pavements

Subgrade for pavements shall be compacted to at least 92 percent laboratory maximum density for the depth below the subgrade of 300 mm(12 inches) in fill or backfill and 200 mm(8 inches) in undisturbed native soil or cut.

3.11.2.5 Subgrade for Shoulders

Subgrade for shoulders shall be compacted to at least 92 percent laboratory maximum density for a depth of 200 mm(8 inches) below finish grade. In areas where the shoulder is to be grassed the top 200 mm(8 inches) shall be compacted to a density of at least 92 percent laboratory maximum density.

3.11.2.6 Subgrade for Airfield Pavements

Compact top 600 mm(24 inches) below finished pavement or top 300 mm(12 inches) of subgrades, whichever is greater, to [100] [_____] percent of ASTM D 1557; compact fill and backfill material to [100] [_____] percent of ASTM D 1557.

3.11.3 Shoulder Construction

Shoulders shall be constructed of satisfactory excavated or borrow material or as otherwise shown or specified. Shoulders shall be constructed as soon as possible after adjacent paving is complete, but in the case of rigid pavements, shoulders shall not be constructed until permission of the Contracting Officer has been obtained. The entire shoulder area shall be compacted to at least the percentage of maximum density as specified in paragraph SUBGRADE PREPARATION above, for specific ranges of depth below the surface of the shoulder. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. Shoulder construction shall be done in proper sequence in such a manner that adjacent ditches will be drained effectively and that no damage of any kind is done to the adjacent completed pavement. The completed shoulders shall be true to alignment and grade and shaped to drain in conformity with the cross section shown.

3.12 FILLING AND BACKFILLING FOR BUILDINGS

3.12.1 General

Filling and backfilling shall not begin until construction below finish grade has been approved, underground utilities systems have been inspected, tested and approved, forms removed and the excavation cleaned of trash and debris. Backfill shall not be placed in areas that are wet, muddy, contain organic materials or are otherwise unacceptable to the Contracting Officer. Satisfactory materials shall be used in bringing fills and backfills to the lines and grades indicated and for replacing unsatisfactory materials. Satisfactory material shall be free from roots and other organic matter, trash, debris, frozen materials, and stones larger than 75 mm(3 inches) in any dimension. Where pipe and/or utility lines are coated or wrapped for protection against corrosion, the backfill material up to an elevation of 600 mm(two feet) above sewer lines and 300 mm(one foot) above other utility lines shall be free from stones larger than 25 mm(one inch) in any dimension.

3.12.2 Placement

Satisfactory materials shall be placed in horizontal layers not exceeding 200 mm(8 inches) in loose thickness, or 100 mm(4 inches) in loose thickness where hand-operated compactors are used. After placing, each layer shall be plowed, disked, or otherwise broken up, moistened or aerated as necessary, thoroughly mixed and compacted as specified. Backfill shall be brought to the indicated finish grade. Heavy equipment for spreading and compacting backfill shall not be operated closer to foundation or retaining walls than

a distance equal to the height of backfill above the top of footing; the area remaining shall be compacted in layers not more than 100 mm in loose thickness with power-driven hand tampers suitable for the material being compacted. Backfill shall be placed carefully around pipes or tanks to avoid damage to coatings, wrappings, or tanks. Backfill shall not be placed against foundation walls prior to 7 days after completion of each compaction, each layer shall be thoroughly and uniformly blended throughout its entire thickness by disking.

3.12.3 Compaction

Compaction shall be accomplished by sheepsfoot roller, pneumatic-tired rollers, smooth-drum vibratory rollers or other approved equipment well suited to the soil being compacted. Generally, sheepsfoot rollers are best suited for compacting cohesive material while smooth-drum vibratory rollers are best suited for compacting cohesionless materials. In areas inaccessible to heavy equipment, or where in the opinion of the Contracting Officer, use of heavy equipment may cause damage to pipes, conduits, or structures, approved power-driven hand tampers suitable for the material being compacted shall be used. Each layer of fill and backfill shall be compacted to not less than the percentage of maximum density specified below.

	Percent Laboratory Maximum Density
Fill, Embankment, and Backfill	
Under structures, steps,paved areas, and in trenches	92
Beside structures, footings, and walls	92
Under sidewalks and grassed areas	85
Subgrade (Top of Fill, Embankment, and Backfill)	
Under building slabs, steps, paved areas, and footings, top 300 mm(12 inches)	92
Under sidewalks and grassed areas, top 150 mm(6 inches)	85
Subgrade (Undisturbed Native Soil or Cut)	
Under building slabs, steps, paved areas, and footings, top 200 mm(8 inches)	92
Under sidewalks and grassed areas, top 150 mm(6 inches)	85

Approved compacted subgrades that are disturbed by the Contractor's operations or adverse weather shall be scarified and recompacted to the required density prior to further construction thereon. Recompaction over underground utilities and heating lines shall be by hand tamping. For compacted subgrades and/or any lift of fill or backfill that fails to meet the specified density and/or moisture requirements, the entire subgrade and/or entire lift of fill shall be broken up to a minimum depth of 200 mm(8 inches), pulverized, the moisture content adjusted as necessary, and recompacted to the specified density, even if this action requires the removal and replacement of subsequently placed satisfactory lifts of fill. Tests on recompacted areas shall be performed to determine conformance with specification requirements. Lifts of fill placed without being field density tested will not be accepted as satisfactory under any circumstances.

3.12.4 [Underdrainage Systems] [Foundation Drain]

Clean sand, crushed rock, or gravel meeting the following requirements:

[a. Perforated or Slotted-Wall Pipe: Backfill meeting requirements of [Type I] material as specified in Table 1.] Place granular material as pipe is laid and extend fit for a minimum of [one] pipe diameter on each side of and 450 mm(18 inches) above the top of the pipe. Place a layer of [kraft paper] [_____,] on top of granular filter before continuing with the backfill.

[b. Open Joint Pipe: [Type III] backfill consisting of both Type I and Type II materials as specified in Table 1.] Place both types of granular material specified as pipe is laid forming an aggregate filter around the pipe. Provide [Type II] material to envelope the pipe a minimum of one-half the pipe diameter or twice the maximum aggregate size, whichever is larger, on each side and on top of the pipe. Place [Type I] material next to and on top of the [Type II] material to provide a total fill extending at least [one] pipe diameter on each side of and 450 mm(18 inches) above the top of the pipe. Place a layer of [kraft paper] [_____,] on top of the granular filter before continuing with the backfill.

[c. Blind or French Drains: Backfill consisting of [Type II] [Type III] material as specified in Table 1.]

[d. Any Type Drain Used With Filter Fabric: [Clean gravel or crushed stone or gravel conforming to ASTM C 33 coarse aggregate grading size 57, 67, or 7] [fill consisting of [Type I] [or] [Type II] [Type III] material as specified in Table 1].]

(1). Perforated or Slotted Wall Pipes: Wrap one layer of filter fabric around pipe in such a manner that longitudinal overlaps are in unperforated or unslotted quadrants of the pipe. Overlap fabric a minimum of 50 mm(2 inches). Secure fabric to pipe so that backfill material does not infiltrate through overlaps. Place granular material and extend it for [one] pipe diameter, minimum of 150 mm(6 inches) on each side of and 450 mm(18 inches) above top of pipe. Place a layer of filter fabric on top of granular filter before continuing with backfill.

(2). Open-Joint Pipe: Wrap one layer of filter fabric around pipe joints overlapping a minimum of 50 mm(2 inches) in the longitudinal direction and extending at least 150 mm(6 inches) on both sides of the joint. Secure fabric to pipe so that backfill material does not infiltrate through overlaps. Place granular material specified and extend it for a minimum of [one] pipe diameter on each side of and 450 mm(18 inches) above top of pipe. Place a layer of filter fabric on top of granular filter before continuing with backfill.

(3). Blind or French Drains: Install filter cloth in trenches with smoothly graded sides and bottom, free of cavities or projecting rocks. Lay the cloth flat but not stretched [and secure with anchor pins]. Place filter cloth so that drain water must pass through the cloth into the specified granular filter material.

Overlap ends at least of 300 mm(12 inches). Place backfill on filter cloth in the direction of overlaps. Where fabric is damaged, place a new piece of filter cloth over damaged area and overlap at least of 300 mm(12 inches) in every direction.

TABLE 1

[[ASTM D 422 Sieve Size]	[Type I [Gradation E 11 ASTM C 33] Percent Passing]	Type II [Gradation 57 ASTM C 33] Percent Passing]	Type III [Gradation [_____] [_____]]] Percent Passing]
37.5 mm	--	100	[_____]
25.0 mm	--	90 - 100	[_____]
9.5 mm	100	25 - 60	[_____]
4.75 mm	95 - 100	5 - 40	[_____]
2.36 mm	--	0 - 20	[_____]
1.18 mm	45 - 80	--	[_____]
300 micrometers	10 - 30	--	[_____]
150 micrometers	0 - 10	--	[_____]]

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TABLE 1

[[ASTM D 422 Sieve Size]	[Type I [Gradation E 11 ASTM C 33] Percent Passing]	Type II [Gradation 57 ASTM C 33] Percent Passing]	Type III [Gradation [_____]] [_____]] Percent Passing]
1.5 inches	--	100	[_____]
1 inch	--	90 - 100	[_____]
3/8 inch	100	25 - 60	[_____]
No. 4	95 - 100	5 - 40	[_____]
No. 8	--	0 - 20	[_____]
No. 16	45 - 80	--	[_____]
No. 50	10 - 30	--	[_____]
No. 100	0 - 10	--	[_____]]

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3.13 BACKFILLING AND COMPACTION FOR UTILITIES SYSTEMS

Backfill material shall consist of satisfactory material, select granular material, or initial backfill material as required. Backfill shall be placed in layers not exceeding 150 mm(6 inches) loose thickness for compaction by hand operated machine compactors, and 200 mm(8 inches) loose thickness for other than hand operated machines, unless otherwise specified. Each layer shall be compacted to at least 92 percent maximum density, unless otherwise specified.

3.13.1 Trench Backfill

Trenches shall be backfilled to the grade shown. The trench shall be backfilled to 0.6 meters(two feet) above the top of pipe prior to performing the required pressure tests. The joints and couplings shall be left

uncovered during the pressure test. The trench shall not be backfilled until all specified tests are performed.

3.13.1.1 Replacement of Unyielding Material

Unyielding material removed from the bottom of the trench shall be replaced with select granular material or initial backfill material.

3.13.1.2 Replacement of Unstable Material

Unstable material removed from the bottom of the trench or excavation shall be replaced with select granular material placed in layers not exceeding 150 mm (6 inches) loose thickness.

3.13.1.3 Initial Backfill

Initial backfill material shall be placed and compacted with approved tampers to a height of at least 300 mm(one foot) above the utility pipe or conduit. The backfill shall be brought up evenly on both sides of the pipe for the full length of the pipe. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe.

3.13.1.4 Final Backfill

The remainder of the trench, except for special materials for roadways, railroads and airfields, shall be filled with satisfactory material. Backfill material shall be placed and compacted as follows:

a. Roadways, Railroads, and Airfields: Backfill shall be placed up to the required elevation as specified. Water flooding or jetting methods of compaction will not be permitted.

b. Sidewalks, Turfed or Seeded Areas and Miscellaneous Areas: Backfill shall be deposited in layers of a maximum of 300 mm(one foot) loose thickness, and compacted to 85 percent maximum density. Compaction by water flooding or jetting will not be permitted. This requirement shall also apply to all other areas not specifically designated above.

3.13.2 Backfill for Appurtances

After the manhole, catchbasin, inlet, or similar structure has been constructed and the concrete has been allowed to cure for 7 days, backfill shall be placed in such a manner that the structure will not be damaged by the shock of falling earth. The backfill material shall be deposited and compacted as specified for final backfill, and shall be brought up evenly on all sides of the structure to prevent eccentric loading and excessive stress.

3.13.3 Special Requirements

Special requirements for both excavation and backfill relating to the specific utilities are as follows.

3.13.3.1 Gas Distribution

Trenches shall be excavated to a depth that will provide not less than 450 mm (18 inches) of cover in rock excavation and not less than 600 mm (24 inches) of cover in other excavation. Trenches shall be graded as specified for pipe-laying requirements in Section 02556A GAS DISTRIBUTION SYSTEM.

3.13.3.2 Water Lines

Trenches shall be of a depth to provide a minimum cover of 750 mm(30 inches) in unpaved areas and 900 mm(36 inches) in paved areas from the existing ground surface, or from the indicated finished grade, whichever is lower, to the top of the pipe.

3.13.3.3 Heat Distribution System

Initial backfill material shall be free of stones larger than 6 mm (1/4 inch) in any dimension.

3.13.3.4 Electrical Distribution System

Direct burial cable and conduit or duct line shall have a minimum cover of 600 mm (24 inches) from the finished grade, unless otherwise indicated. Special trenching requirements for direct-burial electrical cables and conduits are specified in Section 16375A ELECTRICAL DISTRIBUTION SYSTEM, UNDERGROUND.

3.13.4 Buried Tape and Detection Wire

3.13.4.1 Plastic Marking Tape

Warning tapes shall be installed directly above the pipe, at a depth of 450 mm below finished grade unless otherwise shown.Provide buried utility lines with utility identification tape. Bury tape 300 mm (12 inches) below finished grade; under pavements and slabs, bury tape 150 mm (6 inches) below top of subgrade.

3.13.4.2 Buried Detection Wire

Bury detection wire directly above non-metallic piping at a distance not to exceed 300 mm(12 inches) above the top of pipe. The wire shall extend continuously and unbroken, from manhole to manhole. The ends of the wire shall terminate inside the manholes at each end of the pipe, with a minimum of 0.9 m(3 feet) of wire, coiled, remaining accessible in each manhole. The wire shall remain insulated over it's entire length. The wire shall enter manholes between the top of the corbel and the frame, and extend up through the chimney seal between the frame and the chimney seal. For force mains, the wire shall terminate in the valve pit at the pump station end of the pipe.

3.13.5 [Sewage Absorption Trenches or Pits] [Omitted]

3.13.5.1 Porous Fill

Backfill material consisting of clean crushed rock or gravel having a gradation [such that 100 percent passes the 50 mm(2 inch) sieve and zero percent passes the 12.5 mm(1/2 inch) sieve.] [conforming to the requirements of gradation [4.75 mm] ([No. 4]) [_____] for coarse aggregate in ASTM C 33].

3.13.5.2 Cover

Filter fabric as indicated.

3.14 PIPELINE CASING

Provide new smooth wall steel pipeline casing under [new] [existing] [railroad] [and] [pavement] [in a trench] [by the boring and jacking method of installation]. Provide each new pipeline casing, where indicated and to the lengths and dimensions shown, complete and suitable for use with the new piped utility as indicated. [Install pipeline casing by dry boring and jacking method as follows:]

3.14.1 Bore Holes

Mechanically bore holes and case through the soil with a cutting head on a continuous auger mounted inside the casing pipe. Weld lengths of pipe together in accordance with AWS D1.1/D1.1M. Do not use water or other fluids in connection with the boring operation.

3.14.2 Cleaning

Clean inside of the pipeline casing of dirt, weld splatters, and other foreign matter which would interfere with insertion of the piped utilities by attaching a pipe cleaning plug to the boring rig and passing it through the pipe.

3.14.3 End Seals

After installation of piped utilities in pipeline casing, provide watertight end seals at each end of pipeline casing between pipeline casing and piping utilities. Provide watertight [end seals as indicated.] [segmented elastomeric end seals.]

3.15 RIP-RAP CONSTRUCTION

Construct rip-rap [on bedding material] [on filter fabric] [with grout] [in accordance with [DOT] [_____] State Standard, paragraph [_____]] in the areas indicated. Trim and dress indicated areas to conform to cross sections, lines and grades shown within a tolerance of 30 mm(0.1 foot).

3.15.1 Bedding Placement

Spread [filter fabric] bedding material uniformly to a thickness of at least [75] [_____] mm([3] [_____] inches) on prepared subgrade as indicated. [Compaction of bedding is not required. Finish bedding to present even surface free from mounds and windrows.]

3.15.2 Stone Placement

Place rock for rip-rap on prepared bedding material to produce a well graded mass with the minimum practicable percentage of voids in conformance with lines and grades indicated. Distribute larger rock fragments, with dimensions extending the full depth of the rip-rap throughout the entire mass and eliminate "pockets" of small rock fragments. Rearrange individual pieces by mechanical equipment or by hand as necessary to obtain the

distribution of fragment sizes specified above. [For grouted rip-rap, hand-place surface rock with open joints to facilitate grouting and do not fill smaller spaces between surface rock with finer material. Provide at least one "weep hole" through grouted rip-rap for every 4.65 square meters(50 square feet) of finished surface. Weep holes shall consist of columns of bedding material, 100 mm(4 inches) in diameter, extending up to the rip-rap surface without grout.]

3.15.3 Grouting

[Prior to grouting, wet rip-rap surfaces. Grout rip-rap in successive longitudinal strips, approximately 3 m(10 feet) in width, commencing at the lowest strip and working up the slope. Distribute grout to place of final deposit and work into place between stones with brooms, spades, trowels, or vibrating equipment. Take precautions to prevent grout from penetrating bedding layer. Protect and cure surface for a minimum of 7 days.]

3.16 FINISHING

The surface of excavations, embankments, and subgrades shall be finished to a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations shown. The degree of finish for graded areas shall be within 30 mm (0.1 foot) of the grades and elevations indicated except that the degree of finish for subgrades shall be specified in paragraph SUBGRADE PREPARATION. Gutters and ditches shall be finished in a manner that will result in effective drainage. The surface of areas to be turfed shall be finished to a smoothness suitable for the application of turfing materials.

3.16.1 Subgrade and Embankment Protection

During construction, embankments and excavations shall be kept shaped and drained. Ditches and drains along subgrade shall be maintained to drain effectively at all times. The finished subgrade shall not be disturbed by traffic or other operation and shall be protected and maintained by the Contractor in a satisfactory condition until ballast, subbase, base, or pavement is placed. The storage or stockpiling of materials on the finished subgrade will not be permitted. No subbase, base course, ballast, or pavement shall be laid until the subgrade has been checked and approved, and in no case shall subbase, base, surfacing, pavement, or ballast be placed on a muddy, spongy, or frozen subgrade.

3.16.2 Capillary Water Barrier

Capillary water barrier under concrete floor and area-way slabs on grade shall be placed directly on the subgrade and shall be compacted with a minimum of two passes of a hand-operated plate-type vibratory compactor.

3.16.3 Grading Around Structures

Areas within 1.5 m (5 feet) outside of each building and structure line shall be constructed true-to-grade, shaped to drain, and shall be maintained free of trash and debris until final inspection has been completed and the work has been accepted.

3.17 PLACING TOPSOIL

On areas to receive topsoil, the surface shall be free of materials that would hinder planting or maintenance operations. The compacted subgrade soil shall be scarified to a 50 mm (2 inch) depth by disking or plowing for the bonding of topsoil with subsoil. Topsoil then shall be spread evenly to a thickness of 100 mm (4 inches) and graded to the elevations and slopes shown. Topsoil shall not be spread when frozen or excessively wet or dry. Material required for topsoil in excess of that produced by excavation within the grading limits shall be obtained from [offsite areas] [areas indicated].

3.18 TESTING

Testing shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government. Tests shall be performed by an approved commercial testing laboratory. Field in-place density shall be determined in accordance with ASTM D 1556 [and ASTM D 2937]. [ASTM D 2937, Drive Cylinder Method shall be used only for soft, fine-grained, cohesive soils.] When test results indicate that compaction is not as specified, the material shall be removed, replaced and recompacted to meet specification requirements. Tests on recompacted areas shall be performed to determine conformance with specification requirements. Inspections and test results shall be certified by a registered professional civil engineer. These certifications shall state that the tests and observations were performed by or under the direct supervision of the engineer and that the results are representative of the materials or conditions being certified by the tests. The following number of tests, if performed at the appropriate time, will be the minimum acceptable for each type operation.

3.18.1 Fill and Backfill Material Gradation, Classification, and Moisture Content

One test per 150 cubic meters(200yards) stockpiled or in-place source material. Gradation of fill and backfill material shall be determined in accordance with ASTM D 422 and ASTM D 1140 (wash 75 micrometers(0.003 inches), without hydrometer). Liquid limit and plasticity index shall be determined in accordance with ASTM D 4318. Classification of soils shall be in accordance with ASTM D 2487. Moisture content shall be determined in accordance with ASTM D 2216.

3.18.2 Compaction TestsCompaction tests shall be performed by the test procedure presented in ASTM D 1557. Adequate testing shall be conducted to establish at least five points with at least one point falling within plus or minus 1.5 percentage points of the plotted optimum moisture content.

3.18.3 Tests Required on Material Prior to Placement

3.18.3.1 General

All material from required excavations and borrow shall be tested prior to incorporation into the permanent work. The tests shall be performed on samples representative of the various materials to be utilized. Samples shall be carefully selected to represent the full range of materials to be used as fill and/or backfill. The following minimum number of tests shall be performed on the materials prior to the placement of the materials in the work. Additional tests of these types shall be performed when materials of different classification or compaction characteristics are encountered to

determine the properties of the materials. The Contracting Officer reserves the right to direct additional testing as required.

3.18.3.2 Classification Tests

Classification tests shall be performed to determine the acceptability of materials in accordance with paragraph MATERIALS. Such tests on materials proposed for use as fill and/or backfill shall be performed prior to their use. Sufficient classification tests shall be performed to define the full range of all materials proposed for use. A minimum of two classification tests shall be performed on each material classified as satisfactory for use. The Contracting Officer may at any time require additional classification tests to confirm material acceptability.

3.18.3.3 Compaction Tests

Compaction tests shall be performed prior to commencement of construction in order to determine the moisture-density relationships of all satisfactory materials proposed for use as fill and/or backfill. For each compaction test performed, an associated or companion classification test and moisture content test shall be performed. Compaction tests shall be performed in sufficient number to establish the full range of maximum dry density and optimum water content. A minimum of 8 compaction tests shall be performed on materials classified as satisfactory for use. Samples for these tests shall not be obtained from the same locations. The Contracting Officer reserves the right to direct where samples for additional compaction tests are obtained. In the event that the compaction characteristics of materials having the same classification vary appreciably, additional compaction tests shall be performed.

3.18.3.4 Moisture Content Tests

Moisture content tests shall be performed on all materials proposed for use as fill and/or backfill to determine their suitability for use in accordance with paragraph Moisture Content. Moisture content tests shall be performed in sufficient number to determine the full range of moisture contents. Moisture content test shall be performed for each compaction test and as required to determine acceptability of material prior to placement. Not less than two moisture content tests shall be performed on each material classified as satisfactory for use.

3.18.4 Tests Required During Placement

3.18.4.1 In-Place Density Tests for General Earthwork

a. One test per 1000 square meters(10,000 square feet), or fraction thereof, of each lift of fill or backfill areas compacted by other than hand-operated machines.

b. One test per 10 square meters(100 square feet), or fraction thereof, of each lift of fill or backfill areas compacted by hand-operated machines.

c. One test per 30 linear meters(100 linear feet), or fraction thereof, of each lift of embankment or backfill for roads.

d. One test per 700 square meters(7500 square feet), or fraction thereof, of subgrade in native soil or cut in all areas, excluding roads.

e. One test per 15 linear meters(50 linear feet), or fraction thereof, of subgrade in embankment or backfill, and in native soil or cut in roads.

3.18.4.2 In-Place Tests for Buildings

Acceptance of the compacted materials shall be determined by the results of field in-place density tests. Density tests in randomly selected locations shall be performed in the material and at the minimum frequency specified below:

Material Type	Location of Material	Minimum Test Frequency
Fill, embankment and backfill	Beneath structures, to the 1.5 m building line	One test per lift per each increment or fraction of 4000 square feet
Fill and backfill	Areas beside structures, footings, walls, and areas enclosed by grade beams that are compacted by hand operated compaction equipment	One test per foot of depth per each increment or fraction of 200 square feet, or for each (50 linear feet) of long narrow (less than 3 feet wide) fills 50 linear meters or more
Subgrade	Under building slabs on grade and paved areas	One test per each increment or fraction of 2500 square feet
Subgrade	Under footings	One test per every fifth column footing and for each increment or fraction of 75 linear feet of wall footings

3.18.4.3 In-Place Density Tests for Utility Systems

Tests shall be performed in sufficient numbers to ensure that the specified density is being obtained. A minimum of one field density test per lift of

backfill for every 150 linear feet, or fraction thereof, of installation shall be performed.

3.18.4.4 Moisture Content

In the stockpile(s), excavation, or borrow areas, a minimum of two tests, each with a one-point or two-point compaction test, shall be performed per day per type of material or source of material being placed during stable weather conditions. During unstable weather, tests shall be made as dictated by the local conditions to ensure the moisture content of the placed materials is within the specified limits.

3.18.4.5 Optimum Moisture and Laboratory Maximum Density

One representative test shall be performed per 200 cubic meters of fill, embankment, and backfill, or when any change in material occurs which may affect the optimum moisture content of laboratory maximum density.

3.18.4.6 Time and Location of Tests

The Government reserves the right to specify the location of any test. Whenever there is doubt as to the adequacy of the testing or validity of results, the Contracting Officer may direct that additional tests be performed, at not additional cost to the Government. The field density tests shall be performed at times and locations which will assure the specified compaction is being obtained throughout each lift for all materials placed. Additional field density tests shall be performed in areas where the Contracting Officer determines there is reason to doubt the adequacy of the natural subgrade.

3.18.4.7 Field Density Control

The results of field density tests shall be compared to results of compaction tests performed as required elsewhere in these specifications by the use of the appropriate procedures described in the following paragraphs.

3.18.5 Compaction Control

For fine grained (clayey and silty) soils and for sands with appreciable fines such that normal shaped compaction curves are obtained, results of all compaction tests shall be plotted on a common plot as a family of curves. For each field density test performed, a one-point compaction test, with additional points as needed, shall be performed on the same material on which the field density test was conducted. The one-point compaction test shall be performed on the dry side of the optimum moisture content. For comparison of field density data to the proper laboratory compaction test results, the procedures for the one-point and/or two-point compaction control methods as described in paragraph Compaction Procedure, shall be used. Compaction curves plotted on the family of curves shall be of such a scale that the optimum moisture content can be interpreted to the nearest 0.1 percent and the maximum dry density can be interpreted to the nearest 0.5 pounds per cubic foot. When a one-point test plots outside the range of the family of curves, an additional five-point compaction test shall be performed.

3.18.6 Compaction Procedure

3.18.6.1 General

The following paragraphs describe methods of relating field density data to desired or specified values. Compaction control of soils requires comparison of fill water content and/or dry density values obtained in field density tests with optimum water content and/or maximum dry density. At a minimum, control shall be in accordance with the One-Point Compaction Method. Where conditions require, the Two-Point Compaction Method shall be used.

3.18.6.2 One-Point Compaction Method

The material from the field density test is allowed to dry to a water content on the dry side of estimated optimum, and then compacted using the same equipment and procedures used in the five-point compaction test. Thorough mixing is required to obtain uniform drying; otherwise, results obtained may be erroneous. The water content and dry density of the compacted sample are determined and then used to estimate its optimum water content and maximum dry density as illustrated in Figure 1 at the end of this section. In Figure 1, the line of optimums is well defined and the compaction curves are approximately parallel to each other, consequently, the one-point compaction method could be used with a relatively high degree of confidence. However, in Figure 2 at the end of this section, the curves are not parallel to each other and in several instances will cross if extended on the dry side. Consequently, the correct curve cannot be determined from the one-point method; therefore, the two-point compaction method should be used. The one-point method should be used only when the data define a relatively good line of optimums.

3.18.6.3 Two-Point Compaction Method

In the two-point test, one sample of material from the location of the field density test is compacted at the fill water content if thought to be at or on the dry side of optimum water content (otherwise, reduced by drying to this condition) using the same equipment and procedures used in the five-point compaction test. A second sample of material is allowed to dry back about 2 to 3 percentage points dry of the water content of the first sample and then compacted in the same manner. At least one point shall fall within 3 percent of the line of optimum. After compaction, the water contents and dry densities for the two samples are determined. The results are used to identify the appropriate compaction curve for the material being tested as shown in Figure 2 at the end of this section. The data shown in Figure 2 warrant the use of the two-point compaction test because the five-point compaction curves are not parallel. Using point A only, as in the one-point test method, would result in appreciable error as the shape of the curve would not be defined. The estimated compaction curve can be more accurately defined by two compaction points.

3.18.7 Tolerance Tests for Subgrades

Continuous checks on the degree of finish specified in paragraph SUBGRADE PREPARATION shall be made during construction on the subgrades.

3.18.8 Displacement of Sewers

After other required tests have been performed and the trench backfill compacted to the finished grade surface, the pipe shall be inspected to

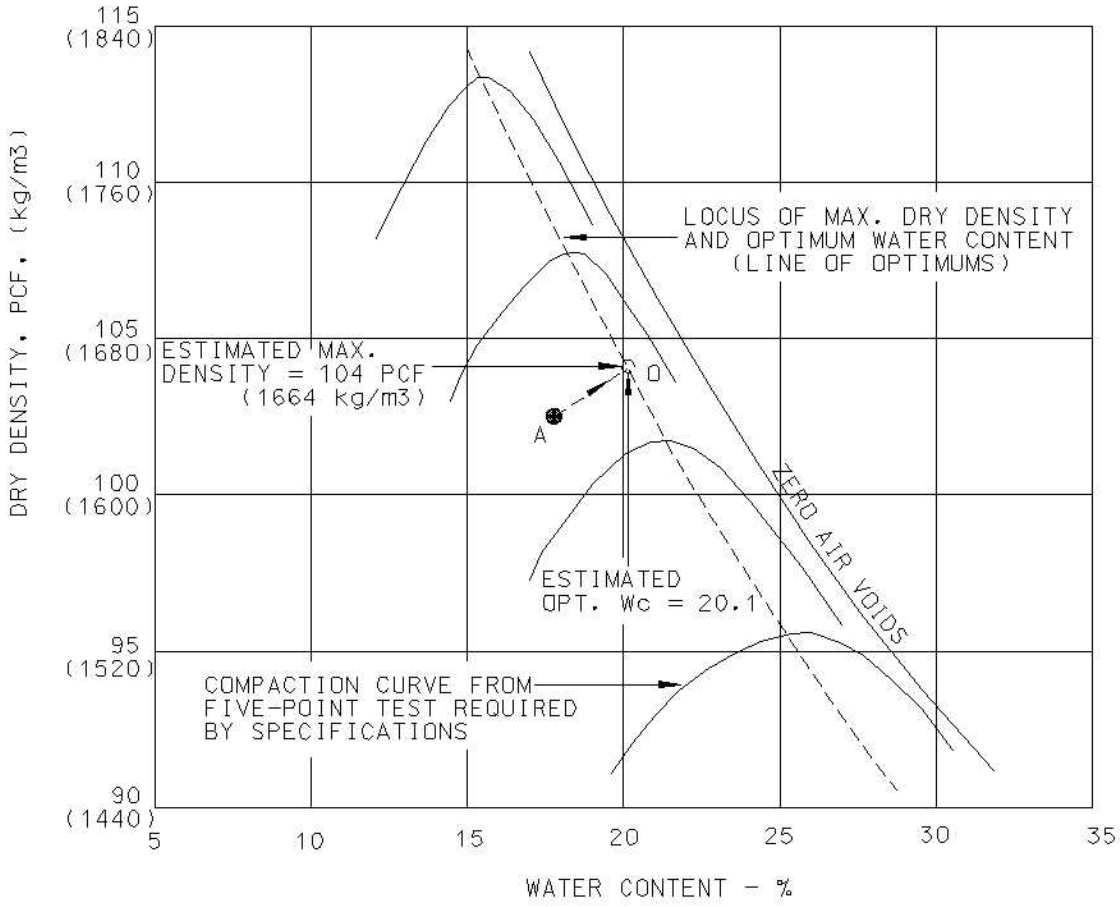
determine whether significant displacement has occurred. This inspection shall be conducted in the presence of the Contracting Officer. Pipe sizes larger than 900 mm (36 inches) shall be entered and examined, while smaller diameter pipe shall be inspected by shining a light or laser between manholes or manhole locations, or by the use of television cameras passed through the pipe. If, in the judgment of the Contracting Officer, the interior of the pipe shows poor alignment or any other defects that would cause improper functioning of the system, the defects shall be remedied as directed at no additional cost to the Government.

3.19 DISPOSITION OF SURPLUS MATERIAL

Surplus material or other soil material not required or suitable for filling or backfilling, and brush, refuse, stumps, roots, and timber shall be [wasted in Government disposal area [indicated] [which is located within a haul distance of [_____]km (miles)]] [removed from Government property as directed by the Contracting Officer].

3.20 PROTECTION

Settlement or washing that occurs in graded, topsoiled, or backfilled areas prior to acceptance of the work, shall be repaired and grades reestablished to the required elevations and slopes.



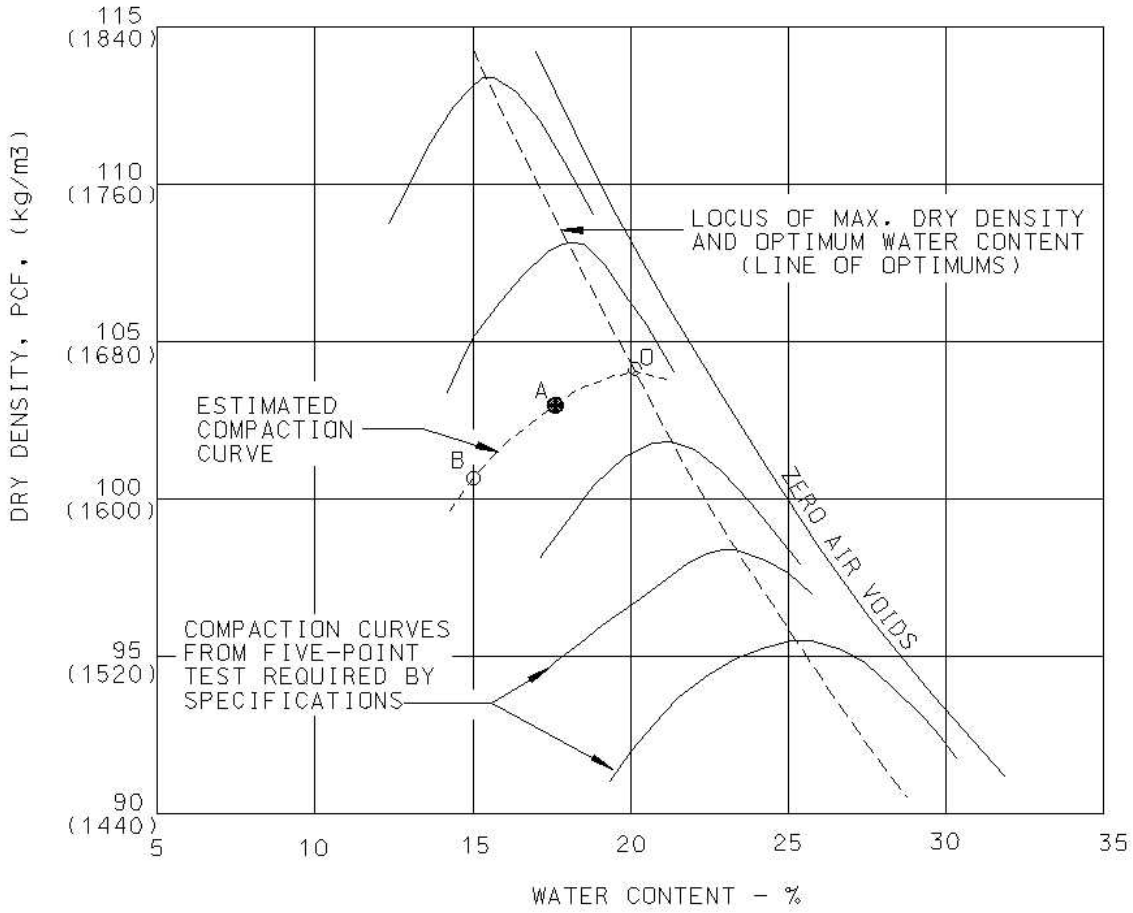
PROCEDURE:

1. Point A is the result of a one-point compaction test on material from field density test. This point must be on the dry side of optimum water content.

2. Point O is the estimated optimum water content and maximum density of the fill material based on a projection of point A approximately parallel to the adjacent compaction curves.

3. Point A must plot within 3 percent of the line of optimums.

Figure 1. Illustration of one-point compaction method.



PROCEDURE:

1. Points A and B are results of a two-point compaction test on material from field density test. Points A and B must be on the dry side of optimum water content.

2. The estimated compaction curve based on Points A and B establishes Point O on the locus, which is the estimated maximum dry density and optimum water content of the fill material.

3. One point must plot within 3 percent of the line of optimums.

Figure 2. Illustration of two-point compaction method.

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CLEARING AND GRUBBING
05/05

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SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 SUBMITTALS

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

SD-03 Product Data

Materials Other Than Saleable Timber

Written permission to dispose of cleared and grubbed material on private property shall be filed with the Contracting Officer.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PROTECTION

3.1.1 Roads

Keep roads free of construction and/or timber harvest-related dirt and debris at all times.

3.1.2 Trees and Vegetation

Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require.

3.1.3 UTILITY LINES

Protect existing utility lines that are indicated to remain from damage. Notify the Contracting Officer immediately of damage to or an encounter with an unknown existing utility line. The Contractor shall be responsible for the repairs of damage to existing utility lines that are indicated or made known to the Contractor prior to start of clearing and grubbing operations. When utility lines which are to be removed are encountered within the area of operations, the Contractor shall notify the Contracting Officer in ample time to minimize interruption of the service.

3.2 CLEARING

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within the areas to be cleared. Clearing shall also include the removal and disposal of structures that obtrude, encroach upon, or otherwise obstruct the work. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Any application of any herbicide or pesticide must be pre-approved by the IMPC in EMD prior to the application. See Section 02360 for more on pesticides.

3.3 GRUBBING

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas, which are all areas to be improved, including Trails, Targets, Buildings, Roadways, etc.
Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth of not less than 18 inches below the original surface level of the ground in

areas indicated to be grubbed and in areas indicated as construction areas under this contract, such as areas for buildings target emplacements, trails, roads, drains, battle positions, electrical/data distribution, camera towers, graded areas, etc. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

3.4 TIMBER

The Construction Contractor shall submit a tree removal plan to the Government as soon as possible after receiving Notice-to-Proceed for design. The Construction Contractor shall 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. The trees on the project site are Government property and therefore the Government through the established Fort Benning timber disposal process will sell all merchantable trees identified and approved for removal. The Construction Contractor will delineate the clearing limits by surveying and flagging the perimeter trees with red flagging tape. The Construction Contractor will notify the Government when this has been accomplished. A representative knowledgeable about the clearing limit surveying and flagging will be designated by the Construction Contractor to answer any questions that may arise regarding clearing limits. The Government and Construction Contractor will determine the site start point of the clearing operation. Once the clearing limits are delineated by the Construction Contractor, 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 Construction 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 top shall be considered as merchantable timber. Trees maybe 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 sale 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.

Note: These guidelines were developed to minimize non-point source (soil erosion and stream sedimentation) and thermal pollution in order to adhere to the Federal Water Pollution Control Act. 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 Construction Contractor may begin any clearing and grubbing required under the contract once all required environmental permits are in place. After the Timber Harvest Contractor has completed his operations

all trees or portions of trees remaining shall be considered to be non-merchantable and are to be removed by the Construction Contractor.

3.4.1 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, then a stream buffer variance must be acquired 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 by the Construction Contractor, then the stream buffer areas must remain untouched until the required stream buffer variance permits have been issued.

Note: Removal of timber products as a silvicultural practice within a 25' buffer from a state water, will prevent future construction activities at this area for a period of 3 years.

The Construction Contractor must cut and stockpile all merchantable trees in stream buffer areas. All merchantable trees that meet the following criteria must be stock piled on the foot print of the construction site for pick-up by the government timber harvest contractor.

- Pine Sawtimber is a minimum of 10 inches DBH and 25 foot length to an 8 inch top.
- Pine Pulpwood is a minimum of 6 inches in DBH and 25 foot length to a 3 inch top.
- Hardwood Pulpwood is a minimum of 6 inches DBH and 25 foot length to a 3 inch top.
- Hardwood Sawtimber is a minimum of 12 inches DBH and 16.5 foot length to a 12 inch top.

The Construction Contractor through the Contracting Officer’s Representative (COR) must schedule with the Land Management Branch, DPW for removal of the stock piled timber. If the remaining timber in wetlands and stream variance areas is deemed non-merchantable, then it shall be disposed of as stated below by the Construction Contractor. Trees/timber can only be deemed non-merchantable by the Land Management Branch, DPW. A signed letter from the Land Management Branch to the Construction Contractor’s COR will designate the timber as non-merchantable. Only then is the timber released to the Construction Contractor. The Construction Contractor through the COR must make a request to the Land Management Branch if they think the timber is non-merchantable.

Harvesting Streamside Management Zones and Wetlands

- Use site-specific equipment and methods to minimize water quality impacts, including high-flotation, low-pressure harvesting equipment, shovel logging, or cable yarding.
- Concentrate skid trails and use logging slash, mats or other techniques to minimize soil compaction and rutting.
- 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.
- Maintain the integrity of stream banks.

o Minimize the exposure of mineral soil by spreading logging slash and using it to drive over.
o Follow Federal mandated stream and wetland crossing procedures.
o Ruts can not be deeper than 12 inches in wetland areas and stream variance areas

Must Avoid
o Using de-limbing gates or trees as de-limbing gates in the wetlands or stream variance areas.
o Leaving tops in stream channels.

3.4.2 SLASH AND RESIDUAL TREE REMOVAL

The Construction Contractor shall submit to the Government a written plan for disposal of all remaining timber. This plan shall be submitted at least 15 days prior to any removal. The plan will indicate the method of disposal and the location. The disposal will occur in one of the following ways unless approved otherwise by the Government:

o Chip the debris and haul off Fort Benning.

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

o Haul debris to a non-government landfill off of Fort Benning.

o Pile debris in trenches and burn at high temperatures using an air curtain destructor or similar equipment able to achieve high temperatures outlined in GA Rules for Air Quality Control Chapter 391-3-1. The incinerated material would be buried in the trench. This process would require monitoring by and coordination with the Contracting Officer Representative and the Fort Benning Environmental office. This process would need to meet any Title V Permit or other federal, State, and local air permits or regulatory requirements. The Construction Contractor shall keep records of the amount of debris burned, location of trenches, weather conditions, and other data as required by the Government. All proposed locations for this method of disposal must be approved by the Government.

-- End of Section --

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DIVISION 02 - SITE CONSTRUCTION

SECTION 31 31 16

SOIL TREATMENT FOR SUBTERRANEAN TERMITE CONTROL
05/05

-- End of Section Table of Contents --

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

THE NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

7 USC Section 136	Federal Insecticide, Fungicide, and Rodenticide Act

1.2 SUBMITTALS

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

SD-03 Product Data

Termiticide Application Plan; G, G

Termiticide application plan with proposed sequence of treatment work with dates and times. The termiticide trade name, EPA registration number, chemical composition, formulation, concentration of original and diluted material, application rate of active ingredients, method of application, area/volume treated, amount applied; and the name and state license number of the state certified applicator shall be included.

Termiticides; G

Manufacturer's label and Material Safety Data Sheet (MSDS) for termiticides proposed for use.

Foundation Exterior; G

Written verification that other site work will not disturb the treatment.

Utilities and Vents; G

Written verification that utilities and vents have been located.

Crawl and Plenum Air Spaces; G

Written verification that crawl spaces and plenum air spaces have been located.

Verification of Measurement; G

Written verification that the volume of termiticide used meets the application rate.

Application Equipment; G

A listing of equipment to be used.

Warranty; G

Copy of Contractor's warranty.

SD-04 Samples

Termiticides; G

Submit on request samples of the pesticides used in this work or the Contracting Officer, the Installation Pest Management Coordinator (IPMC), or Pest Management Quality Assurance Evaluator (PMQAE) may draw, at any time and without prior notice, from stocks at the job site. Should analysis, performed by the Government, indicate such samples to contain less than the amount of active ingredient specified on the label, work performed with such products shall be repeated, with pesticides conforming to this specification, at no additional cost to the Government.

SD-06 Test Reports

Equipment Calibration and Tank Measurement; G

Certification of calibration tests conducted on the equipment used in the termiticide application.

Soil Moisture; G

Soil moisture test result.

Quality Assurance; G

Pest Management Report and copies of daily records signed by an officer of the Contractor, the IMPC, and the PMQAE. Contact EMD prior to work to obtain copies of necessary reporting forms and instructions regarding how to fill them out.

SD-07 Certificates

Qualifications; G

Qualifications and state certification number of the termicide applicator that will be performing the application. Applicator must be certified by Georgia Department of Agriculture in category 30 wood destroying organisms.

1.3 QUALIFICATIONS

The Contractor's principal business shall be pest control. The Contractor shall be licensed and the termiticide applicators certified in the state where the work is to be performed. Termiticide applicators shall also be certified in the U.S. Environmental Protection Agency (EPA) pesticide applicator category which includes structural pest control. The Contractor must possess a Georgia Department of Agriculture business license for termite control. All records, including but not limited to business license, certification of application and liablity insurance, must be submitted prior to application of any pesticide.

The Contractor shall:

a. Have personnel with a state of Georgia certification as required.

b. Provide a submittal with the following information to Contracting Officer and the IPMC:

(1) Quantity of pesticide used.
(2) Rate of dispersion.
(3) Percent of use.
(4) Total amount used.

c. The contractor must coordinate with the Pest Management QAE at 545-1350 or 545-3224, at least 48 hours prior to application of pesticides. The PMQAE has to be onsite to observe the mixing and preparation and application of chemical and to ensure that at the time of any soil treatment application, the soil is in a condition with low moisture to allow uniform distribution of the treatment solution throughout the soil. Treatment can not occur without this coordination.

1.4 SAFETY REQUIREMENTS

Formulate, treat, and dispose of termiticides and their containers in accordance with label directions. Draw water for formulating only from sites designated by the Contracting Officer, and fit the filling hose with a backflow preventer meeting local plumbing codes or standards. The filling operation shall be under the direct and continuous observation of a contractor's representative to prevent overflow. Secure pesticides and related materials under lock and key when unattended. Ensure that proper protective clothing and equipment are worn and used during all phases of termiticide application. Dispose of used pesticide containers off Government property.

1.5 DELIVERY, STORAGE, AND HANDLING

1.5.1 Delivery

Termiticide material shall be delivered to the site in the original unopened containers bearing legible labels indicating the EPA registration number and manufacturer's registered uses. All other materials to be used on site for the purpose of termite control shall be delivered in new or otherwise good condition as supplied by the manufacturer or formulator.

1.5.2 Storage

Materials shall be stored off Post and in accordance with manufacturer's labels. Termiticides and related materials shall be kept under lock and key when unattended.

1.5.3 Handling

Termiticides shall be handled in accordance with manufacturer's labels. Manufacturer's warnings and precautions shall be observed. Materials shall be handled preventing contamination by dirt, water, and organic material. Protect termiticides from sunlight as recommended by the manufacturer.

1.6 INSPECTION

Termiticides shall be inspected upon arrival at the job site for conformity to type and quality in accordance with paragraph TERMITICIDES. Each label shall bear evidence of registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended or under appropriate regulations of the host county. Other materials shall be inspected for conformance with specified requirements. Unacceptable materials shall be removed from the job site.

1.7 WARRANTY

The Contractor shall provide a 5-year written warranty against infestations

or reinfestations by subterranean termites of the buildings or building additions constructed under this contract. Warranty shall include annual inspections of the buildings or building additions. If live subterranean termite infestation or subterranean termite damage is discovered during the warranty period, and the soil and building conditions have not been altered in the interim, the Contractor shall:

a. Retreat the soil and perform other treatment as may be necessary for elimination of subterranean termite infestation;

b. Repair damage caused by termite infestation; and

c. Re-inspect the building approximately 180 days after the retreatment.

1.8 QUALITY ASSURANCE

The Contractor shall comply with 7 USC Section 136 for requirements on contractor's licensing, certification, and record keeping. The Contractor shall maintain daily records using Pest Management Maintenance Record, DD Form 1532-1 and submit copies of records when requested by the Contracting Officer. These forms may be obtained from the main web site: http://web1.whs.osd.mil/icdhome/formsrpt/WWWDDAllbyNumber_1Page10.htm. Or directly from the following websites: http://web1.whs.osd.mil/forms/DD1532-1.pdf and http://web1.whs.osd.mil/forms/DD1532.pdf. Upon completion of this work, submit Pest Management Report. DD Form 1532 identifying target pest, type of operation, brand name and manufacturer of pesticide, formulation, concentration or rate of application used.

PART 2 PRODUCTS

2.1 TERMITICIDES

Termiticides shall be non-repellant. Termiticides shall be currently registered by the EPA or approved for such use by the appropriate agency of the host county. Termiticide shall be selected for maximum effectiveness and duration after application. Termiticide shall be applied at the maximum label application rate. The selected termiticide shall be suitable for the soil and climatic conditions at the project site. The selected termitcide shall be approved by the IMPC.

PART 3 EXECUTION

3.1 TECHNICAL REPRESENTATIVE

The certified Pest Management Quality Assurance Evaluator (PMQAE), shall be present at all meetings concerning treatment measures for subterranean termites, and must be present during treatment application. The command Pest Control Coordinator IMPC shall be contacted prior to starting work.

3.2 SITE PREPARATION

Site preparation shall be in accordance with Sections 02231 CLEARING AND GRUBBING, 02300A EARTHWORK FOR ROADWAYS, TRAILS, TARGETS, AND BERMS, 02315A EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS, 02921A SEEDING. Work related to final grades, landscape plantings, foundations, or any other alterations to finished construction which might alter the condition of treated soils, shall be coordinated with this specification.

3.2.1 Ground Preparation

Food sources shall be eliminated by removing debris from clearing and grubbing and post construction wood scraps such as ground stakes, form

boards, and scrap lumber from the site, before termiticide application begins.

3.2.2 Verification

Before work starts, the Contractor shall verify that final grades are as indicated and smooth grading has been completed in accordance with Section 31 00 00 EARTHWORK ~~FOR ROADWAYS, TRAILS, TARGETS, AND BERMS~~. Soil particles shall be finely graded with particles no larger than 1 inch and compacted to eliminate soil movement to the greatest degree.

3.2.3 Foundation Exterior

The Contractor shall provide written verification that final grading and landscape planting operations will not disturb treatment of the soil on the exterior sides of foundation walls, grade beams, and similar structures.

3.2.4 Utilities and Vents

The Contractor shall provide written verification that the location and identity of HVAC ducts and vents, water and sewer lines, and plumbing have been accomplished prior to the termiticide application.

3.2.5 Crawl and Plenum Air Spaces

The Contractor shall provide written verification that the location and identity of crawl and plenum air spaces have been accomplished prior to the termiticide application.

3.3 SITE CONDITIONS

The following conditions shall determine the time of application.

3.3.1 Soil Moisture

Soils to be treated shall be tested immediately before application. Soil moisture content shall be tested to a minimum depth of 3 inches. The soil moisture shall be as recommended by the termiticide manufacturer. The termiticide will not be applied when soil moisture exceeds manufacturer's recommendations because termiticides do not adhere to the soil particles in saturated soils.

3.3.2 Runoff and Wind Drift

Termiticide shall not be applied during or immediately following heavy rains. Applications shall not be performed when conditions may cause runoff or create an environmental hazard. Applications shall not be performed when average wind speed exceeds 10 miles per hour. The termiticide shall not be allowed to enter water systems, aquifers, or endanger humans or animals.

3.3.2.1 Vapor Barriers and Waterproof Membranes

Termiticide shall be applied prior to placement of a vapor barrier or waterproof membrane.

3.3.2.2 Utilities and Vents

Prior to application, HVAC ducts and vents located in treatment area shall be turned off and blocked to protect people and animals from termiticide.

3.3.3 Placement of Concrete

Concrete covering treated soils shall be placed as soon as the termiticide

has reached maximum penetration into the soil. Time for maximum penetration shall be as recommended by the manufacturer.

3.4 TERMITICIDE TREATMENT

The Contractor shall submit a Termiticide Application Plan to the Facility's Environmental Management Division, Pesticide Department for review and approval before starting the specified treatment.

3.4.1 Equipment Calibration and Tank Measurement

Immediately prior to commencement of termiticide application, calibration tests shall be conducted on the application equipment to be used and the application tank shall be measured to determine the volume and contents. These tests shall confirm that the application equipment is operating within the manufacturer's specifications and will meet the specified requirements. The Contractor shall provide written certification of the equipment calibration test results within 1 week of testing.

3.4.2 Mixing and Application

Formulating, mixing, and application shall be performed in the presence of the Contracting Officer or the technical representative and the PMQAE. A closed system is recommended as it prevents the termiticide from coming into contact with the applicator or other persons. Water for formulating shall only come from designated locations. Filling hoses shall be fitted with a backflow preventer meeting local plumbing codes or standards. Overflow shall be prevented during the filling operation. Prior to each day of use, the equipment used for applying termiticides shall be inspected for leaks, clogging, wear, or damage. Any repairs are to be performed immediately.

3.4.3 Treatment Method

For areas to be treated, the Contractor shall establish complete and unbroken vertical and/or horizontal soil poison barriers between the soil and all portions of the intended structure which may allow termite access to wood and wood related products. Application shall not be made to areas which serve as crawl spaces or for use as a plenum air space. The treatment method shall comply with the provisions of Georgia Rules of Structural Pest Control.

3.4.3.1 Surface Application

Surface application shall be used for establishing horizontal barriers. Surface applicants shall be applied as a coarse spray and provide uniform distribution over the soil surface. Termiticide shall penetrate a minimum of 1 inch into the soil, or as recommended by the manufacturer.

3.4.3.2 Rodding and Trenching

Rodding and trenching shall be used for establishing vertical soil barriers. Trenching shall be to the depth of the foundation footing. Width of trench shall be as recommended by the manufacturer, or as indicated. Rodding or other approved method may be implemented for saturating the base of the trench with termiticide. Immediately after termiticide has reached maximum penetration as recommended by the manufacturer, backfilling of the trench shall commence. Backfilling shall be in 6 inch rises or layers. Each rise shall be treated with termiticide.

3.4.4 Sampling

The Contracting Officer or the PMQAE may draw from stocks at the job site, at any time and without prior notice, samples of the termiticides used to

determine if the amount of active ingredient specified on the label is being applied.

3.5 VERIFICATION OF MEASUREMENT

Once termiticide application has been completed, tank contents shall be measured to determine the remaining volume. The total volume measurement of used contents for the application shall equal the established application rate for the project site conditions. The Contractor shall provide written verification of the measurements.

3.6 CLEAN UP, DISPOSAL, AND PROTECTION

Once application has been completed, the Contractor shall proceed with clean up and protection of the site without delay.

3.6.1 Clean Up

The site shall be cleaned of all material associated with the treatment measures, according to label instructions, and as indicated. Excess and waste material shall be removed and disposed off of Government property.

3.6.2 Disposal of Termiticide

The Contractor shall dispose of residual termiticides and containers off Government property, and in accordance with label instructions and EPA criteria.

3.6.3 Protection of Treated Area

Immediately after the application, the area shall be protected from other use by erecting barricades and providing signage as required or directed. Signage shall be placed inside the entrances to crawl spaces and shall identify the space as treated with termiticide and not safe for children and animals.

3.7 CONDITIONS FOR SATISFACTORY TREATMENT

3.7.1 Equipment Calibrations and Measurements

Where results from the equipment calibration and tank measurements tests are unsatisfactory, re-treatment will be required.

3.7.2 Testing

Should an analysis, performed by a third party, indicate that the samples of the applied termiticide contain less than the amount of active ingredient specified on the label, and/or if soils are treated to a depth less than specified or approved, re-treatment will be required.

3.7.3 Disturbance of Treated Soils

Soil and fill material disturbed after treatment shall be re-treated before placement of slabs or other covering structures.

3.7.4 Termites Found Within the Warranty Period

If live subterranean termite infestation or termite damage is discovered during the warranty period, the Contractor shall re-treat the site.

3.8 RE-TREATMENT

Where re-treatment is required, the Contractor shall comply with the requirements specified in paragraph WARRANTY.

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SECTION 32 92 19

SEEDING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM C 602 (1995a; R 2001) Agricultural Liming Materials

ASTM D 2028	(1997) Cutback Asphalt (Rapid-Curing Type)
ASTM D 5268	(1992; R 1997) Topsoil Used for Landscaping Purposes
ASTM D 977	(1998) Emulsified Asphalt

U.S. DEPARTMENT OF AGRICULTURE (USDA)

AMS Seed Act	(1940; R 1988; R 1998) Federal Seed Act

1.2 SUBMITTALS

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

SD-03 Product Data

Surface Erosion Control Material

SD-06 Test Reports

Equipment Calibration

Certification of calibration tests conducted on the equipment used in the seeding operation.

Soil Test

Certified reports of inspections and laboratory tests, prepared by an independent testing agency, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.

SD-07 Certificates

Seed
Topsoil
pH Adjuster
Mulch

Prior to the delivery of materials, certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include the following:

a. Seed. Classification, botanical name, common name, percent pure live seed, minimum percent germination and hard seed, maximum percent weed seed content, and date tested.

b. Topsoil. Particle size, pH, organic matter content, textural class, soluble salts, chemical and mechanical analyses.

c. pH Adjuster. Calcium carbonate equivalent and sieve analysis.

e. Fertilizer. Chemical analysis and composition percent.

f. Mulch: Composition and source.

1.3 DELIVERY, INSPECTION, STORAGE, AND HANDLING

1.3.1 Delivery

A delivery schedule shall be provided at least 10 calendar days prior to the first day of delivery.

1.3.2 Inspection

Seed shall be inspected upon arrival at the job site for conformity to species and quality. Seed that is wet, moldy, or bears a test date five months or older, shall be rejected. Other materials shall be inspected for compliance with specified requirements. The following shall be rejected: topsoil that contains slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2 inch diameter; and topsoil that contains viable plants and plant parts. Unacceptable materials shall be removed from the job site.

1.3.3 Storage

Materials shall be stored in designated areas. Seed, lime, and fertilizer shall be stored in cool, dry locations away from contaminants. Chemical treatment material shall be stored according to manufacturer's instructions and not with seeding operation materials.

1.3.4 Handling

Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.

1.3.5 Time Limitation

Hydro seeding time limitation for holding seed in the slurry shall be a maximum 24 hours.

PART 2 PRODUCTS

2.1 SEED

2.1.1 Seed Classification

State-approved seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. Labels shall be in conformance with AMS Seed Act and applicable state seed laws.

2.1.2 Permanent Seed Species and Mixtures

Permanent seed species and mixtures shall be proportioned by weight as follows:

Botanical Name	Common Name	Mixture Percent by Weight	Percent Pure Live Seed

SEED MIXTURE	SEED TYPE	SEED APPLICATION RATE	SEEDING DATES	FERTILIZER RECOMMENDATION	LIMESTONE RECOMMENDATION
NO.1	Common Bermuda		October 1-March 14	13-13-13 @	Dolomite Lime @

	Grass (Unhulled)	12	1,400 lbs/acre	4,000 lbs/acre
	Rye Grain	60		
NO. 2	Common Bermuda Grass (Hulled)	15	March 15-Sept. 30	13-13-13 @ 1,400 lbs/acre Dolomite Lime @ 4,000 lbs/acre
	Browntop Millet	10		

2.1.3 Temporary Seed Species

Temporary seed species for surface erosion control or overseeding shall be as follows:

Botanical Name	Common Name	Percent Pure Live Seed	Planting Dates
	Rye Grain	60 lbs/acre	1 Oct - 14 Mar
	Browntop Millet	40 lbs/acre	15 Mar - 30 Sep

2.1.4 Quality

Weed seed shall be a maximum 1 percent by weight of the total mixture.

2.1.5 Seed Mixing

The mixing of seed may be done by the seed supplier prior to delivery, or on site as directed.

2.1.6 Substitutions

Substitutions will not be allowed without written request and approval from The Contracting Officer.

2.2 TOPSOIL

Topsoil shall be as defined in ASTM D 5268. When available, the topsoil shall be the existing surface soil stripped and stockpiled onsite in accordance with SECTION 31 00 00 EARTHWORK ~~Section 02300A EARTHWORK FOR ROADWAYS, TRAILS, TARGETS AND BERMS~~. When additional topsoil is required beyond the available topsoil from the stripping operation, existing shall be amended as recommended by the soil test for the seed specified. Topsoil shall be free from slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2 inch diameter. Topsoil shall be free from viable plants and plant parts.

2.3 SOIL AMENDMENTS

Soil amendments shall consist of pH adjuster, fertilizer, organic material and soil conditioners meeting the following requirements. Vermiculite shall not be used.

2.3.1 pH Adjuster

The pH adjuster shall be an agricultural liming material in accordance with ASTM C 602. These materials may be hydrated lime or ground limestone. The pH adjuster shall be used to create a favorable soil pH for the plant

material specified.

2.3.1.1 Limestone

Limestone material shall contain a minimum calcium carbonate equivalent of 80 percent. Gradation: A minimum 95 percent shall pass through a No. 8 sieve and a minimum 55 percent shall pass through a No. 60 sieve. To raise soil pH, ground limestone shall be used.

2.3.1.2 Hydrated Lime

Hydrated lime shall contain a minimum calcium carbonate equivalent of 110 percent. Gradation: A minimum 100 percent shall pass through a No. 8 sieve and a minimum 97 percent shall pass through a No. 60 sieve.

2.3.2 Fertilizer

The nutrients ratio shall be 13 percent nitrogen, 13 percent phosphorus, and 13 percent potassium. Fertilizer shall be controlled release commercial grade, free flowing, uniform in composition, and consist of a nitrogen-phosphorus-potassium ratio. The fertilizer shall be derived from sulphur coated urea, urea formaldehyde, plastic or polymer coated pills, or isobutylenediurea (IBDU). Fertilizer shall be balanced with the inclusion of trace minerals and micro-nutrients.

2.3.3 Nitrogen Carrier Fertilizer

The nutrients ratio shall be as specified in 2.3.2. Nitrogen carrier fertilizer shall be commercial grade, free flowing, and uniform in composition. The fertilizer may be a liquid nitrogen solution.

2.4 MULCH

Mulch shall be free from weeds, mold, and other deleterious materials. Mulch materials shall be native to the region.

2.4.1 Straw

Straw shall be stalks from oats, wheat, rye, barley, or rice, furnished in air-dry condition and with a consistency for placing with commercial mulch-blowing equipment.

2.4.2 Hay

Hay shall be native hay, sudan-grass hay, broomsedge hay, or other herbaceous mowings, furnished in an air-dry condition suitable for placing with commercial mulch-blowing equipment.

2.4.3 Wood Cellulose Fiber

Wood cellulose fiber shall not contain any growth or germination-inhibiting factors and shall be dyed an appropriate color to facilitate placement during application. Composition on air-dry weight basis: 9 to 15 percent moisture, pH range from 4.5 to 6.0.

2.5 ASPHALT ADHESIVE

Asphalt adhesive shall conform to the following: Emulsified asphalt, conforming to ASTM D 977, Grade SS-1; and cutback asphalt, conforming to ASTM D 2028, Designation RC-70.

2.6 WATER

Water shall be the responsibility of the Contractor, unless otherwise

noted. Water shall not contain elements toxic to plant life.

PART 3 EXECUTION

3.1 INSTALLING SEED TIME AND CONDITIONS

3.1.1 Seeding Time

See Section 2.1.2 for Seeding Times.

3.1.2 Seeding Conditions

Seeding operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work shall be stopped when directed. When special conditions warrant a variance to the seeding operations, proposed alternate times shall be submitted for approval.

3.2 SITE PREPARATION

3.2.1 Finished Grade and Topsoil

The Contractor shall verify that finished grades are as indicated on drawings, and the placing of topsoil, smooth grading, and compaction requirements have been completed in accordance with Section 02300A EARTHWORK, prior to the commencement of the seeding operation.

3.2.2 Application of Soil Amendments

3.2.2.1 Applying pH Adjuster

The pH adjuster shall be applied as specified. The application rate shall be 4000 pounds per acre. The pH adjuster shall be incorporated into the soil to a maximum 4 inch depth or may be incorporated as part of the tillage operation.

3.2.2.2 Applying Fertilizer

The fertilizer shall be applied as specified. The application rate shall be 1400 pounds per acre. Fertilizer shall be incorporated into the soil to a maximum 4 inch depth or may be incorporated as part of the tillage or hydroseeding operation.

3.2.3 Tillage

Soil on slopes up to a maximum 3-horizontal-to-1-vertical shall be tilled to a minimum 4 inch depth. On slopes between 3-horizontal-to-1-vertical and 1-horizontal-to-1 vertical, the soil shall be tilled to a minimum 2 inch depth by scarifying with heavy rakes, or other method. Rototillers shall be used where soil conditions and length of slope permit. On slopes -horizontal-to-1 vertical and steeper, no tillage is required. Drainage patterns shall be maintained as indicated on drawings. Areas compacted by construction operations shall be completely pulverized by tillage. Soil used for repair of surface erosion or grade deficiencies shall conform to topsoil requirements. The pH adjuster, fertilizer, and soil conditioner may be applied during this procedure.

3.2.4 Prepared Surface

3.2.4.1 Preparation

The prepared surface shall be a maximum 1 inch below the adjoining grade of any surfaced area. New surfaces shall be blended to existing areas. The prepared surface shall be completed with a light raking to remove

debris.

3.2.4.2 Protection

Areas with the prepared surface shall be protected from compaction or damage by vehicular or pedestrian traffic and surface erosion.

3.3 INSTALLATION

Prior to installing seed, any previously prepared surface compacted or damaged shall be reworked to meet the requirements of paragraph SITE PREPARATION. Seeding operations shall not take place when the wind velocity will prevent uniform seed distribution.

3.3.1 Installing Seed

Seeding method shall be Broadcast Seeding, Drill Seeding or Hydroseeding. Seeding procedure shall ensure even coverage. Gravity feed applicators, which drop seed directly from a hopper onto the prepared soil, shall not be used because of the difficulty in achieving even coverage, unless otherwise approved. Absorbent polymer powder shall be mixed with the dry seed at the rate recommended by the manufacturer.

3.3.1.1 Broadcast Seeding

Seed shall be uniformly broadcast at the rate specified in 2.1.2, using broadcast seeders. Half the total rate of seed application shall be broadcast in 1 direction, with the remainder of the seed rate broadcast at 90 degrees from the first direction. Seed shall be covered a maximum 1/4 inch depth by disk harrow, steel mat drag, cultipacker, or other approved device.

3.3.1.2 Rolling

The entire area shall be firmed with a roller not exceeding 90 pounds per foot roller width. Slopes over a maximum 3-horizontal-to-1 vertical shall not be rolled. Areas seeded with seed drills equipped with rollers shall not be rolled.

3.3.2 Hydroseeding

Seed shall be mixed to ensure broadcast at the rate specified in 2.1.2. Seed and fertilizer shall be added to water and thoroughly mixed to meet the rates specified. The time period for the seed to be held in the slurry shall be a maximum 24 hours. Wood cellulose fiber mulch and tackifier shall be added at the rates recommended by the manufacturer after the seed, fertilizer, and water have been thoroughly mixed to produce a homogeneous slurry. Slurry shall be uniformly applied under pressure over the entire area. The hydroseeded area shall not be rolled.

3.3.3 Mulching

3.3.3.1 Hay or Straw Mulch

Hay or straw mulch shall be spread uniformly at the rate of 1.5 tons per acre. Mulch shall be spread by hand, blower-type mulch spreader, or other approved method. Mulching shall be started on the windward side of relatively flat areas or on the upper part of steep slopes, and continued uniformly until the area is covered. The mulch shall not be bunched or clumped. Sunlight shall not be completely excluded from penetrating to the ground surface. All areas installed with seed shall be mulched on the same day as the seeding. Mulch shall be anchored immediately following spreading.

3.3.3.2 Mechanical Anchor

Mechanical anchor shall be a V-type-wheel land packer; a scalloped-disk land packer designed to force mulch into the soil surface; or other suitable equipment.

3.3.3.3 Asphalt Adhesive Tackifier

Asphalt adhesive tackifier shall be sprayed at a rate between 10 to 13 gallons per 1000 square feet. Sunlight shall not be completely excluded from penetrating to the ground surface.

3.3.3.4 Non-Asphaltic Tackifier

Hydrophilic colloid shall be applied at the rate recommended by the manufacturer, using hydraulic equipment suitable for thoroughly mixing with water. A uniform mixture shall be applied over the area.

3.3.3.5 Asphalt Adhesive Coated Mulch

Hay or straw mulch may be spread simultaneously with asphalt adhesive applied at a rate between 10 to 13 gallons per 1000 square feet, using power mulch equipment which shall be equipped with suitable asphalt pump and nozzle. The adhesive-coated mulch shall be applied evenly over the surface. Sunlight shall not be completely excluded from penetrating to the ground surface.

3.3.3.6 Wood Cellulose Fiber, Paper Fiber, and Recycled Paper

Wood cellulose fiber, paper fiber, or recycled paper shall be applied as part of the hydroseeding operation. The mulch shall be mixed and applied in accordance with the manufacturer's recommendations.

3.3.4 Watering Seed

Watering shall be started immediately after completing the seeding of an area. Water shall be applied to supplement rainfall at a rate sufficient to ensure moist soil conditions to a minimum 1 inch depth. Run-off and puddling shall be prevented. Watering trucks shall not be driven over turf areas, unless otherwise directed. Watering of other adjacent areas or plant material shall be prevented.

3.4 SURFACE EROSION CONTROL

3.4.1 Surface Erosion Control Material

Where indicated or as directed, surface erosion control material shall be installed in accordance with manufacturer's instructions. Placement of the material shall be accomplished without damage to installed material or without deviation to finished grade.

3.4.2 Temporary Seeding

When directed during contract delays affecting the seeding operation or when a quick cover is required to prevent surface erosion, the areas designated shall be seeded in accordance with temporary seed species listed under Paragraph 2.1.3.

3.4.2.1 Soil Amendments

When soil amendments have not been applied to the area, the quantity of 1/2 of the required soil amendments shall be applied and the area tilled in accordance with paragraph SITE PREPARATION. The area shall be watered in accordance with paragraph Watering Seed.

3.4.2.2 Remaining Soil Amendments

The remaining soil amendments shall be applied in accordance with the paragraph Tillage when the surface is prepared for installing seed.

3.5 QUANTITY CHECK

For materials provided in bags, the empty bags shall be retained for recording the amount used. For materials provided in bulk, the weight certificates shall be retained as a record of the amount used. The amount of material used shall be compared with the total area covered to determine the rate of application used. Differences between the quantity applied and the quantity specified shall be adjusted as directed.

3.6 RESTORATION AND CLEAN UP

3.6.1 Restoration

Existing turf areas, pavements, and facilities that have been damaged from the seeding operation shall be restored to original condition at Contractor's expense.

3.6.2 Clean Up

Excess and waste material shall be removed from the seeded areas and shall be disposed offsite. Adjacent paved areas shall be cleaned.

3.7 SEED ESTABLISHMENT PERIOD

3.7.1 Commencement

The seed establishment period to obtain a healthy stand of grass plants shall begin on the first day of seeding work under this contract and shall continue through the remaining life of the contract and end 12 months after the last day of the seeding operation required by this contract. Written calendar time period shall be furnished for the seed establishment period. When there is more than 1 seed establishment period, the boundaries of the seeded area covered for each period shall be described. The seed establishment period shall be modified for inclement weather, shut down periods, or for separate completion dates of areas.

3.7.2 Satisfactory Stand of Grass Plants

Grass plants shall be evaluated for species and health when the grass plants are a minimum 1 inch high.

3.7.2.1 Field Area

A satisfactory stand of grass plants from the seeding operation for a field area shall be a minimum 100 grass plants per square foot. The total bare spots shall not exceed 2 percent of the total seeded area.

3.7.3 Maintenance During Establishment Period

Maintenance of the seeded areas shall include eradicating weeds, insects and diseases; protecting embankments and ditches from surface erosion; maintaining erosion control materials and mulch; protecting installed areas from traffic; mowing; watering; and post-fertilization.

3.7.3.1 Mowing

a. Field Areas: Field areas shall be mowed once during the season to a minimum 3 inch height. Clippings shall be removed when the

amount cut prevents sunlight from reaching the ground surface.

3.7.3.2 Post-Fertilization

The fertilizer shall be applied as recommended by the soil test. A maximum 1/2 pound per 1000 square feet of actual available nitrogen shall be provided to the grass plants. The application shall be timed prior to the advent of winter dormancy and shall be made without burning the installed grass plants.

3.7.3.3 Repair or Reinstall

Unsatisfactory stand of grass plants and mulch shall be repaired or reinstalled, and eroded areas shall be repaired in accordance with paragraph SITE PREPARATION.

3.7.3.4 Maintenance Record

A record of each site visit shall be furnished, describing the maintenance work performed; areas repaired or reinstalled; and diagnosis for unsatisfactory stand of grass plants.

-- End of Section --

National Environmental Policy Act (NEPA)

RECORD OF ENVIRONMENTAL CONSIDERATION

(32 CFR 651)

BRAC OR HCOF? MCOE

EMD NO. **812102**

EMD Suspense Date: **MAY 07 2008**

Date Received at EMD: **APR 30 2008**

Received by: JKL

Date Received at NRMB:

1. PROJECT DATA

a. Project Title: Warrior In Transistion - Site Approval, Survey, and Soil Borings

b. Project Location: Main Post - Ingersoll Street

Project Number: 69999

d. Execution/Implementation Time frame: FY2008

e. Size of Project Area: Approx. 13 acres

f. Grid Coordinates: X = 691845, Y = 3582124

g. Amount, Description and Location of Digging Required: Utility lines, firing points, target emplacements, berms, etc.

h. Type of Soil/Vegetation: Grass

i. Abandoned Underground Objects: Unknown

j. Number and Types of Vehicles Involved: Unknown

k. Number of Personnel Involved: NA

l. Type of Ammunition to be Used: none

m. Project Description:

Construct a Warrior in Transition (WT) Complex. Primary facilities include a Warrior in Transition (WT) Barracks, Admin and Ops Facility and a Soldier Family Assistance Center (SFAC). Construct special foundations. Energy Management Control System (EMCS) and Fire/Smoke Alarm and Suppression Systems, Sustainable Design and Development (SDD) and energy policy act of 2005 features will be included. Supporting facilities include site work, utilities, lighting, information systems, parking, sidewalks, roads, curbs and gutters, storm drainage, accessories, landscaping, furnishings, and other improvements. Force protection measures include building access control, surveillance and mass notification systems, standoff distances, bollards, and barrier landscaping. Access for individuals with disabilities will be provided. Heating and air conditioningprovided by self contained systems. Comprehensive building and furnishings related interior design services are required. (Air Conditioning is estimated at 500 Tons)

n. NUMBER, Type, Size and Location of Trees to be Removed: Potentially 1-5 large oak trees

Wednesday, July 28, 2010

o. Other Concerns:

COPY

2. PROPONENT OF ACTION

a. Organization/Unit: Master Planning Division, DPW

b. Office Symbol: IMSE-BEN-PWM

c. Name of Project/Action Officer: Dean Miller

d. Rank: CIV

e. Title/Function: Project Manager

f. Telephone Number: 706-545-329

g. Signature:

h. Date: 4/30/2008

I. Submittal No. 1 ___ 2 ___ 3 ___

3. REVIEW

a. this Action qualifies for Categorical Exclusion No. C-1 of Appendix B, (32 CFR 651)

b. This Action is adequately covered in the Existing EA / EIS entitled: NA

c. Natural Resources ☒ d. Cultural Resources ☒ e. Hazardous Materials/Waste ☒ f. Clean Air/Water ☒ g. Other ☒ (See Comments)

4. DECISION

a. ~~CONCUR~~ ☐ b. CONCUR WITH CONDITIONS ☒ ~~NONCONCUR~~ ☐ d. ~~Other~~ ☐ ~~(See Comments)~~

e. Conditions / ~~Comments / Findings / Reasons for Nonconcurrence~~:

SEE ATTACHED RECORD OF DECISION SHEET FOR EMD # 812102

f. Signature, Name, and Title of Reviewer: for **John E. Brown, NEPA Program Manager** ENVSpec

g. Dates: 5/13/08

h. Telephone Number: **(706) 545-7549**

I. Signature, Name and Title of Environmental Coordinator: **Patrick R. Chauvey, Chief, EPMB**

j. Dates: 05/13/08.

k. Telephone Number: **(706) 545-4203**

FB Form 144-R
24 Sep, 2007

National Environmental Policy Act (NEPA)
RECORD OF ENVIRONMENTAL CONSIDERATION

EMD #: 812102 **Project Title: Warrior in Transition—Site Approval, Survey and Soil Borings**

REVIEW: This action qualifies for Categorical Exclusion No. C-1 of Appendix B, 32 CFR 651.

DECISION: _X_ Concur with conditions

Conditions / Findings:

Conservation Branch Management: None: Gary Hollon (544-7070), 9 May, 2008.

Forestry Management: None: James Parker (544-7081), 7 May, 2008.

Cultural Resources Management: Condiitons: Connie Barnett (545-1471), 7 May, 2008.

While the proposed construction site contains no archaeological sites it is within the viewshed of the Main Post Historic District. Building exteriors to be constructed here must be designed as compatible with the historic district following the Secretary of the Interior's Standards for the Treatment of Historic Properties - a version of these pertaining specifically to New Construction and Alterations has already been provided to PM Dean Miller. Project plans/designs must be submitted for review by CRM prior to approval and before the commencement of any construction.

Air/Radon Management: Conditions: Erin Menefee for Bonnie Storey (545-7576), 7 May, 2008.

In accordance with Georgia Rules for Air Quality, the following shall apply:

All persons responsible for any operation, process, handling, transportation or storage facility which may result in fugitive dust shall take all reasonable precautions to prevent such dust from becoming airborne. Some reasonable precautions which could be taken to prevent dust from becoming airborne include, but are not limited to, the following:

Use, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land; covering, at all times when in motion, open bodied trucks, transporting materials likely to give rise to airborne dusts; and the prompt removal of earth or other material from paved streets onto which earth or other material has been deposited. The percent opacity from any fugitive dust source listed above shall not equal or exceed 20 percent.

Construction/operating permits may be required from GA EPD 30 days before construction begins. If the language in the solicitation states that the contractor will apply for the permit(s), then the Ft. Benning Air Program Manager should be made aware of the action and a copy of the permit(s) application(s) shall be submitted to the EMD.

In all instances, the following information relating to the air emission unit shall be submitted to EMD 30 days prior to commencing construction:

Type of unit, Unit manufacturer , Bldg Number housing unit , Size of unit (energy usage units ie Btu) Type of fuel used in unit.

This is needed for all heating/cooling units, batch plants, and other units with air emissions. In addition, some of the construction equipment may require a permit.

Spill/ISCP/SPCC/NPDES/SWP3 Management: Conditions: Felix Seda (545-9879), 5 May, 2008.

ONLY SOIL BORING APPROVED; actual construction project [Warrior in Transition, Project # 69999] will be regulated under NPDES Permit GAR 100001 for construction.

General Notes / Soil Borings Activities:

Project area for soil borings to be over one acre. Minimize soil disturbance at all times. Ensure protection of the exposed soil is accomplished by use of best management practices (BMPs) such as berms or silt fences at all time to minimize soil/sediment run-off that could reach water ways or being washed during rain events.

Soil boring activities involve a process where soil could be displaced during rain events if not properly managed. Stay away 25' or more from any waterways that could be affected, particularly if the waterway is considered a "state waters". This include clearing trees within 25' of any "state waters". This is considered encroachment of the 25' buffer. Any encroachment caused by removing tress with the 25' stream buffer of a "state Water" will result in a violation of the CWA, and the site will not be able to be used for construction for 3 years.

All disturbed areas must be stabilized with some type of vegetation. Crossing of small streams authorize only if performed perpendicular to the stream and with a proper temporary crossing BMPs (Sr) Ensure that wastewaters from drilling operations are not discharged into storm drains or waterways, as constituents are considered pollutants under the CWA.

Notes: Future construction activities at this location will be regulated under NPDES Permit GAR 100001 and/or GAR 100003. Contractor should take advantage of a site visit to identify any potential areas where "state waters" may be present and submit to design professional for consideration during his/her required site visit to the site.

HAZMAT/Waste Management: Conditions: Ted Williams (545-7579), 1 May, 2008.

Any wastes generated must be evaluated for their hazardous characteristics and disposed of in accordance with all Federal, State and Fort Benning Hazardous Waste Regulations.

Appropriate precautions must be taken to prevent hazardous material spills. Adequate quantities of spill response supplies must be on hand while work is being performed. If a spill occurs use notification procedures as outlined in the Fort Benning Hazardous Waste Management Plan.

Contain and clean up any spill according to guidance provided by the Environmental Programs Management Branch. Contact POC for additional guidance for proper waste management.

Solid Waste/Recycling Management: Conditions: Dorinda Morpeth (545-5337), 1 May, 2008.

Fort Benning does not have a landfill for contractor use. Fort Benning will not provide an area within the confines of the installation for disposal of waste material. Clean dirt excavated from a construction site may be used in other areas on post as approved or specified by the Environmental Division, DPW, Fort Benning, GA. The contractor is responsible for disposal or recycling of concrete/asphalt and other demolition material at no expense to the Government.

For projects less than 35% complete a 50% percent minimum diversion of C&D wastes from landfills is a requirement for each project undertaken or contract awarded at an installation or activity.

Additional comments from the GA EPD concerning construction on the landfill will be coming and will be relayed to the COE as soon as they are received.

Please contact Dorinda Morpeth, Bldg 6, Rm 310, phone number 545-5337 FOR MORE INFORMATION ON Solid Waste C&D disposal.

UST/AST/PCB Management: Conditions: Erin Menefee (545-4208), 7 May, 2008.

For all new construction and additions, the following must me met:

The applicator shall be certified by the State Department of Agriculture as "Certified Pesticide Applicators" in the category of Wood Destroying Organisms. Prior to work start, the Contractor shall submit the MSDS, pesticide labels, Contractor's State Department of Agriculture License and the employees' State Department of Agriculture certifications to the Environmental Management Division in Building 6 Room 307.

Work shall be performed in accordance with the RULES OF GEORGIA STRUCTURAL PEST CONTROL COMMISSION

The contractor must coordinate with the Pest Management QAE at 545-1350 or 545-3224, to coordinate a date and time of chemical application. The PMQAE has to be onsite to observe the mixing and preparation and application of chemical and to ensure that at the time of any soil treatment application, the soil is in a condition with low moisture to allow uniform distribution of the treatment solution throughout the soil. Treatment can not occur without this coordination.

The Contractor shall provide a five-year written warranty against existing and new infestations of subterranean termites for the areas treated. The warranty shall state the chemical concentrations, rates, and methods of application complied with the EPA label. The warranty period shall commence from the date of acceptance by the Government. The warranty shall be given to the PMQAE immediately after final treatment.

Rates and methods of application shall be in accordance with the manufacturer's instructions on the pesticide label. Maximum application rates shall be used.

Pest management reports shall be provided within three working days following the completion of the pesticide application. The report shall contain the following:

1. Target pest
2. Pesticide name and formulation
3. Quantity of pesticide applied (gal., oz., Etc.)
4. The percentage of final dilution
5. Total area treated (square feet, acre, etc.)
6. Certified applicator's name

Reports may be faxed or mailed to: Pest Management, Building 6 Room 316 , Fort Benning, Ga. 31905 , Office 545-3224 Fax 545-1493

Site Contamination Management: Conditions: Neil Pearce (545-6427), 5 May, 2008.

This project is sited on or in close proximity to closed landfill #3. If an area can be found outside the area where the landfill and garbage lies I have no problem with siting this project. But I strongly recommend against siting this project on top of the garbage or the landfill.

Pollution Prevention Management: Conditions: Tom Tuten (545-1298), 30 April, 2008.

* Incorporate as many sustainable design features as possible to obtain Leadership in Energy and Environmental Design, (LEED) silver credits. Army guidance states that all new vertical construction that is 50% or greater climate controlled meet LEED silver design standards. Information on LEED design principles can found at http://www.usgbc.org/DisplayPage.aspx?CategoryID=19. Please contact the P2 program manager for further assistance.

Real Property Management: Conditions: Polly Gustafson (545-5977), 7 May, 2008.

- A 1354 must be submitted to the Real Property Officer upon completion of the project.

CONSTRUCTION & MAINTENANCE PROJECTS
SPCC/NPDES CHECKLIST – GENERAL AREAS
Figure 6.8.10

The following CHECKlist provides general information on how to plan, manage or build areas to prevent hazardous material accidents before they occur. By applying the principals and concepts of Monitoring and Housekeeping, and continuously keeping HM/HW and other general areas clean and orderly, units and activities will be able to meet SPCC requirements under AR 200-1. An easy way to remember what to check is to remember your **CHECK**list:

Containment:

___Ensure that secondary containment is used and in good condition.

___Empty water within secondary containment on a regular basis. If water is contaminated, dispose of it IAW the unit Hazardous Waste Management Plan.

HM/HW locations:

___Make sure the locations of your HM/HW are well chosen. Stay away from waterways, drainage, sensitive areas, living areas, bunkers, ammunition storage, fence lines and/or dining facilities. Place them near the areas where hazardous materials are used.

___Put up warning signs and keep them clean and orderly.

Environmental Documentation:

___Maintain MSDSs for each hazardous material and update Unit/Activity SOPs and Spill Response Plans regularly.

Containers:

___Check condition of containers and keep containers of incompatible materials in proper order.

Kits:

___Place Spill Kits, First Aid Kits, and Emergency Response Kits in the vicinity of the HM/HW areas.

___Spill kits should also be available on vehicles transporting hazardous material/waste.

SPILL RESPONSE RECORD

PHASE I - IMMEDIATE ACTIONS FOR EVALUTING AND REPORTING SPILLS:

IMMEDIATELY REPORT ALL SPILLS TO YOUR SUPERVISOR AND CALL 911

***BE PREPARED TO PROVIDE THE FOLLOWING INFORMATION TO 911 OPERATOR:*

During Duty Hours also Call Mr. Felix Seda, EPMB Spill Manager at 545-9879

1. DATE/TIME OF SPILL: _____ /_____
2. LOCATION: _____
3. MATERIAL SPILLED (include NSN and ingredients, if able): _____
4. HAZARD: FLAMMABLE _____ TOXIC _____ CORROSIVE _____
   OXIDIZER _____ REACTIVE _____ UNKNOWN _____
   OTHER (specify) _____
5. CAUSE OF SPILL: _____
6. DESCRIPTION OF SPILL QUANTITY, SIZE AND TYPE OF AREA AFFECTED:
   a. Quantity Released and Size of Spill Area: _____
   b. Soil: _____
   c. Pavement: _____
   d. Vegetation: _____
   e. Storm or Sewer Drain: _____
   f. Name of Body of Water (River, Creek, Pond, Lake, Drainage Ditch): _____
7. HAS RELEASE BEEN STOPPED? _____
8. HAS RELEASE BEEN CONTAINED? _____
9. DID RELEASE CROSS INSTALLATION BOUNDARIES? (IF YES, DESCRIBE LOCATION) _____
10. TYPE AND EXTENT OF INJURIES, IF ANY: _____

****Provide a copy of this form to DPW EPMB Spill Program Manager or FAX to 545-4209**

PHASE II - POST-SPILL RESPONSE AND CLEAN UP ACTIONS:

11. DESCRIBE CLEAN-UP METHOD AND CONTAINMENT PROCEDURES: _____
12. NAME OF CONTRACTOR INVOLVED IN CLEAN-UP: _____
13. ESTIMATED AMOUNT OF SPILL RESIDUE AND CONTAMINATED MATERIAL REMOVED: _____

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

EMD Number: 812102x2 **Project#:** 69999 **Project Title:** Warrior in Transition Complex, Revised Site and Soil Borings

Description of proposed action:

The Warrior in Transition (WT) Complex has been relocated to Marne Road, West of Martin Army Community Hospital. The original FB 144-R EMD Number is 812102, Dated 13 May 08.
Proposed location and soil boring maps are attached.

Project Location:

Marne Road, West of Martin Army Community Hospital

Amount, Description, Location of Disturbance/Digging:

Utility lines, clearing, grubbing, grading, etc

Number/Types of Vehicles:	Number of Personnel:	Type of Ammunition:	Number/Types of Trees:
Unknown	Construction Crews	None	Unknown number of pines and hardwoods

Size of Project Area: Approx. 13

Duration of Action: Start: 3/11/2009 Stop: 8/11/2010

Proponent: Dean Miller 706-5445-3229

Organization/Unit: Master Planning Division, DPW

****

DECISION:

OTHER-Additional information needed in order to complete environmental analysis "SEE NATURAL RESOURCES – RCW COMMENTS BELOW"

****

CWA - NPDES Construction Conditions: Felix Seda (706 545 9879), 3/16/2009

ONLY SOIL BORING APPROVEL _ NO CONSTRUCTION ACTIVITIES APPROVED UNDER THIS FB 144 R ASSESMENT: General Notes / Soil Borings Activities (1-3)_: Project area for soil borings to be less than one acre. Soil boring activities involve a process where soil could be displaced during rain events if not properly managed. Stay away 25' or more from any waterways that could be affected, particularly if the waterway is considered a "state waters". This include clearing trees within 25' of any "state waters". This is considered encroachment of the 25' buffer. Any encroachment caused by removing tress with the 25' stream buffer of a "state Water" will result in a violation of the CWA, and the site will not be able to be used for construction for 3 years.

General Notes / Soil Borings Activities (2-3): 1. Minimize soil disturbance at all times. Ensure protection of the exposed soil is accomplished by use of best management practices (BMPs) such as berms or silt fences at all time to minimize soil/sediment run-off that could reach water ways or being washed during rain events. 2. All disturbed areas must be stabilized with some type of vegetation. 3. Crossing of small streams authorize only if performed perpendicular to the stream and with a proper temporary crossing BMPs (Sr). 4. Ensure that wastewaters from drilling operations are not discharged into storm drains or waterways, as constituents are considered pollutants under the CWA.

General Notes / Soil Borings Activities (3-3): Notes: Future construction activities at this location will be regulated under NPDES Permit GAR 100001 and/or GAR 100003. Contractor should take advantage of a site visit to identify any potential areas where "state waters" may be present and submit to design professional for consideration during his/her required site visit to the site.

Natural Resources - RCW "OTHER" Michael Barron (706 544 7080), 2/25/2009

Site does not appear to have any RCW impacts; however, any project changes must be approved by MCRC2. Proponent should resubmit 144R indicating MCRC2 approval as well as providing ARCGIS Shape files for evaluation.

Natural Resources - TES None Mark Thornton (706 544 7079), 3/12/2009

EMD Number: 812102x2 **IJO#** 69999 **Project Title:** Warrior in Transition Complex, Revised Site

CWA - SPCC/NPDES Industrial - MS4 Conditions: Felix Seda (706 545 9879), 3/16/2009

Implementation Phase: Under the Phase II NPDES MS4 requirements, activities conducted within the installation boundary will be monitored to ensure illicit discharges are prohibited, and that pollutants from small construction/maintenance/demolition / chemical (pesticides/herbicides) applications activities are controlled, reduced, prevented, and/or minimized to meet Ft. Benning standards as per the Storm Water Management Plan (SWMP). The implementation of Best Management Practices (BMPs) and good housekeeping measures under SPCC and NPDES requirements will address pollution prevention requirements for water quality on stormwater/waterways discharges; impacts into land and air resources; as well as meeting NPDES requirements. NPDES Phase II also covers non-point sources such as parking areas, waste disposal to include garbage, municipal waste, sewer discharges, vehicle washing and/or areas where materials are stored that could affect water quality.

Implementation SPCC/MS4: • Ensure that hazardous material/waste/POL/chemicals, wastewater and/or other pollutants (pesticides/herbicides - demolition debris, etc) are not discharged into any storm drainage system, waterways, or into the sanitary sewer system as per NPDES MS4 and Columbus Water Work (CWW) Ordinance No. 04-74 (83-101; as constituents are considered pollutants under the CWA.

CWA - ISCP/EPCRA Conditions: Felix Seda (706 545 9879), 3/16/2009

Potential spills/releases and/or discharges of pollutants from this project/activity that may occur are from: a. Vehicle and/or equipment leaks, as well as from any unexpected accidents. b. Storage, handling and/or transportation of hazardous materials/chemicals. c. Loading/unloading and/or refueling/transferring operations of heavy equipment and any other fuel operated equipment (generators, pumps, chainsaws, etc) to include the use of fuel tanks and any other type of dispensers (as applicable).d. Illicit discharges of polluted waters into the storm drainage system – including waste / waters from equipment/vehicle washing operations, dining/showers/bathrooms, chemical applications (herbicides/pesticides), and/or portables facilities.f. Sedimentation, construction/demolition debris, and other pollutants from small maintenance/construction activities.

Implementation Phase: As part of the ISCP, in the event of a POL and/or hazardous substance spill/release, contact 911 for Fire Department assistance. A spill report must be submitted for all spills/releases to the EPMB Spill Program Manager (use Spill Response Report attached) or FAX 545-4209. Spill Beeper (706) 31-6584 / Spill Phone (706) 358-8258 / Office (706) 545-9879. The contractor and/or proponent are responsible for the cleanup of any spills caused by him/her or any other personnel assigned to his/her contract and/or unit/activity that occur within the installation. Coordination with this office is required for clearance and inspection of any contaminated site.

Forestry Management Conditions: James Parker (706 544 7081), 3/4/2009

All merchantable trees that are sufficient enough for a commercial timber harvest will be removed by a Land Management Branch (LMB) timber harvest contract. Once area has been marked on the ground please contact LMB at 544-7081. If it is determined that the trees can not be harvested commercially then the LMB will release the trees by email or written letter to the proponent of this action for removal.

Restoration None Neil Pearce (706 545 -6427), 3/4/2009

Cultural Resources - Archeological None Edward Howard (706 545 1898), 3/3/2009

Pesticide Conditions: DPW Environmental Management (706 545 7549), 3/3/2009

If Pesticide or Herbicide is to be applied, the applicator shall be certified by the State Department of Agriculture as "Certified Pesticide Applicators" in the category of Wood Destroying Organisms. Prior to work start, the Contractor shall submit the MSDS, pesticide/herbicide labels, Contractor's State Department of Agriculture License and the employees' State Department of Agriculture certifications to the Environmental Management Division in Building 6 Room 307.

The contractor must coordinate with the Pest Management QAE at 545-1350 or 545-3224, to coordinate a date and time of chemical application. The PMQAE has to be onsite to observe the mixing and preparation and application of chemical and to ensure that at the time of any soil treatment application, the soil is in a condition with low moisture to allow uniform distribution of the treatment solution throughout the soil. Treatment can not occur without this coordination.

Solid Waste/Recycling None Dorinda Morpeth (706 545 5337), 2/25/2009

EMD Number: 812102x2 **IJO#** 69999 **Project Title:** Warrior in Transition Complex, Revised Site

Air Management Programs Conditions: Ellis Leeder ((706) 545 1857), 3/3/2009

NOISE: The site for the construction of the new Warrior Transition Battalion Administrative Facility will be located in a Noise Zone II where noise levels are normally unacceptable with sensitive land uses. However, reconsideration is warranted for the site location as ideally one would not normally build/construct in a Noise Zone II. If all viable options have been considered and there are no alternatives to the current site location then new construction in noise impacted zones should be contingent upon the provision of adequate noise insulation provided in the attachment below. According to Planning in the Noise Environment, 15 June 1978, Figure 4-5, Pg 4-24, Acceptable Land Uses and Minimum Building Sound Level Requirements usage are permitted but not without appropriate Noise Level Reduction (NLR) requirements.

Project Planners, Designers, and Managers need to:

1.) Plan / Incorporate into the design and construction of the building Noise Level Reduction Features (NLR) to a MINIMUM of 30 decibels from the interior noise to that of the exterior noise.
2.) NLR can reduce the interior noise but it will not reduce the exterior noise. Standard Operating Procedures should be developed so that occupants will keep the windows and doors closed, minimize outdoor activities during peak firing times. See Attached file "Planning in the Noise Env Ref PDF. For further information or assistance please fee free to contact Ellis Leeder 706-545-1857 or email ellis.leeder@us.army.mil

PERMITTING REQUIREMENTS: Fort Benning operates under a Title V Air Permit for air quality requirements. Construction/Operating Permits are required from the GA Environmental Protection Division (up to 90 days) before the installation of a significant air emission unit. Any diesel boiler, natural gas boiler, and/or LPG boiler, all generators, paint booths, bag houses, cyclones, painting operations, wood working operations, sandblasting, engine test cells, solvent baths/degreasers, fuel storage tanks, or fueling operations requires a pre-construction permit. The air emission units listed above will also require a modification to the Title V Permit and cannot be installed nor operated until a permit is issued by EPD/EPA. Granting periods may be lengthy and permit requests require the manufacturer's technical specifications. Please contact the Air Program Manager in Building 6, Room 310 as soon as possible.

Natural Resources - Wetlands Conditions: Gary Hollon (706 544 7070), 3/2/2009

A wetland permit will be required if the project impacts wetlands or streams. Contact Gary Hollon at 544-7070 if additional information is required.

Water Quality Programs None Joseph Wilkins (706 545 2400), 2/26/2009

Hazardous Materials/Waste Conditions: Onsemus Smith (706 545 2643), 2/25/2009

Any wastes generated must be evaluated for their hazardous characteristics and disposed of in accordance with all Federal, State and Fort Benning Hazardous Waste Regulations.

1. The Environmental Program Management Branch (EPMB) provides an 8 hour course covering Hazardous Waste Management, Hazardous Waste Minimization, Safety, and Pollution Prevention. Call the EPMB at 545-2643 for class schedule and to register for class. Precautions must be taken to ensure that paint chips or any other potential waste streams are containerized and managed properly until a waste analysis is conducted. The requesting contractor shall not dispose of the paint chips in a landfill without a proper analysis. Personnel performing this operation shall contact the EPMB, for proper HW management and analytical testing. Do not disturb any suspected asbestos containing materials (ACMs) during the repair process.

2. Appropriate precautions must be taken to prevent hazardous material spills. Adequate quantities of spill response supplies must be on hand while work is being performed. Use notification procedures as outlined in the Fort Benning Hazardous Waste Management Plan in the event of a spill.

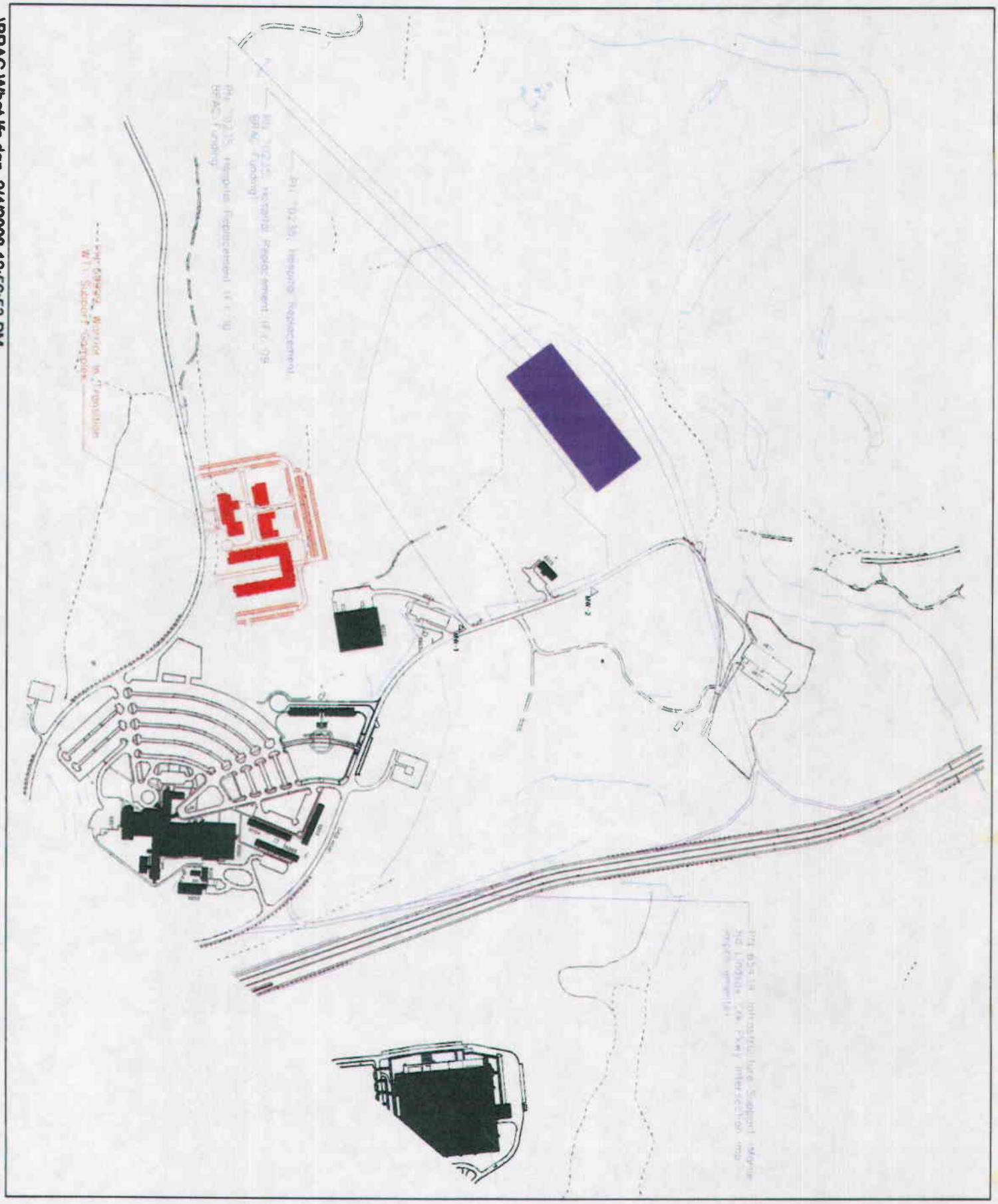
Contact POC for additional guidance for proper waste management.

Signature John E Brown

John E Brown
NEPA Program Manager
Date 18 MAR 09

Signature Ted D. Williams

Ted Williams
Acting EPMB Chief
Date 18 MAR 09



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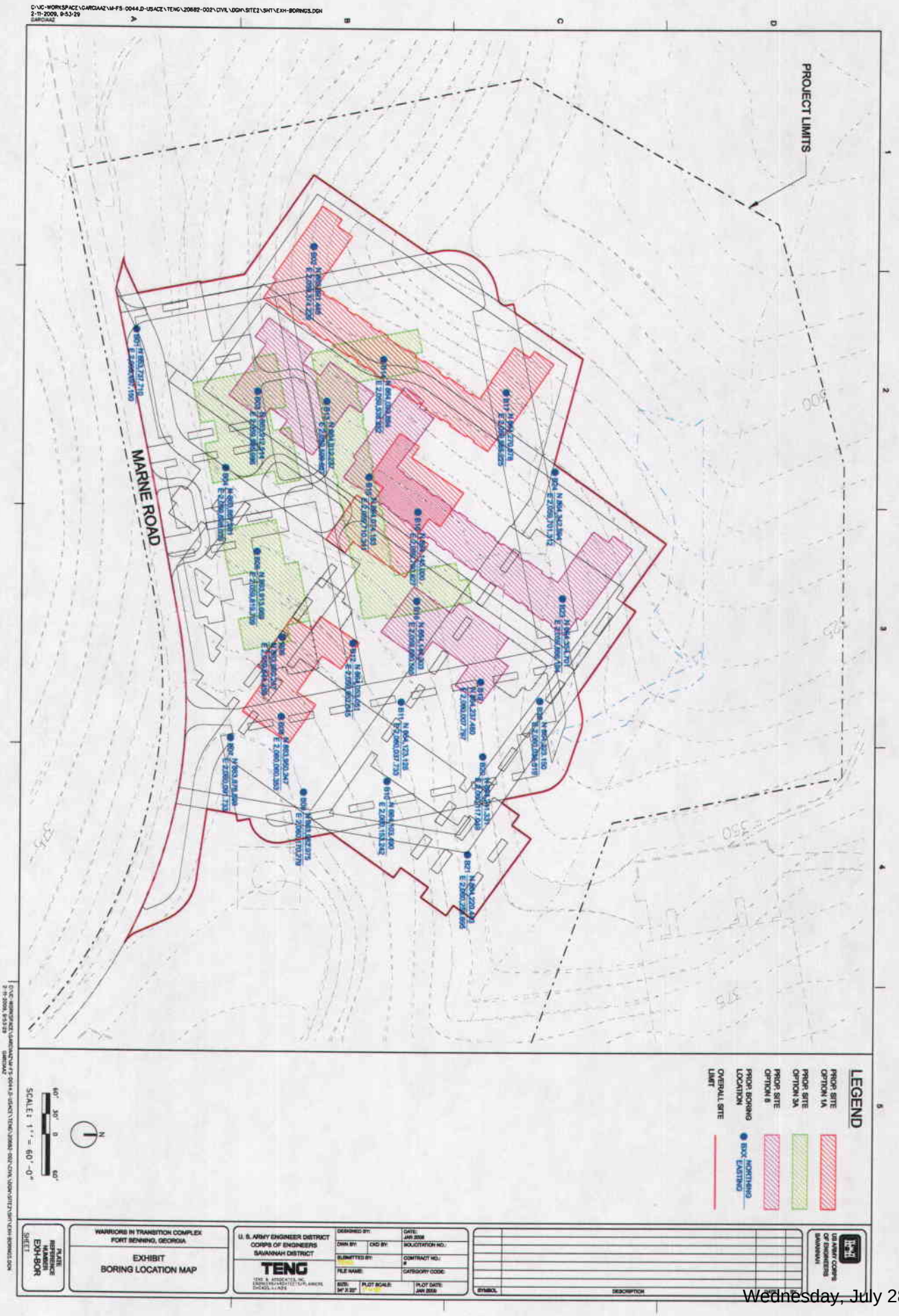
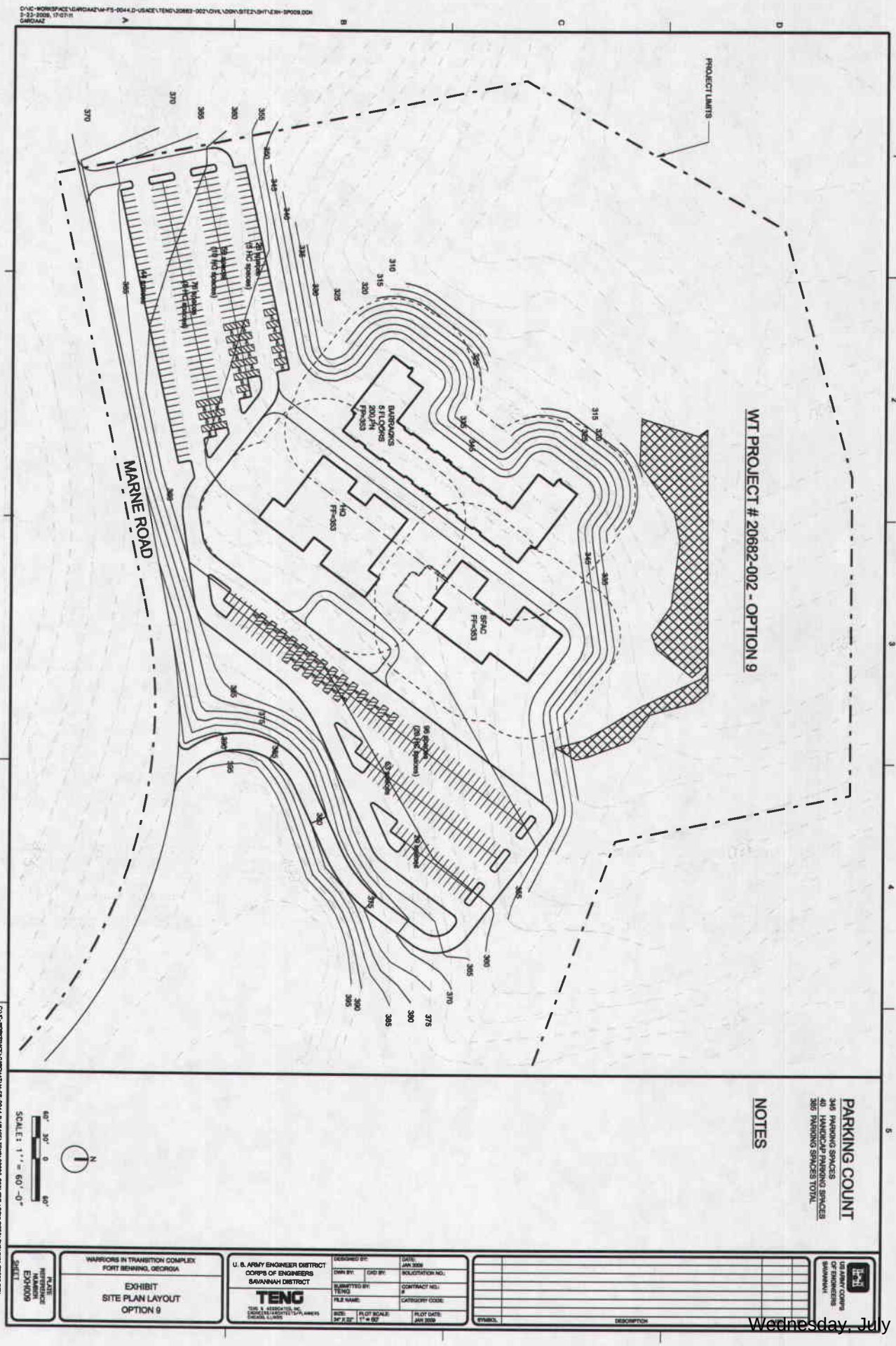

PROJECT LIMITS
MARNE ROAD
LEGEND
PROP. SITE OPTION 1A
PROP. SITE OPTION 3A
PROP. SITE OPTION B
PROP. BORING LOCATION
OVERALL SITE LIMIT
SCALE: 1" = 60'-0"
WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA
EXHIBIT
BORING LOCATION MAP
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT
TENG
EXH-BOR


PROJECT LIMITS
MARNE ROAD
WT PROJECT # 20682-002 - OPTION 9
BARRACKS
5 FLOORS
200 PAX
FFE=353
HQ
FFE=353
SFAC
FFE=353
PARKING COUNT
348 PARKING SPACES
40 HANDICAP PARKING SPACES
385 PARKING SPACES TOTAL
NOTES
SCALE: 1" = 60'-0"
WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA
EXHIBIT
SITE PLAN LAYOUT
OPTION 9
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT
TENG
US ARMY CORPS OF ENGINEERS SAVANNAH
DESCRIPTION

PN 69999 Polygon
(Limits of Construction)
PN 69999 Warrior In Transition
(WIT) Support Complex
Hospital Replacement
Replacement (FY 09
acement (FY 10

15 June 1978

Environmental Protection

PLANNING IN THE NOISE ENVIRONMENT

AFM 19-10
TM 5-803-2
NAVFAC P-970

DEPARTMENTS OF THE AIR FORCE, THE ARMY, AND THE NAVY

DEPARTMENTS OF THE AIR FORCE,
THE ARMY, AND THE NAVY
Washington DC 20330

AF MANUAL 19-10
TECHNICAL MANUAL 5-803-2
NAVFAC P-970
15 June 1978

Environmental Protection

PLANNING IN THE NOISE ENVIRONMENT

This publication is to be used by installation planners as a procedural tool designed to aid in the development of acceptable noise environments for facilities on military installations. It presents guidance for selecting sites for new facilities within existing or expected future noise environments and discusses noise reduction techniques which may be applied to render marginally acceptable locations suitable for use. The guidelines presented are consistent with the Air Installation Compatible Use Zone (AICUZ) Program and land use recommendations generally accepted by the planning community. Recommendations for improvement of this publication should be addressed to HQ USAF/PREV.

This document was prepared under Air Force Contract F49642-74-90035.

Supersedes AFM 86-5; TM5-365; and NAVDOCKS P-98; 1 October 1964.
(See signature page for summary of changes.)
No of printed pages: 259
OPR: PREV (Gary D. Vest)
Approved by: Maj Gen Robert C. Thompson
Writer-Editor: B. Carver
Distribution: (See page 6-30)

FIGURE 4-5

ACCEPTABLE LAND USES AND MINIMUM BUILDING SOUND LEVEL REQUIREMENTS

Facility	SLUCM Code	Outdoor Noise Environment (L_{dn}/L_{eq} in dB) 85-89	80-84	75-79	70-74	65-69
Family Housing	1100	No	No	No	NLR30(4)	NLR25(4
Bachelor Housing	1100	No	No	NLR35(4)	NLR30(4)	NLR25(4
Transient Lodging - Hotel, Motel, etc.	15	No	No	NLR35(4)	NLR30(4)	NLR25(4
*Classrooms, Libraries, Churches	68,711	No	No	No	NLR30	NLR25
*Offices & Administration Buildings - Military		NLR40	NLR35	NLR30	NLR25	Yes
*Offices - Business & Professional	61, 62, 63, 65	No	No	NLR 30	NLR 25	Yes
Hospitals, Medical Facilities, Nursing Homes (24-hour Occupancy)	651	No	No	No	NLR 30	NLR 25
*Dental Clinic, Medical Dispensaries	651	No	No	NLR 30	NLR 25	Yes
*Outdoor Music Shells	7211	No	No	No	No	No
*Commercial & Retail Stores, Exchanges, Movie Theaters, Restaurants & Cafeterias, Banks, Credit Unions, EM/Officer Clubs	53, 54, 56, 57, 59	No	No	NLR 30	NLR 25	Yes
*Flight Line Operations Maintenance & Training		NLR35 35 (5)	NLR30 30 (5)	Yes	Yes	Yes
*Industrial, Manufacturing & Laboratories	21-29, 31-35, 39 41-49, 51, 52, 64	No	NLR35(5) 35 (5)	NLR30(5) 30 (5)	NLR25(5) 25 (5)	Yes
*Outdoor Sports Arenas, Outdoor Spectator Sports	722	No	No	No	Yes(1) (1)	Yes(1) (1)
*Playgrounds, Active Sport Recreational Areas	7610	No	No	No	Yes	Yes
*Neighborhood Parks	7610	No	No	No	Yes	Yes
*Gymnasiums, Indoor Pools	7425, 7432	No	NLR30 30	NLR25 25	Yes	Yes
*Outdoor - Frequent Speech Communication		No(2,3)	No(2,3)	No(2)	No(2)	No(2)
*Outdoor - Infrequent Speech Communication		No(2,3)	No(2,3)	Yes	Yes	Yes
Livestock Farming, Animal Breeding	815-817	No	No	No	Yes	Yes
*Agricultural (except Livestock)	81	Yes(3)	Yes(31)	Yes	Yes	Yes

*For detailed design, the L_{eq} for the appropriate period of usage is the preferred measure of the noise environment. See 4-2.2 for L_{eq} estimation from L_{dn}.

Yes - Land use compatible with noise environment. **No** spatial noise control restriction. Normal construction appropriate.

NLR - Appropriate noise level reduction where indoor activities predominate.

No - Land use not compatible with noise environment, even if special building noise insulation provided.

Refer to text for further explanations of Yes, NLR, and **No** designations.

FOOTNOTES:

1. Land use is acceptable provided special sound reinforcement systems are installed.
2. Land use may be acceptable provided special speech communication systems are used.
3. Land use may be acceptable provided hearing protection devices are worn by personnel. Check applicable hearing damage regulations.
4. Although it is recognized that local conditions may require residential uses in these areas, this use is strongly discouraged in L_{dn} 70-74 and L_{dn} 75-79 75-79 and discouraged in L_{dn} 65-69. The absence of viable alternative development options should be determined. **NLR** criteria will not eliminate outdoor environment noise problems and, as a result, site planning and design should include measures to minimize this impact particularly where the noise is from ground level sources.
5. The **NLR** must only be incorporated into the design and construction of portions of these buildings where the public is received, office areas, and noise sensitive work areas or where the normal noise level is low.

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT AGENCY
SOUTHEAST REGION
GARRISON COMMAND
6751 CONSTITUTION LOOP, SUITE 550
FORT BENNING, GEORGIA 31905-4500

REPLY TO
ATTENTION OF:

Environmental Management Division

SEP 3 0 2008

Ms. Stephanie K. Edwards
Georgia Department of Natural Resources
3100 Gentian Boulevard
Suite 001A
Columbus, Georgia 31907

Dear Ms. Edwards:

In accordance with the new 2008 National Pollutant Discharge Elimination System (NPDES) General Permit GAR 100001 Part II.A.2 requirements, the Directorate of Public Works at Fort Benning, Georgia is submitting six (6) Notice of Intents (NOI) for sites where construction activities are currently taking place. The NOIs for these projects have been prepared using the 2008 Re-Issuance NOI form as required under the new NPDES permit.

If you have any questions, please contact Mr. Felix Seda, Environmental Management Division, Directorate of Public Works, at (706) 545-9879.

Sincerely,

Craig Taylor
Director of Public Works

Enclosures

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

EMD Number: 812102X3 **Project#:** 69999 **Project Title:** Warrior in Transition Complex, Updated Draft RFP Submittal

Description of proposed action:

The Warrior in Transition (WT) Complex has been relocated to Marne Road, West of Martin Army Community Hospital. Updated copies and disks of the RPF will be available at the NEPA Desk. (Delivered 3-27-09) Shape files are attached.

Project Location:

Marne Road, West of Martin Army Community Hospital

Amount, Description, Location of Disturbance/Digging:

Utility lines, clearing, grubbing, grading, etc

Number/Types of Vehicles: Unknown

Number of Personnel: Construction Crews

Type of Ammunition: None

Number/Types of Trees: Unknown number of pines and hardwoods

Size of Project Area: Approx. 13 Acres

Duration of Action: Start: 4/11/2009 Stop: 8/11/2010

Proponent: Dean Miller 706-5445-3229

Organization/Unit: Master Planning Division, DPW

****

DECISION:

This Action qualifies for a Categorical Exclusion **C-1** of Appendix B, (32 CFR 651)

(C-1): Construction of an addition to an existing structure or new construction on a previously undisturbed site if the area to be disturbed has no more than 5.0 cumulative acres of new surface disturbance. This does not include construction of facilities for the transportation, distribution, use, storage, treatment, and disposal of solid waste, medical waste, and hazardous waste (REC required).

****

Natural Resources - RCW **Conditions:** **Michael Barron (706 544 7080), 4/3/2009**

Concur. No red-cockaded woodpecker habitat will be impacted by this project therefore no further consultation or surveys are necessary at this time. If the scope of the project changes, please resubmit a revised 144R detailing all changes to include ARC GIS shape files.

CWA - NPDES Construction **Conditions:** **Felix Seda (706 545 9879), 3/16/2009**

ONLY SOIL BORING APPROVEL _ NO CONSTRUCTION ACTIVITIES APPROVED UNDER THIS FB 144 R ASSESMENT: General Notes / Soil Borings Activities (1-3)_: Project area for soil borings to be less than one acre. Soil boring activities involve a process where soil could be displaced during rain events if not properly managed. Stay away 25' or more from any waterways that could be affected, particularly if the waterway is considered a "state waters". This include clearing trees within 25' of any "state waters". This is considered encroachment of the 25' buffer. Any encroachment caused by removing tress with the 25' stream buffer of a "state Water" will result in a violation of the CWA, and the site will not be able to be used for construction for 3 years.

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EMD Number: 812102X3 **IJO#** 69999 **Project Title:** Warrior in Transition Complex, Updated Draft RFP Submittal

****

CWA - SPCC/NPDES Industrial - MS4 **Conditions:** **Felix Seda (706 545 9879), 3/16/2009**

Implementation Phase: Under the Phase II NPDES MS4 requirements, activities conducted within the installation boundary will be monitored to ensure illicit discharges are prohibited, and that pollutants from small construction/maintenance/demolition / chemical (pesticides/herbicides) applications activities are controlled, reduced, prevented, and/or minimized to meet Ft. Benning standards as per the Storm Water Management Plan (SWMP). The implementation of Best Management Practices (BMPs) and good housekeeping measures under SPCC and NPDES requirements will address pollution prevention requirements for water quality on stormwater/waterways discharges; impacts into land and air resources; as well as meeting NPDES requirements. NPDES Phase II also covers non-point sources such as parking areas, waste disposal to include garbage, municipal waste, sewer discharges, vehicle washing and/or areas where materials are stored that could affect water quality.

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CWA - ISCP/EPCRA **Conditions:** **Felix Seda (706 545 9879), 3/16/2009**

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Natural Resources - TES **None** **Mark Thornton (706 544 7079), 3/12/2009**

Restoration **None** **Neil Pearce (706 545 -6427), 3/4/2009**

Forestry Management **Conditions:** **James Parker (706 544 7081), 3/4/2009**

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Cultural Resources - Archeological None **Edward Howard (706 545 1898), 3/3/2009**

EMD Number: 812102X3 **IJO#** 69999 **Project Title:** Warrior in Transition Complex, Updated Draft RFP Submittal

****

Pesticide **Conditions:** **DPW Environmental Management (706 545 7549), 3/3/2009**

If Pesticide or Herbicide is to be applied, the applicator shall be certified by the State Department of Agriculture as "Certified Pesticide Applicators" in the category of Wood Destroying Organisms. Prior to work start, the Contractor shall submit the MSDS, pesticide/herbicide labels, Contractor's State Department of Agriculture License and the employees' State Department of Agriculture certifications to the Environmental Management Division in Building 6 Room 307.

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Air Management Programs **Conditions:** **Ellis Leeder ((706) 545 1857), 3/3/2009**

NOISE: The site for the construction of the new Warrior Transition Battalion Administrative Facility will be located in a Noise Zone II where noise levels are normally unacceptable with sensitive land uses. However, reconsideration is warranted for the site location as ideally one would not normally build/construct in a Noise Zone II. If all viable options have been considered and there are no alternatives to the current site location then new construction in noise impacted zones should be contingent upon the provision of adequate noise insulation provided in the attachment below. According to Planning in the Noise Environment, 15 June 1978, Figure 4-5, Pg 4-24, Acceptable Land Uses and Minimum Building Sound Level Requirements usage are permitted but not without appropriate Noise Level Reduction (NLR) requirements.

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1.) Plan / Incorporate into the design and construction of the building Noise Level Reduction Features (NLR) to a MINIMUM of 30 decibels from the interior noise to that of the exterior noise.
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PERMITTING REQUIREMENTS: Fort Benning operates under a Title V Air Permit for air quality requirements. Construction/Operating Permits are required from the GA Environmental Protection Division (up to 90 days) before the installation of a significant air emission unit. Any diesel boiler, natural gas boiler, and/or LPG boiler, all generators, paint booths, baghouses, cyclones, painting operations, wood working operations, sandblasting, engine test cells, solvent baths/degreasers, fuel storage tanks, or fueling operations requires a pre-construction permit. The air emission units listed above will also require a modification to the Title V Permit and cannot be installed nor operated until a permit is issued by EPD/EPA. Granting periods may be lengthy and permit requests require the manufacturer's technical specifications. Please contact the Air Program Manager in Building 6, Room 310 as soon as possible.

Natural Resources - Wetlands **Conditions:** **Gary Hollon (706 544 7070), 3/2/2009**

A wetland permit will be required if the project impacts wetlands or streams. Contact Gary Hollon at 544-7070 if additional information is required.

Water Quality Programs **None** **Joseph Wilkins (706 545 2400), 2/26/2009**

EMD Number: 812102X3 **IJO#** 69999 **Project Title:** RFP Submittal

****

Hazardous Materials/Waste **Conditions:** **Onsemus Smith (706 545 2643), 2/25/2009**

Any wastes generated must be evaluated for their hazardous characteristics and disposed of in accordance with all Federal, State and Fort Benning Hazardous Waste Regulations.

1. The Environmental Program Management Branch (EPMB) provides an 8 hour course covering Hazardous Waste Management, Hazardous Waste Minimization, Safety, and Pollution Prevention. Call the EPMB at 545-2643 for class schedule and to register for class. Precautions must be taken to ensure that paint chips or any other potential waste streams are containerized and managed properly until a waste analysis is conducted. The requesting contractor shall not dispose of the paint chips in a landfill without a proper analysis. Personnel performing this operation shall contact the EPMB, for proper HW management and analytical testing. Do not disturb any suspected asbestos containing materials (ACMs) during the repair process.

2. Appropriate precautions must be taken to prevent hazardous material spills. Adequate quantities of spill response supplies must be on hand while work is being performed. Use notification procedures as outlined in the Fort Benning Hazardous Waste Management Plan in the event of a spill.

Contact POC for additional guidance for proper waste management.

Solid Waste/Recycling **None** **Dorinda Morpeth (706 545 5337), 2/25/2009**

Signature _____

For John E Brown
NEPA Program Manager
Date 4.8.09

Signature _____

Ted Williams
Acting EPMB Chief
Date 4-08-09

CONSTRUCTION & MAINTENANCE PROJECTS
SPCC/NPDES CHECKLIST – GENERAL AREAS
Figure 6.8.10

The following CHECKlist provides general information on how to plan, manage or build areas to prevent hazardous material accidents before they occur. By applying the principals and concepts of Monitoring and Housekeeping, and continuously keeping HM/HW and other general areas clean and orderly, units and activities will be able to meet SPCC requirements under AR 200-1. An easy way to remember what to check is to remember your **CHECK**list:

Containment:

___Ensure that secondary containment is used and in good condition.

___Empty water within secondary containment on a regular basis. If water is contaminated, dispose of it IAW the unit Hazardous Waste Management Plan.

HM/HW locations:

___Make sure the locations of your HM/HW are well chosen. Stay away from waterways, drainage, sensitive areas, living areas, bunkers, ammunition storage, fence lines and/or dining facilities. Place them near the areas where hazardous materials are used.

___Put up warning signs and keep them clean and orderly.

Environmental Documentation:

___Maintain MSDSs for each hazardous material and update Unit/Activity SOPs and Spill Response Plans regularly.

Containers:

___Check condition of containers and keep containers of incompatible materials in proper order.

Kits:

___Place Spill Kits, First Aid Kits, and Emergency Response Kits in the vicinity of the HM/HW areas.

___Spill kits should also be available on vehicles transporting hazardous material/waste.

SPILL RESPONSE RECORD

PHASE I - IMMEDIATE ACTIONS FOR EVALUTING AND REPORTING SPILLS:

IMMEDIATELY REPORT ALL SPILLS TO YOUR SUPERVISOR AND CALL 911

***BE PREPARED TO PROVIDE THE FOLLOWING INFORMATION TO 911 OPERATOR:*

During Duty Hours also Call Mr. Felix Seda, EPMB Spill Manager at 545-9879

1. DATE/TIME OF SPILL: _____/_____
2. LOCATION: _____
3. MATERIAL SPILLED (include NSN and ingredients, if able): _____
4. HAZARD: FLAMMABLE _____ TOXIC _____ CORROSIVE _____
   OXIDIZER _____ REACTIVE _____ UNKNOWN _____
   OTHER (specify) _____
5. CAUSE OF SPILL: _____
6. DESCRIPTION OF SPILL QUANTITY, SIZE AND TYPE OF AREA AFFECTED:
   a. Quantity Released and Size of Spill Area: _____
   b. Soil: _____
   c. Pavement: _____
   d. Vegetation: _____
   e. Storm or Sewer Drain: _____
   f. Name of Body of Water (River, Creek, Pond, Lake, Drainage Ditch): _____
7. HAS RELEASE BEEN STOPPED? _____
8. HAS RELEASE BEEN CONTAINED? _____
9. DID RELEASE CROSS INSTALLATION BOUNDARIES? (IF YES, DESCRIBE LOCATION) _____
10. TYPE AND EXTENT OF INJURIES, IF ANY: _____

****Provide a copy of this form to DPW EPMB Spill Program Manager or FAX to 545-4209**

PHASE II - POST-SPILL RESPONSE AND CLEAN UP ACTIONS:

11. DESCRIBE CLEAN-UP METHOD AND CONTAINMENT PROCEDURES: _____
12. NAME OF CONTRACTOR INVOLVED IN CLEAN-UP: _____
13. ESTIMATED AMOUNT OF SPILL RESIDUE AND CONTAMINATED MATERIAL REMOVED: _____

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

EMD Number: 812102X4 **Project#:** 69999 **Project Title:** Warrior in Transition Complex, Revised Site and Soil Borings, Dated 13 April 2009

Description of proposed action:

The Warrior in Transition (WT) Complex has been relocated to Marne Road, West of Martin Army Community Hospital. Proposed soil boring locations have been updated on attached map. New locations are shown in orange and deleted locations have been x-ed out.

Project Location:

Marne Road, West of Martin Army Community Hospital

Amount, Description, Location of Disturbance/Digging:

Utility lines, clearing, grubbing, grading, etc

Number/Types of Vehicles:	Number of Personnel:	Type of Ammunition:	Number/Types of Trees:
Unknown	Construction Crews	None	Unknown number of pines and hardwoods

Size of Project Area: Approx. 13 Acres

Duration of Action: Start: 5/11/2009 Stop: 8/11/2010

Proponent: Dean Miller 706-5445-3229

Organization/Unit: Master Planning Division, DPW

****

DECISION: Concur with conditions

This Action qualifies for a Categorical Exclusion **C-1** of Appendix B, (32 CFR 651)

(C-1): Construction of an addition to an existing structure or new construction on a previously undisturbed site if the area to be disturbed has no more than 5.0 cumulative acres of new surface disturbance. This does not include construction of facilities for the transportation, distribution, use, storage, treatment, and disposal of solid waste, medical waste, and hazardous waste (REC required).

****

Cultural Resources - Archeological	**None**	**Susanne Perry (706-545-1471), 5/5/2009**
Natural Resources - Wetlands	**None**	**Gary Hollon (706 544 7070), 5/4/2009**
CWA - NPDES Construction	**Conditions:**	**Felix Seda (706 545 9879), 5/4/2009**

Same comments as REC 812102 X 2 and 3

ONLY SOIL BORING APPROVED - NO CONSTRUCTION ACTIVITIES APPROVED UNDER THIS FB 144 R ASSESMENT until an ESPCP is submitted and approved by this office.

CWA - SPCC/NPDES Industrial - MS4	**Conditions:**	**Felix Seda (706 545 9879), 5/4/2009**

Same SPCC and NPDES MS4 comments as REC 812102 X 2 and 3

ONLY SOIL BORING APPROVED - NO CONSTRUCTION ACTIVITIES APPROVED UNDER THIS FB 144 R ASSESMENT.

EMD Number: 812102X4 **IJO#** 69999 **Project Title:** Warrior in Transition Complex, Revised Site and Soil Borings, Dated 13 April 2009

****

CWA - ISCP/EPCRA **Conditions:** **Felix Seda (706 545 9879), 5/4/2009**

Same ISCP and EPCRA comments as REC 812102 X 2 and 3

ONLY SOIL BORING APPROVED - NO CONSTRUCTION ACTIVITIES APPROVED UNDER THIS FB 144 R ASSESMENT.

Forestry Management **Conditions:** **James Parker (706 544 7081), 5/1/2009**

Minimize disturbance to surroundings trees.

Restoration	**None**	**Neil Pearce (706 545 -6427), 5/1/2009**
Natural Resources - RCW	**None**	**Michael Barron (706 544 7080), 4/30/2009**
Natural Resources - TES	**None**	**Mark Thornton (706 544 7079), 4/30/2009**
CWA - NPDES Construction	**Conditions:**	**Felix Seda (706 545 9879), 3/16/2009**

ONLY SOIL BORING APPROVEL _ NO CONSTRUCTION ACTIVITIES APPROVED UNDER THIS FB 144 R ASSESMENT: General Notes / Soil Borings Activities (1-3)_: Project area for soil borings to be less than one acre. Soil boring activities involve a process where soil could be displaced during rain events if not properly managed. Stay away 25' or more from any waterways that could be affected, particularly if the waterway is considered a "state waters". This include clearing trees within 25' of any "state waters". This is considered encroachment of the 25' buffer. Any encroachment caused by removing tress with the 25' stream buffer of a "state Water" will result in a violation of the CWA, and the site will not be able to be used for construction for 3 years.

General Notes / Soil Borings Activities (2-3): 1. Minimize soil disturbance at all times. Ensure protection of the exposed soil is accomplished by use of best management practices (BMPs) such as berms or silt fences at all time to minimize soil/sediment run-off that could reach water ways or being washed during rain events. 2. All disturbed areas must be stabilized with some type of vegetation. 3. Crossing of small streams authorize only if performed perpendicular to the stream and with a proper temporary crossing BMPs (Sr). 4. Ensure that wastewaters from drilling operations are not discharged into storm drains or waterways, as constituents are considered pollutants under the CWA.

General Notes / Soil Borings Activities (3-3): Notes: Future construction activities at this location will be regulated under NPDES Permit GAR 100001 and/or GAR 100003. Contractor should take advantage of a site visit to identify any potential areas where "state waters" may be present and submit to design professional for consideration during his/her required site visit to the site.

CWA - SPCC/NPDES Industrial - MS4 **Conditions:** **Felix Seda (706 545 9879), 3/16/2009**

Implementation Phase: Under the Phase II NPDES MS4 requirements, activities conducted within the installation boundary will be monitored to ensure illicit discharges are prohibited, and that pollutants from small construction/maintenance/demolition / chemical (pesticides/herbicides) applications activities are controlled, reduced, prevented, and/or minimized to meet Ft. Benning standards as per the Storm Water Management Plan (SWMP). The implementation of Best Management Practices (BMPs) and good housekeeping measures under SPCC and NPDES requirements will address pollution prevention requirements for water quality on stormwater/waterways discharges; impacts into land and air resources; as well as meeting NPDES requirements. NPDES Phase II also covers non-point sources such as parking areas, waste disposal to include garbage, municipal waste, sewer discharges, vehicle washing and/or areas where materials are stored that could affect water quality.

Implementation SPCC/MS4: • Ensure that hazardous material/waste/POL/chemicals, wastewater and/or other pollutants (pesticides/herbicides - demolition debris, etc) are not discharged into any storm drainage system, waterways, or into the sanitary sewer system as per NPDES MS4 and Columbus Water Work (CWW) Ordinance No. 04-74 (83-101; as constituents are considered pollutants under the CWA.

EMD Number: 812102X4 **IJO#** 69999 **Project Title:** Warrior in Transition Complex, Revised Site and Soil Borings, Dated 13 April 2009

****

CWA - ISCP/EPCRA **Conditions:** **Felix Seda (706 545 9879), 3/16/2009**

Potential spills/releases and/or discharges of pollutants from this project/activity that may occur are from: a. Vehicle and/or equipment leaks, as well as from any unexpected accidents. b. Storage, handling and/or transportation of hazardous materials/chemicals. c. Loading/unloading and/or refueling/transferring operations of heavy equipment and any other fuel operated equipment (generators, pumps, chainsaws, etc) to include the use of fuel tanks and any other type of dispensers (as applicable).d. Illicit discharges of polluted waters into the storm drainage system – including waste / waters from equipment/vehicle washing operations, dining/showers/bathrooms, chemical applications (herbicides/pesticides), and/or portables facilities. f. Sedimentation, construction/demolition debris, and other pollutants from small maintenance/construction activities.

Implementation Phase: As part of the ISCP, in the event of a POL and/or hazardous substance spill/release, contact 911 for Fire Department assistance. A spill report must be submitted for all spills/releases to the EPMB Spill Program Manager (use Spill Response Report attached) or FAX 545-4209. Spill Beeper (706) 31-6584 / Spill Phone (706) 358-8258 / Office (706) 545-9879. The contractor and/or proponent are responsible for the cleanup of any spills caused by him/her or any other personnel assigned to his/her contract and/or unit/activity that occur within the installation. Coordination with this office is required for clearance and inspection of any contaminated site.

Forestry Management **Conditions:** **James Parker (706 544 7081), 3/4/2009**

All merchantable trees that are sufficient enough for a commercial timber harvest will be removed by a Land Management Branch (LMB) timber harvest contract. Once area has been marked on the ground please contact LMB at 544-7081. If it is determined that the trees can not be harvested commercially then the LMB will release the trees by email or written letter to the proponent of this action for removal.

Pesticide **Conditions:** **DPW Environmental Management (706 545 4211), 3/3/2009**

If Pesticide or Herbicide is to be applied, the applicator shall be certified by the State Department of Agriculture as "Certified Pesticide Applicators" in the category of Wood Destroying Organisms. Prior to work start, the Contractor shall submit the MSDS, pesticide/herbicide labels, Contractor's State Department of Agriculture License and the employees' State Department of Agriculture certifications to the Environmental Management Division in Building 6 Room 307.

The contractor must coordinate with the Pest Management QAE at 545-1350 or 545-3224, to coordinate a date and time of chemical application. The PMQAE has to be onsite to observe the mixing and preparation and application of chemical and to ensure that at the time of any soil treatment application, the soil is in a condition with low moisture to allow uniform distribution of the treatment solution throughout the soil. Treatment can not occur without this coordination.

Air Management Programs **Conditions:** **Ellis Leeder ((706) 545 1857), 3/3/2009**

NOISE: The site for the construction of the new Warrior Transition Battalion Administrative Facility will be located in a Noise Zone II where noise levels are normally unacceptable with sensitive land uses. However, reconsideration is warranted for the site location as ideally one would not normally build/construct in a Noise Zone II. If all viable options have been considered and there are no alternatives to the current site location then new construction in noise impacted zones should be contingent upon the provision of adequate noise insulation provided in the attachment below. According to Planning in the Noise Environment, 15 June 1978, Figure 4-5, Pg 4-24, Acceptable Land Uses and Minimum Building Sound Level Requirements usage are permitted but not without appropriate Noise Level Reduction (NLR) requirements.

Project Planners, Designers, and Managers need to:

1.) Plan / Incorporate into the design and construction of the building Noise Level Reduction Features (NLR) to a MINIMUM of 30 decibels from the interior noise to that of the exterior noise.
2.) NLR can reduce the interior noise but it will not reduce the exterior noise. Standard Operating Procedures should be developed so that occupants will keep the windows and doors closed, minimize outdoor activities during peak firing times. See Attached file "Planning in the Noise Env Ref PDF. For further information or assistance please fee free to contact Ellis Leeder 706-545-1857 or email ellis.leeder@us.army.mil

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EMD Number: 812102X4 **IJO#** 69999 **Project Title:** Warrior in Transition Complex, Revised Site and Soil Borings, Dated 13 April 2009

****

Natural Resources - Wetlands **Conditions:** **Gary Hollon (706 544 7070), 3/2/2009**

A wetland permit will be required if the project impacts wetlands or streams. Contact Gary Hollon at 544-7070 if additional information is required.

Water Quality Programs **None** **Joseph Wilkins (706 545 2400), 2/26/2009**

Solid Waste/Recycling **None** **Dorinda Morpeth (706 545 5337), 2/25/2009**

Hazardous Materials/Waste **Conditions:** **Onsemus Smith (706 545 2643), 2/25/2009**

Any wastes generated must be evaluated for their hazardous characteristics and disposed of in accordance with all Federal, State and Fort Benning Hazardous Waste Regulations.

1. The Environmental Program Management Branch (EPMB) provides an 8 hour course covering Hazardous Waste Management, Hazardous Waste Minimization, Safety, and Pollution Prevention. Call the EPMB at 545-2643 for class schedule and to register for class. Precautions must be taken to ensure that paint chips or any other potential waste streams are containerized and managed properly until a waste analysis is conducted. The requesting contractor shall not dispose of the paint chips in a landfill without a proper analysis. Personnel performing this operation shall contact the EPMB, for proper HW management and analytical testing. Do not disturb any suspected asbestos containing materials (ACMs) during the repair process.

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Contact POC for additional guidance for proper waste management.

Signature John E Brown

John E Brown
NEPA Program Manager
Date 6 MAY 09

Signature Ted L Williams

Ted Williams
Acting EPMB Chief
Date 5-7-09

CONSTRUCTION & MAINTENANCE PROJECTS
SPCC/NPDES CHECKLIST – GENERAL AREAS
Figure 6.8.10

The following CHECKlist provides general information on how to plan, manage or build areas to prevent hazardous material accidents before they occur. By applying the principals and concepts of Monitoring and Housekeeping, and continuously keeping HM/HW and other general areas clean and orderly, units and activities will be able to meet SPCC requirements under AR 200-1. An easy way to remember what to check is to remember your **CHECK**list:

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___Make sure the locations of your HM/HW are well chosen. Stay away from waterways, drainage, sensitive areas, living areas, bunkers, ammunition storage, fence lines and/or dining facilities. Place them near the areas where hazardous materials are used.

___Put up warning signs and keep them clean and orderly.

Environmental Documentation:

___Maintain MSDSs for each hazardous material and update Unit/Activity SOPs and Spill Response Plans regularly.

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Kits:

___Place Spill Kits, First Aid Kits, and Emergency Response Kits in the vicinity of the HM/HW areas.

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SPILL RESPONSE RECORD

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During Duty Hours also Call Mr. Felix Seda, EPMB Spill Manager at 545-9879

1. DATE/TIME OF SPILL: _____/_____
2. LOCATION: _____
3. MATERIAL SPILLED (include NSN and ingredients, if able): _____
4. HAZARD: FLAMMABLE _____ TOXIC _____ CORROSIVE _____
   OXIDIZER _____ REACTIVE _____ UNKNOWN _____
   OTHER (specify) _____
5. CAUSE OF SPILL: _____
6. DESCRIPTION OF SPILL QUANTITY, SIZE AND TYPE OF AREA AFFECTED:
   a. Quantity Released and Size of Spill Area: _____
   b. Soil: _____
   c. Pavement: _____
   d. Vegetation: _____
   e. Storm or Sewer Drain: _____
   f. Name of Body of Water (River, Creek, Pond, Lake, Drainage Ditch): _____
7. HAS RELEASE BEEN STOPPED? _____
8. HAS RELEASE BEEN CONTAINED? _____
9. DID RELEASE CROSS INSTALLATION BOUNDARIES? (IF YES, DESCRIBE LOCATION) _____
10. TYPE AND EXTENT OF INJURIES, IF ANY: _____

****Provide a copy of this form to DPW EPMB Spill Program Manager or FAX to 545-4209**

PHASE II - POST-SPILL RESPONSE AND CLEAN UP ACTIONS:

11. DESCRIBE CLEAN-UP METHOD AND CONTAINMENT PROCEDURES: _____
12. NAME OF CONTRACTOR INVOLVED IN CLEAN-UP: _____
13. ESTIMATED AMOUNT OF SPILL RESIDUE AND CONTAMINATED MATERIAL REMOVED: _____

Last Update: August 14, 2006

Section:

FT BENNING WT BARRACKS COMPLEX

PN 69999 • FORT BENNING, GEORGIA
DECEMBER 8, 2009

US Army Corps of Engineers®

B.L. Harbert International

COOKE DOUGLASS FARR LEMONS
ARCHITECTS & ENGINEERS PA

CCI Civil Consultants, Inc.

Section:

FT BENNING WT BARRACKS

December 8, 2009

MASTER PLAN

The proposed Warriors in Transition (WT) Barracks at Ft. Benning, Georgia is located on approximately 17.35 acres of undeveloped land located in the North/Eastern portion of Ft. Benning. The proposed design has taken into account all of the requirements set forth in the project's Request for Proposal (RFP), as well as local community development standards. Within these requirements, the proposed plans have achieved a design that can help the proposed WT Barracks attain its full potential. Our design provides for a functional arrangement of the various facilities for enlisted men, spaces to perform superior service and a site that respects the environment and the ecosystem.

Our team considered the RFP schematic design a starting point for the site development - one that could be improved upon by careful site inventory and analysis. We took our knowledge of site planning, barracks complex design, and sustainable design and combined the RFP's site design requirements to create a development that is functional and aesthetically pleasing.

Section:

FT BENNING WT BARRACKS

December 8, 2009

FUNCTIONAL GROUPINGS/ LAND USE PLAN

Based on the existing topography, roads and wetland areas, as well as future buildings and roads the WT Barracks location has been carefully selected to integrate into existing and future plans for the Ft. Benning site. The 17.35 acre site will contain 3 total buildings as set forth in the RFP; The Proposed Warriors in Transition Barracks, a Soldier and Family Assistance Center (SFAC), and Company Operations Facility Headquarters (COF/HQ) (By Others).

The buildings have been grouped in a campus style arrangement that creates a sense of community between the facilities. This was achieved in part by minimizing vehicular crossings of pedestrian pathways.

BUILDINGS

1 - *WT Barracks*
2 - *Headquarters*
3 - *SFAC*

SITE AMENITIES

A - *Healing Gardens*
B - *Basketball Court*
C - *Wheelchair Rehab Area*
D - *Wetland Area*
E - *Drop off Access with Gates*
F - *Emergency Road/Walk*
G - *Dumpster Locations*
H - *Bus Stop*
I - *Mail Kiosk*
J - *Bike Racks*
K - *Boot Washes*
L - *Gates and Bollards to meet ATFP*

FUTURE HOSPITAL BLVD

MARNE ROAD

WATER TOWER

FUNCTIONAL GROUPINGS

0 50' 100' 200'

SCALE: 1" = 100'

NORTH

CDFL CCI

Section:

FT BENNING WT BARRACKS

December 8, 2009

PRIMARY CIRCULATION PLAN

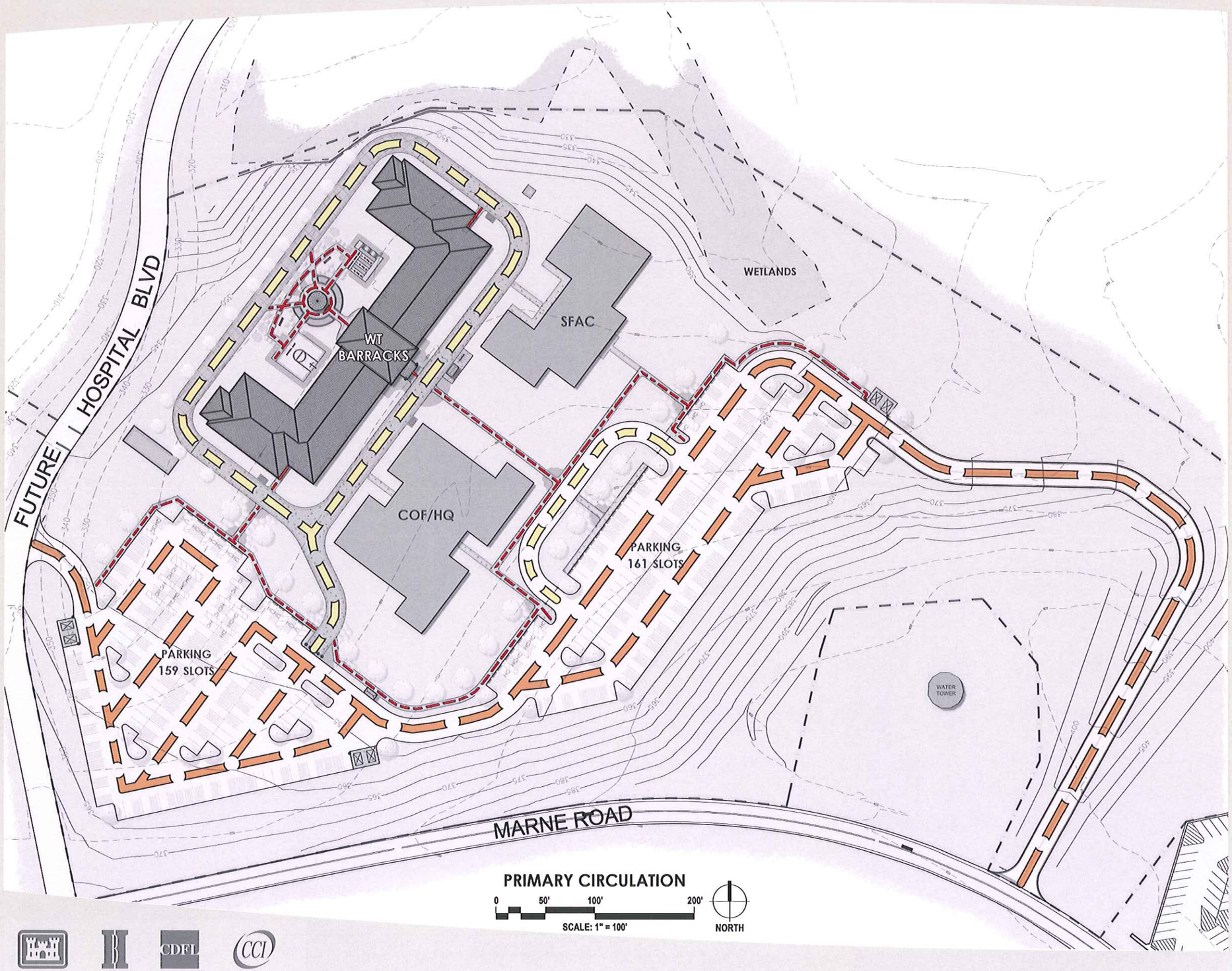
The site development provides an organized, pedestrian friendly experience for the user. A resident can travel from the barracks to the SFAC and the COF/HQ freely, without crossing any POV circulation areas. This will help minimize the amount of potential accidents.

Service drives to the WT, SFAC, and COF/HQ, are used accessory to the proposed pedestrian walkways. By using gates and removable bollards, the design was able to use service drives for pedestrian circulation, while still separating the pedestrian and vehicular circulation.

The vehicular circulation was designed to allow the best access to the proposed parking slots, and to also give easy access to the proposed service/ emergency drives.

WALKWAY WIDTHS

- Emergency Vehicle Access 20'
- Entrance Walkways 8'
- Secondary Walkways 6'



Vehicular Circulation

Pedestrian Circulation

Service Circulation

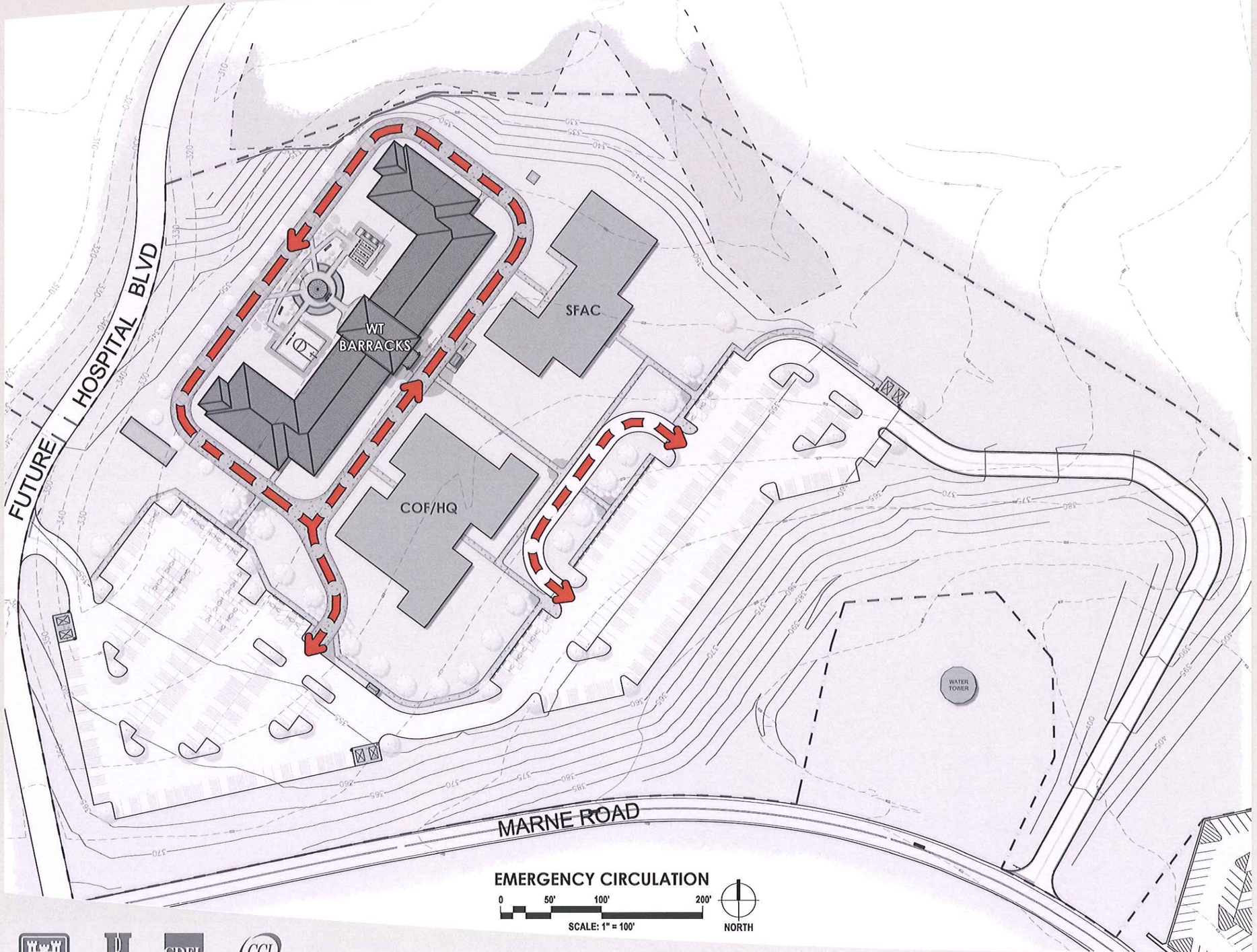
Section:

FT BENNING WT BARRACKS

December 8, 2009

EMERGENCY VEHICLE ACCESS PLAN

Emergency vehicle access is provided for each building from the main vehicular access areas/ parking lots. As required by the Ft. Benning AHJ/ Fire Marshal, the main circle loop service drive provides access to all four sides of the proposed WT Barracks by the use of removable bollards. Front access to the SFAC and COF/HQ facilities is achieved by use of the gated drop off area located off of the South/Eastern parking lot.



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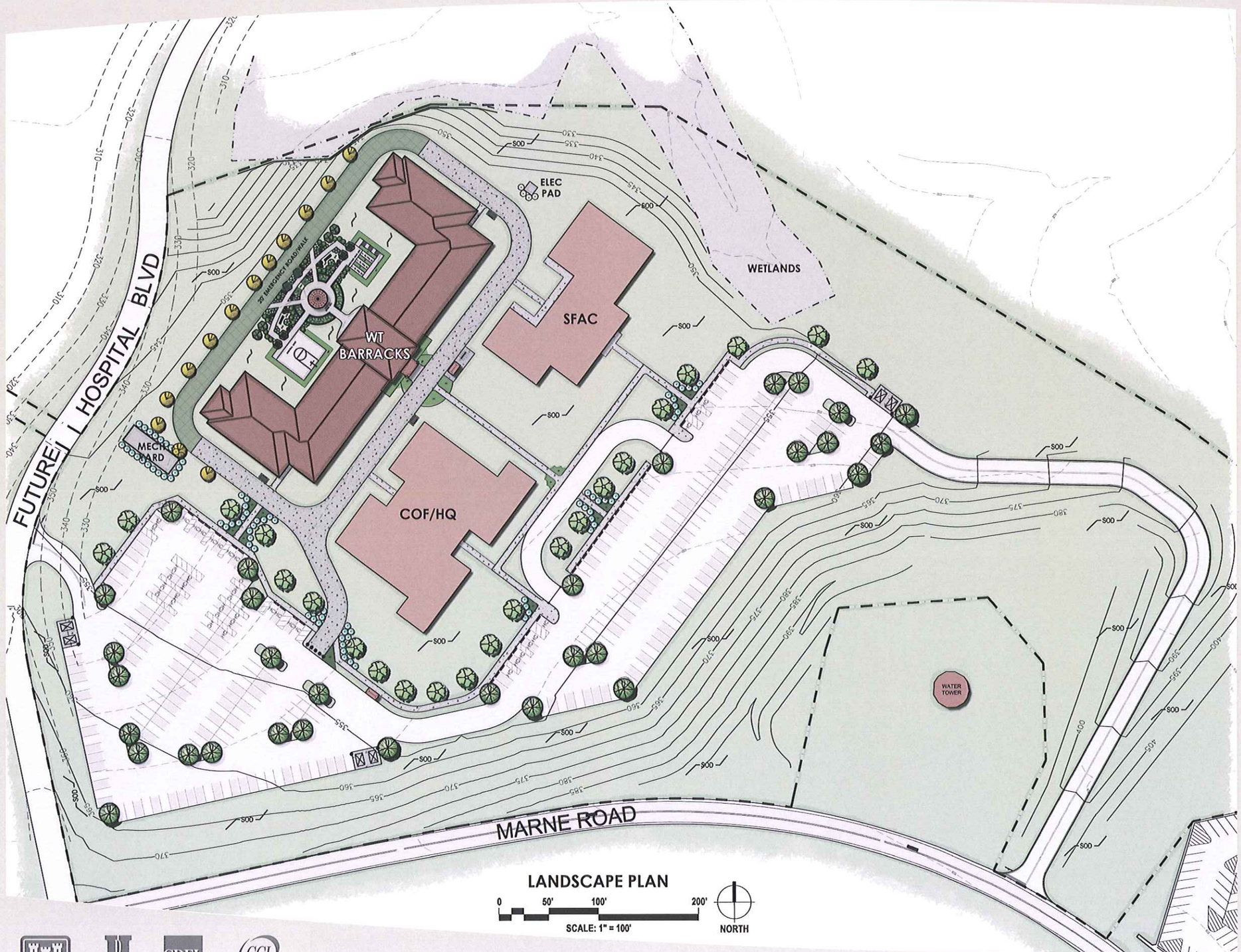


FT BENNING WT BARRACKS

December 8, 2009

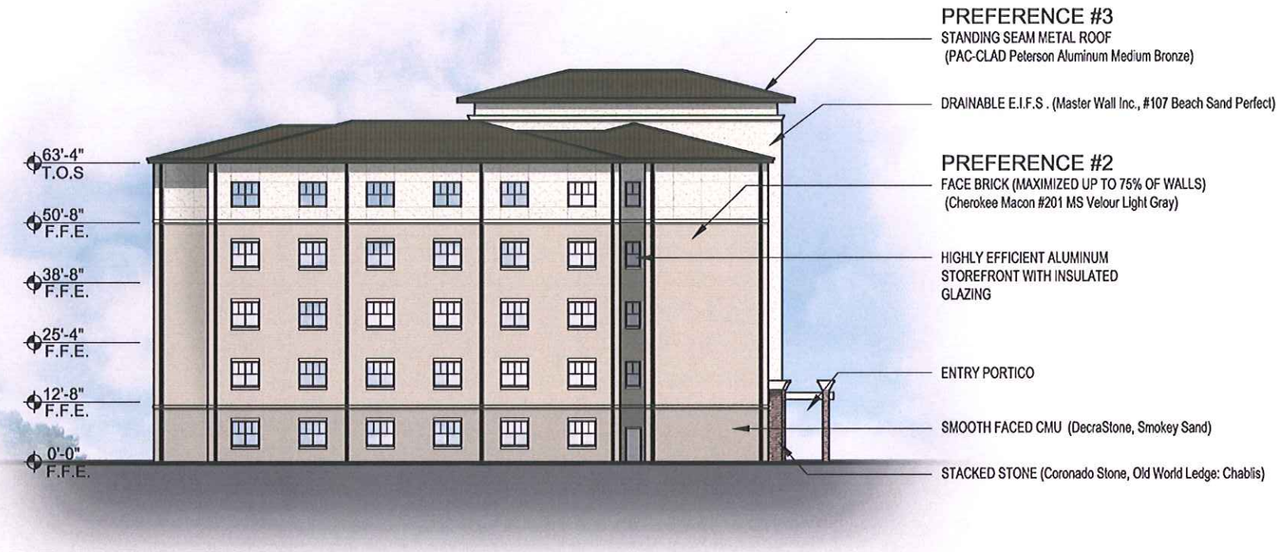
OVERALL LANDSCAPE PLAN

All the plants selected have a number of characteristics that will provide for aesthetic beauty and lower maintenance requirements. All of the plants are native, hardy and both heat and drought tolerant. This will allow the project to be designed without the use of a permanent irrigation system. A temporary Irrigation system may be required to establish plants and trees firmly, but will be removed no later than one (1) year from time of installation.

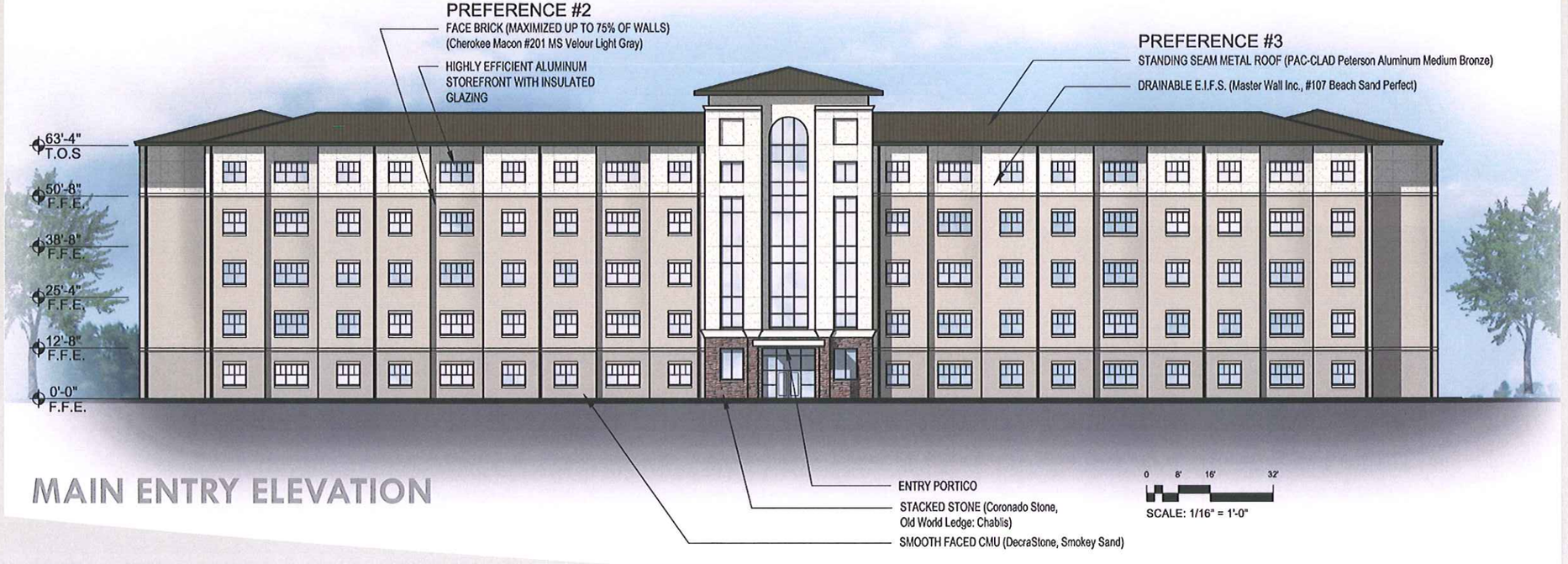
Deciduous native trees were selected and used throughout the site. Trees are used to provide summer shade, seasonal color and help frame and screen views to the various facilities. Smaller trees that provide seasonal flowering, fall color and trunk character have been place throughout the site. Flowering shrub plantings are located at entrances and exits to the main buildings. This will help identify the major ingress and egress points to the building. Bermuda sod will be used throughout all disturbed areas. This species of mix is drought tolerant and slower growing. These mixes also have a medium textured leaf and provides for a more manicured appearance surrounding the building.

A wider variety of plant types were used for the entrances and Healing Garden area. These plant types were selected from the approved plant list, to add an increased amount of color and fragrances. The planting intent for the Healing Garden was to achieve a planting design that would offer color, shade, and desirable textures year round. By using deciduous materials in the appropriate locations, the design allows major sun-rays to be blocked during the peak of the hot summer temperatures, and allows warming winter sun to penetrate into the gardens areas during the colder fall and winter months.

Section:



SIDE ELEVATION



MAIN ENTRY ELEVATION

FT BENNING WT BARRACKS

December 8, 2009

ELEVATIONS

Our Team's design creates a campus of buildings compatible with the adjacent facilities. We have utilized details, massing, proportions, and materials consistent with the existing barracks complex and the new hospital, sympathetic to the style and context of both and the installation.

We have maximized masonry per Preference #3 mixed with EIFS and a standing seam roof (Preference #2). Colors will match and be sympathetic to both facilities.

Priority #1 – Visual Compatibility has been incorporated. Durable, low maintenance materials have been utilized and configured in a five - story building using details and design elements form adjacent projects to create an inviting project to create an inviting building. A base of smooth faced, colored CMU has been used similar to the Architectural Precast Concrete at the hospital to create a human scale. Stone at the entry and interior lobby is used to create a warm, inviting environment.

Priority #2 – Architectural Compatibility has also been incorporated. Exterior materials, styles, and detailing such as roof, materials, doors, windows, and scale similar to adjacent facilities has been utilized.

Section:

FT BENNING WT BARRACKS

December 8, 2009

VIEW OF REAR ENTRY SHOWING HEALING GARDENS, WHEEL CHAIR OBSTACLE COURSE AND BASKETBALL COURT

1 2 3 4 5

D C B A

SHEET VF102

SHEET VF103

SHEET VF104

SHEET VF105

MATCH LINE
MATCH LINE

N

200′ 100′ 0 200′

SCALE: 1′′= 200′-0″

US ARMY CORPS
OF ENGINEERS
SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG

TENG & ASSOCIATES, INC.
ENGINEERS • ARCHITECTS • PLANNERS
CHICAGO, ILLINOIS

DESIGNED BY:	DATE: 06-09
DWN BY: AG	CKD BY: JS
SUBMITTED BY: TENG	SOLICITATION NO.: #
FILE NAME: NFMVF101SRV.DGN	CONTRACT NO.: #
SIZE: 34" X 22"	CATEGORY CODE: 721-12-01
PLOT SCALE: 1" = 200'	PLOT DATE: 06-10-09

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

SURVEY

PLATE
REFERENCE
NUMBER
VF101

SHEET 1

C:\IC-WORKSPACE\GARCIAAZ\M-FS-0044,D-USACE\TENG\20682-002\CIVIL\DGN\BARRACKS CONTRACT\NFMVS101SRV.DGN
6-24-2009, 14:29:02 GARCIAAZ

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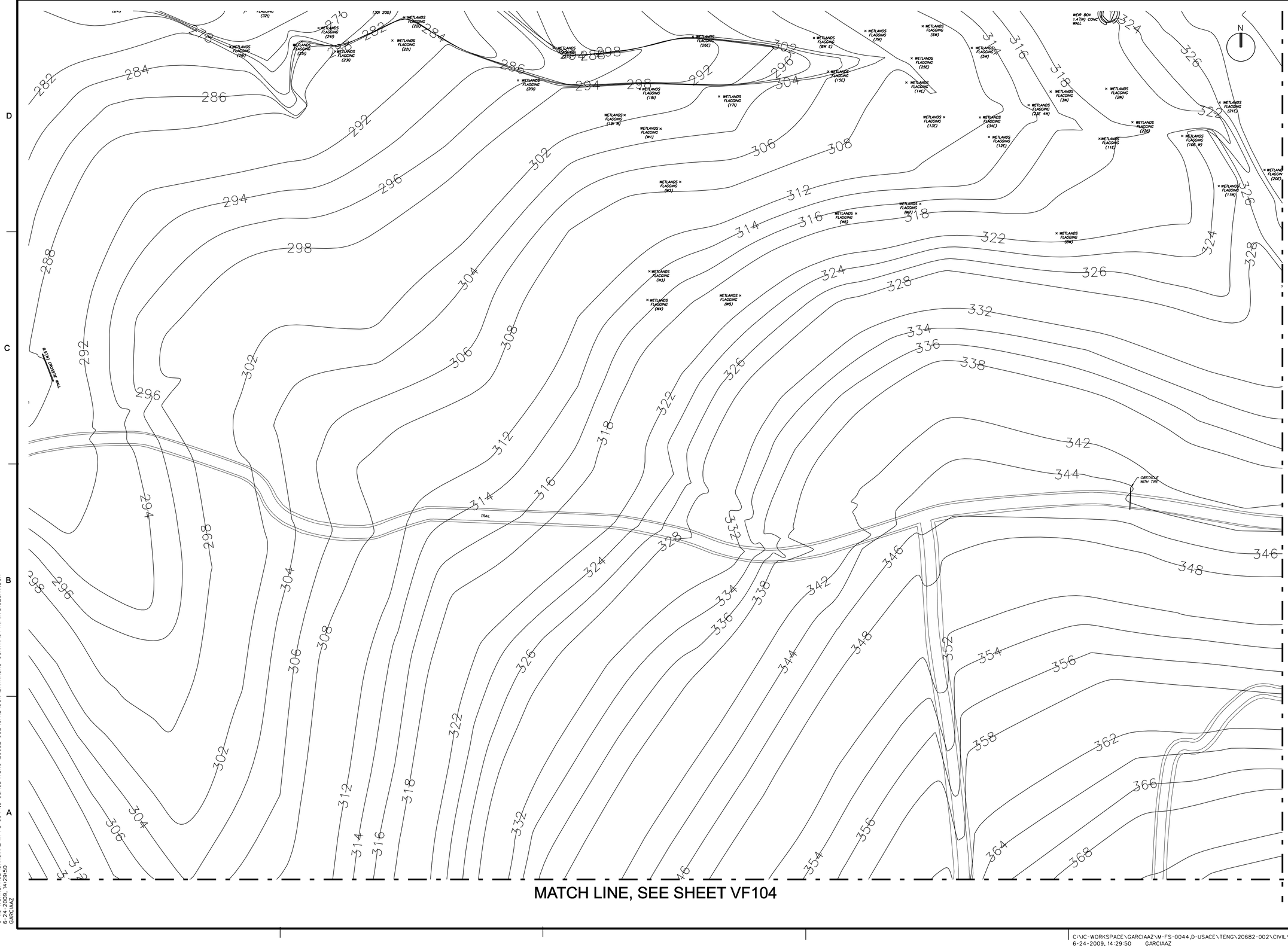
Wednesday, July 28, 2010

1 2 3 4 5

D C B A



US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: AG	DATE: 06-18-09
DWN BY: AG	CHD BY: JS
SUBMITTED BY: TENG	SOLICITATION NO.: #
FILE NAME: NFMVF102SRV.DGN	CONTRACT NO.: ##
SIZE: 34"X 22"	PLOT SCALE: 1" = 30'
	CATEGORY CODE: 721-12-01
	PLOT DATE: 06-18-09

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG

TENG & ASSOCIATES, INC.
ENGINEERS/ARCHITECTS/PLANNERS
CHICAGO, ILLINOIS

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

SURVEY

PLATE REFERENCE NUMBER
VF102

SHEET 2

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MATCH LINE, SEE SHEET VF102

MATCH LINE, SEE SHEET VF105

EXERCISE STATION (LAMP STATION)

EXERCISE STATION (LEG BEND)

36" OAK

SIGN

TRAIL

48" STANDPIPE W/ GRATE

INVERT= 364.37

SANDBAG HEADWALL INV.=364.63

INV=403.88

INV=397.31

9" ORIFICE INV=409.69

6" ORIFICE INV=408.75

9" ORIFICE INV=405.79

SEE DETAIL "A" OCS TOP=409.63 OUT=404.94

OCS DETAIL "A"

OCS 15" RCP TOP=409.63 IN(A)=409.59 IN(B)=405.75 IN(C)=405.79 OUT=404.94

LID

SQ.

6" ORIFICE

SSMH TOP=414.45 IN(A)=405.27 IN(B)=407.11 OUT=406.17

SSMH TOP=411.80 IN(A)=408.04 IN(B)=408.04 OUT=407.76

TRANSFORMER

AC UNIT

FENCE

WOODSLINE

ABOVE FIELD (UNMARKED)

JB TOP=396.37 IN=391.43 OUT=388.99

INV.=408.04

INV.=408.08

413.96

US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: AG
DRAWN BY: AG
SUBMITTED BY: TENG
FILE NAME: NFMVF103SRV.DGN
SIZE: 34" X 22"
DATE: 06-15-09
SOLICITATION NO.: #
CONTRACT NO.: #
CATEGORY CODE: 721-12-01
PLOT DATE: 06-15-09
PLOT SCALE: 1" = 30'

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG

TENG & ASSOCIATES, INC.
ENGINEERS / ARCHITECTS / PLANNERS
CHICAGO, ILLINOIS

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

SURVEY

PLATE REFERENCE NUMBER
VF103

SHEET 3

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GARCIAAZ

MATCH LINE, SEE SHEET VF102

MATCH LINE, SEE SHEET VF105

EXERCISE STATION (PULL UP)

SIGN

LEG PULL UPS/ WORKOUT AREA/BENCH

SIT UP WORKOUT AREA/BENCH

SIGN

TRAIL

N

TRUCK TIRES FILLED WITH CONCRETE

SIGN

ASPHALT

POSTED 20 MPH

ASPHALT CURB

ASPHALT

ASPHALT CURB

CMF (ARMY CORPS OF ENGINEERS) AGENCY 1973

US ARMY CORPS OF ENGINEERS SAVANNAH

BY	DATE	DESCRIPTION	SYMBOL

DESIGNED BY: AG	DATE: 06-18-09
DWN BY: AG	CKD BY: JS
SUBMITTED BY: TENG	SOLICITATION NO.: #
FILE NAME: NFMVF104SRV.DGN	CONTRACT NO.: ##
SIZE: 34" X 22"	PLOT SCALE: 1" = 30'
	CATEGORY CODE: 721-12-01
	PLOT DATE: 06-18-09

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG

TENG & ASSOCIATES, INC.
ENGINEERS/ARCHITECTS/PLANNERS
CHICAGO, ILLINOIS

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

SURVEY

PLATE REFERENCE NUMBER
VF104

SHEET 4

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GARCIAAZ

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6-24-2009, 14:45:28 GARCIAAZ

MATCH LINE, SEE SHEET VF103

MATCH LINE, SEE SHEET VF104

SBM
60D NAIL SET IN
A POWER POLE
ELEV=402.54
ELEV. DATUM: NAVD 88

SWCB
TOP=421.75
IN=415.52
OUT=412.42

US ARMY CORPS
OF ENGINEERS
SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: AG	DATE: 06-18-09
DWN BY: AG	CKD BY: JS
SUBMITTED BY: TENG	SOLICITATION NO.: W
FILE NAME: NFMVF105SRV.DGN	CONTRACT NO.: W
SIZE: 24" X 22"	PLOT SCALE: 1" = 30'
	CATEGORY CODE: 721-12-01
	PLOT DATE: 06-18-09

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG

TENG & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | PLANNERS
CHICAGO, ILLINOIS

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

SURVEY

PLATE
REFERENCE
NUMBER
VF105

SHEET 5

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APPENDIX H
Exterior Signage

Not Used

APPENDIX I
Acceptable Plants List

Not Used

WARRIOR IN TRANSITION COMPLEX ADMINISTRATIVE FACILITIES CONTRACT

FORT BENNING, GEORGIA

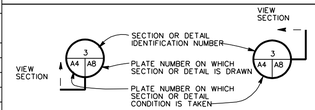
US Army Corps of Engineers

Savannah District

INDEX OF DRAWINGS

PLATE NO.	SHEET NO.	DGN FILE	TITLE
GI001	1	NFMGI001CSA	COVER SHEET AND INDEX OF DRAWINGS
GI002	2	NFMGI002SLA	SITE LOCATION PLAN
CS101	3	NFMCS101EXA	EXISTING CONDITIONS
CG101	4	NFMCG101GRA	GRADING PLAN
CU101	5	NFMCU101UTA	UTILITY PLAN

SECTION SYMBOLS



SYMBOL WHERE SECTION IS TAKEN

SECTION/DETAIL 3 / A4 | A8

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)

STANDARD ABBREVIATIONS

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

DESCRIPTION	DATE	BY

DESIGNED BY: AG
DRN BY: AG
SUBMITTED BY: TENG
DATE: DEC 09
SOLICITATION NO. #
CONTRACT NO.: #
FILE NAME: NFMGI001CSA.DGN
SIZE: 34" X 22"
CATEGORY CODE: 721-12-01
PLOT SCALE: 1:1
PLOT DATE: 08-18-09

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG

TENG & ASSOCIATES, INC.
ENGINEERS / ARCHITECTS / PLANNERS
ATLANTA, GEORGIA

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

COVER SHEET AND INDEX OF DRAWINGS

PLATE REFERENCE NUMBER
GI001

SHEET 1 OF 5

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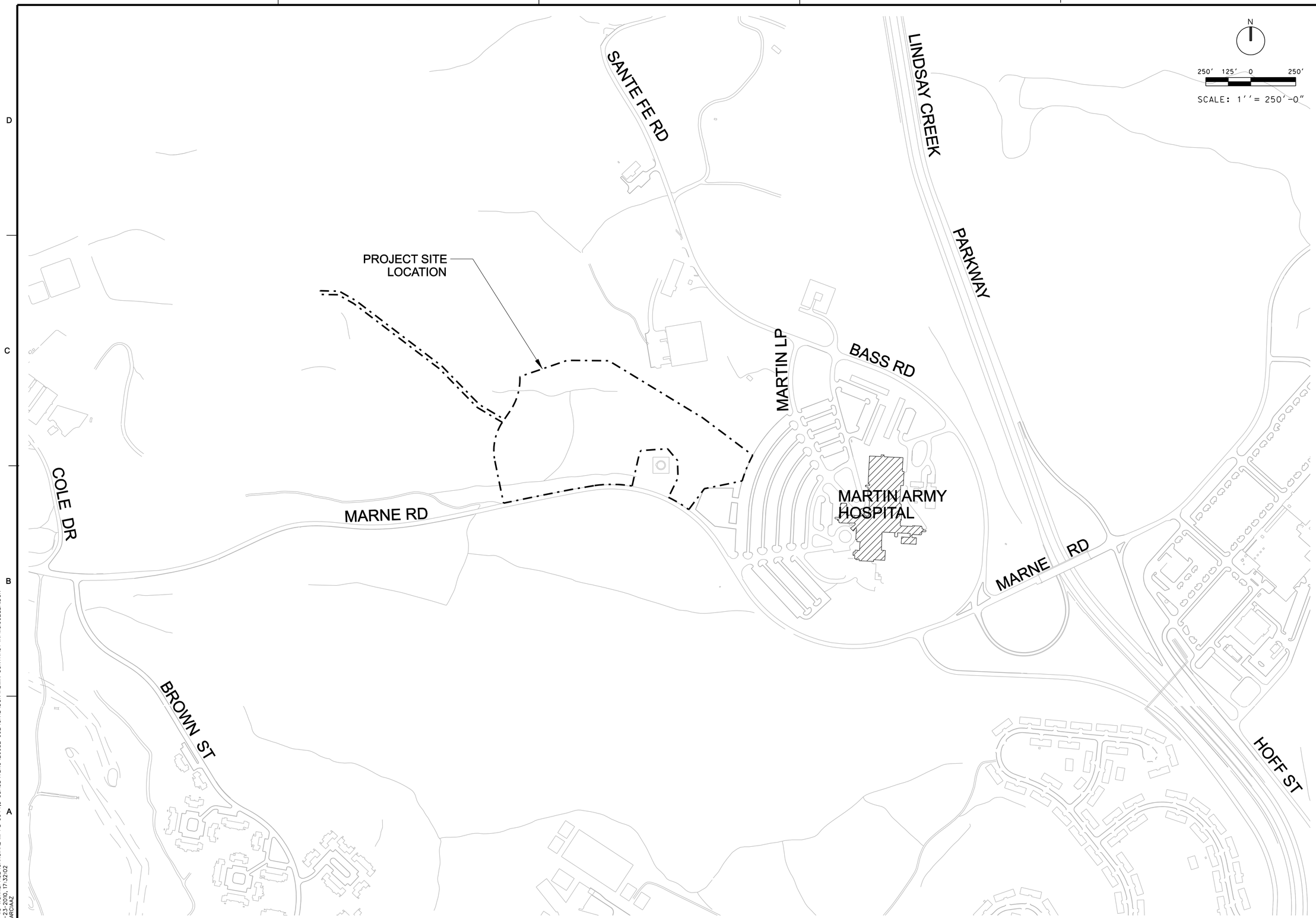

US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: AG
DRN BY: AG
CHKD BY: JS
SUBMITTED BY: TENG
FILE NAME: NFMGI002SLA.DGN
SIZE: 34" X 22"
PLOT SCALE: 1" = 250'
DATE: 06-Feb-09
SOLICITATION NO.: #
CONTRACT NO.: #
CATEGORY CODE: 721-12-01
PLOT DATE: 06-18-09

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG & ASSOCIATES, INC.
ENGINEERS / ARCHITECTS / PLANNERS
CHICAGO, ILLINOIS

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

SITE LOCATION PLAN

PLATE REFERENCE NUMBER
GI002
SHEET 2 OF 5

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3-23-2010, 17:32:02 GARCIAAZ

1 2 3 4 5

D C B A

PROJECT SITE LOCATION

WETLAND AREA
(TYPICAL)

EXISTING TRAIL
(GRAVEL)

MARNE ROAD

WATER TOWER

WATER TOWER
(CURRENTLY UNDER
CONSTRUCTION
BY OTHERS)

N

60′ 30′ 0 60′

SCALE: 1′′= 60′-0″

US ARMY CORPS
OF ENGINEERS
SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: AG	DATE: 06-18-09
DWN BY: AG	CHKD BY: JS
SUBMITTED BY: TENG	SOLICITATION NO.: #
FILE NAME: NFMCS101EXA.DGN	CONTRACT NO.: #
SIZE: 34" X 22"	CATEGORY CODE: 721-12-01
PLOT SCALE: 1 = 60′	PLOT DATE: 06-18-09

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG

TENG & ASSOCIATES, INC.
ENGINEERS / ARCHITECTS / PLANNERS
CHICAGO, ILLINOIS

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

EXISTING CONDITIONS

PLATE
REFERENCE
NUMBER
CS101

SHEET 3 OF 5

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BUILDING TO BE DONE UNDER SEPERATE "BARRACKS AND SITE CONTRACT"

SFAC
FF=367

BUILDING CONSTRUCTION LIMIT

BARRACKS
FF=365

COF/HQ
FF=367

BUILDING CONSTRUCTION LIMIT

WATER TOWER

LEGEND:

EXISTING CONTOURS — 350 —

PROPOSED CONTOURS — 355 —

NOTES:

ALL GRADING WORK SHALL BE COORDINATED WITH "BARRACKS AND SITE CONTRACT"

N

30′ 15′ 0 30′

SCALE: 1′′= 30′-0″

US ARMY CORPS OF ENGINEERS SAVANNAH

BY	DATE	DESCRIPTION	SYMBOL

DESIGNED BY: AG
DRN BY: AG
CHKD BY: JS
SUBMITTED BY: TENG
FILE NAME: NFMCG101GRA.DGN
SIZE: 34" X 22"
PLOT SCALE: 1" = 30'
DATE: 06-18-09
SOLICITATION NO.: #
CONTRACT NO.: #
CATEGORY CODE: 721-12-01
PLOT DATE: 06-18-09

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG

TENG & ASSOCIATES, INC.
ENGINEERS / ARCHITECTS / PLANNERS
CHICAGO, ILLINOIS

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

GRADING PLAN

PLATE REFERENCE NUMBER
CG101

SHEET 4 OF 5

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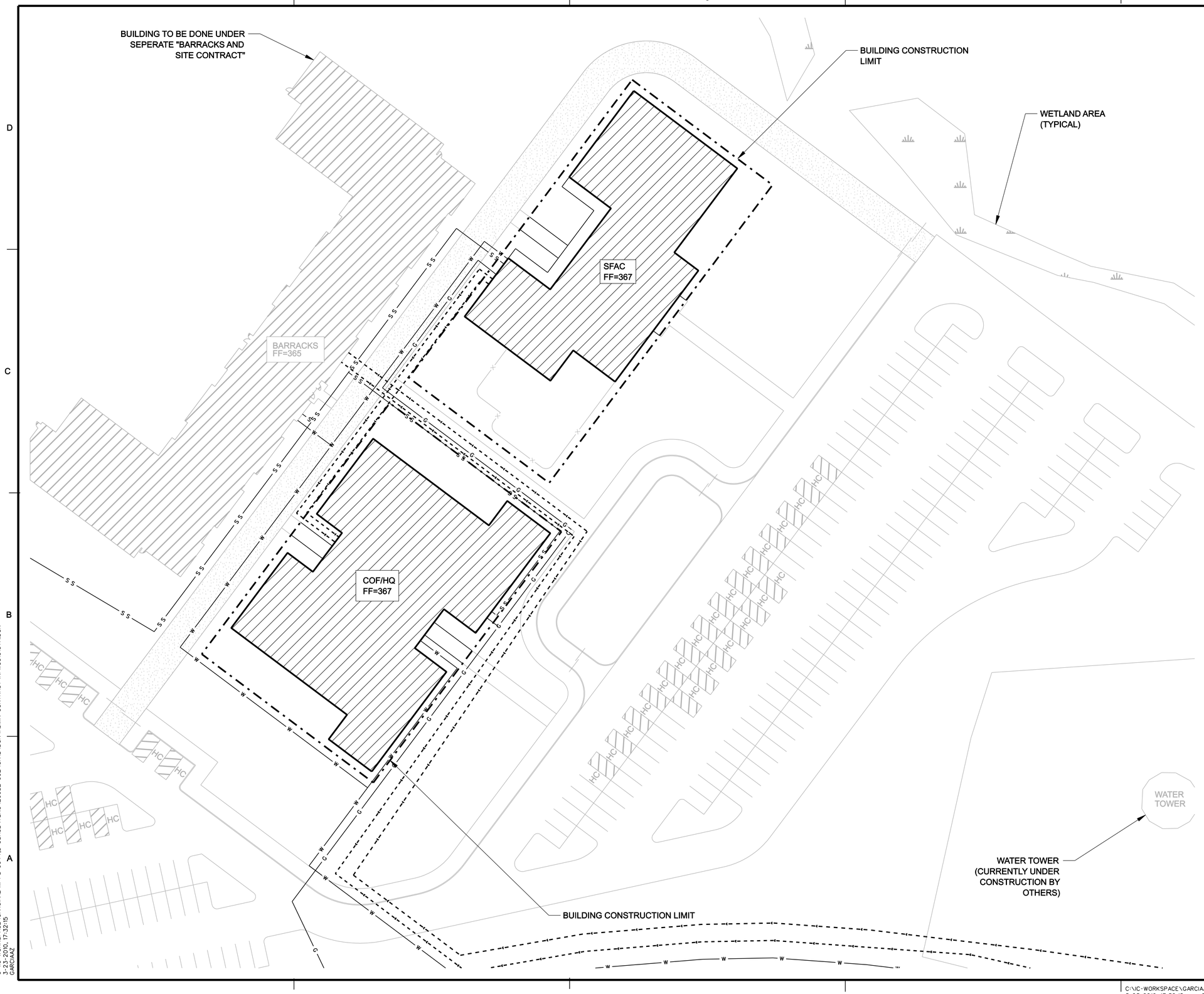

LEGEND:

- EXISTING WATER MAIN — W_x
- PROPOSED WATER MAIN — W
- EXISTING SANITARY SEWER LINE — S S_x
- PROPOSED SANITARY SEWER LINE
- EXISTING STORM LINE
- PROPOSED STORM LINE — S D
- EXISTING ELECTRICAL LINE
- PROPOSED ELECTRICAL LINE
- EXISTING GAS LINE — G_x
- PROPOSED GAS LINE — G
- PROPOSED COMMUNICATION LINE
- WATER MANHOLE (W)
- GAS MANHOLE (G)
- CATCH BASIN (CB)
- FIRE HYDRANT
- SANITARY SEWER MANHOLE (S)
- PROPOSED GAS CONNECTION POINT (G)
- PROPOSED ELECTRICAL CONNECTION POINT (E)
- PROPOSED SANITARY CONNECTION POINT (S)
- PROPOSED WATER CONNECTION POINT (W)
- PROPOSED COMM CONNECTION POINT (C)

NOTES:

1. UTILITY WORK SHALL BE COORDINATED WITH "BARRACKS AND SITE CONTRACT"
2. SEE DEMARCATION MATRIX FOR LIMITS OF RESPONSIBILITY

N

30′ 15′ 0 30′

SCALE: 1′′= 30′-0″

US ARMY CORPS OF ENGINEERS SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

DESIGNED BY: AG
DRAWN BY: AG
SUBMITTED BY: TENG
DATE: 08-18-09
CAD BY: JS
FILE NAME: NFMCS101UTA.DGN
SIZE: 34" X 22"
SOLICITATION NO.: #
CONTRACT NO.: #
CATEGORY CODE: 721-12-01
PLOT SCALE: 1" = 30'
PLOT DATE: 08-18-09

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG

TENG & ASSOCIATES, INC.
ENGINEERS / ARCHITECTS / PLANNERS
CHICAGO, ILLINOIS

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

UTILITY PLAN

PLATE REFERENCE NUMBER
CU101

SHEET 5 OF 5

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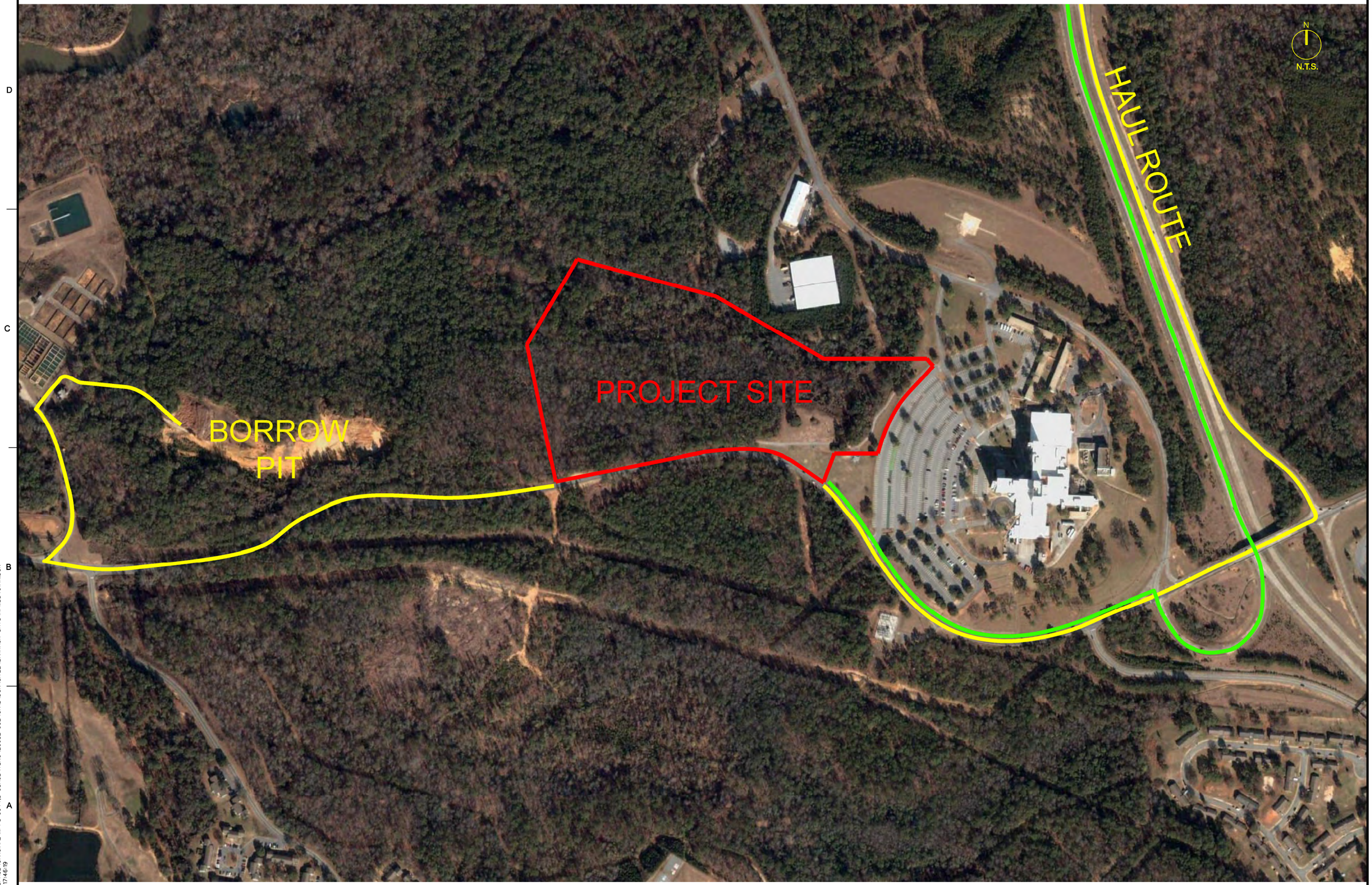

US ARMY CORPS
OF ENGINEERS
SAVANNAH

SYMBOL	DESCRIPTION	DATE	BY

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

TENG

TENG & ASSOCIATES, INC.
ENGINEERS/ARCHITECTS/PLANNERS
SPECIALISTS

DESIGNED BY: AG	DATE: 06/2009
DWN BY: AG	CKD BY: JJS
SUBMITTED BY: TENG	CONTRACT NO.: #
FILE NAME: NFMDD401HR.DGN	CATEGORY CODE:
SIZE: 34" X 22"	PLOT SCALE: NTS
SOLICITATION NO.:	PLOT DATE: 02-27-09

WARRIORS IN TRANSITION COMPLEX
FORT BENNING, GEORGIA

HAUL ROUTE

PLATE
REFERENCE
NUMBER
DD401

SHEET 1 OF 1

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Wednesday, July 28, 2010

MEDIUM COMPANY HEADQUARTERS (DUPLEX) + BATTALION HEADQUARTERS FIRST FLOOR PLAN

MD CoHQ (DUPLEX) - 18,800 sq.ft.
Bn HQ - 8,400 sq.ft.
Building Total - 27,200 sq.ft.

GRAPHIC SCALE
0 5 10 25
3/32"=1'-0"

US Army Corps of Engineers
Fort Worth District

Symbol	Description	Tracking No.	Action	Date

Rev.	Date:	Sol No.	Contr No.	Re-user	Plot date: $$date$$ Plot scale:

Designed by:
Dsn by:
Reviewed by:
Submitted by: BILL BOYLE, A.I.A. CHIEF, ARCHITECTURAL SECTION

U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS

ENGINEERING/ CONSTRUCTION DIVISION ENG. SERVICES BRANCH

DEPT. OF THE ARMY
WARRIORS IN TRANSITION (WT) STANDARD DESIGN
WT ADMINISTRATION SERVICES

MEDIUM COMPANY HEADQUARTERS (DUPLEX)
+ BATTALION HEADQUARTERS (CENTER STACKED)
FIRST FLOOR PLAN

Sheet reference number:
SH-14

Contr No.

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$$cadd file name$$

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$$REFERENCEFILE51$$
$$REFERENCEFILE61$$
$$REFERENCEFILE71$$
$$REFERENCEFILE81$$
$$REFERENCEFILE91$$
$$REFERENCEFILE02$$
$$REFERENCEFILE12$$
$$REFERENCEFILE22$$
$$REFERENCEFILE32$$
$$REFERENCEFILE42$$

MEDIUM COMPANY HEADQUARTERS (DUPLEX) + BATTALION HEADQUARTERS SECOND FLOOR PLAN

MD CoHQ (DUPLEX) - 18,800 sq.ft.
Bn HQ - 8,400 sq.ft.
Building Total - 27,200 sq.ft.

GRAPHIC SCALE
0 5 10 25
3/32"=1'-0"

US Army Corps of Engineers
Fort Worth District

U.S. ARMY ENGINEER DISTRICT, CORPS OF ENGINEERS FORT WORTH, TEXAS

ENGINEERING/ CONSTRUCTION DIVISION ENG. SERVICES BRANCH

Designed by:
Dwn by:
Reviewed by:
Submitted by: BILL BOYLE, A.I.A CHIEF, ARCHITECTURAL SECTION
Date:
Sol No.
Contr No.
File name: $$cadd file name$$
Plot date: $$date$$
Plot scale: $$scale$$

DEPT. OF THE ARMY
WARRIORS IN TRANSITION (WT) STANDARD DESIGN
WT ADMINISTRATION SERVICES

MEDIUM COMPANY HEADQUARTERS (DUPLEX)
+ BATTALION HEADQUARTERS (CENTER STACKED)
SECOND FLOOR PLAN

Sheet reference number:
SH-15

Symbol	Description	Tracking No.	Action	Date

Rev.

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$$REFERENCEFILE15$$
$$REFERENCEFILE16$$
REFERENCE FILES:

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Wednesday, July 28, 2010

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SOLDIER & FAMILY ASSISTANCE CENTER (SFAC)

15,000 sq.ft.

0 5 10 25

GRAPHIC SCALE

US Army Corps of Engineers
Fort Worth District

Rev.	Description	Action	Tracking No.	Date

Date:
Sol No.
Contr No.
Plot date: $$date$$
Plot scale:
Plot name:

Designed by:
Drwn by:
Reviewed by:
Submitted by:
BILL BOYLE, A.I.A
CHIEF, ARCHITECTURAL SECTION

U.S. ARMY ENGINEER DISTRICT,
CORPS OF ENGINEERS
FORT WORTH, TEXAS

ENGINEERING/
CONSTRUCTION DIVISION
ENG. SERVICES BRANCH

DEPT. OF THE ARMY
WARRIORS IN TRANSITION (WT) STANDARD DESIGN
WT ADMINISTRATION SERVICES

LARGE SFAC
FLOOR PLAN

Sheet reference number:

SF-2

DESIGN FILE: $$cadd file name$$

REFERENCE FILES:
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$$REFERENCEFILE3$$
$$REFERENCEFILE4$$
$$REFERENCEFILE5$$
$$REFERENCEFILE6$$

Contr No.

Wednesday, July 28, 2010

APPENDIX K
Life Cycle Cost Analysis Fuel Cost Information

APPENDIX K

Life Cycle Cost Analysis Fuel Cost Information
(June '09)

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 01012 Design After Award:

Electrical:
Demand Charge - Government Consumer: $0.0652 per KWH
Natural Gas:
Commodity Charge Rate - Government Consumer: $0.9593 per CCF
Water:
Commodity Charge Rate - Government Consumer: $1.3455 per K/gal
Sewer:
Commodity Charge Rate –
Government Consumer: $3.8363 per K/gal (Sewage calculated using 70% water use)

Propane:
Commodity Charge Rate – $1.10 per gallon* (Not provided to non-Federal Government users)

APPENDIX L

LEED Project Credit Guidance

This spreadsheet indicates Army required credits, Army recommendations regarding preference and avoidance of individual credits, project-specific ranking of individual point preferences, discussion of Installation roles in support of individual credits, and issues that Government Project Delivery Teams (PDTs) need to be aware of relating to individual credits. The Resources section that follows provides references and resources that relate to LEED, including policy and legal requirements, design guides and documentation resources.

LEED 2.2 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**
CATEGORY 1 - SUSTAINABLE SITES (14 POSSIBLE POINTS)				
SSPR1	Construction Activity Pollution Prevention (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Related to compliance with 40 CFR 122.26 (Clean Water Act).
SS1	Site Selection		X	See paragraph LEED CREDITS COORDINATION for information relating to this credit.

SS2	Development Density & Community Connectivity - OPTION 1 DENSITY		X	Credit is determined by Installation's site selection. See paragraph LEED CREDITS COORDINATION for information relating to this credit.
	Development Density & Community Connectivity - OPTION 2 CONNECTIVITY		X	Credit is determined by Installation's site selection. See paragraph LEED CREDITS COORDINATION for information relating to this credit.
SS3	Brownfield Redevelopment		X	Credit is determined by Installation's site selection. See paragraph LEED CREDITS COORDINATION for information relating to this credit.
SS4.1	Alternative Transportation: Public Transportation Access		X	Credit is determined by Installation's site selection. See paragraph LEED CREDITS COORDINATION for information relating to this credit.
SS4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	Pref		
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.
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		Related to compliance with 40 CFR 122.26 (Clean Water Act).

SS6.2	Stormwater Design: Quality Control			
SS7.1	Heat Island Effect: Non-Roof	Pref		
SS7.2	Heat Island Effect: Roof	Pref	1	Coordinate with nearby airfield requirements, which may preclude this credit.
SS8	Light Pollution Reduction	Pref		
CATEGORY 2 – WATER EFFICIENCY (5 POSSIBLE POINTS)				
WE1.1	Water Efficient Landscaping: Reduce by 50%	Pref		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			
WE3.1	Water Use Reduction: 20% Reduction	Pref		Related to Army mandate for waterless urinals beginning FY10.
WE3.2	Water Use Reduction: 30% Reduction	Pref		
CATEGORY 3 – ENERGY AND ATMOSPHERE (17 POSSIBLE POINTS)				
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	Rqd	Earning of LEED EA1 points as indicated in paragraph ENERGY CONSERVATION, as a minimum, is required. Note that LEED points calculation is based on energy cost reduction. Additional consideration will be given to proposals that exceed the minimum requirements in this credit category.

EA2.1	On-Site Renewable Energy			
EA3	Enhanced Commissioning	Rqd	Rqd	Efforts to obtain this credit must begin early in the design process.
EA4	Enhanced Refrigerant Management			
EA5	Measurement & Verification			Credit relates to EPACT metering requirements. Provider and funding of post-occupancy activities must be coordinated. Assume Government will not provide post-occupancy activities unless indicated otherwise.
EA6	Green Power		X	Credit is determined by Installation's purchase of green power. See paragraph LEED CREDITS COORDINATION for information relating to this credit.
CATEGORY 4 – MATERIALS AND RESOURCES (13 POSSIBLE POINTS)				
MRPR1	Storage & Collection of Recyclables (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Installation provides collection service and outside receptacle needs coordination.
MR1.1	Building Reuse: Maintain 75% of Existing Walls, Floors & Roof			
MR1.2	Building Reuse: Maintain 95% of Existing Walls, Floors & Roof			
MR1.3	Building Reuse: Maintain 50% of Interior Non-Structural Elements			
MR2.1	Construction Waste Management: Divert 50% From Disposal	Rqd	1	See paragraph CONSTRUCTION AND DEMOLITION (C&D) WASTE MANAGEMENT for project requirement.

MR2.2	Construction Waste Management: Divert 75% From Disposal	Pref		
MR3.1	Materials Reuse: 5%			
MR3.2	Materials Reuse: 10%			
MR4.1	Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	Pref		Relates directly to EPA CPG compliance. Federal regulation as well as Federal, DOD and Army policies require purchase of products that contribute to this credit.
MR4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	Pref		Relates directly to EPA CPG compliance.
MR5.1	Regional Materials:10% Extracted, Processed & Manufactured Regionally			
MR5.2	Regional Materials:20% Extracted, Processed & Manufactured Regionally			
MR6	Rapidly Renewable Materials			Relates directly to USDA FB4P biobased materials compliance.
MR7	Certified Wood	AVD	AVD	This credit brings very little value to U.S. Army and should only be considered if there is VERY little wood on the entire project, and can be implemented at nominal or no cost premium.
CATEGORY 5 – INDOOR ENVIRONMENTAL QUALITY (15 POSSIBLE POINTS)				
EQPR1	Minimum IAQ Performance (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Related to compliance with 10 CFR 434 (Federal Energy Code).
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. If Statement of Work indicates smoking is permitted in these types of facilities, the requirements of LEED-NC 2.2 Option 3 apply.
EQ1	Outdoor Air Delivery Monitoring			

EQ2	Increased Ventilation			May adversely effect ability to earn energy optimization credits.
EQ3.1	Construction IAQ Management Plan: During Construction	Pref		
EQ3.2	Construction IAQ Management Plan: Before Occupancy	Pref		Construction schedule must accommodate activities required for this credit.
EQ4.1	Low Emitting Materials: Adhesives & Sealants	Pref		
EQ4.2	Low Emitting Materials: Paints & Coatings	Pref		
EQ4.3	Low Emitting Materials: Carpet Systems	Pref		
EQ4.4	Low Emitting Materials: Composite Wood & Agrifiber Products	Pref		
EQ5	Indoor Chemical & Pollutant Source Control	Pref		System requiring weekly cleaning to earn this credit is not a permitted option for Army projects.
EQ6.1	Controllability of Systems: Lighting			
EQ6.2	Controllability of Systems: Thermal Comfort			
EQ7.1	Thermal Comfort: Design			
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	1	Incorporation of this credit should be coupled with photo-dimming sensors to reduce energy usage, taking care not to incur unwanted solar gain or radiant loss in cooling or heating climates, respectively.
EQ8.2	Daylight & Views: Views for 90% of Spaces	Pref	1	
CATEGORY 6 – FACILITY DELIVERY PROCESS (5 POSSIBLE POINTS)				
IDc1.1	Innovation in Design			
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.

Resources. Following are resources with web links, discussion of Federal and Army mandates and policies that relate to LEED, sources of design guidance and documentation tools to assist the PDT. Use of/compliance with documents indicated in this appendix is not required unless indicated in RFP. In the event of conflict between RFP and this appendix, RFP takes precedence.

Federal Mandates

EPA, *Environmentally Preferable Purchasing* (EPP) Program (EPA), available through URL: http://www.epa.gov/oppt/epp/ . Resulting from Executive Order [EO] 13101 *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition* (White House, 14 September 1998), it establishes basic guidelines for EPP as well as forms the basis for Comprehensive Procurement Guidelines (see below).

Comprehensive Procurement Guidelines [CPG], www.epa.gov/cpg.

The EPA publishes the Comprehensive Procurement Guidelines (CPGs), found in 40 CFR 247, that provide a list of products that must contain recovered material. **This is required regardless of whether the LEED recycled content credit is pursued or not.** Recommendations for the percentages of recovered materials are published in a companion document titled the Recovered Materials Advisory Notice (RMAN). Additional products are added every 2-3 years. The CPGs currently include several commonly used construction products (such as concrete, floor tiles, and roofing materials) and landscaping products (such as site furnishings and landscaping timbers).

EPA requires that the purchase of products listed on the CPG contain at least the recycled content indicated in the CPG when practicable. For every project, designer must review the current CPG list and, unless designer determines that justification for non-use exists, ensure that the technical specifications require at least the recycled content indicated in the CPG. The following are considered adequate justifications for non-use:

a. The product does not meet appropriate performance standards.
b. The product is not available within a reasonable time frame.
c. The product is not available competitively (from two or more sources).
d. The product is only available at an unreasonable price (compared with a comparable non-recycled content product).

Applicable FAR provisions and clauses: FAR Part 23.4, *Use of Recovered Materials,* 52.223-4, *Recovered Material Certification,* 52.223-9, *Estimate of Percentage of Recovered Material Content for EPA-Designated Products*. Note that although EPA designated recycled content products contribute to the LEED recycled content credit, satisfying this requirement does not guarantee that the project will reach the cumulative total required to earn the LEED credit.

USDA Federal Biobased Products Preferred Procurement Program (FB4P)
http://www.biobased.oce.usda.gov

The USDA has a program similar to the EPA CPG, found in 7 CFR 2902, that provides a list of designated products that must contain bio-based material with recommendations for the percentages of bio-based content. The rules for use of designated products are the same as EPA CPG. Currently the only designated construction product is roof coatings, however additional products may be added. For every project, designer must review the current USDA designations for products applicable to the project and, if any are found, unless designer determines that justification for non-use exists, ensure that the technical specifications require at least the bio-based content indicated in the designation.

All Federal contracts that involve the use or purchase of USDA- designated products must specify that the associated procurement requirements be met and must include applicable FAR provisions and clauses (currently not yet published). Note that although USDA designated bio-based content products contribute to

the LEED rapidly renewable materials credit, satisfying this requirement does not guarantee that the project will reach the cumulative total required to earn the LEED credit.

Army Policy and Mandates

ECB 2006-7R Army Standard for Urinals (09 AUG2006) www.hnd.usace.army.mil/techinfo "Publications", "Engineering and Construction Bulletins". Mandates waterless urinals beginning FY10.

United States Green Building Council/LEED

USGBC Website – http://www.usgbc.org

LEED-NC (New Construction) v.2.2 Rating System, October 2005 -- https://www.usgbc.org/ShowFile.aspx?DocumentID=1095

LEED-NC v.2.2 Registered Project Checklist -- https://www.usgbc.org/FileHandling/show_general_file.asp?DocumentID=1096

LEED-NC v.2.2 Reference Guide – Available by purchase from the USGBC at: http://www.usgbc.org/b2c/b2c/mainFS.jsp

LEED Letter Templates – Use of LEED Letter Templates for projects not registered with USGBC is a copyright infringement and is not permitted. Samples of the templates are available for review only at: http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1447. (Fully functional access to LEED On-Line is only available to projects registered with the USGBC.)

LEED Credit Interpretations (CIRs) – Available on the members only side of the USGBC website. Click 'My Account' from the USGBC main web page (log-in and look for CIRs under 'My Resources.'

LEED Application Guide for Multiple Buildings and On-Campus Building Projects https://www.usgbc.org/FileHandling/show_general_file.asp?DocumentID=1097. Provides direction in applying LEED-NC v2.1 and v2.2 to projects in a campus or multi-building setting such as corporate campuses, college campuses, and government installations (i.e. there is one owner or common property management and control).

General Resources

Unified Facilities Guide Specifications (UFGS) www.wbdg.org/ccb

UFGS are non-proprietary guide specifications covering a broad range of products and systems and incorporating agency–specific guidance and many sustainability updates. They are used and maintained by USACE, NAVFAC, AFCESA and NASA.

UFGS are in the process of being updated to include Specifier notes relating to all current EPA CPG product designations, but this process is not complete yet. Designer MUST address EPA CPG requirements in specifications on a product-by-product basis.

UFGS 01 33 29 *LEED ™ Documentation.* This section includes overview and documentation requirements plus credit-specific requirements.

UFGS 01 62 35 *Recycled/Recovered Materials*. This section addresses EPA CPG compliance requirements.

UFGS 02 42 00 *Construction and Demolition Waste Management.* For DB and DBB use. This section includes requirement for waste management plan, diversion requirements and reporting.

UFGS 23 08 00.00 10 *Commissioning of HVAC Systems*. This section includes qualifications, standards and documentation, also includes several test checklists. Because it is limited to HVAC only it **does not** by itself satisfy the LEED fundamental commissioning requirement. Commissioning of other LEED required systems and coordination of documentation associated with this additional commissioning must be addressed.

USACE LEED Credit Documentation Tools

LEED 2.2 Documentation Requirements and Submittals Checklist. USACE Spreadsheet is available at http://en.sas.usace.army.mil to fill in for project submittals.

Commissioning Plan Document for LEED Fundamental Commissioning USACE template available at http://en.sas.usace.army.mil to edit to create project-specific document.

Owners Project Requirements Document for LEED Fundamental Commissioning. USACE template available at http://en.sas.usace.army.mil for Design Agent/Owner to edit to create project-specific document. Completed document should be included in DB RFPs or provided to Design Team at start of design.

Basis of Design Document for LEED Fundamental Commissioning. USACE template available at http://en.sas.usace.army.mil for Designer of Record to edit to create project-specific document.

Owner's Project Requirements Document for LEED Fundamental Commissioning

Project: Army Standard Design Warriors in Transition (WT) Facilities

Approved:

Name	Owner's Representative	Date
_____	_____	_____

Name	Design Agent's Representative	Date
_____	_____	_____

Overview and Instructions

The purpose of this document is to provide clear and concise documentation of the Owner's goals, expectations and requirements for commissioned systems, and shall be utilized throughout the project delivery and commissioning process to provide an informed baseline and focus for design development and for validating systems' energy and environmental performance.

The Owner's Project Requirements Document is a required document for LEED Version 2.2 EA Prerequisite 1, 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.

Use of this template is not required, nor are there any restrictions on editing of it. It is provided simply as a tool to assist project teams in meeting the documentation requirements for LEED Fundamental Commissioning. The intent of the Owner's Project Requirements Document, per the LEED v2.2 Reference Guide, is to detail the functional requirements of a project and the expectations of the building's use and operation as it relates to commissioned systems. This template contains the basic recommended components indicated in the LEED v2.2 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*

What is the primary purpose, program and use of this project? (Example: office building with data center)

The WT facilities will house soldiers temporarily while they are recuperating from injuries sustained during their service in the United States and overseas fighting the Global War on Terror (GWoT). These facilities will provide the best accommodations the Army can build in gratitude for their service and sacrifice. The WT Complexes will include separate barracks, administrative and Soldier Family Assistance Centers (SFAC) and are completely handicap accessible.
The barracks will house single soldiers and is intended to be similar both functionally and technically to apartment type housing in the private sector. The rooms shall be completely handicap accessible and shall include: private sleeping areas, walk-in closets, and a bathroom for each soldier. A living room, laundry and full service kitchen shall be shared by the room module occupants. Additional facility and functional support amenities shall be provided as outlined in the project Scope of Work.

The administrative building function is to provide soldier mission direction and operational needs requirements. This facility will operate in a similar manner as the Battalion and Brigade headquarters facilities and is intended to be similar both functionally and technically to an office building.

The Soldier Family Assistance Center (SFAC) serves as a transitional facility, which bridges the gap between in the transition between family assistance and assisting the soldier in personal adjustments. Soldier assistance by family members is critical element in the recovery from injuries. Child care areas, financial assistance, meeting rooms, kitchenette, chaplain and other assistance type functions to accommodate both the soldier and their families are provided in this facility.in Paragraph 3 of the Scope of Work.

Describe pertinent project history. (example: standard design development)

It is the intent of Government to issue design-build Request for Proposals (RFPs) under the contracts awarded as a result of this solicitation, which may be used as the basis for subsequent RFPs/task orders at the same or other installations within the region, i.e., “adapt-build” and/or as fully-designed RFP/task orders.

Broad Goals

What are the broad goals relative to program needs?

All of the WT facilities together form a complex and provides a cohesive mission in the healing process of the soldier.

What are the broad goals relative to future expansion?

Structure spaces to allow maximum flexibility for future modifications.

What are the broad goals relative to flexibility?

Structure spaces to allow maximum flexibility for future modifications.

What are the broad goals relative to quality of materials?

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.

What are the broad goals relative to construction costs?

The government places value in methods that streamline construction, manage labor and other resource constraints in an effort to reduce costs and support an aggressive schedule, including such things as fast-tracking, using factory built modules or assemblies, panelization, pre-cast, tilt-up, standard designs, etc., while meeting contract and quality requirements.

What are the broad goals relative to operational costs?

Meet EPACT (reduced water, energy consumption). Minimize operating costs as much as possible within first cost budget.

Other broad goals: ***(Insert as applicable)***

To provide essentially the same functional facility at all locations (site-adapt) to the extent possible to reduce repetitive design costs. To achieve overall program efficiencies and cost reductions using regional task order contracts for each standard.

2. Environmental and Sustainability Goals

What are the project goals relative to sustainability and environmental issues? (example: LEED Silver rating)

The project goals relative to sustainability and environmental issues are to achieve LEED Silver rating.

What are the project goals relative to energy efficiency? (example: Meet EPACT)

The project goals relative to energy efficiency are to meet EPACT.

What are the project goals and requirements for building siting that will impact energy use?

Consistent building orientation cannot always be expected. Variations in availability of fuel sources. Special local requirements are indicated in Paragraph 6 of the Scope of Work.

What are the project goals and requirements for building facade that will impact energy use?

Exterior appearance will vary to be compatible with adjoining environment's architectural theme. Special local requirements are indicated in Paragraph 6 of the Scope of Work.

What are the project goals and requirements for building fenestration that will impact energy use?

Same facility must be site-adapted worldwide. Fenestration will vary to be compatible with adjoining environment's architectural theme and Antiterrorism/Force Protection requirements. Consistent building orientation cannot be expected at all sites. All room modules must have windows, although size of windows may vary. Antiterrorism/Force Protection criteria (UFC 4-010-01) must be met.

What are the project goals and requirements for building envelope that will impact energy use?

ASHRAE 90.1 and EPACT are required. Special local requirements are indicated in Paragraph 6 of the Scope of Work

What are the project goals and requirements for building roof that will impact energy use?

Special local requirements are indicated in Paragraph 6 of the Scope of Work.

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.

See Scope of Work.

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.

Typical occupancy schedule is similar to residential apartment buildings. See 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.

Accommodations for after-hours will require access control, lighting controls and HVAC controls.
Special local requirements are indicated in Paragraph 6 of Section 01010.

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: IESNA RP-1-04
Temperature: See Table 5-1 in Section 01010 of RFP
Humidity: 50%
Air Quality: ASHRAE 62.1

Ventilation: ASHRAE 62.1

Filtration: ASHRAE 52.1 and 52.2

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.

See Scope of Work.

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)

See Scope of Work.

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)

Any specific or named equipment and system expectations shall be coordinated with and approved by the Contracting Officer.

5. Building Occupant and O&M Personnel Requirements

How will the facility be operated? Who will operate the facility?

All references to the owner shall be coordinated with and approved by the Contracting Officer.

Will the facility be connected to an EMCS? If so, what are the interface requirements? (example: monitoring points, control points, scheduling)

Yes, see Paragraph 6.9.1 of the Scope of Work

What is the desired level of training and orientation for building occupants to understand and use the building systems?

See Paragraph 6 of Section 00 22 11 as well as Supplemental Contract Requirements in Section 00810.

What is the desired level of training and orientation for O&M staff to understand and maintain the building systems?

See Paragraph 6 of Section 00 22 11 as well as Supplemental Contract Requirements in Section 00810.

LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects

(AGMBC)

For use with the LEED-NC Green Building Rating System Versions 2.1 and 2.2

October 2005

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Table of Contents

Introduction

The purpose of this Application Guide is to provide direction in applying the Leadership in Energy and Environmental Design® Green Building Rating System Versions 2.1 and 2.2 for New Construction and Major Renovations (LEED-NC) to projects in a campus or multi-building setting such as corporate campuses, college campuses, and government installations (i.e. there is one owner or common property management and control). The application guide is intended for projects where several buildings are constructed at once, in phases, or a single building is constructed in a setting of existing buildings with common ownership or planning with the ability to share amenities or common design features. Throughout this guide, the term “campus” is used to represent all of these permutations.

LEED-NC Rating System, Support Materials and Tools

LEED is a program of the U.S. Green Building Council (USGBC) that establishes performance goals in five environmental categories: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, and Indoor Environmental Quality. In addition, a sixth category, Innovation & Design Process, addresses those environmental issues not included in the environmental categories such as acoustics, community enhancement, education, and expertise in sustainable design. Many issues specific to campus projects that are not addressed by the existing credit structure may be included in the Innovation & Design Process category.

The rating system is supported by the LEED-NC Reference Guide, a document that provides additional information and guidance for each LEED Prerequisite and Credit. Consult the LEED-NC Rating System, Reference Guide and www.usgbc.org for more information on the LEED program, the LEED application process, and the USGBC.

Working in concert with the rating system and reference guide, the LEED-NC Submittal Template is a helpful tracking and documentation tool, as well as a required submittal for LEED certification. The Version 2.0 Calculator spreadsheets still remain helpful for some credits.

LEED-NC Application Guide for Multiple Buildings and On-Campus Projects

This Application Guide facilitates using LEED-NC as a performance standard for greening the design of a building or set of buildings within a campus setting (college, corporate, military, multi-use development, etc.), or a group of buildings certifying as a set. A project involving several buildings may be built all at once, or in phases. The latter is especially applicable to large developments.

The Application Guide provides an opportunity for building owners to reduce the environmental impact of buildings by approaching green building in a broader context. Opportunities for reducing environmental impact may be spread over several buildings, a complex of buildings, or an entire campus or installation. Credits are available to each building that benefits from the shared amenities. This approach allows for economies of

scale, enabling more opportunities to reduce the environmental impact of buildings and infrastructure.

The Application Guide analyzes the intent of each LEED-NC credit and prerequisite as developed for commercial facilities and interprets them for campus and installation projects. The greatest opportunities for new interpretations arise in credits associated with Sustainable Sites, Water Efficiency, and Energy and Atmosphere. Materials and Resources and Indoor Environmental Quality credits have fewer campus-specific interpretations and remain mostly the same as LEED-NC, merely requiring aggregation of performance results. The total points available under this guide are the same as LEED-NC v2.1 and 2.2 with no new credits added to or deleted from the basic rating system.

This application guide interprets and supplements the LEED criteria for projects. Where appropriate and unique to the campus or multiple building environment, alternative campus requirements and submittals that meet the intent of the basic rating system are provided. The LEED-NC Rating System and the Reference Guide are the governing documents for all LEED certification applications.

The LEED Multiple Buildings and Campus Committee

The LEED Steering Committee instructed the Multiple Buildings and Campus Committee to create an application guide that would be a simple overlay onto LEED-NC. Although simple in concept, this guide will assist many LEED projects – e.g. at the time of release, approximately 7% of all LEED registered project square footage is that of higher education facilities, which is just one of the sectors served by the guide. The MB&C Committee's ultimate desire is a LEED rating system that can be used to certify entire campuses and military installations in order to more thoroughly impact these market sectors.

USGBC gratefully acknowledges the following committee members (past and present) for their contributions to this document.

Don Fournier (Chair)	University of Illinois Building Research Council
Mark Maves (Vice Chair)	SmithGroup, Inc

Mike Chapman	Naval Facilities Engineering Command
Julia Chlarson	Centers for Disease Control and Prevention
Amanda Eichel	formerly of the University of California
Dagmar Epsten	The Epsten Group, Inc
Merritt Mike	formerly of Southface Energy Institute
Jules Paulk	formerly of Southface Energy Institute
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John Popovic	formerly of Case Western Reserve University
Richard Schneider	U. S. Army Engineering Research & Development Center
Melissa Solberg	formerly of Ford Land Development Corporation
Joel Stout	University of Cincinnati, Division of the University Architect

Overview

How to Use the Application Guide

This Application Guide is designed to complement the LEED-NC Green Building Rating System and the LEED-NC Reference Guide. The prerequisites and credits are supplemented, where necessary, by alternative Requirements and Submittals in order to apply the rating system to on-campus projects and multiple-build projects. *Credit requirement alternatives in this Application Guide may be used instead of the regular LEED-NC requirements, but are not mandatory as they may not apply in all situations.* The USGBC's CIR process also applies to this Application Guide and its requirements.

If appropriate, each prerequisite or credit includes Application Guidance with a discussion of related technologies and strategies. The Application Guide should be used as a working document that is referenced frequently throughout the design process.

Campus and Multiple Building Issues

The most detailed application guidance is necessary in the Sites category, as it presents the most challenges. Most credits in other categories simply allow the option of aggregate calculations. Campus settings sometimes have established property lines between segments of the campus, but share a common infrastructure between areas. Street lighting within a campus (e.g., lighted walkways) may technically encroach upon an adjacent property within the campus boundary. Similarly, stormwater from the campus may enter into a common retention pond or treatment facility specifically built for the campus. The use of natural treatment processes and distributed approaches are encouraged in the campus setting. The campus may own a wastewater treatment system and utilize the gray water for irrigation purposes. Streets and right of ways may be turned over to the local government after completion. Infrastructure and common amenities can be shared in campus settings and may contribute to performance achievement, thus helping to capture LEED points. The approach must be consistently applied across the project and all such cases are carefully scrutinized by the USGBC.

Some campus and multiple building projects may be mixed use development where the campus is developing a portion of the project and a separate party (or parties) is developing the remainder of the project. In such cases, the campus entity may define the LEED scope in such a way as to omit buildings that will be built by a separate party. This choice should be made with due consideration of the issues and projects are advised to keep omissions within the site boundaries to reasonable limits, in particular to parts of the overall project over which the project team will not have control. When the project is one building, the parts of the building within the campus entity's scope must meet LEED requirements. It is recommended that these buildings demonstrate that specific steps have been taken and guidance provided to insure that future build-out can also meet LEED requirements. The development of a thorough and instructive set of design guidelines and recommendations, coupled with building infrastructure to

support future LEED build-outs, is encouraged to ensure that the building will perform as a LEED building after build-out.

The Certification Process for Multiple Buildings and within Campus Settings

Any project team utilizing this guide simply registers its project under the standard LEED-NC program. A project already registered can choose to use the application guide at any time before certification submittal, but should do so as early as possible during the pre-design or design stage.

*** ***Note:*** The following certification processes are in pilot phase, and may be revised at any time. The most up-to-date version will be posted on the Web site along with this application guide. ***

There are three approaches to certifying buildings in the campus or installation setting:

- Certifying a new building within a setting of existing buildings that are considered a campus, i.e. there is one owner or common property management and control.

- Certifying a group of new buildings as a package where the entire building set will be rated as a package and only one rating received. These buildings may constitute the entire campus or be a subset of an existing campus.

- Certifying new buildings where each new building is constructed to a set of standards but will receive an independent rating based on achievement of credits beyond the standards specific to that building. These buildings may constitute the entire campus or be a subset of an existing campus.

Each of these approaches will be discussed separately and registration and certification provided for that particular approach.

Certifying a new building within a setting of existing buildings

The certification process is essentially the same as the LEED-NC certification process for the given building. When certifying a single building under the Application Guide, you may choose campus requirements and submittals in lieu of the standard LEED-NC requirements and submittals where unique aspects of the campus setting have an impact on the credit affecting the building, e.g. where stormwater management practices are campus-wide rather than building-specific.

A reasonable and logical “LEED project site” boundary must be defined for LEED purposes. The project scope of work and the site area affected by the construction generally suffice to inform this definition. The defined site must remain consistent for all LEED credits. The Application Guide provides details on special considerations for shared amenities such as parking (adjacent and, more often, remote) and open space.

Certifying a group of new buildings as a package where the entire building set will be rated as a package and only one rating received

For entities that construct a set of buildings at once or over a defined time period in a campus setting, certification of each building individually could result in excessive documentation, much of which would be duplicated between buildings. In this case the option of rating the entire building set may be the best choice. When certifying a set of buildings under the Application Guide, you may choose campus requirements and submittals in lieu of the standard LEED-NC requirements and submittals where unique aspects of the campus setting impact the credit affecting the buildings. The Application Guide provides the methods for calculations and submittals for credits that may be averaged across the set of buildings and defines which credits must be met by each individual building. Using the averaging techniques, where applicable, allows for one rating to be applied to the building set, thereby minimizing documentation. Identify the group of buildings with a single name for LEED registration and certification.

Certifying new buildings where each new building is constructed to a set of standards but will receive an independent rating based on achievement of credits beyond the standards

1. Many campus build entities establish design standards (e.g. campus master plans and specifications) that will be applied repeatedly to new buildings. These elements may be site- or building-specific. The campus build process allows applicants to certify a “prototype” credit set that is intended for repetition on subsequent projects. The total credits beyond the standards may vary from building to building. Project teams will be permitted to designate prerequisites as prototypes.

2. **Certification Review for the First Project:**

    a. USGBC shall conduct a thorough and complete review of the first project, including prototype credits.

    b. The certification submittal shall include all supporting background information for prototype prerequisites/credits, and specific guidance will be developed for these requirements (similar to that created for LEED-NC audits).

    c. Projects will receive a Preliminary and Final LEED Review for all prerequisites/credits pursued, following the published review process.

    d. The Appeal process shall be an option for any prerequisite/credit which is part of this first project.

e. All approved prototype prerequisites/credits will be designated as such in the Final or Appeal LEED Review of this first project. Any denied prototype prerequisite/credit shall not be included in the prototype set.

3. Certification Reviews For Subsequent Project(s):

a. Subsequent projects shall be reviewed per the current process, which includes up to six prerequisites/credits selected for audit. It will be at the discretion of the review team whether or not a prototype credit will be selected as one of the up to six for audit.

b. These projects will not be required to submit documentation on approved prototype prerequisites/credits unless selected for audit in the Preliminary LEED Review.

c. Failure of an audited prototype prerequisites or credit will result in that item being denied in the current review. The denied item will temporarily drop out of the set of approved prototype prerequisites/credits as the project team will be required to demonstrate achievement of this specific item for the next three consecutive project application reviews. Once achievement is demonstrated, this item will return to the prototype set. If achievement is NOT demonstrated in any one of the next three consecutive project application reviews, the item shall be permanently removed from the prototype set.

d. Appeals will not be permitted for prototype prerequisites/credits in subsequent projects.

e. Prerequisites/credits may be dropped from the approved set of prototype prerequisites/credits at the project team's discretion. Once removed from the set, this item shall not be reviewed as a prototype prerequisite/credit unless it is re-established as such by demonstrating achievement of this specific item for three consecutive project application reviews, or per the steps outlined in #2 above.

f. Prerequisites/credits may be added to the approved set of prototype prerequisites/credits at the project team's discretion. It must be established as such by demonstrating achievement of this specific item for three consecutive project application reviews or per the steps outlined in #2 above (for the latter, this action shall occur with an individual project application, and a fee will be associated with adding this item to the prototype set).

The process above assumes that all buildings will be constructed to a specific standard and that credits associated with that standard can receive preliminary approval. Within the campus setting, the situation can arise where certain site-related amenities would

not be constructed until after the building project is complete. This may result in some pending credits for buildings. These pending credits cannot be awarded until the actual master plan is put into effect and the shared amenities constructed. The individual projects have two choices:

1. Complete certification of the project with certain credits “pending.” These pending credits may alter the rating of the project. If the project is rated without the pending credits, its rating will be based on only those credits achieved. Once the pending credits are available, the project can be recertified and the credits awarded at that time.

2. Await certification until all credits are available.

The volume/campus build process can also be a useful tool for developers to use when managing a portfolio of buildings. Tracking site-specific issues and benefits of individual credits or strategies and the lessons learned during the process will inform future design revisions and decisions. Whether building and certifying projects one at a time, or as a package of several buildings, project teams must be fair and reasonable in defining the project scope and site boundaries and be consistent across credit calculations.

Summary of Prerequisites and Credits

Sustainable Sites	**14 Possible Points**
Prerequisite 1: Erosion and Sedimentation Control	Required
Credit 1: Site Selection	1
Credit 2: Urban Redevelopment	1
Credit 3: Brownfield Redevelopment	1
Credit 4: Alternative Transportation	4
Credit 5: Reduced Site Disturbance	2
Credit 6: Stormwater Management	2
Credit 7: Reduced Heat Island Effect	2
Credit 8: Light Pollution Reduction	1

Water Efficiency	**5 Possible Points**
Credit 1: Water Efficient Landscaping	2
Credit 2: Innovative Wastewater Technologies	1
Credit 3: Water Use Reduction	2

Energy and Atmosphere	**17 Possible Points**
Prerequisite 1: Fundamental Building Systems Commissioning	Required
Prerequisite 2: Minimum Energy Performance	Required
Prerequisite 3: CFC Reduction in HVAC&R Equipment	Required
Credit 1: Optimize Energy Performance	10
Credit 2: Renewable Energy	3
Credit 3: Additional Commissioning	1
Credit 4: Ozone Protection	1
Credit 5: Measurement and Verification	1
Credit 6: Green Power	1

Materials and Resources	**13 Possible Points**
Prerequisite: Storage and Collection of Recyclables	Required
Credit 1: Building Reuse	3
Credit 2: Construction Waste Management	2
Credit 3: Resource Reuse	2
Credit 4: Recycled Content	2
Credit 5: Local/Regional Materials	2
Credit 6: Rapidly Renewable Materials	1
Credit 7: Certified Wood	1

Indoor Environmental Quality	**15 Possible Points**
Prerequisite 1: Minimum IAQ Performance	Required
Prerequisite 2: Environmental Tobacco Smoke (ETS) Control	Required
Credit 1: Carbon Dioxide (CO2) Monitoring	1
Credit 2: Ventilation Efficiency	1
Credit 3: Construction IAQ Management Plan	2
Credit 4: Low-Emitting Materials	4
Credit 5: Indoor Chemical and Pollutant Source Control	1
Credit 6: Controllability of Systems	2
Credit 7: Thermal Comfort	2
Credit 8: Daylighting and Views	2

Innovation and Accredited Professional Points	**5 Possible Points**
Credit 1: Innovations in Design	4
Credit 2: LEED Existing Building Accredited Professional	1

TOTAL POINTS AVAILABLE	**69**

SUSTAINABLE SITES

SS Prerequisite 1: Erosion & Sedimentation Control

Application Guidance

When the site incorporates more than one building, consider the phasing of construction and how the control plan will be modified over time to achieve the requirements. Site disturbance may also be phased and erosion control techniques applied at appropriate times. For large sites, this may be required by law, so effective planning at this scale is highly recommended.

SS Credit 1: Site Selection

Application Guidance

The requirements of this credit are very specific to the project site; substitution of other parcels to meet these requirements is not allowed. Selection of a site for multiple buildings—especially one that is developed over a long period of time—will require effective site layout and planning to be sure all buildings will be able to meet the requirements.

If the site of a multiple-building development does not fully comply with credit requirements, then the buildings can not achieve the credit under a single group certification. However, in such a situation, an individual building is still eligible for the credit if it can be demonstrated that:

1. the area disturbed by the building's construction activity complies with credit requirements and this is demonstrated within the LEED application submittal. This approach is expected to be most useful when buildings are being constructed at different times; OR

2. credit requirements are met for the area defined by a reasonable "LEED project site boundary" that corresponds to the buildings' development footprints or other fair subdivision method. The LEED application submittal must include thorough justification for this artificial site boundary, as it will be closely scrutinized. The LEED project boundary must remain consistent for all credits. This approach is expected to be most useful when buildings are constructed within the same or overlapping time frames.

SS Credit 2: Development Density & Community Connectivity

Application Guidance

NC Version 2.2 provides a "community connectivity" option that is most likely preferable for most campus and non-urban settings. Version 2.1 guidance reflects interpretations that provide compliance pathways adjusted for campus settings.

For Version 2.2, Option 2 (Community Connectivity):

Single buildings on a campus and each building within multiple building projects must comply with the credit requirements as written in order to achieve the compliance path.

For Version 2.1 (and Version 2.2 Option 1):

Requirements

a) Show that the project complies with the Version 2.1 credit requirements as written and incorporating the concepts in the "supplemental application guidance" section, below.

OR

b) If the site is located in an existing urban area and the contiguous property is over 15 acres the project may use the campus boundaries in lieu of a documentation circle to calculate density.

OR

c) Show that the project complies with a regional or campus master planning effort to redevelop an area with existing infrastructure into a higher density area with an ultimate intended density that reflects desired local development conditions and meets the intent of this credit.

Submittals for (c)

To document that the project has achieved credit equivalence, provide the following information in addition to the Submittal Template:

- Documentation showing that the project is being located in a previously developed area with existing development and infrastructure. (New development in a greenfield would not be considered appropriate in this case.) Provide information about the existing development density based on either the documentation circle or the property boundaries.
- Documentation verifying that the project location is within a designated dense urban or campus growth area.

- Documentation that the project is resulting in increased development density that meets or contributes to the goals of the urban development plan or campus master plan.

Supplementary Application Guidance

Typical programmatic requirements for a campus or installation can include common green spaces, land used for agriculture, and outdoor recreation spaces (except sport stadiums). These will all decrease average density when included in the calculations, yet they provide important functions and quality-of-life to a campus. Therefore, these types of required, programmed, low-density outdoor land uses may be considered added to the list of exceptions on page 21, step 5 of the LEED-NC v2.1 Reference Guide, along with "undeveloped public areas such as parks and water bodies."

Using the campus boundary for density calculations (if the campus is at least 15 acres) is beneficial because it does not penalize existing rural or suburban institutions for their neighbors' lower development density, nor does it benefit urban campuses for their neighbors' higher density. The stipulation of 15 acres was chosen because it generally indicates a sizable campus that is deemed to have a substantial enough impact to serve the credit's intent. Using this method also reduces some of the burden of documentation compared to original requirements. Once it is completed for one campus project it is simply updated for the next one, rather than defining a new boundary circle each time and researching additional buildings within a slightly different radius.

A new building is best located where shared physical and intellectual resources exist. Locating it next to an area with a higher density just to promote density rather than where it rationally belongs is not reasonable and it may create negative impacts for transportation and other community aspects. The credit's intent is well served by encouraging campuses to increase their on-campus density (even if existing density is not quite 60,000sf/acre). This approach might also encourage better master planning of building-to-infrastructure relationships on campus.

The LEED-NC v2.1 Reference Guide (page 20) says "Work with local jurisdictions and follow the urban development plan to meet or exceed density goals." Many university campuses and government installations are not required to follow local jurisdictions in this regard and should therefore establish their own density goals that meet the intent of this credit.

SS Credit 3: Brownfield Redevelopment

Application Guidance

Large brownfield site redevelopments may vary in the amount of remediation required for specific buildings under consideration. As long as the entire site is considered a brownfield, credit may be given to buildings on portions of that site that are contaminant free and require no specific remediation for their development footprint.

SS Credit 4.1: Alternative Transportation - Public Transportation Access

Application Guidance

Work with the transit authority to re-engineer bus routes and stops to service the site so that each building is within the required proximity. Consider establishing transit corridors and zones within the campus to ensure availability and access for the entire campus. Either public or campus bus lines must be in place by the end of construction to receive credit on that basis. Campus bus lines must interface with public mass transit. If there is no local mass transit, the campus bus line must connect with a commercial bus or rail line.

For rail transit systems that have not yet been constructed, a letter from the transit authority (stating the intent to establish the rail station and confirming funding sources) is sufficient to qualify for the credit. Campus shuttles to the closest operational station (if local) can be an interim solution until a new, closer station is in full operation.

SS Credit 4.2: Alternative Transportation - Bicycle Storage & Changing Rooms

Application Guidance

The requirements are applicable to each building in a multiple-build project. When calculating the bicycle rack capacity for transients in a non-residential building, address the loading possible at one time and not the cumulative loading based on the total transients in a day. Locate the bicycle storage facilities within 50 feet of the frequently used entrances. Transient (e.g. students, in the case of a campus building) occupancy is required to be included when calculating bicycle storage capacity.

Full-time staff (or staff FTE) may be used to calculate shower/changing room requirements. For this calculation, transients are to be defined as visitors to the building for less than 7 hours**.** Establish overlapping zones within the campus for ready access to shower and changing facilities.

If the project(s) is a mixed used development including residential buildings and other types of buildings, such as barracks complex on a military installation or a residential section of a campus, each building needs to meet the bicycle storage requirements based on its usage and occupancy.

A project is exempt from the shower facility requirement if all non-transient building occupants are housed on the same campus as that building (i.e. a military installation), or within a ½ mile of the building(s).

SS Credit 4.3: Alternative Transportation - Alternative Fuel, Low Emission and Fuel-Efficient Vehicles

Application Guidance

Requirements

Provide alternative fuel vehicles (ultra low sulfur diesel, CNG, LNG, electric, fuel cell, E85; or use average B50 biodiesel in standard diesel engine), low-emission and/or fuel efficient vehicles* for 3% of the full time employees (FTE) in the building(s) AND provide preferred parking for these vehicles, AND have access to a nearby alternative fueling station.

OR

Where the campus has a central fleet operation or motor pool, at least 50% of the vehicles available must be alternative fuel vehicles (as defined above).

Bi-fuel vehicles must utilize the alternative fuel option.

In the case of centralized parking, accommodations for alternative-fueled vehicles may be made at the central facilities, providing that those accommodations are credited cumulatively to each building's need based on the preceding criteria. The centralized parking must be within ¼ mile of the building(s) or serviced by a campus shuttle.

** Low-emission and fuel-efficient vehicles are defined as vehicles that are either classified as Zero Emission Vehicles (ZEV) by the California Air Resources Board or have achieved a minimum green score of 40 on the American Council for an Energy Efficient Economy (ACEEE) annual vehicle rating guide.*

Submittals

Provide a LEED Submittal Template and (back-up documentation that proves faculty/staff/students/employees/residents own vehicles via the preferred parking incentive program), a map identifying the location(s) of the alternative fueling facility, and for campus/installation fleet vehicles provide proof of ownership of, or 2 year lease agreement for, alternative fuel vehicles and calculations indicating that alternative fuel vehicles will serve 3% of

building occupants. Provide site drawings or parking plan highlighting preferred parking or alternative fuel vehicles.

OR

Provide a LEED Submittal Template with specifications and site drawings highlighting alternative refueling stations. Provide calculations demonstrating that these facilities accommodate 3% or more of the total vehicle parking capacity. If centralized parking is used, provide documentation that the parking meets the requirements for distance or shuttle service.

Supplementary Application Guidance

The campus environment lends itself very well to centralized parking concepts which may more readily accommodate preferred parking. A centralized alternative fueling area may be a viable alternative in the case of flexible fuel vehicles. Fleet purchases and/or fuel choices (e.g. biodiesel) may be strategically combined to achieve the performance target. Consider incentive programs for faculty/staff/students.

SS Credit 4.4: Alternative Transportation - Parking Capacity

Application Guidance

Campuses are often exempt from local zoning laws regarding parking, and thus determine their own standards. Calculation and documentation for this credit may be done either on a project by project basis or a campus-wide basis.

Requirements

If applicable local zoning code indicates there are no minimum parking capacity requirements, or if the campus entity is exempt from local codes, size the parking capacity in transit-oriented developments (TOD's) according to the minimum requirements by building typology as outlined in the Portland, Oregon Title 33 Planning and Zoning -Chapter 33.266 for Parking and Loading, Table 266-1 and 266-2 (at http://www.planning.ci.portland.or.us/zoning/ZCTest/200/266_parking.pdf) AND provide preferred parking for carpools or van pools capable of serving 5% of the building occupants,

OR

For rehabilitation projects add no new parking and reduce the capacity of existing oversized parking AND provide preferred parking for carpools or vanpools capable of serving 5% of the building occupants.

Accommodations for carpools and vanpools may be made at the central parking facilities, providing that they are credited to only one building or project based on the preceding criteria. The centralized parking should be within ¼ mile of the building(s) served or be serviced by a shuttle bus.

Supplementary Application Guidance

The campus environment lends itself very well to centralized parking concepts which may more readily accommodate preferred parking. An alternative method of establishing parking requirements have been provided. It is suggested that the method that generates the least parking be utilized. Long term master planning of campus parking facilities is recommended. A successful application of demographic analysis of parking facility users will help identify where parking will work best to serve mixed uses. An example is to locate parking garages where they can effectively be used by at least two groups or shifts per day, rather than a garage dedicated to just an 8am-5pm work force

When calculating the carpool space requirement on a campus where no parking is permitted within the specific project boundary, it is permissible to meet this credit by providing carpool spaces outside of the project boundary to serve the 5% of building occupants. These spaces must not be counted toward other LEED projects. Signage restricting carpool parking only to this project's occupants is not necessary. The "preferred" parking requirement is satisfied if a campus shuttle bus route serves satellite parking lots and structures. Calculation and documentation for this credit may also be achieved on a campus-wide basis. When using the campus-wide approach:

- If all parking spaces are permitted and designated as residential and commuter, the number of commuter permits may be used as the basis of calculations for carpool spaces.
- The credit can be achieved by proxy if local jurisdictional requirements that exceed the credit requirements and it is clearly demonstrated in the LEED submittal.
- Comprehensive transportation management programs are eligible for an innovation point.

Regardless of the compliance approach utilized, it is necessary to sufficiently promote the carpool program.

SS Credit 5.1

Version 2.1: **Reduced Site Disturbance -** Protect or Restore Open Space

Version 2.2: **Site Development -** Protect or Restore Habitat

Application Guidance

Submittals

- For greenfield sites, provide the LEED Submittal Template and attach a list of buildings indicating that each has met requirements.
- For previously developed sites where there are multiple buildings in the project scope, enter aggregate data in the Submittal Template, as appropriate.

Supplementary Application Guidance

Consider the aspects of construction phasing and the use of future building footprints for staging areas and temporary disturbance locations. On projects that are only a portion of a larger development and artificial site boundaries are defined for the LEED project, be sure that they are reasonable, logical, chosen with all credits in mind, and that their use is consistent through all credits. For multiple buildings, consider aggregating any restored previously degraded parts of the site as larger areas of habitat are more effective.

SS Credit 5.2

Version 2.1: **Reduced Site Disturbance -** Development Footprint

Version 2.2: **Site Development -** Maximize Open Space

Application Guidance

Requirements

Open space area can be either adjacent to the building(s) or at another location on the campus. It must be aggregated and contiguous, not divided and dispersed. The open space may be at another campus site as long as it is placed in a permanent reserve status.

Submittals

- If there are multiple buildings in the project scope, enter aggregate data in the Submittal Template.

- For campus areas where the choice is made to have the open space set-aside not adjacent to the buildings provide documentation showing the requirements have been met and the land is in a natural state or been returned to a natural state and conserved for life of the buildings.

Supplementary Application Guidance

Open space does not have to be contiguous to the building(s) to which it is accredited. Open space may be aggregated and set aside as a larger plot of land. The land must be in a natural state or returned to a natural state; quads and playing fields do not count towards attaining this credit. This may enhance ecosystems and provide a larger piece of habitat. Clustering of buildings is good practice in terms of concentrating the impact of development in a limited area, leaving more of the site in its natural state, or providing for larger areas of habitat. Establishment of the project boundary with all credits in mind can enhance this process. Vegetated roofs may also contribute to credit compliance if the plantings meet the definition of native/adapted.

SS Credit 6.1

Version 2.1: **Stormwater Management** - Rate and Quantity

Version 2.2: **Stormwater Design:** Quantity Control

Application Guidance

Requirements

The credit requirements may be met using a centralized approach affecting the defined project site and that is within the campus boundaries. Distributed techniques based on a watershed approach are then required.

Submittals

If there are multiple buildings in the project scope, enter aggregate data in the Submittal Template. Demonstrate that centralized stormwater management strategies using distributed technologies achieve credit performance requirements.

Supplementary Application Guidance

A master planning approach to storm water management and overall impervious surface management that is campus-wide or based on the local watershed is preferred over stormwater management planning limited to one project site at a time. The campus setting with larger boundaries and settings allows comprehensive stormwater management techniques to be applied on a larger scale and with more flexibility. This provides economies of scale and affords greater opportunities for clustering buildings, increasing natural settings, and applying distributed management techniques cost effectively. Phasing of projects may affect when a Master Plan is implemented and how the specific building(s) under consideration will be accommodated.

SS Credit 6.2
1 Point

Version 2.1: **Stormwater Management** – Treatment

Application Guidance

Same as credit 6.1.

SS Credit 7.1: Heat Island Effect - Non-Roof

Application Guidance

Submittals

If there are multiple buildings in the project scope, enter aggregate data in the Submittal Template and list the buildings meeting this credit.

Supplementary Application Guidance

The campus setting with larger boundaries and settings allows comprehensive heat island management techniques to be applied on a larger scale and with more flexibility. This provides economies of scale and affords greater opportunities for clustering buildings, increasing pervious surfaces and natural settings, and applying management techniques cost effectively.

SS Credit 7.2: Heat Island Effect - Roof

Application Guidance

Submittals

If there are multiple buildings in the project scope, enter aggregate data in the Submittal Template and provide a list of buildings meeting the credit.

Supplementary Application Guidance

An average of compliance for building roof areas may be used to meet these requirements when more than one building is on the site. For each building or for the group of buildings, combinations of high albedo and vegetated roof must collectively cover 75% of the roof area.

SS Credit 8: Light Pollution Reduction

Application Guidance

Requirements

Develop an exterior lighting master plan that includes the project site and the surrounding buildings in a comprehensive manner addressing the safety and security issues of the campus environment by sharing exterior lighting amenities while minimizing light pollution and energy consumption. The lighting master plan must show that it incorporates the credit requirements as well as the following:

- How this plan will reduce light trespass and night sky access and specific projects fit into the overall design.
- How safety, security, and comfort will be enhanced by the use of a master plan.

Submittals

- Provide exterior lighting master plan that addresses the project site and buildings and infrastructure showing how overall light pollution is reduced.
- Provide a design narrative from the Architect, Electrical Engineer, or responsible party that demonstrates what measures have been implemented for the registered LEED building(s) to meet the provisions of the exterior lighting master plan in the campus requirements.

WATER EFFICIENCY

WE Credit 1: Water Efficient Landscaping

Application Guidance

Submittals

If there are multiple buildings in the project scope, enter aggregate data in the Submittal Template. Submit appropriate documentation supporting the design of the rainwater collection system, the landscape design, and the extent of the supplemental temporary irrigation system.

Supplementary Application Guidance

Landscaping in the larger context of the campus provides abundant opportunity to implement solutions that require less water and for capturing rainwater or recycled water. Large campuses may consider treating its buildings' wastewater to standards for non-potable uses.

While consistency in site boundaries is required, the initial flexibility in site boundary selection and building clustering options allow for enhanced opportunities for sharing captured or reusable water. The project may also use native plants and other landscape alterations leading to a lower water demand. A temporary irrigation system may be used during establishment period for landscape.

WE Credit 2: Innovative Wastewater Technologies

Application Guidance

Submittals

If there are multiple buildings in the project scope, enter weighted aggregate data in the Submittal Template.

Supplementary Application Guidance

When the site has more than one building, a weighted average of the site buildings, based on square footage, must be used to meet the requirements of the credit. This method ensures that each building generally meets the performance requirements.

Opportunities of scale may also allow more effective use of rain harvesting techniques or innovative and economical waste treatment technologies for the building(s) on the site. Options

include packaged biological nutrient removal systems, constructed wetlands, and high-efficiency filtration systems.

WE Credit 3: Water Use Reduction

Application Guidance

Submittals

If there are multiple buildings in the project scope, enter weighted aggregate data in the Submittal Template.

Supplementary Application Guidance

When the site has more than one building, a weighted average of the site buildings, based on square footage, must be used to meet the requirements of the credit. This method ensures that each building generally meets the performance requirements.

Opportunities of scale may also allow more effective use of certain techniques in differing buildings on the site.

Because of the varying occupant numbers in some types of campus buildings (including students, staff, and visitors) an alternative method of calculating this credit may be used. Rather than basing the calculations on the number of occupants, the water use may be based on the total number of each type of applicable fixtures in the building and the estimated number of uses for each of these. For example, for public water closets a sample calculation is as follows: Total Daily Water Use (Public WC) = Total Number Of Fixtures x Estimated Daily Uses x Flow Rate(GPF) x Duration

The calculations should use the same fixture count and daily use numbers for the base and proposed case. This provides a reasonable representation of base and proposed case water use. Calculations should include all flush fixtures and the following flow fixtures: public and private lavatories, public and private showers, kitchen faucets, and laboratory and service lavatories.

The following as process loads may be excluded: eyewash fountains, emergency showers, water coolers, and water fountains.

ENERGY & ATMOSPHERE

EA Prerequisite 1

Version 2.1: Fundamental Building Systems Commissioning

Version 2.2: Fundamental Commissioning of the Building Energy Systems

Application Guidance

Requirements

Each building in a project must independently meet the requirements of this prerequisite.

Supplementary Application Guidance

Every building on the project site must document compliance. An employee in the owner's organization, who is not responsible for project design or construction management or supervision of the project and who has the appropriate credentials, would be the preferred commissioning authority for EA Prerequisite 1. The documentation for EA Prerequisite 1 may be from the design firm, but the individual acting as the commissioning authority must not be responsible for project design, construction management, or supervision.

In the campus setting, other elements and site features associated with a building project, such as fountains, irrigation system, wheelchair lifts, 'help phones', and exterior lighting systems which are not actual part of a building should also be considered for the commissioning process.

Many campus organizations have commissioning requirements for all projects such as a Project Delivery Process (PDP) Manual which outlines required commissioning related steps for each project phase, from initial scoping to closeout. It is suggested that these types of documents be reviewed for compliance with the LEED fundamental commissioning requirements and be modified, if necessary, to ensure that the strategies employed by the design team to achieve the fundamental commissioning credit fulfills all requirements set forth by the LEED reference guide. A local document or manual as well as any specifications that reference the manual may be submitted along with documentation of how the local manual and procedures specifically meet or exceed the referenced LEED standard. A local manual may serve as documentation for the development of the commissioning plan as long as the manual also complies with the LEED reference guide. The intent of the fundamental commissioning prerequisite will be met assuming the applicant provides information demonstrating their standard building practices, as outlined in the locally-generated procedures manual, meet or exceed the LEED referenced commissioning requirements.

EA Prerequisite 2: Minimum Energy Performance

Application Guidance

Requirements

Each building in a project must independently meet the requirements of this prerequisite.

Supplementary Application Guidance

When designing a group of buildings, orientation and site utilization can have a major impact on energy consumption. Consider the group of buildings as a whole for the application of passive tempering and alternative energy applications.

EA Prerequisite 3

Version 2.1: CFC Reduction in HVAC&R Equipment

Version 2.2: Fundamental Refrigeration Management

Application Guidance

Requirements

Each building in the project must meet this prerequisite. If the building(s) is connected to a central chilled water system, that system must either be CFC free or a commitment to phasing out CFC-based refrigerants must be in place, with a firm timeline of five years from completion of the project. Prior to phase out, reduce annual leakage of CFC-based refrigerants to 5% or less using EPA Clean Air Act, Title VI, Rule 608 procedures governing refrigerant management and reporting.

An alternative compliance path for buildings connected to a central chilled water system requires a third party (as defined in the LEED-EB Reference Guide) audit showing that system replacement or conversion is not economically feasible. The definition of the required economic analysis is: the replacement of a chiller(s) will be considered to be not economically feasible if the simple payback of the replacement is greater than 10 years. To determine the simple payback, divide the cost of implementing the replacement by the annual cost avoidance for energy that results from the replacement and any difference in maintenance costs including make-up refrigerants. If CFC-based refrigerants are maintained in the central system, reduce annual leakage to 5% or less using EPA Clean Air Act, Title VI, Rule 608 procedures governing refrigerant management and reporting and reduce the total leakage over the remaining life of the unit to less than 30% of its refrigerant charge.

Submittals

Provide a LEED Submittal Template, signed by a licensed professional engineer or architect and an attached list of the buildings declaring that each building's HVAC&R systems do not use CFC-based refrigerants.

OR

Provide a modified LEED Submittal Template, signed by a licensed professional engineer or architect with an attached list of the buildings and a letter of commitment from the campus/installation declaring its intention to phase-out CFCs and a summary of the phase out plan describing actions and approximate time frame. AND demonstrate that until phase out, existing CFC containing equipment meets EPA Title VI, Rule 608, procedures for refrigerant management and reporting.

OR

Provide results of third-party audit demonstrating that replacement is not economically feasible based a 10-year simple pay-back analysis. AND provide documentation showing compliance with EPA Clean Air Act, Title VI, Rule 608 governing refrigerant management and reporting. Provide documentation showing that the annual refrigerant leakage rate is below 5%, and the leakage over the remainder of unit life is being maintained below 30%.

Supplementary Application Guidance

If connecting to a central system containing CFC refrigerants operate according to USEPA criteria and plan for phasing out the CFC refrigerants. The use of CFCs in central plants is an ongoing issue for the campus environment. Systems using CFCs are older and less efficient than newer systems using modern refrigerants. It is in the best interests of all to phase out the use of CFCs from several perspectives including ozone depletion, global warming potential, and energy efficiency. When funds are lacking to modernize central chiller plants, the use of third party financing may be a viable alternative if the energy savings from the new equipment can pay for the initial investment. Consider contracting with an energy services company that fronts the equipment, guarantees savings, and is paid out of a share of the savings.

EA Credit 1: Optimize Energy Performance

Application Guidance

Requirements

This credit applies to each building within the project scope. To receive a single rating for a group of buildings, use a weighted average for the group of buildings based on their conditioned square footage, or aggregate the data into one PRM calculation, so that performance is achieved by buildings of varying sizes within a certifying group. Each building must still meet EA Prerequisite 1 and may receive its own rating if that is desired.

Supplementary Application Guidance

Consider energy sources such as waste heat or recovered resources. Reduced energy cost may reflect the effect of time-dependent valuation of energy (time-of-use) rates or demand charges when working in conjunction with permanently installed efficiency or storage systems. Environmental impacts result from the operation and expansion of energy infrastructure both on and off site. Application of the more efficient combined heat and power systems and energy storage systems may be applied more effectively in the campus environment. Since the buildings are rated based upon the energy (and its cost) that crosses the building boundary, more efficient central energy systems and thermal storage should be used as the basis of energy cost reductions in the calculation of the building's energy performance. Calculation instructions for Version 2.1 and 2.2 will be supplied as supplements to the respective Reference Guides.

EA Credit 2: On-Site Renewable Energy

Application Guidance

Requirements

A group of buildings may be evaluated on a group average, based on square footage, or each building may receive its own rating.

Submittals

For multiple buildings either use aggregate data in the Submittal Template and provide a list of the buildings or provide a Submittal Template for each building.

Supplementary Application Guidance

Consider orientation of the buildings as a group for maximum access to renewable energy. A central renewable energy system may be more cost effective than individual systems on the separate buildings. In the case where the renewable energy equipment is not physically located

on the applicant building(s), provide data for each building showing the projected energy consumption and the percentage to be met with their prorated or dedicated share of renewable energy. The owner should also submit a certification letter acknowledging that the renewable energy from a central system will apply only to the submitted project(s) and will not be applied to subsequent buildings for any future LEED certifications.

Another campus consideration may be the energy used to light pathways and other connective routes between multiple buildings in a group. For Version 2.1, the energy benefit of solar-powered pole lights can be applied to EA Credit 2 (Renewable Energy) on a special calculation basis. Normally, site lighting is not included in the ASHRAE 90.1 energy model unless attached to the building. After the energy modeling is completed, add the unregulated site lighting's electricity requirements to the design case's Regulated Subtotal (DEC) and add the solar-powered pole lights' contribution to it. This special calculation method awards the use of the technology within the appropriate context. The pole lighting contribution is not to be factored into EA Credit 1 calculations. Version 2.2 Option 1 accounts for site lighting within the updated referenced standard.

EA Credit 3
1 Point

Additional (Enhanced) Commissioning

Application Guidance

Requirements

Each building in a project must independently meet the requirements of this credit.

Supplementary Application Guidance

The Reference Guide elaborates that the intent of the credit is that "The Additional Commissioning Credit ensures peer review through independent, third party verification." An employee in the owner's organization, who is not responsible for the management or design of the project and who has the appropriate credentials, may serve as the "independent" commissioning authority. For example, if a university has architects who design the campus buildings, an engineer from the facility management staff can be considered the independent commissioning authority.

EA Credit 4

Version 2.1: Ozone Protection

Version 2.2: Enhanced Refrigerant Management

Application Guidance

Requirements

Each building in a multiple building project must meet the requirements of this credit in order to achieve it. In a campus setting, even if the project is only a single building, this often involves a central plant.

Version 2.1: If the building(s) is (are) connected to a central chilled water system, that system must be HCFC free or a commitment must be in place to phasing out HCFC-based refrigerants within 5 years from completion of the project.

Version 2.2: If the building(s) is (are) connected to a central chilled water system, that system must meet the credit requirements.

Supplementary Application Guidance

This credit is problematical to some campus situations where the central system is not owned by the campus operator. Negotiations with the chilled water supplier may be effective in getting their commitment to comply with v2.1 or v2.2 requirements. For Version 2.2, have the chilled water supplier perform the required calculations and submit a letter showing compliance.

In the selection of refrigerants, consider their global warming potential as part of the analysis criteria. A life-cycle analysis that includes the future impact of the Montreal Protocol should guide choice of refrigerants.

EA Credit 5: Measurement and Verification

Application Guidance

Requirements

Each building in a project must independently meet the requirements of this credit.

Submittals

If there are multiple buildings, attach a list of the buildings meeting the credit criteria. Separate M&V plans may be required for buildings that significantly differ.

Supplementary Application Guidance

Consider adding the functions that meet the requirements of this credit to a central energy management and control system for the campus. This would allow a continuous commissioning process for the building and maintenance issues could be centrally alarmed and personnel dispatched to keep systems in peak operating mode.

EA Credit 6: Green Power

Application Guidance

Requirements

Green power may be purchased on a centralized basis and credit attributed to a specific project. This same green power may not be credited to another project.

Submittals

Provide certification that any purchased green power is solely applied as credit to this project. If more than one building is to receive credit, provide data for each building showing the projected energy consumption of the buildings and the percentage to be met with green power. If the green power is generated by a campus entity, show that it meets Green-e standards.

Supplementary Application Guidance

Volume discounts are available from some Green Tag brokers. Therefore, it may be financially advantageous to the campus owner if multiple buildings are achieving this credit. Cogeneration from renewable sources (that meet Green-e standards) would be credited in EA Credit 2. Consider ID Credits for exemplary performance when 100% of green power content is used for extended periods.

MATERIALS & RESOURCES

MR Prerequisite 1: Storage & Collection of Recyclables

Application Guidance

Requirement

A central sorting and collection facility serving multiple buildings will also meet the intent of this credit as long as provisions are made for the collection of the recyclable materials within each building.

Submittals

If a central facility is used for sorting and/or temporary storage, include a narrative that succinctly describes collection procedures, frequency (based on generation estimates) and facilities.

MR Credit 1.1 to 1.3: Building Reuse

Application Guidance

Submittal

If there are multiple buildings in the project scope, enter aggregate data in the primary Submittal Template. Also provide one hardcopy version of the Submittal Template for each building's data.

MR Credit 2: Construction Waste Management

Application Guidance

Submittals

If there are multiple buildings in the project scope, enter aggregate data in the Submittal Template.

Supplementary Campus Application Guidance

Additional strategies for campuses include documenting salvage that occurs by owner organizations prior to the building being turned over to contractors for demolition including

offering materials to academic programs on campus such as fine arts or architectural studios or for troop construction projects on military installations.

MR Credits 3 through 7

Application Guidance

Submittals

If there are multiple buildings in the project scope, enter aggregate data in the Submittal Template.

INDOOR ENVIRONMENTAL QUALITY

EQ Prerequisite 1: Minimum IAQ Performance

Application Guidance

Requirements

If there are multiple buildings on the project site, each building must independently meet the requirements.

EQ Prerequisite 2: Environmental Tobacco Smoke (ETS) Control

Application Guidance

Requirements

If there are multiple buildings on the project site, each building must independently meet the requirements.

Version 2.1 projects can use any Version 2.2 compliance path (v2.2 requirements are simply a compilation of v2.1 credit rulings).

Submittals

List all buildings and identify which method was used on each.

EQ Credit 1: Carbon Dioxide (CO_2) Monitoring

Application Guidance

Requirements

If there are multiple buildings on the project site, each building must independently meet the requirements.

EQ Credit 2: Ventilation Effectiveness

Application Guidance

Requirements

If there are multiple buildings on the project site, each building must independently meet the requirements.

EQ Credit 3.1 and 3.2: Construction IAQ Management Plan

Application Guidance

Requirements

If there are multiple buildings on the project site, then each building must independently meet the requirements.

Version 2.1 projects can use any Version 2.2 compliance path (v2.2 requirements are simply a compilation of v2.1 credit rulings).

EQ Credit 4.1: Low-Emitting Materials - Adhesives & Sealants

Application Guidance

Requirements

If there are multiple buildings on the project site, then each building must independently meet the requirements.

Supplementary Application Guidance

Version 2.2 requirements are more stringent than Version 2.1.

EQ Credit 4.2: Low-Emitting Materials - Paints and Coatings

Application Guidance

Requirements

If there are multiple buildings on the project site, then each building must independently meet the requirements.

Supplementary Application Guidance

Version 2.2 requirements are more comprehensive (and thus more stringent) than Version 2.1.

EQ Credit 4.3: Low-Emitting Materials - Carpet

Application Guidance

Requirements

If there are multiple buildings on the project site, then each building must independently meet the requirements.

EQ Credit 4.4: Low-Emitting Materials - Composite Wood

Application Guidance

Requirements

If there are multiple buildings on the project site, then each building must independently meet the requirements.

Supplementary Application Guidance

Version 2.2 requirements are more comprehensive (and thus more stringent) than Version 2.1.

EQ Credit 5: Indoor Chemical & Pollutant Source Control

Application Guidance

Requirements

If there are multiple buildings on the project site, then each building must independently meet the requirements.

EQ Credit 6.1: Controllability of Systems- Perimeter Spaces

Application Guidance

Requirements

If there are multiple buildings on the project site, then each building must independently meet the requirements.

Supplementary Campus Application Guidance

Examine trade-offs of natural ventilation using operable windows in spaces that will need to be darkened for projection equipment. Some types of power operated black-out shades can be pulled from their tracks by breezes through large window openings. If natural ventilation is a priority and power shades are also required, employ strategies that do not utilize the glazing area of the exterior walls.

EQ Credit 6.2: Controllability of Systems, Non-Perimeter Spaces

Application Guidance

Requirements

If there are multiple buildings on the project site, then each building must independently meet the requirements.

EQ Credit 7.1: Thermal Comfort- Compliance with ASHRAE 55-1992

Application Guidance

Requirements

If there are multiple buildings on the project site, then each building must independently meet the requirements.

Supplementary Campus Application Guidance

Version 2.1 projects can use the Version 2.2 compliance path (v2.2 requirements are simply a compilation of v2.1 credit rulings).

EQ Credit 7.2: Thermal Comfort- Permanent Monitoring System

Application Guidance

Requirements

If there are multiple buildings on the project site, then each building must independently meet the requirements.

EQ Credit 8.1 and 8.2: Daylight and Views

Application Guidance

Requirements

If there are multiple buildings on the project site, then each building must independently meet the requirements.

INNOVATION & DESIGN PROCESS

ID Credit 1.1 – 1.4: Innovation in Design

Application Guidance

In the campus setting and with multiple buildings, additional innovative opportunities arise, specifically with infrastructure and site issues. Economies of scale allow for more creativity and application of initiatives with larger scopes. The strategies and documentation for achieving innovation credits related to the site may be "duplicated" in multiple buildings or multiple applications for separate buildings, provided a clear description of how the whole site achieves the intended credits is presented. It must be clear that none of the required areas or facilities is counted twice. Each credit should be carefully assessed and treated fairly, respective of overall site issues (e.g., pervious surfaces) versus individual building issues (e.g., roofing). For example, if the project is applying for SSc5.2, which requires that permanent open space be designated adjacent to the building, the area of this open space must reflect the combined footprints of all of the buildings.

An innovation credit is warranted if activities and/or programs inspired by a LEED project are applied to the campus as a whole, thus delivering correspondingly larger environmental benefit.

ID Credit 2: LEED Accredited Professional

No application guidance is necessary.

LEED Credit Paragraph	**LEED 2.2 Strategy Table**	Building CTR Substitution Permitted	Site CTR Substitution Permitted	**Required Points Strategy**	YELLOW ITEMS: GD please fill in indicating whether site will earn these credits and return to COS. GREEN ITEMS: GD please review and confirm feasibility/revise as needed and return to COS. BLUE ITEMS: GD please highlight any added building and shared points proposed.
COMPLEX: Warriors in Transition (WT) Complex					
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.
	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 2	NIC	YES	1	Site CTR responsible.
	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	NIC	YES		Site CTR responsible.
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					
WE1.1	Water Efficient Landscaping: Reduce by 50%	NIC	YES	1	Site CTR responsible.
WE1.2	Water Efficient Landscaping: No Potable Water Use or No Irrigation	NIC	YES	1	Site CTR responsible.

LEED Credit Paragraph	**LEED 2.2 Strategy Table**	Building CTR Substitution Permitted	Site CTR Substitution Permitted	**Required Points Strategy**	YELLOW ITEMS: GD please fill in indicating whether site will earn these credits and return to COS. GREEN ITEMS: GD please review and confirm feasibility/revise as needed and return to COS. BLUE ITEMS: GD please highlight any added building and shared points proposed.
COMPLEX: Warriors in Transition (WT) Complex					
PAR	**FEATURE**				**REMARKS**
WE2	Innovative Wastewater Technologies - OPTION 1	NO	NO		Combined Bldg/Site credit.
WE2	Innovative Wastewater Technologies - OPTION 2	NIC	YES		Site CTR responsible.
WE3.1	Water Use Reduction: 20% Reduction	YES	NIC	1	Building CTR responsible.
WE3.2	Water Use Reduction: 30% Reduction	YES	NIC		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	YES	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.
MR1.1	Building Reuse: Maintain 75% of Existing Walls, Floors & Roof	N/A	N/A		
MR1.2	Building Reuse: Maintain 95% of Existing Walls, Floors & Roof	N/A	N/A		

LEED Credit Paragraph	**LEED 2.2 Strategy Table**	Building CTR Substitution Permitted	Site CTR Substitution Permitted	**Required Points Strategy**	YELLOW ITEMS: GD please fill in indicating whether site will earn these credits and return to COS. GREEN ITEMS: GD please review and confirm feasibility/revise as needed and return to COS. BLUE ITEMS: GD please highlight any added building and shared points proposed.
COMPLEX: Warriors in Transition (WT) Complex					
PAR	**FEATURE**				**REMARKS**
MR1.3	Building Reuse: Maintain 50% of Interior Non-Structural Elements	N/A	N/A		
MR2.1	Construction Waste Management: Divert 50% From Disposal	NO	NO	1	Combined 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		Combined 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		Combined Cumulative credit. Building CTR responsible for 5% materials reuse. Site CTR responsible for 5% materials reuse.
MR3.2	Materials Reuse: 10%	NO	NO		Combined Cumulative 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	Combined Cumulative 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		Combined Cumulative credit. Building CTR responsible for minimum 30% recycled materials. Site CTR responsible for minimum 1% recycled materials.
MR5.1	Regional Materials:10% Extracted, Processed & Manufactured Regionally	NO	NO	1	Combined Cumulative 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		Combined Cumulative 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 Systems	YES	NIC		Building CTR responsible.

LEED Credit Paragraph	**LEED 2.2 Strategy Table**	Building CTR Substitution Permitted	Site CTR Substitution Permitted	**Required Points Strategy**	YELLOW ITEMS: GD please fill in indicating whether site will earn these credits and return to COS. GREEN ITEMS: GD please review and confirm feasibility/revise as needed and return to COS. BLUE ITEMS: GD please highlight any added building and shared points proposed.
COMPLEX: Warriors in Transition (WT) Complex					
PAR	**FEATURE**				**REMARKS**
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	1	Building CTR responsible.
EQ6.2	Controllability of Systems: Thermal Comfort	YES	NIC	1	Building CTR responsible.
EQ7.1	Thermal Comfort: Design	YES	NIC		Building CTR responsible.
EQ7.2	Thermal Comfort: Verification	YES	NIC		Building CTR responsible.
EQ8.1	Daylight & Views: Daylight 75% of Spaces	YES	NIC	1	Building CTR responsible.
EQ8.2	Daylight & Views: Views for 90% of Spaces	YES	NIC	1	Building CTR responsible.
CATEGORY 6 – FACILITY DELIVERY PROCESS					
IDc1.1	Innovation in Design	YES	YES		Proposed credit must fall within CTR scope or be coordinated with other CTRs.
IDc1.2	Innovation in Design	YES	YES		Proposed credit must fall within CTR scope or be coordinated with other CTRs.
IDc1.3	Innovation in Design	YES	YES		Proposed credit must fall within CTR scope or be coordinated with other CTRs.
IDc1.4	Innovation in Design	YES	YES		Proposed credit must fall within CTR scope or be coordinated with other CTRs.
IDc2	LEED Accredited Professional	NO	NO	1	
	TOTAL			30	

APPENDIX P

REV 1.0 - 30 NOVEMBER 2008

USGBC Registration of Army Projects

Typical Registration Procedure

1. Complete the online registration form (see guidance below) at the USGBC website http://www.usgbc.org/showfile.aspx?documentid=875 and submit it online.
2. Pay the registration fee via credit card (USACE staff: credit card PR&C is funded by project design or S&A funds).
3. The USGBC will follow up with a final invoice, the LEED-online passwords and template information.
4. If you have any questions, the USGBC contact (as of October 08) is:
Courtney Yan, LEED Program Assistant
U.S. Green Building Council
202/587-7180
cyan@usgbc.org

Completing the Registration Form

BEFORE YOU BEGIN:

Create a personal account with USGBC if you do not have one.
You will need the following information:
Project name as it appears in P2 (obtain from USACE Project Manager)
Building number/physical address of project
Zip code for Installation/project location
Total gross area all buildings in project
Total construction cost for buildings only (see Project Details Section instructions below)

ACCOUNT/LOGIN INFORMATION SECTION

1. The person registering the project **must have an account with USGBC** (login and password) to complete the form. If you have an account, select "I already have a USGBC Web site account" and enter email and password (twice). If you do not have an account, you may select "Create a new USGBC website account" and follow the instructions. It is recommended that you create an account separately on the USGBC website before you start the form. IMPORTANT: USACE team members are members of USGBC and are eligible for Member prices. USACE team members registering projects should be sure to include the USACE Corporate Access ID on the form (if you do not have it contact richard.l.schneider@usace.army.mil or judith.f.milton@usace.army.mil for the number).
2. The Account/Login Information section is filled out by the person registering the project. It may be a Contractor or a USACE staff member.

PROJECT TYPE SECTION

Self-explanatory. As of October 08 USACE projects use LEED for New Construction V2.2. USACE staff members are USGBC members.

GENERAL PROJECT INFORMATION SECTION

Project Title: Match the project name used in P2. Contact the USACE Project Manager for this information.
Is Project Confidential: Indicate NO except if project has security sensitivity (elements that are FOUO or higher security) indicate YES.
Project Address 1 and 2: This is the physical location of the project. Provide building number, street address, block number or whatever is known to best describe the location of the project on the Installation.

Project City: Installation Name
State, Country, Zip Code: Self-explanatory
How Did You Hear About LEED: USACE requirement

PRIMARY CONTACT INFORMATION

The Primary Contact may be a Contractor or a USACE staff member. USGBC considers this individual the primary point of contact for all aspects of the project. It is recommended this person be the Contractor Project Manager or the USACE Project Manager.

PROJECT OWNER INFORMATION

Project Owner First Name, Last Name, email: The Project Owner is the USACE Project Manager.
Organization Name: U.S. Army Corps of Engineers. This field MUST be completed this way because it will be used as a search field by higher HQ to find all USACE registered projects.

PROJECT DETAILS

Owner Type: Military Base
Project Scope: Provide brief description (example: barracks complex)
Site Conditions: Provide brief description (example: wooded with steep grades)
Occupant Type: Provide brief description (example: military and civilian employees)
Owner Occupied: No
Gross Square Footage: Provide total area all buildings in project
Project Budget: Do not include the cost for design, site work, demolition, abatement or other work – do not include Government contingency or supervision costs. For design-build and construction projects registered after award, use the awarded contract cost for construction of buildings only. For projects registered prior to award of design-build or construction contract, use the total Primary Facility cost from DD1391 or updated Primary Facility cost based on design development if available.
Current Project Phase: Identify phase at time of registration (example: design start, construction start)
Project Type: Self-explanatory

PAYMENT INFORMATION

Self-explanatory

APPENDIX Q
REV 1.1 – 31 MAY 2009
AREA COMPUTATIONS

Computation of Areas: Compute the "gross area" and "net area" of facilities (excluding family housing) in accordance with the following subparagraphs:

(1) Enclosed Spaces: The "gross area" is the sum of all floor spaces with an average clear height ≥6'-11" (as measured to the underside of the structural system) and having perimeter walls which are ≥4'-11". The area is calculated by measuring to the exterior dimensions of surfaces and walls.

(2) Half-Scope Spaces: Areas of the following spaces shall count as one-half scope when calculating "gross area":

- Balconies
- Porches
- Covered exterior loading platforms or facilities
- Covered but not enclosed passageways and walks
- Open stairways (both covered and uncovered)
- Covered ramps
- Interior corridors (Unaccompanied Enlisted Personnel Housing Only)

(3) Excluded Spaces: The following spaces shall be excluded from the "gross area" calculation:

- Crawl spaces
- Uncovered exterior loading platforms or facilities
- Exterior insulation applied to existing buildings
- Open courtyards
- Open paved terraces
- Uncovered ramps
- Uncovered stoops
- Utility tunnels and raceways
- Roof overhangs and soffits measuring less than 3'-0" from the exterior face of the building to the fascia

(4) Net Floor Area: Where required, "net area" is calculated by measuring the inside clear dimensions from the finish surfaces of walls. If required, overall "assignable net area" is determined by subtracting the following spaces from the "gross area":

- Basements not suited as office, special mechanical, or storage space
- Elevator shafts and machinery space
- Exterior walls
- Interior partitions
- Mechanical equipment and water supply equipment space
- Permanent corridors and hallways
- Stairs and stair towers
- Janitor closets
- Electrical equipment space
- Electronic/communications equipment space

RMS SUBMITTAL REGISTER INPUT FORM

CONTRACT NUMBER

DELIVERY ORDER

TITLE AND LOCATION

Button <-----Right click for Instructions

			TYPE OF SUBMITTAL											CLASSIFICATION						REVIEWING OFFICE					
SECTION	PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	01 - PRECON SUBMITTALS	02 - SHOP DRAWINGS	03 - PRODUCT DATA	04 - SAMPLES	05 - DESIGN DATA	06 - TEST REPORTS	07 - CERTIFICATES	08 - MFRS INSTRUCTIONS	09 - MFRS FIELD REPORT	10 - O&M DATA	11 - CLOSEOUT SUBMITTALS	FIO - FOR INFORMATION ONLY	GA - GOVERNMENT APPROVED	DA - DESIGNER OF RECORD APPROVAL	CR - CONFORMANCE REVIEW	DA / CR	DA / GA	DO - DISTRICT OFFICE	AO - AREA OFFICE	RO - RESIDENT OFFICE	PO - PROJECT OFFICE	DR - DESIGNER OF RECORD	AE - ARCHITECT / ENGINEER
00 72 00	52.236-13	Accident Prevention Plan	X														X				X				
00 73 00	1.11	Dev. From Accept. Design. No Deviation from Contract					X											X			X				X	
00 73 00	1.11	Dev. From Accepted Design - Deviates from Contract					X												X		X				X	
00 73 00	1.17	Supplemental Price Breakdown	X											X							X					
00 73 00	1.18	SSHO Qualifications	X												X						X					
01 10 00	5.2.3.1	(if concrete pavement) Joint Layout Plan with design drawings					X										X									
01 10 00	5.5.2	Building Envelope Sealing Performance Testing						X						X								X				
01 10 10	***	Tests as Req by Codes - DOR Develops Test Program						X						X								X			X	
01 10 00	5.8.3	BAS Review Information		X														X			X	X			X	
01 10 00	5.8.3	BAS Performance Verification Test						X						X								X			X	
01 10 00	5.8.4	Testing Adjusting and Balancing						X						X								X			X	
01 10 00	5.8.5	Commissioning						X						X								X			X	
01 10 00	6.15	Environmental As Required for Site Specific					X										X					X			X	
01 10 00	6.16	Permits as required for Site specific					X										X					X			X	
01 10 00	5.10.2	Fire Protection Tests						X	X					X								X			X	
01 32 01.00 10	3.4.1	Preliminary Project Schedule	X												X							X				
01 32 01.00 10	3.4.2	Initial Project Schedule	X												X							X				
01 32 01.00 10	3.4.3	Design Package Schedule	X												X							X				
01 32 01.00 10	3.6.1	Periodic schedule updates from the Contractor	X												X							X				
01 32 01.00 10	3.7	Time Extension Request (Schedule)	X												X							X				
01 33 00	1.8	Submittal Register - DOR Input Required	X												X							X			X	
01 33 00	1.8	Submittal Register Updates (Design Packages, etc.)	X												X							X			X	
01 33 00	1.3.1	Substitution of Manuf or Model Named in Proposal		X	X													X				X			X	
01 33 16	1.2	Identify Designer(s) of Record	X												X							X				
01 33 16	1.1.2 / 3.2.4	Fast Track Design Package(s)					X										X				X	X				
01 33 16	1.2	Identification of all Designers of Record	X														X					X				
01 33 16	3.2.1	Site and Utility Des Package, incl. Substantiation					X										X				X	X				
01 33 16	3.2.2/3.5	Interim Des Subm Package(s), incl. Substantiation					X										X				X	X				
01 33 16	3.5.1	Drawings					X										X				X	X				
01 33 16	3.5.2.2	Sitework Design Analyses					X										X				X	X				
01 33 16	3.5.2.3	Structural Design Analyses					X										X				X	X				
01 33 16	3.5.2.4	Security Design Analyses					X										X				X	X				
01 33 16	3.5.2.5	Architectural Design Analyses					X										X				X	X				
01 33 16	3.5.2.6	Mechanical Design Analyses					X										X				X	X				
01 33 16	3.5.2.7	Life Safety Design Analyses					X										X				X	X				
01 33 16	3.5.2.8	Plumbing Design Analyses					X										X				X	X				
01 33 16	3.5.2.9	Elevator Design Analyses (as Applicable)					X										X				X	X				
01 33 16	3.5.2.10	Electrical Design Analyses					X										X				X	X				
01 33 16	3.5.2.11	Telecommunications Design Analyses					X										X				X	X				
01 33 16	3.5.2.12	Cathodic Protection Design Analyses					X										X				X	X				
01 33 16	3.5.3	Geotechnical Investigations and Reports					X										X				X	X				
01 33 16	3.5.4	LEED Submittals					X										X				X	X				
01 33 16	3.5.5	Energy Conservation Documentation					X										X				X	X				
01 33 16	3.5.6	Specifications					X										X				X	X				
01 33 16	3.5.7	Building Rendering					X										X				X	X				
01 33 16	3.2.4/3.7	Final Des Submittal Package(s), incl. Substantiation					X										X				X	X				
01 33 16	3.7.5	DD Form 1354 (Transfer of Real Property)											X				X					X				
01 33 16	3.2.5/3.8	Design Complete Submittal Package(s)					X										X				X	X				
01 33 16	3.3.3	Design and Code Review Checklists					X										X				X	X				
01 33 16	A-2.0	SID - Interim and Final (as applicable)			X	X	X								X							X				
01 33 16	B-2.0	FFE (as Applicable)					X								X							X				
01 45 04.00 10	3.2	Design and Construction QC Plan	X														X					X				
01 57 20.00.10	1.2	Environmental Protection Plan	X														X					X				
01 78 02.00 10	1.2.1	Final as-Built Drawings											X		X											
01 78 02.00 10	1.2.7	Provide final as-built CADD and BIM Model files											X		X							X				
01 78 02.00 10	1.2.9	Provide scans of all other docs in Adobe.pdf format											X		X							X				
01 78 02.00 10	1.3.1	Equip-in-Place list of all installed equip and cost											X		X							X				
01 78 02.00 10	1.3.2	Data on equip not addressed in O&M manuals											X		X							X				
01 78 02.00 10	1.3.3	Final as-built specs - electronic files											X		X							X				
01 78 02.00 10	1.4.2.1	Warranty management plan - FAR 52.246-21											X		X							X				
01 78 02.00 10	1.4.2.1	Certificates of Warranty for extended warranty items											X		X							X				
01 78 02.00 10	1.4.2.1	Contractor's POCs for implementing warranty process											X		X							X				
01 78 02.00 10	1.4.2.1	List of each warranted equip, item, feature or system											X		X							X				
01 78 02.00 10	1.5	See also Section 01 10 00 par. 5.8.4 and 5.8.5											X		X							X				
01 78 02.00 10	1.6.1.2	Equipment O&M Manuals - 1 electronic / 2 hard copies											X		X							X				
01 78 02.00 10	1.7	Field Training DVD Videos										X		X								X				
01 78 02.00 10	1.8	Pricing of CF/CI and GF/CI Property											X	X								X				
01 78 02.00 10	1.11	List of Completed Cleanup Items											X				X					X				

RMS INPUT FORM 4288A

Export to RMS in CSV(MS-DOS) (*.csv) Format

Note: Reviewing Office Optional

National Pollutant Elimination Discharge System (NPDES)
Construction General Permit (CGP)
Ft. Benning, GA

TEMPLATE GUIDELINE
For Preparation of

Erosion, Sedimentation And Pollution Control Plan (ESPCP)

INSTRUCTIONS ON HOW TO USE THE TEMPLATE GUIDELINE

Introduction to the ESPCP Template Guideline:

Design Professionals responsible for developing a specific ESPCP (plan) for a construction activity taking place within the Ft. Benning installation boundary and regulated under Clean Water Act (CWA) NPDES and CGP **must** use this template as a basic outline for the development of the plan. This template has been prepared following the requirements described in Part IV of the GAR 100001 and it creates a standard and consistent plan easy to follow and review for content. The last update as of January 4, 2006 includes comments from the GSWCC Checklist (June 2005 Revision).

NOTE: *The template will probably require one more modification after the Ft. Benning NPDES Program Manager Plan attends the required NPDES training for plan reviewer.*

The Design Professional will replace underlined and/or highlighted text (Grey) = [_____] with information specific to the construction project as required. This template provides generic language as guidance and should be modified as necessary for the development of a site specific ESPCP. **Design Professional must cut-and-past text from this document into their existing plans.**

> ***Need to take into consideration that a plan that deviates from this template (content and order) will still be required to meet all the specific requirements identified in the CGP, and may increase the review process time frame prior to approval at the installation level.***

Guidance on what to provide or how to use the template is found throughout the document in highlighted text (Yellow). Notes for special or specific requirements are highlighted text (Bright green), and could/should be deleted after incorporating into the ESPCP drawings/notes (as applicable). The Design Professional should remove (as needed) these guidance statements from their final ESPCP. They are provided as a guide to ensure that required information is included in the plan. Highlighted text (Red) should be deleted if not needed.

The Operator/Contractor will be responsible for providing additional information (highlighted text (Turquoise)) identified in the ESPCP.

NOTE: *All certifications must be in design drawings*. As per GA EPD on January 3, 2005 coordination with Jan Sammons, GA EPD

> *As mandated by law, certification stating that the plan designer has visited the site prior to the design of the erosion and sediment control plans must be provided. This certification can be located under either the erosion or sediment control note, general notes or on the erosion and sediment control plan sheets.*

Current regulated projects under NPDES: The first steps in the consideration and development of an ESPCP are to determine the acreage of land disturbance and the type of permit required. Most of the Ft. Benning construction activities will be considered as a Stand Alone Construction Project regulated under General Permit No. GAR100001; in some occasions we may have an Infrastructure Construction Project, which will be regulated under General Permit No. GAR100002. Common Development Construction Project (General Permit No. GAR100003) is not likely to be used within the installation, however there is a possibility. During the NEPA Review & FB-144-R process, the Environmental Management Division will identify the type of CGP required for a particular project. (EMD). The

proponent and the Design Professional will follow instructions provided by the EMD office when developing the ESPCP.

NOTE: As of January 4, 2006, this template only meets GAR100001 requirements. Some minor changes need to be made to meet the GAR100002 requirements. Check with this office for any later version that includes GAR 100002 requirements.

For all projects that involve one (1) acre or more of land disturbance, an ESPCP will be developed and regulated to meet the GA CGP requirements to be in compliance with State and Federal laws. This includes the preparation of an ESPCP, and submission of a Notice of Intent (NOI), a Notice of Termination (NOT); as well as all required sampling and monitoring reports under the CGP.

The template must be incorporated into a regular size construction plan (drawings) or blue print (11" X 17" minimum, or 16" X 22"), approximately 3 to 5 pages or more (depending on the numbers of columns and letter size). You also need to consider that maps, diagrams, drawings and other BMP descriptions need to be incorporated into the design of the ESPCP.

Future regulated projects under NPDES: For those projects that are less than one (1) acre, the NPDES requirements under the State and Federal laws does not require the submission of NOI, NOT and related sampling and monitoring reports. However, local regulations at Ft. Benning require the implementation of certain Best Management Practices (BMS) to control soil erosion and sedimentation, as well as pollution prevention measurements to mitigate the effects of pollutants into soil and water resources and air releases.

Under the GA Phase II of the CWA-NPDES rule, Ft. Benning has been designated as a Municipal Separate Storm Sewer System (MS4) regulated facility. This will require Ft. Benning to develop a Storm Water Management Plan (SWMP) that will address construction activities within the installation. Two of the Minimum Control Measurements (MCM) required under this SWMP will be dealing with construction activities:

Construction Site Runoff Control, and Post-Construction Storm Water Management.

The development of an ESPCP as described in this template will meet the local requirements for Ft. Benning under the MS4 requirements.

2/12/07 For development projects to be covered under GAR 100003, see Microsoft Word document:

GAR 100003 Secondary and Tertiary Permittee NPDES Requirements Sheet.doc

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NOTE:

ESPCP Template - Updates: Date & Summary

February 12, 2007 – Felix Seda GAR 100003 NPDES Permit Requirements

January 18, 2007 – Felix Seda

1. Clean Air Act Requirements - GAa Rule 391-3-1-.02(2)(n) [Du] / Fugitive Dust Control
2. Hazardous Waste management

September 26, 2006 – Felix Seda, NPDES Program Manager

1. GASWC Checklist.
2. Part V
3. Part VI - NOT
4. NOT requirements – final stabilization note.

Note: All changes after the previous 4/24/06 revision are noted with blue letters.

National Pollutant Elimination Discharge System (NPDES)
Construction General Permit (CGP)
Ft. Benning, GA

REVIEW, APPLICATION AND SUBMITTAL PROCESS
DESIGN PROFFETTIONAL AND PRIMARY PERMITTE (OPERATOR)

Ft. Benning Internal Review Process: During the project design phase and prior to awarding a project to a contractor, the ESPCP must be reviewed by the Ft. Benning Environmental Management Division (EMD), NPDES Program Manager for content review of the plan to ensure design meets requirements described in Part IV of the GAR 100001 and or appropriate GAR.

Some projects will require coordination and review by the Ft. Benning DPW Engineer Division for technical review prior to final signature.

It is the Design Professional responsibility to develop the specific ESPCP (plan) for a construction activity-taking place at Ft. Benning that meets the requirements described in Part IV of the GAR 100001. Projects not meeting these requirements will not be approved for implementation.

By December 31, 2006, all persons involved in Plan preparation shall have completed the appropriate certification course, pursuant to 12-7-19 (b), approved by the State Soil and Water Conservation Commission. The designer's certification number issued by the Georgia Soil and Water Conservation Commission must be included on the plan. The plan must also contain the signature and seal of the qualified plan designer on all erosion and sediment control sheets.

If the design professional has not completed such certification course, the plan will not be approved for submission and/or implementation at the installation level.

GA EPD will not review a plan without proper signatures.

For additional information and/or guidance call (706) 545-9879 or 4203.

Application Process: Prior to any submission to the State, all documentation and/or reports to be submitted as described below in accordance to the NPDES CGP must be coordinated and revised though the Ft. Benning Environmental Management Division (EMD), NPDES Program Manager. For additional information and/or guidance call (706) 545-9879 or 4203.

All written correspondence required under NPDES permit shall be submitted by *return receipt certified mail* (or similar service) to the appropriate District Office of the EPD according to the schedule in Appendix A of this permit and as per instructions bellow for all Ft. Benning projects.

Copies of all these documentation (certified mail, return receipt, UPS Delivery Confirmation, Payment Fee and Check, etc) must be submitted to:

Mr. Felix Seda,
DPW - Environmental Management Division,
Building 6, Room 310,
Ft. Benning GA 31905
(706) 545-9879

Primary Permittee (Operator/Contractor): A single Notice of Intent (NOI) for the Primary Permittee (the Owner (USAIC-DPW) and the Operator (contractor)) shall be signed in accordance with Part V.G. of the CGP and shall include the information listed under GAR 100001 - Part II.B.1.

The Primary Permittee (Operator/Contractor) will submit **"ORIGINAL"** NOI and ESPCP (***original signature*s**) in accordance with the requirements of Part IV of the CGP at least fourteen (14) days prior to the commencement of construction activities to:

West Central District Office
Georgia Environmental Protection Division
2640 Shurling Drive
Macon, GA 31211-3576

Note: Ft. Benning is located within an area with no local issuing authority, therefore in accordance to GAR 100001 Part IV.A.6.a.(i) and (ii), **"copies"** of the NOI and ESPCP are also require to be submitted to the following two address:

Water Protection Branch
ATTN: Jennifer Hackney
PO Box 3250
Cartersville, GA 30120

NOTE: New address as of 12/16/05
(770) 387-4900

Water Protection Branch
[redacted]

Note: Old address as of 12/16/05

&

Harvey Milner
Pine Mountain Soil & Water Conservation District
8558 Liberty Hall Dr.
Midland, GA 31820
(706) 326-6670

Note: New address as of 02/28/06

OR

District 5 Soil Water Conservation
[redacted]

Note: Alternative address.

Notice of Termination (NOT): The Primary Permittee (Operator/Contractor) is responsible to submit a NOT in accordance to GAR 100001 - Part VI.

Construction Land Disturbance Fees: The Primary Permittee (Operator/Contractor) will submit applicable fees in accordance with Rules and Regulations for Water Quality Control (Rules) promulgated by the Board of Natural Resources. By submitting an NOI for coverage under this permit the Primary Permittee (Operator/Contractor) agrees to pay any fees required, now or in the future, by such Rules authorized under O.C.G.A. Section 12-5-23(a)(5)(A), which allows the Board of Natural Resources to establish a fee system. Fees shall be paid in accordance with such Rules and utilizing the NPDES General Permit Fee Form.

Note: Ft. Benning is located within an area with no local issuing authority. The entire construction land disturbance fee of $80.00 per disturbed acre is to be mailed to:

EPD- Construction Land Disturbance Fees.
P.O. Box 932858
Atlanta, GA 31193-2858

Fee: _____(per disturbed acres) x $80.00 = $ _____

Note: The following POC information to be used as needed in the event that fee form is mailed with no return receipt.

Erosion, Sedimentation And Pollution Control Plan (ESPCP)

National Pollutant Elimination Discharge System (NPDES)
Construction General Permit (CGP) Permit No.

___ **GAR 100001** ___ **GAR 100002** ___ **GAR 100003**

for

"Project Title"
Ft. Benning GA, 31905

Erosion, Sedimentation And Pollution Control Plan (ESPCP)

CERTIFICATION:

"I certify that the permittee's Erosion, Sedimentation and Pollution Control Plan (ESPCP) provides for an appropriate and comprehensive system of best management practices required by the Georgia Water Quality Control Act and the document "Manual for Erosion and Sediment Control in Georgia" (Manual) published by the State Soil and Water Conservation Commission as of January 1 of the year in which the land-disturbing activity was permitted, provides for the sampling of the receiving water(s) or the sampling of the storm water outfalls and that the designed system of best management practices and sampling methods is expected to meet the requirements contained in the General NPDES Permit No. GAR 100001." (GAR 100001 - Part IV, 2nd paragraph)

"I certify under penalty of law that this ESPCP was prepared after a site visit to the locations described herein by myself or my authorized agent, under my direct supervision." (GAR 100001 - Part IV, 3rd paragraph, see also 391-3-7.10)

Name: _____ Title: _____

SEAL

Certification Number: _____

Signature: _____ Date: _____

Design Professional Inspection and/or Delegation of Authority:

As per GAR 100001 - Part IV, A.7. an inspection of the installation of the control measures (BMPs) by the design professional must be conducted within seven (7) days after the initial construction activities commence. This inspection shall determine if the identified BMPs have been installed and are being maintained as designed. The results of the inspection shall be submitted to the Primary Permittee (Owner and Operator/Contractor) within seven (7) days and the Primary Permittee (Operator/Contractor) must correct all deficiencies within two (2) business days of receipt of the inspection report; unless weather related site conditions are such that additional time is required.

Under the above certification, I (_Name of Design Professional_):

__ agree to conduct the require inspection.
__ agree and delegate to the following alternative design professional to conduct the require inspection.

Name: _____ Title: _____

NOTE: As mandated by law, certification stating that the plan designer has visited the site prior to the design of the erosion and sediment control plans must be provided. This certification can be located under either the erosion or sediment control note, general notes or on the erosion and sediment control plan sheets.

Erosion, Sedimentation And Pollution Control Plan (ESPCP)

Primary Permittee (Operator/Contractor) Information:

Owner: U.S. Army Infantry Center, Directorate of Public Works (DPW), Fort. Benning.

Owner's Name: Mr. Craig Taylor, DPW Director, Phone # (706) 545-3155
Address: Burr Street, Building 6, Room 318, Fort. Benning, GA 31905

Facility Contact: Mr. Felix Seda, DPW Environmental Management Division; Phone # (706) 545-9879
Address: Burr Street, Building 6, Room 310, Fort. Benning, GA 31905

Operator/Contractor: _____.

Name and phone number of 24-hour local erosion and sediment control contact: _____.

Note: Implementation of the ESPCP and all the requirements described bellow are the responsibility of the Operator/Contractor (Primary Permittee) identified for this project, as delegated by the U.S. Army Infantry Center, Directorate of Public Works, Ft. Benning under contract.

Secondary Permittee (only for common developments):

Operator: _____

Operator: _____

Erosion, Sedimentation And Pollution Control Plan (ESPCP): Provide revision and/or initial date on plans.

The initial plan date should be shown on all pages. With each resubmittal, the revision date and entity requesting revisions (Ft. Benning, DPW, EMD, COE, Proponent, etc.) should be shown on front sheet and each sheet that has been revised.

Date	Description	Initials

1. Site Description (GAR 100001 - Part IV, D, 1, a-f)

a. Description of the nature of the construction activity: _____

Note: Provide description of existing land use at project site and description of proposed project. Describe critical areas and what extra measures will be utilized for these areas.

The description of existing land use, description of proposed project and the description of critical areas should be included in the plan's erosion and sediment control notes. Critical areas may include crossing state waters, disturbance inside buffer if the work being done is exempt or a variance is obtained, wetlands, neighboring property to which the project site drains, etc.

GPS Location of Construction Exit: _____ [degrees/minutes/seconds] (*information needed for NOI*)

Provide vicinity map showing site's relation to surrounding area, including 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.*

b. Description and chart or timeline of construction schedule: _____

Insert Chart/Table

Note: Provide detailed construction activity schedule – show anticipated starting and completion dates for project events, include vegetation and mulching timeline.

A detailed construction activity schedule should be located on either the cover sheet, or on the erosion and sediment control plan. The schedule must include starting and completion dates of the project or phases under construction, initial erosion control BMPs installation, intermediate erosion control BMPs, final phase erosion and sediment control BMPs, and maintenance of erosion and sediment control practices. Other events noted on the schedule include demolition, clearing and grubbing, grading, storm and sanitary sewer installation, paving, building construction, etc.

c. Total site acreage and Total disturbed acreage: *The total acreage and the total estimated disturbed acreage of the project or phase under construction must be shown under either the erosion and sediment control notes, general notes or on the E&SC plan. The estimated total disturbed area must include disturbances by the primary permittee and all secondary permittees under the NPDES Permit.*

Total site acreage: _____
Total disturbed acreage: _____

d. Hydrology (peak flows or runoff coefficients for pre and post development); Description of soil or quality of discharge: _____

Specific Notes:

- Delineate contributing drainage areas, with acreage, both on and off site. Include 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.*

- Include soil series and their delineation. *Soil series delineations are required for the plan review. The highest level of soil survey required for the site, such as a level three or level four for septic tanks, must be delineated on the plan. The soil series delineation should be shown on the existing site plan.*

e. Site Map (see Template # ___ and/or figure# ___) showing:

1) Drainage patterns
2) Approximate proposed slopes
3) Areas of soil disturbance
4) Areas not to be disturbed
5) Erosion controls identified in the ESPCP (structural and non-structural)
6) Locations of areas where stabilization practices are expected
7) Surface waters including wetlands
8) Locations where stormwater discharges to surface waters

Special Notes for all drawings:

- Show graphic scale and north arrow on all plan sheets.

- Delineate all state waters located on or within 200 feet of the project site. ***ALL STATE WATERS LOCATED ON OR WITHIN 200 FEET OF THE PROJECT SITE MUST BE DELINEATED.*** *If the plan reviewer visits the site and finds possible state water on or within 200 feet of site that is not shown on the plan, the review could be delayed until state waters are determined by the Local Issuing Authority, in the case of Fort. Benning, by GA EPD in Atlanta*

- Show location of erosion and sediment practices *for all phases* using uniform coding symbols from the Manual for Erosion and Sediment Control in Georgia, Chapter 6, with legend.

- Delineate 25-foot undisturbed buffers of state waters and 50-foot buffers along designated trout streams. Clearly note areas of impact. *Any undisturbed buffer area that is impacted by the project site must be noted on the plan and in the hydrology narratives.*

- Show limits of disturbance on E&SC plan. *Limits of disturbance must be shown on plan for all phases including all disturbances on and off the site. Disturbances off site should include sanitary and/or drainage line easements, temporary access easements, etc .*

- Provide both existing and planned contours with contour lines drawn at an interval in accordance with the following:

Map Scale	Ground Slope	Contour Interval, ft.
1 inch = 100 ft. or	Flat 0-2%	0.5 or 1
Larger scale	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 intervals shown on plan. The intermediate phase should show the proposed grade in bold contours with the above intervals overlaying the original contours. Both the existing and proposed contours must be labeled.

f. Receiving Water Bodies and aerial extent of wetland acreage at the site: _____

Note: Identify by name the project receiving waters (any streams, rivers, lake, etc.) and describe adjacent areas – neighboring areas such as streams, lakes, residential areas, etc., which might be affected *by the post-development runoff from the site*.

Additional Requirements:

Potential Environmental Impacts (GAR 100001 - Part IV (iii) [second paragraph]; and Ft. Benning Requirements under AR 200-1. Refer to Ft. Benning FB-144-R Record of Environmental Consideration (REC) # _____ for proper identification of the following areas:

a. Pollutant Sources (existing and proposed):

(1) Vehicle and/or equipment leaks, as well as from any unexpected accidents.
(2) Storage, handling and/or transportation of hazardous materials/chemicals.
(3) Loading/unloading and/or refueling/transferring operations of heavy equipment and any other fuel operated equipment (generators, pumps, chainsaws, etc.) to include the use of fuel tanks and any other type of dispensers (as applicable).
(4) Asphalt and concrete operations.

Spill Prevention, Control and Countermeasure (SPCC) Requirements: During the implementation (construction/operation) phase(s) of this project, the contractor and/or proponent must have a SPCC plan, and follow all Ft. Benning and Department of Transportation (DOT) Regulations associated with transportation of any hazardous materials. Storage of hazardous material/chemicals and waste must comply with Ft. Benning regulations, including secondary containment as required. A hazardous material inventory and MSDS should be kept on record at all times. The inventory must include all petroleum products, chemical, herbicides, pesticides, fertilizers, detergents, paints and any other hazardous substances used and/or stored by the contractor/proponent on Ft. Benning. Drip pans should be available for vehicles and equipment to prevent oil and other petroleum products from spilling onto the soil or water. Secondary containment is required for any refueling/transferring activities.

Storage areas for hazardous materials/chemicals/waste should be designed to allow for secure product storage, to provide secondary containment, and covered. See attached general prevention measurements CHECKlist to meet SPCC requirements and inspection requirements. Contractor to implement CHECKlist or similar plan to meet SPCC requirements.

All spills will be cleaned up immediately upon discovery.

NOTE: If above ground storage of POL products exceeds 1,320 gallons, counting container 55 gallons or larger; an SPCC Plan at the State level will be required. ***This will be the responsibility of the contractor who is actually conducting the construction phase.*** Other wise, local SPCC requirements will be required as described above.

b. Impaired Waters (Georgia 303(d) list): _____

c. Protected Species (DNR manuals - or assessment reports): _____

d. Wetlands (delineation reports and wetland inventory maps): _____

Stream Buffer Requirements: As applicable for this project, refer to GAR 100001 - Part IV (i), (ii) and (iii) to address this requirement. _____.

Note: Delineate 25-foot undisturbed buffers of state waters and 50-foot buffers along designated trout streams. Clearly note areas of impact.

Any undisturbed buffer area that is impacted by the project site must be noted on the plan and in the hydrology narratives.

2. Controls: Installation of Erosion Controls (GAR 100001 - Part IV, D, 2,). Description of stabilization measures such as: Phase E&SC plans into an initial perimeter control E&SC plan, intermediate E&SC plan for grading and drainage and a final phase E&SC plan. *Each phase of the plan should be shown on a separate page.*

The ESPCP will include appropriate staging and access requirements for construction equipment.

Show limits of disturbance on E&SC plan. *Limits of disturbance must be shown on plan for all phases including all disturbances on and off the site. Disturbances off site should include sanitary and/or drainage line easements, temporary access easements, etc .*

Clearly note this 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."**

This statement must be included under erosion and sediment control notes, general notes, or on the erosion and sediment control plan sheet or sheets.

- **Initial perimeter control BMPs:** _____.
-

The initial phase should show all BMPs necessary to prevent sediment from leaving the project site during the beginning of the project and any tree-save fencing that may be required. These practices should include construction exits, silt fence, etc. shown with the existing contours.

Clearing Phase Erosion Control Notes:
_____
_____
_____

- **Intermediate grading and drainage BMPs:** _____.

The intermediate phase should include all BMPs necessary to prevent sediment from leaving the site and the required 67 cubic yards per acre sediment storage. These should include temporary sediment basins, retrofitted detention ponds, check dams, temporary down drains, diversions, inlet protection, temporary grassing, mulching, etc.

Grading Phase Erosion Control Notes:
_____
_____
_____

- **Final BMPs:** _____.

The final phase plan should include such practices as outfall protection, revised inlet protection, permanent grassing, matting, etc..

Final Phase Erosion Control Notes:
_____
_____
_____

Note for Final Phase BMPs: In compliance with NPDES Permit GAR 100001, 100002, 100003, which ever permit this project fall, it should be understood that a Notice of Termination (NOT) will not be processes until the following standard has been met: a. **100%** of the soil surface (disturbed areas) is uniformly **coverage in permanent vegetation**; b. Permanent vegetation with a **density of 70%** or greater; c. or equivalent **permanent stabilization measures** (such as the use of rip rap, gabions, permanent mulches or geotextiles) have been used.

Permanent vegetation should consist of: planted tress, shrubs, perennial vegetation appropriate for the time of the year and region; or a crop of annual vegetation and a seeding of target crop perennials appropriate for the region.

a. Erosion and Sediment Controls:

(1) Description of stabilization measures: _____. Except as provided in GAR 100001 – Part IV.D.2.(a).(1).(a). and (b), stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. See Template # ___ and/or figure# ___).

Clearly note the following statement: **"Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."**

This statement must be shown on the erosion and sediment control notes, general notes, or on the erosion and sediment control sheets of the plan.

Show limits of disturbance on E&SC plan.

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

A vegetative plan must be shown on either the erosion and sediment control plan or the erosion and sediment details. The plan must include all temporary and permanent species with planting dates and seeding, fertilizer and mulching rates that are site specific to the appropriate time of year and geographical region of Georgia.

Stabilization Measures - Erosion Control Notes:
_____
_____
_____

(2) Description of structural practices: _____. ***All BMPs shall be installed IAW the Manual for Erosion and Sediment Control in Georgia. All specifications incorporate by reference into this ESPCP.*** See Template # ___ and/or figure# ___).

Notes: Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet 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 drawings shown must, at a minimum, meet the guidelines given in the Manual.

Structural Practices - Erosion Control Notes:
_____
_____
_____

(3) Sediment basin information: _____. As applicable - provide written rationale explaining the decision not to use sediment basins.

Note: Provide 67 cubic yards per acre sediment storage. Include specific design information and calculations for structural measures on site. Sites with more than 10 total acres must have a temporary sediment basin.

The project or phase under construction must provide 67 cubic yards per acre of the entire drainage basin sediment storage. Sediment storage may be obtained through the use of excavated inlet protection, retrofitted detention ponds or temporary sediment basins. Sites with 10 or more acres disturbed must have a retrofitted detention pond or temporary sediment basin. Specific design

information, calculations and completed worksheets provided in the manual must be included on the erosion and sediment control plan or erosion and sediment control detail sheet.

(4) High performance BMPs: _____. See Template # ___ and/or figure# ___).

b. Storm water management: A description of measures that will be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. _____

(1). Such practices may include: storm water detention structures (including wet ponds); storm water retention structures; flow attenuation by use of open vegetated swales and natural depressions; infiltration of runoff on-site; and sequential systems (which combine several practices). _____. *Explain the technical basis used to select the practices to control pollution where flows exceed pre-development levels*. See Template # ___ and/or figure# ___).

(2) Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel for the purpose of providing a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected [e.g. no significant changes in the hydrological regime of the receiving water(s). _____

Note: Show storm-drain pipe and weir velocities and provide appropriate outlet protection to accommodate discharges without erosion.

Provide a chart of storm-drain and weir velocities. Appropriate outlet protection to accommodate discharges without erosion must be provided. Calculations, stone size and dimensions and any worksheets must be shown on either erosion and sediment control plan or erosion and sediment control details.

c. Other controls:

(1). Waste disposal. Solid materials, including building materials, shall not be discharged into waters of the State. Permitte will follow Ft. Benning requirements identified in the FB-144-R, REC # _____; and incorporated by reference Contract Specification # _____.

(a) ***The contractor shall select a designated waste collection area and provide lids for waste containers***. Construction waste shall be removed on a consistent schedule.

(b) Ensure all wastewater from construction activities and or cleaning operations are discharged into the sanitary sewer system, not storm water sewer system. Do not discharge any wastewater into storm drains. Collect wastewaters for proper disposal, and/or coordinate with appropriate sewer facilities to ensure cleaning operations would not affect plant operations if wastewaters were discharges into sewer lines.

(2). Off-site vehicle tracking of dirt, soils, and sediments and the generation of dust shall be minimized or eliminated to the maximum extent practicable. Vehicle washing within the construction site is subject to monitoring.

(a) Clean Air Act Requirements - Ga Rule 391-3-1-.02(2)(n) [Du] / Fugitive Dust Control. POC: Ms. Polly Gustafson (706) 545-7576.

1. All persons responsible for any operation, process, handling, transportation or storage facility which may result in fugitive dust shall take all reasonable precautions to prevent such dust from becoming airborne. some reasonable precautions which could be taken to prevent dust from becoming airborne include, but are not limited to, the following:

(i) Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;
(ii) Application of asphalt, water, or suitable chemicals on dirt roads, materials, stockpiles, and other surfaces which can give rise to airborne dusts;
(iv) Covering, at all times when in motion, open bodied trucks, transporting materials likely to give rise to airborne dusts;
(v) The prompt removal of earth or other material from paved streets onto which earth or other material has been deposited.

2. The percent opacity from any fugitive dust source listed in paragraph (2)(n)1. above shall not equal or exceed 20 percent.

(3). Primary Permittee (Operator/Contractor) shall ensure and demonstrate that their ESPCP is in compliance with applicable State and local waste disposal, sanitary sewer or septic system regulations. Permitte will follow Ft. Benning requirements identified in the FB-144-R; REC # _____; and incorporated by reference Contract Specification # _____.

(a) Sanitary and septic waste include on-site sanitary facilities; location of these facilities shall be out of high flow areas, regular servicing by a qualified domestic waste hauler is required.

(4). To ensure best management practices for the remediation of all petroleum spills and leaks are suitable, the Primary Permittee (Operator/Contractor) shall provide and implement the following Ft. Benning Installation Spill Contingency Plan (ISCP) Requirements under AR 200-1 requirements. This will also meet GAR 100001 -Part III.B.1. & 2.; Part IV. (iii) [second paragraph]; D.2.c.(1), (3) & (4); Part IV.D.3.(1).

(a) Description of measurements to reduce/prevent/minimize spill/releases of hazardous materials stored and used at the site during construction activities. ***Contractor to describe specific measurements at the site.***

(b) Location of hazardous materials storage areas; including tanks and refueling operations. ***Contractor to describe specific measurements at the site and to show location in map.***

(c) Emergency response and clean-up procedures. All spills will be cleaned up immediately upon discovery. Contractor is responsible to coordinate all emergency response actions at the site, to include removal and disposal of contaminated materials. The contractor should also notify the Environmental Management Division at Ft. Benning of all spill/releases and all corrective actions taken after a spill/release at (706) 317-6584 (24 Hours) or (706) 545-9879 (business hours). For Emergency assistance from the Fire Department contact 911.

(d) Description of measurements to manage hazardous waste (RCRA and TSCA) generated during construction activities. Contractor must follow the Ft. Benning Hazardous Waste Management Plan (HWMP). POC: Mr. Ted Williams (706) 545-7579. ***Contractor to describe specific measurements at the site.***

3. Inspection Requirements (GAR 100001 - Part IV, D, 3). For record keeping, the Primary Permittee (Operator/Contractor) may choose to meet the requirements of this section by utilizing Ft. Benning NPDES inspection checklist and/or any other company data collection system as long as all the requirements are met.

The primary permitte (Operator/Contractor) is responsible for providing a "Qualified Personnel" as described in GAR 100001 – Part I.B.31. to conduct such inspections.

a. Permitte Requirements:

(1). Each day when any type of construction activity has taken place at a Primary Permittee (Operator/Contractor)'s site, qualified personnel shall inspect: (a) all areas where petroleum products are stored, used, or handled for spills and leaks from vehicles and equipment; (b) all locations where vehicles enter or exit the site for evidence of off-site sediment tracking; and (c) measure rainfall once each twenty-four hour period at the site. These inspections must be conducted until an NOT is submitted.

(2). Qualified personnel shall inspect at least once every seven (7) calendar days and within 24 hours of the end of a storm that is 0.5 inches or greater the following: (a) disturbed areas of the construction site that have not undergone final stabilization; (b) areas used for storage of materials that are exposed to precipitation that have not undergone final stabilization; and (c) structural control measures. Erosion and sediment control measures identified in the ESPCP applicable to the Primary Permittee (Operator/Contractor)'s site shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s). For areas of a site that have undergone final stabilization, the Primary Permittee (Operator/Contractor)must comply with Part IV.D.3.a.(3). These inspections must be conducted until an NOT is submitted.

(3). Qualified personnel shall inspect at least once per month during the term of this permit (i.e., until an NOT is received by EPD) the areas of the site that have undergone final stabilization. These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and the receiving water(s). Erosion and sediment control measures identified in the ESPCP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s).

(4). Based on the results of each inspection, the site description and the pollution prevention and control measures identified in the ESPCP shall be revised as appropriate not later than seven (7) calendar days following each inspection. Implementation of such changes shall be made as soon as practicable but in no case later than seven (7) calendar days following each inspection.

(5). A report summarizing the scope of each inspection and the name(s) of personnel making each inspection, the date(s) of each inspection, major observations relating to the implementation of the ESPCP and actions taken in accordance with Part IV.D.3.a.(4) of the permit shall be made and retained at the site or be readily available at a designated alternate location until the entire site or that portion of a construction project that has been phased has undergone final stabilization and an NOT is submitted to EPD. Such reports shall identify any incidents of non-compliance. Where the report does not identify any incidents of non-compliance, the report shall contain a certification that the facility is in compliance with the ESPCP and this permit. The report shall be signed in accordance with Part V.G. of this permit.

4. Maintenance of Erosion Controls (GAR 100001 - Part IV, D, 4): Provide a description of procedures to ensure the timely maintenance of vegetation, erosion and sediment control measures and other protective measures identified in the site plan in good and effective operating condition.

_____

Clearly note maintenance statement – **"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."**

This maintenance statement must be shown on the erosion and sediment control notes, general notes, or on the erosion and sediment control sheets of the plan.

Maintenance Procedures Notes:
_____
_____
_____

5 Sampling Requirements (GAR 100001 - Part IV, D, 5.): Monitoring of nephelometric turbidity in receiving water(s) or outfalls in accordance with this permit.

a. Sampling Requirements (GAR 100001 - Part IV, D, 5, a.):

(1) Topographic map with scale equal to or more detailed than 1:24000 (see Template # ___ and/or figure# ___) showing the location of construction site:

(a) the location of all perennial and intermittent streams and other water bodies; and all other perennial and intermittent streams and other water bodies located during mandatory field verification, into which the storm water is discharged and
(b) the receiving water and/or outfall sampling locations. Symbol: SP-# (see ESPCP Section 5.c)

(2) Narrative of site-specific analytical method. To include:

(a) Sample collection method for each location (See GAR 100001 - Part IV, D, 5, b & c.) : _____. For grab sample - see ESPCP Section 5.b.
(b). Analytical method including quality assurance/quality control procedures: _____

The primary permittee (Operator/Contractor) is responsible for providing a "Qualified Personnel" as described in GAR 100001 – Part I.B.31. to conduct such sampling and to ensure quality assurance/quality control procedures are implemented at all times.

(3) Rationale for allowable NTU limits concentration for outfalls (selected from Appendix B). This rationale must include the size of the facility or stand alone construction, the calculation of the size of the surface water drainage area, and the type of receiving water(s) (i.e. trout stream or supporting warm water fisheries). See ESPCP Section 5.c. (1) (c). for calculations: _____ NTU limit.

NOTE: Rationale for representative streams (Required only for infrastructure projects – see GAR 100002 - Part IV, D, c, (2))

b. Sample Type: All sampling shall be collected by “grab samples" and the analysis of these samples must be conducted in accordance with methodology and test procedures established by 40 CFR Part 136 (unless other test procedures have been approved); the guidance document titled "NPDES Storm Water Sampling Guidance Document, EPA 833-B-92-001" and guidance documents that may be prepared by the EPD.

c. Sampling Points (SP)

(1). Primary Permittee (Operator/Contractor) must sample all receiving water(s), or all outfall(s), or a combination of receiving water(s) and outfall(s). Samples taken for the purpose of compliance with this permit shall be representative of the monitored activity and representative of the water quality of the receiving water(s) and/or the storm water outfalls using the following minimum guidelines:

(a). The upstream sample for each receiving water(s) must be taken immediately upstream of the confluence of the first storm water discharge from the permitted activity (i.e., the discharge farthest upstream at the site) but downstream of any other storm water discharges not associated with the permitted activity. Where appropriate, several upstream samples from across the receiving water(s) may need to be taken and the arithmetic average of the turbidity of these samples used for the upstream turbidity value.

(b). The downstream sample for each receiving water(s) must be taken downstream of the confluence of the last storm water discharge from the permitted activity (i.e., the discharge farthest downstream at the site) but upstream of any other storm water discharge not associated with the permitted activity. Where appropriate, several downstream samples from across the receiving water(s) may need to be taken and the arithmetic average of the turbidity of these samples used for the downstream turbidity value.

(c). Ideally, the samples should be taken from the horizontal and vertical center of the receiving water(s) or the storm water outfall channel(s).

A total of _____ (#) sampling points (receiving waters or outfalls) have been identified for this construction activity; and are identified in Template # ___ and/or Figure# ___. Sample Point locations are identified as follow:

Sample Point # 1 Location: (SP-1) – ___ (disturbed acres) / ___ (surface drainage square miles)= ___ NTU Value.
Sample Point # 2 Location: (SP-2) – ___ (disturbed acres) / ___ (surface drainage square miles)= ___ NTU Value.
Sample Point # _ Location: (SP-_) – ___ (disturbed acres) / ___ (surface drainage square miles)= ___ NTU Value.

d. Sampling Frequency (GAR 100001 - Part IV, D, 5, d.)

(1). The Primary Permittee (Operator/Contractor) must sample in accordance with the ESPCP at least once for each rainfall event described below. For a qualifying event, samples must be taken within forty-five (45) minutes of:

(a) the accumulation of the minimum amount of rainfall for the qualifying event, if the storm water discharge to a monitored receiving water or from a monitored outfall has begun at or prior to the accumulation, or

(b) the beginning of any storm water discharge to a monitored receiving water or from a monitored outfall, if the discharge begins after the accumulation of the minimum amount of rainfall for the qualifying event.

(2). However, where manual and automatic sampling are impossible (as defined in the CGP), or are beyond the permittee’s control, the Primary Permittee (Operator/Contractor)shall take samples as soon as possible, but in no case more than twelve (12) hours after the beginning of the storm water discharge.

(3). Sampling by the Primary Permittee (Operator/Contractor) shall occur for the following events:

(a). For each area of the site that discharges to a receiving stream, the first rain event that reaches or exceeds 0.5 inch and allows for monitoring during normal business hours (Monday thru Friday, 8:00 AM to 5:00 PM and Saturday 8:00 AM to 5:00 PM when construction activity is being conducted by the Primary (Operator/Contractor) that occurs after all clearing and grubbing operations have been completed in the drainage area of the location selected as the sampling location;

(b). In addition to (a) above, for each area of the site that discharges to a receiving stream, the first rain event that reaches or exceeds 0.5 inch and allows for monitoring during normal business hours that occurs either 90 days after the first sampling event or after all mass grading operations have been completed in the drainage area of the location selected as the sampling location, whichever comes first;

(c). At the time of sampling performed pursuant to (a) and (b) above, if BMPs are found to be properly designed, installed and maintained, no further action is required. If BMPs in any area of the site that discharges to a receiving stream are not properly designed, installed and maintained, corrective action shall be defined and implemented within 2 business days, and turbidity samples shall be taken from discharges from that area of the site for each subsequent rain event that reaches or exceeds 0.5 inch during normal business hours* until the selected turbidity standard is attained, or until post-storm event inspections determine that BMPs are properly designed, installed and maintained.

NOTES:

Permittees do not have to sample sheetflow that flows onto undisturbed natural areas or areas stabilized by the project as described in GAR 100001, Part IV.D.5.c.(1) (g).

* Note that the permittee may choose to meet the requirements of (a) and (b) above by collecting turbidity samples from any rain event that reaches or exceeds 0.5 inch and allows for monitoring at any time of the day or week.

Monitoring reports requirements after sampling are taken are described in Section E of this ESPCP.

6. Non-storm water Discharges (GAR 100001 - Part IV, D, 6). Except for flows from fire fighting activities, sources of non-storm water listed in GAR 100001 - Part III.A.2. of this permit that are combined with storm water discharges associated with construction activity must be identified in the ESPCP. The ESPCP shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

Description of all non-stormwater discharges including pollution prevention practices required to prevent discharges of pollutants to surface water. Address all existing and proposed pollutant sources: _____.

See ESPCP Section 2.c. for other controls to prevent/control/minimize pollution from construction activities.

E. Reporting (GAR 100001 - Part IV, E).

1. The permitte is required to submit a summary of the monitoring results to the EPD at the address shown in GAR 100001 - Part II.C. by the fifteenth day of the month following the reporting period. Reporting periods are months during which samples are taken in accordance with this permit. Sampling results shall be in a clearly legible format. Upon written notification, EPD may require the applicable permittee to submit the sampling results on a more frequent basis. Sampling and analysis of any storm water discharge(s) or the receiving water(s) beyond the minimum frequency stated in this permit must be reported in a similar manner to the EPD. The sampling reports must be signed in accordance with Part V.G. Sampling reports must be submitted to EPD until such time as an NOT is submitted in accordance with Part VI.

2. Primary Permittee (Operator/Contractor) must retain copies of all monitoring results reported in accordance with GAR 100001- Part IV.E . All monitoring information shall meet the requirements specified on GAR 100001 - Part IV.E.2

3. Retention of Records.

a. The Primary Permittee (Operator/Contractor) shall retain a copy of the ESPCP required by this permit at the construction site or the ESPCP shall be readily available at a designated alternate location from the date of project initiation to the date of final stabilization. Primary Permittee (Operator/Contractor)s are encouraged to post copies of their NOI, Erosion, Sedimentation & Pollution Control Plan, sampling results, inspection reports, etc. on or in a permit board at the construction exit to facilitate inspections by local issuing authorities and EPD.

b. Copies of all NOI, NOT, reports, plans, monitoring reports, monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, ESPCP, records of all data used to complete the NOI to be covered by this permit and all other records required by this permit shall be retained by the Primary Permittee (Operator/Contractor)who either produced or used it for a period of at least three years from the date that the site is finally stabilized. These records must be maintained at the permittee's primary place of business once the construction activity has ceased at the permitted site. This period may be extended by request of the EPD at any time upon written notification to the permittee.

F. Reports and Documentation Submittal. (GAR 100001 - Part IV, F).

All written correspondence required by the CGP shall be submitted by return receipt certified mail (or similar service) to the appropriate District Office of the EPD according to the schedule in Appendix A of the CGP.

The Primary Permittee (Operator/Contractor) must comply and adhere to the requirements identified in GAR 100001 Part V. Standard Permit Conditions.

NOTE: All documentation and/or reports to be submitted as described above in accordance to the NPDES CGP must be coordinated and revised though the Ft. Benning EMD, NPDES Program Manager.

DPW-EMD
Attention: NPDES Program Manager
Building 6, Room 310
Fort. Benning GA 31905

For additional information and/or guidance call (706) 545-9879 or 4203.

Part V. Standard Permit Conditions The Primary Permittee (Operator/Contractor) must comply and adhere to the requirements identified in GAR 100001 Part V. Standard Permit Conditions to include but not limited:

Part V.A. Duty to Comply
Part V.B. Continuation of Expired General Permit
Part V.C. Need to Halt or Reduce Activity Not a Defense
Part V.D. Duty to Mitigate
Part V.E. Duty to Provide Information.

Part VI. TERMINATION OF COVERAGE

The Primary Permittee (Operator/Contractor) must comply and adhere to the requirements identified in GAR 100001 Part VI when submitting a Notice of Termination (NOT).

A Notice of Termination (NOT), signed in accordance with Part V.G. of this permit, must be submitted by the permittee where the entire stand alone development has undergone final stabilization and all storm water discharges associated with construction activity that are authorized by this permit have ceased. For construction activities where the primary permittee has elected to submit NOIs for separate phases of the stand alone development, the phase or phases of the stand alone development on the NOT shall correspond to the phase or phases on the NOI and shall have undergone final stabilization and all storm water discharges associated with construction activity that are authorized by this permit shall have ceased.

A. Notice of Termination Eligibility. Notice of Termination (NOT), signed in accordance with Part V.G. of this permit, must be submitted:

1. For construction activities, by the permittee where the entire stand alone development has undergone final stabilization and all storm water discharges associated with construction activity that are authorized by this permit have ceased. For construction activities where the primary permittee has elected to submit NOIs for separate phases of the stand alone development, the phase or phases of the stand alone development on the NOT shall correspond to the phase or phases on the NOI and shall have undergone final stabilization and all storm water discharges associated with construction activity that are authorized by this permit shall have ceased.

2. By the Owner or Operator when the Owner or Operator of the site changes. Where storm water discharges will continue after the identity of the Owner or Operator changes, the permittee must, prior to filing the Notice of Termination, notify any subsequent Owner or Operator of the permitted site as to the requirements of this permit.

C. Notice of Termination Submittal. All Notices of Termination (NOT) by this permit shall be submitted by return receipt certified mail (or similar service) to the appropriate District Office of the EPD according to the schedule in Appendix A of this permit and to the local Issuing Authority in jurisdictions authorized to issue a Land Disturbance Activity permit for the permittee's construction site pursuant to O.C.G.A. 12-7-1, et seq.

The NOT must be signed by both, the Owner and Operator prior to submittal to the District Office of the EPD.

Note for Notice of Termination and Final Phase BMPs: In compliance with NPDES Permit GAR 100001, 100002, 100003, which ever permit this project fall, it should be understood that a Notice of Termination (NOT) will not be processes until the following standard has been met: a. **100%** of the soil surface (disturbed areas) is uniformly **coverage in permanent vegetation**; b. Permanent vegetation with a **density of 70%** or greater; c. or equivalent **permanent stabilization measures** (such as the use of rip rap, gabions, permanent mulches or geotextiles) have been used.

Permanent vegetation should consist of: planted tress, shrubs, perennial vegetation appropriate for the time of the year and region; or a crop of annual vegetation and a seeding of target crop perennials appropriate for the region.

January 4, 2006

Revised June 2005

Erosion and Sediment Control Plan Review Checklist

The following changes from the GSWCC June 2005 Revision were integrated into the Ft. Benning TEMPLATE GUIDELINE on January 4, 2006.

Legend:

Red Text: Added text
Blue Text Already in original template
Grey Text – N/A

1. Show graphic scale and north arrow.

2. Provide vicinity map showing site's relation to surrounding area, including designation of specific phase, if necessary.

3. Provide both existing and planned contours with contour lines drawn at an interval in accordance with the following:

Map Scale Ground Slope Contour Interval, ft.
Flat 0-2% 0.5 or 1
Rolling 2-8% 1 or 2
Steep 8% + 2, 5 or 10
1 inch = 100 ft. or
larger scale

4. Delineate contributing drainage areas, with acreage, both on and off site. Include hydrology study and maps of drainage basins for both the pre-and post-developed conditions.

5. Delineate all state waters located on or within 200 feet of the project site.

6. Show location of erosion and sediment practices using uniform coding symbols from the Manual for Erosion and Sediment Control in Georgia, Chapter 6, with legend.

7. Delineate 25-foot undisturbed buffers of state waters and 50-foot buffers along designated trout streams. Clearly note areas of impact.

8. Include soil series and their delineation.

9. Identify the project receiving waters and describe adjacent areas – neighboring areas such as streams, lakes, residential areas, etc., which might be affected.

10. Phase E&SC plans into an initial perimeter control E&SC plan, intermediate E&SC plan for grading and drainage and a final phase E&SC plan.

11. Provide an E&SC plan for a typical lot and each situational lot.

12. Show limits of disturbance on E&SC plan.

Narrative Notes and Other Information: (Notes or narrative should be located on the site plan under general notes or under erosion and sediment control notes.)

1. Provide revision and/or initial date on E&SC plans.

2. Provide description of existing land use at project site and description of proposed project. Include land lot and district numbers for site location. Describe critical areas and what extra measures will be utilized for these areas.

3. Provide name, address and phone number of developer/owner.

4. Provide name and phone number of 24-hour local erosion and sediment control contact.

5. Show certification number, signature and seal of qualified plan designer.

6. 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.

7. Provide detailed construction activity schedule – show anticipated starting and completion dates for project events, include vegetation and mulching timeline.

8. Clearly note this 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."**

9. Provide 67 cubic yards per acre sediment storage. Include specific design information and calculations for structural measures on site. Sites with more than 10 total acres must have a temporary sediment basin.

10. Show storm-drain pipe and weir velocities and provide appropriate outlet protection to accommodate discharges without erosion.

11. 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.

12. Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.

13. Clearly note maintenance statement – **"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."**

14. Clearly note the statement: **"Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."**

15. Provide certification stating that the plan designer has visited the site prior to the design of the E&SC plans.

NPDES Permit ESPCP Review Checklist

PROJECT TITLE:				DESIGN PROFESSIONAL:		
PERMIT PAGE NUMBER			Design Engineering Firm:			
GAR 100001	GAR 100002	GAR 100003	Included (Y/N)	Plan Pg.	DESCRIPTION:	DATE:
16	16	19			1. Show graphic scale and North arrow.	
16	16	19			2. Provide vicinity map showing site's relation to surrounding area, including designation of specific phase, if necessary.	
16	16	19			3. Provide both existing and planned contours with contour lines drawn at an interval in accordance with the following:	
16	16	19			4. Delineate contributing drainage areas, with acreage, both on and off site. Include hydrology study and maps of drainage basins for both the pre-and post-developed conditions.	
16	16	19			5. Delineate all state waters located on or within 200 feet of the project site.	
16	16	19			6. Show location of erosion and sediment practices using uniform coding symbols from the Manual of Erosion and Sediment Control in Georgia, Chapter 6, with legend.	
16	16	19			7. Delineate 25-foot undisturbed buffers of state waters and 50-foot buffers along designated trout streams. Clearly note areas of impact.	
16	16	19			8. Include soil series and their delineation.	
16	16	19			9. Identify the project receiving waters and describe adjacent areas - neighboring areas such as streams, lakes, residential areas, etc., which might be affected.	
15	16	18 & 19			10. Phase E&SC plans into an initial perimeter control E&SC plan, intermediate E&SC plan for grading and drainage and a final phase E&SC plan.	
N/A	N/A	16			11. Provide an E&SC plan for a typical lot and each situational lot.	
16	16	19			12. Show limits of site, disturbance, and construction on E&SC plan.	
14	14	16			13. Provide revision and/or initial date on E&SC plans.	
16	16	19			14. Provide description of existing land use at project site of proposed project. Include land lot and district numbers for site location. Describe critical areas and what extra measures will be utilized for these areas.	
15	15	18			15. Provide name, address and phone number of developer/owner.	
18	18	21			16. Provide name and phone number of 24-hour local hazardous spill and E & S control contact.	
15	15	17			17. Show certification number, signature and seal of qualified plan designer.	

Map Scale	Ground Slope	Con Int Ft.
1 inch = 100ft. Or larger scale	Flat 0-2%	0.5 or 1
	Rolling 2-8%	1 or 2
	Steep 8% +	2.5 or 10

NPDES Permit ESPCP Review Checklist

PROJECT TITLE:				DESIGN PROFESSIONAL:	
PERMIT PAGE NUMBER			Design Engineering Firm:		
GAR 100001	GAR 100002	GAR 100003	Included (Y/N)	Plan Pg.	DESCRIPTION:
16	16	19			18. 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.
16	16	19			19. Provide detailed construction activity schedule - show anticipated starting and completion dates for project events, include vegetation and mulching timeline.
15	16	18 & 19			20. Detail specifications for all structural BMP's that meet the standards of the Manual for Erosion and Sediment Control in Georgia.
19	19	24			21. Clearly note this 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."**
19	19	24			22. Clearly note this maintenance statement - **"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."**
19	19	24			23. Clearly note the statement: **"Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."**
17	17	20			24. Provide 67 cubic yards per acre sediment storage. Include specific design information and calculations for structural measures on site. Sites with more than 10 total acres must have a temporary sediment basin.
17	17	20			25. Show rational explaining the decision not to use sediment basins on the site.
17	17	20			26. Show storm-drain pipe and weir velocities and provide appropriate outlet protection to accommodate discharges without erosion.
16	16	19			27. 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.
FB	FB	FB			28. Delineate all areas sensitive areas (i.e. endangered species, archeological sites, etc..) on or within 200 feet of the project site, or statement noting that these areas do not exist on or within 200 feet of the project site.
4	4	4			29. Show design professional qualifications.
13	13	14			30. Provide design professional certification statement and signature that the permittee's ES&PC Plan provides for an appropriate and comprehensive system of BMPs, and sampling expected to meet permit requirements.

NPDES Permit ESPCP Review Checklist

PROJECT TITLE:				DESIGN PROFESSIONAL:	
PERMIT PAGE NUMBER			Design Engineering Firm:		
GAR 100001	GAR 100002	GAR 100003	Included (Y/N)	Plan Pg.	DESCRIPTION:
13	13	15			31. Provide design professional certification statement that the site was visited prior to development of the ES&PC Plan.
13	13	16			32. Does the plan describe practices used to reduce the pollutants in storm water discharges.
15	15	17			33. Show indication that the design professional who prepared the ES&PC plan is to inspect the installation of BMPs within 7 days after the initial construction activity begins.
15 & 24	15 & 26	17 & 30			34. Show that ESPCP is signed by the design professional and includes the certification in accordance with section V.G. of the permit.
15	16	18			35. Provide indication that amendments to the ES&PC Plan which have a significant effect on BMPs with a hydraulic component must be certified by the design professional.
16	16	19			36. Show estimate of the total area and the total area expected to be disturbed.
16	16	19			37. Provide an estimate of the runoff coefficient or peak discharge flow of the site prior to an after construction activities are completed.
16	16	19			38. Provide a site map including drainage patterns, surface waters including wetlands, and locations where storm water is discharged to surface water.
17	17	20			39. Provide a statement indicating that waste materials shall not be discharged to waters of the State, except as authorized by a Section 404 permit.
18	18	21			40. Show BMPs installed to minimize off-site vehicle tracking of sediments and the generation of dust.
18	18	21			41. Provide documentation that the ES&PC Plan is in compliance with waste disposal, sanitary sewer, or specific tank regulations.
18	18	21			42. Show or document BMPs for the remediation of all petroleum spills and leaks.
18 & 19	18 & 19	21 & 24			43. Show details on required inspections and record keeping by primary permittee.
19	19	21			44. Show description of procedures to ensure timely maintenance of vegetation, erosion and sediment control measures.
19	19	24			45. Provide map indication sampling locations.
19	19	24			46. Show analytical methods used to collect and analyze the samples from each location.
19	19	24			47. Indicate Appendix B Rationale for outfall sampling points.
21 & 22	20 & 23	24			48. Provide information on sampling frequency and reporting requirements.

NPDES Permit ESPCP Review Checklist

PROJECT TITLE:				DESIGN PROFESSIONAL:	
PERMIT PAGE NUMBER			Design Engineering Firm:		
GAR 100001	GAR 100002	GAR 100003	Included (Y/N)	Plan Pg.	DESCRIPTION:
18	18	21			49. Provide information on dust control that meets the requirements set forth in Ga Rule 391-3-1-.02(2)(n) Fugitive Dust Control.
18	18	21			50. Provide information for on-site petroleum, hazardous material, and hazardous waste management along with a spill contingency plan.

NARRATIVE CORRECTIONS

VEGETATIVE CORRECTIONS

SITE MAP CORRECTIONS

REVIEWED BY:

Joseph S. Thames Jr.

DATE:

Joseph S. Thames Jr.
Meloy Hall (Building 6) Rm. 310
Ft. Benning, GA. 31905
joey.thames@us.army.mil
Phone: 706-545-3804
Fax: 706-545-4209

National Pollutant Discharge Elimination System
General Permit Fee Form
Georgia Dept. of Natural Resources
Environmental Protection Division

Please print or type this form.
Submit original and payment to:

EPD-Construction Land Disturbance Fees
P. O. Box 932858
Atlanta, Georgia 31193-2858

Make check payable to:
Department of Natural Resources – EPD (DO NOT MAIL CASH)

(Complete the following information)

Primary Permittee US Army - DPW
Permittee Address Burr Street
Building 6 Room 205
Ft. Benning, GA 31905

Contact Telephone (706) 545-2292/3155

Project Name _____
Location / Address _____
_____
_____
County _____
City _____

Acres Disturbed in an area with a local issuing authority _____ x $40 per acre = _____
Do not include fees payable to local issuing authorities.

Acres Disturbed in an area with no local issuing authority _____ x $80 per acre = _____

Acres Disturbed by an entity exempt from local issuing authority regulation pursuant to statute _____ x $80 per acre = _____

TOTAL FEE SUBMITTED = _____

Check Number _____

Submitted By:

Signature: _____ Date: _____

Print Name: _____ Title: _____

ATTACH CHECK HERE

VOID IF SUBMITTED WITHOUT PAYMENT

Form CLDF. 2 Revised January 2004

E&SC PLAN REVIEW CHECKLIST TO BE SUBMITTED WITH PLANS

Project Name *(Noted clearly on cover sheet)* **SWCD:** *(May be completed by reviewer)*

City/County *(on cover sheet – note LIA)* **Date on Plans:** *(initial plan submittal date on cover sheet)*

Address *(include street name/address on cover sheet)*

Site Plan:

1. Show graphic scale and north arrow.
   The graphic scale and north arrow must be shown on all E&SC plan sheets.

2. Provide vicinity map showing site's relation to surrounding area, including 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 found on another map such as USGS quad.

3. Provide both existing and planned contours with contour lines drawn at an interval in accordance with the following:

Map Scale	Ground Slope	Contour Interval, ft.
1 inch = 100 ft. or larger scale	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 intervals shown on plan. The intermediate phase should show the proposed grade in bold contours with the above intervals overlaying the original contours. Both the existing and proposed contours must be labeled.

4. Delineate contributing drainage areas, with acreage, both on and off site. Include 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.

5. Delineate all state waters located on or within 200 feet of the project site.
   ALL STATE WATERS LOCATED ON OR WITHIN 200 FEET OF THE PROJECT SITE MUST BE DELINEATED. *If the plan reviewer visits the site and finds possible state water on or within 200 feet of site that is not shown on the plan, the review could be delayed until state waters are determined by the Local Issuing Authority.*

6. Show location of erosion and sediment practices using uniform coding symbols from the Manual for Erosion and Sediment Control in Georgia, Chapter 6, with legend.
   All phases of the E&SC Plan must use uniform coding symbols with legend from the Manual for Erosion and Sediment Control in Georgia, Chapter 6.

7. Delineate 25-foot undisturbed buffers of state waters and 50-foot buffers along designated trout streams. Clearly note areas of impact.
   The State of Georgia requires these minimum undisturbed buffers, but the Local Issuing Authority may have more stringent buffer requirements. The most stringent buffer required must be shown on the plan. Any undisturbed buffer area that is impacted by the project site must be noted on the plan and in the hydrology narratives.

8. Include soil series and their delineation.
   Soil series delineations are required for the plan review. The highest level of soil survey required for the site, such as a level three or level four for septic tanks, must be delineated on the plan. The soil series delineation should be shown on the existing site plan.

9. Identify the project receiving waters and describe adjacent areas – neighboring areas such as streams, lakes, residential areas, etc., which might be affected.
   Identify, by name, any streams, rivers, lakes, etc. which the site drains to and describe any neighboring area which could be affected by the post-developed runoff from the site.

10. Phase E&SC plans into an initial perimeter control E&SC plan, intermediate E&SC plan for grading and drainage and a final phase E&SC plan.
    Each phase of the E&SC plan should be shown on a separate page. The initial phase should show all BMPs necessary to prevent sediment from leaving the project site during the beginning of the project and any tree-save fencing that may be required. These practices should include construction exits, silt fence, etc. shown with the existing contours. The intermediate phase should include all BMPs necessary to prevent sediment from leaving the site and the required 67 cubic yards per acre sediment storage. These should include temporary sediment basins, retrofitted detention ponds, check dams, temporary down drains, diversions, inlet protection, temporary grassing, mulching, etc. The final phase plan should include such practices as outfall protection, revised inlet protection, permanent grassing, matting, etc.

11. Provide an E&SC plan for a typical lot and each situational lot.
    A typical lot must be shown as well as an E&SC plan for each situational lot. Situational lots must include lots showing drainage diverted to the front of the lot, drainage diverted to the rear of the lot, drainage diverted to the right of the lot, drainage diverted to the left of the lot, lots bordering state waters, lots bordering wetlands, etc.

12. Show limits of disturbance on E&SC plan.
    Limits of disturbance must be shown on plan for all phases including all disturbances on and off the site. Disturbances off site should include sanitary and/or drainage line easements, temporary access easements, etc .

Narrative Notes and Other Information: (Notes or narrative should be located on the site plan under general notes or under erosion and sediment control notes.)

1. Provide revision and/or initial date on E&SC plans.
   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 front sheet and each sheet that has been revised.

2. Provide description of existing land use at project site and description of proposed project. Include land lot and district numbers for site location. Describe critical areas and what extra measures will be utilized for these areas.
   The description of existing land use, description of proposed project and the description of critical areas should be included in the plan's erosion and sediment control notes. Critical areas may include crossing state waters, disturbance inside buffer if the work being done is exempt or a variance is obtained, wetlands, neighboring property to which the project site drains, etc.

3. Provide name, address and phone number of developer/owner.
   The name, address and phone number of developer/owner must be shown on cover sheet and/or under erosion and sediment control notes.

4. Provide name, certification and phone number of 24-hour local erosion and sediment control contact.
   The name and phone number of a 24-hour contact responsible for erosion and sediment control must be shown under the erosion and sediment control notes, general notes or on the erosion and sediment control plan.

5. Show certification number, signature and seal of qualified plan preparer.
   By December 31, 2006 the designer's certification number issued by the Georgia Soil and Water Conservation Commission must be included on the plan. The plan must also contain the signature and seal of the qualified plan designer on all erosion and sediment control sheets. No plan will be reviewed without proper signatures.

6. 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.
   The total acreage and the total estimated disturbed acreage of the project or phase under construction must be shown under either the erosion and sediment control notes, general notes or on the E&SC plan. The estimated total disturbed area must include disturbances by the primary permittee and all secondary permittees under the NPDES Permit.

   The primary permittee is defined as the owner or the operator or both of the tract of land being developed. Secondary permittees are individual builders, utility companies or utility contractors that conducts construction activities within areas of common development.

7. Provide detailed construction activity schedule – show anticipated starting and completion dates for project events, include vegetation and mulching timeline.
   A detailed construction activity schedule should be located on either the cover sheet, or on the erosion and sediment control plan. The schedule must include starting and completion dates of the project or phases under construction, initial erosion control BMPs installation, intermediate erosion control BMPs, final phase erosion and sediment control BMPs, and maintenance of erosion and sediment control practices. Other events noted on the schedule include demolition, clearing and grubbing, grading, storm and sanitary sewer installation, paving, building construction, etc.

8. Clearly note this 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."**
   This statement must be included under erosion and sediment control notes, general notes, or on the erosion and sediment control plan sheet or sheets.

9. Provide 67 cubic yards per acre sediment storage. Include specific design information and calculations for structural measures on site. Sites with more than 10 total acres must have a temporary sediment basin.
   The project or phase under construction must provide 67 cubic yards per acre of the entire drainage basin sediment storage. Sediment storage may be obtained through the use of excavated inlet protection, retrofitted detention ponds or temporary sediment basins. Sites with 10 or more acres disturbed must have a retrofitted detention pond or temporary sediment basin. Specific design information, calculations and completed worksheets provided in the manual must be included on the erosion and sediment control plan or erosion and sediment control detail sheet.

10. Show storm-drain pipe and weir velocities and provide appropriate outlet protection to accommodate discharges without erosion.
    Provide a chart of storm-drain and weir velocities. Appropriate outlet protection to accommodate discharges without erosion must be provided. Calculations, stone size and dimensions and any worksheets must be shown on either erosion and sediment control plan or erosion and sediment control details.

11. 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.
    A vegetative plan must be shown on either the erosion and sediment control plan or the erosion and sediment details. The plan must include all temporary and permanent species with planting dates and seeding, fertilizer and mulching rates that are site specific to the appropriate time of year and geographical region of Georgia.

12. Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet 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 drawings shown must, at a minimum, meet the guidelines given in the Manual.

13. Clearly note maintenance statement – "**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.*"**
    This maintenance statement must be shown on the erosion and sediment control notes, general notes, or on the erosion and sediment control sheets of the plan.

14. *Clearly note the statement:* ***"Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."***
    This statement must be shown on the erosion and sediment control notes, general notes, or on the erosion and sediment control sheets of the plan.

15. Provide certification stating that the plan designer has visited the site prior to the design of the E&SC plans.
    As mandated by law, certification stating that the plan designer has visited the site prior to the design of the erosion and sediment control plans must be provided. This certification can be located under either the erosion or sediment control note, general notes or on the erosion and sediment control plan sheets.

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): Ft. Benning County: _____

Subdivision Name: N/A

Owner's Name: US ARMY – Directorate of Public Works (DPW): Mr. Craig Taylor

Address: Burr Street, Building 6, Room 318 City: Ft. Benning State: GA Zip Code: 31905

Operator's Name: _____ Phone: _____

Address: _____ City: _____ State: GA Zip Code: 31905

Facility Contact: Mr. Felix Seda Phone: (706) 545-9879

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: N/A

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: Ft. Benning

Name of Receiving Water(s): Upatoi Creek / Chattahoochee River

☐ 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:

X Location map showing the receiving stream(s), outfall(s) or combination thereof to be monitored.

X 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).

N/A List of known secondary permittees.

X 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: Mr. Craig Taylor Title: Director, DPW

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.

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)

X 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: Ft. Benning County: Muscogee / Chattahoochee

Subdivision Name: N/A Lot Number: N/A

Owner's Name: US ARMY – Directorate of Public Works (DPW): Mr. Craig Taylor

Address: Burr Street, Building 6, Room 205 City: Ft. Benning State: GA Zip Code: 31905

Operator's Name: _____ Phone: (706) 545-

Address: Building City: Ft. Benning State: GA Zip Code: 31905

Type of Permittee: **X** Primary ☐ Secondary ☐ Tertiary

Facility Contact: Mr. Felix Seda Phone: (706) 545-9879

If Applicable:

Primary Permittee's Name: Mr. Craig Taylor Phone: (706) 545-2292/3155

Address: Burr Street, Building 6, Room 205 City: Ft. Benning State: GA Zip Code: 31905

Number of Secondary Permittees: N/A

III. SITE ACTIVITY INFORMATION

X 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: Ft. Benning

Name of Receiving Waters: Chattahoochee River / Upatoi Creek

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: Mr. Craig Taylor Title: DPW Director

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

NPDES General Permit
Notice of Termination (NOT)

When the facility/site has been finally stabilized …

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

APPENDIX CC

DEMARCATION MATRIX

DEMARCATION MATRIX

Item of Demarcation	Private Utility Company Scope/Limit of Work	Barracks and Site Development Contract Scope/Limit of Work	Admin Facilities Contract Scope/Limit of Work
Reports	NA	Provide the following reports upon which design and construction will be based: • Geotechnical with special foundation recommendations for the barracks and settlement estimations for the entire site	Provide the following reports upon which design and construction will be based: • Geotechnical with special foundation recommendations for all admin buildings
Site Preparation	NA	Remove topsoil as prescribed by the Contractors geotechnical engineer. Provide site soil compaction in accordance with Contractors geotechnical report.	NA
Site Grading	NA	Provide site grading to pad elevations shown on Site drawings. This will include site features required to provide overall site/pad elevations for primary buildings including the Barracks, Combo Bldg., and SFAC. Positive drainage should be provided for the site and within the building pads to prevent ponding or standing water. For the Barracks Building(s) - Provide foundations, floor slab systems (ground or structurally-supported), and select backfill (nonexpansive) required per geotechnical recommendations. Contractor will be responsible for ensuring proper compaction under buildings per the recommendations provided by Contractor's Geotechnical consultant.	Provide foundations, floor slab systems (ground or structurally-supported), and select backfill (nonexpansive) required per geotechnical recommendations. Contractor will be responsible for ensuring proper compaction under buildings per the recommendations provided by Contractor's Geotechnical consultant.
Emergency Access Roads	NA	Barracks Contractor shall construct per RFP documents.	NA

Item of Demarcation	Private Utility Company Scope/Limit of Work	Barracks and Site Development Contract Scope/Limit of Work	Admin Facilities Contract Scope/Limit of Work
Permits	NA	Contractor will obtain: • Overall SWPPP • Notice of Intent (NOI) • Dust Permit (FDCP) • Soil Erosion Control Plan (SECP) • Digging Permit • NPDES	Building Contractor will obtain any building specific permits for each building. Building Contractor shall be secondary permittee for site permits.
Storm Water Collection/ Detention	NA	Contractor will provide storm water collection/detention for overall site in accordance with specifications and all federal, state and local regulations; and will reroute existing drainage impacted by construction. Contractor to provide storm service connection stub for every building proposed in the complex. Temporarily cap service at the building construction limit. Building Contractor to accommodate roof drains to surface splash blocks and/or below grade storm water collection system(s) for barracks and buildings not included in the Admin Facilities Contract.	Building Contractor to accommodate roof drains to surface splash blocks and/or below grade storm water collection system(s). Assume length of service is 5' for the SFAC building and 5' for the COF/BatHQ building.
Natural Gas	Gas is owned and operated by Atmos and is available along the south side of Marne Road, adjacent to the site. Atmos will design and install the gas lines to each building limit of construction terminating at a provided smart meter. The service will be temporarily capped for connection by the building	Contractor is responsible for coordination with Atmos regarding size and location of service. Contractor will connect at the temporary capped service location and take the service the remaining distance to the building. Assume length of service is 5' for the Barracks building.	Contractor is responsible for coordination with Atmos regarding size and location of service. Contractor will connect at the temporary capped service location and take the service the remaining distance to the building. Assume length of service is 5' for the SFAC building and 5' for the COF/BatHQ building.

Item of Demarcation	Private Utility Company Scope/Limit of Work	Barracks and Site Development Contract Scope/Limit of Work	Admin Facilities Contract Scope/Limit of Work
Domestic Water Distribution	Water is owned and operated by Columbus Water Works (CWW). Lines must be constructed in accordance with CWW standards.	Contractor is responsible for coordination with CWW regarding size and location of service. Approved Contractor will tap the main and install the water mains for the entire site. This includes services for the Admin facilities buildings installed to the building limit of construction. The services will be temporarily capped for connection by the Admin Facilities Contractor.	Contractor is responsible for coordination with CWW regarding size and location of service. Contractor will connect at the temporary capped service location and take the service the remaining distance to the building. Assume length of service is 5' for the SFAC building and 5' for the COF/BatHQ building.
Fire Water Distribution	Water is owned and operated by Columbus Water Works (CWW). Lines must be constructed in accordance with CWW standards. Backflow preventers (BFP) and post indicator valve (PIV) are provided by CWW but will not be installed.	Contractor is responsible for coordination with CWW regarding size and location of service. Approved Contractor will tap the main and install the water mains for the entire site. This includes services for the Admin facilities buildings installed to the building limit of construction. The services will be temporarily capped for connection by the Admin Facilities Contractor. Contractor to locate CWW provided BFP and PIV. Fire department connection (FDC) is the Contractors responsibility. The Contractor is responsible for the alarm system back to the Fire Department.	Contractor is responsible for coordination with CWW regarding size and location of service. Contractor will connect at the temporary capped service location and take the service the remaining distance to the building. Contractor to locate CWW provided BFP and PIV. Fire department connection (FDC) is the Contractors responsibility. The Contractor is responsible for the alarm system back to the Fire Department. Assume length of service is 5' for the SFAC building and 5' for the COF/BatHQ building.
Sanitary Sewer	Sanitary sewer is owned and operated by Columbus Water Works (CWW). Lines must be constructed in accordance with CWW standards.	Contractor is responsible for coordination with CWW regarding size and location of service. Building Contractor will design and install the site sanitary sewer including a dual cleanout at each building construction limit. The services will be temporarily capped for connection by the Admin Facilities Contractor.	Contractor is responsible for coordination with CWW regarding size and location of service. Contractor will connect at the temporary capped service location and take the service the remaining distance to the building. Assume length of service is 5' for the SFAC building and 5' for the COF/BatHQ building.

Item of Demarcation	Private Utility Company Scope/Limit of Work	Barracks and Site Development Contract Scope/Limit of Work	Admin Facilities Contract Scope/Limit of Work
Primary Electrical Service	Flint Electric provides electrical service. They will provide electrical service to the transformer, the transformer equipment, the transformer pad, secondary terminations at the transformers and the meter.	Contractor is responsible for coordination with Flint Electric regarding electric requirements and location of transformer. Contractor shall provide primary electric service from electric meter to the building. Assume length of service is 5' for the Barracks building Building Contractor will provide: • secondary conductors • secondary conduit • grounding at transformer	Contractor is responsible for coordination with Flint Electric regarding electric requirements and location of transformer. Contractor shall provide primary electric service from electric meter to the building. Assume length of service is 5' for the SFAC building and 5' for the COF/BatHQ building. Building Contractor will provide: • secondary conductors • secondary conduit • grounding at transformer
Communications Duct Bank	DOIM will provide ducts and cabling required for the site.	Contractor will coordinate with DOIM for capacity and connection locations. Contractor will provide duct bank and cabling from the building construction limit into the barracks communications room.	Contractor will provide duct bank **(with a minimum of three (3), four (4) inch conduits)** and cabling from the building construction limit into the communications room of each building. Assume length of service is 5' for the SFAC building and 5' for the COF/BatHQ building.
Phone Cabling – Copper	AT&T will provide phone/copper lines from the communication tie in point manhole to the building construction limits.	Building Contractor will provide ducts and phone/copper lines from the building construction limit to the building and any copper/phone elements required within the facility. Provide service entrance termination hardware.	Building Contractor will provide ducts and phone/copper lines from the building construction limit to the building and any copper/phone elements required within the facility. Provide service entrance termination hardware. Assume length of service is 5' for the SFAC building and 5' for the COF/BatHQ building.
Cable Television	Windjammer Cable to provide service entrance coaxial cable into facility within ductbank installed by Barracks and Site Development Contractor package. Windjammer will terminate all coaxial CATV cables which are provided by	Building Contractor will provide outlet locations including backbox, mud ring, and raceway. Building Contractor will provide vertical/horizontal coaxial cable, wire management including, but not limited to,	Building Contractor will provide outlet locations including backbox, mud ring, and raceway. Building Contractor will provide vertical/horizontal coaxial cable, wire management including, but not limited

Item of Demarcation	Private Utility Company Scope/Limit of Work	Barracks and Site Development Contract Scope/Limit of Work	Admin Facilities Contract Scope/Limit of Work
	Building Contractor. Windjammer cable will relocate cable line in coordination with Building Contractor design.	labeling and identification. Building Contractor to provide faceplates for coaxial terminator to be installed by Local Service Provider.	to, labeling and identification. Building Contractor to provide faceplates for coaxial terminator to be installed by Local Service Provider.
UMCS / EMCS	NA	Barracks Contractor will provide any cabling/fiber elements, integrating new system information and new software required to connect and integrate new building EMCS for all equipment and systems into the existing UMCS.	Building Contractor will provide any cabling/fiber elements, integrating new system information and new software required to connect and integrate new building EMCS for all equipment and systems into the existing UMCS.
Building Identification	NA	Barracks/Site Development Contractor will provide Barracks Complex signage and site signage for the entire complex to include individual buildings.	Building mounted number signage is to be provided and installed by the building Contractor.
Sidewalks	NA	Contractor will provide all sidewalks connecting to adjacent sidewalks and to the building's entrance, and POV parking areas. Contractor will provide building stoops and handicap ramps at barracks.	Building Contractor will provide building stoops and handicap ramps at buildings.
Parking Lots	NA	Contractor shall construct per RFP documents.	NA
Landscaping	NA	Site Contractor will provide all landscaping not within the building construction limits, including equipment screening. Contractor will provide landscaping within the barracks building construction limits including seeding and entrance plantings.	Contractor will provide landscaping within the building construction limits including seeding and entrance plantings.
Trash Dumpster	NA	Barracks/Site Development Contractor shall construct per RFP documents. Contractor to define dumpster locations for Barracks and Admin Facilities.	NA

Item of Demarcation	Private Utility Company Scope/Limit of Work	Barracks and Site Development Contract Scope/Limit of Work	Admin Facilities Contract Scope/Limit of Work
Site Anti-Terrorism/ Force Protection (ATFP) Elements	NA	Site Development Contractor will provide any site ATFP elements and ensure minimum setback distances are established and maintained.	Building Contractor will provide any required ATFP elements within the building construction limit.
Equipment Pads (Condensers, Chillers, etc) (if required)	NA	Site Development Contractor shall provide all equipment pads located outside of each buildings construction limit.	NA
Oil/Water Separator, grease interceptors	NA NA		NA
Fencing and gates	NA	Barracks/Site Development Contractor to provide fencing and gates around the site as required except where they fall within the building construction limit.	Building Contractor to provide fencing and gates as required within the building construction limit.
Sustainability, LEED building/site interface	NA	Responsible for registration of project with USGBC and documentation of points attained for LEED. Responsible for site related portion of combined bldg/site LEED Credits. Responsible for barracks related portion of combined bldg/site LEED Credits.	Responsible for admin building related portion of combined bldg/site LEED Credits.
Site/Security Lighting	Flint Electric to provide and install all general area, parking, security, and pedestrian lighting outside the building construction limits. Site Contractor and Building Contractor(s) will coordinate location and size of services. Flint EMC will furnish and install the wiring, light poles, and light fixtures.	Building contractor to provide any building mounted lights. The Contractor shall furnish and install all pole foundations, pole bases, and conduits. Contractor to provide manual switch for exterior lights controlled by photocell. The D/B contractor shall be responsible for the exterior lighting design. The D/B contractor shall base the design on fixtures provide by the private utility company.	Building contractor to provide any building mounted lights. Contractor to provide manual switch for exterior lights controlled by photocell.

Item of Demarcation	Private Utility Company Scope/Limit of Work	Barracks and Site Development Contract Scope/Limit of Work	Admin Facilities Contract Scope/Limit of Work
Gate Controls	NA	NA	NA
Chill Water	NA	Building Contractor to provide chill water to the barracks in accordance with the architectural standards. The contractor is encouraged to consider a chill water system that could serve the entire complex.	Building Contractor to provide chill water to the admin facilities in accordance with the architectural standards.

Section:

Submittal Distribution for Warrior Transition (Admin Facilities), Fort Benning, Georgia

Updated: 29-Mar-10

Activity and Address	Drawing Size (Full Size, 22x34)	Design Analyses & Specs	Drawing Size (Half Size 11x17)	Non-BIM Data CD-ROM (PDF Spec, CAL & .dgn)	Furniture Submittal (FFE)	Structural Interior Design Submittal	BIM Data DVD
US Army Corps of Engineers - Savannah District ATTN: (PM) Ruben DelRio 100 W. Oglethorpe Ave. Savannah, GA 31401	1	5	5	4	1	1	4
U.S. Army Corps of Engineers – Ft. Worth District ATTN: (COS) Chevron Blond 819 Taylor St., RM 4A07 Fort Worth, TX 76102	1	2	2	5	1	1	4
Fort Benning Installation (See Attached DPW List)	2	2	13	17	1	2	2
US Army Corps of Engineers - Savannah District Fort Benning Hospital Area Office ATTN: Richard English 6650 Meloy Drive, Room 412 Fort Benning, GA 31905	3	6	6	3	3	3	3
USAISEC-FDED IT BRAC ATTN: Mark J. Nalepa 7450 New Technology Way Frederick, MD 21703	0	0	0	1	0	0	1

Submittal Distribution for Fort Benning DPW

Updated: 29-Mar-10

Activity and Address	Drawing Size (Full Size, 22x34)	Design Analyses & Specs	Drawing Size (Half Size 11x17)	Non-BIM Data CD-ROM (PDF Spec, CAL & .dgn)	Cost Estimate
U.S. Army Infantry Center & Fort Benning ATTN: (Mr. Dean Miller/ Glen Hall) 6650 Meloy Drive, Bldg 6, Room 329 Fort Benning, GA 31905	0	1 on CD	2	2	1
U.S. Army Infantry Center & Fort Benning ATTN: DOIM (Jim Lance/Chris Mickey) 6830 Upton Ave., Bldg 479 Fort Benning, GA 31905	0	1 on CD	1	1	
U.S. Army Infantry Center & Fort Benning ATTN: Fire Dept (Inspector Ryan Earwood) 6895 Barron Ave,Building 124 Fort Benning, GA 31905 ** We request both hard and electronic copies at 100% submittal. For any other submittal we request only hard copies. We also request that all hard copies be full size and we only need one copy for each submittal.*	1*	1 on CD	0	1	
U.S. Army Infantry Center & Fort Benning ATTN: Physical Security (Dave Moore) 6805 Barron Ave, Bldg 123 Fort Benning, GA 31905	0	0	1	1	
U.S. Army Infantry Center & Fort Benning ATTN: Safety (Debbie Guiterrez) 6811 Vibbert Ave., Bldg 18 Fort Benning, GA 31905	0	0	1	1	
U.S. Army Infantry Center & Fort Benning ATTN: Environmental (John Brown/Henry Haas) 6650 Meloy Drive, Bldg 6, Rm 307 Fort Benning, GA 31905	1	1	2	2 **with shape files**	
U.S. Army Infantry Center & Fort Benning ATTN: Engineering Division, DPW (Bill Cushist) 6650 Meloy Drive, Bldg 6, Room 320E Fort Benning, GA 31905	0	1	1	1	
U.S. Army Infantry Center & Fort Benning ATTN: Sustainability Officer (Peter Lukken) Eckel Street, Bldg 4, Rm 547 Fort Benning, GA 31905	0	0	0	1	
U.S. Army Infantry Center & Fort Benning ATTN: AT/FP(Mike Hill) Eckel Street, Bldg 4, Rm West 87 Fort Benning, GA 31905	0	1 on CD	1	1	
U.S. Army Infantry Center & Fort Benning ATTN: MCRC2 (Rick Clapp/Van Warren) Eckel Street, Bldg 4, Rm W47 Fort Benning, GA 31905	0	1 on CD	1	1	
Columbus Water Works (CWW) Attn: Tom Horn 1421 Veterans Parkway Columbus, GA 31902 * One half size set should be water and sewer sheets only.	0	1 on CD	2	1	
Atmos Energy Attn: Omar McCants 2300 Victory Drive Columbus, GA 31901	0	0	0	1	
Flint Electric Attn: Walker Fricks 2054 Belko St Fort Benning, GA 31905	0	0	0	1	
U.S. Army Infantry Center & Fort Benning ATTN: Energy Officer, DPW (Mr. Vernon Duck) 6650 Meloy Drive, Bldg 6, Room 320B Fort Benning, GA 31905	0	0	0	1	
** For projects requiring roadway work:* U.S. Army Infantry Center & Fort Benning ATTN: Traffic Engineer, DPW (Mr. Dave Benefield) 6650 Meloy Drive, Bldg 6, Room 320B Fort Benning, GA 31905	0	0	1	1	