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Military Working Dog Kennel
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SECTION 01 10 00.[Not Supplied - ProjectInfo : TONUM]
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1.0 PROJECT OBJECTIVES

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

Comparison of Military Facilities to Civilian Facilities

Military Facility	Civilian Facility
MILITARY WORKING DOG KENNEL	14126 Kennel Bldg w/Admin (24 trainers and dogs)

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

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

1.1. SECTION ORGANIZATION

This Section is organized under 6 major “paragraphs”.

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

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

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

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

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

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

2.0 SCOPE

2.1 MILITARY WORKING DOG KENNEL

Design and construct a 7,115 SF Military Working Dog (MWD) Kennel. Primary facilities include an administration area and an indoor/outdoor kennel area for 24 dogs. Additional work includes an exercise area, obstacle course, explosive pad, and storage shed. Support facilities include utilities, site improvements and parking. Provide access for individuals with disabilities. Demolish 3 Buildings (3,294 Total SF). Remove timber left on the site by others after clearing and grubbing operations

2.2. SITE:

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

Approximate area available 12.50 acres

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

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

The following are also GFGI items: TBD

2.4. FURNITURE REQUIREMENTS

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

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

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

2.5. NOT USED

3.0 MILITARY WORKING DOG FACILITY

3.1. GENERAL REQUIREMENTS

Military Working Dog Facilities consist of four major components.

(1) The kennel is the area in which the dogs are quartered and secured. The kennel area provides the day to day living environment for the MWDs by giving each one a place for eating, resting and privacy.

(2) The kennel support building provides an area for the operational, logistical and administrative support functions for the kennels, the dogs and the handlers.

(3) The training area provides a safe and secure area for the obedience, confidence and proficiency training of the dogs. The obedience course, which will normally be located within the training area, helps the dogs maintain agility, stamina and general physical fitness while reinforcing obedience and confidence training.

(4) The exercise area provides a safe, secure area for individual dogs to be exercised when the dog's handler is not available. A separate exercise area also prevents interference with handlers and dogs that need to use the training area.

3.1.1. BUILDING AREA

The gross building area shall be as calculated per Appendix Q, which is the area included within surrounding exterior walls exclusive of vent shafts and courts. Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above. Maximum gross area limits indicated in Paragraph 2.0 SCOPE, may not be exceeded.

The net area is measured to the inside face of the room or space walls.

3.1.2. FUNCTIONAL SPACES

Net area requirements for functional spaces are included in Paragraph 3.2 FUNCTIONAL AND AREA REQUIREMENTS. If net area requirements are not specified the space shall be sized to accommodate the required function, comply with code requirements, comply with overall gross area limitations and other requirements of the RFP; for example area requirements for corridors, stairs and mechanical rooms will typically be left to the discretion of the Offeror.

3.1.3. HANDICAPPED ACCESS

Military Working Dog Facilities shall meet the minimum handicapped accessible requirements.

3.2. FUNCTIONAL AND AREA REQUIREMENTS

The Military Working Dog Facility functional and area requirements presented in this section are based upon FM 3-19.17 Military Working Dogs dated July 2005 and the Department of the Army Pamphlet 190-12 Military Working Dog Program dated 30 September 1993. These documents are included as RFP Appendix GG and Appendix HH, respectively. Schematics derived from these

documents are included in the RFP to identify functional and operational requirements including area and adjacency requirements only. Any indication of specific construction systems in these schematics such as interior or exterior finishes, building systems or utility systems will be superseded by the technical references in the RFP.

The schematic layouts provided in the RFP indicate functional arrangements that meet user operability requirements. Modifications to the indicated building forms are possible provided minimum areas, adjacencies and operability requirements are maintained.

When the construction contractor is required by the Government to provide special inspections as part of his work, the contractor shall retain third-party quality assurance agencies to conduct the special inspections required by the IBC. The inspecting agency shall provide reports of the special inspections directly to the government.

3.2.1. INDOOR/OUTDOOR KENNEL

The indoor/outdoor kennel shall be sized to house a minimum of 24 dogs and should be separated from the kennel support building a minimum of 20 ft. There should also be provisions for 4 portable kennel cages. As a result of the constant interaction between the kennel support building and kennel area, a covered walkway is required to connect the two areas and provide protection from the elements. Care should be taken in the layout of the kennel area in relationship to the kennel support building in order to maintain a one way system in the movement of situations where MWDs will meet face to face and prevent confrontations. Consider the installation of mirrors at corners, intersections and blind spots to alert handlers of potential wrong way traffic. All entries and exits from the kennel area are required to be self closing and self latching. Doors exiting the kennel runs should open inward to aid in preventing MWD escapes.

The roof should extend entirely over the exterior runs and include gutters and downspouts to prevent excessive water in the runs. Exterior framing should be enclosed with a soffit to prevent birds from roosting above the dogs.

All materials in areas accessible by MWDs shall be resistant to damage by scratching, biting and chewing. Materials should be durable and easy to sanitize. Avoid using materials such as angle iron that will rust over time and generate sharp edges that will pose a danger to MWDs.

(1) Kennel Runs. Each MWD living area shall have an interior run, minimum 8 ft x 10 ft, and an exterior run, minimum 8 ft x 5’-6” ft, connected by a guillotine-type door. Align the guillotine door hardware with the door itself. Operation of the door shall be from the central corridor as well as outside the exterior run. Runs shall be arranged such that openings are staggered in order to avoid MWDs facing each other across the corridor.

Floor finishes shall be concrete with an epoxy (100% solids) coating sloped toward floor drains. Full height partitions are required between runs. The first 6 ft above the finish floor shall be sealed concrete. Provide an integral 4” curb at all locations where block walls are installed in kennel wet areas. For interior runs steel clad acoustical panels should be considered from the top of the concrete partition to the ceiling with translucent wall panels in the wall separating runs to provide natural light inside the kennel. Steel clad acoustical ceiling panels should also be considered above the kennels. Heavy gage chain link fence is used for exterior runs, and is also an option for interior

runs. Noise reducing materials are required within the enclosed area of the interior run. As a minimum, end walls shall be full height galvanized chain link fencing. Care should be taken to prevent sharp edges from bolts, hinges, tie wires, etc. located on the interior of the runs to prevent injury to the MWDs. A better alternative is to use galvanized metal mesh with galvanized square tubing. Self latching entry gates shall swing 90 degrees.

(2) Food Prep and Storage Area. The Food Prep and Storage Area shall be a minimum of 10 ft x 12 ft with a large countertop with three compartment, deep, stainless steel commercial sink and upper wall cabinets above. The countertop shall provide space for a GFGI dishwasher and storage space. Space shall be provided for a washer and dryer, and a 2 ft wide space shall be provided at the end of the counter for a storage/drying rack for pans and bowls. A floor drain shall be provided in this area. This room will include a GFGI commercial quality ice machine. Temperature and humidity control equivalent to the office area are required in this room to control food spoilage. Shelving shall be installed to meet local delivery operations.

(3) Mechanical Room. The Mechanical Room shall serve as a mechanical/ electrical room for the kennel and be sized accordingly.

3.2.2. KENNEL SUPPORT BUILDING

The kennel support building is composed of three functional areas; the administration area, special use areas and the support areas.

The Administration Area shall provide work space for one kennel master, two trainers and 10 handlers. MWDs will occasionally visit these spaces so finishes in this area shall be of durable material, require minimal maintenance and be easily repaired or replaced in the case of damage. The design of this area shall provide a professional, well organized space that creates a sense of pride in the work place.

(1) Kennel Masters Office. The Kennel Masters office, minimum 132 square feet, shall be located at the front of the administrative area with exterior windows that view the entry gate to the complex. It should include a lockable closet with shelves for storage of supplies and a public address system. GFGI furnishings will include an L-shaped desk (single pedestal desk with box/box/file storage pedestal and single pedestal return with file/file storage pedestal with closed door hutch storage unit) with ergonomic task chair, visitor seating for two, a four drawer lateral filing cabinet and a bookcase. GFGI equipment will include a computer, printer and a fax/copier.

(2) Trainers Room. The Trainers Room, minimum 240 square feet, shall provide workspace for two trainers. This room shall include one lockable closet with shelves for the storage of training aids for each trainer. Room requirements include a 4 ft x 8 ft dry erase board. GFGI furnishings will include four L-shaped desks (single pedestal desk with box/box/file storage pedestal and single pedestal return with file/file storage pedestal with closed door hutch storage unit) with ergonomic task chairs, two four drawer lateral file cabinets and a common bookcase. GFGI equipment will include four computers, one printer and one copier.

(3) Handlers Room. The Handlers Room, minimum 210 square feet, shall be an open, general office area for 10 handlers. These 10 handlers will share four common workstations. GFGI furnishings will include four systems furniture workstations (48 SF each) with ergonomic task chairs,

four four-drawer lateral file cabinets and a distribution counter. GFGI equipment will include four computers and one printer.

The Special Use Areas shall provide work space for the veterinarian and the unique storage requirements of the facility. This portion of the building functions as transition spaces between the administration area and the kennels and should act as a noise buffer between the two. The design of this area shall provide a professional, well organized space that creates a sense of pride in the work place.

(4) Multi-Purpose Room. The Multi-Purpose Room, minimum 224 square feet, is used for meetings, staff breaks and overflow workspace.

Basic finish requirements for this room include carpeted floors, painted gypsum board walls and suspended acoustical ceiling tiles. Interior partitions shall provide an STC rating of 50 – 55. Floor outlet shall be located in the center of the room and under the conference table. GFGI furnishings will include four 3 feet x 3 feet tables, ergonomic task chairs, 5 feet x 3 feet wall-mounted dry-erase marker board.

(5) Tack Room. The Tack Room, minimum 108 square feet, shall be located near the entrance to the kennel area and not the main building entrance. Requirements include 12 linear feet of 36 inch x 18 inch deep shelves, a 24 inch hanging space with hooks and 6 linear feet of 18 inch x 18 inch x 12 inch shelves.

(6) Narcotics Storage. The Narcotics Storage Room, minimum 64 square feet, shall be protected with Intrusion Detection Equipment (IDE). Room requirements include a solid metal entry door or covered with 9 to 12 gauge security screening or 16 gauge sheet metal, fastened with smooth head bolts and nuts, pinned in place. Hinges shall be mounted to the inside of the door with non-removable pins. Doors must be secured with a high security lock when not in use. Limit the number of entry points providing access to the storage room to the minimum possible.

All windows providing access to the storage room must be protected by 9 to 12 gauge security screening or 3/8 inch or larger diameter steel bars spaced no more than 6 inches apart. The frames holding the screen or bars must be fastened to the window frame with smooth head bolts.

Vents, crawl spaces and ceilings surrounding the storage room must not allow access to the storage room. Any opening larger than 96 square inches must be covered with 9 to 12 gauge security screen or steel mesh. The screens or mesh must either be welded to the frame of the opening or secured with smooth head bolts pinned in place.

Walls, floors and ceilings of the storage room must provide a degree of protection equivalent or better than the reinforced doors and protected window. GFGI furnishings will include a narcotics safe which will be bolted to the concrete slab, a layout table and two stackable guest chairs.

The Support Areas provide space for the common use areas of the building and shall be centrally located and easily accessible for building occupants as well as maintenance personnel in the case of the mechanical room. The design of this area shall provide a professional, well organized space that creates a sense of pride in the work place.

(7) Narcotics storage will be built to standards of AR 190-51, Appendix B-2 risk level II.

(8) Quarters. Sleeping quarters will be provided to accommodate four persons. GFGI furnishings will include four bunk beds (stacked in pairs) and a side chair.

(9) Latrine. The Latrine shall be sized according to the occupant load.

(10) Locker Room. The Locker Room shall include 10 full height metal lockers and a bench.

(11) Shower. The Shower room shall include 1 shower, 1 water closet, 1 lavatory and a bench.

(12) Communications Room. The Comm Room shall be a minimum of 4 ft x 4ft.

(13) Mechanical Room. The Mechanical Room shall serve as a mechanical/ electrical room for the kennel support building and be sized accordingly.

3.2.3. TRAINING AREA
*3
(1) Obedience Course. Quantity required is one. The obedience course, minimum ~~150~~ 135 ft x ~~150~~ 300 ft, shall be sod grassed and free of objects that may be harmful to MWDs and handlers. The site should be graded for drainage, but minimally sloped to provide a level field for training. The area shall be enclosed with an 8 ft chain link fence, plus 1' wired extension arms. Gates shall be self closing/latching and a minimum 5 ft wide to allow for lawn maintenance equipment. Irrigation for sod is not required.

The area shall be well lighted with shadows eliminated. Poles shall be located on the exterior of the fence. Water shall be provided to the site with a minimum number of hose bibbs installed to provide water for MWDs and lawn watering.

Obstacles for the course will be GFGI.

3.2.4. EXERCISE AREA
*3
(1) Exercise Area. Quantity required is ~~two~~one, ~~each~~ at a minimum ~~20~~ 50 ft x ~~40~~ 28 ft, shall be visually separated from the obedience course to prevent MWD distraction during training. The area shall be sod grassed and free of objects that may be harmful to MWDs and handlers. The site should be graded for drainage, but minimally sloped to provide a level field for training. The area shall be enclosed with an 8 ft chain link fence, plus 1' wired extension arms. Gates shall be self closing/latching and a minimum 5 ft wide to allow for lawn maintenance equipment. Irrigation for sod is not required.

The area shall be well lighted with shadows eliminated. Poles shall be located on the exterior of the fence. Water shall be provided to the site with a minimum number of hose bibbs installed to provide water for MWDs and lawn watering.

(2) Break Area. The quantity required is two, each at a minimum 10 ft x 20 ft, shall be located near the kennels. The break area allows the handler to release the MWD immediately after exiting the kennels or before entering the kennels. The area shall be enclosed with an 8 ft chain link fence. Gates shall be self closing/latching and a minimum 5 ft wide to allow for lawn maintenance equipment. The area shall be provided with a sand surface free of grass and a hose bibb.

3.2.5. EXTERIOR ELEMENTS

The entire complex shall be enclosed with a minimum heavy duty 8 ft high chain link fence plus three strands of barbless wire at the top to prevent a MWD from climbing or jumping out. A minimum 10 ft vehicle gate that can be locked, padlock or cipher lock, shall be provided to allow for food deliveries to the facility and other access requirements. An entry gate for personnel that is visible from the Kennel Master office is also required. The personnel gate shall have a cipher lock and a notification buzzer. All gates shall be self closing/latching. Other perimeter fence types that meet the installation's policy may be used as long as it meets the requirements as a secondary measure to keep MWDs from leaving the compound.

(1) Exterior Storage. Two enclosed 400 sf exterior storage buildings are required for the storage of lawn maintenance equipment, portable kennels and obstacles. Interior/exterior lighting, power and a hose bibb shall be included with each storage building.

(2) ARMAG Explosive Storage. An enclosed prefab ARMAG explosive storage building is required for the storage of explosives used in training. The building will be GFGI however the concrete slab shall be provided by the Offeror. Power and communication services shall be provided and connected to the building.

(3) Walks. Provide paved walks to all areas. Careful consideration of creating one way MWD traffic system is required. Avoid situations which allow MWDs to meet and lead to confrontations.

(4) Dumpster. Locate a trash dumpster inside the perimeter fence for the complex.

3.3 TECHNICAL REQUIREMENTS

The design of the Military Working Dog Kennel Complex shall comply with the requirements and recommendations of Appendix GG: FIELD MANUAL 3-19.17 (MILITARY WORKING DOGS) and Appendix HH: ARMY PAMPHLET 190-12 (MILITARY WORKING DOG PROGRAM). Where technical requirements conflict, the order of precedence shall be: 1) the requirements of RFP Section 01 10 00, 2) Appendix GG – FM 3-19.17, and 3) Appendix HH – DA PAM 190-12.

3.3.1 Site Design

3.3.2 Architectural Design

(1) Exterior architectural features of the building shall be designed based on the following and in accordance with the Installation Design Guide.

(2) Natural Lighting. Provide windows for natural lighting and ventilation in all office areas, as well as skylights above every other interior kennel run ensuring compliance with Anti-Terrorism/Force Protection requirements.

(3) Design Standards and Codes. The design shall be in accordance with the current versions of the Unified Facilities Criteria UFC 1-200-01 Design: General Building Requirements, DA PAM 190_12, and other relevant codes and criteria.

3.3.3 Fire Protection

(1) Standards and Codes. All fire protection and life safety features shall be in accordance with UFC 3-600-01 and the criteria referenced therein. Applicable criteria shall include NFPA 150, Fire and Life Safety in Animal Housing Facilities. Categorization of animals shall be Category A per NFPA 150. The Dog Kennel shall be provided with complete sprinkler protection.

(2) Fire Protection and Life Safety Analysis. A fire protection and life safety design analysis shall be provided for all buildings in the project. The analysis shall be submitted with the interim design submittal. The analysis shall include classification of occupancy (both per the IBC and NFPA 101); type of construction; height and area limitations (include calculations for allowable area increases); life safety provisions (exit travel distances, common path distances, dead end distances, exit unit width required and provided); building separation or exposure protection; specific compliance with NFPA codes and the IBC; requirements for fire-rated walls, doors, fire dampers, etc.; analysis of automatic suppression systems and protected areas; water supplies; smoke control systems; fire alarm system, including connection to the base-wide system; fire detection system; standpipe systems; fire extinguishers; interior finish ratings; and other pertinent fire protection data. The submittal shall include a life safety floor plan for all buildings in the project showing occupant loading, occupancy classifications and construction type, egress travel distances, exit capacities, areas with sprinkler protection, fire extinguisher locations, ratings of fire-resistive assemblies, and other data necessary to exhibit compliance with life safety code requirements.

(3) Sprinkler System. The Military Working Dog Facility shall be fully protected with automatic sprinkler systems. All floors and all areas of the facilities shall be protected. The sprinkler system design shall be in accordance with UFC 3-600-01 and NFPA 13. The sprinkler hazard classifications shall be in accordance with UFC 3-600-01, NFPA 13, and other applicable criteria. Design densities, design areas and exterior hose streams shall be in accordance with UFC 3-600-01. The sprinkler systems shall be designed and all piping sized with computer generated hydraulic calculations. The exterior hose stream demand shall be included in the hydraulic calculations. A complete sprinkler system design, including sprinklers, branch lines, floor mains and risers, shall be shown on the drawings. The sprinkler system plans shall include node and pipe identification used in the hydraulic calculations. All sprinkler system drains, including main drains, test drains, and auxiliary drains, shall be routed to a 2-foot by 2-foot splash block at exterior grade.

(a) Sprinkler Service Main and Riser. The sprinkler service main shall be a dedicated line from the distribution main. Sprinkler service and domestic service shall not be combined. The sprinkler service main shall be provided with an exterior post indicator valve with tamper switch reporting to the fire alarm control panel (FACP) The ground floor entry penetration shall be sleeved per NFPA 13 requirements for seismic protection. The sprinkler entry riser shall include a double check backflow preventer, a fire department connection, and a wall hydrant for testing of backflow preventer. The sprinkler system shall include an indicating control valve for each sprinkler system riser, a flow switch reporting to the FACP, and an exterior alarm bell. All control valves shall be OS&Y gate type and shall be provided with tamper switches connected to the FACP. Facilities with multiple floors shall be provided with floor control valves for each floor. The floor control valve assembly shall be in accordance with UFC 3-600-01, Figure 4-1.

(b) Exterior Hose Stream. Exterior hose stream demand shall be in accordance with UFC 3-600-01.Exterior hose stream demand shall be included in the sprinkler system hydraulic calculations.

(c) Backflow Preventer. A double check backflow preventer shall be provided on the fire water main serving each building. This shall be located within the building. An exterior wall hydrant with

dual hose connections with OS&Y valve shall be provided to allow testing of backflow preventer at design flow as required by NFPA 13.

(d) Fire Department Connection. A fire department connection shall be provided for each building with sprinkler protection. These shall be located to be directly accessible to the fire department.

(4) System Components and Hardware. Materials for the sprinkler system, fire pump system, and hose standpipe system shall be in accordance with NFPA 13 and NFPA 20.

(5) Protection of Piping Against Earthquake Damage. The contractor shall confirm the seismic requirements for the project based on the relevant codes and the results of the geotechnical investigation. If required, sprinkler and fire pump piping systems shall be protected against damage from earthquakes. Seismic protection shall include flexible and rigid couplings, sway bracing, seismic separation assemblies where piping crosses building seismic separation joints, and other features as required by NFPA 13 for protection of piping against damage from earthquakes.

(6) Fire Water Supply. Fire flow test data is provided in Appendix D.

(7) Fire Pump. The requirement for a fire pump installation shall be determined by the Contractor based on fire flow test data from the project site and fire protection system design requirements for the project. If required a complete fire pump installation shall be provided for the facility. It shall comply with the requirements of UFC 3-600-01, NFPA 13 and NFPA 20. The Contractor shall submit fire pump design analysis and drawings in the design requirements.

(8) Fire Alarm and Detection: Refer to Electrical and Communication Systems for requirements.

(9) Building Construction. Construction shall comply with requirements of UFC 3-600-01, the International Building Code, NFPA 101 and NFPA 1.

(a) Fire Extinguisher Cabinets and Brackets. Fire Extinguisher cabinets and brackets shall be provided when fire extinguishers are required by UFC 3-600-01 and NFPA 101. Placement of cabinets and brackets shall be in accordance with NFPA 10. Semi-recessed cabinets shall be provided in finished areas and brackets shall be provided in non-finished areas (such as utility rooms, storage rooms, shops, and vehicle bays). Fire extinguishers shall not be provided in this contract.

(b) Interior Wall and Ceiling Finishes. Interior wall and ceiling finishes and movable partitions shall conform to the requirements of UFC 3-600-01 and NFPA 101.

3.3.4 Thermal Performance

As a minimum, the Contractor shall use recommended strategies from the ASHRAE Standard 198.1, Standard for the Design of High Performance Green Buildings to improve the building envelope, lighting, HVAC equipment and systems, and Service Water Heating.

3.3.5 Plumbing

(1) STANDARDS AND CODES: The plumbing system shall conform to UFC 3-420-01, Plumbing Systems, ASHRAE Standard 189.1, and APPLICABLE CRITERIA.

(2) Plumbing system energy usage and equipment efficiencies shall comply with UFC 3-400-01, Energy Conservation, requirements. Per Executive Order 13423, employ strategies that in aggregate use a minimum of 30% less potable water than the indoor water use baseline.
(3) Freeze proof wall hydrants shall be place every 100 feet along the building exterior and at a minimum of one per face.
(4) Conceal piping in permanent-type structures. Exposed piping shall be protected with suitable devices to prevent access by canines. Arrange piping runs to minimize interference with personnel, equipment, and canines.
(5) Design shall utilize solar energy as a means of meeting all or part of the hot-water requirements. If life cycle cost effective, provide at least 30% of building hot water demand by solar water heaters. Conventional back-up heating equipment will be provided for periods when high demand or an extended period of cloudy days exceeds the capacity of the solar energy system.
(6) Size hot water system and set service water heater (SWH) storage temperature set point for not less than 140°F (60°C). Provide a hot water and cold water blending, tempering valve immediately downstream of the SWH storage tank to provide anti-scalding protection. Set the blending valve to deliver 110°F water. Provide a hot water re-circulation line.
(7) Canine waste shall be disposed using a 6 inch wide modular channel trench drain system. The trench drain system shall be made of high density polyethylene and have a radius bottom with a minimum 0.75% built in slope. Grates shall be a slotted Type 304 Stainless steel top with locking feature. Trench drain system shall have a 6 inch no-hub bottom outlet end cap fitting for connection to the sewer system and a closed end cap with water nozzle for trench washing. Trench system shall be from one manufacturer.
(8) Domestic cold water; hot water (as required); and waste services shall be provided for fixtures and appliances as required by herein and by code.
(9) Kennel Support Building. Toilet facilities shall be provided for 24 employees. Domestic cold water; hot water (as required); and waste services shall be provided for fixtures and appliances as required herein and per code.

3.3.6 Heating, Ventilating, and Air Conditioning

(1) Heating, Ventilation, and Air Conditioning design shall conform to UFC 3-410-01FA, Heating Ventilation, and Air Conditioning; ASHRAE Standards 90.1 - 2007 and 62.1; the Engineer and Construction Bulletin 2011-1, High Performance Energy and Sustainable Policy; and APPLICABLE CRITERIA. The HVAC designer is required to meet the USGBC-LEED™ prerequisites and shall provide documentation for as many LEED credits as possible toward certification of the project. The project shall achieve a 40% energy consumption savings below the consumption of a baseline compared to ASHRAE Standard 90.1-2007 in accordance with Engineer and Construction Bulletin 2010-14.

(2) A ground source heat pump shall be considered for HVAC system. A Thermal conductivity Report is attach as Appendix JJ and shall be used as a basis for engineering analysis. The test well exists on site for reuse as part of the system.
(3) The kennel shall require mechanical heating, ventilation, and air conditioning for the following internal design conditions: 24 canines; indoor ambient temperature range of 64 to 84 deg F dbt for canine comfort; range for relative humidity is 30 to 60%; and the heat generated per 50 lb dog at 231 Btu/hr (sensible), 124 Btu/hr (latent), and 355 Btu/hr (total). The designer shall consider additional factors including method of ventilation; airborne contaminants generated by animals, cage cleaning and bedding.
(4) The kennel support building shall require mechanical heating, ventilation, and air conditioning. The Designer shall consider the following internal loads: number of people, animals, equipment, and lighting as stated herein. Indoor and outdoor design conditions are stated in UFC 3-410-01FA. The design shall control air pressure to ensure directional airflow. For example, quarantine, isolation, soiled equipment, and biohazard areas should be kept under negative pressure, whereas clean equipment and housing areas should be kept under positive pressure. Exhaust and return air grilles shall have 1 in. washable or disposable filters to prevent animal hair and dander from entering the ductwork. Filter the combined supply air, including return and outside air, with a combination of pre-filter(s) with a MERV of 8 and final filter(s) with a MERV of 13 when tested in accordance with ASHRAE Standard 52.2.
(5) Outdoor mechanical equipment shall be roof mounted or mounted at grade. For roof mounted equipment, provide access through ladders and work platform. For equipment at grade, equipment shall be protected by cage or fenced wall to prevent access by canines.

Design HVAC controls in accordance with UFGS 23 09 23 Direct Digital Control for HVAC and Other local Building Systems and UFGS 25 10 10 Utility Monitoring and Control Systems (UMCS).

3.3.7 Electrical and Communications

See Paragraph 6 for clarifications and additional requirements for the electrical and communication systems. The following information supplements electrical requirements contained in APPLICABLE CRITERIA. In cases of conflict between Paragraph 3.3.7 and Paragraphs 5 or 6, the requirements of Paragraph 3.3.7 supersede Paragraphs 5 or 6. Cases of conflict shall be reported to the Contracting Officer during design.

(1) Power

(a) Characteristics. 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. Service shall be 3-phase.

(b) Metered Data. Provide a 1-inch conduit from the electric utility meter to the HVAC DDC panel located inside the mechanical room. The electric meter shall be remotely monitored by the DDC system.

(c) Panelboard Labeling. A permanent label identifying the source panel shall be provided on each panelboard.

(d) Nonlinear Loads. The effect of nonlinear loads such as computers and other electronic devices shall be considered and accommodated as necessary. These loads generate harmonics, which can overload conventionally sized conductors or equipment and thereby cause safety hazards and premature failures. Circuits serving such devices shall be equipped with a separate neutral conductor not shared with other circuits. Panelboards and any dry type transformers shall be rated accordingly.

(e) Receptacles, Generator Connection. A manual transfer switch and generator quick connection panel with receptacle drain connectors and matching source plugs shall be provided. The switch and connectors shall be sized for the facility demand load including the required spare capacity. Connectors shall include locking provisions to prevent accidental cable de-coupling. Coordinate connector selection with the Fort Stewart Directorate of Public Works (DPW) through the Contracting Officer. Coordination will address unique requirements of Fort Stewart (if any). Wall or pedestal mounted receptacle connectors shall be located at a contractor-furnished contractor-installed concrete pad. The pad shall be sized for the anticipated generator size and shall be accessible by vehicle. (The sewage lift station will be served from a generator separate from this Government-furnished Government -installed generator.)

(f) Receptacles, Building Exterior. Ground fault circuit interrupter (GFCI) receptacles shall be provided no less than 50-feet on center on building exterior walls, and no building shall have less than one exterior receptacle. All exterior receptacles shall include rugged die-cast aluminum covers rated for wet locations while-in-use.

(g) Receptacles, Site. A GFCI receptacle shall be provided at each light pole location. Receptacles shall include rugged die-cast aluminum covers rated for wet locations while-in-use and shall be securely mounted 36-inches above grade. (Site receptacles may be integral to light poles if approved by Canoochee EMC.)

(h) Receptacles, Administrative Areas. Power receptacles shall be provided per NFPA 70 and in conjunction with the proposed equipment and furniture layouts. Receptacles shall be mounted 18-inches above finished floor except receptacles for CATV power shall be mounted 80- inches above finished floor. Provide power connectivity to each workstation. Power poles shall not be used.

(i) Receptacles, Bunk (Sleeping) Room. Power receptacles shall be provided per NFPA 70 and in conjunction with the proposed equipment and furniture layouts. Receptacles shall be mounted 18-inches above finished floor except receptacles for CATV power shall be mounted 80- inches above finished floor. Provide power connectivity to one workstation per occupant. Branch circuits shall meet NFPA 70 rules for a dwelling unit.

(j) Receptacles, Kennel Area. Receptacles in the kennel area shall be GFCI type and shall include rugged die-cast aluminum covers rated for wet locations while-in-use. Receptacles shall be mounted 48-inches above finished floor and shall include watertight hubs. (No receptacles shall be located within the kennel runs.)

(k) Power and Data Coordination. Provide duplex receptacles adjacent to each duplex (voice/data) outlet and CATV outlet.

(l) Lightning Protection System and Transient Voltage Surge Protection. Provide a lightning protection system designed in accordance with NFPA 780 and other referenced criteria. Provide transient voltage surge protection.

(m) Emergency Power Supply System, Sewage Lift Station. A Level 2 Emergency Power Supply System (EPSS) as defined by NFPA 110 shall be provided. The EPSS shall include a generator sized to serve the lift station load and shall include an automatic transfer switch. If diesel is used as the fuel source, storage tanks shall be aboveground. The EPSS shall be compatible with, configured for, and connected to the existing Fort Stewart Supervisory Control and Data Acquisition (SCADA) System. The EPSS shall comply with and be commissioned in accordance with applicable OSHA, EPA, NEC and NFPA 110 requirements and Fort Stewart and State of Georgia requirements. A Georgia licensed professional engineer (P.E.) shall design the EPSS and shall coordinate the design with the Fort Stewart Directorate of Public Works (DPW) through the Contracting Officer. If DPW determines permitting is required, the contractor shall comply with the permitting requirements identified by DPW and shall prepare the permit application.

(2) Lighting

(a) Lighting, Exterior. Site lighting shall be provided for access roadways, POV parking, walkways, RMAG Containment Area, Dog Break Area, Dog Exercise Area and Dog Obedience Course. Site lighting shall be designed by the Contractor but procured and installed by Canoochee EMC. Lighting shall be designed to minimize trespassing into the kennel runs.

(b) Lighting, Exterior, Inside Perimeter Fence. All wiring shall be underground but none shall be routed through dog exercise, break or obedience areas. Poles shall be located outside fenced dog areas (e.g., obedience course and exercise area). Pole height shall not exceed 25 feet. Light sources shall be pulse start metal halide, induction or LED lamps. Manual ON/OFF switch controls shall be provided for the Dog Break Area, Dog Exercise Area and Dog Obedience Course. Locate the switches on the outside of the kennel building at the building exit nearest the switched lights. Photocell override shall automatically shut off all site lighting at dawn. Site receptacles may be integral to light poles if approved by Canoochee EMC.

(c) Lighting, Administrative Areas. Interior ambient illumination shall provide a generally glare free, high quality lighting environment and conform to IESNA RP-1-04.

(d) Lighting, Bunk (Sleeping) Room. Lighting in bunk (sleeping) rooms shall be with ceiling-mounted recessed indirect or wall-mounted direct-indirect luminaires.

(e) Lighting, Kennel Area. Each kennel run shall include a vandal and corrosion resistant, enclosed and gasketed light. The fixture shall be UL listed for wet locations and shall include watertight hubs. Each kennel run light shall include a local control switch at the kennel run entrance.

(f) Lighting Levels and Controls. Lighting and lighting controls shall comply with the recommendations of the Illumination Engineering Society of North America (IESNA) and the requirements of ASHRAE 90.1. Daylight harvesting shall be provided in the kennel building to take advantage of skylights. Fixtures controlled by daylight harvesting shall be equipped with multi-level or dimming ballast.

(g) Occupancy Sensors. As a minimum, occupancy sensor controls shall be provided in administrative areas, storage and tack areas, restrooms, multi-purpose rooms, exam rooms and

elsewhere required by criteria. Occupied rooms with occupancy sensors shall include supplemental low voltage switches for manual ON and manual/automatic OFF.

(h) Dimming. Lighting fixtures with dimming ballasts capable of dimming to 5 percent shall be provided in multi-purpose and bunk (sleeping) rooms. (Also see paragraph 3.3.7(2)(f)).

(3) Device Faceplates

All faceplates and faceplate hardware shall be stainless steel unless otherwise indicated to be aluminum. Outdoor faceplates shall be gasketed.

(4) Ceiling Fans

Provide ceiling fans in the kennel area of the kennel building, controlled with a single wall mounted switch. Ceiling fans shall be UL listed for damp locations, shall have a lifetime motor warranty, and shall be sized for the space. The quantity of fans shall be based on the manufacturer's recommendations for the room volume but shall be no fewer than four.

(5) Telecommunications

(a) Telecommunications Room. The telecommunications rooms shall be designed in accordance with the I3A Criteria, except the telecommunications room size may be reduced as indicated herein.

(b) Telecommunications Outlets. Telecommunications outlets shall be provided per the I3A Technical Criteria based on functional purpose of the various spaces within the facility as modified by user special operational requirements. All workstations\desks shall have voice and data connection capability. All multi-purpose rooms shall have voice and data connection capability (minimum four outlets). The bunk (sleeping) room shall have voice and data connection capability (minimum one outlet per occupant). The kennel food preparation area shall have voice and data connection capability (minimum one outlet). A wall telephone outlet with a single jack shall be provided in each mechanical room, electrical room and communications room. Provide a duplex outlet (voice/data) for a network printer/copiers and fax machines. Telecommunications infrastructure shall meet the Installation Information Infrastructure Architecture (I3A) Criteria and ANSI/TIA/EIA requirements.

(c) Color Code. Communication wiring and jacks shall be color coded to match the installation standard of WHITE for voice, BLUE for data, and RED for SIPRNet.

(d) All outside plant (OSP) ductlines shall include one duct with 4-way Maxcell innerduct.

(6) Secret Internet Protocol Router Network (SIPRNET)

There are no SIPRNET requirements for this facility

(7) Cable Television (CATV)

CATV shall be provided in all offices, multi-purpose rooms and bunk (sleeping) rooms. The cable television system shall consist of cabling, pathways, and outlets. CATV outlets shall be mounted 80-inches above finished floor and separated 4-inches from the corresponding CATV power receptacles. CATV head-end equipment shall be located in the communications room. All building

CATV systems shall conform to APPLICABLE CRITERIA to include I3A Technical Criteria and the UFC 3-580-01 Telecommunications Building Cabling Systems Planning/Design.

(8) Audio/Visual Systems

Multi-purpose rooms shall include provisions (consisting of a power receptacle and conduit for signal wiring) for a ceiling mounted Government-furnished Government-installed projector.

(9) Intrusion Detection System

The Contractor shall install the necessary conduit, electrical power, and wiring, to support installation of an ICIDS system. The Government shall install the signal devices and equipment necessary to activate the system. Tag the IDS circuit breaker and tag communication wiring with matching tag at both ends of line. Coordinate device locations and other system requirements with the Fort Stewart Physical Security Officer through the Contracting Officer. Coordination shall be during the design phase.

(10) Closed Circuit Television (CCTV)

The Contractor shall install the necessary conduit and boxes, electrical power, and wiring to support installation of Pan-Tilt-Zoom (PTZ) surveillance CCTV cameras. Two PTZ cameras shall be provided at each kennel run, one aimed toward the interior side of the run and one aimed toward the exterior (outside) side of the run. Additional PTZ cameras shall be provided for coverage of the walkways within the dog kennel area, all facility entrance doors, and the ARMAG site. Each PTZ camera location shall include an outlet box served from the CCTV head-end location. Wiring shall consist of with 1-CAT 6 UTP, 1-RG 6 coax and 18/2 AWG in 2-inch conduit. Device boxes shall be 4-inch square PVC outlet boxes. CCTV head-end equipment shall be located in the administration building. The Government shall install the cameras and equipment necessary to activate the system. Tag the CCTV circuit breaker and tag communication wiring with matching tag at both ends of line. . Coordinate device locations and other system requirements with the Fort Stewart Physical Security Officer through the Contracting Officer. Coordination shall be during the design phase.

(11) Grounding System

The ground counterpoise shall be provided around the building perimeter and shall be utilized for grounding incoming service, building steel, telephone service, piping, lightning protection, and internal grounding requirements. Ground straps shall be provided where required by function and will be connected to the building grounding system. Additional grounding may be provided based on project requirements. Systems shall conform to NFPA 70 National Electrical Code, NFPA 780 Lightning Protection Code, local codes, and the US Army I3A Criteria.

(12) Public Address (PA) System

A zoned public address system shall be provided throughout the kennel complex including outside areas (e.g., dog exercise and break areas and obedience course). Speakers in outdoor areas may be mounted to Contractor-furnished light poles where approved by the light pole manufacturer. Outdoor speakers and speakers located in the kennel area shall be rated for outdoor applications.

(13) Notification Buzzer

A notification buzzer shall be provided at the perimeter fence personnel entry gate and shall sound at the Kennel Master Office, the obedience course, the kennel, and elsewhere as requested by the User. On/Off control shall be provided at the kennel to silence the buzzer when no personnel are present.

(14) Mass Notification System

A mass notification system shall be provided in accordance with UFC 4-010-01. The system shall be fully compatible with and integrated with the local Installation wide Mass Notification System.

(15) Fire Detection and Alarm System (FADS)

(a) A voice evacuation fire alarm and detection system shall be provided for this facility. It shall comply with the requirements of UFC 3-600-01, NFPA 72 and NFPA 150. The system shall be addressable and fully compatible with and integrated with the local Installation wide Fire Alarm System.

(b) All initiating devices shall be connected, Class A, Style 6, to signal line circuits (SLC). All alarm appliances shall be connected to notification appliance circuits (NAC), Class A. 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 shall remain functional. Circuit breaker shall be red lockable type.

(c) Break-glass manual fire alarm stations shall not be used.

(d) Over-voltage and surge protection shall be provided at the input power of all panels.

(16) Power Operated Locks

All power operated door and gate locks shall be fail-safe, allowing entry and egress upon loss of power. All power operated locks shall include a mechanical override, and gates with power operated locks shall include a supplemental mechanical locking mechanism.

(17) Exterior Storage Building

Provide power and lighting to the Exterior Storage Building.

(18) ARMAG Explosive Storage Building

Provide power and lighting service to the ARMAG site for connection to the GFGI ARMAG Explosive Storage Building.

(19) Future Expansion

All electrical systems shall be designed for no less than 25% spare capacity for future expansion of the kennel complex. No fewer than 15% spaces shall be provided in each panelboard.

3.3.8 Energy Conservation

(1) Design the buildings, including the building envelope, HVAC systems, service water heating, power, and lighting systems to achieve an energy consumption that is at least 40 percent below the

consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1. Base the selection of solutions and technologies to achieve the above energy performance requirements on life cycle cost analysis. Life Cycle Cost Analyses shall follow the requirements set forth in NIST Handbook 135 Life-Cycle Costing Manual using an automated calculation tool such as BLCC or LCCID. Cyclical and annual maintenance costs used shall come from ASHRAE recommendations or other similar Industry Standard sources.

(2) The Contractor shall 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. In the case of an electric motor of 1 to 500 horsepower the Contractor shall select only a premium efficient motor

3.3.9 FURNITURE REQUIREMENTS

Provide furniture design for all spaces, including existing furniture and equipment to be re-used. Coordinate with the user to define requirements for furniture systems, movable furniture, equipment, existing items to be re-used, storage systems, etc. Early coordination of furniture schedule is required so the facility is complete and usable at turnover. Furniture procurement is not included in this contract.

4.0 APPLICABLE CRITERIA

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

4.1. INDUSTRY CRITERIA

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

Table 1: Industry Criteria

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

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

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

ASHRAE Handbooks	Fundamentals, HVAC Applications, Systems and Equipment, Refrigeration (Applicable, except as otherwise specified)
ASHRAE Standard 15	Safety Standard for Refrigeration Systems
ASHRAE Standard 62.1	Ventilation for Acceptable Indoor Air Quality
ASHRAE Standard 55	Thermal Environmental Conditions for Human Occupancy (Design portion is applicable, except where precluded by other project requirements.)
ASHRAE Standard 189.1-2009	Standard for the Design of High-Performance Green Buildings (ANSI Approved; USGBC and IES Co-sponsored), - (APPLICABLE TO THE EXTENT SPECIFICALLY CALLED OUT IN THE CONTRACT)
American Society of Mechanical Engineers International (ASME)	
ASME BPVC SEC VII	Boiler and Pressure Vessel Code: Section VII Recommended Guidelines for the Care of Power Boilers
ASME A17.1	Safety Code for Elevators and Escalators
ASME B 31 (Series)	Piping Codes
American Water Works Association (AWWA)	
	Standards [standards for water line materials and construction]
American Welding Society	
	Welding Handbook
	Welding Codes and Specifications (as applicable to application, see International Building Code for example)
Architectural Woodwork Institute (AWI)	
Latest Version	AWI Quality Standards
Associated Air Balance Council (AABC)	
AABC MN-1	National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems

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

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

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

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

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

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

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

4.2. MILITARY CRITERIA

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

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

4.2.2. Energy Independence and Security Act of 2007- “EISA” (applies only to the extent specifically implemented in the contract)

4.2.3. 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.

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

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

4.2.6. UFC 3-101-0 Architectural Design, (Applies only to the extent specifically implemented herein).

4.2.7. UFC 3-210-10, Low Impact Development, applicable only to the extent specified herein.

4.2.8. 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.

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

4.2.10. 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.

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

4.2.12. UFC 3-420-01, Plumbing Systems, (Applicable only to the extent specifically implemented herein).

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

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

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

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

5.0 GENERAL TECHNICAL REQUIREMENTS

This paragraph contains technical requirements with general applicability to Army facilities. See also Paragraph 3 for facility type-specific operational, functional and technical requirements. Residential or similar grade finishes and materials are not acceptable for inclusion in these buildings, unless otherwise specifically allowed. References to ASHRAE Standard 189.1 are to ASHRAE Standard 189.1-2009 unless otherwise specified in this Paragraph.

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 SELECTION: Meet the allowable site requirements of ASHRAE Standard 189.1, Section 5.3, Manadatory Provisions, and either Section 5.4, Prescriptive Option, or Section 5.5, Performance Option; and ASHRAE Standard 189.1, Section 10.3.2.1.1, unless otherwise specified by the current Department of Defense Minimum Antiterrorism Standards for Buildings, UFC 4-010-01.

5.1.3. 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.

5.1.3.1. Enclosures and Visual Screens: 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.

5.1.3.2. Dumpster Pads: 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.

5.1.3.3. 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.

5.1.3.4. Emergency Vehicle Access: 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.

5.1.3.5. Stormwater Management and Low Impact Design: Employ design and construction strategies (Best Management Practices, or BMPs) that reduce stormwater runoff, reduce discharges of polluted

water offsite and maintain or restore predevelopment hydrology with respect to temperature, rate, volume, quality and duration of flow. See “Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act (EISA)” (http://www.epa.gov/owow/NPS/lid/section438/pdf/final_sec438_eisa.pdf) and Paragraph 6, PROJECT SPECIFIC requirements for additional information. BMPs used to treat runoff must be capable of removing 80% of the average annual postdevelopment total suspended solids (TSS) load based on existing monitoring reports. BMPs are considered to meet these criteria if:

(a) They are designed in accordance with standards and specifications from a state or local program that has adopted these performance standardsOR

(b) There exists infield performance monitoring data demonstrating compliance with the criteria. Data must conform to accepted protocol (e.g., Technology Acceptance Reciprocity Partnership [TARP], Washington State Department of Ecology) for BMP monitoring.

(c) In addition, meet the requirements of ASHRAE Standard 189.1, Section 5.3, and either Section 5.4, Prescriptive Option or Section 5.5 Performance Option for Site Development and UFC 3-210-10. If any of the requirements in this subsection are prohibited by state law, state law shall take precedence but only as to those requirements found to be in conflict.

5.1.3.6. Erosion and Sedimentation Control: Meet the requirements of ASHRAE Standard 189.1, Section 10.3.1.3.

5.1.4. EXTERIOR SIGNAGE: Provide exterior signage in accordance with Appendix H, Exterior Signage. Provide exterior NO SMOKING signage that conveys building and grounds smoking policy. Meet the requirements of ASHRAE Standard 189.1, Section 8.3.1.4 (a).

5.1.5. 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. Subsurface Conditions Report: 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. Geotechnical Evaluation Report: 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. Pavement Requirements: Except in Department of Energy (DOE) Climate Zones 6, 7, and 8, meet ASHRAE Standard 189.1, Section 5.3.2.1. If the project is located in DOE Climate Zones 6, 7, or 8, 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 in all DOE Climate Zones shall comply with the Installation requirements and with the Manual on Uniform Traffic Control Devices. Develop a Transportation Management Plan that meets the requirements of ASHRAE Standard 189.1, Section 10.3.2.4.1.

5.2.3.2. Parking Requirements. This subsection is applicable only to parking lots/areas that permit POV parking:

(a) General Parking Requirements:

(1) 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.

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

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

(b) Preferred Parking:

(c) Low-Emitting and Fuel Efficient Vehicles:

5.2.3.3. Sidewalks: Design the network of walks throughout the complex (where applicable) to facilitate pedestrian traffic among facilities, and minimize the need to use vehicles. Incorporate sidewalks to enhance the appearance of the site development, while creating a sense of entry at the primary patron entrances to the buildings. Minimum sidewalk requirements are in Paragraph 3, where applicable and/or paragraph 6 and/or site plans, where applicable. In addition, meet the requirements of ASHRAE Standard 189.1, Section 5.3.2.1.

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 Paragraph 5.9.3.5 below for utility metering requirements.

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 and irrigation systems, if provided, shall comply with ASHRAE Standard 189.1, Section 6.3, Mandatory Provisions, and either Section 6.4, Prescriptive Option, or Section 6.5, Performance Option. In addition, meet the requirements of ASHRAE Standard 189.1, Standard 10.3.2.

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

5.3. COMMISSIONING: Execute total building commissioning practices in order to verify performance of building components and systems and ensure that Owner Project Requirements (OPR) are met. Adopt and follow the requirements of ASHRAE Standard 189.1 Section 10.3.1.2, ASHRAE Guideline 0, ASHRAE Guideline 1.1, LEED Energy and Atmosphere (EA) Prerequisite 1 and LEED EA Credit 3. 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. Commissioning activities shall be consistent with the Pre-Design Phase, Design Phase, Construction Phase and Occupancy and Operations Phase. Perform and document a post occupancy system monitoring and inspection to review building operation within 12 months after beneficial occupancy. Post occupancy system monitoring and inspection results will be used to verify compliance with the Owner's Project Requirements (OPR), to revise and update the Systems Manual and for completion of the Final Commissioning Report.

5.3.1.

5.3.2. Plan Development: Meet the requirements for the development of the Maintenance Plan and Service Life Plan in ASHRAE Standard 189.1, Section 10.3.2.

5.4. ARCHITECTURE AND INTERIOR DESIGN.

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

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

5.4.3. MATERIALS AND RESOURCES: Meet ASHRAE Standard 189.1, Section 9.3, Mandatory Provisions, and either Section 9.4, Prescriptive Option, or Section 9.5, Performance Option.

5.4.3.1. Construction and Demolition (C&D) Waste Management: Meet the requirements of ASHRAE Standard 189.1, Section 9.3.1. A waste management plan and waste diversion reports are required, as detailed in Section 01 57 20.00 10, ENVIRONMENTAL PROTECTION.

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

5.4.5. BUILDING EXTERIOR: Design buildings to enhance or compliment the visual environment of the Installation and reflect a human scale to the facility. Building entrance should be architecturally defined and easily seen. 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 materials colors shall conform to the Installation requirements and if brick or stone, have color that is throughout the material. See Paragraph 6 for project specific requirements.

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

5.4.5.2. Roofs and Exterior Walls: Meet the requirements of ASHRAE Standard 189.1, Section 5.3, Mandatory Provisions, and Section 5.4, Prescriptive Option, or Section 5.5, Performance Option. In addition, if a green roof is considered for this project, meet the requirements of ASHRAE Standard 6.2, Mandatory Provisions, and Section 6.3, Prescriptive Option, or Section 6.4, Performance Option.

5.4.6. BUILDING INTERIOR

5.4.6.1. Daylighting and Low Emitting Materials: Meet the requirements of ASHRAE Standard 189.1, Section 8.3, Mandatory Provisions, and either Section 8.4, Prescriptive Option, or 8.5, Performance Option. In addition, meet the daylighting requirements of ASHRAE Standard 189.1, Section 7.3, Mandatory Provisions, and either Section 7.4, Prescriptive Option, or Section 7.5, Prescriptive Option.

5.4.6.2. Surfaces and Color:

(a) 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. In daylit zones, meet the requirements of ASHRAE Standard 189.1 section 8.4.1.

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

5.4.6.3. Builidng Entrance: Meet the requirements of ASHRAE Standard189.1, Section 8.3.1.5.

5.4.6.4. 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.

5.4.7. COMPREHENSIVE INTERIOR DESIGN

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

5.4.7.2. FF&E Package: 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.

5.5. STRUCTURAL DESIGN

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

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

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

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

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

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

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

5.5.4. TERMITE TREATMENT AND GREEN CLEANING: (Except Alaska) Provide termite prevention treatment in accordance with Installation and local building code requirements, using licensed chemicals and licensed applicator firm. In all States, meet the requirements of ASHRAE Standard 189.1, Section 10.3.2, regarding the building Green Cleaning Plan.

5.6. THERMAL PERFORMANCE

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

5.6.2. 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 that shall meet the requirements of ASHRAE Standard 189.1, Section 7.3, Mandatory Provisions, and either Section 7.4, Prescriptive Option, or 7.5, Performance Option. In addition, meet the requirements of ASHRAE Standard 189.1, Sections 10.3.1.4, 10.3.1.5, 10.3.1.6, and 10.3.2 as well as UFC 3-101-0, Section 3-6. Clearly identify all air barrier components of each envelope assembly on construction documents and detail the joints, interconnections and penetrations of the air barrier components. Clearly identify the boundary limits of the building air barriers, and of the zone or zones to be tested for building air tightness on the drawings. The use of painted interior walls is not an acceptable air barrier method.

5.6.2.1. Air Barrier: The air barrier must be durable to last the anticipated service life of the assembly. Provide a motorized damper in the closed position and connected to the fire alarm system to open on call and fail in the open position for any fixed open louvers at elevator shafts. Coordinate the motorized elevator hoistway vent damper(s) with the Fire Protection System design in Paragraph 5.10. Ensure that the damper(s) is accessible to facilitate regular inspection and maintenance.

5.6.2.2. Thermal Bridge. A Thermal Bridge (or cold bridge) occurs when a thermally conductive material (such as a metal stud, steel frame or concrete beam, slab or column) penetrates or bypasses the exterior insulation system. Design the building envelope to align all insulating elements, ie, the continuous wall insulation, insulated glazing, insulated doors from top of footing to bottom of roof deck. Wrap insulation around roof overhangs. Disconnect window and door sills from interior construction. Utilize thermally broken window and door frames. Provide details to eliminate thermal bridges particularly at floor slabs, roof/wall intersections, steel lintels and relief angles, metal through-wall flashings and at building corners.

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

5.6.2.4. Garages: Compartmentalize garages under buildings by providing air-tight vestibules at building access points.

5.6.2.5. Spaces Under Negative Pressure: Compartmentalize spaces under negative pressure such as boiler rooms and provide make-up air for combustion.

5.6.2.6. 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.

5.6.2.7. Performance Criteria and Substantiation: Test the completed building for air tightness in accordance with UFC 3-101-0, Section 3-6.3. 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) Air Barrier Quality Control Plan: Develop an Air Barrier Quality Control plan to assure that a competent air barrier inspector/specialist inspects the critical components prior to them being concealed. At a minimum, three onsite inspections are required during construction to assure the completeness of the construction and design.

(b) Notification of Testing: 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.

5.7. PLUMBING AND WATER CONSUMING EQUIPMENT

5.7.1. STANDARDS AND CODES: The plumbing system and water consuming equipment shall conform to APPLICABLE CRITERIA and ASHRAE Standard 189.1, Section 6.3, Mandatory Provisions, and either Section 6.4, Prescriptive Option, or Section 6.5, Performance Option. In addition, meet the requirements of ASHRAE Standard 189.1, Section 10.3.2.

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

5.7.3. HOT WATER SYSTEMS: For hot water heating and supply systems, meet the requirements in UFC 3-420-01 and amendments, and the service water heating requirements of ASHRAE 189.1, Section 7.4.4.

5.7.4. SIZING HOT WATER SYSTEMS: Unless otherwise specified or directed in Paragraph 3, design in accordance with ASHRAE Handbook HVAC Applications, Chapter 49, “Service Water Heating,” UFC 3-420-01 and amendments, and ASHRAE 189.1, Section 7.4.3. Size and place equipment so that it is easily accessible and removable for repair or replacement.

5.7.5. 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).

5.7.6. 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.

5.7.7. WATER EFFICIENT PLUMBING FIXTURES: Indoor plumbing fixture equipment shall comply with the following criteria: ASHRAE 189.1, Section 6.3, Mandatory Provisions, and either Section 6.4, Prescriptive Option, or Section 6.5, Performance Option.

5.7.7.1. Water Closets (Toilets): ASHRAE 189.1, Sections 6.3.2.1.a and b. requirements for water closets (toilets) shall be as follows: Flushometer valve type: For single flush, maximum flush volume shall be determined in accordance with ASME A112.19.2/CSA B45.1 and shall be 1.28 gal (4.8 L). For dual-flush, the effective flush volume shall be determined in accordance with ASME A112.19.14 and shall be 1.28 gal (4.8 L). Water closets (toilets)—tank-type: Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Tank-Type High-Efficiency Toilet Specification and shall have a maximum flush volume of 1.28 gal (4.8 L).

5.7.7.2. URINALS: As required by ASHRAE 189.1, Section 6.3.2.1.c, maximum flush volume when determined in accordance with ASME A112.19.2/CSA B45.1 shall be 0.5 gal (1.9 L). Non-water urinals shall comply with ASME A112.19.19 (vitreous china) or IAPMO Z124.9 (plastic) as appropriate.

5.7.7.3. PUBLIC LAVATORY FAUCETS: Lavatory faucets in a public setting shall have a maximum flow rate of 0.5 gallons per minute and be in accordance with ASME A112.18.1/CSA B125.1.

5.7.7.4. PUBLIC METERING SELF-CLOSING FAUCETS: Faucets in a public setting that supply a specific amount of water over a given period shall have a maximum water use of 0.25 gallons per cycle and be in accordance with ASME A112.18.1/CSA B125.1.

5.7.7.5. PRIVATE LAVATORY FAUCETS: Faucets in a private setting such as barracks, family housing, or hospitals shall have a maximum flow rate of 1.5 gallons per minute and be in accordance with ASME A112.18.1/CSA B125.1 and shall comply with the performance requirements of the US EPA WaterSense High-Efficiency Lavatory Faucet Specification.

5.7.7.6. KITCHEN FAUCETS: Kitchen faucets shall have a maximum flow rate of 2.2 gallons per minute and be in accordance with ASME A112.18.1/CSA B125.1.

5.7.7.7. Cooling Towers: In addition to the requirements of Subsection 5.7.1. above, conduct a one-time potable water analysis, measuring at least the following control parameters, in ppm or mg/l: calcium (Ca); total alkalinity; silica (Si); chloride (Cl); and conductivity . Calculate the number of cooling tower cycles by dividing the amount of each parameter in the condenser water by the amount in the potable makeup water. The maximum acceptable levels of the parameters in the condenser water are: Ca (as $CaCO_3$) and Total alkalinity – 1000 ppm; SiO_2 –100 ppm; Cl – 250 ppm; Conductivity – 3500 µS/ml. Limit cooling tower cycles to avoid exceeding maximum values for any of these parameters. AND Complete the following: A system to monitor and control microbiological growth is recommended; Meter the potable makeup water to the cooling tower and blowdown from the cooling; Blowdown must be controlled with a conductivity meter; Report monthly results of the amount of potable water used, microbiological levels, blowdown, and corrosion; On cooling towers, install drift eliminators that achieve minimum efficiencies of 0.2% for counter-flow systems or 0.5% for cross-flow systems.

5.7.7.8. Drainage Systems: Do not use engineered vent or Sovent® type drainage systems.

5.7.7.9. Pipe Location and Insulation: Where the seasonal design temperature of the cold water entering a building is below the seasonal design dew point of the indoor ambient air 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. Meet pipe insulation requirements of ASHRAE 189.1, Section 7.4.3.11 and Table C-11 of Normative Appendix C.

5.7.7.10. Pipe Protection During Construction: Cover all drain, waste and vent piping to prevent mortar or other debris during such construction activities.

5.8. ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

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

5.8.2. 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.

5.8.3. 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.

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

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

5.8.5. LIGHTING: Comply with the recommendations of the Illumination Engineering Society (IES) and requirements of EPAct-2005 and Federal Energy Management Program (FEMP) for lighting products.

5.8.5.1. Interior Lighting:

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

(1) Fluorescent Lighting: Fluorescent lighting systems shall utilize NEMA premium electronic ballasts and high performance fluorescent lamps with a Correlated Color Temperature (CCT) of 4100 Kelvin (K) to 5000 K. Linear fluorescent and compact fluorescent lamps shall have a Color Rendering Index (CRI) of ≥ 82. All fluorescent lamps (compact and linear) shall be reclaimed through a process that captures and properly disposes of or recycles the mercury content. Do not use surface mounted luminaires on acoustical tile ceilings. Provide outside each building emergency egress door an un-switched emergency egress luminaire controlled by photocell or astronomical time clock. All other emergency egress luminaires shall be controlled the same as non-emergency luminaires in a shared space during normal (non-emergency) operation.

(2) Solid-State Lighting: Fixtures shall have a lumen maintenance life expectancy (L_{70}) of ≥ 36,000 hours, a CRI of ≥ 82, and a CCT of 4100 K to 5000 K. Each solid-state fixture model shall be tested in accordance with IES LM-79. Test reports shall verify the fixture performance (lumen output, lumen maintenance, power consumption, efficacy and color) meets or exceeds the fixture manufactures published data. Laboratory testing shall be completed by a National Voluntary Laboratory Accreditation Program laboratory. Provide a five year warranty for fixtures.

(3) Light Level Tuning: Light level tuning is a closed-loop feedback system that measures the illumination level in a space and dims the luminaires when the measured level exceeds the target level, thereby saving the energy that otherwise would be used to compensate for future light depreciation. Provide a life-cycle cost-benefit analysis (LCCA) of light level tuning for all spaces where the general lighting luminaires are equipped with dimming ballasts or LED drivers. The LCCA shall follow the methodology contained in 10 CFR 436. Provide light level tuning where the LCCA shows it to be life cycle cost effective.

(4) Lighting Systems and Controls: Lighting systems (including lighting controls, daylighting controls, and lighting power density limits) shall comply with the requirements of Section 7.4.6 of ASHRAE Standard 189.1 and Section 9 of ANSI/ASHRAE/IES 90.1-2007. Lighting designs shall follow the recommended practices of the IES and shall target the recommended illumination levels of the IES.

(5) Occupancy or Vacancy Sensors: Use occupancy or vacancy sensors to automatically turn off lighting a specified time after all occupants leave the space. The off time shall be user adjustable to 5, 15, or 30 minutes. Selection of the sensor type (single or dual technology, wired or wireless) shall be based on the space configuration, user functionality and life-cycle cost-benefit analysis. Single technology solutions shall incorporate signal processing technology that distinguishes between background noise and actual motion without automatically changing their sensitivity.

(6) Automated Shading: Automated shading shall be considered in spaces utilizing daylight harvesting to maximize the energy savings of the daylighting system. The shades shall be controlled to

reduce glare and unwanted heat gain while still allowing natural light to enter the space. When utilizing automated shading consider the following :

i. For ease of use and space aesthetics, incorporate the automated shades with the lighting control system.

ii. For maximum energy savings the automated shading system shall predictably position the shades based on a combination of time of day, façade direction, and sky conditions.

iii. For maximum design flexibility and ease of installation, shade system should have the capability to address and control each shade individually.

iv. The shading system shall have a manual override that allows the occupant to temporarily adjust the shades to any desired position. The system shall revert back to automatic control after a specified period of time.

(b) Provide a life-cycle cost-benefit analysis (LCCA) of automated shading for all spaces where daylight harvesting is provided. The LCCA shall follow the methodology contained in 10 CFR 436. Provide automated shading where the LCCA shows it to be economical.

(1) Scene-Based Dimming: Use scene based dimming in multiple-use areas including auditoriums, conference rooms and classrooms. Also provide scene based dimming in dining rooms and gymnasiums with multiple functions. One button preset touch recall shall allow multiple zones of light within a space to go to the appropriate light levels, known as a scene, for a specific task or use. Scene based control shall allow the integration of AV controls, shading/projection screens and lighting to work seamlessly with one button preset touch (i.e. lights dim, projection screen lowers, and shades go down).

(2) Personal Lighting Control: Personal lighting controls exceeding ASHRAE requirements shall be considered. Personal lighting controls allow users to vary the general light level based on the task at hand. Personal control can be achieved by wall mounted controls (hard wired or wireless), Infrared or Radio Frequency (RF) wireless devices, or via computer. Digital addressable ballasts and light emitting diode (LED) drivers allow the control flexibility of personal dimming of installed lighting on the occupant's work area (i.e. dim the luminaire over their cubicle to the appropriate light level).

(3) Wireless and Plug-and-Play Controls: Wireless and plug-and-play lighting controls shall be considered for all installations where flexibility is paramount. To avoid interference, wireless products shall communicate in an FCC frequency band that does not allow continuous transmissions.

(4) Testing Agent: An independent agent with no less than three years experience in testing of complex lighting control systems shall be hired to conduct and certify functional testing of lighting control devices and control systems. The testing agent shall not be directly involved in either the design or construction of the project and shall certify the installed lighting controls meet or exceed all requirements of ASHRAE Standard 189.1, ANSI/ASHRAE/IES Standard 90.1-2007, and all documented performance criteria. The lighting control manufacturer's authorized technical representative may serve as the testing agent. Submit qualifications of the testing agent for approval.

(5) Manufacturer Support: shall include technical phone support located in the United States. The technical phone support shall be available 24 hours a day, 365 days a year.

5.8.5.2. Exterior Lighting Requirements: These requirements apply to exterior lighting illuminating any building, site, property, structure, gate, sign, roadway, parking lot, pathway, sidewalk, landscape, structure, etc. that is owned, operated by, or constructed to be leased to the Department of the Army. This includes all Sustainment, Restoration, and Modernization (SRM) and Military Construction activities within the United States, its territories, and overseas on permanent Active Army installations, Army Reserve Centers, Army National Guard Readiness Facilities, and Armed Forces Reserve Centers, regardless of funds source. See Paragraph 6.9 for site specific information, if any, on exterior lighting systems.

(a) General: Exterior lighting technology should be selected based on a balance of energy performance and quality of light, while remaining life-cycle cost effective and environmentally responsible. Exterior lighting systems or luminaires selected for use should have demonstrated adherence to quality

standards by being recognized by the DesignLights Consortium (reference e), the ENERGY STAR Program, the FEMP or other third-party qualifier appropriate to the technology. Manufacturers should also stand behind their products by providing a Luminaire warranty for at least five years or more. Design teams should carefully consider the occupancy and purpose of the lighting requirements and incorporate energy-saving controls, sensors, and the use of bi-level fixtures to provide exterior lighting levels only as appropriate and only during the hours of night needed. Other energy-saving and lighting quality design considerations include ensuring better uniformity of lighting distribution to required levels to reduce over-lighted hotspots and control light trespass outside the area of intended coverage.

(b) Exterior Lighting Performance by Application: Exterior lighting systems should meet, at a minimum, the better of the standards below in Table 1 or the DLC Product Qualification Criteria (reference e) or current ENERGY STAR qualification or FEMP designation requirements.

(c) General Exterior Lighting: Typically lighting to provide visibility for security and people moving along established circulation pathways through an illuminated area to or from a destination. Examples include roadways, parking lots, parking structures, sidewalks, tarmacs, service areas, and secondary exits from buildings.

(d) Architectural Lighting: Lighting in use where exterior spaces are occupied at night for a functional purpose, such as plazas, gas stations, pavilions, or amphitheaters. Also, for use where a higher quality of light is desired, such as building entrances, wall-wash luminaires, illumination of architectural or landscaping features, sculpture, displays, exhibits, flags, gates, primary signage, etc.

(e) Exceptions: Where a non-white light color is specifically desired by aesthetic design or a color-specific functional requirement (e.g. water feature lighting, entertainment, signal lights, airfield lights, marine wildlife protection, etc.), the CRI and CCT range values indicated may not apply. Specialized lighting, such as lighting for monitoring systems designed to use non-visible spectrum light, are also exempt from the minimum CRI and CCT standards as well. Luminaires primarily powered by on-site renewable energy (e.g. solar and/or wind) are also exempt from the requirements herein.

Table 1 – Minimum Exterior Lighting Performance by Application. These values represent minimum standards and do not supersede higher standards that may also be applicable or specified by design.

Application	Luminaire Efficacy	CRI	Nominal CCT Ranges	Lamp Life
General Exterior Lighting	65	65	3000-5700	50,000
Architectural Lighting	50	75	3500-5000	50,000

Units:

Luminaire Efficacy (with complete fixture load including ballast/driver loads) is in lumens per watt
CRI (Color Rendering Index) is a value without units
CCT (Correlated Color Temperature) Range is in Kelvin Temperature
Minimum Lamp Life is in Rated Hours per TM-21

(f) Life-Cycle Cost Analysis (LCCA) and Renewable Energy Opportunities. On-site renewable or alternative energy power system cost over a 25-year life-cycle should be compared to the cost of the conventional grid-connection infrastructure, operation and maintenance costs thereof, proper time-of-use grid energy cost with line losses and price escalation. Renewable or alternative energy systems should be used wherever the payback period less than or equal to the life cycle period. Design team selections and Value Engineering evaluations are to prioritize a reduced total cost of ownership during the full life-cycle period over the first costs of design and construction. The LCCA shall follow the methodology contained in 10 CFR 436.

(g) Sustainability and Environmental Impact Reduction. To meet the mercury-use reduction intent of EISA 2007 (Reference c) and other sustainability goals, lighting systems should not contain added mercury in excess of 5mg per lamp or 80 picograms per Lumen Hour. Whenever two or more viable lighting technologies are substantially equal in life-cycle cost and performance, preference should be given to the technology with the lowest mercury content per Lumen Hour.

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

5.8.6.1. Testing: 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 5.9.2.5 for design of environmental systems for Telecommunications Rooms.

5.8.6.2. Installation: 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.

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

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

5.9. HEATING, VENTILATING, AND AIR CONDITIONING

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

5.9.2. DESIGN CONDITIONS:

5.9.2.1. Outdoor and Indoor Calculations and Requirements: Indoor design conditions and load calculations 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 62.1-2007. Outdoor design

conditions are in UFC 3-410-01FA except that weather data is specified in paragraph 6, rather than at the URL (web link) listed in the UFC.

5.9.2.2. Indoor Air Quality: Buildings indoor air quality sytems, thermal comfort, acoustical control, equipment, calculation procedures, construction and start-up shall comply with ASHRAE Standard 189.1, Section 8.3, Mandatory Provisions, and Section 8.4, Prescriptive Option, and either Section 8.5, Performance Option unless otherwise specified in this subsection.

5.9.2.3. Outdoor Air Delivery Monitoring: Spaces Ventilated by Mechanical Systems. Reference Sections 7.4.3.2, 8.3.1.2.1, and 10.3.2, of ASHRAE Standard 189.1. A densely occupied space is defined as those spaces with a design occupant density greater than or equal to 25 people per 1000 ft^2 ($100m^2$).

5.9.2.4. Environmental Tobacco Smoke: a. Smoking shall not be allowed inside the building. Signage stating such shall be posted within 10 ft (3 m) of each building entrance. b. Any exterior designated smoking areas shall be located a minimum of 50 ft (7.5 m) away from *building entrances*, *outdoor air* intakes, and operable windows. c. Section 6.2.9 of ANSI/ASHRAE Standard 62.1 shall not apply.

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

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

5.9.2.7. Environmental Requirements for Telecommunications Rooms and Telecommunications Equipment Rooms, (including SIPRNET ROOMS, where applicable for specific facility type): Comply with ANSI/EIA/TIA 569 (including applicable Addenda**)**. Maintain environmental conditions at the Class 1 and 2 Recommended Operating Environment. Before being introduced into the room, filter and pre-condition outside air to remove particles with the minimum MERV filtration quality shown in the ASHRAE HVAC Applications, Chapter 19. Maintain rooms under positive pressure relative to surrounding spaces. Design computer room air conditioning units specifically for telecommunications room applications. Build and test units in accordance with the requirements of ANSI/ASHRAE Standard 127. A complete air handling system shall provide ventilation, air filtration, cooling and dehumidification, humidification (as determined during the design phase), and heating. The system shall be independent of other facility HVAC systems and shall be required year round.

5.9.2.8. 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.

5.9.3 Utility Meters: Measurement devices with remote communication capability shall be provided to collect energy and water consumption data for each energy supply source and water supply source to each facility, including gas, water (potable, reclaimed and rainwater), electricity, and distributed energy that exceeds the thresholds listed in ASHRAE Standard 189.1. Meet the requirements of ASHRAE Standard 189.1, Sections 6.3.3, 7.3.3, 10.3.2 and AR 420-1, Chapter 22. For Government owned utilities, install meters with remote communication capability as well as have a continuous manual reading option. Water meters shall provide daily data and shall record hourly consumption. 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 to a meter data management system 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. Exception: Renovation or energy projects with programmed costs less than $200,000 shall incorporate lower-cost energy monitors when cost effective over the life-cycle of the building following the monitoring guidance as detailed in ASHRAE Standard 189.1 Section 7.3.3.

5.9.3.1 Data Storage and Retrieval. The meter data management system shall be capable of electronically storing water meter and sub-meter data and creating user reports showing calculated hourly, daily, monthly and annual water consumption for each meter and sub-meter and provide alarming notification capabilities as needed. In addition, verification of meter operation will be conducted at installation.

5.9.3.2 Evaporative Cooling Sub-metering: For buildings that use evaporative cooling, cooling tower(s), hot water makeup systems, or automatic landscape irrigation system(s), separate submeters shall be provided for each such application. Water use data shall be collected at each source (e.g. *potable water*, reclaimed water, rainwater) for any source that exceeds the thresholds of: Potable water- 3,800 L/day (1,000 gal/day); Municipally reclaimed water - 3,800 L/day (1,000 gal/day); and Alternate sources of water - 1,900 L/day (500 gal/day).

5.9.3.3 Water Sub-metering: Sub-metering shall also be provided to collect water use data for each of following building subsystems, if they are sized above the threshold levels: Cooling towers – Primary flow > 30 L/s (500 gpm); Evaportative Coolers – Makeup water > 0.04 L/s (0.6 gpm); Steam and hot water boilers - > 50 kW (500,000 Btu/h) input; Irrigated landscape area with controllers - > 2500 m2 (25,000 ft2); Any large water using process – Consumption > 3,800 L/day (1000 gal/day).

5.9.3.4 Outdoor Irrigation: Outdoor irrigation shall have smart controllers that will shut off when rainfall is sensed (ASHRAE Standard 189.1 paragraph 6.3.1.3 (2011 version)). Outdoor irrigation shall be used only to temporarily for plant establishment and shall be removed within a period not to exceed 18 months of installation.

5.9.3.5 Energy Metering: Meters with remote metering capability or automatic meter reading (AMR) capability shall be provided to collect energy use data for each supply energy source (e.g. gas, electricity, district steam) to the building that exceed thresholds of: Electrical service - > 200 kVA; On-site renewable electric power – All systems > 1 kVA (peak); Gas and steam service - >300 kW (1,000,000 Btu/h); Geothermal - >300 kW (1,000,000 Btu/h0 heating; Solar thermal - >10 kW (30,000 Btu/h). Utility company service entrance/interval meters are allowed to be used provided they are configured for automatic meter reading (AMR) capability. Sub-metering with remote metering capability shall be provided to collect energy use data for each subsystem component that meet the following thresholds: Chillers/heat pumps - >70 kW (240,000 Btu/h) cooling capacity; Packaged AC units - > 70 kW (240,000 Btu/h) cooling; Fans - > 15 kW (20 hp); Pumps - > 15 kW (20 hp); Cooling towers - > 15 kW (20 hp); Boilers and other heating equipment - >300 kW (1,000,000 Btu/h) input; General lighting circuits - > 100 kVA; Miscellaneous electric loads - > 100 kVA).

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

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

5.9.4.1 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.

5.9.4.2 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.

5.9.4.3 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.

5.9.4.4 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.

5.9.4.5 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.

5.9.4.6 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.

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

5.9.4.8 Not Used

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

(a) 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.

(b) 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.

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

(a) The latest version of all software and user manuals required to program, configure and operate the system.

(b) Points Schedule drawing that shows every DDC Hardware device. The Points Schedule shall contain the following information as a minimum:

(1) Device address and NodeID.

(2) Input and Output SNVTs including SNVT Name, Type and Description.

(3) Hardware I/O, including Type (AI, AO, BI, BO) and Description.

(4) Alarm information including alarm limits and SNVT information.

(5) Supervisory control information including SNVTs for trending and overrides.

(6) Configuration parameters (for devices without LNS plug-ins) Example Points Schedules are available at https://eko.usace.army.mil/fa/besc/

(c) Riser diagram of the network showing all network cabling and hardware. Label hardware with ANSI.CEA-709.1 addresses, IP addresses, and network names.

(d) Control System Schematic diagram and Sequence of Operation for each HVAC system.

(e) Operation and Maintenance Instructions including procedures for system start-up, operation and shut-down, a routine maintenance checklist, and a qualified service organization list.

(f) LONWORKS® Network Services (LNS®) database for the completed system.

(g) Quality Control (QC) checklist (below) completed by the Contractor's Chief Quality Control (QC) Representative

Table 5-1: QC Checklist

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

5.9.4.11 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.

5.9.4.12 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.

5.9.4.13 Provide training at the project site on the installed building system, including all commissioned systems and equipment (ASHRAE Standard 189.1, Section 10.3.1.2), . Upon completion of this training each student, using appropriate documentation, should be able to start the system, operate the system, recover the system after a failure, perform routine maintenance and describe the specific hardware, architecture and operation of the system.

5.10 ENERGY CONSERVATION

5.10.1 ENERGY EFFICIENCY: The building(s), including the envelope(s), HVAC systems, service water heating, power, and lighting systems, shall meet, at a minimum, the Mandatory Provisions in Section 7.3 and either the Prescriptive Option in Section 7.4 or the Performance Option in Section 7.5 of ASHRAE Standard 189.1. ASHRAE 189.1 is the minimum requirement that incorporates by reference the requirements of ASHRAE Standard 90.1-2007 and shall be used as the project baseline for life-cycle cost comparisons. A LCCA is not required on the baseline project. Substantiation requirements are defined in Section 01 33 16, Design After Award and ASHRAE Standard 189.1, Section 10.3.2. Exception 1: The on-site renewable energy systems included in ASHRAE Standard 189.1, Section 7.4.1.1 are not required.

5.10.1.1 Minimum Energy Consumption: The building, including the building envelope, HVAC systems, service water heating, power, lighting systems and process and plug loads shall achieve an energy consumption that is a minimum of 30% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1-2007 and that is life cycle cost effective. Energy calculation methodologies and substantiation requirements are defined in Section 01 33 16, Design After Award. A LCCA is required.

5.10.1.2 EISA 2007 Requirement: Design the building to achieve the maximum possible fossil fuel-generated energy consumption reduction based on the requirements of EISA 2007 Section 433 that is life cycle cost effective. A LCCA is required.

5.10.1.3 LCCA: Where a LCCA is required, an incremental LCCA shall be completed for all energy efficiency or conservation features provided in excess of the baseline to ensure the payback period is no greater than the lesser of 40 years or the projected life of the facility. Equipment procurement, fuel, maintenance, repair, replacement, and any other quantifiable benefits and costs are to be included in the LCCA. The LCCA will be documented and made part of the design analysis. The LCCA shall follow the methodology contained in 10 CFR 436.

5.10.2 EnergyStar AND FEMP PRODUCTS: The heating, ventilation, and air conditioning shall comply with Section 6 of ANSI/ASHRAE/IESNA 90.1-2007 and Section 7.4.2.1.b of ASHRAE Standard 189.1, including the Normative Appendix C of ASHRAE Standard 189.1 with the following modification: Purchase Energy Star products, except use FEMP designated products where FEMP is applicable to the product type. The term “Energy Star” means a product that is rated for energy efficiency under an Energy Star program. The term “FEMP designated” 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. For projects located OCONUS the products listed in ASHRAE Standard 189.1, Section 7.4.7, shall have an equipment efficiency that is equivalent or greater than the criteria required to achieve the ENERGY STAR label or meets or exceeds the equivalent of FEMP designated efficiency requirements.

5.10.3 SOLAR HOT WATER HEATING: Design and construct all new construction projects with an average daily non-industrial hot water requirement of 50 gallons or more, and located in an area shown on the NREL solar radiation maps (http://www.nrel.gov.gis.solar.html) as receiving an annual average of 4kWh/m2/day or more to provide a minimum of 30 percent of the facility’s hot water demand by solar

water heating. Waste heat harvesting, integrated co-generation systems, or a combination thereof may be used in lieu of solar water heating where they achieve equivalent energy savings, as documented in the project's design analysis and commissioning analysis.

5.10.4 WATER USED FOR HEATING AND COOLING: Meet the requirements of ASHRAE 189.1 Section 6.3.2.3 – HVAC Systems and Equipment and Section 6.4.2.1 – Cooling Towers. When potable water is used to improve a building's energy efficiency, employ life-cycle cost effective water conservation measures per requirements of EPAct 2005 Section 109. This includes potable water used for both domestic and process purposes.

5.10.5 RENEWABLE ENERGY: See Paragraph 6, PROJECT SPECIFIC REQUIREMENTS for renewable energy requirements for this project.

5.10.6 FUNDAMENTAL REFRIGERANT MANAGEMENT: Meet the requirements of ASHRAE Standard 189.1, Section 9.3.3.

5.11 FIRE PROTECTION

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

5.11.3 INSPECTION AND TESTING: 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.

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

5.11.5 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.

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

5.11.7 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.

5.12 SUSTAINABLE DESIGN

5.12.2 STANDARDS: Sustainable design shall conform to APPLICABLE CRITERIA. See Paragraph 6, PROJECT-SPECIFIC REQUIREMENTS for which version of LEED applies to this project, however, this project shall achieve a minimum of LEED Silver Certification by Green Building Certification Institute (GBCI). Each building must individually comply with the requirements of paragraphs ENERGY CONSERVATION and PLUMBING AND WATER CONSUMING EQUIPMENT. The project must earn the points associated with compliance with paragraph 5.10, ENERGY CONSERVATION,of this RFP.

5.12.3 In accordance with the National Defense Appropriations Acto fo 2012, Section 2830, the contractor will not be compensated for any expenses associated with the express intent to obtain LEED certification above the SILVER level. It is recognized that competitive best balue proposal details and requirements cited else where in this document and supporting documents may provide for features which allow for a certification higher than SILVER to be obtained. Whether to achieve a future marketing advantage or for toher purposes, the contractor may obtain LEED GOLD or PLATINUM certification(s) provided that achieving such certification imposes no additional cost to the government.

5.12.4 LEED INNOVATION AND DESIGN AND REGIONAL PRIORITY 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 and RP 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.

5.12.5 DOCUMENTATION FOR CERTIFICATION: All LEED Prerequisite and Credit documentation shall be provided to GBCI and the Owner (if requested) in addition to any other documentation requirements Online documentation shall be uploaded to GBCI and updated at each phase of the project.

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

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

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

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

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

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

6.0 PROJECT SPECIFIC REQUIREMENTS FORT STEWART, GA

6.1. GENERAL

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

6.2. APPROVED DEVIATIONS

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

NONE

6.3. SITE PLANNING AND DESIGN

6.3.1. General:

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

6.3.1.1. Site Plan

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

6.3.1.2. NOT USED

6.3.1.3. NOT USED

6.3.1.4. On-Post Recycling Center

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

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

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

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

6.3.2. Site Structures and Amenities

6.3.2.1. Storm Drainage System

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

6.3.2.2. Dumpsters

Dumpster enclosure openings must be a minimum of 12 feet wide per dumpster.

Dumpster Screening shall match or compliment the surrounding facilities and current dumpster systems in the area. Locate dumpster pad to minimize backing of trash transfer vehicles. Locate dumpster pads and screening in accordance with setbacks in UFC 4-010-01.

6.3.3. Site Functional Requirements:

6.3.3.1. Stormwater Management (SWM) Systems.

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

(b) Additional information:

No Additional Requirements

(c) Provide a Storm Water Pollution Prevention Plan for approval. Keep the approved plan onsite at all times for inspection by EPA, Georgia Department Natural Resources (Georgia DNR), and Fort Stewart/Hunter AAF environmental personnel. To the extent possible within the contract cost limit, post development runoff shall equal predevelopment runoff. Storm water design shall also consider future development upstream and that flows through the project site. Wet detention ponds are not allowed. Grade all sites to drain without ponding of water. Design dry detention basins to hold water for a MINIMUM of 24 hours, to remove total suspended solids by 80%, and meet detention requirements for flood controls as required during heavier rain events. See Appendix Dry Detention Pond Specifications.

6.3.3.2. Erosion and Sediment Control

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

6.3.3.2.1. Notice of Intent (NOI) Document

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

The DPW will review the NOI package and provide comments to the Contractor. The Contractor shall revise and resubmit the NOI package for DPW signature. The DPW will submit the completed NOI

package via certified mail to the State of Georgia. The NOI package must be received by the Georgia Environmental Protection Division at least 14 days prior to any land disturbing activities.

6.3.3.2.2. Notice of Termination (NOT) Document

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

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

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

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

6.4. SITE ENGINEERING

6.4.1. Existing Topographical Conditions

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

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

6.4.2. Existing Geotechnical conditions:

See Appendix A for a preliminary geotechnical report.

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

See appendix D for fire flow test results.

6.4.4. Pavement Engineering and Traffic Estimates:

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

6.4.4.2. Additional information

No additional requirements

6.4.4.3. Vehicular Parking Areas

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

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

(c) Design parking areas to avoid ponding.

6.4.4.4. Flexible Pavement Design

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

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

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

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

6.4.4.5. Rigid Pavement Design

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

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

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

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

6.4.4.6. Sidewalks

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

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

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

No additional requirements

6.4.6. Base Utility Information

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

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

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

6.4.6.1. Electrical Service

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

6.4.6.2. Communications Service

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

6.4.6.3. Sanitary Sewer Service

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

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

6.4.6.4. Storm Drainage Service

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

6.4.6.5. Water Service

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

(a) Backflow prevention devices

(b) Lead-free solder on copper pipes

(c) Water service connections must be metered

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

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

6.4.6.6. Natural Gas Service

Natural gas IS NOT available in the project area. The design, routing, tie-in, and installation of the exterior gas distribution system (up to and including the gas meter/regulator assembly) shall be accomplished by the Design/Build Contractor. Natural gas meters to be provided shall be compatible with the building's DDC system. Fort Stewart purchases natural gas through a Defense Energy Supply Company (DESC). The utility is distributed locally by Atlanta Gas Light. The installation receives natural

gas on a firm basis. Point of contact at Fort Stewart for gas service line capacity, size, routing, and points of connection to the gas distribution system is Fred Cavedo, 912-767-5499. The nearest gas line available for use by this project is located as indicated in the Attachments.

6.4.6.7. Hydronic Piping

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

6.4.6.8. Local Telephone Service

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

6.4.6.9. Cable TV Service

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

6.4.7. Cut and Fill

Earth cut and fill slopes shall not exceed 3 horizontal to 1 vertical. Retaining walls are not an option to limit the amount of cut and fill.

6.4.8. Borrow Material

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

Recommended borrow pits; based on proximity of project site are A14.1 BP2 and B8.3 BP1 (see location map in Appendix E). Borrow pit recommendations are based on proximity to the project site(s).

6.4.9. Haul Routes and Staging Areas

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

6.4.9.2. Additional Site Requirements

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

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

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

6.4.10. Clearing and Grubbing:

6.4.10.1. Tree Removal and Timber Harvesting Requirements

Timber Harvesting will be completed under separate contract prior to Notice To Proceed. Remove all trees or portions of trees remaining after the Timber Harvest Contractor has completed his operations.

6.4.10.2. Timber Harvesting in Wetlands and Streamside Management Zones

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

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

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

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

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

6.4.10.3. Harvesting Streamside Management Zones and Wetlands

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

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

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

(d) Maintain the integrity of stream banks.

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

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

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

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

6.4.10.4. Slash and Residual Tree Removal

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

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

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

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

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

6.4.11. Landscaping:

Comply with the following references:

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

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

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

- SD- 04 Samples
  - Topsoil - submit one pint
  - Mulch - submit one pint
- SD-06 Test Reports
  - Topsoil Composition Tests; Soil Test of current growing area
  - Percolation Test; Percolation Test of current growing area

6.4.12. Turf: Sod all disturbed areas within the Garrison area. All other areas may be seeded. Use Tifway 419 Bermuda for sod and seed.

6.5. ARCHITECTURE

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

6.5.2. **Design**

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

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

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

(b) Meets Milestones within Maximum Performance Duration.

(c) Achieves Full Scope indentified in this Solicitation

(d) Best Life-Cycle Cost Design

(e) Meets the Specified Sustainable Design and LEED requirements

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

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

Fort Stewart is currently implementing an architectural design theme called "Southern Living Station of Choice," implying that the installation has all the amenities that would cause a military service member to request being stationed at Fort Stewart. The architectural characteristics of this theme are reminiscent of the Southern Colonial Revival style. It incorporates specific architectural features such as porticos, verandas, columns, low-pitched hip or gable roofs and regular patterns of fenestration. Building materials such as brick, concrete masonry units and stucco are used and the range of colors is limited to emphasize earth tones and white. When properly combined, these elements create an architectural image which expresses continuity with Georgia architectural traditions. In the current period of construction, a number of buildings are completed or under construction, and more are planned. These include the Command and Control Facility (Bldg. 001), the Army Education Center, the Soldier Service Center (Bldg. 253), the Troop and Family Care Medical Clinic (Bldg. 412), the Military Police Headquarters (Bldg. 258), the Post Chapel (Bldg. 500), the entrance gates and the new Brigade Combat Team (BCT) area.

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

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

6.5.2.6. Additional architectural requirements:

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

(b) Lockset cylinders shall be fully compatible with products of the Best Lock Corporation and shall have interchangeable cores which are removable by a special control key. Cores shall have seven pin tumblers and shall be factory set using the A4 system and E keyway. All locksets and exit devices shall accept the same interchangeable cores.

(c) If the project includes any elevators, provide an elevator inspector, licensed by the State of Georgia, who shall inspect the installation and provide testing of all new elevators and certify in writing that they meet all requirements.

(d) Color match all exterior louvers, vents, exhaust grilles, etc. to the surrounding building finish material, unless otherwise specified by the Installation.

(e) Use standard size brick (or standard size brick veneer) for all exterior brick facades.

(f) Submit exterior finishes for (Installation Master Planning Division, DPW) Government approval (GA).

6.5.3. Programmable Electronic Key Card Access Systems:

The Installation does not have a standard post-wide key card system.

6.5.4. INTERIOR DESIGN

No additional requirements.

Interior building signage requirements:

No additional requirements.

6.6. STRUCTURAL DESIGN

6.6.1. Foundation

Treat subgrades under all facility foundation to resist subterranean and other wood destroying insects known to exist in the vicinity of the site. Such treatment shall be in accordance with the environmental criteria referenced in this document.

6.6.2. Slabs on Grade

Provide all interior slabs on grade, including storage and mechanical rooms, garages, and carports with a moisture vapor barrier consisting of lapped polyethylene sheeting having a minimum thickness of 6 mils and a minimum 4-inch thick capillary water barrier. Provide capillary water barrier of clean, washed, sand, poorly graded rock, crushed gravel, or natural gravel. Conform to ASTM C 33 for fine aggregate grading with a maximum of 3 percent by weight passing ASTM D 1140, No. 200 sieve (wash), or coarse aggregate size Nos. 57, 67, 7, 78, or 89.

6.6.3. Structural Loading

(a) For Seismic and Wind Load Analysis, the occupancy factor shall be II, as indicated in the most recent version of ASCE 7.

(b) The wind analysis shall be based on a minimum design wind speed of 110 mph for Ft Stewart and 120 mph for Hunter AAF.

(c) For seismic design (Site Class B), the maximum considered earthquake (MCE) spectral response acceleration at short periods and 1 second period shall be, Ss= 29 %g for Ft Stewart and 38 %g for Hunter AAF and S_1 = 10 %g for Ft Stewart and 12 %g for Hunter AAF..

(d) Snow load is Zero.

(e) Roof Live Loads (20 psf minimum)

(f) Frost Penetration is Zero.

6.7. THERMAL PERFORMANCE

No additional requirements

6.8. PLUMBING

6.8.1. For barracks buildings: In all toilet areas requiring water closets, provide elongated floor mounted vitreous china flush tank type with vitreous china lid.

6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.9.1. General.

6.9.1.1. See Appendix C: UTILITY CONNECTIONS for additional information and points of contact.

6.9.1.2. Hold site coordination meetings at the start of design and when necessary thereafter. Meet with all applicable parties, including the installation Network Enterprise Center (NEC), the privatized electric Utility Company, the local cable television (CATV) company, and the Contracting Officer's Representative (COR). Address all design, demolition, and construction work including schedules, capacities, equipment selection, equipment locations, utility routing, connection points and final connection responsibilities..Route all coordination including exchanges of information between the Design-Build Contractor and the installation DPW, NEC, the Utility Company, the local CATV company information and other utility entities through the COR. Coordinate the installation of all privatized utilities to avoid conflicts and ensure all utilities are in place prior to landscaping

6.9.2. Exterior Electrical Distribution System

6.9.2.1. General. Canoochee EMC owns, manages, and maintains the primary distribution system at Ft. Stewart The existing primary power distribution system is a 24900/14400 volts, three-phase, four-wire, grounded wye system. The Utility Company will design and construct site electrical primary distribution infrastructure, cabling,equipment, provide and install meters and the service transformer(s). The Utility Company will install secondary service cable from the point of metering to the service transformer. The Utility Company will demolish existing exterior primary lines and equipment no longer required on the project site(s). For all services, the utility will install the cable terminators and connect to the transformer. The Utility Company's work will be under separate contract with the Government and is not part of this contract.

6.9.2.2. Coordination of Schedules. Develop a schedule with the Utility Company concerning transformer delivery times and any offsite utility upgrade projects required to provide power to this project. Coordinate all schedules to insure that all projects are completed without compromising the Beneficial Occupancy Date.

6.9.2.3. Outages. Schedule outages on the existing systems for off peak times (nights and weekends) and obtain approval from DPW. Give a minimum of 2 weeks advance notification of outage. Make full preparations before the outage, in order to minimize the downtime duration.

6.9.2.4. Secondary Service and Exterior Circuits.

(a) Design and construct the site electrical secondary distribution (e.g., site electrical service entrance ducts, site electrical service entrance conductors between the building service equipment and the point of metering, and site feeder and circuit conduit and conductors for sump pumps, irrigation pumps and other electrical and mechanical equipment.)

(b) Coordinate the location for the meter with the Utility Company. Services greater than 600 amp capacity are typically metered at the service transformer.

(c) Secondary service ductlines shall be direct-burial, thick wall type, Provide concrete encasement in areas subject to vehicular traffic. Transitions from below-grade to above-grade shall be galvanized rigid steel. Fittings for steel conduit shall be steel threaded or compression type. Secondary service ductlines shall include a minimum of one spare duct, sized to match the filled ducts.

(d) Provide a 1-inch conduit from the electric utility meter to a data collection point located inside the building communications room.

6.9.2.5. Service Transformer. Furnish demand load data to the utility and the COR in a timely manner to facilitate Utility Company's transformer procurement. Determine the secondary voltage and provide that

information to the Utility Company. Obtain transformer impedances from the Utility Company to perform electrical calculations Coordinate the location of the service transformer with the Utility Company.

6.9.2.6. See Appendix AA: CANOOCHEE EMC RESPONSIBILITIES, and Appendix BB : CONTRACTOR/CANOOCHEE DEMARCATION LINE for additional information. The Contractor (identified as GC in the appendices) shall comply with all requirements within these appendices unless otherwise indicated.

6.9.3. Exterior Lighting

6.9.3.1. Design all site lighting within the project site. The design shall comply with the recommendations of the Illuminating Engineering Society of North America (IESNA) and shall be based on standard full-cutoff fixtures of the Utility Company approved for use at Fort Stewart. Coordinate the lighting design and conduit routing with Canoochee EMC to ensure timely procurement and installation of equipment by the Utility Company. See Appendix AA for additional exterior lighting design and construction responsibilities.

6.9.3.2. The Utility Company owns and maintains site lighting, defined as all exterior lighting outside of the building 5 foot line, Site lighting includes but is not limited to roadway, walkway, parking, hardstand, physical training (PT) field, sports and area lighting.

6.9.3.3. The Contractor is responsible for design and construction of exterior lighting mounted on the new buildings. Wall mounted site lighting fixtures shall be the fully shrouded, full cut-off type, compatible with the building architecture. The Contractor is responsible for lighting of walkways within 5-feet of the building. Lighting shall be controlled automatically.

6.9.3.4. Calculate the site lighting power densities and demonstrate compliance with the requirements of ASHRAE 90.1 and LEED (where applicable). Coordinate with the Utility Company to obtain information required to calculate the site lighting power densities.

6.9.3.5. The Utility Company will demolish existing lighting structures and associated site conduit and wiring no longer required on the project site(s).

6.9.3.6. All Electric Utility Company work will be under a separate contract with the Government. Such work is NOT part of this contract.

6.9.3.7. For additional guidance regarding the separation of responsibilities between the Contractor and the Utility Company (Canoochee EMC), see APPENDIX AA: CANOOCHEE EMC RESPONSIBILITIES and APPENDIX BB: CONTRACTOR/CANOOCHEE DEMARCATION LINE.

6.9.4. Exterior Communication Services

6.9.4.1. Coordinate and obtain approval for the telecommunications design from the NEC Quality Assurance Officer prior to construction.

6.9.4.2. Connect to the OSP, extending a new ductline, manhole and cable system to the building main communications room. Coordinate the sizes and quantities of the conduits between manholes with the installation NEC. Terminate cables on protected entrance terminal blocks in the building main communications room. Coordinate the duct bank and OSP cabling design and construction with the installation NEC, The NEC will provide location of duct bank and OSP cabling connection point.

6.9.4.3. All ductlines shall include one duct with 3-way Maxcell innerduct.

6.9.4.4. Provide a minimum of 4 weeks advance notification to NEC through the COR prior to any demolition of communication lines or equipment.

6.9.4.5. Provide 50 feet of service loop at the building communications room and in each manhole and hand hole. Tag all cables.

6.9.4.6. Provide 1-50 pair copper cable and 1-24 strand fiber optic cable in new 2W-4" duct from existing maintenance hole MH-RCB10 to the project facility Telecommunications Room (TR). See Appendix FF (Communication OSP Map) for the approximate location of MH-RCB10. Coordinate cable assignments with Fort Stewart NEC.

6.9.5 Revisions to Paragraph 6.9.3: Exterior Lighting. Add the following sub-paragraph.

6.9.3.8. User-operated manual controls shall be provided for the obedience area site lighting and the exercise area

site lighting and elsewhere as determined to be beneficial by the lighting designer in consultation with the user.

Acceptable manual controls shall be coordinated with Canoochee EMC. Automatic override (photocell) controls

shall also be provided.

6.9.5. Cable Television (CATV) Service

6.9.5.1. Comcast Cable is the local cable television (CATV) company at Fort Stewart. Comcast will provide and install service cabling throughout the project site, terminating at the head-end equipment in each building under separate contract with the Government. That work is not part of this contract.

6.9.5.2. Coordinate site work and site/facility interfaces with Comcast Cable. Coordination shall include interface requirements between the building CATV system and the site CATV system.

6.9.5.3. Comcast will provide and install head-end equipment. Coordinate head-end equipment locations with Comcast and NEC.

6.9.5.4. Extend one 4-inch duct from the CATV backboard location to a location specified by Comcast

6.9.6. Cathodic Protection. Obtain soil resistivity data on site to assist in determining the cathodic protection requirements.

6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.10.1. Telecommunications Systems

6.10.1.1. LAN hubs and other communication electronics shall be Government-furnished, Government-installed (GFGI); all other equipment shall be Contractor-furnished, Contractor-installed (CFCI). Connect the BCS with the outside plant (OSP) Notify the Contracting Officer and the NEC Quality Assurance Officer 14 days prior to connection between the BCS and OSP. Representatives of the Contracting Officer and the NEC Quality Assurance Officer will witness the connection.

6.10.1.2. Coordinate design with the Network Enterprise Center (NEC) Quality Assurance Officer. The NEC and the US Army Information Systems Engineering Command (ISEC) must concur with the design prior to construction See Appendix C, UTILITY CONNECTIONS for NEC points of contact.

6.10.2. Intrusion Detection System

6.10.2.1. Where an Intrusion Detection System (IDS) is required by paragraph 3, the Design-Build Contractor shall provide power, communication, and signal circuits including all wiring, conduit, and boxes for the IDS system. The Government willprovide and install the actual sensors (door alarm sensor, passive infrared motion sensor, and the duress alarm sensor, etc) and the Control Unit.

6.10.2.2. Provide a dedicated 20A, 120VAC circuit with a ground wire to the IDS Control Unit enclosure. The conduit for the IDS telephone line shall originate at the communications backboard and terminate in the IDS Control Unit enclosure. The enclosure shall be GFCI. Coordinate with the Physical Security Division (912) 767-8490.

6.10.2.3. Each alarm sensor shall report to the IDS Control Unit. Wiring for the balanced magnetic switch (door alarm sensor) and the duress alarm sensor(s) shall each be a 22 AWG, 4-conductor, stranded wire. Wiring for the PIR motion sensor(s) shall be a 22 AWG, 4-conductor stranded wire. Terminate wiring and conduit for the door alarm sensor near the opening side of the door, adjacent to the ceiling with a 4-inch square metal box. Coordinate locations and connection points with the Installation Physical Security Officer during design. Coordinate the IDS requirements including final sensor box locations with the Fort Stewart Physical Security Division (912) 767-8490. The Government’s ICIDS contractor will complete the installation of the sensors and program the control unit to put the system on-line at the monitor station.

6.10.3. Cable Television System

6.10.3.1. Where cable television (CATV) is required, design and install the complete building CATV system in accordance with the I3A. Provide cable television outlets in each reception area, private office, open office, lounge, conference room, training room, classroom, snack bar and elsewhere as appropriate.

6.10.3.2. Coordinate CATV requirements with the local CATV company, Comcast Cable. Coordination includes interface requirements between the building CATV system and the site CATV system. See Appendix C: UTILITY CONNECTIONS for Comcast points of contact.

6.11. HEATING, VENTILATING, AND AIR CONDITIONING

6.11.1. Utility Monitoring and Control System (UMCS)

The existing UMCS is a Johnson Controls (Metasys) UMCS, which is a web-based system located in Building 1134. The Fort Stewart point of contact for UMCS is Energy Engineer, Mr. Fred Louis (912-767-5034). The building level controllers and DDC System shall utilize LonWorks technology. The Government’s separate system integration contractor will integrate the building DDC systems. The design-Build Contractor shall coordinate with Mr. Louis for integration of building DDC systems. Before starting the design, meet with Mr. Louis to discuss the installation’s requirements for graphics and programming. Additional requirements for DDC systems are in the "Fort Stewart Supplement To LONWorks Direct Digital Control for HVAC and Other Local Building Systems" in the APPENDIX.

6.11.2. Outdoor Design Conditions

6.12. [Not Supplied - PS_HVAC : HVAC]ENERGY CONSERVATION

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

None

6.13. FIRE PROTECTION

6.13.1. The building fire alarm and detection system (FADS) shall be an addressable Class A system fully compatible with the base-wide Monaco D21 central fire alarm system. Coordinate fire alarm zone descriptions and number with the fire department. (Single-story buildings typically require a minimum of 8 to 11 fire alarm zones; each floor above the first floor requires an additional 6 fire alarm zones.)The FADS shall include an integrated radio transceiver, Monaco BT-X or approved equal. Manual pull stations shall be metal, double action type, and shall not use break rods. Key the FADS to the LS-300 keying standard in all cases. Coordinate the fire alarm requirements with the Fort Stewart Fire Chief [Donald Hollis at (912) 767-2636, email address: donald.hollis2@us.army.mil].

6.13.2. Provide a Knox 3200 Series recessed wall mounted key vault for Fire Department use at each building exterior. Locate adjacent to the main building entrance. Coordinate purchase of key vault through the Installation Fire Department for purchase order information and forms.

6.13.3. Provide an exterior post indicator valve with tamper switch reporting to the fire alarm control panel (FACP) on the sprinkler service main.

6.13.4. Protection of Piping Against Earthquake Damage: Protect sprinkler and fire pump piping systems against damage from earthquakes. Seismic protection shall include both flexible and rigid couplings, sway bracing, seismic separation assemblies where piping crosses building seismic separation joints, and other features as required by NFPA 13.

6.13.5. Fire Pump: Determine if a fire pump is required based on fire flow test data and fire protection system design requirements. If a fire pump is required, provide a complete fire pump system installation.

6.13.6. Fire Extinguisher Cabinets and Brackets: Provide semi-recessed cabinets in finished areas and provide brackets in non-finished areas (such as utility rooms, shops, and vehicle bays). Note the location of cabinets and brackets on the architectural drawings. Size cabinets and brackets to accommodate a minimum of a 10-pound ABC extinguisher.

6.13.7. Mass Notification System (MNS): Provide a combined system or equivalentthat performs both as an individual building MNS and as the building Fire Alarm voice evacuation system.

6.13.7.1. The MNS shall be fully compatible with and integrated into the basewide Mass Notification System manufactured by Acoustic Technology Inc. (ATI) and shall be capable of accepting all pre-recorded messages as well as live messages from a remote site by way of dry contacts and 600 ohm audio inputs.

6.13.7.2. Coordinate work and site/facility interfaces with ATI Systems. Procure and install the ATI interface ATI Systems uses a wireless Motorola radio system. Coordinate interface requirements between the building MNS system and the site MNS system. Key the MNS to the LS-300 keying standard in all cases. The ATI Systems point of contact for procurement and installation is Antonio Cracchiolo at (617) 567-4969 x307. The contact for coordination of the tie-in at Fort Stewart is Eric Waters at (912) 767-3417.

6.14. SUSTAINABLE DESIGN

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

6.14.2. The minimum requirement for this project is to achieve LEED Silver level. Each non-exempt facility (building plus sitework) must achieve this level. In addition to any facilities indicated as exempt in paragraph 3, the following facilities are exempt from the minimum LEED achievement requirement: Dog kennels and food storage buildings if separate from admin building (all buildings that do not meet LEED Minimum Program Requirements)..

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

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

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

SS Credit 1 Site Selection:

Project site IS NOT considered prime farmland.

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

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

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

Project site WAS NOT previously used as public parkland.

SS Credit 2 Development Density & Community Connectivity.

Project site DOES NOT meets the criteria for this credit.

SS Credit 3 Brownfield Redevelopment.

Project site DOES NOT meets the criteria for this credit.

SS Credit 4.1 Public Transportation Access.

Project site DOES NOT meets the criteria for this credit.

EA Credit 6 Green Power.

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

MR Credit 2 Construction Waste Management.

The Installation has an on-post recycling facility.

Regional Priority Credits (Version 3 only)

The project zip code is 31314.

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

6.14.7. Not Used

6.14.8. For all Fort Stewart projects using LEED Online, invite the following individuals at the beginning of the project, assigned QA/QC role: Lynda.s.pfau.ctr@mail.mil, Judith.f.milton@usace.army.mil, Stephen.d.bentley@usace.army.mil, Savannah District Project Manager, Fort Bragg Project Manager (name varies - coordinate at kickoff meeting)

6.14.8.1. Additional Information

Change Project Owner designation in LEED OnLine from USACE Project Manager to DPW representative immediately before acceptance of final GBCI certification ruling.

6.15. ENVIRONMENTAL

6.15.1. Comply with all Federal, State, and local environmental requirements to include all requirements of the Fort Stewart Directorate of Public Works Environmental Division as outlined in the Appendix E regarding disposal, borrow pit usage, storm water management, air quality, water quality, storage tanks, cultural resources, and forestry. Refer to Appendix E for the project's National Environmental Policy Act (NEPA) Documentation..

6.15.2. Site Evaluation

Unexploded Ordnance (UXO) avoidance planning will be a requirement even though all live ordnance found during the ongoing UXO survey will be destroyed. The UXO avoidance planning documentation must be added to the construction contractor's Health and Safety plan. The Health and Safety plan must document that this site is within a former Range with the possibility of encountering UXO. A fence must be installed around the construction site, with signage that only authorized personnel are allowed on site. All personnel that will be working on site, to include construction contractors, must take an environmental safety briefing that will be conducted by the Environmental Office. Once a construction contractor has been selected for this project, the COR/DPW PM must coordinate with the Environmental Office for a date and time for the construction contract workers to attend this briefing. When conducting UXO removal or developing a UXO Avoidance Plan, becoming familiar with the following guidance is recommended: • Department of Defense (DoD) Directive 4715.1E, Environment, Safety, and Occupational Health; • DoD Directive 4715.11, Environmental and Explosives Safety Management on Operational Ranges within the United States; • DoD Instruction 3200.16, Operational Range Clearance; • DoD 6055.0-STD, DoD Ammunition and Explosives Safety Standards.

Do not enter, disturb, or allow any discharge (soil, sediment, and/or pollutants) into any wetlands which are adjacent to entrance drive to the dog kennel.

Comply with all local, state, and federal laws and regulations pertaining to the protection of wetlands under the CWA Section 404/401 regulatory program and State of Georgia EPD.

If wetland impacts are unavoidable, abide by CWA Section 404 regulatory program and apply for applicable wetland permits. All wetland permit costs, delineations, and compensatory mitigation costs will be the contractor's responsibility.

Comply with avoidance, minimization strategies prior to approval of any wetland impact in accordance with CWA Section 404 (CWA 33 USC 1344).

6.15.3. Contractual Responsibilities of All Parties in the Event of Encounter with Contamination

If the Contractor encounters materials or conditions which indicate that there may be contamination on the site, stop all work on the job site and report the discovery of the contaminants to the Contracting Officer's Representative (COR). The Contracting Officer will issue a written order to resume work or to suspend, delay, or interrupt all or any part of the work of this contract for the period of time that the Contracting Officer determines appropriate for the convenience of the Government as provided in FAR 52.242-14 - SUSPENSION OF WORK. The Government will be responsible for making an assessment of the contaminated site if this course of action is determined to be appropriate. After the assessment has been completed, the Government reserves the right to the following courses of action:

(a) Direct the Contractor to resume work.

(b) Contain, clean up or institute avoidance action at the contaminated site prior to directing the Contractor to resume work. The COR will determine whether the containment or cleanup is to be accomplished by others or the Contractor.

(c) Relocate the project site.

(d) Terminate the contract for the convenience of the Government as provided in FAR 52.249-1 - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE) (SHORT FORM) or FAR 52.249-2 - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE) - ALTERNATE I as applicable.

6.16. PERMITS

6.16.1. General

6.16.1.1. The Government has not obtained any permits/licenses related to this project. Obtain all permits/licenses required for this project. Comply with all permit requirements. Submit copies of the permits and any amendments. Determine the fee basis and pay all filing fees. The known permit forms are provided in an Appendix.

6.16.1.2. Prepare permit/license applications; provide all required information and supporting documentation in a form ready for signature by the Owner and submittal to the applicable agency. Should the permitting agency require additional clarification or information during the review process, provide all necessary assistance to resolve the outstanding issue. The appropriate address for all permit/license applications will be provided at the Post Award Conference or otherwise, after contract award.

6.16.1.3. Comply with provisions of Installation permits, compliance agreements, and plans with regulating authorities/agencies.

6.16.2. Soil Borrow Permits. If Installation Borrow pits are available for this contract (see paragraph 6.4.8) a permit is required for their use. Soil borrow pit permits are processed with the DPW Environmental Division. Permits are issued for the life of the Contract. Borrow materials may be used

only on the project for which the permits are issued. Keep a copy of the completed permit with the vehicle throughout the Contract borrow operation.

6.16.3. Site Excavation (Disturbance) and Utility Location Permits. Present DPW approved Site Excavation and Utility Location Permits prior to any excavation or drilling that penetrates the ground by 6 or more inches. Keep a signed copy of the digging permit shall be kept on site at all times. A sample of this form can be obtained from the Contracting Officer or DPW upon request. The DPW POC contact information will be provided at the Post award conference.

6.16.4. State of Georgia Required Applications and Permits. Prepare, sign, and submit the following list of commonly required State of Georgia applications and permits for Fort Stewart/Hunter AAF projects. Obtain any additional applications and permits not listed as required for the construction of this project.

Erosion and Sedimentation Control permit

General Permit to Discharge Stormwater under the National Pollutant Discharge Elimination System

Stormwater Management Permit Application Form

Notice of Intent (NOI) and Notice of Termination (NOT) Documents. The Contractor shall prepare, sign, and submit the NOI and NOT documents to the State Georgia.

6.16.5. Air Permits. Coordinate with Fort Stewart/Hunter AAF's Environmental Management Division (EMD) staff in obtaining all required and applicable permits as part of the design process. Secure all permits necessary for construction of this project. Fort Stewart/Hunter AAF operates under a Title V Air Permit for air quality requirements. Perform a regulatory review of all air sources in the project and submit for approval to the EMD. Each Congressional Appropriation is defined as one project. Additionally, new sources must be reviewed for NESHAP (National Emissions Standards for Hazardous Air Pollutants) applicability. Develop required air permit application(s) and/or coordinate with EMD on any on-going permit applications. Pay all air permitting fees and obtain all required permits prior to construction of any new sources. Comply with all State regulatory requirements for boilers fired by either natural gas or distillate oil. Ensure that the boiler(s) is included in the Installations Title V Air Permit. New boilers with an input greater than 10 million btu/hr shall meet 40 CFR Part 60, New Source Performance Standards. All new boilers shall include low NOx burners. An air permit is required for each type of material (i.e. concrete, rock crushing, asphalt batch plants) that will produce dust and other harmful particulates within the boundaries of the installation. The Contractor can not unilaterally change the Installation's Title V Air Permit. Coordinate any and all changes/modifications through the designated EMD staff.

6.16.5.1. Air Permit Submittal Requirements (Boilers and Domestic Water Heaters). Pursuant to satisfying requirements under the Clean Air Act, at or before the Interim design stage, submit the following to the installation's environmental office:

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

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

(3) the quantity of each particulate size

(4) the respective input firing rate. Provide a point of contact and an alternate point of contact, should the environmental office require additional information from the designer of record during the permitting process. Send two copies of the document to the Savannah District, one to the Project Manager for placement in Central Files, and another to the Mechanical Section.

(5) Do not send this document prematurely, since any increase in boiler sizing subsequent to submission of the document will require revision to the permitting process. In any event, if there is a change in equipment sizing during refinement of the design process, submit an updated copy of said document per the guidance above.

(6) Incorporate into the design the equipment accessories required for compliance with the governing environmental laws. This includes, but is not limited to, determining the need for individual metering and the level of emissions monitoring required. The Interim design narrative shall specifically address those features that will be incorporated into the boiler system design to assure compliance with the applicable environmental laws of the State.

(7) Prior to the submission of form DD 1354 Acceptance of Real Property, submit to EMD copies of all required Federal and/or State certifications associated with emission units, i.e. visible emissions certifications. Note the dates that the certifications are turned into EMD in the remarks section of form DD 1354.

6.16.5.2. Construction Permit. Be aware that, normally, for fast track design-build contracts, the construction permit will not have been obtained prior to award of the design-build contract. No construction associated with the building(s) housing the boiler(s) or other source(s) of contaminant can be done prior to obtaining the required permit. Generally, only the following things can be done prior to possession of the permit: clearing and grading, access roads, driveways, parking lots, underground utilities up to the 5-foot line of the buildings, and ancillary structures (structures not associated with housing the sources of contaminants).

6.16.6. Utility Marking Permit (Required for Excavation). Submit all requests for underground utility locations at Fort Stewart/Hunter AAF shall be submitted through the Georgia Utility Protection Center (UPC). The UPC will accept locate requests either by telephone or on-line. The phone number is (800) 282-7411. The UPC web address is www.gaupc.com. Once at the web site, click on IRTH login. To submit a request online, registration is required. The excavating Contractor must mark the boundaries of the proposed excavation site using either white paint, flags or stakes. DPW has responsibility for the accuracy of the locates pertaining to gas and fuel lines, water lines, electrical lines to include secondary electricity, airfield lighting, low voltage , fire systems, sewer lines, roof drain lines, storm drainage lines, industrial waste lines, chilled water lines, high temperature water lines, irrigation systems and DPW non-fiber optic computer lines. Forward requests to all utility companies with services in the vicinity of the excavation site. Permits will be issued within 48 hours of the next business day following the receipt of the request by the UPC. Permits will only be valid for 21 days. Submit renewal requests a minimum of 3 days prior to expiration. Requesting contractors are responsible for maintaining marks during the 21 day period. If after acquiring a permit, a utility is damaged during excavation, please notify the appropriate utility company. DPW‘s utilities are listed above. The DPW point of contact for utilities at Fort Stewart or at HAAF will be provided at the Post Award Conference. The excavating contractor should be prepared to submit proof of a valid permit when calling about damaged utilities.

6.17. DEMOLITION

6.17.1. Demolition of structures requires 50 percent by weight diversion of material from the landfill. Remove all construction debris in the way of construction from the site and dispose of off of the installation. Demolish all existing structures as required to develop the project site within the limits of construction. Remove and/or relocate utilities as required to develop the project site within the limits of construction. Coordinate utility removals and/or relocation with the privatized utilities. .

6.17.2. Remove all hazardous building materials (HBM) from buildings to be demolished. HBMs are defined as asbestos (friable and non friable), mercury containing or contaminated items, PCB containing or contaminated items (including hydraulic systems fluids, light ballasts, and caulk), electronic boards (fire/smoke alarm systems, HVAC control systems, fire suppression dump systems, MNS, IDS, etc.), radioactive sources (smoke detectors), poured lead items (stair rail anchors, roofing weights, window counterweights, sink/shower pastes, pipe joints), and other materials identified in the Asbestos and HBM Surveys in Appendix XX. Lead-based paint (LBP) is a hazardous material when:

- The Toxicity Characteristic Leaching Procedure (TCLP) of demolition waste is exceeded for wastes going into a construction and debris landfill. This applies to all non-housing structures. Housing and barracks are not required to adhere to this requirement when debris is scheduled to be landfilled.
- Used as riprap or fill material. No painted materials may be used for environmental stabilization regardless of lead content.
- When targeted to be used for recycling for uses other than batch feed for hot asphalt or concrete. (Grinding of LBP painted concrete for batch feed must include plans with requirements to control lead contaminated dust, rain run-off, and worker protection. The Contractor is responsible for all permits associated with this activity.

6.17.3. Project Specific Requirements:

Demolish the following buildings: 7736, 7740, and 7740A which currently serve as the Military Working Dog kennel complex. Also remove building foundations, backfill to grade, and seed or sod all disturbed areas as required in paragraph 6.4.12.

6.18. ADDITIONAL FACILITIES

NONE

End of Section 01 10 00.[Not Supplied - ProjectInfo : TONUM]

SECTION 01 32 01.00 10
PROJECT SCHEDULE

1.0 GENERAL

1.1. REFERENCES

1.2. QUALIFICATION

2.0 PRODUCTS (NOT APPLICABLE)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.2. BASIS FOR PAYMENT AND COST LOADING

3.3. PROJECT SCHEDULE DETAILED REQUIREMENTS

3.4. PROJECT SCHEDULE SUBMISSIONS

3.5. SUBMISSION REQUIREMENTS

3.6. PERIODIC SCHEDULE UPDATE MEETINGS

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3.9. WEEKLY PROGRESS MEETINGS

3.10. OWNERSHIP OF FLOAT

3.11. TRANSFER OF SCHEDULE DATA INTO RMS/QCS

1.0 GENERAL

1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE) ER 1-1-11 (1995) Progress, Schedules, and Network Analysis Systems

ECB 2005-10 (2005) Scheduling Requirements for Testing of Mechanical Systems in Construction

(Both are available through the Publications page of the US Army Corps of Engineers TECHINFO Website at http://www.hnd.usace.army.mil/techinfo/. See link for Engineer Regulation ER 1-1-11).

1.2. QUALIFICATIONS

Designate an authorized representative who shall be responsible for the preparation of the schedule and all required updating (statusing) and preparation of reports. The authorized representative shall be experienced in electronic scheduling (has developed, created, and maintained) at least 2 projects similar in nature to this project and shall be experienced in the use of the scheduling software that meets the requirements of this specification.

1.3. SUBMITTALS

Government approval is required for submittals with a "G" designation. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Project Schedule and required updates thereto: G

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.1.1. Submit a project schedule pursuant to Contract Clause, SCHEDULE FOR CONSTRUCTION CONTRACTS and as specified herein for approval, showing the sequence in which the Contractor proposes to perform the work and dates on which the Contractor contemplates starting and completing all schedule activities. The scheduling of the entire project, including the design and construction sequences is required. Contractor management personnel shall actively participate in its development. Designers, subcontractors and suppliers working on the project shall also contribute in developing an accurate project schedule. The schedule must be a forward planning as well as a project monitoring tool.

3.1.2. Approved Project Schedule. The approved project schedule shall be used to measure the progress of the work and to aid in evaluating requests for excusable time extensions. The schedule shall be cost loaded and activity coded as specified herein. The schedule will provide the basis for all progress payments. If the Contractor fails to submit any schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments until the Contractor submits the required schedule

3.1.3. Schedule Status Report. Status the schedule on at least a monthly basis, as specified herein. If in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress including those that may be required by the

Contracting Officer, without additional cost to the Government. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained. See paragraph 3.7.4.

3.1.4. Default Terms. Failure of the Contractor to comply with the requirements of the Contracting Officer shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the default terms of the contract.

3.2. BASIS FOR PAYMENT AND COST LOADING

The schedule shall be the basis for determining contract earnings during each update period and therefore the amount of each progress payment. Lack of an approved schedule update or qualified scheduling personnel will result in an inability of the Contracting Officer to evaluate contract earned value for the purposes of payment. Failure of the Contractor to provide all information, as specified herein will result in the disapproval of the preliminary, initial and subsequent schedule updates. In the event schedule revisions are directed by the Contracting Officer and those revisions have not been included in subsequent revisions or updates, the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until such revisions to the project schedule have been made. Activity cost loading shall be reasonable as determined by the Contracting Officer. The aggregate value of all activities coded to a contract CLIN as specified herein shall equal the value of the CLIN on the Schedule.

3.3. PROJECT SCHEDULE DETAILED REQUIREMENTS

The computer software system utilized to produce and update the project schedule shall be capable of meeting all requirements of this specification. Failure of the Contractor to meet the requirements of this specification will result in the disapproval of the schedule.

3.3.1. Use of the Critical Path Method

Use the Critical Path Method (CPM) of network calculation to generate the project schedule. Prepare the project schedule using the Precedence Diagram Method (PDM).

3.3.2. Level of Detail Required

Develop the project schedule to an appropriate level of detail. Failure to develop the project schedule to an appropriate level of detail, as determined by the Contracting Officer, will result in its disapproval. The Contracting Officer will consider, but is not limited to, the following characteristics and requirements to determine appropriate level of detail:

3.3.2.1. Activity Durations

Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods. Less than 2 percent of all non-procurement activities shall have Original Durations (OD) greater than 20 work days or 30 calendar days. Procurement activities are defined herein.

3.3.2.2. Design and Permit Activities

Include design and permit activities, including necessary conferences and follow-up actions and design package submission activities. Include the design schedule in the project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period.

This shall be at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. Include review and correction periods associated with each item.

3.3.2.3. Procurement Activities

Include activities associated with the submittal, approval, procurement, fabrication and delivery of long lead materials, equipment, fabricated assemblies and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 90 calendar days. A typical procurement sequence includes the string of activities: submit, approve/review, procure, fabricate, and deliver.

3.3.2.4. Mandatory Tasks

Include and properly schedule the following tasks (See also the Sample Preliminary Submittal Register Input Form):

(a) Submission, review and acceptance of design packages, including BIM

(b) Submission of mechanical/electrical/information systems layout drawings

(c) Submission and approval of O & M manuals

(d) Submission and approval of as-built drawings

(e) Submission and approval of 1354 data and installed equipment lists

(f) Submission and approval of testing and air balance (TAB)

(g) Submission of TAB specialist design review report

(h) Submission and approval of fire protection specialist

(i) Submission and approval of testing and balancing of HVAC plus commissioning plans and data. Develop the schedule logic associated with testing and commissioning of mechanical systems to a level of detail consistent with the contract commissioning requirements as well as ECB 2005-10

(j) Air and water balancing

(k) HVAC commissioning

(l) Controls testing plan submission

(m) Controls testing

(n) Performance Verification testing

(o) Other systems testing, if required

(p) Contractor’s pre-final inspection

(q) Correction of punch list from Contractor’s pre-final inspection

(r) Government’s pre-final inspection

(s) Correction of punch list from Government’s pre-final inspection

(t) Final Inspection

3.3.2.5. Government Activities. Show Government and other agency activities that could impact progress. These activities include but are not limited to: approvals, design reviews, review conferences, release for construction of design package(s), environmental permit approvals by State regulators, inspections, utility tie-ins, Government Furnished Property/Equipment (GFP) and phasing requirements, if any.

3.3.2.6. Activity Responsibility Coding (RESP)

Assign Responsibility Code for all activities to the Prime Contractor, Subcontractor or Government agency responsible for performing the activity. Activities coded with a Government Responsibility code include, but are not limited to: Government approvals, Government design reviews, environmental permit approvals by State regulators, Government Furnished Equipment (GFE) and authorization to proceed with phasing requirements. Code all activities not coded with a Government Responsibility Code to the Prime Contractor or Subcontractor responsible to perform the work. Activities shall not have more than one Responsibility Code. Examples of acceptable activity code values are: DOR (for the designer of record); ELEC (for the electrical subcontractor); MECH (for the mechanical subcontractor); and GOVT (for USACE). Unacceptable code values are abbreviations of the names of subcontractors.

3.3.2.7. Activity Work Area Coding (AREA)

Assign Work Area code to activities based upon the work area in which the activity occurs. Define work areas based on resource constraints or space constraints that would preclude a resource, such as a particular trade or craft work crew from working in more than one work area at a time due to restraints on resources or space. Examples of Work Area Coding include different areas within a floor of a building, different floors within a building, and different buildings within a complex of buildings. Activities shall not have more than one Work Area Code. Not all activities are required to be Work Area coded. A lack of Work Area coding will indicate the activity is not resource or space constrained.

3.3.2.8. Contract Changes/Requests for Equitable Adjustment (REA) Coding (MODF)

Assign Activity code to any activity or sequence of activities added to the schedule as a result of a Contract Modification, when approved by Contracting Officer, with a Contract Changes/REA Code. Key all Code values to the Government's modification numbering system. Any activity or sequence of activities added to the schedule as a result of alleged constructive changes made by the Government may be added to a copy of the current schedule, subject to the approval of the Contracting Officer. Assign Activity codes for these activities with a Contract Changes/REA Code. Key the code values to the Contractor's numbering system. Approval to add these activities does not necessarily mean the Government accepts responsibility and therefore liability for such activities and any associated impacts to the schedule, but rather the Government recognizes such activities are appropriately added to the schedule for the purposes of maintaining a realistic and meaningful schedule. Such activities shall not be Responsibility Coded to the Government unless approved. An activity shall not have more than one Contract Changes/REA Code

3.3.2.9. Contract Line Item (CLIN) Coding (BIDI)

Code all activities to the CLIN on the Contract Line Item Schedule to which the activity belongs. An activity shall not contain more than one CLIN Item Code. CLIN Item code all activities, even when an activity is not cost loaded.

3.3.2.10. Phase of Work Coding (PHAS)

Assign Phase of Work Code to all activities, based upon the phase of work in which the activity occurs. Code activities to either a Design Phase or a Construction Phase. Code fast track design and construction phases proposed by the Contractor to allow filtering and organizing the schedule by fast track design and construction packages. If the contract specifies construction phasing with separately defined performance periods, identify a Construction Phase Code to allow filtering and organizing the schedule accordingly. Each activity shall have only one Phase of Work code.

3.3.2.11. Category of Work Coding (CATW)

Assign Category of Work code to all Activities based upon the category of work which the activity belongs. Category of Work Code must include, but is not limited to: Design, Design Submittal, design reviews, review conferences, Construction Submittal, Approvals (if any), Acceptance, Procurement,

Fabrication, Delivery, Weather Sensitive Installation, Non-Weather Sensitive Installation, Start Up, Test, and Turnover. Assign a Category of Work code to each activity. Each activity shall have only one Category of Work Code.

3.3.2.12. Definable Features of Work Coding (FOW1, FOW2, FOW3)

Assign a Definable Feature of Work Code to appropriate activities based on the definable feature of work to which the activity belongs. Definable Feature of Work is defined in Specification Section 01 45 04.00 10, Contractor Quality Control. An activity shall not have more than one Definable Feature of Work Code. Not all activities are required to be Definable Feature of Work Coded.

3.3.3. Scheduled Project Completion and Activity Calendars

The schedule interval shall extend from NTP date to the required contract completion date. The contract completion activity (End Project) shall finish based on the required contract duration, as adjusted for any approved contract time extensions. The first scheduled work period shall be the day after NTP is acknowledged by the Contractor. Schedule activities on a calendar to which the activity logically belongs. Activities may be assigned to a 7 day calendar when the contract assigns calendar day durations for the activity such as a Government Acceptance activity. If the Contractor intends to perform physical work less than seven days per week, schedule the associated activities on a calendar with non-work periods identified including weekends and holidays. Assign the Category of Work Code - Weather Sensitive Installation to those activities that are weather sensitive. Original durations must account for anticipated normal adverse weather. The Government will interpret all work periods not identified as non-work periods on each calendar as meaning the Contractor intends to perform work during those periods.

3.3.3.1. Project Start Date

The schedule shall start no earlier than the date on which the NTP was acknowledged. Include as the first activity in the project schedule an activity called "Start Project" or “NTP”. The "Start Project" activity shall have an "ES" constraint date equal to the date that the NTP was acknowledged, with a zero day duration.

3.3.3.2. Schedule Constraints and Open Ended Logic

Constrain completion of the last activity in the schedule by the contract completion date. Schedule calculations shall result in negative float when the calculated early finish date of the last activity is later than the contract completion date. Include as the last activity in the project schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the contract completion date for the project, and with a zero day duration or by using the “project must finish by” date in the scheduling software. The schedule shall have no constrained dates other than those specified in the contract. The use of artificial float constraints such as “zero fee float” or “zero total float” are typically prohibited. There shall only be 2 open ended activities: Start Project (or NTP) with no predecessor logic and End Project with no successor logic.

3.3.3.3. Early Project Completion

In the event the Preliminary or Initial project schedule calculates an early completion date of the last activity prior to the contract completion date, the Contractor shall identify those activities that it intends to accelerate and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. The last activity shall have a late finish constraint equal to the contract completion date and the schedule will calculate positive float. The Government will not approve an early completion schedule with zero float on the longest path. The Government is under no obligation to accelerate activities for which it is responsible to support a proposed early contract completion.

3.3.4. Interim Completion Dates

Constrain contractually specified interim completion dates to show negative float when the calculated early finish date of the last activity in that phase is later than the specified interim completion date.

3.3.4.1. Start Phase

Include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The “Start Phase X" activity shall have an "ES" constraint date equal to the date on which the NTP was acknowledged, and a zero day duration.

3.3.4.2. End Phase

Include as the last activity for a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the specified completion date for that phase and a zero day duration.

3.3.4.3. Phase “X” Hammock

Include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" hammock activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5. Default Progress Data Disallowed

Do not automatically update Actual Start and Finish dates with default mechanisms that may be included in the scheduling software. Activity Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the AS and AF dates on the Daily Quality Control report for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's updated schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Disable program features which calculate one of these parameters from the other.

3.3.6. Out-of-Sequence Progress

Activities that have progressed before all preceding logic has been satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case basis subject to approval by the Contracting Officer. Propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule..

3.3.7. Negative Lags and Start to Finish Relationships

Lag durations contained in the project schedule shall not have a negative value. Do not use Start to Finish relationships (SF).

3.3.8. Calculation Mode

Schedule calculations shall retain the logic between predecessors and successors even when the successor activity starts and the predecessor activity has not finished. Software features that in effect sever the tie between predecessor and successor activities when the successor has started and the predecessor logic is not satisfied (“progress override”) will not be allowed.

3.3.9. Milestones

Include milestone activities for each significant project event including but not limited to: milestone activities for each fast track design package released for construction; design complete; foundation/substructure construction complete; superstructure construction complete; building dry-in or enclosure complete to allow the initiation of finish activities; permanent power complete; and building systems commissioning complete.

3.3.10. Use of Primavera “P6”

If P6 is being used, the following settings are mandatory in the Preliminary Project Schedule, Initial Project Schedule and all schedule submissions to the Government:

3.3.10.1. Activity Codes shall be Project Level not Global or EPS level.

3.3.10.2. Calendars shall be Project Level not Global or Resource level.

3.3.10.3. Set Activity Duration Types to "Fixed Duration & Units".

3.3.10.4. Set Percent Complete Types to "Physical".

3.3.10.5. Use Default Time Period Admin Preferences "8.0 hr/day, 40 hr/week, 172 hr/month, 2000 hr/year". Set Calendar Work Hours/Day to 8.0 Hour days. This is not to mandate the Contractor’s work week. Alternate workweeks may be set up in “Calendar Settings”.

3.3.10.6. Set Schedule Option for defining Critical Activities "Longest Path".

3.3.10.7. Set Schedule Option for defining progressed activities "Retained Logic".

3.3.10.8. Set up Cost loading a single lump sum Resource. The Price/Unit shall be $1/hr, Default Units/Time shall be "8h/d", and select settings "Auto Compute Actuals" and "Calculate costs from units".

3.3.10.9. Activity ID's shall not exceed 10 characters.

3.3.10.10. Activity Names shall have the most defining and detailed description within the first 30 characters.

3.4. PROJECT SCHEDULE SUBMISSIONS

Provide the submissions as described below. The data CD, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

3.4.1. Preliminary Project Schedule Submission

Submit the Preliminary Project Schedule, defining the Contractor's planned operations for the first 90 calendar days for approval within 15 calendar days after the NTP is acknowledged. The approved Preliminary Project Schedule will be used for payment purposes not to exceed 90 calendar days after NTP. Completely cost load the Preliminary Project Schedule to balance the contract award CLINS shown on the Price Schedule. Detail it for the first 90 calendar days. It may be summary in nature for the remaining performance period. It must be early start and late finish constrained and logically tied as previously specified. The Preliminary Project Schedule forms the basis for the Initial Project Schedule specified herein and must include all of the required Plan and Program preparations, submissions and approvals identified in the contract (for example, Quality Control Plan, Safety Plan, and Environmental Protection Plan) as well as design activities, the planned submissions of all early design packages, permitting activities, design review conference activities and other non-construction activities intended to occur within the first 90 calendar days. Schedule any construction activities planned for the first 90 calendar days after NTP. Constrain planned construction activities by Government acceptance of the

associated design package(s) and all other specified Program and Plan approvals. Activity code any activities that are summary in nature after the first 90 calendar days with Responsibility Code (RESP) and Feature of Work code (FOW1, FOW2, FOW3)

3.4.2. Initial Project Schedule Submission

Submit the Initial Project Schedule for approval within 42 calendar days after NTP. The schedule shall demonstrate a reasonable and realistic sequence of activities which represent all work through the entire contract performance period. The Initial Schedule shall be at a reasonable level of detail as determined by the Contracting Officer. Include detailed design and permitting activities, including but not limited to identification of individual design packages, design submission, reviews and conferences; permit submissions and any required Government actions; and long lead procurement activities required prior to design completion. The Initial Project Schedule shall include the entire construction sequence and all fast track construction activities, with as much detail as is known at the time but, as a minimum, shall include all construction start and completion milestone activities, and detailed construction activities through the dry-in milestone, including all activity coding and cost loading. Include the remaining construction, including cost loading, but it may be scheduled summary in nature. As the design proceeds and design packages are developed, fully detail the remaining construction activities concurrent with the monthly schedule updating process. Constrain construction activities by Government acceptance of associated designs. When the design is complete, incorporate into the then approved schedule update all remaining detailed construction activities that are planned to occur after the dry-in milestone.

3.4.3. Design Package Schedule Submission:

With each design package submitted to the Government, submit a frag-net schedule extracted from the then current Preliminary, Initial or Updated schedule which covers the activities associated with that Design Package including construction, procurement and permitting activities.

3.4.4. Periodic Schedule Updates

Based on the result of the meeting specified in PERIODIC SCHEDULE UPDATE MEETINGS, submit periodic schedule updates. These submissions shall enable the Contracting Officer to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgment of the Contracting Officer or authorized representative is necessary for verifying the Contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made. Update the schedule to include detailed lower WBS activities procurement and construction activities as the design progresses, but not later than the submission of the final, un-reviewed design submission for each separate design package. The Contracting Officer may require submission of detailed schedule activities for any distinct construction that is started prior to submission of a final design submission, if such activity is authorized.

3.4.5. Standard Activity Coding Dictionary

Use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used. A template SDEF compatible schedule backup file (sdef.prx) is available on the QCS website: http://rms.usace.army.mil .

The SDEF format is as follows:

Field	Activity Code	Length	Description
1	WRKP	3	Workers per Day
2	RESP	4	Responsible Party (e.g. GC, subcontractor, USACE)

3	AREA	4	Area of Work
4	MODF	6	Modification or REA number
5	BIDI	6	Bid Item (CLIN)
6	PHAS	2	Phase of Work
7	CATW	1	Category of Work
8	FOW1	10	Feature of Work (used up to 10 characters in length)
9	FOW2	10	Feature of Work (used up to 20 characters in length)
10	FOW3	10	Feature of Work (used up to 30 characters in length)

3.5. SUBMISSION REQUIREMENTS

Submit the following items for the Preliminary Schedule, Initial Schedule, and every Periodic Schedule Update throughout the life of the project:

3.5.1. Data CD’s

Provide two sets of data CD’s containing the project schedule in the backup format. Each CD shall also contain all previous update backup files. File medium shall be CD. Label each CD, indicating the type of schedule (Preliminary, Initial, Update), full contract number, Data Date and file names. Each schedule shall have a unique file name as determined by the Contractor.

3.5.2. Narrative Report

Provide a Narrative Report with the Preliminary, Initial, and each Periodic Update of the project schedule, as the basis of the progress payment request. The Narrative Report shall include: a description of activities along the 2 most critical paths where the total float is less than or equal to 20 work days, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to communicate to the Government, the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through its analysis. Identify and explain why any activities that, based their calculated late dates, should have either started or finished during the update period but did not.

3.5.3. Approved Changes Verification

Include only those project schedule changes in the schedule submission that have been previously approved by the Contracting Officer. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4. Schedule Reports

The format, filtering, organizing and sorting for each schedule report shall be as directed by the Contracting Officer. Typically reports shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date Total Float, Actual Start Date, Actual Finish Date, and Percent Complete. The following lists typical reports that will be requested. One or all of these reports may be requested for each schedule submission.

3.5.4.1. Activity Report

A list of all activities sorted according to activity number.

3.5.4.2. Logic Report

A list of detailed predecessor and successor activities for every activity in ascending order sorted by activity number.

3.5.4.3. Total Float Report

A list of all incomplete activities sorted in ascending order of total float. List activities which have the same amount of total float in ascending order of Early Start Dates. Do not show completed activities on this report.

3.5.4.4. Earnings Report by CLIN

A compilation of the Contractor's Total Earnings on the project from the NTP to the data date. This report shall reflect the earnings of specific activities based on the agreements made in the schedule update meeting defined herein. Provided that the Contractor has provided a complete schedule update, this report shall serve as the basis of determining progress payments. Group activities by CLIN Item number and sort by activity number. This report shall: sum all activities coded to a particular CLIN and provide a CLIN Item percent earned value; and complete and sum CLIN items to provide a total project percent complete. The printed report shall contain, for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Quantity to Date, Percent Complete (based on cost), and Earnings to Date.

3.5.5. Network Diagram

The network diagram is required for the Preliminary, Initial and Periodic Updates. Depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1. Continuous Flow

Show a continuous flow from left to right with no arrows from right to left. Show the activity number, description, duration, and estimated earned value on the diagram.

3.5.5.2. Project Milestone Dates

Show dates on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3. Critical Path

Clearly show the critical path.

3.5.5.4. Banding

Organize activities as directed to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

3.5.5.5. S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.6. PERIODIC SCHEDULE UPDATE MEETINGS

Conduct periodic schedule update meetings for the purposes of reviewing the Contractor's proposed out of sequence corrections, determining causes for delay, correcting logic, maintaining schedule accuracy and determining earned value. Meetings shall occur at least monthly within five days of the proposed schedule data date and after the Contractor has updated the schedule with Government concurrence respecting actual start dates, actual finish dates, remaining durations and percent complete for each activity it intend to status. Match the actual start and finish dates with the dates exported, as described in paragraph 3.3.5. Provide a computer with the scheduling software loaded and a projector during the meeting which allows all meeting participants to view the proposed schedule update during the meeting. The meeting and resultant approvable schedule update shall be a condition precedent to a formal submission of the update as described in SUBMISSION REQUIREMENTS and to the submission of an invoice for payment. The meeting will be a working interactive exchange which will allow the Government and the Contractor the opportunity review the updated schedule on a real time and interactive basis. The Contractor's authorized scheduling representative will organize, sort, filter and schedule the update as requested by the Government. The meeting will last no longer than 8 hours. A rough draft of the proposed activity logic corrections and narrative report shall be provided to the Government 48 hours in advance of the meeting. The Contractor's Project Manager and Authorized Scheduler shall attend the meeting with the Authorized Representative of the Contracting Officer.

3.6.1. Update Submission Following Progress Meeting

Submit a complete update of the project schedule containing all approved progress, revisions, and adjustments, pursuant to paragraph SUBMISSION REQUIREMENTS not later than 4 working days after the periodic schedule update meeting, reflecting only those changes made during the previous update meeting.

3.6.2. Status of Activities

Update statusing information, including Actual Start Dates (AS), Actual Finish Dates (AF), Remaining Durations (RD) and Percent Complete shall be subject to the approval of the Government prior to the meeting. As a minimum, address the following items on an activity by activity basis during each progress meeting:

3.6.2.1. Actual Start and Finish Dates

Accurately status the AS and/or AF dates for each activity currently in-progress or completed since the last update The Government may allow an AF date to be assigned with the percent complete less than 100% to account for the value of work remaining but not restraining successor activities. Only assign AS dates when actual progress occurs on an activity.

3.6.2.2. Remaining Duration

Update the estimated RD for all incomplete activities independent of Percent Complete. Remaining durations may exceed the activity OD or may exceed the activity's prior update RD if the Government considers the current OD or RD to be understated based on current progress, insufficient work crews actually manning the job, unrealistic OD or deficiencies that must be corrected that restrain successor activities.

3.6.2.3. Percent Complete

Update the percent complete for each activity started based on the realistic assessment of earned value. Activities which are complete but for remaining minor punch list work and which do not restrain the initiation of successor activities may be statused 100 percent complete. To allow for proper schedule management, cost load the correction of punch list from Government pre-final inspection activity(ies) not less than 1% of the total contract value, which activity(ies) may be declared 100 percent complete upon completion and correction of all punch list work identified during Government pre-final inspection(s).

3.6.2.4. Logic Changes

Specifically identify and discuss all logic changes pertaining to NTP on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, and other changes that have been made pursuant to contract provisions. The Government will only approve logic revisions for the purpose of keeping the schedule valid in terms of its usefulness in calculating a realistic completion date, correcting erroneous logic ties, and accurately sequencing the work.

3.6.2.5. Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary. 3) Changes required to correct a schedule that does not represent the actual or planned prosecution and progress of the work.

3.7. REQUESTS FOR TIME EXTENSIONS

In the event the Contractor believes it is entitled to an extension of the contract performance period, completion date, or any interim milestone date, furnish the following for a determination by the Contracting Officer: justification, project schedule data, and supporting evidence as the Contracting Officer may deem necessary. Submission of proof of excusable delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is a condition precedent to any approvals by the Government. In response to each Request For Proposal issued by the Government, the Contractor shall submit a schedule impact analysis demonstrating whether or not the change contemplated by the Government impacts the critical path.

3.7.1. Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with its request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information.

Actual delays that are found to be caused by the Contractor's own actions, which result in a calculated schedule delay, will not be a cause for an extension to the performance period, completion date, or any interim milestone date.

3.7.2. Submission Requirements

Submit a justification for each request for a change in the contract completion date of less than 2 weeks based upon the most recent schedule update at the time of the NTP or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

3.7.2.1. A list of affected activities, with their associated project schedule activity number.

3.7.2.2. A brief explanation of the causes of the change

3.7.2.3. An analysis of the overall impact of the changes proposed.

3.7.2.4. A sub-network of the affected area

Identify activities impacted in each justification for change by a unique activity code contained in the required data file.

3.7.3. Additional Submission Requirements

The Contracting Officer may request an interim update with revised activities for any requested time extension of over 2 weeks. Provide this disk within 4 days of the Contracting Officer's request.

3.7.4. If Progress Falls Behind the Approved Project Schedule

3.7.4.1. Should progress fall behind the approved schedule (more than 20 work days of negative float) due to Contractor generated problems, promptly provide a supplemental recovery or completion schedule that illustrates its efforts to regain time to assure a completion by the required contract completion date.

3.7.4.2. The supplemental recovery or completion schedule will not replace the original, approved schedule as the official contract schedule. Continue to update the original, approved schedule on at least a monthly basis. In addition, the Contractor and the Contracting Officer will monitor the supplemental recovery or completion schedule on at least a bi-weekly basis to determine its effect on regaining the rate of progress to assure project completion by the contractually required completion date.

3.7.4.3. Do not artificially improve progress by simply revising the schedule logic, modifying or adding constraints, or shortening future work activity durations. Resource and manpower load the supplemental recovery schedule or completion schedule with crew size and productivity for each remaining activity, indicating overtime, weekend work, and/or double shifts needed to regain the schedule, in accordance with FAR 52.236.15, without additional cost to the Government. Indicate assumptions made and the basis for any logic, constraint, or duration changes used in the creation of the supplemental recovery or completion schedule in a narrative submitted for the Contracting Officer’s approval. Any additional resources or manpower must be evident at the work site. Do not modify the official contract schedule to include these assumptions.

3.7.4.4. Failure to perform work and maintain progress in accordance with the supplemental recovery or completion schedule may result in an interim and final unsatisfactory performance rating and/or may result in corrective action by the Contracting Officer in accordance with FAR 52.236-15.

3.8. DIRECTED CHANGES

If the NTP is issued for changes prior to settlement of price and/or time, submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The Contracting Officer will approve proposed revisions to the schedule prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor with suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the

Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9. WEEKLY PROGRESS MEETINGS

3.9.1. The Government and the Contractor shall meet weekly (or as otherwise mutually agreed to) between the meetings described in paragraph PERIODIC SCHEDULE UPDATE MEETINGS for the purpose of jointly reviewing the actual progress of the project as compared to the as planned progress and to review planned activities for the upcoming two weeks. The then current and approved schedule update shall be used for the purposes of this meeting and for the production and review of reports. The Contractor’s Project Manager and the Authorized Representative of the Contracting Officer shall attend. The weekly progress meeting will address the status of RFI’s, RFP’s and Submittals.

3.9.2. Provide a bar chart produced by the scheduling software, organized by Total Float and Sorted by Early Start Date, and a two week “look-ahead” schedule by filtering all schedule activities to show only current ongoing activities and activities schedule to start during the upcoming two weeks, organized by Work Area Code (AREA) and sorted by Early Start Date.

3.9.3. The Government and the Contractor shall jointly review the reports. If it appears that activities on the longest path(s) which are currently driving the calculated completion date (driving activities), are not progressing satisfactorily and therefore could jeopardize timely project completion, corrective action must be taken immediately. Corrective action includes but is not limited to: increasing the number of work crews; increasing the number of work shifts; increasing the number of hours worked per shift; and determining if Government responsibility coded activities require Government corrective action.

3.10. OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

3.11. TRANSFER OF SCHEDULE DATA INTO RMS/QCS

Download and upload the schedule data into the Resident Management System (RMS) prior to RMS databases being transferred to the Government and is considered to be additional supporting data in a form and detail required by the Contracting Officer pursuant to FAR 52.232-5 - Payments under Fixed-Price Construction Contracts. The receipt of a proper payment request pursuant to FAR 52.232-27 - Prompt Payment for Construction Contracts is contingent upon the Government receiving both acceptable and approvable hard copies and electronic export from QCS of the application for progress payment.

End of Section 01 32 01.00 10

SECTION 01 33 00
SUBMITTAL PROCEDURES

1.0 GENERAL

1.1. DEFINITIONS

1.2. NOT USED

1.3. SUBMITTAL CLASSIFICATION

1.4. APPROVED OR CONCURRED WITH SUBMITTALS

1.5. DISAPPROVED SUBMITTALS

1.6. WITHHOLDING OF PAYMENT

1.7. GENERAL

1.8. SUBMITTAL REGISTER

1.9. SCHEDULING

1.10. TRANSMITTAL FORM (ENG FORM 4025)

1.11. SUBMITTAL PROCEDURES

1.12. CONTROL OF SUBMITTALS

1.13. GOVERNMENT APPROVED SUBMITTALS

1.14. INFORMATION ONLY SUBMITTALS

1.15. STAMPS

1.0 GENERAL

1.1. DEFINITIONS

1.1.1. Submittal

Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.1.2. Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by SD numbers and titles as follows.

SD-01 Preconstruction Submittals

- Certificates of insurance.
- Surety bonds.
- List of proposed subcontractors.
- List of proposed products.
- Construction Progress Schedule.
- Submittal register.
- Schedule of prices.
- Accident Prevention Plan.
- Work plan.
- Quality control plan.
- Environmental protection plan.

SD-02 Shop Drawings

- Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.
- Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.
- Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

- Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work.
- Samples of warranty language when the contract requires extended product warranties.

SD-04 Samples

- Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.
- Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.
- Field samples and mock-ups constructed on the project site establish standards by which the ensuring work can be judged. Includes assemblies or portions of assemblies that are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

- Calculations, mix designs, analyses or other data pertaining to a part of work.
- Design submittals, design substantiation submittals and extensions of design submittals.

SD-06 Test Reports

- Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)
- Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.
- Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.
- Investigation reports.
- Daily checklists.
- Final acceptance test and operational test procedure.

SD-07 Certificates

- Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.
- Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.
- Confined space entry permits.
- Text of posted operating instructions.

SD-08 Manufacturer's Instructions

- Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions.

SD-09 Manufacturer's Field Reports

- Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- Factory test reports.

SD-10 Operation and Maintenance Data

- Data that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

SD-11 Closeout Submittals

- Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

1.1.3. Approving Authority

Office authorized to approve submittal.

1.1.4. Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.2. NOT USED

1.3. SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.3.1. Designer of Record Approved (DA)

1.3.1.1. Designer of Record (DOR) approval is required for all extensions of design, critical materials, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". Provide the Government the number of copies designated hereinafter of all DOR approved submittals, after the DOR has taken appropriate action. The DOR shall ensure that submittals conform to the Solicitation, the Accepted Proposal and the completed design, however see below for those submittals proposing a deviation to the contract or a substitution of a material, system, or piece of equipment that was identified by manufacturer, brand name or model description in the accepted contract proposal.

1.3.1.2. The DOR shall ensure that the submittals comply with all applicable Buy American Act and Trade Agreement Act clauses in the contract. The DOR may confer with the Contracting Officer's Representative for advice and interpretation of those clauses, as necessary.

1.3.1.3. The Government may, but is not required to, review any or all DOR approved submittals for conformance to the solicitation, accepted proposal and the completed design. Except for submittals designated as deviating from the Solicitation, the Accepted Proposal or completed design, the Contractor may proceed with acquisition and installation upon DOR approval. Government Approved (GA)

1.3.2. Government Approved (GA)

Government approval is required for any item specifically designated as requiring Government approval in the Solicitation, for internal and external color finish selections and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.3.3. Government Conformance Review of Design (CR)

The Government will review all intermediate and final design submittals for conformance with the technical requirements of the solicitation. Section 01 33 16 **DESIGN AFTER AWARD** covers the design submittal and review process in detail. Review will be only for conformance with the applicable codes, standards and contract requirements. Design data includes the design documents described in Section 01 33 16 **DESIGN AFTER AWARD**. Generally, design submittals should be identified as SD-05 Design Data submittals.

1.3.4. Designer of Record Approved/Government Conformance Review (DA/CR)

1.3.4.1. Deviations to the Accepted Design. Designer of Record approval and the Government’s concurrence are required for any proposed deviation from the accepted design which still complies with the contract (the Solicitation and Accepted Proposal) before the Contractor is authorized to proceed with material acquisition or installation. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings.” If necessary to facilitate the project schedule, the Contractor and the DOR may discuss a submittal proposing a deviation with the Contracting Officer's Representative prior to officially submitting it to the Government. However, the Government reserves the right to review the submittal before providing an opinion, if it deems it necessary. In any case, the Government will not formally agree to or provide a preliminary opinion on any deviation without the DOR's approval or recommended approval. The Government reserves the right to non-concur with any deviation from the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and concurred design.

1.3.4.2. Substitutions. Unless prohibited or provided for otherwise elsewhere in the Contract, where the accepted contract proposal named products, systems, materials or equipment by manufacturer, brand name and/or by model number or other specific identification, and the Contractor desires to substitute manufacturer or model after award, submit a requested substitution for Government concurrence. Include substantiation, identifying information and the DOR's approval, as meeting the contract requirements and that it is equal in function, performance, quality and salient features to that in the accepted contract proposal.

1.3.5. Designer of Record Approved/Government Approved (DA/GA)

Any proposed deviation to the solicitation and/or the accepted proposal constitutes a change to the contract. In addition to the above stated requirements for proposed deviations to the accepted design, both Designer of Record and Government Approval and, where applicable, a contract modification are required before the Contractor is authorized to proceed with material acquisition or installation for any proposed deviation to the contract. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". The Government reserves the right to accept or reject any such proposed deviation at its discretion.

1.3.6. Information Only

All submittals not requiring Designer of Record or Government approval will be for information only. Provide the Government "For Information Only" copies of all submittals not requiring Government approval or concurrence, after the Designer of Record has taken the appropriate action.

1.4. APPROVED OR CONCURRED WITH SUBMITTALS

Do not construe the Contracting Officer's approval of or concurrence with submittals as a complete check, but only that design, general method of construction, materials, detailing and other information appear to meet the Solicitation and Accepted Proposal. Approval or concurrence will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for design, dimensions, all design extensions, such as the design of adequate connections and details, etc., and the satisfactory construction of all work. The Government won't consider re-submittals for the purpose of substituting previously approved materials or equipment unless accompanied by an explanation of why a substitution is necessary.

1.5. DISAPPROVED SUBMITTALS

Make all corrections required by the Contracting Officer, obtain the Designer of Record's approval when applicable, and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. Resubmit any "information only" submittal found to contain errors or unapproved deviations from the Solicitation or Accepted Proposal as one requiring "approval" action, requiring both Designer of Record and Government approval. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, provide prompt notice in accordance with the Contract Clause "Changes" to the Contracting Officer.

1.6. WITHHOLDING OF PAYMENT

No payment for materials incorporated in the work will be made if all required Designer of Record or required Government approvals have not been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.7. GENERAL

Make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, the Contractor's Quality Control (CQC) System Manager and the Designer of Record, if applicable, shall check, approve, sign, and stamp all items, indicating action taken. Clearly idenify proposed deviations from the contract requirements. Include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Schedule and make submittals requiring Government approval prior to the acquisition of the material or equipment covered thereby. Pick up and dispose of samples remaining upon completion of the work in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.8. SUBMITTAL REGISTER (GA)

Develop a complete list of submittals, including each separate design package submittal. Submit the initial submittal register within 15 days after Notice to Proceed, including, as a minimum, the design packages and other initial submittals required elsewhere in the contract. The Designer of Record shall identify required submittals in the specifications, and use the list to prepare the Submittal Register, utilizing the government-provided software, QCS (see Section 01 45 01.10), to create the ENG Form 4288. Appendix R is a preliminary submittal register input form for use with the Quality Management System and the Resident Office Management System (QCS and RMS). The Government will provide the Contractor the actual Excel Spreadsheet version of this sample input form after award to modify and to use for input into QCS. The Excel Spreadsheet is not totally inputable into QCS, so additional keystroke input will be necessary. The sample input form is not all-inclusive. In addition, additional submittals may be required by other parts of the contract. After award, the parties will meet to discuss contract specific (or task order specific for a task order contract) distribution for the submittals all-inclusive and additional submittals may be required by other parts of the contract. Develop and complete the submittal register as the design is completed. Submit it to the Contracting Officer with the un-reviewed final design package submission or as soon as the design specifications are completed, if before the final design submission. When applicable, if the Contractor elects to fast track design and construction, using multiple design package submissions, update the submittal register to reflect the submittals associated with each design submission, clearly denoting all revisions to the previous submission. The submittal register serves as a scheduling document for submittals and for control of submittal actions throughout the contract period. Coordinate the submit dates and need dates used in the submittal register with dates in the Contractor prepared progress schedule. Submit monthly updates to the submittal register showing the Contractor action codes and actual dates with Government action codes and actual dates or until all submittals have been satisfactorily completed. Revise and submit the submittal register when revising the progress schedule.

1.9. SCHEDULING

Schedule submittals covering component items forming a system or items that are interrelated to be coordinated and submitted concurrently. Schedule certifications to be submitted with the pertinent drawings. Allow adequate time (a minimum of 15 calendar days exclusive of mailing time) and show on the register for those items requiring Government approval or concurrence. No delay damages or time extensions will be allowed for time lost in late submittals by the Contractor.

1.10. TRANSMITTAL FORM (ENG FORM 4025)

Use the transmittal form (ENG Form 4025) for submitting submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor or are included in the QCS software if the Contractor is required to use QCS for this contract. Use a separate transmittal form for each specification section Complete this form by filling out all the heading blank spaces and identify

each item submitted. Exercise special care to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.11. SUBMITTAL PROCEDURES

Make submittals as follows:

1.11.1. Procedures

The Government will further discuss detailed submittal procedures with the Contractor at the Post-Award Conference.

1.11.2. Deviations

For submittals which include proposed deviations requested by the Contractor, check the column "variation" of ENG Form 4025. Set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.12. CONTROL OF SUBMITTALS

Carefully control his procurement operations to ensure that each individual submittal is made on or before the scheduled submittal date shown on the approved "Submittal Register."

1.13. GOVERNMENT APPROVED OR CONCURRED WITH SUBMITTALS

Upon completion of review of submittals requiring Government approval or concurrence, the Government will stamp and date the submittals as approved or concurred.. The Government will retain one (1) 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 three (3) copies of information only submittals.

1.15. STAMPS

Use stamps similar to the following on the submittal data to certify that the submittal meets contract requirements:

CONTRACTOR

(FIRM NAME)

Approved

_____

_____

Approved with corrections as noted on submittal data and/or attached sheet(s)

_____

Signature: _____

Title: _____

Date: _____

For design-build construction, both the Contractor Quality Control System Manager and the Designer of Record shall stamp and sign to certify that the submittal meets contract requirements.

SECTION 01 33 16
DESIGN AFTER AWARD

1.0 GENERAL INFORMATION

1.1. INTRODUCTION

1.2. DESIGNER OF RECORD

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. PRE-WORK ACTIVIES & CONFERENCES

3.1.1. Design Quality Control Plan

3.1.2. Post Award Conference

3.1.3. Partnering & Project Progress Processes

3.1.4. Initial Design Conference

3.1.5. Pre-Construction Conference

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

3.2.1. Site/Utilities

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1.0 GENERAL INFORMATION

1.1. INTRODUCTION

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

1.1.2. The Contractor may elect to fast track the design and construction that is, proceed with construction of parts of the sitework and facilities prior to completion of the overall design. To facilitate fast tracking, the Contractor may elect to divide the design into no more than six (6) design packages per major facility type and no more than three (3) design packages for site and associated work. Designate how it will package the design, consistent with its overall plan for permitting (where applicable) and construction of the project. See Sections 01 33 00 SUBMITTAL PROCEDURES and 01 32 01.00 10 PROJECT SCHEDULE for requirements for identifying and scheduling the design packaging plan in the submittal register and project schedule. See also Sections 01 10 00 STATEMENT OF WORK and 01 57 20.00 10 ENVIRONMENTAL PROTECTION for any specified permit requirements. If early procurement of long-lead item construction materials or installed equipment, prior to completion of the associated design package, is necessary to facilitate the project schedule, also identify those long-lead items and how it will assure design integrity of the associated design package to meet the contract requirements (The Contract consists of the Solicitation requirements and the accepted proposal). Once the Government is satisfied that the long-lead items meet the contract requirements, the Contracting Officer will allow the Contractor to procure the items at its own risk.

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

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

1.2. DESIGNER OF RECORD

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

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. PRE-WORK ACTIVITIES & CONFERENCES

3.1.1. Design Quality Control Plan

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

3.1.2. Post Award Conference

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

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

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

3.1.3. Partnering & Project Progress Processes

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

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

3.1.4. Initial Design Conference

The initial design conference may be scheduled and conducted at the project installation any time after the post award conference, although it is recommended that the partnering process be initiated with or before the initial design conference. Any design work conducted after award and prior to this conference should be limited to site and is discouraged for other items. All Designers of Record shall participate in

the conference. The purpose of the meeting is to introduce everyone and to make sure any needs the contractor has are assigned and due dates established as well as who will get the information. See also Attachment F, BUILDING INFORMATION MODELING REQUIREMENTS for discussion concerning the BIM Implementation Plan demonstration at this meeting. The DB Contractor shall conduct the initial design conference.

3.1.5. Pre-Construction Conference

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

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

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

3.2.1. Site/Utilities

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

3.2.2. Interim Design Submittals

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

over-the-shoulder progress review procedure through the partnering process that would eliminate the need for or expedite a formal intermediate design review on one or more individual design packages.

3.2.3. Over-the-Shoulder Progress Reviews

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

3.2.4. Final Design Submissions

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

3.2.5. Design Complete Submittals

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

3.2.6. Holiday Periods for Government Review or Actions

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

3.2.7. Late Submittals and Reviews

If the Contractor cannot meet its scheduled submittal date for a design package, it must revise the proposed submittal date and notify the government in writing, at least one (1) week prior to the submittal, in order to accommodate the Government reviewers’ other scheduled activities. If a design submittal is

over one (1) day late in accordance with the latest revised design schedule, or if notification of a proposed design schedule change is less than seven (7) days from the anticipated design submission receipt date, the Government review period may be extended up to seven (7) days due to reviewers' schedule conflicts. If the Government is late in meeting its review commitment and the delay increases the Contractor's cost or delays completion of the project, the Suspension of Work and Defaults clauses provide the respective remedy or relief for the delay.

3.3. DESIGN CONFIGURATION MANAGEMENT

3.3.1. Procedures

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

3.3.2. Tracking Design Review Comments

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

3.3.3. Design and Code Checklists

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

3.4. INTERIM DESIGN REVIEWS AND CONFERENCES

3.4.1. General

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

3.4.2. Procedures

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

3.4.3. Conference Documentation

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

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

3.5. INTERIM DESIGN REQUIREMENTS

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

3.5.1. Drawings

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

3.5.2. Design Analyses

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3.5.2.8. For parts including plumbing systems:

(a) List all references used in the design.

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

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

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

3.5.2.9. For elevator systems:

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

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

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

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

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

3.5.2.13. Air Barrier System: Provide a narrative of the design and installation requirements for the Air Barrier system. As part of the design quality control process an air barrier consultant shall review drawing details to assure that details of critical Air Barrier components are properly detailed and incorporated during the design drawings and process (i.e. window flashing details, penetration in air barrier details, door flashing details, roofing/ceiling barrier interface details and etc.). Furnish the Government written review details and results.

3.5.2.14. Life Cycle Cost Analysis (LCCA) Documentation: Sufficient documentation is required for all life cycle cost analyses required in paragraph 5 of Section 01 10 00, the Statement of Work. Each LCCA must be complete and substantial, sufficient of being read as a standalone document which defines all the parameters of the analysis. Use of commercially available software programs to calculate life cycle costs are acceptable, however, provide the LCCA Documentation requirements, as outlined below in addition to any input/output documents generated by the software. As a minimum, include the following items in the LCCA documentation:

(a) Definition of Baseline Condition

(b) Narrative Identification/Explanation of Each Alternative Considered

(c) Energy Usage Analysis (Narrative explanation as well as computer outputs)

(d) Energy Costs Used (Source of Rate Structure or Utility Rates)

(e) First Cost of Baseline Condition and Each Alternative (Cost information must demonstrate inclusion of applicable components and sub-components - single line, lump sum cost estimates for the baseline or alternative conditions are not acceptable)

(f) Cyclical Replacement Costs (Identify data source for equipment/component life used)

(g) Annual/Recurring Maintenance Costs (Identify data source for required maintenance tasks and duration/cost of tasks)

(h) Salvage Values (Identify data source for equipment/component life used)

(i) Life Cycle Cost Results Including:

(1) Life Cycle Cost of the Baseline Condition

(2) Life Cycle Cost of Each Alternative Evaluated

(3) Simple Payback Calculations for Each Alternative

(4) Savings to Investment Ratio for Each Alternative

(5) Study Period Utilized

(6) Net Savings for Each Alternative (As Applicable)

(7) Narrative Discussion/Analysis of Results

(8) Uncertainty Analysis

(9) Certification that the analysis conducted and documented is compliant with the terms, instructions, and conditions of 10 CFR 436 Subpart A.

3.5.3. Geotechnical Investigations and Reports:

3.5.3.1. The contractor’s licensed geotechnical engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal. Make this information available as early as possible during the over-the-shoulder progress review process. Summarize the subsurface conditions and provide recommendations for the design of appropriate utilities, foundations, floor slabs, retaining walls, embankments, and pavements. Include compaction requirements for fill and backfill under buildings, sidewalks, other structures and open areas. Recommend foundation systems to be used, allowable bearing pressures for footings, lateral load resistance capacities for foundation systems, elevations for footings, grade beams, slabs, etc. Provide an assessment of post-construction settlement potential including total and differential. Provide recommendations regarding lateral earth pressures (active, at-rest, passive) to be used in the design of retaining walls. Include the recommended spectral accelerations and Site Class for seismic design along with an evaluation of any seismic hazards and recommendations for mitigation, if required. Include calculations to support the recommendations for bearing capacity, settlement, and pavement sections. Include supporting documentation for all recommended design parameters such as Site Class, shear strength, earth pressure coefficients, friction factors, subgrade modulus, California Bearing Ratio (CBR), etc. Provide earthwork recommendations, expected frost penetration, expected groundwater levels, recommendations for dewatering and groundwater control and the possible presence of any surface or subsurface features that may affect the construction of the project such as sinkholes, boulders, shallow rock, old fill, old structures, soft areas, or unusual soil conditions. Include pH tests, salinity tests, resistivity measurements, etc., required to design corrosion control and grounding systems. Include the raw field data. Arrange a meeting with the Government subsequent to completion and evaluation of the site specific geotechnical exploration to outline any differences encountered that are inconsistent with the Government provided preliminary soils

information. Clearly outline differences which require changes in the foundation type, or pavement and earthwork requirements from that possible and contemplated using the Government furnished preliminary soils investigation, which result in a change to the design or construction. Any equitable adjustment is subject to the provisions of the contract's Differing Site Conditions Clause.

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

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

3.5.4. LEED Documentation:

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

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

3.5.5. Energy Conservation:

3.5.5.1. Refer to Section 01 10 00, Paragraph 5. Interim and Final Design submittals shall demonstrate that each building including the building envelope, HVAC systems, service water heating, power, and lighting systems meet the Mandatory Provisions and the Prescriptive Path requirements of ASHRAE 90.1. Use Compliance Documentation forms available from ASHRAE and included in the ASHRAE 90.1 User's Manual for this purpose. The Architectural Section of the Design Analysis shall include completed forms titled "Building Envelope Compliance Documentation Parts I and II". The Heating Ventilating and Air Conditioning (HVAC) Section of the Design Analysis shall include a completed form titled "HVAC Simplified Approach Option - Part I" if this approach is allowed by the Standard. Otherwise, the HVAC

Section of the Design Analysis shall include completed forms titled “HVAC Mandatory Provisions - Part II” and “HVAC Prescriptive Requirements - Part III”. The Plumbing Section of the Design Analysis shall include a completed form titled “Service Water Heating Compliance Documentation”. The Electrical Section of the Design Analysis shall include an explanatory statement on how the requirements of ASHRAE 90.1 Chapter 8 Power were met. The Electrical Section of the Design Analysis shall also include a completed form titled “Lighting Compliance Documentation”.

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

3.5.6. Specifications

Specifications may be any one of the major, well known master guide specification sources. Uuse only one source. Examples include specifications from MASTERSPEC from the American Institute of Architects, SPECTEXT from Construction Specification Institute or Unified Facility Guide Specifications (UFGS using MASTERFORMAT 2004 numbering system), etc. The UFGS are available through the “Whole Building Design Guide” website, using a websearch engine. Manufacturers’ product specifications, utilizing CSI’s Manu-Spec, three part format may be used in conjunction with the selected specifications. The designers of record shall edit and expand the appropriate Specifications to insure that all project design requirements, current code requirements, and regulatory requirements are met. Specifications shall clearly identify, where appropriate, specific products chosen to meet the contract requirements (i.e., manufacturers’ brand names and model numbers or similar product information). Note that the UFGS are NOT written for Design-Build and must be edited appropriately. For instance, they assume that the Government will approve most submittals, whereas in Design-Build, the Designer of Record has that action, unless this Solicitation requires Government approval for specific submittals. The Designer of Record should also note that some UFGS sections might either prescribe requirements exceeding the Government’s own design standards in applicable references or contain requirements that should be selected where appropriately required by the applicable references. At any rate, where the UFGS are consistent with other major, well known master commercial guide specifications, then generally retain such requirements, as good practices.

3.5.7. Building Rendering

Present and provide a draft color computer, artist, or hand drawn rendering with the conceptual design submittal of the building exterior. Perspective renderings shall include a slightly overhead view of the

entire building to encompass elevations and the roof configuration of the building. After Government review and acceptance, provide a final rendering, including the following:

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

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

3.5.8. Interim Building Design Contents

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

3.5.8.1. Lawn and Landscaping Irrigation System

3.5.8.2. Landscape, Planting and Turfing

3.5.8.3. Architectural

(a) Design Narrative

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

(c) Finish schedule

(d) All required equipment

(e) Special graphics requirements

(f) Door and Window Schedules

(g) Hardware sets using BHMA designations

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

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

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

(k) Air Barrier Design: Details of all Air Barrier components, (i.e. window flashing details, penetrations in air barrier details, door flashing details, roofing/ceiling barrier interface details and etc.)

3.5.8.4. Structural Systems. Include:

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

(b) Foundation plan showing main foundation elements where applicable

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

3.5.8.5. Plumbing Systems

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

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

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

3.5.8.6. HVAC Systems

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

(1) Room designations.

(2) Mechanical legend and applicable notes.

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

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

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

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

(7) Exhaust fans and specialized exhaust systems.

(8) Thermostat location.

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

(10) Location of all air handling equipment.

(11) Air balancing information.

(12) Flue size and location.

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

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

(1) Capacity

(2) Electrical characteristics

(3) Efficiency (if applicable)

(4) Manufacturer's name

(5) Optional features to be provided

(6) Physical size

(7) Minimum maintenance clearances

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

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

3.5.8.7. Fire Protection and Life Safety.

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

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

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

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

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

(5) Indicate any hazardous areas and their classification

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

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

3.5.8.8. Elevators. Provide:

(a) Description of the proposed control system

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

3.5.8.9. Electrical Systems.

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

(1) Room designations.

(2) Electrical legend and applicable notes.

(3) Lighting fixtures, properly identified.

(4) Switches for control of lighting.

(5) Receptacles.

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

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

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

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

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

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

(2) Branch Circuit Designations.

(3) Load Designations.

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

(5) Branch Circuit Connected Loads (AMPS).

(6) Special Features

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

(1) Fixture Designation.

(2) General Fixture Description.

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

(4) Type of Mounting.

(5) Special Features.

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

3.5.8.10. Electronic Systems including the following responsibilities:

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

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

(c) Public Address System

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

(e) Cathodic Protection.

(f) Intrusion Detection, Card Access System

(g) Central Control and Monitoring System

(h) Mass Notification System

(i) Electrical Power Distribution Systems

3.5.8.11. Separate detailed Telecommunications drawings for Information Systems including the following responsibilities:

(a) Telecommunications Cabling

(b) Supporting Infrastructure

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

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

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

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

3.6. FINAL DESIGN REVIEWS AND CONFERENCES

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

3.7. FINAL DESIGN REQUIREMENTS

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

3.7.1. Drawings

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

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

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

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

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

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

All CAD files shall be fully compatible with MicroStation V8 or higher. Save all design CAD files as MicroStation V8 or higher files. Select BIM application(s) and software(s) but all submitted BIM Models and associated Facility Data shall be fully compatible with any of the following file formats: Autodesk Revit

9.0 or higher, Bentley BIM v8 with associated USACE Bentley BIM v8 Workspace, or ArchiCAD 11 or higher.

(a) CAD Data Final File Format: During the design development capture geo-referenced coordinates of all changes made to the existing site (facility footprint, utility line installations and alterations, roads, parking areas, etc) as a result of this contract. There is no mandatory methodology for how the geo-referenced coordinates will be captured, however, Engineering and Construction Bulletin No. 2006-15, Subject: Standardizing Computer Aided Design (CAD) and Geographic Information Systems (GIS) Deliverables for all Military Design and Construction Projects identifies the format for final as-built drawings and data sets to be delivered to the government. Close-out requirements at the as-built stage; require final geo-referenced GIS Database of the new facility along with all exterior modifications. The Government will incorporate this data set into the Installation's GIS Masterplan or Enterprise GIS System. See also, Section 01 78 02.00 10 Closeout Submittals.

(b) Electronic Drawing Files: In addition to the native CAD design files, provide separate electronic drawing files (in editable CAD format and Adobe Acrobat PDF version 7.0 or higher) for each project drawing.

(c) Each file (both CAD and PDF) shall represent one complete drawing from the drawing set, including the date, submittal phase, and border. Each drawing file shall be completely independent of any data in any other file, including fonts and shapes not included with the basic CAD software program utilized. Fonts that are not included as part of the default CAD software package installation or recognized as an allowable font by the A/E/C CAD Standard are not acceptable in delivered CAD files. All displayed graphic elements on all levels of the drawing files shall be part of the project drawing image. The drawing files shall not contain any graphic element that is not part of the drawing image.

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

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

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

3.7.2. Design Analyses

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

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

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

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

3.7.3. Specifications

Specifications shall be 100% complete and in final form.

3.7.4. Submittal Register

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

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

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

3.7.6. Acceptance and Release for Construction

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

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

3.8. DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS

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

3.9. SUBMITTAL DISTRIBUTION, MEDIA AND QUANTITIES

3.9.1. Submittal Distribution and Quantities

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

Activity and Address	Drawing Size (Full Size) **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 (Per Attachment B)	Structural Interior Design Submittal	BIM Data DVD (Per Attach F)
Commander, U.S.Army Engineer District **Savannah District**	1/1	6/6	6/6	6	1	1	0
Commander, U.S.Army Engineer District, Center of Standardization **N/A**	0/0	0/0	0/0	0	0	0	0
Installation	1/1	14/14	14/14	14	2	1	0
U.S.Army Corps of Engineers Construction Area Office	0/0	3/3	3/3	3	1	1	0
Information Systems Engineering Command (ISEC)	0/0	0/1	0/0	1	*Partial Set (Work Station/System Furniture- IT Details)	N/A	1
Huntsville Engineer & Support Center, Central Furnishings Program	N/A	N/A	N/A	N/A	1 Interim/Refer to attachment B for the final submission Qty	N/A	N/A
Other Offices	0/0	1/1	1/0	1	N/A	0	0

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

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

3.9.2. Web based Design Submittals

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 five (5) different addresses. Assemble drawing sheets, specs, design analyses, etc. into individual sets; do not combine duplicate pages from individual sets so that the government has to assemble a set.

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

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

3.10. AS-BUILT DOCUMENTS

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

ATTACHMENT A
STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS

1.0 GENERAL INFORMATION

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

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

2.1. FORMAT AND SCHEDULE

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

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

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

Design submittal requirements include, but are not limited to:

2.1.1. Narrative of the Structural Interior Design Objectives

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

2.1.2. Interior Color Boards

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

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

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

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

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

- All flooring finishes, including patterns.
- All door, door frame finishes and door hardware finishes
- All signage, wall base, toilet partitions, locker finishes and operable/folding partitions and trim
- All millwork materials and finishes (cabinets, counter tops, etc.)
- All window frame finishes and window treatments (sills, blinds, etc.)

Color board samples shall reflect all actual finish textures, patterns and colors required as specified. Patterned samples shall be of sufficient size to adequately show pattern and its repeat if a repeat occurs.

2.1.3. Exterior Color Boards

Prepare exterior finishes color boards in similar format as the interior finishes color boards, for presentation to the reviewers during an interim design conference. Provide original color samples of all exterior finishes including but not limited to the following:

- All Roof Finishes
- All Brick and Cast Stone Samples
- All Exterior Insulation and Finish Samples
- All Glass Color Samples
- All Exterior Metals Finishes
- All Window & Door Frame Finishes
- All Specialty Item Finishes, including trim

Identify each item on the exterior finishes color boards and key to the building elevations to provide a clear indication of how and where each item will be used.

2.2. STRUCTURAL INTERIOR DESIGN DOCUMENTS

2.2.1. General

Structural interior design related drawings must indicate the placement of extents of SID material, finishes and colors and must be sufficiently detailed to define all interior work. The following is a list of minimum requirements:

2.2.2. Finish Color Schedule

Provide finish color schedule(s) in the contract documents. Provide a finish code, material type, manufacturer, series, and color designations. Key the finish code to the color board samples and drawings.

2.2.3. Interior Finish Plans

Indicate wall and floor patterns and color placement, material transitions and extents of interior finishes.

2.2.4. Furniture Footprint Plans

Provide furniture footprint plans showing the outline of all freestanding and systems furniture for coordination of all other disciplines.

2.2.5. Interior Signage

Include interior signage plans or schedules showing location and quantities of all interior signage. Key each interior sign to a quantitative list indicating size, quantity of each type and signage text.

2.2.6. Interior Elevations, Sections and Details

Indicate material, color and finish placement.

ATTACHMENT B
FURNITURE, FIXTURES & EQUIPMENT (FF&E) REQUIREMENTS

1.0 FF&E REQUIREMENTS FOR THE INTERIM AND FINAL DESIGN SUBMITTALS

1.1. FORMAT AND SCHEDULE

Prepare and submit for approval a comprehensive FF&E scheme for an interim design submittal. The Contractor's interior designer, NOT A FURNITURE DEALER, shall develop the design. FF&E is the selection, layout, specification and documentation of furniture and includes but is not limited to workstations, seating, tables, storage and shelving, filing, trash receptacles, clocks, framed artwork, artificial plants, and other accessories. Contract documentation is required to facilitate pricing, procurement and installation. The FF&E package is based on the furniture footprint developed in the Structural Interior Design (SID) portion of the interior design. Develop the FF&E package concurrently with the building design to ensure that there is coordination between the electrical outlets, switches, J-boxes, communication outlets and connections, and lighting as appropriate. In addition, coordinate layout with other building features such as architectural elements, thermostats, location of TV's, GF/GI equipment (for example computers, printers, copiers, shredders, faxes), etc. Locate furniture in front of windows only if the top of the item falls below the window and unless otherwise noted, do not attach furniture including furniture systems to the building. If project has SIPRNET and/or NIPRNET, coordinate furniture layout with SIPRNET and NIPRNET separation requirements. Verify that access required by DOIM for SIPRNET box and conduit is provided. The DOR shall interview appropriate Government personnel to determine FF&E requirements for furniture and furnishings prior to preparation of the scheme to be presented. Determine FFE items and quantities by, but not limited to: (1) the number of personnel to occupy the building, (2) job functions and related furniture/office equipment to support the job function, (3) room functions, (4) rank and grade. Present original sets of the scheme to reviewers at an interim design conference upon completion of the interim architectural submittal or three months prior to the submittal of the final FF&E package (whichever comes first).

Design may proceed to final with the FF&E scheme presented at the conclusion of the interim phase, after resolutions to the comments have been agreed upon between DOR and Government reviewers.

Provide sixcopies 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 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..

Submit four copies of the final and complete FF&E information and samples in 8 ½" x 11" format using three ring binders with pockets on the inside of the cover upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first). Use more than one binder when there are numerous pages with thick samples. Large D-ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out for upholstery and finish boards. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Fold out items must have a maximum spread of 25 ½". Provide cover and spine inserts sheets identifying the document as "Furniture, Fixtures & Equipment" package and include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

Design submittal requirements include, but are not limited to:

1.1.1. Narrative of Interior Design Objectives

Provide a narrative description of the furniture, to include functional, safety and ergonomic considerations, durability, sustainability, aesthetics, and compatibility with the building design.

1.1.2. Furniture Order Form

Prepare one Furnishings Order Form for each item specified in the design. This form identifies all information required to order each individual item. In addition to the project name and location, project number, and submittal phase, the order form must include:

(a) Furniture item illustration and code

(b) Furniture item name

(c) Job name, location, and date

(d) General Services Administration (GSA) FSC Group, part, and section

(e) GSA Contract Number, Special Item Number (SIN), and contract expiration date

(f) Manufacturer, Product name and Product model number or National Stock Number (NSN)

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

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

(i) Dimensions

(j) Item location by room number and room name

(k) Quantity per room

(l) Total quantity

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

(n) Written Product Description: include a non-proprietary paragraph listing the salient features of the item to include but not limited to:

(1) required features and characteristics

(2) ergonomic requirements

(3) functional requirements

(4) testing requirements

(5) furniture style

(6) construction materials

(7) minimum warranty

The following is an example for “m” features and characteristics, ergonomic requirements and functional requirements:

Chair Description:

(1) Mid-Back Ergonomic Task Chair

(2) Pneumatic Gaslift; Five Star Base

(3) Mesh Back; Upholstered Seat

(4) Height and Width Adjustable Task Arms:

a. Arm Height: 6”- 11” (+-1/2”)

b. Arm Width: 2”– 4” adjustment

(5) Height Adjustable Lumbar Support

(6) Adjustable Seat Height 16”-21” (+- 1”)

(7) Sliding Seat Depth Adjustment 15”-18” (+-1”)

(8) Standard Hard Casters (for carpeted areas)

(9) Overall Measurements:

a. Overall width: 25” - 27”

b. Overall depth: 25”– 28”

(10) Must have a minimum of the following adjustments (In addition to the above):

a. 360 Degree Swivel

b. Knee-Tilt with Tilt Tension

c. Back angle

d. Forward Tilt

e. Forward Tilt and Upright Tilt Lock

For projects with systems furniture, also provide a written description of the following minimum requirements:

(1) Type furniture systems (panel, stacking panels, spine wall, desk based system, or a combination)

(2) Minimum noise reduction coefficient (NRC)

(3) Minimum sound transfer coefficient (STC)

(4) Minimum flame spread and smoke development

(5) UL testing for task lighting and electrical system

(6) Panel widths and heights and their locations (this may be done on the drawings)Worksurface types and sizes (this may be done on the drawings)

(7) Worksurface edge type

(8) Varying panel/cover finish materials and locations (locations may be shown on the drawings)

(9) Storage requirements

(10) Keyboard requirements

(11) Lock and keying requirements

(12) Accessory components (examples: tack boards, marker boards, paper management)

(13) Electrical and communication raceway requirement; type, capacity and location (base, beltline, below and/or above beltline)

(14) Locations of communication cables (base, beltline, below and/or above beltline, top channel)

(15) Types of electrical outlets

(16) Types of communication jacks; provided and installed by others

(17) Locations of electrical outlets and communication jacks (this may be done on the drawings)

(18) Type of cable (examples: Cat. 5, Cat. 6, fiber optic; UTP or STP, etc.) system needs to support; provided and installed by others

1.1.3. Manufacturer & Alternate Manufacturer List

Provide a table consisting of all the major furniture items in the order forms and two alternate manufacturers for each item. ALTERNATE MANUFACTURER ITEMS MUST BE SELECTED FROM

GSA SCHEDULE AND MEET ALL THE SALIENT FEATURES OF THE ORIGINALLY SPECIFIED ITEM. Provide manufacturer name, address, telephone number, product series and product name for each item and the two alternate items. Major furniture items include, but are not limited to, casegoods, furniture systems, seating, and tables. Organize matrix by item code and item name.

1.1.4. FF&E Procurement List

Provide a table that lists all FF&E furniture, mission unique equipment and building Contractor Furnished/Contractor Installed (CF/CI) items. Give each item a code and name and designate whether item will be procured as part of the FF&E furniture, mission unique equipment or the building construction contract. Use the item code to key all FF&E documents including location plans, color boards, data sheets, cost estimate, etc. Divide the FF&E package into different sections based on this listing, applies to order forms and cost estimates.

1.1.5. Points of Contact (POCs)

Provide a comprehensive list of POCs needed to implement the FF&E package. This would include but not be limited to appropriate project team members, using activity contacts, interior design representatives, construction contractors and installers involved in the project. In addition to name, address, phone, fax and email, include each contact's job function. Divide the FF&E package into different sections based on this listing, applies to order forms and cost estimates.

1.1.6. Color Boards

Provide color boards for all finishes and fabrics for all FF&E items. Finishes to be included but not limited to paint, laminate, wood finish, fabric, etc.

1.1.7. Itemized Furniture Cost Estimate

Provide an itemized cost estimate of furnishings keyed to the plans and specifications of products included in the package. This cost estimate should be based on GSA price schedules. The cost estimate must include separate line items for general contingency, installation, electrical hook-up for systems furniture or other furniture requiring hardwiring by a licensed electrician, freight charges and any other related costs. Installation and freight quotes from vendors should be used in lieu of a percentage allowance when available. Include a written statement that the pricing is based on GSA schedules. An estimate developed by a furniture dealership may be provided as support information for the estimate, but must be separate from the contractor provided estimate.

1.2. INTERIOR DESIGN DOCUMENTS

1.2.1. Overall Furniture and Area Plans

Provide floor Plans showing locations and quantities of all freestanding, and workstation furniture proposed for each floor of the building. Key each room to a large scale Furniture Placement Plan showing the furniture configuration, of all furniture. Provide enlarged area plans with a key plan identifying the area in which the building is located. Key all the items on the drawings by furniture item code. Do not provide manufacturer specific information such as product names and numbers on drawings, Drawings shall be non-proprietary. This is typical for FFE on all plans, including those mentioned below. Coordinate the overall furniture and area plans with the Life Safety Code Review to ensure adequate clearances are provided for egress. Provide a narrative of this coordination to accompany the Furniture and Area plans.

1.2.2. Workstation Plans

Show each typical workstation configuration in plan view. In addition, provide either elevations or an isometric view. Drawings shall illustrate panels and all major components for each typical workstation configuration. Identify workstations using the same numbering system as shown on the project drawings. Key components to a legend on each sheet which identifies and describes the components along with dimensions. Provide the plan, elevations and isometric of each typical workstation together on the same drawing sheet.

1.2.3. Panel Plans

Show panel locations and critical dimensions from finished face of walls, columns, panels including clearances and aisle widths. Key panel assemblies to a legend which shall include width, height, configuration of frames, panel fabric and finishes (if there are different selections existing within a project), powered or non-powered panel and wall mount locations.

1.2.4. Desk Plans

Provide typical free standing desk configurations in plan view. In addition, provide either elevation or an isometric view and identify components to clearly represent each desk configuration.

1.2.5. Reflected Ceiling Plans

Provide typical plans showing ceiling finishes and heights, lighting fixtures, heating ventilation and air conditioning supply and return, and sprinkler head placement for coordination of furniture.

1.2.6. Electrical and Telecommunication Plans

Show power provisions including type and locations of feeder components, activated outlets and other electrical componentsShow locations and quantities of outlets for workstations. Clearly identify different outlets, i.e. electrical, LAN and telecommunication receptacles indicating each type proposed. Show wiring configuration, (circuiting, switching, internal and external connections) and provide as applicable.

1.2.7. Artwork Placement Plans

Provide an Artwork Placement Plan to show location of artwork, assign an artwork item code to each piece of artwork. As an alternative, artwork can be located on the Furniture Plans. Provide a schedule that identifies each piece by room name and number. Provide installation instructions; include mounting height.

1.2.8. Window Drapery Plans

Provide Interior Window Drapery Plans. Key each drapery treatment to a schedule showing color, pattern, material, drapery size and type, draw direction, location and quantities.

1.2.9. Portable Fire extinguishers:

Provide a list of all required portable fire extinguishers, with descriptions (location, size, type, etc.) and total number per type. See also attachment D, "SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW", paragraph 1.14.

1.3. FURNITURE SELECTION

1.3.1. Select furniture from the GSA Schedules. Specify furniture available open market when an item is not available on the GSA Schedules. Provide justification fort items not available on the GSA Schedules.

1.3.2. To the greatest extent possible when specifying furniture work within a manufacturer's family of furniture for selections, example: Steelcase, Turnstone, Brayton International, Metro, and Vecta are all Steelcase companies. Each alternate should also be specified from a manufacturer's family of furniture, example: first set of alternates would be specified from Knoll's family of furniture and the second from Herman Miller family of furniture. It may be necessary to make some selections from other than a manufacturer's family of furniture if costs are not reasonable for particular items, some items are not available or appropriate for the facility or the items are not on GSA Schedule. If this occurs, consider specifying product from an open line that is accessible by numerous dealerships. Select office furniture including case goods, tables, storage, seating, etc. that is compatible in style, finish and color. Select furniture that complies with ANSI/BIFMA and from manufacturer's standard product line as shown in the most recent published price list and/or amendment and not custom product.

1.4. CONSTRUCTION

1.4.1. Provide knee space at workstations and tables that is not obstructed by panels/legs that interfere with knee space of seated person and specificy modesty panels at walls to be of a height or be hinged to allow access to building wall electrical outlets and communication jacks. Provide desks, storage and tables with leveling devices to compensate for uneven floors.

1.4.2. Unless otherwise noted, specify workstations and storage of steel construction. Provide high pressure laminate worksurface tops constructed to prevent warpage (thermallyfused worksurfaces are not acceptable). Provide user friendly features such as radius edges. Do not use sharp edges and exposed connections and ensure the underside of desks, tables and worksurfaces are completely and smoothly finished. Provide abutting worksurfaces that mate closely and are of equal heights when used in side-by-side configurations in order to provide a continuous and level worksurface.

1.4.3. Drawers shall stay securely closed when in the closed position and protect wires from damage during drawer operation. Include a safety catch to prevent accidental removal when fully open

1.4.4. Unless otherwise noted, provide lockable desks and workstations, filing cabinets and storage. Key all locks within a one person office the same; key all one person offices within a building differently. If an office or open office area has more than one workstation, key all the workstations differently, but key all locks within an individual workstation the same. Use tempered glass glazing when glazing is required. Use light-emitting diode (LED)/solid state lighting where task lighting is required in furniture.

1.5. FINISHES AND UPHOLSTERY

1.5.1. Specify neutral colors for casegoods, furniture systems, storage and tables. Specify desk worksurfaces and table tops that are not too light or too dark in color and have a pattern to help hide soiling. Accent colors are allowed in break and lounge areas. Keep placement of furniture systems panel fabric accent colors to a minimum. All finishes shall be cleanable with ordinary household cleaning solutions.

1.5.2. Use manufacturer's standard fabrics; including textile manufacturers fabrics that have been graded into the furniture manufactures fabric grades and are available through their GSA Schedule. Customers Own Material (COM) can be used in headquarter buildings in command suites with executive furniture. Coordinate specific locations with Corps of Engineers Interior Designer.

1.5.3. Specify seating upholstery that meets Wyzenbeek Abrasion Test, 55,000 minimum rubs. Specify a soil retardant finish for woven fabrics if Crypton or vinyl upholstery is not provided for seating in dining areas. Use manufacturer's standard fabrics. This includes textile manufacturers fabrics that have been graded into the furniture manufactures fabric grades and are available through their GSA Schedule. Specify upholstery and finish colors and patterns that help hide soiling. Specify finishes that can be cleaned with ordinary household cleaning solutions.

1.6. ACCESSORIES

1.6.1. Specify all accessories required for completely finished furniture installation. Provide filing cabinets and storage for office supplies. Provide tack surfaces at workstations with overhead storage. Provide tackable surfaces at workstations with overhead storage.

1.6.2. Not Used.

1.6.3. Workstations are to be equipped with stable keyboard trays that have height adjustability, tilting capability, including negative tilt, have a mouse pad at same height as the keyboard tray that can accommodate both left and right handed users, and retractable under worksurface.

1.7. MISSION UNIQUE EQUIPMENT

Funding for FF&E furniture items and mission unique equipment (MUE) items are from two different sources. Separate the designs and procurement documentation for FFE items and MUE. MUE includes, but is not limited to, items such as commerical appliances, fitness equipment, IT equipment and supporting carts. The User will purchase and install mission unique equipment items, unless otherwise noted. Identify locations of known MUE items such as commercial appliances, etc. for space planning purposes.

1.8. SUSTAINABILITY

1.8.1. For all designs provided regardless of facility type, make every effort to implement all aspects of sustainability to the greatest extent possible for all the selections made in the FF&E package. This includes but is not limited to the selection of products that consider: **Material Chemistry and Safety of Inputs** (What chemicals are used in the construction of the selections?); **Recyclability** (Do the selections contain recycled content?); **Disassembly** (Can the selections be disassembled at the end of their useful life to recycle their materials?).

1.8.2. Make selections to the greatest extent possible of products that possess current McDonough Braungart Design Chemistry (MBDC) certification or other “third-party” certified Cradle to Cradle program, Forest Stewardship Council (FSC) certification, GREENGAURD certification or similar “third-party” certified products consisting of low-emitting materials.

1.9. FURNITURE SYSTEMS

1.9.1. General.

Where appropriate, design furniture systems in open office areas. Coordinate style and color of furniture systems with other storage, seating, etc. in open office areas. Minimize the number of workstation typicals and the parts and pieces required for the design to assist in future reconfiguration and inventorying.

1.9.2. Connector Systems.

Specify a connector system that allows removal of a single panel or spine wall within a typical workstation configuration without requiring disassembly of the workstation or removal of adjacent panels. Specify connector system with tight connections and continuous visual seals. When Acoustical panels are used, provide connector system with continuous acoustical seals. Specify concealed clips, screws, and other construction elements, where possible.

1.9.3. Panels and Spine Walls

Specify panels and spine walls with hinged or removable covers that permit easy access to the raceway when required but are securely mounted and cannot be accidentally dislodged under normal conditions. Panels shall be capable of structurally supporting more than 1 fully loaded component per panel per side. Raceways are to be an integral part of the panel and must be able to support lay-in cabling and have a large capacity for electrical and IT. Do not thread cables through the frame.

1.9.4. Electrical And Information/Technology (IT)

Design furniture with electrical systems that meets requirements of UL 1286 when powered panels are required and UL approved task lights that meet requirements of NFPA 70. Dependent on user requirements and Section 01 10 00, paragraph 3 requirements, it is recommended that workstation electrical and IT wiring entry come from the building walls to eliminate the use of power poles and access at the floor. Design electrical and IT systems that are easily accessed in the spine wall and panels without having to move return panels and components. Electrical and IT management will be easily accessible by removable wall covers which can be removed while workstation components are still attached. Specify connector system that has continuation of electrical and IT wiring within workstations and workstation to workstation.

1.9.5. Pedestals

Specify pedestals that are interchangeable from left to right, and right to left, and retain pedestal locking system capability.

1.10. EXECUTIVE FURNITURE

1.10.1. Design for executive furniture in command areas, coordinate specific locations with Corps of Engineers Interior Designer. Use upgraded furniture, upholsteries and finishes in command suites. This includes but is not limited to wood casegoods, seating and tables. Select executive furniture casegoods from a single manufacturer and style line, to include workstations, credenzas, filing, and storage, etc.

1.10.2. Specify furniture with wood veneer finish with mitered solid wood edge of same wood type. Other executive office furniture such as seating, tables, executive conference room furniture, etc. shall be compatible in style, finish and color with executive furniture casegoods.

1.11. SEATING

1.11.1. General

Specify appropriate chair casters and glides for the floor finish where the seating is located. All task seating shall support up to a minimum of 250 lbs.

1.11.2. Desk and Guest Seating

Select ergonomic desk chairs with casters, waterfall front, swivel, tilt, variable back lock, adjustable back height or adjustable lumbar support, pneumatic seat height adjustment, and padded, contoured upholstered seat and back. Desk and guest chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Depending on scale of desk chair provide seat pan forward and back adjustment to increase or decrease depth of seat pan. All desk chairs shall have an adjustable seat height range of 4 1/2", range to include 16 1/2-20". Select guest chairs that are compatible in style, finish and color with the desk chairs.

1.11.3. Conference Room Seating

At tables, select ergonomic conference seating with casters, non-upholstered arms, waterfall front, swivel, tilt, pneumatic seat height adjustment, and padded, contoured seat and back, unless otherwise noted.

Select arm height and/or design that allows seating to be moved up closely to the table top. Conference chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Perimeter conference chairs shall be compatible in style, finish and color with conference seating at the tables.

1.11.4. Lounge, Waiting and Reception Area Seating

Select seating with arms and cushioned, upholstered seat and back. In heavy use areas, arms shall be easily cleaned such as non-upholstered arms or upholstered arms with wood arm caps unless otherwise noted.

1.11.5. Break Room Seating

Select stackable seating that is easily cleaned. Seating shall be appropriate for table and counter heights as applicable with non-upholstered arms if arms are required. Chairs shall have metal legs and composite materials for seats.

1.12. FILING AND STORAGE.

Select storage and shelving units that meet customer’s functional load requirements for stored items. Specify counterweights for filing cabinets when required by the manufacturer for stability. File drawers shall allow only one drawer to be opened at a time. Provide heavy duty storage and shelving if information is not available.

1.13. TRAINING TABLES.

raining tables shall be reconfigurable, moveable and storable; lighter weight folding with dollies or castered as necessary. Plastic laminate self edges are unacceptable. Specify power and data requirements and dollies as required.

1.14. FURNITURE WARRANTIES.

Specify manufacturer's performance guarantees or warranties that include parts, labor and transportation as follows:

Furniture System, unless otherwise noted – 10 year minimum
Furniture System Task Lights – 2 year minimum, excluding bulbs
Furniture System Fabric – 3 year minimum
Wood Desks - 10 year minimum

Metal Desks – 12 year minimum
Seating, unless otherwise noted - 10 year minimum
Seating Mechanisms and Pneumatic Cylinders - 10 years
Seating Fabric - 3 years minimum
Wood Filing and Storage - 10 year minimum

Tables, unless otherwise noted - 10 year minimum
Table Mechanisms – 5 year minimum
Table Ganging Device - 1 year minimum
Items not listed above - 1 year minimum

ATTACHMENT C
TRACKING COMMENTS IN DRCHECKS

1.0 General

The Government and DB Contractor shall set up the project in Dr Checks. Throughout the design process, the parties shall enter, track, and back-check comments using the DrChecks system. Government and Contractor reviewers enter design review comments into DrChecks. Designers of Record shall annotate comments timely and specifically to indicate for the review conference exactly what action will be taken or why the action is not required. After the design review conference and prior to the next design submittal for the package, the DOR's will annotate those comments that require DOR action, design revision, etc. to show how and where it has been addressed in the design documents, This shall be part of the required design configuration management plan. Comments considered critical by the conference participants shall be flagged as such.

2.0 DrChecks Review Comments

The Contractor and the Government shall monitor DrChecks to assure all comments are annotated and resolved prior to the next submittal. Print and include the DrChecks comments and responses and included in the design analysis for record in the next design submittal for that package.

2.1. Upon review of comments prior to the design review conference, the DOR(s) shall identify whether they concur, non-concur, mark it "for information only" or mark it "check and resolve". Indicate exactly what action will be taken or why the action is not required.

2.2. Conference participants (reviewers) will expect coordination between Design Analysis calculations and the submitted design. Reviewers will also focus on the design submittal's satisfaction of the contract requirements.

2.3. After the conference, the DOR(s) shall formally respond to each applicable comment in DrChecks a second time prior to the next submittal, clearly indicating what action was taken and what drawing/spec/design analysis changed. Designers of Record are encouraged to directly contact reviewers to discuss and agree to the formal comment responses rather than relying only on DrChecks and review meetings to discuss comments. With the next submittal, reviewers will back-check answers to the comments against the new submittal, in addition to reviewing additional design work.

2.4. Clearly annotate in DrChecks those comments that, in the DB Contractor's opinion, require effort outside the scope of the contract. Do not proceed with work outside the contract until a modification to the contract is properly executed, if one is necessary.

3.0 DrChecks Initial Account Set-Up

To initialize an office's use of DrChecks, choose a contact person within the office to call the DrChecks Help Desk at 800-428-HELP, M-F, 8AM-5PM, Central time. This POC will be given an office password to distribute to others in the office. Individuals can then go to the hyperlink at http://www.projnet.org and register as a first time user. Upon registration, each user will be given a personal password to the DrChecks system.

3.1. Once the office and individuals are registered, the COE's project manager or lead reviewer will assign the individuals and/or offices to the specific project for review. At this point, persons assigned can make comments, annotate comments, and close comments, depending on their particular assignment.

4.0 DrChecks Reviewer Role

The Contractor is the technical reviewer and the Government is the compliance reviewer of the DB's design documents. Each reviewer enters their own comments into the Dr Checks system. To enter comments:

4.1. Log into DrChecks.

4.2. Click on the appropriate project.

4.3. Click on the appropriate review conference. An Add comment screen will appear.

4.4. Select or fill out the appropriate sections (particularly comment discipline and type of document for sorting) of the comment form and enter the comment in the space provided.

4.5. Click the Add Comment button. The comment will be added to the database and a fresh screen will appear for the next comment you have.

4.6. Once comments are all entered, exit DrChecks by choosing "My Account" and then Logout.

5.0 DrChecks Comment Evaluation (Step 1 of 2)

The role of the DOR(s) is to evaluate and respond to the comments entered by the Government's and DB Contractor's reviewers. To respond to comments:

5.1. Log into DrChecks.

5.2. Click on the appropriate project.

5.3. Under "Evaluate" click on the number under "Pending".

5.4. Locate the comments that require your evaluation. (Note: If you know the comment number you can use the Quick Pick window on your home page in DrChecks; enter the number and click on go.)

5.5. Select the appropriate evaluation radio button (concur, non-concur, for information only, or check and resolve) and respond with a brief explanation in the Discussion field. An explanation other than to say "concur" is not necessary for "Concur", but may be useful for the Design Configuration Management purposes.

5.6. Click on the Add button. The evaluation will be added to the database and a fresh screen will appear with the next comment.

5.7. Once evaluations are all entered, exit DrChecks by choosing "My Account" and then Logout.

6.0 DrChecks Comment Evaluation (Step 2 of 2)

This is where the DOR(s) respond to each applicable comment in DrChecks after the design review conference, prior to the next submittal, clearly indicating what action was taken and what drawing/spec/design analysis changed. Respond to the previous comments, following the same steps as above, adding the narrative in the discussion field.

7.0 DrChecks Back-Check

At the following design conference, (where applicable) or at some other agreed time, Government and Contractor reviewers will back-check comment annotations against newly presented documents to verify that the designers' responses are acceptable and that all revisions have been completed. Reviewers

shall either enter additional back-check comments, if necessary, or close those where actions are complete.

7.1. Log into DrChecks.

7.2. Click on the appropriate project.

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

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

7.5. If you do not agree with the designer’s response or the submittal does not reflect the response given, select “Issue Open”, enter additional information.

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

7.7. Once back-checks are all entered, exit DrChecks by choosing “My Account” and then Logout. The design is completed and final when there are no pending comments to be evaluated and there are no pending or open comments under back-check.

ATTACHMENT D
SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

Instructions: Use the information outlined in this document to provide the minimum requirement for development of Fire Protection and Life Safety Code submittals for all building projects. Additional and supplemental information may be used to further develop the code review. Insert N/A after criteria, which may be “not applicable”.

1.0 SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

1.1. Project Name (insert name and location)

1.2. Applicable Codes and Standards

1.2.1. Unified Facilities Criteria (UFC): 3-600-01, Design: Fire Protection Engineering For Facilities

1.2.2. International Building Code (IBC) for fire resistance requirements, allowable floor area, building height limitations and building separation distance requirements, except as modified by UFC 3-600-01.

1.2.3. National Fire Protection Association (NFPA) 101 Life Safety Code (latest edition), for building egress and life safety and applicable criteria in UFC 3-600-01.

1.2.4. ADA and ABA Accessibllity Guidelines. For Buildings and Facilities See Section 01 10 00, Paragraph 3 for facility specific criteria.

1.3. Occupancy Classification
IBC chapters 3 and 4

1.4. Construction Type
IBC chapter 6

1.5. Area Limitations
IBC chapter 5, table 503

1.6. Allowable Floor Areas
IBC section 503, 505

1.7. Allowable area increases
IBC section 506, 507

1.8. Maximum Height of Buildings
IBC section 504

1.9. Fire-resistive substitution

1.10. Occupancy Separations
IBC table 302.3.2

1.11. Fire Resistive Requirements

1.11.1. Exterior Walls - [_____] hour rating, IBC table 601, 602

1.11.2. Interior Bearing walls - [_____] hour rating

1.11.3. Structural frame - [_____] hour rating

1.11.4. Permanent partitions - [_____] hour rating

1.11.5. Shaft enclosures - [_____] hour rating

1.11.6. Floors & Floor-Ceilings - [_____] hour rating

1.11.7. Roofs and Roof Ceilings - [_____] hour rating

1.12. Automatic Sprinklers and others used to determine the need for automatic Extinguishing Equipment, Extinguishing Systems, Foam Systems, Standpipe

1.12.1. UFC 3-600-01, chapters 4 and 6 systems, wet chemical systems, etc. State which systems are required and to what criteria they will be designed.

1.12.2. UFC 3-600-01, Appendix B Occupancy Classification. Note the classification for each room. This may be accomplished by classifying the entire building and noting exceptions for rooms that differ (E.g. The entire building is Light Hazard except boiler room and storage rooms which are [_____], etc.)

1.12.3. UFC 3-600-01, Chapter 3 Sprinkler Design Density, Sprinkler Design Area, Water Demand for Hose Streams (supply pressure and source requirements).

1.12.4. UFC 3-600-01, Chapter 4 Coverage per sprinkler head. Extended coverage sprinkler heads are not permitted.

1.12.5. Available Water Supply. Provide the results of the water flow tests showing the available water supply static pressure and residual pressure at flow. Based on this data and the estimated flow and pressure required for the sprinkler system, determine the need for a fire pump.

1.12.6. NFPA 13, Para. 8.16.4.6.1. Provide backflow preventer valves as required by the local municipality, authority, or water purveyor. Provide a test valve located downstream of the backflow preventer for flow testing the backflow preventer at full system demand flow. Route the discharge to an appropriate location outside the building.

1.13. Kitchen Cooking Exhaust Equipment

Describe when kitchen cooking exhaust equipment is provided for the project. Type of extinguishing systems for the equipment should be provided. per NFPA 96. Show all interlocks with manual release switches, fuel shutoff valves, electrical shunt trips, exhaust fans, and building alarms.

1.14. Portable Fire Extinguishers, fire classification and travel distance. per NFPA 10

1.15. Enclosure Protection and Penetration Requirements. - Opening Protectives and Through Penetrations

1.15.1. IBC Section712, 715 and Table 715.3. Mechanical rooms, exit stairways, storage rooms, janitor [_____] hour rating. IBC Table 302.1.1

1.15.2. Fire Blocks, Draft Stops, Through Penetrations and Opening Protectives

1.16. Fire Dampers. Describe where fire dampers and smoke dampers are to be used (IBC Section 716 and NFPA 90A}. State whether isolation smoke dampers are required at the air handler.

1.17. Detection Alarm and Communication. UFC 3-600-01, (Chapter 5); NFPA 101 para. 3.4 (chapters 12-42); NFPA 72

1.18. Mass Notification. Describe building/facility mass notification system (UFC 4-021-01) type and type of base-wide mass notification/communication system. State whether the visible notification appliances will be combined with the fire alarm system or kept separate. (Note: Navy has taken position to combine visible notification appliances with fire alarm).

1.19. Interior Finishes (classification). NFPA 101.10.2.3 and NFPA 101.7.1.4

1.20. Means of Egress

1.20.1. Separation of Means of Egress, NFPA 101 chapters 7 and 12-42; NFPA101.7.1.3

1.20.2. Occupant Load, NFPA101.7.3.1 and chapters 12-42.

1.20.3. Egress Capacity (stairs, corridors, ramps and doors) NFPA101.7.3.3

1.20.4. Number of Means of Egress, NFPA101.7.4 and chapters 12-42.

1.20.5. Dead end limits and Common Path of Travel, NFPA 101.7.5.1.6 and chapters 12-42.

1.20.6. Accessible Means of Egress (for accessible buildings), NFPA101.7.5.4

1.20.7. Measurement of Travel Distance to Exits, NFPA101.7.6 and chapters 12-42.

1.20.8. Discharge from Exits, NFPA101.7.7.2

1.20.9. Illumination of Means of Egress, NFPA101.7.8

1.20.10. Emergency Lighting, NFPA101.7.9

1.20.11. Marking of Means of Egress, NFPA101.7.10

1.21. Elevators, UFC 3-600-01, Chapter 6; IBC and ASME A17.1 - 2000,(Safety Code for Elevators and Escalators)

1.22. Accessibility Requirements, ADA and ABA Accessibility Guidelines for Buildings and Facilities

1.23. Certification of Fire Protection and Life Safety Code Requirements. (Note: Edit the Fire team membership if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features for this project in accordance with the attached completed form(s).

1.24. Designer of Record. Certification of Fire protection and Life Safety Code Requirements. (Note: Edit the Fire team members if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features of this project.

Fire Protection Engineer of Record:

_____

Signature and Stamp

Date

OR

Architect of Record:

_____

Signature and Stamp

Date

Mechanical Engineer of Record:

_____

Signature and Stamp

Date

Electrical Engineer of Record:

_____

Signature/Date

ATTACHMENT E
LEED SUBMITTALS

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	**LEED-NC v3 Submittals (OCT09)**		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
GENERAL							
	GENERAL - All calculations shall be in accordance with LEED 2009 Reference Guide.						
	GENERAL: Obtain excel version of this spreadsheet at http://en.sas.usace.army.mil/enWeb, "Engineering Criteria".						
	GENERAL - For all credits, narrative/comments may be added to describe special circumstances or considerations regarding the project's credit approach.						
	GENERAL - Include all required LEED drawings indicated below in contract drawings with applicable discipline drawings, labeled For Reference Only.						
	NOTE: Each submittal indicated with "**" differs from LEED certified project submittals by either having a different due date or being an added submittal not required by GBCI.						
	NOTE: Projects seeking LEED certification need only submit to GBCI whatever documentation is acceptable to GBCI (for example, licensed professional certifications). This checklist identifies what must be submitted to the Government for internal review purposes. Government review of LEED documentation in no way supercedes or modifies the requirements and rulings of of GBCI for purposes of compliance with project requirement to obtain LEED certifiaction.						
	GENERAL - Audit documentation may include but is not limited to what is indicated in this table.						
			Closeout		List of all Final Design submittals revised after final design to reflect actual closeout conditions. Revised Final Design submittals. - OR - Statement confirming that no changes have been made since final design that effect final design submittal documents.		Proj Engr (PE)
CATEGORY 1 - SUSTAINABLE SITES							
SSPR1		Construction Activity Pollution Prevention (PREREQUISITE)	**Final Design		List of drawings and specifications that address the erosion control, particulate/dust control and sedimentation control measures to be implemented.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			**Final Design		Narrative that indicates which compliance path was used (NPDES or Local standards) and describes the measures to be implemented on the project. If a local standard was followed, provide specific information to demonstrate that the local standard is equal to or more stringent than the NPDES program.		CIV
SS1		Site Selection	Final Design		Statement confirming that project does not meet any of the prohibited criteria.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	X	LEED Site plan drawing that shows all proposed development, line depicting boundary of all bodies of water and/or wetlands within 100 feet of project boundary and a line depicting 5' elevation above 100 year flood line that falls within project boundary. Not required if neither condition applies.		CIV
SS2		Development Density & Community Connectivity	Final Design		Option 1: LEED Site vicinity plan showing project site and surrounding development. Show density boundary or note drawing scale.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Table indicating, for project site and all surrounding sites within density radius (keyed to site vicinity plan), site area and building area. Project development density calculation. Density radius calculation. Development density calculation within density radius.		CIV
			Final Design		Option 2: LEED Site vicinity plan showing project site, the 1/2 mile community radius, pedestrian walkways and the locations of the residential development(s) and Basic Services surrounding the project site.		CIV
			Final Design		Option 2: List (including business name and type) of all Basic Services facilities within the 1/2 mile radius, keyed to site vicinity plan.		CIV
SS3		Brownfield Redevelopment	Final Design		Narrative describing contamination and the remediation activities included in project. Include statement indicating how site was determined to be a brownfield.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS4.1		Alternative Transportation: Public Transportation Access	Final Design		Statement indicating which option for compliance applies. State whether public transportation is existing or proposed and, if proposed, cite source of this information.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: LEED Site vicinity plan showing project site, mass transit stops and pedestrian path to them with path distance noted.		CIV
			Final Design		Option 2: LEED Site vicinity plan showing project site, bus stops and pedestrian path to them with path distance noted.		CIV
SS4.2		Alternative Transportation: Bicycle Storage & Changing Rooms	Final Design		FTE calculation. Bicycle storage spaces calculation. Shower/changing facilities calculation.		CIV
			Final Design		List of drawings that show the location(s) of bicycle storage areas. Statement indicating distance from building entrance.		CIV
			Final Design		List of drawings that show the location(s) of shower/changing facilities and, if located outside the buiding, statement indicating distance from building entrance.		ARC

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SS4.3		Alternative Transportation: Low Emitting & Fuel Efficient Vehicles	Final Design		Statement indicating which option for compliance applies. FTE calculation. Statement indicating total parking capacity of site.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Low-emission & fuel-efficient vehicle calculation.		CIV
			Final Design		Option 1: List of drawings and specification references that show location and number of preferred parking spaces for low-emission & fuel-efficient vehicles and signage.		CIV
			Final Design		Option 1: Statement indicating quantity, make, model and manufacturer of low-emission & fuel-efficient vehicles to be provided. Statement confirming vehicles are zero-emission or indicating ACEEE vehicle scores.		CIV
			Final Design		Option 2: Low-emission & fuel-efficient vehicle parking calculation.		CIV
			Final Design		Option 2: List of drawings and specification references that show location and number of preferred parking spaces and signage.		CIV
			Final Design		Option 3: Low-emission & fuel-efficient vehicle refueling station calculation.		CIV
			Final Design		Option 3: List of drawings and specifications indicating location and number of refueling stations, fuel type and fueling capacity for each station for an 8-hour period.		CIV
			Closeout	X	Option 3: Construction product submittals indicating what was provided and confirming compliance with respect to fuel type and fueling capacity for each station for an 8-hour period.		CIV
SS4.4		Alternative Transportation: Parking Capacity	Final Design		Statement indicating which option for compliance applies.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Preferred parking calculation including number of spaces required, total provided, preferred spaces provided and percentage.		CIV
			Final Design		Option 2: FTE calculation. Preferred parking calculation including number of spaces provided, preferred spaces provided and percentage.		CIV
			Final Design		Options 1 and 2: List of drawings and specification references that show location and number of preferred parking spaces and signage.		CIV
			Final Design		Option 3: Narrative indicating number of spaces required and provided and describing infrastructure and support programs with description of project features to support them.		CIV
SS5.1		Site Development: Protect or Restore Habitat	**Final Design		Option 1: List of drawing and specification references that convey site disturbance limits.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			**Final Design		Option 2: LEED site plan drawing that delineates boundaries of each preserved and restored habitat area with area (sf) noted for each.		CIV
			**Final Design		Option 2: Percentage calculation of restored/preserved habitat to total site area. List of drawings and specification references that convey restoration planting requirements.		CIV
SS5.2		Site Development: Maximize Open Space	Final Design		Option 2: LEED site plan drawing delineating boundary of vegetated open space adjacent to building with areas of building footprint and designated open space noted.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS6.1		Stormwater Design: Quantity Control	Final Design		Statement indicating which option for compliance applies.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Indicate pre-development and post-development runoff rate(cfs) and runoff quantity (cf) -OR - Narrative describing site conditions, measures and controls to be implemented to prevent excessive stream velocities and erosion.		CIV
			Final Design		Option 2: Indicate pre-development and post-development runoff rate(cfs) and runoff quantity (cf). Indicate percent reduction in each.		CIV
SS6.2		Stormwater Design: Quality Control	Final Design		For non-structural controls, list all BMPs used and, for each, describe the function of the BMP and indicate the percent annual rainfall treated. List all structural controls and, for each, describe the pollutant removal and indicate the percent annual rainfall treated.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS7.1		Heat Island Effect: Non-Roof	**Final Design		LEED site plan drawing indicating locations and quantities of each paving type, including areas of shaded pavement. Percentage calculation indicating percentage of reflective/shaded/open grid area.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV

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SS7.2		Heat Island Effect: Roof	Final Design		Option 1: Percentage calculation indicating percentage of SRI compliant roof area. List of drawings and specification references that convey SRI requirements and roof slopes.		ARC
			Final Design		Option 1: List of specified roof materials indicating, for each, type, manufacturer, product name and identification if known, SRI value and roof slope.		ARC
			**Closeout		Option 1: List of installed roof materials indicating, for each, manufacturer, product name and identification, SRI value and roof slope.		PE
			Closeout	X	Option 1: Manufacturer published product data or certification confirming SRI		PE
			Final Design		Option 2: Percentage calculation indicating percentage of vegetated roof area.		ARC
			Final Design		Option 3: Combined reflective and green roof calculation.		ARC
			Final Design		Option 3: List of specified roof materials indicating, for each, type, manufacturer, product name and identification if known, SRI value and roof slope.		ARC
			**Closeout		Option 3: List of installed roof materials indicating, for each, manufacturer, product name and identification, SRI value and roof slope.		PE
			Closeout	X	Option 3: Manufacturer published product data or certification confirming SRI		PE
SS8		Light Pollution Reduction	Final Design		Interior Lighting: List of drawings and specification references that convey interior lighting requirements (location and type of all installed interior lighting, location of non-opaque exterior envelope surfaces, allowing confirmation that maximum candela value from interiorfixtures does not intersect non-opaque building envelope surfaces). - OR - List of drawings and specification references that show automatic lighting controls compliance with credit requirement.		ELEC
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		ELEC
			Final Design		Exterior Lighting: List of drawings and specification references that convey exterior lighting requirements (location and type of all site lighting and building façade/landscape lighting).		ELEC
			Final Design		Exterior Site Lighting Power Density (LPD): Tabulation for exterior site lighting indicating, for each location identification or description, units of measure, area or distance of the location, actual LPD using units consistent with ASHRAE 90.1, and the ASHRAE allowable LPD for that type of location. Percentage calculation of actual versus allowable LPD for all site lighting.		ELEC
			Final Design		Exterior Building Facade/Landscape Lighting Power Density (LPD): Tabulation for exterior building facade/landscape lighting indicating, for each location identification or description, units of measure, area or distance of the location, actual LPD using units consistent with ASHRAE 90.1, and the ASHRAE allowable LPD for that type of location. Percentage calculation of actual versus allowable LPD for all building facade/landscape lighting.		ELEC
			Final Design		Exterior Lighting IESNA Zone: Indicate which IESNA zone is applicable to the project.		ELEC
			Final Design		Exterior Lighting Site Lumen table indicating, for each fixture type, quantity installed, initial lamp lumens per luminaire, initial lamp lumens above 90 degrees from Nadir, total lamp lumens and total lamp lumens above 90 degrees. Percentage of site lamp lumens above 90 degrees from nadir to total lamp lumens.		ELEC
			Final Design		Exterior Lighting Narrative describing analysis used for addressing requirements for light trespass at site boundary and beyond.		ELEC
CATEGORY 2 – WATER EFFICIENCY							
WEPR1		Water Use Reduction: 20% Reduction	Final Design		Statement confirming which occupancy breakdown applies (default or special). For special occupancy breakdown, indicate source and explanation for ratio.		MEC
			Final Design		Occupancy calculation including male/female numbers for FTEs, visitors, students, customers, residential and other type occupants/users		MEC
			Final Design		Statement indicating percent of male restrooms with urinals. Statement indicating annual days of operation.		MEC

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			Final Design		Baseline flush fixture calculation spreadsheet indicating, for each fixture type, gender, flush rate, daily uses per person for each occupant type identified in occupancy calculation and annual baseline flush fixture water usage.		MEC
			Final Design		Design case flush fixture calculation spreadsheet indicating, for each fixture type, gender, fixture manufacturer, fixture model number, flush rate, percent of occupants using this fixture type, daily uses per person for each occupant type identified in occupancy calculation and annual design case flush fixture water usage.		MEC
			Closeout	X	Manufacturer published product data or certification confirming fixture water usage.		PE
WE1.1		Water Efficient Landscaping: Reduce by 50%	Final Design		Statement indicating which option for compliance applies.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Calculation indicating, for baseline and design case, total water applied, total potable water applied, total non-potable water applied. Design case percent potable water reduction. If nonpotable water is used, indicate source of nonpotable water.		CIV
			Final Design		List of landscape plan drawings.		CIV
			Final Design		Narrative describing landscaping and irrigation design strategies, including water use calculation methodology used to determine savings and, if non-potable water is used, specific information about source and available quantity.		CIV
WE1.2		Water Efficient Landscaping: No Potable Water Use or No Irrigation	Same as WE1.1		Same as WE1.1		CIV
WE2		Innovative Wastewater Technologies	Final Design		Statement confirming which option for compliance applies.		MEC
			Final Design		Statement confirming which occupancy breakdown applies (default or special). For special occupancy breakdown, indicate source and explanation for ratio.		MEC
			Final Design		Occupancy calculation including male/female numbers for FTEs, visitors, students, customers, residential and other type occupants/users		MEC
			Final Design		Statement indicating percent of male restrooms with urinals. Statement indicating annual days of operation.		MEC
			Final Design		Baseline flush fixture calculation spreadsheet indicating, for each fixture type, gender, flush rate, daily uses per person for each occupant type identified in occupancy calculation and annual baseline flush fixture water usage.		MEC
			Final Design		Design case flush fixture calculation spreadsheet indicating, for each fixture type, gender, fixture manufacturer, fixture model number, flush rate, percent of occupants using this fixture type, daily uses per person for each occupant type identified in occupancy calculation and annual design case flush fixture water usage.		MEC
			Final Design		Option 1: If onsite non-potable water is used, identify source(s), indicate annual quantity from each source and indicate total annual quantity from all onsite non-potable water sources.		MEC
			Final Design		Option 1: Summary calculation indicating baseline annual water consumption, design case annual water consumption, non-potable annual water consumption and total percentage annual water savings.		MEC
			Final Design		Option 2: Statement confirming on-site treatment of all generated wastewater to tertiary standards and all treated wastewater is either infiltrated or used on-site.		MEC
			Final Design		Option 2: List of drawing and specification references that convey design of on-site wastewater treatment features.		CIV
			Final Design		Option 2: On-site water treatment quantity calculation indicating all on-site wastewater source(s), annual quantity treated, annual quantity infiltrated and annual quantity re-used on site from each source and totals for annual quantity treated, annual quantity infiltrated and annual quantity re-used on site from all sources.		CIV
			Final Design		Option 2: Wastewater summary calculation indicating design case annual flush fixture water usage, annual on-site water treatment and percentage sewage convyance reduction.		MEC
			Final Design		Narrative describing project strategy for reduction of potable water use for sewage conveyance, including specific information on reclaimed water usage and treated wastewater usage.		MEC
WE3		Water Use Reduction: 30% - 40% Reduction	Same as WEPR1		Same as WEPR1		MEC
CATEGORY 3 – ENERGY AND ATMOSPHERE							

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EAPR1		Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	**Final Design		**Owner's Project Requirements document		ALL
			**Final Design		**Basis of Design document for commissioned systems		MEC, ELEC
			**Final Design		**Commissioning Plan		MEC, ELEC
			Closeout		Statement confirming all commissioning requirements have been incorporated into construction documents.		PE
			Closeout		Commissioning Report		PE
EAPR2		Minimum Energy Performance (PREREQUISITE)	Final Design		Statement listing the mandatory provisions of ASHRAE 90.1 that project meets relative to compliance with this prerequisite and indicating which compliance path was used.		MEC ELEC ARC
			Final Design		Statement indicating which compliance path option applies.		MEC
			Final Design		Option 1: Statement confirming simulation software capabilities and confirming assumptions and methodology.		MEC
			Final Design		Option 1: General information including simulation program, principal heating source, percent new construction and renovation, weather file, climate zone and Energy Star Target Finder score.		MEC
			Final Design		Option 1: Space summary listing, for each building use, the conditioned area, unconditioned area and total area and include total area for each category		MEC
			Final Design		Option 1: List of all simulation output advisory message data and show difference between baseline and proposed design		MEC
			Final Design		Option 1: Comparison summary for energy model inputs including description of baseline and design case energy model inputs, showing both by element type		MEC
			Final Design		Option 1: Energy type summary lising, for each energy type, utility rate description, units of energy and units of demand		MEC
			Final Design		Option 1: Statement indicating whether project uses on-site renewable energy. If yes, list all sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, statement describing how exceptional calculation measure cost savings is determined		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, for each exceptional calculation method indicate energy types and, for each energy type, annual energy savings, annual cost savings, and brief descriptive narrative		MEC
			Final Design		Option 1: Baseline performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand for all four orientations. For each orientation indicate total annual energy use for each orientation and total annual process energy use.		MEC
			Final Design		Option 1: Baseline energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Proposed Design performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand, baseline annual and peak energy demand and percent savings. Indicate total annual energy use and total annual process energy use for both proposed design and baseline and percent savings.		MEC
			Final Design		Option 1: Proposed Design energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Energy cost and consumption by energy type report indicating, for each energy type, proposed design and baseline annual use and annual cost, percent savings annual use and annual cost. Indicate for renewable energy annual energy generated and annual cost. Indicate exceptional calculations annual energy savings and annual cost savings. Indicate building total annual energy use, annual energy cost for proposed design and baseline and indicate percent savings annual energy use and annual energy cost.		MEC

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			Final Design		Option 1: Compliance summaries from energy simulation software. If software does not produce compliance summaries provide output summaries and example input summaries for baseline and proposed design supporting data in the tables. Output summaries must include simulated energy consumption by end use and total energy use and cost by energy type. Example input summaries should represent most common systems and must include occupancy, use pattern, assumed envelope component sizes and descriptive features and assumed mechanical equipment types and descriptive features		MEC
			Final Design		Option 1: Energy rate tariff from project energy providers (only if not using LEED Reference Guide default rates)		MEC
EAPR3		Fundamental Refrigerant Management (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies.		MEC
			Final Design		Option 2: Narrative describing phase out plan, including specific information on phase out dates and refrigerant quantities.		MEC
EA1		Optimize Energy Performance	Final Design		Statement indicating which compliance path option applies.		MEC
			Final Design		Option 1: Statement confirming simulation software capabilities and confirming assumptions and methodology.		MEC
			Final Design		Option 1: General information including simulation program, principal heating source, percent new construction and renovation, weather file, climate zone and Energy Star Target Finder score.		MEC
			Final Design		Option 1: Space summary listing, for each building use, the conditioned area, unconditioned area and total area and include total area for each category		MEC
			Final Design		Option 1: List of all simulation output advisory message data and show difference between baseline and proposed design		MEC
			Final Design		Option 1: Comparison summary for energy model inputs including description of baseline and design case energy model inputs, showing both by element type		MEC
			Final Design		Option 1: Energy type summary lising, for each energy type, utility rate description, units of energy and units of demand		MEC
			Final Design		Option 1: Statement indicating whether project uses on-site renewable energy. If yes, list all sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, statement describing how exceptional calculation measure cost savings is determined		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, for each exceptional calculation method indicate energy types and, for each energy type, annual energy savings, annual cost savings, and brief descriptive narrative		MEC
			Final Design		Option 1: Baseline performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand for all four orientations. For each orientation indicate total annual energy use for each orientation and total annual process energy use.		MEC
			Final Design		Option 1: Baseline energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Proposed Design performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand, baseline annual and peak energy demand and percent savings. Indicate total annual energy use and total annual process energy use for both proposed design and baseline and percent savings.		MEC
			Final Design		Option 1: Proposed Design energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Energy cost and consumption by energy type report indicating, for each energy type, proposed design and baseline annual use and annual cost, percent savings annual use and annual cost. Indicate for renewable energy annual energy generated and annual cost. Indicate exceptional calculations annual energy savings and annual cost savings. Indicate building total annual energy use, annual energy cost for proposed design and baseline and indicate percent savings annual energy use and annual energy cost.		MEC

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			Final Design		Option 1: Compliance summaries from energy simulation software. If software does not produce compliance summaries provide output summaries and example input summaries for baseline and proposed design supporting data in the tables. Output summaries must include simulated energy consumption by end use and total energy use and cost by energy type. Example input summaries should represent most common systems and must include occupancy, use pattern, assumed envelope component sizes and descriptive features and assumed mechanical equipment types and descriptive features		MEC
			Final Design		Option 1: Energy rate tariff from project energy providers (only if not using LEED Reference Guide default rates)		MEC
EA2.1		On-Site Renewable Energy	Final Design		Statement indicating which compliance path option applies.		ELEC
			Final Design		List all on-site renewable energy sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost. Indicate total annual energy use (all sources), total annual energy cost (all sources) and percent renewable energy cost.		ELEC MEC
			Final Design		Option 1: Indicate, for renewable energy,proposed design total annual energy generated and annual cost.		ELEC MEC
			Final Design		Option 2: Indicate CBECS building type and building gross area. Provide the following CBECS data: median annual electrical intensity, median annual non-electrical fuel intensity, average electric energy cost, average non-electric fuel cost, annual electric energy use and cost, annual non-electric fuel use and cost.		ELEC MEC
			Final Design		Option 2: Narrative describing renewable systems and explaining calculation method used to estimate annual energy generated, including factors influencing performance.		ELEC MEC
EA2.2		On-Site Renewable Energy	Same as EA2.1		Same as EA2.1		ELEC MEC
EA2.3		On-Site Renewable Energy	Same as EA2.1		Same as EA2.1		ELEC MEC
EA3		Enhanced Commissioning	**Final Design		**Owner's Project Requirements document (OPR)		ALL
			**Final Design		**Basis of Design document for commissioned systems (BOD)		ELEC MEC
			**Final Design		**Commissioning Plan		ELEC MEC
			Closeout		Statement confirming all commissioning requirements have been incorporated into construction documents.		PE
			Closeout		**Commissioning Report		PE
			**Final Design		Statement by CxA confirming Commissioning Design Review		
			Closeout		Statement by CxA confirming review of Contractor submittals for compliance with OPR and BOD		PE
			Closeout		**Systems Manual		PE
			Closeout		Statement by CxA confirming completion of O&M staff and occupant training		PE
			Closeout		**Scope of work for post-occupancy review of building operation, including plan for resolution of outstanding issues		PE
			**Predesign		Statement confirming CxA qualifications and contractual relationships relative to work on this project, demonstrating that CxA is an independent third party.		MEC
EA4		Enhanced Refrigerant Management	Final Design		Refrigerant impact calculation table with all building data and calculation values as shown in LEED 2009 Reference Guide Example Calculations		MEC
			Final Design		Narrative describing any special circumstances or explanatory remarks		
			Closeout	X	Cut sheets highlighting refrigerant data for all HVAC components.		PE
EA5		Measurement & Verification	Closeout		Statement indicating which compliance path option applies.		PE
			Closeout		Measurement and Verification Plan including Corrective Action Plan		PE
			Closeout		**Scope of work for post-occupancy implementation of M&V plan including corrective action plan.		PE
EA6		Green Power	Closeout		Statement indicating which compliance path option applies.		PE
			Closeout		Option 1: Indicate proposed design total annual electric energy usage		PE
			Closeout		Option 2: Indicate actual total annual electric energy usage		PE
			Closeout		Option 3: Calculation indicating building type, total gross area, median electrical intensity and annual electric energy use		PE

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			Closeout		Green power provider summary table indicating, for each purchase type, provider name, annual quantity green power purchased and contract term. Indicate total annual green power use and indicate percent green power		PE
			Closeout		Narrative describing how Green Power or Green Tags are purchased		PE
CATEGORY 4 – MATERIALS AND RESOURCES							
MRPR1		Storage & Collection of Recyclables (PREREQUISITE)	Final Design		Statement confirming that recycling area will accommodate recycling of plastic, metal, paper, cardboard and glass. Narrative indicating any other materials addressed and coordination with pickup.		ARC
MR1.1		Building Reuse: Maintain 55% of Existing Walls, Floors & Roof	**Final Design		If project includes a building addition, confirm that area of building addition does not exceed 2x the area of the existing building.		ARC
			**Final Design		Spreadsheet listing, for each building structural/envelope element, the existing area and reused area. Total percent reused.		ARC
MR1.2		Building Reuse: Maintain 75% of Existing Walls, Floors & Roof	Same as MR1.1		Same as MR1.1		ARC
MR1.3		Building Reuse: Maintain 95% of Existing Walls, Floors & Roof	Same as MR1.1		Same as MR1.1		ARC
MR1.4		Building Reuse: Maintain 50% of Interior Non-Structural Elements	**Final Design		If project includes a building addition, confirm that area of building addition does not exceed 2x the area of the existing building.		ARC
			**Final Design		Spreadsheet listing, for each building interior non-structural element, the existing area and reused area. Total percent reused.		ARC
MR2.1		Construction Waste Management: Divert 50% From Disposal	**Preconstruction		Waste Management Plan		PE
			**Construction Quarterly and Closeout		Spreadsheet calculations indicating material description, disposal/diversion location (or recycling hauler), weight, total waste generated, total waste diverted, diversion percentage		PE
			**Construction Quarterly and Closeout		Receipts/tickets for all items on spreadsheet		PE
MR2.2		Construction Waste Management: Divert 75% From Disposal	Same as MR2.1		Same as MR2.1		PE
MR3.1		Materials Reuse: 5%	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each reused/salvaged material, material description, source or vendor, cost. Total reused/salvaged materials percentage.		PE
MR3.2		Materials Reuse: 10%	Same as MR3.1		Same as MR3.1		PE
MR4.1		Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each recycled content material, material name/description, manufacturer, cost, post-consumer recycled content percent, pre-consumer recycled content percent, source of recycled content data. Total post-consumer content materials cost, total pre-consumer content materials cost, total combined recycled content materials cost, recycled content materials percentage.		PE
			Final Design or NLT Preconstruction		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	X	Manufacturer published product data or certification, confirming recycled content percentages in spreadsheet		PE
MR4.2		Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	Same as MR4.1		Same as MR4.1		PE
MR5.1		Regional Materials:10% Extracted, Processed & Manufactured Regionally	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each regional material, material name/description, manufacturer, cost, percent compliant, harvest distance, manufacture distance, source of manufacture and harvest location data. Total regional materials cost, regional materials percentage.		PE
			Preconstruction		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	X	Manufacturer published product data or certification confirming regional material percentages in spreadsheet		PE

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MR5.2		Regional Materials:20% Extracted, Processed & Manufactured Regionally	Same as MR5.1		Same as MR5.1		PE
MR6		Rapidly Renewable Materials	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each rapidly renewable material, material name/description, manufacturer, cost, rapidly renewable content percent, rapidly renewable product value. Total rapidly renewable product value, rapidly renewable materials percentage.		PE
			Final Design		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		ARC
			Closeout	X	Manufacturer published product data or certification confirming rapidly renewable material percentages in spreadsheet		PE
MR7		Certified Wood	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each certified wood material, material name/description, vendor, cost, wood component percent, certified wood percent of wood component, FSC chain of custody certificate number. Total certified wood product value, certified wood materials percentage.		PE
			Final Design or NLT Preconstruction		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	X	Vendor invoices, FSC chain of custody certificates and anufacturer published product data or certification confirming all certified wood materials percentages in spreadsheet.		PE
INDOOR ENVIRONMENTAL QUALITY							
EQPR1		Minimum IAQ Performance (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies, stating applicable criteria/requirement, and confirming that project has been designed to meet the applicable requirements.		MEC
			Final Design		Narrative describing the project's ventilation design, including specifics about fresh air intake volumes and special considerations.		MEC
EQPR2		Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies, stating applicable criteria/requirement, and confirming that project has been designed to meet the applicable requirements.		ARC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements (signage, exhaust system, room separation details, etc).		ARC
EQ1		Outdoor Air Delivery Monitoring	Final Design		Statement indicating which option for compliance applies and confirming that project has been designed to meet the applicable requirements.		MEC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements.		MEC
			Final Design		Narrative describing the project's ventilation design and CO2 monitoring system, including specifics about monitors, operational parameters and setpoints.		MEC
			Closeout	X	Cut sheets for CO2 monitoring system.		PE
EQ2		Increased Ventilation	Final Design		Statement indicating which option for compliance applies and confirming that project has been designed to meet the applicable requirements.		MEC
			Final Design		Narrative describing the project's ventilation design, including specifics about zone fresh air intake volumes and demonstrating compliance.		MEC
			Final Design		Option 2: Narrative describing design method used for determining natural ventilation design, including calculation methodology/model results and demonstrating compliance.		MEC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements.		MEC
EQ3.1		Construction IAQ Management Plan: During Construction	**Preconstruction		Construction IAQ Management Plan		PE
			Closeout		Statement confirming whether air handling units were operated during construction		PE
			Closeout		Dated jobsite photos showing examples of IAQ management plan practices being implemented. Label photos to indicate which practice they demonstrate. Minimum one photo of each practice at each building.		PE

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			Closeout		Spreadsheet indicating, for each filter installed during construction, the manufacturer, model number, MERV rating, location installed, and if it was replaced immediately prior to occupancy.		PE
EQ3.2		Construction IAQ Management Plan: Before Occupancy	**Preconstruction		Construction IAQ Management Plan		PE
			Closeout		Statement indicating which option for compliance applies and confirming that required activities have occurred that meet the applicable requirements.		PE
			Closeout		Option 1a: Narrative describing the project's flushout process, including specifics about temperature, airflow and duration, special considerations (if any) and demonstrating compliance.		PE
			Closeout		Option 1b: Narrative describing the project's pre-occupancy and post-occupancy flushout processes, including specifics about temperature, airflow and duration, special considerations (if any) and demonstrating compliance.		PE
			Closeout		Option 2: Narrative describing the project's IAQ testing process, including specifics about contaminants tested for, locations, remaining work at time of test, retest parameters and special considerations (if any).		PE
			Closeout		Option 2: IAQ testing report demonstrating compliance.		PE
EQ4.1		Low Emitting Materials: Adhesives & Sealants	Closeout		Spreadsheet indicating, for each applicable indoor adhesive, sealant and sealant primer used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data.		PE
			Closeout		Spreadsheet indicating, for each applicable indoor aerosol adhesive, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data - OR - Statement confirming no indoor aerosol adhesives were used for the project.		PE
			Closeout	X	Manufacturer published product data or certification confirming material VOCs in spreadsheet		PE
EQ4.2		Low Emitting Materials: Paints & Coatings	Closeout		Spreadsheet indicating, for each applicable indoor paint and coating used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data.		PE
			Closeout		Spreadsheet indicating, for each applicable indoor anti-corrosive/anti-rust paint and coating used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data - OR - Statement confirming no indoor anti-corrosive/anti-rust paints were used for the project .		PE
			Closeout	X	Manufacturer published product data or certification confirming material VOCs in spreadsheet		PE
EQ4.3		Low Emitting Materials: Flooring Systems	Closeout		Spreadsheet indicating, for each indoor flooring system used, the manufacturer, product name/model number, if it meets LEED requirement (yes/no) and source of LEED compliance data.		PE
			Closeout		Spreadsheet indicating, for each indoor carpet cushion used, the manufacturer, product name/model number, if it meets LEED requirement (yes/no) and source of LEED compliance data - OR - Statement confirming no indoor carpet cushion was used for the project.		PE
			Closeout	X	Manufacturer published product data or certification confirming material compliance label in spreadsheet		PE
EQ4.4		Low Emitting Materials: Composite Wood & Agrifiber Products	Closeout		Spreadsheet indicating, for each indoor composite wood and agrifiber product used, the manufacturer, product name/model number, if it contains added urea formaldehyde (yes/no) and source of LEED compliance data.		PE
			Closeout	X	Manufacturer published product data or certification confirming material urea formaldehyde in spreadsheet		PE
EQ5		Indoor Chemical & Pollutant Source Control	Closeout		Spreadsheet indicating, for each permanent entryway system used, the manufacturer, product name/model number and description of system.		PE
			Final Design		List of drawing and specification references that convey locations and installation methods for entryway systems.		ARC
			Final Design		Spreadsheet indicating, for each chemical use area, the room number, room name, description of room separation features (walls, floor/ceilings, openings) and pressure differential from surrounding spaces with doors closed - OR - Statement confirming that project includes no chemical use areas and that no hazardous cleaning materials are needed for building maintenance.		ARC MEC
			Final Design		If project includes chemical use areas: List of drawing and specification references that convey locations of chemical use areas, room separation features and exhaust system.		ARC MEC

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			Final Design		If project includes places where water and chemical concentrate mixing occurs: List of drawing and specification references that convey provisions for containment of hazardous liquid wastes OR - Statement confirming that project includes no places where water and chemical concentrate mixing occurs.		ARC MEC
			Closeout		If project includes chemical use areas: Spreadsheet indicating, for AHUs/mechanical ventilation equipment serving occupied areas, the manufacturer, model number, MERV rating, location installed, and if it was replaced immediately prior to occupancy (yes/no) - OR - Statement confirming that project does not use mechanical equipment for ventilation of occupied areas.		PE
EQ6.1		Controllability of Systems: Lighting	Final Design		Calculation indicating total number of individual workstations, number of workstations with individual lighting controls and the percentage of workstations with individual lighting controls.		ELEC
			Final Design		For each shared multi-occupant space, provide a brief description of lighting controls.		ELEC
			Final Design		Narrative describing lighting control strategy, including type and location of individual controls and type and location of controls in shared multi-occupant spaces.		ELEC
EQ6.2		Controllability of Systems: Thermal Comfort	Final Design		Calculation indicating total number of individual workstations, number of workstations with individual thermal comfort controls and the percentage of workstations with individual thermal comfort controls.		MEC
			Final Design		For each shared multi-occupant space, provide a brief description of thermal comfort controls.		MEC
			Final Design		Narrative describing thermal comfort control strategy, including type and location of individual and shared multi-occupant controls.		MEC
EQ7.1		Thermal Comfort: Design	Final Design		Design criteria spreadsheet indicating, for spring, summer, fall and winter, maximum indoor space design temperature, minimum indoor space design temperature and maximum indoor space design humidity.		MEC
			Final Design		Narrative describing method used to establish thermal comfort control conditions and how systems design addresses the design criteria, including compliance with the referenced standard.		MEC
EQ7.2		Thermal Comfort: Verification	Final Design		Narrative describing the scope of work for the thermal comfort survey, including corrective action plan development		MEC
			Final Design		List of drawing and specification references that convey permanent monitoring system.		MEC
EQ8.1		Daylight & Views: Daylight 75% of Spaces	Final Design		Option 2: Table indicating all regularly occupied spaces with space area and space area with compliant daylight zone. Sum of regularly occupied areas and regularly occupied areas withcompliant daylight zone. Percentage calculation of areas withcompliant daylight zone to total regularly occupied areas.		ARC
			Final Design		Option 1: Simulation model method, software and output data		ELEC
			Final Design		Option 1: Table indicating all regularly occupied spaces with space area, space area with minimum 25 footcandles daylighting illumination, and method of providing glare control. Sum of regularly occupied areas and regularly occupied areas with 25 fc daylighting. Percentage calculation of areas with 25 fc daylighting to total regularly occupied areas.		ELEC
			Final Design		For all occupied spaces excluded from the calculation, provide narrative indicating reasons for excluding the space.		ARC
			Final Design		List of drawing and specification references that convey exterior glazed opening head and sill heights, glazing performance properties and glare control/sunlight redirection devices.		ARC
			Closeout	X	Manufacturer published product data or certification confirming glazing Tvis in spreadsheet		PE
EQ8.2		Daylight & Views: Views for 90% of Spaces	Final Design		Table indicating all regularly occupied spaces with space area and space area with access to views. Sum of regularly occupied areas and regularly occupied areas with access to views. Percentage calculation of areas with views to total regularly occupied areas.		ARC
			Final Design		For all occupied spaces excluded from the calculation, provide narrative indicating reasons for excluding the space.		ARC
			Final Design		LEED Floor plan drawings showing line of sight diagramming of views areas in each regularly occupied space. List of drawing/specification references that convey exterior glazed opening head and sill heights.		ARC
INNOVATION & DESIGN PROCESS							

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IDc1.1		Innovation in Design	Final Design		Narrative decribing intent, requirement for credit, project approach to the credit. List of drawings and specification references that convey implementation of credit. All other documentation that validates claimed credit.		
IDc1.2		Innovation in Design	Final Design				
IDc1.3		Innovation in Design	Final Design				
IDc1.4		Innovation in Design	Final Design				
IDc2		LEED Accredited Professional	Final Design		Narrative indicating name of LEED AP, company name of LEED AP, description of LEED AP's role and responsiblilities in the project.		ARC

ATTACHMENT F
Version 05-31-2011

BUILDING INFORMATION MODELING REQUIREMENTS

1.0 Section 1 - General

1.1. Definitions. See Section 7 for definitions of terms used in this document.

1.2. Submittal Format

1.2.1. The Model shall be developed using Building Information Modeling ("BIM") supplemented with Computer Aided Design ("CAD") content as necessary to produce a complete set of Construction Documents. Printed design submittal drawings shall be 22" x 34" size, suitable for half-size scaled reproduction.

1.2.2. BIM submittals shall conform to the requirements of Sections 3 and 4 below.

1.2.3. For each Center of Standardization (CoS) facility type included in this Project, all Models and associated Facility Data shall be submitted in either Bentley Systems v8i BIM or Autodesk Revit 2010 format or higher. The submittals shall be fully operable, compatible, and editable within the native BIM tools.

2.0 Section 2 – Design Requirements

2.1. Use of BIM for Design. Contractor shall use either Bentley Systems or Autodesk Revit BIM application(s) and software(s) to develop Project designs consistent with the following requirements.

2.1.1. Baseline Model. The Contractor will not be provided a baseline multi-discipline BIM Project Model.

2.1.2. USACE BIM Workspace. If Contractor selects Bentley Systems BIM as the BIM platform of choice, the latest version of the USACE Bentley BIM Workspace must be used and can be downloaded from the CAD/BIM Technology Center website, currently https://cadbim.usace.army.mil. If Contractor selects Autodesk Revit as the BIM platform of choice, a USACE Revit Workspace will not be provided; Contractor can select which Revit Workspace to use.

2.1.3. 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.

2.1.4. Industry Foundation Class (IFC) Support. The Contractor's selected BIM application(s) and software(s) must be consistent with the current IFC property sets. Any deviations from or additions to the IFC property sets for any new spaces, systems, and equipment must be submitted for Government acceptance.

2.1.5. BIM Project Execution Plan.

2.1.5.1. Develop a BIM Project Execution Plan ("Plan" or "PxP") documenting the BIM uses, analysis technologies and workflows.

2.1.5.2. Contractors shall utilize the link for the USACE BIM PROJECT EXECUTION PLAN (USACE PxP) Template located in Attachment H to develop an acceptable Plan.

2.2. BIM Requirements.

2.2.1. Facility Data. Develop the Facility Data to include material definitions and attributes that are necessary for the Project facility design and construction as described in Section 4.0. Additional data in support of Section 6.0 Contractor Electives is encouraged to be added to the Model.

2.2.2. Model Content. The Model and Facility Data shall include, at a minimum, the requirements of Section 4 below.

2.2.3. Model Granularity. Individual elements may vary in level of detail within the 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 on appropriately scaled civil drawings.

2.3. Output. Submitted Drawings (e.g., plans, elevations, sections, schedules, details, etc.) shall be derived (commonly known as extractions, views or sheets) from the Model and Facility Data. Drawings derived from the Model shall remain connected to the Model for the life of the Project and documented in the PxP. Drawings not derived from the Model shall also be documented in the PxP.

2.3.1. Drawings derived from the Model shall be compliant with the A/E/C CAD Standard. Deliver electronic CAD files used for the creation of the Construction Documents per requirements in Section 01 33 16, the criteria of the USACE Savannah District District, and as noted herein.

2.3.2. The CAD file format specificied for drawings shall not dictate which application(s) are used for development and execution of the Model and Facility Data. Application(s) used shall be documented in the PxP.

2.4. Quality Control Parameters. Implement quality control ("QC") parameters for the Model, including:

2.4.1. Model Standards Checks. QC validation ensures that the Project Facility Data set has no undefined, incorrectly defined or duplicated elements. Identify and report non-compliant elements and submit a corrective action plan. Provide the Government with detailed justification and request Government acceptance for any non-compliant element that the Contractor proposes to be allowed to remain in the Model.

2.4.2. CAD Standards Checks. QC checking ensures that the fonts, dimensions, line styles, levels and other construction document formatting issues are followed per requirements in Section 01 33 16. Identify and report non-compliant content and submit a corrective action plan.

2.4.3. Other Parameters. Develop such other QC parameters as Contractor deems appropriate for the Project and provide to the Government for acceptance.

2.5. Design and Construction Reviews. Perform design and construction reviews at each submittal stage under Section 3 to test the Model, including:

2.5.1. Visual Checks. Checking to ensure the design intent has been followed and that there are no unintended elements in the Model.

2.5.2. 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, code space requirements) in a written report and resolve.

2.5.3. 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.

2.5.4. Other Parameters. Develop other design and construction review parameters as the Contractor deems appropriate for the Project and provide to the Government for acceptance.

3.0 Section 3 – Submittal Requirements

3.1. General Submittal Requirements.

3.1.1. Provide submittals in compliance with the PxP deliverables at stages as described below.

3.1.2. For each Interim Design Submittal as set forth in Paragraphs 3.3 through 3.6, provide a Contractor-certified written report confirming that consistency checks as identified in Paragraphs 2.4 and 2.5 above 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 Interim Design Submittal as set forth in Paragraphs 3.3 through 3.6, provide the Government with:

3.1.3.1. The Model, Facility Data, Workspace and CAD Data files in the native BIM/CAD format.

3.1.3.2. A copy of the Model in an interactive review format such as Bentley Navigator, Autodesk Navisworks, Adobe 3D PDF 7.0 (or later), Google Earth KMZ or other format per PxP requirements. The format for reviews can change between submittals.

3.1.3.3. A list of all submitted electronic files including a description, directory, and file name for each file submitted. For all CAD printed sheets, include a list of the sheet titles and sheet numbers. Identify which files have been produced from the Model and Facility Data.

3.1.4. The Government shall confirm acceptability of all submittals identified in Section 3 in coordination with the USACE Geographic BIM Manager.

3.2. Initial Design Conference Submittal.

3.2.1. Submit a digital copy of the PxP 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 into the PxP.

3.2.2. Within thirty (30) days after the acceptance of the PxP, conduct a demonstration to review the Plan for clarification, and to verify the functionality of planned Model technology workflow and processes. If modifications are required, the Contractor shall complete the modifications and resubmit the PxP performing a subsequent demonstration for Government acceptance. There will be no payment for design or construction until the PxP is completed and accepted by the Government. The Government may also withhold payment if there is design and construction for unacceptable performance in executing the accepted PxP.

3.3. Interim Design Submittals.

3.3.1. BIM and CAD Data. Submit the Model with Facility Data per the requirements identified in Paragraphs 2.2 and 2.3 as applicable to the Interim Design package(s).

3.4. Final Design Submissions and Design Complete Submittals.

3.4.1. BIM and CAD Data. Submit the Model with Facility Data per the requirements identified in Paragraphs 2.2 and 2.3. 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-Built BIM and CAD Data Submittal. Submit the final Model, Facility Data, and CAD files reflecting as-built construction conditions for Government acceptance, 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 Model shall be developed to include the systems described below as they would be built, the processes of installing them, and to reflect final as-built construction 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 actual net square footage and net volume, and holding data to develop the room finish schedule including room names and numbers. Include program information 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(s) shall be developed in the Structural Model and then referenced by the Architectural Model.

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 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. All architectural specialties (i.e., toilet room accessories, toilet partitions, grab bars, lockers, and display cases) and millwork (i.e., cabinetry and counters) shall be accurately depicted with the necessary intelligence to produce accurate plans, elevations, sections and schedules 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 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, 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. Equipment shall be depicted to meet layout requirements with the necessary intelligence to produce accurate plans and schedules, indicating the configuration, materials, finishes, mechanical, and electrical requirements.. 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 with 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, related building/wall sections, and schedules.

4.5.4. Cast-in-Place Concrete. All walls, columns, 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. All 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. All shafts and pits, including necessary intelligence to produce accurate plans and building/wall sections depicting these design elements.

4.5.8. Openings and Penetrations. All major openings and penetrations that would be included on a quarter inch (1/4”=1’0”) scaled drawing.

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 to be depicted in the Model. Additional minimum Model requirements include:

4.6.1. HVAC. All necessary heating, ventilating, air-conditioning and specialty equipment, including air distribution for supply, return, ventilation and exhaust ducts, control systems, 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 Mechanical equipment clearances shall be modeled for use in interference management and maintenance access requirements.

4.6.4. Elevator Equipment. All necessary equipment and control systems, including necessary intelligence to produce accurate plans, sections and elevations depicting these design elements.

4.7. Electrical/Telecommunications. The Electrical and Telecommunications 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 to be depicted 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. All necessary special electrical components (i.e., security, mass notification, public address, nurse call and other special electrical occupancy sensors, and control systems), including necessary intelligence to produce accurate plans, details and schedules.

4.7.3. Grounding. All necessary grounding components (i.e., lightning protection systems, static grounding systems, communications grounding systems, and bonding), including necessary intelligence to produce accurate plans, details and schedules.

4.7.4. Telecommunications. All existing and new telecommunications 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 including all lighting fixtures, relevant existing and proposed support utility lines and equipment with necessary intelligence to produce accurate plans, details and schedules.

4.7.6. Equipment Clearances. All Electrical equipment clearances shall be modeled for use in interference management and maintenance access requirements.

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, with necessary connections to mains or other distribution points as appropriate, including necessary intelligence to produce accurate plans and profiles .

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, parking lots, and 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, as described in the proposal submission requirements and evaluation criteria, the requirements of paragraphs 6.2 through 6.5 are as applicable for those elective feature(s) that will be included in the project.

6.2. COBIE Compliance. The Model and Facility Data for the Project shall fulfill Construction Operations Building Information Exchange (COBIE) requirements on the Whole Building Design Guide website (www.wbdg.org) , including all requirements for the indexing and submission of Portable Document Format (PDF) and other appropriate records 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 PxP and during the Initial Design Conference Submittal Demonstration, 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 Stages identified in Paragraphs 3.3 through 3.6, the Contractor shall deliver the construction schedule 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 PxP and during the Initial Design Conference Submittal Demonstration, provide an overview of the use of BIM in the development and support of cost estimating, or other costing applications such as comparative cost analysis for proposed changes and estimate validation.

6.4.1. Submittal Requirements. During the Stages identified in Paragraphs 3.3 through 3.6, the Contractor shall deliver cost estimating information derived from the Model.

6.4.2. Project Completion. At Project completion, the Contractor shall provide an Micro Computer Aided Cost Estimating System Generation II (“MII”) Cost Estimate that 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 Model output to the maximum extent possible, though other "gap" quantity information will be included by the contractor as necessary for a complete and accurate Cost Estimate. (See Paragraph 6.4.2.2).

6.4.2.1. Sub system level extracted quantities from the Model 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. When developing a Model, the contractor shall be cognizant of construction sequencing at the beginning stages of Model development, such as recognizing tasks performed 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 Model shall be broken down by their location (proximity in the structure) as well as the complexity of installation.

6.4.2.2. At all design Stages it shall be acknowledged that BIM output 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 alone. (An example of this would be plumbing that is less than 1.5" diameter and, therefore, not expected to be modeled due to permitted level of design granularity; this information is commonly referred to as “The Gap”. Quantities addressing “The Gap” and their associated costs shall be included in the final Project actual Cost Estimates as well even though not derived directly from the Model data).

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 and other analyses that may be generated from the Model or reports summarizing the data compiled from these analyses shall be submitted in the form established by contractor in its accepted PxP.

7.0 Definitions

7.1. The following definitions apply specifically in the context of this attachment only.

7.2. “Model”: An electronic, three-dimensional representation of facility elements with associated intelligent attribute data (“Facility Data”).

7.3. “Facility Data”: The non-graphical information attached to objects in the Model that defines various characteristics of the object. Facility Data can include properties such as parametric values that drive physical sizes, material definitions and characteristics (e.g. wood, metal), manufacturer data, industry standards (e.g. AISC steel properties), and project identification numbers. Facility Data can also

define supplementary physical entities that are not shown graphically in the Model, such as insulation around a duct, or hardware on a door.

7.4. "Workspace": A collection of content libraries and supporting files that define and embody a BIM standard. A workspace includes BIM libraries such as wall types, standard steel shapes, furniture, HVAC fittings, and sprinkler heads. It also contains sheet libraries such as print/plot configurations, font and text style libraries, and sheet borders and title blocks. The USACE has developed Workspaces specific to USACE BIM standards; these workspaces are dependent on specific versions of the BIM applications they serve. All USACE BIM Workspaces can be downloaded from the CAD/BIM Technology Center (https://cadbim.usace.army.mil). In some cases, there is a specific Workspace for a given CoS Facility Standard Design.

"IFC": Industry Foundation Class, a standard and file format used for the exchange of BIM data; see www.iai-tech.org. Note: In the context of this attachment, IFC does not mean "Issued For Construction."

ATTACHMENT G
DESIGN SUBMITTAL DIRECTORY AND SUBDIRECTORY FILE ARRANGEMENT

Organize electronic design submittal files in a subdirectory/file structure in accordance with the following table.

The Contractor may suggest a slightly different structure, subject to the discretion of the government.

Design Submittal Directory and Subdirectory File Arrangement.

Directory	Sub-Directory	Sub-Directory or Files	Files
Submittal/Package Name	Narratives	PDF file or files with updated design narrative for each applicable design discipline	
	Drawings	PDF (subdirectory)	Single PDF file with all applicable drawing sheets - bookmarked by sheet number and name
		BIM (subdirectory) See Attachment F.	BIM project folder (with files) per the USACE Workspace. Include an Excel drawing index file with each drawing sheet listed by sheet #, name and corresponding dgn file name (Final Design & Design Complete only)
	Design Analysis & Calculations	Individual PDF files containing design analysis and calculations for each discipline applicable to the submittal	
		PDF file with Fire Protection and Life Safety Code Review checklist	
	LEED	PDF file with updated Leed Check List	
		PDF file or files with LEED Templates for each point with applicable documentation included in each file.	
		LEED SUBMITTALS	
	Energy Analysis	PDF with baseline energy consumption analysis	
		PDF with actual building energy consumption analysis	
	Specifications	Single PDF file with table of contents and all applicable specifications sections.	
		Submittal Register (Final Design & Design Complete submittal only)	
	Design Quality Control	PDF file or files with DQC checklist(s) and/or statements	
	Building Rendering(s)	PDF file of rendering for each building type included in contract (Final Design & Design Complete).	

ATTACHMENT H
USACE BIM Project Execution Plan (PxP) Template Version 1.0

This template is a tool that is provided to assist in the development of a USACE BIM Project Execution Plan as required per contract. The template provides a standard format for organizations to establish their general means and methods for meeting the scope and deliverable requirements in Attachment F. It was adapted from the buildingSMART alliance™ (bSa) Project "BIM Project Execution Planning" as developed by The Computer Integrated Construction (CIC) Research Group of The Pennsylvania State University. The bSa project is sponsored by The Charles Pankow Foundation, Construction Industry Institute (CII), Penn State Office of Physical Plant (OPP), and The Partnership for Achieving Construction Excellence (PACE). The template can be found at the following link:

https://mrsi.usace.army.mil/rfp/Shared%20Documents/USACE_BIM_PXP_TEMPLATE_V1.0.pdf

Please note: Instructions and examples to assist with the completion of this template are currently in grey. The text can and should be modified to suit the needs of the organization filling out the template. If modified, the format of the text should be changed to match the rest of the document. This can be completed, in most cases, by selecting the normal style in the template styles.

SECTION 01 45 01.10
QUALITY CONTROL SYSTEM (QCS)

1.0 GENERAL

1.1. CORRESPONDENCE AND ELECTRONIC COMMUNICATIONS

1.2. QCS SOFTWARE

1.3. SYSTEM REQUIREMENTS

1.4. RELATED INFORMATION

1.5. CONTRACT DATABASE

1.6. DATABASE MAINTENANCE

1.7. IMPLEMENTATION

1.8. DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

1.9. MONTHLY COORDINATION MEETING

1.10. NOTIFICATION OF NONCOMPLIANCE

1.0 GENERAL

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. The Contractor module, user manuals, updates, and training information can be downloaded from the RMS web site. This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

- Administration
- Finances
- Quality Control
- Submittal Monitoring
- Scheduling
- Import/Export of Data
- Request for Information
- Accident Reporting
- Safety Exposure Manhours

1.1. CORRESPONDENCE AND ELECTRONIC COMMUNICATIONS

For ease and speed of communications, both Government and Contractor will exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.2. OTHER FACTORS

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01 32 01.00 10, PROJECT SCHEDULE, Section 01 33 00, SUBMITTAL PROCEDURES, and Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.3. QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

1.4. SYSTEM REQUIREMENTS

The following listed hardware and software is the minimum system configuration that the Contractor shall have to run QCS:

(a) Hardware

- IBM-compatible PC with 1000 MHz Pentium or higher processor
- 256 MB RAM for workstation / 512+ MB RAM for server

- 1 GB hard drive disk space for sole use by the QCS system
- Compact disk (CD) Reader, 8x speed or higher
- SVGA or higher resolution monitor (1024 x 768, 256 colors)
- Mouse or other pointing devise
- Windows compatible printer (Laser printer must have 4+ MB of RAM)
- Connection to the Internet, minimum 56K BPS

(b) Software

- MS Windows 2000 or higher
- MS Word 2000 or newer
- Latest version of : Netscape Navigator, Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher
- Electronic mail (E-mail), MAPI compatible
- Virus protection software that is regularly upgraded with all issued manufacturer's updates

1.5. RELATED INFORMATION

1.5.1. QCS USER GUIDE

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.5.2. CONTRACTOR QUALITY CONTROL (CQC) TRAINING

The use of QCS will be discussed with the Contractor's QC System Manager during the mandatory CQC Training class.

1.6. CONTRACT DATABASE

Prior to the pre-construction conference, the Government will provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by using the government's SFTP repository built into QCS import/export function. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.7. DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government, e.g., daily reports, submittals, RFI's, schedule updates, payment requests, etc. shall be submitted using the government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, email or CD-ROM may be used instead (see Paragraph DATA SUBMISSION VIA CD-ROM). The QCS database typically shall include current data on the following items:

1.7.1. ADMINISTRATION

1.7.1.1. Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver Contractor administrative data in electronic format.

1.7.1.2. Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver subcontractor administrative data in electronic format.

1.7.1.3. Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home (main) office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

All Requests For Information (RFI) shall be exchanged using the Built-in RFI generator and tracker in QCS.

1.7.1.4. Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.7.1.5. Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.7.2. FINANCES

1.7.2.1. Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the design and construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.7.2.2. Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet prompt payment certification, and payment invoice in QCS. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment request, prompt payment certification, and payment invoice with supporting data by using the government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, E-mail or a CD-ROM may be used. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.7.3. Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. The Contractor shall provide the Government a Contractor

Quality Control (CQC) Plan within the time required in Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a QCS update reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.7.3.1. Daily Contractor Quality Control (CQC) Reports

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government within 24 hours after the date covered by the report. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

1.7.3.2. Deficiency Tracking

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.7.3.3. QC Requirements

The Contractor shall develop and maintain a complete list of QC testing and required structural and life safety special inspections required by the International Code Council (ICC), transferred and installed property, and user training requirements in QCS. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

1.7.3.4. Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.7.3.5. Labor and Equipment Hours

The Contractor shall log labor and equipment exposure hours on a daily basis. This data will be rolled up into a monthly exposure report.

1.7.3.6. Accident/Safety Tracking Reporting

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any accidents occurring on the jobsite. This supplemental entry is not to be considered as a substitute for completion of mandatory notification and reports, e.g., ENG Form 3394 and OSHA Form 300.

1.7.3.7. Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.7.3.8. Hazard Analysis

The Contractor shall use QCS to develop a hazard analysis for each feature of work included in its CQC Plan. The hazard analysis shall address any hazards, or potential hazards, that may be associated with the work

1.7.4. Submittal Management

The Government will provide the submittal register form, ENG Form 4288, SUBMITTAL REGISTER, in electronic format. The Contractor and Designer of Record (DOR) shall develop and maintain a complete list of all submittals, including completion of all data columns and shall manage all submittals. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update, ENG Form 4288, shall be produced using QCS. QCS and RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.7.5. Schedule

The Contractor shall develop a design and construction schedule consisting of pay activities, in accordance with Section 01 32 01.00 10, PROJECT SCHEDULE, as applicable. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01 32 01.00 10 PROJECT SCHEDULE). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.7.5.1. Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data from RMS, and schedule data using SDEF.

1.8. IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.9. DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of QCS data is by using the government's SFTP repository built into QCS export function.. Other data should be submitted using E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of CD-ROM for data transfer. Data on CDs shall be exported using the QCS built-in export function. If used, CD-ROMs will be submitted in accordance with the following:

1.9.1. File Medium

The Contractor shall submit required data on CD-ROMs. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.9.2. Disk Or Cd-Rom Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.9.3. File Names

The files will be automatically named by the QCS software. The naming convention established by the QCS software shall not be altered in any way by the Contractor.

1.10. MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions.

The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.11. NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

End of Section 01 45 01.10

SECTION 01 45 04.00 10
CONTRACTOR QUALITY CONTROL

1.0 GENERAL

1.1. REFERENCES

1.2. PAYMENT

2.0 PRODUCTS (NOT APPLICABLE)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.2. QUALITY CONTROL PLAN

3.3. COORDINATION MEETING

3.4. QUALITY CONTROL ORGANIZATION

3.5. SUBMITTALS AND DELIVERABLES

3.6. CONTROL

3.7. TESTS

3.8. COMPLETION INSPECTION

3.9. DOCUMENTATION

3.10. NOTIFICATION OF NONCOMPLIANCE

1.0 GENERAL

1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. Refer to the latest edition, as of the date of the contract solicitation.

- ASTM INTERNATIONAL (ASTM)
- ASTM D 3740 Minimum Requirements for Agencies

  Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
- ASTM E 329 Agencies Engaged in the Testing

  and/or Inspection of Materials Used in Construction
- U.S. ARMY CORPS OF ENGINEERS (USACE)

  ER 1110-1-12 Quality Management

1.2. PAYMENT

There will be no separate payment for providing and maintaining an effective Quality Control program. Include all costs associated therewith in the applicable unit prices or lump-sum prices contained in the Contract Line Item Schedule.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product, which complies with the contract requirements. The system shall cover all design and construction operations, both onsite and offsite, and shall be keyed to the proposed design and construction sequence. The site project superintendent is responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager at the site, responsible for the overall site activities, including but not limited to quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site. Different contractors have different names for the on-site overall project supervisor. For clarification, the term “site project superintendent” refers to the Contractor’s senior site representative or “on-site manager”, or other similar title, as those terms are used in contract Clause 52.236-7, “Superintendence by the Contractor” and in the Division 00 Section(s) of the solicitation for this contract or task order,.or elsewhere in the contract. It does not refer to a construction superintendent, unless that person is also the Contractor’s permanently assigned senior site representative in charge of all on-site activities.

3.2. QUALITY CONTROL PLAN

Furnish for Government review, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Design and construction may begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. The Government will not permit work outside of the features of work included in an accepted interim plan to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started. Where the applicable Code issued by the International Code Council calls for an inspection by the Building Official, the Contractor shall include the inspections in the Quality Control Plan and shall perform the inspections. The Designer of Record shall develop a program for any special inspections required by the applicable International Codes and the Contractor shall perform these inspections, using qualified inspectors. Include the special inspection plan in the QC Plan.

3.2.1. Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all design and construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect/engineers (AE), fabricators, suppliers, and purchasing agents:

3.2.1.1. A description of the quality control organization. Include a chart showing lines of authority and an acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. A CQC System Manager shall report to the project superintendent or someone higher in the contractor's organization.

3.2.1.2. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function. Also include those responsible for performing and documenting the inspections required by the International Codes and the special inspection program developed by the designer of record.

3.2.1.3. A copy of the letter to the CQC System Manager, signed by an authorized official of the firm, which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Furnish copies of these letters.

3.2.1.4. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect engineers (AE), offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

3.2.1.5. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. Use only Government approved Laboratory facilities.

3.2.1.6. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

3.2.1.7. Procedures for tracking design and construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

3.2.1.8. Reporting procedures, including proposed reporting formats.

3.2.1.9. A list of the definable features of work. A definable feature of work is a task, which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

3.2.1.10. A list of all inspections required by the International Codes and the special inspection program required by the code and this contract.

3.2.2. Additional Requirements for Design Quality Control (DQC) Plan

The following additional requirements apply to the Design Quality Control (DQC) plan:

3.2.2.1. The Contractor's QCP Plan shall provide and maintain a Design Quality Control (DQC) Plan as an effective quality control program which will assure that all services required by this design-build contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, competent, independent reviewers identified in the DQC Plan shall review all documents. Use personnel who were not involved in the design effort to produce the design to perform the independent technical review (ITR). The ITR is intended as a quality control check of the design. Include, at least, but not necessarily limited to, a review of the contract requirements (the accepted contract or task order proposal and amended RFP), the basis of design, design calculations, the design configuration management documentation and check the design documents for errors, omissions, and for coordination and design integration. The ITR team is not required to examine, compare or comment concerning alternate design solutions but should concentrate on ensuring that the design meets the contract requirements. Correct errors and deficiencies in the design documents prior to submitting them to the Government.

3.2.2.2. Include in the DQC Plan the discipline-specific checklists to be used during the design and quality control of each submittal. Submit these completed checklists at each design phase as part of the project documentation.

3.2.2.3. A Design Quality Control Manager, who has the responsibility of being cognizant of and assuring that all documents on the project have been coordinated, shall implement the DQC Plan This individual shall be a person who has verifiable engineering or architectural design experience and is a registered professional engineer or architect. Notify the Government, in writing, of the name of the individual, and the name of an alternate person assigned to the position.

3.2.2.4. Develop and maintain effective, acceptable design configuration management (DCM) procedures to control and track all revisions to the design documents after the Interim Design Submission through submission of the As-Built documents. Include the DCM plan as a subset of the DQC Plan. See Section ‘Design After Award’.

3.2.3. Acceptance of Plan

Government acceptance of the Contractor's plan is required prior to the start of design and construction. Acceptance is conditional and will be predicated on satisfactory performance during the design and construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4. Notification of Changes

After acceptance of the CQC Plan, notify the Government in writing of any proposed change. Proposed changes are subject to Government acceptance.

3.3. COORDINATION MEETING

After the Postaward Conference, before start of design or construction, and prior to acceptance by the Government of the CQC Plan, the Contractor and the Government shall meet and discuss the Contractor's quality control system. Submit the CQC Plan for review a minimum of 7 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, design activities, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. The Government will prepare minutes of the meeting for signature by both parties. . The minutes shall become a part of the contract file. There may be occasions when either party will call for subsequent conferences to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4. QUALITY CONTROL ORGANIZATION

3.4.1. Personnel Requirements

The requirements for the CQC organization are a CQC System Manager, a Design Quality Manager, and sufficient number of additional qualified personnel to ensure contract compliance. The CQC organization shall also include personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. Provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Promptly furnish complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation to the CQC organization. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2. CQC System Manager

Identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a graduate engineer, graduate architect, or a BA/BS graduate of an ACCE accredited construction management college program. The CQC system Manager may alternately be an engineering technician with at least 2 years of college and an ICC certification as a Commercial Building Inspector (Residential Building Inspector certification will be required for Military Family Housing projects). In addition, the CQC system manager shall have a minimum of 5 years construction experience on construction similar to this contract. The CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. Assign the CQC System Manager no other duties (except may also serve as Safety and Health Officer, if qualified and if allowed by Section 00 73 00, or by Section 00 73 10 if this is a task order). Identify an alternate for the CQC System Manager in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager but the alternate may have other duties in addition to serving in a temporary capacity as the acting QC manager.

3.4.3. CQC Personnel

3.4.3.1. In addition to CQC personnel specified elsewhere in the contract provide specialized CQC personnel to assist the CQC System Manager in accordance with paragraph titled Area Qualifications.

3.4.3.2. These individuals may be employees of the prime or subcontractor; be responsible to the CQC System Manager; **are not intended to be full time, but must be physically present at the construction site during work on their areas of responsibility**; have the necessary education and/or

experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan. **One person may cover more than one area, provided that they are qualified to perform QC activities for the designated areas below and provided that they have adequate time to perform their duties:**

3.4.4. Experience Matrix

3.4.4.1. Area Qualifications

3.4.4.1.1. Civil - Graduate Civil Engineer or (BA/BS) graduate in construction management with 4 years experience in the type of work being performed on this project or engineering technician with 5 yrs related experience.

3.4.4.1.2. Mechanical - Graduate Mechanical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or engineering technician with an ICC certification as a Commercial Mechanical Inspector with 5 yrs related experience.

3.4.4.1.3. Electrical - Graduate Electrical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or engineering technician with an ICC certification as a Commercial Electrical Inspector with 5 yrs related experience.

3.4.4.1.4. Structural - Graduate Structural Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or person with an ICC certification as a Reinforced Concrete Special Inspector and Structural Steel and Bolting Special Inspector (as applicable to the type of construction involved) with 5 yrs related experience.

3.4.4.1.5. Plumbing - Graduate Mechanical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience, or person with an ICC certification as a Commercial Plumbing Inspector with 5 yrs related experience.

3.4.4.1.6. Concrete, Pavements and Soils Materials Technician (present while performing tests) with 2 yrs experience for the appropriate area

3.4.4.1.7. Testing, Adjusting and Balancing Specialist must be a member (TAB) Personnel of AABC or an experienced technician of the firm certified by the NEBB (present while testing, adjusting, balancing).

3.4.4.1.8. Design Quality Control Manager Registered Architect or Professional Engineer (not required on the construction site)

3.4.4.1.9. Registered Fire Protection Engineer with 4 years related experience or engineering technician with 5 yrs related experience (but see requirements for Fire Protection Engineer of Record to witness final testing in Section 01 10 00, paragraph 5.10, Fire Protection).

3.4.4.1.10. QC personnel assigned to the installation of the telecommunication system or any of its components shall be Building Industry Consulting Services International (BICSI) Registered Cabling Installers, Technician Level. Submit documentation of current BICSI certification. In lieu of BICSI certification, QC personnel shall have a minimum of 5 years experience in the installation of the specified copper and fiber optic cable and components. They shall have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products. QC personnel shall witness and certify the testing of telecommunications cabling and equipment.

3.4.5. Additional Requirement

In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management for Contractors". This course is periodically offered at Army Corps of Engineers. Contact the Contracting Officer for Information on the next scheduled class.. 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:

  US Army Engineer District, Savannah

  Environmental & Materials Unit

200 North Cobb Parkway, Building 400, Suite 404

Marietta, GA 30062

- For other deliveries:

N/A

N/A

N/A

N/A

The area or resident office will coordinate, exact delivery location, and dates for each specific test.

3.8. COMPLETION INSPECTION

3.8.1. Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. Prepare a punch list of items which do not conform to the approved drawings and specifications and include in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2. Pre-Final Inspection

As soon as practicable after the notification above, the Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Correct any items noted on the Pre-Final inspection in a timely manner. Accomplish these inspections and any deficiency corrections required by this paragraph within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3. Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall attend the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups and major commands may also attend. The Government will formally schedule the final acceptance inspection based upon results of the Pre-Final inspection. Provide notice to the Government at least 14 days prior to the final acceptance inspection and include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9. DOCUMENTATION

3.9.1. Maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers using

government-provided software, QCS (see Section 01 45 01.10). The report includes, as a minimum, the following information:

3.9.1.1. Contractor/subcontractor and their area of responsibility.

3.9.1.2. Operating plant/equipment with hours worked, idle, or down for repair.

3.9.1.3. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

3.9.1.4. Test and/or control activities performed with results and references to specifications/drawings requirements. Identify the applicable control phase (Preparatory, Initial, Follow-up). List deficiencies noted, along with corrective action.

3.9.1.5. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

3.9.1.6. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

3.9.1.7. Offsite surveillance activities, including actions taken.

3.9.1.8. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

3.9.1.9. Instructions given/received and conflicts in plans and/or specifications.

3.9.1.10. Provide documentation of design quality control activities. For independent design reviews, provide, as a minimum, identity of the ITR team, the ITR review comments, responses and the record of resolution of the comments.

3.9.2. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. Furnish the original and one copy of these records in report form to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, submit one report for every 7 days of no work and on the last day of a no work period. Account for all calendar days throughout the life of the contract. The first report following a day of no work shall be for that day only. The CQC System Manager shall sign and date reports. The report shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel. The Contractor may submit these forms electronically, in lieu of hard copy.

3.10. NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

End of Section 01 45 04.00 10

SECTION 01 50 02
TEMPORARY CONSTRUCTION FACILITIES

1.0 OVERVIEW

1.1. GENERAL REQUIREMENTS

1.2. AVAILABILITY AND USE OF UTILITY SERVICES

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.4. PROTECTION AND MAINTENANCE OF TRAFFIC

1.5. MAINTENANCE OF CONSTRUCTION SITE

1.0 OVERVIEW

1.1. GENERAL REQUIREMENTS

1.1.1. Site Plan

Prepare a site plan indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Identify any areas which may have to be graveled to prevent the tracking of mud. Also indicate if the use of a supplemental or other staging area is desired.

1.2. AVAILABILITY AND USE OF UTILITY SERVICES

1.2.1. See Section 00 72 00, Contract Clauses and Section 00 73 00, Special Contract Requirements, for Utility Availability requirements.

1.2.2. Sanitation

Provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer. Government toilet facilities will not be available to Contractor's personnel.

1.2.3. Telephone

Make arrangements and pay all costs for desired telephone facilities.

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.3.1. Bulletin Board

Immediately upon beginning of onsite work, provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. Locate the bulletin board at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Display legible copies of the aforementioned data until work is completed. Remove the bulletin board from the site upon completion of the project.

1.3.2. Project and Safety Signs

Erect a project sign and a site safety sign with informational details as provided by the Government at the Post award conference, within 15 days prior to any work activity on project site. Update the safety sign data daily, with light colored metallic or non-metallic numerals. Remove the signs from the site upon completion of the project. Engineer Pamphlet EP 310-1-6a contains the standardized layout and construction details for the signs. It can be found through a GOOGLE Search or try the US Army Corps of Engineers Techinfo Website at http://www.hnd.usace.army.mil/techinfo/. Click on Publications then go to Engineer Pamphlets and select EP 310-1-6a.

1.4. PROTECTION AND MAINTENANCE OF TRAFFIC

Provide access and temporary relocated roads as necessary to maintain traffic. Maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Take measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, as required by the State and local authorities having jurisdiction. Protect the traveling public from damage to person and property.

The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. Investigate the adequacy of existing roads and the allowable load limit on these roads. Repair any damage to roads caused by construction operations.

1.4.1. Haul Roads

The Contractor shall, at its own expense, construct access and haul roads necessary for proper prosecution of the work under this contract. Construct haul roads with suitable grades and widths. Avoid sharp curves, blind corners, and dangerous cross traffic. Provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Provide adequate lighting to assure full and clear visibility for full width of haul road and work areas during any night work operations. Remove haul roads designated by the Contracting Officer upon completion of the work and restore those areas.

1.4.2. Barricades

Erect and maintain temporary barricades to limit public access to hazardous areas. Barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Securely place barricades clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

1.5. MAINTENANCE OF CONSTRUCTION SITE

Mow grass and vegetation located within the boundaries of the construction site for the duration of the project, from NTP to contract completion. Edge or neatly trim grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers from NTP to contract completion.

End of Section 01 50 02

SECTION 01 57 20.00 10
ENVIRONMENTAL PROTECTION

1.0 GENERAL REQUIREMENTS

1.1. SUBCONTRACTORS

1.2. ENVIRONMENTAL PROTECTION PLAN

1.3. PROTECTION FEATURES

1.4. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

1.5. NOTIFICATION

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1. LAND RESOURCES

3.2. WATER RESOURCES

3.3. AIR RESOURCES

3.4. CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

3.5. RECYCLING AND WASTE MINIMIZATION

3.6. HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

3.7. BIOLOGICAL RESOURCES

3.8. INTEGRATED PEST MANAGEMENT

3.9. PREVIOUSLY USED EQUIPMENT

3.10. MILITARY MUNITIONS

3.11. TRAINING OF CONTRACTOR PERSONNEL

3.12. POST CONSTRUCTION CLEANUP

1.0 GENERAL REQUIREMENTS

Minimize environmental pollution and damage that may occur as the result of construction operations. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire duration of this contract. Comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations

1.1. SUBCONTRACTORS

Ensure compliance with this section by subcontractors.

1.2. ENVIRONMENTAL PROTECTION PLAN

1.2.1. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Define issues of concern within the Environmental Protection Plan as outlined in this section. Address each topic in the plan at a level of detail commensurate with the environmental issue and required construction task(s). Identify and discuss topics or issues which are not identified in this section, but which the Contractor considers necessary, after those items formally identified in this section. Prior to commencing construction activities or delivery of materials to the site, submit the Plan for review and Government approval. The Contractor shall meet with the Government prior to implementation of the Environmental Protection Plan, for the purpose of discussing the implementation of the initial plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. Maintain and keep the Environmental Protection Plan current onsite.

1.2.2. Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.2.3. Contents

The plan shall include, but shall not be limited to, the following:

1.2.3.1. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

1.2.3.2. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable

1.2.3.3. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel

1.2.3.4. Description of the Contractor's environmental protection personnel training program

1.2.3.5. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. Include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

1.2.3.6. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site

1.2.3.7. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

1.2.3.8. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

1.2.3.9. Drawing showing the location of on-installation borrow areas.

1.2.3.10. A spill control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The spill control plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

(a) The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Government and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

(b) The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup

(c) Training requirements for Contractor's personnel and methods of accomplishing the training

(d) A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

(e) The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency

(f) The methods and procedures to be used for expeditious contaminant cleanup

1.2.3.11. A solid waste management plan identifying waste minimization, collection, and disposals methods, waste streams (type and quantity), and locations for solid waste diversion/disposal including clearing debris and C&D waste that is diverted (salvaged, reused, or recycled). Detail the contractor's actions to comply with, and to participate in, Federal, state, regional, local government, and installation sponsored recycling programs to reduce the volume of solid waste at the source. Identify any subcontractors responsible for the transportation, salvage and disposal of solid waste. Submit licenses or permits for solid waste disposal sites that are not a commercial operating facility. Attach evidence of the facility's ability to accept the solid waste to this plan. A construction and demolition waste management plan, similar to the plan specified in the UFGS 01 74 19 (formerly 01572) may be used as the non-hazardous solid waste management plan. Provide a Non-Hazardous Solid Waste Diversion Report. Submit the report on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and each quarter thereafter (e.g. the first working day of January, April, July, and October) until the end of the project. Additionally, a summary report, with all data fields, is required at the end of the project. The report shall indicate the total type and amount of waste generated, total type and amount of waste diverted, type and amount of waste sent to waste-to-energy facility and alternative daily cover, in tons along with the percent that was diverted. Maintain, track and report construction and demolition waste data in a manner such that the installation can enter the data into the Army SWAR database, which separates data by type of material. A cumulative report in LEED Letter Template format may be used but must be modified to include the date disposed of/diverted and include

the above stated diversion data. NOTE: The Solid Waste Diversion Reports are separate documentation than the LEED documentation.

1.2.3.12. DELETED.

1.2.3.13. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

1.2.3.14. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, include a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time in the contaminant prevention plan. Update the plan as new hazardous materials are brought on site or removed from the site. Reference this plan in the storm water pollution prevention plan, as applicable.

1.2.3.15. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented and any required permits. If surface discharge will be the method of disposal, include a copy of the permit and associated documents as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, include documentation that the waste water treatment plant Operator has approved the flow rate, volume, and type of discharge.

1.2.3.16. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. Include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Government.

1.2.3.17. A pesticide treatment plan, updated, as information becomes available. Include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional Installation specific requirements. Follow AR 200-1, Chapter 5, Pest Management, Section 5-4, “Program Requirements” for data required to be reported to the Installation.

1.3. PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Government shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. Both the Contractor and the Government will

sign this survey, upon mutual agreement as to its accuracy and completeness. The Contractor develop a plan that depicts how it will protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.4. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Government and may require an extended review, processing, and approval time. The Government reserves the right to disapprove alternate methods, even if they are more cost effective, if the Government determines that the proposed alternate method will have an adverse environmental impact.

1.5. NOTIFICATION

The Government will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Government of the proposed corrective action and take such action when approved by the Government. The Government may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Government may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1. LAND RESOURCES

Confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. Do not attach or fasten any ropes, cables, or guys to any trees for anchorage unless specifically authorized. Provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Remove all stone, soil, or other materials displaced into uncleared areas..

3.1.1. Work Area Limits

Prior to commencing construction activities, mark the areas that need not be disturbed under this contract. Mark or fence isolated areas within the general work area which are not to be disturbed. Protect monuments and markers before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. Personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.1.2. Landscape

Clearly identify trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved by marking, fencing, or wrapping with boards, or any other approved techniques. Restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.1.3. Erosion and Sediment Controls

Provide erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. Coordinate with approving authorities (federal, state, etc.) for specific requirements to be included in the plan. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. Keep the area of bare soil exposed at any one time by construction operations to a minimum necessary. Construct or install temporary and permanent erosion and sediment control best management practices (BMPs). BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. Remove any temporary measures after the area has been stabilized.

3.1.4. Contractor Facilities and Work Areas

Place field offices, staging areas, stockpile storage, and temporary buildings in areas designated on the drawings or as directed by the Government. Make only approved temporary movement or relocation of Contractor facilities. Provide erosion and sediment controls for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Control temporary excavation and embankments for plant and/or work areas to protect adjacent areas.

3.2. WATER RESOURCES

Monitor construction activities to prevent pollution of surface and ground waters. Do not apply toxic or hazardous chemicals to soil or vegetation unless otherwise indicated. Monitor all water areas affected by construction activities. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by state or federally issued Clean Water Act permits.

3.2.1. Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and local governments or impede state-designated flows.

3.2.2. Wetlands

Do not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

3.3. AIR RESOURCES

Comply with all Federal and State air emission and performance laws and standards for equipment operation, activities, or processes.

3.3.1. Particulates

Control dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants, including weekends, holidays and hours when work is not in progress. Maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods are permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. Provide sufficient, competent equipment available to accomplish these tasks. Perform particulate control as the work proceeds and whenever a particulate nuisance or hazard occurs. Comply with all State and local visibility regulations.

3.3.2. Odors

Control odors from construction activities at all times. Odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.3.3. Sound Intrusions

Keep construction activities under surveillance and control to minimize environment damage by noise. Comply with the provisions of the state and Installation rules.

3.3.4. Burning

Burning is not allowed on the project site unless specified in other sections of the specifications or by written authorization. Specific times, locations, and manners of burning shall be subject to approval.

3.4. CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.4.1. Solid Wastes

Place solid wastes (excluding clearing debris) in containers which are emptied on a regular schedule. Conduct handling, storage, and disposal to prevent contamination. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with solid waste. Transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. The minimum acceptable off-site solid waste disposal option is a Subtitle D RCRA permitted landfill. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.4.2. Chemicals and Chemical Wastes

Dispense chemicals, ensuring no spillage to the ground or water. Perform and document periodic inspections of dispensing areas to identify leakage and initiate corrective action. The Government may periodically review this documentation. Collect chemical waste in corrosion resistant, compatible containers. Monitor and remove collection drums to a staging or storage area when contents are within 6 inches of the top. Classify, manage, store, and dispose of wastes in accordance with Federal, State, and local laws and regulations.

3.4.3. Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable state and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. At a minimum, manage and store hazardous waste in compliance with 40 CFR 262. Take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. Segregate hazardous waste from other materials and wastes; protect it from the weather by placing it in a safe covered location and take precautionary measures, such as berming or other appropriate measures, against accidental spillage. Store, describe, package, label, mark, and placard hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, state, and local laws and regulations. Transport Contractor generated hazardous waste off Government property in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. Dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Immediately report spills of hazardous or toxic materials to the Government and the Facility Environmental Office. Contractor will be responsible for cleanup and cleanup costs due to spills.

Contractor is responsible for the disposition of Contractor generated hazardous waste and excess hazardous materials.

3.4.4. Fuel and Lubricants

Conduct storage, fueling and lubrication of equipment and motor vehicles in a manner that affords the maximum protection against spill and evaporation. Manage and store fuel, lubricants and oil in accordance with all Federal, State, Regional, and local laws and regulations.

3.5. RECYCLING AND WASTE MINIMIZATION

Participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project. Line and berm fueling areas and establish storm water control structures at discharge points for site run-off. Keep a liquid containment clean-up kit available at the fueling area.

3.6. HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area are shown on the drawings. Protect and preserve these resources during the life of the Contract. Temporarily suspend all activities that may damage or alter such resources, if any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found during excavation or other construction activities. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, notify the Government so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. Cease all activities that may result in impact to or the destruction of these resources. Secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.7. BIOLOGICAL RESOURCES

Minimize interference with, disturbance to, and damage to fish, wildlife, and plants, including their habitat. Protect threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.8. INTEGRATED PEST MANAGEMENT

Coordinate, through the Government, with the Installation Pest Management Coordinator (IPMC) at the earliest possible time prior to pesticide application, in order to minimize impacts to existing fauna and flora. Discuss integrated pest management strategies with the IPMC and receive concurrence from the IPMC, through the COR, prior to the application of any pesticide associated with these specifications. Give IMPC personnel the opportunity to be present at all meetings concerning treatment measures for pest or disease control and during application of the pesticide. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.8.1. Pesticide Delivery and Storage

Deliver pesticides, approved for use on the Installation, to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses.

3.8.2. Qualifications

Use the services of a subcontractor for pesticide application whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.8.3. Pesticide Handling Requirements

Formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions.

3.8.4. Application

A state certified pesticide applicator shall apply pesticides in accordance with EPA label restrictions and recommendations.

3.9. PREVIOUSLY USED EQUIPMENT

Clean all previously used construction equipment prior to bringing it onto the project site. Ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the USDA jurisdictional office for additional cleaning requirements.

3.10. MILITARY MUNITIONS

Immediately stop work in that area and immediately inform the Government, in the event military munitions, as defined in 40 CFR 260, are discovered or uncovered.

3.11. TRAINING OF CONTRACTOR PERSONNEL

Train personnel in all phases of environmental protection and pollution control. Conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Conduct additional meetings for new personnel and when site conditions change. The training and meeting agenda shall include methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.12. POST CONSTRUCTION CLEANUP

Clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". Unless otherwise instructed in writing , obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. Grade, fill and seed the entire disturbed area, unless otherwise indicated.

SECTION 01 62 35
RECYCLED/RECOVERED MATERIAL

1.0 GENERAL

1.1. REFERENCES

1.2. OBJECTIVES

1.3. EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

1.4. EPA PROPOSED ITEMS INCORPORATED IN THE WORK

1.5. EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

1.0 GENERAL

1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

- U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
- 40 CFR 247 Comprehensive Procurement Guideline for Products Containing Recovered Materials

1.2. OBJECTIVES

Government procurement policy is to acquire, in a cost effective manner, items containing the highest percentage of recycled and recovered materials practicable consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials. The Environmental Protection Agency (EPA) has designated certain items which must contain a specified percent range of recovered or recycled materials. The Contractor shall make all reasonable efforts to use recycled and recovered materials in providing the EPA designated products and in otherwise utilizing recycled and recovered materials in the execution of the work.

1.3. EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

Materials that have been designated by EPA as being products which are or can be made with recovered or recycled materials, when incorporated into the work under this contract, shall contain at least the minimum percentage of recycled or recovered materials indicated by EPA unless adequate justification (non-availability) for non-use is provided. When a designated item is specified as an option to a non-designated item, the designated item requirements apply only if the designated item is used in the work.

1.4. EPA PROPOSED ITEMS INCORPORATED IN THE WORK

Products other than those designated by EPA are still being researched and are being considered for future Comprehensive Procurement Guideline (CPG) designation. It is recommended that these items, when incorporated in the work under this contract, contain the highest practicable percentage of recycled or recovered materials, provided specified requirements are also met.

1.5. EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

There are many products listed in 40 CFR 247 which have been designated or proposed by EPA to include recycled or recovered materials that may be use by the Contractor in performing the work but will not be incorporated into the work. These products include office products, temporary traffic control products, and pallets. It is recommended that these non-construction products, when used in the conduct of the work, contain the highest practicable percentage of recycled or recovered materials and that these products be recycled when no longer needed.

End of Section 01 62 35

SECTION 01 78 02.00 10
CLOSEOUT SUBMITTALS

1.0 OVERVIEW

1.1. SUBMITTALS

1.2. PROJECT RECORD DOCUMENTS

1.3. EQUIPMENT DATA

1.4. CONSTRUCTION WARRANTY MANAGEMENT

1.5. MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

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1.7. FIELD TRAINING

1.8. PRICING OF CONTRACTOR-FURNISHED AND INSTALLED PROPERTY AND GOVERNMENT-FURNISHED CONTRACTOR-INSTALLED PROPERTY

1.9. LEED REVIEW MEETINGS

1.10. RED ZONE MEETING

1.11. FINAL CLEANING

1.12. INTERIM FORM DD1354 "TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

EXHIBIT 1 SAMPLE RED ZONE MEETING CHECKLIST

1.0 OVERVIEW

1.1. SUBMITTALS

Government approval is required for any submittals with a "G" designation; submittals not having a "G" designation are for Designer of Record approval or for information only. Submit the following in accordance with Section 01 33 00 submittals*:*

SD-02 Shop Drawings

– As-Built Drawings - G

▪ Drawings showing final as-built conditions of the project. Provide electronic drawing files as specified in Section 01 33 16, 3 sets of blue-line prints and one set of the approved working as-built drawings.

SD-03 Product Data

– As-Built Record of Equipment and Materials

▪ Two copies of the record listing the as-built materials and equipment incorporated into the construction of the project.

– Construction Warranty Management Plan

▪ Three sets of the construction warranty management plan containing information relevant to the warranty of materials and equipment incorporated into the construction project, including the starting date of warranty of construction. Furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest to the project location.

– Warranty Tags

▪ Two record copies of the warranty tags showing the layout and design.

– Final Cleaning

▪ Two copies of the listing of completed final clean-up items.

1.2. PROJECT RECORD DOCUMENTS

1.2.1. As-Built Drawings – G

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

1.2.2. Maintenance of As-Built Drawings

1.2.2.1. The Configuration Management Plan shall describe how the Contractor will maintain up-to-date drawings, how it will control and designate revisions to the drawings and specifications (In accordance with Special Contract Requirement: ***Deviating from the Accepted Design*** and Section 01 33 16: ***Design after Award***, the Designer of Record's approval is necessary for any revisions to the accepted design).

1.2.2.2. Make timely updates, carefully maintaining a record set of working as-built drawings at the job site, marked in red, of all changes and corrections from the construction drawings. Enter changes and corrections on drawings promptly to reflect "Current Construction". Perform this update no less frequently

than weekly for the blue line drawings and update no less frequently than quarterly for the CADD/CAD and BIM files, which were prepared previously in accordance with Section 01 33 16. Include a confirmation that the as-builts are up to date with the submission of the monthly project schedule.

1.2.2.3. If the DB Contractor fails to maintain the as-built drawings as required herein, the Government will retain from the monthly progress payment, an amount representing the estimated monthly cost of maintaining the as-built drawings. Final payment with respect to separately priced facilities or the contract as a whole will be withheld until the Contractor submits acceptable as-built drawings and the Government approves them.

1.2.2.4. The marked-up set of drawings shall reflect any changes, alterations, adjustments or modifications. Changes must be reflected on all sheets affected by the change. Changes shall include marking the drawings to reflect structural details, foundation layouts, equipment sizes, and other extensions of design.

1.2.2.5. Typically, room numbers shown on the drawings are selected for design convenience and do not represent the actual numbers intended for use by the end user. Final as-built drawings shall reflect actual room numbers adopted by the end user.

1.2.2.6. If there is no separate contract line item (CLIN) for as-built drawings, the Government will withhold the amount of $35,000, or 1% of the present construction value, whichever is the greater, until the final as-built drawing submittal has been approved by the Government.

1.2.3. Underground Utilities

The drawings shall indicate, in addition to all changes and corrections, the actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, the as-built drawings shall show, by offset dimensions to two permanently fixed surface features, the end of each run including each change in direction. Locate Valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Record average elevation of the top of each run or underground structure..

1.2.4. Partial Occupancy

For projects where portions of construction are to be occupied or activated before overall project completion, including portions of utility systems, supply as-built drawings for those portions of the facility being occupied or activated at the time the facility is occupied or activated. Show this same as-built information previously furnished on the final set of as-built drawings.

1.2.5. As-Built Conditions That are Different From the construction Drawings

Accurately reflect all as-built conditions that are different, such as dimensions, road alignments and grades, and drainage and elevations, from the construction drawings on each drawing. If the as-built condition is accurately reflected on a shop drawing, then furnish that shop drawing in CADD format. Reference the final as-built construction drawing the shop drawing file that includes the as-built information. In turn, the shop drawing shall reference the applicable construction as-built drawing. Delete any options shown on drawings and not selected clearly reflect options selected on final as-built drawings.

1.2.6. Additional As-Built Information that Exceeds the Detail Shown on the construction Drawings:

These as-built conditions include those that reflect structural details, foundation layouts, equipment, sizes, mechanical and electrical room layouts and other extensions of design, that were not shown in the project design documents because the exact details were not known until after the time of approved shop

drawings. It is recognized that these shop drawing submittals (revised showing as-built conditions) will serve as the as-built record without actual incorporation into the construction drawings, piping, and equipment drawings. Include locations of all explorations, logs of all explorations, and results of all laboratory testing, including those provided by the Government. Furnish all such shop drawings in CADD /CADformat. Include fire protection details, such as wiring, performed for the design of the project.

1.2.7. Final As-Built Drawings

Submit final as-built CADD/CAD and BIM Model(s) and Facility Data files at the time of Beneficial Occupancy of the project or at a designated phase of the project. In the event the Contractor accomplishes additional work after this submittal, which changes the as-built conditions, submit a new DVD with all drawing sheets and three blue-line copies of affected sheets which depict additional changes.

1.2.8. Title Blocks

In accordance with the configuration management plan, clearly mark title blocks to indicate final as-built drawings.

1.2.9. Other As-Built Documents

Provide scans of all other documents such as design analysis, catalog cuts, certification documents that are not available in native electronic format in an organized manner in Adobe.pdf format.

1.2.9.1. LEED Documentation

Update LEED documentation on at least a monthly basis and have it available for review by the Government on the jobsite at all times during construction. Submit the final LEED Project Checklist(s), final LEED submittals checklist and complete project documentation, verifying the final LEED score and establishing the final rating. Provide full support to the validation review process, including credit audits. See also the LEED documentation requirements in Section 01 33 16, DESIGN AFTER AWARD.

1.2.9.2. GIS Documentation

Provide final geo-referenced GIS database of the new building footprint along with any changes made to exterior of the building. The intent of capturing the final building footprint and exterior modifications in a GIS database is to provide the installation with a data set of the comprehensive changes made to the landscape as a result of the construction project. The Government will incorporate this data set into the installations existing GIS MasterPlan or Enterprise GIS system. The GIS database deliverable shall follow a standard template provided to the Contractor by the Government, adhere to detailed specifications outlined in ECB No 2006-15, and be documented using the Federal Geographic Data Committee (FGDC) metadata standard.

1.3. EQUIPMENT DATA

1.3.1. Real Property Equipment

Provide an Equipment-in-Place list of all installed equipment furnished under this contract. Include all information usually listed on manufacturer's name plate. Include the cost of each piece of installed property F.O.B. construction site. For each of the items which is specified herein to be guaranteed for a specified period from the date of acceptance thereof, provide the following information: The name, serial and model number address of equipment supplier, or manufacturer originating the guaranteed item. The Contractor's guarantee to the Government of these items will not be limited by the terms of any manufacturer's guarantee to the Contractor. Furnish the list as one (1) reproducible and three (3) copies

thirty (30) calendar days before completion of any segment of the contract work which has an incremental completion date.

1.3.2. Maintenance and Parts Data

Furnish a brochure, catalog cut, parts list, manufacturer's data sheet or other publication showing detailed parts data on all other equipment subject to repair and maintenance procedures not otherwise required in Operations and Maintenance Manuals specified elsewhere in this contract. Distribution of directives shall follow the same requirements as listed in paragraph above.

1.3.3. Construction Specifications

Furnish permanent electronic files of final as-built construction specifications, including modifications thereto, with the as-built drawings.

1.4. CONSTRUCTION WARRANTY MANAGEMENT

1.4.1. Prior to the end of the one year warranty, the Government may conduct an infrared roof survey on any project involving a membrane roofing system. This survey will be conducted in accordance with ASTM C1153-90, "Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging". The Contractor shall replace all damaged materials and locate and repair sources of moisture penetration.

1.4.2. Management

1.4.2.1. Warranty Management Plan

Develop a warranty management plan containing information relevant to the clause ***Warranty of Construction*** in FAR 52.246-21. Submit the warranty management plan for Government approval at least 30 days before the planned pre-warranty conference. In the event of phased turn-over of the contract, update the Warranty Management Plan as necessary to include latest information required. Include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Submit warranty information made available during the construction phase prior to each monthly pay estimate. Assemble information in a binder and turn over to the Government upon acceptance of the work. The construction warranty period shall begin on the date of project acceptance and shall continue for the full product warranty period. The Contractor, Government, including the Customer Representative shall jointly conduct warranty inspections, 4 months and 9 months, after acceptance. The warranty management plan shall include, but shall not be limited to, the following information:

(1) Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the contractors, subcontractors, manufacturers or suppliers involved.

(2) Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

(3) A list for each warranted equipment, item, feature of construction or system indicating:

(i) Name of item.

(ii) Model and serial numbers.

(iii) Location where installed.

(iv) Name and phone numbers of manufacturers or suppliers.

(v) Names, addresses and telephone numbers of sources of spare parts.

(vi) Warranties and terms of warranty. Include one-year overall warranty of construction. Indicate those items, which have extended warranties with separate warranty expiration dates.

(vii) Cross-reference to warranty certificates as applicable.

(viii) Starting point and duration of warranty period.

(ix) Summary of maintenance procedures required to continue the warranty in force.

(x) Cross-reference to specific pertinent Operation and Maintenance manuals.

(xi) Organization, names and phone numbers of persons to call for warranty service.

(xii) Typical response time and repair time expected for various warranted equipment.

(4) The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.

(5) Procedure and status of tagging of all equipment covered by extended warranties.

(6) Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.4.3. Performance Bond

1.4.3.1. The Contractor's Performance Bond will remain effective throughout the construction warranty period.

1.4.3.2. In the event the Contractor or his designated representative(s) fails to commence and diligently pursue any work required under this clause, and in a manner pursuant to the requirements thereof, the Government shall have a right to demand that said work be performed under the Performance Bond by making written notice on the surety. If the surety fails or refuses to perform the obligation it assumed under the Performance Bond, the Government shall have the work performed by others, and after completion of the work, may make demand for reimbursement of any or all expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

1.4.3.3. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Government will have the right to recoup expenses from the bonding company.

1.4.3.4. Following oral or written notification of required warranty repair work, the Contractor will respond as dictated by para. 1.4.5. Written verification will follow oral instructions. Failure of the Contractor to respond will be cause for the Government to proceed against the Contractor as outlined in the paragraph 1.4.5.5 and/or above.

1.4.4. Pre-Warranty Conference

Prior to contract completion, or completion of any phase or portion of contract to be turned over, and at a time designated by the Contracting Officer, the Contractor shall meet with the Government to develop a mutual understanding with respect to the requirements of this clause. Communication procedures for Contractor notification of warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Government for the execution of the construction warranty shall be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor will furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warrantied construction, will be continuously

available, and will be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of his responsibilities in connection with other portions of this provision.

1.4.5. Contractor's Response to Warranty Service Requirements.

Following Government oral or written notification, which may include authorized installation maintenance personnel, the Contractor shall respond to warranty service requirements in accordance with the "Warranty Service Priority List" and the three categories of priorities listed below. Submit a report on any warranty item that has been repaired during the warranty period. The report shall include the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the construction warranty within the timeframe specified, the Government will perform the work and backcharge the construction warranty payment item established.

1.4.5.1. First Priority Code 1 Perform onsite inspection to evaluate situation, and determine course of action within 4 hours, initiate work within 6 hours and work continuously to completion or relief.

1.4.5.2. Second Priority Code 2 Perform onsite inspection to evaluate situation, and determine course of action within 8 hours, initiate work within 24 hours and work continuously to completion or relief.

1.4.5.3. Third Priority Code 3 All other work to be initiated within 3 work days and work continuously to completion or relief.

1.4.5.4. The "Warranty Service Priority List" is as follows:

- Code 1 - Air Conditioning System

(a) Buildings with computer equipment.

(b) Barracks, mess halls (entire building down).

- Code 2 - Air Conditioning Systems

(a) Recreational support.

(b) Air conditioning leak in part of building, if causing damage.

(c) Air conditioning system not cooling properly

(d) Admin buildings with Automated Data Processing (ADP) equipment not on priority list.

- Code 1 - Doors

(a) Overhead doors not operational.

- Code 1 - Electrical

(a) Power failure (entire area or any building operational after 1600 hours).

(b) Traffic control devices.

(c) Security lights.

(d) Smoke detectors and fire alarm systems

(e) Power or lighting failure to an area, facility, portion of a facility, which may adversely impact health, safety, security, or the installation's mission requirement, or which may result in damage to property.

- Code 2 - Electrical

(a) Power failure (no power) for unoccupied buildings or portions thereof or branch circuits within occupied buildings, not listed as Code 1.

(a) Receptacle and lights, not listed as code 1.

- Code 3 - Electrical

(a) Street, parking area lights

- Code 1 - Gas

(a) Leaks and breaks.

(b) No gas to cantonment area.

- Code 1 - Heat

(a) Area power failure affecting heat.

(b) Heater in unit not working.

- Code 2 Heat

(a) All heating system failures not listed as Code 1.

- Code 3 - Interior

(a) Floor damage

(b) Paint chipping or peeling

- Code 1 - Intrusion Detection Systems - N/A.
- Code 2 - Intrusion Detection Systems other than those listed under Code 1
- Code 1 - Kitchen Equipment

(a) Dishwasher.

(b) All other equipment hampering preparation of a meal.

- Code 2 - Kitchen Equipment

(a) All other equipment not listed under Code 1.

- Code 2 - Plumbing

(a) Flush valves not operating properly

(b) Fixture drain, supply line commode, or water pipe leaking.

(c) Commode leaking at base.

- Code 3 - Plumbing

(a) Leaking faucets

- Code 1 - Refrigeration

(a) Mess Hall.

(b) Medical storage.

- Code 2 - Refrigeration

(a) Mess hall - other than walk-in refrigerators and freezers.

- Code 1 - Roof Leaks

(a) Temporary repairs will be made where major damage to property is occurring.

- Code 2 - Roof Leaks

(a) Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.

- Code 1 - Sprinkler System

(a) All sprinkler systems, valves, manholes, deluge systems, and air systems to sprinklers.

- Code 1 - Tank Wash Racks (Bird Baths)

(a) All systems which prevent tank wash.

- Code 1 - Water (Exterior)

(a) Normal operation of water pump station.

- Code 2 - Water (Exterior)

(a) No water to facility.

- Code 1 - Water, Hot (and Steam)

(a) Barracks (entire building).

- Code 2 - Water, Hot

(a) No hot water in portion of building listed under Code 1

1.4.5.5. Should parts be required to complete the work and the parts are not immediately available, the Contractor shall have a maximum of 12 hours after arrival at the job site to provide the Government, with firm written proposals for emergency alternatives and temporary repairs for Government participation with the Contractor to provide emergency relief until the required parts are available on site for the Contractor to perform permanent warranty repair. The Contractors proposals shall include a firm date and time that the required parts shall be available on site to complete the permanent warranty repair. The Government will evaluate the proposed alternatives and negotiate the alternative considered to be in the best interest of the Government to reduce the impact of the emergency condition. Alternatives considered by the Government will include the alternative for the Contractor to "Do Nothing" while waiting until the required parts are available to perform permanent warranty repair. Negotiating a proposal which will require Government participation and the expenditure of Government funds shall constitute a separate procurement action by the using service.

1.4.6. Equipment Warranty Identification Tags

1.4.6.1. Provide warranty identification tags at the time of installation and prior to substantial completion shall provide warranty identification tags on all Contractor and Government furnished equipment which the Contractor has installed.

(a) The tags shall be suitable for interior and exterior locations, resistant to solvents, abrasion, and to fading caused by sunlight, precipitation, etc. These tags shall have a permanent pressure-sensitive adhesive back, and they shall be installed in a position that is easily (or most easily) noticeable. Tag each component of contractor furnished equipment that has differing warranties on its components.

(b) Submit sample tags, representing how the other tags will look, for Government review and approval.

(c) Tags for Warrantied Equipment: The tag for this equipment shall be similar to the following: Exact format and size will be as approved.

EQUIPMENT WARRANTY - CONTRACTOR FURNISHED EQUIPMENT

MFG NAME MODEL NO.

SERIAL NO.

CONTRACT NO.

CONTRACTOR NAME

CONTRACTOR WARRANTY EXPIRES

MFG WARRANTY(IES) EXPIRE

EQUIPMENT WARRANTY - GOVERNMENT FURNISHED EQUIPMENT

MFG NAME MODEL NO.

SERIAL NO.

CONTRACT NO.

DATE EQUIP PLACED IN SERVICE

MFG WARRANTY(IES) EXPIRE

(d) If the manufacturer's name (MFG), model number and serial number are on the manufacturer's equipment data plate and this data plate is easily found and fully legible, this information need not be duplicated on the equipment warranty tag

1.4.6.2. Execution: Complete the required information on each tag and install these tags on the equipment by the time of and as a condition of final acceptance of the equipment.

1.5. MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

Submit; all reports, statements, certificates, and completed checklists for testing, adjusting, balancing, and commissioning of mechanical systems prior to final inspection and transfer of the completed facility for approval, as specified in applicable technical specification sections.

1.6. OPERATION AND MAINTENANCE MANUALS

1.6.1. General Requirements

1.6.1.1. Inasmuch as the operations and maintenance manuals are required to operate and maintain the facility, the operations and maintenance (O&M) manuals will be considered a requirement prior to substantial completion of any facility to be turned over to the Government. Beneficial occupancy of all or portions of a facility prior to substantial completion will not relieve the Contractor of liquidated damages, if substantial completion exceeds the required completion date.

1.6.1.2. Provide one permanent electronic copy on CD-ROM and 2 hard copies of the Equipment Operating, Maintenance, and Repair Manuals. Provide separate manuals for each utility system as defined hereinafter. Submit Operations and Maintenance manuals for approval before field training or 90 days before substantial completion (whichever occurs earlier). If there is no separate CLIN for O&M Manuals, the Government will withhold an amount representing $20,000, as non-progressed work, until submittal and approval of all O&M manuals are complete.

1.6.2. Definitions

1.6.2.1. Equipment

A single piece of equipment operating alone or in conjunction with other equipment to accomplish a system function.

1.6.2.2. System

A combination of one or more pieces of equipment which function together to accomplish an intended purpose (i.e. HVAC system is composed of many individual pieces of equipment such as fans, motors, compressors, valves, sensors, relays, etc.)

1.6.3. Hard Cover Binders

The manuals shall be hard cover with posts, or 3-ring binders, so sheets may be easily substituted. Print the following identification on the cover: the words "EQUIPMENT OPERATING, MAINTENANCE, AND REPAIR MANUALS," the project name, building number, and an indication of utility or systems covered, the name of the Contractor, and the Contract number. Manuals shall be approximately 8-1/2 by 11-inches with large sheets folded in and capable of being easily pulled out for reference. All manuals for the project must be similar in appearance, and be of professional quality.

1.6.4. Warning Page

Provide a warning page to warn of potential dangers (if they exist, such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, high pressures, etc.). Place the warning page inside the front cover and in front of the title page. Include any necessary Material Safety Data Sheets (MDSD) here.

1.6.5. Title Page

The title page shall include the same information shown on the cover and show the name of the preparing firm and the date of publication.

1.6.6. Table of Contents

Each volume of the set of manuals for this project shall include a table of contents, for the entire set, broken down by volume.

1.6.7. GENERAL

Organize manuals according to the following format, and include information for each item of equipment Submit a draft outline and table of contents for approval at 50% contract completion.

TABLE OF CONTENTS

PART I: Introduction

- Equipment Description
- Functional Description
- Installation Description

PART II: Operating Principles

PART III: Safety

PART IV: Preventive Maintenance

- Preventive Maintenance Checklist, Lubrication
- Charts and Diagrams

PART V: Spare Parts Lists

- Troubleshooting Guide
- Adjustments
- Common Repairs and Parts Replacement

PART VI: Illustrations

1.6.7.1. Part I-Introduction

Part I shall provide an introduction, equipment or system description, functional description and theory of operation, and installation instructions for each piece of equipment. Include complete instructions for uncrating, assembly, connection to the power source and pre-operating lubrication in the installation instructions as applicable. Illustrations, including wiring and cabling diagrams, are required as appropriate in this section. Include halftone pictures of the equipment in the introduction and equipment description, as well as system layout drawings with each item of equipment located and marked. Do not use copies of previously submitted shop drawings in these manuals.

1.6.7.2. Part II-Operating Principles

Part II shall provide complete instructions for operating the system, and each piece of equipment. Illustrations, halftone pictures, tables, charts, procedures, and diagrams are required when applicable. This will include step-by-step procedures for start-up and shutdown of both the system and each component piece of equipments, as well as adjustments required to obtain optimum equipment performance, and corrective actions for malfunctions. Show performance sheets and graphs showing capacity data, efficiencies, electrical characteristics, pressure drops, and flow rates here, also. Marked-up catalogs or catalog pages do not satisfy this requirement. Present performance information as concisely as possible with only data pertaining to equipment actually installed. Include actual test data collected for Contractor performance here.

1.6.7.3. Part III-Safety

Part III shall contain the general and specific safety requirements peculiar to each item of equipment. Repeat safety information as notes cautions and warnings in other sections where appropriate to operations described.

1.6.7.4. Part IV-Preventive Maintenance

Part IV shall contain a troubleshooting guide, including detailed instructions for all common adjustments and alignment procedures, including a detailed maintenance schedule. Also include a diagnostic chart showing symptoms and solutions to problems. Include test hookups to determine the cause, special tools and test equipment, and methods for returning the equipment to operating conditions. Information may be in chart form or in tabular format with appropriate headings. Include instructions for the removal, disassembly, repair, reassembly, and replacement of parts and assemblies where applicable and the task is not obvious.

1.6.7.5. Part V-Spare Parts List

Part V shall contain a tabulation of description data and parts location illustrations for all mechanical and electrical parts. The heading of the parts list shall clearly identify the supplier, purchase order number, and equipment. Include the unit price for each part. List parts by major assemblies, and arrange the listing in columnar form. Include names and addresses of the nearest manufacturer's representatives, as well as any special warranty information. Provide a list of spare parts that are recommended to be kept in stock by the Government installation.

1.6.7.6. Part VI-Illustrations

Part VI shall contain assembly drawings for the complete equipment or system and for all major components. Include complete wiring diagrams and schematics. Other illustrations, such as exploded views, block diagrams, and cutaway drawings, are required as appropriate.

1.6.8. Framed Instructions

Post framed instructions are required for substantial completion. Post framed instructions under glass or in laminated plastic, including wiring and control diagrams showing the complete layout of the entire system, including equipment, ductwork, piping valves, dampers, and control sequence at a location near the equipment described. Prepare condensed operating instructions explaining preventive maintenance procedures methods of checking the system for normal safe operation, valve schedule and procedures for safely starting and stopping the system in type form, framed as specified above for the wiring and control diagrams and posted beside the diagrams. Submit proposed diagrams, instructions, and other sheets prior to posting. Post the framed instructions before field training.

1.6.9. (Reserved. See 1.7 for Field Training)

1.6.10. System/Equipment Requirements

1.6.10.1. Facility Heating System

Provide information on the following equipment: boilers, water treatment, chemical feed pumps and tanks, converters, heat exchangers, pumps, unit heaters, fin-tube radiation, air handling units (both heating only and heating and cooling), and valves (associated with heating systems).

1.6.10.2. Air-Conditioning Systems

Provide information in chillers, packaged air-conditioning equipment, towers, water treatment, chemical feed pumps and tanks, air-cooled condensers, pumps, compressors, air handling units, and valves (associated with air-conditioning systems).

1.6.10.3. Temperature Control and HVAC Distribution Systems

Provide all information described for the following equipment: valves, fans, air handling units, pumps, boilers, converters and heat exchangers, chillers, water cooled condensers, cooling towers, and fin-tube radiation, control air compressors, control components (sensors, controllers, adapters and actuators), and flow measuring equipment.

1.6.10.4. Central Heating Plants

Provide the information described for the following equipment: boilers, converters, heat exchangers, pumps, fans, steam traps, pollution control equipment, chemical feed equipment, control systems, fuel handling equipment, de-aerators, tanks (flash, expansion, return waters, etc.), water softeners, and valves.

1.6.10.5. Heating Distribution Systems

Provide the information described for the following equipment: valves, fans, pumps, converters and heat exchangers, steam traps, tanks (expansion, flash, etc.), and piping systems.

1.6.10.6. Exterior Electrical Systems

Provide information on the following equipment: power transformers, relays, reclosers, breakers, and capacitor bank controls.

1.6.10.7. Interior Electrical Systems

Provide information on the following equipment: relays, motor control centers, switchgear, solid state circuit breakers, motor controller, EPS lighting systems, wiring diagrams and troubleshooting flow chart on control systems, and special grounding systems.

1.6.10.8. Energy Monitoring and Control Systems

The maintenance manual shall include descriptions of maintenance for all equipment, including inspection, periodic preventative maintenance, fault diagnosis, and repair or replacement of defective components.

1.6.10.9. Domestic Water Systems

Provide the identified information on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentation, laboratory test equipment, chemical feeders, valves, switching gear, and automatic controls.

1.6.10.10. Wastewater Treatment Systems

Provide the identified information on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentations, laboratory test equipment chemical feeders, valves, scrapers, skimmers, comminutors, blowers, switching gear, and automatic controls.

1.6.10.11. Fire Protection Systems

Provide information on the following equipment: alarm valves, manual valves, regulators, foam and gas storage tanks, piping materials, sprinkler heads, nozzles, pumps, and pump drivers.

1.6.10.12. Fire Alarm and Detection Systems

(1) The maintenance manual shall include description of maintenance for all equipment, including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components.

(2) Provide all software; database with complete identification of programmable portions of system equipment and devices, and all other system programming data on all modes of the system; connecting cables; and proprietary equipment necessary for the operation, maintenance, testing, repair and programming, etc. of the system and that may be required for implementation of future changes to the fire system (additional and/or relocated initiating devices, notification devices, etc.

(3) Provide all system and equipment technical data and computer software with the requisite rights to Government use, in accordance with the applicable contract clauses.

(4) Training shall include software and programming required for the effective operation, maintenance, testing, diagnostics and expansion of the system.

1.6.10.13. Plumbing Systems

Provide information on the following equipment: water heaters, valves, pressure regulators backflow preventors, piping materials, and plumbing fixtures.

1.6.10.14. Liquid Fuels Systems

Provide information on the following equipment: tanks, automatic valves manual valves, filter separators, pumps, mechanical loading arms, nozzles, meters, electronic controls, electrical switch gear, and fluidic controls.

1.6.10.15. Cathodic Protection Systems

Provide information on the following material and equipment: rectifiers, meters, anodes, anode backfill, anode lead wire, insulation material and wire size, automatic controls (if any), rheostats, switches, fuses and circuit breakers, type and size of rectifying elements, type of oil in oil-immersed rectifiers, and rating of shunts.

1.6.10.16. Generator Installations

Provide information on the following equipment: generator sets, automatic transfer panels, governors, exciters, regulators starting systems, switchgear, and protective devices.

1.6.10.17. Miscellaneous Systems

Provide information on the following: communication and ADP systems, security and intrusion alarm, elevators, material handling, active solar, photovoltaic, nurse call, paging, intercom, closed circuit TV, irrigation, sound and material delivery systems, kitchen, refrigeration, disposal, ice making equipment, and other similar type special systems not otherwise specified.

1.6.10.18. Laboratory, Environmental and Pollution Control Systems

Provide information on the following equipment: wet scrubbers, quench chambers, scrub tanks, liquid oil separators, and fume hoods.

1.7. FIELD TRAINING

Field Training is a requirement for substantial completion. Conduct a training course for the operating staff for each particular system. Conduct the training is to be conducted during hours of normal working time after the system is functionally complete. The field instructions shall cover all of the items contained in the Equipment Operating, Maintenance and Repair Manuals. The training will include both classroom and "hands-on" training. Submit a lesson plan outlining the information to be discussed during training periods. Submit this lesson plan for approval 90 days before contract completion before the field training occurs. Record training on DVD and furnish to the Government within ten (10) days following training. Document all training and furnish a list of all attendees.

1.8. PRICING OF CONTRACTOR-FURNISHED AND INSTALLED PROPERTY AND GOVERNMENT-FURNISHED CONTRACTOR-INSTALLED PROPERTY

Promptly furnish and require any sub-contractor or supplier to furnish, in like manner, unit prices and descriptive data required by the Government for Property Record purposes of fixtures and equipment furnished and/or installed by the Contractor or sub-contractor, except prices do not need to be provided for Government-Furnished Property.

1.9. LEED REVIEW MEETINGS

1.9.1. Pre-Closeout Meeting. Approximately 30 days before submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including Installation representative) will meet to review the documentation, determine which, if any, credits will be audited and identify any corrections/missing items prior to the closeout LEED documentation submittal.

1.9.2. Approximately 14 days after submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including Installation representative) will meet to review the LEED closeout documentation. The review conference will include discussion of and resolution of all review comments to ensure consensus on achievement of credits and satisfactory documentation. At the review conference a final score will be determined and endorsed in writing by all parties.

1.10. RED ZONE MEETING

At approximately 80% of contract completion or 60 days before the anticipated Beneficial Occupancy Date (BOD), whichever occurs first, the Contractor and the Government's project delivery team will conduct what is known as the Red Zone Meeting to discuss the close-out process, to schedule the events and review responsibilities for actions necessary to produce a timely physical, as well as fiscal, project close-out. The Red Zone meeting derives its name from the football term used to describe the team effort to move the ball the last 20 yards into the end zone. The close-out of a construction project sometimes can be equally as hard and most definitely requires the whole team’s efforts. The ACO will chair the meeting. If not already provided, shortly before the meeting, the Contractor shall provide an electronic copy or access to the CADD as-built drawings, completed commensurate with the amount of work completed at the time of the Red Zone Meeting, as an indicator of the Contractors’ understanding of and ability to meet the USACE CADD Standards and to ensure that the Contractor is making progress with CADD As-Built requirements. EXHIBIT 1 is a generic meeting checklist.

1.11. FINAL CLEANING

Clean the premises in accordance with FAR clause 52.236-12 and additional requirements stated here. Remove stains, foreign substances, and temporary labels from surfaces. Vacuum carpet and soft surfaces. Clean equipment and fixtures to a sanitary condition. Clean or replace filters of operating equipment if cleaning isn't possible or practicable. Remove debris from roofs, drainage systems, gutters, and downspouts. Sweep paved areas and rake clean landscaped areas. Remove waste, surplus materials, and rubbish from the site. Remove all temporary structures, barricades, project signs, fences and construction facilities. Submit a list of completed clean-up items on the day of final inspection.

1.12. INTERIM FORM DD1354 "TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

Near the completion of Project, but a minimum of 60 days prior to final acceptance of the work, complete, update draft provided with the final design package(s) (see Section 01 33 16, paragraph 3.7.5) and submit an accounting of all installed property on Interim Form DD1354 "Transfer and Acceptance of Military Real Property." Include any additional assets/improvements/alterations and cost updates from the Draft DD Form 1354. Contact the COR for any project specific information necessary to complete the DD Form 1354. This form will be a topic for the Red Zone Meeting discussed above. For information purposes, a blank DD Form 1354 (fill-able) in ADOBE (PDF) may be obtained at the following web site: http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd1354.pdf Submit the completed Checklist for Form DD1354 of Government-Furnished and Contractor-Furnished/Contractor Installed items. Attach this list to the updated DD Form 1354. Instructions for completing the form may be obtained through the US Army Corps of Engineers TECHINFO Website at http://www.hnd.usace.army.mil/techinfo/ under publications, in Unified Facilities Criteria UFC 1-300-08.

EXHIBIT 1

SAMPLE

Red Zone Meeting Checklist

Date:_____

Contract No.	
Description / Location	
Contractor	
Contracting Officer	

Action	**Completion Milestone**	√
Inspections		
Fire		
Safety		
Pre-final		
Mechanical Test & Balance		
Commissioning		
Landscaping Complete		
Erosion Control		
Beneficial Occupancy Date (BOD)		
Furniture Installation		
Comm Installation		
As-Built Drawings		
Provide all O&M manuals, tools, shop drawings, spare parts, etc. to customer		
Training of O&M Personnel		
Provide Warranty documents to Customer		
Contract completion		
Final Inspection		

User move-in		
DD Form 1354, Transfer of Real Property completed & signed		
Ribbon cutting		
Payroll Clearances		
DD Form 2626 - Construction Contractor Performance Evaluation		
DD Form 2631 – A-E Performance Rated after Construction		
Status of Pending Mods and REA's/Claims		
Final Payment Completed		
Release of Claims		
Return of Unobligated Funds		
Move Project from CIP to General Ledger		
Financial completion		

End of Section 01 78 02.00 10

A

Appendix A

Geotechnical Information

SUBSURFACE EXPLORATION
AND GEOTECHNICAL ENGINEERING REPORT
(PRELIMINARY)

Dog Kennel Facility
FY-11, LI: 62728
Fort Stewart, Georgia

By
Soils Section Geotechnical & HTRW Branch
U.S. Army Engineer District, Savannah

February 2011

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Attachment B Soil Test Boring Logs
Attachment C Laboratory Soil Test Data

SUBSURFACE EXPLORATION REPORT
(PRELIMINARY)

Dog Kennel Facility
FY-11, LI: 62728
Fort Stewart, Georgia

1. PURPOSE. The Government has conducted a preliminary geotechnical investigation for the proposed project. This subsurface characterization report provides a general overview of the site conditions, including subsurface soil and groundwater conditions, with detailed descriptions on individual boring logs.

2. QUALIFICATION OF REPORT. The preliminary field explorations performed for this report were made to characterize the subsurface soil and groundwater conditions and were not intended to serve as an assessment of site environmental conditions. No effort was made to define, delineate, or designate any areas of environmental concern or of contamination. The Design-Build Contractor's team shall include a licensed geotechnical engineer to interpret the report and develop foundation and earthwork recommendations and design parameters. Additional subsurface investigations and/or laboratory analyses required to determine the site soil conditions and develop the final design, shall be performed under the direction of a licensed geotechnical engineer and shall be the full responsibility of the Design-Build Contractor. A final geotechnical evaluation report shall be prepared by the licensed geotechnical engineer and submitted along with the first site design submittal.

3. PROJECT DESCRIPTION. Construct a dog kennel facility. The primary facility will be 7115 square feet and will include room for 24 dogs and administration space. An exercise area (1469 square foot), storage sheds (totaling 800 square feet), access road/parking lots (totaling 4000 square yards) of and a break area (313 square foot) will also be built. New gas, water, sewer, storm sewer, communications and electric utilities will be installed to support the facility. Since the project will be constructed under a design-build contract, final facilities layouts and detailed structural information are not available.

4. EXPLORATION PROCEDURES.

a. Site Reconnaissance. Prior to the field exploration, a civil engineer visually inspected the proposed project site and surrounding areas. The observations were used in planning the exploration, in determining areas of special interest, and in relating site conditions to known geologic conditions in the area.

b. Field Exploration.

(1) The subsurface conditions at the project site were explored by four standard penetration test (SPT) borings labeled B-2 through B-5. The borings ranged in depth from 20 to 35 feet. The locations of the borings are shown on the drawings included with this RFP.

(2) The boring locations were established in the field by the use of a global positioning system (GPS); Tremble model Geo-XT. The grid coordinates of the boring locations and top-ofhole elevations are shown on the individual boring logs. The top-of-hole elevations were determined by interpolation from the site topography plans. The grid coordinates and the elevations shown on the boring logs should be considered approximate due to the methods used. The boring locations and boring logs are shown in Attachments A and B, Boring Location Plan and Soil Test Boring Logs, respectively.

(3) The soil test borings were drilled by Savannah District using a truck mounted Failing

1500 drill rig. Where the borehole wall would remain stable, a 4-inch solid flight continuous auger (spiral auger) was used to advance the borehole. Where the borehole wall would not remain stable, the borehole was advanced using the rotary wash boring method in which a bentonite drilling fluid is circulated in the borehole to stabilize the borehole wall and to remove the drill cuttings. The drill bit used was a 5 ¾ inch mud-rotary "fishtail" bit. 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. Groundwater levels were measured in the boreholes during drilling in all the borings and after twenty-four hours in some borings, as time permitted.

5. SITE AND SUBSURFACE CONDITIONS.

a. Site Description. The approximately three acre site is located approximately one-quarter of mile north of Highway 144 and one mile east of the intersection of Highways 144 and 199. The site is currently wooded with mature pines trees and has undergone periodic thinning operations. The site ranges in elevation from a low of about 58.8 feet mean sea level (msl) near the northwest end of the site to a high of about 66.6 feet on the southeast corner of the site. The site generally slopes down to the northwest at about one percent. Wetlands are located nearby to the north and east of the site.

b. Regional and Site Geology. Fort Stewart is located near the eastern edge of the Coastal Plain Physiographic Province. In South Carolina and Georgia, this broad, gently sloping region extends southeastward from the Fall Line (Columbia-Augusta-Macon-Columbus) to the Atlantic Ocean. The province is typified by nine southeastward dipping strata that increase in thickness from 0 feet at the fall line to approximately 4,200 feet at the coast. State geologic records describe crystalline basement rocks at a depth of 4,254 feet below land surface in a petroleum exploration well (the No. 1 Jelks-Rogers) located in the region. This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata. The Cretaceous section is approximately 1,970 feet thick and is dominated by clastics. The Tertiary section is approximately 2,170 feet thick and is dominated by limestone with a 175-foot thick cap of dark green phosphatic clay. The clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110feet to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt. The near-surface soils encountered are predominantly sedimentary in origin and consist of layered marine deposits of sands, silts and clays. The deposits have since been subjected to successive erosion and re-deposition by fluctuations of sea levels, storm tides and winds. Many of the surface sands are the result of depositional forces along ancient beaches which formed during the changing shoreline and river conditions. Intermittent deposits of shells occur within the strata at irregular intervals.

c. Subsurface Conditions.

(1) Medium to loose density, very fine, poorly graded sands (SP) were encountered in all of the borings from the surface to depths from 2.0 to 3.5 feet. N-values in these "surficial" soils were generally between five and eighteen, averaging about ten. A single sample from the surficial, poorly graded sands (SP) was taken from boring B-4 from 2.0 to 3.5 feet below the existing surface. The laboratory classified this soil as clayey sand (SC) with over 73 percent sand. The surficial soils were underlain by medium density clayey sands to a depth of about 8.5 feet. N-values in the clayey sands range from 7 to 22, indicating generally medium density. The medium density clayey sands were underlain by loose to very loose poorly graded sands and clayey sands to the full depth of all of the borings. The loosest soils were encountered in the bottom 22 feet of boring B-2 where the average blow count was 3.2.

(2) The above subsurface descriptions highlight the major subsurface stratification features and material characteristics. The SPT borings performed for the site should be reviewed for specific information at the individual boring locations. The stratifications shown on the logs represent the conditions at the specific boring locations. Variations in conditions and in soil type may occur and should be expected between these locations. The stratification lines shown on the boring logs represent approximate boundaries between the subsurface materials; the actual transitions are typically more gradual.

d. Groundwater Conditions.

(1) Groundwater was encountered from 6.9 to 9.4 feet below the ground surface during drilling and after drilling and at 24-hours. A temporary piezometer was installed in boring B-5 to record the 24-hour readings. Water levels ranged in elevation from 53.3 to 57.2 feet mean sea level.

(2) It should be noted that groundwater conditions, including perched water, vary during periods of prolonged drought and excessive rainfall as well as seasonally. Groundwater conditions can also be affected by construction both adjacent to and on the site. Therefore, fluctuations in the elevation of the groundwater and the occurrence of perched water conditions should be anticipated with changing climatic and rainfall conditions. Infiltration of rain water can be expected to be much greater in the loose surficial poorly graded sands than the clayey sands that underlay them. The soil profile at this site will likely create perched water conditions during wet weather cycles.

(3) Water should not be allowed to collect near the foundation or on floor slab areas of the building either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath floor slabs.

e. Laboratory Soil Tests. Five samples obtained during the field explorations were tested in the laboratory with the results included in Attachment C, Laboratory Soil Test Data. Tests were performed in accordance with applicable ASTM standards. The tests were performed to confirm the visual classifications and to aid in our evaluation of the subsurface soil conditions. Testing consisted of natural moisture contents, Atterberg limits, and grain-size distribution (sieve analysis). In addition, a pH and a hydrometer test was performed on sample 3 from boring B-2. The pH was 7.5 and the fine fraction was almost all clay (very little silt).

6. DRAWINGS. The boring locations, logs and laboratory soil test data completed by the Government and any additional investigations (SPT borings, test pits, cone penetrometer tests, laboratory soils test data, etc.) performed for the Design-Build Contractor shall be shown on the final project drawings completed by the Design-Build Contractor.

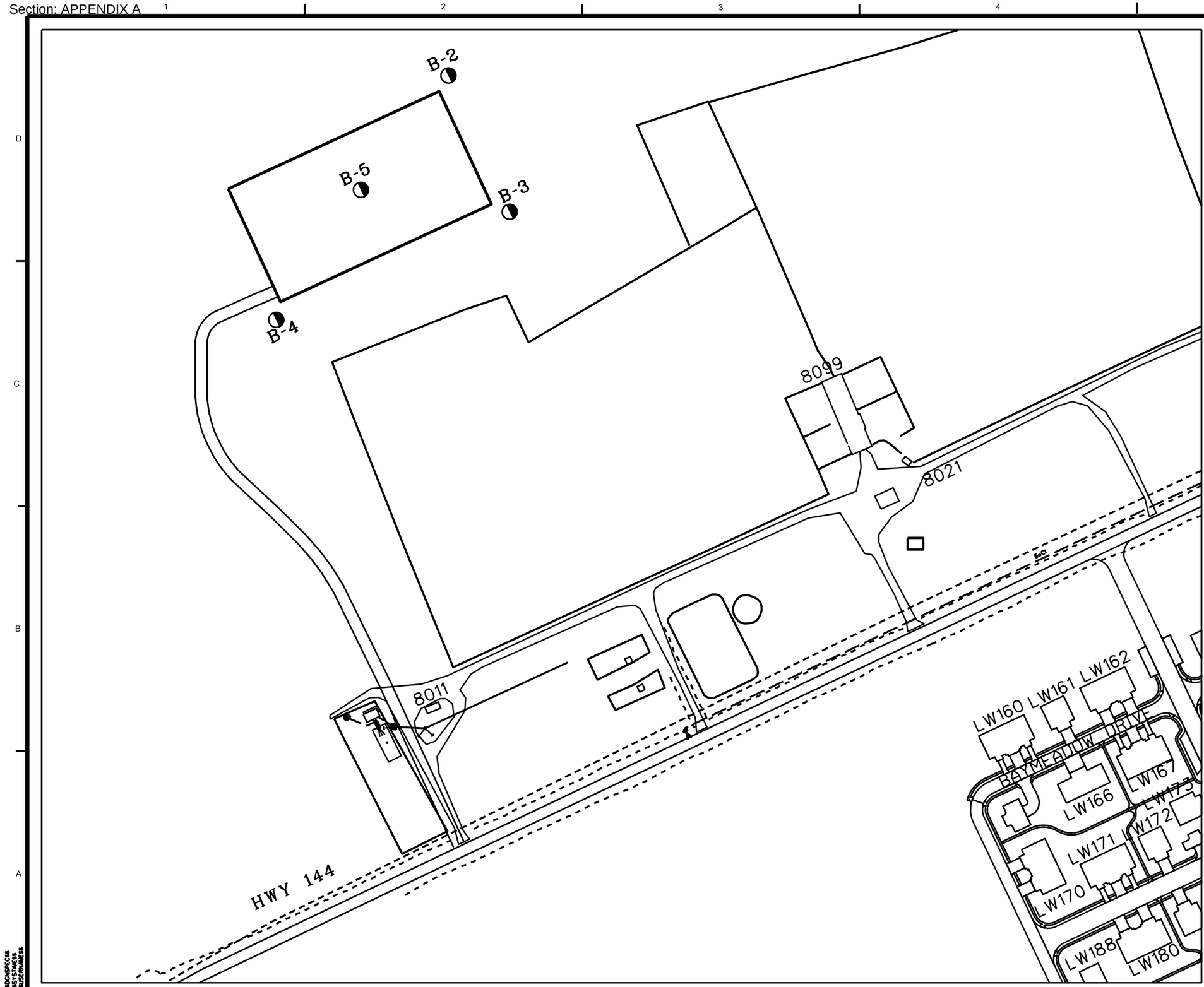
7. SPECIFICATIONS. It is recommended that the Design-Build Contractor use the Savannah District's EARTHWORK specification, 31 00 00, when editing the specifications for this project. The Savannah specification is based on the January 2009 version of the UFGS earthwork specification and can be found at the following website, http://en.sas.usace.army.mil/enweb/httproot/ae/index.htm , under menus "Design Criteria" and "SAS Guide Specifications.

8. FINAL GEOTECHNICAL EVALUATION REPORT. A final geotechnical evaluation report shall be prepared by the Design-Build Contractor's licensed geotechnical engineer and submitted along with the first foundation design submittal. Additional geotechnical investigations, particularly test pits, are recommended to better define the conditions of the site. It is anticipated that the very loose and loose surficial sands encountered throughout this site will have to be manipulated to improve their densities for construction purposes. Typically this can be done by a combination of undercutting, subgraded compaction and replacement with satisfactory soils in compacted lifts. Very loose poorly graded sands (SP) and very sandy clayey sands (SC) with more than 65 percent of the soil

particles ranging between 0.02mm and 0.2 mm in diameter were encountered in boring B-2 and therefore potentially liquefiable; a site-specific seismic evaluation will be necessary. The geotechnical report shall summarize the subsurface conditions, and provide recommendations for the design of appropriate foundations, floor slabs, retaining walls, embankments, roadways, and pavements. The report shall recommend the type 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 groundwater levels, recommendations for dewatering and groundwater control, and 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. The Design-Build Contractor will be responsible for final connections to all site utilities (including connections from new utilities to existing utilities) unless specified otherwise in the RFP specifications.

Attachment A

Boring Location Plan



N

LEGEND:

SPT SOIL BORING LOCATION

100 50 0 100 200FT
SCALE: 1"= 100'

US ARMY CORPS OF ENGINEERS SAVANNAH

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

DESIGNED BY: DATE:
DWN BY: CKD BY: SOLICITATION NO.:
SUBMITTED BY: CONTRACT NO.:
FILE NAME: $$FILE_NAME$$ CATEGORY CODE:
SIZE: PLOT SCALE: $$PLOT_SCALE$$ PLOT DATE: $$PLOT_DATE$$

MILITARY WORKING DOG KENNEL COMPLEX
FORT STEWART, GEORGIA

SOIL TEST BORING LOCATION PLAN

PLATE REFERENCE NUMBER
B–101
SHEET

$$DGNSPEC$$
$$SYSTIME$$
$$USERNAME$$

Attachment B

Soil Test Boring Logs

DRILLING LOG

DIVISION: South Atlantic Division

INSTALLATION: Fort Stewart, Georgia

SHEET 1 OF 1 SHEETS

1. PROJECT: Dog Kennel FY-11, LI. 62728

9. COORDINATE SYSTEM: State Plane - Georgia East | HORIZONTAL: NAD83 | VERTICAL: NAVD88

10. SIZE AND TYPE OF BIT:

2. HOLE NUMBER: B-2 | LOCATION COORDINATES: N 691858 E 826741

11. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500

3. DRILLING AGENCY: USACE, Savannah District

12. TOTAL SAMPLES | DISTURBED: 10 | UNDISTURBED: 0

4. NAME OF DRILLER: John Haskew

13. TOTAL NUMBER CORE BOXES:

5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED | DEG FROM VERTICAL: --- | BEARING:

14. ELEVATION GROUND WATER: See Remarks

15. DATE BORING | STARTED: 12/15/10 | COMPLETED: 12/15/10

6. THICKNESS OF OVERBURDEN: >35'

16. ELEVATION TOP OF BORING: 63.6' (Estimated from plans)

7. DEPTH DRILLED INTO ROCK: 0'

17. TOTAL CORE RECOVERY FOR BORING: N/A

8. TOTAL DEPTH OF BORING: 35'

18. SIGNATURE AND TITLE OF INSPECTOR: Jason Lennane, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			POORLY GRADED SAND (SP), fine; light brownish gray, dry.	73	1		USCS Drilled from the groundsurface using rotary-mud.	2, 4, 4	8
			POORLY GRADED SAND (SP), fine; gray, dry.	33	2			4, 4, 3	7
60.1	3.5		SANDY CLAY (CL), fine; gray, dry.	67	3			4, 3, 4	7
58.1	5.5		CLAYEY SAND (SC), fine; gray mottled with red, dry.	87	4			5, 6, 5	11
55.1	8.5		SAND (SP), fine; very light gray.	80	5		24-hour water level (mud level) 8.4 feet.	3, 4, 3	7
				53	6			2, 3, 3	6
				80	7			2, 1, 1	2
				73	8			3, 2, 2	4
				100	9			1, 1, 1	2
30.1	33.5		CLAYEY SAND (SC), gray.	100	10			2, 1, 1	2
28.6	35.0		BOTTOM OF BOREHOLE AT 35.0 ft						

DRILLING LOG

DIVISION: South Atlantic Division
INSTALLATION: Fort Stewart, Georgia
SHEET 1 OF 1 SHEETS

1. PROJECT: Dog Kennel FY-11, LI. 62728
2. HOLE NUMBER: B-3
LOCATION COORDINATES: N 691573 E 826869
3. DRILLING AGENCY: USACE, Savannah District
4. NAME OF DRILLER: John Haskew
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG FROM VERTICAL: ---; BEARING:
6. THICKNESS OF OVERBURDEN: >25'
7. DEPTH DRILLED INTO ROCK: 0'
8. TOTAL DEPTH OF BORING: 25'
9. COORDINATE SYSTEM: State Plane - Georgia East; HORIZONTAL: NAD83; VERTICAL: NAVD88
10. SIZE AND TYPE OF BIT:
11. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
12. TOTAL SAMPLES: DISTURBED 8; UNDISTURBED 0
13. TOTAL NUMBER CORE BOXES:
14. ELEVATION GROUND WATER: See Remarks
15. DATE BORING: STARTED 12/15/10; COMPLETED 12/15/10
16. ELEVATION TOP OF BORING: 65.7' (Estimated from plans)
17. TOTAL CORE RECOVERY FOR BORING: N/A
18. SIGNATURE AND TITLE OF INSPECTOR: Jason Lennane, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			SAND (SP), fine; gray, dry.	60	1		USCS	1, 3, 5	8
62.2	3.5			80	2			6, 8, 10	18
			CLAYEY SAND (SC), fine; gray.	53	3			4, 8, 10	18
				73	4			4, 8, 7	15
							24-hour water level 8.5 feet.		
				13	5		Groundwater encountered during drilling at 9.5 feet. Drilled from the groundsurface using hollow-stem auger.	2, 3, 5	8
52.2	13.5								
			SAND (SP), fine; very light gray.	100	6			2, 1, 2	3
				73	7			2, 2, 2	4
40.7	25.0			100	8			2, 3, 5	8

BOTTOM OF BOREHOLE AT 25.0 ft

DRILLING LOG

DIVISION: South Atlantic Division
INSTALLATION: Fort Stewart, Georgia
SHEET 1 OF 1 SHEETS

1. PROJECT: Dog Kennel FY-11, LI. 62728
2. HOLE NUMBER: B-4
LOCATION COORDINATES: N 691331 E 826366
3. DRILLING AGENCY: USACE, Savannah District
4. NAME OF DRILLER: John Haskew
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG FROM VERTICAL: ---; BEARING:
6. THICKNESS OF OVERBURDEN: >20'
7. DEPTH DRILLED INTO ROCK: 0'
8. TOTAL DEPTH OF BORING: 20'
9. COORDINATE SYSTEM: State Plane - Georgia East; HORIZONTAL: NAD83; VERTICAL: NAVD88
10. SIZE AND TYPE OF BIT:
11. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
12. TOTAL SAMPLES: DISTURBED 7; UNDISTURBED 0
13. TOTAL NUMBER CORE BOXES:
14. ELEVATION GROUND WATER: See Remarks
15. DATE BORING: STARTED 12/16/10; COMPLETED 12/16/10
16. ELEVATION TOP OF BORING: 60.2' (Estimated from plans)
17. TOTAL CORE RECOVERY FOR BORING: N/A
18. SIGNATURE AND TITLE OF INSPECTOR: John Markov, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			FINE SAND (SP), fine; brown grades to blackish, dry, some silt.	100	1		USCS	2, 4, 5	9
				73	2			6, 8, 8	16
56.7	3.5		(SC), fine; gray mottled with orange, dry.	73	3			8, 8, 9	17
				73	4		24-hour water level 6.9 feet.	6, 5, 6	11
52.2	8.0		(SP), fine; gray mottled with orange, trace clay.	67	5		Groundwater encountered during drilling at 8.5 feet. Drilled with solid flight auger until groundwater was encountered.	4, 5, 6	11
				67	6			3, 4, 3	7
40.2	20.0			60	7			4, 4, 4	8

BOTTOM OF BOREHOLE AT 20.0 ft

DRILLING LOG

DIVISION: South Atlantic Division
INSTALLATION: Fort Stewart, Georgia
SHEET 1 OF 1 SHEETS

1. PROJECT: Dog Kennel FY-11, LI. 62728
2. HOLE NUMBER: B-5
LOCATION COORDINATES: N 691610 E 826550
3. DRILLING AGENCY: USACE, Savannah District
4. NAME OF DRILLER: John Haskew
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED
DEG FROM VERTICAL: ---
BEARING:
6. THICKNESS OF OVERBURDEN: >25'
7. DEPTH DRILLED INTO ROCK: 0'
8. TOTAL DEPTH OF BORING: 25'
9. COORDINATE SYSTEM: State Plane - Georgia East
HORIZONTAL: NAD83
VERTICAL: NAVD88
10. SIZE AND TYPE OF BIT:
11. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
12. TOTAL SAMPLES:
DISTURBED: 8
UNDISTURBED: 0
13. TOTAL NUMBER CORE BOXES:
14. ELEVATION GROUND WATER: See Remarks
15. DATE BORING: STARTED 12/16/10 COMPLETED 12/16/10
16. ELEVATION TOP OF BORING: 63.1' (Estimated from plans)
17. TOTAL CORE RECOVERY FOR BORING: N/A
18. SIGNATURE AND TITLE OF INSPECTOR: Jason Lennane, Geologist

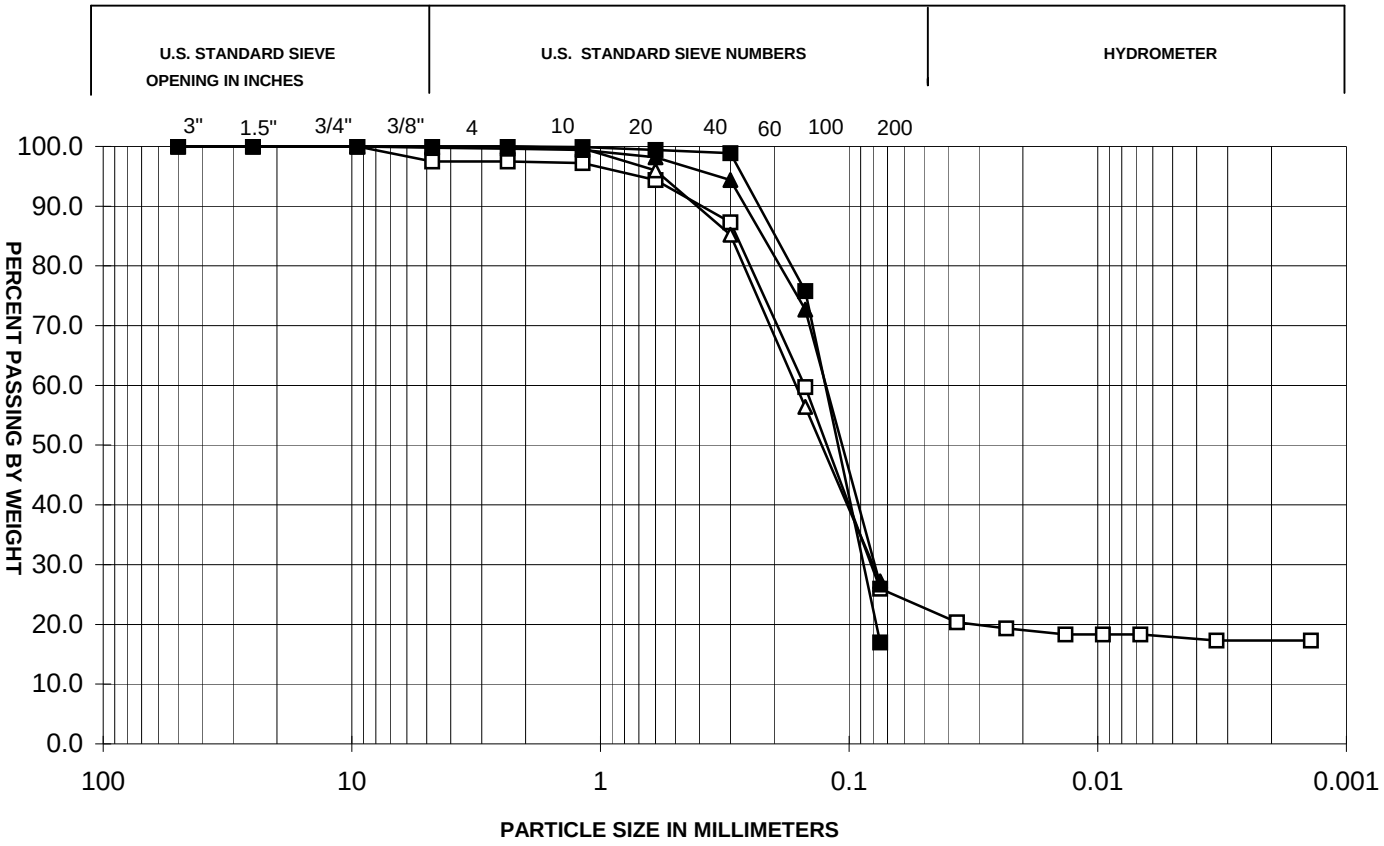
ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			(SP), fine; gray, dry.	53	1		USCS	1 2 3	5
59.6	3.5			67	2			4 5 6	11
			CLAYEY SAND (SC), fine; gray mottled with orange, dry.	47	3			10 10 12	22
54.6	8.5			47	4			5 6 7	13
			(SP), fine; very light gray.	47	5		Groundwater encountered at 9.0 feet during drilling. 24-hour water level 9.4 feet. Taken from an adjacent hole using a piezometer. Drilled with solid flight auger until groundwater was encountered.	3 4 5	9
				67	6			3 5 5	10
44.6	18.5		CLAYEY SAND (SC), very light gray.	80	7			2 2 2	4
38.1	25.0			80	8			6 4 4	8

BOTTOM OF BOREHOLE AT 25.0 ft

Attachment C

Laboratory Soil Test Data

COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



Boring/ Sample No.	Depth (feet)	Symbol	LL	PI	MC%	pH	% -200	Description
B-2 3	3.5-5	□	23	11	18.9	7.5	26.0	Grayish Brown, Clayey SAND, (SC)
B-2 7	18.5-20	■	27	13	31.8	-	17.0	Gray, Clayey SAND, (SC)
B-3 3	3.5-5	△	17	14	10.3	-	27.2	Grayish Brown, Clayey SAND, (SC)
B-4 2	2-3.5	▲	28	12	6.7	-	26.7	Grayish Brown, Clayey SAND, (SC)

Sieve Stack No. (mm opening) - 2 (50.00), 1 (25.00), 3/8(9.50), 4 (4.75), 8 (2.36), 16 (1.18), 30 (0.60), 50 (0.30), 100 (0.15), 200 (0.08)

ASTMs: D-2216, D-4318, D-422, D-1140, D-4972

Project: Dog Kennel, FY-11 Ft. Stewart

USACE Project No.: LI: 62728

Date: 02/03/11

ECS SOUTHEAST, LLC

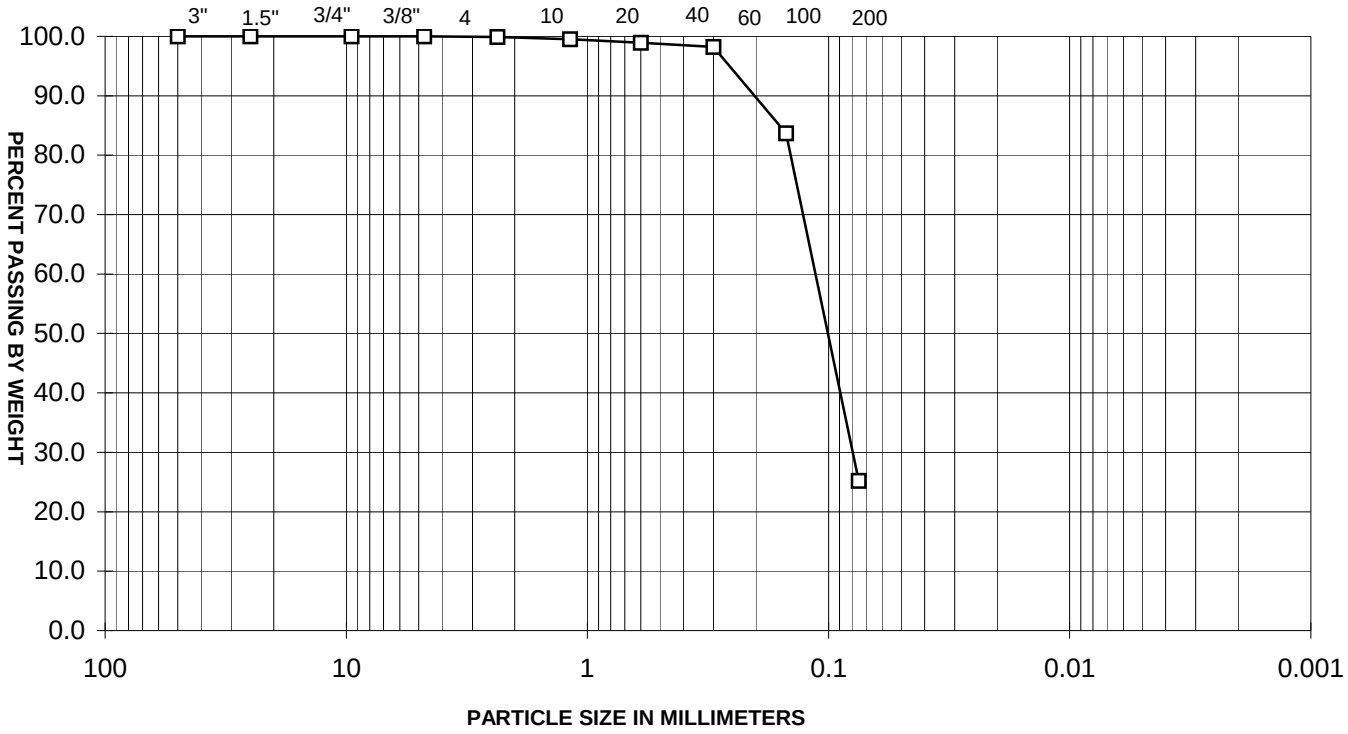
Savannah, Georgia

ECS Project No: 23:2288

Tested By: JWS Calc By: JWS Reviewed By: SB

COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

U.S. STANDARD SIEVE OPENING IN INCHES	U.S. STANDARD SIEVE NUMBERS	HYDROMETER



Boring/ Sample No.	Depth (feet)	Symbol	LL	PI	MC%	pH	% -200	Description
B-5 7	18.5-20	□	25	9	30.6	-	25.2	Gray, Clayey SAND, (SC)
		■	-	-	-	-		
		△	-	-	-	-		
		▲	-	-	-	-		

Sieve Stack No. (mm opening) - 2 (50.00), 1 (25.00), 3/8(9.50), 4 (4.75), 8 (2.36), 16 (1.18), 30 (0.60), 50 (0.30), 100 (0.15), 200 (0.08)

ASTMs: D-2216, D-4318, D-422, D-1140, D-4972

Project: Dog Kennel, FY-11 Ft. Stewart

USACE Project No.: LI: 62728

Date: 02/03/11

ECS SOUTHEAST, LLC

Savannah, Georgia

ECS Project No: 23:2288

Tested By: JWS Calc By: JWS Reviewed By: SB

B

Appendix B

List of Drawings

List of Drawings

01.CAL	G-001	1	COVERSHEET AND INDEX OF DRAWINGS
02.CAL	H-101	2	BUILDING 7736 - ASBESTOS SAMPLE LOCATIONS
03.CAL	H-102	3	BUILDING 7740 - ASBESTOS SAMPLE LOCATIONS
04.CAL	H-103	4	BUILDING 7740A - ASBESTOS SAMPLE LOCATIONS
05.CAL	VF101	5	TOPO SITE PLAN A
06.CAL	VF102	6	TOPO SITE PLAN B
07.CAL	VF103	7	TOPO SITE PLAN C
08.CAL	VF104	8	TOPO SITE PLAN D
09.CAL	VF105	9	TOPO SITE PLAN E
10.CAL	C-101	10	LOCATION PLAN
11.CAL	CS100	11	KEY PLAN
12.CAL	CS101	12	MODEL SITE PLAN A
13.CAL	CS102	13	MODEL SITE PLAN B
14.CAL	CS103	14	MODEL SITE PLAN C
15.CAL	CS104	15	MODEL SITE PLAN D
16.CAL	CS105	16	MODEL SITE PLAN E
17.CAL	A-101	17	FLOOR PLAN
18.CAL	A-201	18	EXTERIOR ELEVATIONS

C

Appendix C

Utility Connections

FORT STEWART, GEORGIA
UTILITY CONNECTIONS

28 October 2010

A. SITE ELECTRICAL GENERAL REQUIREMENTS

1. Site coordination meetings shall be held at the start of design and when necessary thereafter. Meetings shall include all applicable parties including the installation Network Enterprise Center (NEC), the privatized electric utility company, the local cable television (CATV) company, the Design-Build Contractor and the Contracting Officer's Representative (COR). All design, demolition and construction work including schedules, capacities, equipment selection, equipment locations, utility routing, connection points and final connection responsibilities shall be addressed.

2. All coordination including exchanges of information between the Design-Build Contractor and the installation DPW, NEC, the privatized electric utility company, the local CATV company information and other utility entities shall be routed through the COR unless otherwise directed.

3. The Design-Build Contractor shall coordinate the installation of all privatized utilities to avoid conflicts and ensure all utilities are in place prior to landscaping.

4. The privatized electric utility company at Fort Stewart is Canoochee EMC. The point of contact is Ricky Simons at (912) 459-1112 x3004. All work done by the electric utility company shall be under a separate contract with the Government. This work is NOT part of this RFP.

B. SITE LIGHTING

1. Site lighting outside the perimeter fence line of the Military Working Dog Kennel Complex is owned and maintained by the privatized electric utility company. Site lighting includes but is not limited to roadway, walkway, parking, hardstand, physical training (PT) field, sports and area lighting.

2. The privatized electric utility company at Fort Stewart is Canoochee EMC. The point of contact is Ricky Simons at (912) 459-1112 x3004. All work done by the electric utility company shall be under a separate contract with the Government. This work is NOT part of this RFP.

3. For additional guidance regarding the separation of responsibilities between the Design-Build Contractor and Canoochee EMC, see APPENDIX AA: Canoochee EMC Project Responsibilities and APPENDIX: BB Contractor/Canoochee Demarcation Line.

C. SITE COMMUNICATIONS

1. The telecommunications design shall be coordinated with and approved by the NEC Quality Assurance Officer prior to construction. The NEC point of contact is Charles Smith at (912) 912-767-2571, email address: charles.smith7@us.army.mil. An alternate Pamela McCullough at (912) 912-767-7970, email address: pamela.mccullough@us.army.mil.

2. Communications drawings are provided for information only. Communications outside plant connection points shown on drawings shall be verified with the installations NEC. Communications ductbank sizes and quantities shown on drawings shall be verified with the installations NEC.

E. SITE CABLE TELEVISION (CATV)

1. Comcast Cable is the local cable television (CATV) company at Fort Stewart. The Comcast point of contact is Craig Markillie at (912) 353-6064. The Design-Build Contractor shall coordinate head-end equipment locations with Comcast Cable and NEC.

D

Appendix D

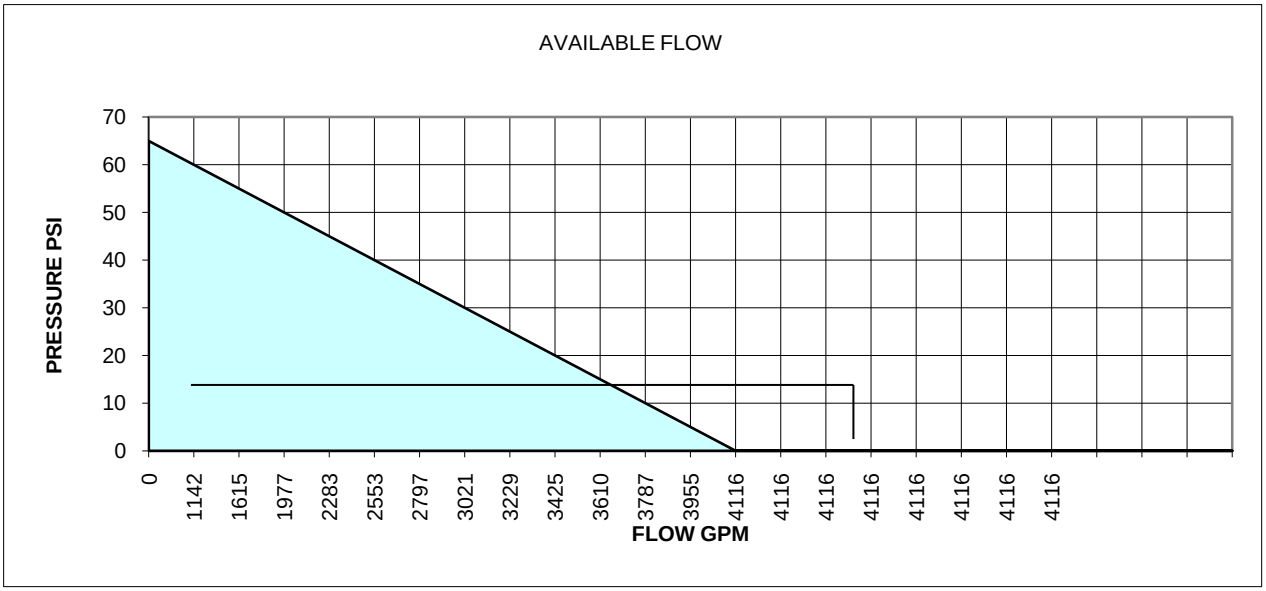
Fire Flow Tests

WATER FLOW TEST SUMMARY SHEET

8" Water Line along 144 Highway

		FLOW		PRESSURE		HOSE DEMAND	
	(PSI)	(GPM)	(LPM)	(PSI)	(BARS)	(GPM)	(LPM)
STATIC		0	0	65	4.4785	500	1895
RESIDUAL	45	1251	4740.0043	59	4.0651		

FLOW		PRESSURE		FLOW HOSE DEMAND		PRESSURE	
(GPM)	(LPM)	(PSI)	(BARS)	(GPM)	(LPM)	(PSI)	(BARS)
0	0	65	4.5	-500	-1895	65	4.5
1142	4327	60	4.1	642	2432	60	4.1
1615	6119	55	3.8	1115	4224	55	3.8
1977	7495	50	3.4	1477	5600	50	3.4
2283	8654	45	3.1	1783	6759	45	3.1
2553	9675	40	2.8	2053	7780	40	2.8
2797	10599	35	2.4	2297	8704	35	2.4
3021	11448	30	2.1	2521	9553	30	2.1
3229	12239	25	1.7	2729	10344	25	1.7
3425	12981	20	1.4	2925	11086	20	1.4
3610	13683	15	1.0	3110	11788	15	1.0
3787	14351	10	0.7	3287	12456	10	0.7
3955	14989	5	0.3	3455	13094	5	0.3
4116	15601	0	0.0	3616	13706	0	0.0
4116	15601	0	0.0	3616	13706	0	0.0
4116	15601	0	0.0	3616	13706	0	0.0
4116	15601	0	0.0	3616	13706	0	0.0
4116	15601	0	0.0	3616	13706	0	0.0
4116	15601	0	0.0	3616	13706	0	0.0
4116	15601	0	0.0	3616	13706	0	0.0

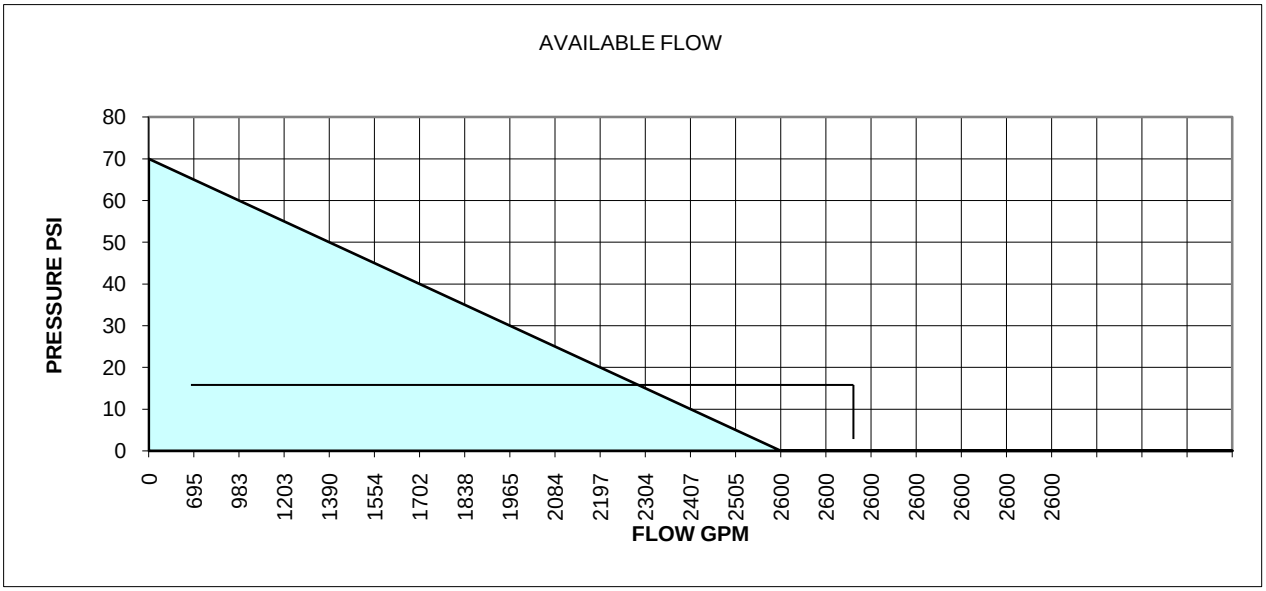


WATER FLOW TEST SUMMARY SHEET

8" Water inside 144 Highway TEMP

		FLOW		PRESSURE		HOSE DEMAND	
	(PSI)	(GPM)	(LPM)	(PSI)	(BARS)	(GPM)	(LPM)
STATIC		0	0	70	4.823	500	1895
RESIDUAL	50	1318	4996.4033	52	3.5828		

FLOW		PRESSURE		FLOW HOSE DEMAND		PRESSURE	
(GPM)	(LPM)	(PSI)	(BARS)	(GPM)	(LPM)	(PSI)	(BARS)
0	0	70	4.8	-500	-1895	70	4.8
695	2633	65	4.5	195	738	65	4.5
983	3724	60	4.1	483	1829	60	4.1
1203	4561	55	3.8	703	2666	55	3.8
1390	5267	50	3.4	890	3372	50	3.4
1554	5888	45	3.1	1054	3993	45	3.1
1702	6450	40	2.8	1202	4555	40	2.8
1838	6967	35	2.4	1338	5072	35	2.4
1965	7448	30	2.1	1465	5553	30	2.1
2084	7900	25	1.7	1584	6005	25	1.7
2197	8327	20	1.4	1697	6432	20	1.4
2304	8734	15	1.0	1804	6839	15	1.0
2407	9122	10	0.7	1907	7227	10	0.7
2505	9495	5	0.3	2005	7600	5	0.3
2600	9853	0	0.0	2100	7958	0	0.0
2600	9853	0	0.0	2100	7958	0	0.0
2600	9853	0	0.0	2100	7958	0	0.0
2600	9853	0	0.0	2100	7958	0	0.0
2600	9853	0	0.0	2100	7958	0	0.0
2600	9853	0	0.0	2100	7958	0	0.0
2600	9853	0	0.0	2100	7958	0	0.0



E

Appendix E

Environmental Information

1 – NEPA Document
2 – Erosion Control
3 – Notice of Intent (NOI)
4 – Notice of Termination (NOT)
5 – Environmental Protection Specification
6 – Borrow Pit Procedures
7 – Termite Treatment
8 – Recycling Policy

NEPA DOCUMENTATION

To be furnished later.

Erosion and Sediment Control

SECTION 01354

EROSION AND SEDIMENTATION CONTROL

PART 1

1.1 SUMMARY

The purpose of this section is to outline the requirements, enforcement and violations, for all Erosion and Sediment Control Plans (E&S), Stormwater Management, Notice of Intent (NOI), and Notice of Termination (NOT) to be submitted with all construction projects on the Fort Stewart/Hunter Army Airfield.

1.1.1 Erosion and Sediment Control Plans

Submitted to DPW upon awarding of contract, reviewed by USDA-NRCS. Must be approved before land-disturbance of any kind can proceed.

1.1.2 Notice of Intent

Contractor to send this form, with the land-disturbance permit, from USDA-NRCS, to Georgia EPD,

Coastal District, Brunswick Office
Georgia Environmental Protection Division
One Conservation Way
Brunswick, GA 31520-8687
(912) 264-7284

14 days in advance of any land disturbing activities. Land-disturbance permit requires three (3) signatures, A) USDA-NRCS, B) DPW representative, C) Contractor responsible for work. Notice of Intent is required for Stormwater management. (See Exhibit 2 at Appendix L.)

1.1.3 Notice of Termination

To be submitted to, Georgia EPD,

Coastal District- Brunswick Office
Georgia Environmental Protection Division
One Conservation Way
Brunswick, GA 31520-8687
(912) 264-7284

by Contractor upon site being 70% stabilized. Concurrence is needed from the COR or PM and USDA-NRCS, and Environmental. (See Exhibit 3 at Appendix L.)

1.1.4 Time Line for Documentation

a. E&S plan submitted to ER&S, DPW.

b. E&S plan reviewed NRCS.

c. Upon E&S plan approval Contractor will be notified by DPW. Contractor to send NOI to the State of Georgia, Environmental Protection Division, 14 days prior to start date. Copies of notification to be sent to:

DPW – Jana Tanner, Chief EP&SD
CHIEF ENGINEER PLAN and SERVICES DIVISION (BLDG 1114)
DIRECTORATE of PUBLIC WORKS (USDA-NRCS)
HQS 3D IN DIV (MECH) AND FORT STEWART, SUITE 101
1117 FRANK COCHRAN DRIVE
FORT STEWART, GA. 31314-4940

Environmental - Tressa M. Rutland
Environmental Branch
Directorate of Public Works, Bldg. 1137
1550 Frank Cochran Drive
Fort Stewart, Georgia 31314-4927

NRCS – James Freeman
CHIEF ENGINEER PLAN and SERVICES DIVISION (BLDG 1114)
DIRECTORATE of PUBLIC WORKS (USDA-NRCS)
HQS 3D IN DIV (MECH) AND FORT STEWART, SUITE 101
1117 FRANK COCHRAN DRIVE
FORT STEWART, GA. 31314-4940

NOTE: Project cannot begin until these items have been completed.

1.2 REFERENCES

The publication listed below form a part of this specification to the extent referenced. The publication is referred to in the text by basic designation only.

Manual for Erosion and Sediment Control of Georgia, 5th Edition - http://www.gaswcc.org/

Environmental Protection Agency - http://www.state.ga.us/dnr/environ/

PART 2

2.1 MINIMUM REQUIREMENTS FOR EROSION AND SEDIMENTATION CONTROL USING BEST MANAGEMENT PRACTICES

2.1.1 General Provisions

Excessive soil erosion and resulting sedimentation can take place during land-disturbing activities. Therefore, plans for those land-disturbing activities, which are not excluded by this ordinance, shall contain provisions for application of soil erosion and sedimentation control measures and practices. The provisions shall be incorporated into the erosion and sedimentation control plans. Soil erosion and sedimentation control measures and practices shall conform to the minimum requirements of paragraph 2.2 of this section. The application of measures and practices shall apply to all features of the site, including street and utility installations, drainage facilities and other temporary and permanent improvements. Measures shall be installed to prevent or control erosion and sedimentation pollution during all stages of any land-disturbing activity.

2.2 MINIMUM REQUIREMENTS/BEST MANAGEMENT PRACTICES (BMP'S)

2.2.1 Best management practices, as set forth in paragraph 2.2 of this section shall be required for all land-disturbing activities. Proper design, installation, and maintenance of best management practices shall constitute a complete defense to any action by the Director or to any other allegation of noncompliance with paragraph (2) of this subsection or any substantially similar terms contained in a permit for the discharge of storm water issued

pursuant to subsection (f) of Code Section 12-5-30, the "Georgia Water Quality Control Act." As used in this subsection the terms "proper design" and “properly designed” mean designed to control soil erosion and sedimentation for all rainfall events up to and including a 25-year, 24-hour rainfall event.

2.2.2 Failure to properly design, install, or maintain best management practices shall constitute a violation of any land-disturbing permit issued by Fort Stewart/Hunter Army Airfield DPW.

2.2.3 Fort Stewart/Hunter Army Airfield DPW may require, in accordance with regulations adopted by the Board, reasonable and prudent monitoring of the turbidity level of receiving waters into which discharges from land disturbing activities occur.

2.2.4 The rules and regulations, ordinances, or resolutions adopted pursuant to this section for the purpose of governing land-disturbing activities shall require, as a minimum, best management practices, including sound conservation and engineering practices to prevent and minimize erosion and resultant sedimentation, which are consistent with, and no less stringent than, those practices contained in the Manual for Erosion and Sediment Control in Georgia published by the Georgia Soil and Water Conservation Commission as of January 1 of the year in which the land-disturbing activity was permitted, as well as the following:

a. Stripping of vegetation, re-grading and other development activities shall be conducted in a manner so as to minimize erosion.

b. Cut-fill operations must be kept to a minimum, as defined by contract.

c. Development plans must conform to topography and soil type, so as to create the lowest practical erosion potential.

d. Whenever feasible, natural vegetation shall be retained, protected and supplemented, as called by design.

e. The disturbed area and the duration of exposure to erosive elements shall be kept to a practicable minimum.

f. Disturbed soil shall be stabilized as quickly as practicable.

g. Temporary vegetation or mulching shall be employed to protect exposed critical areas during development.

h. Permanent vegetation and structural erosion control practices shall be installed as soon as practicable.

i. To the extent necessary, sediment in run-off water must be trapped by the use of debris basins, sediment basins, silt traps, or similar measures until the disturbed area is stabilized. As used in this paragraph, a disturbed area is stabilized when it is brought to a condition of continuous compliance with the requirements of O.C.G.A. 12-7-1 et. seq.

j. Adequate provisions must be provided to minimize damage from surface water to the cut face of excavations or the sloping of fills.

k. Cuts and fills may not endanger adjoining property.

l. Fills may not encroach upon natural watercourses or constructed channels in a manner so as to adversely affect other property owners.

m. Grading equipment must cross, flowing streams by means of bridges or

culverts except when such methods are not feasible, provided, in any case, that such crossings are kept to a minimum;

n. Land-disturbing activity plans for erosion and sedimentation control shall include provisions for treatment or control of any source of sediments and adequate sedimentation control facilities to retain sediments on-site or preclude sedimentation of adjacent waters beyond the levels specified in Section IV B. 2. of this ordinance.

o. A 25-foot buffer along the banks of all state waters, as measured horizontally from the point where vegetation has been wrested by normal stream flow or wave action, except where the Director determines to allow a variance that is at least as protective of natural resources and the environment, where otherwise allowed by the Director pursuant to O.C.G.A. 12-2-8, or where a drainage structure or a roadway drainage structure must be constructed, provided that adequate erosion control measures are incorporated in the project plans and specifications, and are implemented; provided, however, the buffers of at least 25 feet established pursuant to part 6 of Article 5, Chapter 5 of Title 12, the "Georgia Water Quality Control Act", shall remain in force unless a variance is granted by the Director as provided in this paragraph. The following requirements shall apply to any such buffer:
No land-disturbing activities shall be conducted within a buffer and a buffer shall remain in its natural, undisturbed state of vegetation until all land-disturbing activities on the construction site are completed. Once the final stabilization of the site is achieved, a buffer may be thinned or trimmed of vegetation as long as a protective vegetative cover remains to protect water quality and aquatic habitat and a natural canopy is left in sufficient quantity to keep shade on the stream bed.

PART 3

3.1 APPLICATION/PERMIT PROCESS

Fort Stewart/Hunter Army Airfield DPW shall review plans and detailed plans of Fort Stewart/Hunter Army Airfield that affect the tract to be developed and the area surrounding it.

3.2 APPLICATION REQUIREMENTS

3.2.1 No person shall conduct any land-disturbing activity within the jurisdictional boundaries of Fort Stewart/Hunter Army Airfield without first obtaining a permit from Fort Stewart/Hunter Army Airfield DPW to perform such activity.

3.2.2 The application for a permit shall be submitted to Fort Stewart/ Hunter Army Airfield DPW and must include the applicant’s erosion and sedimentation control plan with supporting data, as necessary. Said plans shall include, as a minimum, the data specified in paragraph 3.3 of this section. Soil erosion and sedimentation control plans shall conform to the provisions of paragraph 2.2 of this section. Applications for a permit will not be accepted unless accompanied by four copies of the applicant’s soil erosion and sedimentation control plans.

3.2.3 Immediately upon receipt of an application and plan for a permit, Fort Stewart/Hunter Army Airfield DPW shall refer the application and plan to the USDA-NRCS for its review and approval or disapproval concerning the adequacy of the erosion and sedimentation control plan. The results of the USDA-NRCS review shall be forwarded to the Fort Stewart/Hunter Army Airfield DPW. No permit will be issued unless the plan has been approved by the USDA-NRCS, and any variances required by Section IV C. 15. and 16.

3.3 PLAN REQUIREMENTS

3.3.1 Plans must be prepared to meet the minimum requirements as contained in paragraph 3.3 of this section. Conformance with the minimum requirements may be attained through the use of design criteria in the current issue of the Manual for Erosion and Sediment Control in Georgia, published by the State Soil and Water Conservation Commission as a guide; or through the use of more stringent, alternate design criteria which conform to sound conservation and engineering practices. The Manual for Erosion and Sediment Control in Georgia is hereby incorporated by reference into this ordinance. The plan for the land-disturbing activity shall consider the interrelationship of the soil types, geological and hydrological characteristics, topography, watershed, vegetation, proposed permanent structures including roadways, constructed waterways, sediment control and storm water management facilities, local ordinances and State laws.

3.3.2 Data Required for Site Plan

3.3.3 Narrative or Notes, and Other Information: Notes or narrative to be located on the site plan in general notes or in erosion and sediment control notes.

3.3.4 Description of existing land use at project site and description of proposed project.

3.3.5 Name, address, and phone number of the property owner.

3.3.6 Name and phone number of 24-hour local contact who is responsible for erosion and sedimentation controls.

3.3.7 Size of project, or phase under construction, in acres.

3.3.8 Activity schedule showing anticipated starting and completion dates for the project. Include the statement, in bold letters, that “The installation of erosion and sedimentation control measures and practices shall occur prior to or concurrent with land-disturbing activities.”

3.3.9 Stormwater and sedimentation management systems-storage capacity, hydrologic study, and calculations, including off-site drainage areas.

3.3.10 Vegetative plan for all temporary and permanent vegetative measures, including species, planting dates, and seeding, fertilizer, lime, and mulching rates. The vegetative plan should show options for year-round seeding.

3.3.11 Detail drawings for all structural practices. Specifications may follow guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.

3.3.12 Maintenance statement - “Erosion and sedimentation control measures will be maintained at all times. Additional erosion and sedimentation control measures and practices will be installed if deemed necessary by onsite inspection.”

3.3.13 Maps, drawings, and supportive computations shall bear the signature/seal of a registered or certified professional in engineering, architecture, landscape architecture, land surveying, or erosion and sedimentation control. The certified plans shall contain:

3.3.14 Graphic scale and north point or arrow indicating magnetic north.

3.3.15 Vicinity maps showing location of project and existing streets.

3.3.16 Boundary line survey.

3.3.17 Delineation of disturbed areas within project boundary.

3.3.18 Existing and planned contours, with an interval in accordance with the following:

Map Scale	Ground Slope	Contour Interval, ft.
1 inch = 100 ft	Flat 0-2%.	0.5 or 1
larger scale	Rolling 2-8%	1 or 2
	Steep 8% +	2, 5 or 10

3.3.19 Adjacent areas and features areas such as streams, lakes, residential areas, etc. which might be affected should be indicated on the plan.

3.3.20 Proposed structures or additions to existing structures and paved areas.

3.3.21 Delineate the 25-foot horizontal buffer adjacent to state waters and the specified width in Metropolitan River Protection Act (MRPA) areas.

3.3.22 Location of erosion and sedimentation control measures and practices using coding symbols from the Manual for Erosion and Sediment Control in Georgia, Chapter 6.

3.3.23 Maintenance of all soil erosion and sedimentation control practices, whether temporary or permanent, shall be at all times the responsibility of the Contractor.

3.4 PERMITS

3.4.1 Permits shall be issued or denied as soon as practicable, but in any event not later than fifteen (15) days after receipt by Fort Stewart / Hunter Army Airfield / DPW of a completed application.

3.4.2 No permit shall be issued by Fort Stewart / Hunter Army Airfield/ DPW unless the erosion and sedimentation control plan has been approved by USDA-NRCS and Fort Stewart / Hunter Army Airfield/ DPW has affirmatively determined that the plan is in compliance with this ordinance and all ordinances and rules and regulations in effect within the jurisdictional boundaries of the Fort Stewart / Hunter Army Airfield / DPW are met. If the permit is denied, the reason for denial shall be furnished to the applicant.

3.4.3 If the tract is to be developed in phases, then a separate permit shall be required for each phase.

3.4.4 The permit may be suspended, revoked, or modified by Fort Stewart / Hunter Army Airfield/ DPW, as to all or any portion of the land affected by the plan, upon finding that the holder or his successor in the title is not in compliance with the approved erosion and sedimentation control plan or that the holder or his successor in title is in violation of this ordinance. A holder of a permit shall notify any successor in title to him as to all or any portion of the land affected by the approved plan of the conditions contained in the permit.

3.5 INSPECTIONS AND ENFORCEMENT

3.5.1 Fort Stewart / Hunter Army Airfield / DPW or USDA-NRCS representative, will periodically inspect the sites of land-disturbing activities for which permits have been issued to determine if the activities are being conducted in

accordance with the plan and if the measures required in the plan are effective in controlling erosion and sedimentation. If, through inspection, it is deemed that a person engaged in land-disturbing activities as defined herein has failed to comply with the approved plan, with permit conditions, or with the provisions of this ordinance, a written Notice to comply shall be served upon that person. The notice shall set forth the measures necessary to achieve compliance and shall state the time within which such measures must be completed (15 days). If the person engaged in the land-disturbing activity fails to comply within the time specified, he shall be deemed in violation of this ordinance.

3.5.2 Fort Stewart / Hunter Army Airfield/ DPW or USDA-NRCS representative shall have the power to conduct such investigations as it may reasonably deem necessary to carry out duties as prescribed in this ordinance, and for this purpose to enter at reasonable times upon any site, for the purpose of investigation and inspecting the sites of land-disturbing activities.

3.5.3 No person shall refuse entry or access to any authorized representative or agent of Fort Stewart/Hunter Army Airfield / DPW or USDA-NRCS representative, who requests entry for the purposes of inspection, and who presents appropriate credentials, nor shall any person obstruct, hamper or interfere with any such representative while in the process of carrying out their official duties.

3.6 PENALTIES AND INCENTIVES

3.6.1 Failure To Obtain a Permit For Land-Disturbing Activity

If any person commences any land-disturbing activity requiring a land-disturbing permit as prescribed in this ordinance without first obtaining said permit, the person shall be subject to a stop work order within the boundaries of Fort Stewart / Hunter Army Airfield.

3.7 STOP-WORK ORDERS

3.7.1 For the first violation of the provisions of this ordinance, Fort Stewart / Hunter Army Airfield / DPW shall issue a written warning to the violator. The violator shall have a designated amount of time to correct the violation. If the violation is not corrected within allotted time, Fort Stewart / Hunter Army Airfield/ DPW shall issue a stop-work order requiring that land-disturbing activities be stopped until necessary corrective action or mitigation has occurred; provided, however, that, if the violation presents an imminent threat to public health or waters of the state or if the land-disturbing activities are conducted without obtaining the necessary permit, Fort Stewart / Hunter Army Airfield/ DPW shall issue an immediate stop-work order in lieu of a warning;

3.7.2 For a third and each subsequent violation, Fort Stewart / Hunter Army Airfield / DPW shall issue an immediate stop-work order; and;

3.7.3 All stop-work orders shall be effective immediately upon issuance and shall be in effect until the necessary corrective action or mitigation has occurred.

4.1 DEFINITIONS

The following definitions shall apply in the interpretation and enforcement of this ordinance, unless otherwise specifically stated:

DEFINITIONS

1. Best Management Practices (BMP's): A collection of structural practices and vegetative measures which, when properly designed, installed and maintained, will provide effective erosion and sedimentation control for all rainfall events up to and including a 25-year, 24-hour rainfall event.

2. Board: The Board of Natural Resources.

3. Buffer: The area of land immediately adjacent to the banks of state waters in its natural state of vegetation, which facilitates the protection of water quality and aquatic habitat.

4. Commission: The State Soil & Water Conservation Commission.

5. Cut: A portion of land surface or area from which earth has been removed or will be removed by excavation; the depth below original ground surface to excavated surface. Also known as excavation.

6. Department: The Department of Natural Resources.

7. Director: The Director of the Environmental Protection Division of the Department of Natural Resources.

8. Division: The Environmental Protection Division of the Department of Natural Resources.

9. Drainage Structure: A device composed of a virtually non-erodible material such as concrete, steel, plastic or other such material that conveys water from one place to another by intercepting the flow and carrying it to a release point for storm-water management, drainage control, or flood control purposes.

10. Erosion: The process by which land surface is worn away by the action of wind, water, ice or gravity.

11. Erosion and Sedimentation Control Plan: A plan for the control of soil erosion and sedimentation, resulting from a land-disturbing activity.

12. Fill: A portion of land surface to which soil or other solid material has been added; the depth above the original ground.

13. Finished Grade: The final elevation and contour of the ground after cutting or filling and conforming to the proposed design.

14. Grading: Altering the shape of ground surfaces to a predetermined condition; this includes stripping, cutting, filling, stockpiling and shaping or any combination thereof and shall include the land in its cut or filled condition.

15. Ground Elevation: The original elevation of the ground surface prior to cutting or filling.

16. Issuing Authority: DPW.

17. Land-Disturbing Activity: Any activity which may result in soil erosion from water or wind and the movement of sediments into state waters or onto lands within the state, including, but not limited to, clearing, dredging, grading, excavating, transporting, and filling of land but not including agricultural practices as described in Section III, Paragraph 5.

18. Metropolitan River Protection Act (MRPA): A state law referenced as O.C.G.A. 12-5-440 et.seq., which addresses environmental and developmental

matters in certain metropolitan river corridors and their drainage basins.

19. Natural Ground Surface: The ground surface in its original state before any grading, excavation or filling.

20. Nephelometric Turbidity Units (NTU): Numerical units of measure based upon photometric analytical techniques for measuring the light scattered by finely divided particles of a substance in suspension. This technique is used to estimate the extent of turbidity in water in which colloidally dispersed particles are present.

21. Permit: The authorization necessary to conduct a land-disturbing activity under the provisions of this ordinance.

22. Person: Any individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, state agency, municipality or other political subdivision of this State, any interstate body or any other legal entity.

23. Project: The entire proposed development project regardless of the size of the area of land to be disturbed.

24. Roadway Drainage Structure: A device such as a bridge, culvert, or ditch, composed of a virtually non-erodible material such as concrete, steel, plastic, or other such material that conveys water under a roadway by intercepting the flow on one side of a traveled way consisting of one or more defined lanes, with or without shoulder areas, and carrying water to a release point on the other side.

25. Sediment: Solid material, both organic and inorganic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, ice, or gravity as a product of erosion.

26. Sedimentation: The process by which eroded material is transported and deposited by the action of water, wind, ice or gravity.

27. Stabilization: The process of establishing an enduring soil cover of vegetation by the installation of temporary or permanent structures for the purpose of reducing to a minimum the erosion process and the resultant transport of sediment by wind, water, ice or gravity.

28. State Waters: Any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wells, and other bodies of surface or subsurface water, natural or artificial, lying within or forming a part of the boundaries of the State which are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation.

29. Structural Erosion and Sedimentation Control Practices: Practices for the stabilization of erodible or sediment-producing areas by utilizing the mechanical properties of matter for the purpose of either changing the surface of the land or storing, regulating or disposing of runoff to prevent excessive sediment loss. Examples of structural erosion and sediment control practices are riprap, sediment basins, dikes, level spreaders, waterways or outlets, diversions, grade stabilization structures, sediment traps and land grading, etc. Such practices can be found in the publication Manual for Erosion and Sediment Control in Georgia.

30. Vegetative Erosion and Sedimentation Control Measures: Measures for the stabilization of erodible or sediment-producing areas by covering the soil

with:

A. Permanent seeding, sprigging or planting, producing long-term vegetative cover; or

B. Temporary seeding, producing short-term vegetative cover; or

C. Sodding, covering areas with a turf of perennial sod-forming grass. Such measures can be found in the publication Manual for Erosion and Sediment Control in Georgia.

31. Watercourse: Any natural or artificial watercourse, stream, river, creek, channel, ditch, canal, conduit, culvert, drain, waterway, gully, ravine, or wash in which water flows either continuously or intermittently and which has a definite channel, bed and banks, and including any area adjacent thereto subject to inundation by reason of overflow or floodwater.

32. Wetlands: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

---End of Section ---

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST GUIDANCE DOCUMENT

SWCD: (May be completed by ES&PC plan reviewer)

Project Name: (Noted clearly on cover sheet) Address: (Include street name/address on cover sheet)

City/County: (Noted on cover sheet-note LIA) Date on Plans: (Initial submittal date on cover sheet)

TO BE SHOWN ON ES&PC PLAN

1 Graphic scale and north arrow.
The graphic scale and north arrow must be clearly shown on all ES&PC plan sheets.

2 Existing and proposed contour lines with contour lines drawn at an interval in accordance with the following:

Map Scale	Ground Slope	Contour Intervals, ft.
1 inch =	Flat 0 - 2%	0.5 or 1
	Rolling 2 - 8%	1 or 2
	Steep 8% +	2,5 or 10

Plan should include an existing site plan sheet or sheets with the above contour line intervals shown on plan. The initial, intermediate and final phase sheets of the plan must show the proposed grade in bold contour lines with the above intervals overlaying the original contour lines. Elevations of both the existing and proposed contour lines must be shown. Contours for infrastructure projects may be shown using criteria from infrastructure checklist or by using the criteria listed above.

3 Delineation and acreage of contributing drainage basins on the project site.
The existing site plan or the initial phase plan must show delineation of each drainage basin on the project site with the acreage of each basin noted. As the basins are altered during grading for the intermediate phase of the plan the new basins and acreage must be delineated. If the basins are changed on the final phase of the plan delineate new basins with acreage noted.

4 Delineation of on-site wetlands and all state waters located on and within 200 feet of the project site.
ALL STATE WATERS LOCATED ON AND WITHIN 200 FEET OF THE PROJECT SITE MUST BE DELINEATED ON ALL PHASES OF THE PLAN. If the plan reviewer visits the site prior to the plan review and discovers possible state waters on and within 200 feet of the site that are not delineated on the plan, the review could be delayed until a state waters determination is made by the Local Issuing Authority. ALL WETLANDS LOCATED WITHIN THE PROJECT SITE ONLY MUST BE DELINEATED.

5 Delineation of 25-foot undisturbed buffers of state waters and 50-foot undisturbed buffers along designated trout streams. Clearly note and delineate all areas of impact.
The State Law of Georgia mandates these minimum undisturbed buffers, but the Local Issuing Authorities are allowed to require more stringent buffers of state waters. The minimum undisturbed buffers required by the state and all other buffers of state waters required by the issuing authority must be delineated. Any undisturbed buffer area that is impacted by the project site must be noted on the plan.

6 Soil series and their delineation.
Soil series delineations are required for the plan review and can be found on the NRCS web site. The highest level of soil survey required for the project site, such as a level three or level four survey for projects that will be using septic systems, must be delineated on the plan. The soil series delineation should be shown on the existing site plan or the initial phase plan. A chart listing the soils located on the project site should be shown on the sheet with their delineation.

7 Revision and/or initial date.
The initial plan date should be shown on all pages. With each resubmittal the revision date and entity requesting revisions (Planning Dept., GSWCC, NRCS, etc.) should be shown on cover sheet and each sheet that has been revised.

8 Limits of disturbance for each phase of construction.
The limits of disturbance for the initial phase should delineate only the area required to be disturbed for the installation of perimeter control and initial sediment storage. The intermediate phase should delineate the entire area to be disturbed for that phase, such as grading, drainage, utilities installed, etc. The final phase should delineate any additional areas to be disturbed such as individual lots, etc.

9 Signature, seal and GSWCC Level II certification number of the qualified design professional.
The plan must include the signature, seal and GSWCC Level II certification number of the qualified design professional on each sheet of and pertaining to the ES&PC plan. ANY PLANS RECEIVED THAT DO NOT PROVIDE ANY OF THESE WILL NOT BE REVIEWED.

10 Storm-drain pipe and weir velocities with appropriate outlet protection to accommodate discharges without erosion.
The storm-drain pipe and weir velocities must show the flow characteristics of the pipe at full flow including pipe diameter, flow rate (cfs), velocity (fps), and tailwater conditions. This information should be shown in a chart shown on storm-drain profile sheet, ES&PC intermediate phase sheet or on the ES&PC detail sheet that shows outlet protection.
The dimensions of the apron must include length (La), width at the headwall (W1), down-stream width (W2), average stone diameter (d50), and stone depth (D) designed in accordance with Figures 6-24.1 and 6-24.2 in the Manual. These should be shown in a chart on ES&PC intermediate and/or final phase sheet or ES&PC detail sheet with outlet protection.

11 Provide a minimum of 67 cubic yards of sediment storage per acre drained using a temporary sediment basin, retrofitted detention pond, and/or excavated inlet sediment traps for each common drainage location. Sediment storage volume must be in place prior to and during all land disturbance activities until final stabilization of the site has been achieved. A written rationale explaining the decision not to use a sediment basin must be included in the plan for each common drainage location in which a sediment basin is not provided.
For each common drainage location, a temporary (or Permanent) sediment basin (Sd3, Rt, or excavated Sd2) providing at least 67 cubic yards of storage per acre drained, or equivalent control measures, shall be provided until final stabilization of the site. The 67 cubic yards of storage per acre does not apply to flows from off-site areas and flows from on-site areas that are either undisturbed or have undergone final stabilization where such flows are diverted around both the disturbed area and the sediment basin. Sediment basins may not be appropriate for some common drainage locations and a written rationale explaining the decision not to use sediment basins must be included in the plan.

12 Location of Best Management Practices that are consistent with and no less stringent than the Manual for Erosion and Sediment Control in Georgia. Phase plan into initial sediment storage and perimeter control BMP's, intermediate grading and drainage BMP's and final BMP's. Use uniform coding symbols from the Manual, Chapter 6, with legend.
BMP's for all phases of the plan must be consistent with and no less stringent than the Manual and shown using uniform coding symbols from the Manual. The uniform coding symbols legend from the Manual must be included and may be shown on detail sheet or any of the ES&PC plan sheets.
The plan must be shown in a minimum of three phases with each phase shown on a separate sheet. Initial phase of the plan must include the required 67 cy per acre sediment storage, construction exit, tree-save fence if applicable and any other BMP's necessary to prevent sediment from leaving the site such as silt fence, inlet protection on existing storm drain structures, diversions, check dams, temporary ground cover, etc. Limits of disturbance for the initial phase are to be only the areas needed to install initial BMP's. The intermediate phase should show rough grading and utility construction. BMP's should include initial inlet protection, additional silt fence as needed, any revised sediment storage needed as drainage basins are altered, outlet protection, retrofit if applicable, matting with temporary or permanent vegetation as needed, temporary down drains, filter rings, etc. Final phase of plan should show finished grade, curbing and paving if applicable, building construction if applicable, etc. BMP's should include permanent vegetation, appropriate inlet protection, etc.

13 Name and phone number of 24-hour local contact responsible for erosion, sedimentation and pollution controls.
May be shown on ES&PC plan sheets and/or ES&PC notes.

14 Best Management Practices to minimize off-site vehicle tracking of sediments and the generation of dust.
The Plan must establish BMPs designed to minimize or eliminate the off-site vehicle tracking of dust, dirt, sand, soils and sediment and the generation of dust to the maximum extent practicable. The plan should indicate structural BMPs such as construction exits as well as a narrative description of the actions to be taken and/or equipment to be available and used as necessary to control dust and off-site vehicle tracking. Some requirements of the Plan may need a more detailed description of BMP's than a typical drawing can provide. These items should be clarified with a narrative description shown on the plan or in the ES&PC notes.

15 Delineate sampling locations, perennial and intermittent streams and other water bodies into which storm water is discharged.
The Plan must include a site map that shows the location of all waters of the State (including wetlands) present on the site whether or not those state waters have an associated buffer. The map must also show the location(s) of all storm water discharge points (outfalls) and indicate the location(s) of all points where storm water samples will be collected for the purposes of the permit. Storm water sampling must be conducted at all storm water outfalls (unless a representative outfall is designated) or at upstream and downstream locations in the receiving water(s). In some cases, the plan may call for sampling of a combination of storm water outfalls and receiving waters.

16 Identify/Delineate all storm water discharge points.
Any point where stormwater is discharged from the site should be clearly identified in each phase of the plan.

Narrative Notes and Other Information: (Notes or narrative should be located on the ES&PC plan or under Erosion, Sedimentation and Pollution Control notes.)

17 Provide hydrology study and maps of drainage basins for both the pre- and post-developed conditions.
Hydrology study and drainage maps should be separate from plans. Maps should include each individual basin draining to, through and from the project site, with each one delineated, labeled and showing its total acreage.

18 Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary.
Site location must be delineated showing surrounding area roads and highways. If the project is being done in phases, each individual phase must be delineated and labeled. This information is important for plan reviewers if a site visit is needed, or if the site needs to be located on another map such as USGS quad.

19 Identify the project receiving waters and describe all adjacent areas including streams, lakes, residential areas, wetlands, etc. which may be affected.
The name of the initial receiving water(s) or if unnamed the first named blue line stream indicated on the appropriate USGS Topographic map and describe any neighboring area which could be affected by the post-developed runoff from the site.

20 Plan addresses BMP's for all phases of common development including individual building lots and out-parcels, etc. regardless of who owns or operates the individual sites. Include a typical and any situational lots applicable.
The Erosion, Sedimentation & Pollution Control plans for a common development is designed for the life of the project and must include practices to be implemented by all secondary permittees involved, whether the primary permittee relinquishes ownership of the land rights or not. This includes providing an ES&PC plan for typical and situational lots for each secondary permittee (builder) who purchases a lot from the primary permittee (developer). Situational lots may include, but are not limited to, lots adjacent to state waters buffers (in which a double row of Type C silt fence must be shown adjacent to buffer), lots adjacent to wetlands, lots with an extreme grade, etc. Not applicable for stand alone and infrastructure projects.

21 Design professional's certification statement and signature that the permittee's ES&PC Plan provides for an appropriate and comprehensive system of BMP's and sampling to meet permit requirements as stated on page 15 of permit.
Statement must be shown as worded on page 15 of GAR 100003 and include design professionals signature. The statement and signature are to be shown under ES&PC notes. This statement is found on pages 12-13 in GAR 100001 and on page 13 of GAR 100002.

22 Design professional's certification statement and signature that the site was visited prior to development of the ES&PC Plan.
Statement and signature are to be shown under ES&PC notes.

23 Indication that non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed stream buffers as measured from the point of wrested vegetation without first acquiring the necessary variances and permits.
See Part IV. EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN (I) and (II) of the permit and show under ES&PC notes.

24 Plan describes practices used to reduce the pollutants in storm water discharges.
In addition to erosion and sedimentation controls, the plan must identify all potential sources of storm water pollution expected to be present at the site. These will include BMPs designed to control pollutants from waste disposal practices, soil additives, remediation of spills and leaks of petroleum products, concrete truck washout, etc. The plan must also show that the site will be in compliance with all applicable State and local waste disposal, sanitary sewer or septic system regulations.

25 Indication that the applicable portion of ES&PC Plan is to be provided to each secondary permittee prior to the secondary conducting any construction activity and that each secondary shall sign the Plan or portion of the Plan applicable to their site. List the names and addresses of all secondary permittees.
The Plan must contain a list of and contact information for all secondary permittees and a statement that the primary permittee shall provide a copy of the Plan (and any subsequent revisions to the Plan) to each secondary permittee. The plan must include a section for each secondary to sign indicating that they have made a written acknowledgement of receipt of the plan and a copy of the acknowledgement must be kept in the primary's records. Not applicable for stand alone and infrastructure projects.

26 Indication that the design professional who prepared the ES&PC Plan is to inspect the installation of BMP's within 7 days after initial construction activity begins.
The Plan must include a statement indicating that the design professional must be retained by the primary permittee to conduct a site inspection within seven (7) days after initial construction begins in order to determine if the BMPs have been installed as designed and are being maintained as required by the Plan and the Green Book. The design professional must report the results of the inspection to the primary permittee within seven (7) days and the primary must correct all deficiencies identified in the report within two (2) business days after receiving the report (unless additional time is needed due to adverse weather). The primary permittee may use an alternate design professional to conduct the BMP inspection, provided that they make a written request to EPD to change from the design professional who developed the plan and EPD has agreed.

27 Include certification and signature in accordance with section V.G.d. of the permit.
See part V. G. d. of the permit. Statement must be worded as shown in permit and shown under ES&PC notes with signature.

28 Indication that amendments/revisions to the ES&PC Plan which have a significant effect on BMP's with a hydraulic component must be certified by the design professional.
See part IV. C. of the permit. This can be clarified in a narrative and shown under ES&PC notes. Revisions or amendments should be submitted to the Local Issuing Authority for review.

29 Description of the nature of construction activity.
Provide a description of the existing site and a description of the proposed project. These must be shown on ES&PC plans or under ES&PC notes.

30 Description and chart or timeline of the intended sequence of major activities which disturb soils for the major portions of the site (i.e., initial perimeter and sediment storage BMP's, clearing and grubbing activities, excavation activities, utility activities, temporary and final stabilization).
Activity schedule must be site specific. The narrative description and timeline for each phase of construction may be shown on ES&PC plan sheet or under ES&PC notes.

31 An estimate of the runoff coefficient or peak discharge flow of the site prior to and after construction activities are completed.
The Plan must provide both pre- and post-construction estimates of the runoff coefficient or peak discharge flow for the site. This can be in the form of a hydrologic study so long as that study is made a part of the Plan and accompanies the Plan. A complete hydrologic study is not a required element of the Plan, only the pre and post-construction estimates of the run-off coefficient or peak discharge flow for the site.

32 Description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed.
The Plan must contain a description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed. These may include storm water detention and retention structures, use of vegetated swales and natural depressions for flow attenuation or a combination of these practices (sequential systems). The Plan must also include a technical explanation of the basis used to select these practices where flows will exceed pre-development levels. The Plan must indicate that velocity dissipation devices will be placed at discharge locations and along the length of any outflow channel in order to provide a non-erosive flow so that the natural physical and biological characteristics and functions of the water course are maintained and protected. The installation of these devices may be subject to Section 404 of the Federal Clean Water Act. Note: The permitttee is only responsible for the installation and maintenance of storm water management devices prior to final stabilization of the site and not the operation and maintenance of such structures after construction activities have been completed.

33 Indication that waste materials shall not be discharged to waters of the State, except as authorized by a Section 404 permit.
The Plan must include a description of how waste materials, including waste building materials, construction and demolition debris, concrete washout, excavated sediment, etc., will be properly disposed of. Any disposal of solid waste to waters of the State is prohibited unless authorized by a Section 404 permit.

34 Documentation that the ES&PC Plan is in compliance with waste disposal, sanitary sewer, or septic tank regulations.
The Plan must provide for the proper disposal of sewage and other wastes generated during construction operations. The plan must ensure that the site complies with any applicable State or local regulations regarding waste disposal, sanitary sewer, or septic tanks.

35 BMP's for the remediation of all petroleum spills and leaks.
The Plan must provide BMPs and guidance for the prevention of spills and leaks of petroleum products from any areas where such products are stored or used as well as guidance for the proper remediation of any spills and leaks that do occur. This information can be in the form of a separate Spill Prevention / Spill Response document so long as that information accompanies the Plan.

36 Details on required inspections and record keeping by the primary permittee, secondary permittees and tertiary permittees
The Plan must address the specific requirements for daily, weekly and monthly inspections of the site by Qualified Personnel and the record keeping requirements for the proper documentation of the inspections. Inspection reports must include the name of the inspector(s), the date(s) of each inspection, major observations relating to the implementation of the ES&PC plan and actions taken in response to the inspection(s). The reports must identify any incidents of non-compliance or, if a report does not identify any incidents of non-compliance, the report must contain a certification that the site is in compliance with the plan. Inspection reports must be signed in accordance with Part V.G of the permit.

37 Description of analytical methods to be used to collect and analyze the samples from each location.
The plan must address the monitoring of nephelometric turbidity in receiving waters and/or storm water outfalls by the primary permittee in accordance with the permit. The plan must include the following:
1. A topographic map (scale must be equal to or greater than 1:240000) showing the location of all waters of the State (both perennial and intermittent) into which storm water is discharged
2. A detailed narrative describing the analytical method(s) that will be used to collect and analyze the samples (including quality control and assurance procedures) for each sampling location
3. If all or some storm water outfalls will be sampled, a rationale for the selection of the appropriate NTU values from Appendix B
4. Any additional information required in writing to the permittee by EPD

38 Appendix B rationale for outfall sampling points where applicable.
See item 37 above.

39 Information on sampling frequency and reporting requirements.
The Plan must clearly indicate sampling locations (all receiving waters, storm water outfalls or a combination of both), when sampling events will be conducted, and the requirements for reporting results of sample analysis to EPD.

40 Provide land lot and district numbers for site location. Describe critical areas and any additional measures that will be utilized for these areas.
Land Lot and District numbers must be shown on cover sheet and may also be shown on ES&PC plan sheets and ES&PC notes.

41 Provide name, address and phone number of primary permittee.
May be shown on cover sheet, ES&PC plan or under ES&PC notes.

42 Note total and disturbed acreage (the disturbed area shall be the total estimated disturbed area of the primary and secondary permittees) of the project or phase under construction.
Must be shown on ES&PC plan or under ES&PC notes.

43 Cleary note statement in bold letters- "The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to, or concurrent with, land disturbing activities."
Must be shown on ES&PC plan or under ES&PC notes.

44 Cleary note maintenance statement in bold letters - "Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source."
Must be shown on ES&PC plan or under ES&PC notes.

45 Clearly note the statement in bold letters - "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."
Must be shown on ES&PC plan or under ES&PC notes.

46 Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet the guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.
The erosion and sediment control detail sheet must show a detailed drawing for each structural BMP shown on the plan. All BMPs and details shown must, at a minimum, meet the guidelines given in the Manual. Note that a worksheet is provided in the Manual for most structural BMP's that must be included on the ES&PC plan or detail sheet.

47 Provide vegetative plan, noting all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of year that seeding will take place and for the appropriate geographic region of Georgia.
Provide vegetative plan, noting all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of year that seeding will take place and for the appropriate geographic region of Georgia.

For Official Use Only

NOTICE OF INTENT

State of Georgia
Environmental Protection Division
For Coverage Under NPDES General Permit
To Discharge Storm Water Associated With Construction Activity

PRIMARY PERMITTEE

Coverage Desired (Check Only One)

☐ GAR 100001-Stand Alone ☐ GAR 100002-Infrastructure ☐ GAR 100003-Common Development

I. SITE/OWNER/OPERATOR INFORMATION

Site Project Name: _____

GPS Location of Construction Exit: _____

Street Address: _____

City(if applicable): _____ County: _____

Subdivision Name: _____

Owner's Name: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Operator's Name: _____ Phone: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Facility Contact: _____ Phone: _____

II. SITE ACTIVITY INFORMATION

Start Date: _____ Completion Date: _____ Estimated Disturbed Acreage: _____

Type Construction Activity: ☐ Commercial ☐ Industrial ☐ Municipal ☐ Linear
☐ Utility ☐ Residential/Subdivision Development

Number of Secondary Permittees: _____

III. RECEIVING WATER INFORMATION

A. Name of Initial Receiving Water(s): _____

☐ Trout Stream ☐ Warm Water Fisheries Stream

B. Name of Municipal Storm Sewer System Owner/Operator: _____

Name of Receiving Water(s): _____

☐ Trout Stream ☐ Warm Water Fisheries Stream

C. ☐ Sampling of Outfall(s) ☐ Sampling of Receiving Stream(s) ☐ Trout Stream

Number of Outfalls: _____ Appendix B NTU Value: _____ Surface Water Drainage Area: _____

IV. ATTACHMENTS. (Check those that apply.)

Indicate below the items attached to this Notice of Intent:

_____ Location map showing the receiving stream(s), outfall(s) or combination thereof to be monitored.

_____ Erosion, Sedimentation and Pollution Control Plan (if project is greater than 50 acres or if project in areas without local Issuing Authorities regardless of acreage).

_____ List of known secondary permittees.

_____ Schedule for the timing of the major construction activities.

V. CERTIFICATIONS. (Owner or Operator or both to initial as applicable.)

_____I certify that the receiving water(s) or the outfall(s) or a combination of receiving water(s) and outfall(s) will be monitored in accordance with the Erosion, Sedimentation and Pollution Control Plan.

_____I certify that the Erosion, Sedimentation, and Pollution Control Plan (Plan) has been prepared in accordance with Part IV of the General NPDES Permit GAR100001, GAR 100002 or GAR 100003, the Plan will be implemented, and that such Plan will provide for compliance with this permit.

_____I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner's Printed Name: _____ Title: _____

Signature: _____ Date: _____

Operator's Printed Name: _____ Title: _____

Signature: _____ Date: _____

Instructions
Notice of Intent - Primary Permittee
For Storm Water Discharges
Associated With Construction Activity
To Be Covered Under The NPDES General Permit
Who must file a Notice of Intent (NOI) Form

This Notice of Intent must be typed. Any NOI that contains illegible information will not be accepted, will be returned, and the site will not be granted Permit coverage. All information on this NOI must be submitted to be a valid Notice. Any information requested on the NOI that is not applicable to the owner and operator or to the site must be marked "N/A".

The Owner and Operator of an activity that has a discharge of storm water from a site where construction activities occur must apply for a National Pollutant Discharge Elimination System (NPDES) Permit. The Georgia Environmental Protection Division has issued this General NPDES Permit for storm water discharges from construction activities with an effective date of August 12, 2003. The Permit is available for review at EPD's offices and on EPD's web page at www.dnr.state.ga.us/dnr/environ/. It is highly recommended that the permittee read and understand the terms and conditions of the Permit prior to submitting a NOI for coverage under this Permit. Contact EPD at the Regional Office or District Office shown on the next page for assistance in completing this NOI.

Where to file NOI Forms -- The NOI and attachments must be sent to the Regional Office or District Office shown on the next page. Please submit only the first two pages of this document plus your attachments, if necessary.

Section I. Site / Primary Permittee Information
Enter the information required. The site/project name is the physical location of the construction activity. Should the site lack a street address, sufficiently describe the facility location so that it can be found by district personnel. If additional space is needed, attach the description to the notice.

The facility contact is the person who the primary permittee has assigned the responsibility for the daily on-site operational control. Please do not leave any blanks in this section.

Section II. Site Activity Information
The start date and completion date are expected for the construction activity for which this NOI is applicable.

Estimated disturbed acreage is the total number of acres, **to the nearest 1/10 acre,** that will be disturbed under this NOI (this includes disturbances by the primary and all secondary permittees.)

Section III. Receiving Water Information
If the facility discharges storm water directly or indirectly (but not through a MS4) to the receiving water(s), enter the name(s) of the receiving water(s) and indicate whether the water(s) is a trout stream or a warm water fisheries stream. Attach to this notice a written description and a map of the location of the receiving water(s).

If the storm water discharges to a municipal separate storm sewer system (MS4), enter the name of the operator of the MS4 (e.g., city name or county name) and the name of the receiving water at the point of discharge from the MS4. A MS4 is defined as a conveyance or system of conveyances (including: roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is owned or operated by a city or county which is designed or used for collecting or conveying storm water. It may be necessary to contact the city or county that operates the MS4 to determine the name of the receiving waters. Indicate whether the receiving water(s) is a trout stream or a warm water fisheries stream.

Section IV. Certifications
All applicants must sign this certification. Permittees shall initial next to the applicable certification statements on the line provided. Federal and State statutes provide specific requirements as to whom is authorized to sign Notice of Intents. Signing of a Notice of Intent by others is not a valid submittal. Please be aware Federal and State statues provide severe penalties for submitting false information on this application form. Federal and State regulations require this application to be signed as follows:

- For a corporation: by a responsible corporate officer;
- For a partnership or sole proprietorship: by a general partner or the proprietor; or
- For a municipality, state, Federal or other public facility: by either a principal executive officer or ranking elected official.

GEORGIA EPD DISTRICT OFFICES

All Notice of Intents, Notice of Terminations, Erosion, Sedimentation and Pollution Control Plans, Comprehensive Monitoring Programs, certifications, reports, and any other information shall be sent to the following District offices of EPD:

A. For facilities/sites located in the following counties: Bibb, Bleckley, Chattahoochee, Crawford, Dooly, Harris, Houston, Jones, Lamar, Macon, Marion, Meriwether, Monroe, Muscogee, Peach, Pike, Pulaski, Schley, Talbot, Taylor, Troup, Twiggs, Upson

Information shall be submitted to:

West Central District Office
Georgia Environmental Protection Division
2640 Shurling Drive
Macon, GA 31211-3576
(478) 751-6612

B. For facilities/sites located in the following counties: Burke, Columbia, Emanuel, Glascock, Jefferson, Jenkins, Johnson, Laurens, McDuffie, Montgomery, Richmond, Screven, Treutlen, Warren, Washington, Wheeler, Wilkinson

Information shall be submitted to:

East Central District Office
Georgia Environmental Protection Division
1885-A Tobacco Road
Augusta, GA 30906-8825
(706) 792-7744

C. For facilities/sites located in the following counties: Baldwin, Banks, Barrow, Butts, Clarke, Elbert, Franklin, Greene, Hall, Hancock, Hart, Jackson, Jasper, Lincoln, Madison, Morgan, Newton, Oconee, Oglethorpe, Putnam, Stephens, Taliaferro, Walton, Wilkes

Information shall be submitted to:

Northeast District Office
Georgia Environmental Protection Division
745 Gaines School Road
Athens, GA 30605-3129
(706) 369-6376

D. For facilities/sites located in the following counties: Clayton, Coweta, DeKalb, Fayette, Gwinnett, Heard, Henry, Rockdale, Spalding

Information shall be submitted to:

Mountain District - Atlanta Satellite
Georgia Environmental Protection Division
4244 International Parkway, Suite 114
Atlanta, GA 30354-3906
(404) 362-2671

E. For facilities/sites located in the following counties: Bartow, Carroll, Catoosa, Chattooga, Cherokee, Cobb, Dade, Dawson, Douglas, Fannin, Floyd, Forsyth, Fulton, Gilmer, Gordon, Habersham, Haralson, Lumpkin, Murray, Paulding, Pickens, Polk, Rabun, Towns, Union, Walker, White, Whitfield

Information shall be submitted to:

Mountain District - Cartersville Office
Georgia Environmental Protection Division
P.O. Box 3250
Cartersville, GA 30120-1705
(770) 387-4900

F. For facilities/sites located in the following counties: Appling, Atkinson, Bacon, Brantley, Bryan, Bulloch, Camden, Candler, Charlton, Chatham, Clinch, Coffee, Effingham, Evans, Glynn, Jeff Davis, Liberty, Long, McIntosh, Pierce, Tattnall, Toombs, Ware, Wayne

Information shall be submitted to:

Coastal District- Brunswick Office
Georgia Environmental Protection Division
One Conservation Way
Brunswick, GA 31520-8687
(912) 264-7284

G. For facilities/sites located in the following counties: Baker, Ben Hill, Berrien, Brooks, Calhoun, Clay, Colquitt, Cook, Crisp, Decatur, Dodge, Dougherty, Early, Echols, Grady, Irwin, Lanier, Lee, Lowndes, Miller, Mitchell, Quitman, Randolph, Seminole, Stewart, Sumter, Telfair, Terrell, Thomas, Tift, Turner, Webster, Wilcox, Worth

Information shall be submitted to:

Southwest District Office
Georgia Environmental Protection Division
2024 Newton Road
Albany, GA 31701-3576
912) 430-4144

For Official Use Only

NOTICE OF TERMINATION

State of Georgia
Environmental Protection Division
To Cease Coverage Under General Permit
To Discharge Storm Water Associated With Construction Activity

I. Permit Type: (Choose Only One)

☐ GAR 100001-Stand Alone ☐ GAR 100002-Infrastructure ☐ GAR 10003Common Development

II. SITE / PERMITTEE INFORMATION

Site/Project Name: _____

GPS Location of Construction Exit: _____

Site Location and Street Address: _____

City: _____ County: _____

Subdivision Name: _____ Lot Number: _____

Owner's Name: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Operator's Name: _____ Phone: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Type of Permittee: ☐ Primary ☐ Secondary ☐ Tertiary

Facility Contact: _____ Phone: _____

If Applicable:

Primary Permittee's Name: _____ Phone: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Number of Secondary Permittees: _____

III. SITE ACTIVITY INFORMATION

☐ Construction Activity Completed ☐ No Longer Owner / Operator of Construction Activity

Construction Activity: ☐ Commercial ☐ Industrial ☐ Municipal ☐ DOT ☐ Utility

☐ Residential ☐ Primary Permittee of a Subdivision Development, or

☐ Individual Lot, or

☐ Individual Lot within a Surface Water Drainage Area where the Primary Permittee has ceased Permit Coverage

Name of Initial Receiving Water(s): _____

Name of Municipal Storm Sewer System Owner/Operator: _____

Name of Receiving Waters: _____

IV. CERTIFICATIONS. (Owner or Operator or both to initial as applicable.)

_____ 1. I certify under penalty of law that either: (a) all storm water discharges associated with construction activity from the portion of the construction activity where I was an Owner or Operator have ceased or have been eliminated; (b) all storm water discharges associated with construction activity from the identified site that are authorized by General NPDES Permit number indicated in Section I of this form have ceased; (c) I am no longer an Owner or Operator at the construction site and a new Owner or Operator has assumed operational control for those portions of the construction site where I previously had ownership or operational control; and/or if I am a primary permittee filing this Notice of Termination under Part VI.A.2. of this permit, I will notify by written correspondence to the subsequent legal title holder of any remaining lots that these lot Owners and /or Operators will become tertiary permittees for purposes of this permit and I will provide these tertiary permittees with the primary permittee's Erosion, Sedimentation and Pollution Control Plan. I understand that by submitting this Notice of Termination, that I am no longer authorized to discharge storm water associated with construction activity by the general permit, and that discharging pollutants in storm water associated with construction activity to waters of Georgia is unlawful under the Georgia Water Quality Control Act and the Clean Water Act where the discharge is not authorized by a NPDES permit.

_____ 2. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner's Printed Name:_____Title:_____

Signature:_____Date:_____

Operator's Printed Name:_____Title:_____

Signature:_____Date:_____

Instructions
Notice of Termination (NOT) For Storm Water Discharges Associated With Construction Activity

NPDES General Permit

Who must file a Notice of Termination (NOT) Form

This Notice of Termination must be typed. Any NOT that contains illegible information will not be accepted. All information on this NOT must be submitted to be a valid Notice. Any information requested on the NOT that is not applicable to the owner or operator or the site must be marked "N/A".

When the facility/site has been finally stabilized and all storm water discharges from construction activities authorized by the NPDES General Permit number indicated in Section I of this form have ceased or when the Owner/Operator of the site changes, the Owner/Operator of the facility/site must submit a Notice of Termination (NOT). Final Stabilization means that all soil disturbing activities at the site have been completed, and that for unpaved areas and areas not covered by permanent structures, 100% of the soil surface is uniformly covered in permanent vegetation with a density of 70% or greater, or equivalent permanent stabilization measures (such as the use of rip rap, gabions, permanent mulches or geotextiles) have been used. Permanent vegetation shall consist of: planted trees, shrubs, perennial vines; a crop of perennial vegetation appropriate for the time of year and region; or a crop of annual vegetation and a seeding of target crop perennials appropriate for the region. Final stabilization applies to each phase of construction

Where to file NOT Forms - The NOT and attachments must be sent to the Regional Office or District Office shown on the next page. Please submit only the first two pages of this document plus your attachments, if necessary.

Section I. Permit Type - Indicate the NPDES General Permit number for which this form is being submitted.

Section II. Site / Permittee Information

Enter the information required. The site/project name is the physical location of the construction activity. Should the site lack a street address, sufficiently describe the facility location so that it can be found by district personnel. **Should additional space be needed, attach the description to the notice.**

The facility contact is the person who the Owner and Operator has assigned the responsibility for the daily on-site operational control. Please do not leave any blanks in this section.

Section III. Site Activity Information

Indicate by marking the appropriate block whether this NOT is submitted due to completion of the construction activity or a change in the Owner and Operator of the construction activity.

Mark the appropriate box to indicate the class of construction activity that was conducted at the site. For residential sites, also mark the block as either a subdivision development or an individual lot.

Section IV. Certifications

All applicants must sign this Notice. Permittees shall initial next to the applicable certification statements on the line provided. Federal and State statutes provide specific requirements as to whom is authorized to sign Notice of Terminations. Signing of a Notice of Termination by others is not a valid submittal. Please be aware Federal and State statues provide severe penalties for submitting false information on this application form. Federal and State regulations require this application to be signed as follows:

- For a corporation: by a responsible corporate officer;
- For a partnership or sole proprietorship: by a general partner or the proprietor; or
- For a municipality, state, Federal or other public facility: by either a principal executive officer or ranking elected official.

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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
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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
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One Conservation Way
Brunswick, GA 31520-8687
(912) 264-7284

G. For facilities/sites located in the following counties: Baker, Ben Hill, Berrien, Brooks, Calhoun, Clay, Colquitt, Cook, Crisp, Decatur, Dodge, Dougherty, Early, Echols, Grady, Irwin, Lanier, Lee, Lowndes, Miller, Mitchell, Quitman, Randolph, Seminole, Stewart, Sumter, Telfair, Terrell, Thomas, Tift, Turner, Webster, Wilcox, Worth

Information shall be submitted to:

Southwest District Office
Georgia Environmental Protection Division
2024 Newton Road
Albany, GA 31701-3576
(912) 430-4144

Environmental Protection

SECTION 01355A
ENVIRONMENTAL PROTECTION

1.0 GENERAL

1.1 GENERAL REQUIREMENTS

1.2 SUBCONTRACTORS

1.3 ENVIRONMENTAL PROTECTION PLAN

1.4 PROTECTION FEATURES

1.5 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

1.6 NOTIFICATION

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1 LAND RESOURCES

3.2 WATER RESOURCES

3.3 AIR RESOURCES

3.4 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

3.5 RECYCLING AND WASTE MINIMIZATION

3.6 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

3.7 BIOLOGICAL RESOURCES

3.8 INTEGRATED PEST MANAGEMENT

3.9 PREVIOUSLY USED EQUIPMENT

3.10 TRAINING OF CONTRACTOR PERSONNEL

3.11 POST CONSTRUCTION CLEANUP

1.0 GENERAL

1.1 General Requirements

1.1The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations

1.2. SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.3. ENVIRONMENTAL PROTECTION PLAN

1.3.1. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. In the environmental plan, The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit the Environmental Protection Plan for review and approval by the Contracting Officer. Prior to implementation of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.3.2. Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.3.3. Contents

The environmental protection plan shall include, but shall not be limited to, the following:

1.3.3.1. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

1.3.3.2. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable

1.3.3.3. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel

1.3.3.4. Description of the Contractor's environmental protection personnel training program

1.3.3.5. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

1.3.3.6. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.

1.3.3.7. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

1.3.3.8. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

1.3.3.9. Drawing showing the location of on-installation borrow areas.

1.3.3.10. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1.3.3.10.1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

1.3.3.10.2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup

1.3.3.10.3. Training requirements for Contractor's personnel and methods of accomplishing the training

1.3.3.10.4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

1.3.3.10.5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency

1.3.3.10.6. The methods and procedures to be used for expeditious contaminant cleanup

1.3.3.11. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous

solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted.

1.3.3.12. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.

1.3.3.13. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

1.3.3.14. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated. Reference this plan in the Storm water Polution Prevention Plan, as applicable.

1.3.3.15. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented and any required permits. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

1.3.3.16. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

1.3.3.17. A pesticide treatment plan shall be included and updated, as information becomes available. The plan shall include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional Installation specific requirements. The Contractor shall follow AR 200-5 Pest Management, Chapter 2, Section III "Pest Management Records and Reports" for data required to be reported to the Installation.

1.4. PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor develop a plan that depicts how it will protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.5. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.6. NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1. LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.1.1. Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted

during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.1.2. Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.1.3. Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The Contractor shall coordinate with approving authorities (federal, state, etc.) for specific requirements to be included in the plan. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs). BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. Any temporary measures shall be removed after the area has been stabilized.

3.1.4. Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.2. WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

3.2.1. Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and local governments or impede state-designated flows.

3.2.2. Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

3.3. AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

3.3.1. Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

3.3.2. Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.3.3. Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the state and Installation rules.

3.3.4. Burning

Burning will not be allowed on the project site unless specified in other sections of the specifications or authorized in writing by the Contracting Officer. The specific time, location, and manner of burning shall be subject to approval.

3.4. CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.4.1. Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. The Contractor shall comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.4.2. Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area

when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.4.3. Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262 . The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off Government property in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer and the Facility Environmental Office. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

3.4.4. Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations.

3.5. RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project. .Fueling areas shall be lined and bermed and discharge points for site run-off shall have storm water control structures established. A liquid containment clean-up kit shall be available at the fueling area.

3.6. HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area are shown on the drawings. The Contractor shall protect these resources and shall be responsible for their preservation during the life of the Contract. If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.7. BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.8. INTEGRATED PEST MANAGEMENT

In order to minimize impacts to existing fauna and flora, the Contractor, through the Contracting Officer, shall coordinate with the Installation Pest Management Coordinator (IPMC) at the earliest possible time prior to pesticide application. The Contractor shall discuss integrated pest management strategies with the IPMC and receive concurrence from the IPMC through the COR prior to the application of any pesticide associated with these specifications. Installation Pest Management personnel shall be given the opportunity to be present at all meetings concerning treatment measures for pest or disease control and during application of the pesticide. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.8.1. Pesticide Delivery and Storage

Pesticides, approved for use on the Installation, shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses.

3.8.2. Qualifications

For the application of pesticides, the Contractor shall use the services of a subcontractor whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.8.3. Pesticide Handling Requirements

The Contractor shall formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions.

3.8.4. Application

Pesticides shall be applied by a State Certified Pesticide Applicator in accordance with EPA label restrictions and recommendation.

3.9. PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

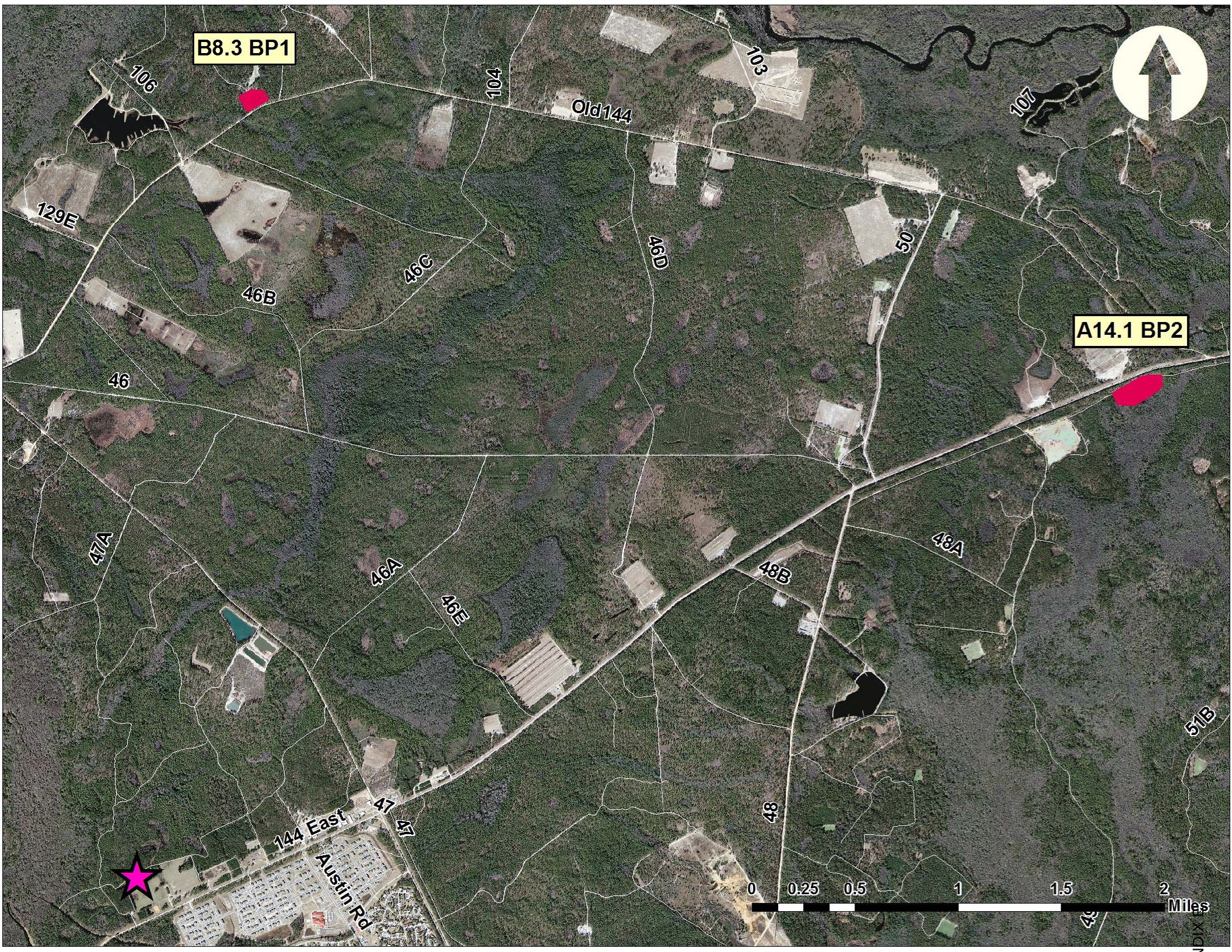
3.10. TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.11. POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

Borrow Pit Procedures


B8.3 BP1
A14.1 BP2
106
104
103
107
Old144
129E
46C
46D
50
46B
46
47A
46A
46E
48A
48B
51B
48
47
144 East
Austin Rd
0
0.25
0.5
1
1.5
2
Miles

FORT STEWART & HUNTER ARMY AIRFIELD
ENVIRONMENTAL DIVISION BORROW PIT EXCAVATION APPLICATION/PLAN

Environmental Branch
1137 Frank Cochran Drive
Fort Stewart, Georgia 31314
912/767-9779 (fax)
912/767-9443 (office)

FOR DEPARTMENT USE ONLY
Project Number:
Training Area:
Operation:
Acreage:
Amount of material required (cubic yards):

APPLICATION FOR BORROW PIT EXCAVATION PERMIT

Instructions: An application for a permit must include the Borrow Pit Operator's Excavation Plan and must be factual and complete. The Application and Plan (original and two [2] copies) must be submitted to the address shown above.

Pursuant to the requirements of the Fort Stewart/HAAF DPW Borrow Pit Management Plan.

1. Applies for a permit to conduct a Borrow Pit Excavation operation as represented in the attached Borrow Pit Excavation Plan;
2. Specifically grants to the applicant or any authorized representative of the applicant the right of entry and travel upon affected lands;
3. Certifies the information provided in or submitted by the Contracting Officer's Representative (COR) on behalf of the Borrow Pit Operator or Contractor as a part of this Borrow Pit Excavation Plan is true and correct, and the COR will ensure the Borrow Pit Operator agrees to comply with provisions of the Fort Stewart/HAAF DPW Borrow Pit Management Plan as specified herein.

Government COR Signature (Date)	Equipment Operator Name & Title
Government COR Name	Operator Contracting Company
Government COR Phone #	Company Address
Government COR Email Address	City, State, Zip
Government COR Building & Office Numbers	Telephone
Project Name	Borrow Pit Identification

The approval of this Application and Borrow Pit Excavation does not relieve the Operator of any obligation or responsibility for complying with the provisions of any other laws or regulations of any other federal, local or state authority.

FOR DEPARTMENT USE ONLY

Plan Recommendation: Approval/Disapproval	**Plan Recommendation: Approval/Disapproval**
Reviewer (Date)	Program Manager (Date)

Comments:

_____
Plan Number (Borrow Pit ID)
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BORROW PIT EXCAVATION LAND USE PLAN

NOTE: Any corrections, changes of information or other alternatives of content of this Plan and attachment must be initialed and dated by the Operator and the Fort Stewart Environmental Branch.

I. OPERATOR AND GENERAL INFORMATION

1. DESCRIPTION OF EXCAVATION OPERATOR'S COMPANY *(hereinafter "Operator")*

Name of Company: _____

Address: _____

Telephone: _____

Type of Business: ( ) Corporation ( ) Partnership ( ) Proprietorship ( ) Other

Onsite Manager/Representative: _____

Title: _____ Telephone: _____ Mobile phone: _____

Government Contracting Officer Representative: _____

Training Area Location of Borrow Pit Operation: _____

Borrow Pit Location within T.A.: _____

Environmental Office Contact: _____ Title: _____

Address: _____ Telephone: _____

3. GENERAL SITE LOCATION

Grid Coordinate of Borrow Pit Excavation Operation: _____

_____

_____

_____

4. MATERIAL TO BE EXCAVATED AND METHOD

Mineral/Material: _____

Method of Removal: _____

_____

5. SCHEDULES FOR EXCAVATION AND RECLAMATION

Anticipated Date to Begin _____
(Month/Year)

Anticipated Date to Complete _____
(Month/Year)

Anticipated Date of Final Reclamation _____
(Month/Year)

Plan Number (Borrow Pit ID)
Page 3

NOTE: If excavation is completed prior to the above stated date, the Operator shall notify DPW three (3) days prior to completion regardless of any stated or implied completion date. An inspection of the Borrow Pit is required by DPW to process a release. Failure to comply with the plan as stated herein will require notification to the COR before a release is authorized.

6. INFORMATION ON OTHER PERMITS

A. List any Georgia Surface Mining Permits suspended revoked, or for which a bond was forfeited:

B. List other environmental permits being applied for in relation to this operation (i.e. erosion/sedimentation, storm water, etc…)

C. List other local permits being applied for in relation to this operation:

II. PERFORMANCE CRITERIA FOR BORROW PIT EXCAVATION PLAN AND DEWATERING ACTIVITIES

1. Plan Drawings (attached) shall show but are not limited to the metes and bounds of the property to be excavated, the limits of the affected acreage, the natural drainage features and water disposal, the initial site preparation and overburden (spoil) area(s), the erosion and sedimentation controls, the ingress/egress area(s), the direction, detail and schedule of excavation advancement, the area to be left undisturbed (buffer) where necessary, and the plan that shows projected final reclamation of the site.

2. The Operator will implement site survey control to ensure that all acres affected by the excavation operation will be on designated, permitted lands. Survey control will be accomplished through the use of permanent accessible benchmarks, survey control stakes, and/or boundary markers that designate and/or delineate all permitted acreage. Survey control shall be as indicated on the boundary survey, drawings, maps, etc. included as part of this Borrow Pit Excavation Plan (attached). Where necessary, for construction or operation proposes, vertical as well as horizontal survey control will be established and maintained.

MEANS	**Identifier/Location**
Property Boundary Markers	
Affected Acreage Markers	
Dredge limits	
Clearing Limits	
Other:	
Permanent Survey Control Markers	
Horizontal: (Identifier & Location)	
Vertical: (Identifier & Location)	
Known Elevation:	
Assumed Elevation:	

3. The Operator will ensure that all measures and facilities for control of erosion and sedimentation during site preparation, operation, and/or reclamation activities shall adhere to the following:

A. Erosion and sedimentation control measures and facilities will be employed prior to or concurrent with clearing, grading, overburden removal, access or other land disturbing activities for preparation or operation of the site. Provisions will be made for treatment or control of any source of sediments.

B. The Operator, so as to be effective, whether temporary or permanent, shall continuously maintain all erosion and sedimentation control measures or facilities.

C. Sediment in surface runoff water shall be trapped by use of debris basins, sediment basins, silt traps, sediment barriers or similar structures.

D. Permanent vegetation shall be installed as soon as possible. Temporary vegetation and/or mulch shall be employed where necessary to protect exposed critical areas until permanent vegetation or stabilization is attained.

E. Natural vegetation shall be retained, protected and supplemented wherever feasible to provide for natural buffer areas.

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F. Diversions, dikes, and berms shall be employed to retain, direct and control surface water runoff from affected areas into sediment control structures.

G. All surface water discharges shall be controlled and released at a non-erosive velocity onto stabilized areas or into stabilized channels.

H. Constructed slopes, at the least should be four horizontal to one vertical (4:1) except where may be approved otherwise in this as shown in the attached Plan/drawings. All slopes shall be marked so as to prevent foot or vehicle traffic from inadvertently falling into the pit. Fill and cut slopes shall be designed and constructed to prohibit slumping or shear failures. Prior to final grading, all slopes will be blended in with the original existing topography. Slope grades shall be uniform. Mechanical or vegetative or both stabilization measures shall be employed as soon as practical to prevent erosion.

***NOTE**: The Operator may refer to design criteria in the "Manual for Erosion and Sedimentation Control in Georgia", published by the State Soil and Water Conservation Commission as a guide or through the use of alternate design criteria which conform to sound conservation and engineering practices.*

4. All permanent landform changes including, but not limited to, berms, drainage structures, surface water channel modifications, etc., shall be constructed in a manner to protect against failure, subsidence and/or erosion and will be permanently stabilized upon completion of construction.

5. Whenever a site lies contiguous to any waters of the State or whenever, in the judgment of the Fort Stewart Environmental Office, proposed operations at such site will adversely affect any portion of a watershed of the State, the Operator will follow sound engineering and conservation measures to provide protective barriers, such as dams, berms, silt ponds, or other similar structures, between the land to be affected and waters or watersheds involved. All such structures are to be approved by the Fort Stewart Environmental Office as a part of this Plan and are to be substantial for the protection of contiguous natural resources of the State. All structures referred to above are to be constructed a reasonable distance from waters of the State, or that portion of a watershed of the State that may be adversely affected, as determined by the Fort Stewart Environmental Office. Borrow Pit Excavation, if conducted within the 100-year floodplain, shall be done in accordance with any applicable local floodplain management ordinance, if any. Where a local floodplain management ordinance does not exist, the Operator shall ensure that the excavation activities are conducted so as to minimize flooding, erosion and/or sedimentation on adjacent upstream or downstream properties.

6. Before natural creeks, streams, rivers, lakes, or other bodies of water may be altered in course or relocated by the Operator, the Environmental Office as a part of this Plan must approve the plan for such alteration or relocation.

7. The Operator shall obtain required storm water permits and maintain compliance with the Water Quality Control Rules, Chapter 391-3-6-.16 (Storm Water Permit Requirements).

8. If archaeological or fossil resources are discovered during the course of an excavation; continued excavation and disturbance of the site will be suspended and the DPW, Environmental Division (767-2010) will be notified immediately. The ED will evaluate the significance of the finding and issue new guidance.

   A. Alternatives or measures to avoid or reduce effects on the historic properties;

   B. Determinations of effects on alteration to features of the property's location, setting, or use;

   C. Determinations of adverse effects which may diminish the integrity of the property's location, design, setting, materials, workmanship, or other structural detail.

Adverse effects on historic properties include, but are not limited to:

A. Physical destruction, damage, or alteration of all or part of the property;
B. Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
C. Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting.

***** Anytime archaeological or paleontological materials (e.g. artifacts, arrowheads, fossils, etc…) are encountered, the Fort Stewart Cultural Resources Section must be immediately notified at (912) 767-0992/2010.***

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9. Adverse effects from the introduction of atmospheric elements shall be defined as repetitive non-conformance with the National Ambient Air Quality Standards (NAAQS) regarding fugitive dust particles of 10 microns and smaller which may leave the subject property as set forth by the Environmental Protection Agency.

10. Adverse effects from the introduction of audible elements shall be defined as repetitive non-compliance with the Georgia Blasting Standards Act (State of Georgia House Bill 824) regarding atmospheric overpressure limits as governed by the Department of the Fire Marshal for the State of Georgia. Avoidance of adverse effects by the introduction of visual elements shall be accomplished wherever practical by maintaining visual barriers, either by undisturbed buffer areas or manmade structures such as berms, as outlined in the approved Excavation Land Use Plan.

11. It is incumbent upon the Operator to provide satisfactory evidence to the Fort Stewart Environmental Office that alternatives have been considered and this plan contains appropriate measures to provide for minimizing and/or mitigating any adverse effects. If after the excavation operation begins adverse effects become evident, the Fort Stewart Program Manager will give the Operator written notice of the occurrence of such adverse effects. The Operator will then have thirty (30) days to mitigate the adverse effects. In certain cases depending on the nature of the impact the Operator may be required to cease work immediately. If during the thirty-day period no successful action is taken by the Operator to mitigate the adverse effects, the Operator upon notice from the Fort Stewart Environmental Office will cease operations. The Operator will then provide to the Fort Stewart Environmental Office, within ten (10) days, an assessment of the effects and a plan to mitigate the impact. Upon approval by the Fort Stewart Program Manager, the Operator may be allowed to resume excavation operations.

12. ***When Federally listed Endangered and/or Protected Plant/Animal Species are encountered the operator must immediately stop all excavation activities, and contact the Fort Stewart Fish and Wildlife Branch (912) 767-2584.***

13. The Operator shall post an identification sign, which shall display the Operator's Name, Borrow Pit Name/Number, and Permit at the entrance of the Borrow Pit.

14. In the event the Operator ceases active excavation, all exposed critical disturbed areas will be stabilized and the Operator will maintain all measures employed for erosion and sedimentation control. Should extraction of mineral or material cease prior to completion of the Excavation Plan, the Operator shall complete the reclamation as provided for within thirty (30) days from date of cessation.

III. PERFORMANCE CRITERIA FOR RECLAMATION

1. All applicable parts of Section II, 3. Erosion and Sedimentation Control apply including the following:

   A. Reclamation shall be concurrent with excavation activity as lands become available.

   B. Reclamation objectives as shown on Borrow Pit Excavation Plan will be achieved unless Operator submits an amendment.

   C. Following the removal or disposal of all structures, equipment, stock-piles, excavation refuse, and all other materials associated with surface excavation, the Operator will reclaim all affected land in accordance with the provisions of this Plan. All lands except those specifically exempted in this Plan will have a neat, clean appearance, and contain a high quality permanent vegetative cover.

   D. Vegetative Stabilization (planting) Requirement: The Operator will provide a high quality, enduring vegetative ground cover of properly planted and nurtured perennial vegetative species suited for the specific planting zone involved. The perennial vegetative species shall provide a complete, thorough stabilization by establishing root mass and cover for the total disturbed area.

   E. Structural Stabilization: Permanent structural control measures, i.e. stone riprap, ditches, berms, paved chutes, or piped down drains, etc, shall be utilized to convey concentrated storm flows down slopes to stable outlets. These measures are necessary in areas where concentrated storm flow velocities may cause erosion.

2. Specific requirements the Operator will adhere to:

   A. The Operator shall grade all peaks, ridges, and valleys resulting from surface excavation and backfill all pits and trenches resulting from same in a manner to minimize any hazardous effects of excavation adjacent to any Fort Stewart, State, or County maintained road.

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Page 6

B. All affected lands requiring backfilling as stated in the Reclamation Objective of this Plan shall be backfilled utilizing overburden, spoil material, and/or borrow from affected (permitted) land unless approval from the Fort Stewart Program Manager is obtained to utilize other materials. Sound engineering principles shall be applied to ensure that affected lands, as reclaimed, meet the intended use.

C. Immediate erosion control measures shall be applied to protect the topsoil cover until an adequate vegetative cover is established.

D. All high-walls occurring in unconsolidated materials shall be reduced by grading to blend the high-wall with the existing original site topography. High-walls occurring in consolidated material shall be reduced as much as may be practicable. If high walls are to remain they should have a constructed bench with reverse slope to the wall shall be provided at the top of. Any remaining high-walls of fifty (50) feet or greater shall be fenced or "bermed" at the top beyond the initial bench. Such fencing or berms shall be sufficient to provide an adequate degree of protection or warning to foot or vehicle traffic.

E. All affected land, unless otherwise specified in this Plan, shall be graded into a rolling topography and blended in with the existing landscape. All graded areas shall be free of debris, stockpiled materials, boulders, etc. that would interfere with the intended use and/or maintenance of the area.

F. Constructed slopes, at the least should be four horizontal to one vertical (4:1) except where may be approved otherwise in this Plan. Fill and cut slopes shall be designed and constructed to prohibit slumping or shear failures. Prior to final grading, all slopes will be blended in with the original existing topography. Slope grades shall be uniform. Mechanical or vegetative or both stabilization measures shall be employed as soon as practical to prevent erosion.

G. Overburden, spoil or refuse, when used as backfill material, for berms or other construction, shall be segregated as necessary, emplaced and compacted in accordance with sound engineering practices to provide for the purpose intended. Refuse does not include any material, which may be classified as solid waste under provisions of the Georgia Comprehensive Solid Waste Management Act.

H. All new landform structures created with the use of overburden (spoil) or refuse materials shall be constructed in a manner to protect against failure, subsidence and/or erosion and will be permanently stabilized upon completion of construction.

I. When lakes/ponds are proposed, the minimum acceptable design criteria shall meet or exceed those criteria in: Agriculture Handbook Number 590, Ponds – Planning, Design, Construction published by the United States Department of Agriculture, Soil Conservation Service, latest issue. When the dam structure proposed is 35 feet or higher, other acceptable design criteria shall be used.

J. Water shall be of a quality suitable for the intended use. The lake/pond shall have a safe access and be free of underwater hazards. All above water portions of the lake/pond site development shall be re-vegetated with an enduring permanent vegetative cover.

K. Under provisions of the Georgia Safe Dams Act, no permit shall be required to be obtained by the Operator if a dam is constructed with or incidental to "surface mining" as defined in the Georgia Surface Mining Act. If the dam so constructed is classified by the Fort Stewart Environmental Office as a Category I dam, then, before such lake is deemed acceptable reclamation and the Operator is released from his obligations under the Georgia Surface Mining Act, as amended, the Operator will obtain a permit for such dam under the Safe Dams Act.

L. Any proposal for the construction of wetlands as a reclamation objective shall be consistent with accepted practices utilizing the Best Available Technology (BAT) and include the best management practices (BMP's) to attain the desired result. The proposal shall be attached to and be a part of this Plan subject to approval by the Fort Stewart Environmental Office.

M. ***The Operator shall notify the Borrow Pit Management representative for Release upon completion of reclamation responsibilities on affected acreage***. A report may be filed on reclamation activities that partially complete the Operator's full responsibilities for total acreage affected.

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Page 7

* The following pass must be obtained from the Range Control Office ***before entering*** any Training Area.

POV PASS FOR FORT STEWART ROADS AND TRAINING AREAS

TO: Appropriate Range Guards and/or military police

FROM: Chief Range Division, Fort Stewart Ga. 31314 (912) 767-877/8100

The following individual(s) is/are authorized access to the following Training Area/Facilities beginning _____ thru _____ _____
(Start Date) (End Date)

_____ _____
Rank, Name (Last, First) Training Area(s) Facility

_____ _____
Organization Phone Number

Reason for Access Pass

Vehicle (Model) Year (License Plate Number)
(State)

Statement of understanding

I understand that I am permitted to use only the above listed training area(s) and roads leading to and from that area. I may only use that area/facility for the date and time listed below. I understand that I am using these roads at my own risk, and the Commander, 3rd infantry Division and Fort Stewart Assume no responsibility for my safety.

Permanently off limit areas- High Risk Dud Area: Artillery Impact Area, Aerial Gunnery Ranges 1-3 (AGR), EOD Area, Tank Gunnery Ranges (B9-16) and small arms impact area, Luzon Range. Abandoned Ranges located in C1 and C4 training areas.

CAUTION: DO NOT DISTURB UNEXPLODED AMMUNITION! Mark location and notify Range Control (912) 767-8777 or call the Military Police at 911.

I have been briefed and understand the OFF-LIMITS areas and the limitations of this pass. I will notify Range Control at 767-8777 prior to entering an area and upon departure.

_____ _____
Chief, Range Division Bearer's Signature

POST ON DASHBOARD OF VEHICLE

ATTACH PLAN DRAWINGS:

Soil Treatment Requirements

Pre-construction treatment for subterranean termite Contract Specification:

1. **SOIL TREATMENT**: Treatment will be applied within three days (in the absence of rain) for all critical phases of construction: pouring concrete slab on grade, pouring of basement slab and prior to backfilling around concrete or masonry foundations and during final grading completion for structures. Application will be made in strict accordance will manufacturer's label.

1.1 **Labeling** information shall be submitted not less than seven days prior to soil treatment is scheduled to occur. All treatment agents shall be delivered to the job site in un-opened containers, bearing the original manufacturers labels. Labels shall bear evidence of registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

1.2 **Approved** termiticide agent will be restricted to the products listed below that have been approved for use in the State of Georgia and approved for the use on Fort Stewart and Hunter AAF. Other products contrary to the list are not approved.

Termidor SC	AI: Fipronil 9.1%	EPA Reg. # 7969-210
Termidor WG	AI: Fipronil 80%	EPA Reg. # 7969-209
Premise 2 Insecticide	AI: Imidacloprid 21.4%	EPA Reg. # 432-1331

1.3 **Inspection** of chemical agent delivery, opening and application will be carried out by Mr. Charles Sikes (PMQAE, DPW), and Mr. Merritt Chambers (PM Supervisor, GSI Inc.) for all construction projects requiring treatment. All materials, equipment and means needed to handle, mix and apply treatments will be inspected for safety and accuracy before the application of chemical agent. Unacceptable materials shall be removed from the job site. Inspection agent shall be notified of treatment schedule at minimum 1 day prior to treatment.

1.4 **Only Applicators** with category # 30 (Wood Destroying Organisms) State certification will be allowed to apply termiticide on the Installation.

1.5 **Treatment** shall be the maximum allowable concentration for the chemical when used as a termiticide during soil treatment according to the label. Any variations will not be permitted.

1.6 **Record** of treatment(s) will be accurately documented and maintained by inspection agent at the time of treatment, along with documentation of services provided from the contractor conducting treatment as required by the State of Georgia.

1.7 **Warranty** of completed treatment shall be in writing and shall be valid for no less than five years after the completion of treatment(s). Warranty shall cover against the infestations or re-infestations by subterranean termites of the building or the buildings addition constructed under this contract, as well as cost of retreating.

Recycling Policy

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
954 WILLIAM H. WILSON AVENUE
FORT STEWART, GEORGIA 31314

REPLY TO
ATTENTION OF

IMSE-STW-IC

FEB 12 2007

MEMORANDUM FOR All Personnel, US Army Installation, Fort Stewart / Hunter Army Airfield, Georgia

SUBJECT: US Army Installation, Fort Stewart / Hunter Army Airfield Policy Memorandum # 8, Command Recycling Policy

1. REFERENCES.

a. Executive Order 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition, 14 September 1998.

b. Office of the Under Secretary of Defense, Acquisition and Technology, DoD Pollution Prevention Measure of Merit, 13 May 1998.

c. Assistant Chief of Staff, Installation Management, Memorandum, Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, 6 Feb 06.

d. Fort Stewart /Hunter Army Airfield, Directorate of Public Works (DPW), Environmental Division Recycling Information Sheet, 31 Mar 06.

2. PURPOSE. To provide guidance to all civilian (and/or military) personnel assigned to and/or under the operational control of the Installation Management Command, tenant organizations, contractors and personnel living and/or working at Fort Stewart / Hunter Army Airfield on the Command Recycling Program.

3. APPLICABILITY. These procedures are applicable to all civilian (and/or military) personnel assigned to and/or under the operational control of the Installation Management Command, tenant organizations, contractors and personnel living and/or working at Fort Stewart / Hunter Army Airfield.

4. POLICY. Executive Order 13101 and this policy are the guidelines for personnel on this installation when purchasing supplies and materials for all operations and contracts. Only designated products meeting the requirements of Executive Order 13101 will be purchased. These product categories include paper, construction products, landscaping products, paper products, non-paper office products, parks and recreation products, transportation and alternative fuel vehicles, and miscellaneous items. All office paper purchased must contain no less than 20 percent recycle content. However, 50 percent recycle materials is encouraged. Contact the DPW, Environmental Waste Management Section for a full list of required items or refer to www.epa.gov/cpg/products.html.

5. PROCEDURES.

a. All military units, installation activities, tenant organizations and contractors will:

(1) Establish a Recycling Program Standard Operating Procedure tailored to their organization for the management of recyclable materials. (Recycling programs will be randomly assessed by DPW Environmental Division for compliance).

(2) Appoint a Recycling Compliance Person/s (RCP). The RCP must attend the Installation ECO (Environmental Compliance Officer) course for training and instruction on current recycling procedures. Contact the DPW Environmental Division Office for ECO Course dates/times and location. DPW, Environmental personnel will be available for participation in contract site visits and kick-off meetings to clarify requirements as needed. All appointed RCP's will work directly with the DPW, Environmental Division to ensure program requirements are met. Short-term contractors (less than one year) will schedule a 1 hour briefing with the DPW, Environmental Division to receive policy letter and guidance in lieu of the ECO course.

(3) Provide clearly marked recycling cans/containers (available through SSSC) and establish collection points inside all buildings/facilities and work sites for the collection of commingled recyclable materials. (For further information refer to Environmental Division Recycling Information Sheet, 31 Mar 06 – contained on the Fort Stewart Intranet, DPW Page).

(a) Office paper, junk mail, newspaper, magazines, cardboard, aluminum/bi-metal cans (i.e. vegetable cans), plastic containers (#1, 2 and 5 only), glass bottles/containers (clear, brown, green).

(i) Ensure all "unclassified" documents/paper products are placed in a transparent plastic bag and tied closed prior to placing in blue dumpsters to facilitate the separation process and protect the integrity of the commodity. Can liners are not required for other recyclable material, but if used, they too must be transparent liners/bags.

(ii) Ensure all recyclable cans and bottles are emptied and rinsed (if possible) prior to placing in collection container.

(iii) Ensure that all commingled (mixed) recyclable materials from barracks, motor pools and administration buildings are placed in blue dumpsters provided. (Note: If collections personnel discover trash in recycling dumpsters or recyclables in trash dumpsters, the containers **will not** be emptied. Violators will be reported to the DPW Environmental Division for coordination with offending entity for corrective action.

(b) Ink/toner cartridges, scrap metal, bulk cardboard and serviceable pallets. Deliver these items to the installation recycling facility (Fort Stewart - Bldg. #957 on McFarland Ave or on Hunter Army Airfield - Bldg. TR-727 on Westley Ave); do not place these items in or beside the dumpsters.

(c) Coordinate collection/delivery of bulk cardboard, scrap metals and pallets with the installation recycling facility. Organizations generating large amounts of cardboard scrap metal, and pallets on a continuous basis should contact the DPW, Environmental Division Section for assistance.

(d) Household Movement/Packing Materials. Coordinate the pickup of recyclable packing material (paper and cardboard) generated by newly arriving soldiers and ensure they are made aware of this recycling policy.

(4) Unit Training Exercises. Continue to enforce the recycling policy during unit field training exercises. Provide a means to collect recyclable materials and process these materials upon return IAW with this policy and specific ECO training guidance regarding petroleum, oil, and lubricant containers (i.e. triple rinse).

(5) Collect and deliver yard waste (limbs, leaves, pine straw, pine cones, grass clippings, etc.) to the landfill for proper disposal/composting – do not deposit these items in/near any dumpster.

b. Government Military Housing (GMH) and Housing Residents.

(1) GMH will:

(a) Provide each family housing unit with a blue recycling poly cart and a copy of this recycling policy.

(b) Provide weekly curbside collection of commingled recyclables. (Note: If collection personnel discover trash mixed with recyclables or recyclables mixed with trash, the containers **will not** be emptied and violators will be reported to DPW, Environmental Division for enforcement actions).

(2) Housing Residents will:

(a) Place all bulk household packing material (paper and cardboard) in the identified locations as designated by GMH for collection upon arrival/assignment to housing.

(b) Place all recyclable materials (i.e., cardboard, junk mail, magazines, writing paper, newspaper, glass bottles/containers (clear, brown, green), plastic containers (#1, 2 and 5 only), aluminum/bi-metal cans, etc.) in the blue poly carts provided. All paper products must be placed in a transparent plastic bag which must be tied closed prior to being placed in the blue poly carts. Can liners are not required for other recyclable material; but if used, they must be transparent liners/bags.

(c) Place their blue poly carts at the curb before 0800 on their assigned collection day.

(d) Place large items, such as bicycles, "privately owned" washers, dryers, refrigerators, etc. on the curb beside their blue poly carts on their assigned collection day to be collected by the contractor.

c. Installation and tenant organizations will:

(1) Ensure that all contracts include the requirement for contractors to adhere to the Fort Stewart/Hunter Army Airfield Recycling Policy, and ensure through inspections that contractors are adhering to policy.
Contracts will require contractors to provide a copy of landfill scale tickets to their COR (Contracting Officer's Representative /QA for all waste disposed of off the installation. The COR will ensure that the copy of the landfill scale tickets are provided to DPW, Environmental Division, and all recyclables from construction, renovation, and demolition sites will be kept separate from other waste. (Note: This applies even if the contract requires the waste to be hauled off the installation for disposal).

(2) Ensure contracts that involve adding or replacing furniture, fixtures, mattresses, and other such items or in general generate large amounts of cardboard include provisions to collect and transport the cardboard t the installation recycling facility. (Note: The DPW Environmental Division has limited resources and will assist with collection and transporting this material until resources are expended, there are drop-off facilities available that are expected to be utilized when such service is not available. Contractors need to be aware of the limited resources and coordinate further assistance with the COR. (For further information refer to Environmental Division Recycling Information Sheet, 31 Mar 06 – contained on the Fort Stewart Intranet, DPW Page).

(3) Custodial service contracts will include the requirement to deposit the contents collected from any recycling containers in the nearest blue dumpster. Provisions will also be included in the contracts to not service trash receptacles when recyclables are not segregated from the waste stream, and to notifying the COR of the discrepancy. The COR will perform random inspections to ensure these requirements are being met and coordinate with the DPW, Environmental Division upon notification.

d. DPW will: Ensure refuse and recycle collection drivers <u>do not</u> service any trash dumpsters with recyclable materials present, or any recycle dumpsters with trash present. If either of these conditions exists, the driver will notify the DPW, Environmental Division for corrective action.

(1) Ensure all contracts state that contractors must separate, collect and deliver recyclable material generated during the life of the contract to the installation's recycling facility.

e. Self-Service Supply Center will:

(1) Stock clear plastic bags and blue recycling containers marked "We Recycle."

(2) Stock office paper with a minimum of 20% recycled content.

(3) Stock items made from recycled material, and ensure those items are clearly marked and labeled as such.

(4) Ensure that signs are posted stating that customers should purchase items made from recycled material when available.

IMSE-STW-IC
SUBJECT: US Army Installation, Fort Stewart / Hunter Army Airfield Policy Memorandum # 8, Command Recycling Policy

6. PROPONENT: The Directorate of Public Works is the proponent for this policy. The point of contact is DPW, Environmental Division, at commercial (912) 767-2010 or DSN 870-2010.

RICK LYNCH
Major General, USA
Installation Commander

F

Appendix F

Conceptual Aesthetic Considerations

The following exterior colors are preferred for the MWD Kennel Complex:

Roof Shasta White

Split Face CMU Texas Cream

Brick Cherry Velour (accent row above water table)

The Exterior Materials and Colors Matrix (from the Ft. Stewart Installation Design Guide) is also included here for reference.

The Ft. Stewart Installation Design Guide is available at
http://en.sas.usace.army.mil/enweb

		Roofs		Walls				Doors and Windows			
Visual Zone	**Building Type**	**Standing Seam Metal**	**Fiberglass Comp. Shingles**	**Brick**	**CMU**	**Concrete**	**Secondary Material**	**Doors**	**Storm Doors**	**Windows**	**Storm Window Frames**
Headquarters	**"Significant"** *(Div., BDE & BN HQ)*	**Manufacturer:** Berridge **Color:** Patina Green	- - - - - - -	**Manufacturer:** Belden Brick **Field Color:** Cherry Velour **Accent Colors:** Dutch Gray Frontier Seal Brown	**Manufacturer:** Featherlite **Color:** Texas Cream	**Color:** Warm Gray	- - - - - - - - -	**Color:** White	- - - - - - - - -	**Color:** White	- - - - - - - - -
	"Secondary" *(CO OPNS FAC)*	**Manufacturer:** Berridge **Color:** Patina Green	- - - - - - -	↓	↓	↓	**Siding:** Metal; horizontal slats **Color:** White	↓	- - - - - - - - -	↓	- - - - - - - - -
	Temporary	- - - - - - -	**Manufacturer:** Georgia Pacific **Color:** Greenwood Blend	- - - - - - -	- - - - - - -	- - - - - - -	**Siding:** Metal; horizontal slats **Color:** Warm Gray	↓	- - - - - - - - -	↓	- - - - - - - - -
Town Center	**Retail and Community**	**Manufacturer:** Berridge **Color:** Patina Green Colonial Red	- - - - - - -	**Manufacturer:** Belden Brick **Field Color:** Cherry Velour Frontier **Accent Colors:** Dutch Gray Seal Brown Quaker Blend	**Manufacturer:** Featherlite **Color:** Texas Cream	**Color:** Warm Gray	**Siding:** Metal; vertical slats **Color:** White	↓	- - - - - - - - -	↓	- - - - - - - - -
	Recreation	↓	- - - - - - -	- - - - - - -	↓	↓	**Siding:** Metal; vertical slats **Color:** White	↓	- - - - - - - - -	↓	- - - - - - - - -
	Temporary	- - - - - - -	**Manufacturer:** Georgia Pacific **Color:** Greenwood Blend	- - - - - - - -	- - - - - - -	- - - - - - -	**Siding:** Metal; vertical slats **Color:** Warm Gray	↓	- - - - - - - - -	↓	- - - - - - - - -

		Roofs		Walls				Doors and Windows			
Visual Zone	**Building Type**	**Standing Seam Metal**	**Fiberglass Comp. Shingles**	**Brick**	**CMU**	**Concrete**	**Secondary Material**	**Doors**	**Storm Doors**	**Windows**	**Storm Window Frames**
Barracks	**Main Cantonment Area**	**Manufacturer:** Berridge **Color:** Colonial Red	- - - - - - -	**Manufacturer:** Belden Brick **Field Color:** Cherry Velour **Accent Colors:** Seal Brown Quaker Blend	**Manufacturer:** Featherlite **Color:** Texas Cream	**Color:** Warm Gray	**Siding:** Metal; vertical slats **Color:** Colonial Red Seal Brown Patina Green	**Color:** Match field brick or CMU	- - - - - - - - -	**Color:** White	- - - - - - - - -
	4th BCT	**Manufacturer:** Berridge **Color:** Colonial Red	**Manufacturer:** Georgia Pacific **Color:** Miami Red Ranchwood	**Manufacturer:** Belden Brick **Field Color:** Quaker Blend **Accent Colors:** Cherry Velour	↓	↓	- - - - - - - - -				
	Temporary	- - - - - - -	↓	- - - - - - -	- - - - - - -	- - - - - - -	**Siding:** Metal; vertical slats **Color:** Tan	**Color:** Tan	- - - - - - - - -	**Color:** Dark bronze	- - - - - - - - -
Installation Support	**Maintenance Facilities**	**Manufacturer:** Berridge **Color:** Shasta White	**Manufacturer:** Georgia Pacific **Color:** Light Gray	**Brick:** Belden Brick **Color:** Dutch Gray	**Manufacturer:** Featherlite **Color:** Texas Cream	**Color:** Warm Gray	**Siding:** Metal; horizontal slats **Manufacturer:** Chicago Metallic **Color:** Natural Adobe	**Color:** Match brick, CMU or siding	- - - - - - - - -	**Color:** Match brick, CMU or siding	- - - - - - - - -
	General Administration	↓	↓	**Brick:** Belden Brick **Field Color:** Cherry Velour Frontier Blend **Accent Color:** Dutch Gray Quaker Blend Seal Brown	**Manufacturer:** Featherlite **Color:** Texas Cream Rose	↓	**Siding:** Metal; horizontal slats **Color:** Natural Adobe	↓	- - - - - - - - -	↓	- - - - - - - - -

		Roofs		Walls				Doors and Windows			
Visual Zone	**Building Type**	**Standing Seam Metal**	**Fiberglass Comp. Shingles**	**Brick**	**CMU**	**Concrete**	**Secondary Material**	**Doors**	**Storm Doors**	**Windows**	**Storm Window Frames**
National Guard	**Barracks**	**Manufacturer:** Berridge **Color:** Colonial Red	**Manufacturer:** Georgia Pacific **Color:** Red	**Manufacturer:** Belden Brick **Field Color:** Dutch Gray Frontier **Accent Colors:** Seal Brown Cherry Velour	**Manufacturer:** Featherlite **Color:** Texas Cream	**Color:** Warm Gray	- - - - - - - - -	**Color:** Maroon	- - - - - - - - -	**Color:** White	- - - - - - - - -
	Maintenance Facilities	**Manufacturer:** Berridge **Color:** Shasta White	**Manufacturer:** Georgia Pacific **Color:** Light Gray	**Brick:** Belden Brick **Color:** Dutch Gray	**Manufacturer:** Featherlite **Color:** Texas Cream	↓	**Siding:** Metal; horizontal slats **Manufacturer:** Chicago Metallic **Color:** Natural Adobe	**Color:** Match brick, CMU or siding	- - - - - - - - -	**Color:** Match brick, CMU or siding	- - - - - - - - -
Housing	**All Types**	- - - - - - - - -	**Manufacturer:** Georgia Pacific **Color:** Gray	**Brick:** Belden Brick **Accent Color:** Cherry Velour	**Manufacturer:** Featherlite **Color:** Texas Cream Rose	- - - - - - - - -	**Siding:** Metal; horizontal slats **Color:** Olive Green Harvest Yellow Brown Beige	**Color:** White or match brick or siding	**Color:** White	**Color:** White	**Color:** White
Green Space	**All Types**	**Manufacturer:** Berridge **Color:** Colonial Red Forest Green	**Manufacturer:** Georgia Pacific **Color:** Greenwood Blend Miami Red	**Manufacturer:** Belden Brick **Field Color:** Dutch Gray Quaker Blend Frontier	- - - - - - - - -	**Color:** Warm Gray	**Paint Manufacturer:** Sherwin Williams **Color:** Warm Gray Off-White	**Color:** White	↓	↓	↓

APPENDIX G
GIS Data

Not Used

H

Appendix H

Exterior Signage

DEPARTMENT OF THE ARMY
HEADQUARTERS, FORT STEWART
DIRECTORATE OF PUBLIC WORKS
1587 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314

REPLY TO
ATTENTION OF

AFZP-PWP-M

25 NOV 2004

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: New Signage Requirements for Fort Stewart and HAAF

1. The purpose of this memorandum is to provide the appropriate personnel with guidance on new signage requirements established by US Army Installation Design Standards (IDS), the Fort Stewart / Hunter Army Airfield Installation Design Guide (August 2001), and Technical Manual (TM) 5-807-10, Signage.

2. Please, take special care to ensure that all appropriate personnel and activities within Ft. Stewart/HAAF are aware of the new requirements contained within the attached enclosure (Signage Annex). The new signage standards are affective 25 November 2004.

3. The point of contact for this memorandum is Will Ingram, DPW, Master Planning Division at 767-9149, e-mail: ingramwh@stewart.army.mil.

Encl

ANNE de la SIERRA
Chief, Master Planning Division

DISTRIBUTION:
GC, Col. John M. Kidd
DGC, Mr. Paul Andreshak
GC, (Hunter Army Air Field) LTC Jeffrey Goble
DGC, (Hunter Army Air Field) Mr. Edward Foerstel
DPW, Mr. Michael Biering
DDPW, Mr. Chester Schratzmeier
RCI, Ms. Jeanne Adams
BOID, Ms. Bonnie Crook
ENRD, Mr. Thomas Fry
ENGR DIV, Mr. Vic Maulden
ENGR DIV, Mr. Doug Saylor
ENGR DIV, Mr. Jon Bairnsfather
OM, Mr. Don Thomas
SCD, Mr. Fred Cavedo
SAS, Mr. Brent Rose

AFZP-PWP-M
SUBJECT: New Signage Requirements for Fort Stewart and HAAF

DISTRIBUTION: (CONT)
SAS, Mr. Charlie McGee, 100 West Oglethorpe Avenue, Savannah, GA 31401
SAS, Mr. Rob Callahan, 100 West Oglethorpe Avenue, Savannah, GA 31401
SAS, Mr. James Landgraff, 100 West Oglethorpe Avenue, Savannah, GA 31401
ENGR DIV, Mr. Tony White
ENGR DIV, Mr. Jim Thomas

SIGNAGE ANNEX

UNIT SIGNS & LOGOS

All unit identification signs will be removed. This is to include all Division, Brigade, and Battalion Headquarters signs, as well as signs identifying Company level units.

All branch insignia, shoulder sleeve insignia, coat of arms and/or distinctive insignia that have been placed on buildings will be removed prior to deployment.

Upon return from deployment, new unit identification signs will be placed at their respective buildings. All signs will comply with the US Army Installation Design Standards, the Fort Stewart / Hunter Army Airfield Installation Design Guide, and Technical Manual (TM) 5-807-10, Signage, in terms of size, color, message, and DoD address standards.

BUILDING ADDRESSES:

Building numbers will no longer be placed on facility identification signs. Only street addresses will be used (see Figure 1). The addressing procedures prescribed in DoD 4525.8-M, DoD Official Mail Manual are mandatory for use by all DoD components. DoD 4525.8-M, Chapter 3 of the manual prescribes the following:

- All DoD address shall be assigned so they are compatible with the United States Postal Services automated delivery point sequencing (C3.3).
- The DoD installation is responsible for assigning city-style, street address on the installation (C3.3.2.2).
- Street addresses shall be assigned and used even though a DoD activity may deliver the mail to the addressee (C3.3.2.2.1).
- Only geographically locatable civilian-style street addresses such as 4102 Cindy Avenue shall be used (C3.3.2.2.4).
- Installations shall not use one street address for the entire installation and then use secondary unit designators such as "Building 123" to designate the delivery addresses on the installation (C3.3.2.2.5).
- Addresses such as "Building 123 Roberts Street" are not a valid address format and shall not be used (C3.3.2.2.6).

Fig. 1 – Use of Street Addresses on All Building Identification Signs

The Fort Stewart Directorate of Information Management (DOIM) is responsible for assigning street addresses to buildings. See attached listing of assigned building addresses.

SIGN STANDARDS

The following standards for facility identification signs are taken from the US Army Installation Design Standards (IDS), the Fort Stewart / Hunter Army Airfield Installation Design Guide, and Technical Manual (TM) 5-807-10, Signage.

The following general guidelines are taken from the IDS and apply to all signs:

Typeface: Lettering is self-adhesive backing material.

- Building Title: Helvetica Medium, Upper and lower case
- Building Numbers: Helvetica regular
- Building Addresses: Helvetica Medium, Upper and lower case

Color:

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

Materials:

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

BUILDING IDENTIFICATION SIGN STANDARDS

The standards to apply for signage color, type, and sizing are found in TM 5-807-10, *Signage*. The following paragraphs are the regulations as they apply for Brigade, Battalion, and Company Headquarters signs. TM 5-807-10 must be followed for any specifics not covered here.

NOTE:

1. All figures and paragraphs referenced in the following can be found in TM 5-807-10.
2. Building numbers as described in TM 5-807-10 will not be **will not** be placed on building identification signs
3. Building addresses will be placed on all building identification signs where the building numbers were once placed.
4. Examples of the various sign types are found in an attached document. Reference TM 5-807-10 for any further clarification.

Brigade, Battalion, and Company Building Identification Signs.

Military headquarters identification signs consist of four types:

- Sign type B1, installation headquarters sign, identifies the central administration of the installation.
- Sign type B2, command, division, and brigade headquarters sign.
- Sign type B3, battalion headquarters sign.
- Sign type B4, headquarters building entrance sign, identifies the building entrance for all levels of authority. In addition, type B4 is used to identify a unit headquarters that has a special entry point other than the main entrance of a building.

Graphics appear on both sides of these signs, since they are placed perpendicular to the road and can be viewed by traffic moving in both directions. Sign placement guidelines are described in paragraph 3-11. Sign structures are given in appendix A.

Headquarters Facilities:

- Sign Type B1
  - Type B 1 signs are used to identify the headquarters facilities of each installation as delineated in figure 3-11. When the headquarters of a command or division level organization is located in the same facility as the installation headquarters, the unit name is placed below the installation name. In addition, the authorized insignia of the command or division level unit is located to the left of the unit name.
    - (1) Colors. White letters and numbers on standard brown background; full-color insignia.
    - (2) Sign grid specifications.
      - *(a) Dimensions.* 3ft-6in. H x 8ft-0in. W.
      - *(b) Message.* Installation name—upper and lower case helvetica medium, 6-inch capital letter height, flush left. Average line length-21 characters per line. “Headquarters” — upper and lower case helvetica regular, 6-inch capital letter height, flush left. Average line length—24 characters per line. Command or division level name—upper and lower case Helvetica medium, 4-inch capital letter height, flush left. Average line length-27 characters per line.
      - *(c) Building address.* Upper and lower case Helvetica medium, 4-inch capital letter height, flush left.
      - *(d) Insignia.* Authorized military insignia, 12-inch maximum height x 8-inch maximum width, flush to top of grid box and centered.
    - (3) *Sign grid.* Figure 3-12.

Brigade Headquarters:

- Sign Type B2
  - Type B2 signs are used to identify the headquarters facilities of command, division and brigade level organizations as shown in figure 3-13. The authorized shoulder sleeve insignia or distinctive unit insignia for each command or division is located to the left of the unit name. Brigade level organizations show the name of the command or division under which each serves below the unit name, and display the command or division insignia to the left of the unit name. Only one headquarter unit is identified per sign.
    - (1) Colors. White letters and numbers on standard brown background; full-color insignia.
    - (2) Sign grid specifications.
      - (a) Dimensions. 3ft-6in. H x 6ft-0in. W.
      - (b) Message. Unit name-upper and lower case helvetica medium, 4-inch capital letter height, flush left. Average line length-l 7 characters per line. “Headquarters” —upper and lower case helvetica regular, 4-inch capital letter height, flush left. Average line length-25 characters per line.
      - (c) Building address. Upper and lower case Helvetica medium, 4-inch capital letter height, flush left.
      - (d) Insignia. Authorized military insignia, 12-inch maximum height x 8-inch maximum width, flush to top of grid box and centered.
    - (3) Sign grid. Figure 3-14.

Battalion Headquarters:

- Sign Type B3
- Type B3 signs are used to identify the headquarters facilities of battalion level organizations as shown in figure 3-15. The name of the command or division under which each serves is shown below the unit name. The authorized branch color(s) of the unit is located to the left of the unit name. Battalion headquarters signs do not display the command or division level organizational insignia. If more than one (1) battalion headquarters is located in a specific building all unit names will be displayed on one (1) sign.
  - (1) Colors. White letters and numbers on standard brown background; full-color symbol.
  - (2) Sign grid specifications.
    - (a) Dimensions. 3ft-6in. H x 5ft-0in. W.
    - (b) Message. Unit name-upper and lower case helvetica medium, 3-inch capital letter height, flush left. Average line length—20 characters per line. “Headquarters"— upper and lower case helvetica regular, 4-inch capital letter height, flush left. Average line length—22 characters per line.
    - (c) Symbol. 6-inch diameter overall, 1/4 –inch perimeter ring in white, 1-inch border ring in secondary branch color.

        - (d) Building address. Upper and lower case Helvetica medium, 4-inch capital letter height, flush left.
    - (3) *Sign grid.* Figure 3-16.

Company Headquarters:

Most company operations facilities contain more than one company headquarters unit. When more than one company Headquarters unit is located in a specific building all units will be listed on an individual sign. Sign specifications are as follows:

- **Facilities with one (1) company headquarters unit:**
    - Type C4 signs. Insignias, branch colors, unit mottos, names or titles of individuals are not recommended on company level unit signs.
        - (1) *Colors.* White letters and numbers on standard brown background.
        - (2) *Sign grid specifications.*
            - *(a) Dimensions.* 2ft-6in. H x 5ft-0in. W.
            - *(b) Message.* Facility and unit name-upper and lower case helvetica medium, 3-inch capial letter height, flush left. Average line length-25 characters per line.
            - (c) *Building address.* Upper and lower case Helvetica medium, 3-inch capital letter height, flush left.
        - (3) *Sign grid.* Figure 3-29.

- **Facilities with more than one (1) company headquarters unit:**
    - Sign Type C2 will be used with the extended grid specifications listed below. Insignias, branch colors, unit mottos, names or titles of individuals are not recommended on company level unit signs
        - (1) Colors. White letters and numbers on standard brown background.
        - (2) Sign grid specifications.
            - (a) Dimensions. 4ft-0in. H x 5ft-0in. W.
            - (b) Message. Unit facility and name—upper and lower case helvetica medium 4-inch capital letter height, flush left. Average line length-19 characters per line. Sub-service name-upper and lower case Helvetica regular, 3-inch capital letter height, flush left. Average line length-30 characters per line.
            - (c) Building number. Helvetica regular, 4-inch number height, flush left.
        - (3) Sign grid. Figure 3-24.
        - (4) Extended sign grid specifications.
            - (a) Dimensions. 5ft-6in. H x 5ft-0in. W.
            - (b) Message. Military unit name-upper and lower case helvetica medium, 4-inch capital letter height, flush left. Average line length—19 characters per line. Sub-unit name-upper and lower

case Helvetica regular, 3-inch capital letter height, flush left. Average line length-30 characters per line.

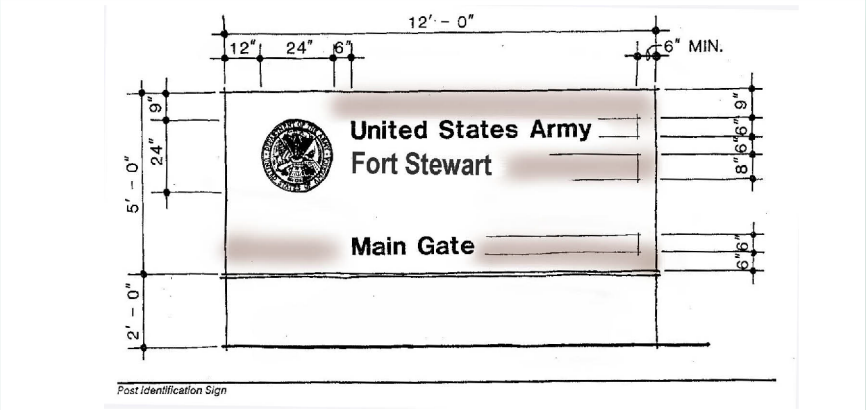
- *(c) Building number*. Helvetica regular, 4-inch number height, flush left.

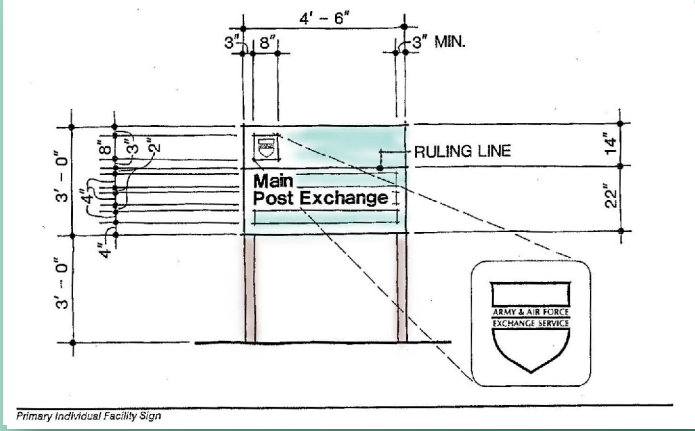
- (5) *Sign grid.* Figure 3-25

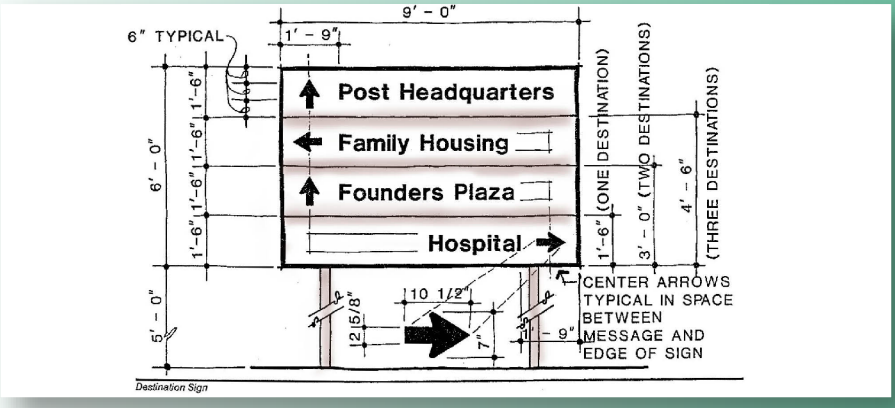
Exceptions to Stated Regulations:

- If companies or detachments are co-located in the same facility with battalion or higher headquarters units, all units will be listed on the facility identification sign of the type associated with the highest echelon unit.

2.7 Design Guidelines
Signage







2.7 Signage

Signs are used to visually communicate information. Utilitarian in function, signs are a highly visible feature of the installation. Careful consideration must be given to their visual appearance and relation to the surroundings. The high visibility of signage and the importance of its function demand that it be an attractive and harmonious piece of the visual environment. The creation of a coordinated signage system will enhance Fort Stewart's visual image and improve the efficiency of movement.

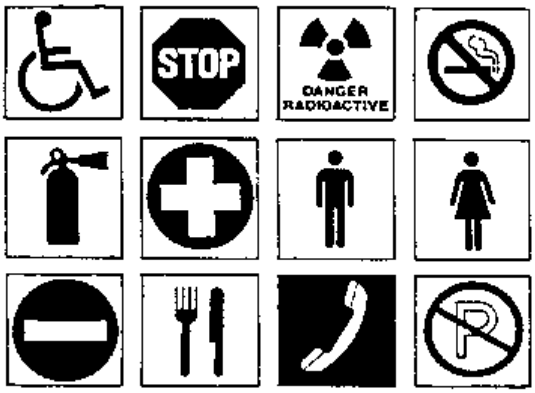
A signage system must communicate information effectively and efficiently. It must present a sequence and hierarchy of information that is logical and responsive to user needs. The system should provide a sense of consistency and continuity to the installation's overall visual image. It must also be designed to be adaptable and compatible with and integrated into the design of other site features.

2.7.1 General Provisions

This section regulates all exterior signs and interior signs positioned for exterior observance. A sign is defined as a placard bearing verbal and/or pictorial information.

- Use only enough signage as is necessary. Remove redundant, unreadable, and outdated signs.
- DPW work and site approval is required prior to installing painting, remodeling, relocating, or expanding any sign.
- No approval is required to perform normal maintenance and repair of a conforming sign or to change a message on an approved sign or marquee specifically designed for this purpose.
- Public safety signs not exceeding two square feet do not require site approval. Examples include emergency telephone, restroom, and underground utilities.
- Street signs, not located in State rights-of-ways, do not require site approval.
- Signs placed for less than 30 days do not require site approval. Those placing these placards shall remove them.
- Signs not conforming to this guide will be removed.

- No nonconforming sign shall be enlarged, repaired, reconstructed, or changed, except to comply; nor shall the wording or graphics be changed, except to comply.
- Signs itemized in this section shall be placed, unless otherwise specified, at the appropriate buildings regardless of its real property categorization.
- No signs shall interfere with or confuse traffic or other aspects of safe driving conditions through use of improper wording, graphics, location, size, shape, or color. No sign shall use the words “Stop”, “Go”, “Caution”, Yield”, etc., when such would be confused with traffic signs or devices.



Acceptable Symbology Commonly Used As Signage Graphics

2.7.2 Sign Details

Signage details include the following:

- All signs will either be pre-manufactured or fabricated by DPWE. Low quality and “homemade” type signs are prohibited.
- Any sign that is mechanically animated (i.e., revolves, rotates, or moves in any way) is prohibited.
- Locate signs where they are most visible and the view unobstructed.
- Signs will be brown Federal Specification Color Number 20140 and white (i.e., Park Service colors).
- Universally recognized color schemes such as the State highway and safety signs may follow the Federal Highway Administration’s “Standard Alphabets for Highway Signs and Pavement Markings” standards.

- Signs generally are not landscaped; however, if ornamental planting occurs in the vicinity of the sign, locate the sign in the planting bed.
- Temporary signs do not require landscaping; changeable signs are not considered temporary.
- Any exposed lighting tubes, strings of lights, spotlights, or any illumination that causes direct glare upon an unrelated building are prohibited.
- Any flashing signs, traveling lights, or signs animated by lights of changing degrees of intensity or color are prohibited.
- Signs may be lit by remote lamps or backlit where nighttime identification is required such as at clubs, shopping areas, and post entry points.
- Internally lit signs must have an opaque message surface displayed at all times, and at no period will views be allowed to the inside of the sign regardless of whether a message is on the sign or not.
- Kiosks, informational signs, and “You Are Here” maps are to be centrally located in “Activity Nodes” as defined by the District Plate graphics.
- For military building signs, quantities are limited to one of each type allowed.
- Quantities are limited regardless of whether facilities are located on corners, have exposure to multiple roads/drives, or have building entrances visually separated from roads/parking lots.
- All signs use Helvetica font.

ABCDEFGHIJKLMN
OPQRSTUVWXYZ
abcdefghijklmn
opqrstuvwxyz

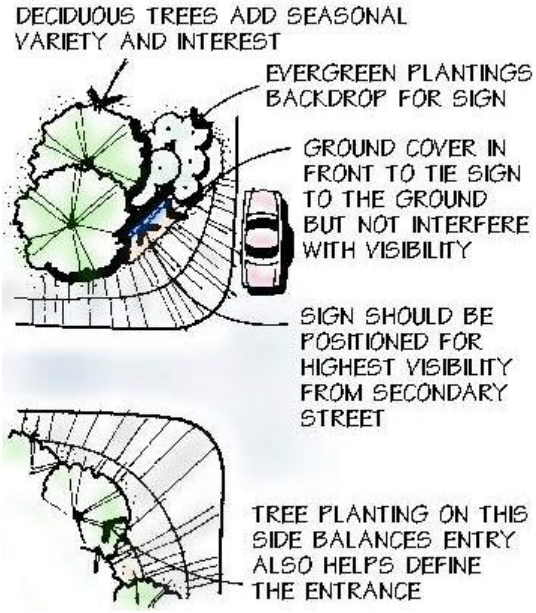
Use Helvetica Type Style

- Traffic signs will follow guidelines in the Federal Highway Administration's "Standard Alphabets for Highway Signs and Pavement Markings" standards.

2.7.3 Sign Mounting and Location

Sign mounting and location standards are as follows:

- Locate identification signs generally at building entrances and/or other parts of the building visible from the main access street. Building signs should be visible from the main circulation paths to the building (vehicular or pedestrian).
- Place building and/or facility identification signs within the first 20 percent of the distance closest to the road between the road and the building. These signs shall be placed as not to obscure any other identification, information or vehicular regulatory signs.
- Signs unable to be located perpendicular to the direction of traffic may be rotated to a 45-degree angle or parallel to traffic.



Consider Basic Planning And Design Objectives In Sign Placement

- The minimum distance between sign and driveway or intersection should normally be 100 feet.
- One identification sign for each building is sufficient unless vehicular access occurs on two or more sides of the building.

- Provide signs to identify facilities dedicated to or accessible to the handicapped, such as parking spaces, building entrances, and restroom facilities.

Mounting Signs on Buildings

- No sign may be mounted on the outside of the door, except small signs (one square foot or less) that indicate required use of an alternate entrance. Signs such as "Escort Required" or changeable signs are not permitted.
- No sign may be attached or mounted to roofs and parapets.
- No sign shall be painted or applied directly onto the surface of a building.
- No permanent signs shall obstruct any window, door, fire escape, ladder, or opening intended for light, air, or egress.
- No temporary sign in windows or glass walls is allowed to cover more than 20 percent of the glass area.
- No signs shall interrupt the vertical and horizontal features of the facade.
- No sign may be tacked, posted, painted, or otherwise affixed to site elements such as sheds, trees, or other structures.
- No sign may be attached to utility poles except for pole identification or warning signs.
- Fasten projecting signs directly to the supporting building wall and integrate the frame into the sign. These signs shall intersect at right angles to the building front and shall not extend above the roofline or the parapet wall. Signs may not project more than five feet from a wall or two-thirds the width of the sidewalk, whichever is less. In no case may signs be closer than 18 inches to the curb line. A clear height of eight feet above the ground is required.

2.7.4 Sign Descriptions and Categories

Criteria for the sign system to be used at this installation are contained within Technical Manual 5-807-10 (TM). This section is designed to assist in using the TM to find the sign needed for a specific situation.

To determine the type of sign needed, first decide which category applies. Chapter Three lists the major sign categories as:

	TM Page
Installation Identification Signs	3-03
Military Headquarters Identification Signs	3-07
Military Facility Identification Signs	3-15
Community Identification Signs	3-36
Motivational Signs	3-50
Guide Signs	3-52
Mandatory/Prohibitory Signs	3-56
Informational Signs	3-69

Chapter Two of the TM deals with sign graphics and Appendix A gives fabrication options. For this installation, all signs shall have square, anodized aluminum posts with matching signboards and white lettering. Exceptions to the manual must be cleared with HQDA (DAEN-ECE-A), Washington, DC 20314. With their approval these guidelines may be waived.

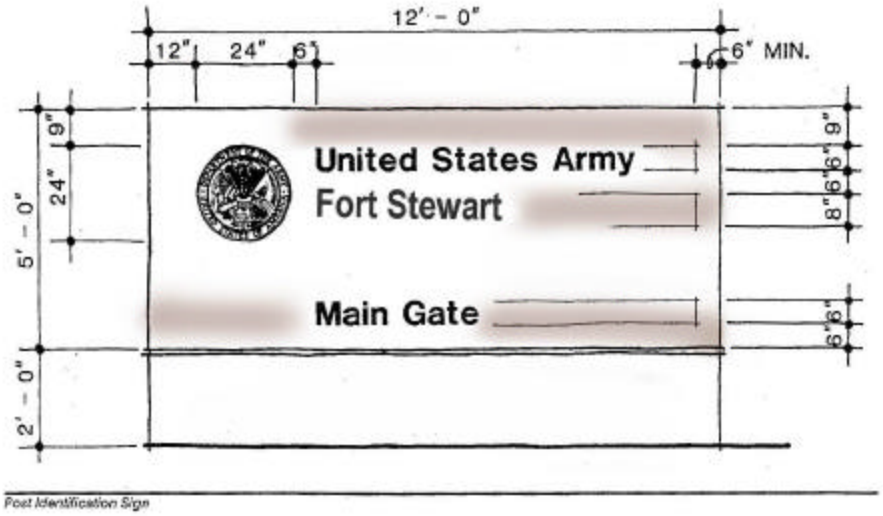
Installation Identification

Installation identification signs name the installation and display the official US Army plaque. When used service wide, these signs convey a uniform image of military strength and stability to the public. Emblems, branch colors, unit mottos, names or titles of individuals are not recommended.

Installation identification signs are categorized within the TM into the following types:

- Type AI: Main Entrance

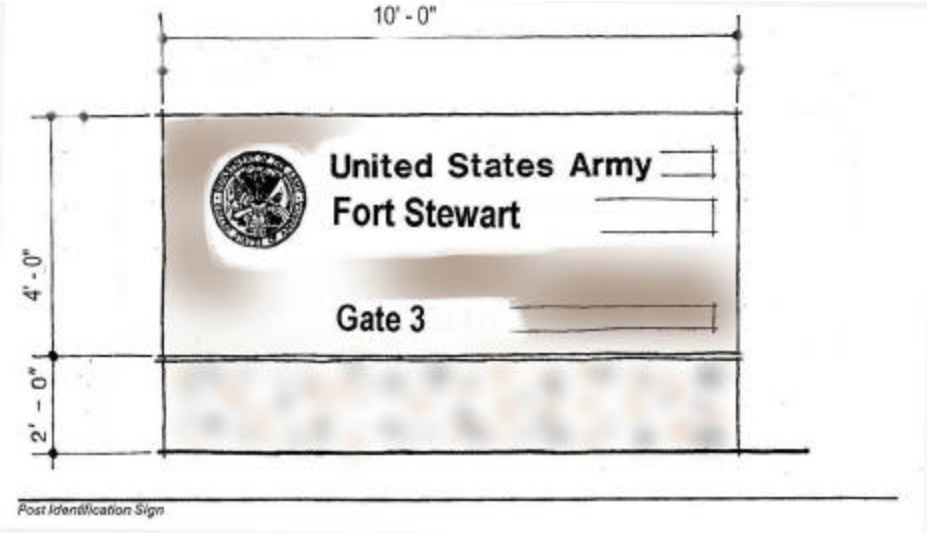
Type A1 signs are used to identify the installation at the main gate and principal visitor entrance.



Type A1

- Type A2: Secondary Entrance

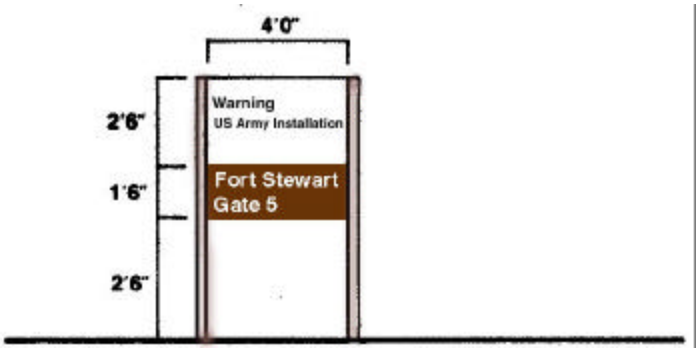
Type A2 signs are used to identify entrances which receive high volumes of visitor traffic in addition to the main gate.



Type A2

- Type A3: Limited Gate Access

Type A3 signs are used to identify secondary entrances, which are used primarily by installation personnel and not by visitors.



Type A3

- Note: Refer to TM for detailed information on sign selection criteria.

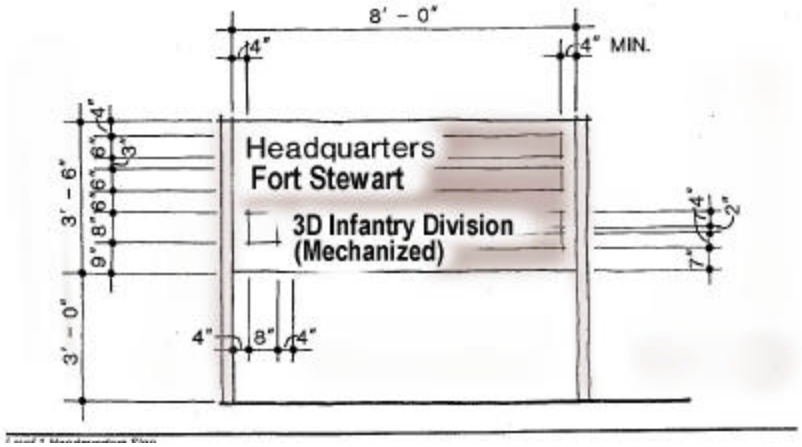
Military Headquarters Identification

Military headquarters identification signs are separated into four categories and sizes to distinguish the different levels of unit authority. The sign face carries the unit name and insignia, emblem, or branch color as appropriate. Unit mottos or names and titles of individuals are not recommended.

Military headquarters identification signs are categorized with the TM into the following types:

- Type BI: Installation Headquarters

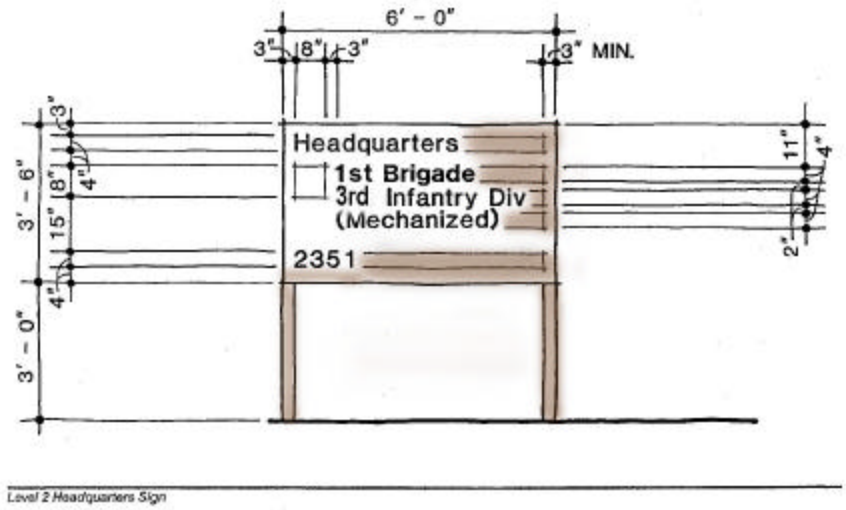
Type B1 signs are used to identify the headquarters facilities of each installation.



Type B1

- Type B2: Command, Division, and Brigade Headquarters

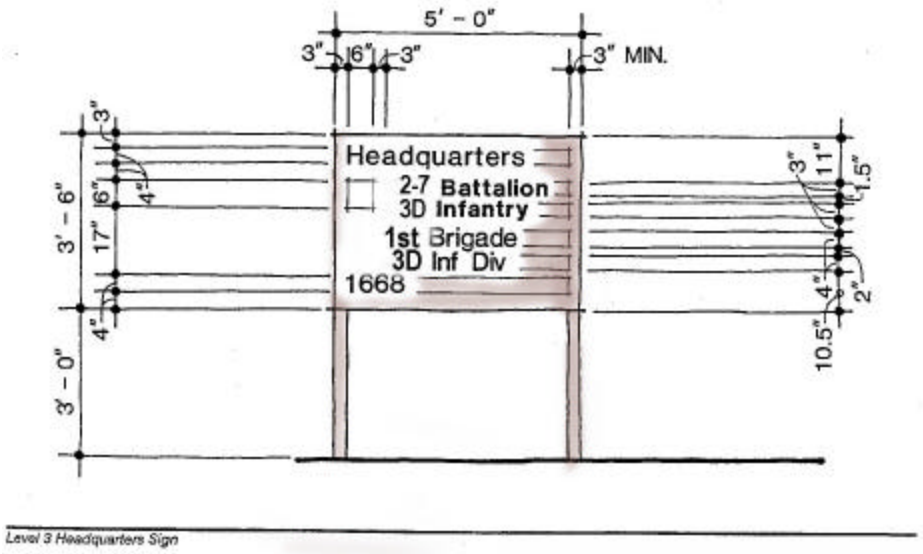
Type B2 signs are used to identify the headquarters facilities of command, division and brigade level organizations.



Type B2

- Type B3: Battalion Headquarters

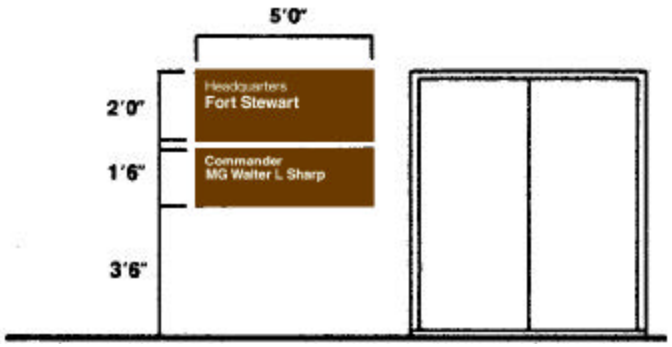
Type B3 signs are used to identify the headquarters facilities of battalion level organizations.



Type B3

- Type B4: Headquarters Entrance

There are two signs used to identify the building entrances of headquarters facilities. The basic sign panel identifies the unit of the headquarters facility and a sign plaque identifies the command personnel of the unit. The sign panel is used alone or in combination with the plaque. Type B4 signs are wall-mounted.



Type B4

- Note: Refer to TM for detailed information on sign selection criteria.

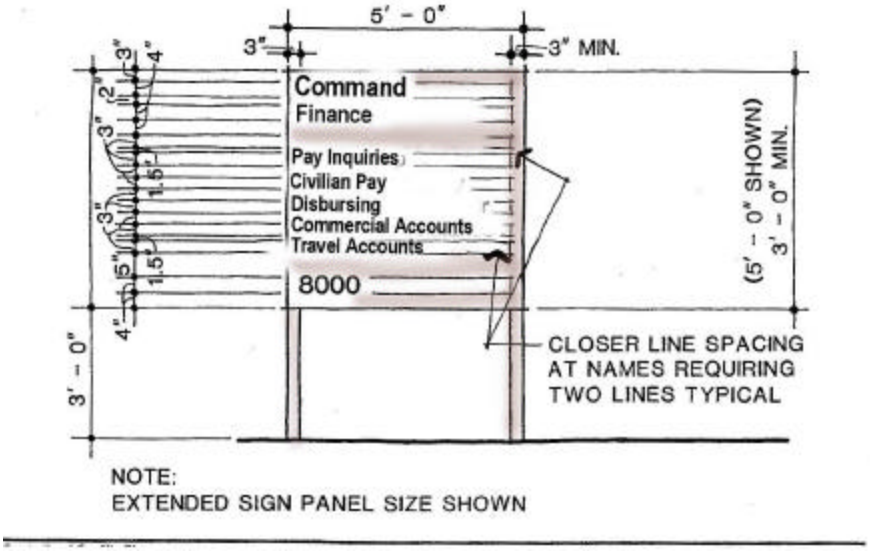
Military Facility Identification

Military facility identification signs are used to identify company-level organizations and other military facilities not included in the installation identification or military headquarters sign types. Insignia, emblems, branch colors, unit mottos, names or titles of individuals are not recommended for use on these signs.

Military facility identification signs are categorized within the TM into the following types:

- Type C1: Centralized Primary Facilities

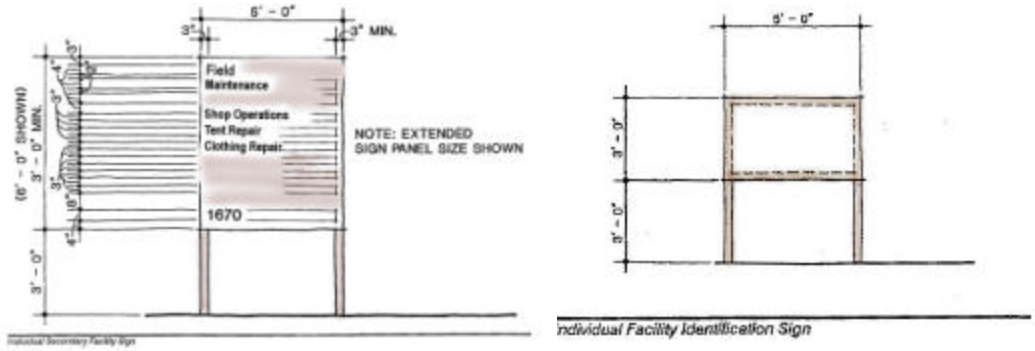
Type C1 signs are used to identify principal service units and their subservices, or multiple service units located in one or a complex of buildings.



Type C1

- Type C2: Centralized Secondary Facilities

Type C2 signs are used to identify services similar to type C1 where the volume of civilian traffic does not warrant the use or cost of type C1 signs.

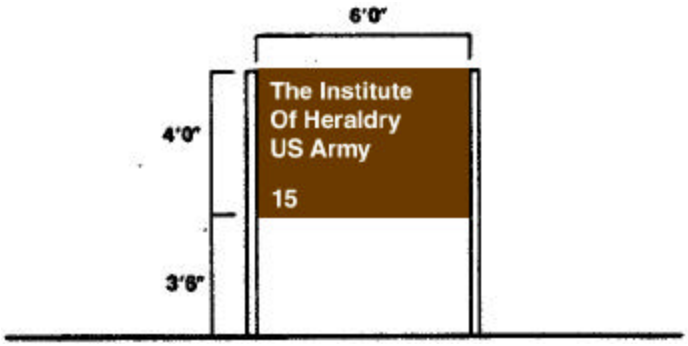


Type C2

Type C2 example

- Type C3: Primary Facilities

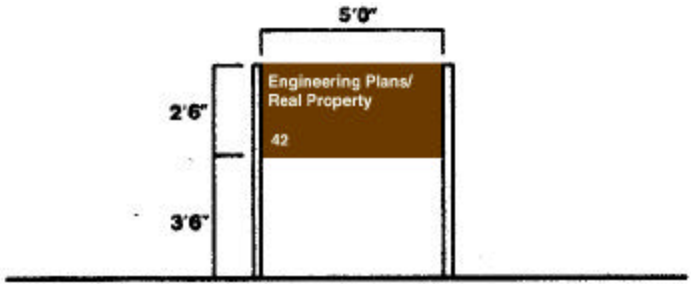
Type C3 signs are used to identify the name of a facility only.



Type C3

- Type C4: Secondary Facilities

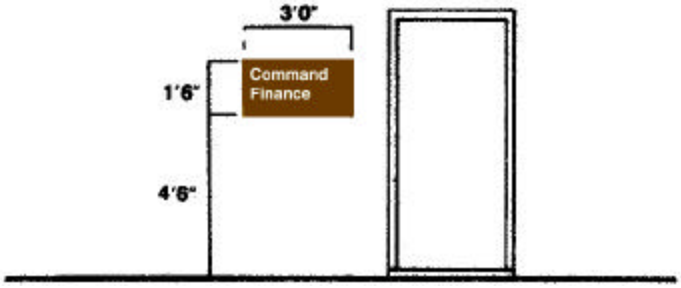
Type C4 signs are used to display the same information as type C3, except they are smaller in size and are used to identify company-level units.



Type C4

- Type C5: Primary Entrance

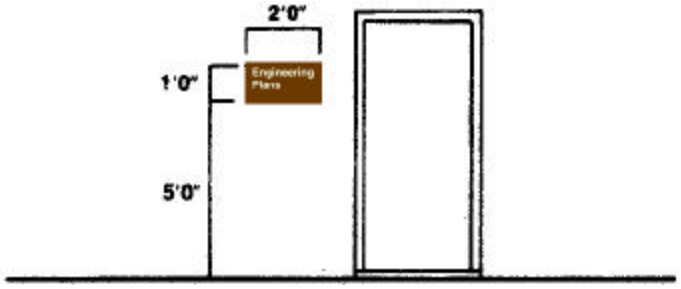
Type C5 signs are used to identify the main entry points of a facility used by a large volume of visitor traffic.



Type C5

- Type C6: Secondary Entrance

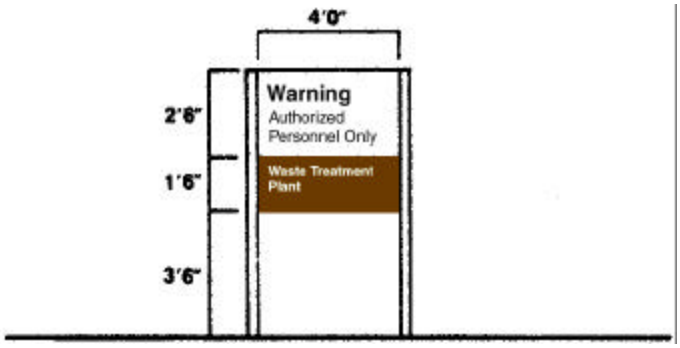
Type C6 signs are used to identify the entry points of company level units and facilities serving a smaller volume of visitor traffic than type C5.



Type C6

- Type C7: Restricted Facility

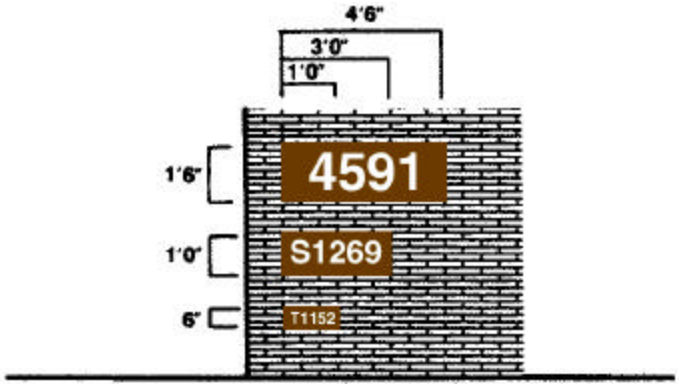
Type C7 signs identifies the name of a restricted area or facility.



Type C7

- Type C8: Building Number

Type C8 signs are used to identify building numbers for permanent, semi permanent and temporary facilities. The size of the sign should be appropriate for the scale of the building and mounting height, regardless of its classification. Signs should be located on the sides of the building where rapid identification is necessary. Type C8 signs are wall-mounted.



Type C8

- Note: Refer to TM for detailed information on sign selection criteria.

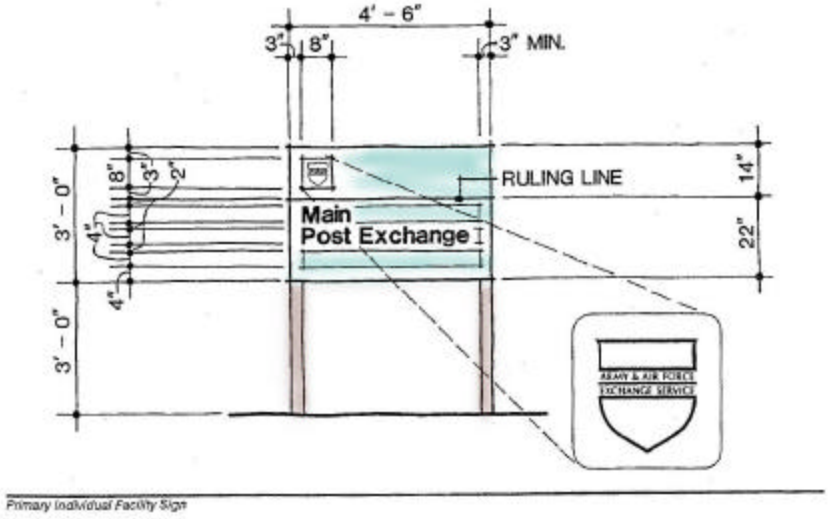
Community Identification

Community identification signs are used to identify activities and facilities used for community, recreational and other nonmilitary purposes.

Community identification signs are categorized within the TM into the following types:

- Type DI: Centralized Primary Facilities

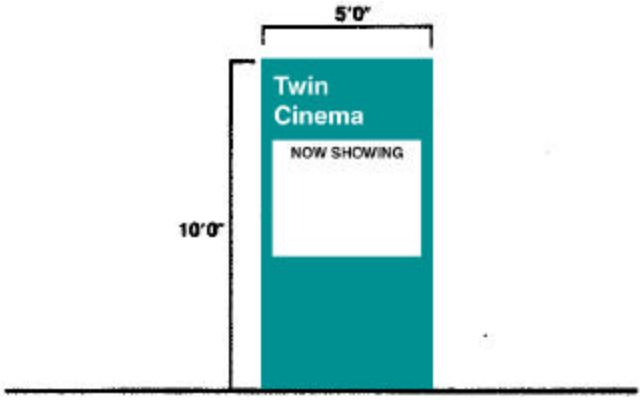
Type DI signs are used to identify community organizations and sub activities in one or more buildings usually with a common parking area.



Type D1

- Type D2: Primary Facilities with Changeable Message Board

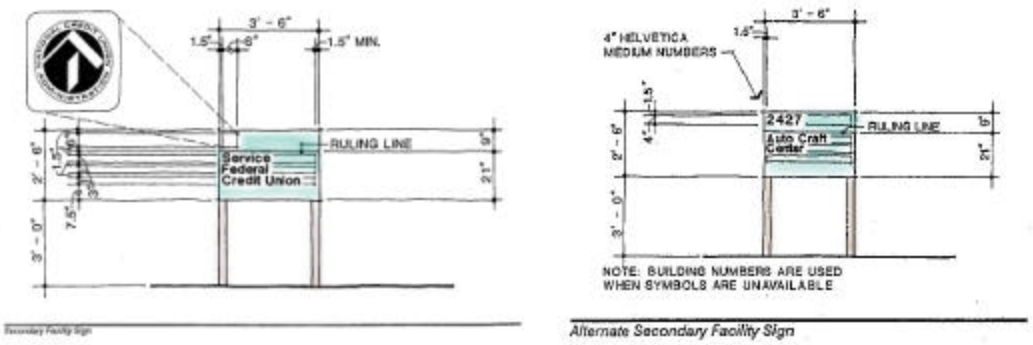
Type D2 signs identifies individual organizations, which support changing activities, such as theaters, gymnasiums, auditoriums, and religious facilities.



Type D2

Type D3: Primary Facilities

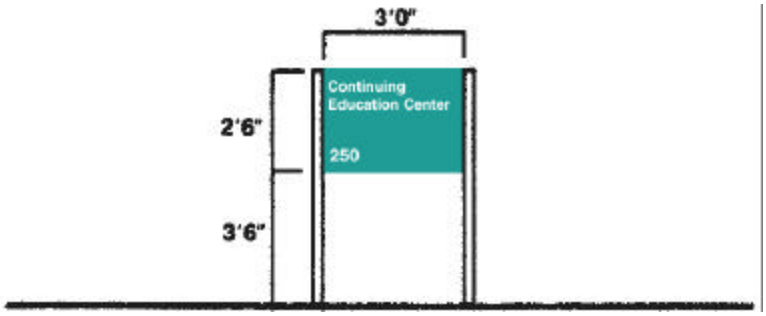
Type D3 signs are used to identify individual organizations, such as the commissary, post office, and bank.



Type D3

- Type D4: Secondary Facilities

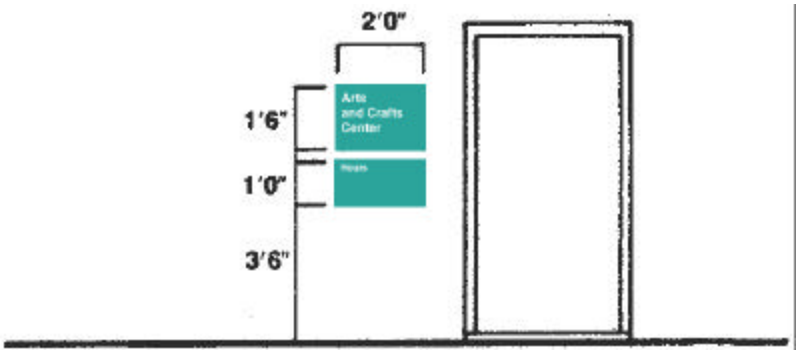
Type D4 identifies the same information as type D3, but is smaller in size.



Type D4

- Type D5: Building Entrance

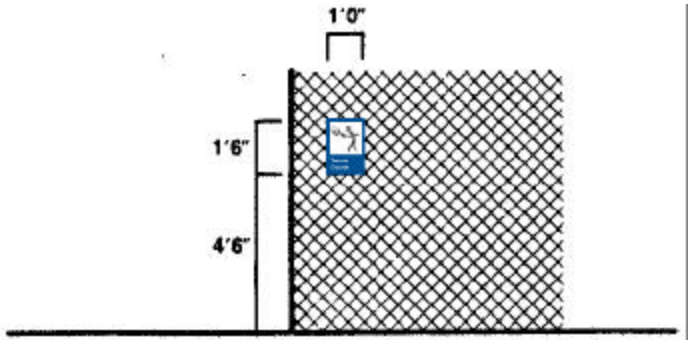
Type D5 signs are used to identify the entry points of a community facility. If required, a sign plaque showing the hours of operation may be placed beneath the basic entrance sign.



Type D5

- Type D6: Recreation Facilities

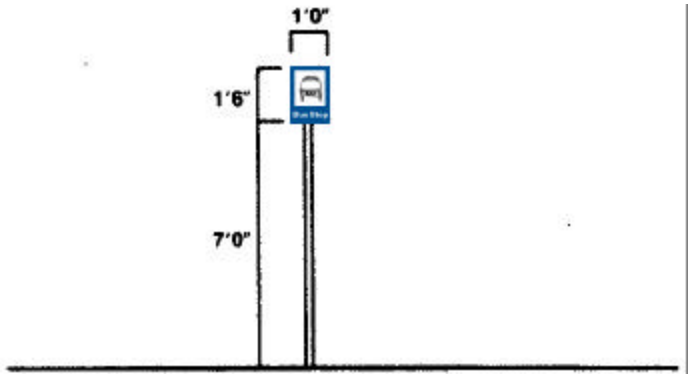
Type D6 signs are used to identify an outdoor recreation or park facility.



Type D6

- Type D7: Bus Route

Type D7 signs are used to identify bus services, such as bus routes, stops and schedules, which are unique to the Army or an extension of local public transportation services.



Type D7

- Note: Refer to TM for detailed information on sign selection criteria.

Motivational

Present throughout Army installations are signs designed to motivate. They are important elements of campaigns to boost morale, improve safety, aid in recruiting, and accomplish other special objectives. Motivational signs are unique in appearance and do not have specified graphic layouts. Unit insignias, emblems, branch colors, mottos, and names and titles of individuals are typically included on these signs.

Motivational signs are the most difficult signs to create. They must be provocative, thoughtful and inspiring without becoming the objects of mild derision. The design, wording and placement of these signs deserve careful consideration if they are to be effective motivators.

Motivational signs are categorized within the TM into the following types:

- Type EI: Installation Motivational

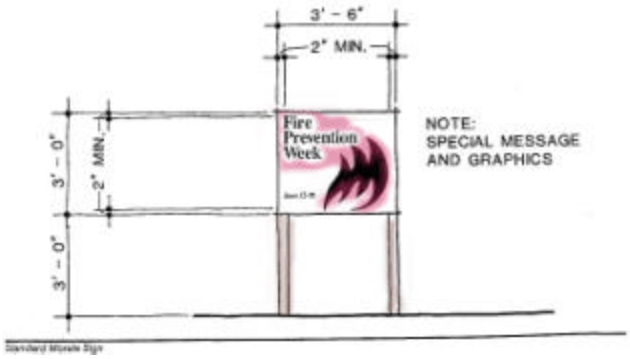
  Type EI signs identify the major military units located at each installation and display their insignia or emblems.

Type E1

Type E1 example

- Type E2: Standard Motivational

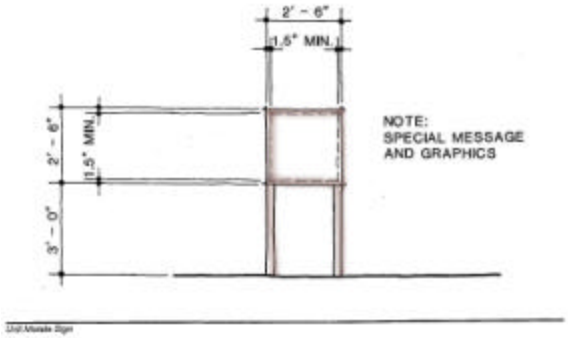
Type E2 signs are used to promote campaigns and support special events, such as safety programs and donation drives.

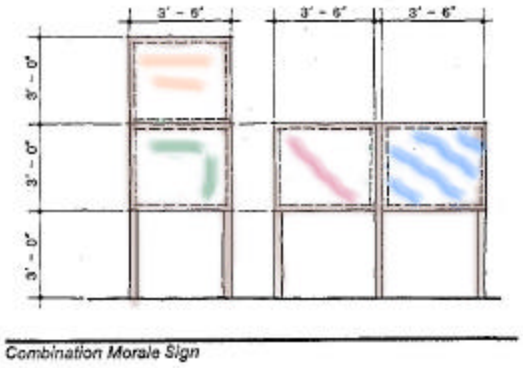


Type E2

- Type E3: Unit Motivational

Type E3 signs are used to express unit pride and to display organizational insignia, emblems, and mottos.





Type E3

Type E3 example

- Note: Refer to TM for detailed information on sign selection criteria.

Guide

Guide signs are an essential means for locating destinations and routing travel to those destinations within a military installation. This category includes site directory map signs at all entrance gates and other key points within the installation; large street name signs at all inter sections; and large-lettered destination signs of not more than three lines. Together, these signs provide the most efficient means of guiding traffic to destinations within an installation. Installation building addresses similar to a municipality are the basis for this system.

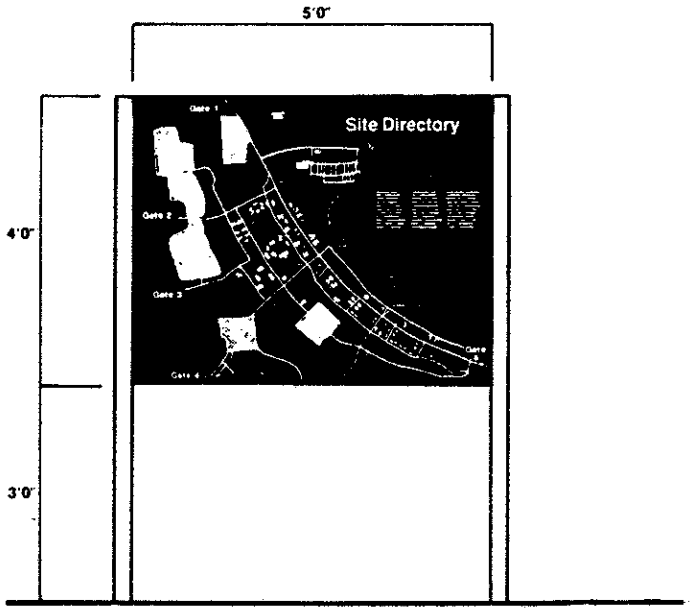
Guide signs are categorized within the TM into the following types:

- Destination and Street Name

  These signs should be in accordance with the "Manual on Uniform Traffic Control Devices," and MTMC Pamphlet 55-14.

- Type FI: Site Directory Map

Type FI site directory map signs provide visitors with a simplified site map of the installation for orientation and directional guidance.



Type F1

- Note: Refer to TM for detailed information on sign selection criteria.

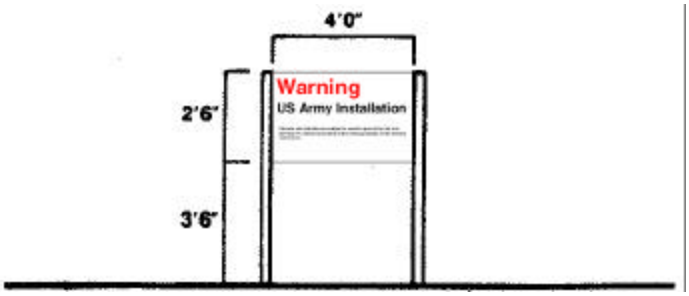
Mandatory/Prohibitory

Mandatory/prohibitory signs restrict, warn and advise visitor and installation personnel in matters of Army security, safety and parking controls. To avoid confusion, directives should not be unnecessarily wordy. Signs should be used in moderation so that their message is not lost among many signs.

Mandatory/prohibitory signs are categorized within the TM into the following types:

- Type G1: Warning

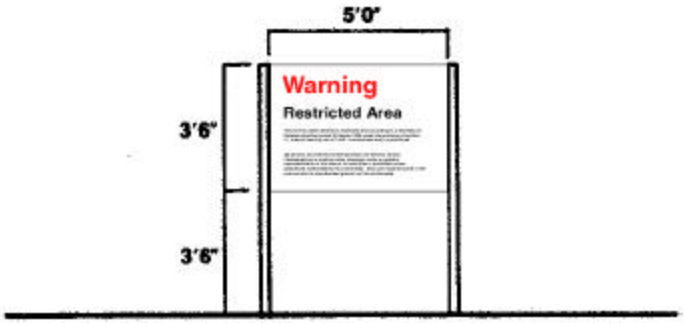
Type G1 signs notify visitors of restrictions governing conduct on the installation and of entrances limited to authorized personnel.



Type G1

- Type G2: Warning

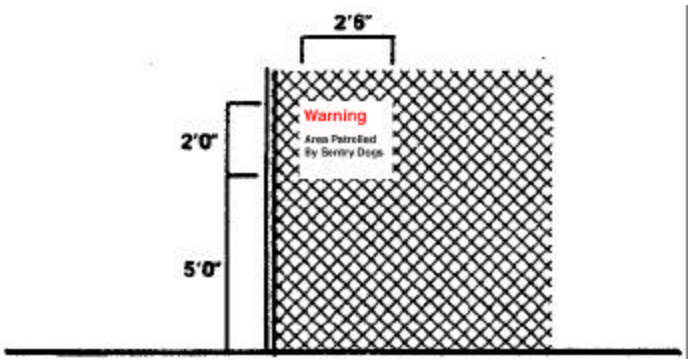
Type G2 signs notify visitors and installation personnel of regulations pertaining to restricted areas on the installation.



Type G2

- Type G3: Warning

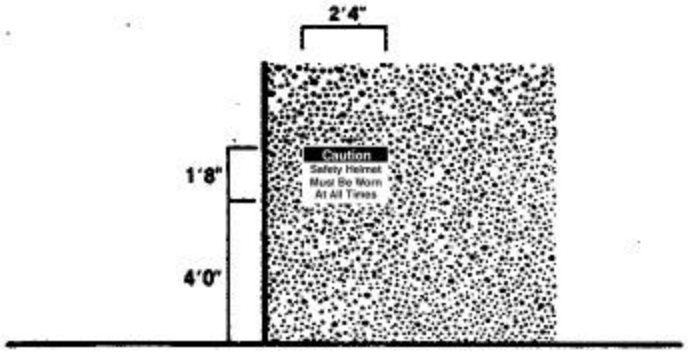
Type G3 signs may notify visitors and installation personnel of general hazards, regulations, and restricted areas similar to types G1 and G2, but on a smaller sized sign.



Type G3

- Type G4: Safety

Specifications for Type G4 safety signs are detailed in AR 385-30, and are in accordance with these guidelines.



Type G4

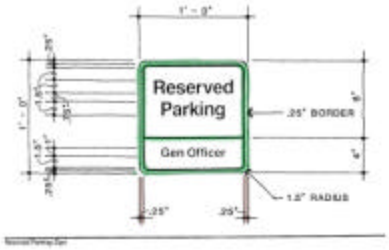
- Type G5: Parking

Type G5 signs have been designed to supplement the "Manual on Uniform Traffic Control Devices" parking standards. Type G5 signs may be freestanding or wall-mounted.

Type G5

- Type G6: Parking

Type G6 signs have been designed to identify reserved parking stalls and to supplement the "Manual on Uniform Traffic Control Devices" parking standards. Parking regulations for the physically handicapped are given in the EM 1110-1103. Type G6 signs may be freestanding or wall-mounted. In addition, curb markings are recommended since they are visually less obtrusive than sign panels on vertical posts. Sign placement guidelines should follow the guidelines in the "Manual on Uniform Traffic Control Devices."



Type G6

- Type G7: Special Traffic

Type G7 signs which identify special conditions, such as tactical equipment limits and trail crossings, follow guidelines established in "Traffic Engineering for Better Signs and Markings," published by the Military Traffic Management Command, and standards in the "Manual on Uniform Traffic Control Devices."

- Note: Refer to TM for detailed information on sign selection criteria.

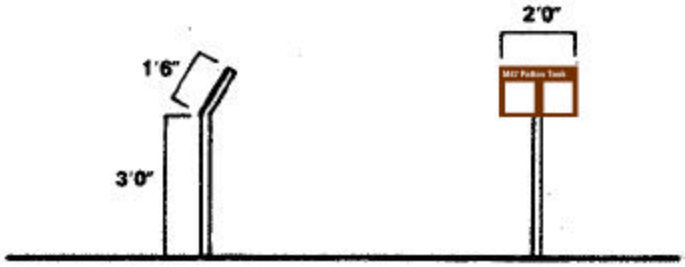
Informational

Information signs are used to provide educational information and directional guidance for visitors.

Informational signs are categorized within the TM into the following types:

- Type HI: Exhibit

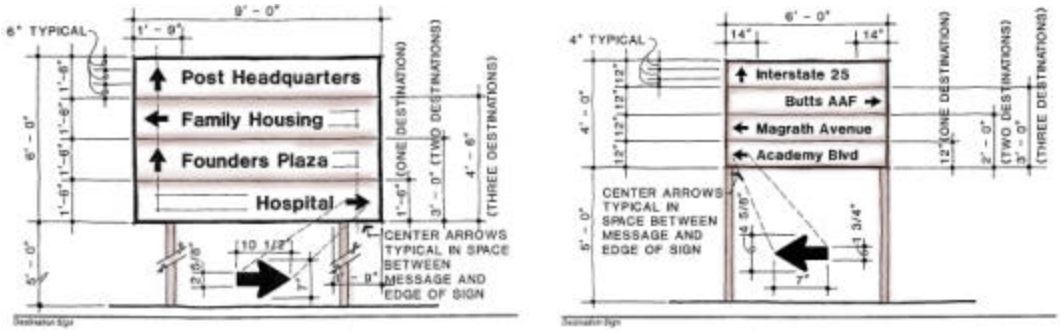
  Type HI signs are used to display information on exhibits of a large or small scale.



Type H1

- Type H2: Pedestrian

  Type H2 signs provides directional guidance for pedestrians. These signs are fabricated from modular sign panels with one destination per panel so that messages can be changed without remaking the entire sign face. Pedestrian signs, which are not expected to receive frequent message changes, should be fabricated from a single sign panel. Messages are grouped in the following order according to their arrow direction: forward, left, and right. In addition, placement of the message on the sign panel is determined by the arrow direction; destinations forward and left have flush left messages, destinations right have flush right messages. The arrow is centered in the space between the message and the edge of the sign. No more than six panels may be mounted on a single base with a maximum of one message line per panel.



Type H2

Type H2 example

- Note: Refer to TM for detailed information on sign selection criteria.

Appendix I

Acceptable Plants List

and

Ft Stewart - Section 32 93 00 EXTERIOR PLANTS

PLANT SELECTION LIST Plant Material Suitability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
Botanical Name	Common Name	Characteristics														Culture								Use							
SHADE TREES																															
Acer rubrum	Red Maple	X				X						X	X	X	X						X	X		X	X		X				X
Betula nigra	River Birch	X				X					X			X						X	X	X	X			X		X				X
Liriodendron tulipifera	Tulip Poplar	X				X			X	X		X			X							X				X		X				X
Magnolia grandiflora	Southern Magnolia		X			X			X	X		X		X	X					X		X		X	X		X				X
Platanus occidentalis	London Planetree	X				X						X		X	X						X	X		X	X		X				X
Quercus falcata	Southern Red Oak	X		X								X		X	X							X		X	X		X				X
Quercus laurifolia	Laurel Oak	X		X								X		X	X					X	X	X		X	X		X				X
Quercus phellos	Willow Oak	X		X								X		X	X						X	X		X	X		X				X
Quercus shumardii	Shumard Oak	X		X								X		X	X					X	X	X		X	X		X				X
Quercus virginiana	Live Oak	X		X								X		X	X					X	X	X		X	X		X				X
INTERMEDIATE TREES																															
Carpinus caroliniana	Blue Beech	X				X						X	X	X							X	X									X
Cercis Canadensis	Redbud	X				X			X	X			X	X	X				X	X		X					X				X
Cornus florida	Flowering Dogwood	X		X					X	X		X	X	X					X	X		X					X				X
Koelreuteria paniculata	Goldenrain Tree	X				X		X				X			X				X	X	X	X	X		X						X
Lagerstroemia indica	Crapemyrtle	X		X			X	X		X	X	X			X							X					X				X
Magnolia soulangeana	Saucer Magnolia	X		X					X	X	X		X	X						X		X			X						X
Magnolia virginiana	Sweet Bay Magnolia		X	X					X	X	X	X	X	X						X	X	X			X		X				X
Myrica cerifera	Southern Wax Myrtle		X			X			X			X		X	X					X		X				X	X				X
Nyssa sylvatica	Black Tupelo	X		X								X		X	X					X	X	X					X				X
Pyrus calleryana ‘Aristocrate’	Aristocrat Pear	X				X			X	X		X			X				X	X		X	X					X				X
Sapium sebiferum	Chinese Yellowtree	X				X		X				X		X						X	X	X	X		X						X
Taxodium distichum	Common Bald Cypress	X				X					X	X		X	X						X	X		X			X				
EVERGREEN TREES																															
Butia capitata	Butia Palm		X	X								X			X							X					X				X
Eriobotrya japonica	Loquat		X	X			X			X		X		X	X					X		X					X				X
Juniperus virginiana	Eastern Red Cedar		X			X					X			X	X					X		X	X			X	X	X			X
Pinus elliottii	Slash Pine		X			X						X		X	X							X				X	X	X			X
Pinus palustris	Longleaf Pine		X			X						X		X	X							X				X	X	X			X
Sabal palmetto	Cabbage Palmetto		X	X								X			X					X		X		X			X				X
Trachycarpus fortunei	Windmill Palm		X	X								X			X				X			X	X	X			X				X
EVERGREEN SHRUBS																															

PLANT SELECTION LIST Plant Material Suitability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
Botanical Name	Common Name	Characteristics														Culture								Use							
Buxus microphyllum	Japanese Boxwood		X	X			X			X		X		X	X						X	X					X		X	X
Camellia sasanqua	Fall-blooming Camellia		X	X			X			X		X		X	X						X	X				X				X
Cotoneaster horizontalis	Rockspray Cotoneaster		X	X								X		X	X							X					X			X
Cycas revolute	Sago Cycas		X	X								X		X	X					X		X					X			X
Elaeagnus pungens	Thorny Elaeagnus		X			X						X	X	X	X					X		X	X			X				X
Fatsia japonica	Japanese Fatsia		X	X			X			X		X		X	X							X					X			X
Hypericum patulum ‘Sungold’	Sungold Hypericum		X			X		X		X		X		X	X				X	X		X	X				X				X
Ilex cornuta ‘Burfordii’	Burford Holly		X	X								X		X	X					X		X				X	X				X
Ilex cornuta ‘Carissa’	Carissa Holly		X	X								X		X	X				X	X		X				X	X				X
Ilex cornuta ‘Rotunda’	Dwarf Chinese Holly		X	X								X		X	X				X	X		X				X	X				X
Ilex crenata	Japanese Holly		X	X								X		X	X					X		X				X	X		X		X
Ilex crenata ‘Helleri’	Heller Japanese Holly		X	X								X		X	X							X					X		X		X
Ilex opaca ‘Fosteri’	Fosters Holly		X	X								X		X	X					X		X				X					X
Ilex opaca ‘Savannah’	Savannah Holly		X	X								X		X	X					X		X				X					X
Ilex vomitoria	Yaupon Holly		X	X								X		X	X					X		X				X	X				X
Ilex vomitoria ‘Stokes dwarf’	Dwarf Yaupon Holly		X	X								X		X	X					X		X				X	X				X
Illicium parviflorum	Yellow Anise-Tree		X			X	X			X		X	X	X	X					X	X	X					X				X
Illicium floridanum	Florida Anise-Tree		X			X	X			X		X	X	X	X					X	X	X					X				X
Juniperus chinensis ‘Torulosa’	Hollywood Torulosa Juniper		X	X								X			X							X									X
Juniperus chinensis ‘Pfitzeriana’	Pfitzer Juniper		X	X								X			X				X			X	X				X				X
Juniperis conferta	Shore Juniper		X	X								X			X				X			X	X				X				X
Juniperus horizentalis ‘Plumosa’	Andorra Juniper		X	X								X			X				X			X	X				X				X
Ligustrum japonicum	Japanese Privet		X			X			X	X		X		X	X				X			X				X	X				X
Ligustrum lucidum	Golden Privet		X			X			X	X		X		X	X				X			X				X	X				X
Mahonia bealei	Leatherleaf Mahonia		X	X					X	X		X	X	X								X					X				X
Nandina domestica	Heavenly Bamboo		X			X			X	X		X	X	X	X				X		X	X	X				X				X
Osmanthus americanus	Devilwood Osmanthus		X	X			X			X		X	X	X						X		X									X
Osmanthus fragrans	Fragrant Tea Olive		X			X	X			X		X	X	X						X		X				X	X				X
Photinia serrulata	Chinese Photinia		X			X			X	X		X		X	X							X	X			X	X				X
Pittosporum tobira	Japanese Pittosporum		X			X			X	X		X	X	X	X							X	X			X	X				X

PLANT SELECTION LIST Plant Material Suitability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
Botanical Name	Common Name	Characteristics														Culture								Use						
Podocarpus marcrophyllus ‘Maki’	Shrubby Yew Podocarpus		X	X					X	X		X	X	X	X				X	X		X	X			X	X	X			X
Prunus caroliniana	Cherry Laurel		X	X					X	X		X		X	X							X				X					X
Pyracantha coccinea	Scarlet Firethorn		X			X		X		X					X							X					X				X
Raphiolepis indica	Indian Hawthorn		X	X					X	X		X	X	X	X				X		X	X	X				X				X
Rhododendron indicum	Indica Azalea		X			X			X	X		X	X	X							X	X					X				X
Rhododendron obtusum	Kurume Azalea		X	X					X	X		X	X	X							X	X					X				X
Ternstroemia gymnathera	Japanese Cleyera		X	X					X	X		X		X	X				X	X		X	X			X	X				X
Viburnum odoratissumum	Sweet Viburnum		X			X			X			X		X								X	X			X	X				X
DECIDUOUS SHRUBS																															
Clethra alnifolia	Summersweet Clethra	X				X		X		X			X	X	X					X		X					X				X
Hibiscus syriacus	Shrub Althea	X		X						X			X	X	X					X		X	X				X				
Hydrangea macrophylla	Bigleaf Hydrangea	X				X		X		X			X	X							X	X					X				X
Hydrangea quercifolia	Oakleaf Hydrangea	X				X		X		X	X			X	X					X		X					X				X
Jasminum nudiflorum	Winter Jasmine	X		X					X	X			X	X	X				X	X		X	X				X				X
Lonicera fragrantissima	Winter Honeysuckle	X				X			X	X			X	X						X		X				X	X				X
Spiraea thunbergii	Thunberg Spirea	X				X		X		X					X							X					X				X
Spiraea x vanhouttei	Vanhoutte Spirea	X				X		X		X					X							X					X				X
GROUNDCOVERS/VINES																															
Ajuga reptans	Carpet Bugle	X				X			X	X		X	X	X	X				X	X	X	X	X				X				
Euonymus fortunei ‘Radicans’	Common Wintercreeper		X	X								X		X	X							X					X				
Hedera canariensis	Algerian Ivy		X	X						X			X	X						X		X					X				
Hedera helix	English Ivy		X	X						X			X	X						X		X					X				
Hemerocallis	Daylilly	X				X	X	X		X		X		X	X					X		X					X				
Juniperus chinensis ‘Sargentii’	Sargent Juniper		X	X								X		X	X							X	X				X				
Juniperus conferta ‘Blue Pacific’	Blue Pacific Juniper		X	X								X		X	X							X	X				X				
Juniperus horizentalis	Creeping Juniper		X	X								X		X	X							X	X				X				
Juniperus procumbrens	Japgarden Juniper		X	X								X		X	X							X	X				X				
Vinca major	Bigleaf Periwinkle		X			X			X	X		X		X	X							X					X				
GRASSES																															
Axonopus affinis	Carpet Grass	X				X						X		X								X					X				

PLANT SELECTION LIST Plant Material Suitability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
Botanical Name	Common Name	Characteristics														Culture								Use							
Cortaderia selloana	Pampas Grass	X				X		X		X			X	X	X					X		X	X				X				X
Cynodon dactylon ‘Tiflawn’	Common Bermuda Grass	X				X						X			X							X					X				
Ermochloa ophiuroides	Centipede Grass	X		X						X				X	X							X					X				
Liriope muscari	Big Blue Lilyturf	X				X		X		X		X	X	X					X			X	X				X				
Liriope spicata	Creeping Lilyturf	X				X		X		X		X	X	X					X			X	X				X				
Stenotaphrum secundatum	St. Augustine Grass	X				X						X	X									X					X				

SECTION 32 93 00

EXTERIOR PLANTS
07/06

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 NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A300	(2004) Tree Care Operations - Trees, Shrubs and Other Woody Plant Maintenance
ANSI Z133.1	(2006) Arboricultural Operations - Safety Requirements for Pruning, Repairing, Maintaining, and Removing Trees, and Cutting Brush
ANSI Z60.1	(2004) Nursery Stock

ASTM INTERNATIONAL (ASTM)

ASTM A 580/A 580M	(2006) Standard Specification for Stainless Steel Wire
ASTM C 602	(2007) Agricultural Liming Materials
ASTM D 1972	(1997; R 2005) Standard Practice for Generic Marking of Plastic Products
ASTM D 2729	(2003) Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM D 3034	(2006) Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM D 4427	(2007) Peat Samples by Laboratory Testing
ASTM D 4972	(2001; R 2007) pH of Soils
ASTM D 5203	(2007) Polyethylene Plastics Molding and Extrusion Materials from Recycled Post-Consumer (HDPE) Sources
ASTM D 5268	(2007) Topsoil Used for Landscaping Purposes
ASTM D 5852	(2000; R 2007) Standard Test Method for Erodibility Determination of Soil in the Field or in the Laboratory by the Jet Index Method
ASTM D 6629	(2001; R 2007) Selection of Methods for

	Estimating Soil Loss by Erosion
ASTM F 405	(2005) Corrugated Polyethylene (PE) Tubing and Fittings

FOREST STEWARDSHIP COUNCIL (FSC)

FSC STD 01 001	(2000) Principles and Criteria for Forest Stewardship

L.H. BAILEY HORTORIUM (LHBH)

LHBH	(1976) Hortus Third

U.S. DEPARTMENT OF AGRICULTURE (USDA)

DOA SSIR 42	(1996) Soil Survey Investigation Report No. 42, Soil Survey Laboratory Methods Manual, Version 3.0

U.S. GREEN BUILDING COUNCIL (USGBC)

LEED	(2002; R 2005) Leadership in Energy and Environmental Design(tm) Green Building Rating System for New Construction (LEED-NC)

1.2 RELATED REQUIREMENTS

Section 31 00 00 EARTHWORK, Section 32 92 19 SEEDING, and Section 32 05 33 LANDSCAPE ESTABLISHMENT applies to this section for pesticide use and plant establishment requirements, with additions and modifications herein.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Governemnt. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

State Landscape Contractor's License

Time Restrictions and Planting Conditions

Indicate anticipated dates and locations for each type of planting.

SD-03 Product Data

Local/Regional Materials; (LEED)

Submit documentation indicating distance between manufacturing facility and the project site. Indicate distance of raw material origin from the project site. Indicate relative dollar value of local/regional materials to total dollar value of products included in project.

Peat
Composted Derivatives
Rotted Manure
Organic Mulch Materials

Submit documentation indicating type of biobased material in product and biobased content. Indicate relative dollar value of biobased content products to total dollar value of products included in project.

Gypsum; (LEED)
Drainage Pipe; (LEED)
Mulch; G,
Ground Stakes

Submit documentation indicating percentage of post-industrial and post-consumer recycled content per unit of product. Indicate relative dollar value of recycled content products to total dollar value of products included in project.

Fertilizer
Hose
Weed control fabric; G,

Staking Material
Ground Stakes

Submit documentation certifying products are from salvaged/recovered lumber sources and indicating percentage of salvaged/recovered content per unit of product.

Metal anchors

Antidesiccants

Erosion control materials

Photographs; G,

SD-04 Samples

Mulch; G,

Submit one pint of mulch.

SD-06 Test Reports

Topsoil composition tests; ; Soil Test of proposed area; Soil Test location map

Percolation Test; ; Percolation Test of proposed area

SD-07 Certificates

Forest Stewardship Council (FSC) Certification; (LEED)

Nursery certifications

Indicate names of plants in accordance with the LHBH, including type, quality, and size.

SD-10 Operation and Maintenance Data

Plastic Identification

When not labeled, identify types in Operation and Maintenance Manual.

1.4 QUALITY ASSURANCE

1.4.1 Topsoil Composition Tests

Commercial test from an independent testing laboratory including basic soil groups (moisture and saturation percentages, Nitrogen-Phosphorus-Potassium (N-P-K) ratio, pH (ASTM D 4972), soil salinity), secondary nutrient groups (calcium, magnesium, sodium, Sodium Absorption Ratio (SAR)), micronutrients (zinc, manganese, iron, copper), toxic soil elements (boron, chloride, sulfate), cation exchange and base saturation percentages, and soil amendment and fertilizer recommendations with quantities for plant material being transplanted. Soil required for each test shall include a maximum depth of 18 inches of approximately 1 quart volume for each test. Areas sampled should not be larger than 1 acre and should contain at least 6-8 cores for each sample area and be thoroughly mixed. Problem areas should be sampled separately and compared with samples taken from adjacent non-problem areas. The location of the sample areas should be noted and marked on a parcel or planting map for future reference.

1.4.2 Nursery Certifications

a. Indicate on nursery letterhead the name of plants in accordance with the LHBH, including botanical common names, quality, and size.

b. Inspection certificate.

c. Mycorrhizal fungi inoculum for plant material treated

1.4.3 State Landscape Contractor's License

Construction company shall hold a landscape contractors license in the state where the work is performed and have a minimum of five years landscape construction experience. Submit copy of license and three references for similar work completed in the last five years.

1.4.4 Plant Material Photographs

Contractor shall submit nursery photographs, for government approval prior to ordering, for each tree larger than 24-inch box/ or 2-inch caliper size.

1.4.5 Percolation Test

Immediately following rough grading operation, identify a typical location for one of the largest trees and or shrubs and excavate a pit per the project details. Fill the pit with water to a depth of 12 inches. The length of time required for the water to percolate into the soil, leaving the pit empty, shall be measured by the project Landscape Architect and verified by the Contracting Officer. Within six hours of the time the

water has drained from the pit, the Contractor, with the Contracting Officer and project Landscape Architect present, shall again fill the pit with water to a depth of 12 inches. If the water does not completely percolate into the soil within 9 hours, a determination shall be made whether a drainage system or a soil penetrant will be required for each tree and or shrub being transplanted.

1.4.6 Erosion Assessment

Assess potential effects of soil management practices on soil loss in accordance with ASTM D 6629. Assess erodibility of soil with dominant soil structure less than 2.8 to 3.1 inches in accordance with ASTM D 5852.

1.4.7 Pre-Installation Meeting

Convene a pre-installation meeting a minimum of one week prior to commencing work of this section. Require attendance of parties directly affecting work of this section. Review conditions of operations, procedures and coordination with related work. Agenda shall include the following:

a. Tour, inspect, and discuss conditions of planting materials.

b. Review planting schedule and maintenance.

c. Review required inspections.

d. Review environmental procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

1.5.1 Delivery

1.5.1.1 Branched Plant Delivery

Deliver with branches tied and exposed branches covered with material which allows air circulation. Prevent damage to branches, trunks, root systems, and root balls and desiccation of leaves.

1.5.1.2 Soil Amendment Delivery

Deliver to the site in original, unopened containers bearing manufacturer's chemical analysis, name, trade name, or trademark, and indication of conformance to state and federal laws. Instead of containers, fertilizer, gypsum, sulfur, iron, and lime may be furnished in bulk with a certificate indicating the above information. Store in dry locations away from contaminates.

1.5.1.3 Plant Labels

Deliver plants with durable waterproof labels in weather-resistant ink. Provide labels stating the correct botanical and common plant name and variety as applicable and size as specified in the list of required plants. Attach to plants, bundles, and containers of plants. Groups of plants may be labeled by tagging one plant. Labels shall be legible for a minimum of 60 days after delivery to the planting site.

1.5.2 Storage

1.5.2.1 Plant Storage and Protection

Store and protect plants not planted on the day of arrival at the site as follows:

a. Shade and protect plants in outside storage areas from the wind and direct sunlight until planted.

b. Heel-in bare root plants.

c. Protect balled and burlapped plants from freezing or drying out by covering the balls or roots with moist burlap, sawdust, wood chips, shredded bark, peat moss, or other approved material. Provide covering which allows air circulation.

d. Keep plants in a moist condition until planted by watering with a fine mist spray.

e. Do not store plant material directly on concrete or bituminous surfaces.

1.5.2.2 Fertilizer, Gypsum, pH Adjusters and Mulch Storage

Store in dry locations away from contaminants.

1.5.2.3 Topsoil

Prior to stockpiling topsoil, eradicate on site undesirable growing vegetation. Clear and grub existing vegetation three to four weeks prior to stockpiling existing topsoil.

1.5.2.4 Weed Control Fabric

Store materials on site in enclosures or under protective covering in dry location. Store under cover out of direct sunlight. Do not store materials directly on ground.

1.5.3 Handling

Do not drop or dump plants from vehicles. Avoid damaging plants being moved from nursery or storage area to planting site. Handle boxed, balled and burlapped, and container plants carefully to avoid damaging or breaking the earth ball or root structure. Do not handle plants by the trunk or stem. Remove damaged plants from the site.

1.5.4 TIME LIMITATION

Except for container-grown plant material, the time limitation from digging to installing plant material shall be a maximum of 90 days. The time limitation between installing the plant material and placing the mulch shall be a maximum of 24 hours.

1.6 TIME RESTRICTIONS AND PLANTING CONDITIONS

Coordinate installation of planting materials during optimal planting seasons for each type of plant material required.

1.6.1 Planting Dates

1.6.1.1 Deciduous Material

Deciduous material from January to March for spring planting and from October to December for fall planting.

1.6.1.2 Evergreen Material

Evergreen material from February to June for spring /summer planting and from September to December for fall /winter planting.

1.6.2 Restrictions

Do not plant when ground is frozen, muddy, or when air temperature exceeds 90 degrees Fahrenheit

1.7 GUARANTEE

All plants shall be guaranteed for one year beginning on the date of inspection by the Contracting Officer to commence the plant establishment period, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by the Government or by weather conditions unusual for the warranty period.

Remove and replace dead planting materials immediately unless required to plant in the succeeding planting season. At end of warranty period, replace planting materials that die or have 25 percent or more of their branches that die during the construction operations or the guarantee period.

1.8 SUSTAINABLE DESIGN REQUIREMENTS

1.8.1 Local/Regional Materials

Use materials or products extracted, harvested, or recovered, as well as manufactured, within a 500 mile radius from the project site, if available from a minimum of three sources.See Section 01 33 29 LEED(tm) DOCUMENTATION for cumulative total local material requirements. Landscaping materials may be locally available.

1.8.2 Plastic Identification

Verify that plastic products to be incorporated into the project are labeled in accordance with ASTM D 1972. Where products are not labeled, provide product data indicating polymeric information in Operation and Maintenance Manual.
Type 1: Polyethylene Terephthalate (PET, PETE).
Type 2: High Density Polyethylene (HDPE).
Type 3: Vinyl (Polyvinyl Chloride or PVC).
Type 4: Low Density Polyethylene (LDPE).
Type 5: Polypropylene (PP).
Type 6: Polystyrene (PS).
Type 7: Other. Use of this code indicates that the package in question is made with a resin other than the six listed above, or is made of more than one resin listed above, and used in a multi-layer combination.

1.8.3 Forest Stewardship Council (FSC) Certification

Use FSC-certified wood where specified. Provide letter of certification signed by lumber supplier. Indicate compliance with FSC STD 01 001 and identify certifying organization. Submit FSC certification numbers; identify each certified product on a line-item basis. Submit copies of invoices bearing the FSC certification numbers.

PART 2 PRODUCTS

2.1 PLANTS

2.1.1 Regulations and Varieties

Existing trees and shrubs to remain shall be protected and a planting plan be arranged around them. Furnish nursery stock in accordance with ANSI Z60.1, except as otherwise specified or indicated. Each plant or group of planting shall have a "key" number indicated on the nursery certifications of the plant schedule. Furnish plants, including turf grass, grown under climatic conditions similar to those in the locality of the project. Spray plants budding into leaf or having soft growth with an antidesiccant before digging. Plants of the same specified size shall be of uniform size and character of growth. All plants shall comply with all Federal and State Laws requiring inspection for plant diseases and infestation.

2.1.2 Shape and Condition

Well-branched, well-formed, sound, vigorous, healthy planting stock free from disease, sunscald, windburn, abrasion, and harmful insects or insect eggs and having a healthy, normal, and undamaged root system.

2.1.2.1 Deciduous Trees and Shrubs

Symmetrically developed and of uniform habit of growth, with straight boles or stems, and free from objectionable disfigurements.

2.1.2.2 Evergreen Trees and Shrubs

Well developed symmetrical tops with typical spread of branches for each particular species or variety.

2.1.2.3 Ground Covers and Vines

Number and length of runners and clump sizes indicated, and of the proper age for the grade of plants indicated, furnished in removable containers, integral containers, or formed homogeneous soil section.

2.1.3 Plant Size

Minimum sizes measured after pruning and with branches in normal position, shall conform to measurements indicated, based on the average width or height of the plant for the species as specified in ANSI Z60.1. Plants larger in size than specified may be provided with approval of the Contracting Officer. When larger plants are provided, increase the ball of earth or spread of roots in accordance with ANSI Z60.1.

2.1.4 Root Ball Size

All box-grown, field potted, field boxed, collected, plantation grown, bare root, balled and burlapped, container grown, processed-balled, and in-ground fabric bag-grown root balls shall conform to ANSI Z60.1. All wrappings and ties shall be biodegradable. Root growth in container grown plants shall be sufficient to hold earth intact when removed from containers. Root bound plants will not be accepted.

2.1.4.1 Mycorrhizal fungi inoculum

Before shipment, root systems shall contain mycorrhizal fungi inoculum.

2.1.5 Growth of Trunk and Crown

2.1.5.1 Deciduous Trees

A height to caliper relationship shall be provided in accordance with ANSI Z60.1. Height of branching shall bear a relationship to the size and species of tree specified and with the crown in good balance with the trunk. The trees shall not be "poled" or the leader removed.

a. Single stem: The trunk shall be reasonably straight and symmetrical with crown and have a persistent main leader.

b. Multi-stem: All countable stems, in aggregate, shall average the size specified. To be considered a stem, there shall be no division of the trunk which branches more than 6 inches from ground level.

2.1.5.2 Palms

Palms shall have the specified height as measured from the base of the trunk to the base of the fronds or foliage in accordance with ANSI Z60.1. The palm shall have straight trunk and healthy fronds or foliage as typical for the variety grown in the region of the project. Palms trimmed or pruned for delivery shall retain a minimum of 6 inches of foliage at the crown as a means of determining plant health.

2.1.5.3 Deciduous Shrubs

Deciduous shrubs shall have the height and number of primary stems recommended by ANSI Z60.1. Acceptable plant material shall be well shaped, with sufficient well-spaced side branches, and recognized by the trade as typical for the species grown in the region of the project.

2.1.5.4 Coniferous Evergreen Plant Material

Coniferous Evergreen plant material shall have the height-to-spread ratio recommended by ANSI Z60.1. The coniferous evergreen trees shall not be "poled" or the leader removed. Acceptable plant material shall be exceptionally heavy, well shaped and trimmed to form a symmetrical and tightly knit plant. The form of growth desired shall be as indicated.

2.1.5.5 Broadleaf Evergreen Plant Material

Broadleaf evergreen plant material shall have the height-to-spread ratio recommended by ANSI Z60.1. Acceptable plant material shall be well shaped and recognized by the trade as typical for the variety grown in the region

of the project.

2.1.5.6 Ground Cover and Vine Plant Material

Ground cover and vine plant material shall have the minimum number of runners and length of runner recommended by ANSI Z60.1. Plant material shall have heavy, well developed and balanced crown with vigorous, well developed root system and shall be furnished in containers.

2.2 TOPSOIL

2.2.1 On-Site Topsoil

Surface soil stripped and stockpiled on site and modified as necessary to meet the requirements specified for topsoil in paragraph entitled "Composition." When available topsoil shall be existing surface soil stripped and stockpiled on-site in accordance with Section 31 00 00 EARTHWORK.

2.2.2 Off-Site Topsoil

Conform to requirements specified in paragraph entitled "Composition." Additional topsoil shall be furnished by the Contractor or obtain from topsoil borrow areas indicated.

2.2.3 Composition

Evaluate soil for use as topsoil in accordance with ASTM D 5268. From 5 to 10 percent organic matter as determined by the topsoil composition tests of the Organic Carbon, 6A, Chemical Analysis Method described in DOA SSIR 42. Maximum particle size, 3/4 inch, with maximum 3 percent retained on 1/4 inch screen. The pH shall be tested in accordance with ASTM D 4972. Topsoil shall be free of sticks, stones, roots, plants, and other debris and objectionable materials. Other components shall conform to the following limits:

Silt	25-50 percent
Clay	10-30 percent
Sand	20-35 percent
pH	5.5 to 7.0
Soluble Salts	600 ppm maximum

2.3 SOIL CONDITIONERS

Provide singly or in combination as required to meet specified requirements for topsoil. Soil conditioners shall be nontoxic to plants.

2.3.1 Lime

Commercial grade hydrated limestone containing a calcium carbonate equivalent (C.C.E.) as specified in ASTM C 602 of not less than 80 percent.

2.3.2 Aluminum Sulfate

Commercial grade.

2.3.3 Sulfur

100 percent elemental

2.3.4 Iron

100 percent elemental

2.3.5 Peat

Natural product of peat moss derived from a freshwater site and conforming to ASTM D 4427 as modified herein. Shred and granulate peat to pass a 1/2 inch mesh screen and condition in storage pile for minimum 6 months after excavation. Biobased content shall be a minimum of 100 percent. Peat shall not contain invasive species, including seeds.

2.3.6 Sand

Clean and free of salt and other materials harmful to plants.

2.3.7 Perlite

Horticultural grade.

2.3.8 Composted Derivatives

Ground bark, nitrolized sawdust, humus or other green wood waste material free of stones, sticks, invasive species, including seeds, and soil stabilized with nitrogen and having the following properties:

2.3.8.1 Particle Size

Minimum percent by weight passing:

No. 4 mesh screen	95
No. 8 mesh screen	80

2.3.8.2 Nitrogen Content

Minimum percent based on dry weight:

Fir Sawdust	0.7
Fir or Pine Bark	1.0

2.3.8.3 Biobased Content

Minimum 100 percent.

2.3.9 Gypsum

Coarsely ground gypsum from recycled scrap gypsum board comprised of calcium sulfate dihydrate 91 percent, calcium 22 percent, sulfur 17 percent; minimum 96 percent passing through 20 mesh screen, 100 percent passing thru 16 mesh screen.

2.3.10 Rotted Manure

Well rotted horse or cattle manure containing maximum 25 percent by volume of straw, sawdust, or other bedding materials; free of seeds, stones, sticks, soil, and other invasive species.

2.4 PLANTING SOIL MIXTURES

100 percent topsoil as specified herein.

Sandy topsoil: one part topsoil to one part peat; clay topsoil: two parts topsoil to one part peat. Thoroughly mix all parts of planting soil mixture to a uniform blend throughout.

2.5 FERTILIZER

Fertilizer for groundcover, wildflowers and grasses is not permitted. Fertilizer for trees, plants, and shrubs shall be as recommended by plant supplier, except synthetic chemical fertilizers are not permitted. Fertilizers containing petrochemical additives or that have been treated with pesticides or herbicides are not permitted.

2.5.1 Granular Fertilizer

Organic, granular controlled release fertilizer containing the following minimum percentages, by weight, of plant food nutrients:

12 percent available nitrogen
12 percent available phosphorus
12 percent available potassium

2.5.2 Fertilizer Tablets

Organic, plant tablets composed of tightly compressed fertilizer chips forming a tablet that is insoluble in water, is designed to provide a continuous release of nutrients for at least 24 months and contains the following minimum percentages, by weight, of plant food nutrients:

20 percent available nitrogen
20 percent available phosphorus
5 percent available potassium

2.6 WEED CONTROL FABRIC

2.6.1 Roll Type Polypropylene or Polyester Mats

Fabric shall be woven, needle punched or non-woven and treated for protection against deterioration due to ultraviolet radiation. Fabric shall be minimum 99 percent opaque to prevent photosynthesis and seed germination from occurring, yet allowing air, water and nutrients to pass thru to the roots. Minimum weight shall be 5 ounces per square yard with a minimum thickness of 20 mils with a 20 year minimum guarantee.

2.7 DRAINAGE PIPE FOR PLANT PITS AND BEDS

Plastic polyvinyl chloride pipe, 4 inches in diameter, unperforated conforming to ASTM D 3034 SDR 35 perforated conforming to ASTM D 2729. Minimum 25 percent recycled content with a minimum of 5 percent post-consumer recycled content. Plastic HDPE pipe, 4 inches in diameter, unperforated and perforated conforming to ASTM D 5203. Minimum 100 percent post-consumer recycled content. Corrugated plastic drainage tubing, 6 inches in diameter, unperforated or perforated conforming to ASTM F 405.

2.8 MULCH

Free from noxious weeds, mold, pesticides, or other deleterious materials.

2.8.1 Organic Mulch Materials

Pine needles from site when available. Biobased content shall be a minimum of 100 percent.

2.9 STAKING AND GUYING MATERIAL

2.9.1 Staking Material

2.9.1.1 Tree Support Stakes

Rough sawn FSC-certified or salvaged hard wood free of knots, rot, cross grain, bark, long slivers, or other defects that impair strength. Stakes shall be minimum 2 inches square or 2 1/2 inch diameter by 8 feet long, pointed at one end. .

2.9.1.2 Ground Stakes

FSC-certified or salvaged wood or 50 percent post-consumer recycled content plastic, 2 inches square are by 3 feet long, pointed at one end.

2.9.2 Guying Material

2.9.2.1 Guying Wire

12 gauge annealed galvanized steel, ASTM A 580/A 580M.

2.9.2.2 Guying Cable

Minimum five-strand, 3/16 inch diameter galvanized steel cable.

2.9.3 Hose Chafing Guards

New or used 2 ply 3/4 inch diameter reinforced rubber or plastic hose, black or dark green, all of same color.

2.9.4 Flags

White surveyor's plastic tape,, 12 inches long, fastened to guying wires or cables.

2.9.5 Turnbuckles

Galvanized or cadmium-plated steel with minimum 3 inch long openings fitted with screw eyes. Eye bolts shall be galvanized or cadmium-plated steel with one inch diameter eyes and screw length 1 1/2 inches, minimum.

2.9.6 Metal Anchors

2.9.6.1 Driven Anchors

Malleable iron, arrow shaped, galvanized, sized as follows:

Tree Caliper	Anchor Size
2 inches and under	3 inches
3 to 6 inches	4 inches
6 to 8 inches	6 inches
8 to 10 inches	8 inches
10 to 12 inches	10 inches

2.9.6.2 Screw Anchors

Steel, screw type with welded-on 3 inch round helical steel plate, minimum 3/8 inch diameter, 15 inches long.

2.10 ANTIDESICCANTS

Sprayable, water insoluble vinyl-vinledine complex which produce a moisture retarding barrier not removable by rain or snow. Film shall form at temperatures commonly encountered out of doors during planting season and have a moisture vapor transmission rate (MVT) of the resultant film of maximum 10 grams per 24 hours at 70 percent humidity.

2.11 EROSION CONTROL MATERIALS

Erosion control material shall conform to the following:

2.11.1 Erosion Control Fabric

Fabric shall be knitted construction of polypropylene yarn with uniform mesh openings 3/4 to 1 inch square with strips of biodegradable paper. Filler paper strips shall have a minimum life of 6 months.

2.11.2 Erosion Control Material Anchors

Erosion control anchors shall be as recommended by the manufacturer.

2.12 WATER

Source of water to be approved by Contracting Officer and suitable quality for irrigation and shall not contain elements toxic to plant life, including acids, alkalis, salts, chemical pollutants, and organic matter. Use collected storm water or graywater when available.

2.12.1 Hose

Hoses used for watering shall be a minimum of 60 percent post-consumer rubber or plastic.

2.13 MYCORRHIZAL FUNGI INOCULUM

Mycorrhizal fungi inoculum shall be composed of multiple-fungus inoculum as recommended by the manufacturer for the plant material specified.

2.14 SOURCE QUALITY CONTROL

The Contracting Officer and Landscape Architect of Record will inspect plant materials at the project site and approve them.

PART 3 EXECUTION

3.1 EXTENT OF WORK

Provide soil preparation, fertilizing, tree, shrub, groundcover, and planting, staking and guying, weed control fabric,, erosion control material installation and a mulch topdressing of all newly graded finished earth surfaces, unless indicated otherwise, and at all areas inside or outside the limits of construction that are disturbed by the Contractor's operations.

3.2 ALTERNATIVE HERBICIDE TREATMENT (SOLARIZING SOIL)

Within 48 hours of subsoil preparation, saturate soil with water to a depth of 3 feet. Immediately stake polyethylene sheeting over area to be planted. Stake tightly to surface of soil. Maintain sheeting in place for a minimum of 6 weeks. Immediately after removing sheeting, cover area to be planted with topsoil. Do not till soil prior to applying topsoil.

3.3 PREPARATION

3.3.1 Protection

Protect existing and proposed landscape features, elements, and sites from damage or contamination. Protect trees, vegetation, and other designated features by erecting high-visibility, reusable construction fencing. Locate fence no closer to trees than the drip line. Plan equipment and vehicle access to minimize and confine soil disturbance and compaction to areas indicated on Drawings.

3.3.2 Layout

Stake out approved plant material locations and planter bed outlines on the project site before digging plant pits or beds. The Contracting Officer reserves the right to adjust plant material locations to meet field conditions. Do not plant closer than 12 inches to a pavement edge, fence or wall edge and other similar structures. Provide on-site locations for excavated rock, soil, and vegetation.

3.3.3 Erosion Control

Provide erosion control and seeding with native plant species to protect slopes.

3.3.4 Soil Preparation

3.3.4.1 pH Adjuster Application Rates

Apply pH adjuster at rates as determined by laboratory soil analysis of the soils at the job site. For bidding purposes only apply at rates for the following:

***2**

Lime 50 pounds per 1000 square feet

3.3.4.2 Soil Conditioner Application Rates

Apply soil conditioners at rates as determined by laboratory soil analysis of the soils at the job site. For bidding purposes only apply at rates for the following:

Peat 20 cubic yards per 1000 square feet

or

Compost Derivatives 20 cubic yards per 1000 square feet

or

Rotted Manure 20 cubic yards per 1000 square feet.

3.3.4.3 Fertilizer Application Rates

Apply fertilizer at rates as determined by laboratory soil analysis of the soils at the job site. For bidding purposes only apply at rates for the following:

Organic granular fertilizer 1200 pounds per acre.

3.3.5 Root Control Barrier

Install geotextile fabric in the soil in a horizontal application. Use appropriate holding device to assure fabric position. For horizontal application, a minimum 2 inch soil cover is required over the top edge. A minimum 18 inch extension of fabric beyond the structure area to be protected is required to prevent root growth from growing around fabric edges.

3.3.6 Subsoil Drainage for Plant Pits and Beds

Provide as indicated. Lay perforated drain pipe with perforations down. Backfill trenches as specified in Section 31 00 00 EARTHWORK.

3.4 PLANT BED PREPARATION

Verify location of underground utilities prior to excavation. Protect existing adjacent turf before excavations are made. Do not disturb topsoil and vegetation in areas outside those indicated on Drawings. Where planting beds occur in existing turf areas, remove turf to a depth that will ensure removal of entire root system. Measure depth of plant pits from finished grade. Depth of plant pit excavation shall be as indicated and provide proper relation between top of root ball and finished grade. Install plant material as specified in paragraph entitled "Plant Installation." Do not install trees within 10 feet of any utility lines or building walls.

3.5 PLANT INSTALLATION

3.5.1 Individual Plant Pit Excavation

Excavate pits at least twice as large in diameter as the size of ball or container to depth shown.

3.5.2 Plant Beds with Multiple Plants

Excavate plant beds continuously throughout entire bed as outlined to depth shown.

3.5.3 Handling and Setting

Move plant materials only by supporting the root ball or container. Set plants on native soil and hold plumb in the center of the pit until soil has been tamped firmly around root ball. Set plant materials, so that the relation to surrounding finish grade, 2 to 3 inches above depth at which they were grown in the nursery, collecting field or container after the settlement occurs. Replace plant material whose root balls are cracked or damaged either before or during the planting process.

Plant material shall be set in plant beds according to the drawings. Backfill soil mixture shall be placed on previously scarified subsoil to completely surround the root balls, and shall be brought to a smooth and even surface, blending to existing areas.

3.5.3.1 Balled and Burlapped Stock

Backfill with prepared soil mixture to approximately half the depth of ball and then tamp and water. Carefully remove or fold back excess burlap and tying materials from the top a minimum 1/3 depth from the top of the rootball. Tamp and complete backfill, place mulch topdressing, and water. Remove wires and non-biodegradable materials from plant pit prior to backfill operations.

3.5.3.2 Container Grown Stock

Remove from container and prevent damage to plant or root system. Loosen circulating roots and gently open and spread out root ball.

3.5.3.3 Ground Covers

Smooth planting areas before planting to provide even, smooth finish. Plant after placing weed control fabric and mulch topdressing. Do not remove plant material from flats or containers until immediately before planting. Space at the intervals indicated. Plant at a depth to sufficiently cover all roots. Start watering areas planted as required by temperature and wind conditions. Apply water at a rate sufficient to ensure thorough wetting of soil to a depth of 6 inches without run off or puddling. Add mulch topdressing as needed.

3.5.4 Earth Mounded Watering Basin for Individual Plant Pits

Form with topsoil around each plant by replacing a mound of topsoil around the edge of each plant pit. Watering basins shall be 6 inches deep for trees and 4 inches deep for shrubs. Eliminate basins around plants in plant beds containing multiple plants.

3.5.5 Weed Control Fabric Installation

Remove grass and weed vegetation, including roots, from within the area. Completely cover areas with specified weed control fabric prior to placing mulch layer. Overlap cut edges 6 inches.

3.5.6 Erosion Control Material

Install in accordance with manufacturer's instructions.

3.5.7 Placement of Mulch Topdressing

Place specified mulch topdressing on top of weed control fabric covering total area enclosed by edging. Place mulch topdressing to a depth of 3 inches.

3.5.8 Mulch Topdressing

Provide mulch topdressing over entire planter bed surfaces and individual plant surfaces including earth mound watering basin around plants to a depth of 3 inches after completion of plant installation and before watering. Keep mulch out of the crowns of shrubs. Place mulch a minimum 2 to 3 inches away from trunk of shrub or tree. Place on top of any weed control fabric.

3.5.9 Fertilization

3.5.9.1 Fertilizer Tablets

Place fertilizer planting tablets evenly spaced around the plant pits to the manufacturer's recommended depth.

3.5.9.2 Granular Fertilizer

Apply granular fertilizer as a top coat prior to placing mulch layer and water thoroughly.

3.5.10 Watering

Start watering areas planted as required by temperature and wind conditions. Slow deep watering shall be used. Apply water at a rate sufficient to ensure thorough wetting of soil to a depth of 24 inches without run off or puddling , except in ground cover beds. Ground cover beds are to be watered to a depth of 6 inches. Watering of other plant material or adjacent areas shall be prevented.

3.5.11 Staking and Guying

3.5.11.1 Staking

Stake plants with the number of stakes indicated as detailed. Attach guy wire half the tree height but not more than 5 feet high. Drive stakes to a depth of 2 1/2 to 3 feet into the ground outside the plant pit. Do not injure the root ball. Use hose chafer guards where guy wire comes in contact with tree trunk.

3.5.11.2 Guying

Guy plants as indicated. Attach two strands of guying wire or guying cable around the tree trunk at an angle of 45 degrees at approximately 1/2 of the trunk height. Protect tree trunks with chafing guards where guying wire contacts the tree trunk. Anchor guys to wood ground stakes. Fasten flags to each guying wire approximately 2/3 of the distance up from ground level. Provide turnbuckles as indicated.

3.5.11.3 Chafing Guards

Use hose chafing guards, as specified where guy wire will contact the plant.

3.5.11.4 Wood Ground Stakes

Drive wood ground stakes into firm ground outside of plant pit with top of stake flush with ground. Place equal distance from tree trunk and around the plant pit.

3.5.11.5 Flags

Securely fasten flags on each guy wire approximately two-thirds of the distance up from ground level.

3.5.12 Pruning

Prune in accordance with safety requirement of ANSI Z133.1.

3.5.12.1 Trees and Shrubs

Remove dead and broken branches. Prune to correct structural defects only. Retain typical growth shape of individual plants with as much height and spread as practical. Do not cut central leader on trees. Make cuts with sharp instruments. Do not flush cut with trunk or adjacent branches. Collars shall remain in place. Pruning shall be accomplished by trained and experienced personnel and shall be accordance with ANSI A300.

3.5.12.2 Wound Dressing

Do not apply tree wound dressing to cuts.

3.6 RESTORATION AND CLEAN UP

3.6.1 Restoration

Turf areas, pavements and facilities that have been damaged from the planting operation shall be restored to original condition at the Contractor's expense.

3.6.2 Clean Up

Excess and waste material shall be removed from the installed area and shall be disposed offsite at an approved recycling center, or composting center. Separate and recycle or reuse the following landscape waste materials: nylon straps, wire, ball wrap, burlap, wood stakes, plastic pots. Adjacent paved areas shall be cleared and cleaned.

-- End of Section --

J

Appendix J

Drawings provided under separate cover.

K

Appendix K

Utility Cost Information

Fort Stewart, GA
Utility Cost Information
(Updated: 16 FEB 2011)

The following utility rates for this installation are provided for the purpose of performing life cycle cost calculations in response to this solicitation and for design development in accordance with Section 01 33 16 Design After Award:

Electrical:
Demand Charge – $0.0687 per KWH

Natural Gas:
Commodity Charge Rate – $0.725 per therm

Water:
Commodity Charge Rate – $0.6316 per 1,000 Gal

Sewer:
Commodity Charge Rate – $1.05 per 1,000 gallons of Water consumption

The rates below apply for Contractors Temporary trailers utility usage. Natural gas is not applicable for trailer usage.

Electrical:

Demand Charge – $0.0810 per KWH

Water:

Commodity Charge Rate – $0.687 per 1,000 Gal

Sewer:

Commodity Charge Rate – $1.022 per 1,000 gallons of Water consumption

.

APPENDIX L

LEED Project Credit Guidance (DEC 10)

This spreadsheet indicates Army required credits, Army preferred credits, project-specific ranking of individual point preferences, assumptions guidance for individual credits, and references to related language in the RFP for individual credits.

LEED Credit Paragraph	**LEED Project Credit Guidance**	**Army Guidance:** Required - Preferred - Avoid	**Project Preference Ranking**: (1=most preferred, blank=no preference, X=preference not applicable to this credit, Rqd=required)	
PAR	**FEATURE**			**REMARKS**
SUSTAINABLE SITES				
SSPR1	Construction Activity Pollution Prevention (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
SS1	Site Selection		X	See paragraph LEED CREDITS COORDINATION.

SS2	Development Density & Community Connectivity - OPTION 1 DENSITY		X	See paragraph LEED CREDITS COORDINATION.
	Development Density & Community Connectivity - OPTION 2 CONNECTIVITY		X	See paragraph LEED CREDITS COORDINATION.
SS3	Brownfield Redevelopment		X	See paragraph LEED CREDITS COORDINATION.
SS4.1	Alternative Transportation: Public Transportation Access		X	See paragraph LEED CREDITS COORDINATION.
SS4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	Pref		Assume that non-transient building occupants are NOT housed on Post unless indicated otherwise.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 1			Requires provision of vehicles, which cannot be purchased with construction funds. Assume Government will not provide vehicles unless indicated otherwise. Assume that 50% of GOV fleet is NOT alternative fuel vehicles unless indicated otherwise.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 2	Pref		
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 3			Requires provision of vehicle refueling stations. Installation must support type of fuel and commit to maintaining/supporting refueling stations.
SS4.4	Alternative Transportation: Parking Capacity	Pref		

SS5.1	Site Development: Protect or Restore Habitat			
SS5.2	Site Development: Maximize Open Space	Pref		Assume AGMBC option for aggregated open space at another location on the installation is not available to the project unless indicated otherwise.
SS6.1	Stormwater Design: Quantity Control	Pref		See paragraph STORMWATER MANAGEMENT.
SS6.2	Stormwater Design: Quality Control	Pref		See paragraph STORMWATER MANAGEMENT.
SS7.1	Heat Island Effect: Non-Roof			
SS7.2	Heat Island Effect: Roof	Pref		Coordinate with nearby airfield requirements, which may preclude this credit.
SS8	Light Pollution Reduction	Pref		
WATER EFFICIENCY				
WEPR1	Water Use Reduction (Version 3 only)	Rqd	Rqd	All LEED prerequisites are required to be met.
WE1.1	Water Efficient Landscaping: Reduce by 50%	Pref		See paragraph IRRIGATION. Project must include landscaping to be eligible for this credit.
WE1.2	Water Efficient Landscaping: No Potable Water Use or No Irrigation	Pref		Project must include landscaping to be eligible for this credit.
WE2	Innovative Wastewater Technologies - OPTION 1			
WE2	Innovative Wastewater Technologies - OPTION 2			
WE3	Water Use Reduction	Pref		See paragraph BUILDING WATER USE REDUCTION.

ENERGY AND ATMOSPHERE				
EAPR1	Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EAPR2	Minimum Energy Performance (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EAPR3	Fundamental Refrigerant Management (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EA1	Optimize Energy Performance	Rqd	1	Earning of LEED EA1 points as indicated in paragraph ENERGY CONSERVATION, as a minimum, is required.
EA2.1	On-Site Renewable Energy	Pref		See paragraph ENERGY CONSERVATION.
EA3	Enhanced Commissioning	Rqd		See paragraph COMMISSIONING. The Commissioning Authority may be provided through the Design-Build Contractor only if in accordance with USGBC Credit Interpretation Ruling (CIR) dated 9/15/06. Commissioning Authority activities begin during design phase and continue well beyond beneficial occupancy. Assume Government will not provide CxA post-occupancy activities unless indicated otherwise.
EA4	Enhanced Refrigerant Management			
EA5	Measurement & Verification			Assume Government will not provide post-occupancy activities unless indicated otherwise.
EA6	Green Power		X	See paragraph LEED CREDITS COORDINATION.

MATERIALS AND RESOURCES				
MRPR1	Storage & Collection of Recyclables (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Coordinate with Installation during design development on collection service and receptacles.
MR1	Building Reuse			
MR2.1	Construction Waste Management: Divert 50% From Disposal	Pref		See paragraph CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT.
MR2.2	Construction Waste Management: Divert 75% From Disposal	Pref		
MR3	Materials Reuse			
MR4.1	Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	Pref		See paragraph RECYCLED CONTENT.
MR4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	Pref		
MR5.1	Regional Materials:10% Extracted, Processed & Manufactured Regionally			
MR5.2	Regional Materials:20% Extracted, Processed & Manufactured Regionally			

MR6	Rapidly Renewable Materials	Pref		See paragraph BIOBASED AND ENVIRONMENTALLY PREFERABLE MATERIALS and paragraph FEDERAL BIOBASED PRODUCTS PREFERRED PROCUREMENT PROGRAM.
MR7	Certified Wood	Pref		See paragraph BIOBASED AND ENVIRONMENTALLY PREFERABLE MATERIALS.
INDOOR ENVIRONMENTAL QUALITY				
EQPR1	Minimum IAQ Performance (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EQPR2	Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Assume all buildings are smoke free unless indicated otherwise (family housing, barracks and other lodging are facility types where smoking may be permitted in some cases). Except where indicated otherwise, provide an outdoor designated smoking area (with signage but no structure) which will be at least 50 feet from common points of ingress/egress, building air intakes and operable windows. Designated smoking area will not be located in an area that is commonly used by nonsmokers.
EQ1	Outdoor Air Delivery Monitoring			
EQ2	Increased Ventilation			
EQ3.1	Construction IAQ Management Plan: During Construction	Pref		See paragraph CONSTRUCTION IAQ MANAGEMENT.
EQ3.2	Construction IAQ Management Plan: Before Occupancy	Pref		See paragraph CONSTRUCTION IAQ MANAGEMENT.

EQ4.1	Low Emitting Materials: Adhesives & Sealants	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.2	Low Emitting Materials: Paints & Coatings	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.3	Low Emitting Materials: Carpet/Flooring Systems	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.4	Low Emitting Materials: Composite Wood & Agrifiber Products	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ5	Indoor Chemical & Pollutant Source Control	Pref		System requiring weekly cleaning to earn this credit is not a permitted option unless indicated otherwise.
EQ6.1	Controllability of Systems: Lighting			
EQ6.2	Controllability of Systems: Thermal Comfort			
EQ7.1	Thermal Comfort: Design	Rqd		See paragraph HEATING, VENTILATING AND AIR CONDITIONING.
EQ7.2	Thermal Comfort: Verification			Project must earn credit EQ7.1 to be eligible for this credit. Assume Government will not provide post-occupancy activities unless indicated otherwise.
EQ8.1	Daylight & Views: Daylight 75% of Spaces	Pref		See paragraph DAYLIGHTING.
EQ8.2	Daylight & Views: Views for 90% of Spaces	Pref		
INNOVATION & DESIGN PROCESS				
IDc1.1	Innovation in Design			See paragraph INNOVATION AND DESIGN CREDITS. Assume Government will not provide any activities associated with ID credits.
IDc1.2	Innovation in Design			
IDc1.3	Innovation in Design			
IDc1.4	Innovation in Design			
IDc2	LEED Accredited Professional	Rqd	Rqd	LEED AP during design

				and construction is required.
REGIONAL PRIORITY CREDITS (Version 3 only)				See paragraph LEED CREDITS COORDINATION.

M

Appendix M

LEED Owner's Project Requirements

Owner's Project Requirements Document for LEED Commissioning

Project: Military Working Dog Kennel Complex, Fort Stewart, GA

Approved:

_____	_____	_____
Name	Owner's Representative	Date
_____	_____	_____
Name	Design Agent's Representative	Date

Overview and Instructions

The purpose of this document is to provide clear and concise documentation of the Owner's goals, expectations and requirements for commissioned systems, and shall be utilized throughout the project delivery and commissioning process to provide an informed baseline and focus for design development and for validating systems' energy and environmental performance.

The Owner's Project Requirements Document is a required document for LEED-NC EA Prerequisite Fundamental Commissioning of the Building Energy Systems. It shall be completed by the Corps District/Design Agent based on coordination with the Installation/User/Proponent and shall be approved by the Installation/User/Proponent representative.

The intent of the Owner's Project Requirements Document is to detail the functional requirements of a project and the expectations of the building's use and operation as it relates to commissioned systems. This template contains the basic recommended components indicated in the LEED Reference Guide. It should be adapted as needed to suit the project, remaining reflective of the LEED intent.

The Owner's Project Requirements Document should ideally be completed before the start of design and furnished to the design team. It must be completed prior to the approval of Contractor submittals of any commissioned equipment or systems to meet LEED requirements.

Updates to the Owner's Project Requirements Document throughout the course of project delivery shall be made by the Corps District/Design Agent based on decisions and agreements coordinated with and agreed to by the Installation/User/Proponent.

The Owner's Project Requirements Document shall be included in the project's LEED documentation file under EA PR1, Fundamental Commissioning of the Building Energy Systems and EA3 Enhanced Commissioning as applicable.

Owner's Project Requirements Document for LEED Commissioning

Table of Contents

1. Owner and User Requirements
   - Primary Purpose, Program and Use
   - Project History
   - Broad Goals
2. Environmental and Sustainability Goals
   - Energy Efficiency Goals
   - General
   - Siting
   - Building Façade
   - Building Fenestration
   - Building Envelope
   - Roof
   - Other
3. Indoor Environmental Quality Requirements
   - Intended Use
   - Occupancy Schedule
   - Accommodations for After-Hours Use
   - Lighting, Temperature, Humidity, Air Quality, Ventilation, Filtration
   - Acoustics
   - Occupant Ability to Adjust System Controls
   - Types of Lighting
4. Equipment and Systems Expectations
   - Space Heating
   - Ventilation
   - Air Conditioning
   - Refrigeration
   - HVAC Controls
   - Domestic Hot Water
   - Lighting Controls
   - Daylighting Controls
   - Emergency Power
   - Other
5. Building Occupant and O&M Personnel Requirements
   - Facility Operation
   - EMCS
   - Occupant Training and Orientation
   - O&M Staff Training and Orientation

TABLE 1

1. *Owner and User Requirements*

What is the primary purpose, program and use of this project? (example: office building with data center)

Housing and training of military working dogs.

Describe pertinent project history. (example: standard design development)

Facilities follow Army standard design for these facilities.

Broad Goals

What are the broad goals relative to program needs?

To provide a safe, secure and healthy environment for training and housing military working dogs that is efficient for personnel to manage.

What are the broad goals relative to future expansion?

No future expansion is anticipated.

What are the broad goals relative to flexibility?

No other use for the facility is anticipated.

What are the broad goals relative to quality of materials?

Ease of maintaining sanitation is paramount.

What are the broad goals relative to construction costs?

Goal is to award full scope within programmed budget.

What are the broad goals relative to operational costs?

To minimize operational costs through efficient design and use of durable, low-maintenance materials.

Other broad goals: *(Insert as applicable)*

_____
_____
_____

2. Environmental and Sustainability Goals

What are the project goals relative to sustainability and environmental issues? (example: LEED Silver rating)

LEED Silver rating. _____
_____
_____

What are the project goals relative to energy efficiency? (example: Meet EPACT)

Achieve at least 40% energy use reduction using ASHRAE 90.1 2007 baseline. _____
_____
_____

What are the project goals and requirements for building siting that will impact energy use?

Nighttime use requires site lighting at outside training areas. _____
_____
_____

What are the project goals and requirements for building facade that will impact energy use?

_____
_____
_____

What are the project goals and requirements for building fenestration that will impact energy use?

Must comply with AT/FP requirements._____
_____
_____

What are the project goals and requirements for building envelope that will impact energy use?

Must comply with ASHRAE 90.1. _____
_____
_____

What are the project goals and requirements for building roof that will impact energy use?

Must comply with ASHRAE 90.1. Reflective roof is desired. _____
_____
_____

Other: *(Insert as applicable)*

_____
_____
_____

3. Indoor Environmental Quality Requirements

What is the intended use for all spaces? For all spaces that have an intended use that is not readily apparent from the space name, provide this information in Table 1.

What is the anticipated occupancy schedule (numbers of occupants and time frames) for all occupied spaces? Indicate the default occupancy schedule below and for all spaces that have an occupancy schedule that differs from the default, provide this information in Table 1.

Facility is in use every day including weekends. Both day and nighttime training are required.

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.

Both site and facility have 24/7 access control for security. Interior staff spaces have occupancy sensors for lighting.

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: ASHRAE 90.1 and as indicated in Statement of Work.
Temperature: ASHRAE 55

Humidity: ASHRAE 55
Air Quality: ASHRAE 55

Ventilation: ASHRAE 62.1

Filtration: LEED Construction IAQ Management credit requirements.

What are the acoustical requirements for all spaces? Indicate the default acoustical requirements below and for all spaces that have a requirement that differs from the default, provide this information in Table 1.

What is the desired level of occupant ability to adjust systems controls? Indicate the default desired levels below and for all spaces that have a desired level that differs from the default, provide this information in Table 1.

Lighting: _____

Temperature: _____
Humidity: _____
Air Quality: _____

Ventilation: _____

What, if any, specific types of lighting are desired? (example: fluorescent in 2x2 grid, accent lighting, particular lamps)

_____
_____
_____

4. Equipment and System Expectations

(Complete for each category as applicable or indicate "none identified" or "N/A". Add desired features information for other anticipated commissioned systems as applicable)

Indicate desired features for the following commissioned system: Space Heating

Desired Type: _____

Quality: _____

Preferred Manufacturer: N/A _____
Reliability: _____
Automation: _____

Flexibility: _____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Ventilation

Desired Type: _____

Quality: _____

Preferred Manufacturer: N/A _____
Reliability: _____
Automation: _____

Flexibility: _____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Air Conditioning

Desired Type: _____

Quality: _____

Preferred Manufacturer: N/A _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Refrigeration

Desired Type: _____

Quality: _____

Preferred Manufacturer: N/A _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies:

Indicate desired features for the following commissioned system: HVAC Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: N/A _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Domestic Hot Water

Desired Type: _____

Quality: _____

Preferred Manufacturer: N/A _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: 30% of domestic water heating solar unless not LCC effective. _____

Indicate desired features for the following commissioned system: Lighting Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: N/A _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Daylighting Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: N/A _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Emergency Power

Desired Type: _____

Quality: _____

Preferred Manufacturer: N/A _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Other - _____

Desired Type: _____

Quality: _____

Preferred Manufacturer: N/A _____
Reliability: _____
Automation: _____

Flexibility:_____
Maintenance Requirements: _____
Efficiency Target: _____

Desired Technologies: _____

5. Building Occupant and O&M Personnel Requirements

How will the facility be operated? Who will operate the facility?

Facility will be operated by MWD staff and Installation DPW._____
_____
_____

Will the facility be connected to an EMCS? If so, what are the interface requirements? (example: monitoring points, control points, scheduling)

_____
_____
_____

What is the desired level of training and orientation for building occupants to understand and use the building systems?

Per LEED EA3 Enhanced Commissioning. _____
_____
_____

What is the desired level of training and orientation for O&M staff to understand and maintain the building systems?

Per LEED EA3 Enhanced Commissioning. _____
_____
_____

Table 1

Space	Use / Activity	Num of Occs	Special Occupancy Schedule	After Hours Use Reqmt.	Special Cooling Reqmt.	Special Heating Reqmt.	Special Humidity Reqmt.	Special Ventil./Filtration Reqmt.	Special Acoustic Reqmt.	Special Lighting Reqmt.	Special Occup Adjustability Reqmt.

APPENDIX N
LEED Requirements for Multiple Contractor Combined Projects

Not Used

APPENDIX O
LEED Strategy Tables

Not Used

APPENDIX P

LEED Registration of Army Projects

15 April 2010

Number of Registrations

Each building must be registered separately, except multiple instances of a standard building on a shared site may be registered as a single project. If a single registration for multiple buildings is chosen, all buildings under the single registration must earn exactly the same points. Do not register buildings that are exempt from a specific LEED achievement requirement.

Typical Registration Procedure

1. Login, complete the online registration form (see guidance below) at the GBCI LEED Online website http://www.gbci.org/DisplayPage.aspx?CMSPageID=174 and submit it online.
2. Pay the registration fee via credit card (USACE staff: credit card PR&C is funded by project design or S&A funds).
3. GBCI will follow up with a final invoice, the LEED-online passwords and template information.
4. The individual who registers the project online is, by default, the Project Administrator.

Completing the Registration Form

BEFORE YOU BEGIN:
Create a personal account with USGBC if you do not have one.
You will need the following information:
Project name as it appears in P2 (obtain from USACE Project Manager)
Building number/physical address of project
Zip code for Installation/project location
Anticipated construction start and end dates
Total gross area all non-exempt buildings in registration
Total construction cost all non-exempt buildings only (see Project Details Section instructions below)

ACCOUNT/LOGIN INFORMATION

1. The person registering the project **must have an account with USGBC** (login and password) to complete the form. Go to http://www.gbci.org/ , click on “register a project” at the drop-down menu for project certification (at the top of the page) and select “register now for LEED 2009” to start the project registration process. If you have an account, login with your email address and password and select “register new project” to proceed. If you do not have an account, you may select “register a new account” and follow the instructions. It is recommended that you create an account separately on the USGBC website before you start the form. IMPORTANT: USACE team members are members of USGBC and are eligible for Member prices. USACE team members registering projects should be sure to include the USACE Corporate Access ID in their personal account profile (if you do not have it contact richard.l.schneider@usace.army.mil or judith.f.milton@usace.army.mil for the number).
2. The Account/Login Information section is filled out by the person registering the project. It may be a Contractor or a USACE staff member.

ELIGIBILITY SECTION

Follow directions (accepting the terms and conditions)
Review your profile information and make corrections if needed

RATING SYSTEM SELECTION SECTION

Select single project registration and I know which rating system.
Select the rating system - currently only LEED-NC and LEED for Homes are approved for Army use without special approval.
LEED Minimum Program Requirements: select YES

RATING SYSTEM RESULTS SECTION

Confirm selected rating system.

PROJECT INFORMATION SECTION

Project Title: Begin the project title with a one-word identifier for the Installation. Do not include the word “Fort”. After this match the project name used in P2 (contact the USACE Project Manager for this information) and identify the building being registered. Example: “Stewart 4th IBCT - DFAC”.
Project Address 1 and 2: This is the physical location of the project. Provide building number, street address, block number or whatever is known to best describe the location of the project on the Installation.
Project City: Installation Name
State, Country, Zip Code: Self-explanatory
Anticipated Construction Start and End Dates: Self-explanatory – give your best guess if unknown. Note that required data entry format is: 1 or 2 digit month/1 or 2 digit date/4 digit year (example 3/23/2010)
Gross Square Footage: Provide total area all buildings in LEED project. Exclude the area of any buildings that are exempt from the LEED achievement requirement (for example, exclude an unconditioned storage shed to be constructed with a barracks complex).
Is Project Confidential: Indicate NO except, if project has security sensitivity (elements that are FOUO or higher security), indicate YES.
Notification of Local Chapter: Indicate NO unless Government/USACE Project Manager requests you to indicate YES.
Anticipated Project Type: Select the most appropriate option from the drop-down menu.
Anticipated Certification Level: Select the applicable option from the drop-down menu (Silver is the usual level).

PROJECT OWNER INFORMATION SECTION

Project Owner First Name, Last Name, email, phone, address: The Project Owner is the USACE Project Manager. Obtain this info from the USACE Project Manager.
Organization: U.S. Army Corps of Engineers. This field MUST be completed this way because it will be used as a search field by higher HQ to find all USACE registered projects. You may supplement it with district name at the end but DO NOT revise or use an acronym.
May we publish Owner information: Indicate NO
Owner Type: Pick Federal Government from drop-down menu.
Project Owner Assertion: Check the box

PAYMENT INFORMATION

Self-explanatory

APPENDIX Q
REV 2.1 – 30 SEP 2010
AREA COMPUTATIONS

Computation of Areas: Compute the "gross area" and "net area" of facilities (excluding family housing) in accordance with the following subparagraphs:

(1) Enclosed Spaces: The "gross area" is the sum of all floor spaces with an average clear height ≥6'-11" (as measured to the underside of the structural system) and having perimeter walls which are ≥4'-11". The area is calculated by measuring to the exterior dimensions of surfaces and walls.

(2) Half-Scope Spaces: Areas of the following spaces shall count as one-half scope when calculating "gross area":

- Balconies
- Porches
- Covered exterior loading platforms or facilities
- Covered but not enclosed spaces, canopies, training, and assembly areas
- Covered but not enclosed passageways and walks
- Open stairways (both covered and uncovered)
- Covered ramps
- Interior corridors (Unaccompanied Enlisted Personnel Housing Only)

(3) Excluded Spaces: The following spaces shall be excluded from the "gross area" calculation:

- Crawl spaces
- Uncovered exterior loading platforms or facilities
- Exterior insulation applied to existing buildings
- Open courtyards
- Open paved terraces
- Uncovered ramps
- Uncovered stoops
- Utility tunnels and raceways
- Roof overhangs and soffits measuring less than 3'-0" from the exterior face of the building to the fascia

(4) Net Floor Area: Where required, "net area" is calculated by measuring the inside clear dimensions from the finish surfaces of walls. If required, overall "assignable net area" is determined by subtracting the following spaces from the "gross area":

- Basements not suited as office, special mechanical, or storage space
- Elevator shafts and machinery space
- Exterior walls
- Interior partitions
- Mechanical equipment and water supply equipment space
- Permanent corridors and hallways
- Stairs and stair towers
- Janitor closets
- Electrical equipment space
- Electronic/communications equipment space

R

Appendix R

Preliminary Submittal Register

RMS SUBMITTAL REGISTER INPUT FORM

CONTRACT NUMBER

DELIVERY ORDER

TITLE AND LOCATION

Military Working Dog Kennel Complex, Fort Stewart, GA

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
01 10 00	5.2.3.1	(if concrete pavement) Joint Layout Plan with design drawings					X										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	3.7	Independent Technical Review					X										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 33 16	F-3.1.3	BIM Model and data					X										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/ BIM Model											X		X										
01 78 02.00 10	1.2.3.11	Non-Hazardous Solid Waste Diversion Reports							X					X								X			
01 78 02.00 10	1.2.7	Provide final as-built CADD and BIM Model files											X		X							X			
01 78 02.00 10	1.2.9	Provide scans of all other docs in Adobe.pdf format											X		X							X			
01 78 02.00 10	1.3.1	Equip-in-Place list of all installed equip and cost											X		X							X			
01 78 02.00 10	1.3.2	Data on equip not addressed in O&M manuals											X		X							X			
01 78 02.00 10	1.3.3	Final as-built specs - electronic files											X		X							X			
01 78 02.00 10	1.4.2.1	Warranty management plan - FAR 52.246-21											X		X							X			
01 78 02.00 10	1.4.2.1	Certificates of Warranty for extended warranty items											X		X							X			
01 78 02.00 10	1.4.2.1	Contractor's POCs for implementing warranty process											X		X							X			
01 78 02.00 10	1.4.2.1	List of each warranted equip, item, feature or system											X		X							X			
01 78 02.00 10	1.5	See also Section 01 10 00 par. 5.8.4 and 5.8.5											X		X							X			
01 78 02.00 10	1.6.1.2	Equipment O&M Manuals - 1 electronic / 2 hard copies											X		X							X			
01 78 02.00 10	1.7	Field Training DVD Videos										X		X								X			
01 78 02.00 10	1.8	Pricing of CF/CI and GF/CI Property											X	X								X			
01 78 02.00 10	1.11	List of Completed Cleanup Items											X					X				X			
01 78 02.00 10	1.12	Interim Form DD 1354											X					X				X			

RMS INPUT FORM 4288A

Export to RMS in CSV(MS-DOS) (*.csv) Format

Note: Reviewing Office Optional

Appendix S

REV 1.1 JUL 2011.

Manufacturing Performance Requirements for Plumbing Fixtures From The Energy Policy Act of 1992 (PL 102-486) (Including Exceptions for Projects Registered for LEED 3.0 or higher)

Note: This information is for use in establishing the Baseline to calculate flow rate reductions from said Baseline, where required by the contract.

Subtitle C--Appliance and Equipment Energy Efficiency Standards

SEC. 123. ENERGY CONSERVATION REQUIREMENTS FOR CERTAIN LAMPS AND PLUMBING PRODUCTS.

… (j) STANDARDS FOR SHOWERHEADS AND FAUCETS- (1) The maximum water use allowed for any showerhead manufactured after January 1, 1994, is 2.5 gallons per minute when measured at a flowing water pressure of 80 pounds per square inch. Any such showerhead shall also meet the requirements of ASME/ANSI A112.18.1M-1989, 7.4.3(a).

`(2) The maximum water use allowed for any of the following faucets manufactured after January 1, 1994, when measured at a flowing water pressure of 80 pounds per square inch, is as follows:

`Lavatory faucets: 2.5 gallons per minute **(BUT SEE BELOW**)**

`Lavatory replacement aerators: 2.5 gallons per minute

`Kitchen faucets : 2.5 gallons per minute

`Kitchen replacement aerators: 2.5 gallons per minute

`Metering faucets: 0.25 gallons per cycle

`(k) STANDARDS FOR WATER CLOSETS AND URINALS- (1)(A) Except as provided in subparagraph (B), the maximum water use allowed in gallons per flush for any of the following water closets manufactured after January 1, 1994, is the following:

`Gravity tank-type toilets --1.6 gpf.

`Flushometer tank toilets --1.6 gpf.

`Electromechanical hydraulic toilets --1.6 gpf.

`Blowout toilets --3.5 gpf.

`(B) The maximum water use allowed for any gravity tank-type white 2-piece toilet which bears an adhesive label conspicuous upon installation consisting of the words `Commercial Use Only' manufactured after January 1, 1994, and before January 1, 1997, is 3.5 gallons per flush.

`(C) The maximum water use allowed for flushometer valve toilets, other than blowout toilets, manufactured after January 1, 1997, is 1.6 gallons per flush.

`(2) The maximum water use allowed for any urinal manufactured after January 1, 1994, is 1.0 gallon per flush.

**** EXCEPTIONS for Projects Registered under LEED 3.0 or higher.**

1. Any exceptions identified in the applicable LEED criteria.

2. Public lavatory faucets shall deliver a maximum flow rate of 0.5 gallons per minute, when tested in accordance with ASME A 112.18/CSA B125. Use that flow rate as the Baseline figure for calculating any required reductions from the Baseline.

APPENDIX T
FUNCTIONAL AREA LIGHTING CONTROL STRATEGY (FALCS)

A. GENERAL LIGHTING CONTROL SYSTEM ENERGY MANAGEMENT STRATEGIES

SUMMARY: This appendix describes various lighting energy management strategies to utilize across functional areas. These strategies are intended to supplement and NOT supersede the requirements of ASHRAE 90.1.

1. Consider LIGHT LEVEL TUNING to maintain the appropriate light level for a given space. Initial light levels are set high to compensate for light depreciation over time. Where dimming ballasts or dimmable LED drivers are used, they shall be digital and addressable in nature (where available) that can provide individual fixture light level tuning and reconfigurability that dims the light level to the target level, saving the energy that otherwise would be used to compensate for future light depreciation. Provide a life-cycle cost-benefit analysis (LCCBA) of light level tuning for all spaces where the general lighting luminaires are equipped with digital addressable dimming ballasts or LED drivers. The LCCBA shall follow the methodology contained in the IESNA Lighting Handbook. Provide light level tuning where the LCCBA shows it to be economical.

2. Use OCCUPANCY/VACANCY SENSORS to automatically turn off lighting a specified time after all occupants leave the space. The off time shall be adjustable settable to 1, 5, 15, or 30 minutes. Select the type (single or dual technology, wired or wireless) based on the use and configuration of the space. Lighting control system shall have the capability to manage both hard-wired and wireless sensors where applicable. Single technology solutions shall incorporate signal processing technology that distinguishes between background noise and actual motion without automatically changing their sensitivity threshold. To maximize energy savings potential, all occupancy sensors shall be either MANUAL ON – AUTOMATIC OFF (vacancy sensor) or AUTOMATIC ON (to a specified light level of 50% or less) – AUTOMATIC OFF to maximize energy savings. Occupancy/Vacancy sensors properly located in the space and set appropriately can offer typical lighting energy savings of 15% or more.

3. Use DAYLIGHT HARVESTING to control lighting in areas within at least two window head heights (head height is the distance from the floor to the top of the glazing) adjacent to exterior view windows. Typical daylight penetrates three times the window head height into the space. To maximize energy savings, daylight dimming strategies need to penetrate beyond the first row of luminaires (first daylight zone). When daylighting installed fluorescent or LED luminaires, accomplish daylight harvesting by digitally addressable dimming ballasts or drivers. As the natural light in the space increases, the artificial light level should dim gradually to maintain a uniform light level and prevent disruption to the occupants. One daylight sensor must be able to control multiple daylighting zones (cross-zoning) without the need of adding more sensors. All controls (daylight sensors, occupancy sensors, wall stations) shall have the capability to connect to the system via hard wire or wireless. Apply the same daylighting strategies to areas where skylights are available (refer to ASHRAE 189.1 daylight zone definitions). Daylighting systems properly tuned and calibrated can offer typical lighting energy savings of 15% or more.

4. Consider AUTOMATED SHADING in spaces utilizing daylight harvesting to maximize the energy savings of the day lighting system. The shades shall be controlled to reduce glare and unwanted heat gain while still allowing natural light to enter the space. When utilizing automated shading consider the following :

    A. For ease of use and space aesthetics, operate the automated shades by common controls, wired or wireless (i.e. same appearance and design) with the lighting control system.
    B. For maximum energy savings the automated shading system shall predictably position the shades based on a combination of time of day, façade direction, and sky conditions.
    C. For maximum design flexibility and ease of installation, shade system should have the capability to address and control each shade individually.
    D. The shading system shall have a manual override that allows the occupant to temporarily adjust the shades to any desired position. The system will revert back to automatic control after a specified period of time.

    Provide a life-cycle cost-benefit analysis (LCCBA) of automated shading for all spaces where daylight harvesting is provided. The LCCBA shall follow the methodology contained in the IESNA Lighting Handbook. Provide automated shading where the LCCBA shows it to be economical.

5. Use SCENE BASED DIMMING in multiple-use areas including auditoriums, conference rooms and classrooms. Also provide scene based dimming in dining rooms and gymnasiums with multiple functions. One button preset touch recall shall allow multiple zones of light within a space to go to the appropriate light levels, known as a scene, for a specific task or use. Scene based control shall allow the integration of AV controls, shading/projection screens and lighting to work seamlessly with one button preset touch (i.e. lights dim, projection screen lowers, and shades go down). If dimming ballasts or LED drivers are used, they shall also be digital and addressable in nature (where available) to take advantage of installation and life-cycle reconfiguration benefits.

6. Provide PERSONAL CONTROL of lighting in spaces to allow the user of the space to vary the general light level based on the task at hand. Personal control can be achieved by wall mounted controls (hard wired or wireless), Infrared or Radio Frequency (RF) wireless devices, or via computer. Digital addressable ballasts and LED drivers allow the control flexibility of personal dimming of installed lighting on the occupant's work area (i.e. dim the luminaire over their cubicle to the appropriate light level).

7. Consider WIRELESS lighting control options for all installations, including retrofit projects (easy installation, lower installed cost, no power packs necessary). Wireless products shall include but not be limited to occupancy / vacancy sensors, daylight sensors, local wall controls, plug in switching and dimming appliance and parasitic load modules. To avoid interference, wireless products should communicate in an FCC frequency band that does not allow continuous transmissions and is free of Wi-Fi devices.

B. FUNCTIONAL TESTING AND MANUFACTURER SUPPORT

SUMMARY: This section describes functional testing to be performed on the lighting control system and the support required from the lighting control manufacturer.

1. Hire an independent agent with no less than three years experience in testing of complex lighting control systems to conduct and certify functional testing of lighting control devices and control systems. The testing agent shall not be directly involved in either the design or construction of the project and shall certify the installed lighting controls meet or exceed all requirements of ASHRAE 90.1 and all documented performance criteria. The lighting control manufacturer's authorized technical representative may serve as the testing agent. Submit qualifications of the testing agent for approval. Submit copies of test results to the Government.

2. LIGHTING CONTROL MANUFACTURER SUPPORT shall include technical phone support located in the United States. The technical phone support shall be available 24 hours a day, 365 days a year.

AA

Appendix AA

Canoochee EMC Responsibilities

Canoochee Electric Membership Corporation (CEMC)
Project Requirements
At
Fort Stewart and Hunter Army Airfield:

Canoochee EMC is responsible for the operation, maintenance, and power line extension of the Fort Stewart (FS) and Hunter Army Airfield (HAAF) electrical distribution systems. Line extensions for new construction projects are designed and constructed in accordance with Rural Utility Specifications (RUS) and the National Electric Safety Code (NESC.)

Line extensions to serve new facilities at Fort Stewart and HAAF may be overhead or underground construction as required by project specifications or site conditions.

Overhead Construction
CEMC will furnish all labor and overhead distribution equipment such as wood poles, transformers, transformer assemblies, primary and secondary conductor, overhead conductor pole hardware, guying, secondary, services, and grounding as required for overhead construction.

Underground Construction
CEMC will furnish all labor and underground distribution equipment such as pad mounted transformers, transformer assemblies, concrete pad, riser assemblies, primary and secondary conductor (600 amp and smaller), meter bases, meters, lighting fixtures, lighting poles, lighting contactor, and lighting conductor as required for under ground construction.

Note: Due to Force Protection requirements, transformers will be located at least 33 feet from any building with an occupancy of 11 people or greater. When the occupancy exceeds 50 people the distance increases to 82 feet. Protection bollards will be installed by GC if required.

Conductor Terminations
CEMC will make all electrical connections of conductors terminating in over head and pad mounted transformers, street lighting, and primary conductor riser assemblies.

Conduit
In accordance to a meeting between DPW on August 26th 2010 The General Contractor will provide and install for underground construction all primary conduit of 4" or 6" diameter buried a minimum of 48 inches deep for (MCA) COE Projects as directed per project. Conduit will be of appropriate schedule type PVC, XLP or PE. Each conduit shall contain a pull string and stubbed up 36" above finish grade. This directive will require coordination between the GC through the appropriate DPW project manager and Canoochee EMC.

GC shall furnish and install all service entrance conductors and conduit from meter to the load center.

Metering

The GC will install self contained meter bases for 600 Amp and less load centers. Meter bases will be mounted on the building exterior between 3'-6" and 5'-0" above finished grade. For load centers greater than 600 Amp or structures larger than 4000 square feet requiring pulse metering, Current Rated Transformer (CT) metering will be furnished by and installed by CEMC at the transformer location.

Self-Contained meter bases will be issued to the GC (or electrical sub-contractor) at the CEMC Operating Headquarter locations shown in Table 1

Canoochee EMC Operating Headquarter				
Base	Address	Building	Contact Name	Phone Number
Fort Stewart	83 Italy St.	1099	Shawn Crosby	912-459-1112
Hunter Army Airfield	443 S. Douglas St.	1035	Stacy Brinson	912-459-1113

Table 1

Coordination / Scheduling

An overall project schedule will be provided by the GC to CEMC at the start of the project for CEMC to design the electrical requirements, order equipment and manage lead time and delivery schedules, clear right of way, and install the electrical facilities.

Changes of the project schedule by the GC affecting CEMC's schedule and/or scope of work will require the approval by CEMC and the Department of Public Works (DPW) or Corp of Engineering (CO) Project Manager (as appropriate.)

Adequate time will be provided by the GC in the project schedule for CEMC construction or demolition activities.

Contractually, CEMC can not start any project until a Notice to Proceed (NTP) has been received from our contracting officer.
Third party jobs fees must be paid before construction can begin.

The GC will ensure the site is on grade elevation prior to the start of work by CEMC. The CEMC work area will need to be clear of obstructions such as materials; equipment lay down areas, earthen backfill, and/or temporary services and portable structures.

The GC will provide site coordination between CEMC and its other project sub-contractors to ensure CEMC is allowed full un-restricted access to the site to install or demo of facilities in a start to competition timeframe.

CEMC will require a reasonable number of working days to complete the installation of the underground facilities. CEMC requires a minimum of 14 and a maximum of 21 calendar day's written notice of the date when the installation of underground facilities may commence. To be considered ready for the installation of CEMC underground facilities a site must be at final grade, but not at final compaction. CEMC will in no way

be responsible for additional work required due to additional compaction or the relocation of facilities when proper coordination is not received.

Examples of Coordination/Scheduling conflicts:

1. CEMC is scheduled to trench where soil compaction for a parking lot is complete. CEMC trenching is not typical of compaction levels for parking lots. CEMC will not be liable for parking lot repairs if scheduled after soil compaction by GC.
2. CEMC is scheduled to install street light poles on foundations, but GC has a portion of the foundations installed. Revisit may increase project cost.
3. CEMC is scheduled to set transformers, but secondary conductors have not been installed by electrical sub-contractor and stubbed up at the transformer for termination by EMC. Revisit may increase project cost.

Canoochee EMC Scheduling Contacts

Base	Primary	Phone Number	Secondary	Phone Number
Fort Stewart	Walt Lee	912-459-1112 extension 3003	Joe Holton	912-459-1112 extension 3002
Hunter Army Airfield	Stacy Brinson	912-459-1113 extension 6000	Daniel Phillips	912-459-1113 extension 6004

Table 2

Equipment Lead Time

The project schedule should include an appropriate amount of time for CEMC to order long lead time equipment as shown in Table 3.

Typical Equipment Lead Times	
Component	*Months*
Transformers, Switchgear, Circuit Protection (Reclosers)	5
Lighting Poles (Aluminum) and Luminaries	3
Overhead or Underground conductor, hardware, meters	1

Table 3

Fast track projects such as portable classrooms, temporary mobile offices, and other such similar structures present a challenge as contractors often erect a temporary facility faster than lead times for Aluminum street light poles and decorative fixtures.

For fast track lighting projects, wood pole construction with standard Utility (gray) Cobra head luminaries should be considered.

Right of Way Clearing

The Forestry Department at Fort Stewart and Hunter Army Airfield will coordinate the removal of all merchantable timber in the Right of Way path of Canoochee EMC's power distribution system. Upon removal of merchantable timber, Canoochee EMC will use their discretion in the determination of the right of way width and type of vegetation for removal or disposal.

Lighting

Design Parameters

The following pages define the lighting and pole standards offered by Canoochee EMC for installation at Fort Stewart and Hunter Army Airfield.

CEMC will provide lighting equipment specifications for poles, fixtures, bases, break a way bases, foundations, and base mounted pole anchor bolt patterns.

Lighting should be designed to meet both IES guidelines and Dark Sky initiatives. Considerations should be given in the design for prevention of glare and light intrusion into adjacent areas.

Base Mounted poles should be selected for areas where the poles are to be installed within 4 feet of the curb. For high traffic impact, concrete foundation should be specified for installation 36 inches above final grade. For low traffic impact, concrete foundation should be specified for installation 3 inches above final grade. **All foundations shall be plumb (level) with the bolts being plumb and with a smooth, level mounting surface.** For areas near road level breakaway bases will be used. **For areas with no traffic impact, Direct Bury poles should be specified.**

High Pressure Sodium and Metal Halide lighting are both utilized on Fort Stewart and Hunter Army Airfield. High Pressure Sodium is preferred for Residential areas, Motor Pools, and along major Roadways. Metal Halide is preferred for Commercial areas, Offices, and the Garrison areas of the base.

Security Cameras

Canoochee EMC does not allow security cameras to be attached to or mounted on distribution power or street lighting poles. (NESC /NEC Code Compliance requirement.)

Bollard Lighting

CEMC does not offer new bollard lighting in the lighting standards.

General Contractor installation Requirements

GC will furnish and install all foundations and conduit for underground lighting. All lighting conduits shall be 11/2" diameter and buried a minimum of **30 inches deep. Each conduit will contain a pull string**. For direct bury poles, conduit shall be stubbed up 36" above finish grade at each pole location.

General Contractor installation Requirements (Continued)

GC will install all concrete pole base foundations with three feet protruding above grade in areas where vehicles park or travel in close proximity to the street light location and/or foundations with breakaway bases. Direct buried street light poles will be installed by CEMC in areas where poles are protected or located out of vehicular parking or travel.

GC will furnish and install the anchor bolts and a pole ground consisting of an 8' ground rod 5/8" in diameter with a #6 solid copper or equivalent in all street lighting foundations at the time the foundations are poured.

Utilities Protection at Fort Stewart
Canoochee EMC is a charter member of the Fort Stewart Hunter Army Airfield Utility Coordination Committee (FSHAAUCC). This committee is a peer group of contractors, locators, and utilities meeting the second Wednesday of each month to discuss underground dig law requirements and issues at Fort Stewart and Hunter Army Airfield.

All underground construction on both military bases is permitted by the Georgia Utilities Protection Center. Excavation requirements in Georgia require a Dig Permit obtained through the one call center……. Call before You Dig Number 1-800-282-7111.

Contractors are invited to attend these meetings to meet with utility representatives and base locator contractors for a safer work environment and protection of the military's underground infrastructure.

Shoebox Fixture **General Electric (GE) DECASHIELD Series**
Dark Bronze finish

Recommended for use along roadways or in parking lots where large amounts of light are desired and aesthetics are of a primary concern. The adapter allows designer to install one, two, three, or four lights per pole.

Shoebox

	Voltage	Wattage	Type	Design
M27-S15-BR	SYL Multi-Volt	150W	MH	Shoebox-Bronze
M27-S25-BR	SYL Multi-Volt	250W	MH	Shoebox-Bronze
M27-S40-BR	SYL Multi-Volt	400W	MH	Shoebox-Bronze
M27-S100-BR	SYL Multi-Volt	1000W	MH	Shoebox-Bronze

Note: These units are multi-wattage.

Shoebox Accessories

M25-S1-BR	Pole Top Tenon Adapter Square

Post Top Fixture **General Electric (GE) Salem Post Top Series**
Dark Bronze or Black Finish

These fixtures are recommended for use in residential areas and Garrison areas subject to high likelihood of damage. Typical example: walkways, barracks and office buildings.

Standard Post Top

	Voltage	Wattage	Type	Design
M26-PS10-BL	SYL Multi-Volt	100W	HPS	Salem Post Top-Black
M26-PS10-BR	SYL Multi-Volt	100W	HPS	Salem Post Top-Bronze
M27-PS15-BR	SYL Multi-Volt	150W	MH	Salem Post Top-Bronze
M27-PS15-BL	SYL Multi-Volt	150W	MH	Salem Post Top-Black

Premium Post Top Fixtures **General Electric (GE) Dynamics 547 Series Black finish**

Recommended for use in high visibility residential neighborhoods where the likelihood of damage is small. These fixtures may be used with fiberglass or aluminum poles.

Premium Post Top

	Voltage	Wattage	Type	Design
M26-PD15-BK	SYL Multi-Volt	150W	HPS	D547 Post Top-Black

These units used in housing areas only.

.

Standard Cobra head **General Electric (GE) M250R Series**
Grey Finish recommended for use along roadways where aesthetics are not of primary concern

Standard Cobra head

Model	Voltage	Wattage	Type	Design
M26-25C	SYL Multi-Volt	250W	HPS	Cobrahead-Gray
M26-40C	SYL Multi-Volt	400W	HPS	Cobrahead-Gray

Premium Cobrahead Fixtures Cut-Off General Electric (GE) M-250R Series
Bronze or black finish

Recommended for use in non-residential areas where aesthetics are not of primary concern.

Premium Cobrahead

M26-C15	SYL Multi-Volt	150W	HPS	Cobrahead-Gray
M26-C25	SYL Multi-Volt	250W	HPS	Cobrahead-Gray
M26-C40	SYL Multi-Volt	250W	HPS	Cobrahead-Gray
M26-C25-BL	SYL Multi-Volt	250W	HPS	Cobrahead-Black
M26-C40-BL	SYL Multi-Volt	250W	HPS	Cobrahead-Black
M26-C25-BR	SYL Multi-Volt	250W	HPS	Cobrahead-Bronze
M26-C40-BR	SYL Multi-Volt	400W	HPS	Cobrahead-Bronze
M27-C40-BR	SYL Multi-Volt	400W	MH	Cobrahead-Bronze

Premium Cobrahead Accessories

M25-C1-BRX	8' Bronze Aluminum Arm Tenon Mount
M25-C1-BLX	8' Black Aluminum Arm Tenon Mount
M25-C1-BR-4	4' Bronze Aluminum Single Arm Tenon Mount
M25-C1-BL-4	4' Black Aluminum Single Arm Tenon Mount
M25-C2-BR-4	4' Bronze Aluminum Double Arm Tenon Mount
M25-C2-BL-4	4' Black Aluminum Double Arm Tenon Mount

Power Floodlight **General Electric Power Directional Flood Light Dark Bronze**

Recommended for use in areas where large areas need to be lighted and aesthetics are of secondary importance.

Floodlights

	Voltage	Wattage	Type	Design
M26-F25-BR	SYL Multi-Volt	250W	HPS	PowerFlood-Bronze
M26-F40-BR	SYL Multi-Volt	400W	HPS	PowerFlood -Bronze
M26-F100-BR	SYL Multi-Volt	1000W	HPS	PowerFlood –Bronze
M27-F40-BR	SYL Multi-Volt	400W	MH	PowerFlood -Bronze
M27-F100-BR	SYL Multi-Volt	1000W	MH	PowerFlood –Bronze

Note: 1000 watt flood lights are special order only. 1000 watt Sports Flood lights are available by Special Order.

Floodlight Accessories

M25-F2-BR	Double Floodlight Arm Tenon Mount Bronze
M25-F3-BR 180 Degree	Three Floodlight Arm Tenon Mount Bronze (on 35’ Direct Bury or All Base Mount Poles)
M25-F3X-BR 120 Degree	Three Floodlight Arm Tenon Mount Bronze (on 35’ Direct Bury or All Base Mount Poles)
M25-F4-BR 180 Degree	Four Floodlight Arm Tenon Mount Bronze (on 33’ or 40’ Base Mount Pole Only)
M25-F4X-BR 90 Degree	Four Floodlight Arm Tenon Mount Bronze (on 33’ or 40’ Base Mount Pole Only)

Direct Burial Poles

PA-16-BR	16’ Aluminum Pole Bronze (12’ mounting height)
PA-25-BR	25' Aluminum Pole Bronze (22' mounting height)
PA-35-BR	35' Aluminum Pole Bronze (30' mounting height)
PF-25-BL	25’ Fiberglass Pole Black (Used in housing areas only)

Base Mount Poles

PA-B12-BL	12’ Aluminum Pole Black (12, Mounting height, requires level foundation with grade or 13.5’ w/ breakaway base)
PA-B12-BR	12’ Aluminum Pole Bronze (12, Mounting height, requires level foundation with grade or 13.5’ w/ breakaway base)
PA-B28-BL	28' Aluminum Pole Black (28' Mounting height, requires level foundation with grade or 29.5’ w/ breakaway base)
PA-B28-BR	28' Aluminum Pole Bronze (28' Mounting height, requires level foundation with grade or 29.5’ w/ breakaway base)
PA-B33-BL	33' Aluminum Pole Black (33' mounting height, requires base 36" above grade)
PA-B33-BR	33’-Aluminum Pole Bronze (33’ Mounting Height, requires base 36” above grade)

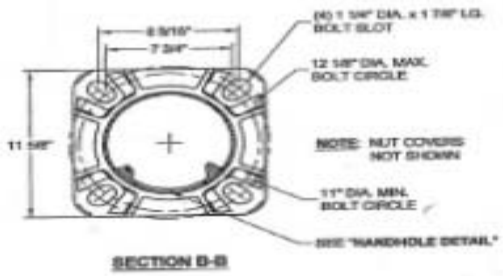
Note: Black poles are special order only.

Pole Foundations

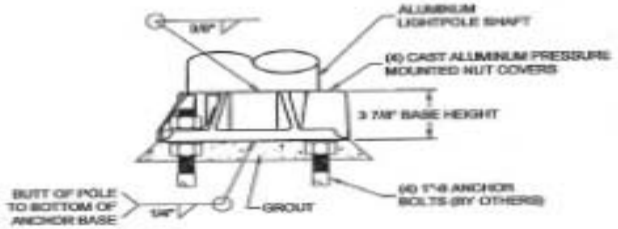
PFOUNDXS	Pole Foundation Extra Small Used for flood lights at grade 4 3/4 ” Bolt Pattern, 3’ Length
PFOUNDS	Pole Foundation Small Used for base mounting flush with grade 12” Bolt Pattern, 3’ Length
PFOUNDM	Pole Foundation Medium Used for base mounting flush with grade 12” Bolt Pattern 5’ Length
PFOUNDL	Pole Foundation Large Used for base mounting 36” above grade 12” Bolt Pattern 8’ Length
PFOUNDXL	Pole Foundation Extra Large Used for base mounting 36” above grade 14” Bolt Pattern 8’ Length

Miscellaneous Accessories

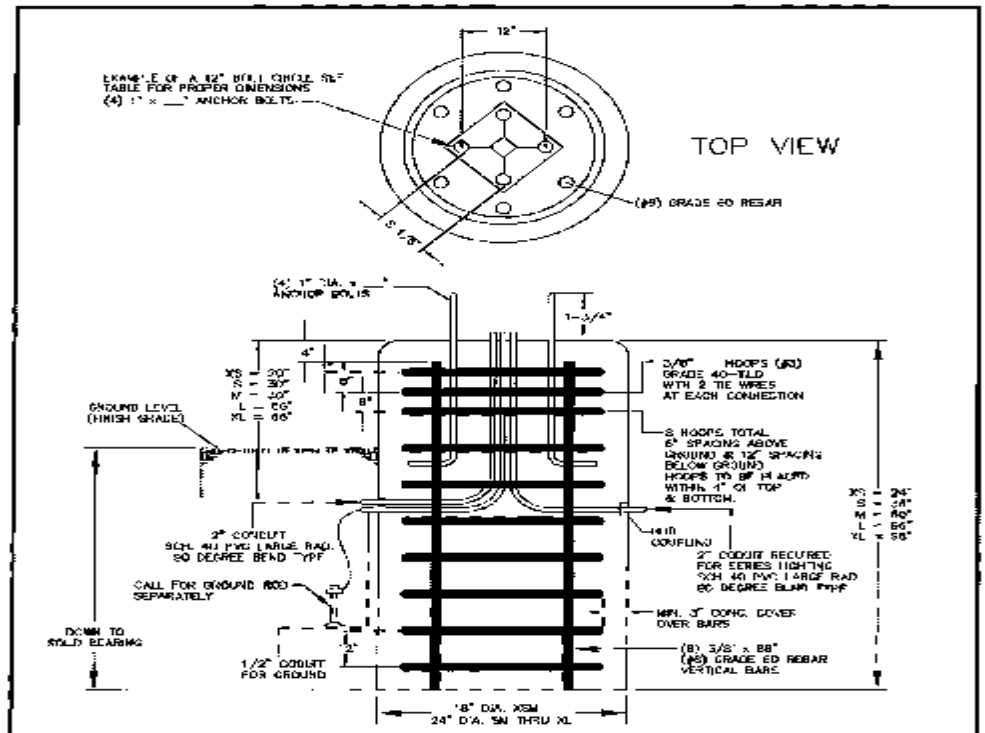
M25-PHOTO	Photo Cell Controlled Contactor
M25-TIME	Timer Controlled Contactor
P-BREAK-BL	Breakaway Base-Black adds 1.5 feet to height
P-BREAK-BR	Breakaway Base-Bronze adds 1.5 feet to height



SECTION B-B



DETAIL A



SIZE	BOLT CIRCLE	BOLT SIZE	TOP OF FOUNDATION	MATERIAL #
XS = 24" X 18"	4 3/4"	3/8" x 12"	FLUSH WITH GRADE	546303
S = 36" x 24"	12"	1" x 24"	FLUSH WITH GRADE	516201
M = 60" x 24"	12"	1" x 36"	FLUSH WITH GRADE	546303
L = 88" x 24"	12"	1" x 36"	36" ABOVE GRADE	546302
XL = 96" X 24"	14"	1" x 36"	36" ABOVE GRADE	516299

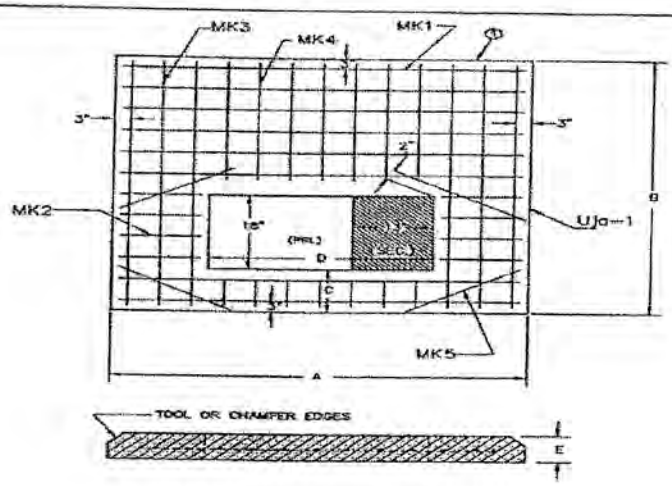
CANOOCHEE EMC

POLE FOUNDATION

REV. DATE		PFOUND *
10/19/10		

Note: All foundation and bolts must be plumb. Please contact CEMC for lighting template.
Note: For 15' or smaller pole near traffic, Foundation should be 5' in length with 30" above grade.

Page 1 of 1



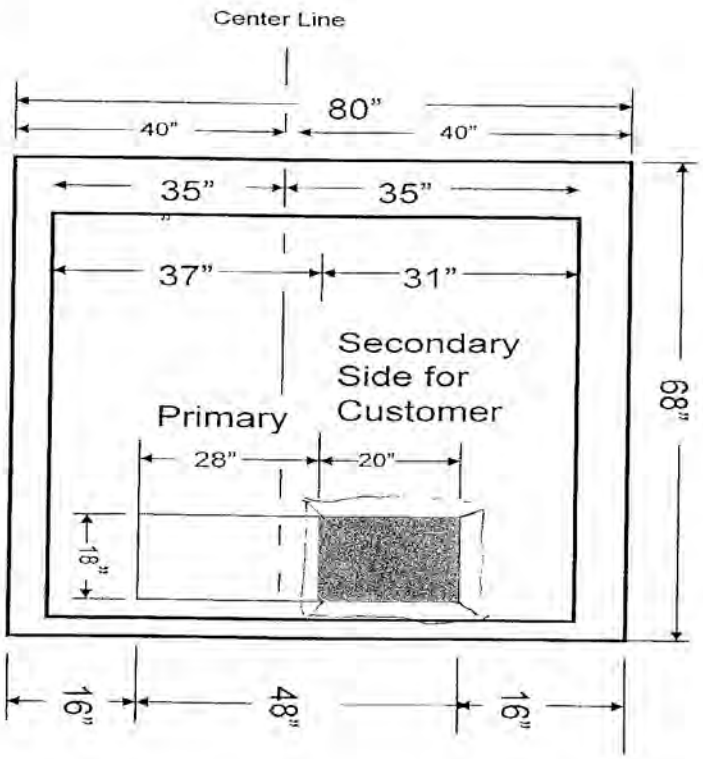
PAD	3-PHASE TRANSF. KVA	DIMENSIONS IN INCHES					REINFORCING BARS				
		A	B	C	D	E	MK1	MK2	MK3	MK4	MK5
#1	75, 112 1/2, 150, 225, 300, 500	78	62	10	42	6	7 #4 70"	4 #4 10"	6 #4 57"	6 #4 28"	4 #4 26"
#2	750, 1000 1500, 2500	104	100	10	54	8	12 #4 98"	6 #4 19"	6 #4 94"	7 #4 66"	4 #4 29"

NOTES:

1. CONCRETE TESTING, 3000 POUNDS MIN. PER SQUARE INCH; 4% TO 6% ENTRAINED AIR, 3/4" MAXIMUM SIZE AGGREGATE.
2. REINFORCING STEEL, ATSM-A615 GRADE 60, PLACE APPROX. 6" O.C. EACH WAY AND SECURELY TIED TOGETHER.
3. MINIMUM CONCRETE COVER OVER REINFORCING STEEL 2 INCHES UNLESS NOTED.
4. WOOD FLOAT FINISH, LEAVING NO DEPRESSIONS.

	THREE PHASE TRANSFORMER CONCRETE PADS	
	2000	UM1-6C

http://image.hpphoto.com/rs/404F1F6C-5B9D-4EF9-B694-FCC24EB67D16/large-screen-... 3/20/2009



Three Phase Transformer Pad

Note: Contractor to install all service entrance conduit in Secondary Side of pad opening.

Canoochee EMC

Color Coding of Customer's Service Conductors. Color coding of Customer's service conductors shall be as follows in Table 3.G. [Phase arrangement shall be (A), (B), (C), front to back, top to bottom, or left to right, as viewed from the front of the service equipment and metering equipment. (N) shall be the neutral.]:

TABLE 3.G
COLOR CODING OF CUSTOMER'S SERVICE CONDUCTORS

Service Type	*Phase*			
	A	*B*	*C*	*N*
120/240V, Single-Phase, 3-Wire	RED	BLACK		WHITE
120/240V, 3-Phase, 4-Wire, DELTA				
Through Metering Equipment	RED	BLACK	ORANGE (High-Leg)	WHITE
In Service Equipment	RED	ORANGE (High-Leg)	BLACK	WHITE
120/208V, Single-Phase, 3-Wire	RED	BLACK		WHITE
120/208V, 3-Phase, 4-Wire, WYE	RED	BLACK	BLUE	WHITE
277/480V, 3-Phase, 4-Wire, WYE	BROWN	YELLOW	PURPLE	NATURAL GRAY

Green shall be used for the *grounding conductor* only.

Marking of conductors at all termination points will be approved for sizes #6 AWG and larger.

Per COA Ordinance No. 000928-107, Section 110-35 Color Coding of Electrical Conductors – **ALL COLORS SHALL BE CONSISTENT THROUGHOUT EACH SYSTEM**. (Four wire wye secondary services from AE to multiple occupancy buildings require that the Customer install a four wire wye service to each occupant to satisfy to color consistency requirement of this COA ordinance.)

Note: Normal Rotation For Canoochee EMC Is Clock-Wise.

BB

Appendix BB

Contractor/Canoochee Demarcation Line

Canoochee
Electric Membership Corporation
P. O. Box 487 / Reidsville, Georgia 30453 / Phone (912) 557-4391

Line of Demarcation for
Canoochee EMC facilities at
Fort Stewart and Hunter Airfield

Canoochee EMC operates and maintains the base electrical distribution systems at Fort Stewart and Hunter Army Airfield. The interface between Canoochee EMC's facilities and those operated and maintained by others (such as Department of Public Works (DPW)) is known as the ***line of demarcation.***

Transmission lines and structures entering both military bases are owned by Georgia Power and operated and maintained by the Georgia Transmission Authority.

Electrical substations on Fort Stewart and Hunter Army Airfield are owned, operated, and maintained by Georgia Power Company and Canoochee EMC.

Electrical overhead and underground distribution circuits serving both bases originating in the electrical sub-stations are privatized and operated and maintained by Canoochee EMC.

Canoochee EMC and Georgia Power Company also provides primary metered electrical distribution from off base electrical sources to Camp Oliver, CACTAF, Shoot House, and other ranges and complexes north of Highway 144. Canoochee EMC operates and maintains the distribution power line and transformation up to the secondary meter point.

1-Ricky Simons	8/1/08	Michael Wasson	8/1/08	0
Drawn	*Date*	*Approved*	*Date*	*Revision*

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Lighting circuits originating from CEMC transformers are operated and maintained by Canoochee EMC.

Specifically, for underground construction,

.

- From the source (transformer) to the point of metering is the responsibility of Canoochee EMC.

- From the point of metering to the first downstream device such as a breaker or the main electrical panel, load is the responsibility of the Military, Department of Public Works, Winn Army Hospital, National Guard, or any other agencies or facilities responsible for operation and maintenance of their facility.

- **Example**: Services less than 600 amp capacity are metered on a meter pole or the side of building. Services greater than 600 amp capacity is usually metered on the transformer.

Additional examples of the line of demarcation for over head, underground, and lighting applications are shown on pages 3 and 4.

For additional information, contact the following Canoochee EMC offices for assistance on questions regarding the line of demarcation:

Base	During Business Hours	After Business Hours
Fort Stewart	**912-459-1112**	**800-459-0134**
Hunter Army Airfield	**912-459-1113**	**800-459-0134**

Table 1

Note: Business Hours are 7 a.m. to 4 p.m. Monday through Friday.

2-Ricky Simons	8/1/08	Michael Wasson	8/1/08	0
Drawn	*Date*	*Approved*	*Date*	*Revision*

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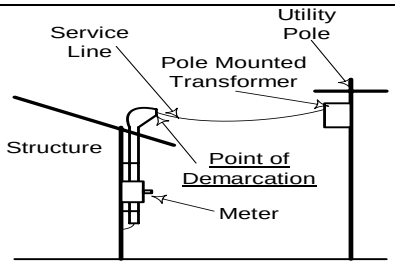
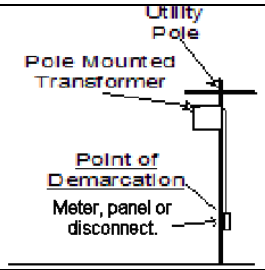
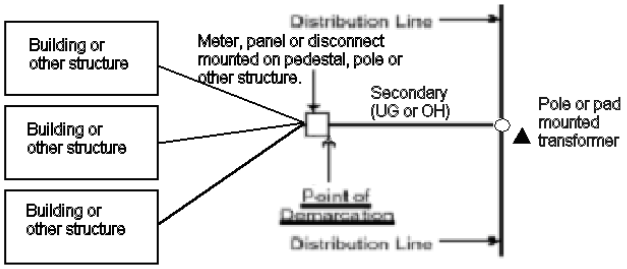
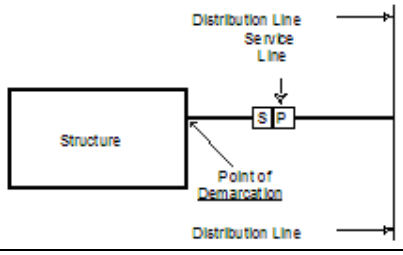
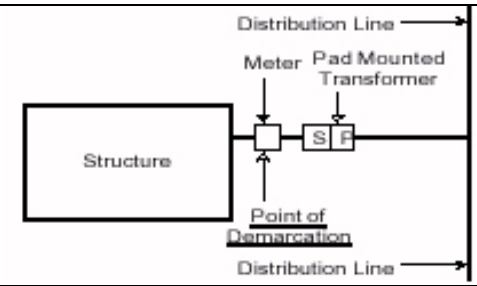
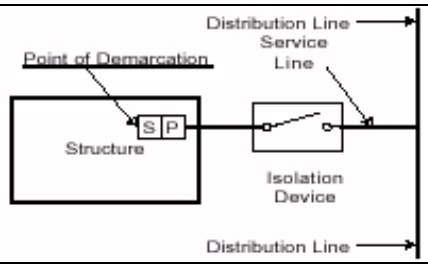
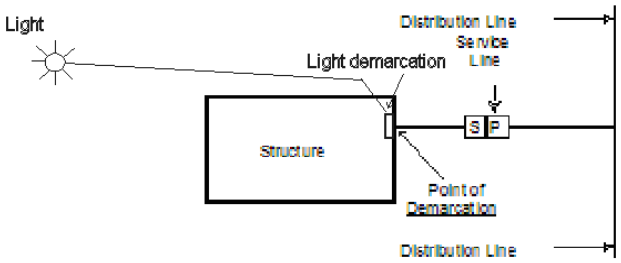
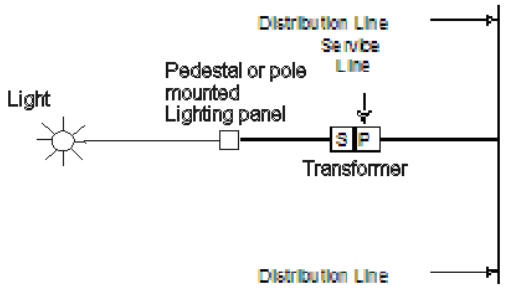
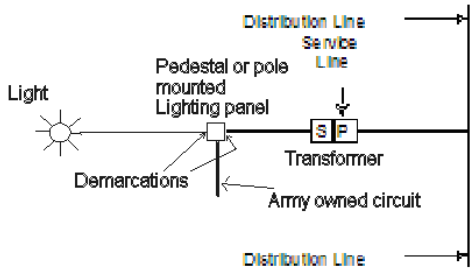
Overhead Service Applies to metered and non-metered locations. Demarcation is at the mast head.	
Underground Secondary on Pole. Demarcation is at the meter, panel or disconnect device.	
Service to Panel, Disconnect device or meter mounted on pedestal, pole or other structure. Not applicable to lighting or residential circuits. Demarcation is at the entry point into the meter, panel or disconnect device.	
Underground Service to non-residential location. Demarcation is at the entry to the panel or disconnect device. Typically for 600 amp or less.	

3-Ricky Simons	8/1/08	Michael Wasson	8/1/08	0
Drawn	*Date*	*Approved*	*Date*	*Revision*

Canoochee
Electric Membership Corporation
P. O. Box 487 / Reidsville, Georgia 30453 / Phone (912) 557-4391

Underground Service to residential location. Applies to units with secondary panels between the transformer and the residence. Demarcation is at the meter or meter base. Typically for 600 amp or greater.	
Indoor Transformers. Demarcation is at the secondary lugs of the transformer.	

Lighting Systems

Lighting circuit originating from a building. Does not include interior panel, contactors or controls. Lighting demarcation at lighting circuit termination into panel.	
Lighting circuits originate from a panel mounted on a pedestal, pole or other structure. The panel is served directly from a transformer. No government-owned circuits exit the panel. No demarcation exists… everything to the light is CEMC-owned.	
Lighting circuits originate from a panel serving Army-owned circuits. Demarcations exist on the incoming and outgoing entry points. The panel and circuits for non-lighting loads are owned by the Army.	

4-Ricky Simons	8/1/08	Michael Wasson	8/1/08	0
Drawn	*Date*	*Approved*	*Date*	*Revision*

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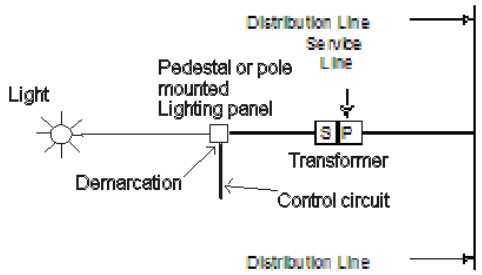
Electric Membership Corporation
P. O. Box 487 / Reidsville, Georgia 30453 / Phone (912) 557-4391

Lighting circuits from panel used exclusively for lighting but with external controls. Typical for ball fields. Any external controls and the control circuits are Army-owned.	

5-Ricky Simons	8/1/08	Michael Wasson	8/1/08	0
Drawn	*Date*	*Approved*	*Date*	*Revision*

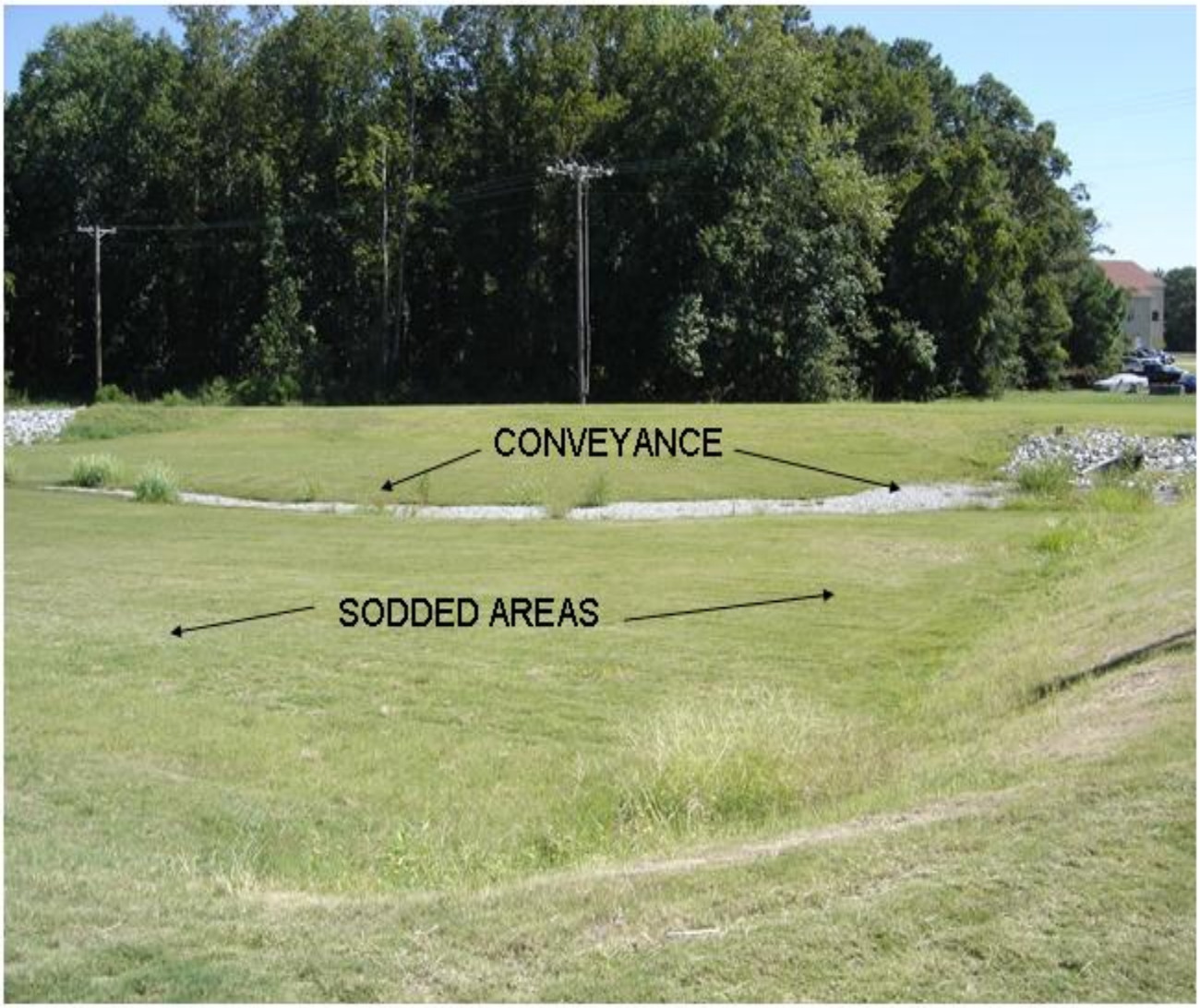
CC

Appendix CC

Dry Detention Pond Specifications

Dry Detention Pond Specifications

1. The final grade of the floor shall be a minimum 1 foot above seasonal high water table.
2. A conveyance to be installed from all inlets to outfall.
    a. Conveyance final grade to be at or above seasonal high water table elevation.
    b. Conveyance to be lined with geo-textile and with four (4") of stone over same. Graded 2"- 4" stone.
    c. Conveyance to be a minimum of 4 feet wide.
3. The following areas will be sodded:
    a. Bottom of detention pond
    b. Inside side slopes of detention pond
    c. Outward, ten feet from the edge of detention pond.
4. All other disturbed areas will be seeded with temporary and permanent grass.
5. Use erosion control blankets, permanent and/or temporary, blankets as required, to prevent erosion rills.


CONVEYANCE
SODDED AREAS

MINIMUM OF TEN
FEET OF SOD

DD

Appendix DD

Contractor Storage Areas

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT STEWART / HUNTER army AIRFIELD
954 WILLIAM H. WILSON AVENUE
FORT STEWART, GEORGIA 31314-5000

REPLY TO
ATTENTION OF

IMSE-STW-PWF

AUG 05 2009

MEMORANDUM FOR All US Army Garrison Fort Stewart/Hunter Army Airfield Directorates and Directorate of Contracting

SUBJECT: US Army Garrison, Fort Stewart and Hunter Army Airfield Policy Memorandum #10 - Design and Maintenance of Contractor Storage Areas

1. PURPOSE: To set forth the Fort Stewart and Hunter Army Airfield policy regarding on-post contractor operations and storage areas.

2. APPLICABILITY: This policy applies to all contractors conducting operations on Fort Stewart and Hunter Army Airfield.

3. POLICY: On-post contractor operations and storage areas must be maintained in an overall clean and orderly condition. To ensure a minimum level of upkeep and uniformity contractors must:

a. Submit to the Contracting Officer Representative (COR) a detailed sketch depicting the location and view of all facilities placed on, and all improvements to be made to, a storage site; obtain written approval from the Directorate of Public Works (DPW) prior to placing any facilities on or making any improvement to the site; and bear all expenses associated with establishing and maintaining the site.

b. Install and maintain a six foot high chain link fence around all storage yards.

c. Install and maintain appropriate weatherproof signs identifying the contractor and the governing contract; locate such signs on the main gate to each storage yard and on any trailer; and list on said signs the names(s) and phone number(s) of the emergency point(s) of contact responsible for the site and available to resolve problems at all times regarding the site.

d. Install and maintain appropriate weatherproof signs on all storage containers identifying the owner of the container and the governing contact; keep all storage containers inside the fenced storage yards, and align storage containers in a neat and orderly manner.

IMSE-STW-PWF
SUBJECT: US Army Garrison, Fort Stewart and Hunter Army Airfield Policy Memorandum #10 - Design and Maintenance of Contractor Storage Areas

e. Stack and arrange all materials not maintained inside an enclosed storage container in a neat and orderly manner inside the fenced storage yard. Where practical, place all materials on pallets, not directly on the ground.

f. Allow no trash or other debris to accumulate in an unsightly manner; and coordinate with the COR on the proper placement and use for dumpsters.

g. Cut and maintain grass and weeds to a height of no more than 6 inches; and maintain all hedges, bushes and other vegetation growth in a neat and presentable manner.

h. Place cone and barrier materials only when and where needed to protect work areas and collect immediately upon completion of the work.

i. Remove all materials, office trailers, storage containers, fence and utilities at the conclusion of the contract; and restore the site to its original grade and condition including seeding with permanent grasses as required.

4. CONSEQUENCE OF NONCOMPLIANCE: Should a contractor fail to comply with requirement in paragraphs 4a-i, or any changes or modification thereto, the contractor's use of such sites and facilities may be terminated and the contractor will be required to move its operations to an off-post location.

5. PROPONENT: The point of contact is the Directorate of Public Works, Contract Construction Branch, at (912) 767-3872 or DSN 870-3872

KEVIN W. MILTON
COL, FA
Commanding

EE

Appendix EE

Ft Stewart Supplement to LONWorks Direct Digital Control for HVAC and Other Local Building Systems

Fort Stewart Supplement

to

LONWorks Direct Digital Control for HVAC and Other Local Building Systems

Where this supplement fails to address, UFGS 23 09 23 dated 10/06 requirements apply.
http://wbdg.org/

1. The building control network shall be a single complete non-proprietary Direct Digital Control (DDC) system for control of the heating, ventilating and air conditioning (HVAC) systems. The building control network shall be an Open implementation of LONWORKS® technology using ANSI/EIA 709.1B as the only communications protocol and shall 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.
2. 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:
   - 2.1. Install hardware such that individual control equipment can be replaced by similar control equipment from other equipment manufacturers with no loss of system functionality.
   - 2.2. 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.
   - 2.3. At Fort Stewart the following systems are prohibited for new installation:
     - 2.3.1. BACNet
     - 2.3.2. Proprietary DDC systems
     - 2.3.3. Pneumatic systems or combination Direct Digital Control (DDC)/Pneumatic systems
   - 2.4. Gateways may be used provided that each gateway communicates with and performs protocol translation for control hardware controlling:
     - 2.4.1. A single major component (chiller, boiler, etc)
     - 2.4.2. Legacy or existing equipment in a building that is to remain
3. DDC Hardware (controllers) Requirements:
   - 3.1. All DDC Hardware shall:
     - 3.1.1. Be connected to a TP/FT-10 ANSI/EIA 709.3 control network.
     - 3.1.2. Communicate over the control network via ANSI/EIA 709.1B exclusively.
     - 3.1.3. Communicate with other DDC hardware using only SNVTs
     - 3.1.4. Conform to the LonMark® Interoperability Guidelines.
     - 3.1.5. Be locally powered; link power (over the control network) is not acceptable.
     - 3.1.6. 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

3.1.7. 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. SNVT inputs for overrides of all setpoints, and SNVT inputs for overrides of all hardware Outputs.

3.2. Application Specific Controllers have a fixed factory-installed application program (i.e. ProgramID) with configurable settings and do not have the ability to be programmed for custom applications. In addition to the requirements for all DDC Hardware ASCs shall:

3.2.1. Be LonMark Certified unless otherwise approved.

3.2.2. Be configurable via an LNS plug-in unless otherwise approved

3.3. Application Generic Controllers (AGCs) have a fixed application program which includes the ability to be programmed for custom applications. In addition to the requirements for all DDC Hardware ASCs shall:

3.3.1. have a fixed ProgramID and fixed XIF file

3.3.2. be fully programmable and configurable for the application through one or more LNS plug-in unless otherwise approved

3.4. General Purpose Programmable Controllers (GPPCs) are not installed with a fixed factory-installed application program and must be programmed for the application.

3.5. At Fort Stewart, Local Display Panels (LDPs) shall be installed at a minimum in each mechanical room where an AHU or Hydronic equipment exist and programmed as per the Point Schedules.

4. Do not rely on the control network to perform DDC sequence applications unless otherwise approved.

5. Where multiple pieces of DDC Hardware are used to execute one sequence, all DDC Hardware executing that sequence shall be on a common segment and isolated from all other DDC Hardware via a CEA-709.1B Router.

6. Each scheduled system shall accept a network variable of type SNVT_occupancy (which will be provided by the UMCS outside the scope of this work) 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][the occupied mode].

7. Fort Stewart currently has an Open LonWorks technology Utility Monitoring Control System (UMCS) manufactured by Johnson Controls, Inc. Integration of building DDC system are performed by Fort Stewart's System Integration contractor. This should be coordinated with the UMCS System Manager.

8. Submittals:

8.1. Prior to DDC system installation the following should be submitted for Government approval:

8.1.1. Points Schedules: Submit Points Schedules using the Points Schedule template located at https://eko.usace.army.mil/fa/bas/ for each piece of DDC Hardware. Points Schedules shall be submitted in hard copy (11"x17") and electronic format. Electronic submission shall be in [AutoCAD][Microstation][Excel] format and submitted on CD or DVD.

8.1.2. Control System Schematic diagram and Sequence of Operation for each HVAC system.

9. Deliverables:

9.1. Upon completion of project the following should be delivered to the Government for acceptance:

9.1.1. Final (as-built) commissioned Turbo LONWORKS® Network Services (LNS®) database with Lon Credits transferred to the Government.

9.1.2. eXternal Information Files (XIF), Resource files and Plug-ins for the completed system.

9.1.3. Point Schedules: Final (as-built) Points Schedules using the Points Schedule template located at https://eko.usace.army.mil/fa/bas/ for each piece of DDC Hardware. Points Schedules shall be submitted in hard copy (11"x17") and electronic format. Electronic submission shall be in [AutoCAD][Microstation][Excel] format and submitted on CD or DVD.

9.1.4. Control System Schematic diagram and Sequence of Operation for each HVAC system.

9.1.5. Programming Software: All software, including licensing information and user manuals, necessary to program GPPCs installed under this contract.

9.1.6. GPPC and AGC Application Source Code: Copies of the installed application programs (all software that is not common to every controller of the same manufacturer and model) as source code compatible with the supplied programming software.

9.1.7. Operation and Maintenance Instructions including procedures for system start-up, operation and shut-down, a routine maintenance checklist, and a qualified service organization list.

9.1.8. Quality Control (QC) checklist (below) completed by the Contractor's Chief Quality Control (QC) Representative.

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

11. 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. Subsequent integration of the building control system into a basewide Utility Monitoring and Control System by the Government or its agents shall not void warranty.

12. Provide a minimum of [8 hours] training at the project site on the installed building system. Upon completion of this training each student, using appropriate documentation, should be able to start the system, operate the system, recover the system after a failure, perform routine maintenance and describe the specific hardware, architecture and operation of the system.

Table: 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	XIF files, Resource files and Plug-in's are up-to-date and accurately represents the final installed system	
5	Commissioned Turbo LNS database with the understanding that the Lon Credits will be transferred to the Government as a complete system.	
6	All software has been licensed to the Government	
7	Local Display Panels (LDPs) have been created for all building systems, including all override and display points indicated on Points Schedule drawings.	
8	Final As-built Drawings accurately represent the final installed system.	
9	O&M Instructions have been completed and submitted.	
10	LonWorks® Network Services (LNS) based M&C software was provided	

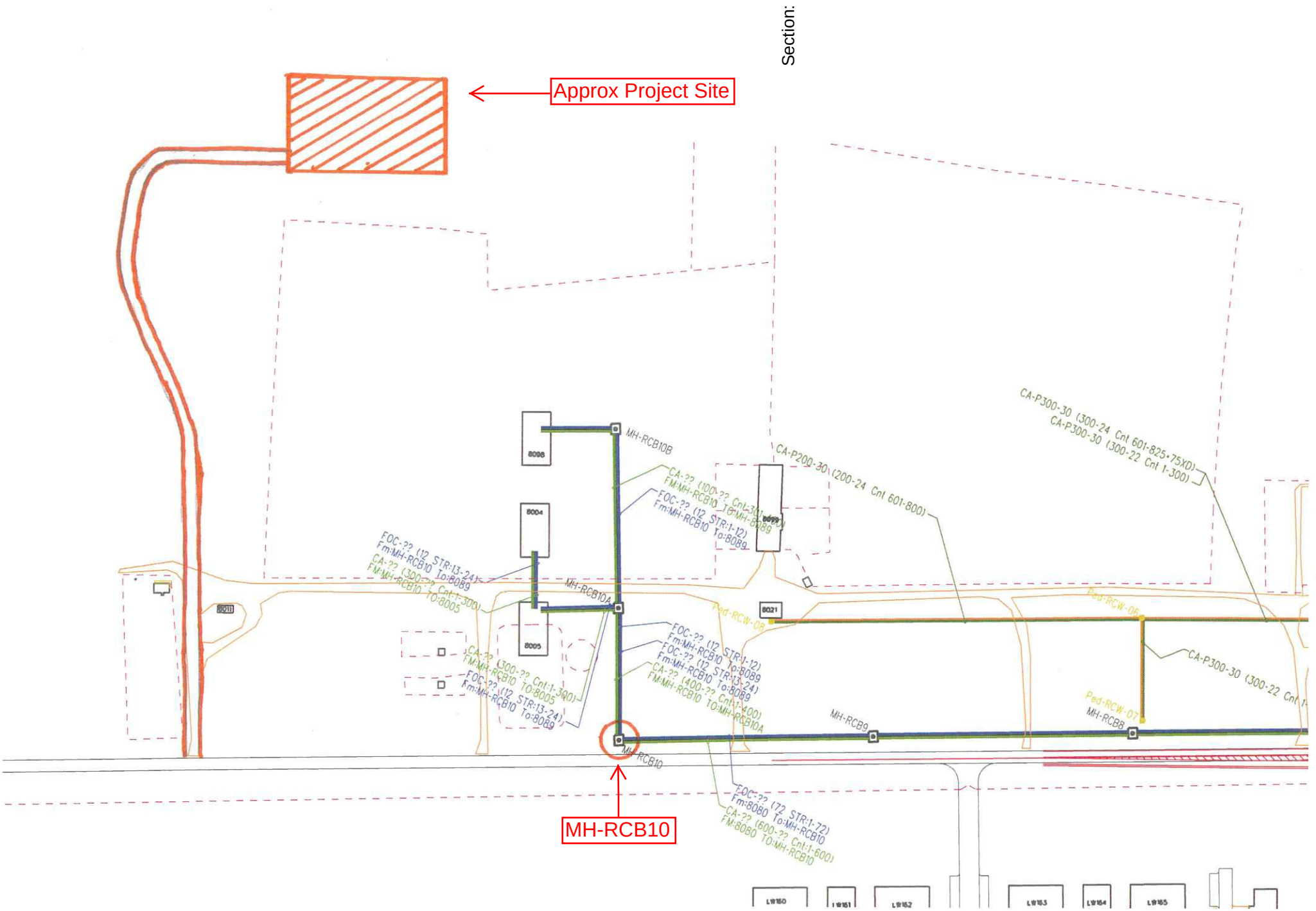
By signing below I verify that all requirements of the contract, including but not limited to the above, been met. Signature:_____ Date:_____

FF

Appendix FF

Communication OSP Map

Section:



Approx Project Site
MH-RCB10
MH-RCB10B
MH-RCB10A
MH-RCB9
MH-RCB8
MH-RCB10
8098
8004
8005
8021
CA-P200-30 (200-24 Cnt 601-800)
CA-P300-30 (300-24 Cnt 601-825+75XD)
CA-P300-30 (300-22 Cnt 1-300)
CA-P300-30 (300-22 Cnt 1-
FOC-?? (12 STR:13-24)
Fm:MH-RCB10 To:8089
CA-?? (300-?? Cnt:1-300)
FM:MH-RCB10 TO:8005
FOC-?? (12 STR:1-12)
Fm:MH-RCB10 To:8089
CA-?? (400-?? Cnt:1-400)
FM:MH-RCB10 TO:MH-RCB10A
FOC-?? (72 STR:1-72)
Fm:8080 To:MH-RCB10
CA-?? (600-?? Cnt:1-600)
FM:8080 TO:MH-RCB10
Ped-RCW-08
Ped-RCW-06
Ped-RCW-07
LW160
LW161
LW162
LW163
LW164
LW165

FM 3-19.17
July 2005

Military Working Dogs

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Headquarters, Department of the Army

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Field Manual
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Headquarters
Department of the Army
Washington, DC, 6 July 2005

Military Working Dogs

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Preface

The last Army dog field manual (FM) was published in 1977. It reflected military working dog (MWD) doctrine developed during the Vietnam era. Although useful at that time, much of the information has since become obsolete. Today, MWD teams are employed in dynamic ways never before imagined.

Today's MWD team is a highly deployable capability that commanders have used around the world from Afghanistan to Africa and from the Balkans to Iraq. These specialized teams aid commanders in stability and support operations as well as in warfighting. Being modular and mobile makes these teams very agile. As situations dictate, MWD teams are quick to arrive and able to conduct various operations. Their versatility allows for effective transformation at all echelons among readiness for deployment and operations on the ground, through redeployment and back to readiness.

The highly aggressive dog tactics of the 1960s and 1970s are long gone. Today's MWD program effectively employs expertly trained and motivated handlers coupled with highly intelligent breeds of dogs. These teams are continuously rotating between their assigned duties and deployments worldwide to perform joint operations, multiechelon tasks, and interagency missions.

This FM addresses the current capabilities of the Military Police Working Dog Program as well as the potential for future applications. As technology and world situations change, the MWD team will continue the transformation process and give commanders the full-spectrum capabilities needed to be combat multipliers on the battlefield as well as persuasive force protection and antiterrorism assets.

Appendix A complies with current Army directives, which state that the metric system will be incorporated into all new publications.

This publication applies to the Active Army, the Army National Guard (ARNG)/the Army National Guard of the United States (ARNGUS), and the United States Army Reserve (USAR).

The proponent of this publication is United States Army Training and Doctrine Command (TRADOC). Send comments and recommendations on *Department of the Army (DA) Form 2028 (Recommended Changes to Publications and Blank Forms)* directly to Commandant, United States Army Military Police School, ATTN: ATSJ-DD, 401 MANSCEN Loop, Suite 2060, Fort Leonard Wood, Missouri 65473-8926.

Unless otherwise stated, masculine pronouns do not refer exclusively to men.

Note: For the purposes of this manual, a dog team refers to one handler and one MWD unless specified otherwise.

Chapter 1
The Military Working Dog Program

Dogs have been used for the protection of life and property since ancient times. From these beginnings, dog training and employment has been continuously refined to produce a highly sophisticated and versatile extension of the soldier's own senses. Even the most complex machines remain unable to duplicate the operational effectiveness of a properly trained MWD team.

THE ROLE OF THE MILITARY WORKING DOG

1-1. MWDs provide a valuable asset to military police, infantry, special forces, the Department of Defense (DOD), and other government agencies. The MWD's senses of sight, smell, and hearing enhance his detection capabilities and provide commanders with a physical and psychological deterrent to criminal activity. Properly trained MWDs can prevent an intruder or suspect from escaping. When necessary, the MWD provides an added dimension of physical force as an alternative to the use of deadly force. Public knowledge of MWD team capabilities provides military police and various security forces with a formidable deterrent wherever the MWD team is employed.

1-2. MWDs are key resources for use in the military police combat support role. MWDs are trained for scouting, patrolling, and performing building and area searches. Commanders can use *Table 1-1* to determine what MWD type best suits their needs. Some MWDs have also been trained to track although this is not a required area of expertise. All of these skills contribute to the successful completion of the five military police functions across the full spectrum of military operations.

Table 1-1. MWD Mission-to-Type Matrix

Mission	*MWD Type*		
	PEDD	**PNDD**	**PD**
A. Area Security Operations			
(1) Area and reconnaissance	X	X	X
(2) Screening and surveillance	X	X	X
(3) Base/air-base defense	X	X	X
(4) Cordon and search	X		
(5) Checkpoints	X	X	X
(6) Roadblocks	X	X	X
(7) Response force	X	X	X
(8) Critical site, asset, HRP security	X[1]	X	X
B. Maneuver and Mobility Support Operations			
(1) Maneuver support	X	X	X
(2) Mobility support	X	X	X
C. I/R Operations			
(1) EPW and CI	X[2]	X[2]	X[2]
(2) Evacuation	X	X	X
D. Law and Order Operations			
(1) Force protection	X	X	X
(2) Military police investigations		X	

Table 1-1. MWD Mission-to-Type Matrix (Continued)

Mission	*MWD Type*		
	PEDD	**PNDD**	**PD**
(3) Customs support	X	X	
(4) Redeployment operations	X	X	
(5) Suspicious/unattended packages	X[3]		
(6) Health and welfare inspections	X	X	
(7) Crowd control	X[4]	X[4]	X[4]
(8) Alarm responses	X	X	X
(9) Bomb threats	X		
(10) Public MWD demonstrations	X	X	X
E. PIO	X	X	X

[1] PEDDs will not be used to provide security in ASPs, as the ammunition and explosives contained at the ASP will detract from the MWD's detection ability and may distract the MWD from his patrol function.
[2] MWDs will not be used in a correction/detention facility to ensure custody of prisoners.
[3] PEDDs can be used to search the area around a suspicious/unattended package for secondary devices. At no time will a PEDD or handler be used to search the package itself.
[4] Direct confrontation with demonstrators is not recommended, but is authorized with the commander's approval when lesser means of force have been unsuccessful.

1-3. MWDs are a unique item; they are the only living item in the Army supply system. Like other highly specialized equipment, MWDs complement and enhance the capabilities of the military police. MWD teams enable the military police to perform its mission more effectively and with significant savings of manpower, time, and money.

HISTORICAL OVERVIEW OF THE MILITARY WORKING DOG

1-4. Dogs have served in active service at the sides of their handlers for decades. They have been heroes, showing bravery under fire, saving lives (often losing their own), and bringing comfort to the injured and infirmed. The first recorded American use of military dogs was during the Seminole War of 1835 and again in 1842. In Florida and Louisiana, the Army used Cuban bred bloodhounds for tracking. During the US Civil War, dogs were used as messengers, guards, and unit mascots.

1-5. The Army Quartermaster Corps began the US Armed Forces' first war dog training during World War II. By 1945, they had trained almost 10,000 war dogs for the Army, Navy, Marine Corps, and Coast Guard. Fifteen war dog platoons served overseas in World War II. Seven platoons saw service in Europe and eight in the Pacific.

1-6. MWDs were trained at Fort Carson, Colorado, organized into scout dog platoons, and used in the Korean conflict for sentry duty and support of combat patrols. In 1957, MWD training moved to Lackland Air Force base (LAFB), Texas, with the Air Force managing the program.

1-7. Throughout the Vietnam Conflict, the Military Police Corps used dogs with considerable success. Most of these were sentry dogs used to safeguard critical installations such as ports and airfields. A new dimension in canine utilization was realized when marijuana detector dog teams were trained and deployed to assist military police in suppressing illicit drug traffic. Sentry and marijuana detector dog teams were then deployed worldwide in support of military police. An important outgrowth of the conflict was the development of canine research and development efforts. These ongoing efforts were able to initiate the first steps toward developing a more intelligent and stronger military dog, training dogs to detect specific drugs and explosives, developing multiple-purpose dogs, and employing tactical dogs by electronic remote control.

1-8. In the 1990s and early 2000s, MWDs were deployed around the globe in military operations such as Just Cause, Desert Shield and Desert Storm, Uphold Democracy, and Enduring Freedom and Iraqi Freedom. These teams were effectively utilized to enhance the security of critical facilities and areas, as well as bolster force protection and antiterrorism missions, allowing commanders to use military police

soldiers and other assets more effectively elsewhere. MWD operations in Haiti showed the first large-scale utilization of MWDs since Vietnam. In the Balkans, military police deployed with MWDs to provide force protection and antiterrorism support and area security throughout the US base camps. MWDs trained as explosive detector dogs conducted vehicle sweeps and building searches to ensure the safety of US soldiers. US Army MWD teams operated beside Iraqi police officials to help in law and order missions and restore the war torn country into a peaceful region.

1-9. MWDs are force multipliers. Installation commanders should include MWDs when planning for force protection and antiterrorism countermeasures. They expand the individual soldier's effectiveness in the face of those that would come against him. They provide an immense physical and psychological effect when used as a show of force in day-to-day operations. The various uses of MWDs have been effectively employed in many aspects of military police missions. MWDs are utilized effectively at gates, camps and bases, and checkpoints and for random searches for narcotics and explosive devices. MWDs are also utilized for other missions in support of combat, combat support, and combat service support units.

1-10. MWD teams are assigned to perform high-risk personnel (HRP) security missions. MWD teams perform narcotic detection missions on the Mexico and US border to assist US Customs. They have been deployed on the United States and Canada border to perform law and order operations. The canine can easily detect what his handler cannot see, hear, or smell. The MWD's controllable aggressive behavior, coupled with the physical and psychological effects he creates, makes him and his handler an impressive and unmatchable team.

ORGANIZATION AND STRUCTURE OF MILITARY WORKING DOG UNITS

1-11. The US Army MWD program is an organization with structure and responsibilities that reach from the DOD level down to the handler level. For information concerning organization and responsibilities above the local level, see *Army Regulation (AR) 190-12*.

KENNEL MASTER TEAM

1-12. The kennel master (KM) team is comprised of two noncommissioned officers (NCOs) (one sergeant first class [SFC], who is the KM and one staff sergeant [SSG], who is the plans NCO). The KM team is modular and provides technical supervision of MWD teams assigned to the military police brigade. This team may be assigned to the corps military police brigade, echelon above corps (EAC) military police brigade, or the internment and resettlement (I/R) brigade. In addition to technical supervision, this team plans and coordinates MWD operations and support requirements. The KM team is also responsible for MWD team proficiency training. This team supervises the storage and accountability of the narcotic and explosive training aids as well as all assigned equipment.

PATROL EXPLOSIVE DETECTOR DOG TEAM

1-13. The patrol explosive detector dog (PEDD) team is comprised of three NCO MWD handlers (one SSG, and two sergeants [SGTs]) and three PEDDs. This team detects explosives and contraband in support of combat, combat support, and combat service support units and the five military police functions. It provides MWD patrol support (including I/R operations) when not employed with explosive detection. This team is normally assigned to the corps military police brigade, EAC military police brigade, military police I/R brigade, or the I/R command and control (C2) detachment. This entire modular team can be deployed together as a unit with all assigned equipment or, based on the specific mission, a handler and an assigned MWD may be deployed apart from the team.

PATROL NARCOTIC DETECTOR DOG TEAM

1-14. The patrol narcotic detector dog (PNDD) team is comprised of three NCO MWD handlers (one SGT and two specialists [SPC]) and three PNDDs. This team detects narcotics and other drugs in support of combat, combat support, and combat service support units and the five military police functions. It

provides MWD patrol support (including I/R operations) when not employed with narcotics detection. This team is normally assigned to the corps military police brigade, EAC military police brigade, military police I/R brigade, or the I/R C2 detachment. This entire modular team can be deployed together as a unit with all assigned equipment or, based on the specific mission, a handler and an assigned MWD can be deployed apart from the team.

INDIVIDUAL DUTIES AND RESPONSIBILITIES

1-15. There are five levels of responsibility in the MWD program. The terminal level is the program manager and the beginning level, the handler. This is not to be confused with the operational chain of command or standards of grade. These individuals have specific duties in managing and performing the MWD program.

PROGRAM MANAGER

1-16. The program manager executes major Army command (MACOM) level responsibilities for the MWD program. He is the equivalent of an operations NCO and is an appointed certification authority whose duties include—

- Conducting MWD team patrol and detector certifications.
- Requisitioning personnel and MWDs.
- Providing policy and guidelines for the MACOM.
- Forecasting annual operational budgets.
- Coordinating MWD support for the office of the Secretary of Defense, US Secret Service (USSS), US Customs Service (USCS), and Department of State missions.
- Serving as the MACOM provost marshal's (PM's) advisor for the employment of MWDs in contingency operations, force protection and antiterrorism support, and homeland defense.

KENNEL MASTER

1-17. The KM is the senior NCO in charge of the installation's MWD program, consisting of 6 to 30 handlers and respective MWDs. KM duties are the equivalent of a platoon sergeant's duties when 9 or more handlers and MWDs are assigned. When 8 or fewer handlers and MWDs are assigned, the duties are equal to those of a squad leader. In addition to traditional leadership responsibilities, KM duties include—

- Monitoring all training to ensure that MWD teams are ready for annual certifications and worldwide deployments in support of various operational missions.
- Advising the commander on the employment of MWD teams.
- Ensuring that team proficiency is maintained.
- Preparing for MACOM and veterinary inspections.
- Forecasting annual operational budgets.
- Assisting the MACOM program manager in requisitioning personnel, MWDs, and equipment.
- Managing the daily maintenance and upkeep of kennel facilities.
- Monitoring MWDs' health and welfare.
- Managing procurements and accounts for explosive and narcotic training aids.
- Advising installation and unit force protection and antiterrorism officers on the use of MWDs.
- Coordinating MWD support for the USSS, the USCS, DOD protective services units, combat support operations, the Army Recruiting Command, and other civilian agencies.

MILITARY WORKING DOG PLANS NONCOMMISSIONED OFFICER

1-18. The MWD plans NCO is part of the KM team and performs the duties of the maneuver mobility support operations (MMSO) and training NCOs. The plans NCO is selected for his ability and overall knowledge of training, mentoring, and deploying MWD assets. This NCO is responsible for—

- Developing training plans.
- Coordinating and planning the unit mission-essential task list (METL).
- Supervising the execution and tracking of the deployment plan.
- Tracking the movement of MWD teams while they are deployed.
- Ensuring that deployed soldier's issues are resolved.
- Assisting in the supervision of the installation MWD program.
- Acting as the KM when the KM is absent.
- Preparing short- and long-term training outlines and risk assessments.
- Validating and supervising proficiency training.
- Overwatching preparation for the deployment of MWD teams.

SENIOR MILITARY WORKING DOG HANDLER

1-19. The senior MWD handler is the senior NCO of the PEDD or PNDD teams. His duties are the equivalent of the squad leader of the PEDD team or the team leader of the PNDD team. In addition to traditional leadership responsibilities, he is responsible for ensuring that—

- Annual certification training is conducted.
- MWD teams are ready for deployments.
- Team proficiency is maintained.
- Handlers are proficient with their assigned MWDs.
- Coordination for MWD team support for the USSS, the USCS, combat support operations, the Army Recruiting Command, and other civilian agencies is completed.

MILITARY WORKING DOG HANDLER

1-20. The handler provides the daily care and grooming for his assigned MWD. He ensures that proficiency skills are maintained in his assigned MWD. The handler and MWD perform either PNDD operations or PEDD operations. The handler and MWD are all trained for patrol but the variant for narcotics detector or explosive detector depends on the MWD team's training. The handler also—

- Fills out training records daily.
- Grooms the assigned MWD daily.
- Trains the assigned MWD daily.
- Maintains MWD kennels daily.
- Performs additional kennels duties.

Note: For more information about additional skill identifier (ASI) Z6 standards of grade, refer to *DA Pamphlet (Pam) 611-21*.

FUNDAMENTALS FOR THE USE OF MILITARY WORKING DOGS

1-21. An MWD can be trained to respond consistently to certain sensory stimuli (sights, sounds, odors, or scents) and alert the handler. Under most circumstances, a properly trained MWD can smell, hear, and visually detect movement better than a person.

1-22. Commanders and supervisors should consider the capabilities of the MWD team when identifying and evaluating possible MWD employment. Not all MWD teams are able or equipped to perform all missions equally (see *Table 1-1,* page 1-1).

USE OF PATROL DOGS

1-23. All MWD teams are trained to perform patrol missions. One benefit of employment is the deterrence of criminal activity. The obvious presence and well-published activities of MWD teams can successfully deter trespassers, vandals, violent persons, and other would-be criminals. When the desired task is to deter unauthorized or suspicious individuals, an MWD team should be assigned to a location during day or night.

1-24. The patrol dog's (PD's) contribution to the law and order effort is most effective when the team is utilized as a walking patrol. The law enforcement duties that a PD team can perform as a walking patrol include checking or clearing buildings and patrolling parking lots, family housing areas, and troop billet areas. Mobility significantly increases the potential area of coverage. The best and most effective method is the ride awhile, walk awhile method. This concept helps cover large patrol areas, and the periodic exercise helps keep the team alert. All PD teams can be utilized for—

- Antiterrorism operations.
- Force protection and antiterrorism efforts.
- Special-reaction team (SRT) operations.
- Assistance in military police investigations.
- Walking and mobile patrols.
- Alarm responses.
- Building checks and searches.
- The identification and apprehension of individuals.
- The protection of HRPs.
- The protection of funds.
- Open-area searches.
- Civil disturbances.
- Perimeter security.
- External intrusion detection.
- Response forces.
- Access control points (ACPs) support.
- High-risk targets (HRT) support.
- Mission-essential vulnerable areas (MEVA) support.
- I/R operations.

1-25. Many of the tasks above can be performed in combat support or force protection and antiterrorism operations. In addition, PD teams can and should be utilized as a tool for area defense, providing warning and response. PD teams are effective on combat patrols and as listening posts and reconnaissance team members. The employment of PD teams should not be overlooked during I/R or enemy prisoner of war (EPW) operations. PDs are trained to apprehend suspects at or near a crime scene, stop those who may attempt to escape, and protect their handlers from harm. Some PDs may be able to locate suspects who have left the scene of a crime.

1-26. The PD team should be utilized to provide a psychological deterrent and a show of additional force protection and antiterrorism measures. PD teams should be placed on roving patrols at ACPs, vulnerable areas, and the location of HRP. These missions should increase as force protection and antiterrorism levels increase.

USE OF PATROL NARCOTIC DETECTOR DOGS

1-27. Military police commanders, planners, and supervisors have a very effective means of detecting the possession and/or use of controlled substances with the employment of a PNDD team. PNDDs are trained to recognize the scent of certain illegal substances through a program of practice and reward.

1-28. In addition to PD missions, PNDD dogs can be utilized for the following:

- Criminal Investigation Division (CID) and military police investigator drug investigations.
- USCS inspections.
- Health and welfare inspections.
- Barracks searches.
- Workplace searches.
- Random gate inspections.
- Area searches.
- Vehicle searches.
- Postal inspections.
- I/R operations.
- Aircraft and luggage searches.
- Predeployment and redeployment searches.
- Other US government agency support.

1-29. When the PNDD responds on any of the substances he is trained to detect, his handler takes the appropriate action. PNDD teams perform a valuable service by helping to rid the military community of illegal drugs and the problems associated with drug and controlled substance abuse.

USE OF PATROL EXPLOSIVE DETECTOR DOGS

1-30. PEDD teams are very useful in many searches or investigations involving explosives. The search for explosives is critically important to ensure that the community is safe and protected from would-be terrorists. PEDD teams are particularly useful if there is a need to locate one or more of these explosive items, which may have been hidden in an area.

1-31. The deterrent value and the detection capabilities of PEDD teams are a very effective countermeasure to terrorism. Public knowledge that PEDD teams are in use is a deterrent to persons who may try to use explosives illegally. The knowledge that explosives can be detected by PEDD teams at entry points or in places where explosives have been hidden can prevent a person from attempting to commit terrorist acts.

1-32. In addition to PD missions, PEDD dogs can be utilized for—

- Bomb threat incidents.
- Suspicious/unattended package incidents.
- ACP searches.
- Checkpoint searches.
- Random gate searches.
- CID and military police investigations section.
- Health and welfare inspections.
- Building and area searches.
- Postal inspections.
- Aircraft and luggage searches.
- Predeployment and redeployment searches.
- Protective service missions.
- Other US government agency support.

1-33. A well–trained PEDD team can conduct a significantly more effective search of an area or facility in a much shorter time than a number of people can. Using PEDD teams helps reduce the potential risk to persons who would otherwise have to do the search without the benefit of the dog's superior sense of smell. More detailed information concerning the employment of PD, PNDD, and PEDD teams is discussed in *Chapters 5, 6,* and *7*.

Chapter 2

Administrative Requirements

This chapter contains information that is useful in planning an MWD program or adding MWD teams to an existing program. The guidelines in this section are not meant to be absolutes for utilization, training, or maintenance. They give general guidance and information that should be considered when planning a program. Leaders will find the following information helpful for writing authorization documentation statements and for planning the local MWD program. It is important to remember that all MWDs are trained as PDs in addition to the specific type of detector dog (narcotic or explosive).

DETERMINATION OF A NEED FOR MILITARY WORKING DOGS

2-1. The installation provost marshal (PM), military police unit commander, or task force commander must take the initiative to establish the local MWD program if it does not already exist. The specific needs must be determined and the costs of the program must be justified. The decision process involves a thorough risk and crime analysis, an accurate evaluation of the requirements of the entire military police mission, and the use of the working dog yardsticks located in this chapter.

2-2. Some of the factors to consider when determining the need for MWD teams include—

- The mission of the team.
- The size of the area of responsibility of the team.
- The size of the installation or the area population.
- The number of personnel to be served by the team.
- Incident rates for all crimes.
- The present capability and the commitment of a portion of the manpower resources as handlers.
- The types of terrain on the installation or in the probable areas of deployment.
- The types of combat support missions for which MWD teams can be used.
- The number of critical facilities or areas.
- The capabilities of each type of team.
- The number of HRP on the installation or in the area of responsibility.

VERIFICATION OF AUTHORIZATIONS

2-3. Initial MWD authorizations should be probationary using the following criteria:

- Adjustments must be made based on actual use data.
- A baseline ratio of 24 hours of MWD utilization to 8 hours training per week (4 hours patrol and 4 hours detection) must be maintained.
  - Utilization includes all missions (force protection/law enforcement, security, and combat support), whether patrolling, detecting drugs or explosives, or performing other functions (in combination), when a handler and dog are being employed together as a team.
  - Training includes all training activities to maintain, improve, regain, or develop dog skills such as obedience, controlled aggression, patrolling, scouting, detection of persons, and detection of drugs or explosives.
- An automatic review must be made by the respective MACOM after two years.

2-4. There is a trade-off when adjusting between the training and utilization necessary to reinforce basic skills or add new skills. For example, four hours per week may be adequate to maintain detector dog proficiency or to train in new skills, but additional training may be justified at times and training hours may be increased accordingly. This increase in training time should be accompanied by an equivalent reduction in utilization time. However, training hours should not be increased merely as a substitute for lack of utilization.

MISSION REQUIREMENTS

2-5. The mission requirements for the following support missions should be considered. These requirements should be used only as guidelines.

INSTALLATION FORCE PROTECTION AND LAW ENFORCEMENT SUPPORT

2-6. In order to provide continuous 24-hour, year-round MWD protection of the installation, nine MWDs are needed. Six of these dogs will be PEDD and three will be PNDD. This requirement is based on each MWD team being used a minimum of 24 hours per week. This does not include hours needed for training, grooming, or health care requirements. This does allow for temporary duty (TDY), handler leave, and illness.

2-7. The goal is to have one PEDD per installation available at all times for bomb threats or explosive type missions (not counted as part of the working force protection requirement). Installations with a three- or four-star headquarters require one additional PEDD authorization. This is due to the increased workload, facility criticality, facility vulnerability, location, past history of terrorist target selections, and present threat assessments.

HIGH-RISK PERSONNEL SECURITY MISSIONS

2-8. DOD tasks the Army to provide PEDD support for presidential, vice presidential, Secretary of State, and Secretary of Defense visits throughout the world. Currently, there is not a published formula to predetermine mission frequencies or requirements for these missions. On average, 40 teams inside the MACOM support the various missions above. These figures do not include travel or mission preparation time.

CUSTOMS SUPPORT

2-9. While no formula exists to quantify requirements for military customs support, this remains an ongoing mission that must be viewed as a requirement for additional MWD authorizations. MWDs are used to screen household goods shipments, privately owned vehicles (POVs), container express (CONEX) containers, military equipment, US mail, and port operations. Workload varies by installation population, location, unit missions and deployments, and the time of year.

CONTINGENCY OPERATIONS SUPPORT

2-10. Currently, approximately 50 MWD teams are supporting various contingency operations. This requirement will continue until mission completion. This figure represents 25 percent of Army MWD authorizations. Support for contingency operations has continued to rise since 1990 and will continue to do so. This increase must be factored into planning for MWD authorizations. A conservative average of 100 MWDs is needed for contingency operations on a yearly basis. This number is to ensure that MWD teams do not perform back-to-back deployments and that they receive proper proficiency training according to *AR 190-12* (4 hours per week in each specialty and 95 percent accuracy for PEDDs or 90 percent accuracy for PNDDs).

KENNEL CONSTRUCTION

2-11. When new MWD programs are started at locations where there are no facilities in place, kennel construction must be complete before the dogs arrive. The MWDs should be ordered through the military standard transportation and issue procedures (MILSTRIP) process approximately one year before the expected completion date of the kennel facility. In operations where MWD teams will be deployed for long periods of time and will be rotated, a permanent facility must be constructed within one year. Deployable field kennels may be used in the interim. The joint service MWD committee states that the DOD's design guide for MWD facilities must be referenced in planning the construction or renovation of a kennel facility.

2-12. Once the need and the justification for an MWD program are established, the PM, military police commander, or task force commander initiates a request to the installation facilities engineer to develop the kennel facility design. Before the kennel design has been finalized, the activity or installation veterinary corps officer (VCO), the physical security inspector, safety personnel, and the KM must be consulted to ensure that the minimum requirements are included in the final design. After kennel designs are completed and construction costs are estimated, the kennel project is submitted to the installation commander for approval and funding. The request for authorization of MWD teams must include the statement that the commitment has been made to fund and build kennels within one year prior to the arrival of the MWDs at the installation. Refer to *Appendix B* and *DA Pam 190-12* for details on kennel construction.

PROCUREMENT

2-13. All MWDs must be procured from the procurement section at the 341st Training Squadron, Lackland AFB, Texas. Local procurement of an MWD is prohibited. Requisition of an MWD team (one dog and one handler) requires two separate transactions. Handlers are obtained as a result of a personnel action requesting military police soldiers with the ASI Z6 in the required pay grades. MWDs are obtained as a result of a supply action. Commanders will assign an appropriately qualified handler to every MWD on hand. Assignment will be consistent with the policy of "one dog and one handler" as outlined in *AR 190-12*.

2-14. When the replacement of an MWD and not a handler is needed, requisitions are done according to *AR 700-81*. Initial requisitions for dogs should be submitted when positions for handlers are authorized. The MWDs in the Army supply system are—

- Dog, patrol: narcotic detector; national stock number (NSN) 8820-00-435-7542, line item number (LIN) D33800.
- Dog, patrol: explosives detector; NSN 8820-00-188-3880, LIN G33732.

2-15. The method of how to replace an MWD that has died, been adopted, or has undergone euthanasia is to submit a requisition in the MILSTRIP format that includes a statement that the unit or installation already has a trained handler on station. The MILSTRIP should also be submitted when the VCO has stated in writing that an MWD only has a 12-month life or work expectancy and/or is placed in deployment category IV (permanently nondeployable).

2-16. KMs should send requisitions for new or replacement dogs, in the MILSTRIP format, to their local property book office and forward a copy to their respective MACOM. The headquarters of the Air Force Security Police Agency will review all requisitions for dogs prior to processing by the 341st Training Squadron, Procurement Section.

TRAINING REQUIREMENTS

2-17. Training is needed at each installation to ensure that teams remain proficient. This realistic and challenging training should be scenario driven and relate to all of the possible operations in which MWD teams will operate according to the unit METL. Properly trained MWD teams are better prepared to accomplish all facets of MWD missions.

INITIAL TRAINING

2-18. MWD teams are initially trained at the 341st Training Squadron, Lackland AFB, Texas. This training is done at a basic level for both the handler and the dog and is not intended to prepare either the handler or the dog for immediate duty in an MWD team. The training is only intended to give a basic overview of the MWD program, the health and care of MWDs, and proper training techniques. It is the responsibility of the gaining unit to train a new handler or dog on all missions conducted by Army MWD teams. Proficiency training is continuously required to ensure that teams are reliable for use in patrol, narcotic detection, and explosive detection.

PROFICIENCY TRAINING

2-19. The effectiveness of MWDs trained in patrol, narcotic detection, or explosive detection depends on the continual reinforcement of the abilities of the dog team through proficiency training. This training is mandatory and if it is not conducted properly, an appointed certification authority can decertify the MWD team. Failure to meet the minimum training standard for at least the 35 days prior to a certification action will result in MWD teams not being evaluated for certification.

2-20. The minimum training standard is at least four hours of training each week in patrol and at least four hours of training each week in narcotic or explosive detection. The minimum standard of proficiency to maintain certification as a detector team is 90 percent or higher (with no more than a 10 percent false response rate) for narcotic detector dogs, and 95 percent or higher (with no more than a 10 percent false response rate) for explosive detector dogs.

2-21. Failure to maintain an average that meets or exceeds the minimum standard for three consecutive training events will result in the automatic decertification of the MWD team. Decertified teams may not be used in any way, and must undergo intensive retraining. These teams may be recertified only after retraining and a consistent demonstration to an appointed certification authority. Proficiency training should be conducted both on and off leash.

PROFICIENCY TRAINING OF PATROL DOG TEAMS

2-22. The effectiveness of PD teams depends on the continual reinforcement of mandatory proficiency training. PD teams must receive a minimum of 4 hours of patrol proficiency training each week. The training environment should approximate the military police working environment as closely as possible. Training should occur at varying times throughout the day and night and on varying days of the week, including weekends.

2-23. The emphasis in training is to develop the skills of both the handler and the dog so that they complement each other and the team becomes a working unit. As a proficiency evaluation criterion, the correct performance of the required task verifies that the handler understands how to control his PD and is able to do so.

2-24. Train the PD to protect with or without command based on any perceived threat to the handler. Because of the potential of serious bodily injury in this specialty, the certification of the handler and the dog as a team is very stringent. Ensure that the proficiency training of PDs includes an emphasis on critical tasks. There are no waivers for failure to accomplish a critical task by a PD team.

WEAPON FIRE TRAINING

2-25. Training on weapon firing ranges is essential for the PD to become proficient and not be deterred from attacking agitators during gunfire. The dog must not attack the handler during gunfire. The firing of all weapons assigned to the handler should be done with the MWD present whenever possible. PDs can be desensitized with the firing of many different types of weapons. This can often be accomplished by arranging for the handlers to take the dogs to weapon ranges of different units.

2-26. Determine the dog's reaction to the sound of gunfire. It may be necessary for the handler to use counterconditioning techniques until the desired proficiency is achieved. Counterconditioning techniques

include starting at distances of 300 meters and slowly bringing the gunfire closer to the dog (or as safety allows, bringing the dog closer to the weapon). The goal is for the dog not to bark or show any signs of aggression when the handler fires all assigned weapons. This can be a slow process over the course of several days.

OBEDIENCE COURSE TRAINING

2-27. The obedience course exposes the PD to various obstacles (see *Figure 2-1*) that simulate walls, open windows, tunnels, ramps, or steps. The dog's exposure to these obstacles reduces the amount of time required to adapt dogs to different environments. The dog learns to negotiate each of the obstacles. When confronted with a similar obstacle in the working environment, the dog is not deterred from completing his mission. The obedience course also develops the handler's ability to control the dog's behavior both on and off leash. The obedience course is not a substitute for exercise. A dog should never be required to negotiate the obedience course until he has been warmed up by proper exercise.

Figure 2-1. Obedience Course Obstacles

PROFICIENCY TRAINING OF DETECTOR DOG TEAMS

2-28. Continuous training of detector dogs is required so they maintain proficiency in the ability to seek and find drugs or explosives, depending on their specialty. Ensure that the detector training is always documented properly. Documentation and training are critical to both maintaining team certification and to establishing probable cause for a search based on a detector dog's number of correct responses.

2-29. There are several differences in the training requirements for PNDD and PEDD. Proficiency training scenarios for both types of detector dogs must be varied to avoid conditioning the dogs to a repetitious training pattern. The following factors will be varied for each proficiency training exercise:

- The general training exercise area.
- The number of training aids planted.
- The specific locations of the training aids in the area being used for training.
- The amount of explosives or drugs used in the training aid plant.
- The type of explosives or drugs used.
- The time of day or night of the training.
- The type of training aid container.
- The type of distraction material planted with the training aid.
- The length of time the training aid is left in place before the detector dog team search.
- The person used to handle and/or plant the training aid.
- The height above or below the floor level of the training aid plants.
- The size of the room or area in which the training aids are planted.

DECOYS

2-30. The decoy is the person who role-plays the primary adversary for training and evaluating the MWD team. The decoy may be a suspect, a subject, an attacker, an agitator, a drunk, an escapee, an enemy, or any of a number of other persons an MWD team may expect to encounter while performing military police duties. A decoy may also be neutral or an ally, such as another military policeman, a supervisor, a lost juvenile, or an innocent person passing through an identification check. Use both males and females for decoys, agitators, and suspect role-players. Vary the clothing the role-players are dressed in to expose the dogs to civilian, military, and the ethnic dress of different countries, if possible.

2-31. Decoys must be taught how to handle the arm protector sleeve or wrap and other aggression tools such as the bite suit (*Figure 2-2*), the hidden wrap, and leg wraps for self–protection when the dog attacks. The sleeve or wrap used should be a hidden sleeve rather than the full, heavy padded sleeve. The hidden sleeve can be concealed under a sweater or field jacket to achieve more realistic conditions for training the MWD.

Figure 2-2. Bite Suit

2-32. KMs and plans NCOs teach decoys how to understand and use the different drives the MWD shows. Once understood, these drives or needs of the MWD can be exploited to cause the desired result in training. Decoys must learn the type of pattern to take to and from the MWD when training on aggression tasks or the bite. For safety and optimum training effect, decoys will learn how to target the MWD into the bite gear and what actions to take during a partial and full bite.

VALIDATION

2-33. The KM or plans NCO will conduct a validation prior to requesting certification. Validations will then be conducted quarterly to verify the patrol and detection accuracy rates recorded on *DA Form 2807-R (Military Working Dog Training and Utilization Record)* and/or *DA Form 3992–(R) (Narcotics or Explosives Detector Dog Training and Utilization Record)*. Additional validations will be given to any patrol or detector MWD whose demonstrated proficiency appears to differ significantly from the rating recorded on his *DA Form 2807-R* and/or *DA Form 3992–R*. The validation will verify proficiency or identify the specific patrol/detector weaknesses that need corrective training.

2-34. Validations include at least 30 trials for a narcotic detector dog and at least 40 trials for an explosive detector dog. These trials will be divided equally with each substance the dog is trained to detect. Training aids will be distributed in at least five different areas over a five–day period. These areas should include (if available) vehicles, barracks, open areas, warehouses, theaters, planes, and luggage. A written record of the evaluation and validation will be maintained on record for a minimum of two years.

CERTIFICATION OF MILITARY WORKING DOG TEAMS

2-35. *AR 190-12* defines the standards and specific requirements for all certification of MWD teams. Certification of an MWD and handler is valid for one year and is immediately nullified when—

- The dog is assigned to another handler.
- The handler and MWD have been separated or have not conducted training for thirty-five or more consecutive days.
- The team fails to meet the minimum detector standard of 95 percent accuracy (explosives) and 90 percent accuracy (narcotics) with no more than a 10 percent false response rate for three consecutive months.

SCOUTING OR PATROLLING

2-36. The PD must be able to detect a person by scent, sound, and sight (on leash only). This task is rated critical. The following tasks must be accomplished to demonstrate proficiency in scouting or patrolling:

- Daytime standards.
  - Detect and respond to the scent of a person who is hidden within 75 yards, and follow the scent to the person's location.
  - Detect and respond to a sound made by a person 100 yards away, and follow this sound to the source.
  - Visually detect and respond to a person in view 100 yards away, and pursue the person on command.
  - Demonstrate proficiency in pursuit, attack, and release.
- Nighttime standards:
  - Detect and respond to the scent of a person who is hidden within 75 yards, and follow the scent to the person's location.
  - Detect and respond to a sound made by a person 100 feet away, and follow this sound to the source.
  - Demonstrate proficiency in pursuit, attack, and release.

Note. There is no nighttime standard for sight due to the dog's natural ability to revert to other senses in the dark.

VEHICLE PATROL

2-37. The PD must be able to ride quietly and calmly inside a vehicle with the handler until provoked or commanded. This is a semicritical task.

TRACKING

2-38. Tracking is the only noncritical task on which PDs are trained. Tracking is noncritical because not all PDs have tracking potential. The local KM should know which dogs have been trained to track. PDs that demonstrate a potential for tracking are identified by the KM or plans NCO at each unit, and the dogs are then further developed in this task. Although tracking is a valuable skill for the PD team, improper performance of the task does not degrade the overall effectiveness of the PD team to perform the military police mission.

2-39. PDs selected for tracking training should be trained and employed for tracking on a tracking harness. The harness serves as a useful cue to the PD that it should focus his senses on tracking. At the start of the track, the handler will give the command "Track" and begin casting for the scent. Initially, scent pads are identified and then an item with the tracklayer's scent on it will be used. The dog is required to track and alert on any items left by the tracklayer.

2-40. The minimum level of proficiency a PD trained for tracking must attain is to be able to follow a human scent at least one hour old, for 1 mile over varied terrain, and on a course with several turns. Given suitable tracking conditions, a skilled tracker dog team can follow the natural wanderings of individuals or groups of persons for at least 3.1 miles over rugged and varied terrain and on a scent track that is at least 12 hours old. While tracking, the dog is also capable of alerting his handler to the presence of tripwires and ambushes.

2-41. Evaluation of tracking tasks must include various ages and lengths of the track. The areas used to conduct tracking training and evaluations will be rotated frequently. Tracks will be at least one-third of a mile long but no longer than one mile. The age should vary from ten minutes to one hour. Tracks will include turns, but evaluators should ensure that the person laying the tracks is not trying to deceive the dog with undue tracklaying. Articles will be placed on the track for the dog to find.

INSPECTIONS

2-42. Inspections help ensure that the MWD section is in compliance with Army standards. *Appendix C* contains an example inspection memorandum to assist the inspection officials on what areas to inspect at an MWD section.

DEPARTMENT OF THE ARMY INSPECTIONS

2-43. Personnel from headquarters, Department of the Army (HQDA), conduct annual inspections of the MACOM MWD program. These inspections are used to assist the MACOM PM and program manager in moving the MACOM MWD program forward. This inspection will be on all aspects of the MACOM MWD program (see *Appendix C)*.

MAJOR ARMY COMMAND INSPECTIONS

2-44. MACOM program managers conduct annual inspections of handlers, MWDs, training, team use, team proficiency, equipment, and kennel facilities. This ensures compliance with *AR 190-12*.

PROVOST MARSHAL AND COMMANDER INSPECTIONS

2-45. PMs and/or commanders conduct monthly inspections of handlers, MWDs, training, team use, team proficiency, equipment, and kennel facilities. These inspections are conducted at least monthly on one or more areas of the kennels and quarterly on all aspects of the installation MWD section to ensure compliance with *AR 190-12*.

2-46. A written record of the monthly and quarterly inspection is maintained on file with the appropriate corrective action (both in memorandum format), stating the corrective action taken for each deficiency. This written record is maintained for one year past the inspection date.

2-47. The responsible VCO will conduct an inspection of the kennel facility at least quarterly to ensure health and welfare for both the handlers and dogs assigned to the MWD section. A copy of this inspection is maintained on file for a minimum of two years. The responsible PM and/or commander takes all actions necessary to correct any deficiencies noted by the VCO. Veterinary inspections are to be conducted monthly, if possible.

TRAINING RECORDS

2-48. There are two forms that must be used to annotate MWD training, *DA Forms 2807-R* and *3992-R*. These forms are official military documents and must be maintained daily with factual information. Many times these documents are used as court documents, so the importance of the completion and accuracy of these documents cannot be stressed enough. Example forms and the procedures for filling these forms out are in *Appendix D*.

PROBABLE CAUSE FOLDERS

2-49. Probable cause folders are one of the most important methods of proving an MWD team's reliability. Legal requirements to conduct a search of private property based on the response of an MWD do not allow the probable cause folder a margin for error. All the items contained in the probable cause folder are copies. The following original records must be kept on file at the kennel facility:

- ***Department of Defense (DD) Form 1834 (Military Working Dog Service Record).*** *DD Form 1834* must be maintained on the MWD and kept as the initial form in the probable cause folder. This form must be accurate and signed on a change of a handler. When the MWD is trained on new substances, ensure that they are listed on the *DD Form 1834*. The 341st Training Squadron at Lackland AFB, Texas, must approve new substances.
- ***Lackland AFB Form 375 (Patrol Dog Certification).*** *Lackland AFB Form 375* follows the *DD Form 1834* in the probable cause folder and lists patrol certification information for the MWD.
- ***Lackland AFB Form 375a (Detector Dog Certification).*** *Lackland AFB Form 375a* follows the *Lackland AFB 375* (if dual certified), and lists postgraduation certification information for the MWD.
- ***Air Force (AF) Form 1256 (Certificate of Training).*** A copy of the handler's *AF Form 1256* follows *Lackland AFB Form 375a*. The handler provides a copy of the *AF Form 1256* for the probably cause folder.
- **Certification Letter**. This letter attests to the fact that the appointed certification authority has witnessed a demonstration of the capabilities of the dog team. This letter, at a minimum, should list the handler and dog, the whelp, the type of MWD (PEDD or PNDD), the social security number (SSN) of the handler, and the date of certification. This letter should be maintained in the probable cause folder after the handler's graduation certificate until the next certification of the team or a change of handler.
- **Quarterly Validation and Evaluation by the KM**. This document is used to show that the KM has conducted a quarterly evaluation on the MWD team. If the KM is not available, the plans NCO can also conduct this evaluation. This document follows the certification letter in the probable cause folder.
- **Training and Utilization Records**. The last items that should be maintained in the probable cause folder are the last three months of training and utilization records for the MWD team. These records include *DA Forms 2807-R* and *3992-R*. Once an additional month has passed, the latest month will be transferred to the MWD team folder in the filing system.

TRANSPORTATION REQUIREMENTS

2-50. Every unit, installation, and activity with MWD teams should assign enough support vehicles so that all missions and kennel support activities can be properly conducted and maintained. The minimum standard for transportation is one support vehicle per two MWD teams (two dogs and two handlers). Vehicle requirements should be determined by mission requirements and the overall number of MWD teams. Some modifications are necessary so that the MWD can be seen and can provide a visual deterrence during law and order or force protection and antiterrorism missions. These modifications will maximize the mission effectiveness of the dog while providing the dog with a comfortable, supportive, and protective area inside the vehicle. This type of modification is normally a kennel crate or cage secured in the rear of the vehicle; the crate or cage should have a nonslippery surface.

2-51. MWD handlers perform complex missions. Four-by-four type passenger vehicles should be used to ensure that MWD teams can get to any mission during inclement weather or on rough terrain.

2-52. Pickup trucks are essential for the transportation of explosive training aids. *AR 190-12* lists the requirements for explosives transported in government vehicles. However, pickup trucks should not be used for transporting MWDs for training or during road patrol type duties. This vehicle offers limited protection for the MWD from inclement weather and innocent bystanders.

2-53. Warning signs stating "CAUTION—MILITARY WORKING DOGS" should be placed on all sides and the rear of any and all vehicles used to transport MWDs. The signs should also be printed in the host nation language. The only exception to this is the use of unmarked vehicles for President of the United States and Vice-President of the United States missions.

NARCOTICS AND EXPLOSIVE TRAINING AIDS

2-54. Detector dog training and evaluations require the frequent use of narcotic and explosive training aids. Due to the potential safety hazards and risks involved with these aids, it is absolutely mandatory for all MWD personnel and commanders to know and follow the regulatory guidance. MWD leaders and handlers must participate in periodic review and training on the requirements noted in *AR 190-12*. These requirements are clearly stated in *AR 190-12*.

Chapter 3
Managing Military Working Dog Operations

Managing an MWD program requires attention from the program manager, the KM, and the plans NCO. This chapter will help these individuals better understand their specific requirements and concerns regarding the scheduling of various missions.

SCHEDULING AND EMPLOYMENT

3-1. The KM or plans NCO assists and advises the commander or operations officer in scheduling and employing MWD teams. The KM and plans NCO are the most qualified to determine the duty schedules, work cycles, and hours of operation to support each mission. All MWD teams should be utilized at least 24 hours per week to perform nontraining related duties.

3-2. Scheduling must allow for a minimum of four hours of patrol proficiency training per week and four hours of detector training per week. Details concerning proficiency training requirements are discussed in *Chapter 2*. Daily scheduling should include enough time for feeding, grooming, and exercising the MWDs as well as maintaining equipment and kennel facilities.

PREDEPLOYMENT OPERATIONS

3-3. MWD leaders and planners need to ensure that handlers are prepared for all possible missions before the moment of execution. Careful planning and concurrent training is an ongoing process that involves all soldiers in every kennel section. No MWD team should ever be sent on a mission without the proper preparation.

PROGRAM MANAGERS PREDEPLOYMENT RESPONSIBILITIES

3-4. MACOM program managers play a key role in MWD team readiness. The careful management of information concerning each kennel enables leaders and planners to keep the unit in a constant state of readiness for any possible deployment or no-notice mission.

3-5. Program managers keep track of the—

- Total number of personnel at each kennel in the MACOM.
- Certification status of all teams at each kennel in the MACOM.
- Deployability status of all MWDs and handlers (see *Chapter 8*).
- Total number and location of deployed MWD teams.
- Status of kennel facilities at deployment locations.
- Status of VCO support at deployment locations.

KENNEL MASTER PREDEPLOYMENT RESPONSIBILITIES

3-6. The KM's responsibility is to ensure the daily accomplishment of all missions. The readiness of all assigned MWD teams is a process that requires continuous effort from all leaders. KMs must maintain statistics and make the necessary corrections to have all personnel and equipment available for future deployments and missions.

3-7. The KM is responsible for—

- Managing the number of personnel assigned to each kennel.
- Verifying the status of certified teams and the dates of certification.
- Maintaining the deployability status of MWDs and handlers.
- Ensuring that soldiers have soldier readiness packets prepared according to *AR 600-8-101*.
- Conducting monthly and quarterly counseling.
- Maintaining accurate and detailed training records that will give the forward deployed KM an understanding of strengths and weaknesses.
- Ensuring that MWD handler equipment for short-notice deployments is prepared at all times.
- Conducting annual 9-millimeter handgun qualification. More than one qualification should be conducted (if possible) to better train MWD handlers on the use of the 9-millimeter handgun and to ensure that handlers are always qualified.
- Ensuring that handlers meet the standards outlined in *AR 600-9* and *FM 21-20* by conducting height and weight testing and physical fitness tests.
- Ensuring that the mandatory common military training and common task tests are conducted according to *AR 350-1*.
- Training soldiers in tasks associated with deployments (for example, kennel setup, utilization, and missions).
- Ensuring that MWD handlers have received any needed driver's licenses or transportation motor pool (TMP) licenses before a deployment order arrives.
- Ensuring that soldiers have received the needed individual readiness training in preparation for deployment in a combat zone.
- Conducting mine awareness training.

PLANS NONCOMMISSIONED OFFICER PREDEPLOYMENT RESPONSIBILITIES

3-8. Deployment planning must include coordination with the supporting military VCO. The plans NCO must consider the expected duration of the deployment and the types of facilities anticipated at the destination.

3-9. The plans NCO is responsible for ensuring that the handlers and MWDs in the MWD team or kennel section are technically proficient. The plans NCO is best able to evaluate and recommend to the KM which MWD team is most qualified and prepared for deployments and missions. Through continuous and realistic predeployment training, the plans NCO ensures that the MWD teams are proficient in—

- Crowd control training.
- Building searches.
- Tactical movements (through obstacles and from point to point).
- Gunfire training (handler and decoy).
- Defense training.
- Controlled aggression.
- Explosive detection (area searches, bunker searches, and tactical vehicle searches).
- Narcotics detection (area searches, bunker searches, and tactical vehicle searches).

ADDITIONAL PREDEPLOYMENT CONSIDERATIONS

3-10. Army mobility requirements necessitate that each MWD has a shipping crate. Shipping crates are used to transport MWDs, simplify handling and loading, and give MWDs adequate space and ventilation during transport. Shipping crates may also be used as temporary kennels at intermediate sites or at the deployment destination.

3-11. The average water requirement for a single MWD is 10 gallons a day. Enough dog food must be taken to last 90 days or until resupply can be established. MWDs must be fed the standard

high-performance dog food, contracted and supplied by the General Services Administration (GSA), unless otherwise directed by the supporting VCO. MWDs are fed twice daily unless the supporting VCO directs another meal frequency.

3-12. First aid kits must accompany the MWD team on every mission. Information on the deployment destination, climate, and terrain help determine the specific contents of the first aid kits. For example, if MWDs are employed on rough terrain, a pad toughener is included in the first aid kit.

3-13. All mission-related equipment must travel and arrive with MWD teams so that they can be fully operational as quickly as possible. Any equipment that is not sent with the MWD teams should be sent by other means to arrive at the location within 60 days of the MWD team's arrival. An example equipment list is in *Appendix E*.

DEPLOYMENT CONSIDERATIONS

3-14. There are many important factors to consider when leaders and MWD planners are preparing for deployments. To ensure that every deployment results in mission success, every aspect from notification to redeployment must be considered. These aspects include, but are not limited to, field kennels, training, and operations.

FIELD KENNELS AND SUPPORT FACILITIES

3-15. A suitable kennel site must be carefully selected. Before deployment, some possible locations may be selected on a map from a leader's reconnaissance. As soon as possible after arrival, the sites should be inspected to choose the most suitable location. When selecting a site, consult a VCO (whenever possible) about possible health hazards.

3-16. Locating the kennel in a congested area may be necessary to protect it from enemy attack. A temporary screen or physical barrier may be needed to block the dog's sight so he will be able to rest.

3-17. When shipping crates are used as temporary kennels, the interior, exterior, and ground beneath the crate must be cleaned daily to prevent the accumulation of moisture and waste or insect infestation. It must be raised four to six inches off the ground to allow for adequate drainage and to reduce parasite breeding places. In hot climates, place crates under trees, a tarpaulin, or plywood to provide shade and ventilation. Spread gravel (if available) around and under the crates to allow for drainage and the easy removal of solid waste. A large tent or prefabricated building can serve as a temporary storage location for equipment, rations, and other supplies.

3-18. A second tent or building erected at the kennel site to house handlers and the KM provides the kennel with sufficient manpower for security of the kennel area. Although conditions around a temporary kennel may be primitive, a high standard of sanitation is essential to prevent diseases and parasite infections. Permanent kennel facilities must be erected within one year of the arrival of MWD teams to the location of operational use. Modular expandable MWD transport containers (NSN 961120, 961130, or an equivalent) (*Figure 3-1*, page 3-4*)* with integrated air conditioning, heating, and equipment storage are recommended for use as temporary kennels in field environments.

DEPLOYMENT TRAINING

3-19. As soon as possible after arriving at the deployment destination and while making sure that site security is established, deployment training must begin. Deployment training allows the MWD teams to quickly develop familiarity with their new location. This is also known as right-seat ride time. The KM or plans NCO needs to evaluate or reevaluate the degree of skill of each of the MWD teams so that the KM and NCO are fully prepared to support the deployed force. Initial evaluation and training should consist primarily of field problems such as attack, search, re-attack, and scouting and basic obedience. Training should also include the handler firing his assigned weapon while maintaining control of the MWD. Some training should be done at dusk, and then in darkness, so that the handler may see (for safety) and the MWD may adjust to the noise and flash of weapons.

Figure 3-1. Modular, Expandable MWD Transport Container

MANEUVER AND MOBILITY SUPPORT OPERATIONS

3-20. MMSO consist of measures necessary to enhance combat movement and the ability to conduct movement of friendly resources in all environments. These measures ensure that commanders receive personnel, equipment, and supplies as needed. MMSO is conducted across the full spectrum of military operations. The primary focus of military police during MMSO is to ensure the swift and uninterrupted movement of combat power and logistical support. KM teams will coordinate MWD operations with the plans and operations officer or task force commander.

AREA SECURITY OPERATIONS

3-21. When setting up listening posts or conducting combat patrols, consider the availability and suitability of PDs for the particular mission. The KM or plans NCO must be briefed early regarding the mission. This will ensure that the most suitable PD team can be selected and that the handler can prepare for the mission. The handler should check the MWD for any limiting ailments and conduct training rehearsals to become familiar with the mission. The KM or plans NCO and selected handlers must be involved in planning conferences and briefings involving the utilization of an MWD team.

3-22. In defensive operations, combat patrols are used to provide early warning, to confirm intelligence information, and to detect or deter enemy action. PD teams greatly enhance the security of reconnaissance and combat patrols.

3-23. On combat patrols, a PD works at maximum efficiency for only two or three hours. During inclement or extreme hot or cold weather, this time will vary. The KM, plans NCO, and VCO should advise the commander on the MWDs' particular capabilities. The team is most effective in uninhabited areas. If an MWD frequently alerts on friendly forces and is continuously taken off his alert, he soon loses interest and reliability. Only the best teams should be selected.

Defiles and Route Reconnaissance/Surveillance Operations

3-24. MWD teams can be used to enhance the security at defile and route reconnaissance/surveillance operations. Consider the following to ensure mission success:

- The mission at hand (the possible threat scenario).
- The size of the area to be covered.

- The type and number of MWD teams.
- The duration of the mission.
- Sustainment supplies.
- Communications.

3-25. Operational planning must ensure that the proper numbers and types of teams are requested to perform the mission. Planning considerations must allow for proper rotations and rest-to-work ratios for the MWD teams.

Checkpoints

3-26. MWD teams are often called on to enhance the effectiveness of checkpoints. After receiving the mission to perform checkpoint duty, planners and handlers need to consider the following:

- The force protection condition (FPCON) (see *Appendix F* for details).
- The type and number of teams required versus those available.
- Sustainment equipment.
- Communications.
- Available support elements.

Area Defense

3-27. Areas that cannot be covered by static defensive posts because of vegetation, terrain, or some other peculiar feature can be secured using PD teams. Prior to positioning any MWD team in a defensive posture, ensure that intelligence preparation of the battlefield (IPB) details any possible placement of friendly or enemy mines. When relieving others from established defensive positions, use range cards to familiarize the team with the area.

3-28. A PD team can detect personnel using concealed avenues of approach and provide an early warning to defenders. Each MWD team's area of responsibility should be large enough so that the team can move to take advantage of the prevailing wind directions. A fixed position should be established to provide covering fire for each MWD team in case the team must withdraw closer to the defensive perimeter after the MWD has alerted on an attempted hostile probe or penetration.

WARNING AND RESPONSE PROCEDURES

3-29. Several procedures should be developed for warning friendly forces of a PD's response because circumstances may prevent the use of a radio. Also, different types of responses tailored to fit a variety of potential situations should be developed. For example, it may be desirable to have the MWD team follow the alert and locate the cause. At other times, combat intelligence may require the team to maintain the alert position until assistance arrives or to withdraw to a more advantageous position. Whatever action is taken, the handler should not release an MWD unless it is necessary to defend—

- Himself.
- Other personnel.
- Protected resources.

INTERNMENT AND RESETTLEMENT OPERATIONS

3-30. I/R operations consist of those measures necessary to guard, protect, and account for people that are captured, detained, confined, or evacuated by US forces. In any military operation involving US forces, accountability and the safe and humane treatment of detainees is essential. US policy demands that all persons who are captured, interned, evacuated, or held by US forces are treated humanely. This policy applies from the moment detainees become the responsibility of US forces and continues until the time they are released or repatriated. (See *ARs 190-8* and *190-47* and *FMs 3-19.40* and *27-10*.)

3-31. MWDs offer a psychological and actual deterrent against physical threats presented by personnel housed in an I/R facility. They cannot be used as security measures against US military prisoners. MWDs reinforce security measures against penetration and attack by small enemy forces that may be operating in the area. MWDs also provide a positive, effective alternative to using firearms when preventing disturbances or escapes by personnel.

3-32. MWD handlers will not use their MWDs to guard prisoners inside prisons or detainee holding facilities and confinement facilities. In addition, MWD handlers will not use their MWDs to degrade, torture, injure, or mistreat EPWs, detained personnel, civilian internees (CIs), or other detainees in US custody.

Demonstrations

3-33. Conduct periodic demonstrations in full view of personnel housed in an I/R facility to increase the psychological deterrent of an MWD. Emphasize how easily and quickly an MWD can overtake a fleeing individual. Highlight the MWD's ability to attack and overcome physical resistance. Demonstrate an MWD's scouting ability. To ensure a successful demonstration, use only the most qualified MWD teams.

Perimeter Security

3-34. Use an MWD team as an addition to perimeter security by making periodic, unscheduled patrols around the perimeter fence during periods of darkness. During inclement weather, a temporary blackout or an electrical failure increases the number and frequency of patrols.

WARNING

Never set patterns or establish routines when conducting security patrols. Enemy observing security measures can exploit set times by attacking when the patrol ends or before it begins.

Narcotic and/or Explosives Detection

3-35. Walk an MWD team through living areas to search for contraband. PEDD teams can be utilized to detect explosive devices and components in the I/R facility and PNDD teams can be utilized to detect narcotics.

Work Details

3-36. Position an MWD team between the work detail and the area offering the greatest avenue of escape. MWD teams provide a valuable addition to work detail guards, particularly those employed in areas offering the greatest potential for escape. However, MWD teams are deterrents and must not be used as guards.

POLICE INTELLIGENCE OPERATIONS

3-37. *AR 525-1 3* directs all military law enforcement to develop foreign and domestic criminal intelligence. MWD teams are an integral part of the police intelligence operations (PIO) process. PIO are conducted in conjunction with all functions in which the MWD teams perform. For example, a PEDD team working at a checkpoint to detect explosives will also be gathering intelligence. This holds true for all MWD functions.

3-38. Leaders and planners of MWD operations must develop procedures to ensure that the MWD teams gather and submit all intelligence in a timely manner. Standardized reports are an effective means that allow for the accurate and detailed submission of intelligence. Contact the supporting intelligence section (S2), provost marshal office (PMO), or CID office to ensure that all PIO coordination is in place prior to performing MWD functions.

LAW AND ORDER OPERATIONS

3-39. Law and order operations are those that MWD teams perform to enforce laws, orders, and regulations and to maintain discipline and safety. Law and order operations can be performed in both combat and peacetime environments

RANDOM ANTITERRORISM MEASURES PROGRAM

3-40. The random antiterrorism measures program (RAMP) is designed to be used at all FPCON levels to increase physical security awareness throughout an installation. RAMP involves the random use of measures, identified in *AR 525-13* and *TC 19-210*, for FPCON levels to make installation operations less predictable and therefore more secure.

3-41. The use of MWD teams during RAMP provides for more thorough detection of narcotics and/or explosives and for a psychological deterrent. An MWD presence can also increase confidence in installation security in general.

3-42. KMs coordinate with the PMO or S3 to ensure that RAMP checks are successful. Coordination will include—

- The reconnaissance of patrol areas (map reconnaissance as a minimum).
- Rehearsals and inspections before operations.
- Transportation.
- Equipment needed on site.
- A threat briefing.
- Rules of engagement.
- Use-of-force criteria.
- After-action review (AAR) requirements (see *Appendix D*).

TEMPORARY DUTY MISSIONS (UNITED STATES CUSTOMS SERVICE/HIGH-RISK PERSONNEL SECURITY MISSIONS)

3-43. USCS safeguards the internal security of the United States through border searches. Because of this, they have broad powers in conducting searches. By utilizing an MWD team, all vehicles, ships, luggage, and baggage can be checked at border clearance crossings or ports. MWD teams are called upon to support local or federal authorities in detection operations. The Joint Enforcement Military Customs Operation places MWDs at border clearance ports to conduct searches of vehicles and cargo entering the United States. The MWD team takes no law enforcement action. The MWD team only searches and reports. *AR 90-12* gives a more detailed explanation of civil support by MWD teams.

3-44. The Air Force has been designated to serve as the primary service point of contact for all very important person (VIP) missions received from the Office of the Secretary of Defense, USSS, and/or Department of State. The VIP coordination officer who (under authority from the Secretary of Defense) tasks and coordinates all missions performed by DOD PEDD team personnel, regardless of service affiliation, issues all mission tasks.

3-45. MWD leaders and planners ensure that the certification of the team selected to perform the mission is well documented and current. Other considerations in planning for USCS support include—

- The travel arrangements of the MWD team.
- Government travel credit cards.
- Lodging for the handler.
- The kennel and boarding.
- VCO support.

MILITARY WORKING DOG PUBLIC DEMONSTRATIONS

3-46. Public demonstrations are conducted to show the abilities of MWD teams. These demonstrations are coordinated through the KM to ensure that the appropriate team is available for the target audience. The goal of public demonstrations is to deter criminal activity and to promote public acceptance of the MWD.

3-47. At no time should demonstrations make an MWD a form of entertainment. The KM or plans NCO should ensure that the details of sensitive police training techniques are not explained to the public. Avoid lengthy or frequent public demonstrations that allow MWDs to tire easily or become bored.

HEALTH AND WELFARE DEMONSTRATIONS

3-48. Initially, the MWD team should provide the responsible commander with a basic demonstration of the MWD's ability. The KM or plans NCO places a training aid in an undisclosed location, and the handler enters the search area with the MWD. The handler presents and conducts a systematic search of the area. When the MWD alerts, the appropriate reward is given. This demonstrates the MWD team's proficiency.

3-49. After the demonstration has been conducted, the unit should ensure that the area being searched is free of soldiers and that all rooms are unlocked. MWD teams are a tool the commander uses to find any illicit narcotic or explosive devices. It is the responsibility of the unit to properly search the room after the MWD has cleared the room. If the MWD team responds, military police personnel are called to continue the search. The MWD handler conducting the search should not search for the illicit narcotics or explosives. Unit commanders should also ensure that no personnel enter the building or area until the search is complete. This is usually accomplished by placing NCOs at various entranceways to stop personnel from entering the area.

COMPETITIVE EVENTS

3-50. MWD teams should be encouraged and allowed to participate in competitive events, seminars, or conferences conducted by outside agencies or police canine organizations. Exposure to competitive events can challenge MWD teams to develop skills or learn advanced employment and training techniques. These events may require new tasks or methods that the handler can use to identify and apply to military missions. In this way, the team's proficiency and effectiveness are enhanced.

RECOVERY OPERATIONS

3-51. After every deployment or extended off-site mission, MWD leaders need to ensure that vital actions are conducted upon the return of the MWD team. These actions include—

- Conducting an AAR after every MWD deployment or extended mission to assist in capturing lessons learned. See *Appendix G* for detailed information on AARs.
- Conducting veterinary inspections.
- Returning any explosive or narcotic training aids.
- Updating training requirements and records.
- Recertifying teams.

Chapter 4
Legal Considerations

The use of MWDs has the same legal considerations as the use of a military police soldier. Each situation and location may be subject to various Status of Forces Agreements (SOFAs), general orders, and other legal restrictions. The following chapter addresses some fundamental areas. It is important to consult with the Staff Judge Advocate whenever legal questions pertaining to an MWD arise.

USE OF FORCE

4-1. Procedures for the use of force are found in *AR 190–14*. This regulation states that personnel engaged in law enforcement or security duties will use the minimum amount of force necessary to control the situation. This regulation further details the levels of force and encourages commanders to substitute nonlethal measures for firearms when they are considered adequate for safely performing force protection, antiterrorism, and law and order functions. The regulation states that in evaluating the degree of force required for specific situations, the following options should be considered in the order listed:

- Verbal persuasion.
- Unarmed defense techniques.
- Chemical aerosol irritant projectors (subject to host nation or local restrictions).
- The military police baton.
- MWDs.
- The presentation of a deadly force capability.
- Deadly force.

4-2. Although high in the order of measures, it is clear that the release of the MWD as a use of force is a nonlethal option to be used before deadly force is considered. It must be understood that the release of an MWD to pursue, bite, and hold a person is likely to result in an injury to the suspect. This injury can be very minor such as scratches or bruises; however, serious bodily harm is possible. For this reason, it is required by *AR 190-14* that all lesser means of force must be used first whenever possible.

4-3. The use of force differs between MWD handlers and regular military police because of the uniqueness of the MWD. Positive control of the MWD must be maintained at all times throughout all of the use-of-force measures. Often, just the presence or arrival of a handler with his MWD can control a situation. If the desired level of control is not achieved, verbal persuasion is the first degree of force to be used. If verbal persuasion is not enough force to maintain or gain control, the next measure may be considered. If the situation allows, military police may use unarmed defense techniques, spray irritants, and the baton before MWD handlers use the MWD as a measure of force.

4-4. A handler is not likely to use unarmed defense techniques when holding an MWD on leash. The handler must remain in positive control of the MWD; therefore he will not be able to get close enough to a suspect to employ unarmed defense techniques. The use of chemical aerosol irritant projectors or the baton would also hinder the handler's ability to keep positive control of the MWD. Therefore, the options are not reasonable measures of force available to the handler.

4-5. Military police and task force commanders, along with PMs, establish clear policies regarding the release of MWDs according to *ARs 190-12* and *190-14*. If the minimum amount of force necessary to control the situation requires the use of MWD force off leash, the handler must ensure that the following steps are followed:

- Ensure that the MWD has identified the same target as the handler before releasing him to bite.
- Give the warning order, "Halt, halt, halt, or I will release my dog." If assigned in a foreign country, give the order in the primary language of the host nation.
- Warn all bystanders to cease all movement.
- Call the MWD off the pursuit and regain control of him if the suspect indicates surrender or stops moving.

4-6. Use extreme caution when removing an MWD from a suspect. Regain and maintain leash control of the MWD until he has become calm enough to obey the commands "Heel" and "Stay." Do not release an MWD if the suspect is out of sight, unless an off-leash building search is authorized. Do not release MWDs in areas where children are present.

4-7. MWD teams are not used for crowd control or direct confrontation with demonstrators unless the responsible commander determines it to be absolutely necessary. When it is necessary, dogs are kept on a short leash to minimize the danger to innocent persons. Dogs are not released into a crowd. Civil disturbance contingency plans include specific criteria for the use of MWD teams that are consistent with *FM 3-19.15, AR 190-12,* and *AR 190–14*.

SEARCHES

4-8. Rules 311 and 313 through 316, *Manual for Courts-Martial (MCM),* prescribe HQDA policies concerning the conduct of searches and inspections and the disposition of property seized in conjunction with those activities. Property refers to property of the United States or of nonappropriated fund activities of an armed force of the United States wherever it is located.

4-9. Commanders and law enforcement personnel must be aware of the distinction between searches, seizures, inspections, and inventories and the provisions for the execution of these actions as outlined in the *MCM*. Knowledge of this information is necessary to ensure the legal use of a PNDD or PEDD.

4-10. Probable cause is a reasonable belief that a crime has been committed and that the person, property, or evidence sought in connection with the crime is located in the place or on the person to be searched. Probable cause must be established prior to searching any persons, property, or residence. Probable cause can be established in the following ways:

- Personal observation.
- Information obtained from a reliable informant or from the witness who observed the crime.
- Use of a detector dog team.
- Any combination of these three.

4-11. The detector dog team is considered a "reliable informant," according to Rule 315 (f)(2), *MCM*. The reliability of a team is established through the initial and annual certifications of the detector dog team by the certification authority and through proper documentation of the MWD's training records.

4-12. Certification establishes the foundation for an officer to grant a search authorization or warrant. Detector dogs are first certified after finishing their basic training. To meet the legal requirements permitting their operational use, each detector dog team must undergo an annual certification and a validation.

4-13. Each detector dog team undergoes a certification when first assigned to duty. A designated certification authority conducts the certification. The detector dog team must perform a demonstration for the person who authorizes any search. This may be any commander from company level up to the post commander. The guideline is that the person who witnesses the demonstration can only authorize a search of units he has command authority over. This person must also review the probable cause folder of the dog

and must validate the team as reliable, in writing. This validation is good as long as the commander is assigned to that command.

4-14. The certification authority should witness a demonstration of the dog's capabilities. All substances the dog has been taught to respond on should be used. Additionally, the dog's capability to detect past/present odor should be demonstrated. At the completion of the demonstration, the results are documented in letter form, signed by the commander, and entered into the dog's probable cause folder. The MWD handler is responsible for preparing and maintaining the probable cause folder and the contents (see *paragraph 2-49*, page 2-9*)*. The probable cause folder accompanies the handler each time the dog is used on an actual search. Each document in the folder should be explained to the commander requesting a detector dog search. The commander with command authority should witness a simple demonstration of the dog's capabilities prior to a search. The above procedure should be followed whenever possible. This procedure establishes the dog's reliability on a continuing basis and is essential in establishing probable cause.

4-15. PEDD and PNDD teams must maintain high standards of accuracy to provide the desired level of confidence in their searches. PNDD teams must maintain a 90 percent accuracy rate for the number of trials conducted, while PEDD teams must maintain a 95 percent accuracy rate for the number of trials conducted. The installation commander authorizes the support of local and federal law enforcement agencies. *DOD Instruction 3025.12* governs the use of all PEDD teams. It governs the use of PNDD teams and ensures compliance with *Section 1385, Title 18, United States Code (USC) (The Posse Comitatus Act) (18 USC 1385 [The Posse Comitatus Act])*. Complete certification, recertification, and decertification details for narcotic and explosive detector MWD teams can be found in *AR 190-12*.

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Chapter 5
Patrol Dogs and Characteristics

PDs can be used in traditional law and order functions, but commanders and planners should not overlook the tactical enhancements that a PD team offers to combat support operations. All aspects of military police functions can be enhanced by the employment of MWD teams. This chapter discusses many practical applications of the PD team.

EMPLOYMENT TECHNIQUES DURING COMBAT SUPPORT OPERATIONS

5-1. PD teams can perform many combat support operations. These teams enable the tactical commander to free up soldiers and employ their resources in other areas. This force multiplier is especially valuable in area security and force protection and antiterrorism operations.

PERIMETER SECURITY

5-2. PD teams are useful for perimeter (*Figure 5-1,* page 5-2) and distant support posts because they are usually located away from normal activity and large numbers of people. These posts also usually enclose large areas, and it would take a large number of single sentries to secure the area effectively. The large size of these areas allows the PD team to change positions to take advantage of the prevailing wind direction. These posts may be secured only during periods of advanced security and high threat. Occasional random posting of these areas is recommended, especially during periods of limited visibility (rain, snow, dust, smoke, and fog) or night conditions. Barriers and obstacles (such as fences, buildings, gullies, and streams) must also be identified and considered in security post planning. Place the PD team so that these obstacles offer the least interference to security.

5-3. Perimeter security, depending on the area to be covered, should use a two-team concept. The teams overlap each other while walking around the perimeter. PD teams should not come into direct contact with each other. Considerations include—

- The commander's intent.
- Priority intelligence requirements.
- Rules of engagement.
- Use-of-force criteria.
- The wind direction and distracters in the area (see *Chapter 8*).
- Friendly and enemy forces around the area.
- Rest areas within the perimeter to allow the MWD to relieve himself.
- Watchtowers or other security forces in the area.

5-4. The PD team should initiate the perimeter security operation by walking in a zigzag pattern around the exterior perimeter. The team should be allowed to go outside of the security area to ensure that no unwanted intruders are present.

Figure 5-1. Perimeter Security

INTRUSION DETECTION SYSTEM AUGMENTATION

5-5. Continuing development and use of Intrusion Detection Systems (IDSs) for security make it necessary to reassess the role of PD teams in the security of priority resources where IDSs are used. Although IDSs are designed to greatly reduce the probability of a successful area penetration, they are not designed to replace PD teams. IDSs cannot see beyond the outer clear zones, counter intrusions, or scout the progress of an intruder force after penetration. They are also subject to malfunction and breakdown. PD teams cannot counter all potential problems, but they can be used selectively to counter some of the IDS limitations. With the advice of the KM, security planners should develop plans that set an effective balance between sensor systems and PD teams. Some suggested functions for integrating PD teams into IDS-augmented security systems are as follows:

- PD teams may be used inside or outside critical sites or locations of HRP type personnel areas to give immediate response to areas not clearly seen by closed circuit television (CCTV) or to support security response teams in their role of alarm assessment
- PD teams may be used to scout hidden intruders from the point of penetration to the hiding location inside protected areas.
- PD teams may be posted outside critical sites during periods of increased threat to expand the protected area beyond the range of the IDS. This use is particularly desirable when there is heavy vegetation beyond the perimeter clear zone or when protected areas are located on or near installation perimeters and may, therefore, be easily accessible to the public.
- PD teams may be used as an element of the security response team or as an element of other designated response forces.
- PD teams may be used to compensate for decreased IDS effectiveness when poor visibility or other environmental conditions adversely affect the IDS equipment or when the IDS is not functioning.

SECONDARY RESPONSE FORCES

5-6. Secondary response forces are typically used as blocking forces and for sweeps and counterattacks. PD teams can greatly improve the capabilities of the secondary response force. Some factors that must be considered are that—

- Blocking positions must be selected downwind from the PD team's position when PDs are used with blocking forces. In this type of mission, PDs should only be used to alert the forces of possible intruders.
- The secondary response force moves into the wind with the PD team in the lead position when the PDs are used for sweeps. It is imperative that security be placed on the PD teams to ensure that they are protected.
- A PD team can often pinpoint the exact location of individual intruders.

5-7. A PD team can help detect, alert, and catch hidden intruders while clearing a position that has been counterattacked successfully. PEDDs can be used to help clear the area of explosives. (See *Chapter 7*.)

LISTENING POSTS

5-8. On a listening post, the PD team should be positioned forward of the tactical area to reduce distractions to the PD, yet close enough to maintain contact with friendly forces. In selecting a location, consider the primary detection senses of the PD. Whenever possible, PD team listening posts should be located downwind from any potential enemy position or dismount avenue of approach. Other locations force the PD to rely only on his hearing and sight for detection, reducing his effective use of scent.

COMBAT PATROLS

5-9. In defensive operations, combat patrols are used to provide early warning, to confirm intelligence information, and to detect or deter enemy action. PD teams greatly enhance the security of reconnaissance and combat patrols.

5-10. On combat patrols, a PD works at maximum efficiency for only two or three hours. The team is most effective in uninhabited areas. If a PD frequently alerts on friendly forces and is continuously taken off his alert, he soon loses interest and reliability.

5-11. Patrol leaders and members must be briefed on actions to take when a dog handler is seriously wounded or killed. Dogs that have worked closely with patrol members and have developed a tolerance for one or more of them will usually allow one of the patrol members to return it to the kennel area. However, the dog may refuse to allow anyone near his handler, and other handlers may need to be called to help. The canine must be separated from the handler by—

- Coaxing the dog away with friendly words or food.
- Covering the dog with a poncho to immobilize it.
- Staking out the dog or leashing him.

5-12. A human will always take precedence over an animal. If no effort is effective, the dog may be destroyed. However, all efforts should be made to avoid this; an MWD is an expensive and valuable asset to replace.

5-13. If a situation arises where a canine is injured but the handler is not, the handler must be allowed to accompany the canine. If wounded or killed, an MWD should be evacuated using the same assets and should receive the same consideration as that given to a soldier under the same circumstances.

TACTICAL PATROLS

5-14. PD teams can be used in tactical patrols to detect enemy presence, to help the patrol avoid discovery, and to locate enemy outposts. When the PD alerts, the handler should signal the patrol to halt until the cause of the alert can be identified and the patrol can proceed safely. If a firefight develops while the PD

team is at the point position, the PD team should respond to fire team's directions and act as a regular member of the patrol.

5-15. Generally, the best locations for PD teams are directly in front of the patrol or on the flanks to enhance the flexibility and security of the formation. Prevailing wind direction should be used to improve the patrol's chances for early warning of enemy forces. If the wind direction is from the rear of the patrol, the PD is forced to rely on sight and sound and may not be as effective. The handler must concentrate on the PD to read his alert and will not be able to use a weapon rapidly. Therefore, members of the patrol should be assigned to protect the PD team.

5-16. PD teams can be used to enhance the capabilities of an ambush patrol. A PD team should be placed in front of the patrol to minimize distractions, yet close enough to maintain contact with other patrol members. PDs on ambush patrols must remain silent and not respond aggressively to approaching enemy forces.

INTERNMENT AND RESETTLEMENT OPERATIONS

5-17. PD teams are used during I/R operations for camp perimeter security and to guard against escapes. The PD's keen senses of sight, smell, and hearing assist the handler and camp authorities in detecting unauthorized activity. A PD team's presence also acts as a deterrent to escapes. In the event of an escape, the PD is a valuable asset that can assist in the search and recovery of internees.

PD Duties and an Internment and Resettlement Camp in Iraq

On 13 April 2003, SGT Carey A. Ford and his MWD Rex responded to a riot at Camp Bucca, Iraq. It was believed that an Iraqi internee had taken a pistol belt and some personal equipment from a guard. The prisoner had taken this equipment back to his tent and the 600 other internees refused to cooperate with the guard force. SGT Ford and MWD Rex went into the I/R camp unarmed. The MWD team moved through the disruptive and unruly crowd providing a secure environment for the quick-reaction force to extract the prisoner and retrieve the stolen pistol belt and personal equipment. SGT Ford related that EPWs would not come anywhere near his MWD Rex. "We work that fear to our advantage."

Four days later, SGT Ford and Rex were called on to scout for and apprehend an escaped EPW. The fugitive had a substantial lead on them, having made his escape two hours prior to SGT Ford's notification. SGT Ford entered a possible unexploded ordnance and/or antipersonnel minefield with Rex, who was also trained to detect explosives. The MWD team was determined to locate the dangerous fugitive and prevent access to any possible weapons caches since many had been located in the area. After hours of relentless searching, SGT Ford and Rex located and apprehended the escapee. Their actions provided the psychological deterrent necessary to prevent future escape attempts.

RIOT/CROWD CONTROL

5-18. Extreme caution should be applied before committing PDs to a potential crowd control situation. Although the presence of a PD can be a powerful statement to an enemy or terrorist, it can elicit a reverse and potentially adverse effect on individuals in a riot/crowd control situation.

5-19. It is difficult to employ PDs properly during demonstrations or riots due to the high levels of confusion and excitement and the large number of potential antagonists. PDs should be trained to remain undistracted by loud noises and crowds. A crowd's reaction to a PD in a riot environment may be dependent on the location. In some areas of the world, the appearance of PDs at an angry crowd scene results in an escalation of violence. The crowd will often challenge soldiers to use the PDs as a measure of force. This is particularly true if a situation can be manufactured or provoked so as to be interpreted as an unreasonable use of force by the military. The presence of PDs can cause extreme fear (deterrence) in some cultures and regions. This fear can be advantageous and should be exploited when needed.

5-20. Committed PD teams may be used as an alternative to the use of deadly force to gain control of a riot situation. If the commander located on the ground directs the employment of PD teams for direct confrontation with demonstrators, PD teams should be held in reserve, out of the sight of the crowd. As the situation escalates, PD teams may be moved forward to within the sight of the crowd, but well away from the front lines.

5-21. When committed to the front lines in direct confrontation, PDs are allowed to bite only under the specific circumstances authorized by the responsible commander. PDs should never be released freely into a crowd. Other riot control force personnel should be positioned approximately three meters from any PD team when conducting any form of riot control. This is to prevent unintentional bite injuries to friendly, riot control force personnel that may happen to get between a PD and an instigator participating in the riot or demonstration.

5-22. PD teams must move a safe distance from the crowd to ensure the safety of the PD. Use of PD teams for direct confrontation with demonstrators is not recommended. According to the Army's use-of-force policy, the application of physical force against a person who cannot reasonably be suspected of committing an offense is not appropriate. Presence in a crowd does not necessarily constitute an offense or a situation where it would be reasonable to apply the degree of physical force of a PD. A PD would not be used unless the person is engaged in some other readily apparent criminal behavior such as theft, destruction of property, or assault.

EMPLOYMENT TECHNIQUES DURING FORCE PROTECTION AND ANTITERRORISM OPERATIONS

5-23. PD teams contribute significantly to the military police force protection and antiterrorism effort. PDs are directly responsible for executing specific security-related measures and for providing support to other government agencies that contribute to force protection.

5-24. MWD support is accomplished under the leadership of the respective command PM. Force protection is accomplished through an active role in physical security, HRP security, law enforcement, and antiterrorism efforts. Force protection and antiterrorism operations consist of those actions that prevent or mitigate hostile actions against DOD personnel (to include family members), resources, facilities, and critical information. During force protection operations, offensive and defensive measures are coordinated and synchronized to enable the joint force to perform while degrading opportunities for the enemy.

5-25. In operations, PD teams are used to enhance the detection capabilities of the combat support force and to provide a psychological deterrent to hostile intrusions. If the PD teams are properly located in a hostile environment, the PD's alert provides an initial warning to the presence of a hostile force. In past combat operations, PD teams often provided warning of attacks early enough to allow a response force time to deploy and to prevent enemy forces from reaching their objectives. PD teams have also helped clear protected areas of hostile persons, explosives, and weapons after attacks.

Crowd Control in Kosovo

During Task Force Falcon (2A) in Kosovo, LTC Cloy (the battalion commander of 1-36 INF, 1 Bde, and 1AD) requested MWD support to assist the Alpha company clear a main supply route (MSR) that had been blocked by 10,000 Kosvar Albanians. LTC Cloy had already deployed both quick-reaction forces to assist Company A because the crowd would not stay off the MSR. LTC Cloy called the battalion operations center and directed that the MWD teams be sent to the scene.

SFC Barnes, SSG Rogers, SSG Barters, and SGT McClintock responded with their dogs Queeny, Danny, Sandor, and Fedor and linked up with an infantry squad. The MWD teams and infantry squad moved dismounted to the town of Gjilani. The crowd was starting to become violent. LTC Cloy was in the middle of the crowd, standing in the center of the city at the critical MSR intersection. LTC Cloy attached the MWD teams to Company A. CPT Curtain, the company commander, told SFC Barnes to move the crowd away from his area and to establish a perimeter. The MWD teams moved into the diamond formation with the dogs on guard. Splitting the crowd in half, the MWD teams moved through the crowd and reached the city center MSR intersection in the center of the city. The handlers then used the dogs to move the crowd back out of the road. Company A and the four MWD teams established a perimeter line to keep the MSR open and traffic moving. They also apprehended troublemakers in the crowd.

Later that evening when the dog handlers entered into the DFAC, LTC Cloy stood up, gained everyone's attention, and stated, "SFC Barnes, you and your handlers were like Moses. Your dogs parted the Red Sea!"

ACCESS CONTROL POINTS

5-26. A PD team may be used to enhance force protection and antiterrorism efforts at ACPs. The PD team's function at an ACP is to deter unauthorized access, crime, and terrorism. The handler that is assigned to the ACP should use the PD so that the public can observe and hear the dog. Care must be taken to ensure that the handler constantly keeps the PD under control to prevent incident or injury to innocent personnel.

BUILDING AND AREA SEARCHES

5-27. A PD team is especially effective in checking and searching buildings such as commissaries, post exchanges, finance offices, banks, and warehouses. The PD team can check buildings visually while patrolling and can stop and dismount so that the handler can physically check doors and windows. These checks should be made with the PD on leash. To take maximum advantage of the PD's scenting ability, the handler should approach buildings from downwind.

5-28. If a building is open or forced entry is evident, PD teams may be used to track hidden intruders from the point of penetration to their location. PDs may be released to apprehend an intruder suspected of committing a serious offense when the only alternatives are escape or the use of deadly force.

5-29. Prior to searching a building, the handler will determine whether to make the search with the PD on or off leash. Some of the factors that must be considered include the following:

- Friendly forces or innocent bystanders in the area.
- The time of day or night.
- Evidence of forced entry.
- The type and size of the building or area to be searched.
- The danger to any innocent persons in the area.
- The PD's ability to work off leash.
- The threat level and IPB.

5-30. Prior to releasing the PD inside a building or enclosed area, the handler will give a clear voice warning to any persons inside the building or in the area. They will be told to come out immediately and that failure to comply with these instructions will result in the release of a trained MWD. An interpreter may be needed to assist the PD team in giving the warning in the host nation language. All persons will be warned that the PD may attack without warning and that they could receive physical injuries. The handler maintains voice control of his PD throughout the search.

Note: A warning similar to the one for off-leash searches will precede on-leash searches. The searching team should be followed by at least one other military policeman to protect the search team.

APPREHENSION OF SUBJECTS

5-31. The use of PDs to attack and hold an individual enemy or terrorist should not be overlooked. A PD can be sent into a building, confined space, or cave to find, attack, and hold an individual until the handler and friendly forces can arrive to place the subject into custody. Although disadvantages do exist (injury or death of the PD), the PD is better-suited than a human to immediately find and subdue a subject in an area where the interior structure is unknown to friendly forces.

WALKING PATROLS

5-32. The PD team's contribution to MWD team law enforcement efforts is most effective when the team is on foot. Some of the law enforcement duties that a PD team can do as a walking patrol include checking or clearing buildings and patrolling parking lots, dependent housing areas, and troop billet areas.

5-33. Since it is easily seen, a PD used during daylight in congested areas provides a good psychological deterrent to certain crimes. PDs are tolerant of people, and the presence of a large number of people does not significantly reduce the PD's effectiveness except when conducting detection missions.

5-34. Using the PD team during darkness or periods of reduced visibility and in areas where there are fewer distractions can enhance the PD's detection ability. Military police may not detect a person fleeing a crime scene at night, but a PD will normally be able to detect and locate a fleeing suspect. When necessary and appropriate, the PD is also much more effective at pursuing and holding the suspect.

5-35. Periodic use of PD teams around on–post schools, especially when school is starting and dismissing, may help deter potential vandalism, child molestation, exhibition, and illegal drug activities. PD teams can also provide effective security for communications facilities, military equipment, and command posts (CPs).

ALARM RESPONSES

5-36. In responding to an alarm condition at facilities such as clubs, finance offices, or banks, the PD team should be among the first military police on the scene. The PD team may be used to search and clear the building and immediate area and help with any apprehensions. If the PD must be used to find a suspect, other persons should attempt to avoid contaminating the area with scents or tracks that may confuse him.

VEHICLE PARKING LOTS

5-37. PD teams are effective in detecting and apprehending thieves and vandals in vehicle parking lots. The presence of the PD team may deter potential acts of theft and vandalism. The PD team can be most effective by alternating between vehicle and foot patrols of the parking lots. During hours of darkness, when there is no activity in a parking lot, the PD team should approach the lot from the downwind side. If the PD alerts, the handler should locate and challenge the suspect for identification.

5-38. If a suspect tries to escape or avoid apprehension and the handler is reasonably certain the suspect has committed or is attempting to commit a serious offense, the handler should give a clear warning to the suspect to halt. When lesser means of force have failed to stop the fleeing suspect, the PD may be released to pursue, attack, and hold. If it is not safe to release the PD, the handler may attempt to follow the suspect if the PD has the ability to track.

Chapter 6
Narcotics Detector Dogs and Characteristics

MWDs are trained to perform dual roles. In addition to the uses and characteristics of the PD, the PNDD is trained to detect the odor and presence of specific drugs. This specialized ability to detect certain illegal drugs makes the PNDD a valuable tool to help commanders and other government agencies maintain law and order. The PNDD can be employed in combat and/or force protection and antiterrorism operations worldwide.

EMPLOYMENT FOR COMBAT SUPPORT OPERATIONS

6-1. The PNDD provides commanders with unique capabilities in combat support environments. The narcotic detection capabilities of these dogs can be used to maintain the order and discipline of US soldiers as well as combatants and other persons involved in operations (EPWs, CIs, refugees, or other detained/interred persons [during time of war/conflict]). In addition to narcotic detection functions, PNDD teams should not be overlooked for their PD functions as discussed in *Chapter 5*.

INTERNMENT AND RESETTLEMENT OPERATIONS

6-2. In addition to perimeter and other security duties, PNDD teams assigned to I/R camps can be used to ensure that no illegal drugs are at the I/R camps by conducting searches of all areas. Commanders and planners should consider having all inbound supplies or equipment searched by PNDD teams. Inbound and outbound mail and vehicles should also be considered as a means for the movement of illegal drugs and, as such, subject to a search by PNDD teams.

POSTAL OPERATIONS

6-3. Postal inspections, including mail storage areas and drop boxes, can be conducted in conjunction with a military customs inspector (MCI) and according to *DOD Directive 5030.49*. The postmaster or MCI can request PNDD support from the area PM or military police brigade S3 with coordination through the KM team.

6-4. A PNDD team can be used to search mail that is received or shipped. Searches can be conducted as the mail comes off or before it goes on the truck prior to being shipped. The PNDD team can search up and down the conveyer belt as the mail is removed from or placed on the truck. If a conveyer belt is not being used, the handler can instruct postal personnel how to arrange the mail in a secure area so that the PNDD team can search it more effectively. When a PNDD team is used in the close quarters of a mailroom or delivery area, all nonessential personnel should remain clear of the area while the team is actively working.

6-5. When the PNDD responds to a parcel indicating the possible presence of illegal drugs, the CID or the military police investigations section will be notified for further action. At this point the PNDD team's actions are finished.

AIRCRAFT AND LUGGAGE SEARCHES

6-6. Before beginning the search, ensure that all personnel have exited the aircraft and all compartments are opened. The PNDD team searches the aircraft before searching any luggage or cargo. When approaching the aircraft, conduct a fresh-air perimeter search from the downwind side. Once a perimeter search has been conducted, the team boards the vessel at either the front or rear. Once the area has been

cleared to search, the handler ensures that only one door is open to limit draft and wind current. A systematic search of all areas within the aircraft is conducted from the top to the bottom. The handler advises other military police on the scene where the PNDD displayed a positive response, and the augmenting military police conduct a detailed search of the area surrounding the response.

6-7. When conducting inbound baggage inspections, the items should be aligned in a sterile area in rows with at least six feet between rows. The handler conducts an on-leash search, presenting each piece of baggage. When searching cargo, every effort should be made to search the cargo before it is palletized. The cargo should be aligned in rows, with at lest six feet between rows, in a sterile area (same as baggage). The handler conducts an on-leash search, presenting cargo as required. Once the PNDD team has searched the cargo, it may be palletized while remaining in the sterile area prior to embarkation.

6-8. Conducting debarkation operations is the same as inbound operations. The host unit (to which the cargo belongs or is being delivered) provides a representative (E6 or above) and a work detail to assist the PNDD team. When pallets are removed from the aircraft, they are placed in a sterile area. Once in the sterile area, the work detail unloads the pallets and arranges the cargo, as required by the PNDD handler.

FORCE PROTECTION AND ANTITERRORISM OPERATIONS

6-9. PNDD teams are extremely useful in force protection and antiterrorism operations. Commanders and other government agencies use PNDD teams to protect the community from the harmful effects of illegal drugs. PNDD teams protect the force and surrounding communities by deterring criminal activity and enhancing law enforcement capabilities.

HEALTH AND WELFARE INSPECTIONS

6-10. PNDD teams conduct health and welfare inspections when requested by the commander and coordinated through the KM, PMO, and S3. The commander contacts the KM directly to schedule a health and welfare inspection. The KM, in conjunction with the installation PM, the CID special agent in charge, and the military police investigations supervisor, briefs all levels of the command on the availability and capabilities of the PNDD teams available to them on the installation.

6-11. When scheduling the inspection, the commander should have the following information available:

- The requested time of inspection.
- The areas to be inspected.
- The number of living quarters.
- The number and size of common areas.
- Other pertinent information.

Appendix H provides a guide to assist handlers with health and welfare inspections.

6-12. Once the coordinating instructions have been established, the KM coordinates a time and location to brief the commander and demonstrate the PNDD team's capabilities. It is important that the unit requesting the health and welfare inspection practices operational security (OPSEC) and informs only those personnel who have an immediate need to know. This usually consists of the commander and first sergeant or sergeant major. The KM advises the PM and the military police investigation supervisor when the inspection is scheduled and if any additional support will be needed.

6-13. A systematic inspection of the living quarters and common areas is conducted. If the PNDD responds to a locked wall locker, the soldier assigned to that wall locker is summoned to open it. Once the wall locker has been opened, unit representatives conduct a detailed search of the wall locker and its contents.

DEPARTMENT OF DEFENSE SCHOOLS AND DRUG ABUSE RESISTANCE EDUCATION PROGRAM INSPECTIONS

6-14. KMs may receive requests from Drug Abuse Resistance Education (DARE) officers or DOD school principles to conduct a health and welfare inspection of a school. When conducting school inspections in

conjunction with DARE, basic building inspection techniques apply. The primary concern when inspecting schools is the safety of the students and the secrecy of the search.

6-15. When possible, searches should be conducted in conjunction with a school activity, such as an assembly or fire drill. This will allow the handlers to conduct the search with a decreased risk of student involvement. Another option is to search the school after normal school hours or on a weekend or holiday. In any event, the use of the PNDD team on school grounds must be cleared by the school administration and the PM must be notified in advance.

ASSISTANCE TO MILITARY POLICE INVESTIGATIONS SECTION AND/OR THE DRUG SUPPRESSION TEAM

6-16. The military police investigation section or the drug suppression team (DST) may contact the KM to schedule an inspection for a number of reasons. PNDD teams may be requested to conduct an inspection of a residence or building where illegal drugs have already been found. In addition, unit commanders may request a PNDD team to inspect the quarters of a soldier who has shown a positive response on a urinalysis. The PNDD is not used to verify or test a substance that has already been found. PNDD handlers contact the military police investigations section or the DST in any circumstance that a PNDD has responded positively according to local standard operating procedures (SOPs).

MILITARY CUSTOMS MISSIONS

6-17. The US Army has been designated as the proponent service for the military customs program. According to current regulations, PNDD teams are used to inspect aircraft cargo areas and airframes when the military customs inspector program manager (MCIPM) directs these inspections. When conducting military customs missions, the handler should first inspect the vessel, then if deemed necessary by an MCI, continue with baggage.

6-18. When scheduling military customs missions, the MCIPM coordinates with the KM according to local SOPs. At a minimum, the MCIPM notifies the KM of—

- The requested time and date of the search.
- The number and types of vessels to be searched.
- The amount of cargo to be searched.
- The number of passengers and crew requiring the MCI's clearance.
- The determination on whether the search is a high-risk or selective search.

6-19. PNDD teams may inspect vessels such as military or civilian aircraft, boats or ships, vehicles, rail cars, or any other vehicle capable of carrying passengers and/or cargo according to the military customs program. These inspections are primarily conducted outside the continental United States. However, some missions in the continental US may be necessary for units returning from foreign theaters where the installation is their first stop within the customs territory of the United States. In addition, the military customs program may require preclearance for units or individuals deploying to areas outside the customs territory of the United States where an MCI has not yet been assigned or is not available. When conducting preclearance of mobilized or deploying soldiers' personal baggage while in formation, the MCI must ensure that the soldiers do not distract the PNDD team.

VESSELS, BAGGAGE, AND CARGO INSPECTIONS

6-20. When establishing sterile areas, the MCI coordinates with the PNDD handler and ensures that the area is of sufficient size with minimal distractions to ensure the optimal working environment for the PNDD. When scheduling working parties for embarkation or debarkation, the PNDD handler coordinates with the MCI to ensure that sufficient personnel will be present to accomplish the mission in a timely manner, but not so many soldiers that they might present a distraction to the PNDD. If an examination has been deemed necessary by the MCI, the handler presents each piece of baggage or equipment to the PNDD.

UNITED STATES CUSTOMS SERVICE MISSIONS

6-21. Missions in support of the USCS come from the MWD program manager via the KM. Handlers must have—

- Active government credit cards.
- Current passports.
- Appropriate civilian attire (or a civilian clothing allowance).
- Complete transportation requirements.

6-22. When temporarily assigned to the USCS, local USCS agents, policies, and procedures direct the PNDD team. Weapons are not authorized for handlers assigned to the USCS. The uniform of the day is determined by the USCS and is normally civilian attire.

6-23. Prior to deploying, every attempt should be made to conduct pretraining exercises with the USCS. These pretraining exercises will allow the MWD to acclimatize to larger quantities of contraband, which may be found while on the mission. The USCS will provide large training aids and determine the PNDD saturation point prior to deploying.

6-24. PNDD teams can expect to perform searches on aircraft, baggage, and tractor trailers as well as vehicle lines at US borders. When assigned to the USCS, the handler does not conduct physical searches of any kind. If the PNDD responds to an area, the handler advises a USCS agent and continues with the search, leaving the agent to conduct the actual physical search of the area.

6-25. Tractor trailers are searched in a USCS sterile area. Once the cargo has been offloaded and placed in standard lines, the PNDD team performs an exterior inspection of the vehicle before moving to all interior compartments and concluding with a systematic search of the cargo.

6-26. While assigned to a US border, the PNDD may be employed in vehicle lines. Vehicle lines are generally 10 to 20 vehicles in a row (placed bumper to bumper) that are inside a sterile area. The PNDD team travels up one side of the vehicle line and back down the other. The handler presents all productive areas. In the event that a USCS agent selects a vehicle for an individual vehicle inspection, that vehicle will be placed in a sterile area and the driver will open all the compartments of that vehicle. Once all occupants are clear of the vehicle, the PNDD will conduct a systematic inspection of the entire vehicle.

6-27. The PNDD will only be used in his narcotics detector role while deployed in support of the USCS or other federal agency. The PD capabilities of the PNDD will not be used for any reason. If the handler is instructed to use his PNDD in any method other than that of a narcotics detector dog, he must immediately notify his KM.

PNDD Support to US Customs Counterdrug Missions

In the summer of 2003, SGTs Payne and Mason from Fort Knox, KY, and SPC Johnson from Fort Sill, OK, were tasked to support a US Customs counterdrug mission along the southwest border between Mexico and the United States. After an overview and train up, the PNDD handlers and their assigned dogs went to work with the customs agents to detect illegal drugs at various points of entry into the country.

These teams became very proficient in detecting large quantities of illegal drugs. The PNDD teams detected narcotics in false floors, dashboards, gas tanks, seats, and hidden panels of many vehicles.

After three months of searching vehicles at checkpoints, the PNDD teams were responsible for detecting over 4,800 pounds of marijuana, over 95 pounds of cocaine, and other undisclosed contraband.

RANDOM VEHICLE SEARCHES

6-28. The use of a PNDD at ACPs and installation gates can increase installation antiterrorism capabilities by providing a visual deterrent to terrorist groups and other criminal elements. The installation commander, task force commander, or base camp commander may task the PM to conduct random vehicle inspections according to local SOPs and the FPCON. When this occurs, the PM submits a schedule of random vehicle inspections to be conducted within a time frame that includes times, dates, and locations of inspections to be conducted. The schedule will be approved or disapproved and the inspection parameters will be dictated (will every vehicle be inspected or will vehicles be inspected at random according to the guidance provided) by the commander and returned to the PM. The PM then notifies the KM accordingly and provides him with a copy of the schedule with the commander's signature and inspection parameters. The PNDD's patrol capabilities may be used at ACPs to search for stowaways and personnel trying to gain access to the installation or a controlled area by hiding in delivery vehicles or other large cargo type vehicles. Extreme caution must be used when using the team in this manner. The commander must be aware that once the PNDD is given the command to search for personnel the MWDs aggression level will increase, thus increasing the chances of the PNDD biting personnel.

ON-CALL DRUG RESPONSE

6-29. PNDD handlers will normally be placed in an on-call status. On call means the handler must remain within response time and distance according to the local SOP. When on call, PNDD handlers do not consume alcoholic beverages; however, they are in a duty position that allows them to wear appropriate civilian attire as well as leave the post according to the local SOPs.

6-30. When on call, PNDD handlers maintain positive control of a secondary communication device issued by the command. The secondary communication device may be a digital pager or cellular telephone as determined by the command. When recalled, the PNDD handler returns to the kennel in the most expedient legal manner to retrieve his PNDD. The PNDD will only be transported in an approved government owned vehicle (GOV). At no time will an MWD be transported in a POV. The handler may respond in appropriate civilian attire according to the local SOP.

6-31. KMs provide insight and guidance to the PM on technical matters of the SOP. The KM should provide recommendations as to acceptable distances which may be traveled while on call, required response times, the required secondary mode of communication, and any installation-specific items of interest, such as an alternate uniform based upon the customary civilian attire that is prominent in the area.

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Chapter 7
Explosive Detector Dogs and Characteristics

In addition to the uses and characteristics of the PD, the PEDD is also trained to detect the odor and presence of explosives. This specialized ability to detect explosives makes the PEDD a valuable asset to help commanders and other government agencies maintain law and order, while enhancing safety procedures. PEDD teams can be employed in combat and/or force protection and antiterrorism operations worldwide. PEDD teams are valuable assets. The task force commander, the PM, and military police planners should consider the use of PEDD teams during combat support operations. This chapter details sound employment techniques and the capabilities of the PEDD teams that enable leaders to develop plans.

INTERNMENT AND RESETTLEMENT OPERATIONS

7-1. The Army is the DOD executive agent for all EPW/CI operations. The military police is tasked with coordinating shelter, protection, accountability, and sustainment for I/R operations. The I/R function addresses military police roles with US military prisoners, EPWs, CIs, refugees, or other detained persons (during time of war/conflict). Although the combat support military police unit initially handles EPWs/CIs, modular military police (I/R) battalions with assigned military police guard companies and supporting MWD teams are equipped and trained to perform I/R operations for sustained amounts of time (see *FM 3-19.40*).

7-2. PEDD teams may be used for searching internees' belongings or confinement cells. PEDD teams should not be used to search a person. A PEDD is trained to attack with or without command; any sudden movements the internee may make could be perceived by the PEDD as an aggressive act. Safety must remain a priority for both the handler and military personnel.

7-3. The commander can also use PEDD assets to search the property of attached military personnel when needed. This is especially helpful when new units are rotating or replacing old units. These types of searches ensure that no explosives are taken out or brought in by US forces.

POSTAL OPERATIONS

7-4. Postal inspections, including mail storage areas and drop boxes, can be conducted in conjunction with an MCI and according to *DOD Directive 5030.49*. The postmaster or MCI can request PEDD support from the area PM or military police brigade S3 with coordination through the KM team.

7-5. The PEDD team can be used to search mail that is received or shipped. Searches can be conducted as the mail comes off or before it goes on the truck prior to being shipped. The PEDD can search up and down the conveyer belt as the mail is removed from or placed on the truck. If a conveyer belt is not being used, the handler can instruct postal personnel how to arrange the mail in a secure area so that the dog can search the mail more effectively. When a PEDD team is used in the close quarters of a mailroom or delivery area, all nonessential personnel should remain clear of the area while the team is actively working.

7-6. When the dog responds to a parcel, indicating the possible presence of explosives, the area is evacuated immediately. Military police secure the area and set up a temporary CP a safe distance from the suspected explosives. Use the stand-off distance according to *Appendix I,* as applicable. Use the PEDD team to search the safe area for any possible secondary explosives. Explosive ordnance disposal (EOD) personnel are requested to dispose of the explosives or render them safe. EOD personnel may give

explosives and improvised explosive device (IED) components to federal agencies for further investigation or turn over the scene to federal agencies after explosive hazards have been neutralized. The PEDD team remains at the temporary CP and resumes detection operations once EOD personnel remove the explosives.

CHECKPOINTS AND ROADBLOCKS

7-7. PEDD teams can be used at checkpoints and roadblocks to supplement the control and movement of vehicles, personnel, and materiel (*Figure 7-1*). PEDD teams are added to security forces to detect explosives and to prevent illegal actions that may aid the enemy. Using these control measures deters terrorist activities, saboteurs, and other threats.

Figure 7-1. Checkpoint Search

7-8. When using PEDD teams at hasty or deliberate checkpoints and roadblocks, a search area must be designated for vehicles and a separate area must be designated for the vehicle occupants or any dismounted personnel. The PEDD team conducts a search of the vehicle only after security forces at the checkpoint ensure that all of the occupants have exited the vehicle and that a threat to friendly forces does not exist. Security forces at the checkpoint provide overwatch while the PEDD team searches for explosives.

Note: At no time should a PEDD handler be used to search the interior of a vehicle. PEDD handlers are trained on searching techniques with a PEDD and should not be used for security force tasks.

7-9. In the event that the dog indicates the presence of explosives, the PEDD team withdraws immediately from the vehicle. The area is evacuated and EOD personnel and the chain of command are notified. The PEDD team stays behind a barrier at the safe-distance location in case the EOD team leader requests further detector assistance. (See *Appendix I* for stand-off distances.)

Note: Be sure that radio operations are stopped until the PEDD team and security forces reach a safe distance from the suspected explosives.

CORDON AND SEARCH OPERATIONS

7-10. Military police leaders and other task force commanders should consider using PEDD teams when conducting cordon and search operations. PEDDs are trained and able to greatly improve the combat force's success in uncovering hidden explosives and people.

7-11. Once the military police or other security forces have established the cordon, the PEDD teams should move in and operate with the search elements. During the search, the PEDD teams provide warning of hidden explosives or persons while the rest of the search element employs overwatch and search techniques.

7-12. The search element leader directs the actions of the team if people or explosives are detected. The PEDD handler should be prepared to advise the commander on the capabilities of the dog and actions required by the rest of the team to ensure the PEDD team's safety. It is important that all members of cordon and search teams rehearse together before conducting operations.

FORCE PROTECTION AND ANTITERRORISM OPERATIONS

7-13. PEDD support for force protection and antiterrorism operations can be requested anywhere in the world and in different circumstances. In forward deployed areas or hostile environments, PEDD teams are often requested to ensure that any suspected explosives are detected before harm can come to US Army, joint, and allied forces. In peacetime environments around the world, PEDD teams perform the detection operations much the same as in combat support operations. The environment surrounding explosive detection operations does not interfere with the explosive detection capabilities of the PEDD team.

SUSPICIOUS/UNATTENDED PACKAGE RESPONSES

7-14. Once a suspicious/unattended item that may contain explosives has been discovered, the military police or security forces on the scene request a PEDD team. Normally, military police evacuate the area and establish a CP a safe distance away from the threat using the stand-off distance listed in *Appendix I* of this manual. The PEDD team checks the perimeter and secures the area for secondary explosives. EOD personnel should respond to the scene and make contact with the PEDD team to be briefed on the location of the package. The PEDD team moves to within 50 meters of the package and begins an area search up to package. The PEDD team also scans the immediate area for secondary devices, when applicable.

Note: At no time should a PEDD team be used to search the package itself. EOD personnel have received special training in handling suspicious/unattended packages and determining if a suspicious/unattended package contains explosives.

7-15. A PEDD handler must not present, touch, open, or physically disturb a package that is suspected of concealing explosives. Once the MWD team has discovered a suspicious item, EOD personnel assume responsibility for the area and take control of the situation in order to render the package safe or dispose of it as necessary.

PEDD Operations in Support of Operation Iraqi Freedom (OIF)

In April of 2003, SGT Raymond Rivera was performing explosives detection missions with his PEDD Kevin in support of OIF near Baghdad, Iraq. SGT Rivera was requested to sweep an area that a support element was in the process of clearing. There was so much debris that a forklift was being used to move large amounts of furniture and building supplies.

The PEDD team would search a portion of the area and then the forklift would come in and haul off the debris searched. After the third load was hauled off, the dog responded to a mattress on the ground with an office table on it. Expecting an explosive devise, SGT Rivera notified the NCOIC of the detail and the area was cleared of all personnel (to a safe distance) and secured. EOD personnel were notified of the suspected explosives and responded to the scene.

SGT Rivera was standing by at the safe area while EOD personnel uncovered two hand grenades that were buried in the sand just below the surface. SGT Rivera said, "Even though it was only two grenades, I was amazed that Kevin found them under all the debris. I'm glad we found them and not our soldiers."

BOMB THREATS

7-16. A PEDD team should be requested for assistance in detecting explosives whenever bomb threats are made against persons or property for which the Army is responsible. The PEDD team's search for explosives begins only after the area or building has been evacuated of all personnel and security has been established. EOD personnel only respond when a suspect item is found; they do not conduct or participate in searches except in support of the USSS. EOD units place a team on standby once the unit is alerted of a bomb threat. PEDD teams coordinate this with the local EOD unit prior to any operation.

7-17. The PEDD team, EOD personnel, and site leadership collaborate to resolve the situation at a nearby CP (see *Appendix I* for stand-off distances). When PEDD teams are located on an installation, their use must be included in the bomb threat planning guidance.

7-18. A systematic search by the PEDD team should include the assistance of a spotter to ensure safety and accuracy. PEDD teams are to be used only to detect the possible presence of explosives.

WARNING:

At no time will the handler touch, open, or otherwise disturb a possible explosive device. IEDs are easily disguised and can be triggered to explode by motion, sound, light, heat, or remote devices.

7-19. Handlers and spotters must not change or otherwise disturb anything in the search. If the lights or any electric device are off or on, do not touch the switch until a thorough search is conducted.

7-20. Ensure that the handler and spotter are provided with available safety equipment including—

- A flack vest (in addition to body armor).
- Flashlights or helmet-mounted lights.
- Gloves.
- Safety goggles.

WARNING:

Always keep track of how much time has elapsed when using a PEDD team at bomb threat incidents. Sufficient time must be maintained to ensure that the team exits the building or area well before the announced or suspected detonation time.

7-21. If the PEDD responds to the presence of explosives, the PEDD handler and spotter note the location and leave the area. EOD personnel then begin measures to render the device safe or remove it. On the request of EOD personnel, the PEDD team may then continue the search until another suspected explosive is found or until the area is cleared by EOD personnel.

7-22. If the search is 30 minutes or longer in duration, explosive training aids should be planted periodically so that the dog can find them. This helps to keep the dog interested in the search. Training aids should only be planted in areas that have already been searched by the PEDD team.

HIGH-RISK PERSONNEL SEARCHES

7-23. Military police provide the task force commander with valuable area security capabilities to protect C2 headquarters, equipment, and services essential for mission success. HRP security is an important task within the area security function. PEDD teams may be employed to enhance explosive detection and protection capabilities.

7-24. The KM or plans NCO determines which PEDD teams will perform the mission. The number of PEDD teams for any mission is determined by the threat, the number of PEDD teams available, any conflicting missions, and other environmental considerations noted in *Chapter 8*.

7-25. PEDD teams may be used as part of a combined arms operation or as an element of a larger security force. When used as part of a combined arms team, the PEDD teams need to be involved will all troop-leading procedures, including rehearsals. All personnel must have a complete understanding of the mission in order to create a safe and secure environment for the HRP. The PEDD teams provide explosive detection and personnel detection capabilities. PEDDs are also a deterrent to hostile forces or terrorists operating within the area of operations.

7-26. Prior to an HRP visit to an area, the PEDD team assists with force protection actions by searching for explosives and IEDs. PEDD also conduct searches of and provide security for outer perimeter areas. During HRP operations, the handler—

- Briefs the on-scene commander of the dog's capabilities.
- Communicates with EOD personnel.
- Obtains the HRP's itinerary and determines locations to be searched.
- Requests a spotter or helper to assist.
- Ensures that areas are secure after searches are done.
- Informs the commander of results and continues follow-on missions.

ACCESS CONTROL POINTS

7-27. Using PEDD teams at ACPs can increase an installation's or base camp's force protection and antiterrorism capabilities by providing a visual deterrent to terrorist groups and other criminal elements. The PM notifies the KM of the requirement to perform vehicle searches at ACPs.

7-28. In the event that the PEDD detects the presence of suspected explosives, the military police forces at the ACP secure and evacuate the area (see *Appendix I* for stand-off distances). EOD personnel are then notified to render the item safe or remove it. PEDD handlers do not attempt to remove or otherwise disturb any suspected explosives.

7-29. PEDD team patrol capabilities may be used at ACPs to search for stowaways and personnel trying to gain access to the installation or a controlled area by hiding in delivery vehicles or other large cargo type vehicles. Extreme caution must be used when utilizing the team in this manner. The commander must be aware that once the PEDD is given the command to search for personnel the potential for injury exists.

HEALTH AND WELFARE INSPECTIONS

7-30. PEDD teams conduct health and welfare inspections when requested by the commander and coordinated through the KM, PMO, and S3. The commander contacts the KM directly to schedule a health and welfare inspection. The KM, in conjunction with the installation PM, the CID special agent in charge, and the military police investigations supervisor, briefs all levels of the installation command on the availability and capabilities of the PEDD teams available to them.

7-31. When scheduling the inspection, the commander should have the following information available:

- The requested time of the inspection.
- The areas to be inspected.
- The number of living quarters.
- The number and size of common areas.
- Other pertinent information.

Appendix H provides a guide to assist handlers with health and welfare inspections.

7-32. Once the coordinating instructions have been established, the KM coordinates a time and location to brief the commander and demonstrate the PEDD's capabilities. It is important that the unit requesting the health and welfare inspection practice OPSEC and inform only those personnel who have an immediate need to know. This usually consists of the commander and 1SG or sergeant major. The KM advises the PM and the military police investigations supervisor when the inspection is scheduled and if any additional support is needed.

7-33. A systematic inspection of the living quarters and common areas is conducted. If the PEDD responds to a locked wall locker, the soldier assigned to that wall locker is summoned to open it. Once the wall locker has been opened, unit representatives conduct a detailed search of the wall locker and its contents.

AIRCRAFT AND LUGGAGE SEARCHES

7-34. Before beginning the search, ensure that all personnel have exited the aircraft and that all compartments are opened. The PEDD team should search the aircraft before searching any luggage or cargo. The PEDD team conducts a fresh-air perimeter search from the downwind side when approaching the aircraft. Once a perimeter search has been conducted, the team boards the aircraft at either the front or rear. Once the area has been deemed clear, the handler ensures that only one door is open to limit draft and wind current. A systematic search of all areas within the aircraft is conducted from the top to the bottom.

7-35. If the dog alerts the handler to a possible presence of explosives, military police or security forces evacuate and secure the scene. The PEDD team moves a safe distance away from the suspected explosives but remains available to further assist EOD personnel, if requested. Once EOD personnel clear the area, the PEDD team may resume the search until another suspected explosive is found or until the area is cleared by EOD personnel.

7-36. When conducting inbound baggage inspections, the items should be aligned in a sterile area in rows with at least six feet between them. The handler should conduct an on-leash search, presenting each piece of baggage. When searching cargo, every effort should be made to search the cargo before it is palletized. The cargo should be aligned in a sterile area in rows with at least six feet between them (the same as baggage). The handler should conduct an on-leash search, presenting cargo as required. Once the PEDD team has searched the cargo, it may be palletized while remaining in the sterile area prior to embarkation.

7-37. Conducting debarkation operations is the same as inbound operations. The host unit (to which the cargo belongs or is being delivered) provides a representative (E6 or above) and work detail to assist the PEDD team. When pallets are removed from the aircraft, they are placed in a sterile area. Once in the sterile area, the work detail unloads the pallets and arranges the cargo as required by the PEDD handler.

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Chapter 8
Veterinary Support

At most locations, veterinary support is provided by an assigned Army VCO. When there is no assigned VCO, an attending VCO from a nearby military installation is assigned responsibility for providing veterinary support. The Army provides veterinary support for all MWDs as authorized by *DOD Directive 6400.4* and *ARs 40-1, 40-3*, and *40-905*. Emergency, civilian veterinary support is authorized for MWDs when there is not a VCO available and/or care is beyond the capability of the veterinary treatment facility (VTF). The responsible VCO and Army Veterinary Service chain of command are responsible for establishing standard procedures for approval, provision, and payment for emergency, civilian veterinary support.

VETERINARY RESPONSIBILITIES

8-1. The US Army Surgeon General provides professional veterinary support for the entire MWD program through the Army Veterinary Corps. This responsibility includes—

- Medical and surgical care at training facilities, bases, and installations.
- Inspections to ensure that the kennel facilities are sanitary.
- A professional review of plans for new construction and modification of kennels, support buildings, and sites.
- Prescribing an adequate feeding program.
- Instructing handlers and supervisors in all matters related to the health of MWDs.
- Conducting research to improve the MWD program.

8-2. The responsible VCO provides treatment for the diseased or injured MWD at the kennel site or at the installation VTF. The Army Veterinary Corps is responsible for equipping this facility and for providing medical and surgical supplies. The VCO is responsible for the MWD veterinary treatment record (VTR) and related information about examinations, immunizations, and treatment.

8-3. The VCO instructs handlers about dog health, care, feeding, and first aid. This instruction helps the handler to develop a better understanding of the MWD's health needs and improves the handler's ability to care for the MWD. The VCO prescribes an appropriate feeding program based on the MWD's health, the climate, and working conditions.

8-4. The VCO is involved in the review of all plans for new kennel construction or kennel modifications. This ensures that potential health and safety hazards can be corrected before construction begins.

VETERINARY INSPECTIONS

8-5. At least quarterly, the VCO inspects the MWD kennel facility to make sure that proper sanitary standards are being maintained. It is recommended that an animal care specialist conduct a monthly check of the kennels to ensure that no major safety violations are present. The VCO ensures that insect and rodent control efforts are adequate and that the handlers are properly maintaining the general health of the MWD. The quarterly inspection also includes the following elements:

- An examination of the kennel facilities for safety hazards and distractions that may interfere with the rest and relaxation of the MWDs.

- A review of the adequacy of the kennel structure (particularly for environmental conditions) and feeding and watering schedules. The VCO should make recommendations to help prevent disease and injury.
- A review of kennel sanitation and cleaning procedures and MWD food storage procedures to minimize the risk of disease transmission to the MWD.

MANDATORY TRAINING

8-6. The local VCO is required to provide training to the MWD handlers upon initial assignment and at least annually thereafter. More frequent training of handlers is recommended but not required. The Department of Defense Military Working Dog Veterinary Services (DODMWDVS) recommends that handler training be conducted at least quarterly. Topics include the following:

- Procedures on when and how to obtain veterinary support (an SOP is appropriate for this).
- General animal health.
- Grooming.
- Prevention of environmental injury (such as heatstroke or cold injuries).
- Emergency first aid (for bloat [gastric dilatation-volvulus], heat stroke, snake bites, and cold injuries).
- Administration or application of routine medications.
- Proper MWD feeding.
- Feed sanitation (proper storage, preparation, and cleanup).
- MWD chemical, biological, radiological, nuclear, and high-yield explosives protective measures.

8-7. It is best to schedule mandatory training so that seasonal problems are addressed prior to their occurrence and appropriate refresher training is provided prior to a deployment. This training is not meant to turn handlers into animal health technicians, but to give them the tools needed to provide emergency care until they can acquire veterinary support.

WEIGHT CHECKS

8-8. Each month the MWDs body weight must be recorded and sent to the responsible VCO. The KM may communicate this to the VTF. Body weight is also measured and recorded monthly in order to monitor body condition and detect important trends in weight loss or gain that may indicate illness. The KM and/or handler documents data such as food intake, stool consistency, and vomiting in the monthly records.

RECORDS/HEALTH CERTIFICATES

8-9. VTRs are maintained by the local VTF. It is very important that MWD handlers ensure that all health information is annotated in these records.

8-10. An examination is given just before shipping an MWD from one installation to another. The MWDs are examined to detect injury or disease and to support the safe shipment and continued good health and performance of the MWD. A health certificate is issued for the state or country into which the MWD is being shipped for TDY and must accompany the MWD. When the TDY period exceeds 10 days, a health certificate may be required for the MWD's return to his home station. A VCO signs this certificate no more than 7 days prior to reembarkation. If the TDY location is in a different Army VCO's area of operation, the gaining VCO is notified prior to the MWD's departure from the home station. An examination is given as soon as possible, but not more than 10 days after the arrival of an MWD at a new assignment, TDY, or deployed location and within 3 days of the MWD's return to his home station. It is important that the handler who deployed with the MWD is present for the examination so that the VCO can get accurate and complete information on any health issues while the MWD was deployed.

FEEDING AND FOOD CONTROL

8-11. MWDs require a diet that is significantly different from that of pet dogs. Their work demands much higher levels of energy and larger quantities of essential nutrients. The standard high-performance diet, contracted and supplied by the GSA for MWDs, meets these nutritional needs and is the only approved feed unless otherwise directed by the attending veterinarian.

8-12. Special diets may be procured and fed to individual MWDs when the VCO determines that other than the standard diet is required. Normally, these diets are available from the VTF, but the MWD unit is responsible for procurement costs.

8-13. Some MWDs have been trained using a food reward schedule that also requires special food. Food reward is used only if an MWD fails to respond to any other type of reward. Procure the special food through normal supply channels or authorized local purchase. The amount of food each MWD should be fed depends on his weight, the amount of activity, and the climate. Local VCOs determine the proper amounts to feed. The responsible VCO must be told when an MWD is trained using food.

8-14. The VCO also prescribes the time of day each MWD is to be fed. This depends on the MWD's duty schedule and the schedule of other kennel activities. MWDs should be allowed 2 hours to eat; leftover food is disposed of within another two hours and feeding pans are cleaned and put away. Never leave uneaten food in the kennel past the authorized 2-4 hour feeding period. If the MWD finishes his meal prior to the end of the feeding period the feed pan may be removed.

PARASITE CONTROL

8-15. MWDs are at risk of becoming infested with internal parasites (intestinal worms and heartworms), and external parasites (fleas, ticks, and mange). Some of these parasites may also transmit infectious diseases to the MWD. In order to prevent infestation and disease transmission, all MWDs must be on a routine parasite prevention program supervised by the responsible veterinarian. At a minimum, this must include the administration of a monthly oral (pill or chewable) heartworm preventative and internal parasite preventive and the administration of a topical, veterinary-prescribed external parasite preventative against fleas and ticks.

8-16. When deployed to areas with high parasite risk, additional preventive measures such as prescription flea and tick collars and the oral antibiotic doxycycline will be prescribed by the supporting veterinarian. Doxycycline must be given with food. The handler must ensure that adequate supplies of all preventives are issued by the VTF prior to departing for TDY or deploying. Flea and tick collars will only be used when prescribed by the veterinarian and must be removed when the MWD is not under direct physical control (when off the choke chain and leash) of the handler to prevent accidental ingestion.

FOOD STORAGE

8-17. Food should be stored in a sealed container that will not allow contamination or rodents to enter the food (for example, pail, utility 7 gallon, NSN 7240-01-411-0581). Bulk storage of food must be in an area separate from the storage of other equipment, cleaning supplies, or materials that may contaminate the food. Bags should be elevated 4-6 inches above the ground, and neatly stacked with a 4-inch space between the stacks and the walls. The sanitation standards for the storage of MWD rations are identical to those required for the storage of bulk rations for personnel in a troop issue subsistence activity, exchange, or commissary.

DEPLOYABILITY CATEGORIES

8-18. The purpose of reporting MWD deployability status is to assist the MWD program managers, PM, commanders, and KMs with the selection of MWD teams for deployment and TDY and to rapidly identify MWDs with limited duty requirements. These guidelines take medical and physical fitness factors into consideration including—

- The anticipated MWD duty stress at deployed locations compared to the home location.
- The availability of veterinary support at the deployed location.

- The climate and environment of the deployed location.
- Any diagnosed or suspected medical conditions that may affect the MWD's performance.
- The MWD's physical conditioning and stamina as observed by the KM and handler.

8-19. It should be noted that some determinations are and will remain subjective; thus the need for prudent judgment by all individuals involved in these assessments remains. This is particularly true regarding the effect of age on an individual MWD. Old age is not a disease and MWDs are not downgraded just due to age; however, with increased age comes increased incidence of illness or disability. These problems may warrant a change in deployability status.

8-20. Deployability status is initially determined after the VCO examines the MWD at the receipt physical or semiannual physical exam. The KM determines training and proficiency status. The VCO and KM should discuss their findings and then categorize each MWD's status and forward the listing through the KM to the PM and MWD program manager. Updates to deployability status lists are performed at least monthly or as needed as changes occur in an individual MWD's status.

Category 1—Unrestricted Deployment (Both Outside the Continental United States and in the Continental United States)

8-21. The MWD is medically fit for any contingency or exercise. There are no limiting or compromising factors. Medical factors may exist but will not limit performance. Special diets, controlled drugs, or special medications can be sent with the MWD (or be carried by the handler) in a quantity sufficient to last the full duration of the anticipated deployment.

Category 2—Limited Deployment (Continental United States or Home Theater of Operation)

8-22. The MWD is medically fit for regions and missions with a minimal requirement for acclimation to heat or physical stress where complete veterinary support is available. The MWD is fit for short duration deployments. There are no significant limiting or compromising factors. Medical problems may exist which slightly limit performances but are controllable. Special diets or medications are required; however they are available in the deployed location or can be sent with the MWD. The reason for limited deployability must be reported.

Category 3—Temporarily Nondeployable

8-23. A medical condition exists that impedes daily duty performance and is under diagnosis, observation, or treatment. The MWD may still be allowed to work at the home station but in a limited capacity.

Category 4—Permanently Nondeployable

8-24. An unresolved medical or physical problem exists that frequently or regularly impedes daily duty performance and an early retirement date cannot be given. The reason for nondeployability must be reported. Medical or physical conditions warrant replacement within one year. The responsible veterinarian and KM should initiate an MWD disposition process at the time an MWD is declared category 4.

KENNEL SANITATION PROCEDURES

8-25. Cleanliness is one of the most important factors for the good health of an MWD. The KM must enforce sanitary measures in and around the kennel area. A good standard of sanitation is the result of the cooperation of the handlers, KMs, supervisors, and the VCO.

8-26. The VCO and the PM or military police commander should set the standard of sanitation. This standard must be maintained by each of the handlers and the KM.

8-27. Kennels must be sanitary, in a good state of repair, and thoroughly cleaned every day. Kennels should be disinfected at least once every week using only those disinfecting products approved by the VCO. Kennels should also be disinfected whenever an animal is removed from a kennel so that the kennel will be ready to be occupied by another animal.

8-28. Stool must be removed from the runs as often as necessary as but no less than twice daily to prevent the MWD from becoming dirty. The method of disposing of stool depends on local conditions and the type of sewage system present. If stool must be carried from the area in cans, the cans must be cleaned and disinfected after each use.

8-29. The entire kennel area must be free of refuse and garbage that could attract rats and insects. Mosquito control measures must be used in ditches and swampy areas in the vicinity of the kennels. Disinfectants and disinfectant procedures should be used only with the approval of the VCO.

MEDICATION

8-30. At times, a VCO prescribes special medication (to be given separately or mixed with food) for a sick or injured MWD. The handler must know how to administer these medications in both pill and liquid form.

8-31. When any foreign substance is placed directly into a dog's mouth, his first reflex is to spit it out. The handler must learn how to administer medication properly so that the MWD is forced to swallow. With the VCO's approval, pills or liquids can be mixed with a small amount of canned dog food or other soft food and fed to the MWD. To administer capsules or tablets—

- Place the fingers of your left hand over the MWD's muzzle and insert your left thumb under the lip and between his upper and lower teeth right behind the canine tooth, pressing your left thumb against the roof of his mouth to open it.
- Place the capsule or tablet into the MWD's throat at the extreme rear of the tongue to prevent him from spitting it out. Quickly remove your hand, close the MWD's mouth, and gently massage his throat until he swallows. The entire procedure must be quick and smooth to ease the MWD's apprehension and resentment.

8-32. Liquid medication is best administered with the help of another person. The handler—

- Holds the MWD's upper and lower jaws together with his left hand. The assistant pulls the MWD's lips away from the teeth at one corner of the mouth with his right hand. The MWD's nose is then pointed slightly upward, forming a natural funnel by the lip, and the assistant pours the liquid into this funnel.
- Elevates the MWD's head only slightly above the horizontal when giving liquid medicine. If the MWD's head is raised higher, he has difficulty in swallowing. Give the MWD adequate time for swallowing to prevent the liquid from getting into the trachea, nose, or lungs. Use extreme caution in giving oily liquids.
- Allows the MWD to lower his head and rest before proceeding if any signs of distress, such as coughing or struggling, appear. Do not give oral medications or any liquids if the MWD is unconscious or cannot swallow.

FIRST AID

8-33. Normally, the handler's early recognition of symptoms of illness or injury allows sufficient time to get assistance from a VCO. However, situations may arise when medical help is not immediately available. The seriousness of the incident may require that the handler take emergency actions to protect the life or health of the MWD. The first aid instructions that follow are commonly used to save life, prevent further injury, and reduce suffering from pain. In all emergency situations, notify the VCO as soon as possible so that the MWD can receive professional medical attention.

8-34. First aid kits should always be available in the kennel area and at training sites. The handler should also carry a first aid kit as part of his or her equipment for the MWD on all operational missions. The VCO will determine the contents of first aid kits. When items are used from the first aid kit, they should be replaced with new items immediately.

MUZZLES

8-35. When an MWD has been injured, the first consideration is to calm and immobilize the animal. Pain and distress, however, may cause the MWD to respond to the handler in an unpredictable manner. The MWD may not respond to verbal commands and may attempt to bite the handler and anyone helping the handler. Whether to apply a muzzle (*Figure 8-1)* or not depends on the nature of the emergency. If the MWD is unconscious, shows any difficulty in breathing, or has suspected head injuries, a muzzle should not be used. Otherwise, a muzzle should be used for safety.

Figure 8-1. Muzzle Use

8-36. There are several types of muzzles, but the leather basket muzzle is the best and most comfortable. It allows for free breathing and causes the least alarm and apprehension. The MWD can still inflict a wound while wearing this type of muzzle, so caution is required.

8-37. An improvised muzzle can be made using the MWD's leash and is called a leash muzzle. To apply the leash muzzle, tighten the choke chain on the MWD's neck by pulling the leash tightly with the right hand. Place the left hand, palm up, under the choke chain on the neck. Grasp the leash tightly as it passes through the palm of the left hand, wrap the leash once around the MWD's neck, and bring it up and across the left side of his head. Finally, wrap the leash twice around the muzzle and grab it tightly with the left hand.

CAUTION

The leash muzzle may be used when the leather muzzle is not available or when it would not provide adequate safety. Do not use the leash muzzle when the MWD is overheated, is having difficulty breathing, or is indicating that he may vomit. Do not leave it on for long periods in hot weather.

FRACTURES

8-38. If a fracture occurs, restrain the MWD and encourage it to lie down and remain quiet. If the face and jaw are not injured, put the MWD in a loose muzzle. Notify the veterinarian immediately when a fracture occurs or is suspected. If there is any bleeding, treat the MWD according to *paragraph 8-40,* then proceed with splinting and moving the MWD to the veterinarian if he is not immediately available.

8-39. Prior to moving the MWD, the fracture area needs to be immobilized with a splint. This should be possible for most leg fractures. The leg should be splinted in the same position it is placed by the MWD

when it is hurt. Do not try to straighten or reduce the fracture. Splinting an MWD's leg is similar to splinting a soldier's leg and may be done with the same materials: bandages, torn cloth, splints from the medic's bag, or other available material including sticks, boards, and rolled newspaper. After the leg is splinted, or if the fracture cannot be splinted, gently move the MWD onto a litter or improvised litter, such as a piece of plywood, or into a kennel and carry it to a vehicle for transport. It is best to slide the litter under the MWD rather than lifting the MWD onto the stretcher. The MWD may need to be strapped to the litter to allow safe movement. Make sure to support the injured leg or area during movement.

BLEEDING WOUNDS

8-40. Bleeding must be quickly controlled, particularly wounds in the foot or leg that are prone to bleed freely. Applying pressure directly on the wound may control bleeding; use a sterile bandage or clean handkerchief or pinch the edges of the wound with your fingers. As soon as possible, apply a pressure bandage.

BURNS

8-41. Most burns occur when an animal comes into contact with hot water, grease, tar, or other scalding liquids. MWDs may also get electrical burns by chewing electrical wires. If an MWD is trapped in a burning building, it may suffer from smoke inhalation in addition to surface burns. The handler can prevent all of these situations through positive control of the MWD. If a burn does occur, applying cold-water soaks or ice packs to the burn for approximately 20 minutes may treat minor burns. The cold helps to reduce the pain. The hair around the burn should be clipped away and the burn should be washed gently with a surgical soap. Blot it dry with sterile or clean soft gauze or cloth. Protect the burned area from rubbing by applying antibiotic ointment and a loose fitting gauze dressing.

SHOCK

8-42. An animal may go into shock after injuries to internal organs, excessive bleeding, or trauma. Shock can be recognized by the following symptoms:

- A glassy look to the eyes.
- A rapid or weak pulse or rapid shallow breathing.
- A dropping body temperature. The lips and feet may feel cold.
- A paleness of the membranes of the mouth and eyes.
- Slow capillary refill time. To determine capillary refill time, press firmly against the MWD's gums until they turn white. Release the pressure and count the number of seconds until the gums return to their normal color. If it is more than two to three seconds, the MWD may be going into shock. Failure to return to the red-pink color at all indicates that the MWD may be in serious trouble and needs immediate assistance.

8-43. If a handler suspects that an MWD has internal injuries or is going into shock, request help from a VCO immediately. Keep the MWD warm and quiet, and lower his head to prevent possible brain damage. If it is necessary to move the MWD, use a litter. Administration of intravenous fluids by appropriately trained personnel will help to prevent permanent injury from shock.

ARTIFICIAL RESPIRATION

8-44. There are conditions that may cause an MWD to stop breathing. When this happens, do not panic. Follow these procedures:

- Open the MWD's mouth and check for any obstructions. Extend the MWD's tongue and examine his throat.
- Clear the MWD's mouth of any obstructions then, close his mouth, and hold it gently closed.
- Inhale, and then cover the MWD's nose and mouth with your mouth.
- Exhale gently. Do not blow hard. Carefully force air into the MWD's lungs and watch for his chest to expand. Repeat every five to six seconds or at a rate of 10 to 12 breathes per minute.

SNAKEBITES

8-45. The bite of a poisonous snake can cause serious illness and death if not treated immediately. Keep the MWD quiet and calm, and request veterinary assistance or move the MWD as quickly as possible to a treatment facility. Panic or exertion causes snake venom to move more rapidly through the bloodstream. If possible, kill the snake so it can be shown to the VCO. The handler should be careful not to be bitten by the snake or come into contact with the snake venom. Bites may occur on the face or neck of the MWD. When this happens, remove the choke chain and loosen or remove the collar and muzzle. Swelling occurs rapidly after a snakebite, and this equipment may restrict breathing. Position the MWD's head extended from his body to allow him to get maximum airflow. An ice pack applied to the bite area helps to slow the flow of blood and helps to keep the venom from spreading.

CAUTION

A tourniquet should not be applied. Constricting the blood flow could increase tissue death.

FOREIGN OBJECTS IN THE MOUTH

8-46. An MWD may get a stick or other foreign object stuck in his mouth or throat. The most common foreign object that becomes stuck is a Kong® or ball reward that is too small for the MWD. The MWD may cough, gag, have difficulty swallowing or breathing, paw at the mouth, and drool. If the MWD is having difficulty breathing, cautiously and gently open his mouth. Look for any abnormal object in the throat, under the tongue, between the teeth, in the gums, or in the roof of the mouth. If the MWD is having trouble breathing, removing the object is an emergency. The ball, Kong, or other object can be removed using pliers or clamps. If the object is not causing breathing problems, it is best to leave it in place and get veterinary assistance.

POISONOUS SUBSTANCES

8-47. There are many toxic chemicals an MWD may come in contact with and/or ingest. These include insecticides, herbicides, rodenticides, and antifreeze. The symptoms of poisoning vary. Unless the handler is certain the MWD has eaten a poison, do not treat for poison. Occasionally, MWDs accidentally swallow narcotics or explosives training aids. Exposure to poisons and accidental ingestion of training aides should be prevented by positive control of the MWD by the handler. If the handler knows that the MWD has eaten a poison, narcotic, or explosive, take the following actions:

- Request veterinary assistance immediately.
- Determine the type and quantity of poison, chemical, narcotic, or explosive that has been swallowed. If any part of the substance or container is available, keep it for the VCO to examine.
- If the Army VCO is not available, immediately make contact with a civilian veterinary to determine if vomiting is appropriate. Causing an animal to vomit is not recommended in all types of poisoning as it may cause more harm to the animal. When vomiting is appropriate, the animal may be induced to vomit by giving him one-quarter to one-half of a cup of hydrogen peroxide.
- Keep the MWD quiet and warm until the VCO arrives.

8-48. For future reference, keep a copy of the material safety data sheet for any training aide that may be ingested available. MWD first aid should be according to the material safety data sheet for people.

OVERHEATING

8-49. Overheating results when an MWD is unable to eliminate body heat rapidly enough. This condition requires immediate action by the handler to save the MWD's life. During hot, humid weather, an MWD may easily become overheated during training, during operations, or while being transported. A body temperature of 105° Fahrenheit or more, combined with poor response to commands, weakness, unsteady

movement, vomiting, difficult or labored breathing, convulsions, and collapse are all symptoms of overheating. It is helpful to take the MWD's temperature in order to monitor the severity of overheating and progress in cooling, but temperature alone does not determine the need for or method of treatment.

8-50. For mild to moderate heat injury, the MWD's temperature is generally lower than 104° Fahrenheit. The MWD may have mild symptoms, to include uncontrolled panting, a rapid but somewhat weak pulse, mild to moderate difficulty breathing (but not cyanotic [blue]), and exercise intolerance or loss of stamina. This is equivalent to heat exhaustion in people.

8-51. When the symptoms of overheating occur, loosen the leash, collar, and muzzle as much as possible without loosing control of the MWD. This allows for more efficient panting and cooling. Follow these guidelines at the onset of symptoms:

- Carry the MWD to the nearest shade and fan him if no wind is present.
- Try to quickly lower the MWD's body temperature by running and sponging cool water over the MWD's head, body, and legs. If a body of water is available, allow the MWD to stand in the water but make sure the MWD's head remains above water. Running water works better than standing water.
- Place the MWD in an air-conditioned kennel, vehicle, or shelter.
- Apply ice packs to the MWD's groin, armpits, and head to increase speed of cooling.
- Dampen, but don't soak, the MWD's feet, ears, and abdomen with rubbing alcohol. Allow it to evaporate and then reapply more.
- Do not let the MWD over drink. He should not consume more than one cup of water until he is calm and his temperature returns to normal.
- Monitor the MWD's temperature every 5-10 minutes, and stop cooling efforts when it reaches 100-103° Fahrenheit. Keep monitoring his temperature for an additional 60 minutes.

8-52. If the MWD's temperature remains normal (about 100-103° Fahrenheit), treatment is complete; however the MWD must be examined by a VCO and a heat injury must be reported in his VTR. If his temperature climbs again, restart cooling efforts.

8-53. If the MWD's temperature drops below 100° Fahrenheit, begin warming by drying and wrapping him with sheets and blankets. Remove the heat when his temperature goes above 101° Fahrenheit.

8-54. For severe heat injuries, the MWD's temperature is generally over 104° Fahrenheit combined with poor response to commands, weakness, unsteady movement, vomiting, difficult or labored breathing, uncontrolled panting, convulsions, collapse, a dull or depressed attitude and behavior, a rapid but somewhat weak pulse, exercise intolerance or loss of stamina, and cyanosis (blueness) or dark red mucous membranes. This is equivalent to heatstroke in people. If this occurs take the following actions:

- Initiate all cooling and monitoring efforts as noted in *paragraph 8-51*.
- Administer 1 liter of intravenous fluids to the MWD as quickly as possible if appropriately trained personnel are available.
- Continue cooling and monitoring until a veterinarian can evaluate the MWD.

BLOAT (GASTRIC DILATION-VOLVULUS)

8-55. Bloat is an acute stomach enlargement and twisting that may be due to gas, food, or water. It may occur if the MWD is fed immediately before or after hard exercise or when he is returned to his kennel after work or exercise and allowed to drink too much water.

8-56. An enlargement may be seen just behind the ribs, primarily on the left side. The MWD may also be restless and show signs of pain in the abdominal region. He may attempt to vomit or have a bowel movement. His breathing may be difficult or labored due to pressure from the enlarged stomach.

8-57. Handlers should notify the VCO and stop all watering and feeding. Walking may enable the MWD to relieve himself through bowel movements or passing gas. Most cases require extensive treatment by the VCO.

8-58. To prevent bloat, MWDs should not be fed within a two-hour period before or after hard work or vigorous exercise. It is also safer to provide multiple small meals each day, feeding twice daily, rather than one large meal. In hot weather, give small amounts of water during training or working MWDs to prevent excessive thirst. For the first hour after working or training, only three inches of water in the bucket should be available. After this cooling-off period, more water may be given.

FIRST AID KIT

8-59. The responsible VCO determines the contents of MWD first aid kits. The VCO should consider the skill of the handlers, access to veterinary support, and emergency situations that may occur. The DODMWDVS does not have a standard first aid kit supply list because needs vary. The local VCO and KM are responsible for developing and putting together an appropriate kit and training the handlers how to use it. The kit should contain supplies for cleaning and dressing minor wounds, cleaning and protecting an eye injury, bandaging or splinting minor breaks, and removing mild superficial foreign bodies (splinters or glass). It should also contain peroxide, antibacterial solutions, and a small supply of any prescription medications needed for individual MWDs.

ENVIRONMENTAL EFFECTS ON THE MILITARY WORKING DOG

8-60. Just as the environment affects soldiers performing their duties, the MWD is affected by his surroundings. It is important for planners and leaders to become aware of the many different conditions that can affect the performance of MWDs. Not all MWDs are affected in the same manner. Acclimation times will vary between conditions and MWDs. Planning considerations should always include the VCO when the MWD will be used or trained in environments that he is not accustomed to.

WIND

8-61. Always consider the direction and velocity of the wind when using an MWD for any detection operations. This consideration holds true even indoors. There may be a slight breeze that will move a scent away from the location of its source. Fans, air conditioning units, and objects in motion can create winds that will affect the performance of a detector dog.

8-62. In addition to these operational concerns, wind may create medical issues (such as blowing sand) that are negative. Wind also creates increased cooling, which is positive in hot weather but negative in cold weather.

INCLEMENT WEATHER

8-63. Precipitation can degrade the MWD's performance of detection operations; however, do not assume that an MWD will not be able to perform satisfactorily. The amount of moisture accumulated and the amount of time elapsed since the scent was left are variables. MWDs have been proven to be effective even in inclement weather. MWDs that become wet and are returned to their kennels or crates while wet are at increased risk of skin injury and infection.

HEAT

8-64. When operating in locations of extreme heat, the MWD should be allowed sufficient time to acclimate. Consult with the VCO at the location to determine how long an MWD should be allowed to acclimate. Care should be given to ensure that the MWD does not sustain injuries to the pads of his paws due to excessive walking on concrete or pavement in extreme heat conditions. Always ensure that the MWD has a fresh and constant source of drinking water.

COLD

8-65. Extreme cold temperatures should not deter MWD operations. Special care should be taken to enable an MWD to perform in cold locations. The accumulation of moisture on the MWD's paw pads can freeze and injure him. Using paw pad protectors to aid in the prevention of injury due to cold weather may be

helpful, but the MWD must be trained to wear them. The MWD should be allowed to rest and warm up on the same cycle as the handler.

TERRAIN

8-66. The safety of the handler and MWD must be given the highest consideration when operating in hazardous terrain. Care should be taken when employment will take place in rocky or mountainous areas. Unfamiliar locations can pose threats in the form of caves, holes, loose footing, and other hazards. Whenever possible, conduct a reconnaissance of the area before employing an MWD.

DISTRACTIONS

8-67. There are numerous distractions that can affect MWD operations. These are conditions that can cause the MWD to focus his attention away from the desired task at hand. Planning and consideration should be given to eliminate or reduce distractions that hinder operations. Distractions are natural and man-made. Some examples of distracters are:

- Other dogs (both MWD and indigenous).
- Other animals.
- Human presence and activities.
- Noise.
- Smells.

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Appendix A
Metric Conversion Table

This appendix complies with current Army directives, which state that the metric system will be incorporated into all new publications. *Table A-1* is a conversion chart.

Table A-1. Metric Conversion Chart

US Units	*Multiplied By*	*Equals Metric Units*
	Length	
Feet	0.30480	Meters
Inches	2.54000	Centimeters
Inches	0.02540	Meters
Inches	25.40010	Millimeters
Miles (nautical)	1.85320	Kilometers
Miles (statute)	1.60930	Kilometers
	Area	
Square inches	6.45160	Square centimeters
Square feet	0.09290	Square meters
	Volume	
Cubic feet	0.02830	Cubic meters
Fluid ounces	29.57300	Milliliters
	Temperature	
Degrees Fahrenheit	Subtract 32, multiply by 5/9	Degrees Celsius
	Weight	
Ounces	28.34900	Grams
Pounds	0.45359	Kilograms
Metric Units	***Multiplied By***	***Equals US Units***
	Length	
Centimeters	0.39370	Inches
Kilometers	0.53960	Miles (nautical)
Kilometers	0.62137	Miles (statute)
Meters	3.28080	Feet
Meters	39.37000	Inches
Millimeters	0.03937	Inches
	Area	
Square centimeters	0.15500	Square inches
Square meters	10.76400	Square feet
	Volume	
Cubic meters	35.31440	Cubic feet
Milliliters	0.03380	Fluid ounces

Table A-1. Metric Conversion Chart (Continued)

Metric Units	*Multiplied By*	*Equals US Units*
	Temperature	
Degrees Celsius	Multiply by 9/5, add 32	Degrees Fahrenheit
	Weight	
Grams	0.03527	Ounces
Kilograms	2.20460	Pounds

Appendix B

Kennel Construction

This appendix is intended to be a starting point in the design process with the identification of requirements and spaces. It should serve as a supplement to the installation design guide and not as a replacement. This appendix provides commanders and planners with guidelines and specifications to consider for the construction and equipment of kennel facilities. The floor plan (*Figure B-1*) is an example of how an MWD facility works, how areas relate to each other, and what is required for each space. It is not intended to serve as a rigid model for duplication.

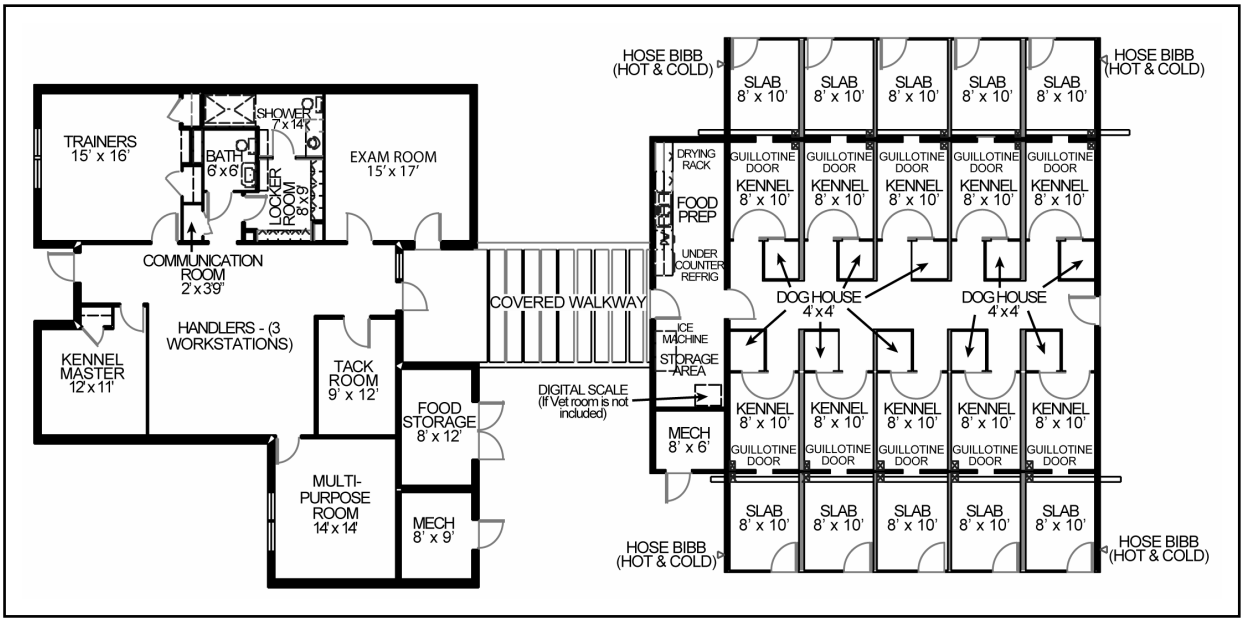


Figure B-1. Example of an MWD Kennel Floor Plan

TEMPORARY KENNELS

B-1. There are two major types of kennels, temporary (*Figure B-2*, page B-2) and permanent. According to *AR 190-12*, temporary kennels are to be used during deployments for no longer than one year, to allow sufficient time for permanent kennels to be built. Temporary kennels may be constructed out of any available resources. The design is not standard and varies from site to site depending on the location, mission, and duration of operations. Using a concept similar to constructing fighting positions, the temporary kennels will be improved continuously as needed or until a permanent facility is completed.

B-2. Using tents and shipping crates may be a hasty method of setting up temporary kennels. Although this method is not optimal for sustained operations, it may be useful until other accommodations can be coordinated. Erect the tents at a location that allows the MWDs a safe place to rest away from other troop activities after operations. Whenever possible, use terrain or buildings to place a barrier between troop activity and the temporary kennel. Never place the temporary kennel site near motor pools, dining facilities, or high noise areas.

Figure B-2. Temporary Kennel

B-3. In some areas of operation, it may be possible to obtain the use of a building or other structures for temporary kennels. In these cases, leaders must ensure that the building is well ventilated, safe, and structurally sound. Ensure that there are no hazards (such as chemicals, bare wires, holes, or debris) that can cause injury to the MWDs or handlers.

B-4. Engineers are often used to assist in the improvement of temporary kennels. In addition, fences should be erected and dog runs created.

***Note*:** From the start of operations, sanitation measures must be employed in all temporary kennel configurations.

PERMANENT KENNELS

B-5. The following information and figures give specific details for the construction of a permanent kennel facility and adjacent areas. These guidelines may be altered to allow for special needs or uses unique to each location.

EXTERIOR AREAS

B-6. An MWD kennel complex (*Figure B-3*) consists of kennels, a support building, an obedience course, an exercise area, an MWD break area, exterior storage, parking areas, drives, and walks. Often, as a result of the location, utility services are limited at the site. Construction should provide the following utilities:

- Water (potable with backflow prevention).
- A sanitary sewer.
- Electric.
- Telephone.
- Network and communication service to the site.

Other systems should be incorporated according to local procedures.

B-7. The entire complex should be enclosed, at the minimum, with a heavy-duty, 8-foot-high chain-link fence with three strands of straight wire (no barbed) at the top to prevent an MWD from climbing or jumping out. A 10-foot (minimum) vehicle gate that can be padlocked is to be installed to allow for food deliveries to the kennel and other access requirements. A personnel entry gate that is visible from the KM's office is also required. The personnel gate should have a cipher lock and a notification buzzer that sounds in the KM's office, the obedience course, and the kennel. The buzzer in the kennel should have the capability to be turned on when personnel are in the area and turned off to allow the MWDs to rest when personnel are absent. All gates should be self-closing and self-latching.

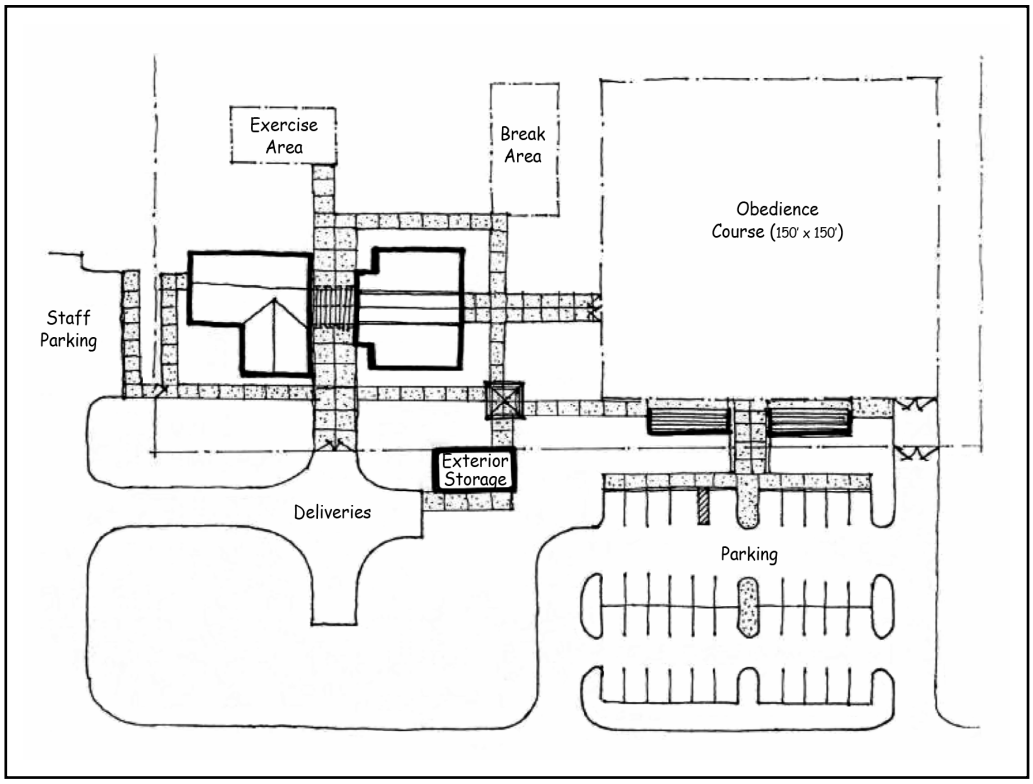


Figure B-3. MWD Kennel Complex

B-8. Security lighting for the area should be according to local policy. At a minimum, the lighting should be on from dusk to dawn and placed on all corners of the fencing area. Security lights should be placed in areas that the other lights do not cover.

B-9. Warning signs will be posted on the exterior fencing and buildings of the MWD kennel and exercise area. Signs should contain the following words: "DANGER—OFF LIMITS–MILITARY DOG AREA." Personnel approaching the kennel area should be able to see and read the warning signs under normal daylight conditions from a distance of 50 meters.

B-10. Locate a trash dumpster for the complex outside of the perimeter fence. Screen the dumpster and provide low-maintenance landscaping for the complex according to local policy.

Exterior Storage, Parking Areas, Drives, and Walks

B-11. An enclosed, 400-square-foot exterior storage building is required to store maintenance equipment, portable kennels, and obstacles. Interior/exterior lighting, power, and a water faucet should be included.

B-12. Staff parking should be a paved parking lot large enough for eight POVs, three GOVs, two visitor vehicles, and one handicap parking space. Pave access drives to accommodate parking, exterior storage, food deliveries, emergency vehicles, and the transportation of MWDs.

B-13. Provide paved walks to all areas. When designing, give careful consideration to creating a one-way MWD traffic system. To prevent confrontations between the MWDs, avoid situations that allow MWDs to meet head on.

Obedience Course (150 Feet by 150 Feet)

B-14. The obedience course plays an important role in maintaining the MWD's agility and stamina as well as in reinforcing obedience and proficiency training. The course should be grassed and free of hazards

(trees, large rocks, holes, and burrs) that may be harmful to MWDs and handlers. The site should be graded for drainage but minimally sloped to provide a level field for training. The area should be enclosed with an 8-foot chain-link fence. Gates should be self-closing and self-latching with a minimum width of 5 feet to allow for lawn maintenance equipment. The area should be well lighted to eliminate shadows. Light poles should be located on the exterior of the fence. On and off switches should be manual. Weatherproof outlets should be provided at each light to provide power at the site. Speaker units connected to the chosen public address system should also be provided. Water should be at the course site with water faucets installed to provide water for MWDs and lawn watering. An irrigation system is desirable for long-term lawn maintenance.

B-15. Obstacles for the course (*Figure B-4*) include barrels, tunnels, steps, jumps, framed windows, and dog walks. Each obstacle is 15 to 20 feet from the previous obstacle; the course is run in a sequence. Obstacles should be constructed to the following specifications:

- Barrel 1 is 35 inches long with a 23-inch opening.
- Barrel 2 is 70 inches long with a 23-inch opening.
- Barrel 3 is 105 inches long with a 23-inch opening.
- The tunnel is 146 inches long with a 19-inch opening.
- The steps are constructed out of wood and are 94 inches high with 5 steps on each side. Each step is 43 inches wide by 16 inches high by 24 inches long. The top platform is 48 inches long by 43 inches wide.
- Jumps 1, 2, and 3 are constructed of wood and are 36 inches high at the maximum raised level. There are 6 removable boards that are 51 inches long by 6 inches high and 1 inch thick.
- The framed window is constructed of wood and is 8 feet tall. The maximum height for the MWD to negotiate is 36 inches. The window opening is 48 inches wide. Removable boards are 5 1/7 inches wide by 51 inches long and 1 inch thick.
- The A-frame is constructed of wood. Its two sides are 8 feet long by 4 feet wide by 1 inch thick with 1-inch by 2-inch boards every 6 inches to secure footing. It has a maximum raised height of 6 feet with a base spread of 10 feet.
- The dog walk is constructed of wood and is 26 inches high by 224 inches long and 11 inches wide with 1-inch by 2-inch boards every 4 inches to secure footing. Each end has a 45° incline ramp that is 11 inches wide by 49 inches long (included in the 224 overall length measurement).

Note: See *DA Pam 190-12* for more complete construction guidelines including the bracing necessary for the various obstacles.

Military Working Dog Break Area (10 Feet by 20 Feet)

B-16. An MWD break area should be located near the kennels. A break area allows the handler to release the MWD immediately after exiting the kennels or before entering the kennels so that the MWD can relieve himself. The area should be enclosed with an 8-foot chain-link fence. Gates should be self-closing and self-latching and a minimum of 5 feet wide to allow for lawn maintenance equipment. The ground can be a sandy area for cleaning ease. A water faucet is required to maintain the area.

Exercise Area (20 Feet by 40 Feet)

B-17. The exercise area is a space where the MWD can be released without the handler being present. The exercise area should not be a shared area with the obedience course, as it would conflict with training objectives. The exercise area should be visually separated from the obedience course to prevent MWD from being distracted during training. The exercise area should be grassed, hazard free, and graded slightly for drainage purposes.

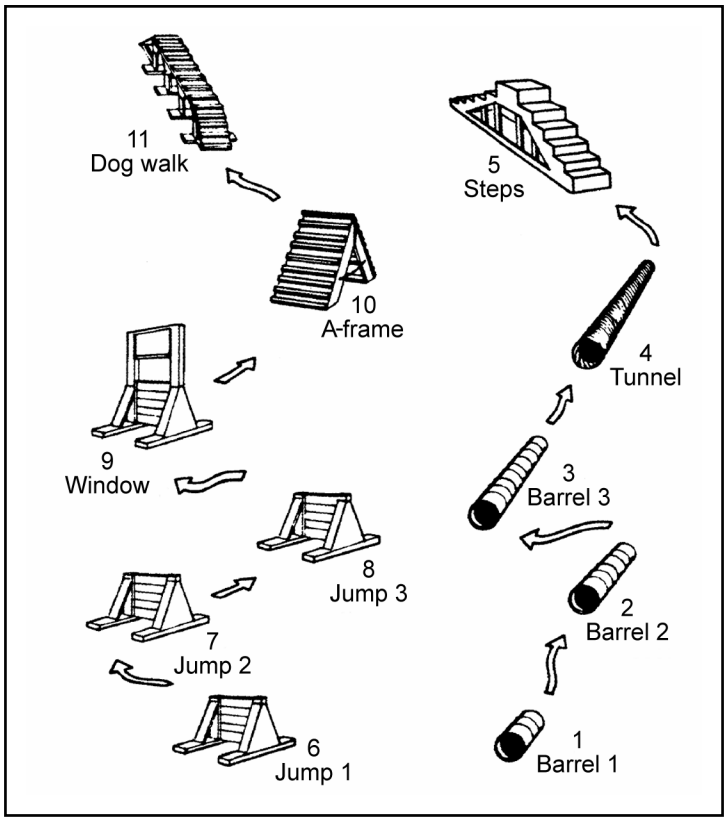


Figure B-4. Obstacle Course Layout

INTERIOR AREAS

B-18. Interior areas have heating, ventilation, and exhaust systems; general-purpose lighting; and power outlets in all spaces. Provide phone, fax, and local area network (LAN) connections to support each area and hot and cold water to all latrines, sinks, and showers. Construct the facility to meet all fire protection and life safety feature requirements.

Administration Areas

B-19. Since MWDs are likely to visit the administration area (*Figure B-5*, page B-6) at some point, finishes should be of durable material, require minimal maintenance, and be easily repaired or replaced in case of damage. (For example, flooring should be covered by carpet.)

Kennel Master's Office (132 Square Feet)

B-20. The KM's office serves as the nerve center for the complex. Ideally, the office should be located at the front of the administrative area with exterior windows that view the entry gate to the complex. It includes a lockable closet for supply storage. Furnishings include a desk, a chair, two visitor chairs, a four-drawer file cabinet, and a bookcase. Equipment includes a computer, a printer, a fax/copier, and a public address system or central intercom console.

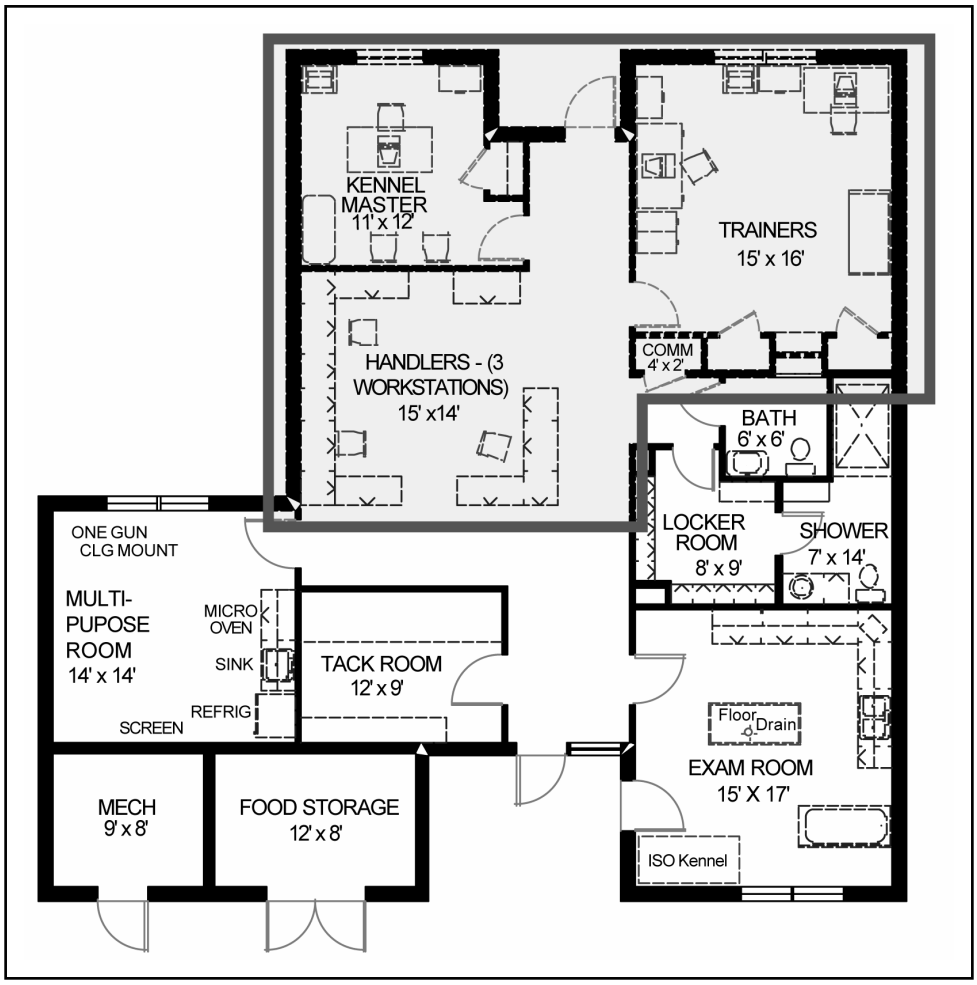


Figure B-5. Kennel Administrative Areas

Trainer's and Plans Noncommissioned Officer's Office (240 Square Feet)

B-21. The trainer office should provide workspace for two people. Lockable closets are required to store training aides for each trainer. Furnishings include a desk, a chair, and a four-drawer file cabinet for each trainer and a common bookcase. Equipment includes a computer, a printer, a copier, and a 4- by 8-foot dry erase board.

Handlers' Area (210 Square Feet)

B-22. The area for the handlers is an open area for general office functions. It includes—

- Three common workstations, depending on the size of the kennels, for handlers to update records and complete daily reports.
- Space for document storage.
- Furnishings (three workstations, file cabinets [one four-drawer vertical file per workstation or the equivalent], and a distribution counter.
- Equipment (computers and a printer).

As a general rule, one workstation should be available for every three handlers assigned to an MWD section.

Controlled-Substance Storage Room

B-23. This room is inside the administrative area and allows sufficient room for the storage safe in which controlled-substance training aids are stored. The doors are secured using approved locking devices. Lightweight doors are replaced with solid metal or wood doors or covered with a 9- to 12-gauge security screen or 16-gauge sheet steel. They are fastened with smooth-headed bolts and nuts and peened in place. All windows providing access to a storage room that is not staffed 24 hours a day are protected by a 9- to 12-gauge security screen or 3/8-inch or larger diameter steel bars spaced no more than 6 inches apart. The frames holding the screen or bars must be fastened to the window frame with smooth-headed bolts.

Special-Use Areas

B-24. Special-use areas (*Figure B-6,* page B-8) are the transition spaces between the administration area and the kennels. They are important in the day-to-day operations of the MWD facilities. They are not normally occupied on a daily basis. As such, these areas provide a secondary function of serving as a noise buffer between the kennels and the administrative areas. The special-use areas provide a workspace for the VCO and accommodate the unique storage requirements for the kennels.

Veterinary Treatment Room

B-25. A veterinary treatment room is used to perform health care and first aid for MWDs since many locations do not have veterinary treatment areas in close proximity to the kennels. In order to maintain sanitary conditions, treatment rooms require a higher degree of cleanliness and durability than the rest of the support building. Basic finish requirements are—

- Seamless floors with an integral base.
- Washable walls.
- Painted gypsum board ceilings.
- Cabinets faced with plastic laminate.
- Solid-surface countertops.

B-26. Interior partitions should provide a sound transmission class rating of 50 to 55. Floor drains are centered in the room to aid in cleaning, and a dedicated floor drain is located under the isolation kennel. Wall and base cabinets with drawers are installed, including stainless steel dual washbasins with hot and cold water. One section of wall cabinets should be lockable so that prescription medicines for MWDs may be stored in the room. In addition to the normal electrical outlets required by code, a 220-volt outlet is required to support other portable equipment that may be used. Equipment for the room includes the following:

- **An MWD isolation kennel.** The entire structure should be made of uniform, nonglare type 304 stainless steel. The frame, cross members, and vertical spokes should be welded together at every intersection. Latches and hinges are made of 12-gauge stainless steel. The floor of the pen is a raised, removable grate. The floor grate is a heavy-gauge stainless steel, plastic-coated section installed 1 3/4 inches off the floor. A dedicated floor drain is required for this kennel.
- **Standard table tub**. The tub is made of type 304 stainless steel with a minimum depth of 15 inches. The tub slopes to the drain end. The design includes a removable, bathing rack made of plastic-coated stainless steel that fits into the bottom of the tub to give MWDs better footing during treatments. Faucets include a flexible, stainless steel hose that will extend the length of the tub and spray powerfully to reach all areas of the tub.
- **Exam room light.** A ceiling-mounted exam room light with an arm extension and swivel capacity of 360° is recommended.
- **Walk-on platform scale.** The scale is a type 304 stainless steel platform with a wall- or post-mounted light-emitting diode (LED) display. The scale is able to perform calibration and weigh animals to the nearest 0.1 of a pound or kilogram.
- **Stationary exam table.** The table top is type 304 stainless steel die-formed from one piece of 20-gauge steel. It should have raised edges to prevent fluid runoff and be permanently attached

to a heavy base. There should be a minimum 35-inch work height from the floor to the top of the table. The heavy base should have adjustable leveling screws.

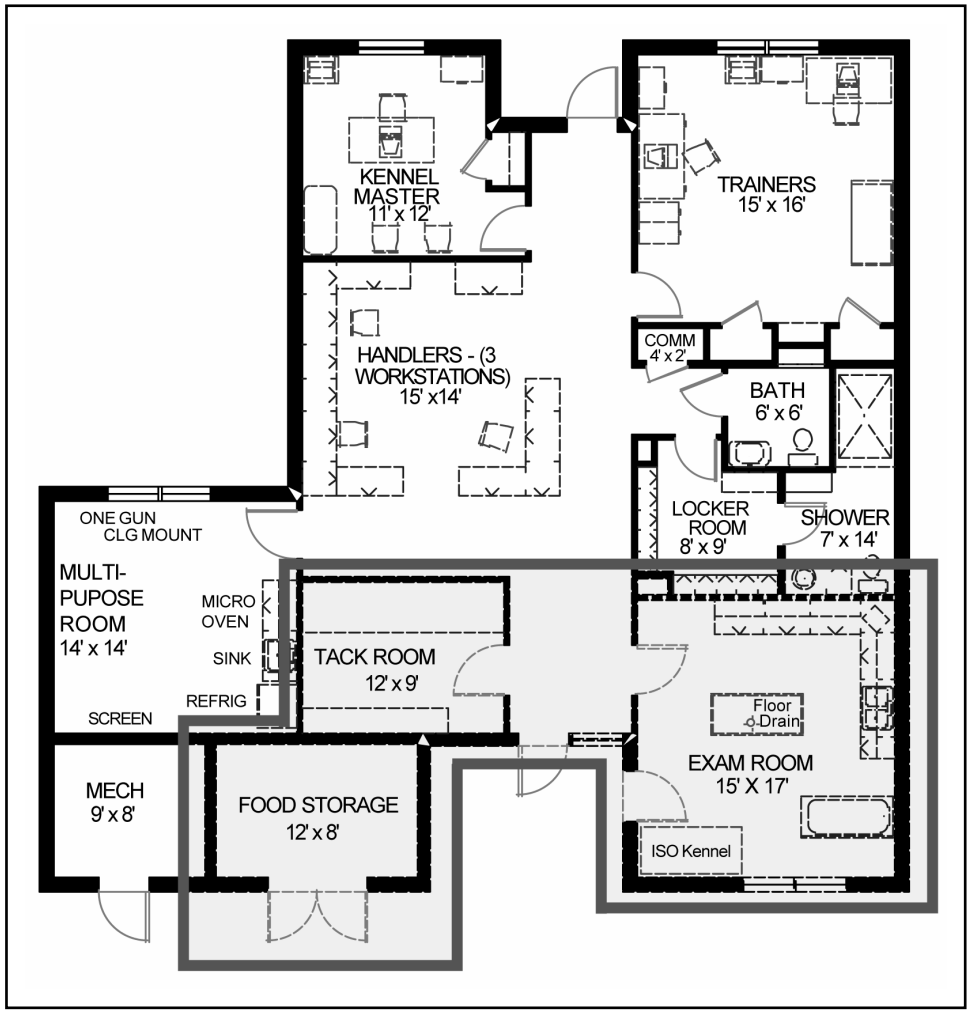


Figure B-6. Kennel Special-Use Areas

Tack Room (108 Square Feet)

B-27. The tack room is for the storage of extra MWD equipment, such as bite suits and portable kennels. The tack room is located near the entrance to the kennels but not the main building entrance. Requirements include 12 linear feet of shelves that are 18-inches wide and 36 inches deep and allow for 36 inches above each shelf; a 24-inch space with hooks to hang items on; and 6 linear feet of shelves that are 18 inches wide and 12 inches deep and allow for 18 inches above each shelf.

Food Storage Room (96 Square Feet)

B-28. The food storage room is normally for the bulk storage of a 30-day supply of food for the MWDs. The room is adjacent to the kennels with an exterior entry. The entry is a pair of 36-inch doors to allow for palletized food delivery and storage. Doors require weather stripping and thresholds to aid in insect and rodent control. Temperature and humidity control equivalent to the office area is required to control food spoilage. A minimum separation of 2 inches is required between the walls and the stored food to allow for air circulation. Shelving should be installed to meet local delivery operations.

SUPPORT AREAS

B-29. The support areas (*Figure B-7*) provide space for the common-use areas of the building. Areas for the multipurpose room, latrines, communications, and mechanical necessities form the core of the support areas. Support areas should be centrally located and easily accessible for building occupants or maintenance personnel in the case of the mechanical room.

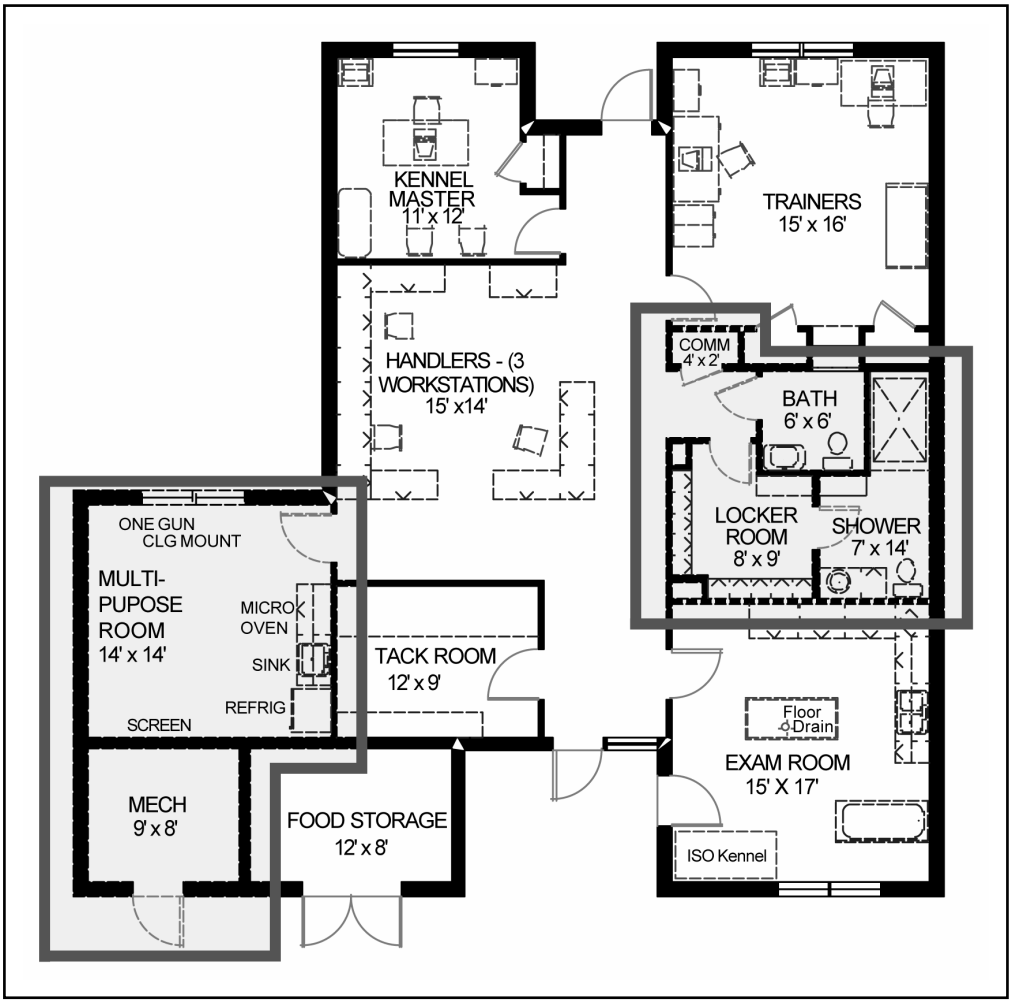


Figure B-7. Kennel Support Areas

Latrine, Shower, and Lockers (206 Square Feet)

B-30. A unisex area is divided into three rooms for the latrine, shower, and lockers. One room is a handicapped accessible latrine with a water closet and lavatory for general use. The locker room includes 10 full-height metal lockers and a bench for MWD handlers' use. The shower room includes a shower, bench, water closet, and lavatory. Do not neglect to include other accessories such as mirrors, soap dispensers, paper towel dispensers, disposal units, grab bars, and hooks.

Heating, Ventilation, Air Conditioning, Mechanical, Electrical, and Communications Systems

B-31. Heating, ventilation, and air conditioning (HVAC) is a process to add hot or cold air in a facility. It also introduces fresh air in to the facility to maintain indoor air quality and eliminate sick building syndrome. Design HVAC systems to optimize energy use and meet the design criteria for the area in which you are located. Place the hot water heater in the mechanical room and with a capacity that will meet the

demands of the latrine and shower; multipurpose room; and veterinary treatment room. Locate electrical panels in this area as well. Although a recommended size is shown on the plans, the room should be big enough to support the equipment required for the location.

B-32. While the number of instruments and computers is not large, the communications closet is vital to the success of the organization. Provide a minimum of one prewired telephone and LAN outlet for each workstation, one in each common area, and one in the kennel food preparation area. Include telephone and LAN outlets for fax machines and printers. Conceal conduit in the walls.

Multipurpose Room (196 Square Feet)

B-33. The multipurpose room serves as a combination conference room, classroom, and break room. Food preparation requirements are a light, a countertop, and base and upper wall cabinets for storage. Lighting should have a variable-level control for use as a conference room and/or classroom. Furnishings include either a conference table for fifteen or three five-person tables; chairs; a bulletin board; and a 4- by 8-foot dry erase board. Equipment includes a video projection system, a projector screen, a sink, a microwave oven, and a refrigerator.

KENNEL AREA

B-34. The kennel area provides the daily living environment for the MWDs, giving each MWD a private place for eating and resting. Kennel areas should be built to accommodate large-breed dogs and designed as modular structures to allow for the future expansion of runs.

B-35. There are three types of kennel areas; indoor kennels, outdoor kennels, and indoor/outdoor kennels. The preferred standard is the combination indoor/outdoor kennel; however, there are factors that must be taken into consideration when selecting the kennel type. Cost is always a consideration, but climate also influences the selection. In cold weather climates, the benefit-to-cost ratio will drive the selection to an indoor kennel while the opposite is true for hot weather climates. The more temperate the climate the more suited the indoor/outdoor kennel is for use. Each type of kennel includes the same space requirements. A kennel includes kennel runs with doghouses, a food preparation area, a storage area, and a mechanical room.

B-36. The kennel should be separated from the administrative building by a minimum of 20 feet. This provides separation between different functions and aids in noise control. As a result of the constant interaction between the two facilities, a covered walkway is required to connect the facilities and provide protection from the elements. Care should be taken in the layout of the kennel in relation to the administrative building; a one-way system should be maintained in the movement of MWDs. The objective is to avoid situations where MWDs meet face to face and to prevent confrontations. Consider installing mirrors at corners, intersections, and blind spots to alert handlers of potential wrong-way traffic.

B-37. All entries and exits from the kennel area are required to be self-closing and self-latching. Doors exiting the kennel runs should open inward to aid in preventing MWD escape. Proper ventilation is important in the kennels to prevent the spread of diseases and to control odors. It is recommended that the ventilation standard be to cycle out the room air 10 to 15 times per hour. Kennel temperature should range from 45° to 85° Fahrenheit with humidity in the range of 40 percent to 70 percent. Temperature should be maintained within 10° of the exterior temperature. MWDs work more effectively and are more alert when the kennel temperature is close to the temperature of their working environment.

B-38. Potable water is required at the kennels. Hot and cold water lines are installed at ceiling level down the length of the 5-foot wide center corridor connecting to hose reels at each end of the corridor. A high-pressure washer is required to assist in sanitizing and cleaning kennel runs.

B-39. Since the kennel is basically a wet environment, all electrical receptacles should be provided with ground fault circuit interrupters and all-weather covers. Receptacles mounted at 48 inches above the finished floor are required at each end of the central corridor.

B-40. Each kennel run should have a waterproof light fixture that has an individual switch at the corridor entrance. Other areas require general-purpose lighting according to industry standards. All drain lines in

the kennel should be a minimum of 6 inches in diameter and be designed to sustain flow velocities that will maintain a self-cleansing action. Due to the nature of the waste, cleanouts should be numerous and easily accessible. Floor drains should be included in the central corridor to aid in the cleaning of kennels.

Indoor/Outdoor Kennel

B-41. A combination indoor/outdoor kennel (*Figure B-8*, page B-12) simply implies that there is an interior run and an exterior run linked with each MWD living area. A guillotine type door will connect the interior run and the exterior run. Other door types may be used, but the idea is to permit isolation of the MWD during cleaning operations. Ideally, operation of the door is from the central corridor and from the outside of the exterior run. At 6 feet above the finished floor, use translucent wall panels in the wall separating the runs to provide natural light inside the kennel.

B-42. The roof should extend over the exterior runs and include gutters and/or downspouts to prevent excessive water in the runs. Exterior framing should be enclosed with a soffit to prevent birds from roosting. Exterior water faucets (with freeze protection where required) with both hot and cold water are required at each corner of the building. These are necessary for cleaning exterior runs. Floor drains (*Figure B-9*, page B-12) should be located in the corner of each run adjacent to the common wall separating exterior and interior runs. Drains should tie-in to a common waste line. Drain covers should be flush with the floor. Kennel floors should slope (at least 1/4- inch per foot) toward the drains to allow for quick water drainage and drying.

Indoor or Outdoor Kennel

B-43. The plan for the indoor or outdoor kennel (*Figure B-10*, page B-13) is the same for either style. The obvious difference is the wall that encloses the kennels. For indoor kennels, the exterior walls along the runs should have windows beginning at 6 feet above the finished floor to allow for natural light. Windows should be operable and hinged at the sill to tilt inward to prevent the escape of MWDs. For outdoor kennels, the exterior wall is simply an 8-foot chain-link fence. Water faucets with hot and cold water are required at each corner of the building. These are required to clean the gutter and drain system (*Figure B-11*, page B-13) for the kennel. A gutter and drainage system is provided at the back of the kennel run for either type of kennel for sluicing wastewaters from cleaning operations. Kennel run floors should slope to the gutter and the gutter should slope to the drain. Gutters should be sufficient to allow for easy cleaning. A minimum of 3 feet should be allowed between the end of the kennel and the wall or fence.

Kennel Run

B-44. Runs should be arranged so that openings are staggered in order to avoid MWDs facing each other across the corridor. Full-height partitions are required between runs for all kennel types. The first 6 feet of wall above the floor should be sealed concrete. For interior runs, steel clad acoustical panels should be considered from the top of the concrete partition to the ceiling. Steel clad acoustical ceiling panels should also be considered above the kennels.

B-45. Heavy-gauge chain-link fence is used for exterior runs and is also an option for interior runs. Because of the noise generated in the enclosed area of an interior run, it is important that noise-reducing materials be introduced to prevent stress to the MWD and hearing loss to personnel.

B-46. As a minimum, end walls should be full-height, galvanized chain-link fencing. Take care to prevent sharp edges from bolts, hinges, and tie wires on the interior of the runs where MWDs may be cut or harmed. Self-latching entry gates should swing 180° and be able to cover the opening of the MWD house. This allows the MWD to be penned in the house during run-cleaning operations. A stainless steel water bucket is required for each kennel, including a holder that prevents the MWD from overturning the bucket.

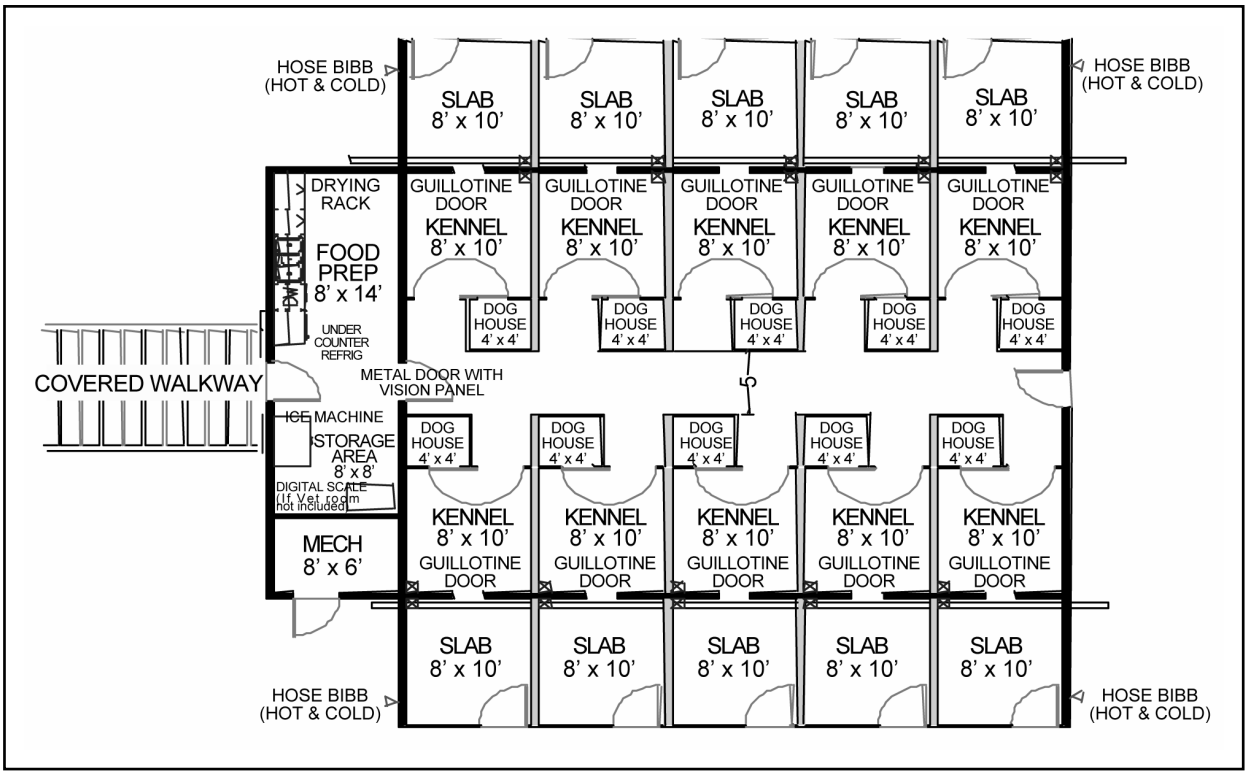


Figure B-8. Combination Indoor/Outdoor Kennel

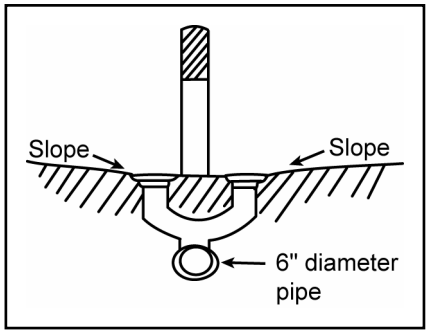


Figure B-9. Example of a Combination Indoor/Outdoor Kennel Floor Drain

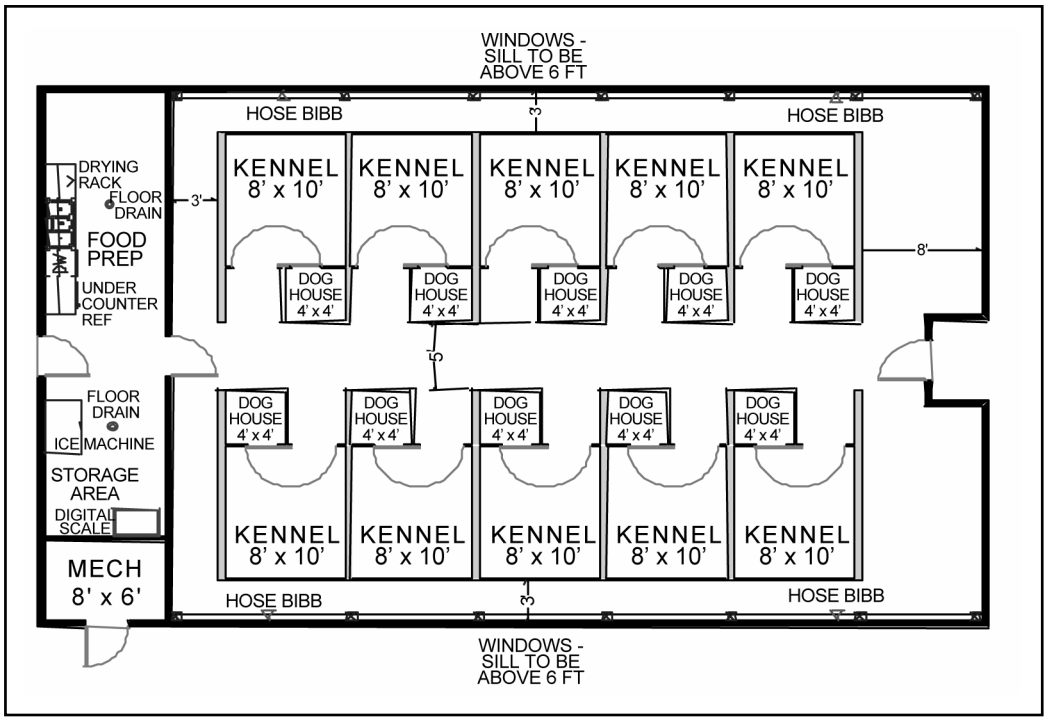


Figure B-10. Indoor or Outdoor Kennel

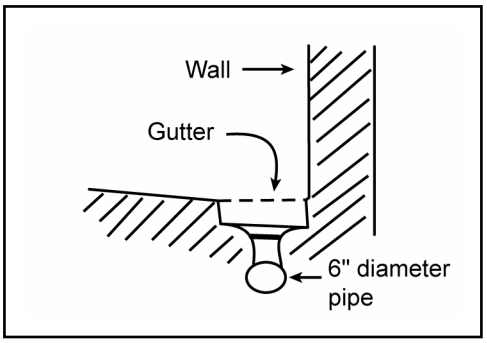


Figure B-11. Example of an Indoor or Outdoor Kennel Floor Drain

B-47. Flooring should be concrete and slope toward floor drains and/or gutters to provide rapid runoff of water and drying. Since runs are subject to frequent wash downs to clean and prevent disease, a smooth epoxy-type finish is needed. Temperature-controlled floors should be emplaced for locations that have inclement weather.

B-48. All materials in areas accessible to MWDs should be resistant to damage by scratching, biting, and chewing. Materials should be durable and easy to sanitize. Avoid using material such as angle iron that rusts over a period of time and generates sharp edges that pose a danger to MWDs.

B-49. MWD houses are 4 feet by 4 feet by 4 feet sealed, concrete boxes with a metal top. Tops should hinge toward the end wall in order to be raised to clean the house or treat an MWD. Once lifted, a holding device should be available to keep the top open. Wall opening dimensions are shown in *Figure B-12*, page B-14. The house should be a minimum of 8 inches and a maximum of 12 inches above the run floor. The house floor should have positive drainage toward the wall opening.

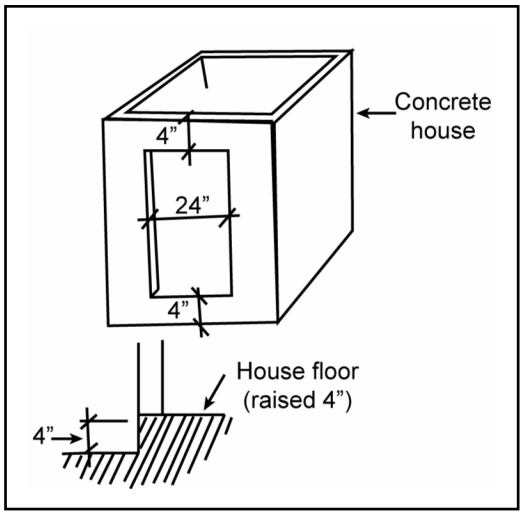


Figure B-12. MWD House

Storage and Mechanical Area

B-50. Additional storage for the kennel is provided. A commercial quality ice machine is required to aid in cooling down MWDs. Include a floor drain for the area. If a veterinary treatment room is not included, a digital scale should be located in this area. Design mechanical systems to optimize energy use and meet the design criteria for the area where the kennel is located. Include the hot water heater in the mechanical room and with a capacity to meet the demands of the kennel. Allow for the location of electrical panels in this area as well.

Food Preparation Room (112 Square Feet)

B-51. The food preparation area is where feedings are prepared and feeding pans/bowls are stored and cleaned. Food preparation for MWDs requires a large countertop with a deep, three-compartment stainless steel sink. Upper wall cabinets are required for general storage. An under the counter refrigerator, a dishwasher, and space to store food for daily use are necessary for operation. A 2-foot space at the end of the counter should accommodate a storing and drying rack for pans and bowls. Lighting and receptacles and a floor drain should be installed per the code. A telephone, bulletin board, feeding chart, and large garbage can should also be provided. Optional equipment includes a garbage disposal unit and a stackable washer and dryer.

Appendix C

Inspection Memorandum

This appendix provides a sample memorandum (see *Table C-1*, page C-2) for documenting the results of inspections. Commanders and program managers will find this useful in preparing for inspections. KMs, plans NCOs, and handlers will find this list helpful in conducting daily duties and adhering to requirements for inspections. Maintain completed memorandum records on file to assist in future inspections.

Table C-1. Sample Inspection Memorandum

DEPARTMENT OF THE ARMY
UNIT
ADDRESS OF UNIT

OFFICE SYMBOL 15 May 2004

MEMORANDUM FOR RECORD

SUBJECT: MACOM Technical Assistance Visit or Provost Marshal Inspection

1. SECTION I. GENERAL INFORMATION.

UNIT: 529th Military Police Company LOCATION: Kaiserslautern
DATE: 3-14-05 TIME: 0900

INSPECTOR (S): LTC Jeffery S. Captain ESCORT: SFC James Majors

TYPE OF VISIT: ___X___ ANNOUNCED_____UNANNOUNCED

TYPE	AUTHORIZED	ON HAND
Patrol		
Patrol Explosive	6	4
Patrol Narcotic	3	2
Explosive Detector	0	0
Narcotic Detector	0	0

2. SECTION II. PERSONNEL.		**YES**	**N/A**	**NO**
a)	Are all authorized MWDs on hand (unit TDA/MTOE document)?	____	____	____
b)	Are all MWD handlers certified by the DoD Dog Center?	____	____	____
c)	Are ASI trained handlers being used as specified in AR 614-200?	____	____	____
d)	Is the assignment policy of one dog and one handler being followed?	____	____	____
e)	Are all MWDs assigned to a handler?	____	____	____
f)	Has an excess of dogs been reported to the MACOM?	____	____	____
g)	Does the KM meet the minimum criteria to be appointed as a KM?	____	____	____
h)	Are handlers being assigned duties that take away from their handling responsibilities (excluding PT, staff duty, field duty, and unit training)?	____	____	____

3. RESPONSIBILITIES OF THE PROVOST MARSHAL AND COMMANDER.

a)	Is there an updated SOP signed by the PM explaining policies, procedures, and responsibilities for the direction, management, and control of the kennels?	____	____	____
b)	Has the PM initiated an MWD program based on the evaluation of the installation support, customs, HRP support, and combat support missions?	____	____	____

Sample

Table C-1. Sample Inspection Memorandum (Continued)

OFFICE SYMBOL SUBJECT: MACOM Technical Assistance Visit or Provost Marshal Inspection	YES	N/A	NO
c) Has the PM issued written guidelines governing the release of an MWD to apprehend a suspect?	____	____	____
d) Are there specific criteria in contingency plans governing the use of dog teams during civil disturbance situations?	____	____	____
e) Does the PM provide guidance on procedures for explosive detector dog support to civil authorities?	____	____	____
f) Is the proficiency of each MWD team evaluated periodically by the PM?	____	____	____
g) Has the PM and/or unit commander checked one or more of these areas monthly: kennels, kennel support building, training and exercise areas, equipment, handlers, dogs, training, utilization and team proficiency?	____	____	____
h) Has the PM and/or unit commander inspected all areas of the MWD kennels quarterly, and is a written record on file?	____	____	____
i) Are MWD requisitions submitted according to *AR 190-12* and *AR 700-81*?	____	____	____
j) Are MWDs placed on the unit property book by NSN, name, and tattoo number?	____	____	____
k) Are MWDs assigned to the KM on a *DA Form 3161* (*Request for Issue or Turn-In)* hand receipt (according to *DA Pam 710-2-1*)?	____	____	____
4. VCO RESPONSIBILITIES.			
a) Are the dogs examined by the VCO every six months (according to *AR 40-905*)?	____	____	____
b) Does the VCO inspect the kennel facility and area for proper sanitary standards on a quarterly basis?	____	____	____
c) Is the issued dog food and diet checked periodically?	____	____	____
d) Is there a program in effect for insect and rodent inspection?	____	____	____
e) Does the VCO concur with the kennel standards/facilities?	____	____	____
If not what course of action has been taken? _____			
f) Does the VCO provide regular training to handlers on MWD health care, feeding, and first aid?	____	____	____
g) Does the VCO provide a list to the KM concerning the deployable status of all MWD?	____	____	____
h) Does the VCO issue health certificates for dogs pending shipment?	____	____	____

Sample

Table C-1. Sample Inspection Memorandum (Continued)

OFFICE SYMBOL SUBJECT: MACOM Technical Assistance Visit or Provost Marshal Inspection	YES	N/A	NO
5. WARNING SIGNS.			
a) Are there warning signs with the following words posted at each instillation entrance, "**CAUTION—THIS AREA PATROLLED BY MILITARY WORKING DOGS**?"	____	____	____
b) Are kennels located away from disturbing influences and adequately posted with "**DANGER—OFF LIMITS—MILITARY DOG AREA**?"	____	____	____
c) Are the shipping crates stenciled with "**CAUTION—MILITARY WORKING DOG—DO NOT TAMPER WITH ANIMAL**?**"**	____	____	____
d) Are shipping crates stenciled with "**LIVE ANIMAL**?**"**	____	____	____
e) Are removable or permanent markings placed on the sides and rear of vehicles with the following phrase "**CAUTION—MILITARY WORKING DOGS**?"	____	____	____
6. KENNEL AREA.			
a) Has a risk analysis been conducted on the kennels?	____	____	____
b) Is the kennel manned both day and night?	____	____	____
c) Does the kennel have an IDS/CCTV system if not manned both day and night?	____	____	____
d) Are approved locks and padlocks used to secure government equipment?	____	____	____
e) Have primary and alternate key custodians been appointed, in writing, by the PM or commander?	____	____	____
f) Are personnel authorized to issue and receive keys listed on an access roster?	____	____	____
g) Are all keys controlled and accounted for on a *DA Form 5513-R* (*Key Control Register and Inventory)?*	____	____	____
h) Is the *DA Form 5513-R* secured in an approved, lockable container?	____	____	____
i) Is the key depository box permanently affixed to a wall?	____	____	____
j) Are keys inventoried semiannually, and is the last report on file?	____	____	____
k) Are all keys inscribed with a serial number?	____	____	____
l) Are kennels used to house or care for other animals?	____	____	____

Sample

Table C-1. Sample Inspection Memorandum (Continued)

OFFICE SYMBOL SUBJECT: MACOM Technical Assistance Visit or Provost Marshal Inspection	YES	N/A	NO
m) Are adequate training areas adjacent to the kennel areas?	____	____	____
1) Is the training area fence 8 feet high?	____	____	____
2) Does the overhanging fence face inward?	____	____	____
3) Is the fence staked to the ground?	____	____	____
n) Does the kennel area have an adequate water supply?	____	____	____
o) Are the kennels of a standard design?	____	____	____
7. EQUIPMENT.			
a) Is all authorized equipment on hand?	____	____	____
b) Are Air Force shipping crates returned within 10 days after receiving a new or replacement MWD?	____	____	____
c) Is there one shipping crate available for each dog authorized?	____	____	____
d) Is leather equipment properly maintained and cleaned?	____	____	____
e) Is all metal equipment free of rust?	____	____	____
f) Is the web equipment cleaned with proper cleaning material to prevent deterioration?	____	____	____
g) Are there adequate medical supplies on hand for first aid treatment and training?	____	____	____
8. USE OF MWDs.			
a) Are the dog teams being employed a minimum of 24 hours per week?	____	____	____
b) Are PDs employed in all areas of the installation during both day and night?	____	____	____
9. NARCOTICS.			
a) Is the MWD section registered with the Drug Enforcement Administration?	____	____	____
b) Is a *DEA 223 (Controlled Substance Registration Certificate)* on file and current?	____	____	____
c) Have all personnel been designated, in writing, by the PM to handle training aids?	____	____	____
d) Has primary and alternate narcotic training aid custodians been appointed, in writing, by the PM?	____	____	____

Sample

Table C-1. Sample Inspection Memorandum (Continued)

OFFICE SYMBOL SUBJECT: MACOM Technical Assistance Visit or Provost Marshal Inspection	YES	N/A	NO
e) Have primary and alternate narcotic custodians been cleared by a favorable Crime Records Center name check?	____	____	____
f) Is the Crime Records Center name check maintained on file?	____	____	____
g) Have all personnel authorized to handle or use training aids been briefed at least annually?	____	____	____
h) Is a written record of the briefing being maintained on file?	____	____	____
i) Are the monthly/quarterly inventories being conducted by a disinterested E7 or above?	____	____	____
j) Are the monthly/quarterly inventories being maintained with the controlled substances?	____	____	____
k) Are the monthly/quarterly inventories being maintained for at least two years?	____	____	____
l) Are joint inventories being conducted on the change of primary or alternate custodians and is the inventory maintained on file?	____	____	____
m) Is a daily issue/return green logbook on hand?	____	____	____
n) Is the property book properly maintained to account for all authorized explosive training aids?	____	____	____
o) Is an *SF 702 (Security Container Check Sheet)* posted on the safe?	____	____	____
p) Are *SFs 702* maintained for 30 days?	____	____	____
q) Is a controlled-substance accountability folder on hand?	____	____	____
r) Is the controlled-substance accountability folder properly maintained?	____	____	____
10. EXPLOSIVES.			
a) Have primary and alternate explosive custodians been appointed, in writing, by the PM?	____	____	____
b) Have primary and alternate custodians been cleared by a favorable Crime Records Center name check?	____	____	____
c) Are records of the Crime Records Center checks on file?	____	____	____
d) Are all personnel authorized to receive and handle explosive training aids designated, in writing, by PM?	____	____	____
e) Is annual explosive safety training being conducted by EOD personnel or other qualified personnel?	____	____	____

Sample

Table C-1. Sample Inspection Memorandum (Continued)

OFFICE SYMBOL SUBJECT: MACOM Technical Assistance Visit or Provost Marshal Inspection	YES	N/A	NO
f) Is a written record of the safety training being maintained on file for a minimum of two years?	____	____	____
g) Is there an SOP that outlines safety procedures in training areas, transportation of explosives, severe weather conditions, and accidents?	____	____	____
h) Are the monthly/quarterly inventories being conducted by a disinterested E7 or above?	____	____	____
i) Are the monthly/quarterly inventories maintained on file for at least two years?	____	____	____
j) Are all required explosive training aids available to ensure that proficiency standards are met?	____	____	____
k) Are chlorates being replaced quarterly?	____	____	____
l) Is each type of explosive being stored in a separate vapor proof container?	____	____	____
m) Is each vapor proof container properly marked?	____	____	____
n) Has the vehicle that is used to transport explosive training aids been approved by safety personnel?	____	____	____
o) Does the installation have an explosive detector training plan that has been approved by the installation commander which lists buildings and facilities authorized for training the PEDD teams?	____	____	____
p) Is a daily issue/return green logbook on hand?	____	____	____
q) Is the logbook properly maintained to account for all authorized explosive training aids?	____	____	____
r) Is a *DA Form 7281-R (Command Oriented Arms, Ammunition, & Explosives Security Screening and Evaluation Record)* on hand for each handler that is authorized to handle or receive explosive training aids?	____	____	____
11. TRAINING.			
a) Does the KM (or handlers) give training to military police on MWD team functions and operational considerations?	____	____	____
b) Are the MWDs receiving a minimum of 4 hours of patrol and 4 hours of narcotic/explosives proficiency training each week?	____	____	____
c) Have all certified narcotic/explosive detector teams received quarterly validation testing by the KM?	____	____	____
d) Is the minimum proficiency standard for assigned patrol/narcotic detector dogs 90 percent and patrol/explosive detector dogs 95 percent?	____	____	____
e) Was the dog decertified when his proficiency standard was less than 90 percent and less than 95 percent for more than three consecutive months?	____	____	____

Sample

Table C-1. Sample Inspection Memorandum (Continued)

OFFICE SYMBOL
SUBJECT: MACOM Technical Assistance Visit or Provost Marshal Inspection

	YES	N/A	NO
12. RECORDS.			
a) Is the handler's information being recorded on the back of *DD Form 1834*?	____	____	____
b) Have all *DA Forms 2807-R* been completed properly?	____	____	____
c) Have all deficiencies for the MWDs been annotated and explained on DA Forms 2807-R?	____	____	____
d) Is a *DA 3992-R* being maintained to record the MWD's reliability?	____	____	____
e) Does each MWD team have a probable cause folder?	____	____	____

13. THE RESULTS OF THIS INSPECTION ARE—

____ EXCELLENT

____ SATISFACTORY

____ UNSATISFACTORY

Sample

14. REMARKS. All areas noted with a deficiency will be annotated in the remarks section. A copy of this technical assistance visit will be provided to OPMG, the MACOM program manager, and the KM. All records of technical assistance visits will be maintained on file at the installation for a minimum of two years after the inspection date with the corrective action memorandum.

15. POINT OF CONTACT. The point of contact for this action is the undersigned at COMM: 555-555-1511 or e-mail address.

(Original Signed)
JEFFREY S. CAPTAIN
LTC, USA
MACOM PM

Appendix D
Training Records

This appendix provides samples and details of how to properly use MWD training records. Records must be maintained for the life of the MWD. At least one year of historical documents must be maintained on file at each kennel for every MWD. Records can be discarded two years after the death, adoption, or euthanasia of the MWD. Nearly all MWDs have a dual purpose (PD and PEDD or PNDD); therefore, every MWD should have a PD and a PEDD/PNDD form on file. Kennels that have internet access can obtain records via the Military Working Dog Management System (MWDMS).

DEPARTMENT OF THE ARMY *FORM 2807-R*

D-1. *DA Form 2807-R (Military Working Dog Training and Utilization Record)* (*Figure D-1,* page D-3) is a standard form used by all MWD personnel. It is used to record the training and utilization of PDs. Use the following instructions when preparing a *DA Form 2807-R*:

ADMINISTRATIVE DATA

D-2. Enter the following information in the appropriate blocks:

- The date.
- The MWD's name and type, tattoo number, and age.
- The handler's name and grade.
- The organization and the location.

TRAINING

D-3. The training section of the form provides complete information on all of the training tasks that must be accomplished for a PD to maintain proficiency. It is not necessary to train on all of the controlled-aggression tasks during the same day; however, all of the controlled-aggression tasks must be trained every week.

D-4. Entries for the amount of time spent training on specific tasks during a particular day of the month are made in minutes. The monthly total for each specific task will be in hours and will be automatically entered in the far right-hand column titled "Total Hours." The handler's or trainer's evaluation of the MWD's daily rating is entered as S or U. Remarks are mandatory for any area the MWD fails to perform to standard. These remarks will be annotated on the reverse side of the form using the following format:

- Deficiency (DF). The MWD's shortcoming.
- Corrective action (CA). The handler's response to the MWD's deficiency.
- Corrective response (CR). The MWD's response to the CA.

D-5. Enter the appropriate information on—

- **Line 1.** Record the number of minutes per day that the MWD is trained on obedience on leash.
- **Line 2.** Record the number of minutes per day that the MWD is trained on obedience off leash.
- **Line 3.** Record the number of minutes per day that the MWD is trained on the obedience course.

- **Line 4.** Record the daily rating of the MWD on controlled aggression (either S or U). Write an explanation of any U rating on the reverse side of the form. In 4a to 4e, record the number of minutes per day that the MWD trained on each controlled-aggression task.
- **Line 5.** Record the number of minutes per day that the MWD trained on building searches on line 5.
- **Line 6.** Record the number of minutes per day that the MWD trained on gunfire with the handler firing the weapon. The number of rounds will be annotated on the reverse side of the form.
- **Line 7.** Record the number of minutes per day that the MWD is trained on gunfire with a third party firing a weapon. The number of rounds will be annotated on the reverse side of the form.
- **Line 8.** Record the number of minutes per day that the MWD is trained on scouting/patrolling. Record the distance (in feet) for scent, sight, and sound detection on lines 8a, b, or c.
- **Line 9.** Record the number of minutes per day that the MWD is trained on vehicle patrol.
- **Line 10.** Record the number of minutes per day that the MWD is trained on tracking.
- **Line 11.** Record the daily training rating (S or U). Explain deficiencies on the reveres side of the form. Any failure of a critical task requires a U daily training rating. See *DA Pam 190-12* for critical tasks.

UTILIZATION

D-6. The utilization section of the form provides a daily record of the time spent performing military police duties in the three general categories of combat support operations, patrol–law enforcement, and patrol–security.

D-7. The combat support operations category may be used to record time spent performing military police missions (actual or training) in support of combat units. Such operations include field training exercises, CP exercises, mobilization exercises, and other activities related to the tactical and strategic missions of the Army, provided that these missions are accomplished with a handler and an MWD together as a certified team.

D-8. The patrol–law enforcement category may be used to record time spent performing law enforcement or force protection type missions. These missions include but are not limited to—

- Random vehicle searches.
- Law enforcement patrols.
- Other duties performed while working in a law enforcement type mission.

D-9. The patrol–security category may be used to record time spent performing security type missions such as—

- Dignitary security.
- Critical asset patrolling in a peacetime environment.
- USSS, Department of State, or other explosive type searches.

D-10. The daily rating of the MWD's performance on military police duties is recorded as S or U. All U performance annotations will have an explanation for the DF and have the CA taken recorded on the reverse side of the form and continuation sheets, if necessary. The total monthly utilization hours are recorded in the last column, titled "Total Hours."

D-11. When training is conducted during the actual use and employment of an MWD, the time used for training may also be reported in the training section. This training is not an automatic entry every time the team has utilization hours. Time annotated as training during utilization hours will be actual time training on patrol or detector tasks. It is unethical to count all or even half of an MWD team's utilization hours as both utilization and training time for every shift, and unrealistic numbers will not be accepted. When time is recorded as utilization and training, a notation is made on the reverse side of the form explaining the double time entry and the type of training conducted. This will make it possible to differentiate between training time, training time while on duty, and duty (utilization) time. Although additional training during utilization hours is acceptable, it will not be accepted as the primary amount of mandatory training hours each week.

MILITARY WORKING DOG TRAINING AND UTILIZATION RECORD

For use of this form, see AR 190-12; proponent agency is ODCSOPS

MONTH AND YEAR: SEP 2003

NAME/TYPE OF DOG	TATTOO/NUMBER	AGE	NAME OF HANDLER	GRADE	ORGANIZATION AND LOCATION
NATZ/PEDD	E309	2	BOOKSTEIN, DAVID B.	SGT	HHC 98TH ASG, BAMBERG, GE

DAILY RATINGS: S - SATISFACTORY, U - UNSATISFACTORY (Explain deficiency and corrective action on reverse)

(Use reverse side of this form for any remarks or notes)

TRAINING	DAY OF MONTH																													TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	HOURS
1. ON LEASH OBEDIENCE	15	15	15	15	30		30	40	10	15			20	15		15	20	30	15		15	15	15	15					15	15		6.50
2. OFF LEASH OBEDIENCE	20	20	15	15	40		30	40	10	15			20	30		15	30	30	15		15	20	20	20					15	15		7.50
3. OBEDIENCE COURSE					20		20			15																						0.92
4. CONTROLLED AGGRESSION (S OR U)		S	S						S	S			S	S																		
a. FALSE RUN		5	5						15	5			5	5																		0.67
b. ATTACK		10	10						20	10			10	10																		1.17
c. SEARCH AND ATTACK		5	5						15	10			10	10																		0.92
d. STAND OFF		10	15						20	5			10	10																		1.17
e. ESCORT		5	5						15	5			5	5																		0.67
5. BUILDING SEARCH		15							15											20												0.83
6. GUNFIRE - HANDLER									10																							0.17
7. GUNFIRE - DECOY/AGITATOR					10														30													0.67
8. SCOUTING/PATROLLING (TIME)					15																			15					15			0.75
a. SCENT DETECTION (DISTANCE)					40																			30					30			
b. SIGHT DETECTION (DISTANCE)																																
c. SOUND DETECTION (DISTANCE)																																
9. VEHICLE PATROL																																0.00
10. TRACKING																																0.00
11. DAILY TRAINING RATING (S OR U)	S	S	S	S	S		S	S	S	S						S	S	S	S		S	S	S	S					S	S		21.92

UTILIZATION	HOURS PER DAY																													TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	HOURS
1. COMBAT SUPPORT OPERATIONS																																0
2. PATROL - LAW ENFORCEMENT	8	8	8	8	8			8	8	8			8	8	8	8				8	8	8	8						8	8		144
3. PATROL - SECURITY																																0
4. DAILY UTILIZATION RATING (S OR U)	S	S	S	S	S			S	S	S			S	S	S	S				S	S	S	S						S	S		144.0

DAILY FEEDING	QUANTITY OF FOOD (BY WEIGHT)																														WT OF DOG	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	DATE	LBS
2 CU S/D	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	1ST	75
2 CU S/D	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	15TH	73.5

DA FORM 2807-R, Oct 84 EDITION DEC 72 IS OBSOLETE, AND REPLACES DA FORMS 2810-R AND 2815-R, DEC 72

Sample

Figure D-1. Sample DA Form 2807-R

DA Form 2807-R
Continuation Sheet

DATE	REMARKS
2-Sep-03	**DF1:** MWD WAS DISTRACTED BY OTHER HANDLER; WOULD NOT FOCUS ON COMMANDS. **CA1:** CONDUCTED PROPER AVOIDANCE TRAINING TECHNIQUE. **CR1:** AFTER MWD DID NOT RESPOND TO INITIAL AVOIDANCE TRAINING TECHNIQUE, A PINCH COLLAR WAS USED, RESULTING IN REGAINED FOCUS. **DF2:** MWD BIT SLEEVE ON STAND OFF. **CA2:** CONDUCTED PROPER AVOIDANCE TRAINING TECHNIQUE. **CR2:** MWD PERFORMED STAND OFF CORRECTLY.
5-Sep-03	GUNFIRE TRAINING: 5 ROUNDS FIRED BY THIRD PARTY. **DF1:** MWD REPEATEDLY BROKE POSITION (SIT TO DOWN AND DOWN TO SIT). **CA1:** CONDUCTED PROPER AVOIDANCE TRAINING TECHNIQUE. **CR1:** MWD REMAINED IN POSITION. **DF2:** MWD WAS HESITANT TO OUT REWARD (BITE SLEEVE). **CA2:** CONDUCTED PROPER AVOIDANCE TRAINING TECHNIQUE. **CR:** MWD OUTED REWARD ON COMMAND.
7-Sep-03	MWD HAS BEEN BREAKING POSITION AFTER SHORT TIME DURING OFF/L OB WHEN HANDLER IS POSITIONED AWAY FROM HIM. TODAY MWD REMAINED IN THE SIT FOR 1 MIN 50 SEC, BROKE SIT, WAS VERBALLY CORRECTED AND REMAINED IN SIT FOR AN ADDITIONAL 25 SEC. **DF:** MWD BROKE FROM DOWN SEVERAL TIMES DURING PARADE REST. **CA:** CONDUCTED PROPER AVOIDANCE TRAINING TECHNIQUE.
8-Sep-03	GUNFIRE TRAINING: 10 ROUNDS FIRED BY HANDLER. **CR:** AFTER MWD DID NOT RESPOND TO AVOIDANCE TRAINING, ESCAPE TRAINING WAS CONDUCTED. EVENTUALLY MWD REMAINED IN DOWN. MWD IS SO EXCITABLE THAT HE HAS A TENDENCY TO CUE OFF HANDLER'S MOVEMENTS TO BREAK FROM POSITION. HANDLER IS CONCENTRATING ON TEACHING MWD NOT TO BE SO DISTRACTED BY OUTSIDE STIMULUS. **DF1:** MWD WAS GETTING DISTRACTED AND NOT HEELING IN THE PROPER POSITION. **CA1:** CONDUCTED PROPER AVOIDANCE TRAINING TECHNIQUE (HEEL-A-WAYS). **CR1:** MWD HEELS CORRECTLY. **DF2:** MWD WAS BITING SLEEVE DURING STAND OFF.
11-Sep-03	**CA2:** CONDUCTED PROPER AVOIDANCE TRAINING TECHNIQUE. **CR2:** MWD PERFORMED STAND OFF CORRECTLY. NO TRAINING DUE TO MWD GOING TO VET. MWD HAS BEEN DIAGNOSED WITH A POSSIBLE PULLED/STRAINED MUSCLE IN HIS RIGHT LEG, WHICH HE IS FAVORING AS HE WALKS. X-RAYS SHOW NO BREAKS OR FRACTURES. MWD CANNOT DO ANYTHING STRENUOUS FOR THE NEXT WEEK (NO RUNNING OR JUMPING UNTIL 18 SEP) INCLUDING BITE WORK OR OB COURSE. MWD CAN DO BASIC OB STARTING TUES, SEP 16.
19-Sep-03	GUNFIRE TRAINING: 15 ROUNDS FIRED BY DECOY.

Sample

Figure D-1. Sample DA Form 2807-R (Continued)

D-12. Record the appropriate utilization information on—

- **Line 1.** Record the hours per day that the MWD is used for combat support operations.
- **Line 2.** Record the hours per day that the MWD is used for patrol–law enforcement.
- **Line 3.** Record the hours per day that the MWD is used for patrol–security.
- **Line 4.** Record the daily utilization rating (S or U). Explain any U on the reverse side of the form.

TOTAL HOURS

D-13. Record the total hours of training and use in the last column on the right side of the form. The time should be recorded in hours and minutes. The MWDMS makes this entry automatically.

DAILY FEEDING

D-14. Record the quantity of food that the MWD eats every day in this section. If the MWD is fed once daily, the type and amount of food will be noted in the first block to the left. Under quantity of food, the amount eaten for each feeding will be annotated as follows:

- "A" if all food was eaten.
- "3/4" if three-quarters was eaten.
- "1/2" if half was eaten.
- "1/4" if one-quarter was eaten.
- "0" if none of the food was eaten.

D-15. If the MWD is fed twice daily, the second block is used to record the second daily feeding (which could be a different type of food). If the MWD is fed once daily, the second block may be used to record a change in the diet of the MWD, directed by the veterinarian. Block 2 may also be used to indicate the type and amount of food used daily for MWDs on a food reward system. Monitoring MWD food consumption is a critical portion of the required daily health checks.

D-16. The last column, titled "Wt of Dog," is used to record a semimonthly weight for the MWD. The weight checks occur on or around the first and the fifteenth day of each month. There is sufficient room under the headings "Date" and "Lbs" to record both the date when the MWD is weighed and the weight in pounds. Any drastic changes in food consumption or weight gain or loss are reported to the veterinarian.

D-17. Enter the following information in the appropriate blocks:

- Enter the VCO's prescribed amount of food to be given daily directly under "Daily Feeding." Both blocks are used when an MWD is fed twice daily.
- Record the amount of food eaten per day, in the appropriate day's block under "Quantity of Food (by Weight)."
- Record the date and weight of the MWD in the respective blocks in the bottom right-hand corner.

REMARKS

D-18. The reverse side of *DA Form 2807-R* (*Figure D-1*) is used to annotate advanced techniques used during training and DFs with CAs and CRs listed. This section is very important for probable cause and shows the time line of events for training. Each day is listed with the action taken on that day. If no training is conducted due to company type training, the words "soldier development" are written on the line followed by the type of training conducted. "Soldier development" is only used when MWD handlers are conducting training in which the MWD is not needed or not taken. If no training is conducted due to leave, passes, or scheduled days off, no entry is needed; *DA Form 6 (Duty Roster)* can be used to verify these days.

DEPARTMENT OF THE ARMY *FORM 3992-R* (FIRST PAGE)

D-19. *DA Form 3992-R (Narcotics or Explosives Detector Dog Training and Utilization Record)* (*Figure D-2*, page D-9) is a standard form used by all MWD personnel. It is used to record the use and training of detector dogs. Use the following instructions when preparing a *DA Form 3992-R:*

ADMINISTRATIVE DATA

D-20. Enter the following information in the appropriate blocks:

- The date.
- The MWD's name and type, tattoo number, and age.
- The handler's name and grade.
- The organization and location.

TRAINING

D-21. The training section of the form is used for recording all training of the detector dog team in the particular detection skill. The detection areas of buildings, containers, and vehicles are listed. There is one blank space for detector training in other areas. Examples of other areas may include—

- Mail facilities.
- Open or wooded areas.
- Warehouses.
- Aircraft.
- Areas considered significant or unique to the command to which the MWD team is assigned.

D-22. Although some of the examples may be included under one of the three prelisted categories, the others should be listed separately. For areas covered under the three general headings, the handler or trainer annotates the specific location under the appropriate day in the remarks (for example, Smith High School, NCO Club, or Corps Auditorium).

D-23. The top line of each training category is divided diagonally into two blocks. The top of each block is used to record the number of training aids planted for that day's detector training. The bottom of each block is used for the number of training aids found by the proper response of the detector dog. If the MWD responds on the same training aid more than once in the same training scenario, it will not be counted as a find unless the number of plants is changed as well. At no time will there be more finds annotated than there are plants. Continually allowing the MWD to return to the last aid found creates false response problems in the MWD and should not be encouraged. It is the handler's responsibility to keep the MWD from returning to the scent cone of the last found training aid, whether the MWD is being worked on or off leash. Once the MWD has entered the scent cone, he must be allowed to work to the source and final respond. At no time will an MWD be yanked off an aid once he is working the scent cone.

D-24. The bottom line of each training category is used to record the search time. Search time is the amount of time devoted to detector training that day. Detector training is the time from the moment the handler enters a problem and commands the MWD to "Seek" until the MWD has completed the search of that training problem, excluding handler or MWD breaks. Add the daily time entries in each training category, and enter the results in the last column, titled "Total Hours."

D-25. Record the following information beside the appropriate training location (building, containers, vehicles, or other):

- **Plants/Finds.** Record the number of plants in the top half of the block and the number of finds in the lower half.
- **Search Time.** Record the amount of time devoted for detector training that day.
- **Training Total Hours.** Record the sum of hours performing detection missions in the far right

UTILIZATION

D-26. All operational detection missions are recorded in the utilization section. The detection missions are listed. Detection missions that are significantly different from these are listed separately to give an accurate record of the types of missions for which the detector dog team is used. There are two blocks under each day of the month for each utilization category. The top block is for recording the number of times the MWD detected a substance. The bottom block is for recording the total search or inspection time for the detection mission. The last column is the sum of the daily times. It gives a record of the total amount of time spent performing the detection missions for that month. The number of finds for the month can also be totaled and entered in the last column, above the time entry.

D-27. Record the following information beside the appropriate location (building, containers, vehicles, or other):

- **Finds.** Record the number of times the MWD finds the substance on a detection mission.
- **Search Time.** Record the total search time.

DETECTOR DOG SEARCH DATA

D-28. All relevant information about the productivity and success of each detection mission is recorded using the "Detector Dog Search Data" section. The location may be a building number, a unit designation, map grid coordinates, and/or any other information that helps identify where the detection mission was performed.

D-29. The MPR number is the number assigned to the case by military police to account for the custody and disposition of the substances found. The substance is the identification of the found material by a common name, such as heroin, marijuana, dynamite, or detonating cord.

D-30. Quantity is the measure of the amount of the substance found. Weight, volume, overall dimensions, length, or any other appropriate measure may be used.

D-31. The "Remarks" section may be used for adding any other relevant information about the substance found. This would include a field or laboratory verification of the type of substance, an EOD evaluation of an explosive device or explosive substance as live or inert, or the presence of other hazardous material in or around the substance found (such as razor blades, trip wires, or poisons). Record any information that may be useful in preparing the team for future searches or that may be applicable or useful to other detector dog teams.

D-32. Record the following information in the appropriate boxes:

- **Time.** Record the time the detector dog performed the mission.
- **Date.** Record the date the detector dog performed the mission.
- **Location.** Record the exact location of the detector mission (such as front gate, Fort Sill, Oklahoma; National Airport, Gabon, Africa; or building 442, Fort Bragg, North Carolina).
- **Military Police Report (MPR) Number.** Record the MPR number in this column, if applicable.
- **Substance.** Record the common name of the substance found, if applicable.
- **Quantity.** Record the quantity of the substance found, if applicable.
- **Remarks.** Use this column to record any other relevant information about the substance found (such as a positive response, no response, or a lab verification).

DETECTOR DOG PROFICIENCY (SECOND PAGE)

D-33. A correct response occurs when the MWD detects the substance and responds with the proper final response, and the training aid or substance is found in the general location where the MWD has responded. A not-at-source response is a training tool used to help an MWD team move closer to the source location of a training aid plant. The distance away from the source in order for a not-at-source response to be given is six to ten feet.

D-34. A missed response is when the MWD fails to detect and respond to the presence of a training aid with a final response. A handler miss or error is when—

- The handler fails to search or clear an area with the MWD and a training aid plant is missed.
- The handler fails to read an MWD's change of behavior and pulls the MWD away from the area where a training aid is planted and a training aid plant is missed.
- The handler presents an area but fails to ensure that the MWD is sniffing and a training aid plant is missed.

Handler misses or errors are considered missed explosives or narcotics and are counted against the find rate percentages of the MWD team.

D-35. False responses are noted in the second to last section of *DA Form 3992-R*. A false response is when the MWD responds as if he has detected a substance and the handler accepts that response, but no training aid or substance can be found within a reasonable distance of the MWD's final response.

D-36. The detector dog team's proficiency is computed monthly by adding the total number of correct responses ("a" for the month) and adding the total number of false/missed (MWD or handler) responses

("b" for the month). These two numbers are used in the following formula to obtain the detector dog team's proficiency rating:

$$\left(\frac{a}{a+b}\right)100 = proficiency$$

D-37. For example, during the month the detector dog team made 93 correct responses on training aids, the MWD team also had 4 false responses, 2 MWD and 1 handler missed responses for a total of 7 false/missed responses. Applying these two numbers (a=93 and b=7) to the formula, the following is obtained:

$$\left(\frac{93}{93+7}\right)100 = 93\%$$

D-38. The computation above shows that the MWD team is working at a 93 percent proficiency rate. This rate is above the minimum for a PNDD team (90 percent), but it is below the minimum standard for a PEDD team (95 percent). A PNDD handler should continue training to maintain and possibly increase the team's proficiency. A PEDD handler needs to identify the causes of the team's substandard performance and immediately begin corrective training to bring the team up to and over the minimum 95 percent detection proficiency standard.

Note: Responses on actual substances during actual searches are not included in this computation. Search data cannot be included because it is impossible to determine the number of false or missed responses during an actual search.

D-39. Record the following information on—

- **Line a.** Record the total correct alerts. The MWDMS makes these entries automatically.
- **Line b.** Record the total false or missed alerts. The MWDMS makes these entries automatically.

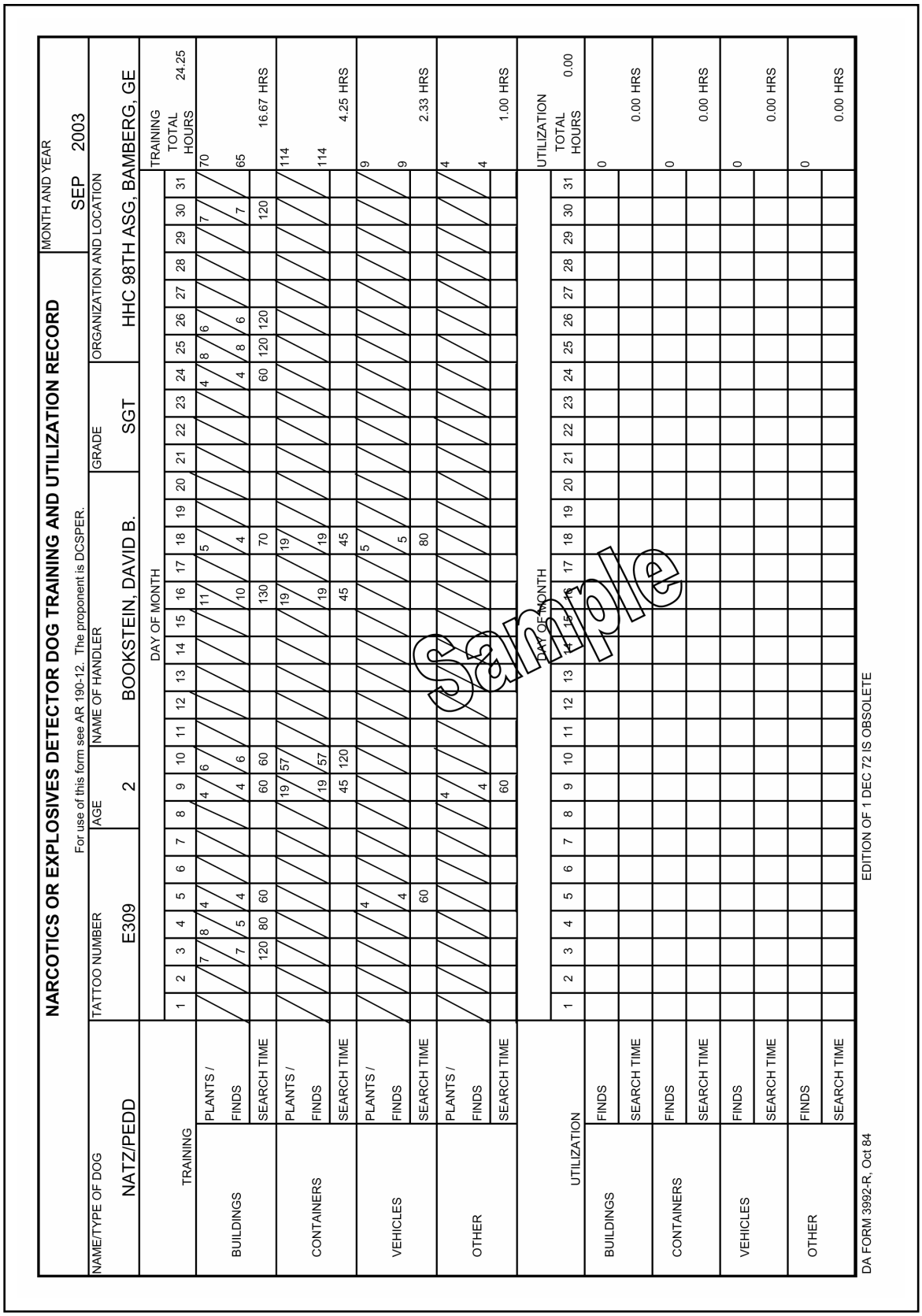
NARCOTICS OR EXPLOSIVE DETECTOR DOG TRAINING AND UTILIZATION RECORD (THIRD AND FOURTH PAGES)

D-40. The first part of section of the Narcotics or Explosive Detector Dog Training and Utilization Record section is used to record the number of each training aid used in training on each day of the month. The entry for each training aid type is divided into three rows to record the day of the month, correct alerts, and missed alerts, respectively. Record the appropriate information in the following sections.

- **Administrative Data.** Record the MWD's name and tattoo number, the month, and the year in the appropriate blocks.
- **Aid Type.** Enter the specific aid type in the upper left-hand corner of each "Detector Dog Proficiency" section.
- **Total Correct Alerts.** Record the number of correct alerts the MWD made during training.
- **Missed Alerts.** Record the number of missed and false alerts the MWD made during training.
- **Proficiency.** Record the actual proficiency in this block. The MWDMS makes this entry automatically.

REMARKS

D-41. Remarks for *DA Form 3992-R* are recorded on a continuation sheet. Each DF (for example, a missed aid or false sit) is listed by the date it occurred. The CA and CR are also listed. If more than one DF is noted per day, number the DF, CA, and CR series to avoid confusion.



NARCOTICS OR EXPLOSIVES DETECTOR DOG TRAINING AND UTILIZATION RECORD

For use of this form see AR 190-12. The proponent is DCSPER.

MONTH AND YEAR: SEP 2003

NAME/TYPE OF DOG	TATTOO NUMBER	AGE	NAME OF HANDLER	GRADE	ORGANIZATION AND LOCATION
NATZ/PEDD	E309	2	BOOKSTEIN, DAVID B.	SGT	HHC 98TH ASG, BAMBERG, GE

		DAY OF MONTH																													TRAINING TOTAL HOURS	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
TRAINING				7	8	4				4	6						11		5						4	8	6				7		70	24.25
BUILDINGS	PLANTS / FINDS			7	5	4				4	6						10		4						4	8	6				7		65	
	SEARCH TIME			120	80	60				60	60						130		70						60	120	120				120			16.67 HRS
CONTAINERS	PLANTS / FINDS									19	57						19		19														114	
										19	57						19		19														114	
	SEARCH TIME									45	120						45		45															4.25 HRS
VEHICLES	PLANTS / FINDS					4													5														9	
						4													5														9	
	SEARCH TIME					60													80															2.33 HRS
OTHER	PLANTS / FINDS									4																							4	
										4																							4	
	SEARCH TIME									60																								1.00 HRS

		DAY OF MONTH																													UTILIZATION TOTAL HOURS	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
UTILIZATION																																	0	0.00
BUILDINGS	FINDS																																0	
	SEARCH TIME																																	0.00 HRS
CONTAINERS	FINDS																																0	
	SEARCH TIME																																	0.00 HRS
VEHICLES	FINDS																																0	
	SEARCH TIME																																	0.00 HRS
OTHER	FINDS																																0	
	SEARCH TIME																																	0.00 HRS

DA FORM 3992-R, Oct 84 EDITION OF 1 DEC 72 IS OBSOLETE

Figure D-2. Sample DA Form 3992-R

DETECTOR DOG SEARCH DATA

NO.	TIME	DATE	LOCATION	MPR NUMBER	SUBSTANCE	QUANTITY	REMARKS
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							

Sample

DETECTOR DOG PROFICIENCY
(Alerts on training aids during training and actual searches)

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	a + b
a. TOTAL CORRECT ALERTS	0	0	7	5	8	0	0	0	26	63	0	0	0	0	0	29	0	28	0	0	0	0	0	4	8	6	0	0	0	7	0	191
b. TOTAL FALSE/MISSED ALERTS	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	199

PROFICIENCY = $\frac{a}{a+b} \times 100$ = 96%

DA Form 3992-R, Oct 84

Figure D-2. Sample DA Form 3992-R (Continued)

NARCOTICS OR EXPLOSIVES DETECTOR DOG TRAINING AND UTILIZATION RECORD

NATZ/PEDD _____ **TATTOO:** E309 **MONTH:** SEP **YEAR:** 2003

DETONATING CORD — DETECTOR DOG PROFICIENCY — PROFICIENCY A ___ X 100 / A + B

(ALERTS ON TRAINING AIDS DURING TRAINING AND ACTUAL SEARCHES)

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	A	A + B
a. TOTAL CORRECT ALERTS			2	1						20						1									3							27	
b. TOTAL MISSED ALERTS				1																												28	96%

C-4 PLASTIC EXPLOSIVE — DETECTOR DOG PROFICIENCY — PROFICIENCY A ___ X 100 / A + B

(ALERTS ON TRAINING AIDS DURING TRAINING AND ACTUAL SEARCHES)

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	A	A + B
a. TOTAL CORRECT ALERTS				1					22	1						3		2								1						30	
b. TOTAL MISSED ALERTS				1					1																							32	94%

POTASSIUM CHLORATE — DETECTOR DOG PROFICIENCY — PROFICIENCY A ___ X 100 / A + B

(ALERTS ON TRAINING AIDS DURING TRAINING AND ACTUAL SEARCHES)

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	A	A + B
a. TOTAL CORRECT ALERTS									1							20		2						2	1							26	
b. TOTAL MISSED ALERTS																1																27	96%

SODIUM CHLORATE — DETECTOR DOG PROFICIENCY — PROFICIENCY A ___ X 100 / A + B

(ALERTS ON TRAINING AIDS DURING TRAINING AND ACTUAL SEARCHES)

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	A	A + B
a. TOTAL CORRECT ALERTS					1				2									21						1	1							26	
b. TOTAL MISSED ALERTS																		1														27	96%

WATER GEL (TOVEX) — DETECTOR DOG PROFICIENCY — PROFICIENCY A ___ X 100 / A + B

(ALERTS ON TRAINING AIDS DURING TRAINING AND ACTUAL SEARCHES)

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	A	A + B
a. TOTAL CORRECT ALERTS				1						21						1		1							2					2		28	
b. TOTAL MISSED ALERTS			1																													29	97%

DA FORM 3992-R, OCT 84 (CONTINUATION SHEET)

Figure D-2. Sample DA Form 3992-R (Continued)

NARCOTICS OR EXPLOSIVES DETECTOR DOG TRAINING AND UTILIZATION RECORD

NATZ/PEDD **TATTOO:** E309 **MONTH:** SEP **YEAR:** 2003

SEMTEX — DETECTOR DOG PROFICIENCY — PROFICIENCY A ___ X 100 / A + B

(ALERTS ON TRAINING AIDS DURING TRAINING AND ACTUAL SEARCHES)

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	A	X 100	A + B
a. TOTAL CORRECT ALERTS			1		2				1							2		2							1					2				11
b. TOTAL MISSED ALERTS																																11	100%	

AMMONIUM NITRATE — DETECTOR DOG PROFICIENCY — PROFICIENCY A ___ X 100 / A + B

(ALERTS ON TRAINING AIDS DURING TRAINING AND ACTUAL SEARCHES)

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	A	X 100	A + B
a. TOTAL CORRECT ALERTS																																0		
b. TOTAL MISSED ALERTS																																0	#DIV/0!	

NITROGLYCERIN DYNAMITE — DETECTOR DOG PROFICIENCY — PROFICIENCY A ___ X 100 / A + B

(ALERTS ON TRAINING AIDS DURING TRAINING AND ACTUAL SEARCHES)

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	A	X 100	A + B
a. TOTAL CORRECT ALERTS				2						21															1							24		
b. TOTAL MISSED ALERTS																																24	100%	

TNT (Trinitrotoluene) — DETECTOR DOG PROFICIENCY — PROFICIENCY A ___ X 100 / A + B

(ALERTS ON TRAINING AIDS DURING TRAINING AND ACTUAL SEARCHES)

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	A	X 100	A + B
a. TOTAL CORRECT ALERTS			3		3											2										1				2				11
b. TOTAL MISSED ALERTS																																11	100%	

SMOKELESS POWDER — DETECTOR DOG PROFICIENCY — PROFICIENCY A ___ X 100 / A + B

(ALERTS ON TRAINING AIDS DURING TRAINING AND ACTUAL SEARCHES)

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	A	X 100	A + B
a. TOTAL CORRECT ALERTS			1		2																			1	1	2				1				8
b. TOTAL MISSED ALERTS																																8	100%	

Totals from TNG Aids (Cont. Sheet)																																		
TOTAL PLANTS	0	0	7	8	8	0	0	0	27	63	0	0	0	0	0	30	0	29	0	0	0	0	0	4	8	6	0	0	0	7	0	197		
TOTAL FINDS	0	0	7	5	8	0	0	0	26	63	0	0	0	0	0	29	0	28	0	0	0	0	0	4	8	6	0	0	0	7	0	191	97%	

a. TOTAL FALSE ALERTS																2																2	1%	
Totals from TNG locations (3992 Front)																																		
TOTAL PLANTS	0	0	7	8	8	0	0	0	27	63	0	0	0	0	0	30	0	29	0	0	0	0	0	4	8	6	0	0	0	7	0	197		
TOTAL FINDS	0	0	7	5	8	0	0	0	27	63	0	0	0	0	0	29	0	28	0	0	0	0	0	4	8	6	0	0	0	7	0	192	97%	

DA FORM 3992-R, OCT 84 (CONTINUATION SHEET)

Sample

Figure D-2. Sample DA Form 3992-R (Continued)

DA Form 3992-R
Continuation Sheet

DATE	REMARKS
3-Sep-03	TRAINING AT SCHWEINFURT BOWLING ALLEY. (TRAINING AIDS PLANTED FROM 6 FT H x 5 FT D)
4-Sep-03	TRAINING AT SCHWEINFURT FMO. (TRAINING AIDS PLANTED FROM 8 FT H x 3 FT D) **DF1:** MWD MISSED AID (1 STRAND DET CORD - 1 FT H x 1 FT D) DUE TO HANDLER ERROR. **CA1:** HANDLER TOLD TO WORK A REVERSE PATTERN UNTIL THE TEAM REACHED THE AID LOCATION. **CR1:** MWD FOUND AID AFTER HANDLER MADE PROPER PRESENTATION. **DF2:** MWD MISSED AID. (1/4 BLOCK C4 2 FT H x 1 FT D) **CA2:** MWD BROUGHT BACK FOR RE-PRESENTATION. **CR2:** MWD FOUND AID AFTER HANDLER MADE SECOND PRESENTATION. **DF3:** MWD MISSED AID. (1 STICK NITRO DYNAMITE- 7 FT H x 1 FT D) **CA3:** MWD BROUGHT BACK FOR RE-PRESENTATION. **CR3:** MWD FOUND AID AFTER HANDLER MADE HIGH PRESENTATION AND DRAGGED HAND UPWARD. **DF4:** MWD MISSED AID. (1 STICK WATER GEL - 5 FT H x 1 FT D) **CA4:** MWD BROUGHT BACK FOR RE-PRESENTATION. **CR4:** MWD FOUND AID AFTER HANDLER MADE SECOND PRESENTATION. MWD WILL BE PROTOCOLED ON ALL MISSED AIDS AT A LATER DATE DUE TO TIME CONSTRAINTS.
5-Sep-03	TRAINING AT 630TH MILITARY POLICE COMPANY MOTOR POOL. (TRAINING AIDS PLANTED FROM 3 FT H x 7 FT D)
9-Sep-03	TRAINING AT SCHWEINFURT OPEN AREA BY CONN CLUB & OUTDOOR REC. (TRAINING AIDS PLANTED FROM 7 FT H x 4 FT D) **CA:** (REFERENCE DF2, 4 SEP) MWD WAS PROTOCOLED ON 1/2 BLOCK C4. **CR:** COMPLETED 4 HV ASSISTED FOR 4 TRIALS AND 15 CONSECUTIVE UNASSISTED TRIALS.
10-Sep-03	TRAINING AT ANSBACH CMFO WAREHOUSES (TRAINING AIDS PLANTED FROM 4 FT H x 1 FT D). **CA:** (REFERENCE DF2-4, 4 SEP) MWD WAS PROTOCOLED ON 1 STRAND DC, 1 STICK ND, AND 1 STICK WG. **CR:** COMPLETED 4 HV ASSISTED FOR 4 TRIALS AND 15 CONSECUTIVE UNASSISTED TRIALS FOR EACH AID.
11-Sep-03	NO TRAINING DUE TO MWD GOING TO VET. MWD HAS BEEN DIAGNOSED WITH A POSSIBLE PULLED/STRAINED MUSCLE IN HIS RIGHT LEG WHICH HE IS FAVORING AS HE WALKS. X-RAYS SHOW NO BREAKS OR FRACTURES. MWD CANNOT DO ANYTHING STRENUOUS FOR THE NEXT WEEK, BUT IS CLEARED TO WORK DETECTION NEXT TUES (16 SEP).
16-Sep-03	TRAINING AT KITZIGEN TISA WAREHOUSE & LEIGHTON THEATER. (TRAINING AIDS PLANTED FROM 9 FT H x 6 FT D.) **DF1:** MWD MISSED AID. (PC - 1 FT H x 6 FT D) **CA1:** MWD BROUGHT BACK FOR REPRESENTATION. WILL CONDUCT PROTOCOL. **CR1:** MWD RESPONDED ON AID AFTER HANDLER MADE SECOND PRESENTATION. MWD WAS PROTOCOLED ON PC COMPLETING 4 HV ASSISTED FOR 4 TRIALS AND 15 CONSECUTIVE UNASSISTED TRIALS. **DF2:** MWD FALSE SAT IN THEATER LOBBY. **CA2:** MWD WAS ESCAPED FROM AREA AND CONTINUED TO WORK. **CR2:** MWD CONTINUED PATTERN WITHOUT FALSE SITTING. **DF3:** MWD FALSE SAT IN THEATER BACK WALL. **CA3:** MWD WAS ESCAPED FROM AREA AND CONTINUED TO WORK. MWD WILL BE WORKED ON BLANK PROBLEM. **CR3:** MWD CONTINUED PATTERN WITHOUT FALSE SITTING.
18-Sep-03	TRAINING AT SCHWEINFURT STRIP LOT & OUTDOOR REC. (TRAINING AIDS PLANTED FROM 8 FT H x 6 FT D) **CA1:** (REFERENCE DF2, 16 SEP) CONDUCTED BLANK PROBLEM. **CR1:** MWD DID NOT ATTEMPT TO FALSE SIT. **DF2:** MWD MISSED AID. (SC - 7 FT H x 3 FT D) **CA2:** MWD BROUGHT BACK FOR RE-PRESENTATION. MWD WAS PROTOCOLED ON SC. **CR2:** MWD FOUND AID AFTER HANDLER MADE SECOND PRESENTATION. COMPLETED 4 HV ASSISTED FOR 4 TRIALS AND 15 CONSECUTIVE UNASSISTED TRIALS.
24-Sep-03	TRAINING AT SCHWEINFURT FMO. (TRAINING AIDS PLANTED FROM 5 FT H x 5 FT D)
25-Sep-03	TRAINING AT THEATER. (TRAINING AIDS PLANTED FROM 2 FT H x 2 FT D)
26-Sep-03	TRAINING AT COMMISSARY. (TRAINING AIDS PLANTED FROM 9 FT H x 6 FT D)
30-Sep-03	TRAINING AT FURNITURE WAREHOUSE. (TRAINING AIDS PLANTED FROM 6 FT H x 7 FT D)

Sample

Figure D-2. Sample DA Form 3992-R (Continued)

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Appendix E
Deployment Equipment List

Table E-1 is a list to be used as a general guide to aid leaders in the planning process prior to MWD deployments. Mission, enemy, terrain, troops, time available, and civilian considerations (METT-TC) should be considered when determining what equipment is necessary for mission success. Required and authorized equipment is determined by tables of organization and equipment (TOEs), modification tables of organization and equipment (MTOEs), and tables of distribution and allowances (TDAs).

Table E-1. Deployment Equipment List

Worn or Carried		
M9 with LCE (LBV)	Identification card	Body armor
Canteen cup	Identification tag	Black gloves with liners
First aid pouch with dressing	Protective mask with a carrier	Military police brassard (subdued)
Kevlar® helmet		
MWD Equipment		
Choke chain	Grooming brush/comb	Feed pan
Leather or nylon collar	Reward ball/Kong	Kennel crate
Stake-out chain	360-inch nylon leash	16-foot leash
Plastic or leather muzzle	Water bucket	Harness
Alice Pack		
BDU (2 sets)	Towels (2)	Sleeping bag with a cover
Brown T-shirt (2)	Gloves, black, cold weather	Shower shoes
Undergarments (2)	BDU Cap	PT uniform (complete set)
Green and black socks (2)	Boot polish kit	MOPP gear in an NBC bag
Poncho with a liner	Flashlight	Boots
Shaving kit	Lip balm	Personal hygiene gear
Waterproof bag	Foot powder	
A/B Bag		
Duffel bag with a padlock	Brown T-shirt (5)	White socks (3)
Cold weather boots	BDU (2)	Green and black socks (5)
Cold weather gear	Towels (3)	Personal hygiene gear
Waterproof bag	Overboots	Undergarments (5)
Military police brassard	Laundry bag (2)	
Additional Equipment		
30-90 day supply MWD food	50-gallon trash can (MWD food)	5-gallon water can
MWD training records	Medical supplies	Engineer tape
MWD medical records	Carpenter kit/tools	Cots
MWD health certificate	Safe for narcotics aides	Fire extinguishers

Table E-1. Deployment Equipment List (Continued)

Additional Equipment		
MWD first aid kit	Explosives and narcotics training aides	Axes, shovels, rakes, brooms
Arm protector, sleeve (hidden)	Parasite preventative mediation	Cooling vest (MWD)
Soldier first aid kit	Light set	Paw pad protectors (2 sets)
Bite suit (optional)	Generator	Foot lockers (2) or blood boxes
Dog shampoo	Transformer	Equipment duffel bag
Heaters and fans	Warning signs (MWD)	Camouflage netting with poles

Appendix F
Force Protection Conditions

The FPCONs outlined below describe the progressive level of a terrorist threat to all US military facilities and personnel under *DOD Directive 2000.12*. As approved by the Joint Chiefs of Staff, the terminology and definitions in this appendix are recommended security measures designed to ease interservice coordination and to support US military antiterrorism activities. Each installation must localize these measures for its specific circumstances, accounting for service and commander requirements, local laws, and SOFAs as a minimum. See *AR 525-13* for further details concerning FPCONs. This appendix details what each condition is and the suggested actions of the MWD teams for each level and measure. Commanders are encouraged to employ MWD teams wherever an MWD team can enhance security and force protection measures that are already established.

FORCE PROTECTION CONDITION NORMAL

F-1. FPCON normal applies when a general global threat of possible terrorist activity exists. It warrants a routine security posture.

FORCE PROTECTION CONDITION ALPHA

F-2. FPCON Alpha applies when there is an increased general threat of possible terrorist activity against personnel or facilities, the nature and extent of which are unpredictable. Alpha measures must be capable of being maintained indefinitely. The following bullets explain the FPCON Alpha measures:

- **Alpha measure 1.** Inform personnel and family members of the general situation at regular intervals. Also, remind them to be alert for and report suspicious activities such as the presence of unfamiliar personnel and vehicles, suspicious/unattended parcels, and possible surveillance attempts.
- **Alpha measure 2.** Ensure that the duty officer or personnel with access to building plans as well as the plans for area evacuations are available at all times. Plans to execute access control procedures should be in place. Key personnel required to implement security plans should be on call and readily available.
- **Alpha measure 3.** Secure and randomly inspect buildings, rooms, and storage areas not in regular use.

Note: MWD should randomly inspect buildings after normal duty hours. The KM should ensure that no inspection time or location patterns are ever set by MWD teams.

- **Alpha measure 4.** Increase security spot checks of vehicles and persons entering installations under the jurisdiction of the United States.

Note: MWD should perform vehicle checks randomly at entry points.

- **Alpha measure 5.** Limit access points for vehicles and personnel commensurate with a reasonable flow of traffic.

- **Alpha measure 6.** Apply Alpha measures 4, 5, 7, or 8 either individually or in combination with each other as a deterrent.
- **Alpha measure 7.** Review intelligence, counterintelligence, and operations dissemination procedures.
- **Alpha measure 8.** Review and, if necessary, implement security measures for HRP.
- **Alpha measure 9.** Consult local authorities on the threat and mutual antiterrorism measures as appropriate.
- **Alpha measure 10.** Review all plans and be prepared to implement a higher FPCON.
- **Alpha measure 11 (spare).** Add additional measures as deemed appropriate by the commanders.

FORCE PROTECTION CONDITION BRAVO

F-3. FPCON Bravo applies when an increased or more predictable threat of terrorist activity exists. Sustaining Bravo measures for a prolonged period may affect operational capabilities and impact relations with local authorities. The following bullets explain the FPCON Bravo measures:

- **Bravo measure 1.** Continue, or introduce, all measures in the previous FPCON level.
- **Bravo measure 2.** Check plans for the implementation of the next FPCON level.
- **Bravo measure 3.** Identify critical and high-occupancy buildings. Move cars and objects (such as crates and trash containers) away from buildings to reduce vulnerability to bomb attacks. Consider centralized parking.
- **Bravo measure 4.** Secure and inspect all buildings, rooms, and storage areas not in regular use.
- **Bravo measure 5.** Inspect the interior and exterior of buildings in regular use for suspicious packages at the beginning and end of each workday, as well as at random intervals. Patrol teams search the exterior of high-occupancy buildings at the beginning and end of each day.

Note: Use PEDD to search buildings and areas.

- **Bravo measure 6.** Implement mail-screening procedures to identify suspicious letters and parcels.

Note: Search the mail distribution center with both PEDD and PNDD teams randomly.

- **Bravo measure 7.** Inspect commercial deliveries randomly. Advise family members to check home deliveries.
- **Bravo measure 8.** Increase presence around and surveillance of domestic accommodations, schools, messes, clubs, and other soft targets to improve deterrence and defense and build confidence among staff and dependents.

Note: Randomly patrol and perform walking patrols of populated areas with MWDs.

- **Bravo measure 9.** Implement plans to enhance off-installation security of DOD facilities. In areas with threat levels of moderate, significant, or high, coverage includes facilities (such as DOD schools and daycare centers) and transportation services and routes (such as bus routes) used by DOD employees and family members.
- **Bravo measure 10.** Inform local security committees of actions being taken.
- **Bravo measure 11.** Verify the identity of visitors and randomly inspect their suitcases, parcels, and other containers.
- **Bravo measure 12.** Conduct random patrols to check vehicles, people, and buildings.
- **Bravo measure 13.** Implement additional security measures for HRP.
- **Bravo measure 14.** Identify and brief personnel who may augment guard forces. Review specific rules of engagement including the use of deadly force.

- **Bravo measure 15.** Test the mass notification system.
- **Bravo measure 16.** Verify the identity of all personnel entering buildings as deemed appropriate.
- **Bravo measure 17.** Identify off-installation safe havens for use at the next FPCON.
- **Bravo measure 18.** Review and implement proper OPSEC, communications security (COMSEC), and information security (INFOSEC) status.
- **Bravo measure 19.** Consider using tactical deception techniques.
- **Bravo measure 20 (spare).** Add additional measures as deemed appropriate by the commanders.

FORCE PROTECTION CONDITION CHARLIE

F-4. FPCON Charlie applies when an incident occurs or intelligence is received indicating that some form of terrorist action or targeting against personnel or facilities is likely. Implementing FPCON Charlie measures creates hardship and affects the activities of the unit and its personnel. The following bullets explain the FPCON Charlie measures:

- **Charlie measure 1.** Continue, or introduce, all measures in the previous FPCON.
- **Charlie measure 2.** Ensure that duty personnel are cognizant of actions required to implement antiterrorism and force protection plans. Recall required personnel.
- **Charlie measure 3.** Reduce access control to a minimum and strictly enforce entry. Randomly search vehicles.

Note: Increase the PEDD and PNDD teams' search times at entry points.

- **Charlie measure 4.** Increase standoff from sensitive buildings based on the threat.
- **Charlie measure 5.** Issue weapons and appropriate communication equipment to guards according to SOFAs. Include specific orders on the issue of ammunition.
- **Charlie measure 6.** Increase patrols of the installation to include waterside perimeters, if appropriate.

Note: Use MWD assets to expand the perimeter patrol area and detect intruders.

- **Charlie measure 7.** Implement a barrier plan to prevent a vehicle-borne attack.
- **Charlie measure 8.** Protect all designated vulnerable points. Give special attention to vulnerable points outside the military establishment.
- **Charlie measure 9.** Consult local authorities about closing public (and military) roads and facilities to reduce the vulnerability to attack.
- **Charlie measure 10.** Consider searching suitcases, briefcases, and packages being brought onto the installation through ACPs and consider randomly searching suitcases, briefcases, and packages leaving.

Note: Use PEDD and PNDD teams to search the items above.

- **Charlie measure 11.** Review personnel policy procedures to determine a course of action for family members.
- **Charlie measure 12.** Review access procedures for all non-US personnel and adjust as appropriate.
- **Charlie measure 13.** Consider escorting children to and from DOD schools.
- **Charlie measure 14 (spare).** Add additional measures as deemed appropriate by the commanders.

FORCE PROTECTION CONDITION DELTA

F-5. FPCON Delta applies in the immediate area where a terrorist attack has occurred or when intelligence has been received that terrorist action against a specific location or person is imminent. Normally, FPCON Delta is declared as a localized condition. The following bullets explain the FPCON Delta measures:

- **Delta measure 1.** Continue, or introduce, all measures in the previous FPCON.
- **Delta measure 2**. Augment guards as necessary.
- **Delta measure 3.** Identify all vehicles within operational or mission support areas.
- **Delta measure 4.** Search all vehicles and contents before allowing entrance to the installation.

Note: Use PEDD and PNDD as needed to search vehicles and contents.

- **Delta measure 5.** Control access and implement positive identification of all personnel with no exceptions.
- **Delta measure 6.** Search all suitcases, briefcases, and packages brought into the installation.

Note: Use PEDD and PNDD as needed to search the items above.

- **Delta measure 7.** Escort children to and from DOD schools or close the schools.
- **Delta measure 8.** Make frequent checks of the exterior of buildings and of parking areas. Use MWD teams to make frequent checks of the exterior of buildings and parking areas.
- **Delta measure 9.** Restrict all nonessential movement.
- **Delta measure 10.** Close public and military roads and facilities if permitted.
- **Delta measure (spare).** Add additional measures as deemed appropriate by the commanders.

Appendix G
After-Action Reviews

The AAR process is used to document and discuss MWD operations and training. AARs are focused on performance standards that enable other MWD handlers, training NCOs, KMs, program managers, and concerned agencies to discover what happened, why it happened, and how to sustain strengths and improve on weaknesses. Leaders, planners, and developers can use AARs to get the maximum benefit from every mission or task conducted during predeployment, deployment, and redeployment.

AFTER-ACTION REVIEW PURPOSE

G-1. AARs must provide—

- Candid insights into specific soldier, leader, and MWD strengths and weaknesses from various perspectives.
- Feedback and insight critical to future successes.
- Details that evaluation reports alone often lack.

G-2. The USAMPS MWD Career Management NCO collects historical data, end-of-tour reports, and other organizational specific issues. With the submission of AARs, USAMPS can build a historical database to benefit all in the improvement of Army MWD team tactics, techniques, and procedures. Ultimately, information will be submitted to the Center for Army Lessons Learned (CALL) for distribution to the Army.

AFTER-ACTION REVIEW SUBMISSION

G-3. After the completion of TDY missions, special operations, deployments or other significant events, MWD handlers submit AARs to their respective MACOMs. MACOMs forward the AARs to HQDA Office of the Provost Marshal General (OPMG) and USAMPS.

POINT OF CONTACT

G-4. The point of contact for the MWD Career Management NCO is commercial: (573) 563-8040 and defense switched network (DSN): 676-8040/7946. Send hard-copy correspondence to: US Army Military Police School, ATTN: ATSJ-P, 401 MANSCEN Loop, Suite 1058, Fort Leonard Wood, MO 65473-8926.

EXAMPLE AFTER-ACTION REVIEW

G-5. *Figure G-1,* page G-2, should be used as the format for AARs submitted to the USAMPS MWD Career Management NCO. Refer to *TC 25-20* for comprehensive guidance on AARs.

DEPARTMENT OF THE ARMY
42D Military Police Detachment
Ft. Bragg, NC 27380

OFFICE SYMBOL DATE

MEMORANDUM FOR RECORD

SUBJECT: After-Action Review, Task Force Iron Dog, Sep 03 – Nov 03

1. State what was supposed to happen: This paragraph contains a brief introduction of the mission that was being performed by the MWD team or section. Include operation objectives, the overall mission, and the intent from the task force commander as well as any other relevant information.

2. State what happened: This paragraph contains pertinent information about what actually happened during the mission. Was the mission accomplished as stated above or were other objectives established inside of the area of operation?

3. Determine what went right and wrong during the mission:

a. Topic: What was right and wrong with what happened during the mission.

b. Discussion: Give the who, what, when, where, and how for the mission. Give a good summary of what the issue was.

c. Recommendation: Give recommendations to improve the issues that were identified as needing improvement.

4. Point of contact for this memorandum is the undersigned at DSN: 123-4567 or jon.doe@us.army.mil.

Sample

Jon Doe
SSG, USA
Kennel Master / PEDD Handler

Note: If you have a positive topic just use Topic and Discussion sections.

Figure G-1. Sample AAR Format

Appendix H

Health and Welfare Inspections Briefing Guide

Commanders frequently request MWD support during health and welfare inspections. Commanders should be made aware that the conduct and responsibility of health and welfare inspections lies within their purview and that the MWD team is not the authority for the mission. This appendix identifies the actions that need to be addressed with the commander to ensure a successful and lawful health and welfare inspection. These actions are needed to establish and act on probable cause determinations. Questions concerning these matters should be directed to the local Staff Judge Advocate Office for clarification.

COORDINATION

H-1. The KM coordinates and approves each health and welfare inspection. After the KM receives the request for assistance, he assesses the needs of the mission and determines which detector dog team (if any) will assist the commander. The KM notifies the unit commander or 1SG and accepts or denies the mission. Once the mission is accepted, the KM briefs them on their roles and responsibilities and informs them that if his criteria are not met, the KM will terminate the search.

HANDLERS BRIEFING

H-2. Prior to the inspection, the KM, plans NCO, or handler ensures that the commander requesting support is aware that the building being inspected must be unoccupied and that all doors are unlocked (or keys available on site). On the arrival of the MWD team at the location of the health and welfare inspection, the handler performs a commander's briefing and demonstration. The handler—

- Explains the probable cause folder to the commander.
- Shows the commander the training aids used for detection.
- Demonstrates the dog's ability to detect.

H-3. A briefing document shows handlers how to record the details of each health and welfare inspection (*Figure H-1*, page H-3). The commander is provided with a copy of the briefing document containing the following information:

- The MWD teams used for the inspection.
- The canines' names and tattoo numbers.
- The scope of the proficiency training of the MWD teams. Discuss with the commander the standards and scope of the detector training required to maintain the certification of assigned MWD teams.
- The MWDs' accuracy rates. Explain to the commander that the accuracy percentage rate is based on quarterly training.
- The MWDs' detection experience. Inform the commander of the amount of time that the MWDs have actually spent conducting detection missions. Include any possible finds in prior inspections.
- The MWDs' capabilities. Explain to the commander that the MWDs are capable of detecting either drugs or explosives.

- The MWDs' alert response. Describe what the MWDs will do when they indicate the presence or odor of found drugs or explosives.
- The unit representatives. Notify the commander that one SSG or above is required to escort each MWD team through out the inspection. The commander may not be a unit representative.

UNIT REPRESENTATIVE DUTIES AND RESPONSIBILITIES

H-4. Ensure that the unit representatives are informed that they—

- Escort the MWD team at all times.
- Unlock doors or areas as needed.
- Carefully observe the MWD team.
- Follow the handler's instructions.
- Obey safety precautions.
- Spot areas that are missed by the MWD team.

DOCUMENTATION

H-5. It is important that the MWD handler documents the commander's briefing on every occasion. *Figure H-1*, page H-3, gives an example for documenting the briefing given to the commander before a health and welfare inspection. Advise the commander to maintain the handlers briefing and other documentation concerning each response of the MWD. Advise the commander that a positive response by a narcotic detector dog provides probable cause for a command-directed urinalysis. Ensure that the commander signs the briefing form and then provide a copy for filing in case of a judicial action.

INSPECTION

H-6. After the briefing has been conducted, the inspection may begin. Remember to advise the commander and unit representatives that this health and welfare inspection is the unit's mission and that the MWD team is assisting in the mission. The MWD team is not in charge of the health and welfare inspection but can be used as a tool by the commander.

ATZP-PM-K DATE: _____

SUBJECT: Commander's Briefing for Health and Welfare Inspections Utilizing Detector Dogs

1. (commander's name) has requested narcotics detector dog support for a health and welfare inspection on (dd/mm/yyyy).

2. Prior to canine(s) being utilized, the building must be unoccupied and all doors must be unlocked (or keys available).

3. The following provides the commander with information essential to a successful inspection:

_____ A. Team(s) to be utilized: (number of PEDD and PNDD to be used).

_____ B. MWD name(s) and tattoo number(s): (name and tattoo number for each MWD)

_____ C. The scope of formal training of the canine team(s). Discuss detector training. Discuss the standards that must be successfully completed to maintain certification of detector dog team(s).

_____ D. The canine's accuracy rate(s) is/are (accuracy rates for each MWD). This is based on the previous 3 months training records.

_____ E. The extent of actual MWD detection field experience. (experience for each MWD)

_____ F. Explain the types of drugs or explosives that the canine(s) is/are trained to detect.

_____ G. Describe the canine's specific behavior(s)/actions when it responds, indicating the presence or the odor of narcotics (detector response of each MWD).

_____ H. Ensure that the commander(s) is/are aware that one representatives (SSG or above) is needed to act as an escort for each team. The commander may not be one of the individuals accompanying canine team(s).

_____ I. Ensure that the escorts are briefed on their duties and responsibilities. Discuss the safety precautions that they must follow, and ensure the safety of others.

_____ J. Ensure that the commander(s) is/are aware that the unit is responsible for maintaining proper documentation (date, time, room number, common or personal area and occupant[s] name[s]), concerning the response of the canine(s). This information should be kept on file with the commander's copy of this briefing sheet, in case of a judicial action.

_____K. Ensure that the commander is aware that a positive response by a narcotic detector dog is probable cause for a command-directed urinalysis on the occupant or occupants of that room.

I (commander's name) have received a personal briefing covering all the information stated above and now understand the capabilities of the canine team(s). I am satisfied that the canine team(s) have the training and experience necessary to provide reliable information upon which to authorize a search and/or perform a command-directed urinalysis. I authorize the canine team(s) to inspect the following area(s): (areas to be inspected)

Sample

Figure H-1. Health and Welfare Briefing Document Sample

HANDLER(S) SIGNATURE

1. _____ 2. _____

3. _____ 4. _____

COMMANDER'S INFORMATION	**1SG'S INFORMATION**
NAME: _____	NAME: _____
RANK: _____	RANK: _____
UNIT: _____	UNIT: _____
SIGNATURE: _____	SIGNATURE: _____
UNIT REPRESENTATIVE	**UNIT REPRESENTATIVE**
NAME: _____	NAME: _____
RANK: _____	RANK: _____
UNIT: _____	UNIT: _____
SIGNATURE: _____	SIGNATURE: _____

Sample

Figure H-1. Health and Welfare Briefing Document Sample (Continued)

Appendix I
Terrorist Bomb Threat Stand-off Distances

Table I-1 contains information from the DOD technical support working group. Commanders, PMs, and MWD planners can use this information as a guide to determine the minimum distances necessary to evacuate personnel from suspected explosive threats.

Table I-1. Minimum Distances for Personnel Evacuation

Threat Description	***Explosives Capacity* (TNT Equivalent)***	***Building Evacuation Distance*****	***Outdoor Evacuation Distance******
Pipe bomb	5 lbs/2.3 kg	70 ft/21 m	850 ft/259 m
Briefcase/suitcase bomb	50 lbs/23 kg	150 ft/46 m	1,850 ft/564 m
Compact sedan	500 lbs/227 kg	320 ft/98 m	1,500 ft/457 m
Sedan	1,000 lbs/454 kg	400 ft/122 m	1,750 ft/534 m
Passenger/cargo van	4,000 lbs/1,814 kg	640 ft/195 m	2,750 ft/838 m
Small moving van/delivery truck	10,000 lbs/4,536 kg	860 ft/263 m	3,750 ft/1,143 m
Moving van/water truck	30,000 lbs/13,608 kg	1,240 ft/375 m	6,500 ft/1,982 m
Semitrailer	60,000 lbs/27,216 kg	1,570 ft/475 m	7,000 ft/2,134 m

* Based on maximum volume or weight of explosives (TNT equivalent).
** Governed by the ability of an unstrengthened building to withstand severe damage or collapse.
*** Governed by either the fragment throw distance or glass breakage/falling glass hazard distance (whichever throws fragments farther than vehicle bombs).

NOTES:
1. All personnel must either seek shelter inside a building away from windows and exterior walls (with some risk) or move beyond the outdoor evacuation distance.
2. The preferred area is beyond the outdoor evacuation distance for the evacuation of personnel in buildings. This is mandatory for personnel outdoors.

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Glossary

Acronyms and Abbreviations

1SG	first sergeant
AAR	after-action review
ACP	access control point
AF	Air Force
agg	aggression
AR	Army regulation
ASG	area support group
ASI	additional skill identifier
ASP	ammunition supply point
ATTN	attention
BDU	battle dress uniform
C2	command and control
C4	composition 4
CA	corrective action
CALL	Center for Army Lessons Learned
CCTV	Closed-circuit television
cert	certification
CI	civilian internee
CID	Criminal Investigation Division
clg	cleaning
CMFO	centralized furnishings management office
comm	communications
COMSEC	communications security
CONEX	container express
cont	continuted
CP	command post
CPT	captain
CR	corrective response
DA	Department of the Army
d	deep
DARE	Drug Abuse Resistance Education
DCSPER	Dputy Chief of Stagg for Personnel
DC	detonating cord
DD	Department of Defense
DEA	Drug Enforcement Administration

Dec	December
det	detonating
DF	deficiency
DOD	Department of Defense
DODMWDVS	Department of Defense Military Working Dog Veterinary Services
DSN	defense switched network
DST	drug suppression team
EAC	echelon above corps
EOD	explosive ordnance disposal
EPW	enemy prisoner of war
eval	evaluaiton
FM	field manual
FMO	Furnishing managemetn office
FPCON	force protection condition
ft	foot; feet
GE	Germany
GOV	government owned vehicle
GSA	General Services Administration
h	high
HF	hole, variable
HRP	high-risk personnel
HRT	high-risk target
HVAC	heating, ventilation, and air conditioning
I/R	internment and resettlement
IDS	Intrusion Detection System
IED	improvised explosive device
INFOSEC	information security
IPB	intelligence preparation of the battlefield
iso	isolation
kg	kilogram
KM	kennel master
LAFB	Lackland Air Force base
LAN	local area network
LBS	pounds
LBV	load-bearing vest
LCE	load-carrying equipment
LED	light-emitting diode
LIN	line item number
LTC	lieutenent colonel
m	meter

MACOM	major Army command
MANSCEN	Maneuver Support Center
MCI	military customs inspector
MCIPM	military customs inspector program manager
MCM	Manual for Courts-Martial
mech	mechanical
METL	mission-essential task list
METT-TC	mission, enemy, terrain, troops, time available, and civilian considerations
MEVA	mission-essential vulnerable areas
MILSTRIP	military standard transportation and issue procedures
min	minimum
MMSO	maneuver mobility support operations
MOPP	mission-oriented protective posture
MPR	military police report
MSR	main supply route
MTOE	modification table of organization and equipment
MWD	military working dog
MWDMS	Military Working Dog Management System
NBC	nuclear, biological, and chemical
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
no	number
Nov	November
NSN	national stock number
OB	obstacle
Oct	October
ODCSOPS	Office of the Deputy Chief of Staff for Operaitons and Plans
off/L	off leash
on/L	on leash
OIF	Operation Iraqi Freedom
OPMG	Office of the Provost Marshal General
OPSEC	operational security
pam	pamphlet
PC	potassium chlorate
PD	patrol dog
PEDD	patrol explosive detector dog
PIO	police intelligence operations
PM	provost marshal
PMO	provost marshal office

PNDD	patrol narcotic detector dog
POV	privately owned vehicle
PT	physical training
prep	preparation
RAMP	random antiterrorism measures program
rec	recreation
S2	intelligence section
SC	sodium cholorate
sec	seconds
Sep	September
SF	standard form
SFC	sergeant first class
SGT	sergeant
SOFA	Status of Forces Agreement
SOP	standard operating procedures
SP	smokeless powder
SRT	special-reaction team
SSG	staff sergeant
STX	Semtex
TDA	table of distribution and allowancees
TDY	temporary duty
TISA	troop issue subsistence activity
TMP	transportation motor pool
TNT	trinitrotoluene
TOE	table of organization and equipment
TRADOC	United States Army Training and Doctrine Command
Tues	Tuesday
US	United States
USA	United States of America
USC	United States Code
USCS	United States Customs Service
USSS	United States Secret Service
v	version
VCO	veterinary corps officer
vet	veterinarian
VIP	very important person
VTF	Veterinary Treatment Facility
VTR	Veterinary Treatment Record
WT	weight

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FM 3-19.17
6 July 2005

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
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0516603

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Department of the Army Pamphlet 190–12

Military Police

Military Working Dog Program

Headquarters
Department of the Army
Washington, DC
30 September 1993

UNCLASSIFIED

SUMMARY of CHANGE

DA PAM 190–12
Military Working Dog Program

This revision--

- Updates all points of contact, organizations, and mailing addresses (table 4-1).
- Includes waiver or reception paragraph (para 1-4).
- Includes a description of DD Form 1834 (Military Working Dog Service Record) (para 3-33).
- Adds inventory procedures for explosive training aids (para 5-4b).
- Authorizes exact duplication of any DA or DD forms generated Military Police Management Information System may be used in place of the Office printed version of the form.

Headquarters
Department of the Army
Washington, DC
30 September 1993

***Department of the Army Pamphlet 190–12**

Military Police

Military Working Dog Program

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the Secretary of the Army

History. This UPDATE printing publishes a revision of this publication. Because the publication has been extensively revised, the changed portions have not been highlighted.

Summary. This pamphlet explains policies, procedures, and responsibilities of the U.S. Army Military Working Dog Program.

Applicability. This pamphlet applies to the Active Army, the Army National Guard, and the U.S. Army Reserve. It applies to all personnel who are involved in the care, training, and employment of military working dogs. This regulation applies during partial and full mobilization.

Proponent and exception authority. The proponent of this regulation is the Deputy Chief of Staff for Operations and Plans. The Deputy Chief of Staff for Operations and Plans has the authority to approve exceptions to this regulation that are consistent with controlling law and regulation. The Deputy Chief of Staff for Operations and Plans may delegate this authority in writing to a division chief within the proponent agency in the grade of colonel or the civilian equivalent.

Interim changes. Interim changes to this pamphlet are not official unless they are authenticated by The Administrative Assistant to the Secretary of the Army. Users will destroy interim changes on their expiration dates unless sooner superseded or rescinded.

Suggested Improvements. Users are invited to send comments and suggested improvements through established command channels on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to the HQDA (DAMO–ODL), 400 Army Pentagon, Washington, DC 20310–0400.

Distribution. Distribution of this publication is made in accordance with the requirements on DA Form 12–09E, block 2568, intended for command levels A, B, C, D, and E for Active Army, Army National Guard, the U.S. Army Reserve.

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Glossary

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Chapter 1
The Military Working Dog Program

Section I
Purpose and References

1–1. Purpose
This pamphlet explains policies, procedures, and responsibilities for the direction, management, and control of the U.S. Army Military Working Dog (MWD) program. This pamphlet complements, and must be used with, AR 190–12 which prescribes Army policy and requirements. Other primary sources of information include AFR 400–8/AR 700–81/ OPNAVINST 10570.1/MCO 20570.1 (hereafter referred to as AR 700–81). This pamphlet provides extensive guidance, standards, and information regarding training and utilization of MWD teams, controlled substances and explosives training aids, veterinary care, kennel facilities, dog handling equipment, and inspections. It provides the commander, the kennelmaster, and the handler with the information needed to maintain a proficient and operationally effective unit MWD program.

1–2. References
Required and related publications and prescribed and referenced forms are listed in appendix A.

1–3. Explanation of abbreviations and terms
Abbreviations and special terms used in this pamphlet are explained in the consolidated glossary.

1–4. Waivers
When provisions of this regulation cannot be met, major Army commands (MACOMs) may request a wavier, as appropriate. Requests for waivers will be forwarded in writing to HQDA(DAMO–ODL–S), 400 Army Pentagon, Washington, DC 20310–0400. Waivers normally will be granted for a period of one year and may be extended only after a review of the circumstances necessitating the extension. Requesting activity will maintain a record of approved waiver.

Section II
Program Concept

1–5. Historical basis
Dogs have been used by people to help protect themselves and their property since ancient times. Trained dogs have been used by most of the world's military forces since the first military units were organized. From these ancient beginnings, the MWD's training has been continuously refined to produce a highly sophisticated and versatile extension of the soldier's own senses. Even the most complex machines remain unable to duplicate the operational effectiveness of a properly trained MWD. The MWD's unique capabilities are used by the military police (MP) to:

a. Secure installation and property.

b. Help enforce military laws and regulations.

c. Increase the effectiveness of the combat support provided by the MPs.

1–6. The role of the military working dog
Like other highly specialized items of equipment, MWDs complement and enhance the capabilities of the MP. When used by existing MP organizations, MWD teams enable the MP to perform their mission more effectively and, in many cases, with significant savings of manpower, time, and money. MWD teams also provide a strong psychological deterrent to potential offenders.

a. The patrol dog is tolerant of people and can be used in almost any area of an installation including airfields, housing, shopping, and industrial areas. Patrol dog teams are used with law enforcement and security patrols to:

(1) Enhance the rear area protection capability.

(2) Search, scout, and track.

(3) Observe from listening or observation posts.

b. Detection dog teams are trained to detect controlled substances or explosives used to construct explosive devices that threaten, damage, or destroy personnel or property.

c. The MWD team's specialized capabilities make it one of the most effective tools available to the commander for combat support, security, and law enforcement. As the only live equipment employed Army–wide, the dog's continuing proficiency depends on realistic daily training and care. Skills which are not practiced or used can be lost. The assignment of dogs and handlers together as active teams is critical to their continuing effectiveness.

1–7. Quality assurance

Every level of command within the Army has specific responsibilities for making sure that the MWD program is properly established and efficiently managed. This includes ensuring that operational units are provided with trained dogs and handlers to form teams, and the necessary equipment and facilities to maintain effective local MWD programs. The Air Force is the executive manager of the MWD program for the Department of Defense (DOD), and is responsible for the procurement, initial training, and initial distribution of MWDs used by the military services and several Federal agencies. Specific responsibilities are per AR 190–12.

Section III
Understanding Military Working Dogs

1–8. Advantages of dogs

A dog can be trained to respond consistently to certain sensory stimuli (odors, scents, and so forth) to alert the handler. If the dog's reaction to selected stimuli is always rewarded by the handler, the reward reinforces the dog's behavior, motivating the dog to repeat the actions. A properly trained handler learns to recognize the dog's reactions and to recognize the source because of the characteristics of the reaction learned during training.

1–9. Superiority of senses

Under almost any set of circumstances, a properly trained dog can smell, hear, and visually detect movement better than a person. Trained dogs respond to selected stimuli and alert their handlers to that which they have been trained to detect. The dogs' detection abilities can be inconsistent; however, some variance is normal and must be considered when evaluating a dog's performance.

1–10. Identifying MWD team missions

The following should be considered when evaluating the possible use of MWD teams:

a. The task to be performed.

(1) *Deterrence.* The obvious presence and well–published activities of the MWD teams can successfully deter trespassers, vandals, violent persons, and so forth.

(2) *Detection.* If the desired task is to deter unauthorized or suspect individuals, the team should be assigned to a location and during a time of day or night when visual, sound, and odor distractions are at a minimum. Examples include patrolling shopping or industrial areas after normal operating hours, patrolling a housing area during duty hours or at night, patrolling an airfield or aircraft maintenance area after normal duty hours, or searching a supposedly unoccupied building. Narcotics and explosives detector dogs (EDDs) are trained to perform their detection skills under an extremely wide range of conditions so that location and time of day are not critical factors.

b. Other tasks. Patrol dogs also are trained to apprehend suspects at or near a crime scene, stop those who may attempt to escape, and to protect their handlers from harm. Some patrol dogs may be able to track suspects who have left the scene of a crime. Chapters 2 and 3 provide more details regarding the variety of ways that patrol dogs can be used.

Section IV
Starting a Military Working Dog Program

1–11. Determining need

The installation provost marshal (PM) or the MP unit commander must take the initiative to establish the local MWD program. The specific needs must be determined and the costs of the program must be justified. There is no easy formula to determine the number and type of MWD teams needed at any particular unit or installation. The decision process involves a thorough risk and crime analysis, and an accurate evaluation of the requirements of the entire MP mission. Normal, emergency, and contingency conditions will be analyzed for all security, law enforcement, and combat support missions.

a. Some of the factors to consider when determining the need for MWD teams include:

(1) The unit mission.

(2) The size of the unit's area of responsibility.

(3) The size of the installation population or the number of personnel to be served by the unit.

(4) Incident rates for appropriate crimes against property (for example, housebreaking, burglary, vandalism), crimes of violence (for example, assault, rape, bomb threats, and incidents), and drug usage (criminal cases, quantity of substances seized, level of self–admitted drug abuse, urinalysis test results, and so forth).

(5) Present capability and the commitment of a portion of the manpower resources as handlers.

(6) The types of terrain on the installation or in the probable areas of deployment.

(7) The types of combat support missions for which MWD teams can be used.

(8) The number of installation facilities or areas that can be more adequately protected because of the availability or

use of MWD teams. Included would be hospital parking areas, soldier and dependent housing areas, warehouses, airfields, installation entry points, munitions storage areas, retail facilities, and stadiums.

(9) The capabilities and limitations of MWD teams when assigned to certain types of duties. (For more information, see chap 2.)

(10) Additional considerations or guidelines to use in determining the need for a dog program (or for determining the number of dogs needed in a program) are contained in appendix B.

b. Probably the most difficult obstacles to overcome in order to establish a unit or installation MWD program concern the cost and construction of required kennel facilities. Kennel facilities should be constructed before dogs begin to arrive, but must be completed and available within one year after the dogs begin to arrive. Therefore, planning for MWD teams requires an early commitment to provide resources and construct the necessary kennel facilities. When planning for a MWD program, the PM or MP unit commander should ensure that the advantages of adding MWD teams to the MP force and the associated costs are justified by reasonable expectations of reduced crime rates and increased security. Accordingly, the justification should consider such factors as the following:

(1) Increasing the effectiveness of the MP.

(2) The additional areas that can be protected using MWD teams.

(3) The additional tasks that can be done with MWD teams that cannot be done, or cannot be done as well, with present manpower and equipment resources.

1–12. Kennel construction approval

Once the need and justification for a MWD program are established, the PM or MP unit commander initiates a request to the installation facilities engineer to develop the kennel facility design. Chapter 7 gives extensive guidance on kennel design and location that will meet local conditions and requirements. The standard designs significantly lower the cost of kennel facilities. Cost must be kept as low as possible to ensure that funding can be provided; therefore, kennels should not use expensive construction materials when less expensive materials accomplish the same purpose. (Some features such as the separation between kennels, ventilation, and safe electrical connections are necessary.) Before the kennel design has been finalized, the activity or installation veterinarian should be consulted to ensure that minimum veterinary requirements are included in the final design. After kennel designs are completed and construction costs estimated, the kennel project is submitted for approval and funding to the installation commander. The request for authorization of MWD teams must include the statement that the commitment has been made to fund and build kennels.

1–13. Manpower requirements

Approval for manpower requirements requires identifying the specific MP or civilian positions (by paragraph and line number) on the unit modified table of organization and equipment (MTOE) or table of distribution and allowances (TDA) which will be the handlers and kennelmaster. The request for change to authorization must identify the correct additional skill identifier (ASI) for the types of dogs and handlers being requested, and the grades must be appropriate (E4 and above, as prescribed in AR 611–201). The request for change to the personnel authorization (addition of the ASI to an authorized or required MP position) normally is approved by the appropriate major Army command (MACOM). The approved manpower authorization may be used (after the request for authorization for dogs has been approved) as the basis for requesting handler training. Approved manpower spaces must be on MTOE/TDA for six or more months before personnel are needed to give enough lead time for any assignment action.

1–14. Requests for authorization of military working dogs

Requests for authorization of MWDs and their shipping crates are submitted through command channels according to AR 310–34 and AR 310–49 on DA Form 4610–R (Equipment Changes in MTOE/TDA). Part I is self–explanatory. The request for authorization must identify the nomenclature and line item number (LIN) for the type dogs being requested, as well as specify the number of dogs of each type being requested in Part II. Part III, Personnel, also should be completed so the approving authority has verification that the correct handlers (by number, ASI, and rank/grade) are being requested. Part IV, Justification, contains a complete justification for the dogs being requested as required by AR 190–12. If additional space is needed, continue on plain white, letter–size paper. DA Form 4610–R is forwarded through command channels as a letter request for authorization of equipment. Approval authority for all requests for authorization of MWDs is at Headquarters, Department of the Army (DALO–EARA–A).

1–15. Requesting authorized military working dogs

a. The approved request for authorization of MWDs may be used as the authorization document to submit Military Standard Requisitioning and Issue Procedures (MILSTRIP) requisitions to obtain authorized dogs. MILSTRIP requisitions are submitted via message to Commander, U.S. Army Aviation and Troop Command (ATCOM), ATTN: AMSTR–MSFC, 4300 Goodfellow Blvd., St. Louis, MO 63120–1798. ATCOM will acknowledge receipt of the requisition and prepare a Military Interdepartmental Purchase Request (MIPR), which is forwarded to the 341st Military Working Dog Training Squadron. A veterinary letter must accompany any MILSTRIP requisition when requesting a one year or less replacement MWD. MILSTRIP requests should not contain the words “emergency” or

"urgent." If a unit believes it has an emergency or urgent need for a MWD, the unit should contact ODCSOPS (DAMO–ODL), before submitting a MILSTRIP requisition. (See AR 190–12 for further guidance.)

b. All dogs are trained by the 341st Military Working Dog Training Squadron, Lackland AFB, TX. These dogs are used to fill MILSTRIP requisitions and as training aids for handler training. Requisitions are filled on a first–come, first–serve basis; therefore, new or replacement requisitions for MWDs should be submitted as soon as a requirement is identified.

1–16. Obtaining equipment

Equipment needed to support the unit MWD program is listed in chapter 8. Individual items such as leashes, collars, and muzzles are shipped by the 341st Military Working Dog Training Squadron with the dog. The unit orders feed pans, water buckets, arm protectors, protective suits, other support items, and replacement equipment through normal supply channels.

Section V
The Military Working Dog Section

1–17. Military working dog section organization

There is no standard organizational structure because of the many types of units and many functions which may be performed by MWD teams. Usually, the kennel operation and MWD team training responsibilities are assigned to the kennelmaster. Operational control of MWD teams may be assigned to other leaders and depends on the mission of the unit and the number of MWD teams. The kennelmaster and each of the handlers are responsible for advising the officer or noncommissioned officer (NCO) who is assigned operational control of one or more MWD teams, how to best utilize the team. Operational control may be retained by the commander, delegated to a platoon leader or platoon sergeant, or attached to the PM section with operational control assigned to a member of the PM's staff.

1–18. Military working dog section composition

The MWD section is composed of the kennelmaster, the handlers, and the MWDs. Larger kennels may have an assistant kennelmaster. One or more senior handlers may be assigned responsibilities as trainers. When manpower is available, other personnel may be used for kennel support.

1–19. Duties for military working dog personnel

a. Kennelmaster. The kennelmaster is the noncommissioned officer in charge (NCOIC) of the MWD section. The kennelmaster directly supervises the kennel operation, is responsible for all training, and ensures that MWD team proficiency is maintained. The kennelmaster supervises the care and feeding of the dogs, coordinates training and duty schedules, ensures that the administrative, accountability, and medical records are maintained, obtains all training support requirements, and supervises the kennel facility maintenance. In summary, the kennelmaster has direct supervisory responsibility for the unit MWD program. The requirements for assignment as a kennelmaster are prescribed in AR 190–12. Because of a kennelmaster's unique expertise, he or she should be a direct participant in all planning for the use of MWD teams. The kennelmaster's duties and required tasks include, but are not limited to:

(1) Knowing the mission of the MP unit or the unit to which MWD teams are attached, and how the MWD teams aid in accomplishing the mission.

(2) Knowing the threats to and vulnerabilities of personnel and resources being protected by dog teams which include:

(a) Assisting leaders in preparing operating procedures and instructions for the utilization of MWD teams.

(b) Training handlers according to the operating procedures so that teams are operationally efficient and dependable.

(3) Developing and implementing a comprehensive MWD team training program.

(4) Making sure that MWD teams are skilled in their team functions by frequently evaluating team proficiency and duty performance.

(5) Making appropriate provisions for the health, safety, and care of assigned dogs, and ensuring that each handler properly cares for his or her assigned dog.

(6) Making sure that each handler understands the physical and psychological characteristics and capabilities of their dog, the basic principles of dog training, and the advantages of using MWDs for MP missions. Also, the kennelmaster will make sure each handler is properly trained to detect and interpret the dog's responses to persons, narcotics, explosives, or other stimuli to which the dog has been trained to respond.

(7) Obtaining equipment and supplies for the MWD section, as needed.

(8) Advising anyone assigned operational control of MWD teams on the best ways to use the teams.

(9) Performing trainer duties whenever a competent handler is not available.

b. Kennel support. A commander may provide a kennelmaster with personnel who are interested in becoming handlers or personnel who need to understand the training and functions of MWD teams. These kennel support personnel will be trained to perform sanitation and maintenance of the kennels, support building, and other areas and

equipment that are included in the kennel facility; they will be assisted by handlers whenever working in proximity to MWDs. Kennel support personnel will not be used to train and handle dogs. Persons who have been relieved of MP duties for misconduct, who are pending investigation or disciplinary action, or who are subject to other adverse personnel actions should not be assigned to kennel support duties.

c. MWD handlers. Each handler is personally responsible for their assigned dog. The handler trains, employs, feeds, cares for, cleans, and otherwise maintains his or her assigned dog in every way. The dog depends directly on the handler and, in keeping with the principle of one dog—one handler, the dog should never have to depend on anyone other than the assigned handler. The handler is responsible for the cleaning and maintenance of the dog's kennel. The handler is directly responsible to the kennelmaster for the operation, maintenance, and cleaning of the kennels, kennel support building, training area, exercise area, obedience course, and any other areas or equipment that are included in the kennel facility. The handler is responsible for maintaining accurate, complete, and current training and utilization records. The kennelmaster may assign handlers any other appropriate duties and responsibilities.

1–20. Military working dog handlers

MWD handlers are MP or civilian employee personnel who have been trained to use a very specialized piece of equipment. Military handlers are MP personnel first, capable of performing the standard MP tasks appropriate for their skill level. MP personnel who want to become MWD handlers should be volunteers. The standard of grade authorization (SGA) for dog handlers begins at E4. Handlers formally are trained and certified by the 341st Military Working Dog Training Squadraon, Lackland Air Force Base, TX, or an equivalent formal course approved by the HQDA, ODCSOPS (DAMO–ODL–S). Handlers cannot and will not be trained through on–the–job training (OJT). Use of force policies and the need to be able to control the dog at all times make OJT of handlers unsafe and improper. The use of unqualified personnel to handle dogs also may subject the Army to unacceptable liability. At no time will an unqualified dog handler work with a MWD dog for any reason.

a. The prerequisites and standards for MP personnel who want to become a dog handler are prescribed in AR 190–12.

b. Personnel who successfully complete formal handler training may be stabilized in their present duty assignment according to Army policies. If stabilization of handlers is desirable, it may be obtained by reporting when the handler starts and when the handler successfully completes handler training to the Commander, US Total Army Personnel Command (PERSCOM), ATTN: TAPC–EPL–M, Alexandria, VA 22333–0400.

c. The installation or unit receiving a newly trained handler is responsible for the documentation of the handler ASI in the soldier's personnel records.

1–21. Military working dogs

All dogs trained and used as working dogs by the Army are procured by the 341st Military Working Dog Training Squadron, Lackland AFB, TX. Usually, only the Belgium Malinois and German Shepherd breed dogs are accepted for military use, but other breeds may be used for special purposes.

a. German Shepherd dogs are used as the standard breed because of their unique combination of traits. Shepherds are intelligent, dependable, predictable, easily trained, usually moderately aggressive, and can adapt readily to almost any climatic conditions. While many dog breeds exhibit some or most of these traits, the Shepherd more than any other breed, most consistently exhibits all of these traits.

b. Small breed dogs are being used in special situations as narcotics detector dogs. These dogs are trained only for detection and are not suitable for other duties. This limitation on their use means lower cost effectiveness than the patrol trained detector dogs, and requires the use of small breed dogs remain limited to special situations. Because of this lower cost effectiveness and because of the lack of a wartime mission for small breed detector dogs, the program has been eliminated. Small breed dogs in the system are to be replaced by attrition by the narcotic detector dog. Authorization documents must be changed to reflect this change.

c. The 341st Military Working Dog Training Squadron specifies the breed and other physical requirements for dogs offered for use in the MWD program. Dogs do not have to be purebred or registered, but must display the predominant characteristics of their breed. The 341st Military Working Dog Training Squadron will provide requirements upon request.

d. Since military duties demand strength and stamina, all dogs must be in excellent physical condition. Minor physical defects may be acceptable provided they do not impair the dog's ability to work. Dogs should be moderately aggressive and must not be gun shy.

e. The 341st Military Working Dog Training Squadron has prepared an evaluation packet for use by kennelmasters and veterinarians to field screen all dogs being offered for sale or donation to the military. This packet is available from MACOMs. Field screening helps to eliminate dogs that are clearly unacceptable for military use without the expense of shipping the dog to and from the 341st Military Working Dog Training Squadron. As a general rule, dogs will not be accepted from donors outside the customs territory of the United States.

f. The majority of dogs trained and used by the military services are purchased from the open market. Kennelmasters and handlers can help recruit qualified dogs. Anyone interested in donating or selling a dog to the U.S.

Government should contact the Program Manager, 341st Military Working Dog Training Squadron, Lackland AFB, TX 78236–5000, or (toll free) 1–800–531–1066.

1–22. Replacement of military working dogs

The method of replacing MWDs and MWD teams according to the team concept is prescribed in AR 190–12.

1–23. Disposition of disabled dogs

When an MWD becomes incapacitated and can no longer perform services beneficial to the Government, euthanasia of the dog is authorized.

a. Dogs are considered incapacitated and may undergo euthanasia:

(1) To end suffering from diseases, injury, or permanent physical disability.

(2) To prevent the spread of a contagious disease.

(3) When they are fractious or too vicious for retraining.

(4) When they are not fit to work because of medical or physical disabilities associated with old age.

(5) When they cease to be effective.

b. Dogs do not undergo euthanasia solely because of advanced age if they continue to be physically capable of performing useful duty.

c. Before a dog undergoes euthanasia, written approval must be obtained form the first field grade rank (Major or above) commander in the supervisory chain of command of the unit owning the dog. A letter recommending euthanasia identifies the dog by name and tattoo number and specifies the reason for the recommendation. If the reason is medical, the recommendation must be supported by a physical evaluation from a veterinarian. The commander approves or disapproves the euthanasia by endorsement of the letter of recommendation.

d. The veterinarian may euthanize a dog without prior written approval of the appropriate commander in an emergency when a delay would cause undue suffering and pain to the dog. In this case, the veterinarian will document the circumstances and necessity for euthanasia by writing a letter to the appropriate commander.

e. Whenever a dog undergoes euthanasia, all medical and service records pertaining to the dog are sent to the 341st Military Working Dog Training Squadron where these records are maintained in a central records repository.

Section VI
Operation of the Military Working Dog Section

1–24. Scheduling and employment

The kennelmaster assists the commander or operations officer in developing duty schedules, duty cycles, duty hours, and methods of using MWD teams that best support MP operations. Scheduling must allow time for mandatory proficiency training and for the care of the dogs, kennels, and equipment.

a. The duty schedule must allow at least four hours each week for proficiency training in both patrol and detector tasks—eight hours for dual certified dogs. One period of four hours proficiency training each week is preferred, rather than shorter periods each day or two. Daily work schedules should provide one to two hours for feeding, grooming, and exercising the dogs, and for maintenance of equipment and kennel facilities.

b. Proficiency training should be conducted in both a training and a duty environment, and should include repetitive training on each of the dog's capabilities. Any deficiencies or weaknesses must be stressed during training to regain and maintain at least minimum proficiency.

c. Some exercising of the dog is desirable when dogs are taken out of the kennel for duty. Detector dogs should not be exercised to the extent that they begin to pant. If such exercise is necessary, they must be allowed to rest before being required to search.

d. MWD teams should be worked in a variety of duty positions each week so that the team is exposed to as many different situations as possible. The variation enhances team proficiency and keeps the dog from becoming bored or making stereotyped responses.

e. Patrol–trained detector dog teams perform normal patrol dog team duties when not needed for detection work. Patrol detector teams cannot be limited to detection duties only. Patrol detector teams need to maintain their patrol dog skills. Lack of exposure to patrol dog tasks can very quickly cause loss of proficiency.

1–25. Competitive events

MWD teams should be encouraged and allowed to participate in competitive events, seminars, conferences, and so forth, conducted by civil or MP agencies or officially recognized police canine associations. The exposure to competitive events permits a MWD team to develop skills, to see and learn advanced employment and training techniques, and to gain a better understanding of the function of the MWD. Although different tasks may be required or different methods may be used, the handler should be able to identify those methods and tasks that apply to military missions. In this way, the team's proficiency and effectiveness are enhanced.

1–26. One dog—one handler

A MWD team includes a handler and his or her assigned dog. The team concept joins a dog and handler together as a team. The team is not split unless the dog dies or the handler leaves the Army, the handler is trained with a different dog in one of the detector dog handler skills, or the handler is reassigned to a nonhandler duty position. The expense of training dog and handler as a team necessitates that dog and handler remain together for as long as possible. The permanent change of station (PCS) reassignment of dog and handler normally will be as a team. Dog and handler will not be separated unless the reassignment orders state the assignment is not as a MWD team or the dog is medically ineligible for reassignment.

1–27. Control

MWDs are worked on– or off–leash depending on the situation. Handlers must be able to control their dog whenever it is off–leash. Kennelmasters and trainers must closely observe off–leash training so that any off–leash control problems are quickly identified and corrected.

1–28. Privately–owned and stray animals

a. Only dogs which are procured and trained as MWDs are housed in U.S. Army kennel facilities. MWD handlers on temporary duty (TDY) must make advance arrangements with the kennelmasters at enroute or TDY locations for overnight kenneling of their assigned dog. Privately–owned animals, unit mascots, or stray animals will not be allowed to enter any MWD kennel facility.

b. Facilities used to house stray or abandoned animals will not be located with or operated as part of an MWD kennel facility. Personnel assigned to the MWD section will not be used to support stray apprehension or operation of stray or abandoned animal facilities. This prohibition exists to prevent contamination of the kennel and the potential spread of infectious diseases which may be carried by animals other than MWDs.

Chapter 2
Utilization

Section I
General

2–1. General information

a. The patrol dog is the basic Army MWD. Some patrol dogs subsequently may be trained in additional skills, such as tracking, scouting, narcotics detection, and explosives detection. All of the MWD employment concepts which have been developed revolve around the basic skills of the Army patrol dog. All dog handlers, even those assigned to narcotics/contraband detector dogs are first trained as patrol dog handlers. The patrol dog handler training teaches handlers the importance of caring for and feeding their assigned dog, the importance of obedience and proficiency training, and helps handlers to develop complete understanding of their role in the MWD program.

b. The length of tours of duty for MWD teams should be consistent with the needs of the command, and schedules should consider the climate and terrain conditions which can enhance or reduce a dog team's effectiveness. Scheduling also should fully consider the time necessary for training the dog, caring for and feeding the dog, and kennel sanitation and maintenance. The standard for employment is approximately 30 hours per week, and at least four hours of proficiency training per week in each certified specialty. It may be necessary to periodically increase the frequency or length of proficiency training to compensate for or correct training or operational deficiencies. When proficiency training must be increased, there will be some tradeoff with utilization. However, it should be possible to maintain the utilization and proficiency training ratio. When both training and utilization consistently fall below the employment standard, a reduction of MWD team authorizations is indicated. Authorizations should be reduced to the number that can maintain the standard. Excess MWD teams should be reassigned to areas where they are needed.

c. There is no need to withdraw MWD teams from their posts during inclement weather. The dog's ability to detect an intrusion will still exceed that of his handler or many other physical, mechanical, or electrical intrusion detection systems (IDS). MWDs stationed in cold weather areas should be acclimated to their boots and blankets during training so the dogs will not resist wearing protective equipment when weather conditions necessitate its use.

d. Whenever possible, a handler should salute an approaching or passing officer. However, maintaining control of the dog is more critical. The action of the handler saluting and of an officer returning the salute could be misinterpreted by the dog as an attack on his handler and could result in the dog attacking the officer. If a salute cannot be safely rendered, an appropriate greeting should be given. Full attention should be given to controlling the dog if the officer elects to give a salute.

2–2. Use of force

a. The patrol dog is trained to perform the primary function of detecting the presence of unauthorized personnel and

warning its handler. Once the handler has been alerted, it becomes the responsibility of the handler to cope with the situation in the most appropriate manner. Frequently, the appropriate action is to keep the intruder or area under surveillance until other MP personnel can arrive. The secondary function of the patrol dog is to pursue, attack, and hold any intruder who attempts to avoid apprehension or escape from custody. However, releasing the dog constitutes the conscious application of physical force and, therefore, is governed by the use of force requirements of AR 190–14 and AR 190–12.

b. As a measure of force, release of a patrol dog to pursue, attack, and hold a person may result in physical injury to the person against whom the dog is released. As a result, AR 190–14 requires that all lesser means of force must be attempted when it is reasonable to do so. The duty of the MP, whatever the situation, is to apply only the minimum amount of force necessary to prevent escape or apprehend a person engaged in a criminal act. The handler also bears a distinct responsibility for the safety of innocent persons, including other MP personnel. Handlers must avoid releasing the dog to attack until the danger to innocent persons can be eliminated or minimized. One method of minimizing danger is to ensure that all MP personnel have been trained regarding the actions to take and the actions to avoid when working around MWDs. Trained MPs can then assist innocent persons who may be present in any area from inadvertently becoming the object of an MWD's attack.

c. When the handler determines that the dog should be released to attack, the handler should disconnect the leash so that the dog will not endanger itself because of a trailing leash.

Section II
Employment of Patrol Dogs—Law Enforcement Operations

2–3. Walking patrols

The patrol dog's contribution to the MWD team law enforcement efforts is most effective when the team is on foot. Some of the law enforcement duties that a patrol dog team can do as a walking patrol include checking or clearing buildings and patrolling parking lots, dependent housing areas, and troop billet areas. The following factors should be considered when planning patrol dog team walking patrols:

a. Since it is easily seen, a patrol dog used during daylight in congested areas provides a good psychological deterrent to certain crimes. Patrol dogs are tolerant of people, and the presence of a large number of people does not significantly reduce the patrol dog's usefulness, except as a detector.

b. More effective use of the patrol dog's detection ability can be made by using the patrol dog team during darkness or periods of reduced visibility and where there are fewer distractions. A person fleeing a crime scene at night may not be detected by the MPs, but a patrol dog normally will be able to detect and locate a fleeing suspect. When necessary and appropriate, the patrol dog also is much more effective at pursuing and holding the suspect.

c. A larger number of buildings and parking lots can more easily be checked or searched with a patrol dog team than by a single MP.

d. Periodic use of patrol dog teams around on–post schools, especially when school is starting and dismissing, may help deter potential vandals, child molesters, exhibitionists, and illegal drug activities.

e. Patrol dog teams also can provide effective security for communications facilities, military equipment, and command posts.

2–4. Mobile patrols

a. Giving patrol dog teams a mobile capability significantly increases their potential area of coverage and allows the teams to perform a greater range of functions during a duty shift. The team is normally unaccompanied, but other MPs may go with the team when the need arises.

b. Whenever possible, the mobile patrol dog team should be assigned a sedan, station wagon, or other passenger type vehicle. The patrol dog will always ride with the handler in the passenger compartment, regardless of the type vehicle. Placing portable kennels in the beds of pickups for transporting dogs is not appropriate for duty. It renders the dog unable to assist his handler, the dog does not stay alert, and the dog cannot protect itself.

c. While patrolling, the handler may allow the dog to be off–leash on the front or rear seat of the vehicle. The rear seat of the vehicle should only be used when a cage does not separate the dog and the handler. A stable platform should be provided to assist the dog in maintaining its position. Suitable platforms may be built locally by adding two 2–inch by 2–inch folding legs to one side of a 24–inch by 30–inch rectangle of 1/2–inch plywood. The length of the legs is determined by the distance from the top of the seat to the floor. The angle or curvature of some vehicle seats may require the addition of a spacer block between the seat and the platform to level the platform. The surface of the platform will be covered with hard rubber matting or other nonskid surface.

d. The dog is required to remain in the SIT position as much as possible to observe the surrounding and activities, and so the dog can be seen. The handler should never allow the dog to lie down or go to sleep, so the dog learns to distinguish between working time and resting time. To prevent eye injury from insects or other foreign objects, the dog must not be allowed to place its head out the window while the vehicle is moving.

e. Mobile patrols are most effective when the patrol dog team uses the ride–awhile, walk–awhile method. The team is able to cover a large patrol area and the periodic exercise helps to keep the dog alert.

2–5. Alarm responses

In responding to an alarm condition at facilities such as clubs, finance offices, or banks, the patrol dog team should be among the first MPs on the scene. The patrol dog may be used to search and clear the building and immediate area, and help with any apprehensions. If the patrol dog must be used to track a suspect, other persons should attempt to avoid contaminating the area with scents and tracks that may confuse the dog.

2–6. Building checks and searches

A patrol dog team is especially effective in checking and searching buildings such as commissaries, post exchanges, finance offices, banks, and warehouses.

a. The patrol dog team can check buildings visually while patrolling, and also can stop and dismount so the handler can physically check doors and windows. These checks should be made with the dog on–leash. To take maximum advantage of the dog's scenting ability, the handler should approach buildings from downwind.

b. If a building is open or forced entry is evident, patrol dog teams may be used to track hidden intruders from point of penetration to their location. Patrol dogs may be released to apprehend an intruder suspected of committing a serious offense when the only alternatives are escape or the use of deadly force.

(1) Prior to searching a building, the handler will determine whether to make the search with the dog on or off the leash. Some of the factors which must be considered include the following:

(a) The time of day or night.

(b) Evidence of forced entry.

(c) The type and size of the building or area to be searched.

(d) The danger to any innocent persons in the area.

(e) The dog's ability to work off–leash.

(2) Prior to release of the dog inside a building or enclosed area, a clear voice warning will be given to any persons inside or in the area, to come out immediately, and that failure to comply with instructions will result in the release of a trained MWD. All persons will be cautioned that the dog may attack without warning, and that they could receive physical injuries. The handler will maintain voice control of his dog throughout the search.

(3) On–leash searches will be preceded by a warning similar to the one for off–leash searches. The searching team should be followed by at least one other MP to protect the search team.

2–7. Vehicle parking lots

a. Dog teams are effective in detecting and apprehending thieves and vandals in vehicle parking lots. Also, the presence of the patrol dog team may deter potential acts of theft and vandalism. The team can be most effective by alternating between vehicle and foot patrol of the parking lots. During hours of darkness, when there is no activity in a parking lot, the team should approach the lot from the downwind side. If the dog responds, the handler should locate and challenge the suspect for identification.

b. If a suspect tries to escape or avoid apprehension, and the handler is reasonably certain the suspect has committed or is attempting to commit a serious offense, the handler should give a clear warning to the suspect to halt. When lesser means of force have failed to stop the fleeing suspect, the patrol dog may be released to pursue, attack, and hold. If it is not safe to release the dog, the handler may attempt to follow the individual if the patrol dog has the ability to track.

2–8. Dependent housing and billet areas

a. Using patrol dogs in family housing or in the vicinity of troop billets helps deter and decrease criminal actions. Although the team should have the ability to move quickly from one area to another, actual patrolling of housing and billet areas should be mostly dismounted. Frequent contact with area residents helps to reinforce the dog's tolerance of people, while at the same time helping to build the confidence of the residents in the efforts of the MPs to keep their community safe and secure. The handler is responsible for determining how much socializing the dog needs and will accept without losing its desired aggressiveness. Community residents should not fear the patrol dog team, but they should have a healthy respect for the team's capabilities.

b. PMs, security officers, or MP commanders will establish procedures governing the release of a patrol dog in family housing or billet areas consistent with Army use of force policy. Apprehensions for minor offenses should not normally necessitate releasing the dog. Children involved in minor incidents, who fail to heed warnings to halt, should be followed to their quarters rather than releasing the dog to catch them. A patrol dog with an ability to track can be used very advantageously in both housing and billet areas with minimum risk to innocent persons. For example, if a"peeping tom" is reported, a dog team may successfully track and apprehend the offender. Tracking procedures are further discussed in paragraph 2–16.

2–9. Traffic violations and accident investigations

a. When a traffic stop is made, the patrol dog may accompany the handler on–leash without interfering with the issuing of traffic citations. Frequently, the presence of the dog will cause many violators to be more willing to cooperate.

b. MWD teams should not be used for traffic control or accident investigation duties. If exceptional circumstances require that they perform these duties, the dog should be secured in the vehicle. In warm weather, dogs left in vehicles can overheat in a very short time because of poor shade or poor ventilation. The handler must make sure there is adequate ventilation for the dog, but at the same time make sure that the dog is unable to get out of the vehicle to avoid potential injury to the dog. All windows need to be rolled up far enough to prevent the dog from trying to get out to avoid potential injury to the dog.

2–10. Identification and apprehension of individuals

To check identification or to apprehend, the handler should always warn the person(s) that if they display any hostility to the patrol dog or the handler, the dog will attack without command. After an apprehension, a search is always done with the patrol dog in the guard position. A backup MP patrol should be used to transport apprehended personnel. If the MWD team must transport apprehended personnel, the patrol dog should be positioned between the handler and the offender.

2–11. Protecting distinguished visitors

Patrol dog teams may assist in protecting distinguished visitors by providing security around quarters and conference sites, or by searching and clearing buildings.

2–12. Fixed post (stakeout)

The primary function of a patrol dog team on a fixed post is surveillance over an area or building. If used outside, the team should be located downwind where the dog can detect an intruder by scent, sound, or sight. If this is not possible, the team should be located so an intruder can be detected by sight or sound. When used inside, the dog depends mostly on its hearing. Other MPs may be used with dog teams on fixed posts.

2–13. Entry control

a. A patrol dog team may be used on gate duty or other entry control functions. The dog's primary function is deterrence and protection of the handler. Use of MWD teams for entry control, however, is not recommended because of the:

(1) High volume of traffic.

(2) Large number of distractions.

(3) Reduction of the handler's ability to maintain positive control over the dog.

b. If circumstances necessitate using MWD teams at entry control points, the dog should not be confined inside a gate house where it could not respond to its handler if needed. Further, the MWD team would need to be frequently moved to other duties to keep the dog alert and proficient.

2–14. Protection of funds

a. Patrol dog teams, used to escort and safeguard funds, may deter some people from attempting to rob the courier. Unlike people, a patrol dog does not fear an armed or unarmed person and, if fired at, will pursue and attack. This is an important aspect of the patrol dog's training to emphasize during demonstrations and in news releases.

b. While escorting funds, the patrol dog team should follow the courier to observe anyone approaching. If a robbery is attempted, the patrol dog is released to attack. Couriers who are reluctant to ride in the same vehicle with the patrol dog should sit in a back seat with the MWD team in front, or ride in another vehicle with the MWD team following.

2–15. Confrontation management

Patrol dogs should be used cautiously in confrontation situations, since their presence could aggravate a situation. The Army use of force policy applies as much to confrontation situations as it does to any other type of situation. (See guidance in paras 2–2 and 2–17). A patrol dog handler who is confronted (for example, in a club or housing area) should avoid entering a building or a closed area alone with the patrol dog. The handler should use the minimum necessary force to withdraw safely from a confrontational situation and then immediately report the incident to his supervisor so that necessary actions can be taken.

2–16. Tracking

a. Not all patrol dogs have been trained to track. Among the dogs trained to track, not all have the same tracking ability. The kennelmaster must know which of his assigned patrol dogs are good trackers and use the best patrol dogs for tracking missions.

b. When the need for tracking arises, personnel who are on the scene should avoid the area and keep other personnel from entering the tracking area. This will reduce contamination of the area with extraneous or confusing scents.

c. To start the track, the patrol dog is taken to the last known location of the person to be tracked and allowed to find the scent. If there are any articles, such as clothing, that have the person's scent, the dog is allowed to smell them to help identify the correct scent. Any articles with the person's scent should be taken along on the track to remind the dog periodically of the correct scent.

d. To eliminate further contamination of the track, the dog team always precedes the search party. The search party should maintain sufficient distance to avoid distracting the dog and to allow the dog to return to an earlier point to regain a lost scent trail, if necessary.

e. The dog should begin tracking as soon as possible because success often depends on the strength of the available scent. The passage of time, wind strength, and other environmental conditions will affect the strength of the scent. Human scent adheres well to grass and brush which can improve the chances of success. Paved or gravel areas, and strong scents such as fertilizer, burned grass, or spilled oil or gasoline impede the tracking ability. Human scent remains longer on cool, moist ground. Direct sunlight, extremely dry ground, or heavy rain dissolves scent rapidly, making tracking more difficult.

f. During tracking, the dog may locate discarded items of evidence or clothing. Allow the dog to smell them but do not allow it to pick them up in its mouth.

g. The methods used to track lost personnel, especially children, are different from those used to track a fleeing suspect. Only dogs who have been trained to track successfully for lost personnel should be used for that purpose to avoid any danger of harming innocent persons.

h. The MWD will wear a tracking harness (NSN 3770–00–240–6620) for all tracking missions. At least 10 percent of the assigned patrol dogs (or at least one patrol dog) should be able to track a person on a trail at least four hours old for at least two miles over varied terrain.

2–17. Riot and crowd control

a. MWD teams will not be used for crowd control or direct confrontation with demonstrators unless determined to be absolutely necessary by the responsible commander. Use of patrol dog teams for direct confrontation with demonstrators is not recommended. In accordance with Army use of force policy, the application of physical force against a person who cannot reasonably be suspected of committing an offense is not appropriate. Presence in a crowd does not necessarily constitute an offense or a situation where it would be reasonable to apply the degree of physical force of a patrol dog. A patrol dog would not be used unless the person is engaged in some other readily apparent criminal behavior such as theft, destruction of property, or assault.

(1) The duty of the MP, whatever the situation, is to apply only the minimum amount of force necessary to prevent escape or effect a lawful apprehension of a person engaged in a criminal act. In a crowd situation, there is no certainty that a patrol dog will attack, pursue, and hold the person against whom the dog has been released. Therefore, under no circumstances, will dogs be released into a crowd.

(2) The high levels of confusion and excitement, and the large number of antagonists all contribute to the difficulty of employing patrol dogs properly. Frequently, the appearance of dogs at an angry crowd scene has resulted in an escalation of violence of the crowd. The crowd often will challenge the MPs to use the patrol dogs as a measure of force, particularly if a situation can be provoked that can later be interpreted or challenged as being an unreasonable use of force by the authorities. According to crowd psychology, the crowd reasons that when authorities act unreasonably, the crowd is then justified in also taking unreasonable actions. This includes criminal actions.

(3) The decision to employ patrol dogs must be weighed carefully by the responsible commander to be sure that if patrol dog teams are committed that all lesser means of force have been reasonably attempted and have failed. The commitment of MWD teams now comes only as an alternative to the use of deadly force to gain control of the situation. If a commander directs the employment of patrol dog teams for direct confrontation with demonstrators, the procedures listed below should be followed.

(a) During the otherwise peaceful stages of a confrontation, patrol dog teams should be held in reserve, out of sight of the crowd. As the situation worsens, dog teams may be moved forward to within sight of the crowd, but well away from the front lines.

(b) When committed to the front lines in direct confrontation, dogs are kept on short leash and allowed to bite when and only under the specific circumstances authorized by the responsible commander. Dogs will never be released into a crowd.

(c) Other riot control force personnel should be positioned approximately 10 feet from the patrol dog teams to prevent any unintentional bite injuries to riot control force personnel.

(d) In an open area with normal wind velocity, chemical riot control agents will not affect the patrol dog's ability to be both a physical and psychological deterrent. Handlers should, however, closely watch their dogs under such conditions. If the dogs show any signs of distress, have the dogs examined by a veterinarian as soon as possible.

(e) Patrol dog teams may be used to help apprehension teams catch and remove specific individuals in a group of demonstrators. In this role, the dog team is used only to protect the members of the apprehension team. The handler must exercise extreme caution in this situation because of the high level of activity and excitement. The dog will become extremely excited and agitated and could mistakenly bite or attempt to bite a member of the apprehension

team. The handler must maintain positive control over the dog and immediately redirect the dog's aggressiveness toward the demonstrators.

b. MWD teams are extremely useful in performing a variety of duties supporting riot control forces. For example, patrol dog teams can be used to:

(1) Protect critical facilities.

(2) Provide security for important persons.

(3) Provide security for law enforcement personnel and equipment held in reserve.

(4) Provide security for fire fighters and fire fighting equipment.

(5) Secure access control points.

(6) Provide security along crowd escape valves.

(7) Provide perimeter patrolling or area patrolling after the crowd has dispersed.

(8) Provide explosives detection.

(9) Position patrol dog teams on the outer perimeter of large open areas to hold the crowd while other forces apprehend demonstrators.

c. Dog teams may be posted around holding areas and processing centers to prevent the escape or liberation of prisoners. Patrol dogs can be used in many locations and situations where manpower shortages preclude assigning adequate manpower for security missions. FM 19–15 describes many situations where the application of initiative on the part of MPs to employ patrol dogs will significantly alleviate potential security problems.

2–18. Civil disasters

When directed or approved by proper authority, MWD teams may be provided to a civilian community in a humanitarian or domestic emergency. Care must be exercised in any of these situations to avoid violations of section 1385, title 18, United States Code (more commonly known as the Posse Comitatus Act). The responsible commander should work closely with the following to closely supervise and direct the activities of any committed MWD teams:

a. The PM or security officer.

b. The MP commander.

c. The installation staff judge advocate (SJA).

Section III
Employment of Patrol Dogs—Security Operations

2–19. Security planning

The primary mission of patrol dog teams as assigned to security duties is to deter, detect, and help apprehend violators on Army property or to prevent access to Army resources by unauthorized personnel. Patrol dog teams may be used on almost any security post, but planners must be familiar with the capabilities of patrol dog teams so that teams can be assigned to those posts where they can be used most effectively.

a. Compared to one or more lone sentries, the patrol dog team offers a much greater intruder detection capability. In addition, it can cover a larger area. This increased probability of detection will, in many cases, discourage attempts by an intruder to gain access to resources. A well–trained team also has a better chance of locating and stopping an intruder.

b. A patrol dog team's effectiveness can be reduced when used on posts that deprive the team of the ability to adjust positions and maneuver to maximize natural abilities. For example, if the team's purpose is detection of intruders, placing the team in an area with a lot of people and constant activity deprives the team of most of its detection capability. If deterrence is the purpose of placing the dog team in high traffic areas, some benefit is gained because of the high visibility of the team. However, any deterrent benefit that may be gained can be lost to the degree that people realize that the team has been deprived of its detection capability. Using a patrol dog team on a security post where there is little room to maneuver to take advantage of wind direction or shadows, such as between fence lines, also deprives the team of most of its capability. When working on a post where the handler must focus on tasks other than working the dog, the dog's abilities, other than protecting his handler, are largely wasted. Finally, a handler usually is unable to quickly or effectively use his or her weapon because the handler also must control the dog. Therefore, a patrol dog team should not be used on a post where rapid, effective firepower is essential.

2–20. Post selection

In selecting security posts, select those posts where it is possible to maximize the advantages to be gained by using patrol dog teams, while minimizing the factors which tend to reduce the dog's capabilities. The area should be as free as possible of distractions that tend to confuse the dog or discourage it from reacting to changes in its environment. Planners must consider the location and size of the area to be protected, the condition and type of terrain, and the prevailing wind direction. All these factors are used to determine the number of dog teams and where the teams will be

generally located. Where there are several limiting factors, adjust the size, number, and locations of the posts to compensate for any potential losses of team effectiveness.

2–21. Perimeter and distant support posts

Patrol dog teams are especially useful for perimeter and distant support posts because they are usually located well away from normal activity and large numbers of people. These posts also usually enclose large areas, and it would take a large number of single sentries to secure the area effectively. The large size of these areas allows the dog team to change positions to take best advantage of the prevailing wind direction. These posts may be secured only during periods of advanced security and high threat. Occasional random posting of these areas is recommended, especially during periods of low visibility such as darkness, rain, and fog. Barriers and obstacles, such as fences, buildings, gullies, and streams also must be identified and considered in security post planning. Place the dog team so that these obstacles offer the least interference to security.

2–22. Close boundary (CB) posts

CB posts differ from perimeter and distant support posts in that it is closer to and dedicated to protecting specific resources. The reasons for using patrol dog teams for security are the same. The post is slightly different because the team is closer to the resource and cannot move around as much to work the wind. CB posts also are closer to human activity and other distractions, such as engine noise and petroleum, oil, and lubricant (POL) odors. These distractions may require setting up a different post location and post limits for a dog team than those for a lone sentry on the same post.

a. One of the decisions that most directly influences security is whether to post the team inside or outside the fence surrounding the resources to be protected.

(1) If placed inside a fence, the team can patrol close to and periodically check the resources. But, if the dog detects an intruder trying to enter the area, the fence may prevent the team from following the escaping intruder. Also, a decoy placed upwind of a dog team confined by a fence can distract the dog while other intruders penetrate the area downwind.

(2) If placed outside a fence, a patrol dog team can move around easier to work the wind and can more easily follow and respond to the source. However, the team cannot respond quickly to a problem inside the protected area. Also, a decoy placed upwind from the team can draw the team away from the resource and make it easier for others to attack from downwind.

b. The more a team's ability to work the wind is limited, the more the team must rely on sound and sight for detection. Planners must learn how environmental change affects a dog's ability to see, hear, and smell, so post locations and limits can be adjusted. Flexible posting also increases deterrence by allowing the team to avoid a set patrol pattern.

c. Using a patrol dog team in a lighted area makes it easier for an outsider to detect the team's presence, allows potential intruders to observe the team's movements, and increases the possibility of a successful penetration. The lights also may cause the dog to rely more on sight than on its other senses. Therefore, if the team must be used in a lighted area, it should be allowed to patrol a varied route, remain in shadows, or stand stationary in concealed downwind positions.

2–23. External intrusion detection systems (IDS)

Continuing development and use of IDS for security makes it necessary to reassess the role of patrol dog teams in security of priority resources where an IDS is used. Although IDS are designed to greatly reduce the probability of a successful area penetration, they are not designed to totally replace sentries or dog teams. IDS cannot "see" beyond the outer clear zones, cannot counter intrusions, cannot track the progress of an intruder force after penetration, and are subject to malfunction and breakdown. Patrol dog teams or sentries cannot counter all potential problems, but they can be used selectively to counter some of the IDS limitations. Security planners should develop plans which set an effective balance between sensor systems and dog teams. Some suggested functions for integrating dog teams into IDS–augmented security systems are as follows:

a. Patrol dog teams may be used inside or outside IDS–protected areas to give immediate response to areas not clearly seen by closed circuit television (CCTV), or to support security response teams in their role of alarm assessment.

(1) Inside protected areas, patrol dog teams may track hidden intruders from point of penetration to their hiding location.

(2) Patrol dog teams may be posted outside IDS–protected areas during periods of increased threat to expand the protected area beyond the range of the IDS. This use is particularly desirable when there is heavy vegetation beyond the perimeter clear zone, or when protected areas are located on or near installation perimeters and may, therefore, be easily accessible to the public.

b. A patrol dog team works effectively as an element of the security response team, or as an element of other designated response forces (RFs).

c. Patrol dog teams can be used to compensate for decreased IDS effectiveness when poor visibility or other environmental conditions adversely affect the IDS equipment or when IDS is not functioning.

2–24. Mobile security patrols

The patrol dog team's training is especially useful for mobile patrols and RFs. As an individual patrol, a patrol dog team can cover individual areas or several areas, and can respond to incidents occurring in any area.

a. Individual mobile patrol duties may include alarm response, building checks, area surveillance and patrol, and identifying and apprehending intruders. Dog teams on mobile patrol can cover large areas quickly, and present both a physical and psychological deterrent.

b. When responding to a request for assistance, the handler must be given the precise location of the incident and whether the intruder is located inside or outside the protected area. If wind direction can be determined, the handler can plan his or her approach to the area from the downwind side. When the patrol dog team arrives, the personnel on the scene should point out the location of the suspected intruder and give the handler any other related information. While the patrol dog team closes on the intruder, other responding forces should follow or provide cover for the team.

c. Patrol dog teams check buildings in their patrol area to detect anyone using the building as concealment or to detect personnel who have entered a building illegally.

(1) The patrol dog team always approaches the building from downwind and checks the entire outside of the building first. This includes checks of any storage sheds, trash containers, and other possible hiding places. As the team circles the building, the handler physically checks doors and windows for signs of forced entry.

(2) If a handler finds an unsecured building, the handler should report the situation immediately and request a backup patrol before entering to search the building. While waiting for the backup patrol to arrive, the handler should locate himself or herself to be able to observe or allow the patrol dog to detect any person attempting to leave the building. An intruder may not leave the building the same way he or she entered but often will choose an exit that allows the least chance of detection.

(3) When the backup patrol arrives, the handler should discuss the building search method and locate the backup patrol in areas where they can best support the dog team. The area around the apparent point of entry should be kept clear until after the building has been searched or processed for any evidence by investigators.

(4) The handler decides whether to conduct the search on– or off–leash considering the dog's ability to work effectively off–leash, the type and size of building, the time of day or night, indications of forced entry, known or suspected contents of the building, and the possibility of innocent persons being inside. The handler should carefully select the best point of entry into the building, if there is a choice.

(5) Backup patrol personnel should select positions from which they can observe all possible exits from the building and any vehicles parked nearby. They should also be alert for any other personnel moving about the area.

(6) When all personnel are in position, the dog team prepares to enter the building. The handler must announce to anyone inside the building that a trained patrol dog is entering to search the building and give anyone inside a reasonable opportunity to exit. After an appropriate length of time, the patrol dog team enters and searches the building. Even if an intruder comes out or is found, the patrol dog team should always search and clear the entire building in case there are more intruders.

(7) The handler should allow the patrol dog to enter the building first to clear the immediate area of entry before the handler enters. All rooms and areas inside the building should be entered by the dog first. As the search progresses, some lights may be turned on to areas that were cleared but no light that would silhouette the team should be turned on at any time.

(8) If the dog responds, the handler should take cover, recall the dog, and put the dog on–leash. The handler then calls to the intruder to come out with hands raised or the dog will be released to attack. The handler also should notify his backup that one or more intruders have been located. Help in making the apprehensions should be requested if necessary.

(9) If the dog does not respond and the building is cleared, the team should attempt to track away from the point of forced entry. Tracking may result in discovering the method of escape, discarded evidence, or finding the intruder.

d. As a member of a response team, a patrol dog team increases the response team's capability to find and apprehend suspects. The response team needs to frequently train and operate with the patrol dog team so that all actions are coordinated and predictable. A variety of response training exercises develop the ability of the team to work well together. The dog team should be the active member of the response team during all searches.

2–25. Secondary response forces

RFs are typically used as blocking forces and for sweeps and counterattacks. Patrol dog teams can greatly improve the capabilities of the RF. Some factors which must be considered are:

a. When used with blocking forces, blocking positions must be selected downwind from the dog team's position.

b. When used for sweeps, the RF moves into the wind with the dog team in the lead position.

c. In preparing for counterattacks, a dog team can often pinpoint the exact location of individual intruders.

d. In clearing a position that has been counterattacked successfully, a dog team can help locate and catch hidden intruders. EDDs can be used to help clear the area of explosive charges, weapons, and ammunition.

Section IV
Employment of Patrol Dogs—Combat Support Operations

2–26. General mission
In combat support operations, patrol dog teams are used to enhance the detection capabilities of the combat support force, and to provide a psychological deterrent to hostile intrusions. In a hostile environment, a dog's response will, in many cases, provide the initial warning to the presence of a hostile force if the teams are properly located. In past combat operations, MWD teams often provided warning of attacks early enough to allow RFs time to deploy into advantageous positions and prevent enemy forces from reaching their objectives. MWD teams also have helped to clear protected areas of hostile persons, explosives, and weapons after attacks.

2–27. Area defense
Areas that cannot be covered by static defensive posts because of vegetation, terrain, or some other peculiar feature can be secured by using patrol dog teams. The patrol dog can detect personnel using concealed avenues of approach and provide an early warning to defenders. Each dog team's area of responsibility should be large enough so that the team can move to take advantage of the prevailing wind directions. A fixed sentry position should be established to provide covering fires for each dog team in case the team must withdraw closer to the defensive perimeter after the dog has responded on an attempted hostile probe or penetration.

2–28. Warning and response procedures
Several procedures should be developed for warning friendly forces of a patrol dog's response because circumstances may prevent the use of a radio. Also, different types of responses tailored to fit a variety of potential situations should be developed. For example, it may be desirable to have the dog team follow the response and locate the cause. At other times, combat intelligence may require that the team maintain in the alert position until assistance arrives, or to withdraw to a more advantageous position. Whatever response is used, the handler should not release a dog unless it is necessary to defend:

a. Himself or herself.

b. Other personnel.

c. Protected resources.

2–29. Listening posts, reconnaissance, and combat patrols
a. Planning factors. When setting up listening posts or combat patrols, consider the availability and suitability of patrol dogs for the particular mission. The kennelmaster must be briefed early regarding the mission. This will ensure that the most suitable patrol dog team can be selected and the handler can prepare for the mission. The handler should check the dog for any limiting ailments and conduct training rehearsals to become familiar with the mission. The kennelmaster and selected handler(s) must be involved in planning conferences and briefings involving the use of a dog team.

(1) In defensive operations, combat patrols are used to provide early warning, to confirm intelligence information, and detect or deter enemy action. Patrol dog teams greatly enhance the security of reconnaissance and combat patrols.

(2) On combat patrols, a patrol dog works at maximum efficiency for only two or three hours. The team is most effective in uninhabited areas. If a dog frequently responds on friendly forces and is continuously taken off response, the dog soon loses interest and reliability. Therefore, handlers must train to be able to perform these missions. Only the best teams should be selected.

(3) Patrol leaders and members must be briefed on actions to take if a dog handler is seriously wounded or killed. Patrol dogs that have worked closely with patrol members and have developed tolerance for one or more of them, will usually allow one of the patrol members to return it to the kennel area. However, the dog may refuse to allow anyone near its handler, and other handlers may need to be called for help.

b. Listening posts. On a listening post, the dog team (along with another soldier) should be positioned in the forward area of the tactical area to reduce distractions to the dog, yet close enough to maintain contact with friendly forces. In selecting a location, consider the primary detection senses of the dog. Whenever possible, MWD team listening posts should be located downwind from any potential enemy position or avenue of approach. Other locations force the dog to rely on its hearing and sight for detection. However, any advance warning the dog gives can be of benefit to friendly forces.

c. Reconnaissance patrols. Reconnaissance patrols may obtain information about the number, weaponry, and movements of enemy forces.

(1) Patrol dog teams used with reconnaissance patrols during daylight or darkness help by detecting enemy presence, helping the patrol to avoid discovery, and locating enemy outposts. In the past, some patrol dog teams also have been

trained to detect mines and booby traps. When the dog responds, the handler should signal the patrol to halt until the cause of the response can be identified and the patrol can proceed safely.

(2) If a fire fight develops while the patrol dog team is at the point position, the dog team should respond to fire team directions and act as a regular member of the patrol.

(3) Generally, the best locations for dog teams are directly in front of the patrol or on its flanks. Prevailing wind direction should be used to improve the patrol's chances for early warning of enemy forces. The handler must concentrate on the dog to read its response and will not be able to use a weapon rapidly. Therefore, a member of the patrol should be assigned to protect the dog team. If the wind direction is from the rear of the patrol, the dog is forced to rely on sight and sound and may not be as effective.

d. Combat patrols. The most common combat patrol using patrol dog teams is the ambush patrol. A dog team should be placed in front of the patrol to minimize distractions, yet close enough to maintain contact with other patrol members. Patrol dogs on ambush patrols must remain silent and not respond aggressively to approaching enemy forces.

2–30. Enemy prisoner of war (EPW) operations

In EPW operations, patrol dog teams are used for camp perimeter security to guard against escape. The dog's keen sense of sight, smell, and hearing assists the handler and camp authorities in detecting unauthorized activity. Their presence also acts as a deterrent to such activity. The team can be used to guard prisoners while in transit, and assist in the search for escaped prisoners.

2–31. Mobilization and deployment

a. Deployment preparations. All levels of command need to be involved in the deployment preparations for MWD teams. Plans for deployment, and for the actions to be taken after arriving at the deployment destination, must include the following:

(1) Considerations of equipment requirements.

(2) Use of field kennels.

(3) Orientation training (including safety procedures).

(4) The concepts of operations to be used.

b. Planning for deployment. Deployment plans must include coordination with the supporting military veterinarian, consideration of the expected duration of the deployment, and consideration of the types of facilities which may or may not exist at the deployment destination.

(1) Dogs must receive proper care during deployment and upon arrival at the destination. Care must be taken to be sure the dog does not overheat or freeze, or suffer from lack of food, water, or rest.

(2) Army mobility requirements necessitate that all MWD teams have a shipping crate. The shipping crates, when used to transport dogs even over short distances, simplify handling, loading, and transporting, and give the dogs adequate space and ventilation during shipment. In addition, the shipping crates may be needed for use as temporary kennels at intermediate sites or at the deployment destination. Standard metal dog crates occupy 31 cubic feet.

(3) Water requirements for dogs usually average about 10 gallons a day for each dog team.

(4) Enough dog food must be taken to last 30 days or until resupply can be established. Determination of type dog food and contents of first aid kits (that must go with the dog teams) should be made by the supporting veterinarian. Information on the deployment destination, climate, and terrain help to determine the specific contents of the first aid kits. For example, if dogs will be employed on rough terrain, a "pad toughener" is included in the first aid kit.

c. Equipment used. Required equipment must travel with and arrive with the patrol dog team(s) so they can be fully operational as quickly as possible. The following equipment should be available for dog teams identified for deployment:

(1) *Dog equipment (one per dog).*

(a) Dog handler gear (two sets).

(b) Dog food (30–day supply).

(c) Water bucket (plus one spare for every five dogs).

(d) Feed pans (plus one spare for every five dogs).

(e) Shipping crate.

(f) Jerry cans, water type (two per day).

(g) Poncho (for use with the dog).

(2) *Personnel equipment (one per handler).*

(a) Flashlight.

(b) Fatigues (three pair).

(c) Combat boots (two pair).

(d) Foul weather gear.

(e) Shelter half (two).

(f) Snake bite kit.

(g) Field mess kit.
(h) Sleeping bag.
(i) Web belt.
(j) Rope.
(k) Canteens (three).
(l) Other equipment as required by unit standard operating procedures (SOPs).
(3) *Other equipment.*
(a) Axes.
(b) Shovels and rakes.
(c) Copies of AR 190–12, DA Pam 190–12, and other appropriate references.
(d) Hatchets.
(e) First aid kit.
(f) Brooms, mops, brushes, disinfectant.
(g) Arm protector (attack sleeve).
(h) 50–gallon trash can.
(i) Refrigerator for veterinary medical supplies.
(j) Power generator.
(k) Other equipment as required by unit SOPs.

d. Field kennels and support facilities. A suitable kennel site must be carefully selected. Before deployment, some possible locations may be selected from a map. However, as soon as possible after arrival, the sites should be inspected to choose the most suitable location.

(1) When selecting a site, consult a veterinarian whenever possible about possible health hazards. Location of the kennel in a congested area may be necessary to protect the kennels from enemy attack. A temporary screen or fence may be needed to block the dog's sight, so the dogs will be able to rest.

(2) When shipping crates are used as temporary kennels, the crate should be turned upside down and raised four to six inches off the ground to allow for adequate drainage and reduce parasite breeding places. Place modified pallets in the crates to prevent the dogs from injuring feet or legs in the crate air holes. In hot climates, place crates under trees, tarpaulin, or plywood to provide shade and ventilation. Spread gravel, if available, around and under the crates to allow for drainage and easy removal of solid waste.

(3) A large tent or prefabricated building can serve as a temporary storage location for equipment, rations, and other supplies. A second tent or building erected at the kennel site to house handlers and the kennelmaster provides the kennel with sufficient manpower for security of the kennel area.

(4) Although conditions around a temporary kennel may never be ideal, a high standard of sanitation is essential to prevent diseases and parasite infections.

e. Orientation training. As soon as possible after arriving at the deployment destination, and while making sure that site security is established, orientation training must begin. Orientation training allows the MWD teams to quickly develop familiarity with their new location and to quickly develop an understanding of their missions. The kennelmaster needs to evaluate or reevaluate the degree of skill of each of the MWD teams so they are fully prepared to support the deployed force. Initial evaluation and training should consist primarily of field problems, attack, search, reattack, tracking, and basic obedience. The remainder of the orientation period should be devoted to training on patrol, squad, and fire team exercises. Field problems should include combat and reconnaissance patrols, outpost, listening post, ambush patrol, sweep deployment, and tracking. Training should also include the handler firing his assigned weapon while maintaining control of the dog. Some training should be done at dusk, and then in darkness, so that the handler may see (for safety), and the dog may adjust to the noise and flash of weapons. Most MWD team missions can be expected to occur at night.

Section V
Employment of Narcotics Detector Dogs

2–32. The drug problem
The abuse of drugs by military personnel, their family members, and civilians, who may enter military areas for work, business, or recreation, presents a continuing problem for the Army. Every effort must be made to reduce the potential danger to society and particularly to the military community from those who sell or abuse drugs.

2–33. The narcotics detector dog
One of the most efficient means of detecting the possession or transportation of dangerous drug contraband is the well–trained narcotics detector dog. The narcotics detector dog is trained through a program of practice and reward to recognize the scent of certain drugs, such as marihuana, hashish, heroin, cocaine, and other related substances. When the narcotics detector dog locates any of these substances, the dog will alert its handler. Most of the Army's narcotics

detector dogs are also patrol dog qualified and are commonly referred to as patrol/narcotics detector dogs. Some large and small breed narcotics detector dogs are not patrol trained. They are called narcotics/contraband detector dogs or contraband dogs. (These dogs are being phased out of the inventory through attrition and are being replaced by the patrol/narcotics detector dog.) Regardless of the label, all these dogs perform a valuable service by helping to rid the military community of illegal drugs and the problems associated with drug and controlled substance abuse.

2–34. Legal aspects—narcotics detector dog teams

There are several legal considerations in using the narcotics detector dog since the apprehension and possible criminal prosecution of offenders may be involved.

a. The use of narcotics detector dogs during an inspection must be authorized by the installation commander or a commander having control over the personnel and property to be inspected. This applies to all inspections, including buildings, vehicles, aircraft, and so forth.

b. If, during the course of an inspection, a narcotics detector dog responds, the dog's actions may be sufficient in the case of persons to justify apprehension and a search. In the case of property, the response may be sufficient to establish probable cause to obtain authorization to search. In order to establish probable cause, a description of the dog's conduct, training, and experience must be conveyed to the authorizing official to permit that person to assess the reliability of the dog. To ensure that this information is available, the following will be maintained for each detector dog:

(1) A general record of the training and experience of the narcotics detector dog team is maintained on DA Form 2807–R (Military Working Dog Training and Utilization Record). (See para 3–34.) This form is prescribed in AR 190–12.

(2) A detailed record of training and experience showing the numbers of training and actual narcotics detection operations in which the narcotics detector dog team has been involved and the dog's performance record is maintained on DA Form 3992–R (Narcotics or Explosives Detector Dog Training and Utilization Record). (See para 3–35.) This form is prescribed in AR 190–12.

c. A demonstration of the narcotics detector dog's proficiency may be required. It should include training aid plants of each type of substance the dog has been trained to detect and a test of the dog's ability to respond on places where a drug has been recently concealed and then removed. This demonstration also may help establish the narcotics detector dog team as a reliable source of information for the commander. The test of the dog's ability to detect recently abandoned hiding places for the drugs or clothes that have the smell of drugs is important because it helps to explain the dog's response when no drug can be found, and reinforces the dog team's credibility.

d. The records described in para b, above, should be carried by the handler when the narcotics detector dog team is TDY for narcotics detection operations so the records are available to appropriate commanders at the TDY site. Commanders at the site should review these records and observe a demonstration before authorizing drug detection operations.

e. Commanders and supervisors should work closely with the command SJA to ensure that drug detection operations achieve objectives and comply with legal requirements. Court decisions and changes to existing laws and policy frequently alter the methods and procedures which must be followed for proper narcotics detection programs. Handlers must learn and apply the rules of evidence, search and seizure, and the procedures for collecting and preserving evidence.

f. Although the dog's training and utilization record and demonstrated proficiency are important to establishing credibility, omissions or irregularities will not necessarily prevent a valid authorization to search. As a basis for authorizing a search, an officer otherwise eligible to do so must be reasonably satisfied that the dog is reliable. This belief must be based on reasonable grounds. Those grounds may be reviewed in court. Whether information is enough to warrant faith in the dog's reliability is a matter of judgment based on facts rather than on compliance with the recommended procedures.

2–35. Certification and decertification

a. After the initial certification of a narcotics detector dog at the 341st Military Working Dog Training Squadron, recertification is required under any of the following circumstances:

(1) When a new handler is assigned to the dog. Any recertification with a new handler automatically nullifies any certification with any other handler. Dog team assignments always will be made consistent with the principle of one dog—one handler, and only certified narcotics detector dog handlers may be assigned to handle narcotics detector dogs. Only one handler will be assigned to each dog.

(2) When a dog team's proficiency training has been interrupted for 30 or more consecutive days for any reason, full recertification of the team by a certification authority (AR 190–12) is required.

(3) When a narcotics detector dog team fails to maintain the minimum proficiency standard of 90 percent or better detection for three or more consecutive months.

(4) Full or partial recertification may be required any time the installation commander, PM, security officer, or MP commander has reason to doubt the team's reliability.

b. To maintain the narcotics detector dog's proficiency during a handler's extended absence, at least four hours of proficiency training must be conducted each week. This is performed by the kennelmaster, a dog trainer, or a qualified narcotics detector dog handler.

c. If a narcotics dog is not able to continue detector duties, fails recertification, and retraining fails to correct the situation within 45 days, the circumstances will be thoroughly documented. Documentation will include the following:

(1) The apparent cause of failure.

(2) A statement from the supporting veterinarian identifying any physical or medical conditions which may be contributing to or causing the failure.

(3) A summary statement of retraining efforts to include MACOM or Army training assistance team's efforts to correct the deficiency.

d. The complete documentation package will be submitted through the appropriate MACOM to HQDA, ODCSOPS (DAMO–ODL–S), requesting further instructions. ODCSOPS (DAMO–ODL–S) will review and forward the request to the 341st Military Working Dog Training Squadron for appropriate disposition instructions.

e. If the dog is permanently decertified, the unit will report decertification by letter to the 341st Military Working Dog Training Squadron so the dog's NSN can be changed. Unit records also will be changed.

(1) If the unit where the dog is assigned can use the dog as a patrol dog, the unit should reassign the dog to a patrol dog handler. The unit should then request a replacement narcotics detector dog by submitting a MILSTRIP requisition according to AR 190–12. Any outstanding MILSTRIP requisition for a patrol dog will be canceled.

(2) If the unit has no patrol dog requirement, the unit will report the dog as excess to requirements in accordance with AR 190–12. A replacement narcotics detector dog will be requisitioned in accordance with AR 190–12.

Section VI
Employment of Explosives Detector Dogs

2–36. The need for explosives detector dogs

Few other criminal acts create such concern and fear in the hearts of a nation's citizens as a series of bombings. It is no coincidence that organized crime and terrorist groups routinely utilize explosive materials as a means of achieving their violent goals. Whether the objective is murder, intimidation, extortion, or governmental disruption, the bomb is a favorite and very effective weapon of the criminal element. One of the most effective countermeasures to the use of explosives is the deterrent value and the detection capabilities of the EDD team.

2–37. The explosives detector dog team

EDD teams fill three distinct roles in MP operations (in addition to the routine use of patrol dog teams.)

a. Deterrent. Public knowledge that EDD teams are assigned to and are used at an installation acts as a deterrent to persons who may try to use explosives illegally on the installation. The knowledge that explosives can be detected by EDDs at installation gates or in places where explosives have been hidden, can prevent a person from attempting to bring explosives on to an installation.

b. Search. The most common use of EDD teams, and probably the most important, is to search areas of buildings against which a bomb threat has been made. A well–trained EDD team can conduct a significantly more effective search of any area or facility in far shorter time than almost any number of people. Using EDD teams also helps to reduce the potential risk to persons who would otherwise have to do the search without benefit of the dog's superior sense of smell.

c. Investigation. EDD teams can be useful in many investigations involving almost any type of weapon, ammunition, or explosives. They are particularly useful if there is a need to locate one or more items which may have been hidden in an area.

2–38. Legal aspects—explosives detector dog teams

The most frequent tasks performed by EDD teams are in response to bomb threats against military or civilian resources. The general requirements for providing EDD team support to civil authorities are stated in AR 190–12. However, many units also are using EDD teams in random searches at entry control points, for inspection of troop and dependent housing areas, for checking aircraft and aircraft areas, for sensitive or high–value equipment storage area checks, or for checks of mail, baggage, freight shipments, and so forth. The expanded use of EDD for these functions presents many of the same legal problems for explosives searches that are characteristic of narcotics detector dog team searches for drugs. Whenever the operational situation may result in the apprehension and possible criminal prosecution of offenders, the procedural and record–keeping requirements defined in para 2–33 for narcotics detector dogs apply to EDDs. However, compliance with procedural requirements should never be an obstacle to protecting life and property. The EDD handler should always be prepared to establish the EDD team's credibility with training, utilization, and proficiency records, and/or a demonstration.

2–39. Certification and decertification

a. EDDs and handlers initially are certified upon successful completion of training by the 341st Military Working Dog Training Squadron. The continuing effectiveness of EDDs depends on continual reinforcement of the detection ability through proficiency training. Proficiency training is mandatory, and an EDD team should receive at least four hours training each week. The minimum standard to maintain certification as an EDD team is 95 percent or better detection. Failure to maintain an average proficiency that meets or exceeds the minimum standard for three or more consecutive months will result in automatic decertification of the MWD team. The team may be recertified only after retraining and consistent demonstration of the minimum standard of proficiency to an appointed certification authority or to the instructor staff of the 341st Military Working Dog Training Squadron.

b. After the initial certification of an EDD and handler at the 341st Military Working Dog Training Squadron, recertification of the EDD is required under any of the following circumstances:

(1) When a new handler is assigned to the dog. Any recertification with a new handler automatically nullifies any certification of the dog with any other handler. Dog team assignments always will be made consistent with the principle of one dog—one handler. Only certified EDD handlers may be assigned to handle EDDs. Only one handler will be assigned to each dog.

(2) When a dog team's proficiency training has been interrupted for 30 or more consecutive days for any reason, full recertification of the team is required.

(3) When an EDD team fails to maintain the minimum proficiency standard of 95 percent or better detection for three or more consecutive months.

(4) Full or partial recertification may be required any time the installation commander, PM, security officer, or MP commander has reason to doubt the team's reliability.

c. To maintain the EDDs proficiency during a handler's extended absence, at least four hours of proficiency training (in addition to four hours of patrol training) for the dog must be conducted each week by the kennelmaster, a dog trainer, or a qualified EDD handler.

d. If an EDD is not able to continue detector duties for any reason, or fails recertification, and concentrated retraining fails to correct the situation within 45 days, the circumstances will be thoroughly documented. Documentation will include:

(1) The apparent cause of failure.

(2) A statement from the supporting veterinarian identifying any physical or medical conditions which may cause the failure.

(3) A summary statement of retraining efforts to include MACOM or Army training assistance teams' efforts to correct the deficiency.

e. The complete documentation package will be submitted through the appropriate MACOM to HQDA, ODCSOPS (DAMO–ODL–S), requesting further instructions. Based on the documentation package, certification authority recommendations and status of Army–wide MWD program, the HQDA, ODCSOPS(DAMO–ODL–S), will review and forward to the 341st Military Working Dog Training Squadron who will advise:

(1) To continue retraining efforts.

(2) To decertify the dog.

(3) To ship the dog to the 341st Military Working Dog Training Squadron for evaluation.

f. If the dog is permanently decertified, the unit will report the matter by letter to the 341st Military Working Dog Training Squadron so that the dog's NSN can be changed. Unit property records will also be changed.

(1) If the unit where the dog is assigned can use the dog as a patrol dog, the unit should reassign the dog to a patrol dog handler and request a replacement EDD by submitting a MILSTRIP requisition as prescribed by AR 190–12. Any outstanding MILSTRIP requisition for a patrol dog will be cancelled.

(2) If the unit has no patrol dog requirement, the unit will report the dog as excess to requirements in accordance with AR 190–12. A replacement EDD will be requisitioned as prescribed by AR 190–12.

2–40. Bomb threat planning

Army guidance on bomb threat planning and procedures is contained in Training Circular (TC) 19–5. Each unit or activity on an installation should have a bomb threat search and evacuation plan that describes the actions taken when a bomb threat is received. When EDD teams are available, the use of these teams should be included in these plans.

2–41. Response to bomb threats

a. The procedures provided here as guidance should be used during both actual bomb threats and training rehearsals for bomb threats. Training on bomb threat responses can:

(1) Be used to enhance the proficiency of EDD teams.

(2) Train security and unit personnel on actions which can and cannot be taken when searching for explosive devices.

(3) Educate security and unit personnel on search precautions when the EDD team is not available.

b. The type of threat received and local policy determine the initial actions to be taken in response to a bomb threat. Evacuation of the area may or may not be ordered by the responsible commander. The area must be evacuated if the EDD team is being used to perform the initial search. The advantage of using the EDD team to conduct the first search is that the EDD handler has specialized knowledge of explosives and explosive devices and search techniques. The area must be evacuated to minimize the distractions to the EDD team and to reduce the risk to area occupants in the event of an explosives detonation. Whether the building is evacuated or not, a complete and thorough search of the area must be made by residents or users of the facility, with the assistance of safety and security personnel (MP, fire fighters, explosive ordnance disposal (EOD) teams, and others as prescribed by local policy), as appropriate. In conducting an explosives search with an EDD team, the following basic precautions should be taken in addition to the search procedures described in TC 19–5:

(1) The EDD handler should determine the number of safety and security personnel who will be allowed to accompany the EDD team into the area to be searched. Each of the personnel selected should be briefed on the actions to be taken during the search and in the event the dog responds.

(2) The EDD handler and any personnel designated to accompany the team during the search should be provided protective equipment and other items necessary to conduct a safe and thorough search. These would include flak vests, special flashlights such as the ones issued for use in coal mines, and inspection mirrors.

(3) The search should be as thorough as possible. However, nothing should be moved or disturbed unless it can be positively ruled out as an explosive device. Improvised explosive devices (IED) or homemade bombs, can be triggered in an almost infinite number of ways. Methods include lifting, tilting, pushing, pulling, or other movements, as well as sound, light, heat, and by remote control. IEDs can be disguised to look like anything from a desk pen, telephone, coffee pot, or trash can to a chair, table, door, fire extinguisher, movie projector, or briefcase. No object can be automatically ruled out. The EDD team should inspect every item that cannot be positively identified.

(4) Searchers should not change or move anything during the search. If lights or other electrical or mechanical appliances are on, leave them on; if they are off, leave them off until a thorough search is completed. An IED can be triggered by the application or removal of light or power.

(5) After the EDD search team is able to clear an area, section, or building, persons assigned to the area should also search, when it is possible to enter the area without distracting the EDD. Persons assigned to the area or building are most familiar with the contents and are probably best qualified to identify equipment which is out of place or which does not belong, as well as areas where a potential explosive device could be successfully hidden. Special care should be taken to search areas accessible to the general public such as the building exterior, entrances, corridors, stairways, storage and utility closets, and rest rooms. Be particularly cautious of and report any object that appears out of place or unusual.

(6) Searches of locked rooms can usually be left until open room searches have been completed. If, however, examination of the door and lock reveals evidence of forced entry, the room should be searched immediately. Before entering such a room, carefully examine the door for any indication that the door is wired as a triggering device.

(7) If the person making the bomb threat gave a specific time for the bomb to go off, the area should be evacuated of all personnel, to include search personnel, during an appropriate time frame surrounding the threatened time of detonation. All personnel being evacuated should be moved to an area at least 300 feet from the building or area in which the explosive device is allegedly planted. Whenever possible, personnel should be kept clear of an evacuated area for at least one hour past the threatened detonation time.

(8) During the conduct of the search, training aids such as C–4 plastic explosive, military dynamite, or smokeless powder should be planted periodically so the dog can find them. This helps the dog to maintain interest in the search. Training aids should only be planted in areas that already have been searched by the EDD team. During an actual search, the EDD should be allowed to find a training aid every 15 to 30 minutes to break the search routine and reward the dog for its perseverance. A skilled EDD handler will know the proper interval between training aid finds to maintain the dog's interest.

2–42. Positive responses

When the EDD shows increased interest in or responds on an object, the handler must reward the dog and report the response to the appropriate commander or supervisor. The handler should not touch or retrieve the suspected object during an actual search or training exercise, nor should the handler allow the dog to scratch or paw at the object or pick it up in its mouth. If the dog responds during an actual search, immediately notify EOD personnel of the location of the response. EOD will dispose of any suspect devices or objects. Neither the MPs nor any other person should ever attempt to move, open, or tamper with any object suspected of being an explosive device unless they have been specifically trained to do so.

2–43. Alternative immediate action

A situation may arise when EOD personnel are either not available or cannot respond immediately and, because of the location of the explosive device, immediate action must be taken to neutralize or limit the effects of the explosion. In some cases, barricades of sandbags, mattresses, or other nonfragmenting material may be erected around the device to partially contain or redirect the blast. Such efforts, however, greatly increase the exposure and attendant risk of

personnel to an explosion. Therefore, any immediate protective action should only be taken in cases of extreme necessity. Regardless of the circumstances, the area should always be evacuated of all personnel in advance of any time of threatened detonation. Only EOD personnel should be allowed to reenter the area to clear the explosives device.

Section VII
Reporting Use of Military Working Dogs

2–44. Incident reporting
The MP has known for several years, now, the valuable contribution made by MWD teams to the detection, investigation, or solving of several types of criminal activity. However, the ability to identify or document those completed cases or incidents that could both clearly identify how we use dog teams as well as demonstrate their value to MP and Army missions has been limited. As a result, supplementary crime codes have been developed for entry on DA Form 3975 (Military Police Report). The supplementary codes identify the incidents reported on MP reports which have involved the use of patrol dog teams, narcotics detector dog teams, and/or EDD teams. There are separate codes for each type of dog team as well as separate codes for detection of marihuana, hashish, heroin, and cocaine by narcotics detector dog teams. These supplementary codes are prescribed in AR 190–45.

2–44.1.
Not used.

Chapter 3
Training

Section I
Proficiency Training

3–1. General
a. The purpose of this chapter is to provide performance standards for the MWD team. This chapter is not intended to serve as a training manual, although some training methods will be presented. Specifically, this chapter:

(1) Describes how to conduct proficiency training.

(2) Identifies the tasks that dogs and handlers are school–trained to do.

(3) Prescribes the tasks that MWD teams must be taught to be operationally proficient.

(4) Prescribes the minimum standards for each of the tasks.

(5) Explains the methods to be used to evaluate the proficiency of an MWD team.

b. Dogs and handlers who have been certified by the 341st Military Working Dog Training Squadron have demonstrated the proficiency level required for certification (that is, explosive detector has met 95 percent detection standard and narcotics detector has met 90 percent standard). This is not an assurance of their ability to perform these tasks to the same degree of proficiency in the working environment. Therefore, each MWD team assigned to a unit or installation should be evaluated locally on each of the tasks and on their general ability to perform MP missions as a team in the working environment. Additional training will normally be necessary before new MWDs and handlers, as a team, can consistently achieve all of the performance standards and perform the full range of MP missions.

c. In addition to the initial evaluation, each MWD team should be evaluated periodically by the PM or unit commander to be sure proficiency is maintained. All MWD team evaluations, whether initial or routine, must be done in an environment that simulates the working environment as closely as possible. The purpose of the evaluation must be to identify deficiencies and the corrective measures necessary to raise the MWD team's proficiency level to at least the minimum standards. An MWD team should be able to consistently meet at least minimum proficiency standards before being employed for operational MP missions. A written record of this evaluation will be maintained with the dog's training record.

3–2. The need for training
MWD teams need continual proficiency training to maintain their skills. The team's normal day–to–day duties do not provide the necessary practice in all of the skills a team has been trained to do. Without frequent reward reinforcement for performing a task correctly, the dog will soon lose interest in performing the task. Likewise, the handler who does not practice his or her skill loses the ability to "read" the dog's responses. Proficiency training, then, maintains all of the dog team's basic skills and improves the team's performance.

3–3. The principles of training
a. There is no magic formula or singular method for training MWDs. Each dog has unique characteristics and training must be adapted so that a consistently correct response is achieved. The basic principle of dog training is that

the dog is taught to associate a pleasant event with the correct performance of the required task. This association is brought about in training by applying knowledge, patience, repetition, praise, reward, and correction.

(1) When training the dog, the handler must apply all the knowledge he or she gained about dog training while being trained as a handler at the school, as well as drawing on the knowledge of other handlers, kennelmasters, and dog trainers. A handler's education must not stop when leaving the handler school. The handler must take advantage of every opportunity available to learn more about handling and training dogs.

(2) Patience is the steadiness, endurance, or perseverance necessary to help the dog develop the skill to perform a task correctly. A handler must remain calm and self–controlled while working with the dog on each task.

(3) Repetition is practicing the same exercise or task several times until the desired or correct response is achieved consistently.

(4) Praise is probably the most important reinforcement. Praise must be given at the precise moment the dog makes the desired or correct response. Praise encourages the dog to perform a task correctly. Praising a dog too early or too late may only confuse the dog about the nature of the task the handler is trying to train the dog to do.

(5) A reward is a specific object, such as food, a ball, or other favorite play object, that is used to recognize the dog for successful and proper completion of a task. To maintain the strength or value of the reward, the following principles apply:

(a) The dog must never get too much of the reward so that it no longer wants the reward.

(b) The reward must be given to the dog only when it has made the required response.

(c) The reward must be given to the dog immediately after the dog makes the required response. If a food reward system is used, only enough should be given to the dog so it realizes it has been rewarded. Similarly, if the dog is rewarded with a ball or other play object, the dog should be allowed to keep it only briefly to realize it has been rewarded and so the dog does not become bored with the reward.

b. The response the dog will be trained to make when it performs detection tasks correctly is determined during initial training of the dog at the school. Some dogs will have been taught to make an aggressive response such as biting or scratching at a hiding place. Other dogs will have been taught a passive response such as barking or sitting. The school now teaches only the passive response.

c. An important element for training success is to train the dog to adapt to the various areas and objects around which it will be required to work. This lessens the effect that strange odors and surroundings may have on the dog and helps the dog to concentrate on the desired task. For this reason, the real working environment offers the best training ground. Areas that offer excellent training opportunities without exposing the MWD team in training to real situations include the following:

(1) Theaters which have been vacated at the end of a movie or training class.

(2) Commercial facilities just after close of business.

(3) MP unit areas anytime.

3–4. Where to train

a. Working environment. Much of the required proficiency training for an MWD team can and should be conducted in the working environment or in a similar one. Handlers and kennelmasters can use the handler's normal tour of MP duty to conduct training exercises that closely simulate the actual tasks (such as scouting, detection, and building search) that the MWD team may be required to do. Training scenarios can be designed to include concurrent training in several different tasks thus developing the team's ability to accomplish the operational mission. For example, a situation can be set up that allows the MWD team to discover an unsecured building while on walking patrol. The handler must request a backup patrol, secure the building area until the backup patrol arrives, enter and search the building, find one suspect who attempts to escape, pursue the suspect by sight, sound and/or scent, then attack and apprehend the suspect and escort him or her back to the building. This exercise provides realistic training in several tasks, to include the proper application of necessary force to apprehend a suspect. The handler must remember to give the necessary warnings to the suspect, as well as consciously applying the use of force principles (that is, minimum necessary force) before releasing the patrol dog to attack. This exercise could require that the backup MP patrol accomplish the apprehension rather than allowing the handler to release the dog. This aspect of the training exercise helps MWD teams and regular MP patrols develop their knowledge about how to work together.

b. Training area. Some training may be best conducted in a training area. Before going on duty, the handler should exercise the dog moderately, just as an athlete would warm up before an event. This preduty exercise is an ideal time for obedience exercises, on– and off–leash, and for exercise on the obedience course obstacles. Nearly all off–leash attack training should be conducted in the training area, especially if the kennelmaster or handler is trying to correct a control problem.

c. Obedience course. The obedience course exposes the patrol dog to various obstacles that simulate walls, open windows, tunnels, ramps, or steps. The exposure of the dog to these obstacles reduces the amount of time required to adapt dogs to the environment. The dog learns to negotiate each of the obstacles. Then, when confronted with a similar obstacle in the working environment it is not deterred from completing its mission. The obedience course also develops the handler's ability to control the dog's behavior both on– and off–leash. The obedience course is not a substitute for

exercise. A dog should never be required to negotiate the obedience course until it has been warmed up by proper exercise.

(1) The obstacles should be run in sequence as shown in figure 3–1. This sequence allows the dog to progress from least difficult to most difficult. The critical obstacles are adjustable so that the dog can be trained to accomplish the maximum height a little at a time.

(2) Veterinarians may determine that due to a particular medical or physical condition, a dog should not negotiate certain obstacles or the obedience course. Alternative exercises may then be prescribed.

(3) The obedience course obstacles are painted with an exterior paint, preferably white. The top surface of the steps, A–frame, and the dog walk are painted with a nonskid paint.

3–5. When to train

a. Since dogs, like people, have different levels of capability, characteristics, and behavior patterns, the amount of time that must be spent training to guarantee proficiency will vary. The general rule is that at least four hours of proficiency training each week is necessary to maintain minimum standards for each dog. The ability of the dog to maintain proficiency on separate tasks will also vary depending on the nature and complexity of the task. Kennelmasters and handlers must learn how long a dog can go before it begins to lose proficiency on various tasks. The most important factor is the length of time between task performances, not the amount of time spent on doing the task. Until the optimum training cycle is worked out, have the dog perform each task at least once each 5– or 6–day period. If the dog correctly performs without any particular problems, try increasing the interval. If the dog performs a task poorly, decrease the interval. Once the best training cycle (frequency of repetition of a task) has been determined, set up a training schedule that keeps the dog at peak proficiency. Keep the schedule in the dog's training record and stick to it!

b. When public or business facilities are used for training exercises, the training should begin as soon as possible after the facilities have been closed so that the lingering human scents provide a realistic working or training environment. Normally, a building would be evacuated for an explosives search. Patrol dogs and narcotics detector dogs should be able to work in buildings where there may be other persons present. Therefore, it may not always be necessary to totally vacate a building or area when training MWD teams.

3–6. How to conduct proficiency training

Training exercises that closely simulate actual performance requirements are the best form of training. Stereotyped exercises lead to stereotyped results with little training value. Repeatedly using the same exercise scenario makes it easier for the trainer; however, it also conditions the dog to anticipate the actions required and the dog will soon begin acting without waiting for commands from the handler. If this situation is allowed to continue, more serious control problems will result.

a. Patrol dog team training. To control the total amount of time spent on training and the frequency as much as possible, varied training exercises should be developed. Training should be tailored with emphasis on the dog's or handler's weaknesses. For example, if the dog team is weak in building searches, several training exercises should require the team to search a building (not the same building). The team should track a suspect to the building. As a variation, have the team detect a suspect near a building and chase the suspect into the building. Each training cycle, concentrate on the critical tasks as defined in sections II, III, and IV, below. Remember—never let training become routine or stereotyped.

b. Detector dog training. In addition to the proficiency training in patrol dog tasks, detector dogs require continued training in detection of narcotics (drugs) or explosives. Well–conducted and documented training are both critical to the maintenance of team certification and to the establishment of probable cause for a search based upon a detector dog's number of correct responses. Although there are several differences in the training requirements for drugs or explosives detection, proficiency training scenarios for both types of detector dogs must be varied to avoid conditioning the dogs to a repetitious training pattern. The following factors can and should be varied for each training exercise or proficiency evaluation:

(1) *The general training exercise area.* The places selected should be at random and should be different for each exercise. (This indicates if the dog responds to locations rather than the odor of the substance.)

(2) *The number of training aids planted.* Some exercises should involve no training aid plants. (This indicates if the dog has been trained using the same number of training aid plants each time and identifies false responding by the dog, cues made by the handler that cause false responding, and guessing by the handler.)

(3) *The specific locations of the training aids in the area being used for training.* The training aids should not be visible to the dog or handler and the hiding places should vary. (This indicates if the handler is cuing the dog or if the dog is cuing on places rather than the odor.)

(4) *The amount of explosives or drugs used in the training aid plant.* (This indicates if the dog responds to various odor concentrations.)

(5) *The type of explosives or drugs used.* To maintain proficiency includes maintaining detection proficiency for each of the substances the dog has been trained to detect.

(6) *The time of day or night of the training.* (This indicates whether the dog has been trained to work anytime or will only work at specific times.)

(7) *The type of training aid container.* For example, training aids may be packaged in cloth, plastic, metal, paper, cardboard, glass, or wood containers. (This indicates if the dog responds to the odor of the container rather than the substance.)

(8) *The type of distraction material planted with the training aid.* The training aids should always be uncontaminated and fresh. Distraction materials may be planted adjacent to the training aid. (This indicates if the dog responds to the odor of the distraction rather than the training aid.)

(9) *The length of time the training aid is left in place before the detector dog team search.* Varying the time will affect the extent of odor dispersion and the longer a training aid is in place the easier it is for the dog to detect.

(10) *The person used to handle and/or plant the training aid* . (This indicates whether the dog is responding to the odor of a specific person rather than the odor of the substance.)

(11) *The height above or below the floor level of the training aid plants.* (Matches most real world situations and forces the team to work scent cones and follow air current patterns to detect training aids.)

(12) *The size of the room or area in which the training aids are planted, such as an auditorium, an office, a closet, a desk drawer.* (Improves the detector dog team's use of search patterns and the ability of the team to work scent cones and follow air currents to detect narcotics and explosives.)

(13) *Storage location of the training aids.* Training aids stored together can cross–contaminate or become contaminated with the odors of the storage location. Training aids should be isolated in vapor proof containers when stored, if possible.

3–7. Decoys

a. One of the most important roles to be played in proficiency training and proficiency evaluation is that of the decoy. One or more decoys are essential. The decoy is the person used as the primary adversary role player for training and evaluating the MWD team. The decoy may be a suspect, a subject, an attacker, an agitator, a drunk, an escapee, an enemy or any of a number of other"persons" a dog team may expect to encounter while performing MP duties. A decoy may also be neutral or an ally, such as another MP, a supervisor, a lost juvenile, or an innocent person passing through an identification check.

b. To maintain realism, the decoy should not be familiar to the patrol dog. The less a decoy knows about dog training, the more realistic the decoy's behavior will be. The one thing that a decoy must be taught is how to handle the arm protector (or wrap) for self–protection when the dog attacks. The sleeve or wrap used should be a hidden sleeve rather than the full, heavy padded sleeve. The hidden sleeve can be concealed under a sweater or field jacket in order to achieve more realistic conditions for training the dog.

c. Both male and female personnel should be selected as decoys and both the military uniform and civilian clothing should be worn to improve realism. Military and civilian clothing obtained from the installation property disposal office is suitable for this activity.

Section II
Military Working Dog Team Proficiency Standards

3–8. Proficiency standards

a. The proficiency standards identified in section III, below, apply to all MWDs which are certified as patrol dogs at the dog school. The standards in section III describe how a task must be performed in the school environment for certification. As evaluation criteria, the correct performance of the required tasks serves to verify that the handler understands control of the patrol dog. In the operational working environment, the handler will usually need to adjust commands to deal with situations individually. For example, in a STAND–OFF, the handler may prefer to command DOWN or SIT rather than HEEL. This can avoid giving a suspect an opportunity to escape or to attack the dog or handler while the dog is returning to the HEEL position.

b. The proficiency standards identified in section IV, below, apply to all patrol dogs. These standards must be achieved within six months of team assignment to a unit or installation. They must be maintained for retention of certification as a patrol dog.

3–9. Degrees of criticality

To strengthen the usefulness of the proficiency evaluation of MWD teams and to rank corrective training efforts, the proficiency standards are assigned varying degrees of criticality, depending on their relative importance to the MP mission.

a. Critical. A task which is not performed consistently to at least the minimum standard seriously degrades the effectiveness of the MWD team. Dogs that fail to meet or exceed the minimum standards for these tasks for three consecutive days are considered unreliable. Unless there are known reasons for failures, the MWD team should begin immediate and extensive corrective training.

b. Semi–critical. Tasks that are done correctly provide a higher level of confidence in the dog team. Therefore, the team may be employed in a broader range of MP duties. Overall effectiveness is not degraded substantially by failure to perform a semi–critical task; however, corrective training must be applied to eliminate the deficiency.

c. Noncritical. Tracking is the only noncritical task for which patrol dogs are trained. Although tracking is a valuable skill for the patrol dog team, improper performance of the task does not degrade the overall effectiveness of the patrol dog team to perform its MP mission. Tracking also is identified as noncritical because not all patrol dogs have tracking potential. Normally, a patrol dog with tracking potential will be identified while still at the school at Lackland AFB, TX.

Section III
Patrol Dog School Certification Requirements

3–10. Obedience commands

On command from the handler, the patrol dog must execute the commands of SIT, DOWN, HEEL, and STAY. These commands must be executed when the dog is located at the handler's side and when the handler is positioned at least 10 feet away from the dog. Only one physical correction per four commands is allowed. The command STAY is rated critical due to its importance to controlled aggression and performance. The commands SIT, DOWN, and HEEL are rated semi–critical.

3–11. Obedience course (semi–critical)

The dog must be able to negotiate the obedience course at a moderate pace, on–leash, by command of its handler. This task is rated semi–critical. The obedience course and proper sequence of the obstacles (numbered 1 through 11) is shown in figure 3–1.

a. Task one (barrels one, two, three, and tunnel). On command, the dog will walk or crawl through the barrels of various lengths and the tunnel, immediately coming to the heel or sit position when each part of the task is completed.

b. Task two (steps). On command, the dog will climb up, then down the step obstacle, and immediately come to the heel and sit position when the task is completed.

c. Task three (jumps one, two, and three). On command, the dog will leap jump one at the 24–inch level, jump two at the 30–inch level, and jump three at the 36–inch level. The dog will come immediately to the heel or sit position after completing the task.

d. Task four (window). On command, the dog will jump up and through the window opening at a height of 36 inches, and immediately come to the heel or sit position on the other side of the obstacle.

e. Task five (A–frame). On command, the dog will scale the entire length of the A–frame in the full raised position, up and down, and immediately come to the proper heel or sit position.

f. Task six (dog walk). On command, the dog will climb and walk the entire length of the dog walk, and immediately come to the heel or sit position.

3–12. Controlled aggression

a. False run (critical). On the command STAY, the dog must remain in the heel or sit position, off–leash, and not attack when approached by a person. To evaluate, a person wearing an arm protector, starting from a position at least 40 feet away from the dog, approaches the dog to a distance of no closer than four feet from the dog, and then returns to the starting position. The arm protector must not touch the dog or be used to provoke the dog to respond incorrectly. This task is rated critical.

b. Attack (critical). The patrol dog must stay in the heel or sit position, off–leash, and attack only on the command GET HIM. The dog must leave the handler's side and attack a person wearing an arm protector. The person must be positioned at least 40 feet away from the dog team. The dog must complete the attack, bite, and hold the arm protector for at least 15 seconds, and release on the command OUT. This task is rated critical.

c. Search and attack (critical). The dog must, on the command STAY, remain in the down or sit position while the handler searches a person. If there is any attempt to escape or if the person initiates any hostile act against the handler or the dog, the dog must attack without command and hold the person for at least 15 seconds. After the search, the handler moves to a position about two feet to the right and 10 feet to the rear of the person, so the person is positioned between the dog and the handler. Then, facing the dog, the handler commands the dog to HEEL. The dog must move to the HEEL position next to this handler without attacking the person. The person must not touch the dog or attempt to provoke the dog to attack. This task is rated critical.

d. Stand–off (semi–critical). The correct response for this task is for the dog to cease pursuit of an agitator on the command OUT, then on the command of HEEL return to the handler. During school training, the dog may bite or nip at the agitator, but the dog must respond to verbal correction and return to the HEEL position on command. This task is rated semi–critical.

e. Escort (semi–critical). With the dog in the heel position, the handler and dog escort the person for a distance of at least 10 meters. The dog must stay in the heel position, off–leash, and not attack. This task is rated semi–critical.

3–13. Building search (critical)

The patrol dog must find one person in a building and show the handler the location of the person. The dog also must show proficiency in attacking a person who tries to escape or who tries to harm the handler or the dog. For school certification, the dog must be on–leash. This task is rated critical.

3–14. Small arms fire (critical)

The patrol dog must not be deterred from attacking during gunfire. This task is rated critical.

3–15. Scouting or patrolling (critical)

The patrol dog must be able to detect a person by scent, sound, and sight. This task is rated critical. The following tasks must be accomplished to demonstrate proficiency in scouting or patrolling:

a. Detect and respond to the odor or scent of a person who is hidden 50 meters upwind and follow the odor or scent to the person's location.

b. Detect and respond to a sound made by a person 100 feet downwind and follow this sound to the source.

c. Visually detect and respond to a person in view 100 feet downwind and pursue the person on command.

d. The patrol dog must demonstrate proficiency in pursuit and attack during this detection work.

3–16. Vehicle patrol (semi–critical)

The patrol dog must ride quietly and calmly inside a vehicle with the handler. The patrol dog must not be aggressive towards passengers or the driver. The driver may or may not be the handler.

3–17. Tracking (noncritical)

Patrol dogs which demonstrate a potential for tracking are identified at the dog school. This information is recorded on DD Form 1834 (Military Working Dog Service Record) and is given to the gaining unit or installation.

Section IV
Patrol Dog Team Postgraduation Certification Requirements

3–18. Certification standards

After a patrol dog team completes formal training and is assigned to an organization, the patrol dog's proficiency is increased through unit team training. This section prescribes the minimum proficiency standards which each patrol dog team must meet within seven months after being assigned to a unit. These standards must be maintained for certification from then on. This unit team training is accomplished at the kennel training area and in all areas of the installation where MP missions would reasonably dictate a need for familiarizing the team. The training environment should approximate the MP working environment as closely as possible. Training should occur at varying times throughout the day and night and on varying days of the week, including weekends. The patrol team must perform these tasks whether the personnel used as suspects are male or female, and whether they are dressed in military or civilian clothing. The emphasis in training must be on developing the skills of both the handler and the dog so that they complement each other and the team becomes a working unit. As proficiency evaluation criteria, the correct performance of these required task serves to verify that the handler understands how to control his or her patrol dog and is able to do so. In the working environment, the handler usually will need to adjust commands to deal with the individual situation. The team should be required to develop skills using both verbal command and visual commands (hand and arm signals) so that the patrol dog is responsive to either type of command.

3–19. Obedience commands

a. On command from the handler, the patrol dog must execute the commands of SIT, DOWN, HEEL, and STAY. The dog must execute correctly the commands when the dog is located at the handler's side and when the handler is positioned at a distance of 50 feet with no more than one correction per five commands. On the command of STAY, either in the SIT or DOWN position, the patrol dog must remain in that position for at least three minutes. The commands STAY and HEEL are rated critical. The commands SIT and DOWN are rated semi–critical.

b. While off–leash, the patrol dog will maintain a proper heel position while the handler starts, stops, changes speed, changes direction, and executes passing movements. Movements the dog team must be able to perform include forward march, rear march, column left, column right, and halt. These and other marching movements are rated semi–critical.

c. Recall will consist of calling the dog from a distance of 50 feet and stopping the dog at a distance of 25 feet with a SIT or DOWN command. The dog will then be called to HEEL position with a voice command. Recall is rated semi–critical.

3–20. Obedience course (semi–critical)

The patrol dog must negotiate the obedience course at moderate rate of speed, on–leash or off–leash, by command of its handler. When off–leash, the patrol dog will maintain the heel position while the patrol dog handler walks the dog through the course. Random stops will be made between obstacles, and some obstacles will be passed to ensure that the dog is responding to the handler's direction and not simply "running the course." This task is rated semi–critical.

3–21. Controlled aggression

When evaluating the patrol dog team on controlled aggression tasks, situations and locations should closely approximate real working situations. Evaluation exercises must not be limited to the kennel training area, but done in areas where MWD teams may be realistically employed.

a. False run (critical). When the MWD team confronts a group of at least two persons and the dog is commanded to STAY, the patrol dog must remain in the heel or sit position, off–leash, and not attack when the MWD team is approached by one of the persons. One person wearing a concealed arm protector, the decoy, approaches no closer than four feet from the dog and then returns to the starting position. The decoy should not touch or provoke the dog or make any hostile gestures toward the handler. This task is rated critical. An appropriate evaluation exercise would be to have the decoy approach the MWD team, present an identification card to the handler by placing it on the ground; the handler retrieves the card, examines it, and then replaces it on the ground; the decoy reclaims the card and returns to the group or leaves the area. The handler should never break the line of sight between the patrol dog and the decoy. Alternatively, the decoy may present identification directly to the handler if the dog has developed sufficient tolerance for persons approaching that closely.

b. Attack (critical). The patrol dog must stay in the heel or sit position, off–leash, and attack only on the command GET HIM. The decoy may be running toward or running away from the dog team. When the handler commands the dog to attack, the decoy halts and prepares to meet the attacking dog. The dog must complete the attack, bite and hold the decoy (using the arm protector), hold the bite for at least 15 seconds, and release on the command OUT. The patrol dog must return to its handler when commanded to HEEL. This task is rated critical. To develop a full range of appropriate attack responses, the patrol dog also must be trained to attack, bite, and hold a decoy who does not stop to meet the attacking dog. Similarly, after the command OUT, the dog should be trained to respond to commands other than HEEL, such as SIT, DOWN, and STAY so that the dog is prepared to reattack on command.

c. Search and attack (critical). The patrol dog must, on the command STAY, remain in the heel, down, or sit position while the handler searches a decoy. The search will consist of patting down both arms, both legs, and the torso of the decoy. During the search, the dog must attack the decoy without command if the decoy tries to escape or to attack the handler. The patrol dog must bite and hold the decoy for at least 15 seconds, and release on the command OUT. After the search, the handler moves to a position about two feet to the right and 10 feet to the rear of the decoy, so that the decoy is positioned between the dog and the handler. The handler faces the dog and commands the dog to HEEL. The dog must respond to the command without attacking the decoy. This task is rated critical. The patrol dog will be trained to not interpret movement by the decoy as a reason to attack. Some movement must be expected from a person being searched.

d. Stand off (critical). The correct response for this task is for the dog to cease pursuit of a decoy on the command OUT, then on command of HEEL, the dog will return to the handler. This task is accomplished off–leash, and the decoy may be moving or standing. Only one command of GET HIM will be given. Only one correction may be used to enforce the OUT command. If the decoy is moving, when pursuit begins, the decoy will not stop moving until the dog obeys the OUT command. The decoy will do nothing to cause the patrol dog to attack when the original command of GET HIM is given. This task is rated critical.

e. Escort (semi–critical). With the patrol dog in the Heel position, the MWD team must escort the decoy for at least 20 meters to a vehicle. The dog must stay in the heel position, off–leash, and will not attack while the decoy is placed into the vehicle. This task is rated semi–critical.

3–22. Building search (critical)

The patrol dog must find three decoys in different locations inside any structure, and show the handler where the decoys are located. For certification, this task must be done both on– and off–leash. When working off–leash, the handler will remain at the entrance until the dog indicates it has found one of the decoys. If the dog returns to the handler and then returns to the location of the decoy, this is sufficient. A patrol dog must be able to search away from the handler on its own. This task is rated critical.

3–23. Gunfire (critical)

The patrol dog must not be adversely affected by gunfire, either when the handler or another person is firing. The dog may respond on gunfire. However, gunfire will not be a command for the dog to attack. The patrol dog will hold its position while its handler or another person is firing a weapon. The dog will attack, only on command, a decoy who is firing a weapon. This task is rated critical.

3–24. Scouting or patrolling (critical)

The patrol dog must be able to find people by scent, sound, and sight. This task is rated critical. Proficiency in scouting or patrolling requires demonstrating the ability to detect persons according to the following criteria:

a. Detect and respond to the scent of one or two decoys who are hiding together or in separate locations, upwind at least 100 meters but not more than 200 meters, and follow the scent(s) to the decoy(s) location(s).

b. Detect and respond to the sound made by one or two decoys who are hiding together or in separate locations at least 100 feet downwind and follow the sound(s) to the source(s).

c. Visually detect and locate one or two decoys who are downwind together or in separate locations show the handler their locations. Night detection will be evaluated at a distance of at least 25 meters but not more than 50 meters. Daylight detection will be evaluated at a distance of at least 150 meters but not more than 250 meters.

d. The patrol dog will pursue and attack only on command.

e. The handler will respond properly each time the patrol dog responds. He or she will make proper use of the wind for an area search and will be able to state whether the patrol dog's response is for scent, sight, or sound. If the dog loses the scent, the handler will demonstrate the proper technique to help the dog regain the scent.

3–25. Vehicle patrol (semi–critical)

The patrol dog must ride quietly and calmly in a vehicle that the handler is driving and not show any aggressiveness toward passengers. The handler will not allow the dog to ride with its head outside of the window. The handler must demonstrate the procedures for mounting and dismounting from any assigned vehicle and will demonstrate his or her ability to control the dog while in the vehicle. This task is rated semi–critical.

3–26. Tracking (noncritical)

a. All patrol dogs identified as having tracking potential will receive tracking training to develop this potential. As a general rule, at least one out of every 10 patrol dogs can and should be trained for tracking. Tracking training takes a lot of patience and determination on the part of the handler. The patrol dog must not only have some natural ability for tracking, but also must have some natural willingness to track. Patrol dogs selected for tracking training should be trained and employed for tracking on a tracking harness. The harness serves as a useful cue to the patrol dog that it should focus its senses on tracking. Tracking harnesses may be procured by the unit and should be issued to the tracking dog handler for use with the dog.

b. The minimum level of proficiency a patrol dog trained for tracking must attain is to be able to follow the scent of a human on a scent at least one hour old for one mile over varied terrain on a course with several turns. Given suitable tracking conditions, a skilled tracer dog team can follow the natural wanderings of individuals or groups of persons for a least 5000 meters over rugged and varied terrain, on a scent track that is at least 12 hours old. While tracking, the dog is also capable of alerting its handler to the presence of tripwires and ambushes. Additional information on tracking can be found in FM 19–35, chapters 2 and 5. The tracking skill is rated noncritical.

Section V
Proficiency Training and Evaluation of Detector Dog Teams

3–27. Certification standards

a. The operational effectiveness of narcotics detector dogs depends on continual reinforcement of the detection ability through proficiency training. A minimum of four hours narcotics detection proficiency training is mandatory each week. This proficiency training is in addition to the patrol dog proficiency training for all patrol–trained dogs. The minimum standard of proficiency to maintain certification as a narcotics detector dog team is a 90 percent or better detection rate. Failure to maintain an average that meets or exceeds this minimum standard for three or more consecutive months results in automatic decertification of the team. The team may be recertified only after retraining and consistent demonstration of proficiency to an authority. Narcotics or contraband training aids, which are procured according to the procedures described in chapter 4, are essential for proficiency training.

b. The greater complexity and danger of explosives detection requires that the proficiency standards for EDD teams be significantly higher than for any other type of MWD team. Therefore, certification depends on the demonstrated knowledge and handling skill of the handler and the explosives detection rate of the EDD.

(1) Handler proficiency is evaluated by having the handler demonstrate detailed knowledge of:

(a) The characteristics of each of the explosives the team is trained to detect.

(b) How these explosives may be used in explosive devices.

(c) The requirements for safe handling, transportation, and storage of these explosives.

(d) The requirements for conducting safe training exercises.

(2) The handler must be a capable instructor so that other MPs can be trained to support an EDD team. The handler must have detailed knowledge of bomb threat response procedures and must be involved in bomb threat planning. This will ensure the operational needs of the explosives detection team are met, giving the team the greatest opportunity to detect the presence of explosive substances.

(3) The EDD must receive a minimum of four hours explosives detection proficiency training each week. This proficiency training is in addition to the required patrol dog proficiency training for all patrol–trained dogs. The minimum standard of proficiency to maintain certification as an EDD team is a 95 percent or better detection rate. Failure to maintain an average that meets or exceeds this minimum standard for three or more consecutive months results in automatic decertification of the EDD team. The team may be recertified only after retraining and consistent demonstration of proficiency to a certification authority.

(4) Explosives training aids, which are procured according to the procedures described in chapter 5, are essential for proficiency training. Proficiency cannot be maintained without explosives training aids. Any EDD, whose detection rate falls below the 95 percent detection rate standard in any single month should be entered immediately into remedial proficiency training to ensure that problems are corrected before they become more serious.

3–28. The narcotics detector

Narcotics detector dogs are trained to detect concealed marihuana, hashish, heroin, and cocaine. Some narcotics detector dogs also may be trained to detect additional narcotics or drug contraband substances, such as amphetamines or barbiturates. Narcotics detector dogs are not trained to detect drug substances, such as PCP, that present a significant health and safety threat to the dog. Narcotics detector dogs are not trained to detect explosives. The credibility of the narcotics detector dog team is critical to the establishment of probable cause and the authorization to search. Therefore, the narcotics detector dog should never be trained to detect anything that would detract from the team's credibility. The narcotics detector dog's detection proficiency should be maintained on all of the narcotics and drug contraband substances the dog has been trained to detect and all training should be thoroughly documented in training records.

3–29. The explosives detector

The EDD is trained to detect several types of commercial and plastic explosive, detonating cord, potassium chlorate, and sodium chlorate. No training should ever be conducted which could damage the public's trust and confidence in the EDD team. The EDD team's detection proficiency should be maintained on all of the explosives the dog had been trained to detect. All training should be thoroughly documented in training records.

3–30. Proficiency training of detector dogs

All of the principles applied to the proficiency training of patrol dogs apply equally well to the proficiency training of detector dogs. That is, the training environment should be as close to the working environment as possible. Training scenarios should involve realistic situations, including decoys, supporting MPs, and supervisors. If there are opportunities to conduct training in the working environment, these should be used to train both the detector dog team and the supporting MPs. Training is automatically conducted any time training aid plants are used during an actual search to help maintain the dog's interest. Some of the principles which apply to the proficiency training of detector dogs are as follows:

a. All detector dogs must receive a minimum of four hours detection proficiency training each week. Detection training is in addition to the mandatory four hours minimum patrol dog proficiency training for all patrol–trained dogs. Even the nonpatrol–trained detector dogs must receive some obedience training, although the full four hours may not be necessary. The general rule is to train as much and as often as necessary to maintain the desired level of proficiency. There is, of course, some trade–off between training time and utilization time. Every handler also has unit responsibilities. Therefore utilization time may fluctuate depending on the extent of these responsibilities. Although the utilization goal is 30 hours per week, increased proficiency training requirements may reduce the ability of the team to be used the full 30 hours per week. Unit commanders must balance the handler's operational and training responsibilities with unit responsibilities to ensure that the MWD team is ready to perform the MP mission.

b. The detector dog should not be expected to detect an odor unless the dog has access to the odor. The following will have a direct bearing on whether the odor will or will not be accessible to the detector dog:

(1) The quality of the substance.

(2) The length of time it has been in place.

(3) The type of container enclosing the substance.

(4) Heat.

(5) Humidity.

(6) Air currents.

c. The odor of a substance may be present in enough concentration to cause the dog to respond even after the substance has been removed. Therefore, when a detector dog responds and no drug or explosive is found, do not assume the dog has made an error. Some substances that are not illegal or dangerous have the same odor as the substances the detector dogs are trained to detect. When such substances are identified, their identity is included in the training program. In this way, handlers can differentiate between responses on these substances as opposed to a genuinely false response.

d. Training aids are planted during actual searches to keep the dog from exceeding the maximum search time and

losing interest. Training aid plants also provide a periodic verification during an actual search that the dog is working consistently. This training also helps the dog's continuing adaptation to all working environments.

e. The person hiding training aids during training exercises should be varied to prevent the dog from responding on the person's scent. The handler's scent is very familiar to the dog. If the handler consistently hides the training aids, the detector dog quickly learns to respond on the handler's scent rather than the substance and numerous nonproductive responses may result. An increasing number of nonproductive responses is a good indication that this situation exists. By that time, extensive retraining may be necessary to correct the problem.

3–31. Proficiency evaluation of detector dog teams

a. Records. The proficiency of a detector dog team can be evaluated by reviewing the training and utilization records. The records will reveal the frequency of proficiency training, the amount of time which has been spent in training, the types of substances on which training has been conducted, and the performance record of the detector dog team in training and on duty. The detector dog's proficiency rating also is recorded on the training and utilization record. A proficiency evaluation based on records always should include at least three months records (at least one year worth of records are required), and should clearly substantiate the detector dog team's ability. The detector dog's proficiency rating should meet or exceed the detection rate standard of 90 percent for narcotics detector dogs and 95 percent for explosives detector dogs.

b. Demonstration. The detector dog team may be required to demonstrate its proficiency if an authority is not satisfied that the training and utilization records have clearly substantiated the team's ability. Some of the performance indicators which help to verify the detector dog team's ability are as follows:

(1) The dog team should approach the area or object to be searched from downwind whenever possible.

(2) The handler should give the command SEEK to start the search.

(3) On command, the dog should actively search, sniffing areas and objects as shown by the handler.

(4) The search should be systematic and overlook nothing capable of hiding the substance being sought. The search should start from the outside to the inside, and from left to right. A scan of the area to be searched before the detailed systematic search is acceptable. However, the dog must stay on–leash at all times during the presearch scan.

(5) When the dog smells an odor it was trained on, it should try to go to the source of the odor and give a response (alert) recognizable to the handler. Some dogs are trained to give a passive response (sit, bark, and so forth) and other dogs will give an aggressive response (excitement, scratching, pawing, biting, and so forth).

(6) The handler should recognize the dog's response, praise or reward the dog, and continue to search until the demonstration is complete.

(7) The number and type of training aids selected should be appropriate to the purpose of the demonstration.

3–32. Validation tests

a. Validation tests will be given by the kennelmaster, at least quarterly, to verify the detection accuracy rates recorded on DA Form 3992–R. Validation tests will be given to any detector dog whose demonstrated proficiency appears to significantly differ from the rating recorded on the DA Form 3992–R. The validation test should verify proficiency or identify the specific detection weaknesses which need corrective training.

b. Validation tests should include at least 20 trials for a narcotics detector dog and at least 45 trials for an EDD. These trials should be divided so at least five trials are made with each substance the dog is trained to detect.

c. Training aids should be distributed in at least four different areas over a 2–day period. A person fulfilling the requirements of a decoy will be used to make the training aid plants. Every type of substance which the dog has been trained to detect will be used during validation testing.

Section VI
Administrative Records

3–33. DD Form 1834 (Military Working Dog Service Record)

a. DD Form 1834 contains the official and physical description of the MWD when the dog is procured.

b. The form is completed and issued by the 341st Military Working Dog Training Squadron with initial assignment of the dog after training.

c. The form records all certification training at the MWD Squadron received by the dog throughout the dog's service career.

d. Each time a new handler is assigned to the dog, the handler information is recorded on the back of the form.

e. The section titled "Final Disposition" is completed by the organization to which the dog is assigned at the time the dog dies or undergoes euthanasia.

3–34. DA Form 2807–R (Military Working Dog Training and Utilization Record)

a. DA Form 2807–R is a daily record of training and employment activities for all MWDs. (See fig 3–2 for a completed sample.)

b. Entries are the responsibility of the handler.

c. When completed, the record provides a daily report of training, utilization, and feeding for one month which can aid in identifying training deficiencies and can improve the utilization of the MWD team.

d. When the form is used to schedule training or duty, it helps to ensure that:

(1) Scheduling conflicts are avoided.

(2) Training and utilization rates are maintained.

(3) All tasks are repeated frequently enough to maintain team proficiency.

(4) Corrective training is sufficiently intensive to be productive.

e. One form is required for every MWD each month and forms are retained in the dog's record for at least one year from the date of the last entry on each form.

f. When completed, the form gives the handler, the kennelmaster, the commander, the veterinarian, and other supervisors essential training, utilization, and health management data.

g. A copy of DA Form 2807–R is located at the back of this handbook, and can be locally reproduced on 8 1/2 by 11–inch paper.

3–35. DA Form 3992–R (Narcotics or Explosives Detector Dog Training and Utilization Record)

a. DA Form 3992–R will be used as a daily record of training, use, and performance of all narcotics and EDD teams.

(1) This form is used in addition to DA Form 2807–R, and is intended to be an accurate record of the training, utilization, and proficiency status of the detection capability for each detector dog. AR 190–12 prescribes the use of the form. (See fig 3–3 for a completed sample.)

(2) Its purpose is to record and establish the detector dog's detection reliability by using training aids during both training and actual searches.

(3) It is specifically a record of the detector–related training and utilization of the detector dog team.

(4) At least one form is required for every detector dog every month.

(5) The handler is responsible for the information entered on the form.

(6) When completed, the form gives the handler, the kennelmaster, the commander, the veterinarian, and other supervisors essential training, utilization, and health management data.

(7) Completed DA Forms 3992–R will be retained in the administrative record for at least one year from the date of the last entry on the form.

(8) A copy of DA Form 3992–R is located at the back of this handbook and can be locally reproduced on 8 1/2 by 11–inch paper.

b. The training section of the form is used for recording all training of the detector dog team in the detection skill. All detection training is conducted using all appropriate training aids.

(1) In order to maintain the detector dog's proficiency, the dog must receive training on each of the substances it has been trained to detect. The frequency with which the dog is trained on each substance is a very important part of maintaining the dog's proficiency. Accordingly, the handler must keep a training record that shows the frequency with which the handler trains with the dog on each of the appropriate training aids. The training record must also show the proficiency of the dog at detecting each of the required substances.

(2) A suggested method of keeping this training record is to use a separate DA Form 3992–R for each substance the dog is trained to detect. By consecutively numbering all the forms for a particular month, the forms also may be used to record utilization and detector dog search data in chronological order. For example, a narcotics detector dog is trained to detect marihuana, hashish, heroin, and cocaine. Using one DA Form 3992–R for each substance, the form for marihuana is number one, hashish is number two, heroin is number three, and cocaine is number four. Training and proficiency data are entered on the appropriate form. Utilization data is entered on form number one. Forms two, three, and four would only be used if the commander, kennelmaster, or handler wanted to account separately for more than one mission on each calendar day. That is, the second mission of the day is entered on form number two, the third mission on form number three, and so on. Detector dog search data is entered chronologically on form number one. Forms two, three, and four are used, in turn, when all the lines on the preceding form are filled in.

(3) The goal here is not to produce a set of complicated and confusing rules about how to use these forms. Instead, the goal is to suggest some of the ways that the forms can be used to develop meaningful training and utilization data. This data should improve the proficiency of the detection team and ensure that team assets are being used effectively and efficiently to support the mission.

c. The utilization section is used to record all operational detection missions. If desired, when training aid plants are used during actual searches, the handler can keep track of the number of training aids planted and the number found by recording those numbers in the training section. However, utilization search time should not be counted as training time even if training aids are used. Also, training aid finds should not be included in the total number of finds during an actual search.

d. The detector dog search data section is used by the handler to record all relevant information about the

productivity and success of each detection mission. Remember to use the remarks section (or a separate sheet of paper) to record any information which may be useful in preparing the team for future searches, or which may be applicable or useful to other detector dog teams. The greater the amount of information shared among detector dog handlers, the more successful the detector dog program will become.

e. When making entries in the detector dog proficiency section, remember that the only way to determine proficiency accurately is to know the exact number of substances (training aid plants) which are supposed to be found. This is the only way to be able to differentiate between correct responses and false/missed responses. The control of the majority of variables in a training environment ensure that the dog is responding to the real substance in the training aid rather than a masking agent, a distraction, or some other external cue.

f. The integrity of the handler and kennelmaster to record both the successes and failures of the detector dog team is critical to the credibility of the detector dog program. The commander places a significant trust in the narcotics detector dog handler because the dog's response serves as the basis for an authorization to search and the possible criminal prosecution of a person. For the EDD handler, the quick identification of training or operational deficiencies may mean the difference between a successful detection of an explosive device or the tragic loss of life or property. No handler should ever betray the commander's trust.

g. Remember that total training and utilization hours for a detector dog is computed by adding together the training time and utilization time reported on both DA Form 2807–R and DA Form 3992–R.

Section VII
Training of Nonhandler Military Police Personnel

3–36. Military police training

Any personnel that are routinely expected to work with an MWD team as a partner or back up for the team should be educated about the functions dog teams perform, how to work safely around an MWD team, and how to support the MWD team without interfering with the dog. The kennelmaster and the individual handlers probably are the best qualified personnel to provide this instruction to other MP personnel. All MP personnel should be able to answer the following questions:

a. What effect does wind have on how a dog works?

b. Where should you be when the dog is being used to clear an area or building?

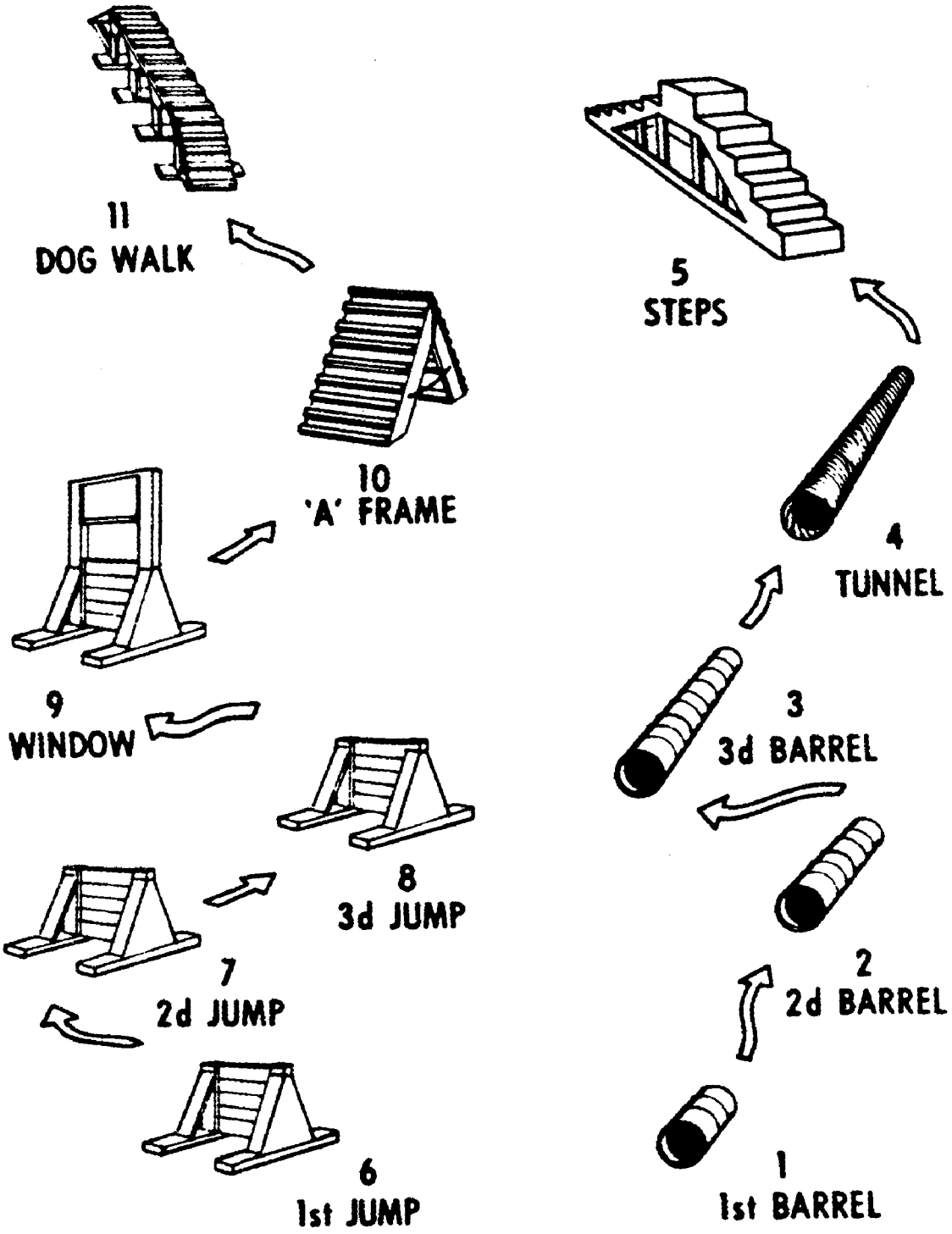
c. Where should you be when the dog is tracking?

d. Who will do the search of a person if you are to properly assist a handler when a search of a suspect is necessary? (The common rule is that the handler does the search with the dog as primary backup and other MP personnel as secondary backup.)

e. What do you do if the dog handler is hurt or unconscious and you have to aid them?

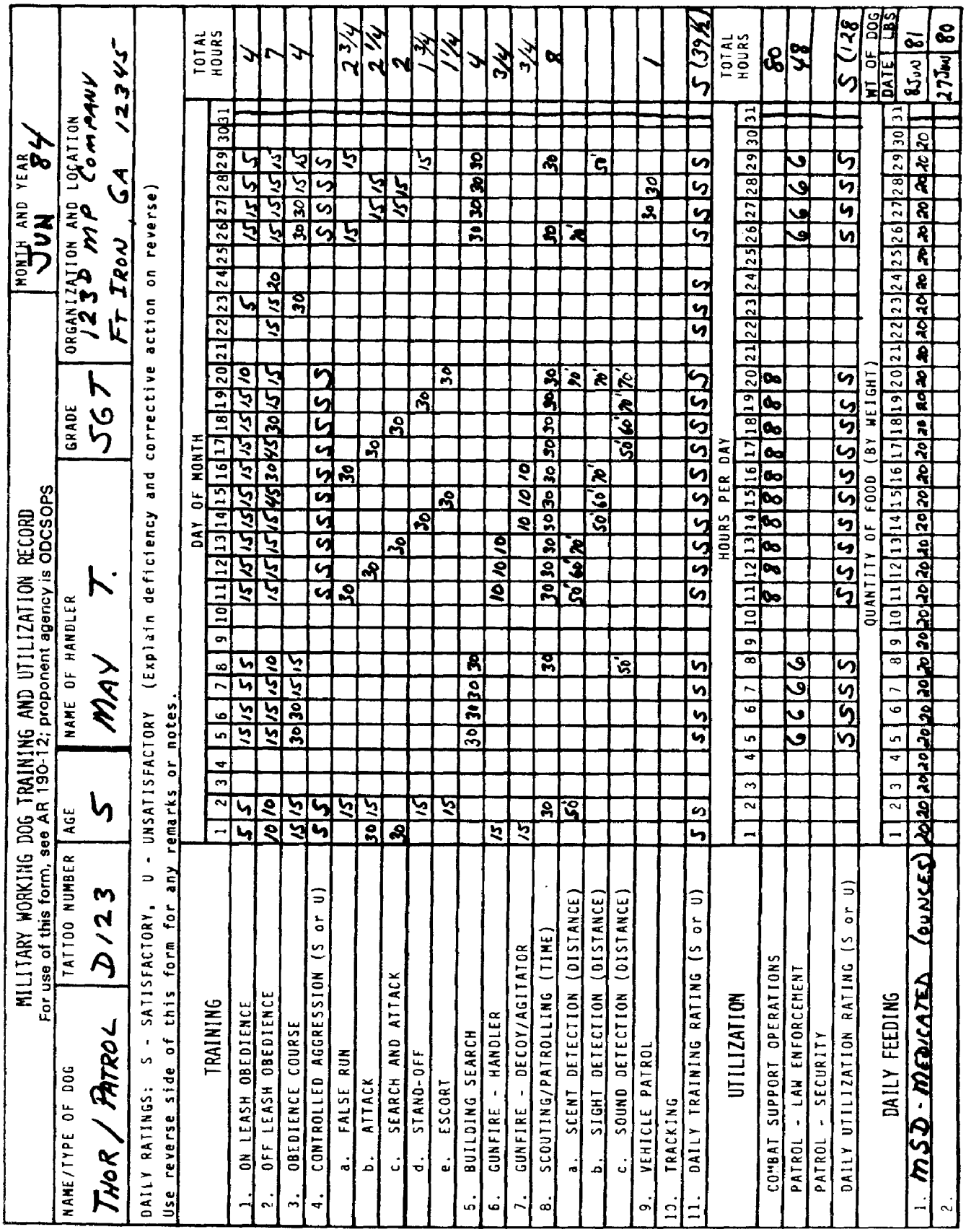
f. How do you support a narcotics detector dog team?

g. How do you support an explosives detector dog team?



EACH OBSTACLE IS 15 TO 20 FEET FROM PREVIOUS OBSTACLE AND COURSE RUNS IN SEQUENCE

Figure 3-1. Obedience course



MILITARY WORKING DOG TRAINING AND UTILIZATION RECORD
For use of this form, see AR 190-12; proponent agency is ODCSOPS

NAME/TYPE OF DOG: THOR / PATROL | TATTOO NUMBER: D123 | AGE: 5 | NAME OF HANDLER: SGT MAY T. | GRADE: SGT | ORGANIZATION AND LOCATION: 1238 MP Company FT IRON, GA 12345 | MONTH AND YEAR: JUN 84

DAILY RATINGS: S - SATISFACTORY, U - UNSATISFACTORY (Explain deficiency and corrective action on reverse)
Use reverse side of this form for any remarks or notes.

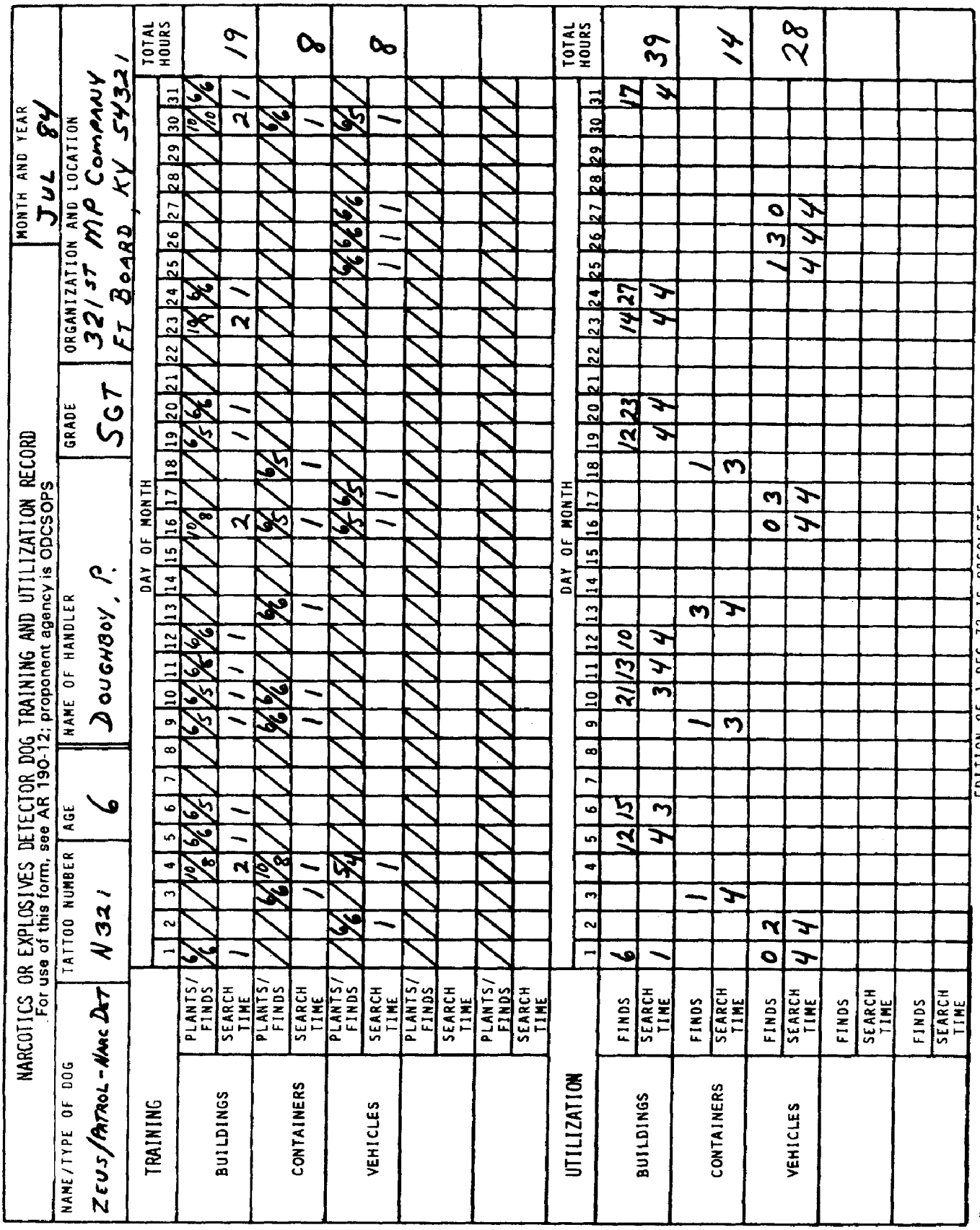
TRAINING	DAY OF MONTH 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL HOURS
1. ON LEASH OBEDIENCE	S	S			15	15	S	S			15	15	15	15	15	15	15	15	10			S				15	15	S	S			4
2. OFF LEASH OBEDIENCE	10	10			15	15	15	10			15	15	15	15	15	30	15	30	15			15	15	20		15	15	15	15			7
3. OBEDIENCE COURSE	15	15			30	30	15	15														30				30	30	15	15			4
4. CONTROLLED AGGRESSION (S or U)	S	S									S	S	S	S	S	S	S	S	S							S	S	S	S			
a. FALSE RUN		15									30				30											15			15			2 3/4
b. ATTACK		30	15									30					30									15	15					2 1/4
c. SEARCH AND ATTACK		30											30						30							15	15					2
d. STAND-OFF			15											30				30										15				1 3/4
e. ESCORT			15												30					30												1 1/4
5. BUILDING SEARCH					30	30	30	30																		30	30	30				4
6. GUNFIRE - HANDLER		15								10	10	10																				3/4
7. GUNFIRE - DECOY/AGITATOR		15													10	10	10															3/4
8. SCOUTING/PATROLLING (TIME)			30					30			30	30	30	30	30	30	30	30	30							30		30				8
a. SCENT DETECTION (DISTANCE)			50								50	60	70							70							70					
b. SIGHT DETECTION (DISTANCE)														50	60	70												50				
c. SOUND DETECTION (DISTANCE)								50									50	60	70	70												
9. VEHICLE PATROL																										30	30					1
10. TRACKING																																
11. DAILY TRAINING RATING (S or U)	S	S			S	S	S	S			S	S	S	S	S	S	S	S	S	S		S	S	S		S	S	S	S			S (39 4/4)

UTILIZATION	HOURS PER DAY 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL HOURS
COMBAT SUPPORT OPERATIONS										8	8	8	8	8	8	8	8	8	8													80
PATROL - LAW ENFORCEMENT						6	6	6																		6	6	6	6			48
PATROL - SECURITY																																
DAILY UTILIZATION RATING (S or U)						S	S	S			S	S	S	S	S	S	S	S	S							S	S	S	S			S (128

DAILY FEEDING	QUANTITY OF FOOD (BY WEIGHT) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	NR OF DOG DATE	LBS
1. MSD - MEDICATED (OUNCES)	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	8Jun	81
2.																																27Jun	80

DA FORM 2807-R, Oct 84

Figure 3-2. Sample completed DA Form 2807–R



NARCOTICS OR EXPLOSIVES DETECTOR DOG TRAINING AND UTILIZATION RECORD
For use of this form, see AR 190-12; proponent agency is ODCSOPS

NAME/TYPE OF DOG: ZEUS/PATROL-NARC DET | TATTOO NUMBER: N321 | AGE: 6 | NAME OF HANDLER: DOUGHBOY, P. | GRADE: SGT | ORGANIZATION AND LOCATION: 321ST MP COMPANY FT BOARD, KY 54321 | MONTH AND YEAR: JUL 84

		DAY OF MONTH																													TOTAL HOURS
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
TRAINING																																	
BUILDINGS	PLANTS/FINDS	6/6			1/8	6/5	6/5			6/5	6/5	6/6	6/6				1/8			6/5	6/6			1/8	6/6						1/0	6/6	19
	SEARCH TIME	1			2	1	1			1	1	1	1				2			1	1			2	1						2	1	
CONTAINERS	PLANTS/FINDS			6/8	1/0					6/6	6/6		6/6				6/5	6/5													6/6		8
	SEARCH TIME			1	1					1	1						1	1													1		
VEHICLES	PLANTS/FINDS		6/6	5/4													6/5	6/5								6/6	6/6				6/5		8
	SEARCH TIME		1	1													1	1								1	1				1		
	PLANTS/FINDS																																
	SEARCH TIME																																
	PLANTS/FINDS																																
	SEARCH TIME																																
UTILIZATION																																	
BUILDINGS	FINDS	6				12	15				21	13	10							12	23			14	27							17	39
	SEARCH TIME	1				4	3				3	4	4							4	4			4	4							4	
CONTAINERS	FINDS			1						1				3						1													14
	SEARCH TIME			4						3				4						3													
VEHICLES	FINDS	0	2														0	3								1	3	0					28
	SEARCH TIME	4	4														4	4								4	4	4					
	FINDS																																
	SEARCH TIME																																
	FINDS																																
	SEARCH TIME																																

DA FORM 3992-R, Oct 84 — EDITION OF 1 DEC 72 IS OBSOLETE

Figure 3-3. Sample completed DA Form 3992–R

DETECTOR DOG SEARCH DATA

NO.	TIME	DATE	LOCATION	MPR NUMBER	SUBSTANCE	QUANTITY	REMARKS
1	0630	1 JUL	B / 1-21 INF	634-84	MARIHUANA	50 grams	Field test verified
2	0730	2 JUL	Bldg 501	647-84	COCAINE	6 grams	
3	1030	3 JUL	C / 2-37 ARMOR	649-84	COCAINE	3 grams	
4	0900	5 JUL	C / 2-4 CAV	659-84	MARIHUANA	20 grams	
5	0530	6 JUL	A / 1-19 INF	663-84	MARIHUANA	43 grams	Field test verified
6	1945	9 JUL	D / 32D ENG	682-84	MARIHUANA	100 grams	Field test verified
7	2015	10 JUL	Bldg 523	690-84	MARIHUANA	63 grams	Field test verified
8	2030	11 JUL	Bldg 677	699-84	MARIHUANA	71 grams	Field test verified
9	2330	12 JUL	MAIN GATE	712-84	MARIHUANA	19 grams	
10	2130	13 JUL	SOUTH GATE	720-84	MARIHUANA	28 grams	
11	1945	17 JUL	QTRS 1473 - SOUTH POST	726-84	HEROIN	5 grams	
12	2240	18 JUL	NORTH GATE	733-84	HASHISH	10 grams	
13	2130	19 JUL	QTRS 1475 - SOUTH POST	740-84	MARIHUANA	104 grams	Field test verified
14	2010	20 JUL	C / 1-37 ARMOR	747-84	MARIHUANA	37 grams	
15	0700	23 JUL	A / 1-19 INF	780-84	MARIHUANA	10 grams	Residue, Seeds
16	0745	24 JUL	C / 32D ENG	788-84	MARIHUANA	17 grams	
17	0630	25 JUL	155TH AVN CO	798-84	MARIHUANA	5 grams	Residue, Seeds
18	0900	26 JUL	D / 1-55TH ADA	807-84	MARIHUANA	18 grams	
19	0530	31 JUL	HHC / 56TH TRANS	826-84	MARIHUANA	154 grams	Field Test Verified
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							

DETECTOR DOG PROFICIENCY

(Alerts on training aids during training and actual searches)

$\frac{189}{205} = .917$

PROFICIENCY = $\frac{a}{a+b} \times 100$

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
a. TOTAL CORRECT ALERTS	6	6	6	20	6	5			11	11	6	6	6			18	5	5	5	6			9	6	6	6	6			21	6	= 189
b. TOTAL FALSE/MISSED ALERTS	0	0	0	5	0	1			1	1	0	0	0			4	1	1	1	0			1	0	0	0	0			1	0	= 17

92%

Page 2, DA Form 3992-R, Oct 84

Figure 3-3. Sample completed DA Form 3992-R—Continued

Chapter 4
Controlled Substances Training Aids

4–1. General

The effectiveness of narcotics/contraband detector dogs depends on continual reinforcement of the detection skill through proficiency training.

a. Army installations located within the States or territories of the United States that are assigned narcotics/contraband detector dogs are required to register with the Drug Enforcement Administration (DEA), U.S. Department of Justice, before obtaining controlled substance training aids from any source. Possession and/or use of controlled substance training aids by Army installations or activities not registered with DEA is prohibited by law. Proof of registration is possession of a current registration certificate DEA Form 223 (Controlled Substances Registration Certificate). An Army research protocol filed with the DEA is the document that allows installations or activities identified in the protocol to apply for registration, and to then procure, store, and use controlled substance training aids in proficiency training. (See section 33, part 1301, title 21, Code of Federal Regulations (21 CFR 1301.33).)

b. Army units or installations located outside the States or territories of the United States are not required or eligible to register with DEA. DEA controlled substance training aids are not available to overseas units. Overseas units will coordinate all activities involving the use of controlled substances for training with their respective host government(s). Consistent with host country agreements, controlled substance training aids may be obtained from US Army Criminal Investigation Command (CID) or MP evidence custodians in accordance with AR 195–5. Security, control, accountability, use, and destruction of training aids obtained from CID or MP evidence custodians will be as prescribed in this chapter.

c. The requirements stated in this chapter are derived from section 801, title 21, United States Code (Controlled Substances Act) (21 USC 801) as published in part 1301, title 21, Code of Federal Regulations (21 CFR 1301). Current copies of 21 CFR 1301 should be on hand in each unit registered with DEA. Units may obtain copies through their installation library or directly from the Superintendent of Documents, US Government Printing Office, Washington, DC 20402; commercial telephone (202) 783–3238. The CFR is revised annually as of 1 April. The numbers and letters in parentheses at the end of some paragraphs in this chapter are references to paragraphs in the CFR. Questions concerning these requirements may be directed to the Compliance Division of the local DEA Field Division/Resident Officer. DEA Field Divisions, District and Resident offices, are listed in figure 4–1 and a map showing these elements is provided in figure 4–2.

4–2. DEA registration

The Army research protocol is the only protocol required for registration. Installation PMs or security officers are not required to submit a protocol to DEA with their registration application. However, the transmittal letter should make reference to the Army research protocol on file at Headquarters, DEA, which covers the Army narcotics/contraband detector dog program. DEA registration for authority to procure and use controlled substance training aids (marihuana, hashish, heroin, and cocaine) will be accomplished as follows:

a. Registration for heroin, hashish, and marihuana (Schedule I). Complete DEA Form 225 (New Application for Registration Under Controlled Substances Act of 1970). The form is completed according to the instructions printed therein. A sample DEA Form 225 – Schedule I at figure 4–3 also may be used as a guide. The individual assigned direct responsibility for control and safe keeping of controlled substance training aids will sign the DEA Form 225 as the applicant. This normally will be the installation PM or security officer or his designee. A custodian and an alternate custodian should be appointed in writing to handle the daily responsibility for controlled substances (21 CFR 1301.32).

b. Registration for cocaine (Schedule II). A separate DEA Form 225 must be submitted to obtain DEA registration for cocaine. A separate form is required because cocaine is classified in a different schedule. The form is completed according to the instructions printed therein. A sample DEA Form 225 – Schedule II at figure 4–4 also may be used as a guide (21 CFR 1301.32).

c. Address. Send the original completed DEA Form(s) 225 to the Registration Branch, Drug Enforcement Administration, Department of Justice, P.O. Box 28083, Central Station, Washington, DC 20005; and a copy to the major Army command under whose jurisdiction the installation falls (21 CFR 1301.32 (c)).

d. DEA responsibilities. When the application is approved, DEA will issue a DEA Form 223 (Controlled Substances Registration Certificate). DEA may assign a single registration number to both Schedule I and II substances rather than issuing two registration certificates. This does not change the requirement to submit separate applications. The registration certificate authorizes the applicant from the registered installation/activity to procure, store, and use controlled substance training aids for narcotics/contraband detector dog proficiency training. No other personnel are required to register. The Controlled Substances Act authorizes any Federal officer engaged in the enforcement of any Federal law relating to controlled substances, drugs, or customs to possess controlled substances in the course of his or her duties (21 CFR 1301.26 and 1301.44).

e. Renewals. The registration certificate normally will be valid for one year. Approximately 60 days prior to the expiration date, a preprinted DEA Form 225a (Renewal Application for Registration) will be sent to each registrant by DEA. If DEA Form 225a has not been received within 45 days prior to the expiration date, notify the appropriate DEA regional office. DEA Form 225a will be used following the same procedures for completion of DEA Form 225 to reregister. Copies of renewal registration certificates will be sent to the appropriate MACOM as required in *c* above (21 CFR 1301.32 (c)).

f. Changes. If, during the period of registration, changes occur which modify any information contained on the original DEA Forms 225 or 225a, a certified letter identifying the changes will be sent to the Registration Branch, Drug Enforcement Administration, Department of Justice, PO Box 28083, Central Station, Washington, DC 20005. The letter will include the registrant's name, address, and registration number(s) that are printed on the current certificate of registration, and the new or modified information. The letter is processed by DEA in the same manner as a new application. When approved, DEA will issue a new certificate of registration which will be maintained with the old certificate of registration until expiration. Copies of new registration certificates will be sent to the appropriate MACOM as required in *c* above (21 CFR 1301.61).

4–3. Procurement of training aids

Each installation or activity with assigned narcotics/contraband detector dogs that is registered with DEA is authorized to procure controlled substance training aids. Maximum amounts permitted in a procurement action are up to 20 grams of cocaine, up to 20 grams of heroin, up to 20 grams of hashish, and up to 200 grams of marihuana. The maximum quantities of controlled substances authorized to be on hand at any one time are 300 grams of marihuana, 30 grams of hashish, 30 grams of heroin, and 30 grams of cocaine. This "extra" amount is authorized only when"old" training aids are being destroyed and"fresh" controlled substances are being issued.

a. DEA supplies bulk quantities of marihuana, hashish, heroin, and cocaine to the US Air Force Security Police Academy, 341st Military Working Dog Training Squadron. Upon receipt of bulk shipments from DEA, the 341st Military Working Dog Training Squadron has the substances qualitatively analyzed if this information is not provided by DEA. The substances are weighed and packaged into appropriate quantities for shipment as training aids to registered units or installations.

b. Individual units possessing a current certificate of registration DEA Form 223 will order training aids as required by submitting DEA Form 222 (DEA Official Order Form for Schedule I and II Controlled Substances). Supplies of these preprinted order forms will be provided by DEA when the registration certificate is issued. The DEA Form 222 is controlled and a sample is not included with this pamphlet. However, the form is easy to complete using the following guidance:

(1) *Supplier's name.* 341st Military Working Dog Training Squadron.

(2) *Supplier's address (city and State).* Lackland AFB, TX 78236.

(3) *Street address.* Leave blank.

(4) *Date block.* Leave blank.

(5) *Packaging.* Heroin, hashish, and cocaine training aids are packaged in 20–gram containers. Marihuana is packaged in a 200–gram container. Orders should state the same quantities of these substances as follows:

(a) Line item 1: one package, size of package: 200 grams, marihuana.

(b) Line item 2: one package, size of package: 20 grams, hashish.

(c) Line item 3: one package, size of package: 20 grams, heroin.

(d) Line item 4: one package, size of package: 20 grams, cocaine.

(6) *Name and address of registrant block.* The installation or activity already should be identified in this block when the forms are obtained from DEA.

(7) *Signature of purchaser or his attorney or agent.* Enter the typed name, rank, title, and signature of the responsible individual who signed the DEA Form 225 or 225a as applicant. (See para 4–2.)

c. Mail copies one and two to Commander, 341st Military Working Dog Training Squadron, Lackland AFB, TX 78236. Keep copy three for your files. National Drug Codes are used by DEA on the DEA Form 225/225a and the unit may wish to add this information to its file copy of DEA Form 222. Drug codes on copies one and two of DEA Form 222 are filled in by the supplier.

d. The 341st Military Working Dog Training Squadron will fill the order and record the number of containers of each substance furnished and the date the containers are shipped to you on copies one and two of the order form. The substances can only be shipped to the location preprinted on the order form. The 341st Military Working Dog Training Squadron will keep copy one of the order form for its records and will forward copy two to the DEA at the end of the month in which the order was filled. The 341st Military Working Dog Training Squadron will include a qualitative analysis statement for each line item in the shipment.

e. When the requested shipment is received, the appointed custodian will verify the weight of each container and record, on copy three of the order form, the weight of each container received and the date received. Controlled substance training aids will be stored and controlled as required by this chapter.

f. Any order form which is not complete, legible, properly prepared, properly signed, or shows any signs of

alteration or erasure will not be accepted by the supplier (1). Unaccepted forms are returned to the installation or activity with a statement explaining the reason(s) the form was not accepted. Copies one and two of the unaccepted forms and the statement explaining nonacceptance will be filed with the retained copy three and maintained for a period of at least two years. A defective order form may not be corrected. A new order form must be initiated (21 CFR 1305.11).

4–4. Controlled substances accountability folder

A controlled substances accountability folder will be kept for each separate controlled substance training aid shipment from the supplier. A new folder is started whenever a new DEA Form 222 is initiated. Similarly, a folder will be started for each issue of controlled substances from a CID or MP evidence custodian.

a. When a new training aids shipment is requested, copy three of the DEA Form 222 is the first document filed in the folder. A copy is made of copy three DEA Form 222 for each additional control substance folder as needed. For controlled substances requested and obtained from CID or MP evidence custodians, a copy of the request and DA Form 4137 (Evidence/Property Custody Document) on which the controlled substances are accepted are the first documents filed in the folder.

b. When controlled substances are received, the appointed controlled substance training aids custodian (or alternate) first weighs each container to verify the quantity of substances being received. Any discrepancies should be immediately reported to the issuing agency. Any theft or unexplained loss should be reported and investigated according to the criteria in paragraph 4–6e. For DEA training aids, annotate copy three of the DEA Form 222 in the space provided with the number of containers of each substance received, the weight of each container, and the date received. Separate .5 gram each of heroin and cocaine and preserve separately for analysis. When this is done, the custodian may repackage the substances into other types of containers and in various quantities, if desired. Do not mix controlled substances with each other or with other substances when repackaging training aids. Qualitative integrity of the controlled substances must be maintained.

c. Controlled substance training aids/containers will be identified using a three–number code with hyphens between the numbers, for example, 1–3–4.

(1) The first number indicates the order in which the controlled substances were received by the using installation or activity. For example, 1–3–4 would indicate the training aid/container is from the first shipment of DEA controlled substances received from the 341st Military Working Dog Training Squadron. Numbers will be assigned sequentially beginning with one and will continue indefinitely without interruption, duplication, or consideration for changing years.

(2) The second number indicates the container in the shipment from the 341st Military Working Dog Training Squadron or in the issue from an MP or CID evidence custodian from which the training aid was taken. If only one container of a controlled substance is received in a shipment or issue, all training aids taken from the container will have the same middle number. If one container of marihuana and one container of heroin are received, they will be identified as number one and two in the sequence they appear on the DEA Form 222 or DA Form 4137. The DEA Form 222 (or DA Form 4137) will be annotated with this identifying number for each container when the weight of the controlled substances received is verified according to the procedure in b, above. For example, 1–3–4 would indicate that the training aid came from the third container in the first shipment received from Lackland AFB by the installation or activity.

(3) A third and final number in the three–number code identifies a specific training aid. Each portion or container which results from the subdividing or repackaging of an original container of controlled substances received from any source will be assigned a sequential number beginning with the number one. For example, training aid/container 1–3–4 is the fourth training aid repackaged out of the third original container, received in the first controlled substance shipment from the 341st Military Working Dog Training Squadron.

(4) The three–part number, then, represents the issue or shipment sequence number, the original line item number from the DEA Form 222 or DA Form 4137 used to issue the controlled substances, and the training aid number. For example, in your first shipment of controlled substances you received heroin and marihuana which were line items number one and two on DEA Form 222. When you repackaged the substances to make training aids, you made three heroin training aids and seven marihuana training aids. Your heroin training aid containers would be numbered 1–1–1, 1–1–2, and 1–1–3. Your marihuana training aid containers would be numbered 1–2–1, 1–2–2, 1–2–3, 1–2–4, 1–2–5, 1–2–6, and 1–2–7.

d. Each controlled substance training aid/container will be assigned its own unique training aid/container number, and each will be individually weighed. This information will be recorded on DA Form 4608–R (Controlled Substances Accountability Record). An example of a completed DA Form 4608–R is provided in figure 4–5. All controlled substances received will be accounted for on the DA Form 4608–R. A new DA Form 4608–R will be initiated each time new controlled substances are received and will be maintained in the controlled substances accountability folder. Disposition of all training aids/containers will be recorded in the“Remarks” column.

e. Controlled substance containers/training aids will be signed out, and signed back in by the custodian whenever they are removed from secure storage for training or for any other reason. The DA Form 4607–R (Controlled Substance Training Aid Utilization Record) will be used for this purpose. One DA Form 4607–R will be used for each training aid/container. The DA Form 4607–R will be maintained with the training aid/container until final disposition.

When final disposition is made, the method of destruction or disposal will be recorded on the form including the date, witnesses, and any other appropriate information. The completed DA Form 4607–R will be filed in the controlled substances accountability folder along with any associated documents. Figures 4–6 and 4–7 provide examples of properly completed DA Forms 4607–R, correctly cross–referenced with the sample DA Form 4608–R at figure 4–5 and 4–8.

f. Controlled substances accountability folders will be retained in active secure files for at least 2 years after the date of the last action affecting any training aid that was taken from the controlled substances to which the folder pertains. Because portions of each shipment or issue of controlled substances may become unusable and be disposed of at different times, several DA Forms 4607–R and 4608–R, DEA Forms 41 (Registrant's Inventory of Drugs Surrendered), letters of disposition instructions, and letters of notification of disposition may be filed in the accountability folder. These records are subject to inspection by the Department of Justice, the DEA, the commander, the PM, the inspector general, or by any representative of these agencies or individuals who has been appointed or authorized to conduct inspections or investigations (21 CFR 1316.03).

4–5. Destruction of training aids

a. Destruction of training aids, for any reason, which were procured from the 341st Military Working Dog Training Squadron will be accomplished as follows:

(1) Store all controlled substances or packaging determined to be unusable physically separate from usable controlled substances. Each package of unusable controlled substance/packaging will be marked clearly as unusable.

(2) Submit a letter to the appropriate DEA office requesting disposition instructions for controlled substances to be destroyed. The letter must list the type and quantity of all the drugs scheduled for destruction. The DEA Division or District Administrator will furnish instructions for proper disposal of substances. Complete DEA Form 41 and submit three copies to the DEA office. Insert one copy for each type of substance destroyed into the respective control substance accountability folder. Copies of the DEA letter of disposition instructions are also to be filed in the accountability folders. DEA Form 41 is available on request from DEA offices (21 CFR 1307.21).

b. Destruction of controlled substance training aids and packaging obtained from CID or MP evidence custodians will be accomplished as follows:

(1) When all or part of a controlled substance training aid is determined to be of no further value for training, it will be destroyed in the presence of a witness (SFC/E7 or above) using an approved method of destruction (for example, marihuana may be destroyed by burning).

(2) Appropriate entries will be made on all accountability documents, including the DA Form 4137, noting the following:

(a) Date.

(b) Time.

(c) Location of the destruction.

(d) The identity of the person performing the destruction.

(e) The identity of all witnesses to the destruction.

(3) Accountability documents will be retained in active secure files for at least two years after the date of destruction of all the training aids that were taken from the original amount of controlled substances issued on DA Form 4137.

4–6. Security requirements

Strict physical security and control procedures must be applied to prevent the misuse or theft of controlled substances used as training aids obtained from any source. All installations or activities using controlled substance training aids will comply with the following minimum security and control requirements (21 CFR 1301.72):

a. Storage location. Controlled substance training aids will be stored in a location meeting the minimum criteria shown below.

(1) Buildings and rooms will meet or exceed the minimum structural standards specified for secure storage structures in AR 190–51.

(2) The door(s) to the room in which controlled substance training aids are stored will be secured using approved locking devices. Lightweight doors will be replaced with solid metal or wood doors, or covered with 9–gauge to 12–gauge security screen or 16–gauge sheet steel. They will be fastened with smooth–headed bolts and nuts, and peened in place.

(3) All windows providing access to a storage room that is not staffed 24 hours a day will be protected by a 9–gauge to 12–gauge security screen, or 3/8–inch or larger diameter steel bars spaced no more than 6 inches apart. The frames holding the screen or bars must be fastened to the window frame with smooth–headed bolts.

b. Storage containers.

(1) Controlled substance training aids will be secured in a Class 5, General Services Administration–approved security container equipped with approved 3 position combination locks. If the security container weighs less than 750 pounds, it will be bolted, chained, or cemented to the floor or wall in such a way that it cannot be readily removed.

(2) Heroin, cocaine, hashish, and marihuana will each be stored in a separate area, drawer, or container within the security container to prevent cross–contamination of the individual odor characteristics of each substance. Marihuana has a very strong scent and is the most likely substance to cause an odor cross–contamination problem.

c. IDS. The security container should be protected by an approved IDS connected to a central monitoring station, with personnel on 24–hour duty who can provide an armed response to an alarm signal. When IDS is used, it will be installed to protect the storage container as well as the doors and windows to the storage room for unauthorized entry. The decision whether to install IDS is based on:

(1) A thorough risk analysis considering the security threats.

(2) The location of the storage facility.

(3) The structural integrity of the building and room in which the storage container is located.

(4) The quantity of drugs being stored.

(5) The relative cost of compensatory measures necessary to provide security equivalent to an IDS.

d. Access control. The controlled substances storage area shall be accessible to an absolute minimum number of specifically authorized personnel (21 CFR 1301.72(d)).

(1) Access to the controlled substance storage room will be limited to the primary and alternate custodians, and a very limited number of other individuals. These are persons who will require access for official purposes. They are to be specifically identified in writing by the PM or security officer. A copy of access authorizations will be maintained on file in the storage area, but will not be posted in the area or on the container.

(2) SF 702 (Security Container Checklist) will be used to record all openings and closings of the storage container. SF 702 will be posted on the container. The completed SF 702 will be retained for 30 days from the date of the last entry on the form and will then be destroyed unless needed for an investigation.

(3) The doors to the storage area will always be locked unless authorized personnel are physically present and have direct observation of the storage container.

(4) During normal duty hours or at other times when the storage room has been authorized to be open, unauthorized personnel will not be allowed to enter the storage room. The storage container will not be opened except to issue, inventory, repackage, or return controlled substance training aids, or to perform other necessary and authorized functions. At all other times, the storage container will be secured.

e. Weight checks.

(1) Each container of controlled substances will be weighed monthly and verified by a disinterested person (E7 or above) who will certify the exact weight of each controlled substance training aid/container in grams. The Trip Balance Laboratory, NSN 6670–00–401–7195, one of which is authorized by CTA 8–100, for each military police unit with narcotics/contraband detector dogs authorized, may be used for this purpose. Monthly weight checks will be recorded on a separate DA Form 4608–R for each training aid/container. Completed weight check forms will be filed in the controlled substances accountability folder. A sample completed form is provided at figure 4–8.

(2) Minor weight variation because of irretrievable loss resulting from breakage of training aids during dog team training exercises or any unexplained or suspicious loss of more than one gram of heroin, cocaine, or hashish, or two grams of marihuana will be reported immediately to the PM or security officer. An immediate investigation will be conducted. One copy of the report of investigation will be sent to HQDA(DAMO–ODL–S), 400 Army Pentagon, Washington, DC 20310–0400, and one copy will be sent to the appropriate MACOM PM or security officer. One copy of the investigation report will also be filed in the controlled substances accountability folders.

(3) Any theft or significant loss (one gram or more of heroin, cocaine, or hashish; and 2 grams or more of marihuana) of any controlled substance obtained from the 341st Military Working Dog Training Squadron will be reported immediately to the appropriate DEA Field Division or Resident Office upon discovery of such theft or loss. DEA Form 106 (Report of Theft or Loss of Controlled Substances) will be used. Thefts must be reported whether or not the controlled substances are subsequently recovered and/or the responsible parties are identified and action taken against them (21 CFR 1301.74(c)). A copy of the completed DEA Form 106 will be attached to each of the copies of the report of investigation required for distribution in compliance with the requirement of (2) above.

f. Inventories.

(1) Inventories will be made:

(a) Once during each calendar quarter.

(b) When a new primary controlled substance training aid custodian is appointed.

(c) When any controlled substances are lost from storage, or when there has been a breach in security of the storage room or storage container.

(2) Quarterly inventories will be made by a disinterested person (anyone not assigned to or with direct responsibility for the installation MWD program) in grade E7 or above, who is appointed by the PM or security officer, or installation or activity commander. Inventories which are required because of losses or breaches of security will also be conducted by a disinterested person.

(3) Change of primary custodian inventories will be joint inventories between the old and new custodian.

(4) An inventory will completely account for all quantities of controlled substances maintained as training aids and

will be a complete audit of the accountability records pertaining to those substances. Only those records that are still active and those that have not been previously audited need to be audited. The person conducting the inventory will positively account for all quantities and types of substances by verifying the audit trail set up by the DEA Form 222 (or DA Form 4137), DA Forms 4608–R, DEA Forms 41 (or destruction certificates), and the amount of the substances on hand.

(5) The person conducting the inventory will prepare a report for the PM or security officer, or other appointing authority. A copy of the report will be maintained with the controlled substances accountability folders in a secure files storage area. Inventory reports will be maintained for at least two years from the date of the report (21 CFR 1304.04).

(6) Inventory reports will include the following information:

(a) Date of inventory and the inclusive dates of all controlled substances accountability records included in the inventory.

(b) Name, rank, and unit of the person conducting the inventory. Include a copy of any written appointing document for disinterested persons or the appointing document for a new primary custodian.

(c) Quantity of each type of controlled substance ordered and received (from DEA Form 222 and/or DA Form 4137 in controlled substances accountability folders).

(d) Quantities of each type of substances disposed of (from DEA Forms 41 or other documents validating authorized disposition).

(e) Quantities of each substance on hand or in use.

(f) State whether the inventory and audit of records successfully accounted for all controlled substances. If all substances could not be accounted for, state what action was taken to resolve the discrepancies and any recommendations to improve accountability procedures.

(g) Evaluate the custodian's compliance with security, accountability, and control procedures.

4–7. Control of issue, return, and use

a. Issue or return procedures.

(1) Personnel authorized to sign out, possess, and use controlled substance training aids to conduct proficiency training will be designated in writing by the PM or security officer (21 CFR 1301.90).

(2) DA Form 4607–R will be used to maintain a record of all issues and turn–ins of training aids as discussed in paragraph 4–4e.

(3) When training aids are issued, the date, time of issue, training aid/container number, location where training is to be conducted, and the signature of the person receiving the training aids will be recorded on the form.

(4) When returned, the date, time of return, and the signature of the custodian receiving the aids will be recorded on the form along with any appropriate remarks.

(5) Training aids will be issued, returned, and secured during the same duty day, unless special authorization to do otherwise is granted in advance by the PM or security officer.

b. Control of training aids during use.

(1) All personnel authorized to conduct training using controlled substance training aids will be thoroughly briefed on the security requirements and personal responsibility for controlled substances before being allowed to participate in training. Briefings will be conducted at least annually thereafter. A written record for these briefings will be made and will be maintained on file.

(2) The person who was issued and is using controlled substance training aids for training is responsible for the control and security of the training aids. This person will not leave the immediate area where training aids are being used, and is responsible for retrieving and returning all training aids to the custodian.

(3) Unauthorized personnel will not be allowed to handle training aids. However, different authorized personnel should be involved in placing training aids rather than the same person, so that the dog genuinely responds on the training aids rather than the scent of the person placing the training aids (21 CFR 1301.90).

c. Temporary duty control procedures. Qualified narcotics/contraband detector dog handlers may be authorized to carry training aids when deployed TDY if the period of TDY exceeds five working days. Training aids which are authorized for use while TDY will be controlled as follows:

(1) The handler's TDY orders will specifically authorize the handler to possess the type and quantity of controlled substance training aids being carried.

(2) When the training aids are not in use at the TDY location, the training aids will be secured in a container that meets or exceeds the requirements of paragraph 4–6b. The container will be located in a secure storage room or area protected by IDS, or in a room or area which is always occupied by armed military or security police personnel.

(3) DA Form 4137 will be used for issue from and turn–in to the TDY storage location, and to provide a continuous chain of custody record for the controlled substance training aids while the handler is TDY. The TDY handler is the only person authorized to receive the training aids being stored at the TDY location.

(4) If the dog handler must unavoidably interrupt travel between his or her home station and TDY location overnight, the handler will contact the nearest military installation PM or security officer, or the local civilian police

agency, and request that the agency secure the training aids. A written receipt (DA Form 4137 may be used) for the training aids will be obtained when the training aids are surrendered by the handler for safekeeping.

(5) Training aids procured from the 341st Military Working Dog Training Squadron will not be transported outside the State or territories of the United States. Training aids obtained from CID or MP evidence custodians will also not be transported outside the geographic and jurisdictional boundaries of the host country, except as permitted by law, and by prior coordination with and the written consent of, any country involved. Transportation of training aids within the geographic and jurisdictional boundaries of host country is subject to the laws and coordinated agreements with the host government.

4–8. Form procurement and control

a. DEA forms.

(1) DEA Form 225 and other noncontrolled blank DEA forms may be obtained at any Field Division of the DEA, or by writing to the Registration Branch, Drug Enforcement Administration, Department of Justice, PO Box 28083, Central Station, Washington, DC 20005.

(2) DEA Form 225a will be mailed to each registered person approximately 60 days before the expiration date of the current registration. If DEA Form 225a has not been received within 45 days before the expiration date of the current registration, request DEA Form 225a by writing to the DEA Registration Branch at the address given above.

(3) Blank DEA order forms (DEA Form 222) are controlled and are issued with the DEA registration certificate. Reproduction of blank DEA order forms is prohibited (21 CFR 1305.05).

(4) DEA Form 223 is issued by DEA when the application for registration is approved.

(5) DEA Form 223 and DEA Form 222 will be secured in a locked security container under the immediate control of the PM or security officer, or of the individual whose signature is on the application for registration (DEA Form 225 or 225a) as the applicant. DEA Forms 223 and blank DEA Forms 222 will be secured separately from the controlled substance training aids/containers and the controlled substances accountability folders. DEA Form 223 and blank DEA Forms 222 will be inventoried at least quarterly by the applicant.

b. DA forms. DA Form 4607–R and DA Form 4608–R may be reproduced locally. Copies for reproduction purposes are located at the back of this book.

4–9. Use of synthetic drug training aids

a. The use of pseudo–cocaine or pseudo–heroin substances to train narcotics/contraband detector dogs is prohibited. No controlled scientific studies have been conducted by competent scientists which prove drug substitutes will adequately simulate the real drug. The use of real cocaine and heroin to train dogs to detect and respond avoids detection problems caused by the perfume effect (a substance mixed with splicing materials can produce a new odor). It also avoids real odor concentration problems (substitutes may not emit the same odor concentration as the real drug).

b. The use of pseudo–drugs to train detector dogs can be compared to the problem created when a dog that is trained to detect marihuana is assumed to be able to detect hashish. Although both substances contain tetrahydrocannabinol (THC), the THC exists in different concentrations. A dog trained to detect marihuana may not respond on hashish because of this difference. A properly trained dog is therefore trained to detect and respond on both marihuana and hashish.

c. To maintain the proficiency of narcotics/contraband detector dog teams, real marihuana, hashish, heroin, and cocaine training aids will be obtained and used in both training and actual searches.

ATLANTA FIELD DIVISION[1]

Suite 200, United Family Life Bldg., 200 Houston St., N.E., Atlanta, Georgia 30303; 242–4401

Charleston Resident Office, Room 630, 334 Meeting St., Charleston, South Carolina 29403; 930–5209

Columbia Resident Office, Room 204, 1101 Laurel, P.O. Box 702, Columbia, South Carolina 29202; 677–5251

Columbus Resident Office, P.O. Box 1565, Columbus, Georgia 31902; 247–9787

Greensboro Resident Office, 2300 W. Meadowview Road, Suite 224, Greensboro, North Carolina 27407; 699–5203

Figure 4-1. DEA field divisions and district/resident offices (Office, Address, and Telephone)

Memphis Resident Office, 401 Federal Bldg., 167 N. Main St., Memphis, Tennessee 381031; 222–3396
Nashville Resident Office, A929, Estes Ke Fauver Bldg., FB–USCH, 801 Broadway, Nashville, Tennessee 37203 [1]; 852–5988
Savannah Resident Office, Suite C, 430 Mall Blvd., Savannah, Georgia 31406; 248–4288
Wilmington Resident Office, P.O. Box 4189, Wilmington, North Carolina 28406; 671–4513

BOSTON FIELD DIVISION [1]
G–64 JFK Federal Bldg., Boston, Massachusetts 02203; 223–2170
Bridgeport Resident Office, FB–USCH, 915 Lafayette Blvd., Bridgeport, Connecticut 06604; 643–4591
Burlington Resident Office, P.O. Box 327, Essex Junction, Vermont 05452; 832–6777
Concord Resident Office, Federal Bldg. & P.O., 55 Pleasant St., P.O. Box 1314, Concord, New Hampshire 03301; 834–4754
Hartford Resident Office, Room 628, 450 Main St., Hartford, Connecticut 06103; 244–3230
Portland Resident Office, 329 USCH Bldg., 156 Federal St., P.O. Box 451, Portland, Maine 04101; 833–3331
Providence Resident Office, 232 P.O. & Federal Bldg., Exchange Terrace, Providence, Rhode Island 02903; 838–4322
Springfield Resident Office, 1550 Main St., Rm. 408, Springfield, Massachusetts 01103; 836–9284

CHICAGO FIELD DIVISION [1]
1800 Dirksen Federal Bldg., 219 S. Dearborn St., Chicago, Illinois 60604; 353–7875
Fargo Resident Office, Room 257, 657 2nd N. Ave., Fargo, North Dakota 58102; 783–5331
Hammond Resident Office, 407 Federal Bldg., 507 Slate St., Hammond, Indiana 46302; 370–5321
Indianapolis Resident Office, Room 290, 575 N., Pennsylvania, Indianapolis, Indiana 462041; 331–7977
Milwaukee Resident Office, 228A FB–USCH, 517 E. Wisconsin, Milwaukee, Wisconsin 53202; 362–3395
Minneapolis Resident Office, 402 Federal Bldg., 110 S. 4th St., Minneapolis, Minnesota 55401; 725–2783

DALLAS FIELD DIVISION [1]
1880 Regal Row, Dallas, Texas 73235; 729–7151
Ft. Worth Resident Office, P.O. Box 17478, Ft. Worth, Texas 76102; 334–3455
Oklahoma City Resident Office, Federal Bldg., 200 N.W. Fifth St., Suite 960, Oklahoma City, Oklahoma 73102; 736–4141
Tulsa Resident Office, 333 W. Fourth St., Rm. 3335, Tulsa, Oklahoma 74103; 736–7611
El Paso District Office, 4110 Rio Bravo, Suite 100, El Paso, Texas 79902; 572–7920
Alpine Resident Office, P.O. Box 1282, Alpine, Texas 79830; 8–915–837–3421
Lubbock Resident Office, 1605 Broadway, Lubbock, Texas 79403; 738–7344

DENVER FIELD DIVISION [1]
316 U.S. Customs House, P.O. Box 1860, Denver, Colorado 80201; 327–3951
Cheyenne Resident Office, 8020 Federal Center, 2120 Capitol Ave., Cheyenne, Wyoming 82001; 328–2391
Salt Lake City Resident Office, 8416 Federal Bldg., 125 State St., Salt Lake City, Utah 84138; 588–4156
Albuquerque District Office, 1st National Bank Bldg., East 5301 Central Ave., N.E., Albuquerque, New Mexico 87108; 474–3285
Las Cruces Resident Office, P.O. Box 399, Las Cruces, New Mexico 88004; 571–8337

DETROIT FIELD DIVISION [1]
357 Federal Bldg., 231 W. Lafayette, Detroit, Michigan 48226; 226–7290
Cincinnati Resident Office, 7405 Federal Office Bldg., 550 Main St., Cincinnati, Ohio 45201; 684–3671
Cleveland Resident Office, Room 300, 601 Rockwell, Cleveland, Ohio 441141

HOUSTON FIELD DIVISION [1]
4299 San Felipe, Suite 200, Houston, Texas 77027; 526–4950
Corpus Christi Resident Office, 723 Upper North Broadway, P.O. Box 2443, Corpus Christi, Texas 78403; 734–3236
Galveston Resident Office, P.O. Box 2070, Galveston, Texas 77553; 527–6565
McAllen District Office, 3017 S. 10th St., McAllen, Texas 78501; 734–4562
Brownsville Resident Office, 2100 Boca Chica Blvd., Suite 305, Brownsville, Texas 78521; 734–8253
Laredo Resident Office, P.O. Drawer 2307, Laredo, Texas 78041; 734–6211
San Antonio District Office, 4th Floor, 1800 Central Bldg., 1802 N.E. Loop 410, San Antonio, Texas 78217; 730–5050
Austin Resident Office, 55 N. Interregional Hwy., P.O. Box 8, Austin, Texas 78767; 770–5631
Del Rio Resident Office, 132 Foster Drive, Del Rio, Texas 78840; 730–7241

Figure 4-1. DEA field divisions and district/resident offices (Office, Address, and Telephone)—Continued

Eagle Pass Resident Office, 342 Rio Grande, Room 102, Eagle Pass, Texas 78852; 730–7236

LOS ANGELES FIELD DIVISION [1]

Suite 800, 350 S. Figueroa St., Los Angeles, California 90071; 798–2650
Honolulu Resident Office, Room 3129, 300 Ala Moana Blvd., P.O. Box 50163, Honolulu, Hawaii 96850; 8–808–546–8391
Guam Resident Office, Suite 502C, 238 O'Hare St., P.O. Box 2137, Agana, Guam 96910; 9–011–671–472–7384
Las Vegas Resident Office, FB–USCH, 300 Las Vegas Blvd. S., P.O. Box 16023 Las Vegas, Nevada 89101; 598–6635
Reno Resident Office, 209 Bldg. 1, 4600 Kietzke Lane, Reno, Nevada 89502; 470–5617

MIAMI FIELD DIVISION [1]

8400 N.W., 53rd St., Miami, Florida 33166; 820–4870
Ft. Myers Resident Office, 2345 Union St., Suite D, Ft. Myers, Florida 33901; 826–3744/54
Jacksonville Resident Office, Suite 210, 4077 Woodcock Dr., Jacksonville, Florida 32207; 946–3566
Orlando Resident Office, 235 Whooping Loop, Altomonte Springs, Florida 32701; 820–6155
Panama City Resident Office, P.O. Box 1486, Panama City, Florida 32401; 946–5217
Tampa Resident Office, Suite 400, 700 Twiggs St., Tampa, Florida 33602; 826–2178
Ft. Lauderdale Resident Office, FB–USCH, 299 E. Broward Blvd., Ft. Lauderdale, Florida 33301; 820–7220
Marathon Resident Office, Room 215, 11400 Overseas Hwy., P.O. Box 1269, Marathon, Florida 33050; 350–5483
West Palm Beach Resident Office, Room 223, 701 Clematis St., West Palm Beach, Florida 33401; 350–7263
Tampa Airport Detail, Tampa, Florida 33401; 826–2176
San Juan District Office, 154 Housing Investment Bldg., 416 Ponce de Leon Ave., Hato Rey, Puerto Rico 00919; 8–809–754–6450

NEWARK FIELD DIVISION [1]

Federal Office Bldg., 90 Broad St., Newark, New Jersey 07102; 341–6060
Atlantic City Resident Office, P.O. Box AB, Northfield, New Jersey 08225; 483–4316

NEW ORLEANS FIELD DIVISION [1]

1661 Canal St., Suite 2200, New Orleans, Louisiana 70112; 682–3894
Baton Rouge Resident Office, Suite 118, 4560 North Blvd., Baton Rouge, Louisiana 70806; 687–0254
Birmingham Resident Office, Suite 520, 236 Goodwin Crest, Birmingham, Alabama 35209; 229–0621
Jackson Resident Office, 1501A Federal Bldg., 100 W. Capitol St., Jackson, Mississippi 39269; 490–4400
Little Rock Resident Office, Suite 850, One Union National Plaza, Little Rock, Arkansas 72201; 740–5981
Mobile Resident Office, Suite 216, 2 Office Park, Mobile, Alabama 36609; 537–2831
Shreveport Resident Office, 8A20A Federal Bldg., Shreveport, Louisiana 71102; 493–5078

NEW YORK FIELD DIVISION [1]

555 W. 57th St., Suite 1900, New York, New York 10019; 662–5151
Albany Resident Office, 746 Leo W. O'Brien Federal Bldg., Clinton Ave. & N. Pearl St., Albany, New York 12207; 562–3425
Buffalo Resident Office, Suite 300, 268 Main St., Buffalo, New York 14202; 437–4421
Rochester Resident Office, P.O. Box 14210, Rochester, New York 14614; 963–3180
Long Island District Office, Suite 1C–02, 1 Huntington Quadrangle, Melville, New York 11747; 667–1777
New York DEA Drug Task Force, Suite 1700, 555 W. 57th St., New York, New York 10019; 662–4991
JFK Airport Station, P.O. Box 361, Jamaica, New York 11430; 667–1666

PHILADELPHIA FIELD DIVISION [1]

10224 William J. Green Federal Bldg., 600 Arch St., Philadelphia, Pennsylvania 19106; 597–9530
Pittsburgh Resident Office, 2306 Federal Bldg., 1000 Liberty Ave., Pittsburgh, Pennsylvania 15222; 722–3390
Wilmington Resident Office, 5305–5307 J. Caleb Boggs Federal Bldg., 844 King St., Wilmington, Delaware 19801; 487–6184

PHOENIX FIELD DIVISION [1]

1980 Valley Bank Center, 201 N. Central, Phoenix, Arizona 85073; 261–4866
Yuma Resident Office, 370 S. Main St., P.O. Box 10151, Yuma, Arizona 85364; 764–6578
Tucson District Office, Tucson International Airport, 6904 South Plumer Ave., Tucson, Arizona 85706; 762–6845
Nogales Resident Office, 3970 Fairway Dr., Nogales, Arizona 85621; 764–1248

Figure 4-1. DEA field divisions and district/resident offices (Office, Address, and Telephone)—Continued

SAN DIEGO FIELD DIVISION [1]
402 W. 35th St., National City, California 90250; 895–5654
Calexico Resident Office, 38 W. 4th St., P.O. Box J, Calexico, California 92231; 894–2446

SAN FRANCISCO FIELD DIVISION [1]
Room 12215, 450 Golden Gate Ave., P.O. Box 36035, San Francisco, California 94102; 556–6771
Fresno Resident Office, Room 104F, 2202 Monterrey St., Fresno, California 93707; 467–5402
Sacramento Resident Office, 2941 B Fulton Ave., P.O. Box 255097, Sacramento, California 95825; 468–4205
San Jose Resident Office, Suite 200, 777 N. 1st St., San Jose, California 95110; 463–7235

SEATTLE FIELD DIVISION [1]
Suite 301, 220 W. Mercer, Seattle, Washington 98119; 399–5443
Anchorage Resident Office, 701 C St., Anchorage, Alaska 99513; 8–907–271–5033
Blaine Resident Office, 170 C St., P.O. Box 1680, Blaine, Washington 98230; 396–9420
Boise Resident Office, 2121 American Reserve Bldg., 2404 Bank Dr., Boise, Idaho 87305; 554–1620
Eugene Resident Office, 230 Federal Bldg., 211 E. 7th Ave., Eugene, Oregon 97401; 425–6861
Great Falls Resident Office, 111 14th St. South, P.O. Box 2887, Great Falls, Montana 59403; 585–1371
Portland Resident Office, 706 Terminal Sales Bldg., 1220 S.W. Morrison, Portland, Oregon 97205; 423–3371
Spokane Resident Office, USCH, 920 W. Riverside, P.O. Box 1504, Spokane, Washington 99201; 439–5342

ST. LOUIS FIELD DIVISION [1]
Suite 200, Chromallory Plaza, 120 S. Central Ave., St. Louis, Missouri 63120; 279–3241
Des Moines Resident Office, USCH, P.O. Box 1784, Des Moines, Iowa 50306; 862–4700
Kansas City Resident Office, Suite 300, 1150 Grand Ave., Kansas City, Missouri 641061; 758–2631
Omaha Resident Office, Federal Bldg., 215 N. 17th St., P.O. Box 661, Downtown Station, Omaha, Nebraska 68101; 864–4222
Sioux Falls Resident Office, P.O. Box 1109, Sioux Falls, South Dakota 57102; 782–4421
Wichita Resident Office, Room 505, 202 W. 1st St., Wichita, Kansas 67202; 752–6601

WASHINGTON D.C. FIELD DIVISION [2]
Room 2558, 400 Sixth St., S.W., Washington, D.C. 20024; 724–7834
Charleston Resident Office, 22 Capital St., P.O. Box 1146, Charleston, West Virginia 25324; 930–5209
Norfolk Resident Office, Suite 320, 200 Grandby Mall, Federal Bldg., Norfolk, Virginia 23510; 827–3152
Richmond Resident Office, 400 N. 8th St., P.O. Box 10150, Richmond, Virginia 23240; 925–2871
Baltimore District Office, 955 Federal Bldg., 31 Hopkins Plaza, Baltimore, Maryland 212012; 922–4800

EL PASO INTELLIGENCE CENTER FIELD DIVISION
South 200, 2211 E. Missouri, El Paso, Texas 79903; 572–7942

Notes:

[1] Field Divisions/Resident Offices that can assist in registration matters.

[2] Assistance capability at Baltimore to be transferred to Washington, DC on a date to be determined.

Figure 4-1. DEA field divisions and district/resident offices (Office, Address, and Telephone)—Continued

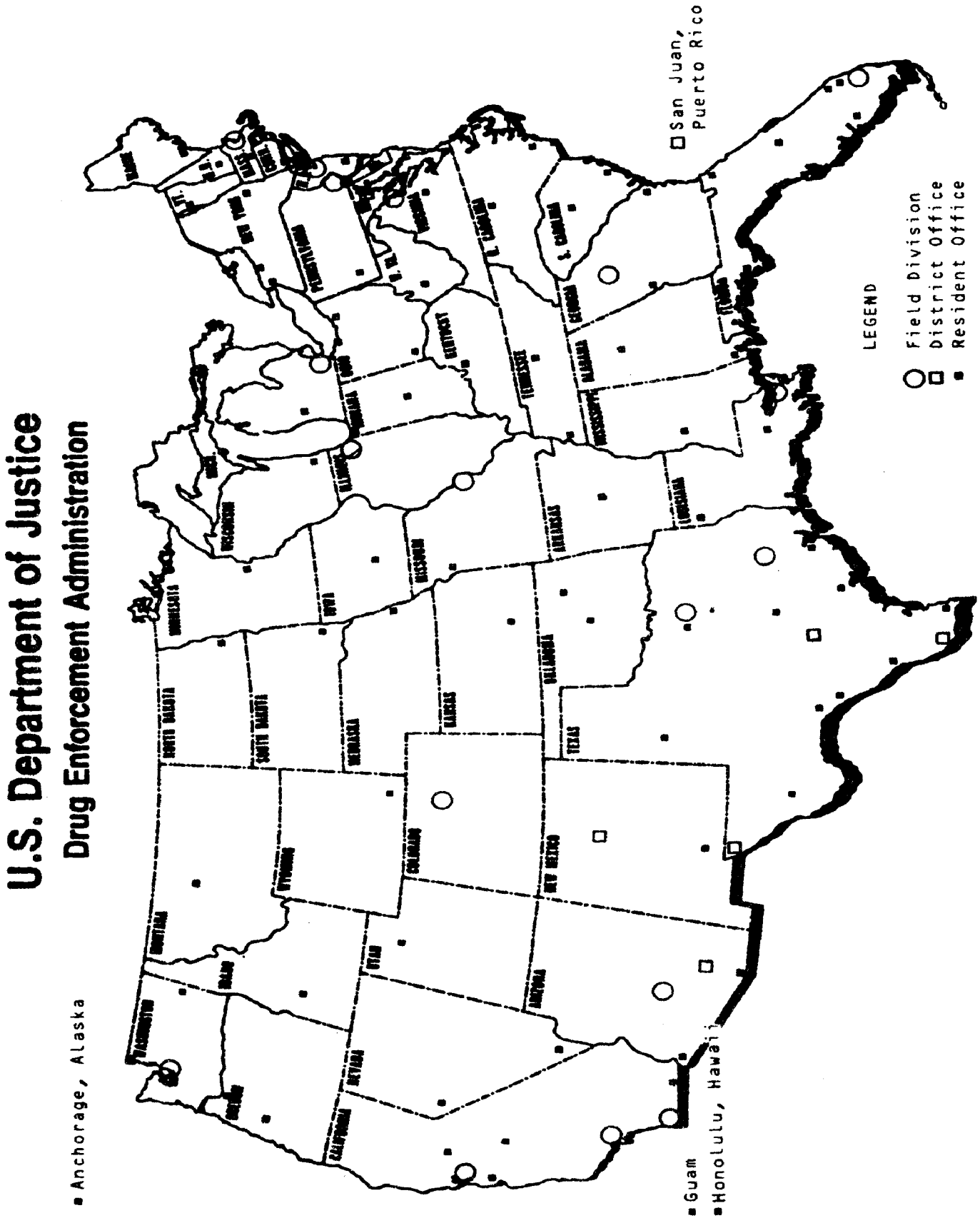


Figure 4-2. DEA field division and district/resident office map

DEA Form 225 (Dec. 1982) - 226 OMB No. 1117-0012

NEW

APPLICATION FOR REGISTRATION UNDER CONTROLLED SUBSTANCES ACT OF 1970

READ AND COMPLETE ALL APPLICABLE ITEMS
PRINT or TYPE All Entries

No registration may be issued unless a completed application form has been received (1301.21 CFR 21)

RETAIN Copy 3. Mail Orig. and 1 copy with FEE to:

UNITED STATES DEPARTMENT OF JUSTICE
DRUG ENFORCEMENT ADMINISTRATION
P.O. Box 28083
CENTRAL STATION
WASHINGTON, D.C. 20005

For INFORMATION, Call: (202) 254-8255

See "Privacy Act" Information on Reverse

THIS BLOCK FOR DEA USE ONLY

Commander

ATTN: Provost Marshal

CITY Fort Bridge STATE Arizona ZIP CODE 78901

REGISTRATION CLASSIFICATION: Submit Check or Money Order Payable to : DRUG ENFORCEMENT ADMINISTRATION in Amount specified for Activity checked below.

1. BUSINESS ACTIVITY: (Check one only; see NOTES on Instruction Sheet before checking)
   - ☐ A RESEARCHER – Fee $ 50.00
   - ☐ H ANALYTICAL LAB – Fee $ 50.00
   - ☐ E MANUFACTURER – Fee $ 50.00
   - ☐ J IMPORTER – Fee $ 25.00
   - ☐ F DISTRIBUTOR – Fee $ 25.00
   - ☐ K EXPORTER – Fee $ 25.00

2. DRUG SCHEDULES (Check all applicable schedules in which you intend to handle controlled substances.) Complete Item 9 if applicable.
   - ☐ 1 SCHEDULE I
   - ☐ 2 SCHEDULE II
   - ☐ 3 SCHEDULE III NARCOTIC
   - ☐ 4 SCHEDULE III NONNARCOTIC
   - ☐ 5 SCHEDULE IV
   - ☐ 6 SCHEDULE V

3. ☐ (E) Check this block if applicant is exempt from payment of Registration Fee: *If checked, applicant's supervisor must complete Item 8.*

4. ☐ (Y) Check here if you require Order Forms.

5. Supply any other DEA Registration Numbers for any class of business activity at the address shown on this application.

NA	NA

6. MANUFACTURERS ONLY (Item 1E, Business Activity):

NA	MANUFACTURER CATEGORIES	SCHEDULES				
		I	II	III	III-Nar	IV	V
Check Schedules & Category applicable in the boxes to the right. (Definitions on Reverse)	A ☐ Bulk, Synthesizer-Extractor						
	B ☐ Dosage Form						
	C ☐ Repacker - Relabeler						
	D ☐ Non-Human Consumption						

7. ALL APPLICANTS MUST ANSWER THE FOLLOWING:
   (a) Are you currently authorized to manufacture, distribute, dispense, prescribe, conduct research, in instructional activities, or chemical analyses with, or otherwise handle the controlled substances in the schedules for which you are applying, under the laws of the State or jurisdiction in which you are operating or propose to operate? ☒ YES ☐ NO
   Current State License Number for the State in which you are applying for Registration: NA
   (b) Has the applicant been convicted of a felony in connection with controlled substances under state or federal law? ☐ YES ☒ NO
   (c) Has the applicant ever surrendered a previous CSA registration or had a CSA registration revoked, suspended, or denied? ☐ YES ☒ NO
   (d) If the applicant is a corporation, association, or partnership, has any officer, partner, or stockholder been convicted of a felony in connection with controlled substances under state or federal law? ☐ YES ☒ NO
   (e) If the applicant is a corporation, association, or partnership, has an officer, partner, or stockholder surrendered a previous CSA registration or had a CSA registration revoked, suspended, or denied? ☐ YES ☒ NO

IF ANSWER TO QUESTIONS (b), (c), (d), or (e) is YES, include a statement using the space provided on the REVERSE of this part.

ATTACH CHECK HERE

John E. Law — 202: 555-1234
Print or Type Name - Address — *Applicant's Business Phone Number (Optional)*

SIGN HERE ▶ *Signature of applicant or authorized individual* — *Date*

Lieutenant Colonel, MPC, Provost Marshal
Title (If the applicant is a corporation, institution, or other entity, enter the TITLE of the person signing on behalf of the applicant. E.g., President, Dean, Procurement Officer, etc.....)

8. CERTIFICATION FOR FEE EXEMPTION (*Complete only if Item 3 is checked*)
The Undersigned hereby certifies that the applicant herein is an officer or employee of a Federal, State or local agency who, in the course of such employment, is authorized to obtain, dispense, or prescribe controlled substances or is authorized to conduct research, instructional activity or chemical analysis with controlled substances, and is exempt from the payment of this registration fee.

Signature of Certifying Official — *Date*

Alan T. Uniform
Major General, Commander, Fort Bridge, AZ
Print or Type Name & Title

US ARMY
Name of Institution or Agency

9. DRUG CODE NUMBERS must coincide with the schedules requested. Listed below are the Drug Code requirements for each business activity:
   - Analytical Lab - Not required to list drug codes
   - Distributor - Schedule I
   - Exporter - Schedule I and II
   - Importer - Schedule I and II
   - Researcher - Schedule I and II (See Note 8 on Instruction Sheet)
   - Manufacturer - Schedule I, II, III, IIIN In addition to codes furnished, bulk manufacturer (synthesizer/extractor) applicants MUST Circle Below those "Basic Classes" of controlled substances in Schedule I and II which they propose to "Manufacture in Bulk".

7360	9200	7370							

IF ADDITIONAL SPACE IS REQUIRED, USE A SEPARATE SHEET AND RETURN WITH APPLICATION.

WARNING: Section 843(A) (4), Title 21, United States Code, states that any person who knowingly or intentionally furnishes false or fraudulent information in this application is subject to imprisonment for not more than four years, a fine of not more than $30,000.00, or both.

MAIL the Original and 1 copy to the above address. Retain 3rd copy for your records.

Figure 4-3. Sample completed DEA Form 225—Schedule I

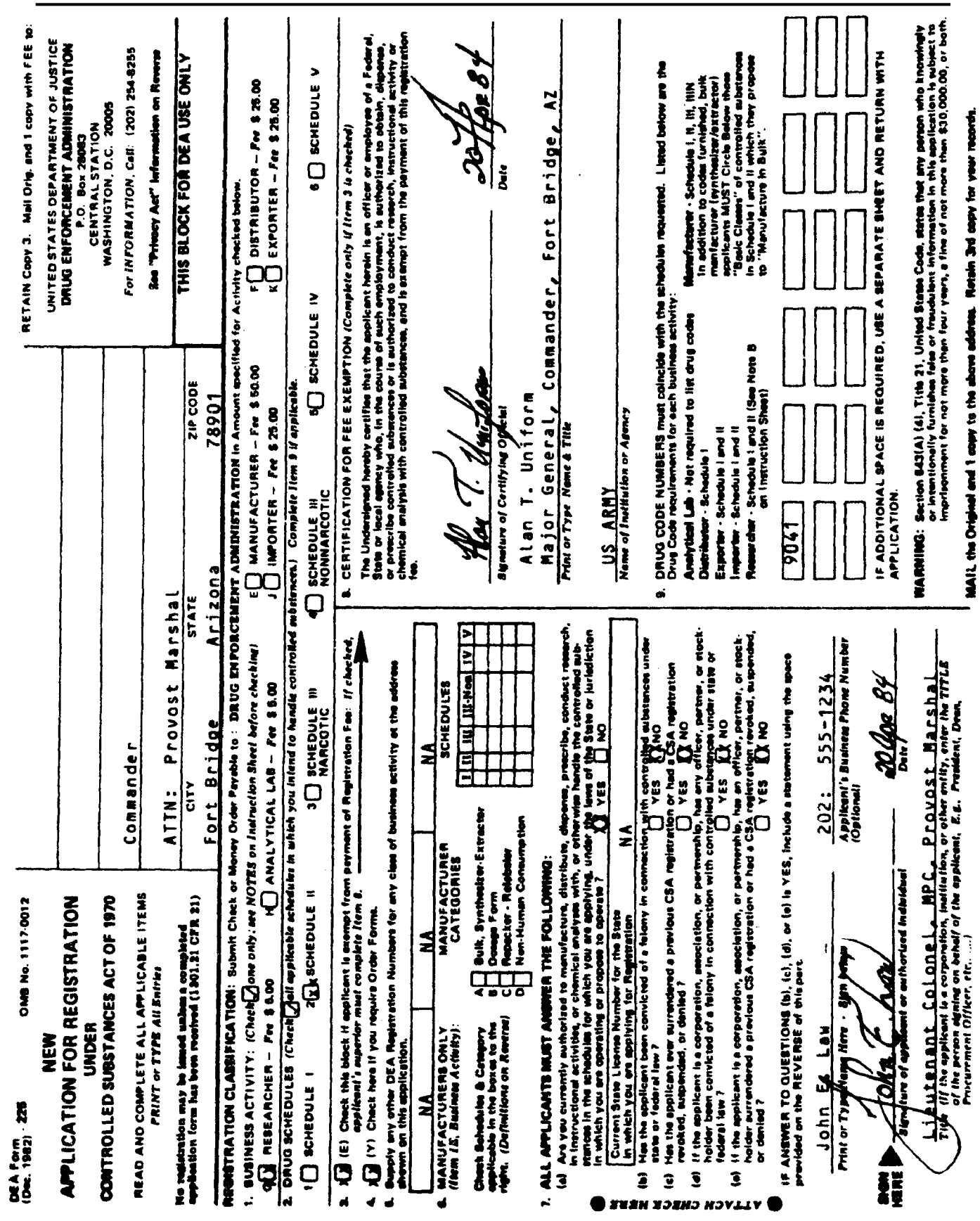


Figure 4-4. Sample completed DEA Form 225—Schedule II

CONTROLLED SUBSTANCE ACCOUNTABILITY RECORD

For use of this form, see AR 190-12; proponent agency is ODCSOPS

ORGANIZATION/INSTALLATION	DEA REGISTRATION NO.	DEA FORM 222c NO.
Provost Marshal, Fort Bridge, AZ	A 1111-0000	Z44560000

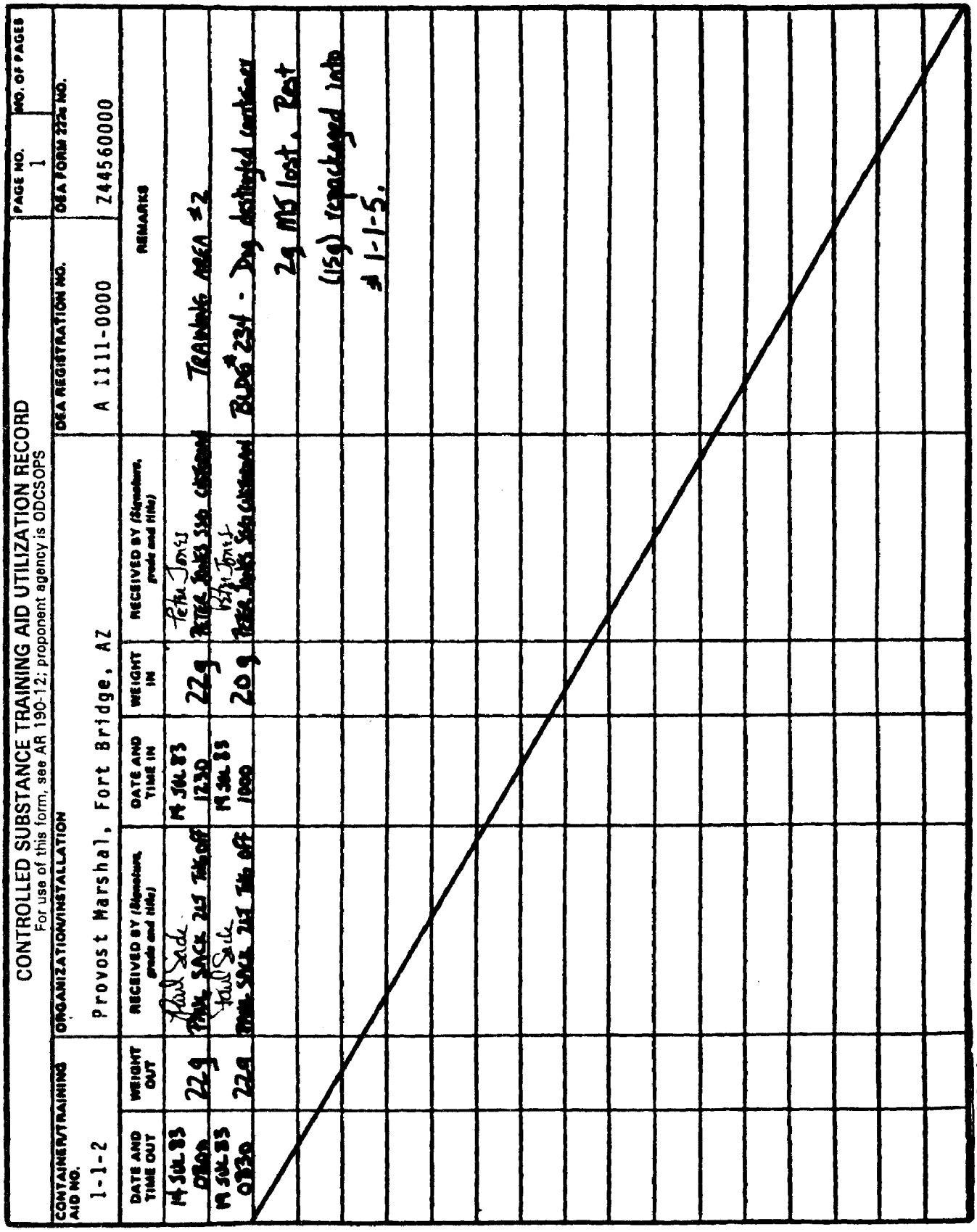
The controlled substances received from this order were repackaged (or weight checked) as indicated below.

ENTRY NO.	TRAINING AID/CONTAINER NO.	WEIGHT AND CODE OF SUBSTANCE	WEIGHT AND TYPE OF CONTAINER	TOTAL WEIGHT OF TRAINING AID	WEIGHT CHECKED/ PACKAGED BY	DATE AND INITIALS	REMARKS
1	1-1-1	10g MJ	8g Nylon Hose	18g	1LT James Behr	12JUL83 JRB	
2	1-1-2	17g MJ	5g Cloth Bag	22g	1LT James Behr	12JUL83 JRB	Dog Bit 19 JUL 83, 2g MJ lost. Rest (15g) repackaged into 1-1-5 (Entry # 11)
3	1-1-3	5g MJ (seeds)	3g Plastic Bag	8g	1LT James Behr	12JUL83 JRB	Unuseable seeds sent Registered Mail (234,567) to DEA 18 JUL 83 DEA Form 41 completed.
4	1-1-4	168g MJ	18g Plastic Bag	186g	1LT James Behr	12JUL83 JRB	
5	1-2-1	6g HE	4g Red Balloon	10g	1LT James Behr	12JUL83 JRB	Destroyed 16 JUL 83. DEA witnesses. DEA Form 41 completed
6	1-2-2	8g HE	80g Metal Box	88g	1LT James Behr	12JUL83 JRB	
7	1-2-3	6g HE	3g Plastic Bag	9g	1LT James Behr	12JUL83 JRB	
8	1-3-1	4g CO	3g Plastic Bag	7g	1LT James Behr	12JUL83 JRB	
9	1-3-2	6g CO	18g Plastic Bag	24g	1LT James Behr	12JUL83 JRB	Dog clawed 14 AUG 83; Lost .8g Rest (5.2g) to DEA by Reg. MAIL (234,778) 22 AUG 83
10	1-3-3	10g CO	80g Metal Box	90g	1LT James Behr	12JUL83 JRB	
11	1-1-5	15g MJ	5g Cloth Bag	20g	1LT James Behr	19JUL83 JRB	See Entry #2

Code Key: Marihuana--MJ; Hashish--HH; Heroin--HE; Cocaine--CO

DA FORM 4608-R, Oct 84

Figure 4-5. Sample completed DA Form 4608—R



CONTROLLED SUBSTANCE TRAINING AID UTILIZATION RECORD

For use of this form, see AR 190-12; proponent agency is ODCSOPS

PAGE NO. 1 | NO. OF PAGES

CONTAINER/TRAINING AID NO.	ORGANIZATION/INSTALLATION	DEA REGISTRATION NO.	DEA FORM 222a NO.
1-1-2	Provost Marshal, Fort Bridge, AZ	A 1111-0000	Z44560000

DATE AND TIME OUT	WEIGHT OUT	RECEIVED BY (Signature, grade and title)	DATE AND TIME IN	WEIGHT IN	RECEIVED BY (Signature, grade and title)	REMARKS
14 JUL 83 0800	22g	Paul Sack PAUL SACK 2LT TNG OFF	14 JUL 83 1230	22g	Peter Jones PETER JONES SSG CUSTODIAN	TRAINING AREA #2
19 JUL 83 0830	22g	Paul Sack PAUL SACK 2LT TNG OFF	19 JUL 83 1000	20g	Peter Jones PETER JONES SSG CUSTODIAN	BLDG #234 - Dog destroyed container 2g MJ lost. Rest (15g) repackaged into #1-1-5.

DA FORM 4607-R, Oct 84

Figure 4-6. Sample completed DA Form 4607—R

CONTROLLED SUBSTANCE TRAINING AID UTILIZATION RECORD
For use of this form, see AR 190-12; proponent agency is ODCSOPS

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CONTAINER/TRAINING AID NO.	ORGANIZATION/INSTALLATION	DEA REGISTRATION NO.	DEA FORM 222c NO.
1-3-2	Provost Marshal, Fort Bridge, AZ	A 1111-0000	Z44560000

DATE AND TIME OUT	WEIGHT OUT	RECEIVED BY (Signature, grade and title)	DATE AND TIME IN	WEIGHT IN	RECEIVED BY (Signature, grade and title)	REMARKS
13 JUL 83 0930	24 g	Kelly Hall SSG TNG NCO	13 JUL 83 1200	24 g	Peter Jones SSG CUSTODIAN	PMO Parking Lot
16 JUL 83 1000	24 g	Paul Sack 2LT TNG OFF	16 JUL 83 1600	24 g	Peter Jones SSG CUSTODIAN	Bldg # 234
21 JUL 83 0800	24 g	Kelly Hall SSG TNG NCO	21 JUL 83 1530	24 g	Peter Jones SSG CUSTODIAN	Main Parking Lot
26 JUL 83 0830	24 g	Paul Sack 2LT TNG OFF	26 JUL 83 1230	24 g	Robert Kane ISG Alt Custodian	Airfield
5 AUG 83 1130	24 g	Paul Sack 2LT TNG OFF	6 AUG 83 1630	24 g	Robert Kane ISG Alt Custodian	PMO Parking Lot
14 AUG 83 1015	24 g	Kelly Hall SSG TNG NCO	14 AUG 83 1415	23.2 g	Peter Jones SSG CUSTODIAN	Bldg 234 Dog alerted; .8g lost Investigation initiated
		Report of findings of investigation mailed to Commander USAMPOA on 16 AUG 83				
		Remaining cocaine in 1-3-2 sent to DEA by Registered Mail (#234,778)				
			on 22 AUG 83. DEA form 41 completed.			

DA FORM 4607-R, Oct 84

Figure 4-7. Sample completed DA Form 4607—R

CONTROLLED SUBSTANCE ACCOUNTABILITY RECORD

For use of this form, see AR 190-12; proponent agency is ODCSOPS

ORGANIZATION/INSTALLATION	DEA REGISTRATION NO.	DEA FORM 222c NO.
Provost Marshal, Fort Bridge, AZ	A 1111-0000	Z44560000

The controlled substances received from this order were repackaged (or weight checked) as indicated below.

ENTRY NO.	TRAINING AID/CONTAINER NO.	WEIGHT AND CODE OF SUBSTANCE	WEIGHT AND TYPE OF CONTAINER	TOTAL WEIGHT OF TRAINING AID	WEIGHT CHECKED/ PACKAGED BY	DATE AND INITIALS	REMARKS
1	1-2-3			9 GRAMS	MAJ B. NEARBY Co A 1/2 INF	14 AUG 83 BN	
2	1-2-3			9 GRAMS	CPT JOHN SMITH Co B 3/4 ARTY	16 SEP 83 JS	
3	1-2-3			8.8 GRAMS	MAJ B. NEARBY Co A. 1/2 INF	15 OCT 83 BN	

Code Key: Marihuana--MJ; Hashish--HH; Heroin--HE; Cocaine--CO

DA FORM 4608-R, Oct 84

Figure 4-8. Sample completed DA Form 4608—R (weight check)

Chapter 5
Explosives Training Aids

5–1. General

The proficiency of EDDs is a critical skill that depends on continual reinforcement through training. To maintain satisfactory proficiency (95 percent or better detection rate), EDDs must be given a minimum of 4 hours of explosives detection training each week.

a. Within safety limits, training should be conducted in the same or a similar environment to that which the EDD team will be required to work. Some examples of good training environments are barracks just after all occupants have left for training, post exchanges, commissaries, and theaters just after closing. This includes any other facility that will provide real or nearly real conditions, and that will not present an unreasonable safety hazard to personnel not involved in the training exercise. Detailed requirements to ensure the safety of personnel during training exercises are given later in this chapter.

b. In selecting facilities for training, consideration should be given to the structure of the building. Some buildings may be much more susceptible to high cost structural damage in case of an accidental explosion than others. Taking this factor into consideration may lead to selection of alternate facilities with relative little, if any, loss in training effectiveness or realism. For example, a commissary warehouse may be selected as a training site in place of the commissary. The same wide variety and concentration of odors will be present. Therefore, much of the effectiveness of performing the training in the commissary is maintained.

c. In selecting facilities to be used for EDD training, a plan should be developed in conjunction with local safety and engineer personnel. A listing of buildings or facilities to be used should be compiled. The selection process should take into consideration the personnel exposure or safety factors listed later in this chapter, the factors listed above, and the need to maintain EDD detection proficiency in varied surroundings (that is, in buildings with variation of distracting odors, floor surfaces, outside noises, and so forth). Once a plan is formed, the installation commander should be informed of, and approve, the list of buildings or facilities selected for use. The plan should include the projected frequency of training and safety precautions being taken. Included would be the following:

(1) Prior notification of, and coordination with, building or facility managers.

(2) Evacuation of area in which training is taking place.

(3) Compliance with provisions of safety precautions prescribed in this chapter.

5–2. Explosives used for training

a. A variety of explosives training aids are needed to maintain proficiency. Many different explosive compounds are in use today and the explosives used in homemade bombs may range from common household materials to the most sophisticated military or commercial chemical compounds. Nearly all explosives, however, have certain identifiable elements that are found in at least one of the explosives used for training aids. Dogs trained to detect these explosives training aids can therefore detect most other explosives. The handler must develop an understanding of what odors the dog is able to detect to be sure that the EDD is consistently trained to detect the explosives substance rather than containers, wrappings, tapes, and other material which may be present. The following types of explosives are authorized for training of EDD teams:

(1) Commercial dynamite.

(a) Gelatin.

(b) Ammonium nitrate.

(2) Military dynamite.

(3) Water gel (TOVEX).

(4) TNT (trinitrotoluene).

(5) Smokeless powder.

(6) C–4 plastic explosive.

(7) Detonating cord.

(8) Potassium chlorate.

(9) Sodium chlorate.

b. All of the explosives included in the list in a, above are contained in the explosive scent kit, and should be available to the EDD team for training. Each of these explosives should be used frequently enough to maintain the EDDs detection proficiency at 95 percent or better on each of the explosives. The general rule to follow is to use any type of explosive, varying the amount and type from day to day. Of the basic types of explosives to be used, C–4 plastic explosive has the strongest odor. This is followed by dynamite, smokeless powder, TOVEX, detonating cord, and TNT. The chlorates are a relatively new addition and their position in the odor spectrum has not been established.

5–3. Explosives characteristics

The effectiveness of the EDD team depends on the dog's ability to detect explosives substances. This ability can be greatly enhanced by the handler's knowledge of the characteristics of explosives, the source of the odor the EDD is trained to detect, and how explosives devices are constructed. The information provided here is intended to give only a general understanding of explosives. Handlers should use this information as a foundation for further study in other Army publications on explosives (field manuals and technical manuals) and related references.

a. Smokeless powder.

(1) Smokeless powder is the world standard propelling powder for small arms, cannons, and, in a slightly different form, some rockets. All low explosives currently used as propellants have a nitrocellulose base and are commonly referred to as smokeless powders. Various organic and inorganic substances are added to the nitrocellulose base during manufacture to give improved qualities for special purposes. Various commercial trade names or symbols may be used to identify the family of smokeless powders.

(2) Smokeless powders are produced by dissolving gun cotton (nitrocellulose) in a mixture of ether and alcohol to form a mass called colloid. The colloid has a consistency of melted glue and is squeezed into macaroni–shaped tubes that are subsequently cut in short lengths. The ether and alcohol used to dissolve the guncotton are evaporated, leaving a hard substance. The small cylindrical powder grains resulting from this process are generally used as rifle ammunition powders.

(3) Pistol powders, unlike rifle powders, do not generally have cylindrical grains. Instead, they are manufactured in the form of very fine, thin wafers, flakes, or balls. These shapes ensure the shorter burning time necessary for full combustion in weapons with short barrels. Shotgun powders are similar to pistol powders in that they burn more rapidly than rifle powders. Most shotgun powders are straight nitrocellulose in composition.

(4) Like black powder, smokeless powders vary widely in both form and color. The majority of rifle and pistol powders are black in color and are formed into rods, cylindrical strips, round flakes, or irregular grains. Shotgun powders may be translucent round or square flakes, orange to green in color, or may be black irregularly shaped granules. Smokeless powders of all types are sold in tin flasks, glass jars, plastic containers, and kegs of varying weights up to 25 pounds.

(5) Unconfined smokeless powder burns with little or no ash or smoke and, when confined, its rate of burning increases with temperature and pressure. For this reason it is frequently used in the construction of pipe bombs. It should be noted that smokeless powder manufactured for use in small arms ammunition is usually glazed with graphite to facilitate machine loading and prevent the accumulation of static electricity. Many of these powders are as sensitive to friction as black powder. Therefore, the precautions used in handling black powder should be observed for smokeless powder.

(6) The age of the smokeless powder can also affect the dog's detection ability. The ether base dissipates with age when the powder has been exposed to the open air. Therefore, training aids should be made using both old and new smokeless powder.

b. C–4 plastic explosive. Composition C–4 is a composite explosive containing 91 percent Research Department Explosive (RDX) and nine percent nonexplosive plasticizers. C–4 has a greater shattering effect than the earlier C–3. C–4 is white to light brown in color and does not stain the hands. C–4 is often used in letter bombs because it can be shaped easily to fit the letter. Even though only a small amount of C–4 is used, it has such a strong odor that detection should be easy for the dog when searching mail. C–4 is available as a block demolition charge in the M5A1 2 1/2–pound block or the M112 1 1/4–pound block. Additional information on this and other explosives can be found in FM 5–25.

c. Detonating cord.

(1) Detonating cord consists of a core of PETN or RDX in a textile sheath, waterproofing materials, and plastics. Detonating cord will detonate at a speed of approximately 21,000 feet (or four miles) per second. Various colorings and textiles patterns are used to identify different explosive strengths and types of detonating cord. Detonating cord resembles safety fuse, is approximately the same diameter, and is supplied in rolls or coils. Detonating cord is nearly always distinguishable by its white or pink powder core. Detonating cord is manufactured under brand names such as Primacord, Primex, Detacord, Detonating Fuse, Cordeau Detonant, or Cord Tex.

(2) Most of the common detonating cords contain 50 to 60 grains of PETN per foot. A white crystalline powder, PETN is an extremely powerful explosive. Although pure PETN is white, the addition of desensitizers may slightly change its color to light gray. Detonating cord which contains up to 400 grains of PETN as a core load is dyed pale green in color. There are other lower energy detonating cords designed for specific applications, especially for operations in developed areas where a reduced noise level is desired.

(3) Another special type of detonating cord is used in operations where the ability to withstand high temperature is required, such as oil well jet perforating. This type of detonating cord has a black nylon or synthetic rubber outer sheath and the explosive core is 70 to 80 grains of RDX per foot. The RDX core load is pink. RDX is used because it can be exposed to crude oil and well fluids at high pressure and temperature (up to 325 degrees Fahrenheit) for as long as 2 hours without deterioration or detonation.

(4) Detonating cord is used with high explosives in the same way as blasting caps. Detonating cord may be tied

around, threaded through, or knotted inside explosives to cause them to detonate. Detonating cord is also used when a simultaneous detonation of a number of explosive charges is planned, and when it is not practical to use electrical circuits for this purpose. A single line of detonating cord can be laid out from the firing point in a path that will pass near all of the explosive charges. From this main line shorter lengths of detonating cord are attached to the charges. A blasting cap is attached to one end of the main line of the detonating cord to initiate detonation of all the charges simultaneously.

d. TNT. TNT is the most common military explosive. Alone or as part of a composite explosive, TNT is used widely as a booster charge, bursting charge, and demolition charge. TNT is a standard explosive that serves as a basis for rating other explosives. The TNT most likely to be found will be in 1/4–, 1/2–, or 1–pound blocks. When TNT is removed from its cardboard container, it is light yellow brown in color. TNT gradually turns dark brown after several days exposure to sunlight. Some TNT also may be gray in color due to the addition of graphite during manufacture.

e. Water gels (TOVEX). Water gels, or blasting slurries, are a new commercial group of blasting agents. These consist of nitrocellulose mixtures, with or without TNT, in a gel–like substance. Powdered metals, such as aluminum may be added to increase their performance. Water gels can be poured into irregular or wet bore holes to fill all available space with explosive. Most water gels require an explosive booster or primer for detonation. Some water gels also are being manufactured that can be detonated by using a blasting cap. Water gels may be packaged in plastic bags, 1 1/2 to 8 inches in diameter, or may be delivered to the blasting site by special pump trucks.

f. Military dynamite.

(1) Military dynamite is a composite explosive which consists of 75 percent RDX, 15 percent TNT, five percent SAE 10 motor oil, and five percent flour. When removed from its wrapper, military dynamite is a buff colored granular substance which crumbles easily and is slightly oily to the touch. It does not cause the headaches which are a typical side–effect for personnel who handle commercial dynamites.

(2) Military dynamite is used as a substitute for commercial dynamites in military construction, quarry work, and demolitions. It is equivalent in strength to 60 percent straight dynamite. Since it contains no nitroglycerin, military dynamite is safer to handle, transport, and store than commercial dynamite. Military dynamite is relatively insensitive to heat, shock, friction, or bullet impact.

(3) Military dynamite is packaged in standard dynamite cartridges. The cartridge may be marked either M1, M2, or M3 depending on the cartridge size only. All military dynamite detonates at about 20,000 feet per second.

g. Commercial dynamites. Commercial dynamites include straight dynamites, ammonia dynamites, gelatin dynamites, and ammonia gelatin dynamites.

(1) The explosive base of straight dynamite is liquid nitroglycerin absorbed in a mixture of various carbon–rich materials, such as wood pulp or ground meal. Sodium nitrate is added primarily to supply oxygen for complete combustion of the carbon–rich materials and increase the strength of the explosion. When removed from its wrapper, straight dynamite will generally be light tan or reddish–brown in color. While the texture of straight dynamites may vary, they are usually loose, sightly moist, oily mixtures similar to a mixture of sawdust, clay, and oil. Straight dynamites are manufactured and graded in ranges from 15 to 60 percent.

(a) The nitroglycerin gives straight dynamite a heavy, pungent, sweet odor. Breathing straight dynamite fumes, even for short periods of time, will usually cause a very persistent and severe headache. Nitroglycerin liquid and vapors are quickly absorbed by the body and enter the bloodstream producing the headache. Although aspirin and other pain relievers have little effect on such headaches, some relief may be obtained by drinking strong black coffee or caffeine citrate. Personnel in constant contact with nitroglycerin usually develop some immunity from the headaches. This immunity, however, can be maintained only by almost daily contact.

(b) Straight dynamites are rarely used in general blasting work because they are highly sensitive to shock and friction, and they are highly flammable. When detonated, they produce toxic fumes which make them unsuitable for use underground or in confined spaces. Because of their nitroglycerin content, straight dynamites are the most hazardous of the dynamites to handle and store. Boxes or sticks of dynamite in storage must be periodically turned over to prevent the nitroglycerin from settling to the bottom and leaking out of the dynamite stick. Any dynamite that appears to be deteriorating or leaking an oily substance should be moved only by properly trained EOD personnel.

(c) A form of straight dynamite that is widely used in commercial blasting operations is called ditching dynamite. Ditching dynamite is manufactured in a 50 percent grade in sticks 1 1/4 inches by 8 inches and is used for blasting ditches. If soil conditions are right, ditching dynamite will detonate by propagation. This eliminates the need for individual priming of each charge with blasting caps or detonating cord. A principal characteristic of ditching dynamite is its relatively high detonation velocity of almost 17,000 feet per second. This rapid detonation produces a powerful shock wave and good earth shattering effect.

(2) In the manufacture of ammonia dynamites, ammonium nitrate replaces a portion of the nitroglycerin. This substitution produces a dynamite which costs less and which is less sensitive to shock and friction than straight dynamite. Ammonia dynamite has a lesser shattering effect and, therefore, is more suitable for quarry operations, stump or boulder blasting, and hard pan gravel or frozen earth blasting. Because of its ability to move or dislodge objects, ammonia dynamites are probably the most widely used explosives of the dynamite family. Ammonia dynamites are generally made in strengths from five to 70 percent with detonation velocities ranging from 3,600 to 13,000 feet per

second. When the wrapper is removed, ammonia dynamite will appear light tan to light brown in color and will have a pulpy, granular, slightly moist, oily texture. It has the same odor as straight dynamite because of its nitroglycerin content, and may also produce severe headaches after short periods of contact.

(3) Gelatin dynamites have a base of water resistant"gel" made by dissolving or colliding nitrocotton with nitroglycerin.

(a) The gel varies from a thick viscous liquid to a tough rubbery substance. Gelatin dynamite is neither hygroscopic nor desensitized by water, and therefore avoids two of the disadvantages of ammonia dynamite. Since it is insoluble in water and tends to waterproof and bind other ingredients with which it is mixed, gelatin dynamite is well suited for all types of wet blasting work. Because of its density, it is also used extensively for blasting very hard, tough rock or ore.

(b) Gelatin dynamites are manufactured in strengths from 20 to 100 percent. Gelatin dynamite will also detonate at two velocities. Unconfined, the lower rated strengths will detonate at about 7,000 feet per second. Confined, gelatin dynamites will detonate at approximately 13,000 feet per second. Detonation velocities up to 23,600 feet per second are available. Semi–gelatin dynamites have characteristics that fall between those of ammonia dynamites and ammonia–gelating dynamites.

(4) Ammonia–gelatin dynamites have most of the characteristics and qualities of gelatin dynamites. A portion of their strength is provided by using less costly ammonium nitrate. Ammonia–gelatin dynamites are manufactured in strengths of 25 to 90 percent, with detonating velocities ranging from about 7,000 to 23,000 feet per second.

h. Dynamite detonation. All dynamites may be detonated using either electric or nonelectric blasting caps or detonating cord. Since blasting caps are extremely sensitive, a hole is made in the dynamite stick before the cap is inserted. A blasting cap crimper tool has a pointed handle, and is usually used to prepare dynamite for insertion of the blasting cap.

i. Ammonium nitrate.

(1) Ammonium nitrate is one of the least sensitive and most readily available main charge high explosives. It ranges in color from white to buff–brown, depending on its purity, and has a salty taste. Colored dyes may be added to aid identification. Ammonium nitrate is usually found in the form of small compressed pellets called prills. It is used extensively as a blasting agent or as a cratering charge, and as an ingredient in the manufacture of some dynamites. Ammonium nitrate is commonly used as a fertilizer.

(2) Even a high explosive grade of ammonium nitrate generally needs a booster for detonation. For cratering charges, TNT is used as the booster. RDX or pentolite boosters or primers are often used for commercial applications. The detonation velocity of ammonium nitrate ranges from 3,300 to 8,200 feet per second. Ammonium nitrate absorbs moisture easily (hygroscopic) and will lose power and sensitivity as its moisture content increases. As a result, ammonium nitrate is usually packaged in some type of waterproof container.

j. Sodium chlorate and potassium chlorate. Both sodium chlorate and potassium chlorate are substances which are frequently being used in improvised explosive devices (homemade bombs). These chlorates are available as a pharmaceutical or from a chemical supplier. The strength and odor is affected by exposure to air or moisture, so most explosive devices made using chlorates will be packaged in waterproof materials. For training, the chlorates should never be mixed with each other or with other substances. Chlorates used for training will need to be replaced frequently (about every three months) because of their exceptionally rapid loss of potency (odor and strength).

5–4. Procurement of explosives training aids

a. Procurement. Procurement of explosives training aids is the responsibility of the installation PM, security officer, or the MP unit commander. The source of training aids and the procedures for obtaining explosives training aids will be established before the request for authorization of EDDs is submitted. Arrangements need to be made with the installation activity having installation responsibility for procurement and storage of explosives, and with the nearest EOD unit. Army installations or activities with authorized and assigned EDD teams are authorized to procure and issue the explosive scent kit which contains the items listed in paragraph 5–2 for the purpose of providing explosives training aids for proficiency training of MP EDD teams.

b. Inventories.

(1) Inventories will be made:

(a) Monthly.

(b) When a new explosives training aid custodian is appointed.

(c) When an explosives training aid is not accounted for at the conclusion of the daily training session, lost from storage or when there has been a breach in security of the storage room or storage container.

(2) Monthly inventories will be conducted by a disinterested person (anyone not assigned to or with direct responsibility for the installation MWD program) in grade E–7 or above, who is appointed by the PM or security officer, or by the installation or activity commander. Inventories which are required because of losses or breaches of security will also be conducted by a disinterested person.

(3) Change of primary custodian inventories will be joint inventories between the old and new custodian.

(4) An inventory will account completely for all quantities of explosives training aids maintained as training aids and will be a complete audit of the accountability records pertaining to those substances. Only those records that are

active and those that have not been audited previously need to be audited. The person conducting the inventory will positively account for all quantities and types of explosives training aids by verifying the previously established audit trail.

(5) The person conducting the inventory will prepare a report for the PM or security officer or other appointing authority. A copy of the report will be maintained with the explosives training aids folders in a secure files storage area. Inventory reports will be maintained for at least two years from the date of the report.

(6) Inventory reports will include the following information:

(a) Date of inventory and the inclusive dates of all controlled substances accountability records included in the inventory.

(b) Name, rank, and unit of the person conducting the inventory. Include a copy of any written appointing document for disinterested persons or the appointing document for a new custodian.

(c) Quantity of each type of explosive received.

(d) Quantities of each explosive disposed of or destroyed.

(e) Quantities of each explosive on hand or in use.

(f) State whether the inventory and audit of records successfully accounted for all explosive aids. If all explosives could not be accounted for, state what action was taken to resolve the discrepancies and any recommendations to improve accountability procedures.

(g) Evaluate the custodian's compliance with security, accountability, and control procedures.

5–5. Cutting training aids

Explosives training aids issued for individual team training will not exceed the following quantities:

a. Commercial dynamite or military dynamite—one stick per training aid. Use a normal manufactured configuration. Do not cut dynamite. Size and weight may vary between types and brands of dynamite.

b. TNT—no more than 16 ounces per training aid. Use a normal manufactured configuration. Do not cut TNT.

c. Smokeless powder—no more than 16 ounces per aid. Smokeless powder may be removed from the container and repackaged into other containers as necessary. Preparation should be carried out in a suitable remote location.

d. C–4 plastic explosive—no more than 20 ounces per aid. Use a normal manufactured configuration. If cutting or dividing is necessary, only qualified munitions or EOD personnel should do the cutting or dividing.

e. Detonating cord—no more than 10 feet per training aid. Detonating cord may be cut with a knife.

f. Potassium chlorate and sodium chlorate—30 grams (or one ounce) per aid. The portion of the chlorate not being used should be left in a tightly closed storage container. The training aid used will be stored separately to avoid contaminating the remaining chlorates.

5–6. Storing explosives

Explosives must be stored in vapor proof containers in facilities that meet the requirements of AR 385–64. The security requirements for explosives are contained in AR 190–11. AR 710–2 and AR 740–26 prescribe inventory, accountability, and issue procedures.

5–7. Issue and turn–in procedures

a. Explosives and explosives training aids will only be issued to those individuals who have received the explosives safety training required in AR 190–12. All personnel who are authorized to receive and handle explosives training aids will be designated in writing by the PM, security officer, or unit commander.

b. DA Form 581 (Request for Issue and Turn–in of Ammunition) will be used for requesting, receipting for, and turning in explosives used for training. Local procedures will be established to ensure that all quantities of explosives issued for training are all returned to secure storage. Thefts and/or losses will be investigated as required by AR 190–11.

c. Only the amount of explosives needed for that day's training will be issued.

5–8. Vehicle transportation requirements

Explosives are transported only in Government vehicles meeting the criteria of TM 9–1300–206 and/or AR 55–355, as appropriate. Vehicles must be certified as safe for explosives transportation by explosives safety personnel.

a. Before each use, the driver of the vehicle being used to transport explosives will inspect the vehicle to be sure it is in good mechanical condition and that all safety equipment is in working order. This inspection includes the following:

(1) The vehicle must have two approved Class B/C (CO2 or dry chemical) fire extinguishers that are fully charged. One extinguisher is mounted on the outside of the vehicle on the driver's side and the other on the inside of the cab.

(2) All electrical wiring must be in good condition and all connections properly attached.

(3) Fuel tanks and fuel lines will be secure and free of leaks.

(4) Brakes, tires, steering and other equipment should be in proper working order. Tire inflation pressure should be checked and adjusted if necessary.

(5) Exhaust system will be free of oil, grease, and fuel.

(6) "Explosives A" placards will be mounted on the sides, front, and rear of the vehicle (and/or trailer).

b. Each type of explosive should be transported in a separate closed container. Containers should not be metal or other material that would fragment. Paper, cardboard, or light wood should be used. Each container must be marked to show the type of explosive in it.

c. Explosives are only transported in the cargo compartment of the vehicle. Personnel and MWDs will not ride in or on the cargo area with explosives.

d. Each explosives container should be immobilized so that it cannot shift during transit. Sandbags should be placed between containers and around the sides of the cargo compartment.

e. Wheel chocks should be used when the vehicle has stopped to prevent the vehicle from rolling from its stationary position.

5–9. Explosives safety

The consistent practice and observance of explosives safety requirements is as important to the credibility of the EDD team as the maintenance of the team's proficiency. There can be no tolerance of unsafe practices because carelessness invites disaster. Before any individual is allowed to handle explosives, he or she must be fully knowledgeable of explosives safety requirements and should be able to demonstrate that knowledge in both training and real situations.

5–10. Explosives safety training

Each PM, security officer, or MP unit commander will ensure that personnel who will be involved in EDD training have been thoroughly trained in the safe storage, transportation, and handling of each type of explosive to be used as training aids before they are allowed to conduct or take part in this training. This training should be conducted by or with the direct assistance of EOD or explosives safety personnel. The initial explosives safety training will occur before the individual participates in any training where explosives are present. Training will be repeated at least annually thereafter. A written record of all explosives safety training conducted, including a list of personnel (by name) who have been trained, will be maintained for at least two years. Explosives safety training will include at least the following subjects as they relate to the types and quantities of explosives to be used in training.

a. Storage requirements.

b. Security requirements.

c. Vehicle transportation requirements.

d. Explosives handling and personnel precautions.

e. Extinguishing agent for explosives fires.

f. Fire department assistance.

g. Explosive ordnance disposal assistance.

h. Emergency actions.

i. Physical characteristics of each type of explosive used.

j. Functional characteristics of each type of explosive used.

k. Sensitivity to shock, heat, electricity, moisture, and corrosive agents of each type of explosive used.

l. Hazards related to each type of explosive used.

m. Procedures for using, placing and recovering explosives used in training.

5–11. Explosives safety requirements

a. Proficiency training is best done in the same environment in which actual searches would most likely be done. For example, public buildings such as post exchanges, commissaries, schools, banks, and warehouses provide a suitable training environment, as well as aircraft, vehicles, motor pools, petroleum storage areas, open areas around water towers, electrical power stations, and so forth. Training in these areas must be coordinated in advance with the users so as not to disrupt normal operations. Whenever possible, training should be done after normal operating hours but as close to the end of the operational period as possible to simulate building or area evacuation.

b. Training must not be done during an electrical storm or when an electrical storm is approaching. Always contact the local weather station or military weather detachment before training is conducted to be sure weather conditions will permit a safe training exercise. If an electrical storm comes up during training, all training activity will be stopped and explosives will be returned to the storage area. If time does not allow for safe return to the storage area, all explosives will be placed in an open unoccupied area at least 300 feet from occupied buildings, personnel, or equipment. The person in charge of the explosives will maintain surveillance over them during this period from at least 100 feet.

c. Before training starts, the fire department will be notified of the training location and the amount and type of explosives to be used. Proper fire symbols will be posted around the training area so that they are clearly visible from approach roads used by fire fighters. A class B/C type fire extinguisher will be readily available in the training area.

d. All persons handling commercial dynamite will wear rubber or plastic gloves to prevent the absorption of nitroglycerin into the skin. Dogs will not be allowed to pick up any explosive training aids in their mouths.

e. Smoking is prohibited within 100 feet of explosives used in training or within 100 feet of any actual search location.

f. All persons not actively involved in training exercises will be evacuated to a distance of at least 100 feet from the training area. Only the minimum number of personnel required to conduct the training will be authorized in the training area.

g. The total quantity of explosives used in any training event must not be more than 5 pounds of explosives. This quantity may be a mix of any of the types of authorized explosives.

h. Blasting caps, squibs, explosive detonators, or any type of initiating explosive or device may not be used for training when other explosives are being used. When training EDDs with initiating devices, only those devices (no explosives) may be present in the training area.

i. Explosives training aids will not be placed near any heat or spark producing source such as electrical wiring and outlets, radiators, heaters, heat vents, car engines, ash trays, or any other source of potential ignition.

j. Explosives training aids should not be placed inside metal containers that would fragment in case of accidental initiation.

k. When multiple training aids are used, they must be placed at least 50 feet apart to prevent propagation in case of accidental detonation.

l. Leave training aids in place only for the minimum time necessary for required odor dispersion, search, and recovery. Collect all training aids immediately after the training period.

m. Training aids must be kept under constant surveillance. DO NOT LEAVE EXPLOSIVES UNATTENDED!

Chapter 6
Health, Care, and Feeding

Section I
Veterinary Medical Care

6–1. Veterinary services

a. The Army provides veterinary service for all MWDs as authorized by DOD Directive 6015.5, AR 40–1, AR 40–3, and AR 40–905.

b. At most locations, veterinary medical care is provided by the assigned installation veterinarian. When there is no assigned installation veterinarian, a veterinarian from a nearby military installation will be assigned responsibility for providing veterinary health services.

c. The PM, security officer, or the MP unit commander who has the MWD assigned or the military veterinarian will be responsible for approving all emergency civilian veterinary care when a military veterinarian is not available. If routine military veterinary care is not available, the attending Army veterinarian will establish procedures to ensure that adequate care is provided.

6–2. Veterinary responsibilities

a. The Surgeon General, U.S. Army, through the Army Veterinary Corps, provides professional veterinary medical support for the entire MWD program. This responsibility includes:

(1) Medical and surgical care at training facilities, bases, and installations.

(2) Sanitary inspection of kennel facilities.

(3) Professional review of plans for new construction and modification of kennels, support buildings, and sites.

(4) Prescribing an adequate feeding program.

(5) Instructing dog handlers and supervisors in all matters related to the health of MWDs.

(6) Conducting research to improve the MWD program.

b. The veterinarian provides treatment for the diseased or injured MWD at the kennel site or at the installation veterinary medical treatment facility. The veterinarian is responsible for equipping this facility and for providing medical and surgical supplies.

c. Physical examinations of dogs being offered to the military by sale or donation are given free of charge to make sure only healthy dogs are procured. MWDs also receive a physical examination before and after shipment.

(1) An examination is given just before shipment from one installation to another. A health certificate is issued for the state or country into which the dog is being shipped for PCS or TDY greater than 30 days. When the TDY period exceeds 30 days, the MWD will be accompanied by a health certificate prepared and signed by a veterinarian no more

than 10 days prior to embarkation. If TDY location is in a different Army veterinarian area of operation, the gaining veterinarian will be notified prior to departure from the home station.

(2) An arrival examination is given as soon as possible, but not more than 30 days after arrival of a dog at a new location.

(3) The dogs are examined to detect injury or disease and support the safe shipment and continued good health of the dog.

d. Dogs are routinely immunized against contagious diseases. Immunizations begin at the procurement or training facility and are continued regularly throughout the dog's service life. The zoonosis control program refers to prevention and control of diseases and conditions common to man and other animals. Rabies is an example. The veterinarian will train MP personnel about control and preventive measures to minimize the possibility of getting diseases from dogs.

e. At least quarterly, the veterinarian inspects the kennel facility and area to make sure that proper sanitary standards are being maintained. The veterinarian ensures that insect and rodent control efforts are adequate, and that the general health of the dogs judged from appearance, grooming, and feeding is being properly maintained by the handler. The quarterly inspection also includes the following elements:

(1) Examine the kennel facilities for safety hazards and distractions that may interfere with the rest and relaxation of the dogs.

(2) Review the adequacy of the kennel structure (particularly for environmental conditions), and the adequacy of feeding and watering schedules. Make recommendations to help prevent disease and injury.

f. The veterinarian instructs handlers about dog health, care, feeding, and first aid. This instruction helps the handler to have a better understanding of the dog's health needs and improves the handler's ability to care for the dog.

g. The veterinarian is responsible for the MWD medical record and related information about examinations, immunizations, and treatment.

h. The veterinarian prescribes an appropriate feeding program based on the dog's health, the climate, and working conditions.

i. The veterinary officer is involved in the review of all plans for new kennel construction or kennel modifications. This is to ensure potential health and safety hazards can be corrected before construction begins.

j. Veterinarians may conduct medical research in support of the MWD program to improve the health, welfare, and effectiveness of the dogs.

Section II
Diseases and Parasites

6–3. Disease prevention

The nature of the work being performed by MWD teams and the importance of this work to the Army mission makes the dog's continuing good health a matter of special attention. The veterinarian provides the professional expertise for treatment, prevention, and control of disease; however, only the handler is in daily contact with the dog. Handlers must be knowledgeable about the physical indicators of failing health in a dog, so prompt action can be taken to help the dog recover. Handlers must be familiar with their dog's normal body functions, such as temperature, appetite, and stool, and must know their dog's normal attitude. Changes must be reported to the veterinarian. Although handlers may not be able to recognize a specific disease, they should be able to recognize the symptoms of illness and be able to describe the symptoms to the veterinarian.

6–4. Contagious diseases

a. Infectious diseases are caused by microscopic or macroscopic organisms. Contagious diseases that can be transmitted between humans and other animals are zoonotic diseases. Four of the more important contagious diseases of dogs are:

(1) *Canine distemper*. This is a widespread, highly contagious, and often fatal viral disease that occurs primarily in young dogs. The airborne virus is easily transmitted from dog to dog but does not affect humans.

(2) *Infectious canine hepatitis.* This is a widespread viral disease found most commonly in young dogs but also in older dogs that are not immunized. The mortality rate is not as high as from distemper, but recovery takes a long time. The virus is spread through the urine, mainly by the use of feeding and drinking utensils contaminated by urine. It does not infect humans.

(3) *Leptospirosis.* This disease, commonly known as "lepto," is caused by a spirochete and is fairly common.

(a) Animals other than dogs can be infected by the disease, and it can be transmitted to humans. It is spread through the urine, usually of dogs and rats. Therefore, in addition to immunization, it is essential that dogs do not consume contaminated food and water.

(b) Rodent control is important in preventing the spread of this disease since rats are the most common carriers.

(c) Where leptospirosis is known or suspected to exist, dogs should not be allowed to enter or drink surface water that may be contaminated by urine or dead animals.

(d) The possibility of human infection reinforces the need for personal cleanliness. Handlers must protect themselves from urine contamination when caring for sick dogs.

(e) Although vaccination will usually prevent the dog from exhibiting clinical signs of disease, vaccination of the dog against leptospirosis does not prevent the dog from shedding the infectious organisms in its urine. Therefore, it is possible to transmit the infectious organism to a human or unvaccinated dog that comes in contact with the infected dog's urine. Food sanitation practices are important in the control of this disease. Runs and kennels should be cleaned and sanitized daily.

(4) *Parvovirus.*

(a) This is an infectious and contagious viral organism which is shed in the stool, vomitus, and urine.

(b) There is a vaccine available which protects the dog against the disease.

(c) The clinical signs of the disease are vomiting (usually green in color) and bloody diarrhea. The dog is usually off food and water for a day prior to onset of the clinical signs.

(d) After onset of the vomiting and bloody diarrhea, the MWD could die within hours if veterinary medical treatment is not obtained. The animal should be taken to a veterinarian immediately.

(5) Dogs infected with any of the diseases discussed in this paragraph usually exhibit one or more of the symptoms listed below. When a dog shows such symptoms, or other changes in normal body functions, the veterinarian must be notified.

(a) Elevated temperature.

(b) Loss of appetite.

(c) Depression.

(d) Loss of weight.

(e) Loss of energy.

(f) Diarrhea.

(g) Vomiting.

(h) Coughing.

(i) Thick discharge from the eyes and nose.

(j) Muscle stiffness.

(k) Convulsions.

b. Rabies, like leptospirosis, is a zoonotic disease. The rabies virus in the saliva of infected animals is readily transmitted to humans through the bite wounds or contact of saliva with broken skin.

(1) Rabies affects all warm blooded animals. Most frequently infected are skunks, raccoons, bats, foxes, dogs, cattle, and cats.

(2) There are two stages of rabies seen in dogs:

(a) In dumb rabies, the most common stage of rabies seen in dogs, the animal will usually have the following signs: excessive drooling from the mouth, sit at one place with blank expression and howl, and unable to move jaw and, therefore, cannot swallow food or water.

(b) In furious rabies, the dog will have a sudden change in temperament or attitude, become very excitable and bite at all objects placed in front of him, appears to walk aimlessly about (loss of eyesight), and not able to swallow food or water. Rabid wild animals often lose their natural fear and will attack rather than retreat.

(3) Handlers must prevent contact between their dogs and wild or stray animals. Contact resulting in bites or scratches must be reported to the veterinarian. Extreme cautions must be used during the capture to prevent bites to personnel.

(4) If a handler is bitten by an animal, medical treatment should be given as soon as possible. In areas where rabies is endemic, handlers and other personnel with an increased occupational risk of exposure to rabies should receive prophylactic rabies immunization from their local medical facility.

c. Other contagious diseases for which vaccines do not exist, such as upper respiratory infections, pneumonia, and gastroenteritis, can infect dogs. Infected dogs may show symptoms including high temperature, loss of appetite, loss of energy, vomiting, diarrhea, and coughing. Any of these symptoms must be reported to the veterinarian.

6–5. Parasite infestations

Parasites can spread disease organisms to other dogs or humans. Dogs may serve as host to a large number of parasites and control of infestation is of prime importance to the dog's health.

6–6. External parasites

Parasites that live in or on the skin of the dog cause damage by sucking blood or actually eating the tissue. The dog responds by biting and scratching the irritated areas, which may lead to severe skin infections and may drastically affect the dog's working ability. The following paragraphs discuss the most common external parasites.

a. Ticks are common in many parts of the world. They suck blood from the dog and, when present in large numbers, may cause a serious loss of blood. Ticks can be observed standing still on the dog's body with their heads

deep in the skin. Ticks spread diseases by sucking blood or tissue fluid from a diseased animal and then moving to another animal.

(1) Care is required in removing ticks since they may carry zoonotic disease. Inflammation of the dog's skin may result if all of the tick is not removed. The correct procedure for removal is to place the fingers or tweezers around the body of the tick and as close to the dog's skin as possible. The tick's head is then slowly withdrawn. Ticks deep in the ear canals must be removed only by veterinary personnel due to the danger of ear injury. Ticks should be disposed of by flushing down the nearest drain or immersion in alcohol. Personnel should always wash their hands after handling ticks.

(2) Ticks may be found in cracks in the floors and sides of the kennel, and in the grass and bushes of the training and working areas. They may live away from the dog's body as long as a year without having to return to the dog for a blood meal. To control ticks, the kennels, training areas, and working areas should be treated with insecticides. The veterinarian should assist with the selection and approval of the insecticides to be used for this purpose, because many insecticides are harmful to dogs.

b. Fleas torment the dog, irritate the skin, and spread disease. They crawl or hop very rapidly through the dog's coat. Like ticks, they are difficult to control since they do not spend all of their time on the body but live in cracks in the kennel and in grass around the kennels. Fleas also may transmit tapeworms from dog to dog. Control requires repeated individual treatment and kennel sanitation.

c. Lice (biting and sucking types) commonly affect dogs. Biting lice live off the dog's tissues; sucking lice suck blood. Both produce great irritation. Biting lice crawl over the skin and through the hair. Sucking lice are usually immobile, and stand perpendicular to the skin. The eggs of lice, called nits, are small, white or gray, crescent shaped objects fastened to the hairs. Lice, unlike fleas and ticks, can live only a short time when they are not on the dog's body. Control, therefore, requires treatment only of affected animals.

d. Mites of several types irritate the ear canal or produce mange.

(1) The ear mite lives in the ear canals and causes a severe irritation. The mites are small but are visible to the naked eye as tiny, white crawling specks. Affected dogs scratch at the ears and cock their heads to one side or shake them. Examination of the affected dog's ear canals usually reveals a large amount of dark colored waxy discharge.

(2) Mange mites live in the animal's skin. The sarcoptic mange mite can be transmitted to humans. Mange mites are too small to be seen by the naked eye, but a skin scraping of the infested area will reveal them under a microscope.

(3) Mites also spend their entire life on the dog. Control, therefore, depends primarily on treatment of the affected animals.

6–7. Internal parasites

Like external parasites, internal parasites (living in the body) irritate the tissues, rob the body of blood or essential elements of the diet, or interfere with specific body functions. Only part of the life cycle of internal parasites is spent in the dog's body. A knowledge of this life cycle, or the stages of development from egg to adult, is important in the control of parasites. The life cycles of several of the most commonly found internal parasites are discussed below.

a. Hookworms, one of the most harmful parasites, live in the dog's intestines. They are small and threadlike, 1/2 to 3/4s of an inch long. They suck blood and cause blood loss by tearing the intestinal wall.

(1) The adult worm lives in the dog's intestine, where eggs are produced by the female and passed in the dog's stools. Larvae develop from these eggs, and can infect the same or another dog. The larvae penetrate the dog's skin or are swallowed as the dog licks the ground or himself. The larvae pass directly into the lungs. Those reaching the lungs are coughed up and swallowed, reaching the intestine. Once in the intestine, they develop into adulthood hookworms, and the cycle begins again.

(2) Dogs with hookworms may have a variety of symptoms, depending on the severity of the infection. Membranes of the mouth and eyes may be pale, stools may be loose and contain blood, or the animal may lose weight. The veterinarian diagnosis the disease by microscopic examination of the animal's stools.

(3) Control of hookworms is done primarily by feeding rations with a chemical to prevent the worms from completing their life cycle. Other control measures include treating infected animals and keeping the area free of stools.

b. Roundworms also live in the intestine. They vary from two to eight inches in length.

(1) The life cycle of roundworms is similar to that of hookworms except the eggs do not develop into larvae until they have been swallowed by a dog. Adult roundworms rob the infected animal of essential nutrients in the diet and larvae produce an irritation as they travel through the lungs.

(2) Symptoms may include vomiting, diarrhea, loss of weight, and coughing. The diagnosis is made by finding the eggs in the stools. Occasionally, adult worms may be vomited or passed in a stool, in which case they may be seen by the handler.

(3) Control measures include treating the animal and good sanitation in the kennel area.

c. Whipworms are smaller than roundworms but larger than hookworms.

(1) The life cycle is very similar to that of the roundworm; however, the larvae do not travel to the lungs before becoming adults in the intestine of the infected animal.

(2) Symptoms include diarrhea, loss of weight, and paleness of membranes of the mouth and eyes. Diagnosis is made by finding the microscopic eggs in the stool. Control measures are the same as for roundworms.

d. Tapeworms are long, flat, and ribbonlike. They have many segments and a head. The tapeworm attaches its head to the wall of the intestine. Several kinds of tapeworms may infect the dog's intestine.

(1) The life cycle of the tapeworm is rather complex. In one type of tapeworm, after the eggs have been passed in the dog's stool, they are eaten by the larvae of the dog flea. The larva develops when the adult flea is eaten by a dog. The larva enters the dog's intestine and develops into an adult tapeworm.

(2) The symptoms are usually not too noticeable, but may include diarrhea and loss of appetite or weight.

(3) Some types of tapeworms pass through the bodies of rabbits, mice, or squirrels during their life cycle. Dogs may become infected by eating a rabbit or other animal containing the tapeworm larvae.

(4) Often the eggs of the tapeworm cannot be detected by the veterinarian during stool examinations. However, segments passed by the infected dog may be seen in the stool or among the hairs in the dog's anal region. They are small, white objects about 1/4 of an inch long, and may be seen moving.

(5) Control measures require treatment of the infected animal, good sanitation in the kennel area, control of fleas, and not allowing the dog to eat animals that are likely sources of infection.

e. Heartworms are found in the heart and lungs rather than the intestine. These parasites are threadlike in appearance, are 6 to 11 inches long, and interfere with the dog's heart action and circulation.

(1) The adult worms in the heart produce larvae called microfilaria. They circulate in the animal's bloodstream where they may be picked up by mosquitoes, the insect responsible for the spread of the parasite.

(2) The larvae continue their development in the mosquito and then are injected into the dog's tissues when the mosquito feeds. The microfilaria travel to the dog's heart and develop into adults.

(3) Symptoms include coughing, loss of weight, difficult breathing, and a quick loss of energy. The disease is diagnosed by the veterinarian during a blood test. Medication is given to kill the adult worms and microfilaria.

(4) Heartworms in dogs are controlled by a chemical added to the food ration to prevent the worms from completing their life cycle. Other control measures are treatment of infected dogs by a veterinarian to prevent them from serving as sources of infection, and controlling mosquitoes in the area.

6–8. Noninfectious diseases of dogs

Many diseases affecting dogs are not caused by viruses, bacteria, or other infectious agents. Some noninfectious diseases are overheating, arthritis, bloating, chronic kidney disease, and allergy. The symptoms of a noninfectious disease may resemble those of an infectious disease or may be hardly noticeable. Gradual loss of weight, excessive water consumption, excessive urination, and obscure lameness are symptoms that may be hard to detect. A handler alerted by any abnormal changes in a dog should report the observation to the veterinarian.

Section III
Medication and First Aid

6–9. Special medication

At times, a veterinarian prescribes special medication for a sick or injured dog, to be given separately or mixed with food. The handler must know how to administer these medications in both pill and liquid form.

a. When any foreign substance is placed directly into a dog's mouth, his first reflex is to spit it out. The handler must learn how to administer medication properly so that the dog is forced to swallow.

(1) To administer capsules or tablets, the handler places the fingers of the left hand over the muzzle and inserts the left thumb under the lip and between the dog's upper and lower teeth right behind the canine tooth, pressing the left thumb against the roof of the mouth to open the dog's mouth.

(2) Place the capsule or tablet into the dog's throat at the extreme rear of the tongue to prevent the dog from spitting it out. The handler then quickly removes the hand, closes the dog's mouth, and gently massages the dog's throat. The entire procedure must be quick and smooth to allay the dog's apprehension and resentment.

b. Liquid medication is best given with the help of another person.

(1) With the left hand, the handler holds the upper and lower jaws together; with the right hand, the assistant pulls the dog's lips away from the teeth at one corner of the mouth. The dog's nose is then pointed slightly upward, forming a natural funnel by the lip, and the assistant pours the liquid into this funnel.

(2) In giving liquid medicine, elevate the head only slightly above the horizontal. If the head is raised higher, the dog has difficulty in swallowing. Give the dog adequate time for swallowing to prevent the liquid from getting into the trachea, nose, or lungs. Use extreme caution in giving oily liquids.

(3) If any signs of distress appear, such as coughing or struggling, allow the dog to lower his head and rest before proceeding. Do not give oral medications or any liquids if the dog is unconscious or cannot swallow.

6–10. First aid

a. Normally, the handler's early recognition of symptoms of illness or injury allows sufficient time to get assistance

from a veterinarian. However, situations may arise when medical help is not immediately available. The seriousness of the incident may require that the handler take emergency actions to protect the life or health of the dog. The first aid instructions which follow are the most common used to save life, prevent further injury, and to reduce suffering from pain. In all emergency situations, notify the veterinarian as soon as possible so that the dog can receive professional medical attention.

b. First aid kits should always be available in the kennel area and at training sites. The handler should also carry a first aid kit as part of his or her equipment for the dog on all operational missions. The contents of first aid kits will be determined by the veterinarian. Any time items are used from the first aid kit, used items should be replaced with new items immediately.

6–11. Physical restraint

When a dog has been injured, the first consideration is to calm and immobilize the animal. Pain and distress, however, may cause the dog to respond to the handler in an unpredictable manner. The dog may not respond to verbal command and may attempt to bite the handler and anyone helping the handler. Whether to apply a muzzle or not depends on the nature of the emergency. If the dog is unconscious, shows any difficulty in breathing, or has suspected head injuries, a muzzle should not be used. Otherwise, a muzzle should be used for safety.

a. There are several types of muzzles, but the leather basket muzzle is the best and most comfortable. It allows free breathing, and causes the least alarm and apprehension. The dog can still inflict a wound while wearing this type of muzzle, so caution is required.

b. An improvised muzzle can be made using the dog's leash and is called a leash muzzle.

(1) To apply this muzzle, tighten the choke chain on the dog's neck by pulling the leash tightly with the right hand. Place the left hand, palm up, under the choke chain on the neck. Grasp the leash tightly as it passes through the palm of the left hand, wrap the leash once around the dog's neck, and bring it up and across the left side of the dog's head. Finally, wrap the leash twice around the muzzle and grab it tightly with the left hand.

(2) This muzzle may be used when the leather muzzle is not available or when it would not provide adequate safety. Do not use the leash muzzle when the dog is overheated, is having difficulty breathing, or if there is an indication the dog may vomit. Do not leave it on for long periods in hot weather.

6–12. Fractures

Broken bones and fractures are potentially the most serious injuries because the dog will probably continue trying to move around. Movement must be prevented. Continued movement will only make the injury more painful and serious.

a. A handler should suspect broken or fractured bones if the dog has been hit by a vehicle, was injured while jumping or climbing, has been hit by a large projectile, and so forth. The symptoms of a break or fracture may be swelling, deformity, limited ability or inability to use a body part, irregular bone contour, or a bone sticking out of a wound.

b. If a fracture or break has occurred, immediately restrain the dog to prevent any possible injury to people and to minimize the possibility of further injury to the dog. Send for veterinary help and keep the dog quiet and warm to prevent shock. Unless absolutely necessary, do not move the dog until the veterinarian arrives. If a bone is sticking out of a wound and there is bleeding, attempt to reduce the bleeding using sterile gauze bandages. If bleeding is severe and gentle pressure will not stop the bleeding, apply firm pressure over the artery that supplies blood to the broken limb. Apply pressure carefully to avoid causing greater injury.

c. If the dog must be moved before veterinary assistance can be obtained, the area of the fracture should be immobilized before attempting to move the dog. This may be accomplished by using a solid object such as a board or stick as a splint.

(1) Gently bring the limb into as natural a position as possible, without moving the area around the fracture.

(2) Lay the support or splint along the limb in the most comfortable and natural position. Do not apply the splint directly over the open fracture.

(3) Secure the splint to the limb, firmly but gently, by tying a strip of cloth as far above the injury as possible. The strip of cloth must be applied above the joint immediately above the injury. Tie another strip of cloth as far below the injury as possible. The second strip must be applied below the joint immediately below the injury. If the break cannot be splinted so that the joint above and below the injury are immobile, follow the instructions in d below. Be careful not to restrict blood circulation by tying the splint too tightly.

(4) If practical, bandage the whole limb lightly, wrapping the entire splint and limb.

(5) Move the dog no further than absolutely necessary and avoid leaving the limb and splint without support even if the only support is a cushion or supporting hand.

d. If the fracture cannot be splinted, transport the dog on a firm litter made from board strips or a sheet of plywood large enough to permit the dog to lie comfortably.

6–13. Wounds

a. Bleeding must be quickly controlled, particularly wounds in the foot or leg which bleed freely. Bleeding may be

controlled by applying pressure directly on the wound. Use a sterile bandage or a clean handkerchief, or pinch the edges of the wound with your fingers. As soon as possible, apply a pressure bandage.

b. If bleeding cannot be controlled by using pressure, use of a tourniquet may be necessary until a pressure bandage can be applied. Tourniquets may be improvised from a leash, belt, necktie, bootlace, or a piece of gauze bandaging material. A tourniquet is dangerous because, if not applied properly, it could stop all blood supply to the area below it and cause serious damage. Apply a tourniquet three or four inches above the wound (between the wound and the heart) with just enough pressure to control bleeding. When a pressure bandage can be applied, remove the tourniquet.

6–14. Burns

Serious burns seldom occur with animals. Most burns occur when an animal comes into contact with hot water, hot grease, hot tar, or other hot, scalding liquids. Dogs may also get electrical burns by chewing electrical wires. If a dog is trapped in a burning building, it may suffer from smoke inhalation in addition to surface burns. Minor burns may be treated by applying cold water soaks or ice packs to the burn for approximately 20 minutes. The cold helps to reduce the pain. The hair around the burn should be clipped away and the burn should be washed gently with a surgical soap. Blot dry with sterile or clean soft gauze or cloth and then apply a topical antibiotic ointment. Protect the burned area from rubbing by applying a loose fitting gauze dressing.

6–15. Shock

a. Frequently an animal will go into shock after injuries to internal organs, excessive bleeding, or trauma. Shock can be recognized by the following symptoms:

(1) A glassy look to the eyes.

(2) Rapid or weak pulse, or rapid shallow breathing.

(3) Body temperature begins to drop, and the lips and feet may feel cold.

(4) Paleness of the membranes of the mouth and eyes.

(5) Slow capillary refill time. To determine capillary refill time, press firmly against the dog's gums until they turn white. Release the pressure and count the number of seconds until the gums return to their normal color. If it is more than two to three seconds, the dog may be going into shock. Failure to return to the red–pink color at all indicates that the dog may be in serious trouble and needs immediate assistance.

b. If a handler suspects that a dog has internal injuries or is going into shock, request help from a veterinarian immediately. Keep the dog warm and quiet, and lower the dog's head to prevent possible brain damage. If it is necessary to move the dog, use a litter.

6–16. Artificial respiration

There are many conditions that may cause respiratory collapse (stop breathing). When this happens, do not panic. Follow the procedures listed below.

a. Open the dog's mouth and check for any obstructions. Extend the dog's tongue and examine its pharynx.

b. Clear the dog's mouth of any obstructions, blood and mucus, close the dog's mouth, and hold it gently closed.

c. Inhale, then cover the dog's nose and mouth with your mouth.

d. Exhale gently, do not blow hard. Carefully force air into the dog's lungs and watch for the dog's chest to expand. Repeat every five to six seconds or at a rate of 10 to 12 breaths per minute.

6–17. Snake bites

The bite of a poisonous snake can cause serious illness and death if not treated immediately. If a dog is bitten by a poisonous snake, keep the dog quiet and calm and request veterinary assistance or move it as quickly as possible to a treatment facility. Panic or exertion causes snake venom to move more rapidly through the bloodstream. If possible, kill the snake so it can be shown to the veterinarian. The handler should be careful not to be bitten or come into contact with the snake venom. Many bites occur on the face or neck of the dog. When this happens, remove the choke chain and loosen or remove the collar and muzzle. Swelling occurs rapidly after a snake bite, and this equipment may restrict breathing. Position the dog's head extended from its body to allow the dog to get maximum airflow. An ice pack applied to the bite area helps to slow the flow of blood and helps to keep the venom from spreading. A TOURNIQUET SHOULD NOT BE APPLIED!

6–18. Foreign objects in the mouth

A dog may get a stick or other foreign object in its mouth or throat. The dog may cough, gag, have difficulty swallowing, paw at the mouth, and drool saliva. Rabies may cause similar symptoms, so the handler must be careful. If the dog is having difficulty breathing, cautiously and gently open the dog's mouth. Look for any abnormal object in the throat, under the tongue, between the teeth, in the gums, or stuck to the roof of the mouth. Gently try to dislodge the object by moving it from side to side. If no object can be found or the handler is unable to remove the object, request veterinary assistance.

6–19. Poisonous substances

There are many toxic agents (chemicals) a dog may come in contact with and/or ingest. These include insecticides, herbicides, rodenticides, antifreeze, and so forth. The symptoms or signs of poisoning vary. Unless the handler is certain the dog has eaten a poison, do not treat for poison. Occasionally, dogs have accidentally swallowed narcotics or explosives training aids. If the handler knows the dog has eaten a poison, narcotic, or explosive, take the following actions:

a. Request veterinary assistance immediately.

b. Determine the type and quantity of poison, chemical, narcotic, or explosive that has been swallowed. If any part of the substance or container is available, keep it for the veterinarian to examine.

c. The kennelmaster should obtain a list of common poisons and initial first aid procedures for these poisons from the Army veterinarian. Handlers can then refer to the list at those times that a dog may be poisoned and the veterinarian is not immediately available. If such a list is not available and the Army veterinarian is not available, immediate contact with a civilian veterinarian should be made. Causing an animal to vomit is not recommended in all types of poisoning as it may cause more harm to the animal. Where vomiting is appropriate, the animal may be induced to vomit by placing one to two tablespoons of salt on the back of its tongue.

d. Keep the dog quiet and warm until the veterinarian arrives.

6–20. Overheating

a. Overheating results when a dog is unable to eliminate body heat rapidly enough. This condition requires immediate action by the handler to save the dog's life. During hot, humid weather, a dog may easily become overheated during training, during operations, or while being transported. A body temperature of 105 degrees Fahrenheit or more, poor response to commands, weakness, unsteady movement, vomiting, difficult or labored breathing, convulsions, and collapse are all symptoms of overheating.

b. When the symptoms of overheating occur, carry the dog to the nearest shade and try to quickly lower the body temperature by running and sponging cold water over the dog's head, body, and legs. If a body of water is available, put the whole dog into the water, keeping the dog's head above water.

c. If it is possible to take the dog's temperature, more specific measures can be taken. If the dog's temperature is less than 107 degrees Fahrenheit and the dog is having no difficulty standing, placing the dog into an air–conditioned kennel or building and soaking the dog with tap water should be sufficient. If the dog's temperature is higher than 107 degrees Fahrenheit and/or the dog is having difficulty standing and/or the dog's mucous membranes are turning blue, more drastic actions are necessary. These would include the following:

(1) Immerse the body in a tub of ice water. The dog should be maintained up on its chest (sternal position) while in the tub. The depth of the water and ice mixture should be sufficient to completely cover the shoulders and back. The head must be held out of the water at ALL TIMES so that there will be no opportunity for water to be inhaled into the lungs. An ice pack can be placed on top of the head, and that portion of the neck not immersed can be massaged with ice water. Immersion of the animal into extremely cold water may cause the animal to go into shock (refer to para 6–15) or to stop breathing (refer to para 6–16).

(2) If an ice water bath is not immediately available, the dog should be soaked with ice water or an alcohol and ice water mixture until such a bath can be made available.

(3) Monitor temperature continuously. Stop cooling when temperature falls below 103 degrees Fahrenheit.

(4) If the temperature falls below 100 degrees, begin warming by drying and wrapping the dog with sheets and blankets. Remove heat when temperature goes above 101 degrees Fahrenheit.

(5) Continue to monitor the dog's temperature every 10 minutes for one hour after the dog has reached a normal body temperature.

(6) Do not let the dog overdrink. He should not consume more than one cup of water until he is calm and his temperature returns to normal.

6–21. Causes of bloat

Bloat is an acute stomach enlargement that may be due to gas, food, or water. It may occur if the dog is fed immediately before or after hard exercise, or when the dog is returned to his kennel after work or exercise and allowed to drink too much water.

a. An enlargement may be seen just behind the ribs, primarily on the left side. The dog will be restless and show signs of pain in the abdominal region. It will attempt to vomit or have a bowel movement. Breathing will be difficult or labored due to pressure from the enlarged stomach.

b. Handlers should notify the veterinarian and stop all watering and feeding. Walking may enable the dog to relieve himself through bowel movements or passing gas. Most cases require extensive treatment by the veterinarian.

c. To prevent bloating, dogs should not be fed within a two hour period prior to or after hard work or vigorous exercise. Giving small amounts of water during training or working in hot weather will prevent excessive thirst. For the

first hour after working or training, only three inches of water in the bucket should be available. After this cooling–off period, more water may be given.

Section IV
Care of dogs

6–22. Required sanitation

a. Cleanliness is one of the most important factors for good health of the MWD. The kennelmaster must enforce sanitary measures in and around the kennel area. A good standard of sanitation is the result of the cooperation of the handlers, kennelmasters, supervisors, and the veterinarian.

b. The veterinarian and the PM, security officer, or MP unit commander set the standard of sanitation. This standard must be maintained by each of the handlers and the kennelmaster.

c. Sanitation is one of the chief measures of disease prevention and control. The importance of disease control in a kennel facility cannot be overemphasized. The existence of a disease in one dog that might be passed on to other dogs must be the concern of every handler.

d. A disease that spreads through the kennels may seriously impair the effectiveness of the unit if a large number of animals become ill and have to be removed from duty. Disease control and sanitation cannot be separated. There are many ways to keep a good level of sanitation.

(1) The kitchen or food preparation area must be kept as clean as possible. Dogs may get diseases from food prepared with dirty hands or dirty utensils. To prevent disease, clean and sanitize the food and water utensils daily. Clean utensils immediately after each food preparation period. If canned foods are being fed for a special diet, the can opener must be cleaned after each use. Store food in rat–proof areas so that neither the food nor cans are soiled by rat urine or stools. The use of disinfectant procedures in the food preparation area may be required, but use must be approved by a veterinarian.

(2) Kennels must be sanitary, in a good state of repair, and thoroughly cleaned every day. Kennels should be disinfected at least once every week using only those disinfecting products approved by the veterinarian. Kennels also should be disinfected whenever an animal is removed from a kennel so that the kennel will be ready to be occupied by another animal.

(3) Stools are a common source of infection and must be removed from the runs as often as necessary. Before washing down concrete runs, remove the stools with a shovel to prevent them from splashing into adjacent runs, on the walls of the kennel, or on the dog. The method of disposing of stools depends on local conditions and the type of sewage system present. If stools must be carried from the area in cans, the cans must be cleaned and disinfected after each use.

(4) The entire kennel area must be free of refuse and garbage that could attract rats and insects. Mosquito control measures must be used in ditches and swampy areas in the vicinity of the kennels. Disinfectants and disinfectant procedures must be used only with the approval of the veterinarian.

(5) One of the causes of bacterial skin infections and bacterial ear infections in MWDs is the high humidity in the kennels. For this reason, it is important that handlers, when cleaning the kennels, remove the animals from the runs prior to washing the run. Then they should squeegee the run to dry it prior to putting the animal back in the run.

6–23. Grooming and inspection

Grooming and inspection are essential to the dog's health and well–being, and must be done daily. The physical closeness between the dog and the handler during daily grooming helps to develop the strong psychological bond between handler and dog that is necessary to function as a team.

a. German shepherd dogs have a double coat of hair; the undercoat of soft, wooly hair, and the outer coat of stiff, water–resistant hair. Daily grooming is essential to the proper care of the dog's coat and skin.

(1) In grooming, give the dog a brisk rubdown with the fingertips moving against the grain. This loosens dead skin, hair, or dirt, brings it to the surface, and massages the skin. Brushing against the grain follows. Next, brush the coat with the grain to return the hair to its natural position. Finally, hand rub the coat with the grain. This distributes the oil and gives the coat a glossy appearance. Occasional combing helps, but in winter, it should be limited to avoid tearing out the undercoat.

(2) An occasional bath may be necessary, but may remove the oils that keep the skin soft, prevent drying and cracking, and make the coat water repellent. The veterinary officer advises on the frequency of bathing, the type of soap, and how to protect the dog's eyes and ears. Rinsing after the bath removes soap left in the coat that may become sticky, collect dirt, or cause skin irritation. After drying with a towel, the dog may be gently exercised to complete the drying. Do not bathe a dog in cold or wet weather unless it can dry in a warm place.

b. Daily inspection is part of the grooming period. During inspections, check each part of the dog's anatomy for signs or symptoms of illness or injury. After a short acquaintance, the handler knows how the dog should look and act when healthy, what is normal for the dog, how the coat looks, frequency of bowel movements, and eating habits. In

daily inspection, this knowledge helps reveal anything abnormal, and if treatment begins early, the dog's recovery is more rapid.

c. Knowing the terms used to describe the dog's external anatomy enables the handler to read intelligently about the dog, to report symptoms of illness or injury accurately, and to understand the veterinarian's instructions. Figure 6–1 describes the parts of the dog's anatomy.

d. During inspection, the handler checks specific areas of his or her dog for symptoms of disease and injury.

(1) Illnesses are frequently accompanied by changes in the eyes and many illnesses affect only the eyes. Usually, a dog's eyes are bright and clear and the surrounding membranes have a healthy pink color. The small wedge–shaped membrane at the inner corner of the eyes is the nictitating membrane, or third eyelid. Usually, this covers a small part of the inner portion of the eye. The following are symptoms of illness or injury:

(a) Red or yellow discoloration of the membranes and whites of the eyes.

(b) Paleness of the membranes.

(c) White or yellow discharges.

(d) Cloudiness or other discolorations of the clear portion of the eyes (cornea).

(e) Puffiness of the lids.

(f) Lids partially or completely closed.

(g) Nictitating membranes that cover more of the eyeball than usual.

(2) The black pad at the end of the dog's nose is usually shiny and moist. If it is persistently dry and dull, this may be a symptom of illness. Other symptoms are watery, yellowish, or red–tinged discharge, sneezing, snorting, and pawing at the nose.

(3) The erect external portion of the ear is called the earflap. The vertical ear canal extends down the earflap to the opening of the horizontal ear canal. The horizontal canal leads to the inner ear. A small amount of brownish wax in the vertical canal is normal.

(a) A reddish discoloration, swelling, or large amount of discharge in the ear canal should be reported. Also, report a foul odor coming from the canals, shaking of the head, holding the earflap down, holding the head to one side, twitching the ear, scratching or pawing at the ear, and evidence of pain when the ear is touched.

(b) Dirt and wax can be removed from the inner part of the earflap, but have the ears checked by the veterinarian even when they appear only to need cleaning. Never probe into the ear canal.

(4) In dog's mouth, gums, and inner lips are a healthy pink. Teeth are firm and white. Symptoms of illness include paleness of gums, sores, persistent drooling, bloody saliva, gagging or pawing at the mouth, and a foul breath. Loose and broken teeth, tartar accumulations on the teeth, and objects lodged between the teeth are conditions to report.

(5) A well fed and groomed dog usually has a glossy coat and skin that is soft and pliable. The coat changes in appearance with the climate and season.

(a) The undercoat is thicker in cold weather, and shedding is noticeable in hot weather.

(b) Indications of skin trouble are reddening, scabbing, moist discharges, scratching, abnormal shedding, loss of hair in spots, dryness, and loss of pliability.

(6) The dog's feet are inspected for foreign objects, cuts and bruises, and abrasion of the pads. Nails should not touch the ground when the dog stands. Long nails interfere with the dog's work. Report this and any broken or split nails. The dewclaws are not worn down by contact with the ground and require cutting. Lameness is a common sign of foot or leg problems.

(7) Check the dog's legs for wounds, swellings, and sores. If the elbow callous becomes inflamed, report it to the veterinarian.

(8) In a male dog, the penis is located in a fold of skin known as the prepuce or sheath, where a small amount of greenish–yellow discharge is normal. If this discharge is present in large amounts, report it to the veterinarian. A bleeding prepuce should be reported immediately. The scrotum, the pouch containing the testicles, should be checked for swelling, reddening, or scabbing. In the female dog, the external genital opening is the vulva. Usually, there is no discharge, but reddening of the vulva, or the skin in that area, and a discharge should be reported.

(9) The opening from the rectum is the anus. Report any swelling or reddening of the skin in the area of the anus. On either side of the rectum near the anus is a small sac that is a frequent source of trouble. When the anal sacs are full or infected, the dog may bite at the area or slide along in a sitting position. Report these symptoms to the veterinarian.

(10) The dog's attitude is one of the best indications of its general health. If the dog begins to show undue nervousness, loss of vitality and energy, an increased desire for sleep, tiredness, or inattentiveness while on post or in training, report this to the veterinarian. Also report changes in appetite, thirst, breathing, vomiting, a very soft or watery stool, or blood in the vomitus or stool. Watch the dog when it is urinating or having a bowel movement to detect blood in the urine or difficulty with the passage of urine or stools. If there is blood in the urine, notice whether it is in the first or last portion of the urine, or whether it is distributed throughout. Report increases or decreases in the frequency of urination and bowel movements.

(11) A dog's temperature is also an excellent indication of the animal's state of health. Usually, it is within the range of 101.0 to 102.0 degrees Fahrenheit.

(a) Variations frequently indicate an illness, although some variation in temperature may be normal; for example, following exercise or agitation. Consult the veterinarian when variations are found.

(b) The temperature is taken rectally, and the thermometer is held in the rectum from 2 to 3 minutes before reading. Lubricate the thermometer with soap or mineral oil to ease its insertion. As a safety precaution, muzzle the dog before taking its temperature.

(12) The kennel and run areas should always be checked for evidence of vomiting, abnormal stools, or bleeding.

6–24. Feeding dogs

MWDs require a diet that is significantly different from that of pet dogs. Their work demands much higher levels of energy and larger quantities of essential nutrients. Therefore, a special feed has been developed for these dogs. This food, Feed, High Caloric, Medicated, NSN 8710–00–403–4565, is commonly known as Maximum Stress Diet (MSD) and is procured through normal supply channels. MSD is a pellet size, dry dog food that can be fed directly from the container or mixed with water. It has measured amounts of medication against heartworm and hookworms. The amount fed depends on the weight of the dog.

a. MSD is packed in either metal or fiberboard cans sealed against moisture and contamination. Units should not keep more than a 30– to 60–day stock on hand at the kennel. Once a can is opened, it must be stored in a cool, dry location to protect against spoilage. If a can is opened and found to have an excessive amount of moisture or if it emits a foul odor, it is probably contaminated or spoiled and should not be fed to the dogs. Instead, return the can to supply for disposal.

b. Special diets may be procured and fed to individual dogs when the veterinarian determines that other than the standard diet is required. Normally, specially prescribed foods will be available from the local commissary.

c. Some dogs have been trained using a food reward schedule that also requires special food. Food reward is used only if a dog fails to respond to any other type of reward. Procure the special food through normal supply channels or by authorized local purchase.

d. Food other than MSD medicated should not be fed to MWDs except under the conditions described in b and c above.

e. The amount of MSD each dog should be fed depends on the dog's weight, amount of activity, and the climate. Local veterinarians determine the proper amounts to feed.

f. The veterinarian also prescribes the time of day each dog is to be fed. This depends on the dog's duty schedule and the schedule of other kennel activities.

g. After the prescribed feeding period, leftover food is disposed of within two hours and feeding pans are cleaned and put away. Never leave uneaten food in the kennel past the feeding period. The food spoils and, if eaten, makes dogs sick.

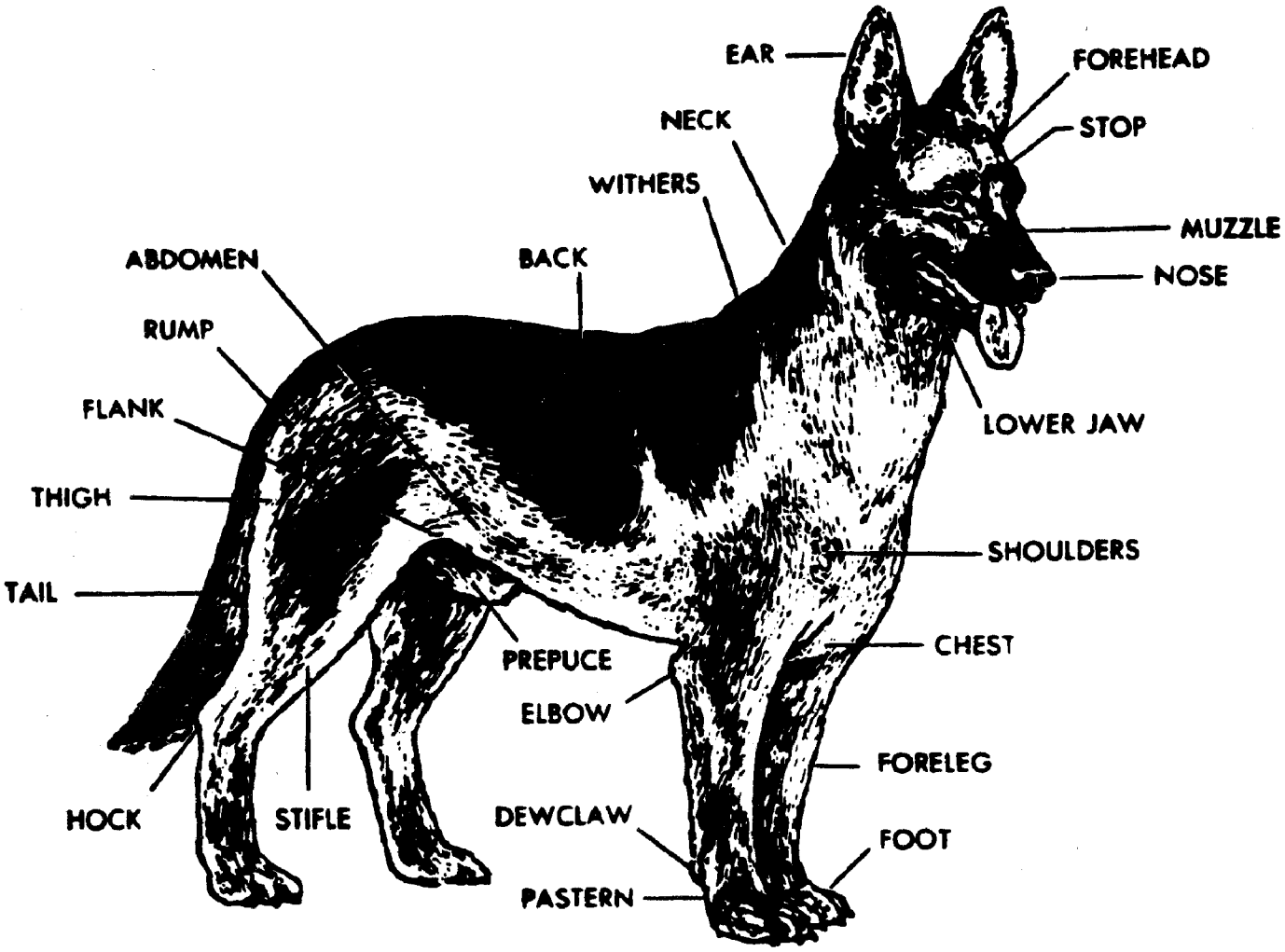


Figure 6-1. External anatomical parts

Chapter 7
Kennel Facilities

Section I
Kennel and Support Facilities

7–1. Kennel requirements

A very important part of the decision process in determining whether to use or expand the use of MWDs by a unit or at an installation is the decision to construct kennel facilities. Standard kennel facilities are required for all MWDs, including the small breed detector dogs. Although there are instances where it has been necessary to quarter the small breed dog with the handler, this practice is only authorized until standard kennels can be constructed. The large breed dogs must always be quartered in either temporary or permanent kennels. Kennels provide the MWD with a standard, secure, sanitary facility that can be readily inspected. Kennels, for all MWDs which have been authorized or for which authorization is being sought, must be completed, inspected, and available for occupancy within 1 year after arrival of the dog(s) at the unit or installation. Failure to provide proper facilities for the dogs may result in reassignment of dog team assets and loss of the authorization for MWD teams. Kennel designs have been approved providing relatively low cost kennels for nearly any size MWD program. The designs in this chapter should be used as a guideline. Minor changes may be made to meet locally unique requirements.

7–2. Master planning

a. All proposed construction must be sited on the approved master plan for the installation. Development of the master plan is initiated by the installation commander working through the Installation Planning Board. When a kennel project has been validated by the Installation Planning Board as a new requirement and is not sited on the approved master plan, an individual site approval will be initiated. Each project will be consistent with the written goals and objectives, safety and environmental criteria, functional organization, land use, and infrastructure development of the installation. These procedures will be in accord with AR 210–20.

b. Kennels should not be located in built–up, busy areas of the installation. Although the dogs will tolerate some activity, activity which prevents them from getting adequate rest will affect their ability to perform effectively when required for duty. Also, when dogs are located in areas of moderate to high activity, the dogs will create a noise distraction to people working in the area. If the kennel must be located in a busy area, both visual and sound barriers will be necessary to minimize the distractions to the dogs.

c. It may be advantageous to build small kennel facilities near existing MP activities. Operations can be easier, handlers are more readily available, and the presence of the MP activity helps to provide at least some passive security for the kennels. However, the high level of activity normally associated with MP functions will necessitate the installation of visual and sound barriers around the kennel facility.

d. Kennels should be located as near as possible to existing primary water, power, and sewer lines to reduce site preparation and construction costs.

e. Kennels, support facilities, exercise and training areas should all be located on the same site to reduce travel time and transportation requirements for daily kennel activities.

f. To keep noise levels around kennel areas at a minimum, do not build kennels near aircraft runways, taxiways, weapons firing ranges, motor parks, installation commercial activities, or other areas where the time weighted overall average sound pressure level for any 24–hour period exceeds 75 decibels. Similarly, kennels should not be located in the vicinity of nuclear, biological, chemical (NBC) training sites, or other areas that may present an environmental or health hazard to the dogs or the handlers.

g. The selected kennel site must have natural ground slope or be graded so that accumulation of standing water during wet weather is prevented.

7–3. Kennel components

a. A permanent kennel facility will normally consist of four major components. The kennel is the area in which the dogs are quartered and secured. The kennel support building provides an area for the operational, logistical, and administrative support functions for the kennels, the dogs, and the handlers. The training area provides a safe and secure area for the obedience, confidence, and proficiency training of the dogs. The obedience course, which will normally be located within the training area, helps the dogs to maintain agility, stamina, and general physical fitness while reinforcing the obedience and confidence training. The exercise area provides a safe, secure area for individual dogs to be exercised when the dog's handler is not available. A separate exercise area also prevents interference with handlers and dogs who need to use the training area.

b. The kennel support facilities should consist of the minimum necessary space to adequately support the operation of the kennel, and the care, feeding, and training of the assigned MWDs. Kennel support buildings normally will include the following elements:

(1) Food preparation room with counter, cabinets, sinks, refrigerator, stove, food cart, and storage racks.

(2) Food storage room with sufficient shelving to store a 30–day supply of food for the dogs.

(3) One office for the kennelmaster. Additional office space may be necessary depending on the size of the kennel facility and the number and types of MWD teams assigned. In very large kennels, separate office spaces may be provided for handlers of narcotic detector dogs, patrol dogs, and EDDs. This arrangement would give the kennelmaster and each of the functional teams with the same skills an area to maintain references and discuss operational matters.

(4) Latrine with sink, toilet, and shower.

(5) One large multipurpose room. The size of the room should be adequate for assembly of all the handler personnel authorized for the kennel. This room may be used as:

(a) An emergency examination and treatment area.

(b) A mission preparation room (ready room, briefing room, assembly area, and so forth).

(c) An administrative area where the kennelmaster or unit commander can conduct meetings, briefings, training classes, inspections, or other functions.

(6) Isolation kennels are required only for kennels housing more than 20 dogs, or where a veterinarian is not located within a reasonable traveling distance (25 miles). Adequate space should be provided in the multipurpose room for a temporary prefabricated isolation kennel, if that becomes necessary, or the veterinarian may choose to hospitalize sick dogs in commercial veterinary facilities. Remote kennel sites should have one or more isolation kennels built adjacent to the multipurpose room. This would provide space for quarantine of sick animals and a recovery cage after routine dental prophylaxis or X–ray. Isolation kennels should all be indoor kennels. Two isolation kennels for every 20 dogs is recommended at isolated sites where veterinary services hospitalization capability is not readily available.

(7) A tack room with shelves and racks for storage of the MWD equipment.

(8) A mechanical equipment room for the furnace, water heater, and so forth.

(9) Other closets and storage rooms, as necessary, for storage of handler equipment, tools, repair materials, equipment for building and exterior maintenance, and so forth.

7–4. Standardization

The purpose of this section is to prescribe standard criteria for US Army dog kennels in temperate and frigid climate locations and overseas locations. DOD 4270.1–M and this pamphlet are the primary sources of criteria for all kennel designs and construction projects, regardless of type of funds used.

a. Development of any kennel design will be directed towards achieving goals of austerity, simplicity, and economy of construction, consistent with minimum acceptable health and animal welfare standards. High cost materials, such as quarry tile, ceramic tile, and stainless steel, should not be used if less expensive materials will serve the same purpose. Concrete sealer, epoxy glaze, and plastic laminates are examples of less expensive materials.

b. To the maximum practical extent, passive energy conservation measures will be incorporated in the design of any kennel facility. One method of improving the flow of natural ventilation is to orient the kennels so that the length of the kennel building is on an east–west axis and the kennel building faces north or south. Adequate ventilation is necessary for proper health and sanitation. Therefore, kennel facilities should not be located where other buildings or vegetation will block the natural air flow. If natural ventilation does not prevent the humidity from building up in the kennels, fans or other methods must be used to increase the exchange of air in the buildings so that humidity may be reduced.

c. All kennels will be built to be able to accommodate large breed dogs.

d. The structural design of the kennel building will be modular to facilitate expansion of the kennel in pairs of kennel runs. Accordingly, the structural design should conform to TM 5–809–1 through –6 and –8 through –11, as applicable.

e. The kennel building shell for permanent kennels will be constructed in accordance with figure 7–1. A wood truss may be used in place of steel.

f. An acoustic reduction of approximately 45 decibels will be provided between the kennel and support areas, and between the multipurpose room and any offices.

g. Slope of the floors of kennel runs will be 1/4–inch per foot, and drains should be trapped and connected to waste systems by 6–inch diameter pipe.

7–5. Kennel site selection

Kennels should be located outside built–up areas whenever possible. It is not necessary for the kennels to be located in remote or isolated areas. The kennel site should be located as near as possible to utility (water, sewer, gas, and electricity) sources. Natural barriers are useful in reducing noise and visual distractions. Where there are no natural barriers, it may be necessary to construct artificial barriers. Artificial barriers may be solid walls, wood fences, chain link fencing with privacy strips weaved into the chain link, or other suitable visual and sound barriers.

7–6. Standard permanent kennel, 4–18 dogs

a. Kennel building. The kennel building will be built to accommodate at least four MWDs (four kennels). Kennels should be modular so that additional kennels can be added in pairs if authorizations are increased. Kennels may be totally indoors or, where the climate permits, there may be both an indoor and an outdoor kennel run separated by a guillotine–type door. A sample floor plan for an indoor kennel is shown at figure 7–2.

b. Kennel support building. Where new construction is necessary, room dimensions and the overall dimensions of the kennel support building will not exceed the limits prescribed in paragraph 7–9. Four sample floor plans for a kennel support building are shown in figures 7–3 through 7–6, which range in size from 435 square feet to 875 square feet. Many other designs are possible. The specific layout of a kennel support building may be varied to meet local requirements, including isolation kennels where they are needed.

7–7. Large permanent kennel, 19 or more dogs

An example of a large permanent kennel is shown at figure 7–7.

a. The kennel building will be built to accommodate at least 20 MWDs. Kennels should be modular so that additional kennels can be added in pairs if authorizations are increased. Kennels may be totally indoors or, where the climate permits, there may be both an indoor kennel or an outdoor kennel run separated by a guillotine–type door. The kennel building includes the food preparation and storage room.

b. Where new construction is necessary, room dimensions and the overall dimensions of the kennel support building will not exceed the limits prescribed in paragraph 7–9. Many kennel support building designs are possible. The specific layout of a kennel support building may be varied to meet local requirements, including isolation kennels where they are needed.

7–8. Semipermanent kennel

Semipermanent kennels may be provided in overseas areas having climates within the tolerances described in paragraph 7–13. The semipermanent kennel may be located adjacent to the PM's office or some other office that is continuously occupied by personnel who are able to care for and protect the dogs. A small house trailer may also be used as a support building to provide a food preparation and storage area, a tack room, and an office for the kennelmaster. An example of a semipermanent kennel is shown at figure 7–8. Detailed designs for temporary kennels intended for use in the theater of operations or other overseas contingencies are found in TM 5–302 (Army Facilities Components System – Designs). The associated bills of materials are found in TM 5–303 (Army Facilities Components System Logistics Data and Bills of Material).

a. The kennel for each dog is constructed of chain link fencing with minimum dimensions of 5–feet 6–inches wide by 12 feet long by 6 feet high. All kennels will have a top guard or a section of fence fastened to the top of the kennel to keep the dog from climbing or jumping out. Prefabricated sections of chain link kennels are available from civilian manufacturers and provide an acceptable kennel. Prefabricated sections are assembled by bolting the corners together. The prefabricated kennel also includes a pre–hung door.

b. Each kennel will be equipped with a doghouse for the dog. Overall dimensions should be 48 inches long by 36 inches wide by 30 inches high. A heating capability will be provided to maintain the doghouse above 35 degrees Fahrenheit during cold weather. Sufficient open shelter should be provided to the kennel so the dog is protected from direct sunlight without reducing the horizontal airflow when the temperature exceeds 85 degrees Fahrenheit.

c. The floor of the kennel will be sealed concrete or pea gravel. Animal wastes will be collected and disposed of in a sanitary manner at least twice daily. If the temperature is above freezing, the kennel floor should also be washed after disposing of wastes.

d. Each kennel will be separated by an opaque barrier fastened to the chain link fencing material to keep the dogs from agitating each other.

7–9. Kennel support building size limits

Kennel support buildings exist to support the operation of the kennel, the daily training of the MWD teams, and the operational missions involving MWD teams. To avoid unnecessary new construction cost, size limits for kennel support buildings have been established. New construction will not exceed these size limits. Kennel designs should provide only the minimum necessary space to perform required functions. Size shall be in accordance with table 7–1.

Table 7–1
Kennel support building size limits

Room or area	Semipermanent Kennel	Standard Kennel	Large Kennel
Food preparation room with counter, sinks, refrigerator, stove, food cart, and storage racks	60SF	80SF	100SF
Food storage room with sufficient space for 30–day supply of food for dogs.	40SF	40SF	80SF
Isolation kennel (optional).	NA	50SF	100SF
Kennelmaster Office.	NA	100SF	100SF
Latrine with sinks, toilets, and showers.	NA	60SF	120SF
Maximum overall size of kennel.	200SF	1000SF	1400SF
Mechanical equipment room for furnace, water heater, etc.	40SF	40SF	70SF
Multipurpose room—ready room, briefing room, classroom, emergency exam and treatment room.	NA	150SF	250SF
Other closets and strorage room, each room.	NA	35SF	35SF
Other offices—permanent kennels only, each office.	NA	100SF	100SF
Tack room with shelves and racks for equipment.	NA	40SF	80SF

7–10. Ventilation system

a. The ventilation system in the kennel building will be separate from the system for the kennel support building. At least six air changes per hour are required for the kennel building and at least one air change per hour in the kennel support building. Latrines and isolation kennels will be ventilated by individual systems to avoid mixing with the air in the remainder of the kennel facility.

b. Venturi ventilation is the concept that has been applied to the shell design of the kennel building. If construction is according to the building shell plans, the natural ventilation will normally be adequate to achieve the necessary air movement through the kennel building to maintain the dogs in good health. The Venturi ventilation concept requires that the kennel building be constructed on an east–west axis with both the east and west ends of the building totally enclosed. The kennel building faces north or south. If the building is not oriented correctly or if there are other factors which interfere with the natural air flow, some auxiliary air movement systems (fans) may be necessary.

c. The minimum effective air flow required for control of moisture condensation under severe conditions is 0.8 to 1.0 cubic feet per minute (CFM) per square foot of floor area.

d. Circular metal roof ventilators (fans) or a continuous ridge may be installed on the top of the kennel building depending on local ventilation requirements. Any roof ventilator used should be capable of being opened and closed manually. A 12–foot ladder should be provided for access to the catwalk to service the ventilators. Forced air reversible fans work well.

e. Each dog kennel within the kennel building may be constructed with a window that could be opened in the event of a ventilation system failure and to admit natural light. The window should be outside the kennel cage. Kennels with both an indoor and an outdoor section separated by a guillotine–type door are also adequate.

7–11. Heating

a. The kennel building will be heated for frigid zone kennels. Heating will be by floor radiant heat providing a slab temperature of not less than 35 degrees Fahrenheit and not more than 55 degrees Fahrenheit during heating season.

b. Heating of the remainder of the kennel building and the kennel support building will be by the most economical heating system according to human standards. Solar heating applications shall be evaluated in accordance with ETL 1110–3–3xx, Evaluation of Renewable Forms of Energy, dated 3 Aug 83. Other heating systems include low temperature radiant heating system only, radiant heating plus domestic hot water, or domestic hot water only.

c. For cold climates, glazed closures should be provided for all exterior screened areas.

7–12. Air–conditioning

When air–conditioning is authorized, it will be provided in the kennel support area, including the food preparation and storage areas, only. The kennel area of the kennel building will not be air–conditioned.

7–13. Temperature climate kennel

A temperature climate kennel building will be built where the design ground snow load is 20 pounds per square foot or less or where the mean annual heating days are less than 5501.

a. The kennel area will be an enclosed area with a 5–foot wide central corridor or aisle, double loaded with kennels 5–feet 6–inches wide by 8–feet long each. Outdoor runs, 5–feet 6–inches wide by 8–feet long, will be connected to each indoor kennel. The outdoor run will be protected by a 4–foot roof overhang.

b. The indoor kennel and the outdoor run will be separated by a guillotine–type door, operable from the central corridor, to allow isolation of the dogs during cleaning operations.

c. The outdoor runs should be sloped to a gutter located immediately outside of the end fence of each run. Indoor kennels should be sloped toward center aisle drains.

d. All areas within the kennel building should be protected with insect screening.

7–14. Frigid climate kennel

The frigid climate kennel may be used where the design ground snow load is more than 20 pounds per square foot or where the mean annual heating degree days is more than 5500.

a. The kennel building will be completely enclosed with a 5–foot wide central corridor or aisle, double loaded with kennels 5–feet 6–inches wide by 8–feet long each.

b. A gutter and drain will be provided between the inside kennel building wall and the back of each kennel run for sluicing waste waters during kennel cleaning. The space between the wall and back of the kennel runs should be at least 2 feet. Drain gutters should be wide enough to be easily cleaned.

c. The kennel floor will be sloped (at least 1/8–inch per foot) to the gutter to allow for quick water drainage and drying. Drain traps should be deep enough to prevent freezing of water in cold weather.

d. The kennel building design must include ground level ventilation. Venturi ventilation or normal height windows are not sufficient to dry kennel run floors during cold weather.

7–15. Plumbing

A potable water supply (hot and cold water) will be located in the food preparation area. Potable water is water which has been approved for human consumption. If water lines are not available, a water trailer and immersion heaters must be provided.

a. A hot water heater will be installed to provide sufficient hot water for authorized dogs and handlers.

b. Kennel building water lines will be installed at ceiling level with drop connection lines at least every 50 feet.

c. The sinks in the food preparation room should be the deep, laundry–type basins.

d. All floor drains will be at least 6–inches in diameter. An isolation kennel will have at least one 6–inch floor drain located outside the kennel.

e. Gutters between indoor and outdoor kennels make cleaning easier. Half round pipe permits the dog to walk through. All gutters should be flushed immediately after cleaning with potable water to prevent sanitation problems. Kennel runs on both sides may be cleaned from the center aisle.

f. Attachment of the kennel plumbing system to a sewer system is highly recommended. A 100–gallon septic tank must be emptied daily for 50 dogs.

7–16. Lighting and electrical systems

Receptacle circuits in areas to be washed down or subjected to spraying will be provided with ground fault circuit interrupters. All electrical sockets (inside and out) will be the all–weather type with a spring cover.

a. Lighting in the kennel building will be 10–foot candles and in the multipurpose room at least one area should be 70–foot candles. Lighting in the remainder of the kennel facility will conform to the requirements of DOD 4270.1–M, and Illuminating Engineering Society (IES) lighting handbook.

b. Lighting in the kennel building is required for safety and security.

c. Outside security lighting should be sufficient to provide a lighted perimeter around the kennel facility to prevent an unauthorized intrusion.

7–17. Public address system

A public address system should be provided between the kennelmaster's office, the kennel building, and the outdoor training and exercise areas. The public address system should consist of one master station and an appropriate number of speakers.

7–18. Structural safety and security

a. Gates and metal frames should be constructed from square tabular metal rather than angle iron. Chain link spot–welded to angle iron is easily torn loose by aggressive or bored dogs. Tabular metal gate and kennel frames are significantly more maintenance free.

b. Kennel run gates and kennel building doors will be self–closing.

c. All kennels will have chain link fencing installed over the top of the kennel to prevent the dog from climbing or jumping out.

d. Water–type fire extinguishers must be provided for each 2500 square feet of floor space in the kennel and support buildings.

e. At least two doors or gates should separate the dog from unrestricted public areas.

7–19. Kennel partitions

A full height concrete partition will be provided between all kennel runs. A 4–foot high, germ and urine resistant, glaze coated wainscot will be provided on all masonry walls. All areas accessible to dogs will be finished with materials that are resistant to damage by scratching, biting, and chewing. Materials selected should provide the minimum maintenance and maximum sanitation possible. Paint and epoxy compounds are not usually effective.

7–20. Louvers

Louvers are installed on the fixed portion of the kennel face on opposite sides of the center aisle between kennels so that dogs are unable to directly observe each other. Louvers are installed to extend from the floor to at least 4 feet high. Louvers are used so as not to interfere with natural ventilation. Louvers normally are not needed on the gate. Gate entrances to kennels are alternated so dogs will not be in direct line of sight with the kennel on the opposite side of the corridor. (See fig 7–2.)

7–21. Kennel building floor

a. All floors in kennels and isolation kennels will be sealed concrete.

b. All floors will be sloped toward drains and/or gutters to provide rapid run–off of water and rapid drying. Floor drains and gutters are located outside the kennel runs.

7–22. Kennel fixtures

a. One pallet will be provided for each dog. Pallets will be wolmanized wood or other hardwood to resist insect infestation and chewing by the dog. Commercially manufactured hard plastic kennel pads may be acceptable for use with dogs, but should not be used until evaluated and approved.

b. A bucket holder will be provided for each kennel for each dog. A hoop that encircles the bucket or a double snap holder are both acceptable because they prevent the dog from overturning the water bucket.

7–23. Fencing

Standard chain link fencing 8–feet high will be used to enclose the training area, and all entrances to the kennel building. A top guard (of plain wire, not barbed wire) should be installed to prevent a dog from climbing or jumping out. Each outside entrance of the kennel building will be enclosed to provide a space not less than 15 feet by 15 feet and an outside self–closing gate. NATO standard fencing or Type FE–5 (OCE Drawing 40–16–08) are both suitable for all fencing requirements.

7–24. Parking and sidewalks

a. Parking will be limited to no more than eight stalls in front of the kennel support building. A gravel surfaced access drive should connect the parking area with the training area.

b. One concrete sidewalk will be provided between the parking area and the main entrance to the kennel support building. A pea gravel path may be provided around the kennel building and kennel support building.

c. Walkway planning should consider the need for dog team traffic in and around the kennel facility to be one way to avoid confrontation between dogs.

7–25. Training area

An enclosed, secure training area is required to provide a location where training can be held in advanced obedience, confidence training, and correction of deficiencies in off–leash control. To simplify transportation requirements, the training area should be located near the kennel building. All training areas should be constructed according to the following standards:

a. The entire training area should be enclosed using standard chain link fencing. The fencing must have one or more entry gates with an automatic latching device that securely latches the gate when it closes.

b. The surface of the training area must be free of objects that may be harmful to the dogs or handlers, such as rocks, broken glass, holes, and sand burrs. The surface should be graded or sloped to prevent standing water.

c. The size of the training area should be at least 80 feet by 100 feet to give adequate room for off–leash training exercises.

d. An obedience course, as illustrated in figure 3–1, should be built in the training area or in an adjacent training area. The obedience course obstacles may be built from salvaged materials. Each obstacle must have padding and a nonskid surface to prevent injuries to the dogs. Specifications for the obstacles are provided in paragraph 7–26.

e. Training areas must be kept clean, all obstacles in good repair, and vegetation closely trimmed. Stools must be removed at the end of each training session.

7–26. Obedience course

The obedience course obstacles are constructed according to the specifications provided in figures 7–9 through 7–14. Figure 7–9 gives the dimensions of the three barrels and tunnel. Figure 7–10 gives the specifications for the steps. Figure 7–11 gives the specifications for the three jumps. Figure 7–12 give the specifications for the window obstacles. Figure 7–13 gives the specifications for the "A" frame. Figure 7–14 gives the specifications for the dog walk.

7–27. Exercise area

The exercise area is an area where the dog can be released by itself. Only one dog is allowed in the exercise area at a time. The area should be at least 20 feet by 20 feet enclosed by standard 8–feet high chain link fencing. The surface of the exercise area should be sloped to prevent the accumulation of standing water, and the area should be free of all objects that may be harmful to the dog.

Section II
Maintenance and Sanitation

7–28. Kennel maintenance

a. Proper maintenance of kennels requires early detection and correction of all deficiencies, safety, and health hazards. Kennels must be carefully inspected daily by the kennelmaster and each of the assigned handlers. Loose or worn hinges, catches or rollers, broken wire or anchor fasteners, and any other broken or damaged equipment must be promptly repaired. Wood pallets must be checked for broken boards, splinters, mold, signs of chewing or insect infestation, and replaced or repaired as necessary.

b. Kennel runs are cleaned out daily to remove debris and stools, and washed out daily to remove urine, dust, and stains. Drain troughs are provided outside each run to provide proper drainage.

c. Special cleaning of kennel runs using hot water and detergent, or steam cleaning, must be done at least weekly. All areas will be thoroughly rinsed with potable water after cleaning. A chemical sanitizing agent (disinfectant) which has been approved by the veterinarian will then be applied to control infectious bacteria and offensive odors.

d. Insects and rodents can be controlled by immediate disposal of all waste material. Rodents are attracted by dry meal and food scraps. All foodstuffs must, therefore, be stored in rodent–proof containers. Tall grass, weeds, and brush will be removed from areas that harbor ticks and other insects, preferably by controlled burning under fire department supervision. Vegetation should be removed from around the kennel to a distance of at least 10 feet. The area should then be sprayed with a residual insecticide, approved by the veterinarian. The kennel area, the food preparation and storage area, and any other appropriate area also will be sprayed periodically with a residual insecticide prescribed by the veterinarian.

Section III
Kennel Safety and Transportation of Dogs

7–29. Warning signs
Warning signs, which must be posted on exterior fencing and buildings of the kennels and training area, are prescribed in AR 190–12.

7–30. Safety measures and procedures
a. Consistently practicing safety in the kennel and training area is a direct measure of the professional skill, motivation, and credibility of every handler, kennelmaster, and supervisor of an MWD kennel facility. Freedom from careless accidents builds public confidence in the individual and collective abilities of all handlers, and helps build a favorable impression of the MWD program among the members of the Army served by the MPs. Although MWD are trained to be tolerant of other personnel and dogs, the constant activity in kennel areas tends to excite the dogs. Positive control must be maintained to prevent a dog from getting loose and injuring a person, another dog, or itself. Safety is every handler's personal responsibility.

b. Personnel must not run or horseplay in or near kenneled dogs. This activity agitates the dogs and could result in a dog mistaking the actions with actual hostility, thus causing an attack.

c. Personnel must make sure they secure all gates after use, avoid sudden movements when passing dogs, and not speak or move in any threatening way around the dogs.

d. Handlers must keep dogs on a short leash at all times in the kennel area. If a dog gets loose, the first person to notice the loose dog must warn everyone else. Everyone except the dog's handler ceases all movement until the handler regains physical control of the dog.

e. One way traffic patterns must be set up throughout the kennel and training area to keep dogs from meeting head–on.

f. Handlers with dogs will give a verbal warning when entering or leaving the kennel area, or whenever their view is obstructed. These warnings help to prevent the dogs from being surprised by the sudden appearance of a person (and vice versa) rounding a corner or opening a door.

7–31. Training area safety
The following safety precautions are required in training areas not surrounded by fences.

a. Keep a safety leash on the right wrist while moving to and from training areas.

b. Keep a safe distance between dog teams in the area. When approaching another dog team, each dog is held in the heel position with a short leash.

c. Except when necessary for certain training exercises or while in a vehicle, the handler should not sit or lie down when accompanied by a dog.

d. Never secure the dog to an object with the leash, never stake out the dog and leave it unobserved, and never tie the dog to a vehicle. The dog can chew through or break the leash.

e. If a dog fight occurs, never attempt to stop it alone, and never attempt to pull the dogs apart. Pulling may injure the dogs.

(1) If on a leash, keep the leash taut, work the hands toward the snap of the leash, and hold the leash firmly with one hand, grasping the dog's throat with the other hand and squeezing with thumb and forefinger to cut off the dog's air supply. When the dog gasps for air, move the dogs away from each other.

(2) If off a leash, grasp the choke chain, leather collar, or the nape of the neck with one hand and with the other squeeze the dog's throat with thumb and finger to cut off the dog's air supply (the handler uses the same procedures when the dog bites a person. An attacked person should not try to jerk free from a dog's bite. Any unnecessary movement by a person will only increase the seriousness of the injury). When the dog gasps for air, move the dogs away from each other.

(3) An alert handler recognizes when a dog is about to attack, grasps the leash above the snap, holds the dog's front feet off the ground, pushes the dog away and slowly turns in a circle to keep the dog off balance.

7–32. Safety in veterinary facilities
When taken to a veterinarian, the dog is among unfamiliar surroundings and people and may behave unexpectedly. The handler must be prepared to physically control the dog while medical care is being given. The handler should always be present and immediately available to the veterinarian whenever the dog is receiving medical treatment.

a. Before entering the veterinary clinic, the handler should muzzle the dog, attach the short leash, and carefully follow the instructions of the veterinarian.

b. Before entering, the handler must give a verbal warning that an MWD is entering. In the treatment facility, the handler controls the dog with the short leash. The handler can calm the dog by speaking in a soothing, reassuring voice

to the dog. When facilities permit, MWDs will be admitted to the veterinary treatment facility through an entrance separate from that used by privately–owned animals.

7–33. Vehicle transportation

a. A cleated ramp may be used to load dogs onto a vehicle. If a ramp is not available, the handler lifts the dog on or off the vehicle by using the front and hindquarter or the stomach lift. Injured dogs may require different handling. Dogs are lifted on or off a vehicle on a short leash.

b. To place the dog in a vehicle for patrol purposes, begin with the dog at the heel or sit position. Open the door, command HUP, then SIT. A stable platform with a nonskid surface as described in para 2–4 should be used to cover the seat. The dog may be off–leash in the vehicle, but is never tied or left alone. When getting out of the vehicle, the handler commands HEEL.

c. Dogs being transported off an installation may be transported in shipping crates. If the dog is being shipped to a potentially hostile area, the crate should be painted with camouflage paint. Plainly mark the shipping crate with the dog's name and brand number, and mark in bold letters on the shipping crate "DANGER, MILITARY WORKING DOG—DO NOT TAMPER WITH ANIMAL." Handle the crate carefully to prevent it from being dropped. If a vehicle has an accident, remove the dog from the crate and check for possible injury.

7–34. Aircraft transportation

MWDs and handlers will normally be moved together. Commercial air transportation may be used when moving MWD teams interstate or to overseas commands. The following requirements apply to all movement of MWDs:

a. Handler and dog will be routed on the most direct flight by using the most cost–effective commercial air transportation. For overseas movement, Category Z or other discount fare will be used. A handler should always accompany the dog on the overseas segment of travel.

b. When handler and dog move together on PCS, the dog is declared as "excess baggage" on the Government Transportation Request (GTR). The GTR will contain the statement:"LIVE ANIMAL—MILITARY WORKING DOG."

c. When the handler takes a delay enroute in the continental United States (CONUS) (for example, leave), the dog will be shipped separately as air freight to the appropriate CONUS commercial gateway to link up with the handler. The losing unit commander is responsible for coordinating the movement of the dog and handler to ensure arrival at the airport at approximately the same time. The handler will claim his or her dog from the air freight carrier, and transfer the dog and crate to the air carrier on which they are scheduled for overseas movement. The Government Bill of Lading (GBL) will contain the statement "LIVE ANIMAL—MILITARY WORKING DOG" also. Copies of all appropriate documents, such as health certificate and vaccination records, will accompany the GBL/shipment as required.

d. All shipment of MWDs must minimize the number of stops and transfers. If possible, during hot weather, ship dogs at night. The air temperature in any holding area should not be allowed to fall below 45 degrees Fahrenheit or to exceed 85 degrees Fahrenheit at any time. MWDs should arrive at the airport as near to flight time as possible and not more than four hours prior to flight time. For CONUS moves, the shipping installation will notify the receiving installation of the carrier, the flight number, and the date and time of arrival. A handler from the receiving installation will be assigned to meet and claim an unaccompanied dog within 4 hours of its arrival.

e. The MWD will be offered potable water within 4 hours, but not less than two hours prior to flight time. Feeding and watering instructions must be affixed to the outside of the shipping crate and included on the GBL so that the dog can be cared for if there are delays enroute. Instructions will include the recommendation to provide potable water at least once every 12 hours and food at least once every 24 hours. Appropriate food should also accompany the dog and shipping crate.

f. The shipment must also comply with conditions specified in subpart A, part 3, subchapter A (Animal Welfare), chapter 1, title 9, Code of Federal Regulations.

g. When making booking, transportation officers/port call activities should ensure that the airline is advised that the passenger is authorized excess baggage consisting of a metal shipping crate, a live animal, and its food. Provide the total weight, the number of pieces, and the dimensions of each piece.

h. Local procedures should be established to ensure that necessary information on port call is provided to all persons involved; that is, the handler, the kennelmaster, the unit commander, the central port call office (CPCO), and the transportation officer. When the dog is shipped air freight, other movement information (carrier(s), flight number(s), date(s), and time(s) of departure and arrival) will be provided by priority message (and by phone, if possible) to the Military Traffic Management Command (MT–PTO–T), to the Military Air Traffic Coordinating Unit (MATCU), the installation/activity nearest any connecting airport, and the gaining unit/installation, as appropriate. The appropriate personnel assistance point (PAP) will be an information addressee on the message.

i. MTMC will provide additional guidance as necessary to ensure maximum visibility of the movement of MWDs including, but not limited to, air carriers and assistance that can be provided by MATCUs, air carriers, and air

terminals. Where international movements are involved, location of MATCUs will be a factor in the routing determination.

j. As a general rule, movement of dog and handler together is funded from the Military Personnel, Army (MPA) account. Movement of the dog alone is funded from the operation and maintenance, Army (OMA) account.

k. All movement of patrol–trained dogs should be accomplished using the standard metal shipping crate. The lighter, fiberglass shipping container may be used for nonpatrol–trained detector dogs and for the small breed detector dogs.

7–35. Hot weather requirements

a. When transporting dogs in shipping crates, use air–conditioned or well ventilated vehicles, give the dogs adequate and frequent supplies of fresh, cool water, and in case of vehicle breakdown, unload each dog from the vehicle and locate in a nearby shady, cool area.

b. Load crates so that the dogs will get maximum ventilation. Never place baggage, other crates, or equipment on top of or around a crate. Never load dogs into crates that have been standing in the sun.

c. Check dogs often to be sure they are not becoming overheated.

7–36. Leaving dogs unattended

Dogs should never be left unattended except when they are put in their kennels. There are times, however, when they must be left unattended for short periods. When this becomes necessary, the rules below must be followed:

a. Use only the leather collar and a kennel chain to stake out a dog. Do not use the choke chain and leash.

b. Do not secure a dog to a vehicle or an object that can be moved, or may accidentally move.

c. Do not stake out a dog in a location where it could injure itself or others.

d. Make sure that the dog is located in a shady area during hot weather.

e. Check the dog often to make sure that it is not in distress.

Section IV
Security Requirements for Kennels

7–37. Risk analysis

In order to provide the most realistic and cost–effective protection for the MWDs and kennel facility, commanders must appreciate the importance and analyze the significance of the threats to these assets because of theft, sabotage, or damage. A proper analysis of these risks will determine the minimum level of protection needed to adequately safeguard these resources. This process is called risk analysis. The principles of risk analysis (see AR 190–51) apply to the determination of measures which must be taken to protect the kennel and dogs from criminal activity.

7–38. Designing for security

Many passive security measures, such as lighting, barriers, and structural integrity, can be provided merely by including them in the design and construction of the kennel facility. All access points to the kennel facility can be designed to prevent unauthorized access. Security can be provided in depth to delay an intruder from reaching his or her objective. The facility can be located in an area that provides a reasonable degree of natural security from terrain features or from its proximity to other installations. Although a patrol dog will provide an early warning of an intruder, a patrol dog confined in a kennel can do very little to prevent an intruder from taking kennel property or from harming the dogs. Some of the security design depends on the types of materials or equipment which will be maintained in the kennel facility. For example, if training aids will be stored in or near the facility, special safety and security requirements exist to protect explosives and narcotics. Structural security decisions depend on the identification of the assets which will be maintained in the kennel facility, the importance of these assets to the accomplishment of the operational mission, the identification of the significance of the threat to these assets, and the appropriate measures to counter the threats.

7–39. Operational security

Operational security is achieved by identifying the appropriate measures and procedures which are necessary to protect the dogs and the kennel facility. Important elements of operational security are as follows:

a. Controlling access to the facility.

b. Controlling access to certain areas of the facility.

c. Security awareness by the handlers.

d. The active application of security principles to handler activities in and around the kennel.

e. Property accountability.

f. The security and accountability of training records.

g. Careful daily inspection of the dogs and the kennel area.

7–40. Minimum kennel security requirements

a. As a general rule, kennels should be manned both day and night. Full–time coverage provides:

(1) Immediate response to any attempted unauthorized intrusion.

(2) The capability to render immediate attention to a dog that is in physical distress.

(3) The ability to seek immediately veterinary medical assistance.

(4) A continuous ability to feed, water, and care for the dogs.

b. Despite these reasons, there may be situations when it is not possible or practical to provide full–time coverage of the facility. In this event, appropriate compensatory measures are necessary to protect the dogs, the equipment, and the facility. Some form of an IDS and CCTV needs to be installed in the kennel facility. Although motion sensors in the kennel building are not practical, there are other sensors, such as contact switches, and pressure grids that would provide warning to a security force. CCTV would allow the monitoring of MWDs to identify any problems. Frequent checks of the facility should be made to ensure that one of the dogs does not need medical attention. Care must be exercised during these checks to not overly excite the dogs or the lack of rest may interfere with their performance. All other compensatory measures, as justified by risk analysis, should also be applied. The lighting and fencing requirement, included in the engineering instruction for kennels in section I above, may be augmented as necessary. Doors and locking hardware should be consistent with the structural security requirements for buildings in AR 190–51. Keys must be readily available in case of an emergency. Fresh water must be provided at least every 8 hours for dogs confined in their kennels. Narcotics and/or explosives training aids will not be stored in unattended facilities unless:

(1) The storage room and container are protected by an IDS.

(2) The standards of AR 195–5 and AR 190–11 are met for narcotics or explosives, respectively.

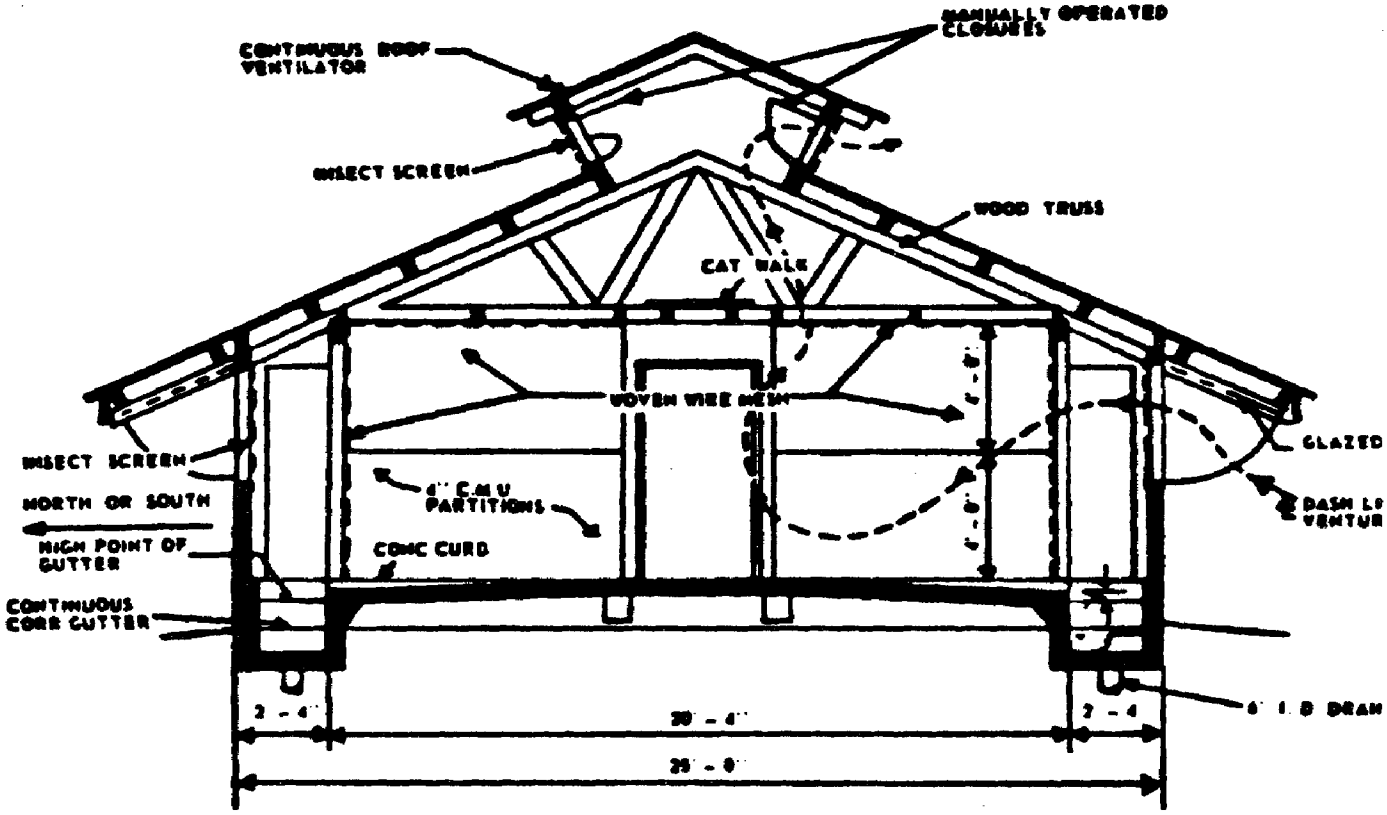


Figure 7-1. Standard kennel building shell

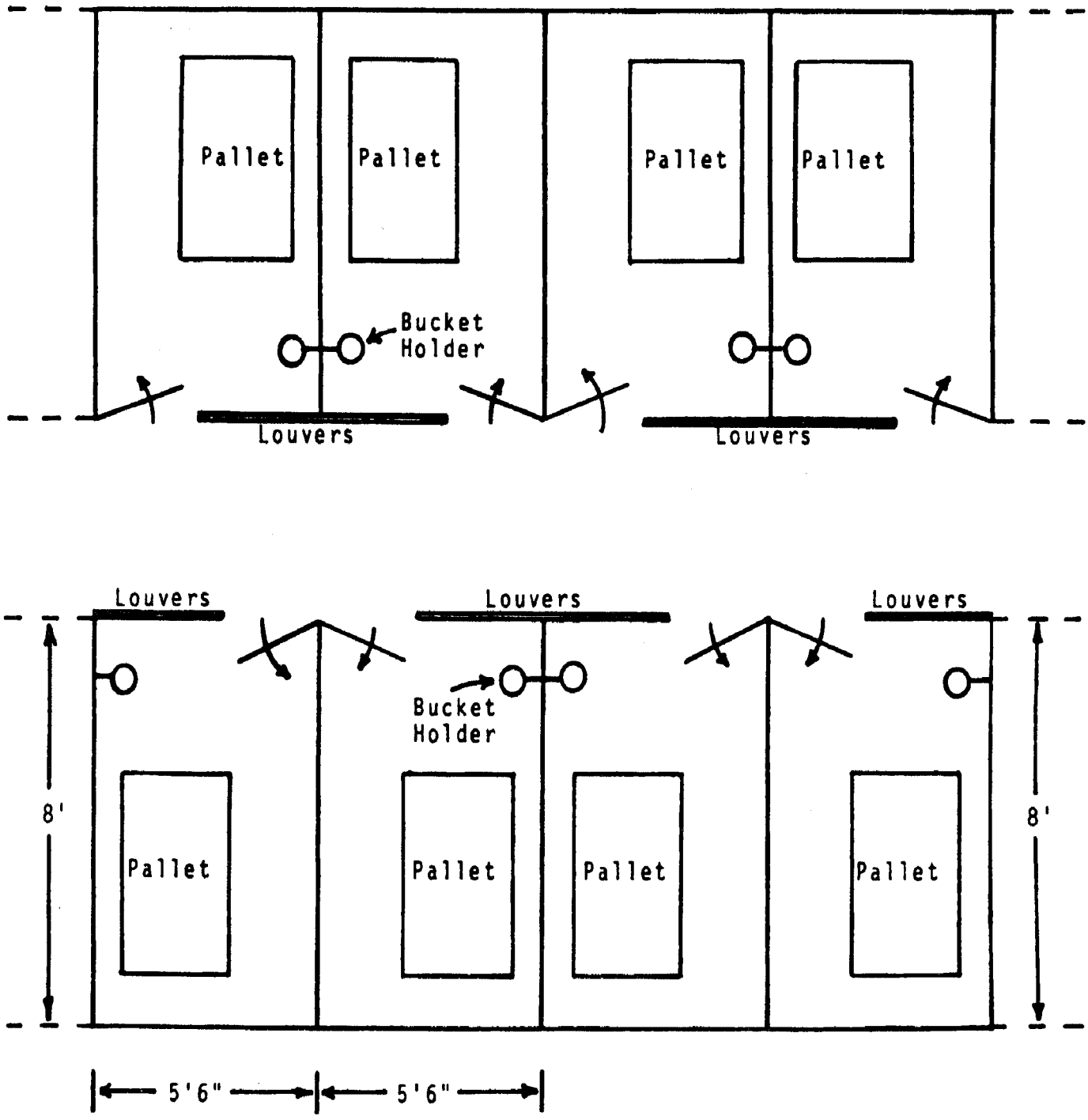
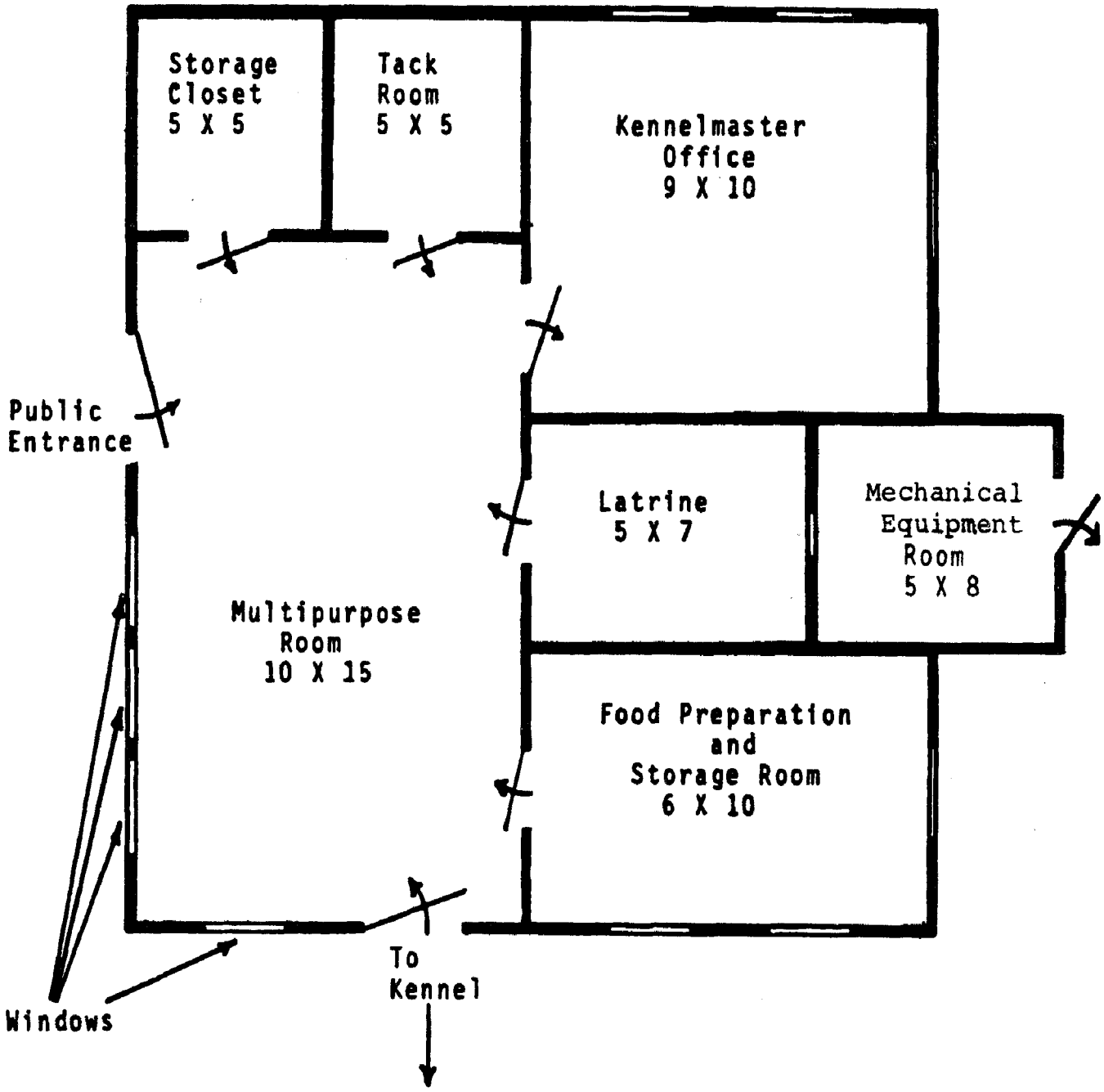
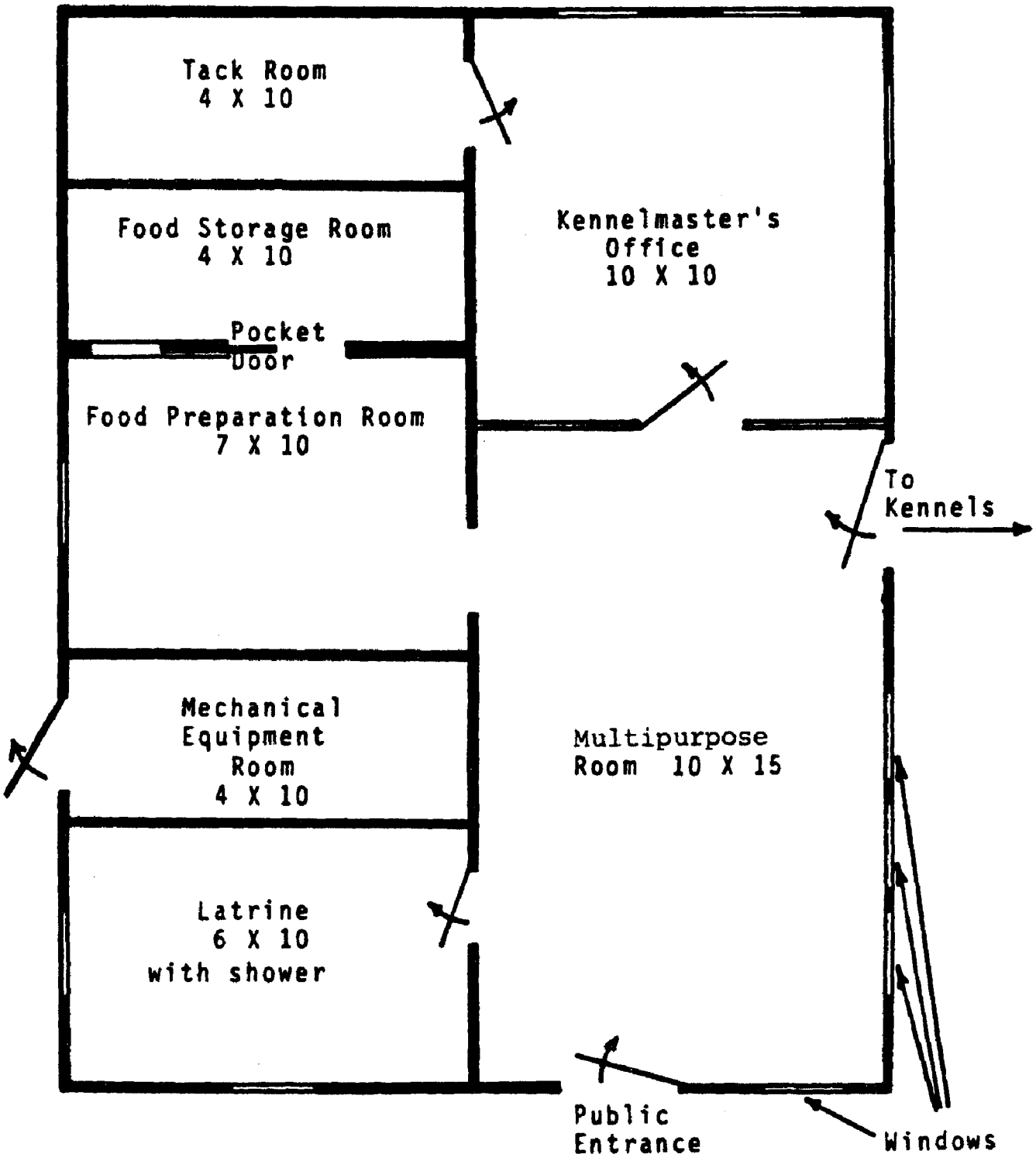


Figure 7-2. Sample floor plan, indoor kennel



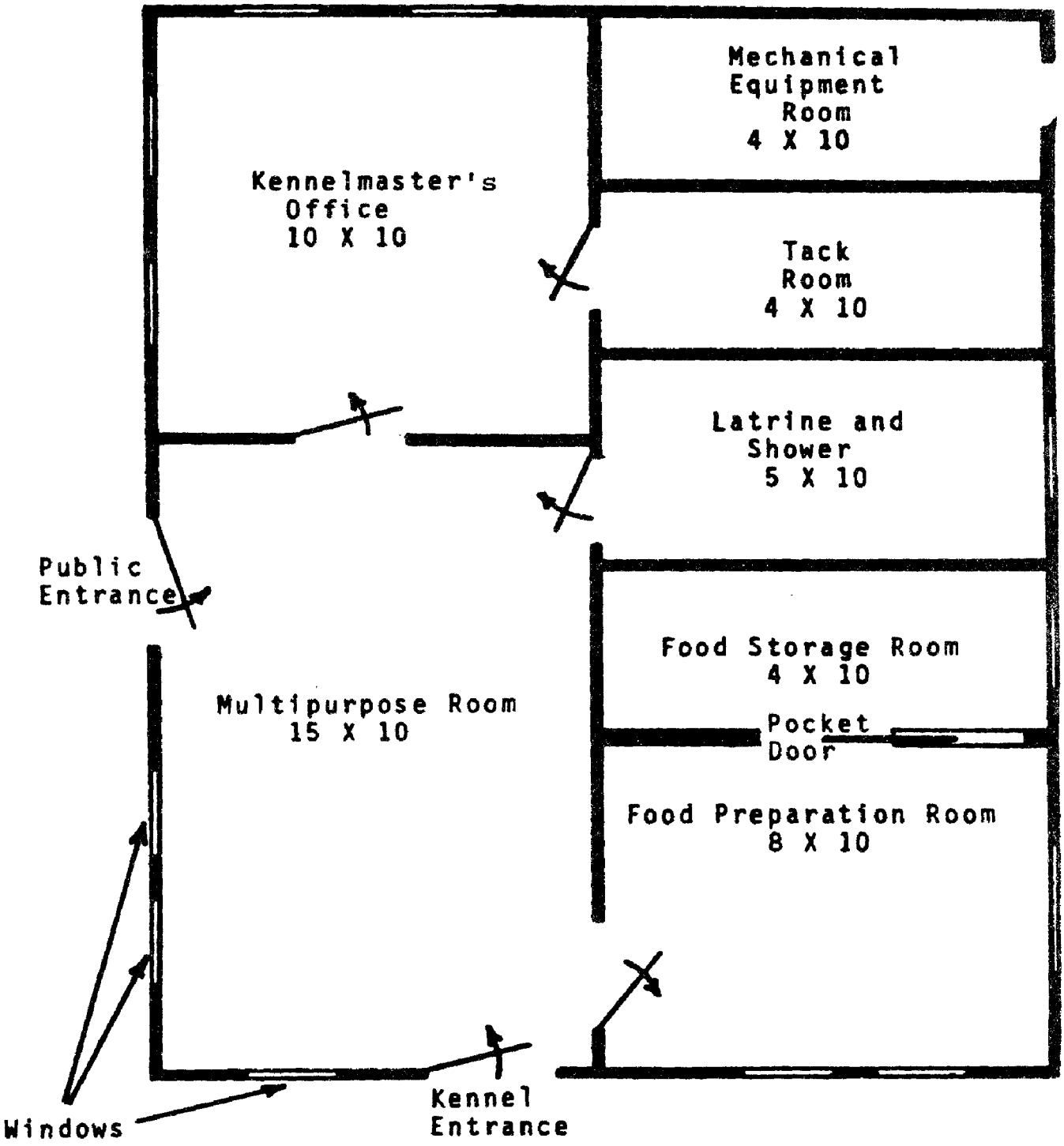
NOTE:
All measurements are in feet

Figure 7-3. Sample kennel support building, 435SF



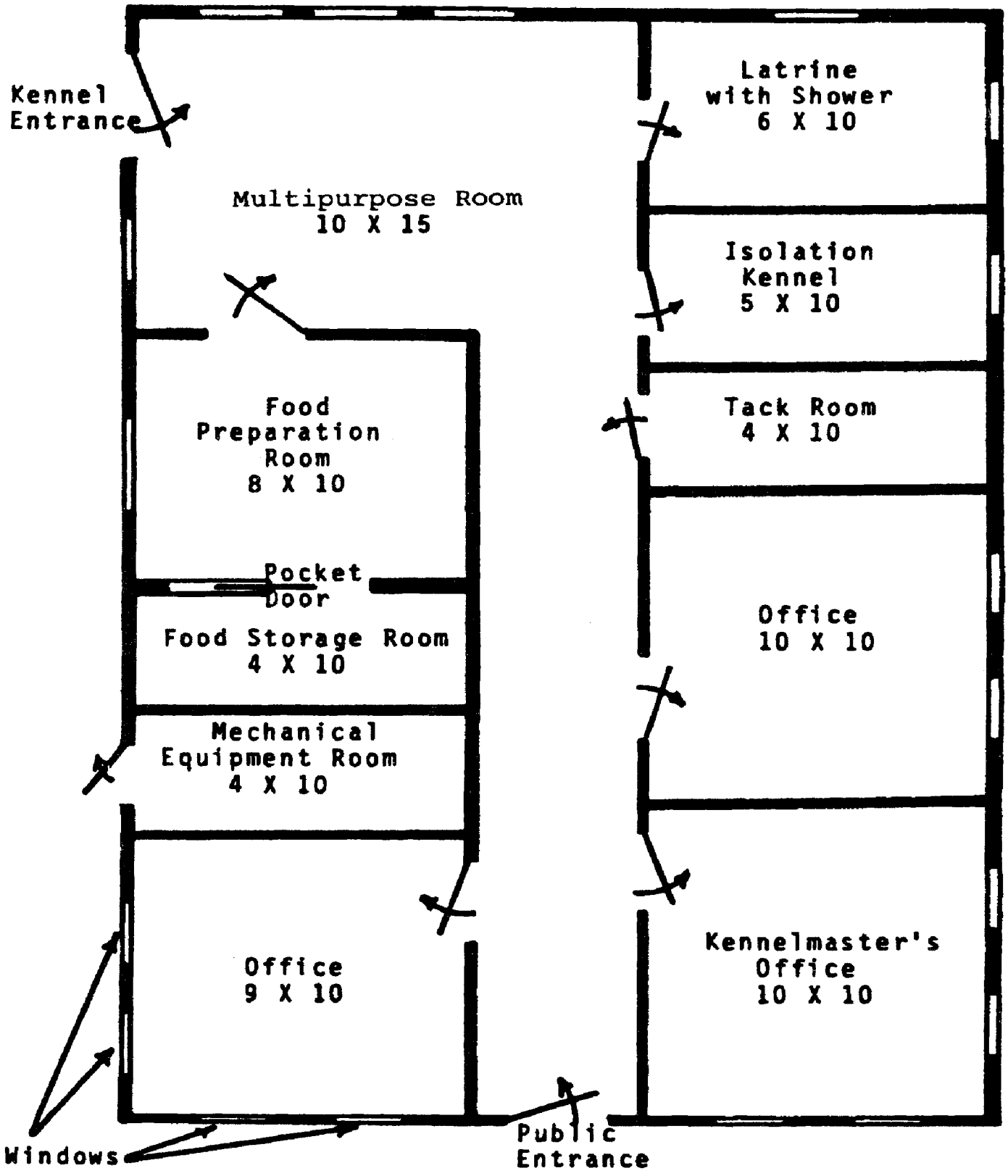
NOTE:
All measurements are in feet

Figure 7-4. Sample kennel support building, 500SF



NOTE:
All measurements are in feet

Figure 7-5. Sample kennel support building, 500SF



NOTE:
All measurements are in feet

Figure 7-6. Sample kennel support building, 875SF

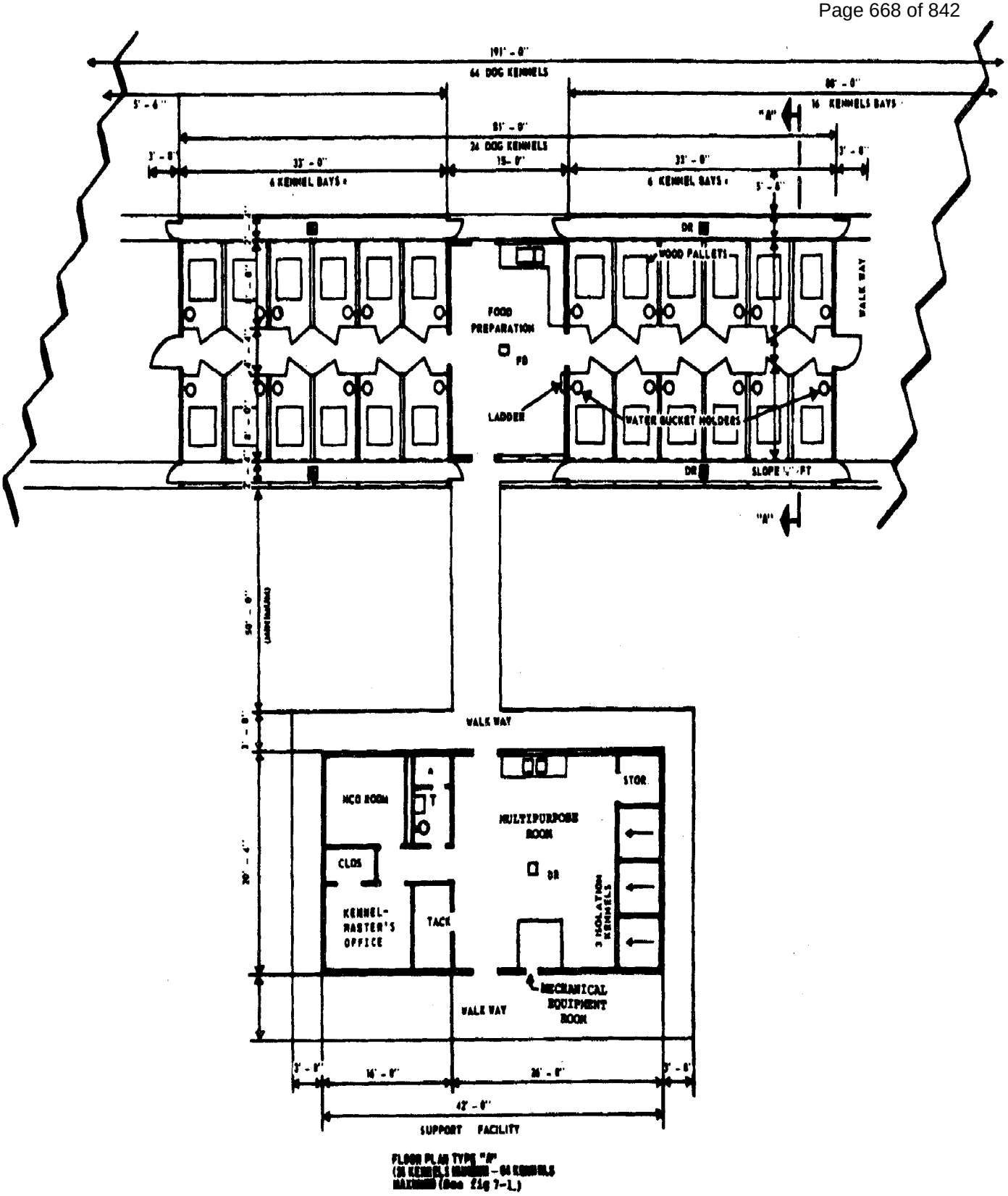
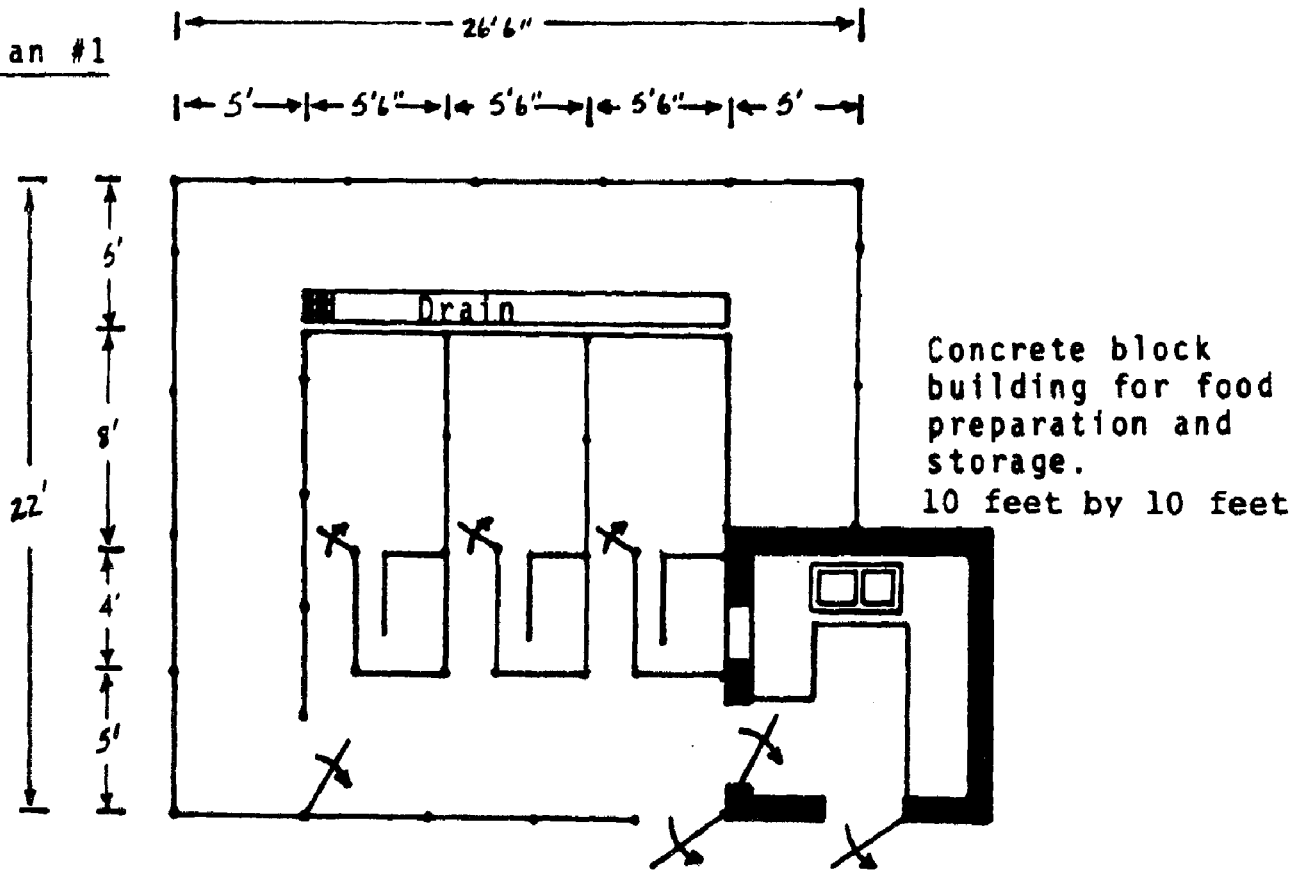


Figure 7-7. Large permanent kennel

Plan #1



Concrete block building for food preparation and storage.
10 feet by 10 feet

Kennels constructed on concrete pad, 17 feet by 16 feet 6 inches, including a 5 foot apron in front. Kennel and a 5 foot strip around kennel enclosed by chain link fence.

Plan #2

Kennels constructed on concrete pad, 12 feet by 16 feet 6 inches, completely enclosed by chain link fence.

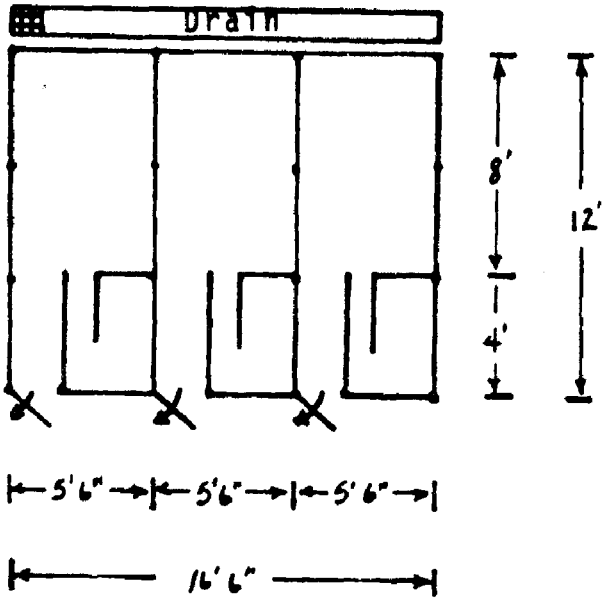
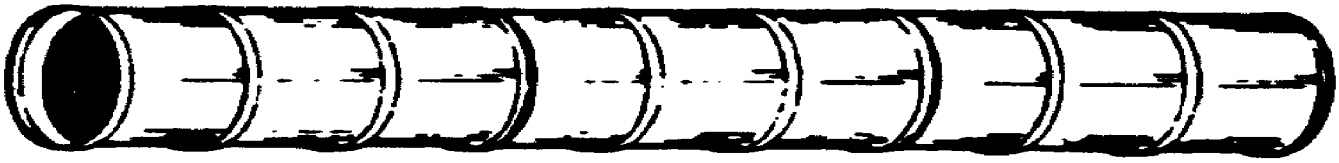


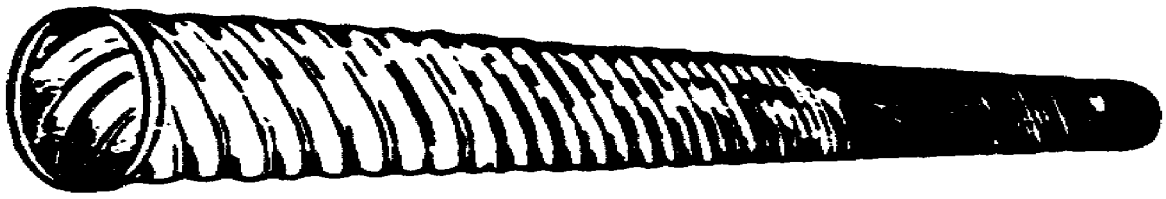
Figure 7-8. Semipermanent kennel

Barrel No. 1 — **Length = 35 inches**, **Opening = 23 inches**

Barrel No. 2 — **Length = 70 inches**, **Opening = 23 inches**



Barrel No. 3 — **Length = 105 inches**, **Opening = 23 inches**



Tunnel — **Length = 146 inches**, **Opening = 19 inches**

Figure 7-9. Specifications for barrels and tunnel

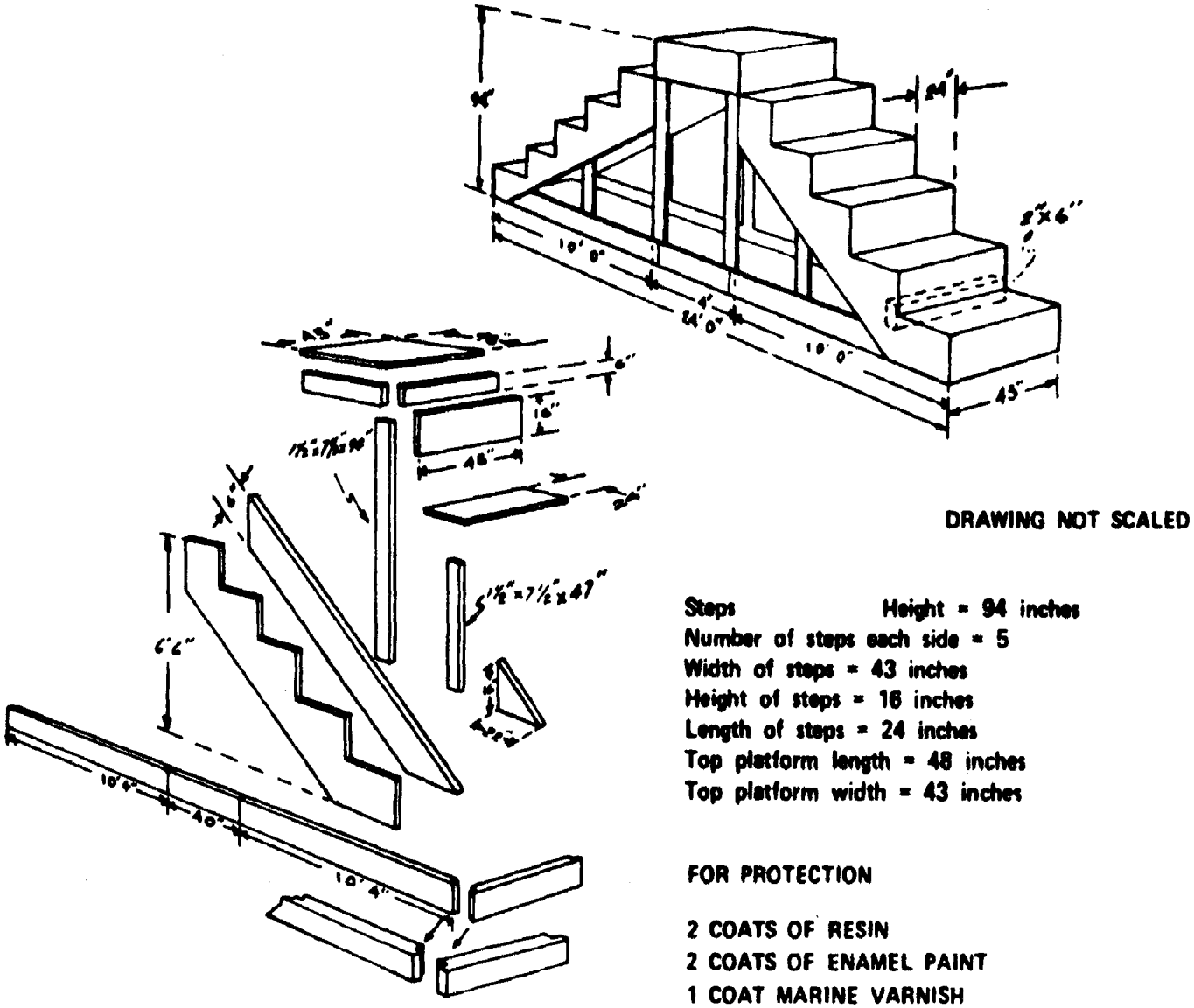
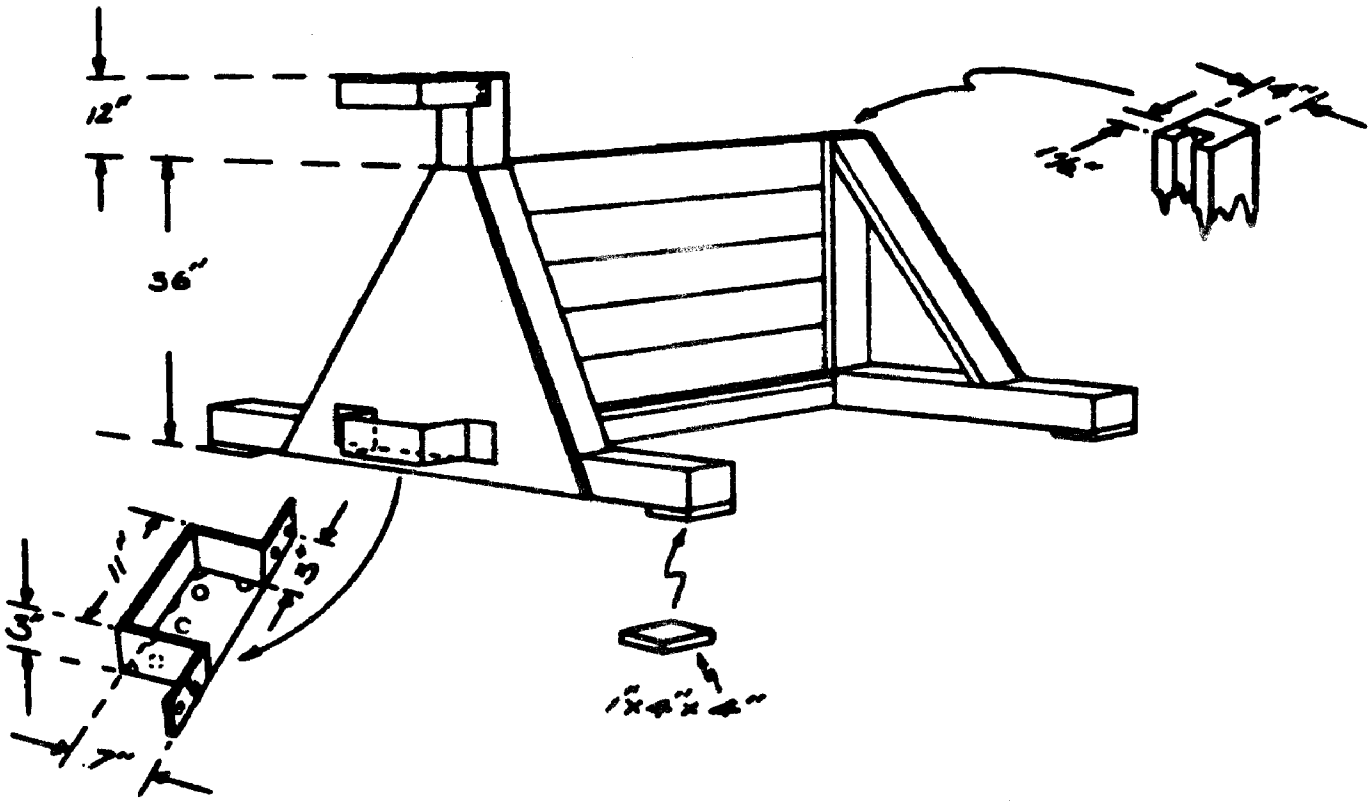


Figure 7-10. Specifications for steps



Jumps 1, 2, and 3
Height at maximum raised level for dog to negotiate = 36 inches
Number of removable boards = 6
Length of 6 boards, each = 51 inches
Height of 6 boards, each = 6 inches
Thickness of each board = 1 inch **DRAWING NOT SCALED**

FOR PROTECTION

2 COATS OF RESIN
2 COATS OF ENAMEL PAINT
1 COAT MARINE VARNISH

Figure 7-11. Specifications for jumps

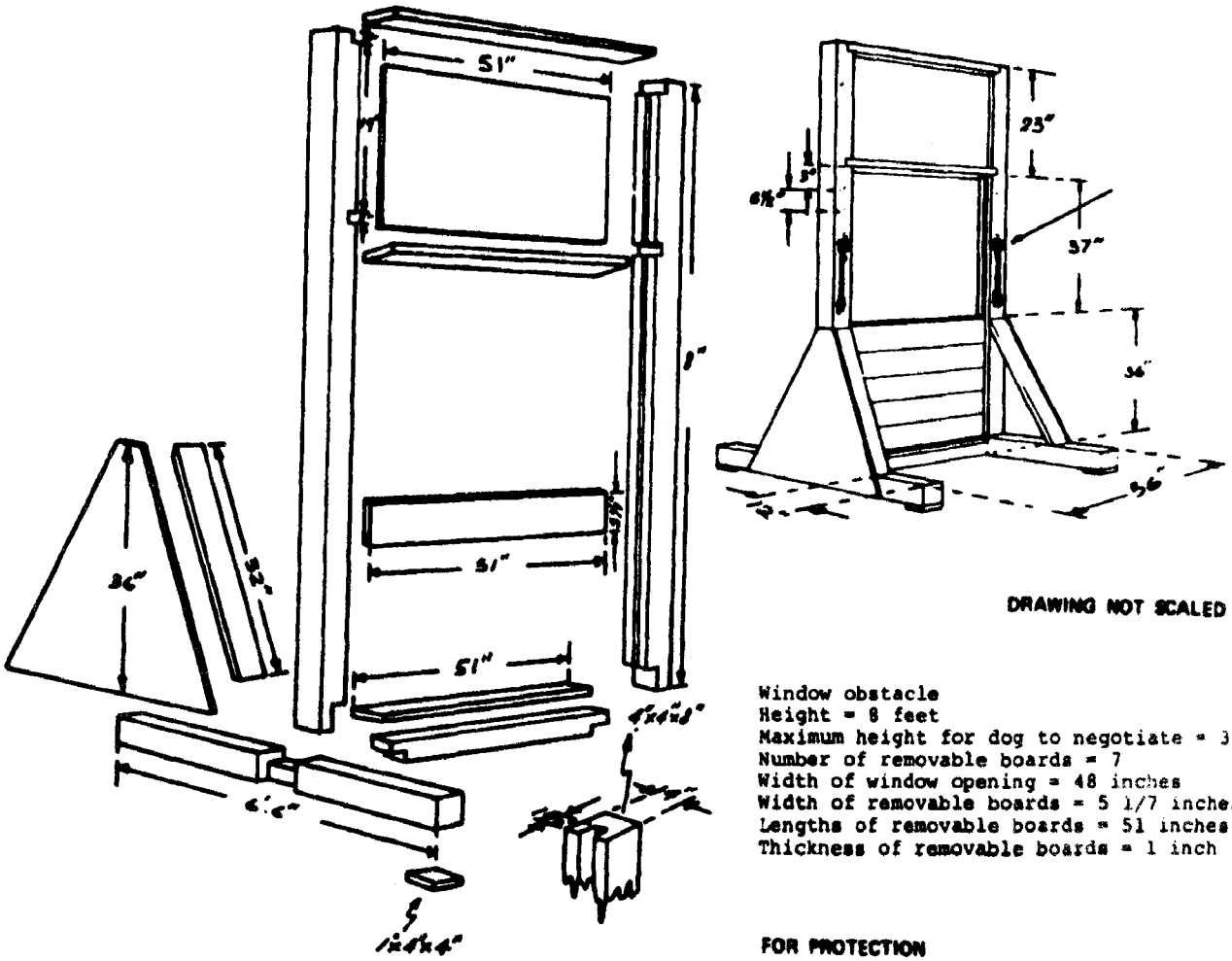
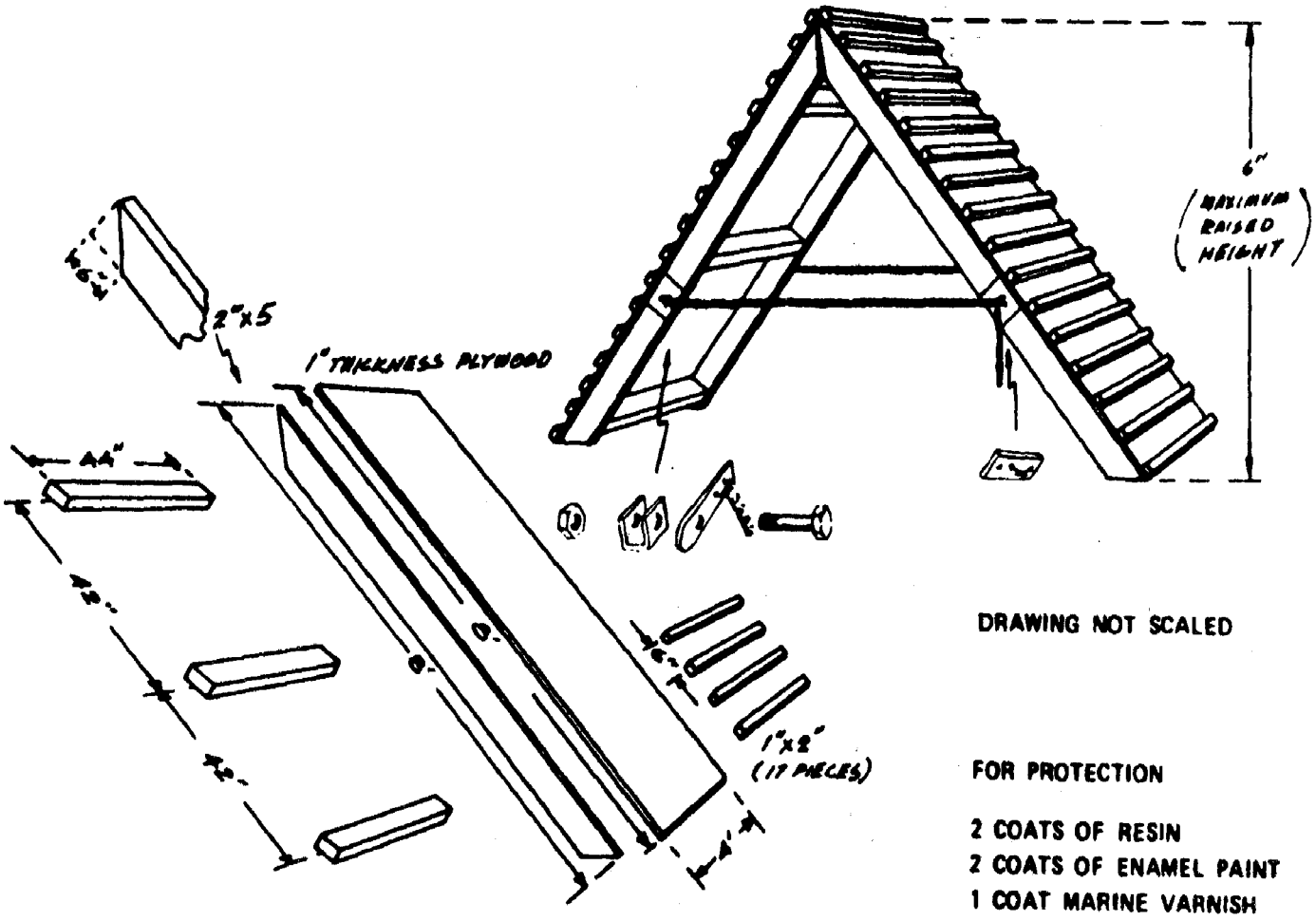
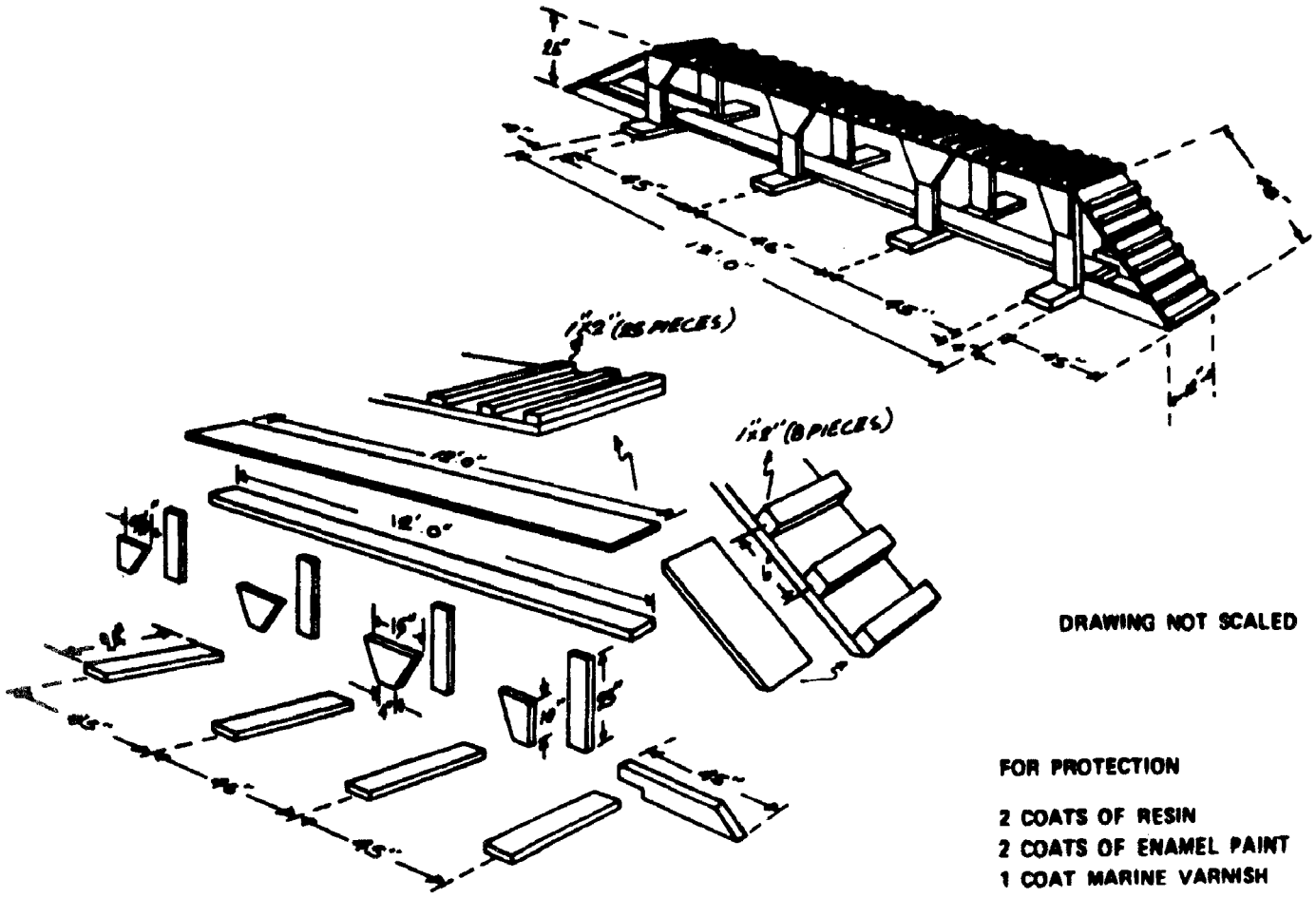


Figure 7-12. Specifications for window obstacle



"A" frame, length 16 feet, 8 feet on each side
Maximum raised height = 6 feet
Adjustable from the horizontal position to the maximum allowable of 6 feet
Width = 4 feet
Added 1½-inch-wide boards every 4½ inches to insure safe footing

Figure 7-13. Specifications for "A" frame



Dogwalk
Height = 26 inches
Length = 224 inches
Width = 11 feet
2-inch-wide boards every 4 inches to insure safe footing
45° incline ramp on each end of dogwalk, 11 inches wide, 49 inches long. (To be included in total 224-inch overall length measurement.)

Figure 7-14. Specifications for dogwalk

Chapter 8
Authorized Equipment

8–1. General

The various items of equipment authorized for MWDs and kennel facilities are listed in Common Tables of Allowance (CTA) 50–900 and CTA 50–970. Commanders, kennelmasters, and handlers must make sure all necessary equipment is available and kept in good condition.

8–2. Initial issue equipment

The following items of equipment are used by each handler and are issued when the handler enters initial patrol dog training. Replacement of these items is the responsibility of the unit or installation to which the dog and handler are assigned.

a. Choke chain. The choke chain is the basic collar used for all MWDs. Usually the choke chain is left on the dog. Choke chains are available in several sizes and the handler is responsible to make sure the correct size is used.

b. Leather collar. The leather collar is used when a dog is secured to a stationary object. Some older patrol dogs and detector dogs were trained to work only when wearing the leather collar. Current training procedures have eliminated the need to use the leather collar as a work cue, but some dogs may work more effectively when the leather collar is used as a work cue.

c. Kennel chain. The 6–foot kennel chain is used with the leather collar when securing the dog to a stationary object on a temporary basis. The kennel chain is never tied around the dog's neck or snapped to the choke chain.

d. Muzzle. The muzzle is used only as a safety device when it is necessary to prevent the dog from biting. The muzzle is most commonly used when the dog is receiving veterinary treatment or field first aid treatment. The muzzle is usually not used during training because it is distracting to the dog.

e. Leash. Two types of leashes are available for use: the 60–inch leather leash and the 360–inch cotton web training leash. Only the 60–inch leather leash is initial issue. The 360–inch cotton web leash is used during advanced obedience training, some phases of attack training, and when the dog is used for tracking.

f. Equipment holder. The equipment holder is used to secure items of equipment so the handler's hands remain free.

g. Comb and brush. The dogs should be brushed often to remove loose hair, spread natural oils, remove dirt, and to prevent their hair from matting. The comb should be used only when necessary because excessive combing removes the dogs undercoat and may scratch or cut the skin.

h. Reward ball. Detector dogs are usually trained to detect narcotics or explosives using a rubber ball as a reward. This ball is a special 2 1/2–inch hard rubber ball that can be purchased from dog equipment suppliers.

8–3. Organizational equipment

The following items of equipment are not issued to the handler when entering training, but must be available so that he or she can properly care for and train the dog.

a. 360–inch cotton web training leash. Use of the leash is explained in paragraph 8–2e.

b. Feeding pan. The feeding pan is stainless steel and has a 3–quart capacity. This size is enough to hold the dog's daily ration and allow the dog room to eat.

c. Water bucket. The water bucket is galvanized steel or galvanized metal and holds at least 3 1/2–gallons of water. Each dog has a water bucket. The bucket is cleaned and refilled daily with fresh potable water. In cold weather, water in the bucket must be located in an area where it will not freeze. For small breed dogs, a standard feed pan may be used for a water container.

d. Leather harness (NSN 3770–00–240–6620). The only time the patrol dog wears the leather harness is while tracking. The tracking harness is specially designed to ground scent. A scouting harness is specially designed to allow the dog to scout with its head up. The harness enables the handler to control the dog's ranging distance, but still allows the dog to breathe normally. When the harness is worn, the choke chain is removed. Although some dogs may scout or track without the harness, the harness serves as a useful cue to the dog that the mission to be performed is scouting or training. The dog's efficiency is greater in a harness.

e. Arm protector. The arm protector is used by an agitator or decoy when training patrol dogs in controlled aggression. This sleeve is used instead of the attack suit sleeve because patrol dogs trained on the larger, more bulky attack suit sleeve tend to have a weaker, more inconsistent bite. The smaller sleeve is easier for the dog to bite and dogs will then learn to more readily bite the arm rather than some other portion of the body. The arm protector should always be wrapped with heavy cloth or burlap to serve as added padding against bites and bruises. Also, the cloth allows a greater degree of protection against injury to the dog's teeth and gums. Target cloth, NSN 8305–00–285–2152, is very suitable for the outer wrap and is available through supply channels.

f. Attack suit. The attack suit is used for patrol. The attack suit consists of the leather protective pants or overalls (which are made similar to overalls) and the leather protective vest. A variety of protective gauntlets, cuffs, and sleeves are available for use with the attack suit to protect the arms and hands.

g. Shipping crate. The shipping crate is aluminum and is designed for transporting MWDs over a long distance. It may be used for a temporary kennel (NSN: 8115–00–803–3172).

8–4. CTA 50–900

Items of dog training equipment are authorized in CTA 50–900. They are listed in table 8–1.

8–5. CTA 50–970

Items of MWD and kennel facility equipment are authorized in CTA 50–970. (See table 8–2).

8–6. Care of equipment

a. Leather equipment should be wiped with a damp cloth whenever it becomes muddy or dirty. Leather should be thoroughly cleaned with saddle soap weekly. All leather equipment in storage must be inspected periodically and in ready working condition.

b. Rust will be removed from metal equipment and parts with a fine grade of steel wool. After cleaning, a very light coat of oil will be applied to the metal.

c. Web equipment will be kept clean by washing as needed.

8–7. Support vehicles

a. Each unit, installation, and activity with assigned MWD teams should assign enough support vehicles so that mission and kennel support activities can be properly maintained. Some variation of the types of vehicles may be necessary to be sure that the vehicles used are appropriate for the purpose and offer the most functional configuration. Regardless of the type of vehicles used, some modification will usually be necessary to maximize the mission effectiveness of the dog, to provide the dog a comfortable, supportive, and protective area, and to prevent unnecessary damage to the vehicle interior. Paragraph 2–4c describes the platform which must be installed in a vehicle when using patrol dogs in mobile patrols.

b. Support vehicles assigned to units with EDDs must be equipped and maintained so that the vehicles meet the safety requirements to transport explosives. Vehicles that do not meet the explosives safety requirements will not be used to transport explosives.

c. All vehicles used to transport MWDs must be equipped with removable warning signs with the wording"CAUTION–MILITARY WORKING DOGS." Signs are placed on the sides of the vehicle when it is used to transport dogs.

8–8. Training aids weight scale

One trip balance laboratory scale, NSN 6670–00–401–7195, is authorized by CTA 8–100 for each MP unit with authorized narcotics/contraband detector dogs, and is used for weighing narcotics/contraband training aids as explained in chapter 4.

8–9. Approved locking devices

Only approved locking devices are authorized for use where locks and locking hardware are required. Approved locking devices are:

a. Padlocks, military specification MIL–P 43607(GL) (high–security padlock) with the NSN 5340–00–799–8016 (open shackle with clevis and chain), and NSN 5340–00–799–8248 (shrouded shackle with clevis and chain).

b. Padlocks, military specification MIL–P–17802C body with the NSN 5340–00–158–3807 (with chain), and NSN 5340–00–158–3805 (without chain).

c. Pin tumbler mortise locks with dead bolt that conform to the following minimum standards:

(1) Dead bolt throw of at least one inch.

(2) Double cylinder design.

(3) Five pin tumblers of which two will be mushroom or spool–type drive pin design.

(4) Have 10,000 or more key changes.

(5) Is not master keyed.

(6) Bolt is not visible when in the locked position.

d. High–security hasps described in MIL–H–43905A for use with the high–security padlock. The high–security hasps are currently manufactured in nine styles, with the first six styles being the styles to be used.

e. Hasps and staples for secondary locks which are heavy pattern steel, securely fastened to the structure with smooth headed bolts, rivets, or welding to prevent removal.

Table 8–1
Dog training equipment authorized in CTA 50–900

LIN	Item	Basis of issue
T72252	Sleeve, dog attack trainer's: Arm chrome leather outer covering. NSN 8415–01–122–0684	1 per 5 MWD
	Sleeve, dog attack trainer's: Arm sagless jute cloth outer covering. NSN 8415–01–122–0681	1 per 5 MWD
	Sleeve, dog attack trainer's: Arm 840 denier nylon outer covering. NSN 8415–01–122–0683	1 per 5 MWD
	Sleeve, dog attack trainer's: Arm, one–ply animal jute outer covering, 29 inches long. NSN 8415–01–122–0678	1 per 5 MWD
	Sleeve, dog attack trainer's: Arm, one–ply animal jute outer covering, 24 inches long. NSN 8415–01–122–0682	1 per 5 MWD
	Sleeve, dog attack trainer's: Forearm 9–11 ounce aluminum. NSN 8415–01–122–0685	1 per 5 MWD
	Sleeve, dog attack trainer's: Arm ¼′ neoprene rubber. NSN 8415–01–122–0679	1 per 5 MWD
	Sleeve, dog attack trainer's: Upper Arm 2–ply split leather. NSN 8415–01–122–0680.	1 per 5 MWD
	Sleeve, dog attack, trainer's: Hand protective, German jute. NSN 8415–01–122–0674	1 per 5 MWD
F53543	Cuff, dog attack trainer's. NSN 8415–01–122–0686	As required
E43371	Vest, dog attack trainer's. NSN 8415–01–122–0675	1 per 5 MWD
X35399	Overall, dog attack trainer's. NSN 8415–01–122–0676	1 per 5 MWD

Table 8–2
Military working dog and kennel facility equipment authorized in CTA 50–970

NSN	Item	Basis of issue
3770–00–163–9542	Blanket, dog coat style OD, large	1 per dog
	OR	
3770–00–163–9543	Blanket, dog coat style OD, Med	1 per dog
	OR	
3770–00–163–9544	Blanket, dog coat style OD, Small	1 per dog
3770–00–555–9959	Brush, animal grooming	2 per dog
3770–00–162–6207	Chain, dog kennel steel, 72 inches long	2 per dog
3770–00–951–6418	Collar, dog leather with D–Ring and buckle, 18 inches by 2 inches wide.	2 per dog
3770–00–255–6191	Collar, dog steel chain choke 24 inches, 22 inches or 20 inches	2 per dog
3770–00–163–2606	Comb, dog	1 per dog
3770–00–171–1257	Holder, dog leash leather belt type with triple snap.	1 per handler
3770–00–171–1258	Leash, dog with swivel and snap leather lead type.	2 per dog
3770–00–171–1256	Leash, dog with swivel and snap cotten webbing OD, 360 inches long 5/8 inch wide.	1 per dog
3770–00–170–1495	Muzzle, dog leather russet	2 per dog
3770–00–105–2717	Muzzle, dog attack bite proof	1 per dog
7240–00–160–0455	Pail, metal steel galvanized	2 per dog
3770–00–951–3230	Pan, dog feeding aluminum 3 quart capacity.	2 per dog
3770–00–025–7914	Leash, dog nylon	1 per dog in hot/wet climate
3770–00–026–2409	Holder, dog leash nylon	1 per dog in hot/wet climate

Chapter 9
Inspections

Section I
Operational Inspection Guidelines

9–1. General

a. This chapter provides the commander with inspection guidelines. The reading of this chapter alone will not provide a commander or any other inspector with sufficient knowledge to perform a competent inspection. Before beginning an inspection, the commander needs to be thoroughly familiar with the policy of AR 190–12, this pamphlet, FM 19–35, and other relevant publications. This chapter provides guidance regarding the scope of an inspection and directs the commander towards inspecting those activities which need the greatest attention. A commander is not limited by this guidance and may inspect any aspects of the unit MWD program to ensure that his or her MWD teams are technically, operationally, and administratively proficient.

b. AR 190–12 requires that the unit commander conduct a monthly inspection of handlers, dogs, training, team utilization, team proficiency, equipment, and kennel facilities. A detailed, comprehensive inspection is necessary because of the complexity of a unit MWD program. Therefore, the specifications of the monthly inspections may be varied, provided that all aspects of the unit MWD program are inspected at least quarterly. A written record of inspections is required, and each monthly inspection should ensure that corrective action has been taken on any deficiencies noted during previous inspections. Most inspections should be“working inspections” so interference with operational commitments can be minimized. Both announced and unannounced inspections should be made.

Section II
Facilities

9–2. Kennels

Proper construction, maintenance, and sanitation are essential for the dog’s health. Improper and faulty construction may not be apparent until after the facility has been occupied, but should be corrected as soon as possible to protect the dogs and handlers from hazardous conditions. The commander should check to ensure the following:

a. Kennel runs:

(1) Are clean and free of animal wastes.

(2) Have concrete surfaces smoothly finished and in good repair.

(3) Have concrete block walls surfaced with smooth concrete or wainscot.

(4) Have metal walls free of rust and dirt.

b. Houses or pallets are clean and in good repair. Look closely at inside corners and underneath the pallet or house

since these are common breeding places for insects and parasites. Houses or pallets that have been chewed on may indicate a bored dog. Check the dog's training record to ensure that it is being used and trained properly.

c. Floor slope allows for natural drainage of liquid wastes from runs and houses.

d. Water buckets are clean and filled with an adequate amount of water. Also, ensure that the drinking water supply is adequate.

e. Fencing and lighting are adequate and proper warning signs are posted. Check for loose fencing, holes in the fence or ground under a fence, or sharp objects which may cause injury to a dog. All electrical cords should be out of reach of the dogs.

f. Drainage gutter is free of animal wastes, hair, and other foreign matter. Also, ensure that stools are removed, not washed down the drain.

g. The plumbing system is adequate to handle all drainage throughout the kennel facility (that is, no sewage back–up).

h. Kennel area (inside and out) is policed and free of dog stools.

i. Fire fighting equipment is available and serviceable.

j. The kennel area is free of standing water that could allow insect breeding.

9–3. Kennel support building

The commander should check to ensure the following:

a. The food preparation area is clean and all equipment is in good condition.

b. The food preparation area and the food storage area is neat and orderly. Food must be stored in rodent proof containers. Storage areas should be checked for signs of rodents or insects.

c. Feed pans are clean and do not feel greasy.

d. Hot water supply is adequate for food preparation and cleaning.

9–4. Training and exercise areas

The commander should check to ensure the following:

a. Training and exercise areas:

(1) Are policed.

(2) Are free of dog stools.

(3) Have vegetation trimmed.

(4) Are free of standing water.

(5) Are free of rocks, glass, and other materials that could injure the dogs.

b. Fencing is in good repair with no loose wires that could cause injuries.

c. Holes are filled promptly, seeded, and packed.

d. Gate locks work properly and gates close automatically and securely.

e. The obedience course is in good condition with:

(1) All obstacles present and properly constructed.

(2) No loose boards or nails.

(3) All obstacles properly painted with nonskid paint or other nonskid materials on surfaces traveled by the dog.

(4) Wood surfaces reasonably smooth and free of splinters.

Section III
Equipment

9–5. Leather and metal

The commander should check to ensure the following:

a. Leather is treated with a light coat of neat's–foot oil (saddle leather) or saddle soap (latigo leather).

b. All metal chains and snaps are clean and rust free.

c. Snaps have adequate spring tension to keep the snap in the closed position and work freely.

d. Equipment is stored in a clean, dry place.

e. Shovels, rakes, mowers, water hoses, and other equipment are clean, in good repair, and neatly stored.

9–6. Supplies

The commander should check to ensure the following:

a. A 30–day supply of dog food for each dog is available.

b. All food is stored in dry, rodent–proof containers.

c. Food is rotated to use the oldest first to avoid spoilage.

d. Dog food is MSD (see para 6–24), or food specifically procured by direction of the veterinarian for special dietary requirements.

e. First aid kits, disinfectant, and cleaning equipment are readily available, of the correct type, and in sufficient quantity.

f. Medicines, ointments, and other prescriptions are being used as prescribed.

Section IV
Appearance and Condition of Dogs

9–7. Appearance
The commander should check to ensure the following:

a. The dogs appear healthy and properly groomed.

b. Coats are shiny and free of mud, dirt, and burrs.

c. Eyes are clear. Discharge from the eyes may indicate an illness and the veterinarian should be aware if there is a problem.

9–8. Physical condition
The dog's physical condition may be evaluated by observing the dog negotiate the obedience course (unless the dog has been exempted by the veterinarian). The dog's alertness and aggressiveness in training and while performing operational duties are also keys to its physical condition.

Section V

9–9. Veterinary inspections
The provost marshal should check to ensure that periodic veterinary inspections are being conducted. Frequency should depend on the nature and severity of any health or sanitation problems; however, at a minimum, quarterly inspections are to be made. Any deficiencies noted by the veterinarian during his or her inspection should be corrected as quickly as possible. The commander's inspection should ensure that all corrective action taken is both appropriate and adequate to avoid any continuing health or sanitation problem.

9–10. Veterinary instructions
a. The veterinarian may provide instructions to handlers and the kennelmaster regarding the:

(1) Care of the dogs.

(2) Feeding of the dogs.

(3) Grooming of the dogs.

(4) Medication for the dogs.

(5) Physical conditioning of the dogs.

(6) Materials for sanitation and for extermination of pests.

b. The provost marshal's inspection should verify that:

(1) All materials, medications, and procedures prescribed by the veterinarian are present or being applied.

(2) Sanitation instructions applicable to the kennels, the food preparation area, feed pans, and water buckets are followed.

(3) Feeding records comply with instructions.

(4) Medications are administered in specific quantities and according to the prescribed schedule.

9–11. Veterinary support
The provost marshal's inspection should verify that the veterinarian is providing adequate guidance to each of the handlers regarding the health, care, and feeding of their dogs. The completeness of first aid kits, the availability of medical supplies, and the ease of access to veterinary assistance are all indicators as to whether guidance is adequate. Although all units may not have direct or immediate access to a veterinarian, this assistance should be reasonably available. (Interpretation of reasonable may depend on the distance to the nearest veterinarian.) Further, the veterinarian is responsible for providing some medical training (at least first aid) to handlers. Training should occur with reasonable regularity so that handlers are able to properly care for a dog that is sick or injured until the veterinarian can respond.

Section VI
Use and Training

9–12. Use
MWD team assets are of little value if they are not used. Qualified MP handlers can perform most MP missions better

when employed as a team with his or her assigned dog. Proper care requires good planning, proper scheduling, and coordination. The types of duties performed should be varied so that the team's proficiency is maintained in all areas, and to keep the dog from losing its alertness and aggressiveness. Planning, scheduling, and use are to be documented on training and utilization records. The handler should be knowledgeable about use of force principles and show reasonable ability to apply this knowledge in real situations. An MWD team's performance while on duty should be observed to ensure that the handler is able to control the dog, and that the dog responds appropriately in real situations.

9–13. Training

Training records should be closely examined to make sure they are kept current and that proficiency training is conducted with sufficient regularity to maintain the MWD team's proficiency. A minimum of 4 hours of patrol dog training is required each week for patrol dogs and a minimum of 4 hours of detection training is required for detector dogs each week. To be effective, training must be planned, it must be scheduled, and records should be present to verify appropriate planning and scheduling. Weaknesses which are noted during use and training should be specifically identified, and corrective training should be conducted to avoid their repetition. A lack of corrective training indicates an exceptional dog or a handler and kennelmaster who are not honestly maintaining their training records. Any MWD team that is not performing as well as the records indicate should be required to undergo appropriate proficiency evaluation or validation tests (chap 3).

9–14. Handler knowledge

Handlers should be able to demonstrate their knowledge of dog handling and knowledge appropriate to their MP skill level. Handler knowledge includes handling, acting as a decoy, controlled aggression, obedience, scouting or patrolling, tracking (if appropriate), detection, and full understanding how an MWD team is operationally employed so that the team's performance always supports the accomplishment of the MP mission.

9–15. Demonstration of proficiency

All MWD teams should be required to demonstrate their proficiency, in one or more of the skills appropriate for the type of dog, during some phase of the inspection. A spot check of proficiency verifies that the records are a reasonably accurate reflection of reality. Proficiency standards are provided in chapter 3.

Section VII
Training Aids Accountability

9–16. Narcotics training aids

Detailed instructions are provided in chapter 4 for the control, storage, security, and accountability of controlled substance training aids. The commander should spot check security and accountability records to be sure that records are being properly maintained, that monthly inventories and audits are being conducted as required, and that records completely account for a training aid disposal. At least some training aids should be weighed to verify that they are all still present. Disposition records should be checked to ensure that training aids destroyed were properly destroyed and witnessed. Any other disposition should also be properly documented.

9–17. Explosives training aids

Detailed instructions are provided in chapter 5 for the safe handling, transportation, control, security, storage, and accountability of explosives training aids. Inspections should verify that handlers who use explosives training aids are reasonably knowledgeable about the characteristics of each of the explosives and the requirements discussed in chapter 5. Vehicles used to transport explosives should have a current safety inspection, and vehicles should be checked to determine if there are any apparent safety hazards that may have arisen since the last safety inspection. Training should be observed to be sure that handlers maintain safe distances and properly handle explosives. No training aid should be "cut" to a size smaller than that required (for example, one stick of dynamite). Any personnel involved in training with explosives training aids must have received all appropriate explosives safety training, and this training must be documented. The handler may be questioned to confirm the extent of his or her knowledge.

Section VIII
Records

9–18. Administrative and medical records

The information on the front of the DD Form 1834 (Military Working Dog Service Record) is filled in at the 341st Military Working Dog Training Squadron when the animal is accepted into military service. The kennelmaster is responsible for the information on the back. This includes the handler's name, grade, social security number, date the dog was assigned to the handler, organization and installation. Verify that the information is correct. Medical records may be kept at the kennels or at the veterinarian's office at the discretion of the attending military veterinarian. Only veterinary personnel are allowed to make entries in the medical record. Administrative and medical records are sent to

the gaining installation when the MWD team or the dog is transferred. When a dog dies or undergoes euthanasia, administrative and medical records are sent to the 341st Military Working Dog Training Squadron. The only records kept on hand in the kennel are for dogs assigned to the unit or installation.

9–19. DA Form 2807–R

Training and utilization time should be entered daily in the appropriate blocks along with appropriate ratings. If a dog is rated as continuously satisfactory, conduct a proficiency evaluation (full or partial) to determine if these ratings are done according to proficiency standards. Determine what actions were or are being taken to correct unsatisfactory proficiency. The deficiency and corrective action may be noted on the back of the form. Entries may be typed or handwritten. This is a working document, so there can be handler or kennelmaster notations. The record should still be reasonably neat so that it can be determined how and when the dog is being trained and utilized. The feeding and weight section are maintained daily to record the type and quantity of food consumed by the dog. Any feeding problems should be discussed with the veterinarian. The dog's weight is entered semi–monthly, and reflects the dog's weight at approximately the same times each month. A significant change in weight should be reported to the veterinarian by the handler.

9–20. DA Form 3992–R

a. Detector dog training must be properly documented. Each line item must indicate the number of training aids planted, the number of training aids found, and the search time.

b. Actual searches are recorded on the back of DA Form 3992–R. All appropriate entries should be completed for each case, to include verification by field test, lab test, or EOD of the type of substance detected.

c. The monthly computation of proficiency is based on training aid plants and finds only. Be sure that sufficient training is being conducted for the computation to be statistically valid (50 or more trials per month). Spot check the computation to be sure that the rating is accurate, especially for detector dogs at or near the proficiency standard. Determine what actions are being taken to retrain detector dogs that have fallen below the proficiency standard. Looking at several month's proficiency ratings can also help identify trends so that proficiency training can be intensified when a dog appears to be on a steady downward trend.

9–21. Controlled substances training aids accountability folder

Check each accountability folder to make sure that a clear audit trail exists, and that all controlled substances are accounted for. Each folder should have a DEA Form 222 (or DA Form 4137) showing the type and amount of each controlled substance received, a DA Form 4608–R showing how the procurement was broken down into individual training aids, and DEA Form 41 (or other appropriate documentation) verifying proper disposition of any training aids no longer being used. Verify the most recent inventory of training aids by comparing control numbers and amounts to those recorded on DA Form 4608–R. Check DA Form 4608–R to ensure training aids are signed out and returned on the same day. Any deviations from the same day requirement must be authorized in writing. Training aids are to be signed out and signed back in when being turned in. Weight deviations must be explained in writing or investigated, as appropriate.

Appendix A
References

Section I
Required Publications

AR 190–11
Physical Security of Arms, Ammunition and Explosives. (Cited in paras 5–6, 5–7b, and 7–40b.)

AR 190–12
Military Police Working Dogs. (Cited in paras 1–1, 1–7, 1–14, 1–15, 1–18a, 1–19a, 1–22, 2–2a, 2–31c, 2–34b, 2–35a, 2–35e, 2–38, 2–39f, 3–35a, 5–7a, 7–29, 9–1a, and 9–1b.)

AR 190–45
1–13,Military Police Law Enforcement Reporting. (Cited in para 2–44.)

AR 190–51
Security of Army Property at Unit and Installation Level. (Cited in paras 4–6a, 7–37, 7–40b, B–5d, and B–8d.)

AR 310–49
The Army Authorization and Utilization Policies and Criteria, and Common Tables of Allowances. (Cited in para 1–14.)

AFR 70–12/AR 700–81/NAVINST 10570.1/MCO 20570.1
DoD Dog Program. (Cited in para 1–1.)

Section II
Related Publications

AR 40–1
Composition, Mission, and Functions of the Army Medical Department

AR 40–3
Medical, Dental, and Veterinary Care

AR 40–656
Veterinary Surveillance Inspection of Subsistence

AR 40–905
Veterinary Health Services

AR 55–355
Defense Traffic Management Regulation

AR 75–15
Responsibilities and Procedures for Explosive Ordnance Disposal

AR 190–14
Carrying of Firearms and Use of Force for Law Enforcement and Security Duties

AR 190–22
Searches, Seizures, and Disposition of Property

AR 190–40
Serious Incident Report

AR 210–10
Administration

AR 385–30
Safety Color Code Markings and Signs

AR 385–64
Ammunition and Explosives Safety Standards

AR 600–200
Army Command Policy

AR 611–201
Enlisted Career Management Fields and Military Occupational Specialties

AR 710–2
Supply Policy Below the Wholesale Level

AR 740–26
Physical Inventory Control

DA Pam 710–2–1
Using Unit Supply System (Manual Procedures)

FM 5–25
Explosives and Demolitions

FM 19–10
The Military Police Law and Order Operations

FM 19–15
Civil Disturbances

FM 19–30
Physical Security

FM 19–35
Military Police Working Dogs

DOD 4270.1–M
Construction Criteria Manual

DODD 3025.12
Employment of Military Resources in the Event of Civil Disturbances

DODD 5200.31
Single Manager for DoD Working Dog Program

DODD 6015.5
Joint Use of Military Health and Medical Facilities and Services

TC 19–5
Bomb Threats

TM 5–302
Army Facilities Components System: Design

TM 5–303
Army Facilities Components System – Logistic Data and Bills of Materiel

TM 5–809–1
Load Assumption for Buildings

TM 5–809–2
Concrete Structural Design for Buildings

TM 5–809–3
Masonry Structural Design for Buildings

TM 5–809–4
Steel and Aluminum Structural Design for Buildings

TM 5–809–5
Wood Structural Design for Buildings

TM 5–809–6
Structural Design: Structures Other than Buildings

TM 5–809–8
Metal Roofing and Sliding

TM 5–809–9
Structural Design for Thin–Shell Roof Construction

TM 5–809–10
Seismic Design for Buildings

TM 5–809–11
Design Criteria for Facilities in Areas Subject to Typhoons and Hurricanes

TM 9–1300–206
Ammunition and Explosives Standards

Section III
Prescribed Forms

This section contains no entries.

Section IV
Referenced Forms

Exact duplicates of any DA or DD forms generated by the automated Military Police Management Information System may be used in place of the official printed version of the form.

Forms that have been designated “approved for electronic generation (EG)” must replicate exactly the content (wording), format (layout), and sequence (arrangement) of the official printed form. The form number of the electronically generated form will be shown as –R–E and the date will be the same as the date of the current edition of the printed form.

DA Form 581
Request for Issue and Turn–in of Ammunition

DA Form 2028
Recommended Changes to Publications and Blank Forms

DA Form 2807–R (approved for EG)
Military Working Dog Training and Utilization Record

DA Form 3655
Crime Lab Examination

DA Form 3975
Military Police Report

DA Form 3992–R (approved for EG)
Narcotics or Explosives Detector Dog Training and Utilization Record

DA Form 4137
Evidence/Property Custody Document

DA Form 4607–R (approved for EG)
Controlled Substance Training Aid Utilization Record

DA Form 4608–R (approved for EG)
Controlled Substances Accountability Record

DA Form 4610–R
Equipment Changes in MTOE/TDA

DD Form 1834
Military Working Dog Service Record

DEA Form 41
Registrant's Inventory of Drugs Surrendered

DEA Form 106
Report of Theft or Loss of Controlled Substances

DEA Form 222
DEA Official Order Form for Schedule I and II Controlled Substances

DEA Form 223
Controlled Substances Registration Certificate

DEA Form 225
New Application for Registration Under Controlled Substances Act of 1970

DEA Form 225a
Renewal Application for Registration

SF 702
Security Container Checklist

Appendix B
Military Working Dog Authorizations

Section I
General

B–1. Scope
The intent of this appendix is to furnish information that may be useful in planning an MWD program or adding MWD teams to an existing program. The guidelines and yard sticks contained in this appendix are not meant to be "absolutes" for utilizations, training, or maintenance. The following paragraphs do, however, give general guidance and information that should be considered when planning a program. Sections II to V contain performance standards that may be useful in determining the number and type of MWD teams needed. The user of this pamphlet will find all of the following information useful for writing authorization documentation statements, as well as for planning the local MWD program.

B–2. Authorizations
All initial authorizations should be probationary and the following will apply:

a. Adjustment to be made based on actual utilization data.

b. Baseline of 30 hours utilization to 4 hours training ratio (with trade–off when appropriate).

c. Automatic review by respective MACOM after two years.

B–3. Clarification of specific terms

a. Utilization includes all missions (law enforcement, security, and combat support), whether patrolling, detecting drugs or explosives, or other functions (in combination) performed when handler and dog are being employed together as a team.

b. Training includes all training activities to maintain, improve, regain, or develop dog skills such as patrolling, scouting, tracking, detection of persons, detection of drugs or explosives.

c. Maintenance includes all activities related to care, grooming, health, and sanitation of the dog, including medical treatment, recuperative time, sickness, and so forth. Down time for medical reasons is the basis for under utilization or under training.

d. Trade–off is the adjustment between training and utilization necessary to reinforce basic skills or to add new skills. For example, 4 hours per week may be adequate to maintain detector dog proficiency or to train in new skills. Additional training may be justified at times and training hours increased accordingly. This increase in training time should be accompanied by an equivalent reduction in utilization time. However, training hours should not be increased merely as a substitute for lack of utilization.

Section II
Patrol Dog Yardsticks–—Peacetime (Law Enforcement/Security)

B–4.

The start point for patrol dog posts (motorized or walking) is as follows:

a. One per 30 hours of anticipated utilization.

b. A multiplier of 1.2 (add–on).

B–5.

Factors influencing commitment or justification rationale include:

a. Installation population (military, civilian, dependent and contractor).

b. Geographic area served (square miles).

c. Crime rates or rates of incidents on which presence of dog teams could reasonably be expected to have impact (for example, parking lot larcenies, vandalism, prowlers, house break–ins, schools/commercial activity break–ins, rapes/assaults in areas used as short cuts, IDS responses).

d. Risk assessment (using AR 190–51) which takes into account:

(1) Types of activities and resources on the installation needing protection and the value of same (monetary and intrinsic).

(2) The vulnerability of resources.

(3) The effect of loss of resources on the Army's wartime capability.

e. Type of installation access control (for example, closed, open, time–controlled).

f. Crime rates in the local area.

B–6.

Amending the local TDA/TOE for "peacetime" by adding appropriate dog handler ASIs to the existing structure is the easiest way to start (or add to) a MWD program. A"plus–up" of TDA/TOE is the most difficult way to begin a program and should be the last resort.

Section III
Narcotic Detector Yardsticks in Peacetime (Law Enforcement/Security)

B–7.

Considerations listed in section II still apply, with additional considerations outlined below because of the additional skill of narcotics detection having been added. The start point for additional consideration in justifying narcotic detector dog teams may be any combination of the following:

a. One authorization per 5000 population supported.

b. One per 30 hours projected detector utilization.

c. A multiplier of 1.2 (add–on).

B–8.

Factors for consideration which influence commitment or justification rationale include:

a. Installation population composition (military, dependent, civilian, median age, and so forth).

b. Crime rates associated with drug abuse; use/possession/sale/trafficking (general measure is one dog team per 100 use/possession cases annually).

c. Level of self–admitted drug use based on survey data.

d. Risk assessment based on AR 190–51 that considers the availability of narcotics (by type), cost, and geographic proximity to drug trafficking centers.

Section IV
Explosives Detector Yardsticks in Peacetime (Law Enforcement/Security)

B–9.

Considerations listed in section II still apply, with additional considerations outlined below because of the additional skill of explosives detection having been added.

a. The start point for additional considerations in justifying explosives detector dog teams is as follows:

(1) One authorization per 10,000 population supported.

(2) A multiplier of 1.2 (add–on).

b. Factors for consideration which influence commitment or justification rationale include:

(1) Number of bomb threats annually.

(2) Number of actual bombs/explosive devices found, and number of actual explosions.

(3) Risk assessment on the following:

(a) Resources needing protection and their value.

(b) The vulnerability of resources.

(c) The impact of the loss of a resource on the Army's wartime capability.

(d) Threat posed (geography, political significance, and so forth).

(e) The probability of overt/covert attack using explosives.

(4) Demographics; for example, Bureau of Alcohol, Tobacco and Firearms (BATF) survey of explosives incidents and the area being identified as a problem area.

(5) Lack of availability or lengthy response time of explosive dogs from other Federal/State agencies in the area (for example, Federal Aviation Administration (FAA), local police, and so forth).

Section V
Patrol, Narcotic Detector, Explosives Detector Yardsticks or Considerations for Wartime Combat Support Role

B–10.

Basic patrol dog utilization in combat is contained in paras 2–26 through 2–30. In addition, consideration must be given to:

a. Operation plans (OPLANs) being supported which may further justify dogs.

b. Size, mission, and type of combat (or combat support, combat service support) organizations(s) being supported.

c. Mission of unit(s) being supported.

B–11.

An additional wartime consideration for patrol dogs dual trained as narcotic detectors would be whether or not OPLANs being supported required deployment to the Middle East or Far East. The narcotics detection capability can be used during deployments to either location. This capability may also prove useful around ports of embarkation/ debarkation, especially at sea ports.

B–12.

Additional wartime consideration for patrol dogs dual trained as explosives detectors can be found in any OPLAN being supported. Justification can be found in any of the following areas (not meant to be all inclusive):

a. Terrorism threat.

b. Insurgent threat (that is, during refugee control operations, insurgents may be detected by the hidden ordnance they may be carrying).

c. Key facility security (that is, initial clearance and maintaining that clearance and security on a key bridge on a main supply route (MSR)).

d. Detection of unexploded ordnance.

Glossary

This is the consolidated glossary for the Physical Security Handbook.

Section I
Abbreviations

AA&E
arms, ammunition, and explosives

AC
Active Component

ACSI
Assistant Chief of Staff for Intelligence

ADP
automatic data processing

AE
ammunition and explosives

AFB
Air Force Base

AFH
Army family housing

AFI
annual formal inspection

AFSPA
Air Force Security Police Agency

AG
Adjutant General

AGS
Armed Guard Surveillance

AIF
Army Industrial Funds

AMC
U.S. Army Material Command

AMDF
Army Master Data File

AP
acquisition plan

APSEAG
Army Physical Security Equipment Action Group

AR
Army regulation

ARDEC
U.S. Army Armament Research, Development and Engineering Center

ARNG
Army National Guard

ARSTAF
Army Staff

ASA (IL&E)
Assistant Secretary of the Army (Installations, Logistics, and Environment)

ASA (RDA)
Assistant Secretary of the Army (Research, Development, and Acquisition)

ASI
additional skill identifier

ASI H3
ASI for physical security inspector

ASI P7
ASI for patrol/narcotics or contraband detector dog handler

ASI Z6
ASI for patrol/explosives detector dog handler

ASL
authorized stockage list

ASP
ammunition supply point

AT
antiterrorism

ATC
Air Training Command

ATCOM
U.S. Army Aviation and Troop Command

BASOPS
base operations

BATF
Bureau of Alcohol, Tobacco, and Firearms

BCU
battery coolant unit

BRDEC
Belvior Research & Development Engineering Center

CB
close boundary

CBT/T
combatting terrorism

CCI
controlled cryptographic items

CCP
circulation control point

CCTV
closed circuit television

CDR
commander

CE
U.S. Army Corps of Engineers

CECOM
U.S. Army Communications-Electronics Command

C-E
communications-electronics

CFM
cubic feet per minute

CG
commanding general

CL
carload

CMP
Civilian Marksmanship Program

COA
Comptroller of the Army

COCO
contractor-owned, contractor-operated

COE
Chief of Engineers

COFC
container-on-flatcar

COMDT
commandant

COMSEC
communications security

CONEX
container express

CONUS
continental United States

CONUSA
the numbered armies in the Continental United States

CPA
Chief of Public Affairs

CPCO
Central Port Call Office

CPR
civilian personnel regulation

CQ
charge of quarters

CRC
U.S. Army Crime Records Center

CSS
Constant Surveillance Service

CT
counterterrorism

CUCV
commercial utility and cargo vehicle

DA
Department of the Army

DAPSRB
Department of the Army Physical Security Review Board

DCSINT
Deputy Chief of Staff for Intelligence

DCSLOG
Deputy Chief of Staff for Logistics

DCSOPS
Deputy Chief of Staff for Operations

DCSPER
Deputy Chief of Staff for Personnel

DDPS
Dual Driver Protective Service

DEA
Drug Enforcement Administration

DEFCON
defense readiness condition

DEH
Director of Engineering and Housing

DLA
Defense Logistics Agency

DNA
Defense Nuclear Agency

DOD
Department of Defense

DODD
Department of Defense directive

DOL
Director of Logistics

DPDO
Defense Property Disposal Office

DRMO
Defense Reutilization Marketing Offices

DTS
Defense Transportation System

DUSD(P)
Deputy Under Secretary of Defense for Policy

EDD
explosives detector dog

ENTNAC
Entrance National Agency Check

EOC
Emergency Operations Center

EOD
explosive ordnance disposal

FAA
Federal Aviation Administration

FBI
Federal Bureau of Investigation

FISO
Force Integration Staff Officer

FM
field manual

FMS
foreign military sales

FOA
field operating agency

FOB
free on board

FSC
Federal supply classification

FY
fiscal year

GBL
Government bill of lading

GOCO
Government-owned, contractor-operated

GOGO
Government-owned, Government-operated

GS
greater security

GSA
General Services Administration

GT
general technical aptitude area

GTR
Government transportation request

HQDA
Headquarters, Department of the Army

HQMC
Headquarters, United States Marine Corps

HSP
high security padlock

HUMINT
human intelligence

ID
identification

IDS
intrusion detection system

IED
improvised explosive device

IES
Illuminating Engineering Society

ILS
integrated logistic support

INSCOM
U.S. Army Intelligence and Security Command

ITO
installation transportation office(r)

JCS
Joint Chiefs of Staff

JMSNS
Justification for Major System New Start

JROTC
Junior Reserve Officers' Training Corps

JRWG
Joint Requirements Working Group

J-SIIDS
Joint-Service Interior Intrusion Detection System

JTAG
Joint Test Advisory Group

LAW
light antitank weapon

LCC
life cycle cost

LEA
law enforcement activity

LEC
law enforcement command

LIN
line item number

LOA
letter of agreement

LOI
Letter of Instruction

LR
letter requirement

LTC
lieutenant colonel

LTL
less than truckload

MAC
Military Airlift Command

MACOM
major Army command

MAJ
major

MATCU
military air traffic coordinating unit

MCA
major construction, Army

MEDCEN
U.S. Army Medical Center

MEDDAC
medical department activity

MEVA
mission essential or vulnerable area

MHE
materials handling equipment

MI
military intelligence

MILPO
military personnel office

MILSPEC
military specification

MILSTRIP
military standard requisitioning and issue procedures

MILVAN
military-owned demountable container

MIPR
military interdepartmental purchase request

MOS
military occupational specialty

MP
military police

MPA
military personnel, Army

MPI
Military Police Investigator

MSC
major subordinate command; Military Sealift Command

MSD
maximum stress diet

MSR
main supply route

MTOE/TDA
modified table of organization and equipment/table of distribution and allowances

MTMC
Military Traffic Management Command

MTX
Military Traffic Expediting Service

MUSAREC
major U.S. Army Reserve command

MWD
military working dog

NAF
non-appropriated fund

NATO
North Atlantic Treaty Organization

NBC
nuclear, biological, and chemical

NBS
National Bureau of Standards

NCDD
narcotics/contraband detector dog

NCEL
Naval Civil Engineering Laboratory

NCIC
National Crime Information Center

NCO
noncommissioned officer

NCOIC
noncommissioned officer in charge

NDA
National Defense Area

NDI
nondevelopmental item

NGR
National Guard regulation

NIS
Naval Investigative Service

NSN
national stock number

OACSI
Office of the Assistant Chief of Staff for Intelligence

OCE
Office of the Chief of Engineers

OCIE
organizational clothing and individual equipment

OCONUS
outside continental United States

OCPA
Office of the Chief of Public Affairs

ODCSLOG
Office of the Deputy Chief of Staff for Logistics

ODCSOPS
Office of the Deputy Chief of Staff for Operations

ODCSPER
Office of the Deputy Chief of Staff for Personnel

ODUSDP
Office of the Deputy Under Secretary of Defense for Policy

OJT
on-the-job training

OMA
Operation and Maintenance, Army

OMAR
Operation and Maintenance, Army Reserve

OPA
Other Procurement, Army

OPLAN
operation plan

OPM
Office of Personnel Management

OPSEC
operations security

OSD
Office of the Secretary of Defense

pam
pamphlet

PAO
public affairs officer

PAP
personnel assistance point

PARR
Program Analysis Resource Review

PCP
phencyclidine

PCS
permanent change of station

PDIP
Program Development Increment Package

PECIP
Productivity Enhancing Capitol Investment Program

PERSCOM
U.S. Total Army Personnel Command

PIF
productivity investment funding

PM
product manager; program manager; project manager; provost marshal

POC
point of contact

POD
port of debarkation

POE
port of embarkation

POL
petroleum, oils, and lubricants

POV
privately-owned vehicle

PPBES
Planning, Programming, Budgeting, and Execution System

PS
physical security

psi
pounds per square inch

PSC
physical security councils

PSE
physical security equipment

PSEAG
Physical Security Equipment Action Group

PSI
physical security inspector

PSS
Protective Security Service

PT
physical training

QPL
qualified products list

QRIP
Quick Return on Investment Program

RAM
reliability, availability, and maintainability

RAM-D
reliability, availability, maintainability, and durability

RC
Reserve component

RCS
reports control symbol

RDA
research, development, and acquisition

RDT&E
research, development, test, and evaluation

RDX
research department explosive

RESHIP
report of shipment

RF
radio frequency, response forces

RFP
request for proposal

ROC
required operational capability

ROTC
Reserve Officers' Training Corps

RSS
Rail Surveillance System

SCIF
sensitive compartmented information facilities

SECDEF
Secretary of Defense

SF
standard form

SFC
sergeant first class

SGA
standards of grade authorization

SJA
Staff Judge Advocate

SIR
serious incident report

SOFA
Status of Forces Agreement

SOP
standing operating procedure

SQT
skills qualification test

SRT
special reaction team

SSG
staff sergeant

SSN
social security number

SSS
Signature Security Service

SSSC
self-service supply center

TAADS
The Army Authorization Documents System

TAG
The Adjutant General

TASA
television audio support activity

TASC
training and audiovisual support center

TB
technical bulletin

TC
training circular

TCE
Technical Center of Expertise

TCP
traffic control point

TDA
tables of distribution and allowances

TDP
technical data package

TDY
temporary duty

THC
tetrahydrocannabinol

THREATCON
terrorist threat condition

TISA
Troop Issue Subsistence Activity

tl
truckload

TM
technical manual

TMDE
test, measurement, and diagnostic equipment

TMF
threat management force

TNT
trinitrotoluene

TOFC
trailer-on-flatcar

TOVEX
water gel (explosive)

TRADOC
U.S. Army Training and Doctrine Command

TSG
The Surgeon General

TSRWG
Tri-Service Requirements Working Group

TTS
technical training squadron

TTG
technical training group

TTW
technical training wing

UCMJ
Uniform Code of Military Justice

UL
Underwriter Laboratories

USACE
U.S. Army Corps of Engineering

USACIDC
United States Army Criminal Investigation Command

USAF
United States Air Force

USAISC
U.S. Army Information Systems Command

USAMPS
U.S. Army Military Police School

USAR
U.S. Army Reserve

USAREUR
U.S. Army, Europe, and Seventh Army

USC
United States Code

USMA
United States Military Academy

USS
United States standard

WSM-PSE
Weapons Systems Manager-Physical Security Equipment

WSN
weapon serial number

WTCA
Water Terminal Clearance Authority

Section II
Terms

Access (when pertaining to a restricted area or CCI)
Personnel movement within a restricted area that allows the chance for visual observation of, or physical proximity to, either classified or protected materiel. It is also the ability and opportunity to obtain detailed knowledge of CCI through uncontrolled physical possession. External viewing or escorted proximity to CCI does not constitute access.

Aggressor
Any person seeking to compromise an asset. Aggressor categories include criminals, terrorists and protestors.

Ammunition
A device charged with explosives, propellants, pyrotechnics, initiating composition, riot control agents, chemical herbicides, smoke and flame, for use in connection with defense or offense, including demolition. Excluded from this definition are devices charged with chemical agents defined in JCS Pub. 1 and nuclear or biological materiel. Ammunition includes cartridges, projectiles, including missile rounds, grenades, mines, and pyrotechnics together with bullets, shot and their necessary primers, propellants, fuses, and detonators individually or having a unit of issue, container, or package weight of 100 pounds or less. Blank, inert training ammunition and caliber .22 ammunition are excluded.

Antiterrorism
Defensive measure used to reduce the vulnerability of individuals and property to terrorist acts, to include limited response and containment by military forces.

Armed Guard Surveillance
A service that provides armed guards to maintain constant and specific surveillance of shipments for which the service is requested. “Armed” is defined as having a firearm and appropriate ammunition readily available for immediate use. (DOD 5100.76–M)

Arms
A weapon included in AR 190–11, appendix A, that will or is designated to expel a projectile or flame by the action of the explosive, and the frame or receiver of any such weapon.

Asset
Any resource requiring protection.

Aviation Facility
A department of the Army activity or area collocated with facilities for the takeoff and landing of aircraft. The facility has the mission of command and control of administrative, operational, training, and/or logistical support of Army aviation.

Badge
A security credential that is worn on the possessor's outer garment and validates (his or her) authority for access to a restricted area.

Bulk Storage
Storage in a facility above the using or dispensing level specifically applicable to logistics warehouse and depot stocks. This applies to activities using controlled medical substances and items (such as pharmacies, wards, or clinics) only when a separate facility (building or room) is used to store quantities that exceed normal operating stocks.

Cable Seal Lock
A seal in which the cable is passed through the locking hardware of a truck trailer or railcar door and the bullet nose is inserted into the barrel and the end of the cable until securely anchored. Once locked any force exerted to separate the lockpoint from the lockbody will strengthen its connection. (DOD 5100.76–M)

Carrier Custodian
An employee who has been assigned responsibility for controlled shipments containing SECRET material by the carrier and who has been issued a personnel security clearance by the Government. (DOD 5100.76–M)

Certification
The process whereby a patrol or detector dog's and handler's proficiency is verified to be in compliance with minimum training standards.

Chains
Chains used to secure racks or containers will be of heavy-duty, hardened steel chain, welded, straight-link steel. The steel will be galvanized of at least 5/16-inch thickness or of equal resistance required to force, to cut, or break an approved low security padlock. An example of such a chain is Type 1, Grade C, Class 4 NSN 4010–0–149–5583, NSN 4010–00–149–5575, or NSN 4010–00–171–4427.

Closed Circuit Television
Television that serves a number of different functions, one of which is physical security. As it pertains to the field of physical security, CCTV is used to augment, not replace, existing intrusion detection systems (IDS) or security patrols. It is not used as a primary sensor, but rather as a means of assessing alarms. CCTV also may be used as a surveillance means, but if used in this way, it will augment, not replace, existing IDS.

Closed post
An army installation or activity to which ground and water access is controlled at all times by perimeter barriers with limited, manned entry control points.

Closed vehicle or equipment
A conveyance that is fully enclosed with permanent sides and a permanent top, with installed doors that can be locked and sealed. (DOD 5100.76–M)

Combatting Terrorism
Actions, including AT and CT, taken to oppose terrorism throughout the entire threat spectrum.

Commercial-type vehicle
A vehicle designed to meet civilian requirements, and used without major modifications, for routine purposes in connection with the transportation of supplies, personnel, or equipment.

Constant Surveillance Service
A service that is an integral part of the provisions of 49 CFR 397 (reference (b)) that a carrier must apply when transporting hazardous or Class A and B explosive materials. It provides constant surveillance over a shipment. The transporting conveyance containing the shipment must be attended at all times by a qualified representative of the carrier. A motor vehicle is "attended" when the person in charge of the vehicle is awake and not in a sleeper berth and

is within 100 feet of the vehicle, provided the vehicle is within the person's obstructed field of vision. The qualified representative "attending" the vehicle must:

a. Be aware of the nature of the material contained in the vehicle.
b. Have been instructed on procedures to follow in case of emergency.
c. Be authorized to move the vehicle and have the means and capability to do so.

Note. CSS does not include a signature and tally service as provided under Signature Security Service (SSS). (DOD 5100.76–M)

Container Express
A reusable container for shipment of troop support cargo, quasi-military cargo, household goods, and personal baggage.

Containerization
A box or other device in which a number of packages are stored, protected, and handled as a unit in transit; for example, CONEX, MILVAN, and SEAVAN. This term also refers to the shipping system based on large cargo-carrying containers that can be easily interchanged between trucks, trains, and ships, without rehandling of contents. (DOD 5100.76–M)

Container on a flat car
A large box-like demountable body without undercarriage used to transport cargo that is mounted on a railroad flat car. (DOD 5100.76–M)

Constant Surveillance
Observing or protecting a storage facility containing AA&E by a human, intrusion detection system, closed circuit television, or combination, to prevent unobserved access, or make known any unauthorized access to the protected facility.

Continuous Surveillance
Constant unobstructed observance of items or an area to prevent unauthorized access. Continuous surveillance may be maintained by dedicated guards, other on-duty personnel, or intrusion detection systems and those enhanced by closed-circuit television.

Controlled Area
See restricted area.

Controlled cryptographic item
A secure telecommunications or information handling equipment ancillary device, or associated cryptographic component, which is unclassified but is controlled.

Controlled medical substance
A drug or other substance, or its immediate precursor, listed in current schedules of 21 USC 812 in medical facilities for the purpose of military treatment, therapy, or research. Categories listed in this section are narcotics, amphetamines, barbiturates, and hallucinogens.

Counterterrorism
Offensive measures taken to prevent, deter, and respond to terrorism.

Crime analysis
The process used to determine the essential features of a criminal act. It is a mandatory part of any crime prevention program.

Crime prevention
The anticipation, recognition, and appraisal of a crime risk, and initiation of some action to remove or reduce it. Crime prevention is a direct crime control method that applies to before-the-fact efforts to reduce criminal opportunity, protect potential human victims, and prevent property loss.

Crime prevention inspection
An on-site evaluation of the crime prevention program of a unit, section, office, or other facility.

Crime risk management
The development of systematic approaches to reduce crime risks.

Crisis management team
A team found at a major command or installation level. A crisis management team is concerned with plan, procedures, techniques, policies, and controls for dealing with terrorism, special threats, or other major disruptions occurring on Government installations and facilities. A crisis management team considers all aspects of the incident and establishes contact with the AOC.

Critical communications facility
A communications facility that is essential to the continuity of operations of the National Command Authority during the initial phases of national emergencies, and other nodal points or elements designated as crucial to mission accomplishment.

Cryptographic component
The embodiment of a cryptographic logic in either hardware or firmware form, such as a modular assembly, a printed circuit board, a microcircuit, or any combination of these.

Cryptographic equipment
Any equipment employing a cryptographic logic.

Cryptographic logic
A deterministic logic by which information may be converted to an unintelligible form and reconverted to an intelligible form. Logic may take the form of engineering drawings, schematics, hardware, or firmware circuitry.

Day gate
Any barriers, used in a doorway or entrance to pharmacy or medically sensitive item storage areas, that prevents unauthorized personnel access during operating hours. Such barriers normally are not the sole protection afforded the entrance during nonoperating hours; however, during operating hours, the barrier ensures positive entry control by on-duty personnel (for example, electronic buzzer control entry to the area after positive identification by receptionist or on-duty personnel).

Dedicated guards
Individuals charged with performing the primary task of safeguarding designated facilities, material, and personnel within a defined area during a tour of duty. A dedicated guard may perform this function as a static post. He or she remains within or on the perimeter of a protected area and maintains continuous surveillance over that which is being protected during the tour of duty.

Defense Transportation System
Consists of military controlled terminal facilities, Military Airlift Command (MAC) controlled airlift, Military Sealift Command (MSC) controlled or arranged sealift, and Government controlled air or land transportation. (DOD 5100. 76–M)

Demilitarization
The act of destroying the offensive or defensive characteristics inherent in certain types of equipment and materiel. The term comprehends mutilation, scrapping, burning, or alteration designed so as to prevent the further use of such equipment and materiel for its originally intended military or lethal purpose.

Double-locked container
A steel container of not less than 26 gauge which is secured by an approved locking device and which encases an inner container that also is equipped with an approved locking device. Cabinet, medicine, combination with narcotic locker, NSN 6530–00–702–9240, or equivalent, meets requirements for a double-locked container.

Dromedary
A freight box carried on and securely fastened to the chassis of the tractor or on a flat-bed trailer. The dromedary is demountable by the use of a forklift truck, is protected by a plymetal shield, and is equipped with doors on each side that may be locked with seals or padlocks. All explosive items carried in the dromedary must be compatible and in compliance with 49 CFR 177 (ref (c)) or host nation regulations. (DOD 5100.76–M)

Dual Driver Protective Service
A service requiring SSS plus continuous attendance and surveillance of the shipment through the use of two drivers.
a. The vehicle containing the shipment must be attended at all times by one of the drivers. A vehicle is attended

when at least one of the drivers is in the cab of the vehicle, awake, and not in a sleeper berth or is within 10 feet of the vehicle.

b. SSS signature and tally requirements are not required between the same pair of drivers for a particular movement. (DOD 5100.76–M)

Duress alarm system
A method by which authorized personnel can covertly communicate a situation of duress to a security control center or to other personnel in a position to notify a security control center. (DOD 5100.76–M)

Duress or holdup alarms
Devices which allow personnel on duty to transmit a signal to the alarm monitoring station from which an armed response force can be dispatched if a holdup or a duress situation occurs.

Emergency Aircraft
An aircraft designated by the commander to respond to emergency situations and provide life-saving and property-saving services. Normally, such aircraft has special equipment and markings. Air Ambulances and firefighting aircraft are examples.

Emergency vehicle
A vehicle designated by the commander to respond to emergency situations and provide life-saving and property-saving services. Normally, the vehicle has special equipment and markings. Ambulances and firefighting and military or security police vehicles are examples.

Enclosed vehicle or equipment
A conveyance that is fully enclosed with permanent sides and permanent top, with installed doors that can be locked and sealed.

Entry control (when pertaining to a restricted area)
Security actions, procedures, equipment, and techniques, employed within restricted areas to ensure that persons who are present in the areas at any time have authority and official reason for being there.

Escorted personnel (when pertaining to a restricted area)
Those persons authorized access to a restricted areas who are escorted at all times by a designated person.

Escorts and couriers
Military members, U.S. civilian employees, or DOD contractor employees responsible for the continuous surveillance and control over movements of classified material. Individuals designated as escorts and couriers must possess a Government-issued security clearance at least equal to that of the material being transported.

Exception
An approved permanent exclusion from specific requirements of this regulation. Exceptions will be based on a case-by-case determination and involve unique circumstances which make conformance to security standards impossible or highly impractical. An exception can also be an approved permanent deviation from the provisions of this regulation. There are two types of exceptions:

a. Compensatory Measures Exception. This is a deviation in which the standards are not being met, but the DOD component (HQDA(DAMO–ODL–S) concerned determines it is appropriate, because of physical factors and operational requirements. Compensatory measures are normally required.

b. Equivalent Protection Exception. This is a deviation in which nonstandard conditions exist, but the totality of protection afforded is equivalent to or better than that provided under standard criteria.

Exclusion area
See restricted area.

Exclusive use
A conveyance unit or vehicle that is used only for a shipment from origin to destination without transfer of lading, and that permits locking of the unit and use of seals. (DOD 5100.76–M)

Explosives
Any chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to, individual land mines, demolition charges, blocks of explosives (dynamite,

trinitrotoluene (TNT), C–4, and other high explosives), and other explosives consisting of 10 pounds or more; for example, gunpowder or nitroguanidine.

Facility
Any single building, project, or site.

Force Protection
Security program developed to protect soldiers, civilian employees and family members, facilities and equipment, in all locations and situations. This is accomplished through the planned integration of combatting terrorism, physical security, operations security, protective services and law enforcement operations, all supported by foreign intelligence, counterintelligence and other security programs.

Greater security (GS)
A seal tracing and inspection rail service for unclassified sensitive cargo that includes a military traffic expending (MTX) service and provides:

a. Inspection of railcars at major terminals by railroad personnel for evidence of forced entry or tampering with seals or security devices.

b. Name of carrier reporting.

c. Time of inspection; that is, a.m. or p.m.

d. Actual arrival and actual departure time from inspection terminal. (DOD 5100.76–M)

Handler
A military police person or DOD civilian guard or police person who has been qualified by training and certification to care for, train, and employ a military working dog.

Handling
Controlled physical possession without access.

High risk personnel
Personnel who, by their grade, assignment, value, location, or specific threat, are more likely to be attractive or accessible terrorist targets.

Independent power source
A power source, normally battery, independent of any other source (DOD 5100.76–M)

Industrial and utility equipment
Equipment used in the manufacture or in support of the manufacture of goods and equipment used to support the operation of utilities such as power and water distribution and treatment.

In flight
The condition of an aircraft from the moment when all external doors are closed following embarkation until the moment when one such door is opened for disembarkation.

Installations
Such real properties as reserve centers, depots, arsenals, ammunition plants (both contractor- and Government-operated, hospitals, terminals, and other special mission facilities, as well as those used primarily by troops. (See also JCS Pub. 1)

Internal controls (when pertaining to a restricted area)
Security actions, procedures, and techniques employed within restricted areas to ensure persons who are present in these areas at any time have authority and official reason.

Intrusion detection system
The combination of electronic components, including sensors, control units, transmission lines, and monitoring units integrated to be capable of detecting one or more types of intrusion into the area protected by the system and reporting directly to an alarm monitoring station. The IDS will be an approved DOD standardized system, such as the Joint Service Interior Intrusion Detection System or MACOM-approved commercial equipment.

Justification for Major System New Start
A requirement document that the combat developer prepares with the material developer, training developer, manpower

and personnel planner, and logistician. A JMSNS is prepared to describe the mission need and justifies the acquisition of a major new system at program initiation in the acquisition cycle.

Kennel facilities

The buildings, the kennels, the runs, and the exercise and training areas which are used to house, care for, and train military working dogs.

Key and lock control system

A system of identifying both locks and their locations and personnel in possession of keys and/or combinations.

Keying

The process of establishing a sequence of random binary digits used to initially set up and periodically change permutations in cryptographic equipment for purpose of encrypting or decrypting electronic signals, for controlling transmission security processes, or for producing other keys.

King Tut block

A King Tut block is a specially designed large concrete block. It is placed in front of an igloo or magazine entrance with a fork lift. Access to the igloo or magazine therefore requires a fork lift to move the block. The King Tut block is of sufficient weight to prevent removal without a fork lift.

Letter of agreement

A document jointly prepared and signed by the combat and materiel developers when a potential materiel system need has been identified and it has been determined that one or more technological approaches may satisfy the need. Even though it may be in an early stage of development, the LOA will address the materiel system from the Total System Management standpoint. The LOA describes operational, technical, training, personnel, and logistical system unique events that must be undertaken to produce the total system.

Letter requirement

An abbreviated procedure for acquisition of low-unit cost, low-risk developmental, or commercial items. It will be used instead of the ROC when applicable. The total system definitive requirements for training, personnel, and logistics requirements are the same for the LR as for the ROC. The LR is jointly prepared by TRADOC and AMC.

Lightweight construction

Building construction other than reinforced concrete or masonry (concrete block or clay brick) such as wood or metal siding.

Limited access post

An Army installation or activity that meets one of the criteria below:

a. No permanent fences or other physical barriers exist, but entry can be temporarily closed to vehicular traffic and other movements using roads and other conventional points of entry.

b. Permanent perimeter barriers exist and access is controlled only after normal duty hours; for example, gates are secured or manned with guards after dark.

c. No permanent perimeter barriers exist, but vehicular traffic and other movements using roads and other conventional points of entry are continuously controlled.

Limited area

See restricted area.

Locked container

A container or room of substantial construction secured with an approved locking device. For pharmacy operating stocks, lockable automated counting systems meet requirements for a locked container.

Locking devices

a. Padlocks, military specifications MIL–P–43607 (High Security Padlock); shrouded shackle, NSN

5340–01–217–5068 or horizontal sliding bolt, NSN 5340–00–799–8248) or MIL–P–43951 (medium security padlock; regular shackle, NSN 5340–00–799–8016).

b. Padlocks, Commercial Item Description A–A–1927 (low security padlock) having a hardened steel shackle and body; NSN 5340–00–158–3807 (with chain), NSN 5340–00–158–3805 (without chain).

c. GSA-approved changeable three-position padlock, Federal Specification FF–P–110.

d. High security hasps. Military Specifications MIL–H–43905 or MIL–H–29181A.

e. Hasps and staples for low-security padlocks which are of heavy pattern steel, securely fastened to the structure with smooth-headed bolts, rivets, or welding to prevent removal.

Locks

Locks should be considered as delay devices only, not as positive bars to unauthorized entry, since any lock can be defeated by expert manipulation or force.

a. Padlocks

High security padlocks: Military Specification MIL–P–43607, shrouded shackle with clevis and chain, NSN 5340–01–217–5068 or NSN 5340–00–188–1560; horizontal sliding bolt with clevis and chain, NSN 5340–00–799–8248.

Medium security padlocks: Military Specification MIL–P–43951, open shackle with clevis and chain, NSN 5340–00–799–8016. Authorized for continued use to secure Categories III and IV AA&E only until stocks are depleted or replaced.

Low security padlocks: Commercial Item Description A–A–1927, hardened steel shackle and case, without chain: NSN 5340–00–158–3805; with chain: NSN 5340–00–158–3807.

(Any questions regarding the above specifications will be addressed to the DOD Lock Program Technical Manager, Naval Facilities Engineering Service Center, Code C66, 560 Center Drive, Port Hueneme, CA 93043–4328 (DSN 551–1567 or –1212).

b. Certain locks, such as high or medium security padlocks, provide excellent protection when used in conjunction with a high security hasp. Hasps installed for protection of AA&E will provide protection comparable to that given by the lock used. Determination of "comparable protection" will be addressed to the DOD Lock Program Technical Manager, Naval Civil Engineering Laboratory, Code L56, 560 Center Drive, Port Hueneme, CA 93043–4328 (DSN 551–1567 or –1212).

NAPEC high security shrouded hasp (MIL–H–29181A) is approved for use with the high security padlock to secure all categories of AA&E. The hasp has a cover that protects the lock from cutting or hammer tools and inclement weather. It should be used to secure Category I and II AA&E storage facilities. When replacement of a hasp on Category III, IV or uncategorized AA&E is necessary, this hasp should also be used. The Natick high security hasp (MIL–H–43905) is a high security hasp that also is approved for protection of Category III and IV AA&E when used with an approved high security padlock.

Hasp, pin-type, locking "T" is a hasp that was authorized previously to secure ammunition storage magazines. Magazines were secured using the installed locking bar in conjunction with a "T" pin and high security padlock. The locking "T" hasp does not provide adequate security for sensitive AA&E. It must be replaced with a high security hasp to enhance security. It will not be used to secure Category I and II ammunition storage facilities.

c. Another lock is the cable seal lock. Once locked, any force exerted to separate the lockpoint from the lockbody strengthens the connection. Such locks are not approved for use in securing storage facilities containing AA&E. The same restriction applies to d below.

d. A complementary device to locks is the No. 5 American Wire Gauge wire twist. This is a U-shaped wire place in the hasp along with the shackle and twisted tightly in place. Another device is a wire cable of a thickness equivalent to or larger than No. 5 wire. This is placed through the hasp, a metal sleeve slipped over it, and crimped into place.

e. Built-in combination locks, meeting Underwriters Laboratories Standard 768, Group 1 (NSN 5340–01–375–7593) are approved for use on GSA-approved Class 5 vault doors and GSA-approved Class 5 weapons containers storing unclassified material and unclassified AA&E.

LOGAIR

Long-term contract airlift service within the continental United States for the movement of cargo in support of the logistics system of the Military Services (primarily the Army and Air Force) and Defense Agencies. (DOD 5100.76–M)

Major disruption on installations

Acts. Threats, or attempts to commit such acts as kidnapping, extortion, bombings, hijackings, ambushing, major weapons thefts, arson, assassination, and hostage taking on a military installation. These acts that have potential for widespread publicity require special response, tactics, and management.

Medically sensitive items

Standard and nonstandard medical items designated by medical commanders to be sufficiently sensitive to warrant a

stringent degree of physical security and accountability in storage. Included within this definition are all items subject to misappropriation and/or misuse such as needles and syringes.

Military Traffic Expediting (MTX) Service
A service providing for movement from origin to destination in the shortest time possible for specifically identified rail shipments, and which is required for the shipment of firearms and other sensitive shipments. This service uses electrical communications between members of the Association of American Railroads, is available for either single line haul or jointline movements, and provides progress reports as required. (DOD 5100.76–M)

Military van (MILVAN)
Military-owned demountable container, conforming to U.S. and international standards, operated in a centrally controlled fleet for movement of military cargo. (DOD 5100.76–M)

Military working dog
Dogs required by the using DOD component for a specific purpose, mission, or combat capability. MWDs include patrol, patrol and narcotic/contraband, and patrol and explosive detector dogs.

Military working dog team
The MWD and its appropriately qualified, assigned handler.

Mission-critical personnel
Personnel who are essential to the operation of an organization of function.

Mission essential and vulnerable areas
Facilities or activities within the installation that, by virtue of their function, are evaluated by the commander as vital to the successful accomplishment of the installation's State National Guard, or MUSARC mission. This includes areas nonessential to the installation's/facility's operational mission but which, by nature of the activity, are considered vulnerable to theft, trespass, damage, or other criminal activity.

Motor pool
A group of motor vehicles used as needed by different organizations or individuals and parked in a common location when not in use. On an Army installation, a nontenant Army activity with 10 or less assigned commercial-type vehicles but no local organizational maintenance support does not have a motor pool, under this regulation, even though the vehicles are parked together.

Motor vehicle
A self-propelled, boosted, or towed conveyance used to transport a burden on land. This includes all Army wheeled and track vehicles, trailers, and semitrailers, but not railroad locomotives and rolling stock.

National Defense Area
An area set up on non-Federal lands located within the United States, its possessions or territories, to safeguard classified defense information or DOD equipment or materiel. Establishment of a National Defense Area temporarily places such non-Federal lands under the effective control of DOD and results only from an emergency event.

Negotiations
A dialogue between authorities and offenders which has as the ultimate goal for the safe release of hostages and the surrender of the offenders.

Note C controlled medical items
Sets, kits, and outfits containing one or more component Note Q or Note R items.

Note Q controlled medical items
All standard drug items identified as Note Q in the Federal Supply Catalog, Nonstandard Drug Enforcement Administration (DEA) Schedule III, IV, V Controlled Substances.

Note R controlled medical items
All items identified as Note R in the Federal Supply Catalog, Nonstandard DEA Schedule II Controlled Substances.

One dog-one handler
The concept that each MWD will have only one handler. Personnel shortages may necessitate assigning a handler responsibility for more than one dog. However, two or more handlers cannot handle the same dog.

Open post
Installations or activities that do not qualify as closed or limited access posts. Access to the installation or activity is not controlled during or after normal duty hours.

Perimeter fence
Fences for the security of unclassified, non-sensitive items that meet the requirements of U.S. Army Corps of Engineers Drawing Code STD 872–90–00 Series. The minimum height will be 6 feet. Use of NATO Standard Design Fencing is also authorized.

Perimeter wall
Any wall over 6 feet tall which delineates a boundary and serves as a barrier to personnel and/or vehicles. These walls may be constructed of reinforced concrete, masonry, or stone.

Physical protective measures
Physical security measures used to counter risk factors that usually do not change over a period of time such as mission impact, cost, volume, and criticality of resources and vulnerabilities. The measures are usually permanent and involve expenditure of funds.

Physical security
That part of the Army security system, based on threat analysis, concerned with procedures and physical measures designed to safeguard personnel, property, and operations; to prevent unauthorized access to equipment, facilities, materiel, and information; and to protect against espionage, terrorism, sabotage, damage, misuse, and theft. Operations security (OPSEC) and security targeted against traditional criminal activity are included.

a. Physical security procedures include, but are not limited to, the application of physical measures to reduce vulnerability to the threat; integration of physical security into contingency, mobilization, and wartime plans; the testing of physical security procedures and measures during the exercise of these plans; the interface of installation OPSEC, crime prevention and physical security programs to protect against the traditional criminal; training of guards at sensitive or other storage sites in tactical defense against and response to attempted penetrations; and creating physical security awareness.

b. Physical security measures are physical systems, devices, personnel, animals, and procedures employed to protect security interests from possible threats and include, but are not limited to, security guards; military working dogs; lights and physical barriers; explosives and bomb detection equipment; protective vests and similar equipment; badging systems; electronic entry control systems and access control devices; security containers; locking devices; electronic intrusion detection systems; standardized command, control, and display subsystems; radio frequency data links used for physical security; security lighting; delay devices; artificial intelligence (robotics); and assessment and/or surveillance systems to include closed-circuit television. Depending on the circumstances of the particular situation, security specialists may have an interest in other items of equipment such as armored sedans.

Physical security equipment
A generic term for any item, device, or system that is used primarily to protect Government property, including nuclear, chemical, and other munitions, personnel, and installations, and to safeguard national security information and material, including the destruction of such information and material both by routine means and by emergency destruct measures.

a. Interior physical security equipment. Physical security equipment used internal to a structure to make that structure a secure area. Within DOD, DA is the proponent for those functions associated with development of interior physical security systems.

b. Exterior physical security equipment. Physical security equipment used external to a structure to make the structure a secure area. Within DOD, the Department of the Air Force is the proponent for those functions associated with the development of external physical security systems; however, the Army will develop lights, barriers, and robotics.

c. Intrusion detection system. See previous definition.

Physical security inspection
A formal, recorded assessment of physical procedures and measures implemented by a unit or activity to protect its assets.

Physical security measures
See physical security.

Physical security plan
A comprehensive written plan providing proper and economical use of personnel, land, and equipment to prevent or minimize loss or damage from theft, misuse, espionage, sabotage, and other criminal or disruptive activities.

Physical security procedures
See physical security.

Physical security program
The interrelationship of various components that complement each other to produce a comprehensive approach to security matters. These components include, as a minimum, the physical security plan; physical security inspections and surveys; participation in combatting terrorism committees and fusion cells; and a continuing assessment of the installation's physical security posture.

Physical security resource plan
Plan developed by the physical security officer that identifies physical security needs, and shows proposed programmed procurement of those needs.

Physical security survey
A formal, recorded assessment of the installation physical security program.

Physical security system architecture
A system ensuring that IDS components designed by the various services are compatible when used together. The Air Force is responsible for systems architecture.

Pier service
Ocean carrier booking is restricted over ocean movement from port of embarkation (POE) to port of debarkation (POD). It precludes prearranged-through-booking employing surface transportation to inland destinations. (DOD 5100. 76–M)

Pilferable assets
Any asset which can be stolen and which does not fall under the other asset categories discussed in this publication.

Pilferage-coded items
Items with a code indicating that the material has a ready resale value or civilian application and, therefore, is especially subject to theft.

Portable
Capable of being carried in the hand or on the person. As a general rule, a single item weighing less than 100 pounds (45.34 kilograms) is considered portable.

Primary electrical power source
That source of power, either external (commercial) or internal, that provides power to site facilities on a daily basis. (DOD 5100.76–M)

Protection in depth
A system providing several supplementary security barriers. For example, a perimeter fence, a secure building, a vault, and a locked container provide four layers of protection. (DOD 5100.76–M)

Protective layer
Any envelope of building components which surrounds an asset and delays or prevents aggressor movement toward the asset or which shields the asset from weapons and explosives effects.

Protective Security Service
A service to protect shipments. PSS involves a transporting carrier that must be a "cleared carrier" under provisions of DOD 5220.22–R, paragraph 1–702.a (ref (d)). A shipment must be under the constant surveillance of designated carrier employees, unless it is stored in containers or an area approved by the cognizant Defense Investigative Service regional

office. The designated carrier employees providing constant surveillance when PSS is required must possess a Government-issued SECRET clearance and a carrier-issued identification. (DOD 5100.76–M)

QUICKTRANS
Long-term contract airlift service within the continental United States (CONUS) for the movement of cargo in support of the logistic system for the Military Services (primarily the Navy and Marine Corps) and Defense agencies. (DOD 5100.76–M)

Rail Surveillance Service
An inspection service of rail shipments. An inspection is made within one hour after each stop, if the trailer containing a shipment remains at a halt. Reinspection is made a minimum of once each hour, as long as the railcar containing the shipment remains at a halt. (DOD 5100.76–M)

Report of Shipment
An advanced report furnished by message or telephone immediately upon dispatch of a shipment within CONUS for domestic shipments. A report goes to both Water Terminal Clearance Authority (WTCA) and the water port transshipping facility for surface export shipments, or to the Military Air Traffic Coordinating Officer (MATCO) for air export shipments. The advance notice of shipments shall include the following applicable data:

a. For domestic shipments, see AR 55–355/NAVSUPINST 4600.70/AFM 75–2/MCO P4600.14A/DLAR 4500.3, Routing Instruction Note (RIN) 146, Appendix L (reference (e)).

b. For export shipments, see chapter 4, DOD 4500.32–R (reference (f)). (DOD 5100.76–M)

Required operational capability
A requirements document that the combat developer prepares with input from the training developer in coordination with the material developer, logistician, and manpower and personnel planner. The ROC is a concise statement of the minimum essential operational, RAM, technical, personnel and manpower, training, safety, health, human factors engineering, logistical, and cost information to start full scale development or procurement of a material system.

Restricted area
Any area to which entry is subject to special restrictions or control for security reasons or to safeguard property or material. This does not include those designated areas over which aircraft flight is restricted. Restricted areas may be of different types. The type depends on the nature and varying degree of importance, from a security standpoint, of the security interest or other matter contained therein.

a. Exclusion area. A restricted area containing—

(1) A security interest or other matter of such nature that access to the area constitutes, for all practical purposes, access to such security interests or matter; or—

(2) A security interest or other matter of such vital importance that proximity resulting from access to the area is treated equal to (1) above.

b. Limited area. A restricted area containing a security interest or other matter, in which uncontrolled movement will permit access to such security interest or matter; access within limited areas may be prevented by escort and other internal restrictions and controls.

c. Controlled area. That portion of a restricted area usually near or surrounding an exclusion or limited area. Entry to the controlled area is restricted to authorized personnel. However, movement of authorized personnel within this area is not necessarily controlled. Mere entry to the area does not provide access to the security interest or other matter within the exclusion or limited area. The controlled area is provided for administrative control, safety, or as a buffer zone for security in depth for the exclusion or limited area. The proper commander establishes the degree of control of movement.

Ride awhile-walk awhile method
A law enforcement or security patrolling technique. The MWD team patrols for a period of time in a vehicle and then dismounts for an appropriate period of time to patrol an area on foot. This method increases the potential area the team can cover, as well as allowing the team to concentrate their foot patrols in especially critical areas.

Risk
The degree or likelihood of loss of an asset. Factors that determine risk are the value of the asset to its user in terms of mission criticality, replaceability, and relative value and the likelihood of aggressor activity in terms of the attractiveness of the asset to the aggressor, the history of or potential for aggressor activity, and the vulnerability of the asset.

Risk analysis
Method of examining various risk factors to determine the risk value of likelihood of resource loss. This analysis will be used to decide the level of security warranted for protection of resources.

Risk factors
Elements that make up the total degree of resource loss liability. Factors to be considered in a risk analysis include the importance of the resource to mission accomplishment; the cost, volume, criticality and vulnerabilities of the resources; and the severity of threats to the resources.

Risk level
An indication of the degree of risk associated with an asset based on risk analysis. Risk levels may be Levels I, II, or III, which correspond to low, medium, and high.

Risk value
Degree of expectation or likelihood of resource loss. The value may be classified as low, medium, or high.

Safe
A GSA Class 5 Map and Plans Security Container, Class 6 Security Filing Cabinet or refrigerator or freezer, secured with an approved locking device and weighing 500 pounds or more, or secured to the structure to prevent removal.

Schedule I drug
Any drug or substance by whatever official name (common, usual, or brand name) listed by the DEA in Title 21 of the Code of Federal Regulations, chapter II, Section 308.11, intended for clinical or non-clinical use. A list of Schedule I drugs and substances is contained in AR 40-7, appendix A.

Seal
A device to show whether the integrity of a shipment has been compromised. Seals are numbered serially, are tamperproof, and shall be safeguarded while in storage. The serial number of a seal shall be shown on Government Bills of Lading (GBL). A cable seal lock provides both a seal and locking device.

Sealed containers
Wooden boxes, crates, metal containers, and fiber containers sealed in a way to show when the containers are tampered with after sealing. The method of sealing depends of the type of construction of the containers. Sealing may be by metal banding, nailing, airtight sealing, or wax dripping (for fiber containers). In key control, a sealed container is also a locked key container or a sealed envelope containing the key or combination to the key container.

Sealed protection
A container or an area enclosed by a plastic or soft metal device which is opened easily without the use of a key or combination.

SEAVAN
A commercial, Government-owned or leased shipping container and without bogey wheels attached that is moved by ocean transportation and must be lifted on and off the ship. (DOD 5100.76–M)

Security card
An official distinctive identification (pass or card) that identifies and authorizes the possessor to be physically present in a U.S. Army designated restricted area.

Security engineering
The application of engineering principles to the protection of assets against various threats through the application of construction and equipment application.

Security lighting
The amount of lighting necessary to permit visual surveillance by security police or by supervisory personnel.

Security procedural measures
Physical security measures to counter risk factors that will periodically change over a period of time such as criminal, terrorist, and hostile threats. The procedures can usually be changed within a short amount of time and involve manpower.

Sensitive conventional arms, ammunition, and explosives
See categorization of such items in appendix A, AR 190–11.

Sensitive items
Material requiring a high degree of protection to prevent unauthorized acquisition. This includes arms, ammunition, explosives, drugs, precious metals, or other substances determined by the Administrator, Drug Enforcement Administration to be designated Schedule Symbol II, III, IV, or V under the Controlled Substance Act of 1970.

Signal intelligence
Intelligence derived from communications means (such as telephone, telegraph, radio), electronic signal emitters (such as navigation radar, identification friend or foe, and weapons guidance devices) and instrumentation signals (such as telemetry and beaconry).

Signature Security Service
A service designed to provide continuous responsibility for the custody of shipments in transit. A signature and tally record is required from each person responsible for the proper handling of the shipment at specified stages of its transit from origin to destination.

a. The initial signature on the signature and tally record should be the same as that of the carrier's agent on the GBL. When SSS is used in conjunction with DDPS, both drivers in each pair of drivers shall sign the signature and tally record when that pair assumes responsibility for the shipment.

b. Commercial carriers offering SSS must be able to trace a shipment in less than 24 hours. The following forms shall be used to obtain SSS:

(1) *Surface shipments.* DD Form 1907 (Signature and Tally Record) shall accompany every surface shipment of classified or protected material accorded a signature and tally service by surface commercial carriers. Carrier tariffs and tenders may describe this type of service under different titles for example, Hand-to-Hand Signature Service or Signature Service.

(2) *Commercial air shipments.* The air industry internal Form AC–10 (Airlines Signature Service Record) shall be used by regulated and nonscheduled airlines to obtain the signature and tally record. Air taxi operators and air freight forwarders providing SSS may use DD Form 1907 instead of AC–10. No receipt is required from the flight crew or attendants while the aircraft is in flight. A signature and tally record is required; however, from air carrier personnel whenever the aircraft is on the ground and access to the cargo compartment containing the sensitive arms, ammunition, and explosives (AA&E) is available for any purpose. A signature and tally record is also required from pickup and delivery carriers used by the airlines for such purposes.

(3) *Military air shipments.* The AF Form 127 (Traffic Transfer Receipt) or similar document, will be used to provide hand-to-hand receipt control for sensitive and classified shipments being transferred in the DTS. (DOD 5100. 76–M)

Steel bar
A flat bar, 3/8 inch by one inch minimum; or round bar 1/2 inch diameter minimum.

Steel mesh
High carbon, manganese steel not less than 15/100 inch (8-gauge) in thickness, and a grid of not more than two inches center to center.

Storage
Any area where AA&E are kept. Storage does not include items in process of manufacture, in use, or being transported to a place of storage or use.

Survivability
The ability to withstand or repel an attack, or other hostile action, to the extent that essential functions can continue or be resumed after the hostile action.

Tactics
The specific methods of achieving the aggressor's goals to injure personnel, destroy Army assets, or steal Army materiel.

Tactical vehicle
A vehicle with military characteristics designed primarily for use by forces in the field in direct connection with, or support of, combat or tactical operations, or the training of troops for such operations.

Tenant activity
A unit or activity of one Government agency, military department, or command that occupies facilities on an installation of another military department or command and that receives supplies or other support services from that installation.

Terrorism
The calculated use of violence or the threat of violence to inculcate fear; intended to coerce or to intimidate governments or societies in the pursuit of goals, that are generally political, religious, or ideological.

Terrorism counteraction measures
Term used previously for combatting terrorism (see definition of this term).

Terrorist group
A politically, religious, or ideologically oriented group which uses terrorism as its prime mode of operations.

Threat management force
An action force from the installation that responds to major disruptions on installations. The TMF should be of sufficient size to manage the disruption and will usually involve a command element, security element, negotiation team, SRT, and logistical element.

TOW
A tube-launched, optically traced, wire-command missile designed as an antitank weapon system. (DOD 5100.76–M)

Upper rail loc
A set screw operated variation of a “C” clamp designed for gripping the upper sliding rail which supports or guides the weight of some styles of railroad boxcar doors. Gripping the upper sliding rail, the “loc” blocks and prevents the door’s roller hangers or carriers from sliding past, thereby effectively preventing the door from being moved. (DOD 5100. 76–M)

Waiver
Temporary relief from specific standards imposed by this manual (regulation) pending actions accomplishment of actions that will conform to the standards required. Compensatory measures are required.

Section III
Special Abbreviations and Terms
There are no entries in this section.

Index

This index is organized alphabetically by topic and by subtopic within topic. Topics and subtopics are identified by paragraph number.

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Appendix JJ

Thermal Conductivity Test Report

AH&P CONSULTING ENGINEERS

FORMATION THERMAL CONDUCTIVITY TEST REPORT

Client: SAIC Energy, Environment & Infrastructure, LLC.
9400 North Broadway, Suite 300
Oklahoma City, Oklahoma 73114
Phone: (405) 478-5353
Fax: (405) 478-3721

Test Location: MWD Kennel Complex
Geothermal Conductivity Test
Project: PN 62728
U.S. Army - Fort Stewart, GA
Thermal Conductivity Test
Coordinates: N 31°54.020'
W 81°37.062'

TC Test and Analysis Performed By: Andrews, Hammock & Powell, Inc.
250 Charter Lane
Macon, GA 31210
Phone: (478) 405-8301
Fax: (478) 405-8210
www.ahpengr.com

Report Date: November 21, 2011

EXECUTIVE SUMMARY

Formation Thermal Conductivity Testing (TCT) was performed by Andrews, Hammock and Powell, Inc Consulting Engineers (AH&P) in the underground geological formation at the U.S. Army base located in Fort Stewart, GA. The acquired data is intended to be utilized by a skilled Geothermal Heat Pump System Engineer in a long-term, hour-by-hour, simulation of a Building and its associated Ground Loop Heat Exchanger (GHX) for the purpose of accurately sizing the GHX. This testing was performed during the week of October 19th – 21st, 2011 having been preceded the previous week before by the drilling of a nominal 300' borehole.

The installation of this borehole was accomplished by Middle Georgia Water Systems, Inc. The drillers utilized a mud rotary drilling process to drill the borehole. The driller began with a 5-½" diameter borehole and achieved the 300' depth. Into it was placed a 300' deep, 1" diameter, SDR-11 HDPE piping/u-bend. The borehole was then fully grouted in place from bottom-to-top with thermally enhanced sodium bentonite grout (k=1.05) pumped into the borehole's annulus by means of a "tremie" tube.

Analysis of the data collected by AH&P from the TCT testing equipment was performed by AH&P based on modeling the borehole as a "line source" of energy (heat) input into the formation. Analysis of that data resulted in the calculated average thermal conductivity of the formation presented below. Linear regression was applied to the appropriate collected data. It was determined that there was an excellent fit of temperature vs. natural logarithm of time data to the calculated straight line through the data points as the "correlation coefficient" (R^2) was 0.996.

This report details the formation TCT procedures utilized and the results of the TCT which was performed at a heavily wooded, undeveloped site location North-West of the Explosive Ordinance Disposal Complex (approximate GPS coordinates N31°54.020', W 81°37.062'). The location for the TCT was selected by government personnel and is anticipated to potentially serve a new geothermal heat pump system for the MWD Kennel Complex, which is expected to be constructed somewhere in the vicinity of the geothermal test well.

The resultant average Thermal Conductivity (k) of the formation was found from the data analysis to be:

- **Thermal Conductivity(k) of the Formation = 1.06 BTU/(hr-ft-°F)**

The average temperature of the undisturbed formation was directly measured by lowering a special underwater temperature data logger into the water column that had been place in the grouted u-bend/piping the previous week. The average undisturbed formation temperature was:

- **Undisturbed Formation Temperature = 69.2°F**

Thermal diffusivity (α) is calculated by performing a weighted average of the industry standard laboratory determined α values for the various strata encounter by the driller. Its value was:

- **Estimated Thermal Diffusivity (α) = 0.71 ft^2/day**

FORMATION THERMAL CONDUCTIVITY TEST REPORT

PROJECT INFORMATION:

Project Name:	MWD Kennel Complex – Geothermal Conductivity Test - PN62728
Location:	Fort Stewart, GA
Prepared By:	Chuck W. Hammock, Stephen E. Sullens
Email:	chammock@ahpengr.com, ssullens@ahpengr.com
Client Name:	SAIC Energy, Environment & Infrastructure, LLC.
Contact Email:	Tomra Russell – tomra.j.russell@saic.com

TEST DATA AND CALCULATION RESULTS

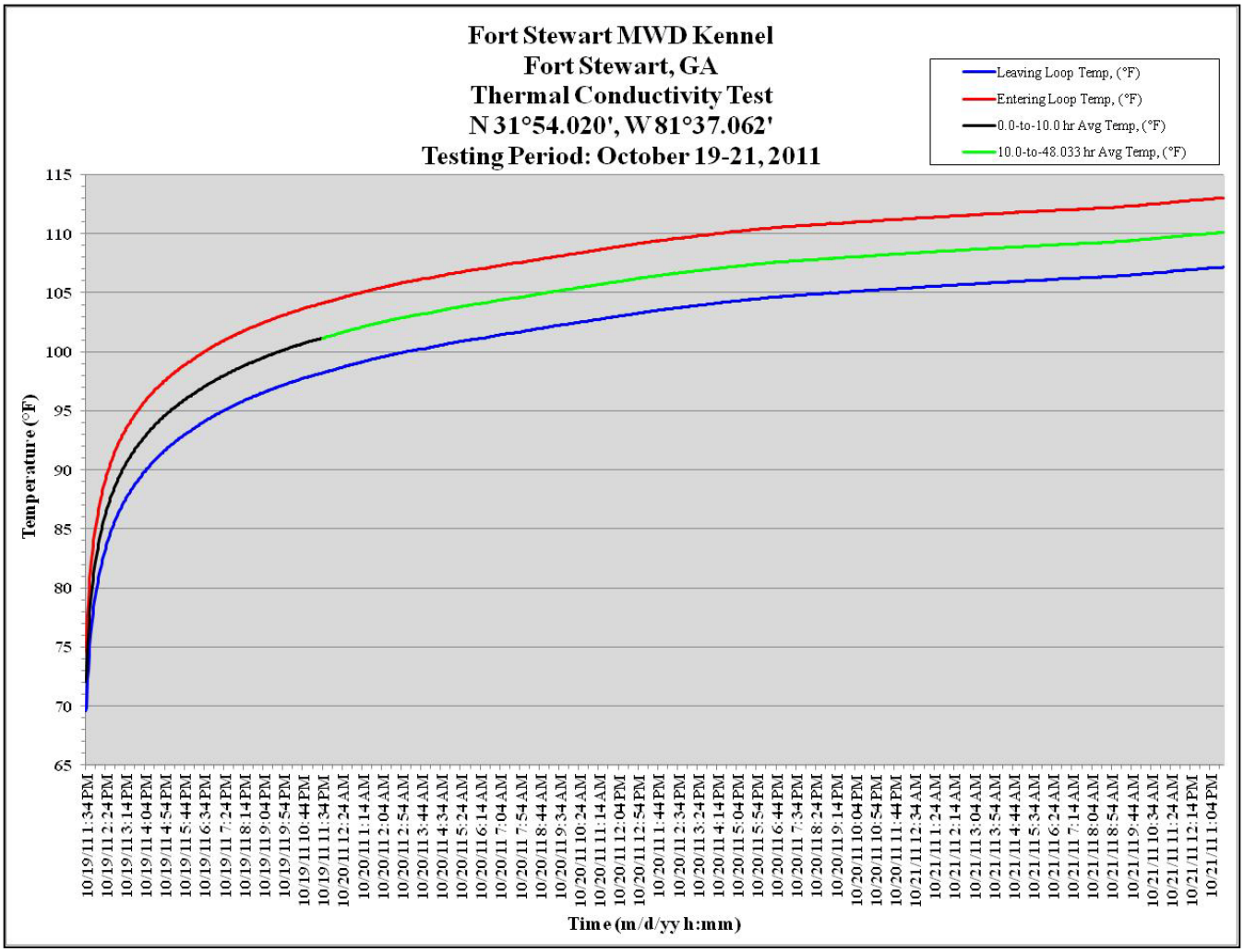
Test Date:	October 19, 2011 to October 21, 2011	
Test Duration:	48.033	Hrs
Calculation Interval Utilized:	38.033	Hrs
Average Power:	6,534	Watts
Average Heat Input Rate:	22,294	Btu/Hr
Average Heat Flux:	21.78	Watt/ft
Average Calculated Flow Rate:	7.6	GPM
Avg. Undisturbed Ground Temp.:	69.2	°F
Estimated Thermal Diffusivity:	0.71	ft^2/day
Formation Thermal Conductivity:	1.06	Btu/(hr*ft*°F)

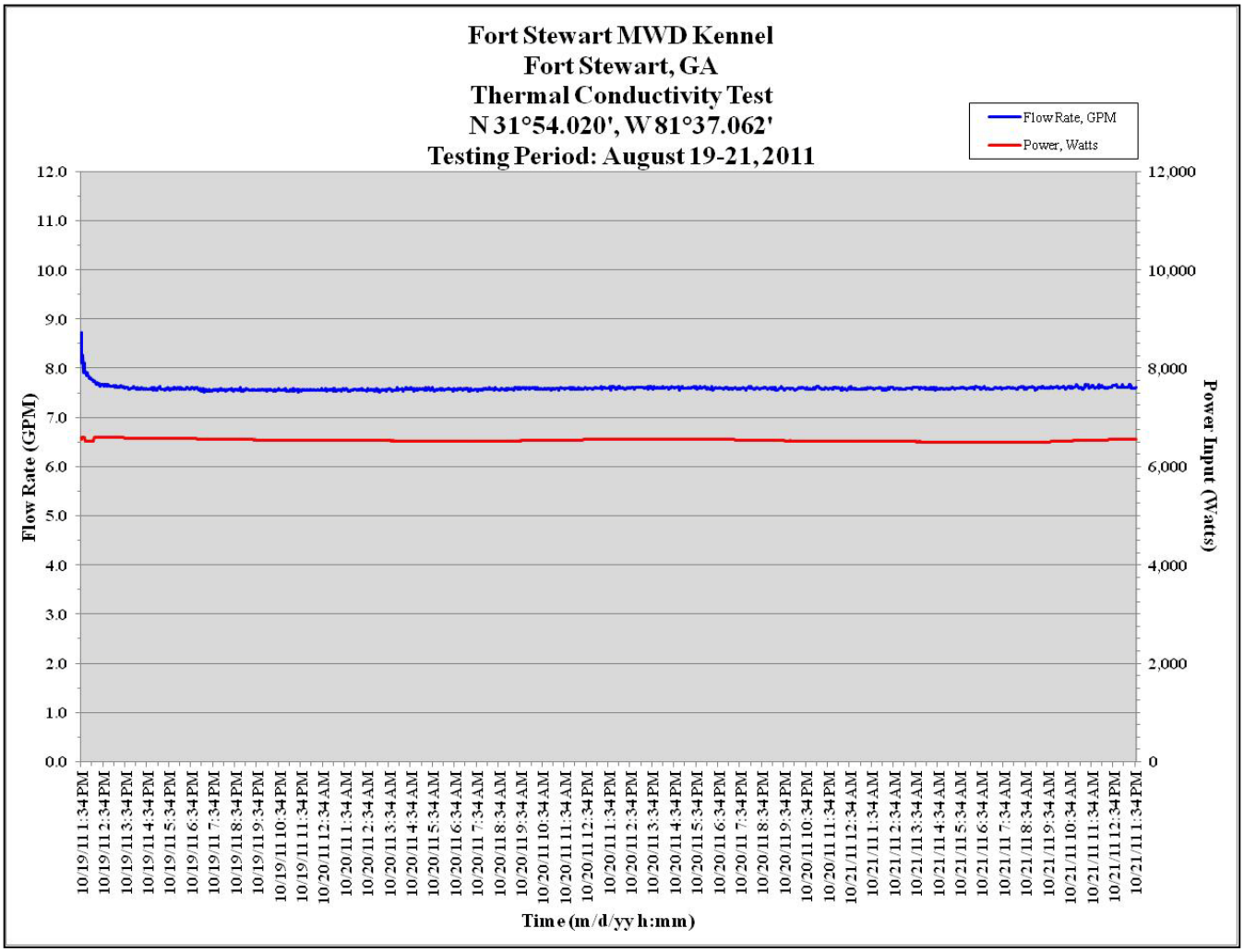
DRILLING LOG: Provided by Middle Georgia Water Systems, Inc.
GEOLOGICAL CLASSIFICATION: Robert L. Atkins, PG, A&S Environmental Services, Inc.
THERMAL DIFFUSIVITY ANALYSIS: AH&P, Inc.

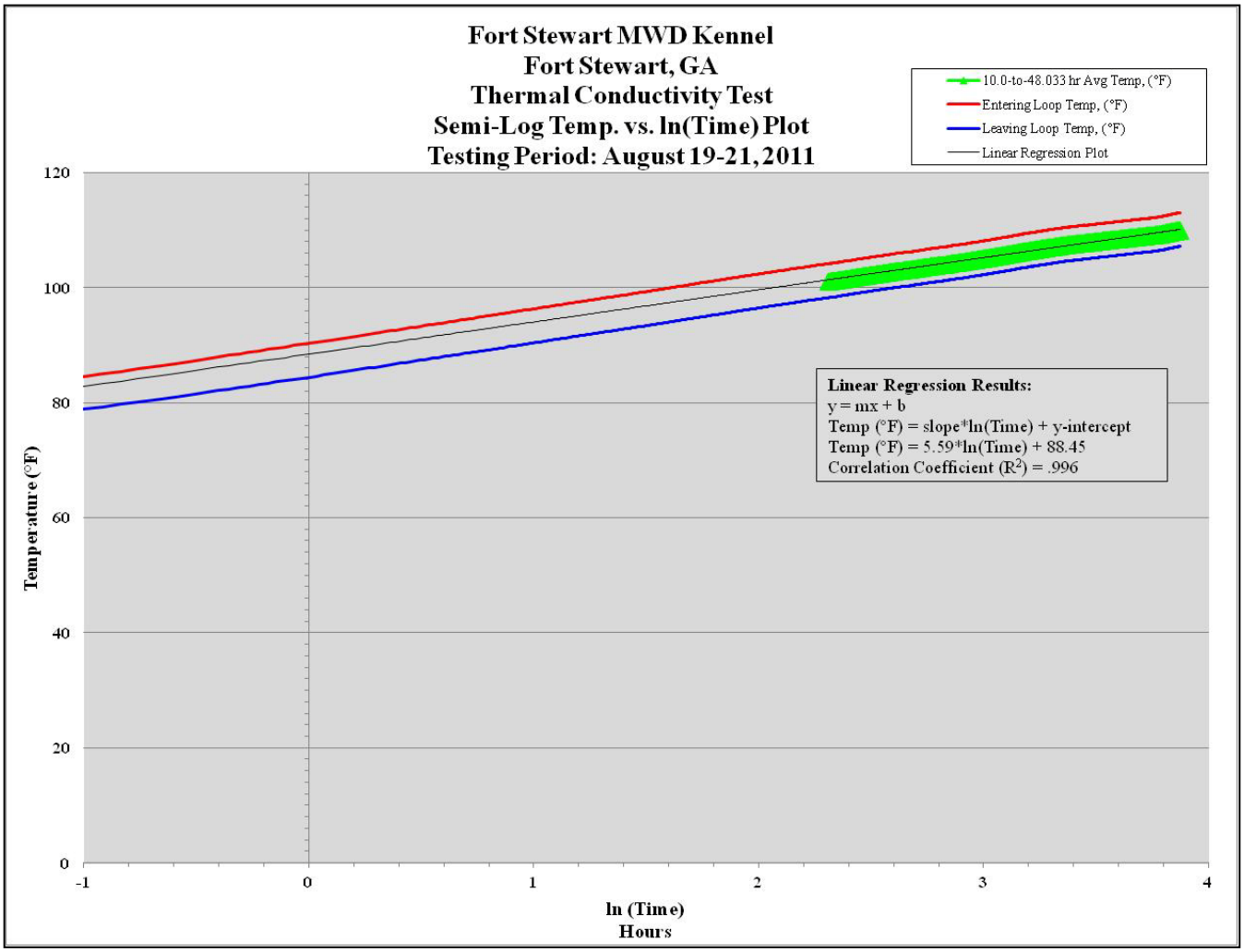
SIMPLIFIED[1] DRILL LOG			DIFFUSIVITY ANALYSIS	
Depth (ft)	**Range (ft)**	**Description[1]**	**Estimated Diffusivity**	**Weighted Average**
0' – 20'	20'	Silty sandy clay	0.60	0.040
20' – 60'	40'	Silty clayey fine-to-coarse rounded/sub-rounded sand to angular sand	0.67	0.089
60' – 120'	60'	Sandy silt to silty fine-to-medium sub-rounded sand	0.89	0.178
120' – 160'	40'	Silty clayey fine-to-coarse sand	0.63	0.084
160' – 180'	20'	Silty micaceous slightly clayey fine sandy silt	0.73	0.049
180' – 220'	40'	Micaceous silty clay	0.53	0.071
220' – 300'	80'	Fine-to-medium clayey sandy silt to sandy clay/clayey sand	0.73	0.195
TOTAL	**300'**	**Estimated Overall Thermal Diffusivity (α):**		0.71

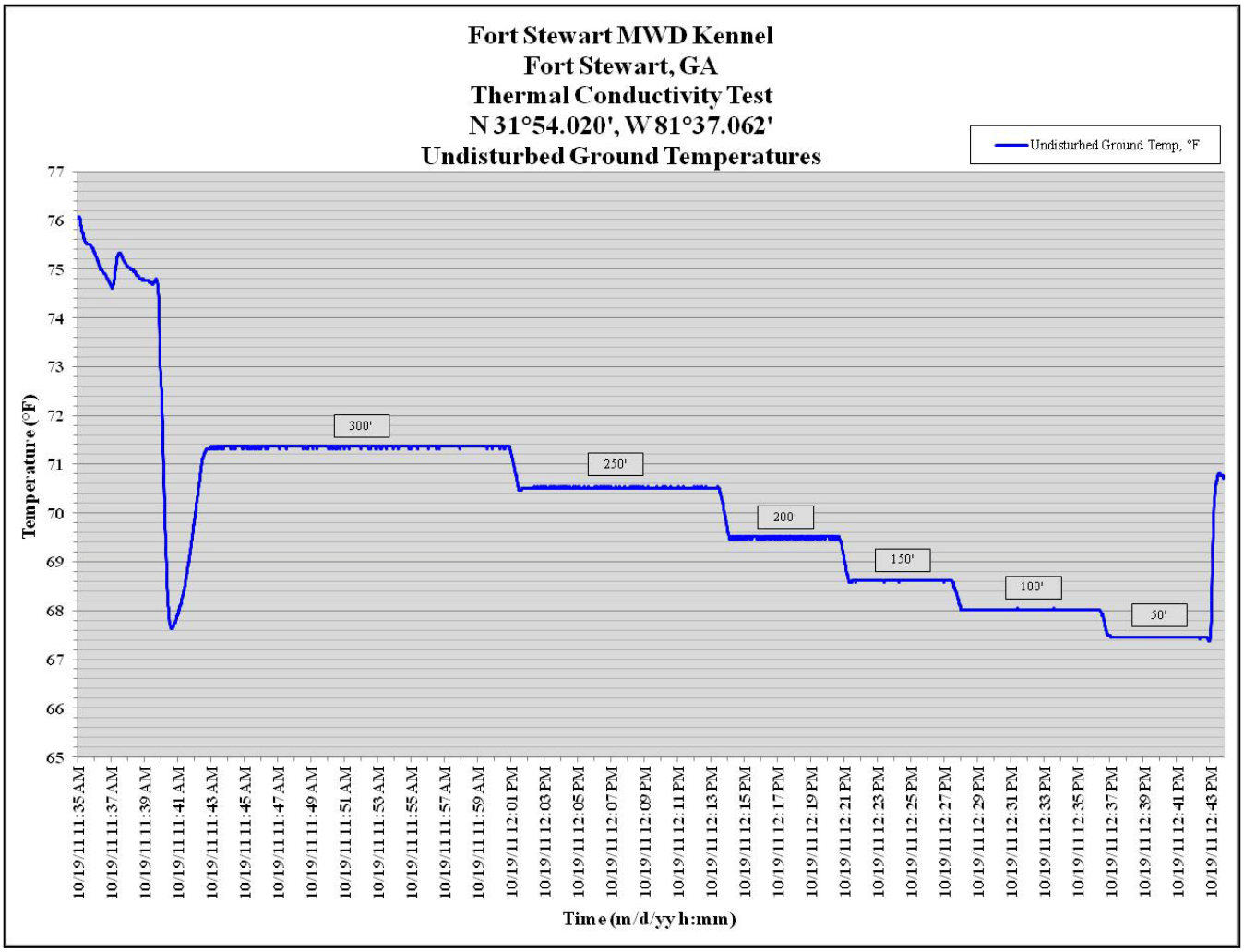
Drill Date:	October 10, 2011
Installed U-Bend Depth[2]:	300'
Borehole Diameter:	5-1/2"
Pipe/U-Bend Size:	1.00" HDPE, SDR-11
Grout Type:	Wyo-Ben, Inc. brand Wyoming sodium bentonite grout mixed with high silica sand thermal enhancement.
Grout Mixture:	50 lb Bag of Wyo-Ben Therm-Ex Grout mixed with 300 lb of Silica Sand and 20 gallons of water per batch.
Grout "Loss":	Driller indicated that there was minimal grout loss compared to the theoretical annulus volume calculated based on the grout manufacturer's standard charts.
Grout Thermal Conductivity[3]:	Approximately 1.05 Btu/(hr*ft*°F)
Drilling Method:	Mud Rotary
Drilling Time:	Approximately 5.0 hours overall

Notes:
[1]See Appendix A for a comprehensive Geological Drilling Log of the conditions encountered.
[2]Driller advised that they had achieved an approximate 300' depth below grade depth with the u-bend. When AHP lowered the deep earth temperature data-logger down inside the wetted u-bend via its support cable, we were also able to achieve the 300' depth down to the bottom of the u-bend. That is therefore the depth we report herein and is the basis of our thermal conductivity/diffusivity analysis.
[3]Based on Manufacturer's Literature. See Appendix E. Grout thermal conductivity only impacts the "borehole resistance" and does not impact the "thermal conductivity of the formation" as reported herein.


Fort Stewart MWD Kennel
Fort Stewart, GA
Thermal Conductivity Test
N 31°54.020', W 81°37.062'
Testing Period: October 19-21, 2011
Leaving Loop Temp, (°F)
Entering Loop Temp, (°F)
0.0-to-10.0 hr Avg Temp, (°F)
10.0-to-48.033 hr Avg Temp, (°F)
Temperature (°F)
115
110
105
100
95
90
85
80
75
70
65
Time (m/d/yy h:mm)


Fort Stewart MWD Kennel
Fort Stewart, GA
Thermal Conductivity Test
N 31°54.020', W 81°37.062'
Testing Period: August 19-21, 2011
Flow Rate, GPM
Power, Watts
Flow Rate (GPM)
Power Input (Watts)
Time (m/d/yy h:mm)


Fort Stewart MWD Kennel
Fort Stewart, GA
Thermal Conductivity Test
Semi-Log Temp. vs. ln(Time) Plot
Testing Period: August 19-21, 2011
10.0-to-48.033 hr Avg Temp, (°F)
Entering Loop Temp, (°F)
Leaving Loop Temp, (°F)
Linear Regression Plot
Linear Regression Results:
y = mx + b
Temp (°F) = slope*ln(Time) + y-intercept
Temp (°F) = 5.59*ln(Time) + 88.45
Correlation Coefficient (R2) = .996
Temperature (°F)
120
100
80
60
40
20
0
-1
0
1
2
3
4
ln (Time)
Hours


Fort Stewart MWD Kennel
Fort Stewart, GA
Thermal Conductivity Test
N 31°54.020', W 81°37.062'
Undisturbed Ground Temperatures
Undisturbed Ground Temp, °F
Temperature (°F)
Time (m/d/yy h:mm)
300'
250'
200'
150'
100'
50'

Appendix A
Geological Drill Log

BORING LOG
FOR
FORT STEWART DOG KENNEL WELL

Drilling Contractor: Middle Georgia Water Systems Date: 10-10-2011

Drill Cuttings Log: Bob Atkins, P.G.

Depth (ft)	Description
20	White to slightly silty sandy Clay
40	Very dark gray silty clayey medium to coarse sub-rounded Sand
60	Dark gray silty clayey fine to coarse rounded to angular Sand
80	Gray silty fine to medium Sand
100	Dark gray sandy Silt to silty Sand
120	Light gray silty fine to medium sub rounded Sand with opaque fragments
140	Dark greenish gray silty clayey medium to coarse Sand with rounded Opaque fragments
160	Gray to light gray clayey silty fine to medium Sand with coarse fragments
180	Gray to light gray slightly micaceous slightly clayey fine sandy Silt
200	Gray micaceous silty Clay
220	Gray micaeous silty Clay
240	Gray slightly micaceous clayey sandy Silt
260	Very light gray fine sandy clayey Silt
280	Very light gray fine to medium sandy clayey Silt to silty Sand
300	Gray silty fine sandy Clay to clayey fine Sand

Appendix B
Testing Procedures and Quality Assurance

Testing Procedures: Andrews, Hammock & Powell Inc. (AH&P) utilized the procedures outlined in Chapter 32 of the American Society of Heating, Refrigeration and Air Conditioning (ASHRAE) HVAC Applications Handbook, 2007 Edition when conducting this Formation Thermal Conductivity Test (TCT). Some of those procedures, and the enhancements AH&P adds to those recommendations are as follows:

- ASHRAE recommends total test duration of 36 to 48 hours. The total duration of this test complies with those guidelines at 48.033 hours

- ASHRAE recommends that heat be applied to the borehole U-tube at a rate of 15-25 watts per foot of bore (141 to 234 foot of bore/u-tube per ton). For this test, heat was applied within those guidelines at a rate of 21.78 watts per foot.

- ASHRAE recommends a maximum standard deviation of +/-1.5% of the input power from the average power level and peak variations be kept to less that 10% of the average power level ***OR*** the resulting temperature variation of the actual average loop temperature, from that predicted by a linear regression analysis of temperature vs. the natural logarithm of time, be held to less than +/- 0.5°F. This TCT resulted in values that better those standards as:
  - Standard Deviation of power level from the avg. level = 0.37%, well below the +/-1.5% specification
  - Peak Power Deviation from the average level=1.04%, below the +/-10% specification
  - …***AND***, Predicted Temperature "Standard Error" (deviation)= 0.146°F, well below the +/-0.5°F spec.

- ASHRAE recommended temperature measurement/recording accuracy is 0.5°F. The temperature probes and data loggers have a combined accuracy of 0.36°F.

- ASHRAE recommended power transducer/recorder accuracy is +/-2%. The current transducers and associated watt/watt-hour transducer we utilize to measure power (wattage), measures at a combined accuracy of +/-1.12%, which is well below the standard.

- ASHRAE recommends pumping sufficient flow to obtain a temperature differential of the "actual heat pump system" and mentions the range of 6-12°F. AH&P's experience is that actual heat pump systems can have *annualized* temperature differentials that may fall below this range. Also, as "line source" is the heat energy "architecture" modeled in this analysis, it is felt that higher flow (lower delta T) values are more appropriate when the grouted, dual piped u-bends are desired to serve as the "line source" of heat energy for the TCT. Accordingly, this test was run at a slightly higher flow rate of approximately 7.59 GPM with a resultant 5.87°F average temperature rise allowing the u-bend to more accurately represent a "line source" with reduced short circuiting.

- ASHRAE recommends a 5 day waiting period for k<1.0 formation and 3 days for k>1.0 formation. Some TCT practitioners adjust this waiting period to 5 day when high energy/friction/heat drilling is involved (down-hole-hammer/air drilling in rock) vs. as little as 2 days waiting when lower energy/friction "mud-rotary" drilling is utilized. This test was conducted in a formation with k>1.0 after at least five days had passed between the mud rotary drilling and the TCT.

- ASHRAE allows either direct temperature recording of the underground undisturbed formation temperature via probe insertion in the liquid filled u-bend at three locations or loop exit temperature during startup. AH&P performs ***both*** of the test procedures then reports the more accurate direct measurements by averaging the data

recorded at 6 depths (50' below grade though 300' below grade, on 50' intervals) by the miniature rapid-response submersible temperature data-logger. This device is carefully inserted into the u-bend and lowered to the bottom of the U-bend then raised to the surface in 50' increments, with the last recording taken at 50' below grade. See the plot of this data for more information. If the GHP engineer utilized actual borehole depths below 300', the data allows one to recalculate this value before GHX computer simulations are performed.

- ASHRAE recommends data collection on maximum 10 minute intervals. AH&P increases the frequency of recording five-fold by recording data every two minutes.

- ASHRAE recommends ½" of above ground piping insulation and a minimum of 1" fiberglass equivalent test rig insulation. AH&P exceeds the recommended ½" pipe insulation with ¾" pipe insulation and insulates the test rig with closed cell foam board insulation that is equivalent to more than 3" of fiberglass batt insulation.

- ASHRAE publishes "re-testing" protocols, but retesting was not required for this project and is therefore "not applicable".

Quality Assurance: In addition to the ASHRAE procedures outlined above, AH&P strives to provide the client with the highest level of formation thermal conductivity testing and data analysis by the following practices:

- AH&P owns their TCT testing apparatus. We maintain, calibrate, repair and constantly improve our TCT rig to provide the highest quality TCT we can deliver. We have an in-house test lab where we can startup and operate the test rig under simulated conditions prior to utilizing it in the field so that we can insure it is functioning properly before it is deployed on your project.
- In the field, we utilize graduate engineers, NEBB certified Test and Balance/Commissioning Supervisors or in-house personnel formally trained by these persons to conduct the actual TCT test.
- After our personnel return to the office an IGSHPA Certified Geothermal Designer (CGD), and more importantly, a Registered Professional Engineer (PE) supervises the data analysis and preparation of your TCT report by a graduate engineer.
- We utilize linear regression to analyze the appropriate data sets to insure the above ASHRAE standards are met in regards to power consistency and temperature vs. ln(time) "slope" quality. Specifically, if we determine the "correlation coefficient" (R^2) of our slope line is unacceptable due to any errors on our part, we will rerun the TCT. We do not use the "classic line" (simple two-point) slope analysis utilized by some firms and/or software programs.

Appendix C
Data Interpretation and Usage

Data Usage: The purpose of this report is to provide skilled geothermal heat pump system engineers with critical thermal data (values) for the geological formation at the proposed location of a future geothermal heat exchanger (GHX) which will be used in conjunction with a building geothermal heat pump system to successfully heat and cool the facility on a long term basis. This data is typically input into a long-term (multi-decade), hour-by-hour (365 days X 24 hours/day) computer simulation program to model the Building loads and their short and long term impact on the geothermal heat pump loop and its associated Ground Loop Heat Exchanger (GHX). The formation thermal conductivity (**k**), the estimated thermal diffusivity (**α**) and the undisturbed formation temperature presented herein while very critical to this type of analysis, only represent three of thousands of variables that must be input into the building/GHX simulation to properly model the building over the long term and size the GHX.

The information below is offered as general guideline, to the Client. It is not intended to substitute for the professional advice and analysis of the engineer performing energy/GHX modeling of the actual building, which will ultimately utilize the information contained herein.

Limitations: Because a single borehole cannot exactly model the entire borehole field, this data should be taken for what it is, namely, a single measurement of the properties at a particular point in the future bore field.

Methodologies: The industry standard and ASHRAE approved method commonly known as the "line source" method was utilized for this test. The high correlation coefficient (R^2) of the data, and the steps outlined in Appendix B, should give the reader of this report a high level of confidence in the data presented herein. Furthermore, full grouting of the test well from top to bottom, with high TC (k=1.05) grout should allow the data to be utilized (after hour 10) and fully reflect the properties of the formation, not the grout. It also has the added benefit of being suitable for a production geothermal well.

Underground Hydro-geology: A study of the local hydro-geology was not a part of the scope of this TCT.

GHX Design Considerations:

General: The use of thermally enhanced sodium bentonite grout (k=1.05) in this test well was done because AH&P believes it provides more usable, and better quality, data for a TCT, than boreholes done with standard grout or even no grout at all. We also believe wells grouted this way provide superior production boreholes. This fact however does not preclude the GHX engineer from using standard grout or possibly pea gravel/drill cuttings for portions of the borehole, although those practices are not endorsed by AH&P. If the GHX designer chooses some other material in the borehole annulus, it must be properly "modeled" as such and all State, Federal, EPA and other specifications/laws/codes must be adhered to. Furthermore, it must be assumed that the existing water table will not drop substantially if some form of low water diffusive grout is not utilized. AH&P recommends the use of thermally enhanced bentonite grout in virtually all production boreholes for GHX systems. However, some formations (e.g. with high TDS, chloride, etc. levels) may require cementious or other types of grout.

U-Bend/Pipe Size: The U-bend size (1") was selected so that this well could be used in the future as a production borehole. Based on final decisions of borehole flows (gpm) and depth, production wells may need to use alternate diameters due to pressure drop considerations, minimum flow (gpm) needed for turbulence, etc.

Undisturbed Formation Temperature: Because we directly measure this value by lowering a data logger all the way to the bottom of the u-bend (and not count on the pump to bring the fluid up without mixing) and measure it at six (6) different locations, we believe this data is more accurate than the data presented in some TCT reports. Accordingly, it is appropriate to use the "Deep-Earth Temperature" field found in some GHX sizing programs. For further information, please consult your GHX software manufacturer or appropriate ASHRAE or IGSHPA materials. Since the ends of the U-bend were left sealed and filled with water, this value can be re-measured at any time or any depth prior to the TCT being converted to a Production well. A reader may also review the graphical presentation of the data if an "undisturbed formation temperature" calculation of alternate depth boreholes is desired.

Appendix D
Field Data

Thousands of data points were collected and analyzed as part of this TCT report. All of the data is not presented in this report in consideration of reducing the report's bulk; however, all of the data is available to the Client for their review. If you would like a copy of this data, you may request it by email or phone by contacting:

Chuck Hammock, PE, LEED AP, CGD
Andrews, Hammock & Powell, Inc.
250 Charter Lane
Macon, GA 31210
478-405-8301, ext. 102
chammock@ahpengr.com

Appendix E
Grout Manufacturer Literature

THERM-EX GROUT™

Certified to NSF/ANSI 60

THERM-EX GROUT™ is an engineered system for use as backfill material in earth-coupled heat pump systems. Its elevated thermal conductivity and low permeability allow for excellent heat exchange while protecting groundwater supplies. THERM-EX GROUT™ should be pumped using a positive displacement pump capable of generating pressures in excess of 300 psi. Developed using high swelling Wyoming Bentonite, this new generation of grouting material offers efficient installation of closed-loop geothermal heat pump systems.

MATERIAL SPECIFICATIONS:

Thermal Conductivity:	.93 Btu/hr-ft-^{o}F	1.05 Btu/hr-ft-^{o}F
Permeability:	2 x 10^{-8}	6 x 10^{-8}
Solid Content:	64 %	67 %
Slurry Weight:	13.6 lbs/gal	14.4 lbs/gal
Slurry Volume/Batch:	29 gals	36 gals
Thermal Conductivity:	1.13 Btu/hr-ft-^{o}F	1.2 Btu/hr-ft-^{o}F
Permeability:	6 x 10^{-8}	6 x 10^{-8}
Solid Content:	69 %	71 %
Slurry Weight:	15.1 lbs/gal	15.2 lbs/gal
Slurry Volume/Batch:	41 gals	41.5 gals

APPROXIMATE VOLUMES FOR GROUT

Drilled Hole Dia.	Loop Inside Dia.	Anlr. Vol. (cu.ft./ft.)	Anlr. Vol. (gal./ft.)
4	3/4”	0.08	0.57
4.5	1”	0.09	0.70
5	1”	0.12	0.89
5.5	1”	0.15	1.10
6	1”	0.18	1.33
5	1 1/4”	0.11	0.84
5.5	1 1/4”	0.14	1.05
6	1 1/4”	0.17	1.29

APPLICATION RATE:

The combination of fresh water, THERM-EX GROUT™ and silica sand constitute “the system” for backfilling geothermal loops. Use locally available dry silica sand. For best results, use sand ranging in size from 30 mesh to 70 mesh (AFS GFN particle size classification 38 to 50).

Mix as follows:

	.93 Btu/hr-ft-^{0}F	1.05 Btu/hr-ft-^{0}F	1.13 Btu/hr-ft-^{0}F	1.2 Btu/hr-ft-^{0}F
Water	17 gal	20 gal	21 gal	22 gal
THERM-EX GROUT™	1 – 50 lb bag	1 – 50 lb bag	1 – 50 lb bag	1 – 50 lb bag
Silica Sand	200 lb	300 lb	350 lb	400 lb

Add the THERM-EX GROUT™ to the water while agitating. Mix for approximately one minute, then add the sand. Agitate until the sand is uniformly dispersed and pump into place using a tremie line. For best results, place the tremie line near the bottom of the loop and pump into place. Providing local regulations allow, slowly extracting the tremie line as you come up the hole reduces pump pressure, aids the grout in setting quicker, and reduces the opportunity for formation damage.

To increase work time for deep sets, you may add THINZ-IT® to the make-up water. Addition rates may vary, but generally 2 ounces to make-up water yields the desired results.

THERM-EX GROUT™ is packaged in 50 pound bags.

Appendix F
TCT Job-Site Pictures

Picture #1 – During Testing

Picture #2 – During Testing

Picture #3 – During Testing

Picture #4 – After Completion

Picture #5 – After Completion

Appendix G
Google Earth Image

Fort Stewart - MWD Kennel - TCT #1
© 2011 Google
Image © 2011 GeoEye
©2010 Google
Imagery Date: 7/11/2009
1993
31°53'57.43" N 81°37'02.64" W elev 67 ft
Eye alt 2379 ft

XX

Appendix XX

Asbestos and HBM Surveys

US Army Corps of Engineers®

Savannah District
Environmental and Materials Unit

Asbestos Survey

Building 7736
Military Working Dog Kennel
Ft. Stewart, Georgia

Thursday, June 28, 2012

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **November 2010**

Building 7736
Military Working Dog Kennel
Ft. Stewart, Georgia

Final report

Prepared for **US Army Corps of Engineers**
Savannah District

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Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building 7736 at the Military Working Dog Kennel, Ft. Stewart; Georgia conducted on 9 November 2010 by Savannah District US Army Corps of Engineers employee Tim Jones. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building 7736 is a single story wood frame building on a concrete floor slab reportedly built in the 1940s timeframe. Interior walls are covered with a combination of gypsum drywall and plywood, much of which has been covered with thin plastic sheets. Ceilings are a mixture of gypsum drywall and two types of ceiling tiles. The floor is painted concrete. Exterior walls are covered with older wood siding topped with newer vinyl siding. The roof is wood framed and covered with a single layer of newer looking mineral surfaced asphalt shingles. The building appears to have been renovated several times during its existence and a small addition containing Rooms 106, 107 and 108 has been very recently added. Rooms on the building floor plans are arbitrarily numbered for identification in this report only.

Description of study

Investigation

All accessible areas of Building 7736 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of suspected ACM's not assumed to contain asbestos were collected. This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Carolina Environmental, Inc. The laboratory is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). A copy of the laboratory's accreditation certificate is included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. The laboratory's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspectors. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building 7736 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

No suspect asbestos containing TSI was located in the building.

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and Ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building 7736 were found to contain or were assumed to contain asbestos:

a. Any caulking material applied to joints in the older wood exterior siding is assumed to contain asbestos. This material was not located during inspection as vinyl siding covers all older siding. It is expected to exist at corner trim boards and at joints between siding and window and door frames. - (Refer to Tables 2 and 3 for specific information).

b. Drywall joint compound applied to walls and ceilings throughout the building contains asbestos. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations).

c. Adhesive possibly applied between thin plastic surface sheeting and substrates on interior walls is assumed to contain asbestos if it is found to exist. This material was not located during inspection as significant damage would have occurred to walls in an attempt to locate it. - (Refer to Tables 2 and 3 for specific information).

d. Grey assumed asbestos containing cement board was located attached to one wall above the ceiling in Room 105. - (Refer to Tables 2 and 3 for specific information).

e. Paint applied to the concrete floor contains <1% asbestos. Though below the regulatory definition of an asbestos containing material for disposal, this may become an issue if the concrete floor is to be ground for recycling.

Surfacing Material

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

No asbestos containing surfacing material was located in the building.

TABLE 1
SUSPECT ACM SAMPLES
BUILDING 7736

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
7736-1-1	**Gypsum board & joint compound**	**Room 101, corner of wall**	**Joint compound 2% chrysotile, gypsum board NAD**
7736-1-2	**Drywall joint compound**	**Room 102 ceiling**	**2% chrysotile**
7736-1-3	**Gypsum board & joint compound**	**Room 103, corner of wall**	**Joint compound 2% chrysotile, gypsum board NAD**
7736-1-4	**Drywall joint compound**	**Room 102 ceiling**	**2% chrysotile**
7736-1-5	Caulking material	Room 102, where conduit penetrates wall, red fire stop material	No Asbestos Detected
7736-1-6	Caulking material	Room 102, where conduit penetrates wall, red fire stop material	No Asbestos Detected
7736-1-7	**Drywall joint compound**	**Room 104, corner of wall**	**2% chrysotile**
7736-1-8	2’ X 2’ Ceiling tile	Room 111	No Asbestos Detected
7736-1-9	2’ X 4’ Ceiling tile	Room 112	No Asbestos Detected
7736-A-10	Black adhesive	Room 112, on paper backing for ceiling insulation, holds fiberglass to paper backing, above ceiling	No Asbestos Detected
7736-A-11	Black adhesive	Room 112, on paper backing for ceiling insulation, holds fiberglass to paper backing, above ceiling	No Asbestos Detected
7736-1-12	**Drywall joint compound**	**Room 110, corner of wall**	**2% chrysotile**
7736-1-13	2’ X 4’ Ceiling tile	Room 109	No Asbestos Detected
7736-1-14	2’ X 2’ Ceiling tile	Room 109	No Asbestos Detected
7736-1-15	Floor paint	Room 110	<1% chrysotile (verified by point count)

7736-1-16	Floor paint	Room 112	<1% chrysotile (verified by point count)
7736-1-17	**Drywall joint compound**	**Room 105, corner of wall**	**2% chrysotile**
7736-R-18	Roof shingle	Roof	No Asbestos Detected
7736-R-19	Roofing felt	Roof, under shingles	No Asbestos Detected
7736-R-20	Roof shingle	Roof	No Asbestos Detected
7736-R-21	Roofing felt	Roof, under shingles	No Asbestos Detected

Samples testing positive for asbestos indicated in **BOLD** type

NAD = No Asbestos Detected

TABLE 2
ACM QUANTITY SUMMARY
BUILDING 7736

Homogeneous Area	UNITS	Functional Space								
		EXTERIOR	INTERIOR	ROOM 105						TOTALS
Caulking Material	L.F. 1/2" wide	1 (minimum)								1 (minimum)
Drywall Joint Compound	S.F.		2900							2900
Adhesive On Plastic Wall Covering	S.F.		1 (minimum)							1 (minimum)
Asbestos Cement Board	S.F.			12						12

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

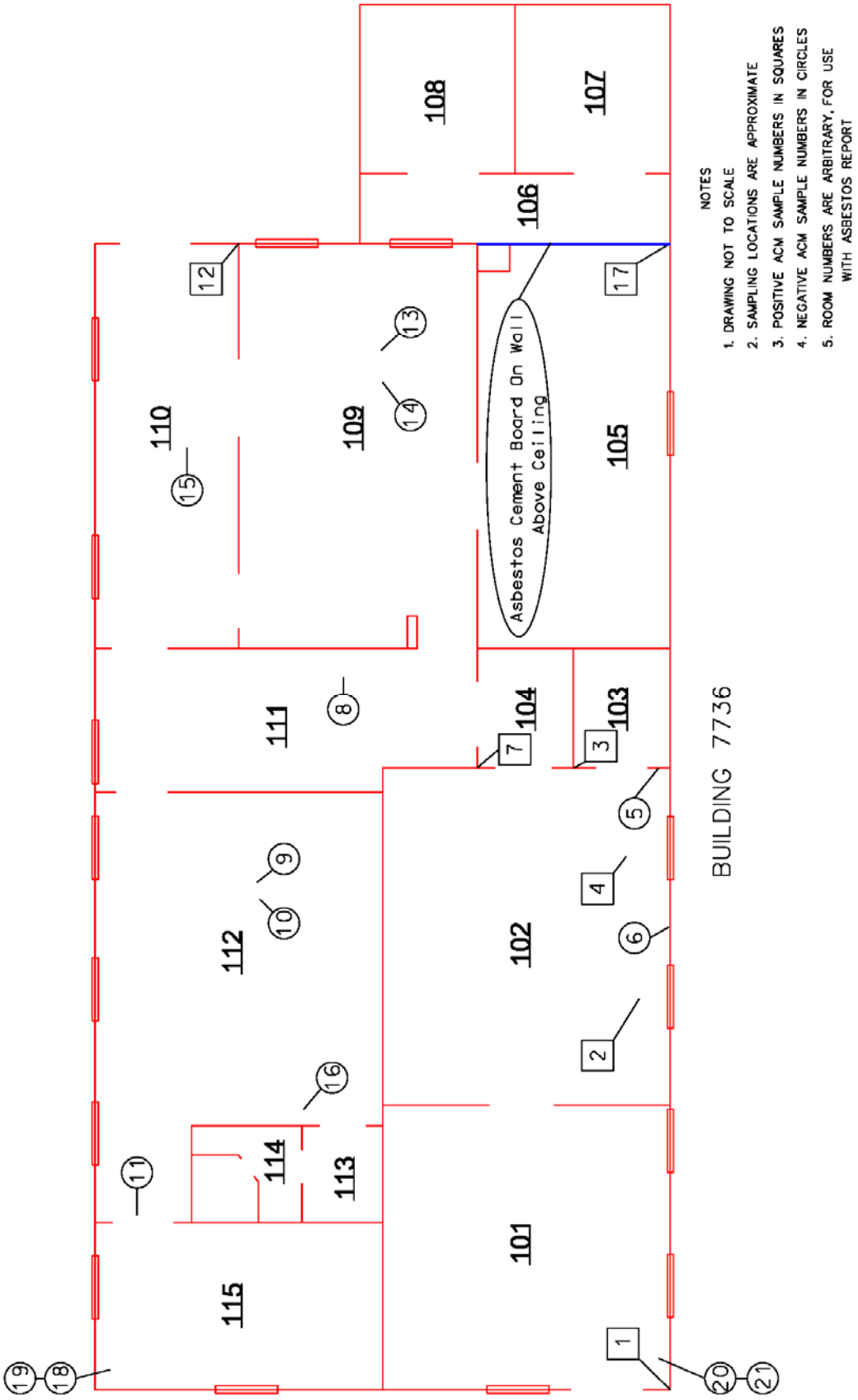
TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
BUILDING 7736

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material	Assumed, not verified to exist	1 (minimum)	Unknown	Unknown	Low
Miscellaneous	Drywall Joint Compound	Yes	2900	Friable	Good	Low
Miscellaneous	Adhesive On Plastic Wall Covering	Assumed, not verified to exist	1 (minimum)	Unknown	Unknown	Low
Miscellaneous	Asbestos Cement Board	Assumed	12	Non-friable	Damaged	Low

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

Disturbance potential assessment based on normal building occupancy, renovation or demolition activities may increase potential for damage.

Figure 1


NOTES
1. DRAWING NOT TO SCALE
2. SAMPLING LOCATIONS ARE APPROXIMATE
3. POSITIVE ACM SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ACM SAMPLE NUMBERS IN CIRCLES
5. ROOM NUMBERS ARE ARBITRARY, FOR USE WITH ASBESTOS REPORT
Asbestos Cement Board On Wall Above Ceiling
BUILDING 7736
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115

Appendix A

Laboratory's Analytical Report

CAROLINA ENVIRONMENTAL, INC.
107 New Edition Court, Cary, NC 27511
Phone: (919) 481-1413 Fax: (919) 481-1442

LABORATORY REPORT
ASBESTOS BULK ANALYSIS

Client: **US Army Corps of Engineers - Savannah District - EMU9**
200 North Cobb Parkway, Bldg. 400 Ste. 404
Marietta , GA 30062

Project: Ft. Stewart Bldg. 7736; 10434

CEI Lab Code: A10-9129
Received: 11-11-10
Analyzed: 11-15-10
Reported: 11-15-10
Analyst: Lisa Ismail

CLIENT ID	CEI LAB ID	HOMOGENEITY DESCRIPTION	% ASBESTOS
7736-1-1	A1087095	GYPSUM BOARD/JOINT COMPOUND Heterogeneous, White, Tan, Fibrous, Bound CHRY <1% PAINT 10 % CELL 20 % BIND 20 % FBGL <1 % GYPSUM 50 % CHRY 2% in joint compound only. Sample contains CHRY <1% overall.	CHRY <1%
7736-1-2	A1087096	DRYWALL JOINT COMPOUND Heterogeneous, White, Fibrous, Bound CHRY 2% PAINT 20 % BIND 78 %	CHRY 2%
7736-1-3	A1087097	GYPSUM BOARD/JOINT COMPOUND Heterogeneous, White, Tan, Fibrous, Bound CHRY <1% PAINT 10 % CELL 20 % BIND 20 % FBGL <1 % GYPSUM 50 % CHRY 2% in joint compound only. Sample contains CHRY <1% overall.	CHRY <1%
7736-1-4	A1087098	DRYWALL JOINT COMPOUND Heterogeneous, White, Fibrous, Bound CHRY 2% PAINT 20 % BIND 78 %	CHRY 2%
7736-1-5	A1087099	CAULKING MATERIAL Homogeneous, Red, Fibrous, Bound CAULK 98 % FBGL 2 %	ND
7736-1-6	A1087100	CAULKING MATERIAL Homogeneous, Red, Fibrous, Bound CAULK 98 % FBGL 2 %	ND

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107 New Edition Court, Cary, NC 27511
Phone: 919-481-1413 Fax: 919-481-1442

Project: Ft. Stewart Bldg. 7736; 10434

Lab Code: A10-9129

CLIENT ID	CEI LAB ID	HOMOGENEITY DESCRIPTION	% ASBESTOS
7736-1-7	A1087101	DRYWALL JOINT COMPOUND Heterogeneous, White, Fibrous, Bound CHRY 2% PAINT 20 % BIND 78 %	CHRY 2%
7736-1-8	A1087102	CEILING TILE Heterogeneous, White, Tan, Fibrous, Bound PAINT 10 % CELL 45 % PERL 20 % FBGL 25 %	ND
7736-1-9	A1087103	CEILING TILE Heterogeneous, White, Tan, Fibrous, Bound PAINT 10 % CELL 45 % PERL 20 % FBGL 25 %	ND
7736-A-10	A1087104	BLACK ADHESIVE Homogeneous, Black, Fibrous, Bound MAST 95 % FBGL 5 % CELL <1 %	ND
7736-A-11	A1087105	BLACK ADHESIVE Homogeneous, Black, Fibrous, Bound MAST 95 % FBGL 5 % CELL <1 %	ND
7736-1-12	A1087106	DRYWALL JOINT COMPOUND Heterogeneous, White, Fibrous, Bound CHRY 2% PAINT 20 % BIND 78 %	CHRY 2%
7736-1-13	A1087107	CEILING TILE Heterogeneous, White, Tan, Fibrous, Bound PAINT 10 % CELL 45 % PERL 20 % FBGL 25 %	ND

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Project: Ft. Stewart Bldg. 7736; 10434

Lab Code: A10-9129

CLIENT ID	CEI LAB ID	HOMOGENEITY DESCRIPTION	% ASBESTOS
7736-1-14	A1087108	CEILING TILE Heterogeneous, White, Tan, Fibrous, Bound PAINT 10 % CELL 45 % PERL 20 % FBGL 25 %	ND
7736-1-15	A1087109	FLOOR PAINT Heterogeneous, Grey, Non-fibrous, Bound CHRY <1% PAINT 90 % CELL <1 % BIND 10 %	CHRY <1%
7736-1-16	A1087110	FLOOR PAINT Heterogeneous, Grey, Non-fibrous, Bound CHRY <1% PAINT 90 % CELL <1 % BIND 10 %	CHRY <1%
7736-1-17	A1087111	DRYWALL JOINT COMPOUND Heterogeneous, White, Fibrous, Bound CHRY 2% PAINT 20 % BIND 78 %	CHRY 2%
7736-R-18	A1087112	ROOF SHINGLE Heterogeneous, Black, Fibrous, Bound GRAV 20 % FBGL 35 % TAR 45 %	ND
7736-R-19	A1087113	ROOFING FELT Heterogeneous, Black, Fibrous, Bound TAR 40 % CELL 60 %	ND
7736-R-20	A1087114	ROOF SHINGLE Heterogeneous, Black, Fibrous, Bound GRAV 20 % FBGL 35 % TAR 45 %	ND

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Project: Ft. Stewart Bldg. 7736; 10434

Lab Code: A10-9129

CLIENT ID	CEI LAB ID	HOMOGENEITY DESCRIPTION	% ASBESTOS
7736-R-21	A1087115	ROOFING FELT	ND
	Heterogeneous,	Black, Fibrous, Bound	
		TAR 40 % CELL 60 %	

The following definitions apply to the abbreviations used in the ASBESTOS BULK ANALYSIS REPORT:

CHRY = Chrysotile	CELL = Cellulose	DEBR = Debris
AMOS = Amosite	FBGL = Fibrous Glass	BIND = Binder
CROC = Crocidolite	CACO = Calcium Carbonate	SILI = Silicates
TREM = Tremolite	SYNT = Synthetics	GRAV = Gravel
ANTH = Anthophyllite	WOLL = Wollastonite	MAST = Mastic
ACTN = Actinolite	CERWL = Ceramic Wool	PLAS = Plaster
N D = None Detected	NTREM = Non-Asbestiform Tremolite	PERL = Perlite
NANTH = Non-Asbestiform Anthophyllite	FBGY = Fibrous Gypsum	RUBR =Rubber
		VER =Vermiculite

CLIENT: US Army Corps of Engineers - Savannah District - EMU9

PROJECT: Ft. Stewart Bldg. 7736; 10434

CEI LAB CODE: A10-9129

Stereoscopic microscopy and polarized light microscopy coupled with dispersion staining is the analytical technique used for sample identification. The percentage of each component is visually estimated by volume. These results pertain only to the samples analyzed. The samples were analyzed as submitted by the client and may not be representative of the larger material in question. Unless notified in writing to return samples, Carolina Environmental, Inc. will discard all bulk samples after 30 days.

Many vinyl floor tiles have been manufactured using greater than 1% asbestos. Often the asbestos was milled to a fiber size below the detection limit of polarized light microscopy. Therefore, a "None Detected" (ND) reading on vinyl floor tile does not necessarily exclude the presence of asbestos. Transmission electron microscopy provides a more conclusive form of analysis for vinyl floor tiles.

It is certified by the signature below that Carolina Environmental, Inc. is accredited by the National Voluntary Accreditation Program (NVLAP) for the analysis of asbestos in bulk materials. The accredited test method is EPA / 600 / M4-82 / 020 for the analysis of asbestos in building materials. Procedures described in EPA / 600 / R-93 / 116 have been incorporated where applicable. The detection limit for the method is 0.1% (trace amount). Carolina Environmental, Inc.'s NVLAP accreditation number is #101768-0. This report is not to be used to claim product endorsement by NVLAP or any agency of the U. S. Government. This report and its contents are only valid when reproduced in full. Dust and soil analyses for asbestos using PLM are not covered under NVLAP accreditation.

ANALYST Lisa Clomail

REVIEWED BY

Tianbao Bai, Ph.D.
Laboratory Director

End of Report

CAROLINA ENVIRONMENTAL, INC.

LABORATORY REPORT

PLM GRAVIMETRIC POINT COUNT ANALYSIS

Client Name: US Army Corps of Engineers - Savannah District - EMU9

Project Site: Ft. Stewart Bldg. 7736; 10434 **Date Received:** 11/19/2010

CEI Lab Code: A10-9129.1 **Date Reported:** 11/22/2010

Analyzed By: L. Ismail

CEI Lab ID	Client Sample ID	Sample Weight (g)	% Organic Material	% Acid Soluble Material	% Acid Insoluble Material	Asbestos Type	% Asbestos
A1087109	7736-1-15	0.4024	50.02	5.50	44.37	Chrysotile	0.11
A1087110	7736-1-16	0.2883	52.97	6.38	40.45	Chrysotile	0.20

Reviewed By Tianbao Bai

107 New Edition Ct.
Cary, NC 27511

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Fax: (919) 481-1442

Appendix B

Sample Chain of Custody Forms

A10.9129 (21)
A1087095 A1087115

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 7736**	Job No.:	**10434**
Sampler:	Tim Jones	Analysis:	PLM

DATE	SAMPLE ID	EMU ID	COMPONENTS/NOTES
11/9/2010	7736-1-1	65358	Gypsum board & joint compound
11/9/2010	7736-1-2	65359	Drywall joint compound
11/9/2010	7736-1-3	65360	Gypsum board & joint compound
11/9/2010	7736-1-4	65361	Drywall joint compound
11/9/2010	7736-1-5	65362	Caulking material
11/9/2010	7736-1-6	65363	Caulking material
11/9/2010	7736-1-7	65364	Drywall joint compound
11/9/2010	7736-1-8	65365	Ceiling tile
11/9/2010	7736-1-9	65366	Ceiling tile
11/9/2010	7736-A-10	65367	Black adhesive
11/9/2010	7736-A-11	65368	Black adhesive
11/9/2010	7736-1-12	65369	Drywall joint compound
11/9/2010	7736-1-13	65370	Ceiling tile
11/9/2010	7736-1-14	65371	Ceiling tile
11/9/2010	7736-1-15	65372	Floor paint
11/9/2010	7736-1-16	65373	Floor paint
11/9/2010	7736-1-17	65374	Drywall joint compound
11/9/2010	7736-R-18	65375	Roof shingle
11/9/2010	7736-R-19	65376	Roofing felt
11/9/2010	7736-R-20	65377	Roof shingle
11/9/2010	7736-R-21	65378	Roofing felt

Relinquished By	Date	Received By	Date	Time
Tim Jones	11-10-10 1400	Kristi Pruitt	11/11/10	10:10 am

48 ~~24~~ 72 HR TAT. Please report results to Tim Jones

Appendix C

Certifications and Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed
an examination that meets all criteria required for
EPA / AHERA (TSCA Title II) Approved Accreditation
and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy Jones

Social Security Number - XXX-XX-8826
US North Corp of Engineers - 200 North Cobb Parkway, Suite 404 - Marietta, Georgia 30062

Has completed coursework and satisfactorily passed
an examination that meets all criteria required for
EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation

Asbestos in Buildings: Inspector Refresher

September 29, 2010
Course Date

12194
Certificate Number

September 29, 2010
Examination Date

September 28, 2011
Expiration Date

David W. Hogue - Principle Instructor / Training Manager

Rachel G. McCain - Exam Administrator

(Approved by the ABIH Certification Maintenance Committee for 1/2 CM point)
(American Council for Accredited Certification - Re-certification Credit Registration #10072802)
(Florida Provider Registration Number 0001342 - Course #0002805)
TEI - 1841 West Oak Parkway, Suite F - Marietta, Georgia 30062 - (770) 427-3600 - www.tei-atl.com

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101768-0

Carolina Environmental, Inc.

Cary, NC

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2010-04-01 through 2011-03-31

Effective dates

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)

US Army Corps of Engineers®

Savannah District
Environmental and Materials Unit

Hazardous Building Materials Survey

Building 7736
Military Working Dog Kennel
Ft. Stewart, Georgia

Prepared by Timothy A. Jones

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Hazardous Building Materials Survey **November 2010**

Building 7736
Military Working Dog Kennel
Ft. Stewart, Georgia

by Timothy A. Jones

Final Report

Prepared for **US Army Corps of Engineers**
Savannah District

Hazardous Building Materials Survey Report

Introduction

Background

Building 7736 is a single story wood frame building on a concrete floor slab reportedly built in the 1940s timeframe. Interior walls are covered with a combination of gypsum drywall and plywood, much of which has been covered with thin plastic sheets. Ceilings are a mixture of gypsum drywall and two types of ceiling tiles. The floor is painted concrete. Exterior walls are covered with older wood siding topped with newer vinyl siding. The roof is wood framed and covered with a single layer of newer looking mineral surfaced asphalt shingles. The building appears to have been renovated several times during its existence and a small addition has been very recently added.

Description of study

Investigation

This report documents the hazardous building materials survey of Building 7736 at Ft. Stewart, Georgia conducted on 9 November 2010 by USACE Savannah District employee Tim Jones. This report includes only building materials located at the time of inspection. The investigation includes a visual identification and location of such items as: fluorescent and mercury-vapor lights, including possible PCB containing ballasts; battery back-up exit lights and emergency lights; mercury-containing thermostats and switches; refrigerant containing air conditioners, water fountains and ice makers; above and below ground storage tanks; transformers; built in and portable chemical type fire suppression systems; smoke detectors; and lead building materials. Other hazardous building materials not listed above may also be included at the discretion of the inspectors. Asbestos is excluded from this inspection as it is covered separately in an asbestos inspection report.

Conclusions

The following information gathered during the survey of Building 7736 is presented in attached information:

a. *Light Count:* The fluorescent and mercury vapor light count results are presented in Table 1.

b. *Thermostats:* One mercury containing thermostat was located in the building.

c. *Compressed Refrigerant Gas:* One air conditioner, two refrigerators and one portable de-humidifier were located in the building. This equipment is assumed to contain refrigerant gas that should be recovered prior to demolition.

d. *Portable Fire Extinguishers:* Three portable fire extinguishers were located in the building.

e. *Above Ground Storage Tank:* One 500 gallon capacity above ground propane tank was located next to the building.

f. *Lead Building Components:* Poured lead pipe joints are suspected in the plumbing drainage system below the slab. Approximately 25-50 such joints are estimated to exist.

g. *Lead Based Paint:* Four paint chip samples were collected from the building. Three of the samples contained some amount of lead. Of those three samples, one contained lead above the EPA/HUD guidelines (0.5% by weight) for lead based paint. Sample information is listed in Table 2. The laboratory's analytical report is included as Appendix A at the end of this report. This information is not to be construed as a complete lead based paint survey. Information was collected for estimating and general information purposes only.

TABLE 1
Ft. STEWART BUILDING 7736
FLORESCENT AND MERCURY LIGHT FIXTURES

AREA IDENTIFICATION	# & TYPE LIGHTS PRESENT	DESCRIPTION OF LIGHTS
Interior	1	2 foot long, 2 bulb florescent fixtures
Interior	14	4 foot long, 2 bulb florescent fixtures
Interior	6	Small screw in fluorescent bulbs
Interior	12	Spare 4 foot long fluorescent bulbs

TABLE 2
Ft. STEWART BUILDING 7736
PAINT SCRAPE SAMPLES

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	LOCATION	ANALYTICAL REASULTS
7736-LBP-1	Grey on concrete floor slab	Lobby	0.073 %
7736-LBP-2	White on exterior wood siding	Exterior	1.9 %
7736-LBP-3	White on interior gypsum board wall	Sergeant’s office	0.26%
7736-LBP-4	Grey on interior wood window trim	Sergeant’s office	<0.0043 %

APPENDIX A

CAROLINA ENVIRONMENTAL, INC.
107 New Edition Court
Cary, N.C. 27511
Phone: (919)481-1413 Fax: (919) 481-1442

LABORATORY REPORT
LEAD IN PAINT

Client: **US Army Corps of Engineers - Savannah District - EMU9**
200 North Cobb Parkway, Bldg. 400 Ste. 404
Marietta, GA 30062

CEI Lab Code: C10-0602
Received: 11-11-10
Reported: 11-15-10

Project: Ft. Stewart Bldg. 7736 LBP; 10434

CLIENT ID	CEI LAB ID	PPM (ug/g)	CONCENTRATION % BY WEIGHT
7736-LBP-1	CA37997	730	**0.073**
7736-LBP-2	CA37998	19000	**1.9**
7736-LBP-3	CA37999	2600	**0.26**
7736-LBP-4	CA38000	<43	**<0.0043**

ANALYSIS METHOD: EPA SW846 7420

Reviewed By: Tianbao Bai

Tianbao Bai, Ph.D.
Laboratory Director

This method has been validated for sample weights of 0.020g or greater. When samples with a weight of less than that are analyzed those results fall outside of the scope of accreditations.
*** The analysis of composite wipe samples as a single samples is not included under AIHA accreditation.**

Minimum reporting limit is 20 ug total lead. Sample results denoted with a "less than" (<) sign contain less than 20.0 ug total lead, based on a 40ml sample volume.

Lead samples are not analyzed by Carolina Environmental Inc. Lead samples are submitted to an AIHA ELLAP accredited laboratory for lead analysis of soil, dust, paint, and TCLP samples.

Laboratory results represent the analysis of samples as submitted by the client. Information regarding sample location, description, area, volume, etc., was provided by the client. Unless notified in writing to return samples, Carolina Environmental, Inc. discards client samples after 30 days. This report shall not be reproduced, except in full, without the written consent of Carolina Environmental, Inc.

REGULATORY LIMITS
OSHA Standard: No safe limit.
Consumer Products Safety Standard: Greater than 0.06% lead by weight.
Federal Lead Standard / HUD: 0.5% lead by weight.

CAROLINA ENVIRONMENTAL, INC.
107 New Edition Court, Cary, NC 27511
Tel: 919-481-1413 Fax: 919-481-1442

Project: Ft. Stewart Bldg. 7736 LBP; 10434

Lab Code: C10-0602

CLIENT ID	CEI LAB ID	PPM (ug/g)	CONCENTRATION % BY WEIGHT

LEGEND			
	ug = microgram	ppm = parts per million	g = grams
	ml = milliliter	Pb = lead	wt = weight

End of Report

C10.0602 (4)
CA37997.CA38006

CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS
LEAD-BASED PAINT ANALYSIS

Project:	**Ft. Stewart Bldg. 7736 LBP**	Job No.:	**10434**
Sampler:	Tim Jones	Analysis:	% Lead in Paint

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/9/2010	7736-LBP-1	65395	Paint chip
11/9/2010	7736-LBP-2	65396	Paint chip
11/9/2010	7736-LBP-3	65397	Paint chip
11/9/2010	7736-LBP-4	65398	Paint chip

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-10-10	1400	Kristy Pratt	11/11/10	10:10AM

US Army Corps of Engineers®

Savannah District
Environmental and Materials Unit

Asbestos Survey

Building 7740
Military Working Dog Kennel
Ft. Stewart, Georgia

Thursday, June 28, 2012

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **November 2010**

Building 7740
Military Working Dog Kennel
Ft. Stewart, Georgia

Final report

Prepared for **US Army Corps of Engineers**
Savannah District

Thursday, June 28, 2012

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Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building 7740 at the Military Working Dog Kennel, Ft. Stewart; Georgia conducted on 9 November 2010 by Savannah District US Army Corps of Engineers employee Tim Jones. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building 7740 is an approximately 1600 square foot single story prefabricated steel frame building on a concrete floor slab reportedly built in the late 1990s timeframe. Exterior walls and roof are covered with corrugated metal panels. The building is used as a kennel to house military working dogs.

Description of study

Investigation

All accessible areas of Building 7740 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of suspected ACM's not assumed to contain asbestos were collected. This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Carolina Environmental, Inc. The laboratory is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). A copy of the laboratory's accreditation certificate is included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM)

using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. The laboratory's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspectors. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building 7740 is included in this report where relevant. Bulk sample information appears on Table 1. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

No suspect asbestos containing TSI was located in the building.

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and Ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building 7740 were found to contain or were assumed to contain asbestos:

No suspect asbestos containing Miscellaneous Materials were located in the building.

Surfacing Material

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

No asbestos containing surfacing material was located in the building.

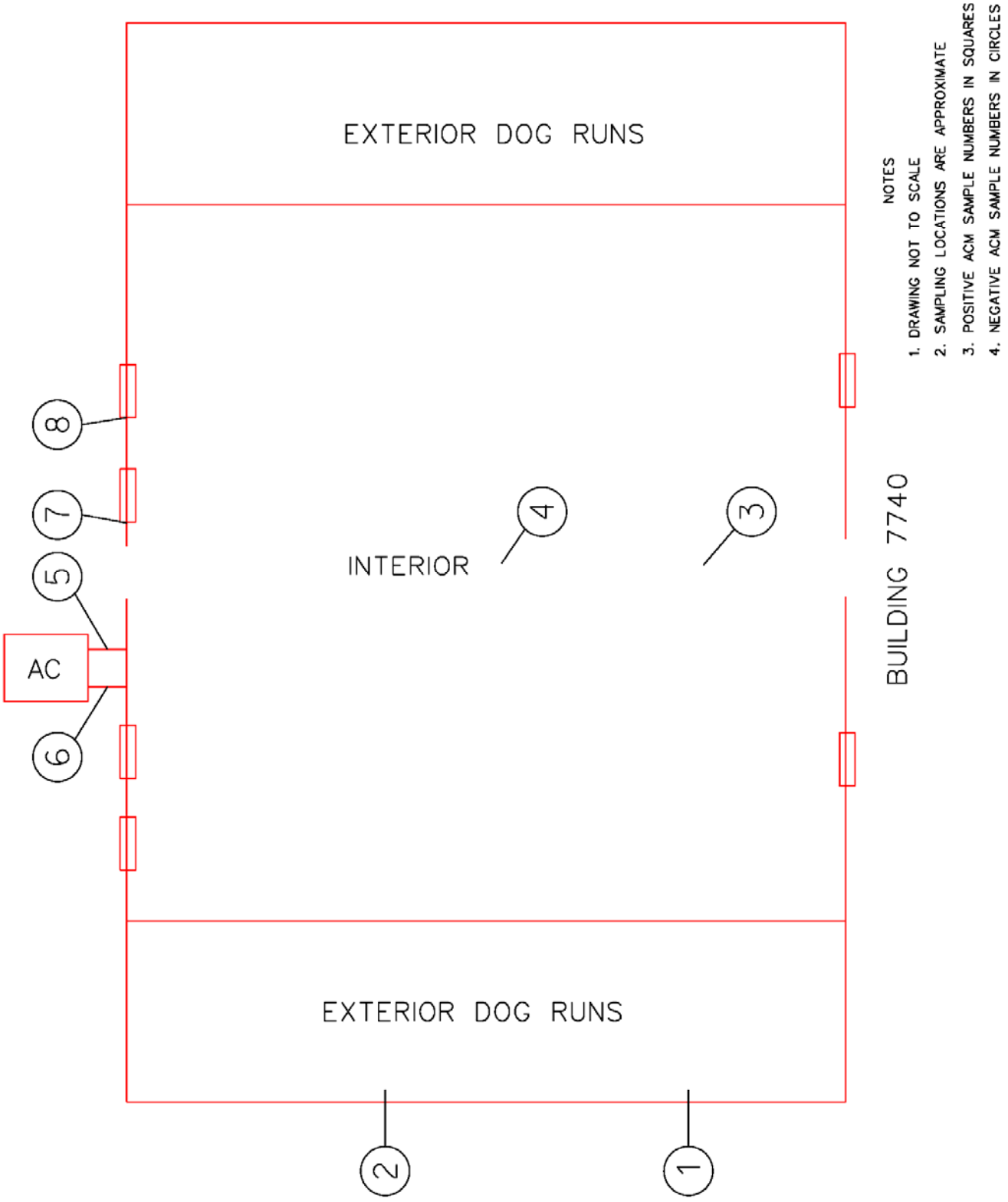
TABLE 1
SUSPECT ACM SAMPLES
BUILDING 7740

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
7740-R-1	Caulking material	Roof, between overlapping sections of corrugated metal roofing	No Asbestos Detected
7740-R-2	Caulking material	Roof, between overlapping sections of corrugated metal roofing	No Asbestos Detected
7740-1-3	White mastic	Interior, on seams of foil backed duct insulation	No Asbestos Detected
7740-1-4	White mastic	Interior, on seams of foil backed duct insulation	No Asbestos Detected
7740-E-5	Grey mastic	Exterior, coating duct insulation near air conditioner	No Asbestos Detected
7740-E-6	Grey mastic	Exterior, coating duct insulation near air conditioner	No Asbestos Detected
7740-E-7	Caulking material	Exterior, between metal window frame and wood trim	No Asbestos Detected
7740-E-8	Caulking material	Exterior, between metal window frame and wood trim	No Asbestos Detected

Samples testing positive for asbestos indicated in **BOLD** type

NAD = No Asbestos Detected

Figure 1


EXTERIOR DOG RUNS
INTERIOR
EXTERIOR DOG RUNS
BUILDING 7740
AC
1
2
3
4
5
6
7
8
NOTES
1. DRAWING NOT TO SCALE
2. SAMPLING LOCATIONS ARE APPROXIMATE
3. POSITIVE ACM SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ACM SAMPLE NUMBERS IN CIRCLES

Appendix A

Laboratory's Analytical Report

CAROLINA ENVIRONMENTAL, INC.
107 New Edition Court, Cary, NC 27511
Phone: (919) 481-1413 Fax: (919) 481-1442

LABORATORY REPORT
ASBESTOS BULK ANALYSIS

Client: **US Army Corps of Engineers - Savannah District - EMU9**
200 North Cobb Parkway, Bldg. 400 Ste. 404
Marietta, GA 30062

Project: Ft. Stewart Bldg. 7740; 10434

CEI Lab Code: A10-9130
Received: 11-11-10
Analyzed: 11-15-10
Reported: 11-15-10
Analyst: Gary A. Swanson

CLIENT ID	CEI LAB ID	HOMOGENEITY DESCRIPTION				% ASBESTOS
7740-R-1	A1087116	CAULKING				ND
	Homogeneous,	Grey, Fibrous, Bound				
		CACO	20 %			
		BIND	80 %			
7740-R-2	A1087117	CAULKING				ND
	Homogeneous,	Grey, Fibrous, Bound				
		CACO	20 %			
		BIND	80 %			
7740-1-3	A1087118	MASTIC				ND
	Homogeneous,	White, Fibrous, Bound				
		CACO	20 %	FBGL	5 %	
		BIND	70 %	CELL	5 %	
7740-1-4	A1087119	MASTIC				ND
	Homogeneous,	White, Fibrous, Bound				
		CACO	20 %	FBGL	5 %	
		BIND	70 %	CELL	5 %	
7740-E-5	A1087120	MASTIC				ND
	Homogeneous,	Grey, Fibrous, Bound				
		CACO	20 %	CELL	5 %	
		SILI	5 %			
		BIND	70 %			
7740-E-6	A1087121	MASTIC				ND
	Homogeneous,	Grey, Fibrous, Bound				
		CACO	20 %	CELL	5 %	
		SILI	5 %			
		BIND	70 %			

CAROLINA ENVIRONMENTAL, INC.
107 New Edition Court, Cary, NC 27511
Phone: 919-481-1413 Fax: 919-481-1442

Project: Ft. Stewart Bldg. 7740; 10434

Lab Code: A10-9130

CLIENT ID	CEI LAB ID	HOMOGENEITY DESCRIPTION	% ASBESTOS
7740-E-7	A1087122	CAULKING	ND
	Heterogeneous,	White, Grey, Non-fibrous, Bound	
		PAINT 3 %	
		CACO 20 %	
		BIND 77 %	
7740-E-8	A1087123	CAULKING	ND
	Homogeneous,	White, Non-fibrous, Bound	
		CACO 20 %	
		BIND 80 %	

The following definitions apply to the abbreviations used in the ASBESTOS BULK ANALYSIS REPORT:

CHRY = Chrysotile	CELL = Cellulose	DEBR = Debris
AMOS = Amosite	FBGL = Fibrous Glass	BIND = Binder
CROC = Crocidolite	CACO = Calcium Carbonate	SILI = Silicates
TREM = Tremolite	SYNT = Synthetics	GRAV = Gravel
ANTH = Anthophyllite	WOLL = Wollastonite	MAST = Mastic
ACTN = Actinolite	CERWL = Ceramic Wool	PLAS = Plaster
N D = None Detected	NTREM = Non-Asbestiform Tremolite	PERL = Perlite
NANTH = Non-Asbestiform Anthophyllite	FBGY = Fibrous Gypsum	RUBR =Rubber
		VER =Vermiculite

CLIENT: US Army Corps of Engineers - Savannah District - EMU9

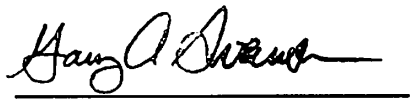
PROJECT: Ft. Stewart Bldg. 7740; 10434

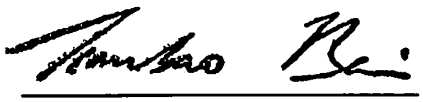
CEI LAB CODE: A10-9130

Stereoscopic microscopy and polarized light microscopy coupled with dispersion staining is the analytical technique used for sample identification. The percentage of each component is visually estimated by volume. These results pertain only to the samples analyzed. The samples were analyzed as submitted by the client and may not be representative of the larger material in question. Unless notified in writing to return samples, Carolina Environmental, Inc. will discard all bulk samples after 30 days.

Many vinyl floor tiles have been manufactured using greater than 1% asbestos. Often the asbestos was milled to a fiber size below the detection limit of polarized light microscopy. Therefore, a "None Detected" (ND) reading on vinyl floor tile does not necessarily exclude the presence of asbestos. Transmission electron microscopy provides a more conclusive form of analysis for vinyl floor tiles.

It is certified by the signature below that Carolina Environmental, Inc. is accredited by the National Voluntary Accreditation Program (NVLAP) for the analysis of asbestos in bulk materials. The accredited test method is EPA / 600 / M4-82 / 020 for the analysis of asbestos in building materials. Procedures described in EPA / 600 / R-93 / 116 have been incorporated where applicable. The detection limit for the method is 0.1% (trace amount). Carolina Environmental, Inc.'s NVLAP accreditation number is #101768-0. This report is not to be used to claim product endorsement by NVLAP or any agency of the U. S. Government. This report and its contents are only valid when reproduced in full. Dust and soil analyses for asbestos using PLM are not covered under NVLAP accreditation.

ANALYST 

REVIEWED BY 

Tianbao Bai, Ph.D.
Laboratory Director

End of Report

Appendix B

Sample Chain of Custody Forms

A10-9130 (8)
A1087116.A1087123

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 7740**	Job No.:	**10434**
Sampler:	Tim Jones	Analysis:	PLM

DATE	SAMPLE ID	EMU ID	COMPONENTS/NOTES
11/9/2010	7740-R-1	65379	Caulking material
11/9/2010	7740-R-2	65380	Caulking material
11/9/2010	7740-1-3	65381	White mastic
11/9/2010	7740-1-4	65382	White mastic
11/9/2010	7740-E-5	65383	Grey mastic
11/9/2010	7740-E-6	65384	Grey mastic
11/9/2010	7740-E-7	65385	Caulking material
11/9/2010	7740-E-8	65386	Caulking material

Relinquished By	Date	Received By	Date	Time
Tim Jones	11-10-10 1400	Kirk Holt	111110	10:10am

48 ~~24~~ HR TAT. Please report results to Tim Jones
TB

Appendix C

Certifications and Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed
an examination that meets all criteria required for
EPA / AHERA (TSCA Title II) Approved Accreditation
and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy Jones

Social Security Number - XXX-XX-8826
US North Corp of Engineers - 200 North Cobb Parkway, Suite 404 - Marietta, Georgia 30062

Has completed coursework and satisfactorily passed
an examination that meets all criteria required for
EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation

Asbestos in Buildings: Inspector Refresher

September 29, 2010
Course Date

12194
Certificate Number

September 29, 2010
Examination Date

September 28, 2011
Expiration Date

David W. Hogue - Principle Instructor / Training Manager

Rachel G. McCain - Exam Administrator

(Approved by the ABIH Certification Maintenance Committee for 1/2 CM point)
(American Council for Accredited Certification - Re-certification Credit Registration #10072802)
(Florida Provider Registration Number 0001342 - Course #0002805)
TEI - 1841 West Oak Parkway, Suite F - Marietta, Georgia 30062 - (770) 427-3600 - www.tei-atl.com

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101768-0

Carolina Environmental, Inc.

Cary, NC

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2010-04-01 through 2011-03-31

Effective dates

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)

US Army Corps of Engineers®

Savannah District
Environmental and Materials Unit

Hazardous Building Materials Survey

Building 7740
Military Working Dog Kennel
Ft. Stewart, Georgia

Prepared by Timothy A. Jones

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Hazardous Building Materials Survey **November 2010**

Building 7740
Military Working Dog Kennel
Ft. Stewart, Georgia

by Timothy A. Jones

Final Report

Prepared for **US Army Corps of Engineers**
Savannah District

Hazardous Building Materials Survey Report

Introduction

Background

Building 7740 is an approximately 1600 square foot single story prefabricated steel frame building on a concrete floor slab reportedly built in the late 1990s timeframe. Exterior walls and roof are covered with corrugated metal panels. The building is used as a kennel to house military working dogs.

Description of study

Investigation

This report documents the hazardous building materials survey of Building 7740 at Ft. Stewart, Georgia conducted on 9 November 2010 by USACE Savannah District employee Tim Jones. This report includes only building materials located at the time of inspection. The investigation includes a visual identification and location of such items as: fluorescent and mercury-vapor lights, including possible PCB containing ballasts; battery back-up exit lights and emergency lights; mercury-containing thermostats and switches; refrigerant containing air conditioners, water fountains and ice makers; above and below ground storage tanks; transformers; built in and portable chemical type fire suppression systems; smoke detectors; and lead building materials. Other hazardous building materials not listed above may also be included at the discretion of the inspectors. Asbestos is excluded from this inspection as it is covered separately in an asbestos inspection report.

Conclusions

The following information gathered during the survey of Building 7740 is presented in attached information:

a. *Light Count:* The fluorescent and mercury vapor light count results are presented in Table 1.

b. *Compressed Refrigerant Gas:* One central air conditioner was located in the building. This equipment is assumed to contain refrigerant gas that should be recovered prior to demolition.

c. *Portable Fire Extinguishers:* One portable fire extinguisher was located in the building.

d. *Lead Based Paint:* Due to the construction date of the building lead based paint is not expected to be an issue.

TABLE 1
Ft. STEWART BUILDING 7740
FLORESCENT AND MERCURY LIGHT FIXTURES

AREA IDENTIFICATION	# & TYPE LIGHTS PRESENT	DESCRIPTION OF LIGHTS
Interior	19	4 foot long, 2 bulb florescent fixtures

US Army Corps of Engineers®

Savannah District
Environmental and Materials Unit

Asbestos Survey

Building 7740A
Military Working Dog Kennel
Ft. Stewart, Georgia

Thursday, June 28, 2012

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **November 2010**

Building 7740A
Military Working Dog Kennel
Ft. Stewart, Georgia

Final report

Prepared for **US Army Corps of Engineers**
Savannah District

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Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building 7740A at the Military Working Dog Kennel, Ft. Stewart; Georgia conducted on 9 November 2010 by Savannah District US Army Corps of Engineers employee Tim Jones. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building 7740A is a single story, two room, 200 square foot, concrete block and wood frame building on a concrete floor slab reportedly built in the late 1990s timeframe. The front room of the building is concrete block construction while the rear room is wood framed with gypsum board interior wall covering and corrugated metal exterior siding. The entire building has a corrugated metal roof. The building is used for dog food storage for the military working dogs. Rooms on the building floor plans are arbitrarily numbered for identification in this report only.

Description of study

Investigation

All accessible areas of Building 7740A were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of suspected ACM's not assumed to contain asbestos were collected. This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Carolina Environmental, Inc. The laboratory is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)).

A copy of the laboratory's accreditation certificate is included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. The laboratory's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspectors. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building 7740A is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

No suspect asbestos containing TSI was located in the building.

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and Ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building 7740A were found to contain or were assumed to contain asbestos:

Black sink undercoating on the double bowl stainless steel sink in Room 101 contains asbestos. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations).

Surfacing Material

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

No asbestos containing surfacing material was located in the building.

TABLE 1
SUSPECT ACM SAMPLES
BUILDING 7740A

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
7740A-1-1	Drywall joint compound	Room 102 wall	No Asbestos Detected
7740A-1-2	Drywall joint compound	Room 102 wall	No Asbestos Detected
7740A-1-3	Caulking material	Room 101, between concrete floor slab and block wall	No Asbestos Detected
7740A-1-4	Caulking material	Room 101, between concrete floor slab and block wall	No Asbestos Detected
7740A-1-5	**Sink undercoating**	**Room 101, underside of stainless steel sink**	**2% chrysotile**
7740A-1-6	**Sink undercoating**	**Room 101, underside of stainless steel sink**	**2% chrysotile**
7740A-R-7	Caulking material	Roof, between overlapping sections of corrugated metal roofing	No Asbestos Detected
7740A-R-8	Caulking material	Roof, between overlapping sections of corrugated metal roofing	No Asbestos Detected

Samples testing positive for asbestos indicated in **BOLD** type

NAD = No Asbestos Detected

TABLE 2
ACM QUANTITY SUMMARY
BUILDING 7740A

Homogeneous Area	UNITS	Functional Space								
		Room 101								TOTALS
Sink Undercoating	S.F.	5								5

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

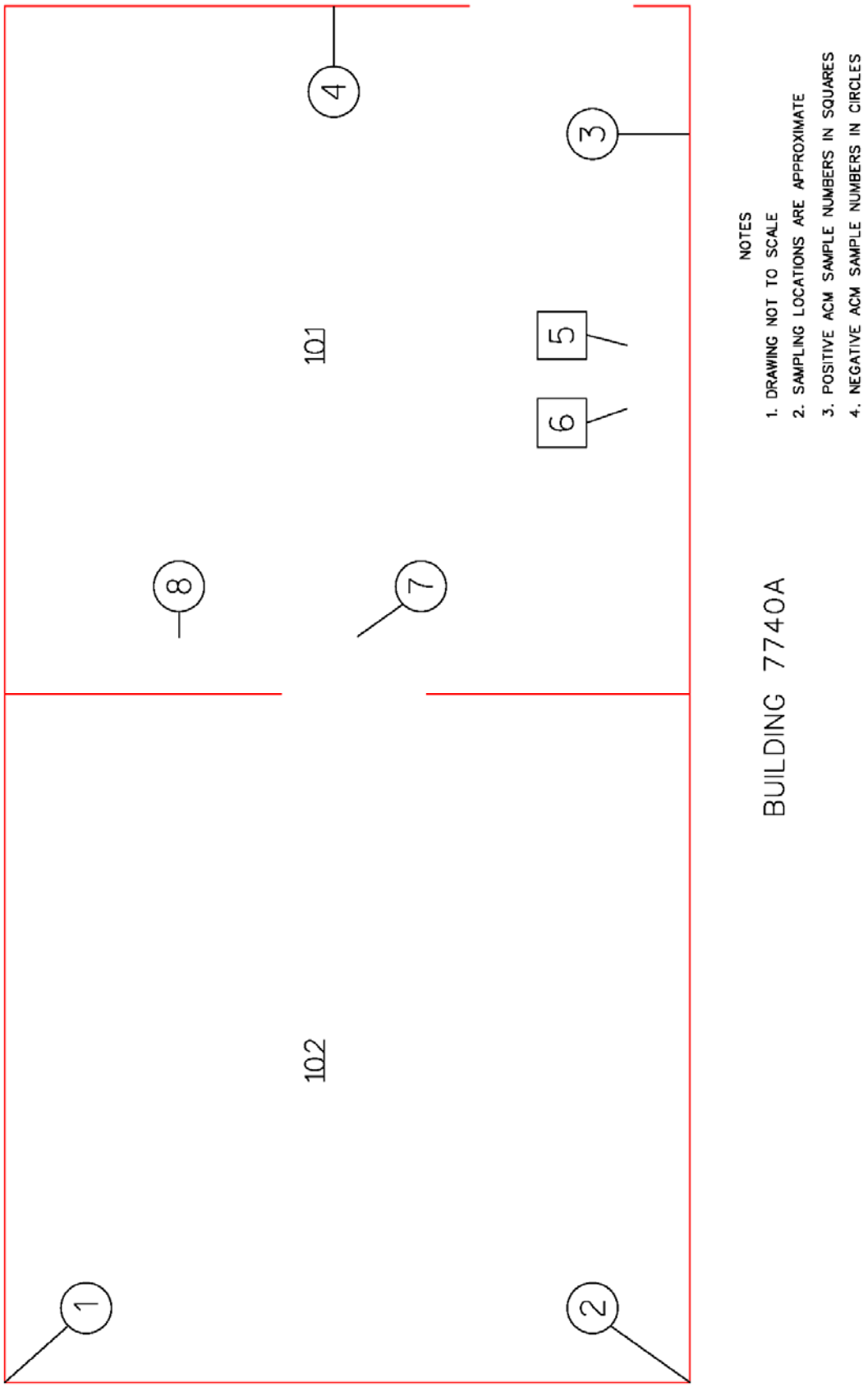
TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
BUILDING 7740A

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Sink Undercoating	Yes	5 S.F.	Non-friable	Good	Low

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

Disturbance potential assessment based on normal building occupancy, renovation or demolition activities may increase potential for damage.

Figure 1


4
3
101
5
6
8
7
BUILDING 7740A
102
1
2
NOTES
1. DRAWING NOT TO SCALE
2. SAMPLING LOCATIONS ARE APPROXIMATE
3. POSITIVE ACM SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ACM SAMPLE NUMBERS IN CIRCLES

Appendix A

Laboratory's Analytical Report

CAROLINA ENVIRONMENTAL, INC.
107 New Edition Court, Cary, NC 27511
Phone: (919) 481-1413 Fax: (919) 481-1442

LABORATORY REPORT
ASBESTOS BULK ANALYSIS

Client: **US Army Corps of Engineers - Savannah District - EMU9**
200 North Cobb Parkway, Bldg. 400 Ste. 404
Marietta , GA 30062

Project: Ft. Stewart Bldg. 7740A; 10434

CEI Lab Code: A10-9131
Received: 11-11-10
Analyzed: 11-15-10
Reported: 11-15-10
Analyst: Lisa Ismail

CLIENT ID	CEI LAB ID	HOMOGENEITY DESCRIPTION	% ASBESTOS
7440A-1-1	A1087124	DRYWALL JOINT COMPOUND Heterogeneous, White, Fibrous, Bound PAINT 20 % CELL 10 % BIND 70 %	ND
7440A-1-2	A1087125	DRYWALL JOINT COMPOUND Heterogeneous, White, Fibrous, Bound PAINT 20 % CELL 10 % BIND 70 %	ND
7440A-1-3	A1087126	CAULKING MATERIAL Homogeneous, Grey, Non-fibrous, Bound CAULK 100 % CELL <1 %	ND
7440A-1-4	A1087127	CAULKING MATERIAL Homogeneous, Grey, Non-fibrous, Bound CAULK 100 % CELL <1 %	ND
7440A-1-5	A1087128	SINK UNDERCOATING Homogeneous, Black, Fibrous, Bound CHRY 2% BIND 98 % CELL <1 %	CHRY 2%
7440A-1-6	A1087129	SINK UNDERCOATING Homogeneous, Black, Fibrous, Bound CHRY 2% BIND 98 % CELL <1 %	CHRY 2%

Page 1

CAROLINA ENVIRONMENTAL, INC.
107 New Edition Court, Cary, NC 27511
Phone: 919-481-1413 Fax: 919-481-1442

Project: Ft. Stewart Bldg. 7740A; 10434

Lab Code: A10-9131

CLIENT ID	CEI LAB ID	HOMOGENEITY DESCRIPTION				% ASBESTOS
7440A-R-7	A1087130	CAULKING MATERIAL				ND
	Homogeneous,	Grey, Fibrous, Bound				
		CAULK	80 %	WOLL	15 %	
				TALC	5 %	
7440A-R-8	A1087131	CAULKING MATERIAL				ND
	Homogeneous,	Grey, Fibrous, Bound				
		CAULK	80 %	WOLL	15 %	
				TALC	5 %	

The following definitions apply to the abbreviations used in the ASBESTOS BULK ANALYSIS REPORT:

CHRY = Chrysotile	CELL = Cellulose	DEBR = Debris
AMOS = Amosite	FBGL = Fibrous Glass	BIND = Binder
CROC = Crocidolite	CACO = Calcium Carbonate	SILI = Silicates
TREM = Tremolite	SYNT = Synthetics	GRAV = Gravel
ANTH = Anthophyllite	WOLL = Wollastonite	MAST = Mastic
ACTN = Actinolite	CERWL = Ceramic Wool	PLAS = Plaster
N D = None Detected	NTREM = Non-Asbestiform Tremolite	PERL = Perlite
NANTH = Non-Asbestiform Anthophyllite	FBGY = Fibrous Gypsum	RUBR =Rubber
		VER =Vermiculite

CLIENT: US Army Corps of Engineers - Savannah District - EMU9

PROJECT: Ft. Stewart Bldg. 7740A; 10434

CEI LAB CODE: A10-9131

Stereoscopic microscopy and polarized light microscopy coupled with dispersion staining is the analytical technique used for sample identification. The percentage of each component is visually estimated by volume. These results pertain only to the samples analyzed. The samples were analyzed as submitted by the client and may not be representative of the larger material in question. Unless notified in writing to return samples, Carolina Environmental, Inc. will discard all bulk samples after 30 days.

Many vinyl floor tiles have been manufactured using greater than 1% asbestos. Often the asbestos was milled to a fiber size below the detection limit of polarized light microscopy. Therefore, a "None Detected" (ND) reading on vinyl floor tile does not necessarily exclude the presence of asbestos. Transmission electron microscopy provides a more conclusive form of analysis for vinyl floor tiles.

It is certified by the signature below that Carolina Environmental, Inc. is accredited by the National Voluntary Accreditation Program (NVLAP) for the analysis of asbestos in bulk materials. The accredited test method is EPA / 600 / M4-82 / 020 for the analysis of asbestos in building materials. Procedures described in EPA / 600 / R-93 / 116 have been incorporated where applicable. The detection limit for the method is 0.1% (trace amount). Carolina Environmental, Inc.'s NVLAP accreditation number is #101768-0. This report is not to be used to claim product endorsement by NVLAP or any agency of the U. S. Government. This report and its contents are only valid when reproduced in full. Dust and soil analyses for asbestos using PLM are not covered under NVLAP accreditation.

ANALYST Lisa Clomail

REVIEWED BY Tianbao Bai

Tianbao Bai, Ph.D.
Laboratory Director

End of Report

Appendix B

Sample Chain of Custody Forms

A10 9131 (8)
A 1087124 A 1087131

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 7740A**	Job No.:	**10434**
Sampler:	Tim Jones	Analysis:	PLM

DATE	SAMPLE ID	EMU ID	COMPONENTS/NOTES
11/9/2010	7740A-1-1	65387	Drywall joint compound
11/9/2010	7740A-1-2	65388	Drywall joint compound
11/9/2010	7740A-1-3	65389	Caulking material
11/9/2010	7740A-1-4	65390	Caulking material
11/9/2010	7740A-1-5	65391	Sink undercoating
11/9/2010	7740A-1-6	65392	Sink undercoating
11/9/2010	7740A-R-7	65393	Caulking material
11/9/2010	7740A-R-8	65394	Caulking material

Relinquished By	Date	Received By	Date	Time
Tim Jones	11-10-10 1400	Kristy Pell	11/11/10	10:10 am

46 ~~24~~ HR TAT. Please report results to Tim Jones

Appendix C

Certifications and Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed
an examination that meets all criteria required for
EPA / AHERA (TSCA Title II) Approved Accreditation
and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy Jones

Social Security Number - XXX-XX-8826
US North Corp of Engineers - 200 North Cobb Parkway, Suite 404 - Marietta, Georgia 30062

Has completed coursework and satisfactorily passed
an examination that meets all criteria required for
EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation

Asbestos in Buildings: Inspector Refresher

September 29, 2010
Course Date

12194
Certificate Number

September 29, 2010
Examination Date

September 28, 2011
Expiration Date

David W. Hogue - Principle Instructor / Training Manager

Rachel G. McCain - Exam Administrator

(Approved by the ABIH Certification Maintenance Committee for 1/2 CM point)
(American Council for Accredited Certification - Re-certification Credit Registration #10072802)
(Florida Provider Registration Number 0001342 - Course #0002805)
TEI - 1841 West Oak Parkway, Suite F - Marietta, Georgia 30062 - (770) 427-3600 - www.tei-atl.com

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101768-0

Carolina Environmental, Inc.

Cary, NC

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2010-04-01 through 2011-03-31
Effective dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

Sally S. Bruce
For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)

US Army Corps of Engineers®

Savannah District
Environmental and Materials Unit

Hazardous Building Materials Survey

Building 7740A
Military Working Dog Kennel
Ft. Stewart, Georgia

Prepared by Timothy A. Jones

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Hazardous Building Materials Survey **November 2010**

Building 7740A
Military Working Dog Kennel
Ft. Stewart, Georgia

by Timothy A. Jones

Final Report

Prepared for **US Army Corps of Engineers**
Savannah District

Hazardous Building Materials Survey Report

Introduction

Background

Building 7740A is a single story, two room, 200 square foot, concrete block and wood frame building on a concrete floor slab reportedly built in the late 1990s timeframe. The front room of the building is concrete block construction while the rear room is wood framed with gypsum board interior wall covering and corrugated metal exterior siding. The entire building has a corrugated metal roof. The building is used for dog food storage for the military working dogs.

Description of study

Investigation

This report documents the hazardous building materials survey of Building 7740A at Ft. Stewart, Georgia conducted on 9 November 2010 by USACE Savannah District employee Tim Jones. This report includes only building materials located at the time of inspection. The investigation includes a visual identification and location of such items as: fluorescent and mercury-vapor lights, including possible PCB containing ballasts; battery back-up exit lights and emergency lights; mercury-containing thermostats and switches; refrigerant containing air conditioners, water fountains and ice makers; above and below ground storage tanks; transformers; built in and portable chemical type fire suppression systems; smoke detectors; and lead building materials. Other hazardous building materials not listed above may also be included at the discretion of the inspectors. Asbestos is excluded from this inspection as it is covered separately in an asbestos inspection report.

Conclusions

The following information gathered during the survey of Building 7740A is presented in attached information:

a. *Light Count:* The fluorescent and mercury vapor light count results are presented in Table 1.

b. *Compressed Refrigerant Gas:* One window air conditioner and one ice maker were located in the building. This equipment is assumed to contain refrigerant gas that should be recovered prior to demolition.

c. *Portable Fire Extinguishers:* One portable fire extinguisher was located in the building.

d. *Lead Based Paint:* Due to the construction date of the building lead based paint is not expected to be an issue.

TABLE 1
Ft. STEWART BUILDING 7740A
FLORESCENT AND MERCURY LIGHT FIXTURES

AREA IDENTIFICATION	# & TYPE LIGHTS PRESENT	DESCRIPTION OF LIGHTS
Interior	2	4 foot long, 2 bulb florescent fixtures

YY

Appendix YY

Pending Changes to Section 01 10 00, Paragraph 6

Changes to Section 01 10 00, Paragraph 6
These changes have already been made, however RFP WIZARD UPDATE WILL OCCUR 7 APRIL 2011.

1) Change "22 AWG, 2-conductor" in 2nd sentence to "22 AWG, 4-conductor"

So the corrected paragraph will read this way:

6.10.2.3. Each alarm sensor shall report to the IDS Control Unit. Wiring for the balanced magnetic switch (door alarm sensor) and the duress alarm sensor(s) shall each be a 22 AWG, 4-conductor, stranded wire. Wiring for the PIR motion sensor(s) shall be a 22 AWG, 4-conductor stranded wire...

2) Timber Harvest: create two selections

--If RFP preparer selects "Timber Harvest will be completed prior to Notice To Proceed" then the following will print.

6.4.10.1. Tree Removal and Timber Harvesting Requirements

Timber Harvesting will be completed under separate contract prior to Notice To Proceed. Remove all trees or portions of trees remaining after the Timber Harvest Contractor has completed his operations.

--If RFP preparer select "Timber Harvest will not be completed prior to Notice To Proceed" then the current wording for this paragraph will print.

3) 6.4.12 Turf

Change grass type to Tifway 419 Bermuda.

4) 6.4.11 Landscaping

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

ADD THE FOLLOWING to the end of subparagraph (a):

"See Appendix I."

5) Dumpster, change 11 feet to 12 feet.

6.3.2.2. Dumpsters
Dumpster enclosure openings must be a minimum of 12 feet wide per dumpster.

6) 6.15 Environmental, Change "EA" to "NEPA Documentation"

"Refer to Appendix E for the project’s NEPA Documentation."

7) 6.3.3.1 Stormwater Management Systems

ADD THE FOLLOWING to the end of subparagraph (c):

"Dry detention basins should be designed to hold water for a MINIMUM of 24 hours, to remove TSS by 80%, and meet detention requirements for flood controls as required during heavier rain events."

8) 6.11.1

DELETE all of the following:

--"both Bacnet and"

--"A contractor certified by Johnson Controls (Metasys) shall install and integrate the building control system."

--"<UMCS>Provide M&C Software with a license for no less than «M&C_LICNUM» clients Provide M&C Software with a license for no less than «M&C_POINTNUM» points. </UMCS>"

ADD THE FOLLOWING to the end of the paragraph:

"Additional requirements for UMCS are in the "Fort Stewart Supplement To LONWorks Direct Digital Control for HVAC and Other Local Building Systems" in the APPENDIX."

SO THE PARAGRAPH WILL READ THIS WAY:

Integrate the control system to the installation’s existing UMCS. The existing UMCS is a Johnson Controls (Metasys) UMCS, which is a web-based system. The UMCS is located in Building 1134 and is capable of handling LonWorks protocols. The point of contact for UMCS is Energy Engineer, Mr. Fred Lewis (912-767-5034). The building level controllers shall utilize LonWorks technology. Submit certification documentation for the proposed control system. Before starting the design, meet with the operating staff to discuss the installation’s requirements for graphics and programming. Additional requirements for UMCS are in the "Fort Stewart Supplement To LONWorks Direct Digital Control for HVAC and Other Local Building Systems" in the APPENDIX.

ZZ

Appendix ZZ

BIM Not Required

Delete Building Information Modeling (BIM) Requirement

BIM is not required for this project. Disregard references to BIM in this Request for Proposal.