

3.0 TACTICAL EQUIPMENT MAINTENANCE FACILITY (TEMF) <VER>(REV 4.1 – 31 JAN 2013)</VER>

3.1. GENERAL REQUIREMENTS:

3.1.1. FACILITY DESCRIPTION: Tactical Equipment Maintenance Facilities provide facilities for the purpose of maintaining and repairing vehicles and equipment, complete with parts & tool storage and administrative offices. It is intended to be similar to heavy equipment garages or motor pool facilities in the private sector.

3.1.2. FACILITY RELATIONSHIPS

A. GENERAL: Tactical Equipment Maintenance Facilities are typically located within an operations complex that may include Brigade and Battalion Headquarters and share a hardstand with the Company Operations Facilities (COF). The facilities within this complex shall be oriented to support deployment and daily operations, and should also be located within walking distance of associated community facilities such as barracks and dining facilities.

B. TRAVEL DISTANCES: Under optimum conditions, the TEMF should be located directly adjacent to its associated COF, sharing hardstand between the two facilities.

3.1.3. ACCESSIBILITY REQUIREMENTS: All TEMF buildings are to be handicapped accessible.

3.1.4. BUILDING AREAS:

A. ENCLOSED SPACES: The gross area includes the total area of all floors, including basements, mezzanines, penthouses, usable attic or sloping spaces used to accommodate mechanical equipment or for storage with an average height of 6'-11" measured from the underside of the structural system and with the perimeter walls measuring a minimum of 4'-11" in height, and other enclosed spaces as determined by the effective outside dimensions of the building.

B. HALF SPACE: One half of the area will be included in the gross area for balconies and porches; exterior covered loading platforms or facilities, either depressed, ground level, or raised; covered but not enclosed passageways or walks; covered and uncovered but open stairs; and covered ramps.

C. EXCLUDED SPACE: Crawl spaces; exterior uncovered loading platforms or facilities, either depressed, ground level, or raised; exterior insulation applied to existing buildings; open courtyards; open paved terraces; roof overhangs and soffits for weather protection; uncovered ramps; uncovered stoops; and utility tunnels and raceways will be excluded from the gross area.

D. GROSS AREA LIMITATIONS: Gross areas of facilities shall be computed according to subparagraphs above. Maximum gross area limits indicated in Paragraph 2.0, SCOPE, may not be exceeded. A smaller overall gross area is permissible if all established net area program requirements are met.

E. NET AREA: Net area requirements for functional spaces are included in the drawings. If net area requirements are not indicated, 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).

3.1.5. ADAPT BUILD MODEL: An Adapt-Build Model for a TEMF, which contains a fully developed design, including a Building Information Model (BIM), 2-D CADD files, and specifications, can be downloaded from the USACE CoS TEMF Website: <http://mrsi.usace.army.mil/cos/savannah/SitePages/temf.aspx>. This design is provided as a guide that exemplifies a technically suitable product and incorporates mandatory functional/operational requirements for a similar (although perhaps not an exact) facility to be constructed under this solicitation. It will be left to the offerors' discretion if, and how, they will use the sample design provided to satisfy the requirements of this Request for Proposal. This model is not intended to modify or over-ride specific requirements of this RFP and, under all circumstances, it will be incumbent upon the successful offeror to adhere to the site specific scope and functional/operational requirements specified within the RFP. Neither this statement of work, nor the adapt-build model, are intended to diminish the offeror's responsibilities under the clauses titled

“Responsibility of the Contractor for Design,” “Warranty of Design,” and “Construction Role During Design.” The successful offeror shall be the designer-of-record and shall be responsible for the final design and construction product, including but not limited to, adherence to the installation architectural theme, building code compliance and suitability of the engineering systems provided. The government assumes no liability for the model design provided and, to the extent it is used by an offeror, the offeror will be responsible for all aspects of the design as designer-of-record.

3.2. FUNCTIONAL AND OPERATIONAL REQUIREMENTS

3.2.1. FUNCTIONAL SPACES: The primary TEMF is composed of two main types of functional areas: Repair Bays (consisting of Repair areas and Maintenance areas), and the Core Area. Refer to the attached building layouts for the required functional and operational spaces and required adjacencies.

A. **REPAIR AREAS AND VEHICLE CORRIDOR/MAINTENANCE AREAS:** Repair areas and maintenance areas are garage areas used for service and repair of the full range of Army tactical equipment. They are single story ground floor spaces. A typical structural bay to accommodate both repair and maintenance areas is sized to measure 32' x 96'. Conceptually, this structural bay contains four 16' x 32' repair work areas, and a 32' wide vehicle corridor dividing them crosswise. The vehicle corridor also serves as a maintenance area. It accommodates pairs of 16' x 32' maintenance work areas down the length of the entire building. Two contiguous work areas may be required to accommodate work on larger equipment, thus resulting in the need for work areas to be constructed in pairs. Repair and maintenance areas are to be free of intermediate support columns, i.e. columns are only permissible along exterior perimeter walls. This allows complete shop floor coverage by a single bridge crane for all contiguous maintenance and repair areas (each wing of the facility). TEMFs requiring four structural bays or less shall be constructed contiguously in a single wing of the facility. Wall insulation shall be protected by interior metal panels to a minimum height of 8'-0" AFF.

1) **Repair Areas**

- a) **Function.** Repair of vehicles as described above. Structural height shall be as required to allow minimum bridge crane hook cradle height of 20 feet for a 10-ton crane or a minimum of 25 feet for facilities with a 35-ton crane. Facilities should have only one crane unless specifically approved by OACSIM. Unless noted otherwise, overhead coiling doors, 24'-0" wide x 14'-0" high, shall be provided at each end of each structural bay. Overhead coiling doors, 24'-0" wide x 16'-0" high, shall be provided at each end of last structural bay.HQ- Overhead coiling doors, 24'-0" wide x 14'-0" high, shall be provided at each end of each structural bay.
- b) **Equipment.** Repair Bays shall be served by a 10-ton or a 35-ton capacity traveling bridge crane with full structural bay coverage as indicated in the Architectural TEMF Features Matrix and as specified in Para. 2.1. Additional requirements are specified in the paragraph ARCHITECTURE.
- c) **Outlets.** Provide one hose bibb and two compressed air outlets 3'-0" above the floor for each pair of repair areas.
- d) **Welding/Machine Shop Area.** Provide special purpose repair space to support machine shop equipment and power connectivity for portable welding equipment within one pair of repair areas, typically in repair bay farthest from the Core Area. This area will not be used exclusively for welding. It may be utilized as a repair area also and shall be equipped with all requirements for repair areas except items (e) and (j).
- e) **Utilities.** Provide utilities for component washing and vehicle spot washing in the outermost work area of each wing of repair/maintenance areas. Provide a 5'-4" high concrete masonry wall separating the outermost bay from others to contain spray resulting from engine and component wash functions. Terminate partition to provide 6'-0" clear space at each end of the partition.
- f) **Power.** In each pair of repair areas, provide electric power for user provided (GFGI) portable hydraulic lift.
- g) **Trench Drains.** Provide continuous 6-inch wide trench drains with continuous grating along full width of bays at exterior doors; locate drains approximately 3'-0" inside face of exterior walls. In addition to the outside trench drains, a center trench drain running the full length of the maintenance area is provided to facilitate internal drainage of the facility. When a dedicated, partitioned welding area is provided, provide a solid cover to trench drain where it runs through the welding area.
- h) **Data.** Each work area shall have access to NIPRNet data connection points.
- i) **Exhaust Outlet.** Provide an outlet to a vehicle exhaust evacuation system for each repair area.

j) **Tire Changing Area:** Provide capability for tire changing function where shown on the TEMF Standard Drawings. Tire changing equipment shall be GFGL.

k) **POL Dispensing Points:** Provide POL dispensing points between each pair of structural bays on both sides so that each repair area has ready access to POL fluids. Two points will be provided in the repair area of a small facility, four in a medium, etc. Hose and reel assembly shall be heavy duty, designed for the applicable fluid or oil. Provide shutoff valve at reel. Provide distribution for grease, engine oil, gear oil, transmission fluid, and antifreeze from each dispensing point.

2) **Vehicle Corridor/Maintenance Areas**

a) **Function.** Maintenance of vehicles as described above. Maintenance areas within core area shall be equipped for inspection, oil changing and lubrication. All requirements listed above, except items d), e), f), j), and k) apply to the maintenance areas.

b) **Maintenance Area within the High Bay Portion of Facility.** Access to compressed air, water, vehicle exhaust, power and data in the maintenance areas within high bay portion of facility shall be via connections along the nearest wall.

c) **Maintenance Area within the Core Area.** Maintenance areas within the core area shall be equipped for inspection, oil changing and lubrication. The minimum clear ceiling height shall be 14'-0" Above Finished Floor. Provide an outlet to a vehicle exhaust evacuation system for each pair of maintenance areas. Bridge crane access is not required for maintenance areas along central vehicle corridor in the core area.

(1) **Maintenance Pit.** Provide one 40-foot long x 3'-6" wide concrete maintenance pit in the central vehicle corridor portion maintenance area within the core with (concrete or metal) stair access. Due to inside clearance for some vehicles, the maximum 3'-6" width is critical for the pit and curbing. Pit shall have non-sparking, non-slip removable floor grating approximately 4'-4" below finish floor elevation, with concrete pit floor below sloping to sump. Provide sump pump, see Paragraph 3.3.6 Plumbing for additional information. Provide compressed air outlet at two places in the pit. When not in use, pit shall be provided with removable cover capable of supporting pedestrian traffic. Pit cover panels to be light enough to be handled by a maximum of two personnel (typically less than 75 lbs). Provide minimum 4-inch high steel angle curb surrounding pit opening. At each end of pit opening, provide a rounded curb (steel angle with concrete fill) to prevent possible puncture of vehicle tires. Maintenance pit walls shall be designed and constructed with recesses, as needed, to accommodate compressed air outlets, POL hose reel, Fluid Recovery System, and lighting requirements.

(2) **POL Hose Reels.** Provide two POL dispensing points mounted to the wall adjacent to maintenance area pit. Hose and reel assembly shall be heavy duty, designed for the applicable fluid or oil. Provide shutoff valve at reel. Provide distribution for grease, engine oil, gear oil, transmission fluid, and antifreeze at the two dispensing points on the wall. Provide a third dispensing point mounted in a recess in the maintenance pit. Provide only grease, gear oil and transmission fluid at the dispensing point inside the maintenance pit.

(3) **Fluid Recovery System:** Provide a Pneumatic Fluid Recovery System that will allow the evacuation of used POL fluids and waste antifreeze to the appropriate 500 gallon wasted fluid tank. Provide two collection points for each type of waste fluid within the maintenance pit, and provide a third collection point at a central location within the facility (out of the flow of traffic) to accommodate used fluids collected in the repair area.

3) **Circulation Bays**

a) **Structural Bay.** Provide an 8' wide x 96' long structural bay between each wing of repair bays and the core area to facilitate pedestrian egress from the building and shall conform to OSHA requirements.

b) **Equipment.** Provide 4'-0" high x 8'-0" wide framed tack board (for 'safety board') mounted on wall along the circulation bay near the tool room. Provide one permanently installed emergency eyewash, hand held drench hose and shower station at each circulation bay that is adjacent to a core area and provide additional emergency eye wash, hand held drench hose and shower stations in other bays as required per OSHA standard 1910.151(c) and ANSI Z358.1. Provide one or more emergency eyewash, hand held drench hose and shower stations in Consolidated Bench Repair and in the Fluid Distribution Room when the equipment being serviced or solvents being used generate this requirement. Locate emergency wash stations in accordance with OSHA standard 1910.151(c) and ANSI Z358.1. Per OSHA 1910.151(c) emergency eyewash/shower units should be located such that a worker can reach one in 10 seconds. ANSI Z358.1 gives a guideline of 55 feet to meet this requirement.

B. **CORE AREAS:** Core areas are arranged in one and two story configurations (refer to the attached floor plans for standard layouts). Internal walls within the core should be non-load bearing to the extent possible to allow future rearrangement of spaces.

1) **Administration and Shop Control.** Office space to accommodate foremen, production control, and clerical personnel. Provide one space per core; may be located on first or second floor but shall be accessible to the physically disabled. Provide counter and pass-through window between this room and the customer Waiting Area; size pass-through window to accommodate transfer of 30-inch by 30-inch items, and layout the area outside window so that two people can stand at the window and be out of the corridor traffic pattern. Provide viewing windows from administration and shop control space into the repair areas. Provide a weatherproof conduit through the south facing exterior wall to facilitate running the VSAT cable to the satellite antenna.

2) **Training Room.** The training room space is intended to facilitate the training mission for maintenance personnel. This space is to be divided into two training areas with an operable folding partition (movable wall) having a sound isolation of STC 45, minimum. Provision shall be made to accommodate up to 30 students for computer based training, including power and data connections for each student. Provide projection equipment hookups and a screen in the Training Room. In subdivided Training Rooms, two hookups and two pull-down screens are to be provided.

3) **Consolidated Bench.** Shop space for unit-level maintenance of electronics, optics, and other gear. Locate on first floor.

a) **Equipment.** Provide an overhead coiling door 10'-0" wide x 10'-0" high.

b) **Furnishings/Fixtures.** See Table 7 for furnishings. Provide capabilities shown in the features matrix for each work space.

c) **Windows.** Provide operable exterior windows. Provide at least one window with clear view and unobstructed line of sight out of the building to a minimum of 800 feet for testing weapon sights.

4) **Tool Room.** Designated space for the issue and secure storage of unit common tool kits, as well as supplemental tool kits and individual tools shared by shop personnel. Direct covered access from the tool room to the SATS containers (described below) on the exterior of the building is required. Provide an overhead coiling door 10'-0" wide x 10'-0" high and a lockable personnel door for access to the interior of the facility, and an overhead coiling door 10'-0" wide x 10'-0" high for exterior access to the SATS containers~~Provide lockable pair of personnel doors and pass-through opening with impact resistant counter and metal overhead lockable coiling shutter between Tool Room and Corridor.~~

5) **Standard Automotive Tool Set (SATS).** The SATS is a unit-owned (i.e. GF/GI) containerized tool system with the dimensions of 8' x 20' x 8' high. An exterior hardstand storage area adjacent to the Tool Room shall be provided for three SATS containers. Connectivity to building and installation network is required. SATS are accessed from the end. Provide wall mounted awning with minimum 14-foot clear height above hardstand for weather protected entry into SATS containers. The technical manual for SATS is TM 9-4910-783-13&P.

6) **Tool Box Storage.** Tool Box Storage is provided for personnel working inside the maintenance facility in the Repair Areas and the Consolidated Bench area for the secure storage of individually assigned or personal (contractor) tools. In the Repair Areas, as indicated on attached building layouts, provide a shared 4' x 12' x 42" work bench at each end of every other structural bay to securely accommodate 8 toolboxes. The secure storage shall be provided underneath the bench via lockable cabinets, or structural supports sufficient to accommodate chains and padlocks.~~Provide one Tool Box Storage Room for each wing of Repair Areas (if Repair Areas are located on both sides of a core, each side of core shall have a Tool Box Storage Room). Tool Box Storage is provided for personnel working inside the maintenance complex in the Repair Areas and the Consolidated Bench for the storage of individually assigned or personal (Contractor) tools requiring security. Provide lockable personnel door with closer between Tool Box Storage and Circulation Bay.~~

7) **Combat Spares.** Storage and issue of Prescribed Load List (PLL) and shop stock items kept in stock at all times because of demand or management decisions. Direct covered access from the Combat Spares room to the ASL-MS containers (described below) on the exterior of the building is required. Provide an overhead coiling door 10'-0" wide x 10'-0" high and a lockable personnel door for access to the interior of the facility, and an overhead coiling door 10'-0" wide x 10'-0" high for exterior access to the ASL-MS containers and accommodation of the~~Provide lockable pair of personnel doors so to accommodate 48" x 48" x 74" ASL-MS repair parts bins and shelving modules, and pass-through opening with impact resistant counter and overhead lockable coiling shutter between Combat Spares and Corridor. Provide a weatherproof conduit through the wall to facilitate running the VSAT cable to the satellite antenna.~~

8) **Authorized Storage List - Mobility System (ASL-MS)**. Similar to the SATS, the ASL-MS is a unit-owned (i.e. GF/GI) 8' x 20' x 8' high container for repair parts. An exterior hardstand storage area adjacent to the Combat Spares room shall be provided for three ASL-MS containers. ASL-MS are accessed from the side. Provide sufficient aisles between ASL-MS for access. Provide wall mounted awning with minimum 14-foot clear height above hardstand for weather protected entry into ASL-MS containers. ~~Provide lockable pair of personnel doors at building exterior to accommodate large bulk portable tools and equipment, and ASLMS repair parts modules.~~—The technical manual for ASL-MS is TM 9-5411-236-13&P.

9) **Latrine, Shower and Locker Rooms**

a) **Latrines**. Provide separate latrines for men and women on each floor. Provide water closets, urinals, lavatories and drinking fountains in accordance with established layouts and referenced codes.

b) **Shower and Locker Rooms**. Provide a Men's Shower and Locker Room and Women's Shower and Locker Room. Locate on first floor of each core, sized to accommodate the number of lockers and showers indicated. Shower and locker area shall be adjacent to and connect to the latrine area. Provide individual shower compartments (3'-0" x 3'-0") in the number indicated on the drawings. Provide a single tier steel locker for each non-administrational occupant of the building, minimum size 1'-0" wide x 1'-6" deep x 6'-0" high.

10) **Break, Training, and Conference (BTC)**. Locate this room on same floor as Admin and Shop Control.

a) **Furnishings**. Provide kitchen, base and wall cabinets and 30-inch deep countertop minimum 10'-0" long.

b) **Equipment**. Provide stainless steel two-compartment sink.

c) **Additional Space**. Allow space and hookups for vending machines, refrigerator and microwave.

d) **Projection equipment** hookups and a pull-down screen are to be provided in Medium, Large and X-Large BTC Room only. Due to small size of BTC Room in the Small TEMF, no projection equipment hookup or screen will be provided in this area.

11) **Vaults**. All vault walls, floors and ceilings shall be constructed in compliance with appropriate requirements referenced below. Provision for a user provided (GFGI) intrusion detection system including motion detectors, door alarm, and camera, is required.

a) **Weapons Storage Vault**. Provide secure storage of weapons being repaired, especially vehicle-mounted weapons such as machine guns and firing port weapons. Weapons vault walls, floors and ceilings shall be constructed in compliance with AR 190-11, Physical Security of Arms, Ammunition, and Explosives. An option exists for use of prefabricated, modular vaults conforming to Fed. Spec. AA-V-2737 requirements. Provide a GSA-approved Class 5 Armory vault door with lock in accordance with Fed. Spec. AA-D-600D and a "Dutch door" style day gate. Provide an internal wire mesh partitioned space or provide space for GFGI lockable cabinets IAW installation requirements to accommodate armorer's tool kits, spare arms parts, machine gun barrels and major subassemblies. Coordinate arms rack anchor rings, common storage racks, etc with user.

b) **COMSEC Vault**. Provide secure storage of communications/cryptology equipment. Room must have a minimum 8-foot dimension. Refer to Physical Security Standards of Appendix D of AR 380-40, Policy for Safeguarding and Controlling Communications Security (COMSEC) Material (FOUO). Provide a "Dutch door" style day gate.

12) **Nonsensitive Secure Storage**. Nonsensitive Secure Storage shall be constructed to meet Secure Storage standards for Risk Level II per AR 190-51, Security of Unclassified Army Property.

13) **Telecommunications Room**. Telecommunications rooms shall be provided for voice and data. There shall be a minimum of one room on each floor, located as near the center of the building as practicable, and stacked between floors. The telecommunications rooms shall be designed in accordance with the Technical Criteria for Installation Information Infrastructure Architecture I3A Criteria and ANSI/EIA/TIA-569-B. A separate SIPRNET Room or vault within the TER Room shall also be provided for future SIPRNet connectivity in accordance with the Technical Guide for the Integration of Secret Internet Protocol Router Network (SIPRNet). Due to NEC security requirements, Mass Notification, Fire Alarm and CATV panels cannot be located in the Telecommunications Room, these panels will be located in the Electrical room. Where required, the Fire Alarm Panel may be located in the Mechanical Room.

14) **Non-Assignable Spaces and Gross Area**. The items below account for additional gross area within the core that is not specifically listed in the spaces above. These items may also vary in size contingent on site, climate, type and use.

- a) **Stairwells.** Design in accordance with model and local building codes.
- b) **Elevator.** Provide one passenger elevator in each two-story building. Elevator machine room is also part of the gross area of the core.
- c) **Common Circulation Corridors.** All circulation corridors shall be a minimum of 6 feet wide.
- d) **Waiting Area.** Locate adjacent to Admin and Shop Control pass-through window off of corridor. Size Waiting Area for the seating of a minimum of four persons.
- e) **Janitorial Spaces.** Provide one janitorial space as shown on drawings with mop sink and heavy duty shelving. Expansion of the Janitorial Space to include a recycling function is optional.
- f) **Mechanical Rooms.** Utility space must be provided for heating and cooling equipment. Where feasible, vertically stack like utility spaces if located on two floors. Locate first floor mechanical rooms adjacent to exterior walls for external maintenance access and ventilation. See paragraph 3.3.5 Heating, Ventilation, and Air Conditioning (HVAC) Systems, for additional requirement. Walls and floor/ceiling assemblies enclosing mechanical room shall have a sound transmission class (STC) rating of not less than 50 (45 if field tested) for air-borne noise when tested in accordance with ASTM E 90, and an impact insulation class (IIC) rating of 50 (45 if field tested) when tested in accordance with ASTM E 492.
- g) **Electrical Rooms.** Locate first floor electrical rooms adjacent to exterior walls for external maintenance access and ventilation.
- h) **Fluid Distribution Room.** Provide a room to house the POL central distribution equipment and unused POL storage containers (typically 55-gallon drums) for five types of lubricants/fluids. Fluids shall be dispensed by automotive lubricant type air driven pump assemblies. Motor shall be heavy-duty compressed air driven reciprocating action. For antifreeze unit all parts shall be corrosion resistant. Locate near maintenance pit to minimize length of fluid distribution lines. Compliance with UFC 3-600-01, NFPA 30, and 29 CFR 1910.106 is mandatory. Provide secondary containment in compliance with applicable federal and state environmental regulations. Square footage for this space is part of the gross area for the core.
- C. TEMF FEATURES MATRICES: The following Matrices designate functions and spaces for the TEMF facility.

15) **Architectural TEMF Features Matrix**

ARCHITECTURAL TEMF FEATURES MATRIX	COLUMN-FREE SPACE	WIRE MESH ENCLOSURE	STUDWALL PARTITIONS	CONC/CMU IMPACT RESISTANT PARTITIONS	GYPSUM BOARD IMPACT RESISTANT PARTITIONS	WINDOWS TO REPAIR BAYS	WINDOWS TO EXTERIOR	VINYL COMPOSITION TILE	CONCRETE FLOOR HARDENER	CERAMIC TILE FLOOR	PAINTED WALLS	WALL CORNER GUARDS	FINISHED CEILING	MOISTURE RESISTANT CEILING	EXPOSED STRUCTURE OVERHEAD	CEILING HEIGHT 9 FT.	CEILING HEIGHT 12 FT.	10 TON CRANE-HOOK HEIGHT 20 FT. (Note 4)	35 TON CRANE-HOOK HEIGHT 25 FT. (Note 4)	OPERABLE WINDOW FOR TESTING SIGHTS	LOCKERS	OVERHEAD COILING DOORS - 10 FT. X 10 FT.	OVERHEAD COILING DOORS - 24 FT. X 14 FT.	BOLLARDS @ OH DOORS INSIDE/OUTSIDE	GSA CLASS 5 VAULT DOOR	MAINTENANCE PIT	ISSUE WINDOW WITH COUNTER & COILING DOOR	BUILT-IN STORAGE BINS
	FUNCTIONAL AREAS																											
ADMIN & SHOP CONTROL			1																									
UNASSIGNED			1																									
TOOL ROOM		3																										
COMBAT SPARES		2																										
LATRINES, SHOWERS, LOCKERS																												
CLASSROOM																												
BREAK, TRAINING & CONF																												
CONSOLIDATED BENCH REPAIR																												
WEAPONS STORAGE VAULT		2														6												
COMSEC VAULT		2														6												
NONSENSITIVE SECURE STORAGE																												
COMMUNICATION VEHICLE DOCK																												
CORRIDOR							5																					
MECHANICAL ROOM																												
ELECTRICAL ROOM																												
COMMUNICATIONS / SIPRNET ROOM																												
FLUID DISTRIBUTION																												
REPAIR AREAS																												
MAINTENANCE AREAS																												
HARDSTAND																												
ORG STORAGE																												
UAV MAINT. AND STORAGE BUILDING																												
DISTRIBUTION COMPANY SUPPLY BLDG.																												

Notes for Architectural TEMF Features Matrix

1. Lightweight, non-bearing partitions removable to rearrange space
2. Wire mesh partitions to subdivide where required

3. Wire mesh enclosed for tool storage to facilitate interaction of mechanics and tool room keeper, and for relocation flexibility.
4. Provide either a 10-ton or a 35-ton top running bridge crane for the repair areas and maintenance areas as noted in para. 2.1.
5. VCT in corridor on 2nd Floor (except Small TEMF).
6. Provide top of Concrete Cap at 12'-0". Provide an additional dropped ceiling to protect weapons and COMSEC equipment under repair. Top of caps shall be secure from unauthorized access.
7. All Finishes are considered minimum finishes only.
8. The Maintenance Corridor through the Core Area shall have a minimum 14'-0" clear Ceiling Height.
9. Roll-up doors or double doors may be provided for exterior access to the Fluid Distribution Room, POL and HAZMAT buildings, based on User preference.

SAMPLE

16) **Mechanical TEMF Features Matrix**

MECHANICAL TEMF FEATURES MATRIX	HVAC				PLUMBING & FIRE PROTECTION										MISCELLANEOUS				ENVIRONMENTAL					
	HEAT	VENTILATE	AIR CONDITION	VEHICLE EMISSIONS EXHAUST SYSTEM	LAVATORY OR SINK	HOSE BIBB	WASH FOUNTAIN	WATER CLOSET	URINAL	SHOWERS	COMPRESSED AIR	EMERGENCY SHOWER & EYEWASH	SPRINKLER SYSTEM	TRENCH DRAIN AT DOORS	FLOOR DRAIN	STEAM CLEANING FOR PARTS/ENGINES	WELDING AND/OR MACHINIST AREA	POL/ANTIFREEZE DISPENSING WHOSE SYSTEM	POL/ANTIFREEZE WASTE DISPOSAL SYSTEM	OUT OF SPEC WASTE FUEL STORAGE	WASTE OIL STORAGE	WASTE ANTIFREEZE STORAGE/RECYCLE		
	FUNCTIONAL AREAS																							
	ADMIN & SHOP CONTROL	•		•																				
	UNASSIGNED	•		•																				
TOOL ROOM	•		•																					
COMBAT SPARES	•		•																					
LATRINES, SHOWERS, LOCKERS	•	•	•		•	•	8	•	•	•		•	•	•	•									
TRAINING ROOM	•		•																					
BREAK, TRAINING & CONF	•		•		•																			
CONSOLIDATED BENCH REPAIR	•		•							•	•	•	•		7									
WEAPONS STORAGE VAULT	•		•										•											
COMSEC VAULT	•		•										•											
NONSENSITIVE SECURE STORAGE	•		•										•											
COMMUNICATION VEHICLE DOCK																								
CORRIDOR	•		•																					
MECHANICAL ROOM	4	•													•									
ELECTRICAL ROOM	4	•																						
COMMUNICATIONS / SIPRNET ROOM																								
FLUID DISTRIBUTION	•	•						•			•	•	•											
REPAIR AREAS	•	•	•		•	8				•	•	•	•	7		5	1	•	•	3	3	3		
MAINTENANCE AREAS	•	•		6	•					•	•	•	•	7				•	•	3	3	3		
HARDSTAND																								
ORG STORAGE	4	•																						
UAV STORAGE BUILDING	4	•																						
HAZ WASTE & POL STORAGE BLDGS																								
DISTRIBUTION CO. STORAGE BLDG	4	•										•												

Notes for Mechanical TEMF Features Matrix

1. Welding exhaust system in one pair of repair areas. This area will also accommodate machinist function.
2. Not used.
3. Provide secondary containment in tanks outside of building.
4. Heat for freeze protection only.
5. Provide water and power connections for hook-up of user procured (GFGI) portable steam cleaner for cleaning of engines and engine components in a pair of repair areas.
6. Provide non-sparking explosion proof exhaust from pit.
7. Convey waste water through an oil/water separator prior to discharge to sanitary sewer.

8. Provide wash fountain in 8 FT circulation bay adjacent to the core area, or outside the latrines in the core area as shown on the drawings.

SAMPLE

17) **Electrical TEMF Features Matrix**

ELECTRICAL/ TELECOMMUNICATIONS TEMF FEATURES MATRIX	POWER							COMMUNICATIONS					LIGHTING					
	28V DC	120V SINGLE PH	208V SINGLE PH	208-230V 3 PH	208V-400 HZ	208V, 3PH, 50 HZ	FILTERED POWER	GROUND BUSBAR ON WALL	GROUNDING POINTS IN FLR OR HARDSTAND	TELEPHONE	DATA CONNECTION	INTERCOM/PAGING/MASS NOTIFICATION	INTRUSION DETECTION SYSTEM	PANABLE ZOOM CAMERA	CATV	FLUORESCENT OR SOLID STATE (LED)	(HID) METAL HALIDE OR SOLID STATE (LED)	EXPLOSION PROOF FLUORESCENT
FUNCTIONAL AREAS																		
ADMIN & SHOP CONTROL			•						•	•	•			•		•		
UNASSIGNED			•						•	•	•			•		•		
TOOL ROOM			•		12				•	•	•			•		•		
COMBAT SPARES			11						•	•	•			•		•		
LATRINES, SHOWERS, LOCKERS			•						•	•	•			•		•		
TRAINING ROOM			•						•	•	•			•		•		
BREAK, TRAINING & CONF			•						•	•	•			•		•		
CONSOLIDATED BENCH REPAIR		•	•				•	•	•	•	•			•		•		
WEAPONS STORAGE VAULT			•						•	•	•	•		•		•		
COMSEC VAULT			•					•	•	•	•	•		•		•		
NONSENSITIVE SECURE STORAGE			•						•	•	•	•		•		•		
COMMUNICATION VEHICLE DOCK			•		5			•	•	•	•			•		•		
CORRIDOR			•						•	•	•			•		•		
MECHANICAL ROOM			•						•	•	•			•		•		
ELECTRICAL ROOM			•						•	•	•			•		•		
COMMUNICATIONS / SIPRNET ROOM			•					•	•	•	•			•		•		
FLUID DISTRIBUTION			•						•	•	•			•		•		
REPAIR AREAS	1	•	•	10	•	4	•	•	•	•	•		7		•			
MAINTENANCE AREAS		•	•	•	•	4	•	•	•	•	•		7		•		8	
HARDSTAND				2,6	3			•										
ORGANIZATIONAL STORAGE			•							9					•			
UAV STORAGE BLDG		•	•				•		•	•					•			
HAZ WASTE & POL STORAGE BLDGS			•												•			
DISTRIBUTION CO. STORAGE BLDG			•						9						•			

Notes for Electrical TEMF Features Matrix

1. Provide power connections for hook-up of user procured (GFGI) portable steam cleaner for cleaning of engines and engine components in a pair of repair areas. Coordinate power requirements with the User. It is prohibited to locate electrical disconnects, junction boxes, receptacles, transformers, panelboards, electrical devices and exposed conduit on the masonry partition in repair areas where the partition is exposed to overhead bridge crane travel. All power connections in the Repair and Maintenance Area shall be GFCI protected.
2. MILVANS (100A), TOE vans (50A), Hospital (100A, 208V, 3-PH, 5-Wire). Each of these vans will be located adjacent to the SATS, ASLMS or Communications Van on the TEMF apron. Provide power connections on the exterior of the building for these vans, when they are required by the User.
3. LCSS Vans (to be discontinued in future), Patriot Missile Units.
4. For Engineers shop.
5. Communications Vans (100A).

6. Hospital units require 120/208V, 3-PH, 5-Wire connection.
7. Provide power and conduit and wiring system(s) for user provided panable zoom camera system; monitored in Admin and Shop Control.
8. Lighting classification for pit lighting shall be determined during the design.
9. Provide 1-4" conduit with a 6 pair copper cable to the Distribution Company

Storage and Organizational Storage Buildings from the main communications room in the TEMF. Conduit and cable routing may be to the nearest telecommunications maintenance hole before routing cable back to the TEMF main communications room. Provide Protected Entrance Terminal (PET) with one 110 type block mounted on a 4 ft by 8 ft backboard mounted vertically. Backboard treatment shall be in accordance with I3A. Provide one wall mounted telephone outlet inside the building. Ground PET in accordance with 250.50 and 800.100 of NFPA 70 National Electrical Code.

10. Provide 208V single phase power in all Repair Areas and for tire changing machine where shown on the TEMF Standard Drawings.

11. ASLMS Containers

a) The ASLMS Container is provided with the following:

- 1) Each ASLMS container comes with a set of two – 150 foot cables with each end plug identical. MS part number for the plug used on cable is MS3456W16-10P.

- 2) Electrical circuit is 20 ampere, 120 volt, single phase.

b) Provide the following power provisions for each ASLMS container:

- 1) Two dedicated 20 ampere, 120 volt, single phase circuits with a special receptacle for each circuit. MS part number for special receptacle to be provided is MS3451W16-10S.

12. SATS Containers

a) The SATS Container is provided with the following:

- 1) Integrated 10 KW generator (208V, 3 phase 60 Hz)

- 2) A wall mounted 100 Amp, 208 volt, 3-phase, 60 Hz AC conforming to MIL-C-22992, Class L, Style P comprised of a MS90558 C 44 4 shell, with an MS14055 insert having insert arrangement 44-12, along with a MS90564 44 C weather-tight cover.

- 3) Signal entry panel (SEP) with the following connections: RS 232 Male/Female small and large, RJ 11 (phone), RJ 45 (LAN), 10 Base 2 (BNC), and 10 Base T (Ethernet).

b) Provide the following power and data provisions for each SATS container:

- 1) A branch circuit sized to the full load capacity of the 10kw generator to a weatherproof wall mounted 100 amp disconnect switch located within the cable's reach.

- 2) A pre-manufacturer cable, stock number 5995-01-435-8697. This cable is 50 foot long with a plug for the SATS receptacle at one end and terminal connections on the other end. Connect the cable's terminal ends to the disconnect switch. Provide a means to hang the cable.

- 3) A weatherproof RJ 45 (phone) and RJ 45 (LAN) outlet with the conduit and cables (Category 6) to the Communication Room and connect per I3A requirements. Provide 50 feet of exterior cable with appropriate connectors on each end for each outlet. Provide a means to hang the cables.

3.3. SITE FUNCTIONAL REQUIREMENTS

A. GENERAL: Site features include vehicular hardstand, storage buildings, and site improvements.

1) **Vehicular Hardstand**: Vehicular hardstand includes Tactical Vehicle parking, building aprons, access lanes, and circulation lanes.

2) **Dock**. Provide one docking location for maintenance and electronic testing of specialized, permanently vehicle mounted, communications equipment. Provide equipment power connections and grounding points for vehicle degauss and individual personnel static discharge protection of equipment.

2)3) **VSAT Platform**. Provide a platform capable of supporting the VSAT receiver (approximately 500 pounds) at the south facing exterior wall of the building adjacent to the Administration and Shop Control area. The VSAT receiver unit will be secured to the platform by the user. The platform may be permanently attached to the building structure or may be self supporting and resting on the hardstand. If a self supporting platform is provided, bollards shall be designed and installed around the intended platform location.

B. PARKING:

1) **Privately Owned Vehicle (POV) Parking**: Privately Owned Vehicle (POV) parking.

<TEMF_POV_OTHER>POV parking to be provided by others. </TEMF_POV_OTHER><TEMF_POV_GOV>POV parking shall be provided at a minimum ratio of one space for 56% of the total assigned personnel. </TEMF_POV_GOV>

2) **Organized Vehicle Parking**: This area consists of a rigid concrete paved area used for parking assigned vehicles (wheeled and heavy and tracked), commercial vehicles (Contractor support), trailers and generators. Organizational vehicle pavement grades shall provide positive surface drainage with a 1 percent minimum slope in the direction of drainage. Maximum pavement slope shall be 2 percent.

a) **Tactical/Military and Commercial Vehicle Parking**. Maximize vehicle parking and traffic flow to best support the operation of the TEMF. Tactical/Military Vehicle Parking spaces shall be spaced with side clearances of 3 feet and end clearances of 2 feet.

b) **POL Vehicle Parking Area**. <TEMF_POL_NO>Not required. </TEMF_POL_NO><TEMF_POL>Parking for POL vehicles is considered separate from other organizational vehicle parking and shall be segregated from other vehicle parking areas. POL parking shall be spaced a minimum of 10 feet between vehicles. POL parking area circulation lanes shall be 50 feet wide. Drainage from the POL parking area shall be isolated and shall not be allowed to enter underground storm or sanitary sewer systems without being impounded first and manually released. POL drainage impoundment shall be located 100 feet from any structure. </TEMF_POL>

c) **Dead Line Vehicle Parking**. Parking for vehicles waiting for parts or for work to be performed. One dead line parking space for every pair of repair areas and shall be located in parking areas adjacent to repair bays that will service them. Dead line vehicle parking spaces shall be sized based on the largest vehicle for the assigned maintenance bay. Parking spaces shall be spaced with side clearances of 3 feet and end clearances of 2 feet.

d) **Circulation Lane**. Organizational vehicle parking circulation lanes shall be 20 feet wide when lanes are located adjacent to TEMF aprons. Parking stalls within the hardstand are to be placed back-to-back with circulation lane widths of 30 feet for vehicles less than or equal to 18 feet long and 45 feet for vehicles more than 18 feet long.

C. ACCESS DRIVES AND LANES:

1) **Entrance Drives**: Provide primary and secondary entrance drives to connect organizational vehicle hardstand to existing roads and/or tank trails.

2) **Building Aprons**: Provide concrete pavement for aprons associated with each of the facilities located in the maintenance complex.

3) **Access and Circulation Lanes**: A standard access apron clearance of 45 feet is required along both sides and both ends of the maintenance building described above. A minimum circulation lane 20 feet in width surrounds this area and is required for vehicular circulation routes. When a warehouse is provided, a 65 foot clearance is required on the side with the loading dock.

4) **Primary and Secondary Drives:** Provide a primary and secondary entrance drive into the organizational vehicle hardstand area. The primary and secondary entrance drives shall be 30 feet wide.

D. **SPECIAL SETBACKS AND PERIMETER CONTROLS:**

1) **ATFP:** Each project should be evaluated for security requirements in accordance with UFC 4-010-01.

2) **Security Fencing:** Minimum requirement is a security fence at the site perimeter consisting of 7-foot high chain link fabric plus a single outrigger with 3-strand barbed wire, designed in accordance with STD 872-90-03, FE-6, Chain-Link Security Fence Details.

3) **Clear Zone:** A zone cleared of trees and shrubs, 20 feet wide inside the fence and 10 feet wide outside the fence is required. The clear zone shall be gravel underlain by a synthetic fabric. The clear zone shall be treated with herbicides to discourage vegetative growth. As an option, the installation may choose to use grass in the clear zone.

4) **Vehicular Gates:** Manually operated vehicular gates, approximately 30 feet wide overall, shall be provided at each vehicle entrance/exit.

5) **TEMF Aprons:** TEMF aprons shall measure 45 feet wide on all four sides of the facility. Circulation lanes are not part of the 45-foot wide apron.

6) **Site Storage Building Aprons:** Site storage building aprons shall measure 27 feet wide along the entire building length on the vehicular access side. Circulation lanes are not part of the 27-foot wide apron.

7) **Bollards:**

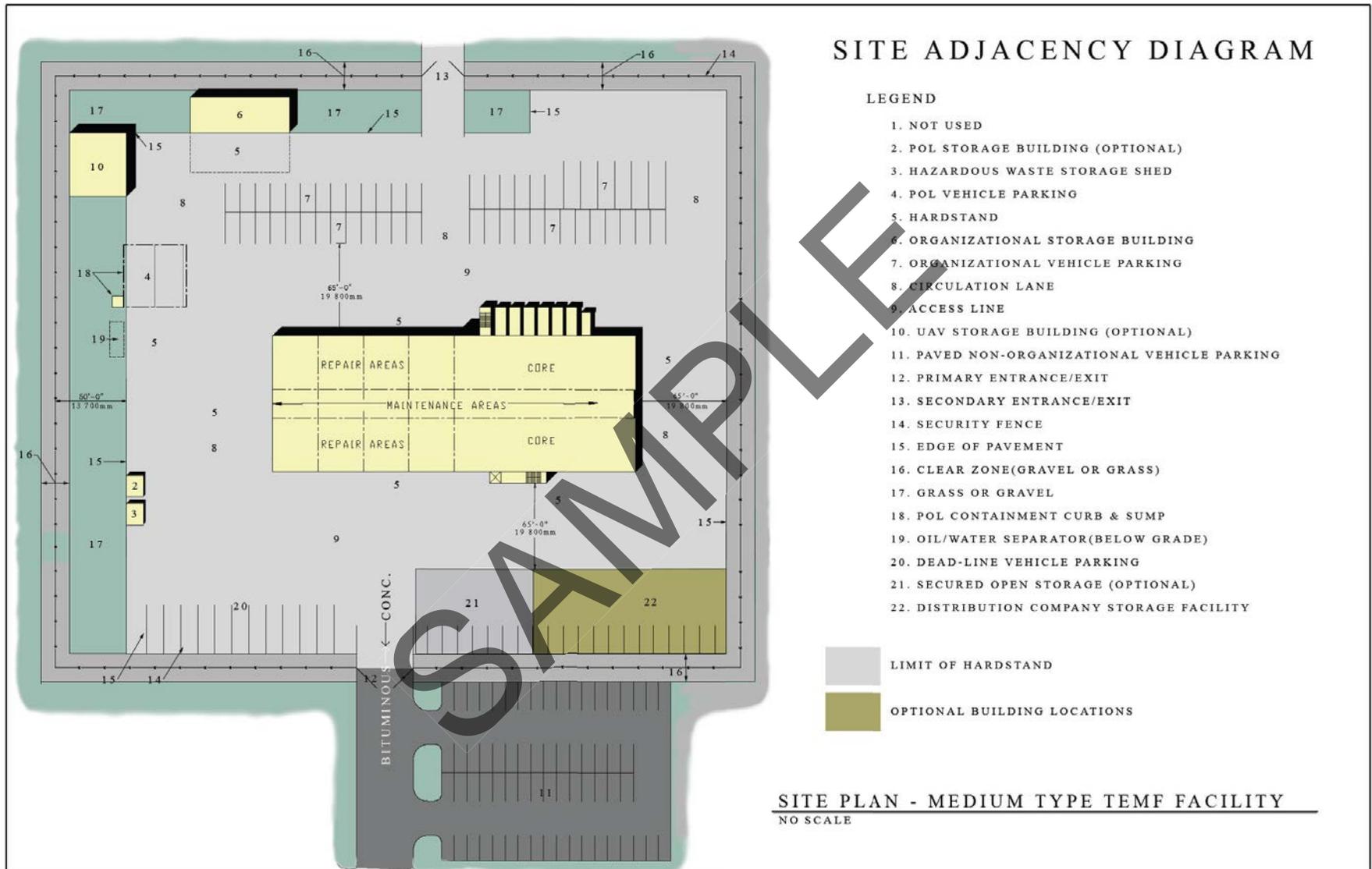
(a) **Bollards at TEMF Repair Bays:** Provide 12-inch diameter steel bollards filled with concrete at all TEMF repair bay openings where frequent vehicle access/egress increases the risk of damage by vehicle impact. Bollards and footings shall be designed to withstand organizational vehicular impact.

(b) **Bollards at Out of Spec Waste Fuel, Used Oil and Used Engine Coolant (Antifreeze) Storage Tank(s):** Provide 12-inch diameter by 5-foot high, concrete-filled, schedule 80 galvanized steel pipe bollards, 5 feet from edge of containment wall, painted safety yellow, around the perimeter of above-ground tank areas. Bollards shall be placed at a maximum of 10 feet O.C. spacing. Bollards and footings shall be designed to withstand organizational vehicular impact.

(c) **Bollards at Site Storage Buildings:** Provide 12-inch diameter by 5-foot high, concrete-filled, schedule 80 galvanized steel pipe bollards, 5 feet from the edge of the building. Bollards shall be placed at a maximum of 10 feet O.C. spacing. Bollard spacing may be greater than 5' O.C. if the portion of the building being protected is not in a high volume traffic area. Bollards and footings shall be designed to withstand organizational vehicular impact.

E. **HARDSTANDS:** All hardstand areas shall be rigid concrete pavement. Pavement design for organizational vehicle areas shall be designed to support the vehicles assigned to this facility and the heaviest vehicle at the installation. See RFP appendix for organizational vehicles assigned to the facility. The parking layout and configuration shall be adjusted as necessary for the site limits and space provided.

F. SITE ADJACENCY DIAGRAM: The following drawing should be used as a guide to associate relative adjacencies of site structures.



3.4. SITE AND LANDSCAPE REQUIREMENTS

A. SITE STORAGE:

1) **Hazardous Waste Storage Building:** Provide a building with solid walls and roof. It is used to temporarily store used lubricants, flammable solvents, dry sweep, etc. Used anti-freeze and used POL fluids are stored separately in 500 gallon tanks and not considered to be stored in this facility. A unit is authorized 60 square feet for each 25 vehicles, or part thereof, which it maintains. A minimum of 120 square feet of hazardous waste storage space will be provided. The specific requirement for this project is specified in Para. 2.1. Provide secondary containment in compliance with applicable federal and state environmental regulations. Compliance with UFC 3-600-01, NFPA 30, and 29 CFR 1910.106 is mandatory. Maintain minimum separation distance from other buildings in accordance with the IBC in order to eliminate the need for automatic sprinkler protection. Pre-fabricated, fire-rated, self-contained, moveable steel safety storage buildings are permitted as an option. Minimum size of 120 SF per container, though multiple containers may add up to the total quantity required per satellite accumulation area. Hazardous Waste Storage Buildings do not require sprinkler protection if the following conditions are met:

- a) The buildings shall not exceed 1000 SF in area. For facilities over 1000 SF, in order to reduce costs, divide the total requirement for these facilities into multiple buildings so that each building is less than 1000 SF.
- b) The buildings shall be separated from tactical equipment maintenance facilities or other important buildings by a minimum of 60 feet.
- c) Construction and exterior separation of Hazardous Waste Storage Buildings shall be per UFC 3-600-01 and NFPA 30 as indicated with the following restrictions. Where multiple POL and Hazardous Waste Storage buildings are present, groups of POL and Hazardous Waste Storage Buildings shall not exceed two buildings and shall be separated by no less than 10 feet. Additional POL and Hazardous Waste Storage Buildings or groups of two buildings shall be separated by not less than 50 feet from adjacent POL and Hazardous Waste Storage Buildings.

2) **POL Storage Building:** Provide a building for the storage of oil, lubricants, and flammable solvents for daily use. This facility is sized to store one week's worth of materials used in the Fluid Distribution Room consisting of engine oil, gear oil, transmission fluid, grease and antifreeze stored in 55 gallon drums. A unit is authorized 60 square feet for each 25 vehicles, or part thereof, which it maintains. A minimum of 120 square feet of oil storage space will be provided. The specific requirement for this project is specified in Para. 2.1. Provide an access apron at the entry of this building. Provide secondary containment in compliance with applicable federal and state environmental regulations. Compliance with UFC 3-600-01, NFPA 30, and 29 CFR 1910.106 is mandatory. Maintain minimum separation distance from other buildings in accordance with the IBC and local codes in order to eliminate the need for automatic sprinkler protection. Pre-fabricated, fire-rated, self-contained, moveable steel safety storage buildings are permitted as an option. Minimum size of 120 SF per container, though multiple containers may add up to the total quantity required per satellite accumulation area. POL Storage Buildings do not require sprinkler protection if the following conditions are met:

- a) The buildings shall not exceed 1000 SF in area. For facilities over 1000 SF, in order to reduce costs, divide the total requirement for these facilities into multiple buildings so that each building is less than 1000 SF.
- b) The buildings shall be separated from tactical equipment maintenance facilities or other important buildings by a minimum of 60 feet.
- c) Construction and exterior separation of Hazardous Waste Storage Buildings shall be per UFC 3-600-01 and NFPA 30 as indicated with the following restrictions. Where multiple POL and Hazardous Waste Storage buildings are present, groups of POL and Hazardous Waste Storage Buildings shall not exceed two buildings and shall be separated by no less than 10 feet. Additional POL and Hazardous Waste Storage Buildings or groups of two buildings shall be separated by not less than 50 feet from adjacent POL and Hazardous Waste Storage Buildings.

3) **Organizational Storage Building:** This building is for storage of deployment equipment. The size of this facility is determined by the organizational structure and the number of organizational vehicles; specific to each project. Provide a manually operated 10' x 10' coiling door and a personnel door for each 700 SF of company supply area along one side of building. Wall insulation shall be protected by interior metal panels to a minimum height of 8'-0" AFF. Provide internal wire or secure partitions between each 700 SF space. Floor area of building shall be as specified in the project scope of work. Building shall be approximately 25 feet deep. The floor system of this facility should be designed to accommodate fork-lifts.

- 4) **Distribution Company Storage Facility:** <TEMF_STORAGE_NO>Not required</TEMF_STORAGE_NO><TEMF_STORAGE>Provide 8000 SF building for storage of Distribution Company materials and equipment. Wall insulation shall be protected by interior metal panels to a minimum height of 8'-0" AFF. </TEMF_STORAGE>
- 5) **Secure Open Storage:** <TEMF_SECURE_STORAGE_NO>Not required</TEMF_SECURE_STORAGE_NO><TEMF_SECURE_STORAGE>Where a Distribution Company Storage Facility is provided, provide a 445 SY fenced area on concrete paving for exterior storage. </TEMF_SECURE_STORAGE>
- 6) **UAV Storage Building:** <TEMF_UAV_NO>Not required</TEMF_UAV_NO><TEMF_UAV>This building is for storage of Unmanned Aerial Vehicles (UAV). Provide a 40-foot by 45-foot (1800 SF) building to accommodate storage of assigned UAVs. Provide a 24' x 14' coiling door as well as minimum two personnel doors for emergency egress and ingress. Wall insulation shall be protected by interior metal panels to a minimum height of 8'-0" AFF. </TEMF_UAV>
- 7) **Used Oil Storage Tank(s):** Provide one 500-gallon above-ground used engine oil storage tank at the end of the Vehicle Corridor. Tank shall be constructed of non-corrosive material. Provide secondary containment in compliance with applicable federal and state environmental regulations. Tank construction and location shall comply with NFPA 30 requirements. Recommended location is adjacent to the Vehicle Corridor. Used oil, waste fuel, and used engine coolant storage tanks should be co-located, if possible. For Large and Extra Large TEMFS an additional tank may be required. Due to the length of these buildings a single pump may not be able to pump waste fluids from one end of the facility to the tank on the other end.
- 8) **Used Engine Coolant (antifreeze) Storage Tank(s):** Provide one 500-gallon above-ground used engine coolant storage tank at the end of the Vehicle Corridor. Tank shall be constructed of non-corrosive material. Provide secondary containment in compliance with applicable federal and state environmental regulations. Tank construction and location shall comply with NFPA 30 requirements. Recommended location is adjacent to the Vehicle Corridor. Used oil, waste fuel, and used engine coolant storage tanks should be co-located, if possible. For Large and Extra Large TEMFS an additional tank may be required. Due to the length of these buildings a single pump may not be able to pump waste fluids from one end of the facility to the tank on the other end.
- 9) **Out of Spec Waste Fuel Tank(s):** Provide one 500-gallon above-ground Out-of-Spec Waste Fuel Tank at the end of Repair Areas. Tank shall be constructed of non-corrosive material. Provide secondary containment in compliance with applicable federal and state environmental regulations. Tank construction and location shall comply with NFPA 30 requirements. These tanks are manually filled only. Recommended location is adjacent to the Vehicle Corridor. Used oil, waste fuel, and used engine coolant storage tanks should be co-located, if possible.
- 10) **Loading Dock:** A Loading Dock is only provided with the Distribution Company Warehouse.
- B. **STORM WATER MANAGEMENT:** <TEMF_STORM_CONTR>Site storm water management may require controls on the peak flow that can be discharged. Installations are required to have a storm water pollution prevention plan. Implement the applicable portions of this plan using best management practices. Segregate drainage from areas likely to be contaminated (e.g., fueling area). Provide treatment for contaminated water prior to its discharge. Maintenance should not be performed outside the primary facility. </TEMF_STORM_CONTR><TEMF_STORM_OTHER>Storm water management shall be constructed by others. </TEMF_STORM_OTHER>
- C. **STORM DRAINAGE SYSTEM:** Construction and material specified for storm drainage installation shall be per the State's DOT requirements. All storm drainage lines constructed under organizational vehicle hardstand, entrance drives, and other surfaces subject to vehicular traffic shall be reinforced concrete pipe with watertight joints. See paragraph 6 for additional storm drainage system requirements.
- D. **OIL/WATER SEPARATOR:** One or more oil/water separators are required to remove, oil, lubricants, floatables, and grit from contaminated water sources (e.g., repair and maintenance areas, POL fluids distribution, etc.). Oil/water separators shall be designed in accordance with local codes and standard industry practice for the specific waste stream to be treated. Minimize maintenance requirements and locate oil/water separators to minimize pipe runs, provide vehicular access, and built out of circulation areas.

E. USED AND WASTE OIL, ANTIFREEZE, SOLVENTS, CLEANING COMPOUNDS, AND HAZARDOUS MATERIALS: Hazardous materials generated in the course of maintenance operations shall be classified in accordance with 40 CFR 261. Criteria for short term storage (less than 90 days) of hazardous materials is provided in 40 CFR 262. Long-term storage is not authorized for TEMF facilities. The installation Defense Resources Management Office has responsibility for long term storage. Long term storage of hazardous materials is governed by 40 CFR 264.

F. MECHANICAL AND ELECTRICAL EQUIPMENT YARD: Provide 12-inch diameter by 5-foot high, concrete-filled, schedule 80 galvanized steel pipe bollards, 5 feet from edge of the mechanical and Electrical Equipment Yard, painted safety yellow, around the perimeter of the equipment yards. Bollards shall be placed at a maximum of 10 feet O.C. spacing. Provide vehicular access and locate out of circulation areas. Bollards and footings shall be designed to withstand organizational vehicular impact.

3.5. ARCHITECTURAL REQUIREMENTS

A. GENERAL: Building construction shall comply with requirements of UFC 3-600-01, the International Building Code and NFPA 101.

B. FLOORS: Provide concrete floors in maintenance and repair areas sloped in accordance with NFPA 30A and IBC/IPC. Provide a continuous trench drain located on the interior side of the overhead doors at repair areas and at centerline of central vehicle corridor, extending the length of maintenance areas.

C. NATURAL LIGHTING: Repair and maintenance bays, storage and admin areas shall be illuminated using hybrid lighting systems which includes electric lighting with electronic daylight controls in combination with skylights with reflective tube that channels the light into the work area and a lens that diffuses the light, clerestory windows, and translucent wall panels above overhead doors. Open maintenance and storage sheds shall use hybrid lighting systems with a dome-shape skylights. Provide operable windows for natural lighting and ventilation in administration and shop control, training room, break/training/conference room, and consolidated bench repair shop. Preference will be given for designs providing vision panels in overhead doors.

D. PARTITIONS: Fixed walls are required to separate repair areas and maintenance areas from the core areas, along corridors, and surrounding fixed areas such as latrines, vaults, storage areas and shops. Shops and storage areas may be subdivided with metal mesh partitions. Admin., training and break room walls should be non-load bearing to the greatest extent possible (for example, gypsum board on steel studs) except around latrines.

E. SOUND INSULATION: Provide sound insulation in all administration areas, training rooms, and bench repair areas to meet a minimum rating of STC 45 at walls and floor/ceiling assemblies, and a rating of STC 33 for doors. In addition to the sound insulation required, training areas shall meet a Noise Criteria (NC) 30 rating in accordance with ASHRAE Fundamentals Handbook.

F. REPAIR AREA BAY/MAINTENANCE CORRIDOR DOORS: ~~Provide overhead doors 24 feet wide by 14 feet high in the exterior wall at each end of the structural bays and at each end of the building Maintenance Corridor. The lone exception is that 24 feet wide by 16 feet high overhead doors shall be provided in the exterior wall at each end of last structural bay to accommodate MRAP (Mine-Resistant Ambush-Protected) vehicles, or other large tactical vehicles. Provide overhead doors 24 feet wide by 14'-0" feet high in the exterior wall at each end of each structural bay and each end of the building Maintenance Corridor.~~ Provide doors of coiling, sectional, or telescoping design. Provide electrically operated doors with provision for manual chain operation. Provide manual 10-foot by 10-foot overhead doors for Consolidated Bench Repair Shop, Tool Room and Combat Spares.

1) Locking: Provide overhead doors that are operable from the interior only. Provide doors with a positive locking mechanism that will allow the door to remain open at engine exhaust position approximately 1 foot above the floor. Coordinate door locking requirements with the using service.

2) Serviceability: Repair and maintenance bay doors shall be designed to meet heavy duty loads and high frequency of operation. Provide testing of deflection and operation of the doors prior to acceptance during construction. Doors shall be provided and installed by a commercial door company having not less than 5 years of experience in manufacturing, installing, and servicing the size and type of doors provided.

3) **Insulated Doors:** Preference will be given to proposals that include insulated doors for thermal resistance and noise control.

G. **PERSONNEL DOORS:** Provide exterior personnel doors in the ends of central vehicle corridor portion of maintenance areas and in the circulation bays as shown on the drawings. Provide steel doors and shall include vision panels, except at storage, janitorial, and latrine areas. Minimum size for personnel doors is 3 feet wide by 7 feet high.

3.5.1. FINISHES AND INTERIOR SPECIALITIES

A. **GENERAL:** Exterior Materials. Select exterior materials to be attractive, economical, durable, and low maintenance.

B. **MINIMUM FINISH REQUIREMENTS:**

1) **Walls:** Masonry walls are recommended at the ground floor level. Internal walls within the core should be non-load bearing to the extent possible to allow future rearrangement of spaces. Interior wall finishes shall conform to the requirements of UFC 3-600-01 and NFPA 101.

2) **Ceilings:** Interior ceiling finishes shall conform to the requirements of UFC 3-600-01 and NFPA 101.

3) **Floors:** Provide concrete floors in maintenance and repair areas and Core Areas.

4) **Counter Tops:** Impact resistant.

C. **INTERIOR SPECIALTIES:**

1) **Signage & Directories:**

a) Per installation requirements.

2) **Toilet Accessories**

a) Per installation requirements.

3) **Storage Shelving:**

a) All shelving shall be heavy duty.

4) **Lockers:** Single tier steel locker, minimum size 1'-0"(w) x 1'-6"(d) x 6'-0"(h).

5) **Fire Extinguishers, 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.

3.6. STRUCTURAL REQUIREMENTS

A. **DESIGN LOADS**

1) **Live Loads**

a) Design live loads shall be per the IBC and ASCE 7 mandated live loads.

b) Maintenance bay slabs on grade shall be designed for worst case loading based on authorized vehicle size, weight, and axle load or tire size.

2) **Other Loads**

a) Pre-Engineered Metal Buildings (PEMB) and foundation design shall include accommodation for support of the weight of required bridge crane and its rated capacity.

3) **Bollard Loads**

a) Bollards and footings shall be designed for an organizational vehicle (minimum 7000#) impacting the bollard at bumper height.

b) To the greatest extent possible, bollards shall not be fastened directly to the building column foundations.

B. STRUCTURAL DESIGN CRITERIA

1) **ATFP Requirements:**

a) Antiterrorism/Force Protection measures shall comply with UFC 4-010-01.

2) **Foundations/Slabs-on-Grade:**

a) The foundation is site specific and must be designed based upon known geotechnical considerations as stated in the project geotechnical report. Design the foundations as recommended by the geotechnical investigation. Coordinate the need for a vapor barrier with the architectural floor finishes and requirements of the geotechnical report. Reinforce the slabs on grade and provide a minimum thickness of five (5) inches. Design floor slab thickness and reinforcing for the loads associated with the function of the specific area considered, but not less than 5 inches.

C. **MODULAR OR PRE-ENGINEERED BUILDINGS:** The structural design of Pre-Engineered Metal Buildings (PEMB) may be delegated to a PEMB designer. THE PEMB designer shall submit design calculations and designs for review. THE PEMB designer shall coordinate all building loads and reactions with the design of the building foundations.

3.7. SEE PARAGRAPH 6.7 THERMAL PERFORMANCE – NOT USED

3.8. PLUMBING REQUIREMENTS

A. **TRENCH DRAINS:** Design trench drain for easy cleaning. Provide basket strainers to facilitate trash removal where trench drains discharge to piping systems. Convey waste to exterior oil/water separator prior to discharge to the sanitary sewer system. When a dedicated, partitioned welding area is provided, provide a solid cover to the trench drain where it runs through the welding area.

B. **EMERGENCY SHOWERS AND EYE WASHES:** See Section 3.2.2.A (3) (b) for eye wash, hand held drench hose and emergency shower requirements within the repair and maintenance areas and core area.

C. **COMPRESSED AIR:** Provide the compressed air outlets with quick disconnect couplings in all repair and maintenance areas, along the vehicle corridor, at two places in the pit, and in the Consolidated Bench Repair area. Provide one compressed air outlet per bench in Consolidated Bench Repair area. Each drop shall include an isolation valve, filter and pressure regulator, condensate trap with drain cock. Provide air compressor with receiver, refrigerated air dryer, filtration and pressure regulation. The air compressor shall be installed building equipment. Size air compressor for 10 CFM per outlet in repair and maintenance areas and 5 cfm per outlet in the Consolidated Bench Repair area, with a 60 percent diversity (assume 60% of all drops in the facility will be in use at the same time), plus any additional compressed-air equipment in the facility. Unless otherwise indicated by the user requirements in paragraph 6, provide compressed air at 125 psi. Coordinate with the user on compressed air outlet size.

D. **SUMP PUMPS:** Provide sump pump in maintenance pit and elevator pit. The maintenance pit sump pump shall be explosion proof type. Both sump pump shall be submersible type and shall be capable of handling small amounts of oil and anti-freeze. Maintenance pit and elevator pit sumps shall discharge to an oil water separator.

3.9. COMMUNICATIONS AND SECURITY SYSTEMS

A. **TELECOMMUNICATION SYSTEMS:** Telecommunications and SIPRNET Minimum Room Sizes - Telecommunication Pathways, Outlets and Cabling. Telecommunications cabling shall be Category 6 for all voice and data connections unless length of run warrants need for multimode fiber optic cable. Provide number and type of connectors as defined by the User. Telecommunications outlets and conduits shall be provided in core areas and supply administration areas with a minimum of one outlet in each work area. Each Training Room shall have a voice outlet. Each Training Room shall have a data connection for each seat and for an instructor. Each repair area workstation shall have access to a data connection. In administration and shop control areas provide a voice and data outlet for every workstation. A data outlet shall be provided at each copier location. Provide a

single jack outlet for wall mounted GFGI phones in mechanical, electrical, vaults, telecommunications room and corridors. For controlled access facilities, provide outlets for wall mounted GFGI phones at primary entrance. Additional outlet locations may be provided based on coordination with the facility User and where required for HVAC equipment or other equipment. Provide outlets per I3A technical criteria and Table 5 below. Provide Telecommunications and SIPRNET rooms minimum sizes as indicated in Table 5A below.

TABLE 5A - Minimum Size Telecommunications and SIPRNET Rooms for TEMF				
TEMF	Telecommunications Room		SIPRNET Room	
Floor	Width Feet (min)	Square Feet (min)	Width Feet (min)	Length Feet (min)
1st Small	8	150	6	6
1st Medium	8	150	6	6
2nd Medium	8	110	None	None
1st Large	8	150	6	6
2nd Large	8	110	None	None
1st EXLarge	8	150	6	6
2nd EXLarge	8	150	None	None

General Notes:

1. Width is a minimum inside edge of wall to inside edge of wall dimension inside the room. Length shall be greater than or equal to width
2. The Telecomm room shall not be less than the minimum width and square feet indicated above and the SIPRNET rooms shall not be less than the minimum width not be less than the minimum width and length indicated above Telecommunications and SIPRNET rooms shall be rectangular in shape.

B. **CABLE TELEVISION (CATV):** A minimum of two CATV outlets shall be provided in the Break, Training, and Conference Room and Admin and Shop Control Room. The cable television system shall consist of cabling, pathways and outlets. 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.

C. **AUDIO/VISUAL SYSTEMS:**

- 1) **Audio/Visual Systems:** Provisions (consisting of a power receptacle and conduit for signal wiring) for a GFGI projector shall be provided in each Training Room.
- 2) **Paging Systems:** A paging system shall be provided for the repair areas and maintenance areas with the microphone located in the administration and shop control area. The system shall be zoned for multiple bay operation and shall have input from the telephone system.

D. **SECURITY INFRASTRUCTURE:** The security infrastructure shall be installed to support GFGI equipment including cameras, door alarms, and motion sensors.

- 1) **Intrusion Detection and Security Systems:** Provision for user provided ICIDS intrusion detection and security systems are required for secure and restricted areas including the arms vault, COMSEC vault and SIPRNet room. Provisions shall include dedicated power circuits, telecommunications connections, and raceways and signal wiring for user installed devices. System requirements shall be coordinated with the Installation Security Office.
- 2) **Access Control System:** The access control system shall consist of proximity sensors throughout the facility with varying levels of security. System requirements shall be coordinated with the Installation Security Office.

E. **MASS NOTIFICATION SYSTEMS:** A mass notification system shall be provided as required by UFC 4-010-01.

F. **SECURE COMMUNICATIONS ROOM:** The SIPRNET room for future SIPR service shall be designed and constructed in accordance with the open storage area requirements at secret level outlined in the Secret Internet Protocol Router Network (SIPRNET) Technical Implementation criteria. This room shall be a separate dedicated room (minimum size shall be 6'X6') and shall include a communication signal ground busbar, connected to the main telecom room signal busbar via properly sized ground wire (see MIL-HDBK-419-A), and one dedicated 20-amp circuit for the SIPRNET rack/safe, in addition to convenience outlets. The connection to

the main telecommunications room will be via a single 2-inch trade size steel conduit in accordance with the I3A Criteria. A NIPRNET data outlet also shall be provided. As an alternative, if approved by the local NEC, the space allocated for the SIPRNET room may be incorporated into the telecommunications room if an approved SIPRNET Information Processing System Security Container (IPS) is provided within the combined SIPRNET/telecommunications room.

G. OVERVOLTAGE AND SURGE PROTECTION: Over-voltage and surge protection shall be provided at the input power of all panels

3.10. ELECTRICAL REQUIREMENTS

A. GENERAL: See Paragraph 6 of the RFP for work to be performed by others (work indicated in paragraph 3 shall be a part of this contract unless otherwise indicated in paragraph 6), clarifications and additional requirements for the electric and telecommunications systems.

B. EXTERIOR ELECTRICAL DISTRIBUTION SYSTEM:

1) Parking Pad and Power Connections. Provide power connections to hardstand for existing equipment as required in Features Matrix.

C. EXTERIOR LIGHTING:

1) Exterior Lighting General: Exterior lighting systems inside the TEMF security fence shall be provided for sidewalks, roadways, service yards, facility aprons, open storage areas and parking areas. Exterior lighting shall consist of high intensity discharge (HID) or solid state (LED) light fixtures, mounted on poles located within the AT/FP fence line clear zone and elsewhere as required to attain illumination levels and uniformity. Poles located within the service yards, facility aprons and hardstand parking areas shall be located and protected to minimize damage from vehicles. Building-mounted light fixtures may be used around the building perimeter to supplement pole mounted light fixtures. Building mounted light fixtures used solely for building perimeter and doorway lighting may be fluorescent. Illumination levels shall be 5 foot-candles within 10 feet of the bay doors for repair areas and maintenance areas and for the canopy are for AS-LMS, SATS and vans. Illumination levels shall be no less than 0.5 foot-candles for parking areas. Exterior lighting shall be controlled by a photosensor or astronomical time clock that is capable of automatically turning off the exterior lighting when sufficient daylight is available or the lighting is not required.

2) Perimeter Security Lighting: Protective lighting systems shall be provided in response to project specific requirements to deter trespassers and make them visible to guards. Levels of exterior lighting for protected areas shall conform to the requirements in the IESNA Lighting Handbook. Lighting circuits shall be controlled by a photosensor with manual override.

D. INTERIOR ELECTRICAL:

1) Electrical Power

a) Power Service: In the electrical equipment room provide a space for 3-phase, 200 ampere breaker with additional 3-phase, 200 ampere power capacity for this breaker in the main switch board. Installation shall conform to NFPA 70, National Electrical Code.

b) 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.

2) Receptacles: Power receptacles shall be provided per NFPA 70 and in conjunction with the proposed equipment and furniture layouts. Provide power connectivity to each workstation. Provide a duplex receptacle adjacent to each duplex voice/data and CATV outlet.

3) Special Power Requirements: Electrical power outlets for special power shall be coordinated with workbench locations in shops and provided in the maintenance areas. Both low voltage and high frequency power may be required in some areas. See the TEMF Features Matrix. Coordinate with the User for the electrical characteristics of the equipment to be provided by the Government.

4) **Hazardous Locations:** Hazardous locations shall be clearly defined on the drawings by the designer based on the intended use of the facility and applicable criteria. Receptacles, devices, equipment and wiring in hazardous locations shall be designed (UL listed for the application) and installed in accordance with the NFPA codes. When hazardous locations are determined to be up to 18 inches above the finished floor, receptacles and devices and conduit routing to them shall be installed above the hazardous area, where possible.

E. **INTERIOR LIGHTING:** 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.

1) **Office, Training Room and Conference Room Lighting:** Interior ambient illumination shall provide a generally glare free, high quality lighting environment conforming to IESNA RP-1-04. Training rooms and conference rooms shall have a dimmable circuit providing general lighting without glare on audio-video displays. Dimming ballasts shall be capable of dimming to 5 percent.

2) **Repair and Maintenance Areas:** Illumination of the repair maintenance areas shall consist of T5, T5HO, T8 fluorescent or solid state light fixtures. The fixture layout shall be coordinated with the traveling bridge crane requirements.

3) **Maintenance Pit Lighting:** Illumination in maintenance pits shall consist of T5, T5HO, or T8 fluorescent linear or solid state light fixtures mounted in the pit area for general illumination. Task illumination shall be provided by no fewer than four pit-mounted incandescent, compact fluorescent or metal halide adjustable or solid state swing-arm task lights. In lieu of swing-arm task lights, no fewer than two receptacles with cord and plug incandescent, compact fluorescent or metal halide portable safety lights may be provided. Each cord shall be of adequate length to service no less than 60 percent of the pit area. All equipment shall be suitable for the hazardous classification of the pit.

4) **Illumination Levels:** Maintained Illumination levels shall be in accordance with the Table 4 below. Maintained illumination levels in areas not included in Table 4 shall comply with the recommendations of the IESNA Lighting Handbook. Illumination levels in maintenance pits shall be calculated based on no contribution from the overhead ambient light fixtures.

SAMPLE

TABLE 4 ILLUMINATION LEVELS	
FUNCTIONAL AREA	FOOT CANDLES
Administration and Shop Control	50
Warehouse, Storage, and Miscellaneous Rooms	20
Latrines, Showers, and Lockers	20
Break, Training, and Conference	30
Repair and Maintenance Areas	50
Weapons Storage and COMSEC Vaults	50
Maintenance Pit	15
Repair Shops (General Item, Compact Item, Special Environment, Battery, etc.)	50
Electrical/Mechanical Rooms	30

TABLE 5 OUTLET DENSITIES	
FUNCTIONAL AREA	AREA PER OUTLET (SF)
Administration and Shop Control	80
Latrines, Showers, and Lockers	0
Break, Training, and Conference	80
Repair and Maintenance Areas	500
Weapons Storage and COMSEC Vaults	80
Repair Shops (Consolidated bench repair, Battery, etc)	80

F. GROUNDING:

1) **Facility:** Each maintenance building shall have a ground counterpoise around the building perimeter for grounding incoming service, building steel, lightning protection, telephone service, piping, and internal grounding requirements. Ground busbar shall be provided on walls of each repair area. A grounding point shall be provided in each repair area and each maintenance area. Each repair area and maintenance area is 16' x 32' in size. Equipment grounding shall be in accordance with the recommendations of MIL-HNBK-419A, which is referenced in I3A. This includes, but is not limited to, the earth electrode subsystem should exhibit a resistance to earth of 10 ohms or less and multiple ground rods should be interconnected using 1/0 AWG bare copper cable. Install an interior #2 AWG bare tinned copper ground loop around the perimeter of the Fluid Distribution Room for

dissipation of potential static charge. Bond ground loop to building structure and grounding riser. Provide thirty (30) #6 AWG bare copper pigtailed complete with alligator clips on both ends for grounding of metallic barrels/dispensing equipment. Length of pigtailed should be based on potential layout of equipment/drums and the location of ground ring. Additional grounding may be provided based on project requirements. Systems shall conform to NFPA 70 National Electrical Code, NFPA 780 Standard for the Installation of Lightning Protection Systems, local codes and the Technical Criteria for Installation Information Infrastructure Architecture (I3A).

2) **Exterior Grounding:** Grounding points shall be provided in vehicle and equipment parking areas on 40-foot centers (maximum) and coordinated with the parking layout. It will be acceptable to provide a minimum of one grounding point for every eight vehicles parked in a double row, and one grounding point for every four vehicles parked in a single row configuration. Equipment parking grounding shall be in accordance with the recommendations of MIL-HNBK-419A, which is referenced in I3A. This includes, but is not limited to, the earth electrode subsystem that shall exhibit a resistance to earth of 10 ohms or less, and multiple ground rods that shall be interconnected using 1/0 AWG bare copper cable. Additional grounding may be provided based on project requirements.

G. **LIGHTNING PROTECTION SYSTEM AND TRANSIENT VOLTAGE SURGE PROTECTION:** Design shall be in accordance with NFPA 780 and other referenced criteria. Provide transient voltage surge protection. All tactical equipment maintenance facilities are classified as mission essential and continuity of facility services is required for lightning protection risk assessments.

3.11. HEATING VENTILATING AND AIR CONDITIONING (HVAC) REQUIREMENTS

A. VENTILATION SYSTEM:

1) **Supply:** The ventilation supply and general exhaust systems for the repair and maintenance bays and the vehicle corridor shall be designed to provide 100% of outdoor air with no recirculation and sized for 1.5 cfm per square foot per ASHRAE 62.1 The supply and general exhaust systems shall operate at 0.75 cfm/sf. CO and NOx sensors shall be provided throughout the repair bays and the vehicle corridor within the core area. There shall be two setpoints for the sensors. The first setpoint be at a point below unacceptable CO and NOx levels. At the first setpoint the supply and general exhaust fans shall ramp up to provide the full 1.5 cfm per square foot of ventilation. The second setpoint shall be at unacceptable CO and NOx levels. If the sensors register concentrations above setpoint, they shall initiate an audible and visual local alarm. An alarm event shall also be generated at the Building Automation System.

2) **Fan:** The general exhaust system's fan shall be equipped with a VFD. In addition to tracking the supply system fan, the general exhaust fan reduces the exhaust airflow rate based on the operation of the vehicle exhaust systems. The repair and maintenance areas and vehicle corridor shall be maintained at negative pressure with respect to the air conditioned core area.

3) **Temperature:** The ventilation air shall be tempered to 55 degrees (F).

4) **Site buildings:** UAV Storage Building, Organizational Storage, Distribution Company Storage, POL Building, mechanical and electrical rooms, the ventilation rate shall be such that the space is maintained at a maximum of 10 degrees (F) above design ambient conditions.

B. SYSTEM SELECTION:

1) **Bays:** Repair and maintenance bays and the vehicle corridor are to be heated to 55 degrees F. The repair and maintenance bays shall be heated by some form of radiant heating; overhead gas infrared, in-floor hydronic, or some combination thereof. Other site storage buildings (see paragraph 3.2.1.D) are to be heated to 40 degrees F for freeze protection.

2) **Occupied Spaces:** Occupied spaces within the core shall be heated and cooled in accordance with Paragraph 5 of Section 01 10 00. Consider all viable alternative systems meeting the functional requirements of each of the areas of the facility. For the core spaces, consider packaged equipment, split systems or systems utilizing chilled/heating water from either a central plant or decentralized sources.

3) **Plenums:** Return air plenum systems are not allowed for Tactical Equipment Maintenance Facilities.

4) **Evaporative cooling:** Consider use of evaporative air pre-cooling in hot climates.

5) **Telecommunication Rooms:** Telecommunications Rooms and SIPRNet rooms will each be served by an independent and dedicated air-handling system. Air handling unit system(s) shall not be floor-space mounted within the actual space served. Rooms shall be maintained at 72 degrees F year-round. The space shall be positively pressurized. Assume 616 Watts for the equipment heat dissipation for SIPRNet rooms and 1941 Watts for Telecommunication rooms. Contractor shall verify this load during the design stage.

C. **BUILDING EXHAUST SYSTEMS:** Provide general exhaust in repair and maintenance areas and exhaust systems at maintenance area pit, welding area and weapons vault. Provide portable welding exhaust. Exhaust fan shall be non-sparking. Maintenance area pit exhaust system will be ducted exhaust system with explosion proof fans. Welding exhaust shall be manually engaged during the welding activity. All other exhaust systems will operate continuously while the building is occupied. Exhaust duct openings shall be located so that they effectively remove vapor accumulations at floor level from all parts of the floor area. Exhaust shall be taken from a point within 12 inches of the floor in accordance with NFPA 70. Exhaust systems shall be in accordance with NFPA 30 and 30A. Energy recovery from exhaust air shall be used where required by ASHRAE 90.1.

D. **VEHICLE EXHAUST EVACUATION SYSTEMS:** Vehicle exhaust evacuation system for wheeled and tracked vehicles shall be provided at each repair area and along the vehicle corridor allowing for capturing exhaust fumes from stationary vehicles and vehicles moving in and out of the building and along the vehicle corridor. Consider viable alternative systems meeting the functional requirements of each of the areas of the facility. Size and locate the exhaust lines as required to service vehicles and equipment within the repair areas. Lines shall not interfere with maintenance operations or obstruct equipment such as the traveling bridge crane. 50% duty cycle of the total available capacity of vehicle exhaust can be considered unless specified otherwise by the using service. The using service is responsible for providing the transition connectors (if required, depending on the type of exhaust system provided) between the vehicle exhaust and the vehicle exhaust system installed in the building. All system components must be compatible with the vehicle exhaust temperatures. Unless otherwise indicated by the user, design exhaust outlets for 1400 cfm and 900 degrees F. For vehicles with higher rate requirements, two exhaust lines may be combined. No exhaust system is currently available that will satisfy the requirements of the AGT 1500 Gas Turbine. Ventilation in the maintenance and repair bays shall be as a minimum per ASHRAE 62.1. Additional makeup air may be needed compensate for the exhaust requirements.

E. **HVAC CONTROLS:** HVAC Controls shall be in accordance with paragraph 5.8.3. See Appendix for HVAC Controls for typical control system points schedules. These schedules identify as a minimum points to be monitored and controlled by the building automation system (BAS). See paragraph 6 for any additional installation specific points. Points schedule drawings convey a great deal of information critical to design, installation, and subsequent performance of the control system. It includes hardware input/output information, device ranges and settings, ANSI 709.1 communications protocol data, and information about data that is to be used at the operator workstation by Monitoring and Control software. These schedules are available as an excel spread sheet and as AutoCAD drawings on Engineering Knowledge Online (EKO) website <https://eko.usace.army.mil/fa/bas/>. Point schedule of system types not addressed in the appendix shall be developed by the Contractor, and shall be sufficiently detailed to a level consistent to a similar listed system in the appendix. It is recommended that all of the guidance and instruction documents be reviewed prior to using any of the info, as the documents provide necessary and critical information to the use of website drawings and other information.

3.12. ENERGY CONSERVATION REQUIREMENTS

A. **GENERAL:** Energy conservation shall be in accordance with Paragraph 5, GENERAL TECHNICAL REQUIREMENTS, of the RFP Statement of Work (SOW), subparagraph ENERGY CONSERVATION. An energy efficiency and sustainability study, jointly conducted by the U.S. Army Corps of Engineers and the Department of Energy, has been completed and the draft summary report is available at http://mrsi.usace.army.mil/sustain/Documents/2011_EISA_Study.pdf. This draft report is made available to designers as a reference tool to aid in meeting energy conservation mandates and targets. Any measures that exceed the requirements of ASHRAE 189.1 must be justified by a life cycle cost analysis.

B. **SCHEDULES:** The following load schedules must be used in all facility energy simulations for purposes of showing compliance with energy performance requirements.

Hr	Occupancy			Lighting			Plug Loads			Service Hot Water		
	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun
1	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
2	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
3	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
4	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
5	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
6	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
7	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
8	0.15	0	0	0.4	0.04	0.04	0.5	0.2	0.2	0.1	0.03	0.03
9	0.7	0	0	0.9	0.04	0.04	0.8	0.2	0.2	0.7	0.03	0.03
10	0.9	0	0	0.9	0.04	0.04	0.9	0.2	0.2	0.7	0.03	0.03
11	0.9	0	0	0.9	0.04	0.04	0.9	0.2	0.2	0.7	0.03	0.03
12	0.9	0	0	0.9	0.04	0.04	0.9	0.2	0.2	0.7	0.03	0.03
13	0.5	0	0	0.8	0.04	0.04	0.8	0.2	0.2	0.7	0.03	0.03
14	0.85	0	0	0.9	0.04	0.04	0.9	0.2	0.2	0.7	0.03	0.03
15	0.85	0	0	0.9	0.04	0.04	0.9	0.2	0.2	0.7	0.03	0.03
16	0.85	0	0	0.9	0.04	0.04	0.9	0.2	0.2	0.7	0.03	0.03
17	0.2	0	0	0.9	0.04	0.04	0.9	0.2	0.2	0.2	0.03	0.03
18	0	0	0	0.3	0.04	0.04	0.4	0.2	0.2	0.03	0.03	0.03
19	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
20	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
21	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
22	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
23	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03
24	0	0	0	0.04	0.04	0.04	0.2	0.2	0.2	0.03	0.03	0.03

3.13. FIRE PROTECTION REQUIREMENTS

A. **GENERAL:** Standards and Codes. All fire protection and life safety features shall be in accordance with UFC 3-600-01 and the criteria referenced therein. Tactical Equipment Maintenance Facilities shall be classified as mission essential and shall be provided with complete sprinkler protection.

B. **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.

C. **SPRINKLER SYSTEM:** Provide complete sprinkler protection for Vehicle Maintenance Shops, UAV Storage Buildings, Organizational Storage Buildings, and Distribution Company Storage Buildings. Wet pipe sprinkler systems shall be provided in areas that are heated and dry pipe sprinkler systems shall be provided in areas subject to freezing. 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. **<TEMP_UAV>** Fire suppression for UAV aircraft bays shall be wet pipe sprinkler systems. UAV bay design density shall be 0.40 gpm/sf, design area shall be the entire UAV bay, and exterior hose stream shall be 500 gpm. Sprinklers in UAV bays shall be 286 degree F quick response type. **</TEMP_UAV>** 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' x 2' splash block at exterior grade.

D. **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.

E. **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.

F. **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.

G. **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.

H. **ELEVATORS:** The fire protection features of elevators, hoist ways, machine rooms and lobbies shall be in accordance with UFC 3-600-01, ASME A17.1, NFPA 13 and NFPA 72.

I. **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.

J. **PROTECTION OF PIPING AGAINST EARTHQUAKE DAMAGE:** 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.

K. **FIRE WATER SUPPLY:** Fire flow test data is provided in Appendix D.

L. **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.

M. **FIRE DETECTION AND ALARM:**

1) **Fire alarm and detection:** A fire alarm and detection system shall be provided for this facility. It shall comply with the requirements of UFC 3-600-01 and NFPA 72. The system shall be addressable and fully compatible with and integrated with the local installation wide central monitoring system. Coordinate fire alarm system requirements with the Fire Department's Representative during design.

2) **Initiating Devices:** 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.

3) **Fire Alarm Stations**: Breakglass manual fire alarm stations shall not be used.

3.14. SEE PARAGRAPH 6.14 SUSTAINABLE DESIGN – NOT USED

3.15. SEE PARAGRAPH 6.15 ENVIRONMENTAL – NOT USED

3.16. SEE PARAGRAPH 6.16 PERMITS – NOT USED

3.17. SEE PARAGRAPH 6.17 DEMOLITION – NOT USED`

3.18. SEE PARAGRAPH 6.18 ADDITIONAL FACILITIES – NOT USED

3.19. EQUIPMENT AND FURNITURE REQUIREMENTS

3.19.1. FURNISHINGS

A. **GENERAL**: Furniture Systems. The following criterion describes the furnishing requirements for all room types. Furnishings, other than installed building equipment, are to be Government-furnished and Government-installed (GFGI) unless otherwise specified in this document. The following furnishings table(Table 6) is provided for coordination of room and office layouts to ensure suitability for their intended function.

SAMPLE

Table 6- Room Size and Furnishings Chart

Room	Description	NSF	Comments	Furniture Required
Admin Shop Control &	Administration & Shop Control	Varies	OPEN-PLAN OFFICE	Systems furniture open plan office area with workstations, approx. 48 SF, with work surfaces, file drawers—and, overhead storage and personal storage tower each for six staff members in Small TEMF, 16 staff members in Medium TEMF, 40 staff members in Large TEMF, and 57 staff members in Extra Large TEMF. Records section to have 4-drawer5-drawer lateral filing cabinets per building size: Small – 6, Medium -20, Large – 24, X-Large 26.
TRAINING ROOM	Training Room	1080	CLASSROOM	1 desk and chair for each 20 SF to accommodate min. 30 students.
BREAK ROOM/ CONF/ TRAIN	Break Room/ with adjacent Multi-purpose Space	Varies	STAFF BREAK AREA & CONFERENCE ROOM	Min. 10 LF base and wall cabinets with space for commercial grade refrigerator with ice maker. Provide seating and tables to accommodate approx. 40 percent of the building occupants.
ARMS VAULT	Class 5A Vault	300	CONSTRUCTED IN ACCORDANCE WITH AR 190-11, APP G.	1 double pedestal desk—to accommodate a computer, 1 task chair, 1 bookcase for manuals, one 4-drawer5-drawer lateral file cabinet, and 1 work bench.
COMSEC VAULT	Class 5V Vault	300	CONSTRUCTED IN ACCORDANCE WITH AR 380-5.	1 double pedestal desk—to accommodate a computer, 1 task chair, 1 bookcase for manuals, 4 lockable metal cabinets with shelves, two 4-drawer5-drawer lateral file cabinets, industrial shelving approximately 10'wx4'dx6'h each.
COMBAT SPARES	Spare Parts	Varies	STORAGE ROOM	1 double pedestal desk—to accommodate a computer, 1 task chair, one 4-drawer5-drawer lateral file cabinet, and 4 lockable metal cabinets with shelves.
TOOL ROOM	Tools and Tool Set Storage	Varies	STORAGE ROOM	1 double pedestal desk—to accommodate a computer, 1 task chair, one 4-drawer5-drawer lateral file cabinet, and 4 lockable metal cabinets with shelves.
SECURE STOR.	Secure Storage	300	CONSTRUCTED IN ACCORDANCE WITH RISK LEVEL II ANALYSIS OF AR 190-51.	4 lockable metal cabinets with shelves and industrial shelving approximately 10'wx2'dx6'h each - 1 for small TEMF, 2 for medium, 3 for large, and 4 for extra large.
CONSOLD. BENCH REPAIR	Consolidated Bench Repair	Varies	WORK AREA	Min. 16 SF of Static-Free work bench space for each assigned repair technician – 6 for small TEMF, 20 for Medium, 36 for Large, and 71 for Extra Large.

3.19.2. EQUIPMENT

A. GENERAL: Most furniture and equipment will be provided by others. However, some equipment is necessary to make TEMF ready for daily operations and is provided as an integral part of the building construction. Table 7 shows typical contractor provided equipment that is needed to make TEMF ready for operations.

B. OVERHEAD CRANES: Crane shall be designed and constructed to CMAA 70 (Class C) or CMAA 74 (moderate requirements) for operation with hoist in accordance with ASME HST-1 or HST-4.

- 1) The 10-ton crane shall have the following rated load speeds (plus or minus 15 percent):
 - a) Hoist - 20 fpm
 - b) Trolley - 65 fpm
 - c) Bridge - 125 fpm
- 2) The 35-ton crane shall have the following rated load speeds (plus or minus 15 percent):
 - a) Hoist - 10 fpm
 - b) Trolley - 60 fpm
 - c) Bridge - 85 fpm
- 3) Hoist motor control system shall provide one speed in each direction.
- 4) Bridge and trolley main control systems shall provide one speed in each direction.
- 5) Provide runway stops at limits of crane bridge travel.
- 6) Prior to PEMB design completion, the contractor shall verify that the weight and dimensions of the selected crane and crane bridge have been coordinated with the structural support system.

SAMPLE

TABLE 7 INSTALLED BUILDING EQUIPMENT		
Area	Equipment Class ¹	Equipment/Furniture Item
Repair Areas	CFCI CFCI CFCI	Exhaust System Bridge Crane Compressed Air
Maintenance Areas	CFCI CFCI CFCI CFCI CFCI CFCI	Bridge Crane Maintenance Pit Compressed Air Dispensing/Disposal System Emergency Eye Wash, hand wash and shower station Fire Extinguisher Cabinets
Administration and Shop Control	CFCI CFCI	Window/Reception Counter Fire Extinguisher Cabinets
Consolidated Bench	CFCI	Compressed Air
Tool Room Tool Box Storage	CFCI CFCI	Window/Reception Counter
Combat Spares	CFCI	Window/Reception Counter
Latrines, Showers & Lockers	CFCI	Lockers and Benches
Break, Training, Conference Room	CFCI	Counter with Sink
Weapons & COMSEC Vaults	CFCI	Vault Door
Site	CFCI	Oil/Water Separator

A. Note¹: CFCI is Contractor Furnished/Contractor Installed equipment. This equipment is always MCA funded and is part of the construction contract.

3.20. FACILITY SPECIFIC REFERENCES

- A. 40 CFR 261, Identification and Listing of Hazardous Waste
- B. 40 CFR 262, Standards Applicable to Generators of Hazardous Waste
- C. 40 CFR 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
- D. American Society of Mechanical Engineers (ASME); ASME HST-1, Performance Standard for Electric Chain Hoists; ASME HST-4, Performance Standard for Overhead Electric Wire Rope Hoists
- E. ANSI Z358.1, American National Standard for Emergency Eyewash and Shower Equipment

- F. ANSI/TIA/EIA 606-A, Administration Standard for Commercial Telecommunication Infrastructure.
- G. AR 190-11, Physical Security of Arms, Ammunition, and Explosives (FOUO)
- H. AR 190-51, Security of Unclassified Army Property (Sensitive and Nonsensitive)
- I. AR 380-5, Department of the Army Information Security Program
- J. Crane Manufacturers Association of America (CMAA); CMAA 70, Top Running and Bridge and Gantry Type Multiple Girder Electric Overhead Traveling Cranes, No. 70; CMAA 74, Top Running and Under Running Single Girder Electric Overhead Cranes Utilizing Under Running Trolley Hoist, No. 74
- K. Fed Spec AA-V-2737, Modular Vault Systems
- L. UFC 4-020-01 DoD Security Engineering Facilities Planning Manual
- M. AR 380-40, Policy for Safeguarding and Controlling Communications Security (COMSEC) Material (FOUO).
- N. USACE STD 872-90-03, FE6 Chain-Link Security Fence Details

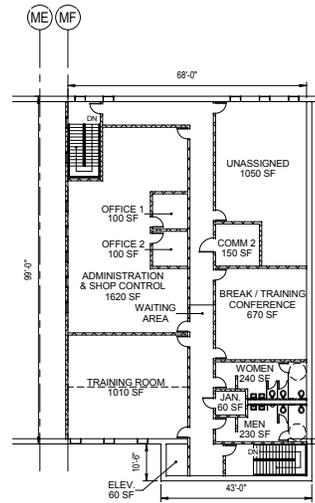
SAMPLE

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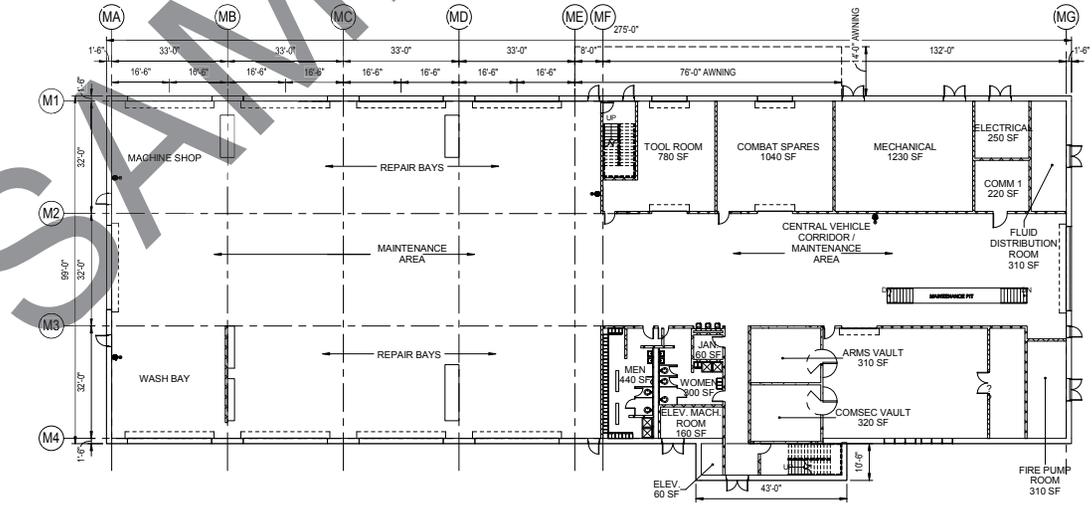
The floor plans indicate the Army Standard Design in schematic form. The designer-of-record (D-O-R) is allowed to make adjustments for the exterior façade/architecture theme, and/or to accommodate specific building engineering systems (structural, mechanical, electrical, fire protection, sustainable design, etc.). These adjustments will be evaluated by the Center of Standardization (CoS) during its compliance review.

The overall building dimensions and the values for the gross building areas indicated are for the standard layouts shown and are predicated on an assumed exterior wall thickness of 18 inches. It is understood that the actual gross building area will vary depending on the wall system / material selected for a specific project. A reduced overall gross area is permissible if all net program requirements and adjacencies are satisfied, but in no case may the maximum gross area for the facility be exceeded.

FIRST FLOOR 27,677 SF
 AWNING 532 SF
 SECOND FLOOR 7,728 SF
 TOTAL AREA AS SHOWN 35,937 SF
 GROSS ALLOWABLE MAX. 38,000 SF



2 SECOND FLOOR PLAN
 1/16" = 1'-0"



1 FIRST FLOOR PLAN
 1/16" = 1'-0"

</REV>

U.S. Army Corps of Engineers
 SAVANNAH DISTRICT

DATE	10/10/18
REVISION	
NO.	
DESCRIPTION	

DESIGNED BY	SCHEIDT/ANDERSON
CHECKED BY	SCHEIDT/ANDERSON
CONTRACT NO.	
PROJECT NAME	
DRAWN BY	SCHEIDT/ANDERSON
DATE PLOTTED	10/10/18 10:58 AM
SCALE	1/16" = 1'-0"
PROJECT CODE	
FILE NAME	
DATE	10/10/18
BY	SCHEIDT/ANDERSON

U.S. ARMY ENGINEER DISTRICT
 SAVANNAH DISTRICT

FACILITIES STANDARDIZATION PROGRAM
 TACTICAL EQUIPMENT MAINTENANCE FACILITY

MEDIUM TEMP FLOOR PLANS

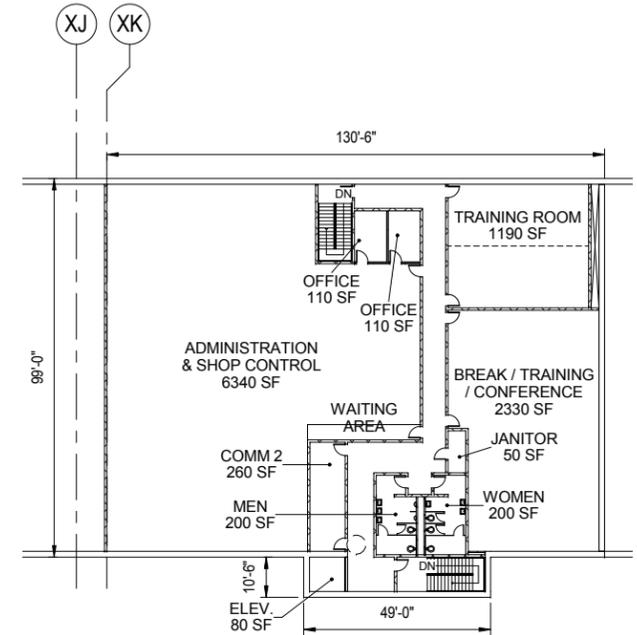
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 A-101B
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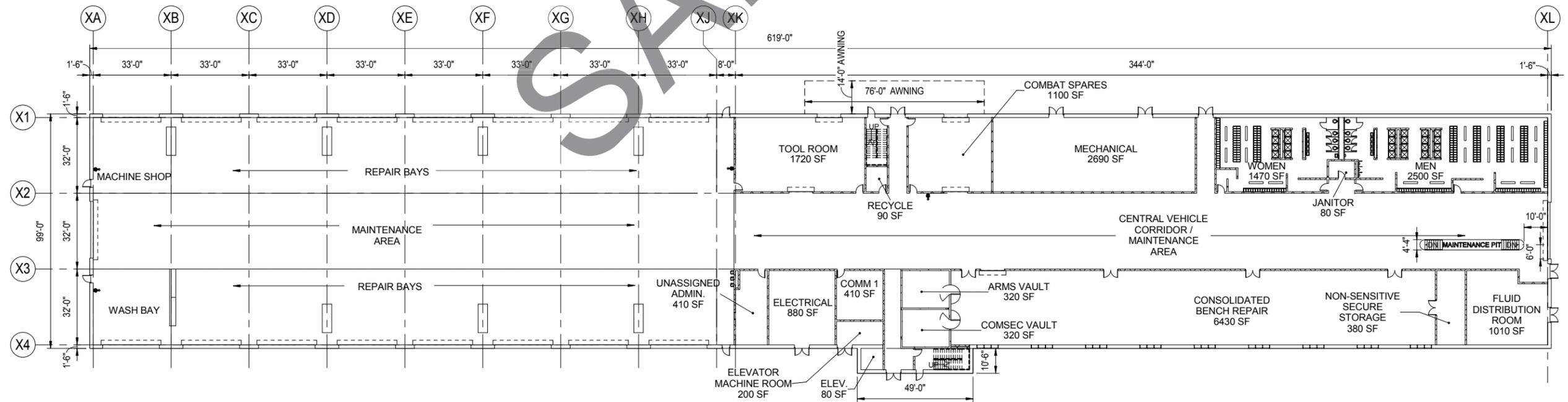
The floor plans indicate the Army Standard Design in schematic form. The designer-of-record (D-O-R) is allowed to make adjustments for the exterior façade/architecture theme, and/or to accommodate specific building engineering systems (structural, mechanical, electrical, fire protection, sustainable design, etc.). These adjustments will be evaluated by the Center of Standardization (CoS) during its compliance review.

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FIRST FLOOR	61,796 SF
AWNING	532 SF
SECOND FLOOR	13,434
TOTAL AREA AS SHOWN	75,762 SF
GROSS ALLOWABLE MAX.	76,200 SF



2 SECOND FLOOR PLAN
1/24" = 1'-0"



1 FIRST FLOOR PLAN
1/24" = 1'-0"

</REV>



DATE:	xxx-20xx	SOLICITATION NO.:		BY:	
DESIGN BY:	Designer	CKD BY:	Designer	DATE:	
DRAWN BY:	Author	PLT DATE:	1/24/2014 PM 3:08:14	SYMBOL:	
SEAL BY:	1/24/2014 PM 3:08:14	CONTRACT NO.:		DESCRIPTION:	
FILE NAME:	27' x 34'	CATEGORY CODE:			

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH DISTRICT

FACILITIES STANDARDIZATION PROGRAM
TACTICAL EQUIPMENT MAINTENANCE FACILITY

PLATE REFERENCE NUMBER
A-101D
SHEET

EXTRA LARGE TEMP FLOOR PLANS

