US Army Corps
of Engineers
Mobile District

DEPARTMENT OF THE ARMY
FACILITIES STANDARDIZATION PROGRAM

AVIATION SUPPORT BATTALION (ASB)
AIRCRAFT MAINTENANCE HANGAR

STANDARD DESIGN

July 2020

Record of Changes (changes are indicated by \1\ … /1/

Change No.	Date	Summary of Changes
01	30 Jul 2020	Name revision from ULLS-A to LIS throughout the document Name revision to hazardous material storage building throughout the document Table 2.2 revision to allowable gross area for wash apron and access 3.3 F.2 revision to minimum wash apron dimensions 3.6 B.2 a) revision to narrative on crane hook height 3.9 B revision to narrative to include workbenches in the voice data requirements 3.9 B revision to narratives covering telecom rooms, logistics information systems, and wireless access point 3.9 C.2 revision to SIPRNET narrative 3.9 G revision to Public address (PA) system narrative 3.9 J revision to Cybersecurity narrative 3.10 C revisions to power distribution narratives Room Data Sheets: miscellaneous revisions covering compressed air, power and telecommunication requirements. Room Data Sheet: Aircraft Maintenance Bay - revisions to number of maintenance modules, number of emergency showers, number of cranes, and clarification to hook height Room Data Sheet: LIS Equipment Room – revision to ceiling type, building equipment, and telecommunication requirements Room Data Sheet: Special Tools Room - added service counter material and power requirement Room Data Sheet: Blade Repair Shop - added exhaust requirement Room Data Sheet: ALSE Shop - deleted ALSE locker, customer service counter, and double door to ALSE storage. Room Data Sheet: Aircraft Mounted Weapons – added requirement for light fixture protection. Room Data Sheet: Aircraft Parts Supply Office - added service counter material Room Data Sheet: Contractor Logistics Support - added locker requirement Room Data Sheet: Toilet Rooms - clarified fixture count.

TABLE OF CONTENTS

3.2 FUNCTIONAL AND OPERATIONAL REQUIREMENTS
- A. General
- B. Primary Spaces
- C. Aircraft Maintenance Bay Module
- D. Admin/Shop Core Module
- E. Site Storage Buildings/Tanks/Aircraft Wash Apron
- F. Space Criteria for ASB Maintenance Hangar

3.3 SITE FUNCTIONAL REQUIREMENTS
- A. General
- B. Parking
- C. Access Drives and Lanes
- D. Shipping & Receiving
- E. Hardstand
- F. Airfield Pavements
- G. Special Setbacks & Perimeter Controls

3.4 SITE AND LANDSCAPE REQUIREMENTS
- A. Site Structures
- B. Site Utilities
- C. Landscaping/Hardscaping
- D. Site Specialties and Furnishings

3.5 ARCHITECTURAL REQUIREMENTS
- A. General
- B. Walls
- C. Roof Systems
- D. Openings
- E. Exterior Specialties
- F. Elevator/Conveying Systems
- G. Vault Requirements
- H. Acoustical Requirements

3.5.1 FINISHES AND INTERIOR SPECIALTIES
- A. General
- B. Finishes
- C. Interior Specialties

3.6 STRUCTURAL REQUIREMENTS
- A. General
- B. Design Loads
- C. Foundations
- D. Superstructure
- E. AT/FP Requirements
- F. Aircraft Maintenance Bay Doors
- F. Design and Construction Documentation
- G. Modifications to Existing Structures – Not Used
- H. Modular or Pre-Engineered Buildings

3.7 THERMAL PERFORMANCE

3.8 PLUMBING REQUIREMENTS
- A. General
- B. Domestic Hot Water System
- C. Drains
- D. Plumbing Fixtures
- E. Emergency Showers and Eyewashes
- F. Compressed Air

3.9 HEATING, VENTILATION, AND AIR CONDITIONING

A. General
B. Design
C. Hangar Floor Areas
D. Administrative Areas
E. Shop Areas
F. Building Exhaust and Hangar Ventilation/Exhaust Systems
G. Design Conditions

3.10 COMMUNICATION AND SECURITY SYSTEMS
A. General
B. Telecommunication Systems
C. Secured Communications
D. Electronic Security Systems (ESS)
E. Audio/Visual Systems & Infrastructure
F. Cable Television
G. Public Address (PA) Systems
H. Fire Alarm & Detection
I. Mass Notification Systems
J. Cybersecurity

3.11 ELECTRICAL REQUIREMENTS
A. General
B. Hazardous Locations and Classification
C. Power Distribution
D. Lighting
E. Lightning Protection
F. Grounding
G. Cathodic Protection

3.12 ENERGY CONSERVATION REQUIREMENTS

3.13 FIRE PROTECTION

3.14 SUSTAINABLE DESIGN - NOT USED

3.15 ENVIRONMENTAL - NOT USED

3.16 PERMITS - NOT USED

3.17 DEMOLITION - NOT USED

3.18 ADDITIONAL FACILITIES - NOT USED

3.19 FURNITURE AND EQUIPMENT REQUIREMENTS

3.19.1 FURNITURE AND FIXTURES
A. General Conditions
B. Workstations
C. Workbenches/Worktables
D. Tables
E. Chairs
F. File Storage Units
G. Storage Cabinets, Shelving and Lockers
H. Miscellaneous Furnishings
I. IT Equipment
J. Appliances
k. Furniture and Equipment Plans

3.19.2 MATERIAL HANDLING/ CONVEYING EQUIPMENT
A. Overhead Cranes

3.20 ROOM DATA SHEETS

A. Room Data Sheet Group 1 – Aircraft Maintenance Bay
B. Room Data Sheet Group 2 – Maintenance Administration and Operations
C. Room Data Sheet Group 3 – Maintenance Support
D. Room Data Sheet Group 4 – Allied Shops
E. Room Data Sheet Group 5 – Aviation Life Support Equipment
F. Room Data Sheet Group 6 – Secured Storage
G. Room Data Sheet Group 7 – Aircraft Parts Supply
H. Room Data Sheet Group 8 – Contractor Logistics Support (CLS)
I. Room Data Sheet Group 14 – Conference/Training Areas
J. Room Data Sheet Group 15 – Common Areas

3.21 FACILITY SPECIFIC REFERENCES (PART II)

Attachment A: NOTIONAL FLOOR AND FURNITURE/EQUIPMENT PLANS

PART I
GENERAL DESIGN REQUIREMENTS

AVIATION SUPPORT BATTALION (ASB) AIRCRAFT MAINTENANCE HANGAR

GENERAL DESIGN REQUIREMENTS

1.0 GENERAL AND SPECIFIC CRITERIA

The criteria in this document are applicable to the programming and design of an Aircraft Maintenance Hangar Complex for an Aviation Support Battalion (ASB) within a Combat Aviation Brigade (CAB). The ASB Standard Design Aircraft Maintenance Hangar Complex provides functional areas which allow the hangar to be occupied by an ASB in support of the CAB.

A. STANDARDIZATION. The Center of Standardization (COS) for Aviation Support Battalion (ASB) Aircraft Maintenance Hangars is the U.S. Army Engineer District, Mobile (CESAM). In accordance with ER 1110-3-113, the COS (CESAM) maintains lessons-learned and CADD files of completed designs and should be consulted when starting a project.

B. SPACE PLANNING CRITERIA. The maximum gross areas for an ASB Maintenance Hangar Complex, including utility spaces for communication, electrical and mechanical equipment, are listed in Table 1. For a TOE unit which is not classified as a standard ASB, select the non-standard option in Part II Statement of Work, Para. 2.1 SCOPE, and coordinate with the Center of Standardization in regards to a conceptual layout for the intended using activity.

The maximum allowable gross area permitted for the Standard Design ASB Maintenance Hangar is provided in Table 1. A reduced overall gross area is permissible if all net program requirements and adjacencies are satisfied per the standard layout provided herein, but in no case may the maximum allowable gross area be exceeded.

Table 1: Maximum Allowable Gross Areas

FCC	Description	UM	Maximum Allowable Gross Area
211 10	ASB Aircraft Maintenance Hangar	SF	157,500

C. APPLICABILITY. This standard design is applicable to Facility Category Codes (FCC) 211-10, 211-13, 211-14, 211-16, 211-17, 211-20, and 113-70 as defined by DA PAM 415-28 (Reference 3) for new construction. Note that Depot Maintenance Facilities and TDA maintenance organizations (Logistics Readiness Centers-Aviation, LRC-A and Aviation Center Logistics Command, ACLC) are not covered by this criterion.

D. SUSTAINABILITY. Incorporate sustainable design predicated on criteria and goals established by Department of Army at the time of specific project development.

E. RENOVATIONS. Depending on the mission, organization, mode of operation and complexity of renovation, the specific criterion included in this standard design document might or might not be applicable. Coordinate with the Center of Standardization in regard to the programming and design of spaces to be renovated.

2.0 CAB ORGANIZATION.

The MTOE for the Combat Aviation Brigade (CAB) consists of a Headquarters and Headquarters Company (HHC), Attack Reconnaissance Squadron (ARS), Attack Reconnaissance Battalion (ARB), Assault Helicopter Battalion (AHB), General Support Aviation Battalion (GSAB), and an Aviation Support Battalion (ASB). The CAB is designed to be modular and tailorable and is typically task organized. See FM 3-04 for more information on a CAB's organization.

A. AVIATION SUPPORT BATTALION (ASB) HANGAR OCCUPANCY. Assumed military occupancy includes MTOE military personnel assigned to the Aviation Maintenance Company. The facility shall be designed to permit 24 hour operation.

Table 2: MTOE Aviation Support Battalion (ASB) Hangar Occupancy

Unit	Unit Type	Aircraft	Unit Personnel
Aviation Support BN (ASB)			

Aviation Support Company	AVUM		355
Contractors (assumed)			10
			Total = 365
Notes:			
AVN – Aviation (Flying)			
AVUM – Aviation Unit Maintenance			

3.0 LEVELS OF MAINTENANCE.

AR 750-1 and Department of the Army pamphlet (DA PAM) 750-1 outline the concepts, roles, responsibilities, and authority requirements of the Army maintenance program. Field-level and sustainment-level maintenance (two-level maintenance) comes under the Army national maintenance program (NMP). The CAB commander has command and control (C2) authority for field-level maintenance.

A. FIELD MAINTENANCE (FM). Field maintenance is performed by CAB personnel assigned to the aviation (maneuver) companies/troops and the aviation maintenance company/aviation maintenance troop (AMC). Flight company personnel perform authorized maintenance procedures within their capability. Aviation field maintenance is characterized by "on-system maintenance", generally replacing components or performing component repair and return to the user.

1. The Aviation Support Company (ASC) assigned to the Aviation Support Battalion (ASB) provides field-level maintenance, up to intermediate-level maintenance, support to the AMC. The ASC primarily performs intermediate-level maintenance support and reinforces unit maintenance support upon request.

B. SUSTAINMENT MAINTENANCE (SM). Sustainment maintenance is the Army strategic support. At this level, maintenance supports the supply system by economically repairing or overhauling components. Maintenance management concentrates on identifying the needs of the Army supply system and managing programs to meet the supply system demands. Sustainment maintenance support is divided and primarily performed by three separate entities: the original equipment manufacturers (OEMs) and their CFSRs; Army sustainment facilities, located at fixed-bases in the continental United States; and by the national maintenance (NM) source of repair (SOR).

4.0 ASB HANGAR FUNCTIONAL AREAS.

Aircraft maintenance activities are conducted in the aircraft maintenance bay and the allied/special shops. AMC administrative and support spaces shall be centrally located and in close proximity to the maintenance bay for scheduling and supervision of maintenance activities. The room data tables shall be used in conjunction with other requirements herein.

A. AIRCRAFT MAINTENANCE BAY. The twelve (12) aircraft maintenance modules authorized for the ASB hangar is based on a 10% ratio of aircraft assigned to the CAB. All ASB hangars shall include ten (10) 84' deep x 64' wide aircraft maintenance modules and two (2) 110' deep x 70' wide aircraft maintenance modules. In addition to the maintenance modules, a five (5) foot safety corridor shall be provided around the entire perimeter of the aircraft maintenance bay free of any storage or equipment. The safety corridor shall be continuous and shall provide an unobstructed passage to the required egress door locations. An additional five (5) foot allowance is provided between the safety corridor and the maintenance bay rear and side walls to accommodate structural elements, storage cabinets, life safety equipment, mechanical and electrical equipment.

B. MAINTENANCE ADMINISTRATION AND OPERATIONS. AMC administrative and operational spaces are required for scheduling, supervising, quality control, and support of maintenance activities.

C. MAINTENANCE SUPPORT. Maintenance Support functional areas include: Repair Section, Special Tools Room, and Maintenance Test Pilot Office(s).

D. ALLIED/SPECIAL SHOPS. Allied and special shops are required for component repair/replacement where the repair activity cannot be conducted directly on the aircraft in the maintenance bay. Each shop contains specialized equipment for more efficient workflow of repair activities.

E. MAINTENANCE STORAGE. Aircraft parts supply and special tools spaces are required to maintain, store, and issue Class IX (air) repair parts, special tools, PLL, bench stock, and shop stock.

F. SECURE STORAGE. Secure storage spaces are required for aircraft mounted systems, communication equipment, and personnel weapons.

G. FACILITY SUPPORT SPACES (COMMON AREAS). Facility support spaces are required to support the common building activities to include conference/training rooms, break areas, restrooms, and facility storage.

5.0 SITE FUNCTIONAL AREAS.

A. ASB HANGAR COMPLEX SITE LOCATION.

1. The hangar complex shall be sited immediately adjacent to the aircraft mass parking apron on Army Airfields (AAF) or Army Heliports (AHP) without penetrating controlled airspace or obstruction clearances.

2. The outer boundary of the hangar complex typically abuts the Rotary Wing Aircraft Parking Apron FCC 113 20, Hover Taxi lanes FCC 112 21, and Taxiways FCC 112 31. This assures safe and efficient transition from the power-on components of an AAF/AHP (primary landing surface (i.e., runway or helipad) and aircraft parking) to non-power ingress/egress to the hangar.

3. The ASB Hangar shall be connected to the mass parking apron by a Hangar Access Apron which extends the full width of the Aircraft Maintenance Bay. The minimum depth of the Access Apron shall provide 125 feet between the edge of the Parking Apron and the ASB Hangar.

4. Provide clear space around the hangar in accordance with UFC 4-211-01.

5. Site selection and real property master planning for all Active Component Hangar Complexes (and Reserve Component complexes when applicable) shall comply with all safety, obstruction, and airspace boundaries as stipulated by Army Regulation 95-2 and implemented by the Transportation Systems Mandatory Center of Expertise (TS MCX) for DCS G-3, HQDA. The major components of a hangar complex and minimum site requirements for any hangar project shall include the primary facility FCC 211 10, Hangar Access Apron FCC 113 40, and Aircraft Wash Apron FCC 113 70. Siting shall comply with UFC 3-260-01 Airfield and Heliport Planning and Design and UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings.

6. The ASB maintenance hangar complex shall include standalone HAZMAT Storage Building, POL Storage Building, Ground Support Equipment (GSE) Covered Storage, and Associated Items of Equipment (ASIOE) Covered Storage.

7. Dumpster enclosure area, utility service yard, waste fuel and oil storage building locations and clearances are crucial and shall be incorporated.

B. VEHICLE PARKING.

Other features including POV parking, organizational parking, access drives, emergency vehicle lanes, shall also be incorporated. Since ASB hangar is part of a larger airfield complex, proper AT/FP setbacks and continuity of airfield security shall be taken into consideration.

6.0 REFERENCES (Part I).

Department of the Army Pamphlet 415-28, Guide to Army Real Property Category Codes

Army Standard for Aircraft Maintenance Hangar (HGR) Complex, 24 Feb 2014

Army Regulation 95-2, Airspace, Airfields/Heliports, Flight Activities, Air Traffic Control, and Navigational Aids

AR 750-1 Army Materiel Maintenance Policy

ER 1110-3-113, Department of the Army Facilities Standardization Program

FM 3-04.111 Aviation Brigades

UFC 3-260-01, Airfield and Heliport Planning and Design

UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings

UFC 4-211-01, Aircraft Maintenance Hangars

PART II
STATEMENT OF WORK

1.0 PROJECT OBJECTIVES

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

Comparison of Military Facilities to Civilian Facility

Military Facility	**Civilian Facility**
ASB Aircraft Maintenance Hangar (HGR)	Aircraft Maintenance Hangar

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

The site infrastructure will have at least a 50-year life expectancy with industry-accepted maintenance and repair cycles.

The government is required by Public Law 102-486, Executive Order 12902, and Federal Regulations 10 CFR 435 to design and construct facilities in an energy-conserving manner while considering life cycle cost over the life of the facilities.

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

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

2.0 SCOPE

A. AVIATION SUPPORTBATTALION (ASB) AIRCRAFT MAINTENANCE HANGAR

1. The ASB Hangar shall be designed and constructed to accommodate rotary-wing aircraft operations and maintenance. This facility type contains spaces for the purpose of maintaining and repairing rotary-wing aircraft, complete with parts and tool storage, administrative operations, aviation operations, and all support equipment and facilities. It is intended for these facilities to be similar to aviation operations and maintenance hangars in the private sector community with the addition of allied shops, storage, and administrative spaces.

2. This project is designated as an [Attack Reconnaissance Battalion (ARB)] [Attack Reconnaissance Squadron (ARS)] [Assault Helicopter Battalion (AHB)] Aircraft Maintenance Hangar Complex. This statement of work is based on a hangar facility to accommodate any Attack Reconnaissance or Assault Battalion organization. Table 2.1 shows the number of aircraft and personnel typically assigned to each Aviation Battalion.

Table 2.0 Typical AVIATION SUPPORT Battalion (ASB) Hangar Occupancy

Unit	Unit Type	Aircraft	Unit Personnel
Aviation Support BN (ASB)			
Aviation Maintenance Company, AMC	AVUM		355
Contractors (assumed)			10
			Total = 365
Notes:			
AVN – Aviation (Flying)			
AVUM – Aviation Unit Maintenance			

3. The facility shall be designed to permit 24 hours operation.

4. Table 2.2 summarizes the maximum allowable gross areas permitted for the typical components of an ASB Maintenance Hangar Complex. A reduced overall gross area is permissible if all net program requirements and adjacencies are met per the standard layout provided herein, but in no case may the maximum allowable gross area be exceeded.

Table 2.2 Maximum Allowable Gross Area

CATCD	Description	UM	Maximum Allowable Gross Area
211 10	ASB Aircraft Maintenance Hangar	SF	157,500
214 70	POL Storage Building	SF	200
214 70	Hazardous Material Storage Building	SF	200
14179	AGSE Covered Storage	SF	3,000
14179	ASIOE Covered Storage	SF	2,000
113 70	Aircraft Wash Apron	SY	\1\1,644/1/

B. SITE

1. Provide all site design and construction within the ASB Hangar limits of construction necessary to support the new building facilities. Supporting facilities include, but are not limited to, utilities, electric service, exterior and security lighting, fire protection and alarm systems, security fencing and gates, water, gas, sewer, oil water separators, storm drainage and site improvements. Provide accessibility for individuals with disabilities.

Include Antiterrorism/Force Protection measures in the facility design in accordance with applicable criteria.

2. The Contractor shall be responsible for maintaining the construction site and haul route. Repair/replace damage to existing sidewalks, pavements, curb and gutter, utilities, and/or landscaping within the construction limit, adjacent to the construction site, and along the Contractor's haul route resulting from the Contractor's construction activities at no additional cost to the Government. Prior to construction activities, Contractor and Contracting Officer's Representative shall perform an existing condition survey. At completion of the Task Order, Contractor and Contracting Officer's Representative shall perform a final condition survey to determine repair/replacement requirements.

3. Approximate area available for this hangar complex is shown on the drawings.

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

Coordinate with Government on GFGI item requirements and provide suitable structural support or brackets for projectors, TVs, or other GFGI equipment. Provide all utility connections and space with required clearances for all GFGI items. All computers and related hardware, copiers, faxes, printers, video projectors, and TVs are GFGI.

D. FURNITURE REQUIREMENTS

Provide furniture design for all spaces, including any existing furniture and equipment to be re-used in accordance with Paragraph 3.19 Furniture and Equipment Requirements. Furniture procurement is not included in this contract or task order.

3.0 AVIATION SUPPORT BATTALION (ASB) AIRCRAFT MAINTENANCE HANGAR

3.1 GENERAL REQUIREMENTS

A. Facility Description

The ASB Standard Design Maintenance Hangar Complex provides functional areas which allow the hangar to be occupied by an Aviation Support Battalion (ASB) within a Combat Aviation Brigade (CAB). The ASB Hangar is one of four types of standard design maintenance hangars which typically are located at an Army air installation supporting a Combat Aviation Brigade (CAB).

The ASB Hangar Complex typically consists of the following facilities: ASB Hangar, Aircraft Ground Support Equipment (AGSE) Covered Storage, Associated Support Items of Equipment (ASIOE) Covered Storage, Hazardous Material (HAZMAT) Storage Building, POL Storage Building, Aircraft Washing Apron, and a Hangar Access Apron. A separate Fire Pump Building with Water Storage Tank(s) is often also required to supply the ASB Hangar fire suppression system with adequate water pressure and water supply.

The ASB Hangar Complex provides facilities for maintenance and repair of Combat Aviation Brigade (CAB) aircraft including shops, parts and tool storage.

B. Facility Relationships

1. General: The ASB Maintenance Hangar Complex is typically located on an Army Airfield (AAF) or Army Heliport (AHP) and adjacent to an Aircraft Parking Apron. Site selection and real property master planning shall comply with all safety, obstruction, and airspace boundaries as stipulated by UFC 3-260-01 and UFC 4-211-01. The ASB Hangar Complex is typically part of the outer boundary of the AAF/AHP Restricted Area. Mandatory and safety distances between exterior elements shall be taken into consideration from project inception to ensure adequate exterior acreage is provided.

2. Travel Distances: The maximum travel distance from POV parking to the Hangar shall not exceed a distance of 1200 feet. The maximum travel distance from handicap parking to the buildings shall not exceed a distance of 225 feet.

C. Accessibility Requirements

1. General: Able-bodied soldiers occupy and manage the ASB Hangar Complex. In accordance with the DoD Deputy Secretary of Defense Memorandum *Subject: Access for People with Disabilities*, October 31, 2008, the ASB Hangar need not comply with the DoD Standards. However, it is the goal of the DoD to make its facilities accessible to persons with disabilities to the maximum extent that is reasonable and practicable without degrading the facility's military utility. Therefore, provide the following accommodations:

2. Site Plan Design and Construction:

   a) Provide ABA compliant access from the POV parking lot to the building.

   b) Provide two (2) ABA compliant vehicle parking stalls within the POV parking lot for visitor parking.

   c) Provide handicapped vehicle parking signage and pavement markings.

3. Facility Design and Construction:

   a) The main building entrance at ground level and at least one emergency egress exit, shall be accessible. Electronic exterior door push buttons are not required.

   b) Provide ABA clearances and door accesses in the ASB Hangar.

   c) Provide ABA accessible restrooms for both sexes on each floor. Accessible shower stalls are required in quantities appropriate to contractor staffing levels.

   d) Provide an ABA accessible drinking fountain on each floor.

D. Building Area

1. Gross Area: Gross areas of facilities shall be computed according to UFC 3-101-01.

2. Gross Area Limitations: Maximum gross area limits indicated in Paragraph 2.0, SCOPE, may not be exceeded. A smaller overall gross area is permissible provided all established net area program requirements are met.

3. Net Area: Net area requirements for functional spaces are included in Table 3.1 Space Criteria for ASB Maintenance Hangar Complex. Where net area requirements are not specified, the space shall be sized to accommodate the required function, comply with code requirements, and comply with gross area limitations.

E. Adapt Build Model: Not Used

3.2 FUNCTIONAL AND OPERATIONAL REQUIREMENTS

A. General: The ASB Maintenance Hangar Complex provides a consolidation of several previously separate facility types or functional/mission areas: Aircraft Maintenance Hangar FCC 21110, Aircraft Maintenance Bay FCC 21114, Aircraft Parts Supply FCC 21113, Unit Flight Operations FCC 14112, and Company Operations Facility FCC 14185. Associated facilities to the Hangar Complex are: Aircraft Maintenance Parking Apron FCC 11330, Hangar Access Apron FCC 11341, and Aircraft Wash Apron FCC 11370. The ASB Hangar Complex provides multipurpose facilities for maintenance and repair of Aviation Support BN aircraft including shops, parts and tool storage, and maintenance company administration and unit storage. The ASB Hangar also provides space for unit flight operations, flight planning, and aviation company administration and unit storage.

B. Primary Spaces: The ASB Maintenance Hangar is composed of two primary functional areas: Aircraft Maintenance Bay and the Admin/Shop Core. Refer to the Standard Design drawings for

the required functional and operational spaces and adjacencies. See Table 3.2 for the functional area square footage allowance. See Paragraph 3.20 ROOM DATA SHEETS for additional space specific requirements.

C. Aircraft Maintenance Bay**:** The Aircraft Maintenance Bay is a high bay, enclosed, heated and ventilated work area for the inspection, service, repair, and modification of the assigned Attack or Assault Battalion rotary-wing aircraft. Direct aircraft access from the mass Aircraft Parking Apron to the maintenance bay is provided by a Hangar Access Apron and a large aircraft door opening. The maintenance bay contains ten (10) UAR and two (2) Cargo maintenance modules arranged side by side and surrounded by a five (5) foot wide perimeter safety corridor to form one contiguous work area. Space for two (2) transverse building expansions joints with braced frames and safety corridors on each side are allowed for in the area allowances. An additional five (5) foot structural/equipment space allowance is provided along the back and side walls of the maintenance bay. The maintenance bay is to be free of interior support columns. Bridge cranes shall provide crane hook coverage of the entire maintenance module area.

1. Aircraft Maintenance Module: The ASB Hangar utilizes the Army Standard Utility/Attack/Reconnaissance (UAR) and Cargo aircraft maintenance modules which are based on the UH-60 “Blackhawk” and the CH-47 “Chinook” aircraft respectively. The maintenance module sizes are provided in Table 3.1. The required perimeter Safety Corridor is in addition to the maintenance module size indicated. The ASB Hangar Floor Plan provided depicts a functional arrangement of the aircraft maintenance modules within the Aircraft Maintenance Bay of the ASB Hangar.

Table 3.1 Aircraft Maintenance Module Size

Module Type	Module Length	Module Width	Module Area
UAR	84 feet	64 feet	5,376 sf
Cargo	110 feet	70 feet	7,700 sf

2. Maintenance Bay Aircraft Access Opening: The aircraft access opening shall have a minimum clear height of 28 feet. The access opening width shall provide the minimum horizontal aircraft clearances in accordance with UFC 4-211-01. The aircraft access opening shall be column free except as indicated on the standard design drawings. Provide clear access between a minimum of two adjacent aircraft maintenance modules as indicated on the floor plan. When intermediate columns are provided, aircraft clearances shall be in accordance with UFC 4-211-01. Column design shall allow for unobstructed bridge crane operation above the entire maintenance module area. Columns shall not be placed within the maintenance modules or safety corridors.

3. Maintenance Bay Aircraft Doors: Maintenance Bay door clearances shall be in accordance with UFC 4-211-01. Doors may be either Motorized Vertical Lift or Horizontal Rolling type. For motorized vertical lift type, provide manual operation in the event of power failure. For the horizontal rolling type, provide capability to disengage the motor and capability to connect to tug(s) for opening and closing of doors. Each horizontal Rolling door leaf shall be independently powered and operable. Motorized Vertical lift or horizontal rolling doors shall be configured such that no less than 50% of the aircraft maintenance modules are accessible at any given time.

4. Aircraft Maintenance Module Utility Pedestals: Utility Pedestals increase workplace safety and centralize utility connections. Provide pedestals in the maintenance bay as shown in the standard design drawings. Utility Pedestals will provide power, data, and compressed air as required to service each aircraft maintenance module. See aircraft maintenance utility pedestal requirement. Power connections to aircraft shall be provided as a part of the facility.

5. Wash Bay: The end Cargo aircraft maintenance module shall be provided with a hose bib and drainage for limited aircraft washing. This bay is not intended to replace the exterior aircraft wash apron, but is intended to allow the washing of aircraft during inclement weather. In addition to the hose bib provided at the designated aircraft wash module, three additional

hose bibs shall be provided. (One centered on the back wall and two at the opposite ends near the aircraft door opening). Provide per UFC 4-211-01 Chapter 3.

6. Maintenance Bay Floor Slope: Slope the maintenance bay floor slab from the rear wall of the maintenance bay to a continuous floor trench located just inside the hangar aircraft doors. The elevation of the floor slab and the floor slope shall be in accordance with UFC 4-211-01.

D. Admin/Shop Core Module: The Admin/Shop Core Module within the ASB Hangar is composed of Maintenance Administration, Maintenance Support, Allied Shops, Aviation Life Support Equipment (ALSE) Shop, Secured Storage, Aircraft Parts Supply, Contractor Logistics Support (CLS), Conference/Training Rooms, utility and common spaces. Refer to the attached floor plans for the required adjacencies. See room data sheets for additional room descriptions.

1. Maintenance Administration: Maintenance Administration functional areas include Production Control, Quality Control, Technical Library, \1\LIS Equipment/1/ Room, and Logistical Assistance Representatives (LARS).

2. Maintenance Support: Maintenance Support functional areas include Repair Section, Special Tools Room, and Maintenance Test Pilot Office(s).

3. Allied Shops: Allied Shop required functional spaces include Power Plant/Powertrain, Structural Repair, Blade Repair, Pneudraulics, and Systems Repair. Allied shops shall be directly adjacent to the maintenance bay. Circulation and openings between the aircraft maintenance bay and the adjacent allied shops shall be adequately sized to facilitate movement of components, work stands, and carts into and out of the shops. Partitions between shops shall be non-load bearing and designed to allow flexibility for future organizational/mission changes.

4. Conference/Training Area: Conference/Training areas are provided for company level meeting and training.

5. Fire Suppression Room: Provide a centralized room on the ground floor for fire protection equipment (Hi-EX foam tank, pumping equipment, riser control valves, wet-pipe system piping and valves, and the fire water service main. Room shall provide 1-hour fire barrier protection. Space for fire water pumps are not included in the hangar; where required provide a separate Fire Pump Building and Fire Water Storage Tanks.

6. Common Areas: Common Admin/Shop functional support areas shall include break rooms, restroom/shower/locker areas.

7. Corridors:

   a) Maintenance Bay Access Corridors: Corridors connecting directly to the Aircraft Maintenance Bay shall be a minimum of eight (8) feet in width. Corridor shall comply with UFC 4-211-01, paragraph 3-7.1.

   b) Common Corridors: All corridors shall have a minimum width of 6’-8”.

8. Janitor’s Closets: Provide janitorial space with mop sink and heavy duty shelving on each floor as shown on drawings.

E. Site Storage Buildings/Tanks/Aircraft Wash Apron: The maintenance hangar complex typically includes site supporting structures as identified under paragraph 3.4. Appropriate distance between these structures and the hangar should be maintained.

F. Space Criteria for ASB Maintenance Hangar

Table 3.2

This table establishes the allowances for the spaces within the ASB maintenance hangar. All allowances are in net square feet exclusive of interior and exterior walls. Spaces listed are included in the standard design floor plan.

Room Description	Remarks	Allowance NSF
Admin Core		
Maintenance Administration	Production Control (950 sf) PC Office (150 sf) Quality Control (2,050 sf) QC Office (150 sf) Logistics Assistance Representatives (LARS) (500 sf) Technical Library (300 sf) \1\LIS Equipment/1/ Room (80 sf) Safety Office (120 sf) Airframe Maintenance Platoon Office (150 sf) Airframe Maintenance Platoon Section Leaders (225 sf) AH-64 Airframe Repair Section (700 sf) UH-60 Airframe Repair Section (600 sf) CH-47 Airframe Repair Section (600 sf) Component Repair Platoon Office (150 sf) Component Repair Platoon Admin (150 sf) Tech/Shop Supervisor (800 sf) Armament Repair Section HQ (150 sf) Avionics Section HQ (150 sf) Maintenance Test Pilot (600 sf) Petroleum, Oils, and Lubricants (POL) Office (300 sf)	8,800 nsf
Allied Shops	Power Plant (1,200 sf) Powertrain (1,600 sf) Structural Repair (1,900 sf) Blade Repair (950 sf) Pneudralics (950 sf) Electrical (800 sf)	7,800 nsf
Special/Other Shops	Non-Destructive Inspection (150 sf) Machine/Welding (800 sf) Armament/Weapons System/Fire Control System (2,000 sf) Navigation, Flight Control (1,000 sf)	4,650 nsf

	Night Vision Device Repair (200 sf) Comm Equipment Repair (500 sf)	
Aviation Life Support Equipment	ALSE (600 sf)	600 nsf
Secured Storage	Arms Vault - Aircraft Mounted Weapons (300 sf) Non-Sensitive Secured Storage (300 sf) Communications Secure (COMSEC) Storage (300 sf)	900 nsf
Tech Supply	Aircraft Parts Supply Office (Tech Supply Office) (300 sf) Aircraft Parts Supply Issue Counter Area (300 sf) Aircraft Parts Supply (Tech Supply) (Class Ix Storage) (7,280 sf) Centralized Bench Stock Storage (120 sf)	8,000 nsf
Tool Storage	Special Tools Room (1,500 sf)	1,500 nsf
Contractor Logistics Support	Contractor Logistics Support (CLS) (2,200 sf)	2,200 nsf
Conference/Training	Combined Distributed Computer Based Training (DT/CBT) (600 sf)	600 nsf
Support Areas	Break Room (1st Floor) (600 sf) Restrooms / Showers / Locker rooms (2,280) Janitorial Storage (70 sf) Facility Storage (600 sf) Recyclable Storage (225 sf) * Fire Suppression Room (1,600 sf)	6,635 nsf
Total Admin/Shops Module, NSF *		**43,000 nsf**
Net to Gross Area Allowance *		**17,500 nsf**
Total Admin/Shops Module, GSF *		**60,500 nsf**
Maintenance Bay GSF *	Based on twelve (12) maintenance modules	**97,000 nsf**
Total Allowable Hangar Gross Area *		**157,500 nsf**
*** Areas shown are maximum allowable and are not a simple sum of individual functional areas shown, Refer to Standard Design plans for individual and functional area sizes.**		
Exterior Support		
	POL Storage Building	200 sf
	Hazmat Storage	200 sf
	ASIOE Covered Storage	2,000 sf

	GSE Covered Storage	3,000 sf

Table 3.3 Space/Size Criteria for Site Storage Buildings and Tanks

This table establishes the allowances for supporting structures in the hangar complex. Adequate clearances should be provided between the hangar and these structures.

FUNCTIONAL ITEM	MAXIMUM AREA OR SIZE
GSE Covered Storage	3,000 GSF
ASIOE Covered Storage	2,000 GSF
Hazardous \1\Material/1/ Storage Building	200 GSF
POL Storage Building	200 GSF
Used Oil Storage Tank	2500 GAL
Waste Fuel Tank	250 GAL
Fire Suppression Effluent Tank	VARIES

3.3 SITE FUNCTIONAL REQUIREMENTS

A. General:

1. Site Work Scope: Site features typically include an aircraft access apron, aircraft wash apron, vehicular/equipment hardstand, storage buildings, covered storage, and site improvements. ASB Hangar projects may also include other airfield or heliport pavement areas such as parking aprons, maintenance parking aprons, taxiways, and helipads.

2. Primary facility siting: Distance from the center of runway, glide slope, distance from the taxiway, aircraft parking apron, access apron dimensions, shall all be considered in determining the facility orientation and setback distances. Transportation System Center of Expertise (TS MCX) and Airfield Manager shall be involved in the development of airfield area development plan from project inception through the design process. TS MCX approval of siting and paving design is mandatory. Criteria in UFC 3-260-01, Airfield and Heliport Planning and Design, shall be used for geometric layout, design and construction of runways, helipads, taxiways, aprons, and aircraft wash aprons.

3. Site Criteria: The site design shall comply with the latest edition of the following:

   a) UFC 4-211-01 Aircraft Maintenance Hangars

   b) UFC 3-201-01 Civil Engineering

   c) SDDCTEA Pamphlet 55-17, Better Military Traffic Engineering

   d) UFC 3-260-01 Airfield and Heliport Planning and Design: The designer is required to submit all design drawings, specifications, calculations and design analysis of the ASB Maintenance Hangar Complex to the Transportation Systems Center of Expertise (TCX) for review at the completion of the Concept Design Phase. Interim Design Submittal comments from the TCX must be incorporated into the design in order to obtain final government approval of construction documents. The designer of record shall contact the TCX as early as possible to establish a design and review schedule to minimize impact on the project schedule. Points of contact for the TCX are as follow:

      Position: Transportation Systems Center of Expertise
      Address: 1616 Capitol Ave., Omaha, NE 68102
      Website: https://transportation.erdc.usace.army.mil/tsmcx/

   e) UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings: Each project shall be evaluated for security requirements in accordance with UFC 4-010-01. Typically, the

aircraft maintenance bay portion of the complex is treated as a low occupancy building and is exempt from all provisions of the DoD Minimum Antiterrorism Standards.

f) UFC 3-600-01 Fire Protection Engineering for Facilities

B. Parking:

1. Privately Owned Vehicle (POV) Parking: POV parking spaces shall be provided for 70% of assigned unit personnel and shall be provided for 100% of assigned contractor personnel (10 spaces minimum). See Table 2.0 for unit personnel count. Provide five (5) additional parking spaces for official-use organizational vehicle parking within the POV parking lot. Handicap parking will be provided in accordance with Paragraph 3.1. C Provide Low–emitting and fuel–efficient POV parking in accordance with LEED Guidelines. Parking spaces are to be 9 feet by 18.5 feet with a 2.5 foot bumper overhang. Parking lot aisles are to be 26 feet wide.

2. Separate Organizational Vehicle Parking: Not required.

C. Access Drives and Lanes

1. Entrance Drives:

a) Provide primary and secondary entrance drives to connect POV parking area to existing roads.

b) Provide 28 foot wide entrance drives.

2. Service Drives:

a) Service drives shall be provided to all mechanical and electrical rooms.

b) Provide 28 foot wide service drive to hardstand and Aircraft Parts Supply area.

3. Emergency Vehicle/Fire Access Lanes:

a) Provide suitable exterior fire apparatus access on at least two complete sides of the building in accordance with UFC 4-211-01.

b) Provide direct access to the flight line through two 30 feet wide security gates. Gates shall be provided at each end of the hangar for vehicle entrance/exit to the Hangar Access Apron.

4. Drop-off Lanes: Drop-off lanes will not be used.

D. Shipping and Receiving: Aircraft parts and supplies will be received and shipped from the Aircraft Parts Supply Room. Provide adequate pavement for truck delivery, off-loading, and turning around.

E. Hardstand: Provide hardstands to accommodate unit assigned trailers, shop vans, ground support equipment (GSE), pre-fabricated POL and HAZMAT Storage Buildings, Waste Fuel and Waste Oil Tanks. All hardstand areas shall be rigid concrete pavement capable of withstanding container handling equipment and unit support vehicles. The hardstand area is typically within a security fence area.

F. Airfield Pavements:

1. Hangar Access Apron (FCC 113 40): Provide a Hangar Access Apron between the aircraft maintenance bay entrance and the Rotary Wing (RW) Parking Apron or taxiway. The Hangar Access Apron size is based on the hangar design and orientation to the RW Parking Apron or

operational Taxiway. The minimum width of the Access Apron shall be equal to the width of the aircraft maintenance bay. The minimum length of the Access Apron shall be 125 feet.

2. Aircraft Wash Apron (Rack) (FCC 113 70): Provide a dedicated Aircraft Wash Apron for the ASB Maintenance Hangar. The Wash Apron should be located adjacent to the ASB Hangar and contiguous to the RW Parking or Access Aprons. \1\The Wash Apron shall be sized at 80 feet wide x 120 feet deep minimum./1/ The Aircraft Wash Apron is a rigid pavement area for aircraft washing and cleaning as a function of or in preparation for conducting maintenance and repair activities.

3. Rotary Wing (RW) Parking Apron (FCC 113 20): Aircraft parking spaces shall be provided for 75% of unit assigned aircraft for general parking.

4. Aircraft Maintenance Parking Apron (FCC 113 30): Aircraft parking spaces shall be provided for 15% of unit assigned aircraft for maintenance operations checks and aircraft awaiting maintenance. Any fraction shall be rounded to the next whole number to determine the total number of parking spaces.

G. Special Setbacks & Perimeter Controls:

1. AT/FP: Anti-terrorism/Force Protection shall comply with UFC 4-010-01.

2. Airfield Security: The ASB Hangar Complex is part of the outer boundary for the AAF/AHP restricted area. Personnel or vehicular traffic from other than assigned units on the AAF or AHP are not allowed entry into the restricted area without express authorization from Airfield Operations. All pedestrian and vehicular traffic are under the strict control and surveillance by Air Traffic Control when entering into aircraft operational areas. Hence, a security line is established commencing from the hangar line and encompassing all operational areas of the AAF/AHP to include aircraft parking, navigational aids (NAVAIDS), and airfield service buildings and/or areas. Airfield security fencing shall be continuous. This entire restricted area is also designated as a foreign object damage (FOD) control area.

3. 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.

3.4 SITE AND LANDSCAPE REQUIREMENTS

A. Site Structures:

1. Wash Apron: Provide a covered or non-covered wash apron for each hangar with power, water and compress air to support the wash activity.

2. Dumpster Enclosure Area: A screened concrete dumpster pad shall be provided at an appropriate location in accordance with DPW Standards for storage of a minimum of two truck-operated trash containers. The selected location shall take into account the ease of access by building users, visibility, and access for dumping and removal.

3. Mechanical/Electrical Equipment Service Yards: May be provided as needed at an appropriate location and in accordance with UFC 04-010-01. Yards will be paved to prevent Foreign Object Debris (FOD) transfer to the flight line.

4. Covered Hardstands:

a) Ground Support Equipment (GSE) Covered Storage: Provide fenced and gated exterior covered storage to secure and shelter ground support equipment from weather. The independent GSE structure shall be located with direct access to the Hangar Access Apron but shall not interfere with airfield operations. Provide weatherproof lighting and weatherproof general purpose receptacles with ground fault protection.

b) Associated Items of Equipment (ASIOE) Covered Storage: Provide fenced and gated exterior covered storage to secure and shelter ASIOE equipment such as maintenance stands, mobile cranes, aircraft maintenance trailers, aircraft blade boxes, and other unit equipment. The structure shall be located outside the airfield security fence, but within a fenced secure area. The ASIOE Storage Shed does not require direct access to the Hangar Access Apron. Provide weatherproof lighting and weatherproof general purpose receptacles with ground fault protection.

5. Storage Buildings and Tanks:

a) Flammable/Petroleum, Oil, and Lubricants (POL) Storage Building: Provide a building to store oil, lubricants, and flammable solvents for daily use. This facility shall be sized at 200 square feet. 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. The POL Storage Building shall be located outside the clear space of the hangar building, but readily accessible to shop personnel. Pre-fabricated, fire-rated, self-contained, moveable steel safety storage buildings are permitted.

b) Hazardous \1\Material/1/ Storage Building: Provide a building for the temporary storage of used lubricants, flammable solvents, dry sweep, etc. This facility shall be sized at 200 square feet. 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. The Hazardous \1\Material/1/ Storage Building shall be located outside the clear space of the hangar building, but readily accessible to shop personnel. Pre-fabricated, fire-rated, self-contained, moveable steel safety storage buildings are permitted as an option.

c) Used Oil Storage Tank: Provide one 250-gallon above-ground used engine oil storage tank near the Shop 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. Locate Oil Storage Tank adjacent to the Waste Fuel Storage Tank. Provide 8-inch diameter x 5’-4” high, concrete-filled, schedule 80 galvanized steel pipe bollards, painted safety yellow, around the perimeter of above-ground tank areas.

d) Waste Fuel Storage Tank: Provide one 250-gallon above-ground waste fuel storage tank near the Shop 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. Locate Waste Fuel Storage Tank adjacent to the Used Oil Storage Tank. Provide 8-inch diameter x 5’-4” high, concrete-filled, schedule 80 galvanized steel pipe bollards, painted safety yellow, around the perimeter of above-ground tank areas.

B. Site Utilities: Designer of Record shall coordinate with Department of Public Works for site utility capacity and tie in requirements.

C. Landscaping/Hardscaping:

1. Non-Vehicular Walks: Non-vehicular pedestrian shall be constructed of Portland cement concrete having a minimum nominal thickness of 4 inches. Joint patterns shall be designed in accordance with American Association of State Highway and Transportation Officials (AASHTO) standards and shall be uniform and symmetrical. The length to width ratio shall not exceed 1.25 for non-reinforced pavements. Walks paralleling buildings shall be located beyond the eave drip line and at least 5 feet from the foundation.

2. Pedestrian Sidewalks: Provide pedestrian walks from the main entrances and all required building exits. Pedestrian walks shall connect the building to the hardstand and POV parking. Sidewalks shall be a minimum of 6 feet wide.

D. Site Specialties and Furnishings:

1. Site Specialties:

a) Apron Lighting: Comply with UFC 3-530-01 per UFC 4-211-01 3-7.10.1

b) Airfield Lighting: Comply with UFC 3-535-01, Visual Air Navigation Facilities, and design criteria for the types of lighting fixtures, colors, spacing, controlling, and location of lights.

c) Airfield Paving and Marking: The aviation facility pavement and markings, except as stated below, are to be designed using UFC 3-260-01 and UFC 3-260-02.

2. Site Furnishings: Provide outdoor furnishings including trash and recycling receptacles, seating, bicycle racks, and bollards in coordination with the installation design guide. Where the climate is acceptable, provide outdoor break areas with tables, seating and shading devices.

3.5 ARCHITECTURAL REQUIREMENTS

A. General: Building design and construction shall comply with the latest UFC 1-200-01 *DoD Building Code*, UFC 3-600-01 *Fire Protection Engineering for Facilities*, UFC 3-101-01 *Architecture*, UFC 4-211-01 *Aircraft Maintenance Hangars*, and UFC 4-010-01 *DoD Minimum Antiterrorism Standards for Buildings*. Interior and exterior architectural features of the facility shall be designed in accordance with the established Installation Design Guide. Provide durable and easily maintainable materials. Do not use exterior materials that require periodic repainting or similar refinishing processes. Material exposed to weather shall be factory prefinished, integrally colored or provided with intrinsic weathering finish.

1. Design Approach: The hangar shall be designed in harmony with the surrounding architecture as appropriate. Continuity of thermal, air, and moisture barriers in the building envelope is necessary for energy efficiency and prevention of mold growth; thus shall be incorporated into the design. Use of diffused day lighting shall be maximized in both maintenance bay and the admin/shop core. In the two-story admin/shop core, utility support shall be stacked vertically where possible and where required by other UFCs.

2. Exterior Elevations: The hangar shall be designed in conformance to the Installation Design Guide (IDG) and in accordance with applicable codes and regulations. Exterior walls, roof, floor/ceiling assemblies, doors, windows and interior partitions shall be designed to provide for attenuation of external noise sources such as airfields and internal maintenance activities in accordance with applicable criteria, but no less than STC 49 for exterior walls.

B. Walls:

1. Exterior Walls:

a) Hangar Maintenance Bay Walls: The interior face of the wall finish from the required minimum specified in UFC 4-211-01 to the top of each wall shall be prefinished moisture resistant metal liner panels.

b) Fire Protection Pump House (Category Code 89144): If this building is included, the exterior walls are to match the hangar and adjacent buildings.

2. Interior Walls: Interior spaces and structure shall be designed such that the interior layout may be modified in the future in accordance with changes in unit composition or mission.

C. Roof Systems: Design in accordance with the Installation Design Guide, UFC 3-110-03 and UFC 4-211-01. The highest roof obstruction is to comply with lateral clearance criteria as defined in UFC 3-260-01. Avoid skylights over the hangar floor area and other rooftop penetrations to the greatest extent possible. Coordinate walkways with end user

1. Roof Mounted Equipment: For roof mounted equipment, provide permanent access walkways and platforms to protect roof. Roof mounted equipment on pitched roof systems is unacceptable. Roof mounted equipment on membrane roof systems shall be completely screened by the roof parapet.

2. Radio Antenna Platform: Provide a 10 feet by 10 feet radio antenna platform with multiple mounting anchors that is capable of supporting 250 lb/sf live load.

3. Roof Access: Roof access is required by either an interior stair extended to the roof or access door from the catwalk in the Hangar Bay. A roof walkway that has safety railings and leads to the 10 x 10 radio antenna platform is also required.

4. Roof Fall Protection: Provide fall protection in accordance with UFC 3-110-03 and UFC 4-211-01. Provide fall protection for service staff on the roof consist of either an extension of the parapet, guardrails, or a tie-off system.

5. Trim and Flashing: Provide gutters, downspouts, and fascia in accordance with UFC 3-110-03. Exposed finishes shall color match to the visible building surfaces and included as a manufacturer's assembly. Manufacturer of wall panels shall provide wall trim, etc.

D. Openings:

1. Hangar Door System: Maintenance Bay Aircraft Doors shall either be motorized vertical lift or horizontal rolling doors. Each horizontal rolling door shall be independently operable with recessed controls. The doors shall be designed for R-30 with double air seal. The horizontal rolling doors shall be configured such that no less than 50% of the hangar maintenance bay(s) is accessible for aircraft movement at any time. Aircraft Doors shall have minimum 28' unobstructed vertical clearance. Horizontal clearances for aircraft movement shall comply with UFC 4-211-01. Personnel access doors shall be provided in the horizontal sliding doors or between vertical lift doors. See structural paragraph for additional hangar door requirements.

2. Storefronts/Curtain Walls & Entrances:

   a) Storefronts (Main Entrance Doors): Provide aluminum storefront doors and frames with Architectural Class 1 anodized finish, fully glazed, with medium or wide stile entrance for entry into lobbies or corridors. Provide doors complete with frames, framing members, sub-frames, transoms, sidelights, trim, applied muntins, and accessories. Framing systems shall have thermal-break design. Storefront systems shall be capable of withstanding area wind loads, thermal and structural movement required by location and project requirements, and shall comply with applicable codes and criteria and AT/FP requirements.

   b) Curtain Wall Systems: Curtain wall systems if used, shall be capable of withstanding area wind loads, thermal and structural movement required by location and project requirements, and shall comply with applicable codes and criteria and AT/FP requirements.

3. Windows: Glazed openings susceptible to accidental human impact should be designed in accordance with the applicable IBC, Consumer Product Safety Commission (CPSC), or similar code safety requirements in model building codes. In considering the use of high-performance glazing, the designer should carefully evaluate the solar gain/heat loss values and thermal performance levels. Force protection issues must also be considered in the glazing design at locations where exposure to threat is indicated. The needs for natural daylight, thermal efficiency, value, and security should be balanced. Security window sash

and bars may be used only at ground floor locations of supply and repair parts rooms and warehouses.

4. Exterior Windows: Provide insulated, high efficiency window systems, with thermally broken frames complying with applicable codes and criteria. Window sills shall be designed to discourage bird nesting.

5. Fixed Translucent Panels and Skylights: The use of translucent systems either as panels or skylights is encouraged to provide natural lighting to interior spaces. Panels and skylights shall be integrated with building envelope for continuity of thermal, air, and moisture barriers. The panels exterior finishes shall resist the effect of UV degradation and weathering.

6. Doors and Frames:

   a) Exterior Insulated Hollow Metal Doors and Frames: Provide insulated hollow metal exterior doors for entries to all spaces other than where storefront doors are specified. Appropriate weather-stripping and threshold shall be provided. Doors and frames shall comply with applicable codes and criteria. Doors shall be minimum Level 3, physical performance Level A, Model 2. Frames shall be minimum 12-gauge, with continuously welded mitered corners and seamless face joints. Doors and frames shall be A60 galvannealed, shall comply with ASTM A653 and shall be factory primed. Fire-rated openings shall comply with applicable codes, and the requirements of the labeling authority.

   b) Interior Insulated Metal Doors: Shall comply with applicable codes and criteria. Doors shall be minimum Level 3, physical performance Level A, Model 2; factory primed.

   c) Provide insulated metal doors at utility rooms, janitor closets, and stairwell doors.

   d) Provide rated insulated metal doors between maintenance bay(s) and the admin core.

   e) Overhead Doors: See room data sheet for size and location of overhead doors. Overhead doors shall be insulated and motorized with manual chain override for non-power operation.

   f) Interior Hollow Metal Door and Frames: Fire-rated and Smoke Control Doors and Frames shall comply with applicable codes, criteria and requirements of labeling authority. STC ratings shall be of the sound classification required and shall include the entire door and frame assembly.

   g) Vision Panels: Provide narrow vision panels or sidelights for all doors except doors serving Shops, Secure Planning Room, Aviation Operations Secure Storage, Company Secured Consumable Storage, Restrooms, Janitors Room, Facility Storage, Recyclable Storage, and Utility rooms. Glazing type and size shall conform to all applicable codes and criteria.

   h) Hardware:

      1) Door Hardware: All hardware shall be consistent and shall conform to ANSI/BHMA standards for Grade 1. Provide closers for all exterior doors, all doors opening to corridors and as required by codes. Exit devices shall be installed on all building egress doors.

      2) Finish Hardware (Master Keying System/Cores): All requirements for hardware keying shall be coordinated with the Contracting Officer. Extension of the existing Installation keying system shall be provided, the Installation keying system cores shall have not less than seven pins; cylinders shall have key-removable type cores. Disassembly of knob or lockset shall not be required to remove core from lockset. Locksets for mechanical, electrical and communications rooms only shall be keyed to the existing Installation Master Keying System. Plastic cores are

unacceptable.

3) Fire and Exit Door Labeling: Hardware for fire doors shall be installed in accordance with the requirements of applicable codes. Exit devices installed on fire doors shall have a visible label bearing the marking "Fire Exit Hardware". Other hardware installed on fire doors, such as locksets, closers, and hinges shall have a visible label or stamp indicating that the hardware items have been approved by an approved testing agency for installation on fire rated doors. Hardware for smoke-control door assemblies shall be installed in accordance with applicable codes.

4) Auxiliary Hardware: Provide other hardware as necessary for a complete installation. All doors shall latch and be lockable.

5) Door Stops: Provide wall or floor stops for all interior and exterior doors that do not have overhead holder/stops.

6) Electronic Keycard Access System: All exterior personnel doors and frames shall be wired and equipped to accept GFGI Electronic keycard access system. The infrastructure including conduits and boxes shall be CFCI. The main access system unit shall be located in flight operations.

7) Nondestructive Emergency Access System (KNOX Box): Provide one KNOX box near the main entrance for emergency department access.

E. Exterior Specialties:

1. Sunshade Overhang and Light Shelf: Use of overhang to reduce direct solar heat gain on exterior glazing is mandatory. Use of light shelf is encouraged to project additional day lighting into the building interior.

2. Bird Intrusion Prevention: Provide long-term permanent passive system to mitigate bird nesting and intrusion, especially the maintenance bay roof structure in accordance with UFC 4-211-01.

3. Covered Entrance: Covered entrances shall be provided at the main and stair entrances. Material used shall be compatible with the exterior material used on building elevations.

F. Elevator/Conveying Systems:

1. Elevator: Comply with requirements of UFC 3-490-06. The elevator shall have a minimum rated load capacity of 3500 lb. (1588 kg), with doors and interior dimensions sized to accommodate a fully extended emergency medical services (EMS) gurney and four average size adults. Provide required clearance for Hoistway Entrapment Protection. Elevator interior walls, ceiling, doors and fixtures shall have a satin No. 4 stainless steel finish. Floor finish shall be resilient flooring. The elevator shall be furnished with removable hanging protective pads and fixed hooks to protect interior wall surfaces during movement of furniture, equipment, and other large objects.

G. Vault Requirements:

1. Arms Vault: Arms vaults to accommodate storage of arms, ammunition, and explosives (AA&E) shall be provided for each company. The Arms Vault shall be designed and constructed in accordance with the physical security requirements contained in UFC 4-215-01 and AR 190-11 for Category II arms. The arms vault door and door frame shall be a GSA-approved Class 5 armory door per GSA Federal Specification AA-D-600D(4). Provide a full height Dutch-door day gate with the armory door. The Arms Vault will be provided with an approved Intrusion Detection System (IDS).

2. Aircraft Mounted Weapons Vault: The Aircraft Mounted Weapons Vault shall be designed and constructed in accordance with the physical security requirements contained in AR 190-11 for Category II arms. The arms vault door and door frame shall be a GSA-approved Class 5 armory door per GSA Federal Specification AA-D-600D(4). The Arms Vault will be provided with an approved Intrusion Detection System (IDS).

H. Acoustical requirements: To isolate potential noises from the maintenance bay, shops, and between rooms, each space has been assigned a minimum STC rating to be achieved. The STC room rating listed on the room data sheets shall be applied to the entire room assembly to include walls, openings, utility penetrations, HVAC ductwork, and floor/ceiling assemblies. Interior partitions at a minimum shall achieve STC of 40. At a minimum, floor/ceiling assemblies shall achieve STC of 50 or IIC of 55. Sound conditions shall not exceed levels as recommended by ASHRAE handbook criteria.

3.5.1. FINISHES AND INTERIOR SPECIALTIES

A. GENERAL: Provide design and finishes in accordance with UFC 3-120-10 and UFC 4-211-01.

B. FINISHES: Minimum Finish Requirements:

1. Walls:

a) Maintenance Bay: For above the 10’-0” line, use painted moisture resistant gypsum board, exposed vinyl faced insulation or factory finished metal liner panels (solid or perforated).

2. Ceilings:

a) Lobby, Entry and Vestibules: Acoustical Ceiling Tile with hold-down clips or Painted Gypsum Board.

b) Auxiliary Spaces not specifically listed in the Room Data tables: Acoustical Ceiling Tile or Painted Gypsum Board.

3. Floors:

a) Lobby/Entrances/Vestibules: Ceramic tile / porcelain tile, recessed walk-off mat at main entry. Resilient flooring at secondary entrances.

b) Other auxiliary spaces: Unless otherwise noted, Sealed Concrete

4. Bases: Floor/wall transition

a) Within the hangar, other than Aircraft Maintenance Bay, Aircraft Parts Supply (Tech Supply), Mechanical Rooms, Fire suppression Rooms, and Electrical rooms, all other rooms, spaces and areas shall receive rubber base for floor/wall transition.

b) Restrooms/Showers/Locker rooms shall receive Ceramic tile, porcelain tile cove base.

5. Window Stools: solid surfacing of either solid polymer or solid polyester resin composition. 1/2-inch thickness minimum.

C. INTERIOR SPECIALTIES

1. Signage & Directories:

a) Room Signage: Provide signage in accordance with UFC 4-211-01 and UFC 3-120-01.

2. Bulletin Boards: Provide size as indicated in the Room Data tables. Bulletin boards shall have natural cork with wood frame.

3. Dry Erase Marker Board: Provide size as indicated on the Room Data tables. Marker Boards shall be porcelain enamel steel writing surface, magnetic with aluminum frame and continuous marker tray.

4. Projector Screen: Provide size as indicated on the Room Data tables. The retractable screen shall be motorized and shall have matte white surface with high contrast and black border finish.

5. Projector Mount: Provide structurally supported threaded end pipe to support the ceiling mounted project screen. Power and communication outlets shall be provided at each projector mount.

6. Toilet Partitions: Toilet partitions should be of solid phenolic resin with a plastic laminate finish for durability. Partitions should be anchored to solid reinforcement in the walls, and should be supported overhead and secured to the floor (including miscellaneous metal bracing above the ceiling.)

7. Toilet Accessories: Furnish and install the items listed below and all other toilet accessories necessary for a complete and usable facility. All toilet accessories (except partitions) shall be type 304 stainless steel with satin finish.

8. Toilet Area: Toilet accessories shall conform to the requirements of the ABA and shall include, but are not limited to the following:

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

    b) Liquid soap dispenser – at each lavatory

    c) Combination recessed mounted paper-towel dispenser/waste receptacle

    d) Sanitary napkin disposal at each female and unisex toilet

    e) Lockable double toilet paper holder – at each water closet.

    f) Sanitary toilet seat cover dispenser – a minimum of one per toilet room

    g) Grab bars – as required by ABA

9. Showers:

    a) Shower curtain rod - extra heavy duty.

    b) Shower curtain – white anti-bacterial nylon/vinyl fabric shower curtain.

    c) Soap dish and hair product shelf

10. Wall Protection:

    a) Chair Rail: Chair rails shall be installed in training rooms, briefing room, multi-purpose/conference room, and break rooms.

    b) Protective Rail: Corridor walls shall be protected from equipment carts by 6” high impact resistant, integral colored protective railing.

11. Lockers:

a) Shower Lockers: Provide steel lockers on a 3:1 ratio of lockers per shower. Locker body shall be a minimum thickness of 24 gauge and one-piece door frame shall be a minimum thickness of 16 gauge. Provide sloping tops.

1) Provide single tier lockers for women, minimum locker size shall be 15”(w) x 18”(d) x 72”(h).

2) Provide double tier lockers for men, minimum locker size shall be 15”(w) x 18”(d) x 36”(h).

3.6 STRUCTURAL REQUIREMENTS

A. GENERAL:

Comply with UFC 1-200-01 (*General Building Requirements*), UFC 3-301-01 (*Structural Engineering*), and UFC 4-211-01 (*Aircraft Maintenance Hangars*) except as clarified by this Standard Design document.

B. DESIGN LOADS:

Use UFC 3-301-01, *Structural Engineering*, for structural-specific design and loading requirements. Use UFC 4-211-01, *Aircraft Maintenance Hangars* for facility-type specific design and loading requirements.

1. Wind Loads:

Wind load on the main wind force resisting system of aircraft hangars shall be determined in accordance with paragraph 2-1.5.2 of UFC 3-301-01.

2. Maintenance Bay Crane Loads:

a) The ASB Hangar Maintenance Bay structure shall be designed to support three (3) independent, 10-ton overhead cranes; two (2) over the UAR modules and one (1) over the cargo modules. The cranes will be supported from the roof structure above using a minimum of three (3) continuous runway beams. \1\See room data sheet for hook height requirement./1/

b) The two (2) UAR crane systems shall allow each crane hoist to reach the centerline of each of the exterior maintenance modules in the event one crane hoist becomes disabled.

c) The crane system and supporting structure shall be designed to support both fully loaded crane hoists at a minimum spacing of 32’-0”.

3. Shop Crane Loads:

a) The combined Power Plant/Powertrain Shop roof/wall structure shall be designed to support a 2-ton overhead crane. The crane hoist shall have a minimum clear hook height of 12’-0” AFF.

b) The crane system hoist hook coverage will extend to within 5-feet of the shop side walls, the Maintenance Bay wall, and the NDI Room wall.

C. FOUNDATIONS:

1. Maintenance Hangar:

a) The hangar foundation system is site specific and must be designed based upon known geotechnical considerations as stated in the project geotechnical report. Design the hangar foundations as recommended by the geotechnical investigation.

b) The aircraft maintenance bay and the office/shop area are to be designed as separate structures sharing a common foundation, the movement of the maintenance bay structural framing shall not be perceptible to occupants in the office/shop areas. This applies to motion caused by wind, cranes, door operations, aircraft movement or similar loads with the exception of seismic forces.

2. Exterior Storage and Support Buildings:

a) The POL and HAZMAT Storage Buildings are typically pre-fabricated buildings delivered and set on concrete pads adjacent to the PCC hardstand area. The concrete pads are typically flush with the surface of the adjacent PCC hardstand pavement. The concrete pads should be reinforced and designed appropriately for the geology and weather conditions of the site. The size of the concrete pads shall be coordinated with the building size specified.

b) The GSE and ASIOE Storage Sheds are roofed structures not fully enclosed for storing Ground Support Equipment (GSE) or Associated Support Items of Equipment (ASIOE). The structure foundations are to be isolated from the adjacent PCC hardstand and shed slab-on-ground.

D. SUPERSTRUCTURE:

1. General Configuration:

a) The Hangar Maintenance Bay superstructure shall be isolated from the Office/Shop/Admin superstructure through the use of a building isolation joint. The Office/Shop/Admin areas must be isolated from the adjacent Maintenance Bay by a masonry or concrete wall having a fire resistance rating of at least one hour. This wall will extend from the ground floor to the roof of the adjacent Office/Shop/Admin areas.

b) The framing system selected for the hangar maintenance bay shall provide a column free maintenance bay and aircraft doorway opening, except as shown on the Standard Design Floor Plan. Optional column locations are shown along the doorway opening at a minimum spacing equivalent to two (2) aircraft maintenance modules.

c) Structural bracing shall be located so as not to impair functionality of shop areas. Exposed structural bracing shall not be permitted in office areas without prior COS approval.

E. AT/FP REQUIREMENTS:

1. The Maintenance Bay structure is typically treated as a “low occupancy building” for considerations of UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings.

2. The Office/Shop/Admin structure shall be treated as a “primary gathering building”.

3. Verify through analysis that collapse of the low occupancy portion of the building will not result in the collapse of the primary gathering portions of the building in accordance with Standard 7, Structural Isolation, of UFC 4-010-01.

F. AIRCRAFT MAINTENANCE BAY DOORS:

Provide a Vertical Lift Fabric Door System or a Horizontal Steel Sliding Door System in accordance with UFC 4-211-01, Aircraft Maintenance Hangars.

G. DESIGN AND CONSTRUCTION DOCUMENTATION:

The construction drawings shall clearly and fully disclose all relevant design loading and stability assumptions. Elements which function as stability bracing shall be clearly noted and the members which are braced shall be noted as being laterally unstable until the time the stability bracing is installed. All instances where the installation of multiple secondary elements is

required for the proper stability of a primary element or when a bracing element in turn requires stability bracing shall be clearly noted.

H. MODIFICATIONS TO EXISTING STRUCTURES: NOT USED

I. 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 Designer-of-Record must state on construction drawings all required loading and deflection limits for equipment mounted to frame and for exterior materials with limited movement capacity such as plaster, brick, etc.

3.7 SEE PARAGRAPH 6.7 THERMAL PERFORMANCE – NOT USED

3.8 PLUMBING REQUIREMENTS

A. GENERAL: Provide plumbing design in accordance with UFC 4-211-01 – paragraph 3-5.5 and applicable sub paragraphs, UFC 4-211-01 – paragraph 6-5.3, UFC 3-420-01 PLUMBING SYSTEMS, and the International Plumbing Code (IPC). For conflicts between UFC requirements and the International Plumbing Code, the UFC requirements apply unless IPC requirements are more stringent. UFC 4-211-01 requirements override UFC 3-420-01 and IPC requirements. Do NOT follow NFPA 409 except where specifically required in UFC 4-211-01. Chapters 5 and 7 of UFC 4-211-01 do not apply to Army Hangars, however, if project is at a joint facility, inquire with base leadership as to which standards to follow. Contracting Officer shall approve direction for other than Army Standard.

B. DOMESTIC HOT WATER SYSTEM:

1. Heating System: Locate the main water heating equipment within a mechanical room, on the ground floor level only. Instantaneous water heaters are permissible for remote fixtures. Size system storage and recovery for delivery of hot water at every shower head and other fixture requiring hot water shall comply with applicable provisions of UFC 3-420-01. Determine the energy source for the domestic water heating system by Life Cycle Cost Analysis.

2. Solar Water Heating: If life-cycle cost effective, provide solar water heating or other renewable energy source in accordance with UFC 1-200-02.

C. DRAINS:

1. Drains: Provide floor drains as required in UFC 3-420-01 except as modified by UFC 4-211-01 as applicable to Army projects.

2. Hangar Floor Trench Drains: Trench drains primarily serve to remove fluids spills and prevent puddles from forming on the hangar floor. Provide trench drains in the hangar bay to comply with NFPA 409 floor drainage requirements, except as modified by UFC 4-211-01, for the removal of hazardous fuels and fire suppression system discharges. Locate trench drains between aircraft (or columns of aircraft where there is more than one row) perpendicular to the hangar door(s). Provide trench drain across the width of the hangar door, five feet to the inside of the innermost door tracks with the aforementioned drains sloping into it. Track drains (for the hangar door(s) shall drain into this trench drain system as well. See “Hangar Door Surface Drains” below. Route outlet drains, sized for a minimum of 1500 GPM, from the bottom of the trench low point(s) to an oil water separator or to effluent capture tanks and provide diverter valve with monitoring and controls as indicated in UFC 4-211-01, Paragraph 6-2.2 and all sub paragraphs.

3. Hangar Door Surface Drains: For a horizontal sliding hangar door assembly, the rail support system shall include surface drains as required in UFC 4-211-01, paragraph 3-10.2 and all sub paragraphs.

D. PLUMBING FIXTURES:

1. Sink and Lavatories:

   a) Janitors Sink: Provide corner floor mounted terrazzo mop receptor in each janitor's closet. Mop receptor shall be provided with stainless steel rim guards and service faucet with vacuum breaker and pale hook. Both hot and cold water shall be provided to the sink.

   b) Break Room Sink: Provide 18 gauge double bowl stainless steel sink in all Break areas. Faucet shall be single control goose neck type. Both hot and cold water shall be provided to the sink.

   c) Lavatories: Provide lavatories in the men's and women's restrooms per requirements of the International Plumbing Code. Counter top lavatories shall be under mount vitreous china or integral to the counter top. Faucets shall be low flow, sensor controlled type. Coordinate the use of battery power or hard-wired electrical supply faucets with the base requirements.

   d) Shop Sink: Provide single compartment stainless steel sink in the Allied Shops. Compartment size shall be 24" long, 21" wide and 14" deep with a single 18" wide drain board. Sink shall be constructed of 16 gauge 304 stainless steel. Provided foot operated faucet with hot and cold water. Drain from shop sinks shall not be connected to main sanitary. Connection shall be to an oil/water separator or storage tank.

   e) Urinals: Provide wall-mounted, water-saving, sensor-flush type fixture with a maximum flow rate of 0.125 gallons per flush cycle. Coordinate the use of battery power or electrical supply faucets with the base requirements.

   f) Water closet: Provide tank-less, sensor-flush type with a maximum flow rate of 1.25 gallons per flush cycle. Provide wall-mounted fixture unless directed differently by base design standards. Coordinate the use of battery power or electrical supply faucets with the base requirements.

   g) Hand Wash Sink: Provide a 36" semi-circular 3 station hand wash fountain in hangar with foot operated control bar. Supply hand wash fountain with tempered water.

   h) Showers: Provide balance shower fitting with valve cartridge, integral stops, single operator lever handle.

   i) Drinking Fountain: Provide hi-lo drinking fountains with bottle fill capability.

2. Emergency Showers and Eyewashes: Provide eye wash and emergency eye wash/shower in the hangar, shop, and bench stock areas. Locate emergency eye wash and showers stations in accordance with OSHA standard 1910.151(c) and ANSI Z358.1. Do not locate showers in hangar's 5 foot safety lanes. Tankless water heaters may be used to supply tempered water to emergency eye wash and showers stations. Floor drains are not required at emergency shower locations. Since hazardous materials are used in the aircraft maintenance process, if floor drains are provided in hangar and shop spaces for the emergency showers stations they must be tied to either the stations industrial sewer or to a collection system that will capture and hold these materials for proper disposal.

   a) In Aircraft Maintenance Bay provide stations such the maximum travel distance to the station is 10 seconds from any location within the maintenance bay. In general, a distance of 55 feet, along path of travel should accomplish this requirement but other factors may require a shorter distance.

   b) In shop areas where chemicals, oils, solvents or debris can be sprayed or blown into the eyes or spilled on clothing, provide the emergency shower and eyewash stations near to

the exits. See room data sheet for locations where emergency shower and eyewash are required.

c) Hazardous \1\Material/1/ Storage Building: Provide a station in each room adjacent to the exit.

E. COMPRESSED AIR:

Provide an energy efficient compressed air system consisting of compressors, receiver, refrigerated air dryer, filters, and distribution piping in accordance with UFC 3-420-02FA, and having a free air delivery capacity required by the functions performed within the building areas (125 CFM minimum) at 125 psig. Determine required capacity in accordance with the Compressed Air & Gas Handbook (CAGH) published by the Compressed Air & Gas Institute (CAGI). Compressors with greater than 125 SCFM capacity shall be rotary screw type. Provide air compressor with a minimum 600 gallon receiver, an integral compressed air dryer capable of producing a 50 degree F dew point, an isolation valve, filters and a pressure regulator. All pressure containing parts, devices, components of the system shall comply with ASME BPVC Section VIII where applicable. Provide compressed air outlets with four quick disconnect couplings in all bays and all shop areas. Each drop shall include an isolation valve, filter and pressure regulator, condensate trap with drain cock. Size each compressed air drop to accommodate 20 SCFM at 100 psig. The air compressor shall be CFCI building equipment. Compressed air shall be provided at locations identified on the room data sheets. In Aircraft Maintenance Bay provide two compressor drops for each aircraft utility pedestals. ALSE shop requires clean and dry air.

3.9 COMMUNICATION AND SECURITY SYSTEMS

A. GENERAL: Comply with UFC 4-211-01. Coordinate all telecommunications with COR and NEC during the design process. NEC must be informed of required inspections before walls are closed or ceilings are closed that house class pathways. At least a minimum 5 business days must be given for scheduling purposes. A Communications QA must be assigned to the project to provide with assisting in the Quality Assurance. The Contractor shall assume responsibility for ensuring that the communications systems shall be constructed IAW with all applicable criteria listed in the military criteria list. An electronic copy of all test results shall be provided to NEC. An As-built copy of communication pathways must be turned over at the time the building is turned over.

B. TELECOMMUNICATION SYSTEMS: Connect the facility to the Installation wide area network system (WAN) and voice system. Design telecommunications systems in accordance with UFC 3-580-01. An acceptable building telecommunications cabling system encompasses, but is not limited to, copper and fiber optic (FO) entrance cable, termination equipment, copper and fiber backbone cable, copper and/or fiber horizontal distribution cable, workstation outlets, racks, cable management, patch panels, cable tray, cable ladder, grounding, and labeling. Provide voice/data outlets to support all workstations, \1\workbenches/1/, and equipment based on functional purpose of the various spaces within the facility and as modified by user special operational requirements. Provide each utility space, such as mechanical, electrical and telecommunications rooms with at least one wall mounted telecommunications outlet, with a wall mounting lug face plate near the entrance door. Provide additional telecommunications requirements as specified in the following sections and in the room data sheets.

1. Outside Plant Telecommunications Systems: Connect the project's facilities to the Installation telecommunications (voice and data) system through the outside plant (OSP) underground infrastructure per UFC 3-580-01 requirements. Connect to the OSP cabling system from each facility main cross connect located in the main telecommunications room or telecommunications equipment room to the closest OSP access point. Components include the physical cable plant and the supporting structures. Items included under OSP infrastructure encompass, but are not limited to, maintenance hole and duct infrastructure, copper cable, fiber optic cable, cross connects, terminations, splices, cable vaults, and copper and FO entrance facilities.

2. \1\Telecommunications Rooms: Telecommunications rooms shall be provided to support three different networks; unclassified NIPR network, unclassified Logistics Information

System (LIS) network, and classified SIPR network. Provide one telecommunications entrance room (TER) and additional telecommunications rooms (TR) for unclassified NIPR network and voice equipment to support cabling infrastructure throughout the facility. There shall be a minimum of one TR on each floor located near the center of the building and stacked between floors. Provide TR's as required per UFC 3-580-01 square footage requirements. Provide one telecommunications entrance for each facility located in the TER. TIA/EIA-569 compliant Telecommunications Enclosures (TE) may be used in hangar areas where the horizontal cable distance exceeds 295 feet. Provide one additional TR on each floor, preferably stacked, to support the User's LIS network. The first floor LIS room shall be provided with a 4 inch conduit to the V-SAT location adjacent to the building. Coordinate proposed VSAT location with User. See section 3.9 (C) for classified SIPR network telecommunications room requirements./1/

3. \1\Logistics Information System (LIS): Provide a complete separate network as described in 3.9 (B). Provide one (1) LIS drop for every NIPR drop in spaces where LIS network is indicated in the room data sheets. LIS drops may be collocated in the same outlets as NIPR drops and utilize the same pathways, but will terminate in the LIS TR./1/.

4. \1\Wireless Access Points: In addition to providing standard voice/data outlet configuration throughout the facility per UFC 3-580-01, provide wireless access point (WAP) outlets to support GFGI Power Over Ethernet (PoE) WAP coverage of the hangar bay and apron. Each WAP outlet shall consist of one (1) NIPR and one (1) LIS drop./1/

C. SECURE COMMUNICATIONS: A secure communications system shall be provided for the facility IAW USAISEC Technical Guide for the Integration of Secret Internet Protocol Router Network (SIPRNET).

1. Provide SIPRNET rooms in accordance with ICD/ICS 705 Technical Specifications for Construction and Management of Sensitive Compartmented Information Facilities (current version).

2. Install SIPR drops where indicated in room data sheets. Rooms indicated are not authorized for open storage. \1\Provide a Protective Distribution System (PDS) to distribution classified cabling throughout the facility./1/ The SIPRNET building infrastructure shall use Category 6 UTP copper cables with red cable jacket and red outlet modules unless otherwise directed by the local NEC. Cables shall be terminated in the SPIRNET room and at the outlet in accordance with UFC 3-580-01 criteria for data cables. \1\Separation requirements with all classified runs/drops shall be IAW USAISEC Technical Guide for the Integration of Secret Internet Protocol Router Network (SIPRNET)./1/

D. ELECTRONIC SECURITY SYSTEMS (ESS): Provide the design and infrastructure for the installation of GFGI systems unless directed otherwise by project specific requirements; Secure Access Systems (SAS), Intrusion Detection Systems (IDS), and Closed Circuit Television (CCTV) in compliance with UFC 4-211-01.

1. Secure Access Systems (SAS): The SAS shall be designed to provide coverage of the building perimeter doors outside the airfield fence line, all motorized gates, and where indicated in the room data sheets. Coordinate with the Installation Physical Security anticipated locations of devices and provide raceways, door prep, and back boxes for installation of a secure access system per Army Installation Design Standards paragraph 3.5.11, "Locks and Locking Devices". Provide a programming workstation in the PC office. Coordinate the homerun terminations location with NEC and Unit Physical Security.

2. Intrusion Detection System (IDS): The IDS shall be designed to provide coverage for spaces where indicated in the room data sheets. Coordinate with the Installation Physical Security anticipated locations of devices required for a complete IDS system. Design raceways, back boxes, and power requirements for installation of a complete system.

3. Closed Circuit Television (CCTV): The CCTV system shall be designed to provide complete coverage of the hangar apron and inside the hangar bay. Provide additional coverage where

indicated in the room data sheets. Coordinate with the Unit Physical Security the anticipated locations of devices required for a complete CCTV system. The design shall be for an IP based system. Provide raceways, back boxes, power conductors, and fiber optic cables for installation of a complete system. Provide a monitoring station in the PC office and Flight Ops. Coordinate the homerun terminations location with NEC and Unit Physical Security.

E. AUDIO/VISUAL SYSTEMS & INFRASTRUCTURE: Provide the infrastructure to support all GFGI Audio/Video systems where indicated in the room data sheets; projectors, sound systems, video teleconferencing, etc. Coordinate with the architectural and interior designs.

F. CABLE TELEVISION: Provide a completely operational CATV cabling system in compliance with UFC 4-211-01 including, but not limited to, all necessary raceways, cabling, terminations, jacks and faceplates. Provide CATV where indicated in the room data sheets. The horizontal cable for the CATV system will be RG-6 with "F" type connectors on the terminal end. Terminate the CATV cabling on splitters in the telecommunications room, or in a location indicated by the Network Enterprise Center (NEC). CATV riser cable will be RG-11 type. Locate splitters on the CATV backboard in the telecommunications room, or in a location indicated by the NEC. Provide CATV drops where indicated in the room data sheets. Homerun all CATV all drops to the CATV backboard. Coordinate service requirements to the building with the local CATV service provider. At a minimum provide one 2" empty conduit stubbed out five feet from the building to facilitate the CATV service entrance.

G. PUBLIC ADDRESS (PA) SYSTEM: \1\Provide a PA system in compliance with UFC 4-211-01. The system shall provide audible coverage to the hangar bays, shop areas, and hangar apron, minimum. Integrate the PA system with the phone system for control and access throughout the facility./1/

H. FIRE ALARM & DETECTION: Provide a fire alarm and detection system in compliance with UFC 4-021-01, UFC 4-211-01, UFC 3-600-01 and NFPA 72. The system shall be fully addressable and compatible with the local Installation wide Fire Alarm Systems. Provide a NONDESTRUCTIVE Emergency Access System (KNOX Box) at a location designated by the installation Authority Having Jurisdiction (AHJ).

I. MASS NOTIFICATION SYSTEMS: Provide a Mass Notification System in accordance with UFC 4-021-01 Design and O&M: Mass Notification Systems. The system shall be fully compatible with and integrated with the local Installation wide Mass Notification System.

J. CYBERSECURITY: \1\Provide controls systems which meet or exceed the requirements of UFC 4-010-06; Fire Alarm and Mass Notification (FAMNS), Utility Monitoring Control System (UMCS), etc./1/

3.10 ELECTRICAL REQUIREMENTS

A. GENERAL: Design facility power in accordance with UFC 3-501-01, UFC 4-211-01 and NFPA 70. Provide a 3-phase wye-connected, underground secondary service rated at 480VAC with sufficient capacity for future growth. Careful coordination will be required to size incoming service appropriately based upon the type and number of aircraft. Two service entrances may be utilized dependent on the overall load size of the facility. Use 480VAC for mechanical equipment and larger building specific loads, such as 400HZ. Generally, use 277VAC for lighting. Use dry type step down transformers to provide 208Y/120VAC service for miscellaneous loads. Specific load requirements for the hangar and shop areas will vary by airframe type and specific shop equipment and will vary by specific hangar type design. Utilize an appropriate diversity factor for sizing specialized systems in the hangar and shop areas; 400Hz and 28VDC conversion equipment, shop machine equipment, exterior equipment/trailers, etc. See Table 6-2 in UFC 4-211-01 for Ground Service Baseline Requirements sizing. See appendices for typical 400Hz and 28VDC aircraft service points.

B. HAZARDOUS LOCATIONS AND CLASSIFICATION: Define and design hazardous classified spaces in accordance with UFC 4-211-01 and NFPA 70 Article 513.

C. POWER DISTRIBUTION: Provide power connections to support all mechanical and building equipment. Provide power receptacles per NFPA 70 and in conjunction with all proposed equipment and proposed furniture layouts. Coordinate the furniture type and layout with the electrical design. Provide a minimum of one duplex receptacle for every 12 feet of wall in all admin spaces with a minimum of one per wall. No more than six duplex receptacles or three quad receptacles per circuit. Power circuits shall not serve receptacles in multiple spaces or rooms. Provide additional power requirements as specified in the following sections and in the room data sheets.

1. 400Hz System: Provide a fixed 200Y/115VAC, 400HZ power system to support aircraft maintenance functions in the hangar bay. The system shall be integrated with the building power system and complete with all cables and connectors required to interface with the aircraft. No conversion carts shall be allowed. The system shall be designed to provide access points to each aircraft parking space without any cables or equipment passing thru the five foot clear zone around the perimeter of the hangar bay floor. Provide permanently mounted pedestals per UFC 4-211-01 section 6-7.1.1. \1\ /1/

2. 28VDC System: Provide a fixed 28VDC power system to support aircraft maintenance functions in the hangar bay. The system shall be integrated with the building power system and complete with all cables and connectors required to interface with the aircraft. Combination 400Hz/28VDC converter units may be utilized. No conversion carts shall be allowed. The system shall be designed to provide access points to each aircraft parking space without any cables or equipment passing thru the five foot clear zone around the perimeter of the hangar bay floor. Provide permanently mounted pedestals per UFC 4-211-01 section 6-7.1.1. \1\ /1/

3. Aircraft Maintenance Hangar Bay: Provide one GFI 120V/20A quad receptacle for every 25 feet of wall minimum. Provide additional receptacles and disconnects as needed to support additional equipment and/or workbenches.

4. Shop Areas: Provide a local dedicated panel to power all equipment and receptacles in each shop. Provide a minimum of one 120V/20A quad receptacle every 15 feet of wall length. Provide additional receptacles and disconnects as needed to support additional equipment and/or workbenches.

5. \1\Covered Storage Areas: Provide 120V/20A general receptacles and 240V/3/30A receptacles to support mobile shops./1/

D. LIGHTING: Lighting design and levels shall be IAW UFC 3-530-01 and UFC 3-535-01. The building perimeter, hangar apron and hangar maintenance bay(s) lighting shall be compatible with any future security cameras and security requirements as applicable. Provide interior lighting and controls in accordance with UFC 3-530-01. Utilize daylighting where applicable to conserve energy in the hangar, shops, etc.

E. LIGHTNING PROTECTION: Provide a lightning protection system based on a risk assessment analysis in accordance with NFPA 780. The lightning protection system for the facility shall be IAW UFC 3-575-01. Provide a ground counterpoise around the building perimeter for grounding incoming service, building steel, telephone service, piping, lightning protection, aircraft static grounding grid, and facility internal grounding requirements (e.g. shop areas).

F. GROUNDING: Provide a grounding system for the facility shall be IAW UFC 4-211-01 and UFC 3-575-01. Provide additional grounding based on project-specific requirements and UFC 3-580-01. Aircraft grounding points in the Hangar Bay (OH) shall be IAW UFC 3-575-01 Paragraph 2-2.3.2 for a general purpose hangar (grid with 50 ft max spacing). Provide an equipment grounding bar around the perimeter of shops or one at each workbench. Provide ground straps in shops/labs where required by function connected to the building grounding system.

G. CATHODIC PROTECTION: Provide cathodic protection systems for the facility utilities and supporting fire protection systems IAW UFC 3-570-01.

3.11 HEATING, VENTILATING AND AIR CONDITIONING

A. GENERAL: Comply with the requirements of UFC 4-211-01, UFC 3-410-01, and other applicable UFCs referred to therein. Additional criteria specific to aircraft hangar mechanical systems is included herein.

B. DESIGN: Heat gain and loss calculations shall be, as a minimum, in accordance with the ASHRAE Handbook of Fundamental and ASHRAE Standard 183. Computer load calculations shall be provided, and shall include complete input and output summaries. Pre-approved computer load analysis programs are as listed in UFC 3-410-01. Inside design conditions shall be based on the data shown in INDOOR DESIGN DATA TABLE below. Outdoor design conditions shall comply with the requirements in the applicable UFC.

C. HANGAR FLOOR AREAS:

1. DESIGN: Install heating equipment in accordance with UFC 4-211-01. For the hangar floor areas, consider heating and ventilating units, radiant heating, or some combination of the two. Where overhead radiant heating is provided, design and installation shall comply with applicable provisions of NFPA 409. In colder climates, consider supplemental heating at the floor level or under slab radiant floor heating in the hangar bay aircraft modules. Coordinate system selection with the user. Base the system selection on energy compliance, life cycle cost, reliability, operating considerations, and the maintenance capabilities and resources of the user. Consider all viable alternative systems meeting the functional requirements of the hangar bays.

2. OVERHEAD RADIANT HEAT SYSTEMS:

   Overhead radiant heat systems may be either low or high intensity radiant heating Provide radiant heaters with shielding that shield the heating element or flame from optical flame detectors or heat detectors as required to prevent activation of optical flame detectors or heat detectors and accidental release of the fire suppression system.

3. SNOW/ICE-MELTING SYSTEM:

   A snow/ice-melting system at the hangar door tracks, when rolling hangar doors are used, must be installed when outside design temperature is +15°F (-4°C) or lower and when historical snow accumulation data supports the requirement.

D. ADMINISTRATIVE AREAS:

1. DESIGN: Conditioning for the administration areas shall be in accordance with UFC 3-401-01 Mechanical Engineering. The HVAC distribution system serving the administration areas shall be served by an air-handling unit dedicated to the administration areas only. The design for these spaces should including flexible zoning, such that the system can be modified to address future changes to the mission and occupant densities. Administrative areas shall be temperature-controlled by the DDC system compatible with the existing base systems. Temperature set point adjustment shall be accomplished via DDC System by authorized personnel.

2. COMMUNICATION ROOMS AND ARMS VAULT: Provide dedicated ductless splits type DX equipment for each Communication Room and Arms Vault. Provide a dehumidification unit in the Arms Vault capable of maintaining a 45% relative humidity. Internal loads in the Communication Rooms, Arms Vault, and shall be coordinated by the user. The equipment load in the Fight Simulator is 25,000 Btu's.

E. SHOP AREAS:

Conditioning for shop and bench stock areas shall be in accordance with UFC 3-401-01. The air distribution systems serving the shop area shall be a dedicated air-handling unit to these spaces. Return air from this area shall not be mixed, re-circulated or transferred into the administration spaces.

F. BUILDING EXHAUST and HANGAR VENTILATION/ EXHAUST SYSTEMS:

Provide building exhaust systems at heat sources, restrooms, locker/shower rooms, break rooms, shop space, and contamination sources, i.e. printer/ copy areas. Exhaust systems will operate continuously while the building is occupied. Route exhaust air through an Energy Recovery Unit if it is shown to be Life Cycle Cost Effective or as required by ASHRAE 189.1. Exhaust systems shall comply with NFPA 90A.

In the hangar, local ventilation should be considered where contaminants are generated; however general ventilation is required in accordance with UFC 4-211-01 paragraph 3-5.3.1.5. Under floor pits, duct, and tunnels shall be ventilated, exhausting 30 air-changes per hour and controlled by a continuous detection system in accordance with NFPA 409. For Fuel Cell Maintenance Hangars at Joint Bases, comply with Service specific requirements as applicable.

Ventilation may be operated in economizer cycles for increased thermal comfort where climatic conditions are appropriate. Natural air movement through locating louvers and dampers near the ceiling and floor should be evaluated for life cycle cost effectiveness versus a fan powered economizer cycle. Evaporative cooling is not allowed in Army hangar maintenance bays.

G. DESIGN CONDITIONS:

1. WEATHER DATA, INDOOR DESIGN CONDITIONS: Design shall be based on weather data from UFC 3-400-02 for outdoor design conditions. Indoor design conditions shall conform to Indoor Design Data Table below. Indoor air quality shall comply with the current ASHRAE Standard 62.1 and OSHA requirements.

Indoor Design Data Table

HEATING		
Indoor Design Temperature	Admin and Offices –	68°F
	Shop Spaces –	65°F
	Hangar Floor Area–	55°F
	Flight Simulator Room –	68°F max
	Unoccupied Space –	45°F
COOLING		
Indoor Design Temperature	Admin and Offices –	75°to78°F
	Shop Spaces –	78°F
	Hangar –	Ambient (unless conditioned for mission. Then as required for equipment)
	Flight Simulator Room –	65°F min
	Unoccupied Space –	85°F

2. HIGH HUMIDITY AREAS: In geographical areas of high humidity, to prevent mold formation in buildings, air conditioning systems must be designed to maintain space humidity at reasonable levels. Include the following considerations in the design of the air conditioning systems. Avoid over sizing of direct-expansion cooling equipment. Design single zone systems and multi-zone systems to maintain an indoor design condition of 50% relative humidity. Size cooling coils for the greater of the cooling load calculated at the design dry bulb temperature condition or the design humidity condition. Where fan coil units are used, provide a non-permeable wall covering behind the unit. Provide ventilation air from a

separate dedicated air handling unit. Do not condition outside air through fan coil units. Avoid the use of direct expansion cooling coils in air handling units with constant running fans that handle outside air.

3.12 ENERGY CONSERVATION REQUIREMENTS

A. GENERAL: Energy conservation shall be in accordance with UFC 1-200-2 High Performance & Sustainable Building Requirements and as outlined in Paragraph 5, GENERAL

3.13 FIRE PROTECTION REQUIREMENTS

A. GENERAL: Provide a fire protection system in accordance with UFC 3-600-01 Fire Protection Engineering For Facilities and UFC 4-211-01 Aircraft Maintenance Hangars. The fire protection system design may require the need for a separate Fire Pump Building and Water Storage Tanks. The final site arrangement of these features vary by location and shall be refined by the designer of record and approved by the COS, DPW, and the airfield manager.

3.14 SUSTAINABLE DESIGN – NOT USED

3.15 ENVIRONMENTAL DESIGN – NOT USED

3.16 PERMITS – NOT USED

3.17 DEMOLITION – NOT USED

3.18 ADDITIONAL FACILITIES – NOT USED

3.19 FURNITURE AND EQUIPMENT REQUIREMENTS

All furniture, fixtures and equipment listed on the room data sheets shall be incorporated into the project. Contractor shall be responsibility for providing all utility connections to support each furnishing and equipment. Unless noted otherwise, FF&E are government furnished government installed. Furniture and furnishing listed shall be used to develop the furniture package. Furnishings shall be coordinated with utility/data/voice outlets such that they are readily accessible.

3.19.1. FURNISHINGS:

A. GENERAL CONDITIONS:

1. All desks and workstations shall have at least one task light. Where overhead storage is specified, task lights shall be attached to the overheads. In the absence of overhead storage units, a desk lamp shall be provided. Task lighting shall be LED type.

2. Workbenches/Worktables shall have task lighting where indicated.

3. All desks and workstations shall have both a trash and recycling receptacle.

4. All desk and workstations shall have at least one grommet with cover.

5. All storage pieces; i.e. filing cabinets, storage bins, storage cabinets, etc., shall be lockable.

6. Furniture components within each workstation and/or private office shall be keyed alike. Independent storage pieces shall be keyed random. Confirm any special locking requirements with Contracting Officer prior to order.

B. WORKSTATIONS:

1. Where cubicles abut or are adjacent to exterior windows, daylighting strategies shall be considered and divider height/design shall be adjusted to allow for daylighting within the surrounding space(s).

2. Lower cubicle wall panels' when/where they abut facility walls could be omitted so that access to outlets is possible.

3. For ergonomics, keyboard tray with foam wrist rest shall be provided at each workstation.

4. Modular Admin workstations shall be metal unless noted otherwise.

5. Workstations shall be freestanding. Partitions if provided and general furnishings shall not interfere with wall access to power, communications and data connections. Provide full height modesty panel and full depth end panel on pedestal side. Work surfaces shall be laminated.

C. WORKBENCHES/WORKTABLES:

1. Provide workbench and worktable accessories according to the room data sheets. Accessories shall be of standard stock and dimension for ease of replacement.

2. Unless noted otherwise, workbenches and worktables shall have steel support and frame.

3. For the build-in computer work shelves, the edge shall be rounded.

D. TABLES:

1. Unless noted otherwise, conference tables, study carrels, and training tables shall have high pressure laminate surface with edge band.

2. Map tables shall be custom-built with a 30 degree fixed tilt. The overall worktop height shall accommodate standing operation. Shelving spaces for binders and forms shall be provided below the table, front and back. Replaceable plexi-glass sheet, size of the table tops, shall be provided for map overlay.

E. CHAIRS:

1. Ergonomics shall be taken into consideration in the product selection.

F. FILE STORAGE UNITS:

1. Unless noted otherwise, bookcases, lateral file cabinets, file cabinets, and other file and storage cabinets, shall be of heavy gauge steel construction, baked enamel finish. Cabinets shall be lockable.

2. Printer storage cabinet shall receive laminated top with edge band.

3. Bookcases and storage cabinets shall have adjustable metal shelving.

4. Lateral File Cabinets shall have counterweighted, glides with 1" adjustability.

G. STORAGE CABINETS, SHELVING AND LOCKERS:

1. Lockable Tool Storage: All-welded cabinet with removable bins, heavy-gauge steel doors with 14 gauge steel construction, 3-point locking system, capacity of 1450 lbs per shelf.

2. Industrial Shelving Units: Pre-engineered bulk storage rack, for bulk items, with heavy duty 14-gauge steel beams. Shelves of solid decking. 18 Gauge Extra Heavy Duty Box W shelves deliver 1300 Lb capacity per shelf for storing motors, pumps, and other heavy equipment.

3. Shelving Unit: Each shelf shall be able to support 350 lbs.

4. Flammable Storage Cabinet: Double wall 18-gauge steel, 350 lb shelf capacity, adjustable shelf. Meeting NFPA, OSHA and FM Standards.

H. MISCELLANEOUS FURNISHINGS:

1. Map Board (CFCI): Provide single map board sized per unit/installation requirements. Map board shall be framed with a removable plexi-glass overlay for dry erase marker use. Plexi-glass overlay shall be easily removable for map replacement.

2. Static Dissipative Floor Mats: 3 feet wide by the length of the workbenches. Mats shall be grounded for maximum effectiveness.

3. Lectern: adjustable tilt writing surface, open cabinet with adjustable shelf, locking cabinet doors, dual wheel casters, powered. Include microphone, light, slide out shelf. Wood veneer and trim.

I. IT EQUIPMENT:

1. Dedicated power and communication outlets shall be provided for each IT equipment listed.

2. Flat Screen Displays: Provide wall backing for flat screen displays as indicated on the room data sheets. Where flat screen displays are required, provide wall mounting support with power and data connections.

3. Audio/Visual Control System: AV control system shall also have connectivity and controllability of unclassified video teleconferencing. Provide voice functionality with the AV system.

J. APPLIANCES:

1. General: Provide power to each appliance listed.

2. Refrigerator: Waterline with cutoff valve shall be provided for the Ice maker.

3. Laundry Appliances: Washer water supply and sanitary waste lines shall be designed and installed per code. Vent to the exterior will be required for the cloth dryer.

K. FURNITURE AND EQUIPMENT PLANS

See ASB Furniture Fixture and Equipment Plan for FF&E locations and quantities. FF&E items shown shall be fully incorporated in the design.

3.19.2. MATERIAL HANDLING/ CONVEYING EQUIPMENT

A. OVERHEAD CRANES

1. AIRCRAFT MAINTENANCE BAY: Provide overhead cranes with capacities and quantities per paragraph 3.6. Cranes shall be a minimum Duty Service Class C.

a) Overhead Crane Controls: Provide static reversing, adjustable frequency controllers for the hoist, bridge and trolley electric drives. Provide dynamic braking for all electric drives. Speed control must be infinitely variable type for the hoist function and infinitely variable type for the bridge and trolley functions. The hoist, trolley and bridge brakes must set only after the associated controller decelerates the motor to a controlled stop. All motors must run smoothly, without torque pulsations at the lowest speed and be energized at a frequency not exceeding 60 HZ at the highest speed. The hoist controller must enable the drive motor to develop full torque continuously at zero speed

b) On deceleration, resistors or reactors must be inserted into the motor's high speed leads prior to de-energization of the high speed contactor. Acceleration and deceleration must be smooth. Provide the bridge and trolley motor control systems with a drift point between OFF and the first speed control point in each direction. Do not use definite purpose contactors. All contactors must be NEMA rated. Feed control circuits from a single phase, air cooled, double wound transformer with a grounded metal screen between the primary and secondary windings of the transformer

c) Crane Speeds: The cranes shall have the following rated load speeds (plus or minus 15%):

1) **Hoist** – 20 fpm

2) **Trolley** – 65 fpm

3) **Bridge** – 125 fpm

d) Provide runway stops at limits of crane bridge travel.

e) Radio Controls: Suspend the pendant pushbutton station from an independent festooned messenger track system, operating the length of the bridge. Locate the pendant pushbutton station 4 feet above the finished floor. Clearly mark all controls for identification of functions. Provide directional contactors with both mechanical and electrical interlocks.

f) Floodlights: Provide four US Lighting Tech Daytona Tunnel Lighting induction fixtures, 200W, 5,000 Kelvin (or equivalent), mounted evenly spaced along the bridge. Lights shall be switched on independently of the crane power, on a switch mounted on the crane column, near the crane disconnect, so that the lights can operate even when the crane power is turned off

2. POWER PLANT/POWERTRAIN SHOP: Provide one (1) 2-ton overhead crane. Crane shall be a minimum Duty Service Class C Provide loaded hook coverage to within five (5) feet of the shop walls.

a) 2-Ton Overhead Crane: The 2-ton crane shall have the following rated load speeds (plus or minus 15%):

1) **Hoist** – 20 fpm

2) **Trolley** – 65 fpm

3) **Bridge** – 125 fpm

b) Hoist motor control system shall provide one speed in each direction. Bridge and trolley main control systems shall provide one speed in each direction. Provide runway stops at limits of crane bridge travel.

3.20 ROOM DATA SHEETS:

Room data sheets grouped by functional areas are intended to supplement other requirements identified in this document. The designer shall incorporate all requirements identified in the room data sheets. For any discrepancies within the document, the most stringent and most comprehensive approach shall govern. For furnishing and equipment,

A. ROOM DATA SHEET GROUP 1 – AIRCRAFT MAINTENANCE BAY

Room Name	**AIRCRAFT MAINTENANCE BAY**
Description/Usage	\1\Heated and ventilated work area for the inspection, maintenance, repair and modification of rotary-wing aircraft. The maintenance bay consists of ten (10) UAR maintenance modules and 2 cargo maintenance modules surrounded by a five (5) foot wide safety corridor./1/
Room Finish Type	Aircraft Maintenance Bay per UFC 4-211-01, Chapter 3 & 6.
Minimum Ceiling Height	Exposed overhead roof construction and support system for 10-Ton overhead hoist system.
Special Equipment	Provide aircraft maintenance pedestals as shown on SD notional floor plan. \1\Provide three (3) 10-ton bridge cranes with two at 31' minimum hook height over the UAR modules and one at 31' minimum hook height over the cargo modules./1/
Plumbing	Provide \1\seven (7)/1/ combination emergency eyewash and shower stations along the back wall of the maintenance bay. (100' Maximum spacing.) Provide 4 interior hose bibs, two (2) on back wall and one (1) near hangar door on each side wall. Provide 36" wide semi-circular wash fountain w/foot activation bar near each Admin/Shop corridor entrance. Provide continuous trench drain as shown on SD notional floor plan.
Compressed Air	Provide two (2) compressed air drops on each aircraft utility pedestal. Provide dedicated isolation valve.
HVAC	The maintenance bay shall be heated and ventilated. Specialized exhaust system is required. Provide per UFC 4-211-01 Chapter 3 and 6.
Fire Protection	For the purposes of fire protection and code analysis, aircraft shall be considered fueled. Provide per UFC 4-211-01 Chapter 3 and 6.
Electrical	\1\ 400 Hz and 28 DC power shall be provided on the utility maintenance pedestals. Two (2) 400Hz Cable Reels shall contain 75' cable length each. 60A/480V/3Ø, 30A/208V/3Ø and two (2) quad GFI 120V receptacles shall be provided. /1/ Aircraft grounding shall be in accordance with UFC 3-575-01.
Lighting	Daylighting controls if applicable.
Telecommunications & Electronic Systems	\1\ Provide NIPR and LIS networks. Provide additional two (2) NIPR and two (2) LIS drops on each aircraft maintenance pedestal. Provide a WAP outlet for each aircraft parking module. Provide WAP outlets near the hangar doors or on the exterior of the facility apron coverage./1/ Provide CCTV cameras coverage for each aircraft maintenance module.
Special Requirement	Hangar door shall have a minimum 28' clear vertical opening. Horizontal clearance shall be in accordance with UFC 4-211-01. Either motorized vertical lift or horizontal rolling door are allowed. Hangar door configuration shall

	provide no less than 50% of the hangar maintenance bay accessible for aircraft movement simultaneously. Provide continuous 5’-0” wide Safety Corridor around perimeter of six (6) UAR aircraft maintenance modules. Provide 5’-0” of additional space along the side and rear walls of the maintenance bay for structural elements, mechanical, electrical, emergency equipment, and hand washing stations.
Acoustics	

B. ROOM DATA SHEET GROUP 2 – MAINTENANCE ADMINISTRATION AND OPERATIONS

Room Name	**PRODUCTION CONTROL**
Description/Usage	Open office for maintenance activity assignments and scheduling. Receive, monitor, and track maintenance work orders using automated and manual systems.
Room Finish Type	Provide LVT flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9'-0"
Interior Construction / Built-in Equipment	\1\Provide minimum 6'-0" long customer service counter with coiling shutter near room entrance./1/ Provide seating area and integrated base cabinets at service counter.
Plumbing	
HVAC	Daily PC morning meetings will temporarily increase room population from approximately seven (7) to twenty (20) personnel for approximately 1-hour.
Power	\1\Provide receptacle at service counter./1/
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR network only. Additional NIPR and Voice at service counter./1/ Provide public address control station in accordance with SD paragraph 3.9. Provide (2) flat screen monitors for weather reports/radar from CATV or Air Traffic Control. Confirm monitor location(s)/requirement with Production Control Officer. Provide CCTV monitor(s) display of each aircraft maintenance module within the aircraft maintenance bay and exterior views of the Access Apron. Confirm exact requirement with Production Control Officer. Provide CCTV monitoring location. Provide two flat screen monitor mounts with power and data outlets. \1\ /1/
Special Requirements	Provide a 20 person conference area within Production Control for daily meetings. Provide three (3) Dry Erase Marker Boards (MB) 6'x4' on wall adjacent to conference area. Provide (1) Dry Erase MB 6'x4' near entrance to PC Office.
Acoustics	Room STC rating 40.

Room Name	PRODUCTION CONTROL OFFICE
Description/Usage	Semi-private office for Production Control Officer and Maintenance Officer.
Room Finish Type	Provide LVT flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9’-0”
Interior Construction / Built-in Equipment	
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR network only./1/
Special Requirements	
Acoustics	Room STC rating 40.

Room Name	QUALITY CONTROL
Description/Usage	Open Office space for Quality Control Section staff. QC enforces standards in repair, overhaul, modification, safety-of-flight, and other required maintenance functions.
Room Finish Type	Provide LVT flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9’-0”
Interior Construction / Built-in Equipment	Provide (2) Dry Erase MBs 6’x4’.
Plumbing	
HVAC	
Power	\1\Provide receptacle at service counter./1/
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR network only. Additional NIPR and Voice at service counter./1/ Provide two CATV flat screen monitor mount with power and data outlets.
Special Requirements	Provide adjacent to Production Control. Provide a 6 person conference area within the space. Provide administrative workspaces for twelve (12). Provide minimum 6'-0” long customer service counter with coiling shutter near room entrance. Provide seating area and integrated base cabinets at service counter.
Acoustics	Room STC rating 40.

Room Name	QUALITY CONTROL OFFICE
Description/Usage	Private office for Quality Control Supervisor.
Room Finish Type	Provide LVT flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9’-0”
Interior Construction / Built-in Equipment	
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	\1\NIPR network only./1/
Special Requirement	
Acoustics	Room STC rating 40.

Room Name	TECHNICAL LIBRARY
Description/Usage	General offices for storage and access to aircraft maintenance technical manuals.
Room Finish Type	Provide LVT flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR network only./1/
Special Requirements	
Acoustics	Room STC rating 40.

Room Name	LOGISTICS ASSISTANCE REPRESENTATIVES (LARS)
Description/Usage	Office for highly trained and experienced DOD civilians assigned to support aviation maintenance units.
Room Finish Type	Provide LVT flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	Provide (1) Dry Erase MB 6’x4’.
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR network only./1/
Special Requirements	
Acoustics	Room STC rating 40.

Room Name	\1\LIS EQUIPMENT ROOM/1/
Description/Usage	Company level server room for \1\LIS equipment/1/.
Room Finish Type	Provide LVT flooring, painted gypsum board walls with resilient base, and \1\exposed/1/ ceiling.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	\1\ /1/
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks. Provide 1-4” conduit from VSAT equipment room to exterior VSAT antenna location./1/
Special Requirements	Provide adjacent to Production Control with direct access from Production Control.
Acoustics	Room STC rating 40.

C. ROOM DATA SHEET GROUP 3 – MAINTENANCE SUPPORT

Room Name	**REPAIR SECTION WORKROOM**
Description/Usage	Functional area for administrative workspace, platoon tool storage, and bench top maintenance specific to aircraft type.
Room Finish Type	Provide sealed concrete floor, painted gypsum board walls with resilient base, and exposed painted structure above.
Minimum Ceiling Height	10’
Interior Construction / Built-in Equipment	Provide (1) Dry Erase MBs 6’x4’.
Plumbing	
Compressed Air	\1\Provide compressed air drop at each pair of workbenches and worktables from ceiling mounted retractable air hose reel./1/
HVAC	
Power	\1\Provide dual outlets every 3 feet of countertop length and ceiling mounted retractable power reel at each workbench and worktable./1/
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks. Additional outlet (NIPR and LIS) for every 3 feet of countertop length./1/
Special Requirement	Provide 8’-6 wide x 12’-6 deep x 10’ high caged secure storage area. Provide 6’-0” double door from corridor. Provide minimum of 30 LF of 24” deep continuous built-in countertop work surface with seating for 10. Provide lockable wall cabinets with shelving above countertop length.
Acoustics	Room STC rating 40.

Room Name	**SPECIAL TOOLS ROOM**
Description/Usage	The special tools room provides secure storage and control of special tools associated with the maintenance of aircraft and components.
Room Finish Type	Provide sealed concrete floor, painted gypsum board walls with resilient base, and exposed painted structure above.
Minimum Ceiling Height	10’
Interior Construction / Built-in Equipment	Provide 8' long x 30” wide \1\stainless steel/1/ service counter with integrated base cabinet.
Plumbing	
Compressed Air	Provide one (1) compressed air drop near workbench.
HVAC	
Power	\1\Provide receptacle at service counter./1/
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks. Additional outlet (NIPR and LIS) at service counter./1/
Special Requirement	Provide 36” wide personnel access door to maintenance bay. Provide 42” wide personnel access door to interior corridor. Provide 8' W x 10’ H insulated motorized overhead door to maintenance bay.
Acoustics	Room STC rating 40.

Room Name	**MAINTENANCE TEST PILOT OFFICE**
Description/Usage	Administrative workspace and storage for maintenance test pilots.
Room Finish Type	Provide sealed concrete floor, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	Provide (1) Dry Erase MB 6’x4’.
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks./1/
Special Requirement	
Acoustics	Room STC rating 40.

D. ROOM DATA SHEET GROUP 4 – ALLIED SHOPS

Room Name	**POWER PLANT / POWERTRAIN SHOP**
Description/Usage	Shop space for inspection and, repair of turbine engines, transmission and rotor assemblies.
Room Finish Type	Provide sealed concrete or Fuel Resistive Resinous Flooring, 3-Coat System on floor, painted concrete or CMU walls with resilient base, and exposed painted structure above.
Minimum Ceiling Height	Bridge crane dependent.
Interior Construction / Built-in Equipment	Provide one (1) 2-ton bridge crane with 12’ minimum hook height. Provide (1) Dry Erase MB 6’x4’.
Plumbing	Provide combination emergency eyewash and shower station. Provide one (1) heavy duty stainless steel utility sink with point of use oil interceptor or connect to oil/water separator.
Compressed Air	Provide two (2) compressed air drops on each side wall near workbenches. Provide dedicated isolation valve in shop.
HVAC	Specialized exhaust system required per UFC 4-211-01 Chapter 3.
Power	Provide local dedicated 208/120V panel to serve all loads in this space. \1\Provide one (1) 240/3/30A receptacle on each side wall./1/
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks./1/
Special Requirement	Provide 8’-6 wide x 12’-6 deep x 10’ high caged secure storage area. Provide 8’ W x 12’ H insulated motorized overhead door to maintenance bay. Overhead door shall be accompanied by an adjacent personnel access/egress door.
Acoustics	Room STC rating 40.

Room Name	**NONDESTRUCTIVE INSPECTION (NDI) ROOM**
Description/Usage	Dark room for fluorescent penetrant parts inspection. Provide appropriate industrial ventilation and exhaust.
Room Finish Type	Provide sealed concrete or Fuel Resistive Resinous Flooring, 3-Coat System on floor, painted walls with resilient base, and painted gypsum board ceiling.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	
Plumbing	
Compressed Air	
HVAC	Specialized exhaust system required per UFC 4-211-01 Chapter 3.
Power	
Lighting	
Telecommunications & Electronic Systems	
Special Requirement	The room shall be constructed similar to a dark room to prevent light entering from adjacent room.
Acoustics	Room STC rating 35.

Room Name	**STRUCTURAL REPAIR SHOP**
Description/Usage	Shop space for metal fabrication and composite material repair.
Room Finish Type	Provide sealed concrete or Fuel Resistive Resinous Flooring, 3-Coat System on floor, painted concrete or CMU walls with resilient base, and exposed painted structure above.
Minimum Ceiling Height	12’
Interior Construction / Built-in Equipment	Provide (1) Dry Erase MB 6’x4’.
Plumbing	Provide emergency eyewash station. Provide one (1) heavy duty stainless steel utility sink with point of use oil interceptor or connect to oil/water separator.
Compressed Air	Provide two (2) compressed air drops on each side wall near workbenches. Provide dedicated isolation valve in shop.
HVAC	Specialized exhaust system required per UFC 4-211-01 Chapter 3.
Power	Provide local dedicated 208/120V panel to serve all loads in this space. \1\Provide one (1) 240/3/30A receptacle on each side wall./1/
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks./1/
Special Requirement	Provide 8’-6 wide x 12’-6 deep x 10’ high caged secure storage area. Provide 8’ wide x 12’ high insulated motorized overhead door to maintenance bay. Overhead door shall be accompanied by an adjacent personnel access/egress door.
Acoustics	Room STC rating 40.

Room Name	**BLADE REPAIR SHOP**
Description/Usage	Shop space provides for inspection and repair of aircraft rotor blades.
Room Finish Type	Provide sealed concrete, painted concrete or CMU walls with resilient base, and exposed painted structure above.
Minimum Ceiling Height	10’ exposed ceiling
Interior Construction / Built-in Equipment	
Plumbing	Provide emergency eyewash station.
Compressed Air	Provide two (2) compressed air drops 20’ o.c. on exterior side wall. Provide dedicated isolation valve in shop.
HVAC	Specialized exhaust system required due to possible presence of hexavalent chromium during blade sanding operations. \1\100% exhaust is required./1/Unit supplied downdraft table may be needed. Coordinate operational requirements for this room with unit.
Power	Provide local dedicated 208/120V panel to serve all loads in this space. Provide grounding bar at each workbench.
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks./1/
Special Requirement	Provide 8’W x 10’H insulated motorized overhead door to maintenance bay. Provide 36” personnel access door to corridor.
Acoustics	Room STC rating 40.

Room Name	**PNEUDRAULICS REPAIR SHOP**
Description/Usage	Shop space for repair, testing, and fabrication of pneudraulic components and systems.
Room Finish Type	Provide sealed concrete or Fuel Resistive Resinous Flooring, 3-Coat System on floor, painted concrete or CMU walls with resilient base, and exposed painted structure above.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	Coordinate with Unit for other/additional machinery/tool needs. Provide (1) Dry Erase MB 34”w x 23” h.
Plumbing	Provide emergency eyewash. Provide one (1) stainless steel service sink with point of use oil interceptor or connect to oil/water separator.
Compressed Air	Provide one (1) compressed air drop. Locate by workbenches. Provide dedicated isolation valve in shop.
HVAC	Specialized exhaust system required per UFC 4-211-01 Chapter 3.
Power	Provide local dedicated 208/120V panel to serve all loads in this space. \1\Provide one (1) 240/3/30A receptacle on each side wall. /1/ Provide one (1) grounding bar near workbenches.
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks./1/
Special Requirement	Provide 8’-6 wide x 6’-6” deep x 10’ high caged secure storage area. Provide min 42” access door from corridor or hangar bay.
Acoustics	Room STC rating 40.

Room Name	**SYSTEMS REPAIR SHOP**
Description/Usage	Shop space for repair of aircraft avionics, armament, and electrical systems.
Room Finish Type	Provide static dissipative resilient flooring, painted concrete or CMU walls with resilient base, and exposed painted structure above.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	Provide (1) Dry Erase MB 6’x4’. User to provide 400 Hz and 28 Volt DC power supply converter with connection cables
Plumbing	Provide emergency eyewash station.
Compressed Air	Provide minimum of two (2) compressed air drops along maintenance bay wall and two (2) drops at electronic workbenches. Provide dedicated isolation valve in shop.
HVAC	Provide per UFC 4-211-01 Chapter 3 and 6. Provide avionics/electrical repair exhaust system at electronic workbenches.
Power	Provide local dedicated 208/120V panel to serve all loads in this space. Provide grounding bar at each workbench. Provide emergency power off switch. \1\ /1/
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks./1/
Special Requirement	Provide 6’ W double door access from corridor. Aircraft Mounted Weapons Vault and COMSEC Secure Storage Room are accessed from within Systems Repair Shop.
Acoustics	Room STC rating 40.

E. ROOM DATA SHEET GROUP 5 – AVIATION LIFE SUPPORT EQUIPMENT (ALSE)

Room Name	**ALSE SHOP**
Description/Usage	Shop space for inspection, maintenance, and storage of ALSE equipment.
Room Finish Type	Provide LVT flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	10’
Interior Construction / Built-in Equipment	Provide (1) Dry Erase MB 6’x4’. \1\ /1/
Plumbing	Provide one (1) stainless steel utility sink with emergency eyewash. Provide floor drain for washing machine.
Compressed Air	Provide 2 low pressure high volume drops (moisture and oil free). Provide dedicated isolation valve in shop.
HVAC	Provide avionics/electrical repair exhaust with snorkel at one workbench.
Power	Provide local dedicated 208/120V panel to serve all loads in this space. \1\Provide receptacle at service counter./1/ Provide grounding bar at each workbench.
Lighting	
Telecommunications & Electronic Systems	\1\ Provide NIPR and LIS networks. Additional outlet (NIPR and LIS) at service counter /1/
Special Requirement	\1\ /1/
Acoustics	Room STC rating 40.

Room Name	**ALSE STORAGE ROOM**
Description/Usage	Space for storage of ALSE equipment.
Room Finish Type	Provide LVT flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	10’
Interior Construction / Built-in Equipment	
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	
Special Requirement	Provide 6’ W double door access from corridor.
Acoustics	Room STC rating 40.

F. ROOM DATA SHEET GROUP 6 – SECURED STORAGE

Room Name	**ARMS VAULT – AIRCRAFT MOUNTED WEAPONS**
Description/Usage	Secure storage of aircraft mounted weapons components removed from aircraft for maintenance or repair.
Room Finish Type	Match adjacent Systems Repair Shop flooring, painted concrete walls with resilient base, and painted concrete ceiling. Use light color paint.
Minimum Ceiling Height	11’-4”
Interior Construction / Built-in Equipment	
Plumbing	
Compressed Air	
HVAC	Provide humidity control in accordance with UFC 4-215-01, Table 4-12.
Power	Provide ceiling lamp protection (Wire Guards). Provide grounding bar at workbench if required.
Lighting	\1\Provide ceiling lamp protection (Wire Guards)./1/
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks./1/ Provide intrusion detection system (IDS).
Special Requirement	Construct to AR 190-11 paragraph 4-4 and Appendix G requirements. Provide GSA approved Class 5 Armory vault door with day gate.
Acoustics	NA

Room Name	**COMSEC SECURE STORAGE**
Description/Usage	Storage of aircraft communication equipment/components temporarily removed from the aircraft.
Room Finish Type	Match adjacent Systems Repair Shop flooring, painted walls with resilient base, and painted ceiling. Use light color paint.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	Provide intrusion detection system (IDS).
Special Requirement	Construct to AR 190-51, Para 3-6, and appendix B, Risk Level II requirements.
Acoustics	NA

G. ROOM DATA SHEET GROUP 7 – AIRCRAFT PARTS SUPPLY

Room Name	**AIRCRAFT PARTS SUPPLY OFFICE**
Description/Usage	The parts supply office is used for distribution of supply and aircraft replacement parts. The office contains storage space for small frequently requested controlled aircraft replacement parts and supplies.
Room Finish Type	Provide LVT flooring, painted walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	10’
Interior Construction / Built-in Equipment	Provide (1) Dry Erase MB 6’x4’.
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks./1/
Special Requirement	Provide 8’-0” long \1\stainless steel/1/ customer service countertop. Provide 36” access door from Aircraft Parts Supply and maintenance bay.
Acoustics	Room STC rating 40.

Room Name	**AIRCRAFT PARTS SUPPLY**
Description/Usage	Parts Supply is used for requisition, receiving, storing, and issuing of Class IX (air), PLL, bench stock, and shop stock.
Room Finish Type	Provide sealed concrete floor, painted concrete or CMU walls (10’ H minimum) with resilient base, and exposed painted structure above.
Minimum Ceiling Height	16’
Interior Construction / Built-in Equipment	
Plumbing	Exterior hose bib near access door.
Compressed Air	Provide (1) compressed air drop. Coordinate location with unit. Provide dedicated isolation valve within the space.
HVAC	Conditioned and humidity controlled
Power	\1\Provide receptacle at service counter. Provide one (1) 240/3/30A receptacle for forklift charging./1/
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR and LIS networks. Additional outlet (NIPR and LIS) at service counter./1/ Provide one (1) voice drop near exterior entrance.
Special Requirement	Provide a 10'W x 14'H insulated motorized overhead door exterior wall and one at maintenance bay wall when direct access to the Aircraft Maintenance Bay is possible. Provide 36” wide access door to Parts Office. Provide single personnel door to exterior, adjacent to rollup door.
Acoustics	

H. ROOM DATA SHEET GROUP 8 – CONTRACTOR LOGISTICS SUPPORT (CLS)

Room Name	**CONTRACTOR LOGISTICS SUPPORT**
Description/Usage	Administrative workspace and limited storage space for civilian contract maintenance representatives.
Room Finish Type	Provide LVT flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	\1\Provide 10 double tier steel lockers with raised base. (12”w x 18” d x 72” h)/1/
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	\1\Provide NIPR network only./1/
Special Requirement	
Acoustics	Room STC rating 40.

Room Name	MC COMPONENT REPAIR PLATOON OFFICE
Description/Usage	Semi-private office for Platoon Leader and Aviation Maintenance Tech.
Room Finish Type	Provide LVT flooring, painted gypsum board walls, and suspended acoustical ceiling.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	\1\ Provide NIPR and LIS networks./1/
Special Requirement	Provide Flight Lockers (24”x24”x72”) for each pilot.
Acoustics	Room STC rating 45.

Room Name	MC AIRFRAME REPAIR PLATOON OFFICE
Description/Usage	Semi-private office for Platoon Leader and Aviation Maintenance Officer.
Room Finish Type	Provide LVT flooring, painted gypsum board walls, and suspended acoustical ceiling.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	
Plumbing	
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	\1\ Provide NIPR and LIS networks./1/
Special Requirement	Provide Flight Lockers (24”x24”x72”) for each pilot.
Acoustics	Room STC rating 45.

I. ROOM DATA SHEET GROUP 14 – CONFERENCE/TRAINING AREAS

Room Name	**CONFERENCE/TRAINING ROOM(S)**
Description/Usage	Dedicated conference/training room.
Room Finish Type	Provide carpet tile flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	Provide (2) Dry erase marker board (8’x4’).
Plumbing	
HVAC	
Power	
Lighting	Dimmable lighting.
Telecommunications & Electronic Systems	\1\ Provide NIPR and LIS networks. Additional outlet (NIPR and LIS) at conference table./1/
Special Requirement	
Acoustics	Room STC rating 40.

Room Name	DISTRIBUTED/COMPUTER-BASED TRAINING (DT/CBT) ROOM
Description/Usage	Dedicated training room for distributed computer based Army mandated training.
Room Finish Type	Provide carpet tile flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	Provide (1) Dry erase marker boards (6’x4’). Provide (1) Bulletin Board (5’x3’) Provide (1) motorized projector screen (8’W x 8’H minimum). Provide (1) projector mount.
Plumbing	
HVAC	
Power	
Lighting	Dimmable lighting.
Telecommunications & Electronic Systems	\1\ Provide NIPR and LIS networks. Additional outlet (NIPR and LIS) at each training position./1/
Special Requirement	Provide minimum of 14 individual training positions. Individual prewired study carrels for training preferred.
Acoustics	Room STC rating 40.

J. ROOM DATA SHEET GROUP 15 – COMMON AREAS

Room Name	**BREAK ROOM**
Description/Usage	Break Room
Room Finish Type	Provide polished concrete floor, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	Provide 12 LF (minimum) of countertop with base and wall cabinets. Provide one (1) bulletin board (5’x3’) outside of break room.
Plumbing	Provide two compartment stainless steel sink and water supply for refrigerator(s) ice maker.
HVAC	
Power	Provide (3) dual electrical outlets for countertop appliances. Provide (4) electrical outlets for vending machines and refrigerators.
Lighting	
Telecommunications & Electronic Systems	Provide one CATV flat screen monitor mount with power and data outlets.
Special Requirements	
Acoustics	Room STC rating 40.

Room Name	SHOWER & LOCKER ROOMS
Description/Usage	Restroom, shower and locker rooms
Room Finish Type	See UFC 4-211-01, Section 3-3.4, Personnel Support space.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	Provide 3 personnel lockers per shower. Lockers shall have raised base and sloped top. Provide single tier (12”Wx18”Dx72”H) lockers for female soldiers. Provide double tier (12”Wx18”Dx72”H) lockers for male soldiers.
Plumbing	Provide 8 male and 3 female showers. Provide 3 male urinals. Provide 3 water closets each in male and female areas. Provide 2 lavatories each in male and female areas.
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	
Special Requirements	
Acoustics	Room STC rating 40.

Room Name	TOILET ROOMS
Description/Usage	
Room Finish Type	See UFC 4-211-01, Section 3-3.4, Personnel Support space.
Minimum Ceiling Height	9’
Interior Construction / Built-in Equipment	
Plumbing	\1\Provide as shown on floor plan./1/ Provide water fountain in entrance area.
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	
Special Requirements	
Acoustics	Room STC rating 40.

Room Name	MOTHER'S ROOM
Description/Usage	Private room for soldier breastfeeding and lactation support.
Room Finish Type	Provide LVT flooring, painted gypsum board walls with resilient base, and suspended acoustical ceiling.
Minimum Ceiling Height	9'
Interior Construction / Built-in Equipment	6 LF (minimum) of countertop. Coordinate size and location of under-counter refrigerator to be provided by the unit.
Plumbing	Provide single stainless steel sink.
HVAC	
Power	Provide (2) dual electrical outlets for countertop appliances.
Lighting	
Telecommunications & Electronic Systems	
Special Requirement	Room door shall be lockable from the inside.
Acoustics	Room STC rating 40.

Room Name	FACILITY STORAGE
Description/Usage	Janitor Rooms and Facility Storage
Room Finish Type	Provide sealed concrete, painted walls with resilient base, and exposed construction above.
Minimum Ceiling Height	NA
Interior Construction / Built-in Equipment	Provide mop holder rack above mop sink in Janitor Rooms.
Plumbing	Provide mop sink and floor drain in Janitor Rooms.
HVAC	
Power	
Lighting	
Telecommunications & Electronic Systems	
Special Requirement	
Acoustics	NA

3.21 FACILITY SPECIFIC REFERENCES: (Part II)

AR 190-11 Physical Security of Arms, Ammunition, and Explosives, Appendix G

AR 190-13 The Army Physical Security Program

AR 190-51 Security of Unclassified Army Property (Sensitive and Nonsensitive)

UFC 1-200-01 DoD Building Code

UFC 1-200-02 High Performance and Sustainable Building Requirements

UFC 3-201-01 Civil Engineering

UFC 3-101-01 Architecture

UFC 3-110-03 Roofing

UFC 3-120-10 Interior Design

UFC 3-260-01 Airfield and Heliport Planning and Design

UFC 3-260-02 Pavement Design for Airfields

UFC 3-301-01 Structural Engineering

UFC 3-400-02 Design: Engineering Weather Data

UFC 3-401-01 Mechanical Engineering

UFC 3-410-01 Heating, Ventilating, and Air Conditioning Systems

UFC 3-420-01 Plumbing Systems

UFC 3-420-02FA Compressed Air

UFC 3-490-06 Elevators

UFC 3-530-01 Interior and Exterior Lighting Systems and Controls, with Change 3

UFC 3-535-01 Visual Air Navigation Facilities

UFC 3-570-01 Cathodic Protection System

UFC 3-575-01 Lightning and Static Electricity Protection Systems

UFC 3-580-01 Telecommunications Interior Infrastructure Planning and Design

UFC 3-600-01 Fire Protection Engineering for Facilities

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

UFC 4-010-06 Cybersecurity of Facility-Related Control Systems

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

UFC 4-211-01 Aircraft Maintenance Hangars

UFC 4-215-01 Armories and Arms Rooms