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AIR FORCE SPECIAL OPERATIONS
COMMAND



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AFSOC FACILITY REQUIREMENTS

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This instruction implements Department of the Air Force Manual (DAFMAN) 32-1084, *Facility Requirements*. This Facility Requirements Instruction (FRI) has been prepared to support Air Force Special Operations Command's (AFSOC) facilities planning programming. This instruction provides guidance for calculating facility allowances for established Air Force category codes (CATCODEs). Due to the unique mission support requirements for AFSOC units, DAFMAN 32-1084 allows AFSOC to develop its own facility requirements for many category codes. This instruction applies to AFSOC gained Air Force Reserve Command (AFRC) and Air National Guard (ANG) units. Consult the *Air Force Reserves Command Handbook (AFRCH 32-1001)* and *Air National Guard Handbook Facility Space Standards (ANGH 32-1084)* for variances applicable to Reserve and Guard facilities. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFI 33-322, *Records Management and Information Governance Program*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Air Force (AF) Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command. This publication may not be supplemented or further implemented/extended. Requests for waivers must be submitted to the OPR listed above for consideration and approval. The authorities to waive wing, unit, delta or garrison level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the

publication OPR for non-tiered compliance items. Requests for waivers of non-tiered items must be processed through command channels to the publication OPR for consideration.

SUMMARY OF CHANGES

Supersedes: AFSOCI 32-1084 8 May 2018. This document has been substantially revised and needs to be completely reviewed. Major changes include an update of reference to DAFMAN 32-1084, incorporated requirements for the U-28 weapon system and primary training aircraft inventory (PTAI), removal of base operating support (BOS) tables, updating citations and references for the criteria in this FRI, and organization to align with the Whole Building Design Guide (WBDG) revision of DAFMAN 32-1084, *Standard Facility Requirements* where the individual facility requirements standards are organized by Facility Classes. To align with DAFMAN 32-1084, each Facility Class in the FRI is further organized into Category Groups comprised of individual category codes (CATCODE). The standard Air Force facility requirements are available at <https://www.wbdg.org/ffc/af-afcec/manuals-afm/afman-32-1084>.

SUMMARY OF CHANGES CORRECTIVE ACTION

Corrective actions have been applied to this publication to fix the incorrect page count that was shown.

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Chapter 1

INTRODUCTION

1.1. Overview. This FRI has been prepared to support AFSOC facilities planning programming. DAFMAN 32-1084 provides guidance for calculating facility allowances for established Air Force CATCODEs. Due to the unique mission support requirements for AFSOC units, DAFMAN 32-1084 allows AFSOC to develop its own facility requirements for many category codes. This FRI provides the basis for calculating the unique facility requirements associated with the seven functional categories listed in paragraph 1.1.1. Any deviations from the standards established in this FRI must be approved by Headquarters (HQ) AFSOC/A4I. (T-2)

1.1.1. Facility Functional Categories.

1.1.1.1. **Base Operations Ground Facilities.** Including, but not limited to: runway, overrun, taxiway, shoulder, aircraft parking apron, landing pad, compass calibration pad, wash rack, and aerial port.

1.1.1.2. **Training Systems Facilities.** Including, but not limited to: motion and non-motion simulator facilities, maintenance training facilities, and weapons training facilities. These facilities typically include simulator bays, administrative office space, classrooms, and computer support spaces.

1.1.1.3. **Operations Facilities.** Including, but not limited to: flying squadron operations facilities and aircrew flight equipment (AFE) facilities.

1.1.1.4. **Maintenance Facilities.** Including, but not limited to: aircraft maintenance unit, Dash 21 equipment storage, mission auxiliary tank storage.

1.1.1.5. **Maintenance Hangar.** Including, but not limited to: minimum hangar clearances, hangar bay dimensions, hangar floor requirements, doors requirements, fire protection, and building utility system requirements.

1.1.1.6. **Intermediate Maintenance.** Including, but not limited to: depot-level maintenance shops for fabrication flight, maintenance flight, accessories flight, propulsion flight, and avionics flight.

1.1.1.7. **Storage Facilities.** Including, but not limited to: ground fuel bulk storage, aerospace ground equipment, aviation fuel storage, above ground magazine storage, ancillary explosive facilities, hazardous materials storage, base supply and equipment warehouse, base supply open storage, and classified storage.

1.1.2. **FRI Organization.** This FRI contains eight chapters that are organized into three parts: FRI References and Hyperlinks, Weapon System Requirements, and Overhead and Support Requirements. It is organized so that each part serves a specific function when planning and programming facilities. For example, the reference chapters (Chapters 2-6) provide continuity with DAFMAN 32-1084 and real property inventory analysis for base-level facility planning. Weapon system requirements ([Chapter 7](#)) defined in one place allows planners the ability to quickly identify requirements for stationing actions, weapon system beddowns, or specific facilities. Overhead and support requirements ([Chapter 8](#)) provide AFSOC unit overhead

requirements that include variances for overhead units at host and tenant installations in addition to continental U.S. (CONUS) and outside the continental U.S. (OCONUS) locations.

1.1.2.1. FRI References and Hyperlinks. References and hyperlinks in the FRI are found in Chapters 2-6. Each of these chapters represents a different facility class (e.g., [Chapter 2](#) - Operations and Training or [Chapter 6](#) - Housing and Community). CATCODES in these chapters will have a brief description of the facility type and a hyperlink shortcut to the content that relates specifically to each weapon system or overhead/support element. These chapters are intended to be used as a quick search reference guide to specific information. Hyperlinks have been provided to allow the user the ability to navigate to unique requirements by CATCODE and section.

1.1.2.1.1. Instructions for Hyperlinks. Hyperlinks throughout this FRI are displayed in underlined blue font. The hyperlinks in Chapters 2-6 provide direct links to weapon systems and overhead/support elements associated with the facility class and CATCODE of that section. To navigate to material related to the hyperlink title, click the keyboard Ctrl button and the hyperlink (Ctrl + Hyperlink). This will advance the page in the FRI directly to the CATCODE requirements and critical technical elements associated with each section.

1.1.2.2. Weapon System Requirements. The second part of this FRI contains facility requirements organized by weapon system. [Chapter 7](#) contains the facility requirements for AFSOC CV-22, AC-130J, MC-130J, U-28, MC-12, C-146, MQ-9, and Special Tactics (ST) weapon systems as well as their associated mission activities. Each weapon system has its own subsection.

1.1.2.3. Overhead and Support Requirements. The third part of this FRI contains facility requirements organized by overhead/support element. [Chapter 8](#) contains the facility requirements for AFSOC overhead/support elements including all functions for the Major Command (MAJCOM), Wings, Groups, Operations Support Squadrons, and Schoolhouses. Each overhead/support element has its own subsection.

1.1.3. General Notes and Guidance

1.1.3.1. Requirements Basis.

1.1.3.1.1. Unit Type Code (UTC) Construct. AFSOCs mission dictates constant adjustment to how weapon systems are employed in the Special Operations Forces (SOF) environment. A UTC is the force package that identifies how many people, aircraft, and pieces of equipment are required to support a specific capability. For AFSOC weapon systems, changes to the UTC construct can drive significantly different facility requirements because the total number of primary mission aircraft inventory (PMAI), backup aircraft inventory (BAI), primary training aircraft inventory (PTAI), personnel, and volume of equipment required will vary based on the UTC structure. AFSOC facility unique requirements are built around a single UTC analysis that can easily be expanded to additional UTCs. The analysis also accounts for the efficiencies that occur with larger organizations. Mission UTC constructs can evolve periodically, therefore, this instruction will require periodic updates.

1.1.3.1.2. Crew Ratio and Crew Complement. Crew ratio and crew complement can also significantly impact facility space requirements. The *crew ratio* is the number of crews required to support deployments and dwell times for the unit. The *crew complement* is the crew composition to operate the weapon system. Together, along with the number of PMAI, the crew ratio and crew complement can be used to determine how many flight crews there are in addition to unit overhead and support personnel. The number of flight crews is determined by the following formula: number of personnel in a flight crew (crew complement) x crew ratio x number of PMAI. Thus, a larger flight crew or crew ratio will result in larger facilities required to support additional personnel, and vice versa.

1.1.3.1.3. Maintenance Spaces Per Aircraft (SPA). The maintenance SPA indicates the number of aircraft maintainers that are required to perform maintenance for one aircraft. At an installation, the maintenance SPA can change based on the number and types of airframes supported. Increases or decreases in the maintenance personnel requirements for one airframe can impact the maintenance SPA of other airframes. For planning purposes, the maintenance SPA for a weapon system is used to determine an approximate number of personnel required to provide maintenance for a weapon system.

1.1.3.1.4. Requirements by Location. The facility requirements in this manual apply to both CONUS and OCONUS locations. Where applicable, CONUS and OCONUS designations are included along-side each requirement within the paragraph text, tables, or figures. Any information not specifically designated as CONUS or OCONUS is applicable to both location types.

1.1.3.2. Facility Type Descriptions. For each type of facility, this FRI provides the CATCODE, requirements determination, scope determination, and dimensions for the facility space requirement. Requirements determination provides the basis for determining the functions of the facility and the major subcomponent spaces as they relate to mission. Scope determination contains the data required to make the initial determination about the overall size of the facility. The dimension section contains information about any specific dimensions required to meet the facility space requirement. In addition to facility space requirements, additional considerations for design, communications, etc., are included or referenced as applicable.

1.1.3.3. Building Utility System Requirements. To aid facility planning, this FRI provides critical building system requirements that have potential impacts on facility space requirements. This includes building mechanical, electrical, plumbing, fire protection, and communications systems. The design of interior mechanical, electrical, plumbing, fire protection, and telecommunications infrastructure is a specialized technical area. This FRI provides general guidance for planners implementing existing and emerging interior infrastructure requirements. All provided building system requirements follow industry standards. Due to service-specific unique operating requirements and existing infrastructure and topology, this FRI includes a table for each unique facility type. Where possible, this information has been condensed. In these instances, refer to [Table 1.1.1.](#), which provides general building system requirements for each utility system.

Table 1.1.1. General Building Utility System Requirements for AFSOC Facilities.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions in all areas via an energy efficient heating, ventilation, and air conditioning (HVAC) system. Applicable criteria include Unified Facilities Criteria (UFC) 3-401-01 for mechanical.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide interior and exterior lighting system in accordance with the Illuminating Engineering Society (IES) Lighting Handbooks for lighting intensities. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Provide a commercial grade domestic water and waste water system. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	Provide Communication requirements in accordance with Unified Facilities Guide Specification (UFGS) Division 27 - Communications, Division 33 - Utilities and UFC 3-580-01 for designing and implementing of interior and exterior telecommunications infrastructure for military construction. This infrastructure typically includes telecommunications spaces, pathways, cabling and interconnecting components.

1.1.3.4. Definitions for Specific Facility Types. For reference and planning purposes of this manual, some facility types have been defined to clarify distinctions between like-named facilities.

1.1.3.4.1. Covered Storage Definition. Covered storage refers to facility that is constructed without complete side and end walls (fewer than 4 sides). Examples include sheds, pole barns, and lean-tos. The types of items typically considered for storage in these facilities includes vehicle/watercraft storage, supplies, equipment, and material not requiring closed warehouse space but requiring covered protection from the weather because of the nature of material or packaging. Waivers for enclosed storage in place of covered storage, or where not identified in this manual, require proper justification and will be determined by AFSOC/A4I based on mission requirements, degradation, weather, and other applicable considerations deemed necessary by the OPR.

1.1.3.4.2. Storage and Warehouse Definition. Storage or warehouse space refers to an enclosed, unairconditioned space that is needed for bulk and bin storage of materials for which maximum protection from the weather is authorized. Exceptions include general facility storage and other typical storage spaces/closets found in administrative

buildings, storage for equipment that requires cooling (e.g., computer and communications rooms), or other storage approved by AFSOC/A4I.

1.1.3.4.3. Open Storage Yard Definition. The term open storage refers to an improved or paved area used to store materials authorized for open storage. To avoid confusion with open storage security requirements, the term “Open Storage Yard” will be used to define these uncovered storage spaces. This description provides continuity with DAFMAN 32-1084 descriptions for open storage yards.

1.1.3.5. Assumptions for support facilities at AFSOC installations. For reference and planning purposes of this instruction, some facility types are assumed to be existing and adequate at existing installations.

1.1.3.5.1. An Aerial Delivery Facility is assumed to have available and adequate facilities at existing AFSOC airfields. The size of this facility will vary based on the quantity and type of equipment needed to support specific mission requirements. This type of facility differs from an aerial port. This aerial delivery facility supports aerial delivery flights that prepare items to be airdropped from AFSOC aircraft specifically and is typically assigned as part of the Special Operations Support Squadron (SOSS).

1.1.3.5.2. A FARP Equipment Storage Facility is assumed to have available and adequate facilities at existing AFSOC airfields. A pre-positioned “shack” for FARP equipment is not a mandatory AFSOC requirement as FARP equipment can be delivered by truck.

1.1.3.5.3. A Deployment Processing Facility is assumed to have available and adequate facilities at existing airfields. Since AFSOC does not have a specific requirement for Deployment Processing the “host” installation will provide this facility.

1.1.3.5.4. Also, the following (including, but not limited to) facilities are assumed to be available and adequate for existing airfields: Communications - Transmitter/Receiver – very high frequency/ultra-high frequency (VHF/UHF) Air Traffic Control & High Frequency, Radar Approach Control (RAPCON), Airport Surveillance Radar, Precision Approach Radar, Instrument Landing System, Tactical Air Navigation (TACAN), VHF Omni-Directional Range (VOR), Wind Direction Indicator, Beacon Light, Approach Lighting, Obstruction Lighting, Runway Lighting, Special Airfield Lighting (Touchdown Zone Lights/Runway Centerline Lights/Glide Slope), and Taxiway Lights.

1.1.3.6. Unauthorized spaces and space utilization concepts. This section contains guidance regarding unauthorized spaces and space use concepts for open offices, secured spaces, and flexible-use spaces within AFSOC facilities. Deviations from the concepts below must be supported by detailed documentation of the variance and must be approved by AFSOC/A4I.

1.1.3.6.1. **Unauthorized Spaces.** A designated heritage room is not authorized, but may be provided within authorized break room or lobby areas. Fitness space is only authorized within installation fitness centers or human performance training centers. Auditoriums are not authorized. (AFSOC/A4I).

1.1.3.6.2. **Open Office Concept.** Where offices are provided, an open office concept using system furniture will be used with exceptions for the command suite, meeting rooms, and conference rooms (AFSOC/A4I).

1.1.3.6.3. **Secured Space Concept.** Any non-secure space (conference room, training room, office, etc.) can be used as an area where classified discussions and training can be conducted when administrative controls are applied. Sensitive compartmented information facilities (SCIFs) are provided when required by mission or when storing sensitive compartmented information (SCI) is required (AFSOC/A4I).

1.1.3.6.4. **Flex-Use Concept for Large Spaces.** To maximize space utilization and enable agile facilities capable of adapting for SOF, create flex-use spaces separated by folding partition walls for large group activities. For example, combining the authorization for meeting areas (conference room, briefing room, training room, etc.) allows the individual spaces to open into a single larger flex-use space that can accommodate larger groups (AFSOC/A4I).

1.1.3.7. **Development of Unique Facility Requirements.** The unique facility requirements in this manual are based on notional manpower provided by AFSOC/A1M, analysis of government furnished material and technical resources, guidance from AFSOC A4I and AFIMSC Det 3/CEB, and interviews with various subject matter experts (SMEs). Reference documents for information contained within this instruction are listed in Appendix C. Field validation of facility requirements was also conducted at the 1st and 24th Special Operations Wings (SOW) at Hurlburt Field, Florida; the 27th SOW at Cannon Air Force Base (AFB); the 352nd Special Operations Group (SOG) at Royal Air Force (RAF) Mildenhall, United Kingdom; and the 353rd SOG at Kadena Air Base (AB), Japan.

Chapter 2

FACILITY CLASS 1, OPERATION AND TRAINING

2.1. Category Group 11, Airfield Pavements.

2.1.1. Overview. The airfield is the portion of the base used for airfield operations, i.e., takeoffs, landing, servicing, parking, etc. The designation of airfield pavements applies to runways, taxiways, aprons, pads, paved shoulders, and paved overruns; it is a paved surface designed for the landing and takeoff of fixed-wing aircraft that can also accommodate rotary-wing aircraft. The surface is usually concrete or asphalt. When planning airfield pavements, consider stormwater runoff and control of pollutants being discharged into stormwater to maintain compliance with the stormwater and discharge permit requirements, including deicing operations and requirements under 33 USC § 1251 – 1387; *Clean Water Act* (CWA); Air Force Instruction (AFI) 32-7041, *Water Quality Compliance*; and federal, state, and local stormwater permit requirements. When planning aircraft support facilities where personnel or explosives are involved, ensure explosives standards (Department of Defense (DOD) 6055.9-M, Volume 1 *DOD Ammunition and Explosive Safety Standards: General Explosives Safety Information and Requirements* and AFMAN 91-201, *Explosive Safety Standards*) are considered. Finally, pavement design criteria are presented in [Chapter 7](#) for each AFSOC weapon system; however, additional design criteria are contained in UFC 3-260-01 and UFC 3-260-02.

2.1.1.1. Runways (CATCODE: 11111). The runway is the paved surface provided for normal aircraft landings and takeoffs. Runways are classified as either Class A or Class B based on the intended aircraft use per Table 3-1 of UFC 3-260-01, *Airfield and Helipad Planning and Design*. Links to AFSOC weapon systems minimum runway requirements are found below.

Table 2.1. AFSOC Weapon Systems Requiring Runways.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

2.1.1.2. Paved Overrun (CATCODE: 11115). The runway overrun is an extension of the runway (excluding shoulders) to allow for the possibility of short landings and possible aircraft overruns. Links to AFSOC weapon systems minimum paved overrun requirements are found below.

Table 2.2. AFSOC Weapon Systems Requiring Paved Overruns.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

2.1.1.3. Taxiway (CATCODE: 112211). Taxiways are the pavements provided for the ground movement of aircraft. Taxiways connect the parking and maintenance areas of the airfield with the runways and provide access to hangars, docks, and various parking aprons and pads. Taxiways are normally parallel to runways to facilitate aircraft ground movement on the taxiways during landings and take offs on the runway. Links to AFSOC weapon systems minimum taxiway requirements are found below.

Table 2.3. AFSOC Weapon Systems Minimum Taxiway Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

2.1.1.4. Apron (CATCODE: 113321). Aprons are paved areas provided for aircraft parking, servicing, and loading. Apron space is required for operational aircraft; alert aircraft; transient aircraft; the loading and unloading of cargo aircraft; mission support aircraft (Base Flight); aircraft undergoing depot maintenance; and aircraft access to hangars, docks, and shelters. Combat aircraft require additional separation between parked aircraft and unrelated facilities that may drive additional apron requirements. Links to AFSOC weapon systems minimum apron requirements are found below.

Table 2.4. AFSOC Weapon Systems Minimum Apron Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

2.1.1.5. Paved Shoulders (CATCODE: 116642). The shoulders of runways, aprons, taxiways, and airfield pads are paved to protect the shoulder areas against jet blast, reduce maintenance of the unpaved shoulder area, support aircraft outrigger gear, or accommodate snow removal equipment, aircraft service vehicles, and emergency vehicles. Links to AFSOC weapon systems minimum paved shoulder requirements are found below.

Table 2.5. AFSOC Weapon Systems Minimum Paved Shoulder Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

2.1.1.6. Helicopter Landing Pad (CATCODE: 116663). Helicopter pads are relatively small paved areas that support vertical takeoff, landing, taxiing, and parking operations for rotary-wing aircraft. This also includes emergency landing pads, which are limited use helicopter pads where the aircraft can be positioned into the wind and land on secured mattresses in the event of a landing gear malfunction. Links to AFSOC weapon systems minimum helicopter landing pad requirements are found below.

Table 2.6. AFSOC Weapon System Minimum Helicopter Landing Pad Requirements.

CV-22

2.1.1.7. Pad, Arm and Disarm (CATCODE: 116661). Bases with Special Operations Aircraft require arm/disarm pads. The pads are used for arming and disarming (safing) guns which malfunction or have not been expended. These pads differ from Dangerous Cargo Pads (or Combat Aircraft Parking Aprons [CAPAs]) because they are used for arming/disarming only. The pads are sited so that armed aircraft head in the direction of the least populated areas or toward revetments. Links to AFSOC weapon systems minimum arm/disarm pad requirements are found below.

Table 2.7. AFSOC Weapons Systems Minimum Arm/Disarm Pad Requirements.

AC-130J	MQ-9

2.1.1.8. Pad, Dangerous Cargo, Load/Unload (CATCODE: 116662). Dangerous cargo pads are paved areas for loading and unloading explosives and other hazardous cargo from aircraft. They can also serve as CAPAs. Links to AFSOC weapon systems minimum dangerous cargo pad requirements are found below.

Table 2.8. AFSOC Weapon Systems Minimum Dangerous Cargo Pad Requirements.

AC-130J	MQ-9

2.1.1.9. **Warm-up/Holding Pad (CATCODE: 116666).** The warm-up/holding pad is a paved area adjacent to the taxiway at or near the end of a runway. The intent of a warm-up pad is to provide a parking location, off the taxiway, for aircraft which must hold due to indeterminate delays and allows other departing aircraft unencumbered access to the runway. Links to AFSOC weapon systems minimum warm-up/holding pad requirements are found below.

Table 2.9. AFSOC Weapon Systems Minimum Warm-Up/Holding Pad Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

2.1.1.10. **Pad, Compass Calibration (CATCODE: 116667).** The compass calibration pad is a paved area where aircraft are positioned during calibration of the magnetic standby compass and the magnetic azimuth detector. Links to AFSOC weapon systems minimum compass calibration pad requirements are found below.

Table 2.10. AFSOC Weapon Systems Minimum Compass Calibration Pad Requirements.

AC-130J	MC-130J

2.1.1.11. **Aircraft Washrack (CATCODE: 116672)** . Aircraft washracks are paved areas provided at all installations to clean aircraft in conjunction with periodic maintenance and to prevent corrosion. Links to AFSOC weapon systems minimum aircraft washrack requirements are found below.

Table 2.11. AFSOC Weapon Systems Minimum Aircraft Washrack Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

2.2. Category Group 12, Liquid Fueling and Dispensing Facilities.

2.2.1. **Overview.** This section contains information regarding petroleum dispensing and operating facilities for AFSOC weapon systems. Each base supporting AFSOC weapon systems is provided adequate facilities for receiving, storing, distributing, and dispensing the fuel products necessary for its assigned mission. See UFC 3-460-01, *Petroleum Fuel Facilities*, and UFC 3-460-03, *Operations and Maintenance: Maintenance of Petroleum Systems*, for additional information and guidance.

2.2.1.1. **Aircraft Truck Fueling Facility (CATCODE: 126925).** Truck liquid fuel fill stands are required as a means of loading fuel from the storage tanks into fuel servicing vehicles and tank trucks. Links to AFSOC weapon systems minimum aircraft truck fueling facility requirements are found below.

Table 2.12. AFSOC Weapon Systems Minimum Aircraft Truck Fueling Facility Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

2.3. Category Group 14, Land Operational Facilities.

2.3.1. **Overview.** This section contains the criteria and guidance for land-based operational facilities.

2.3.1.1. **Special Operations (CATCODE: 141454).** This category is used for SOF activities not otherwise defined by similar U.S. Air Force (USAF) functions. Links to AFSOC special operations requirements are found below.

Table 2.13. AFSOC Special Operations Requirements.

STS	ST OSS	STTS	T&IW AvFID	T&IW FLTS	T&IW FTU
T&IW NSA ^v	T&IW SOACS	T&IW SOMXS	T&IW SOSS	T&IW USAFSOS	

2.3.1.2. **USAF Command Posts or Installation Control Center (ICC) (CATCODE: 141461).** Command posts are the focal point for emergency action, flight tracking, and operations reporting functions. An ICC has a separate function from the Command Post, as it provides the installation commander with a single, consolidated command and control (C2) center from which to monitor, assess, plan, and execute the full range of installation activities. The makeup and size of any Command Post or ICC is contingent upon unit or installation size, mission, location, specific types of units assigned, and threat level. Links to AFSOC Command Post and ICC requirements are found below.

Table 2.14. AFSOC Command Post and ICC Requirements.

Wing

2.3.1.3. **Squadron Operations Facility (CATCODE: 141753).** This building is a main control point for all unit flight and flying training tasks including planning, briefing, administration, and critique of combat crews. The Squadron Operations provides an organized operation facility for each flying squadron to carry out its mission. Links to AFSOC squadron operations requirements are found below.

Table 2.15. AFSOC Squadron Operations Requirements.

CV-22	AC-130J	MC-130J	MC-12	C-146	MQ-9
U-28	SOAOS and SOCPTS	SOF Security Forces		SOSS	

2.4. Category Group 17, Training Facilities.

2.4.1. **Overview.** The following guidance applies to all facility requirements described in this chapter that involve lecture or seminar classrooms, and all classroom requirements identified under operational facilities described elsewhere in this manual. The term “classroom” is included in the official nomenclature of only two facilities: Technical Training Classroom (CATCODE 171621) and Flying Training Classroom (CATCODE 171211). However, most of the facilities listed in this chapter include some classroom space. Many training programs include instruction outside of the classroom and, therefore, classrooms designated for these programs are often available for part-time use by other programs. The latter may include segments of major training programs or any of the variety of smaller training programs that

require intermittent use of space. To achieve maximum utilization of existing classroom space and ensure that any space acquisitions are thoroughly justified, training program managers should coordinate their plans and schedules where possible to define a base-wide facility requirement for lecture and seminar classrooms. To determine classroom and training facility requirements beyond those identified in this manual, consider a three-step approach that involves 1) establishing the desired learning environment, 2) determine the ideal combination of rooms and students per room that provide the highest rate of occupancy compatible with the training to be accomplished, and 3) identify all facility assets and define their capabilities for satisfying the requirements under the preceding steps. Consult AFSOC/A4I for more information on defining and validating classroom and training facility requirements not identified in this manual.

2.4.1.1. Flight Simulator Training (CATCODE: 171212). This facility houses aircraft flight simulators, special training devices, and their associated equipment and support spaces including, but not limited to, administration and records, classrooms, trainer maintenance, and storage. Links to AFSOC weapon systems minimum flight simulator training requirements are found below.

Table 2.16. AFSOC Weapons Systems Minimum Flight Simulator Training Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

Chapter 3

FACILITY CLASS 2, MAINTENANCE FACILITIES

3.1. Category Group 21, Maintenance Facilities.

3.1.1. Overview. Hangars and docks provide space for scheduled inspections, landing gear retraction tests, aircraft weighing, major maintenance on fuel systems, airframe repairs, and TO compliance and modifications. Refer to fire detection and suppression requirements listed in UFC 3-600-01, *Fire Protection Engineering for Facilities*, Engineering Technical Letter (ETL) 02-15, *Fire Protection Engineering Criteria-New Aircraft Facilities*; and ETL 98-8, *Fire Protection Engineering Criteria-Existing Aircraft Facilities* before mission change of facility renovation. All aircraft maintenance facilities will comply with local, state, and federal requirements in respect to air emissions, as required by AFI 32-7040, *Air Quality Compliance and Resource Management*. Finally, this chapter covers facility requirements for common AFSOC maintenance facilities; however, some facility requirements, such as those for newer, unique, or future weapon systems, were unknown or under development at the time of this FRI's publishing, and are not included. Contact AFSOC/A4I for facility requirements not contained in this instruction.

3.1.1.1. Maintenance Hangar (CATCODE: 211111). Maintenance hangars provide space for aircraft maintenance, tool rooms, aircraft weighing, and other maintenance and inspection activities. Links to AFSOC weapon systems minimum maintenance hangar requirements are found below.

Table 3.1. AFSOC Weapon Systems Minimum Maintenance Hangar Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

3.1.1.2. Aircraft General Purpose Shop (CATCODE: 211152). This shop provides space for specialized maintenance activities such as metals technology, aerospace systems shops, egress shop, and reclamation operations on crash damaged aircraft and equipment. Links to AFSOC weapon systems minimum aircraft general purpose shop requirements are found below.

Table 3.2. AFSOC Weapon Systems Minimum Aircraft General Purpose Shop Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

3.1.1.3. Nondestructive Inspection (NDI) Laboratory (CATCODE: 211153). This facility provides space for field level NDI of aircraft components. Optic, penetrant, magnetic, eddy current, ultrasonic, radiographic, infrared, ultraviolet, and spectrometric devices inspect materials and components for quality, integrity, properties, and dimensions without damaging them. Links to AFSOC weapon systems minimum NDI lab requirements are found below.

Table 3.3. AFSOC Weapon Systems Minimum NDI Lab Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

3.1.1.4. Aircraft Maintenance Unit (AMU) (CATCODE: 211154). This building is a main control point for all AMU maintenance activities, administration, task training, equipment storage, and tool storage. AMUs are responsible for servicing, inspecting, maintaining, and launching/recovering assigned aircraft; maintaining/storing required aircraft maintenance equipment/tools; and ensuring all mobility requirements are met. There is normally one AMU for each assigned Operations Squadron (OS). AMUs may include the following sections: Production, Aircraft, Specialist, Scheduling, Weapons, Debrief, and Support. Additional space could be required for aircraft field service representatives. Links to AFSOC weapon systems minimum AMU requirements are found below.

Table 3.4. AFSOC Weapon Systems Minimum AMU Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

3.1.1.5. Corrosion Control Hangar (CATCODE: 211159). This type of facility provides two unique activities: (1) hangar space for corrosion treating, corrosion repairing, paint stripping, and repainting of an entire aircraft hangar and (2) an environmentally controlled area to wash aircraft. These two activities can be collocated or separated. This facility also provides space for the corrosion control shop, which includes preparation and drying areas, abrasive blasting rooms, paint booths for mixing and/or applying paint, tool storage, lockers, and administrative areas. Corrosion control shops are also required to support small aircraft components, aerospace ground equipment, vehicles, weapons and munitions, and avionics shops. Links to AFSOC weapon systems minimum corrosion control hangar requirements are found below.

Table 3.5. AFSOC Weapon Systems Minimum Corrosion Control Hangar Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

3.1.1.6. Small Aircraft Maintenance Dock (CATCODE: 211177). This facility has space for an aircraft parking bay and support space for heating, plumbing, ventilation, compressed air, and fire detection and suppression. Maintenance docks provide protected space for aircraft maintenance. Links to AFSOC weapon systems minimum small aircraft maintenance dock requirements are found below.

Table 3.6. AFSOC Weapon Systems Minimum Small Aircraft Maintenance Dock Requirements.

MQ-9

3.1.1.7. Fuel Systems Maintenance Area (CATCODE: 211179). This facility has space for an aircraft parking bay and support space for heating, plumbing, ventilation, compressed air, and fire detection and suppression. The fuel system maintenance dock may need additional fire detection and suppression. Docks used for fuel systems maintenance also include mechanical ventilation, fume sensing and alarm, fire extinguishing systems, and wash down drainage trenches. Links to AFSOC weapon systems minimum fuel systems maintenance area requirements are found below.

Table 3.7. AFSOC Weapon Systems Minimum Fuel Systems Maintenance Area Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	MQ-9

3.1.1.8. **Weapons Release Systems Shop (CATCODE: 215552).** This facility provides space for off equipment overhaul and repair of aircraft gun systems and weapons release systems that include, but are not limited to, bomb ejection racks, weapons pylons, and missile rotary launchers. Links to AFSOC weapon systems weapons release systems shop requirements are found below.

Table 3.8. AFSOC Weapon Systems Release Systems Shop Requirements.

CV-22	AC-130J	MQ-9

3.1.1.9. **Avionics Shop (CATCODE: 217712).** This shop accommodates organizational and intermediate level maintenance activities for the following aircraft equipment and accessories: Airborne communications, cameras, bombing systems, and tactical support element/communications security (TSEC/COMSEC) equipment. Links to AFSOC weapon systems minimum avionics shop requirements are found below.

Table 3.9. AFSOC Weapon Systems Minimum Avionics Shop Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

3.1.1.10. **Aerospace Ground Equipment (AGE) Shop and Storage Facility (CATCODE: 218712).** This facility encompasses powered and non-powered aerospace ground equipment (AGE) maintenance, inspection, repair and servicing functions, and powered munitions AGE, if assigned. It also maintains and holds powered AGE in readiness. Links to AFSOC weapon systems minimum AGE shop and storage requirements are found below.

Table 3.10. AFSOC AGE Shop and Storage Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

Chapter 4

FACILITY CLASS 4, SUPPLY

4.1. Category Group 41, Liquid Storage - Fuel and Nonpropellants.

4.1.1. **Overview.** The total requirement for liquid fuel storage will be calculated based on programming guidance furnished by Defense Energy Support Center (DESC) and requirements established in the Inventory Management Plan. Tankage will be programmed in standard size tanks using guidance in UFC 3-460-01, *Petroleum Fuel Facilities*.

4.1.1.1. **Aviation Bulk Fuel Storage (CATCODE: 411135).** See [Paragraph 4.1.1](#). Links to AFSOC weapon systems minimum aviation bulk fuel storage requirements are found below.

Table 4.1. AFSOC Weapons Systems Minimum Aviation Bulk Fuel Storage Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

4.2. Category Group 42, Ammunition Storage.

4.2.1. **Overview.** The quantity and type of explosives storage facilities required at an installation will vary based on the operating requirements, the quantity or type of munitions to be stored or handled, the site characteristics and physical limitations, and the type of proposed storage structures preferred or required at the storage site. An installation's explosive storage requirements are based on the unit's mission, support, training, and Operations Plan (OPLAN). Explosives will normally be stored in a secure area reserved exclusively for explosives storage as defined in AFMAN 91-201, *Explosive Safety Standards*, and AFI 21-201, *Conventional Munitions Maintenance Management*.

4.2.1.1. **Above Ground Magazine Storage Facility, Types A, B, and C (CATCODE: 422258).** Above Ground Magazines are used for long-term storage of Cartridge Actuated Devices (CAD) and Propellant Actuated Devices (PAD). The storage facility shall provide an environment that protects CAD/PAD from moisture, high temperatures, and direct sunlight. Links to AFSOC weapon systems minimum above ground magazine requirements are found below.

Table 4.2. AFSOC Weapon Systems Minimum Above Ground Magazine Requirements.

CV-22	AC-130J	MQ-9

4.2.1.2. **Ancillary Explosives Facility (CATCODE: 422275).** This designation may be applied to pads, locations, revetments, and facilities (excluding aircraft parking) of such size and quantity as required for the following uses: classification yard, holding yard, inspection station, interchange yard, loading dock, ready explosives facility, and bomb preload station. Links to AFSOC weapon systems minimum ancillary explosive facility requirements are found below.

Table 4.3. AFSOC Weapon Systems Minimum Ancillary Explosive Facility Requirements.

CV-22	AC-130J	MQ-9

4.3. Category Group 44, Supply Storage Facilities (Covered Storage).

4.3.1. **Overview.** The term “LRS facilities” applies to facilities required to store material and equipment under the accountability of the Logistics Readiness Squadron (LRS) or counterparts in base tenant organizations. They include Hazardous Storage (CATCODE 442257), Supply and Equipment (CATCODE 442628), Warehouse Supply and Equipment (CATCODE 442758), and Open Storage Supply (CATCODE 452252).

4.3.1.1. **Base Hazardous Material Storage (CATCODE: 442257).** This facility is required to store hazardous materials that cannot be stored in supply and equipment sheds or warehouses (CATCODEs 442628 and 442758). The guidance on storage criteria and fire safety is given in Air Force Interservice Manual 24-204(I), *Preparing Hazardous Materials for Military Air Shipments*, and Air Force Joint Manual (AFJMAN) 23-210, *Joint Service Manual (JSM) for Storage and Materials Handling*. Standards for hazardous waste containment buildings are contained in 40 CFR 264 and 265, Subpart DD. Consult Air Force Center for Environmental Excellence (AFCEE) *Facility Planning and Design Guide: HAZMART (Hazardous Material Pharmacy)* for additional information and guidance. Links to AFSOC weapon systems minimum base hazardous material storage requirements are found below.

Table 4.4. AFSOC Weapon Systems Minimum Base Hazardous Material Storage Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

4.3.1.2. **Cryogenics Storage (CATCODE: 442258).** This facility provides storage of liquid oxygen (LOX), gaseous oxygen (GOX), and liquid nitrogen (LN2) servicing units/carts. Links to AFSOC weapon systems minimum cryogenics storage requirements are found below.

Table 4.5. AFSOC Weapon Systems Minimum Cryogenics Storage Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146

4.3.1.3. **Base Supplies and Equipment Shed (CATCODE: 442628).** Shed space is required to store supplies, equipment, and material not requiring closed warehouse space but requiring covered protection from the weather because of the nature of material or way they are packed. Links to AFSOC weapon systems minimum base supplies and equipment shed requirements are found below.

Table 4.6. AFSOC Weapon Systems Minimum Base Supplies and Equipment Shed Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

4.3.1.4. **Base Supplies and Equipment Warehouse (CATCODE: 442758).** Warehouse space is required for bulk and bin storage of materials for which maximum protection from

the weather is authorized. Links to AFSOC weapon systems minimum base supplies and equipment warehouse requirements are found below.

Table 4.7. AFSOC Weapon Systems Minimum Base Supplies and Equipment Warehouse Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

4.4. Category Group 45, Open Storage - General Purpose.

4.4.1. Overview.

4.4.1.1. Base Supply Open Storage (CATCODE: 452252). This facility is an improved or paved area used to store materials authorized for open storage. Links to AFSOC weapon systems minimum base supply open storage requirements are found below.

Table 4.8. AFSOC Weapon Systems Minimum Base Supply Open Storage Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

4.4.1.2. Aircraft Support Equipment Storage Yard (CATCODE: 852273). This facility is an improved or paved area used to store materials authorized for open storage. Links to AFSOC weapon systems minimum AGE open storage yard requirements are found below.

Table 4.9. AFSOC Weapon Systems Minimum AGE Open Storage Yard Requirements.

CV-22	AC-130J	MC-130J	U-28	MC-12	C-146	MQ-9

Chapter 5

FACILITY CLASS 6, ADMINISTRATIVE

5.1. Category Group 61, Administrative and Administrative Support Spaces.

5.1.1. Overview. This chapter identifies the program requirements for administrative and administrative support spaces. These spaces support the administrative affairs of a military establishment and should be programmed and designed such that they enhance the main mission or functions of an organization. In addition to the area requirements, administrative and support spaces should be programmed and designed so that these facilities can be flexible, cost-effective, and create an atmosphere that increase morale, productivity, and collaboration. In general, administrative space authorizations in this FRI are based on the rank-based programming method found in DAFMAN 32-1084 CG 61 - Administrative Facilities Overview, Table 1.1.2, as this method provides the most detailed basis for requirements among the alternatives. Consult AFSOC/A4I for the administrative and support space requirements beyond those listed in this instruction.

5.1.1.1. Group Headquarters (CATCODE: 610243). Group Headquarters facilities may accommodate the staff offices of the headquarters for the following types of organizations: operational groups, support groups, logistics groups, or any other group officially designated as such under the Air Force Wing structure. Links to AFSOC group headquarters requirements are found below.

Table 5.1. AFSOC Group Headquarters Requirements.

SOG	ST SOG	SOMXG	T&IW SOG	T&IW SOTRG	RPA ROC

5.1.1.2. Wing Headquarters (CATCODE: 610249). This facility accommodates the staff offices of the headquarters for operational wings, air base wings, or training wings. Links to AFSOC wing headquarters requirements are found below.

Table 5.2. AFSOC Wing Headquarters Requirements.

SOW	ST SOW	T&IW SOW

5.1.1.3. Major Command Headquarters (CATCODE: 610284). This category code applies to building space occupied by the headquarters staff offices including field extensions. Links to AFSOC MAJCOM headquarters requirements are found below.

Table 5.3. AFSOC MAJCOM Headquarters Requirements.

MAJCOM

Chapter 6

FACILITY CLASS 7, HOUSING AND COMMUNITY

6.1. Category Group 71, Family Housing. Since there are no SOF-unique requirements for Family Housing, see DAFMAN32-1084 category group 71 for Family Housing requirements.

6.2. Category Group 72, Unaccompanied Personnel Housing (UPH). Since there are no SOF-unique requirements for UPH, see DAFMAN32-1084 category group 71 for UPH requirements.

6.3. Category Group 73, Personnel Support and Services Facilities.

6.3.1. Overview. This section provides the criteria for personnel support and services facilities. For all personnel support and services facilities not included in this FRI, see DAFMAN32-1084 for facility requirements.

6.3.1.5. Security Forces Operations (CATCODE: 730835). This facility is the command center for the direction of security, law enforcement, police services, investigation, training, information and personnel security, resource protection, and confinement operations. SOF security forces embed within Security Forces Squadron (SFS) CONUS or the Special Operations Support Squadron (SOSS) OCONUS. SOF security forces are composed of Deployed Aircraft Ground Response Element (DAGRE) teams and logistics support packages. Links to AFSOC SOF Security Forces requirements are found below.

Table 6.1. AFSOC SOF Security Forces Requirements.

SOF Security Forces

6.4. Category Group 74, Indoor Services Facilities. Since there are no SOF-unique requirements for Indoor Services Facilities, see DAFMAN32-1084 category group 71 for Indoor Services Facilities requirements.

Chapter 7

WEAPON SYSTEM REQUIREMENTS

7.1. CV-22 Facility Requirements.

7.1.1. Weapon System Characteristics. The armament for the CV-22 includes either a .50-caliber (50-cal) or M240D machine gun.

7.1.2. Aircraft Description. The CV-22 Osprey is a multi-mission tilt-rotor design combining the Vertical Take Off and Landing (VTOL) capabilities of a helicopter with the speed, range, and service ceiling of a turboprop aircraft. The aircraft is twin-engine, twin-propeller, high-wing, twin-tail design with retractable landing gear. The wing can be rotated and stowed to provide a compact storage envelope for parking/stowage configuration. An aft ramp is provided for loading and unloading of troops and cargo. External cargo is carried on a tandem hook suspension system for highspeed transport. The rotor blades are all composite construction. A replaceable leading-edge abrasion strip protects against erosion and covers the blades' electrical deicing elements. Rotor blade folding hinges, and pitch and flap axis lockouts permit automatic folding to meet shipboard requirements.

7.1.2.1. Crew and Systems. The normal flight crew consists of 4 personnel (pilot, copilot, and two flight engineers). To enhance survivability, the CV-22 incorporates an Electronic Warfare (EW) group of systems, including the Suite of Integrated Radio Frequency Countermeasures (SIRFC), a dedicated EW display, a chaff and flare countermeasures dispensing system, a Multi-Mission Advanced Tactical Terminal (MATT), and a Directional Infrared Countermeasures (DIRCM) system. This integrated EW suite provides the aircrew with real-time threat display, near real-time geolocated threat information, threat jamming, and chaff/flare dispensing capability. The aircraft is also equipped with multi-mode Terrain Following/Terrain Avoidance (TF/TA) radar, a Traffic Alert/Collision Avoidance System (TCAS), Low Probability of Intercept Altimeter (LPIA), additional fuel storage capacity for longer range, a survivor locator system, additional radios, and upgraded computers.

7.1.3. Aircraft Principal Dimensions. The CV-22 aircraft has a three-blade rotor mounted on a tilting nacelle on each wing tip that is 38 ft in diameter. The rotors turn in opposite directions for torque balance, with the right rotor turning counterclockwise when viewed from above (in the VTOL mode). The nacelles can be tilted such that the rotor shaft can operate in any orientation between 7.5 degrees aft of vertical, through vertical (VTOL mode), to horizontal (airplane mode). The nacelle angle range is from 0-degrees at horizontal to 97.5-degrees at vertical. The nacelle tilt forward angle is 45-degrees minimum while the aircraft is on the ground and is in operation. The nacelle tilt forward angle while in maintenance is 0 degrees (AFSOC/A5RX). See [Table 7.1.1.](#) for block dimensions and [Figure 7.1.1.](#) for the flight ready aircraft dimensions and [Table 7.1.2.](#) for all five different configuration dimensions of the CV-22.

Table 7.1.1. CV-22 Block Dimensions.

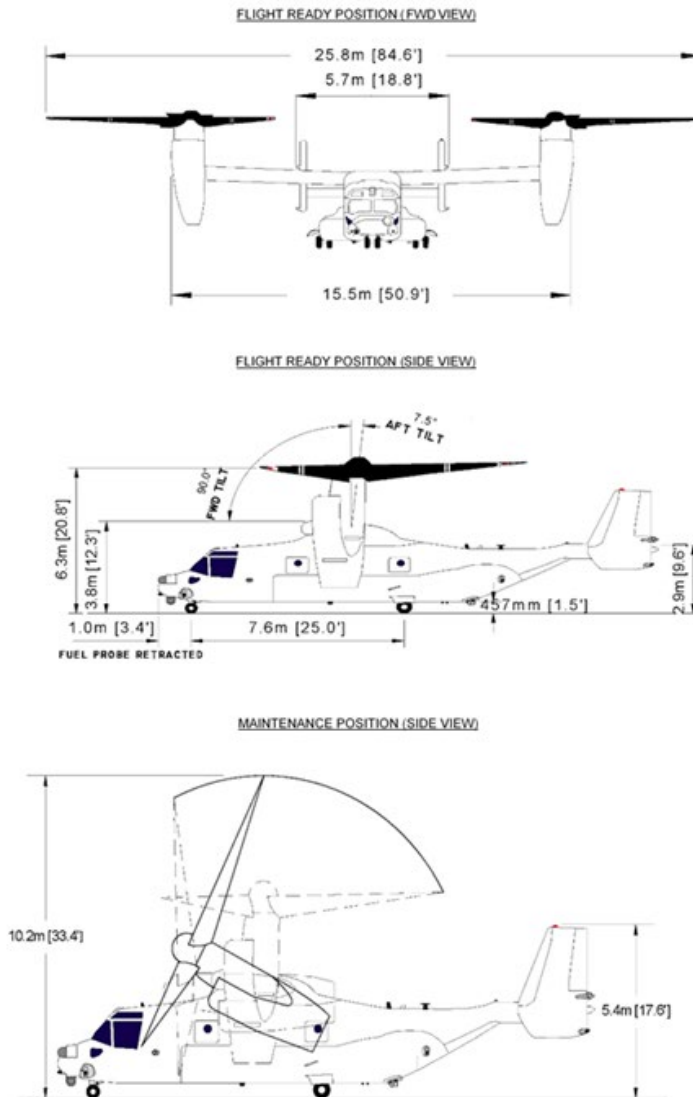
Block Dimension Detail	Width meters [m] (feet [ft])	Length m (ft)	Height m (ft)
Fuel Probe Retracted	25.8 (84.6)	20.3 (66.5)	10.2 (33.4)

Note:

1. For planning purposes, the block dimensions for the CV-22 used to calculate hangar, apron, and airfield pad clearances/dimensions include the fuel probe extended dimensions.

Table 7.1.2. CV-22 Configuration Dimensions.

CV-22 Configuration	Width m (ft)	Length m (ft)	Height m (ft)
Flight Ready Position (Fuel Probe Extended)	25.8 (84.6)	20.3 (66.5)	6.9 (22.6)
Flight Ready Position (Fuel Probe Retracted)	25.8 (84.6)	17.6 (57.8)	6.9 (22.6)
Maintenance Position (Fuel Probe Extended)	25.8 (84.6)	20.3 (66.5)	10.2 (33.4)
Maintenance Position (Fuel Probe Retracted)	25.8 (84.6)	17.6 (57.8)	10.2 (33.4)

Figure 7.1.1. CV-22 Aircraft Dimensions.

7.1.4. Aircraft Weights/Wheel Loads.

Table 7.1.3. CV-22 Gross Weight Summary.

Configuration	Special Operations Forces Kilograms [kg] (pounds [lbs])	Self- Deployment kg (lbs)
Empty Weight	16,783 (37,000) ¹	15,864 (34,974)
Useful Load	10,116 (22,303)	8,945 (19,720)
Fuel (Total)	7,238 (15,956)	8,217 (18,116)
Fuel Internal	6,187 (13,641)	6,187 (13,641)
Mission Auxiliary Tank (MAT) Capacity	1,628 liters (430 gallons)	1,628 liters (430 gallons)
Forward MAT (430 gallons or 2,881 lbs)	1,050 (2,315) ¹	1,050 (2,315) ²
Mid MAT (430 gallons or 2,881 lbs)	Not applicable (N/A)	980 (2,160) ²
Unusable Fuel	35.5 (78.3)	47.8 (105.3)
Troops	2,164 (4,770)	N/A
Crew	339 (880)	339 (880)
Other	238 (524)	238 (524)
Gross Weight (Empty Weight plus Useful Load)	25,980 (57,277)	24,809 (54,694)
Notes: 1. Includes SOF Mission Kits 2. Crash load limitation		

Table 7.1.4. CV-22 Maximum Aircraft Weights.

Configuration	kg (lbs) or specified units
Maximum Vertical Takeoff Weight	23,859 (52,600)
Maximum Short Takeoff Weight	22,855 (57,000)
Maximum Gross Takeoff Weight	27,442 (60,500)
Cargo Floor Weight	0.1465 kg/square centimeter (cm ²) (300 pounds per square foot [psf])

7.1.5. **Aircraft Mooring Arrangement.** The Air Force has no standard airfield tie-down pattern at this time, but is in the process of establishing a standard for use in new construction. Until published, apron tiedown fittings should have a minimum of 4,535.9 kg (10,000 lb) vertical strength (allowable load). See [Figure 7.1.2.](#) and [Figure 7.1.3.](#) for the typical CV-22 tie-down pattern.

Table 7.1.5. CV-22 Tie-down Chains Required by Wind Speed.

Wind Speed	Total Chains Required
Up to 45 knots (KTS)	4
Over 45 KTS	10

Figure 7.1.2. Typical CV-22 Tie-down Pattern (top view).

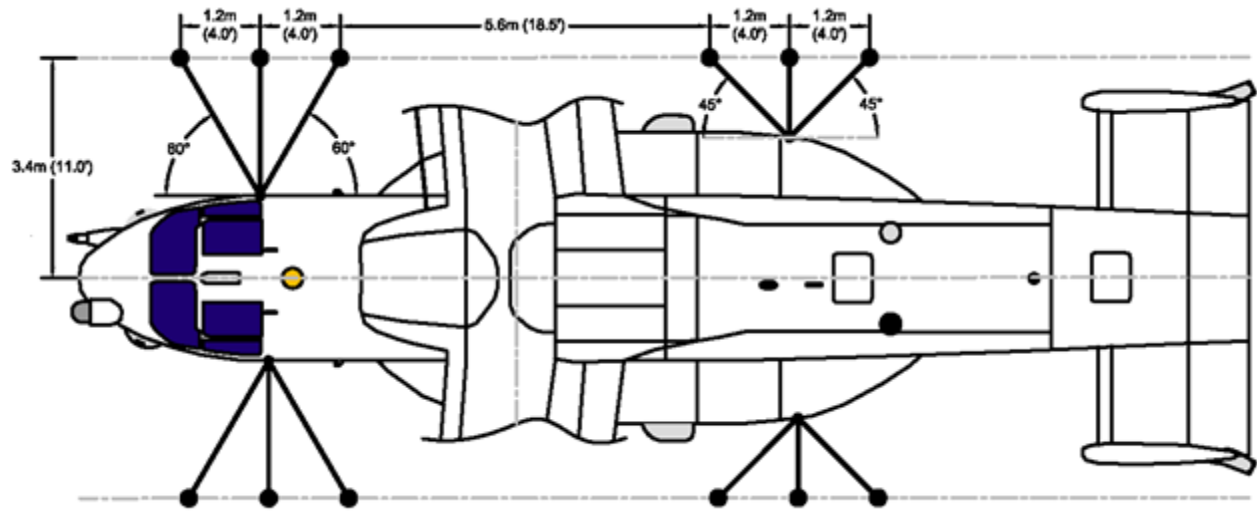
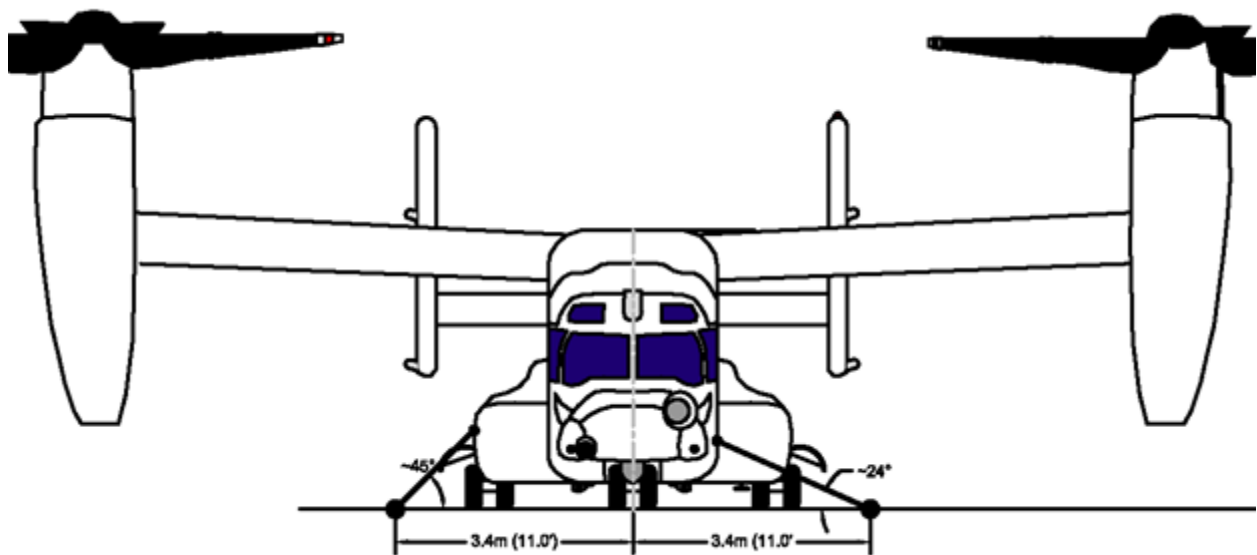


Figure 7.1.3. Typical CV-22 Tie-down Pattern (front view).



7.1.6. Minimum Takeoff and Landing Requirements.

7.1.6.1. **Reference.** See Paragraph 1.11., Base Operations Facilities - Airfield Requirements, for the minimum runway length required for the CV-22 and other airfield requirements.

7.1.6.2. **Takeoff.** The minimum ground roll takeoff distance for the CV-22 is 675 ft at the maximum VTOL gross weight of 52,600 lbs. See [Table 7.1.6.](#) for CV-22 takeoff distances at maximum weights by configuration.

Table 7.1.6. CV-22 Rolling Takeoff Distance at Maximum Weights.

Aircraft Configuration	Aircraft Weight kg (lbs)	Ground Roll Distance ¹ m (ft)
Maximum VTOL Gross Weight	23,859 (52,600)	205 (675)
Maximum Short Takeoff Gross Weight	22,855 (57,000)	289 (950)
Maximum Self-Deploy Gross Weight	27,442 (60,500)	342 (1,125)
Note: 1. Nacelle Angle 60 Degrees, All Engines Operating 100 percent (%) Nr, Autoflaps, Sea-level, (+20 degrees Celsius (°C), < 5 Knot Headwind)		

7.1.6.3. **Landing.** The minimum ground roll distance for the CV-22 is 850 ft at an aircraft weight of 45,000 lbs. This weight includes approximately 10,000 lbs on top of the aircraft empty weight for crew, fuel, cargo, etc. See [Table 7.1.7.](#) for CV-22 ground roll landing distances at weights that account for crew, fuel, and cargo variations.

Table 7.1.7. CV-22 Landing Ground Roll Distance.

Aircraft Weight kg (lbs)	Ground Roll Distance ¹ m (ft)
20,412 (45,000)	259 (850)
22,680 (50,000)	381 (1,250)
24,948 (55,000)	579 (1,900)
27,216 (60,000)	777 (2,550)
Note: 1. Nacelle Angle 85 Degrees, All Engines Operating 100%Nr, Autoflaps, Sea Level, Calm Wind, +5°C	

7.1.7. **Unique Maintenance Requirements.** The CV-22 has various systems that require periodic servicing and replenishment. However, none of these items drive a facility requirement that is not met within the minimum requirements of the maintenance hangar and other maintenance and intermediate maintenance facilities.

7.1.8. **Unique Power Requirements.** The aircraft 400 Hertz (Hz) external power receptacle is located on the left side of the aircraft at Station 304. External 400 Hz power must be within the following voltage and frequency limits for the Aircraft External Power Monitor to operate and to prevent possible damage to the aircraft equipment (MIL-STD-704):

7.1.8.1. **Voltage:** 113 to 118 volts (V) per phase.

7.1.8.2. **Frequency:** 393 to 407 Hz.

7.1.8.3. **Phase Sequence:** A-B-C.

7.1.8.4. **Current:** CV-22 Total Continuous Ground Maintenance Modes require 21.1 kilovolt-ampere (kVA) maximum.

7.1.8.5. **Direct Current (DC) Voltage:** 24 to 29 V.

7.1.8.6. **Aircraft External Power Receptacle:** Part Number (P/N) MS90362-1, current rating 60 kVA nominal.

7.1.8.7. Aircraft Input Power Cable.

7.1.8.7.1. Cable Assembly. 115/200 V 400 Hz Power, four-conductor, wire size 00, with two # 12 American wire gauge (AWG) control leads, current rating 75 kVA nominal.

7.1.8.7.2. Multiple cable lengths are identified as P/N MS90328-34M [18.3 m (60 ft) with molded plug], P/N MS90328-35M [24.4 m (80 ft) with molded plug], and P/N MS90328-36M [30.5 m (100 ft) with molded plug].

7.1.9. CV-22 Operational Squadron Characteristics.

7.1.9.1. CV-22 UTC Construct, Crew Ratio, and Crew Complement.

7.1.9.1.1. UTC Construct. The CV-22 currently has two UTC constructs: one for CONUS and another for OCONUS forces. A CONUS UTC consists of 5 PMAI and 1 BAI (6 total airframes), while an OCONUS UTC consists of 3 PMAI and 1 BAI (4 total airframes).

7.1.9.1.2. Crew Ratio and Crew Complement. The normal flight crew for the CV-22, as detailed in [Paragraph 7.1.2.](#), is 4 personnel (PN). The crew ratio is the number of crews required to support deployments and dwell times for the unit. The CV-22 crew ratio is 1.5 crews per PMAI. The number of flight crew is calculated as follows: number of flight crew x crew ratio x number of PMAI. Thus, a larger flight crew or crew ratio will result in larger facilities required to support additional personnel, and vice versa.

7.1.9.1.3. Notional Squadron Concepts. For planning purposes, this FRI provides facility space requirements for the three most common CV-22 squadron scenarios: 1 CONUS UTC (5 PMAI, 1 BAI); 2 CONUS UTCs (10 PMAI, 1 BAI), which represents a full CONUS squadron; and 2 OCONUS UTCs, which represents a full OCONUS squadron. To ensure the most accurate facility space requirements possible, consult AFSOC/A3O/A4I for the latest information regarding the current CV-22 UTC construct, crew ratio, and crew complement. Notional manpower for CV-22 special operations squadrons (SOSs) is presented in [Tables 7.1.8](#), 7.1.9, and 7.1.10. Notional manpower for CV-22 maintenance squadrons is presented in [Tables 7.1.11](#), 7.1.12, and 7.1.13.

Table 7.1.8. CV-22 CONUS Operations Squadron Notional Manpower, 1 UTC (5 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	Commander Support Staff	0	1	1	2
SOS	First Sergeant	0	0	0	0
SOS	Aviation Resource Management	0	3	0	3
SOS	Flight Crews @ Crew Ratio (CR) 1.5 ¹	15	15	0	30
	SOS Total	17	19	1	37
SOSS	Aerospace Medicine	1	2	0	3

Unit	Function	Officer	Enlisted	Civilian	Total
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	3	0	3
SOSS	Electronic Intelligence (ELINT) Analysis	0	1	0	1
SOSS	AFE	0	5	0	5
SOSS	Operations Data Management	0	1	0	1
	SOSS Total	1	13	0	14
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
SOG	Knowledge Operations	0	0	0	0
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3}	23	36	1	60

Notes:

1. Per AFI 65-503 Attachment 36-1 the crew ratio for the CV-22 will be 1.5.
2. Per the AFSOC/CC: The current CONUS UTC concept will be a 5-ship configuration. In this case that equals 5 PMAI and 1 BAI (total of 6 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.1.9. CV-22 CONUS Operations Squadron Notional Manpower, 2 UTCs (10 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	1	0	1
SOS	Commander Support Staff	0	2	1	3
SOS	Aviation Resource Management	0	6	0	6
SOS	Flight Crews @ CR 1.5 ¹	30	30	0	60
	SOS Total	32	39	1	72
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	6	0	6
SOSS	ELINT Analysis	0	1	0	1
SOSS	AFE	0	10	0	10
SOSS	Operations Data Management	0	1	0	1
	SOSS Total	1	21	0	22
SOG	Standardization and Evaluation	1	1	0	2
	Weapons and Tactics	2	2	0	4
SOG	Knowledge Operations	0	0	0	0
	SOG Total	1	1	0	2
SOW	Flight Safety	1	0	0	1

Unit	Function	Officer	Enlisted	Civilian	Total
SOW	Plans and Programs	1	2	0	3
	SOW Total	2	2	0	4
	TOTAL OPERATIONS^{2,3}	37	61	1	99

Notes:

1. Per AFI 65-503 Attachment 36-1 the crew ratio for the CV-22 will be 1.5.
2. Per the AFSOC/CC: The current CONUS UTC concept will be a 5-ship configuration. In this case that equals 10 PMAI and 1 BAI (total of 11 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.1.10. CV-22 OCONUS Operations Squadron Notional Manpower, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	1	0	1
SOS	Commander Support Staff	0	1	2	3
SOS	Aviation Resource Management	0	4	0	4
SOS	Flight Crews @ CR 1.5 ¹	18	18	0	36
	SOS Total	20	23	2	45
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	4	0	4
SOSS	ELINT Analysis	0	1	0	1
SOSS	AFE	0	6	0	6
SOSS	Operations Data Management	0	1	0	1
	SOSS Total	1	15	0	16
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
SOG	Knowledge Operations	0	0	0	0
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3}	26	42	2	70

Notes:

1. Per AFI 65-503 Attachment 36-1 the crew ratio for the CV-22 will be 1.5.
2. Per the AFSOC/CC: The current OCONUS UTC concept will be a 3-ship configuration. In this case that equals 6 PMAI and 1 BAI (total of 7 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.1.10. CV-22 Maintenance Squadron Characteristics.

Table 7.1.11. CV-22 CONUS Maintenance Squadron Notional Manpower, 1 UTC (5 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOAMXS	AMU OIC/Chief	1	0	0	1
SOAMXS	Production Superintendent	0	1	0	1
SOAMXS	Production Staff (Expeditors)	0	4	0	4
SOAMXS	Lead Crew Chiefs	0	3	0	3
SOAMXS	Aircraft Section (Crew Chief)	0	30	0	30
SOAMXS	Specialist Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Specialist Section Staff	0	58	0	58
SOAMXS	Support Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Support Section Staff	0	4	0	4
SOAMXS	Weapons Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Weapons Section Staff	0	14	0	14
	Subtotal SOAMXS Sections	1	117	0	118
SOAMXS	SOAMXS Overhead	2	5	0	7
	Total SOAMXS	3	122	0	125
SOMXS	Fabrication Flight	0	8	0	8
SOMXS	Accessories Flight	0	6	0	6
SOMXS	AGE Flight	0	3	0	3
SOMXS	Munitions Flight	0	2	0	2
SOMXS	Maintenance Support Flight	0	5	0	5
SOMXS	Propulsion Flight	0	3	0	3
SOMXS	Avionics Flight	0	3	0	3
SOMXS	Armament Flight	0	3	0	3
	Subtotal SOMXS Sections	0	34	0	34
SOMXS	SOMXS Overhead	2	5	0	7
	Total SOMXS	2	38	0	40
SOMXG	SOMXG Overhead	2	1	0	3
	Total SOMXG	2	1	0	3
	TOTAL MAINTENANCE^{1,3}	7	161	0	168
	SPA^{2,4}				33.5

Notes:

1. Per the AFSOC/CC: The current CONUS UTC concept will be a 5-ship configuration. In this case that equals 5 PMAI and 1 BAI (total 6 airframes).
2. Per AFSOC/A1M, the current SPA for CV-22 CONUS units is 33.5.
3. Per AFSOC/A1M, assume the total maintenance breaks down into 10% overhead (includes SOMXG, SOAMXS, and SOMXS), 70% SOAMXS sections, and 20% SOMXS sections. The notional manpower breakdown is based on existing unit structures and logistics composite models (LCOMs) and should be used for facility programming purposes only.
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.1.12. CV-22 CONUS Maintenance Squadron Notional Manpower, 2 UTCs (10 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOAMXS	AMU OIC/Chief	1	0	0	1
SOAMXS	Production Superintendent	0	1	0	1
SOAMXS	Production Staff (Expeditors)	0	5	0	5
SOAMXS	Lead Crew Chiefs	0	4	0	4
SOAMXS	Aircraft Section (Crew Chief)	0	62	0	62
SOAMXS	Specialist Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Specialist Section Staff	0	121	0	121
SOAMXS	Support Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Support Section Staff	0	9	0	9
SOAMXS	Weapons Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Weapons Section Staff	0	29	0	29
	Subtotal SOAMXS Sections	1	234	0	235
SOAMXS	SOAMXS Overhead	2	8	0	10
	Total SOAMXS	3	242	0	245
SOMXS	Fabrication Flight	0	17	0	17
SOMXS	Accessories Flight	0	13	0	13
SOMXS	AGE Flight	0	7	0	7
SOMXS	Munitions Flight	0	3	0	3
SOMXS	Maintenance Support Flight	0	10	0	10
SOMXS	Propulsion Flight	0	5	0	5
SOMXS	Avionics Flight	0	5	0	5
SOMXS	Armament Flight	0	5	0	5
SOMXS	TMDE Flight	0	1	0	1
	Subtotal SOMXS Sections	0	67	0	67
SOMXS	SOMXS Overhead	2	8	0	10
	Total SOMXS	2	74	0	76
SOMXG	SOMXG Overhead	2	12	0	14
	Total SOMXG	2	12	0	14
	TOTAL MAINTENANCE^{1,3}	7	328	0	335
	SPA^{2,4}				33.5

Notes:

1. Per the AFSOC/CC: The current CONUS UTC concept will be a 5-ship configuration. In this case that equals 10 PMAI and 1 BAI (total 11 airframes).
2. Per AFSOC/A1M, the current SPA for CV-22 CONUS units is 33.5.
3. Per AFSOC/A1M, assume the total maintenance breaks down into 10% overhead (includes SOMXG, SOAMXS, and SOMXS), 70% SOAMXS sections, and 20% SOMXS sections. The notional manpower breakdown is based on existing unit structures and LCOMs and should be used for facility programming purposes only.
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.1.13. CV-22 OCONUS Maintenance Squadron Notional Manpower, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOAMXS	AMU OIC/Chief	1	0	0	1
SOAMXS	Production Superintendent	0	1	0	1
SOAMXS	Production Staff (Expeditors)	0	4	0	4
SOAMXS	Lead Crew Chiefs	0	3	0	3
SOAMXS	Aircraft Section (Crew Chief)	0	39	0	39
SOAMXS	Specialist Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Specialist Section Staff	0	76	0	75
SOAMXS	Support Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Support Section Staff	0	6	0	6
SOAMXS	Weapons Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Weapons Section Staff	0	18	0	18
	Subtotal SOAMXS Sections	1	149	0	150
SOAMXS	SOAMXS Overhead	2	6	0	8
	Total SOAMXS	3	155	0	158
SOMXS	Fabrication Flight	0	11	0	11
SOMXS	Accessories Flight	0	9	0	9
SOMXS	AGE Flight	0	5	0	5
SOMXS	Munitions Flight	0	2	0	2
SOMXS	Maintenance Support Flight	0	6	0	6
SOMXS	Propulsion Flight	0	3	0	3
SOMXS	Avionics Flight	0	3	0	3
SOMXS	Armament Flight	0	3	0	3
SOMXS	TMDE Flight	0	1	0	1
	Subtotal SOMXS Sections	0	43	0	43
SOMXS	SOMXS Overhead	2	6	0	8
	Total SOMXS	2	49	0	51
SOMXG	SOMXG Overhead	2	3	0	5
	Total SOMXG	2	3	0	5
	TOTAL MAINTENANCE^{1,3}	7	207	0	214
	SPA^{2,4}				35.56

Notes:

1. Per the AFSOC/CC: The current CONUS UTC concept will be a 3-ship configuration. In this case that equals 6 PMAI and 1 BAI (total 7 airframes).
2. Per AFSOC/A1M, the current SPA for CV-22 CONUS units is 35.56.
3. Per AFSOC/A1M, assume the total maintenance breaks down into 10% overhead (includes SOMXG, SOAMXS, and SOMXS), 70% SOAMXS sections, and 20% SOMXS sections. The notional manpower breakdown is based on existing unit structures and LCOMs and should be used for facility programming purposes only.
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.1.11. CV-22 Base Operations Ground Facilities - Airfield Requirements.

7.1.11.1. Runways CATCODE: 111111.

7.1.11.1.1. Requirements Determination. As a tilt-rotor aircraft, the CV-22 requires a runway to perform normal takeoff and landings operations, especially when the aircraft is at or near its maximum gross weight. The minimum runway length is provided to show only the minimum runway requirements and should not be interpreted to imply that all operations can be performed at this length. A1-V22AC-AFM-000 or the latest flight manual should always be consulted to assure runway acceptability.

7.1.11.1.2. Runway Length. The required minimum runway length for the CV-22 is 1,600 ft (UFC 3-260-01, Table 4-1). CV-22 aircraft may require runways shorter or greater in length depending on the aircraft weight and configuration (Short Takeoff, VTOL, rolling landing, etc.). See [Table 7.1.6.](#) and [Table 7.1.7](#) for takeoff and landing distances at various aircraft weights. Bell-Boeing FRD Paragraph 3.1.2. states that a runway of 5,400 linear feet (LF) should accommodate most CV-22 operations, but A1-V22AC-AFM-000 is the determining guidance document and must be referred to in identifying runway acceptability. Per UFC 3-260-01, “V-22 will be considered a fixed-wing aircraft, and the runway will be planned according to critical field length (CFL).” A1-V22AC-AFM-000 states that approximately 6,500 LF is required for single engine landing.

7.1.11.1.3. Runway Width. The minimum runway width for the CV-22 is 100 ft (Bell-Boeing FRD Paragraph 3.1.2.).

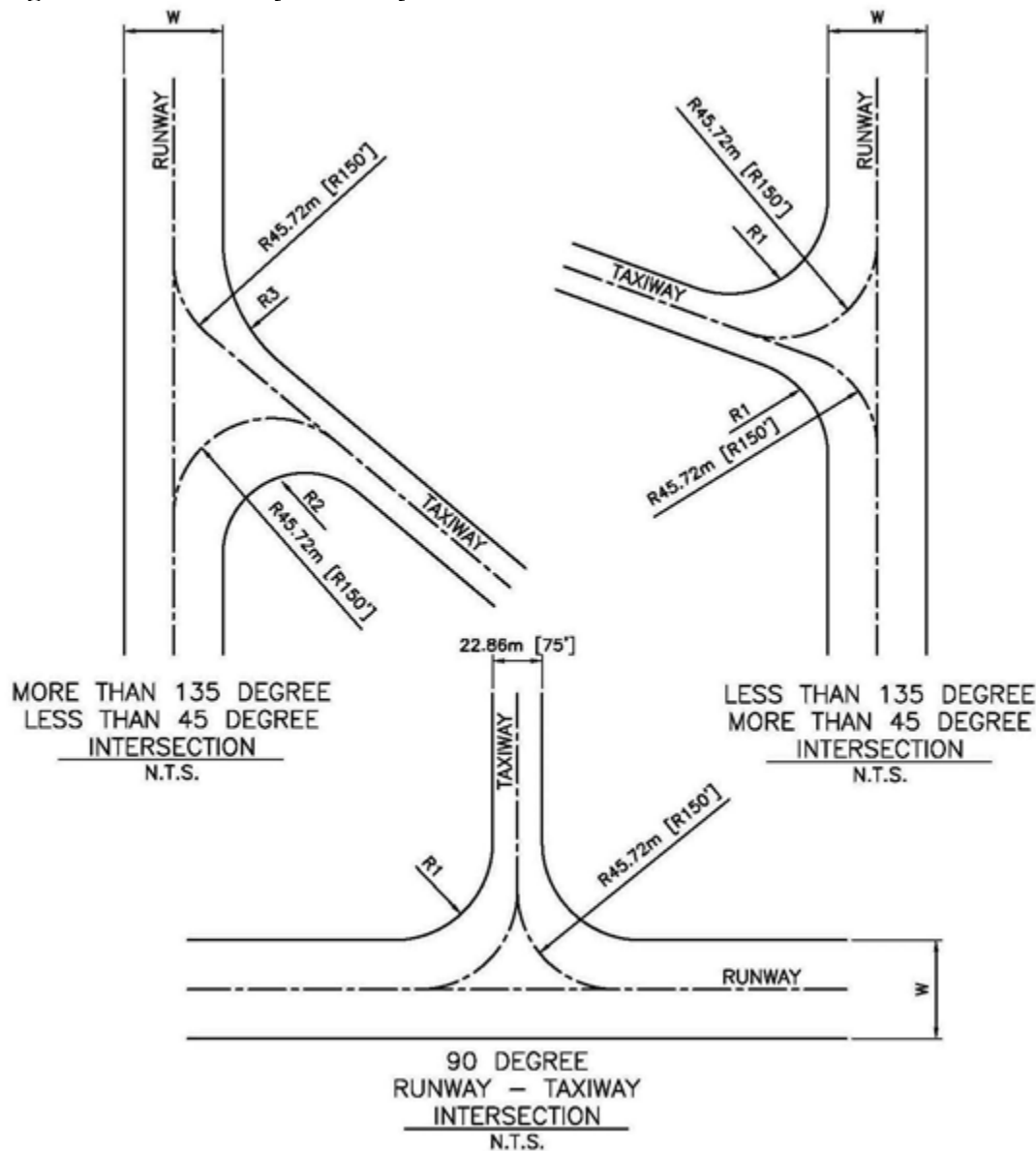
7.1.11.1.4. Shoulders. A minimum of 25 ft of paved shoulders on each side of a runway should be provided for the CV22 (DAFMAN 32-1084, CC 111111 Runways, Table 5).

7.1.11.1.5. Runway/Taxiway Intersection Fillet Radii. See Table 7.1.14. and Figure 7.1.4.

Table 7.1.14. Runway/Taxiway Intersection Fillet Radii.

Runway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	R1 ^{1,3}	R2 ²	R3 ²
More than 75 ft but less than 150 ft	150	125	250
150 ft or more	125	125	250
Notes: 1. Less than 135 and more than 45-degree intersection 2. More than 135 and less than 45-degree intersection 3. 90-degree intersection			

Figure 7.1.4. Runway-Taxiway Intersection Fillet Radii.



7.1.11.2. Paved Overrun (CATCODE: 111115).

7.1.11.2.1. Requirements Determination. All runways are required to have paved overruns.

7.1.11.2.2. Length (min.). The CV-22 paved overrun minimum length for runways is 75 ft (Bell-Boeing FRD Paragraph 3.1.3.).

7.1.11.2.3. Width (min.). The CV-22 paved overrun minimum width for runways is 150 ft [100 ft runway width plus 25 ft on each side] (UFC 3-260-01, Table 4-5, Item 3, Remarks).

7.1.11.3. Taxiway (CATCODE: 112211).

7.1.11.3.1. Requirements Determination. Taxiways are required for all runways.

7.1.11.3.2. Taxiway Width. The minimum taxiway width for CV-22 airfields is 75 ft (Bell-Boeing FRD, Paragraph 3.1.4.).

7.1.11.3.3. Taxiway Paved Shoulders. The minimum paved taxiway shoulder width for CV-22 airfields is 25 ft (Bell-Boeing FRD, Paragraph 3.1.4. and UFC 3-260-01, Table 5-3, Item 2

7.1.11.3.4. Taxiway Clearance Line (Fixed or Mobile Objects). The taxiway clearance line for fixed or mobile objects for CV-22 airfields with Class A runways is 150 ft or 200 ft for Class B runways (UFC 3-260-01, Table 5-1, Item 10).

7.1.11.3.5. Taxiway Clearance Line (Parallel Taxiway). The taxiway clearance line for parallel taxiways for CV-22 airfields with Class A runways is 175 ft and 237.5 ft for Class B runways (UFC 3-260-01, Table 5-1, Item 11).

7.1.11.3.6. Taxiway Centerline Radius. The taxiway centerline radius is the taxiway width divided by 2 and added to 100 ft. The minimum taxiway centerline radius is 137.5 ft ($75 / 2 + 100 = 137.5$ ft). The centerline turning radius used to determine the fillet radii for [Figure 7.1.4.](#) and [Figure 7.1.5.](#) below is 150 ft and 125 ft respectively.

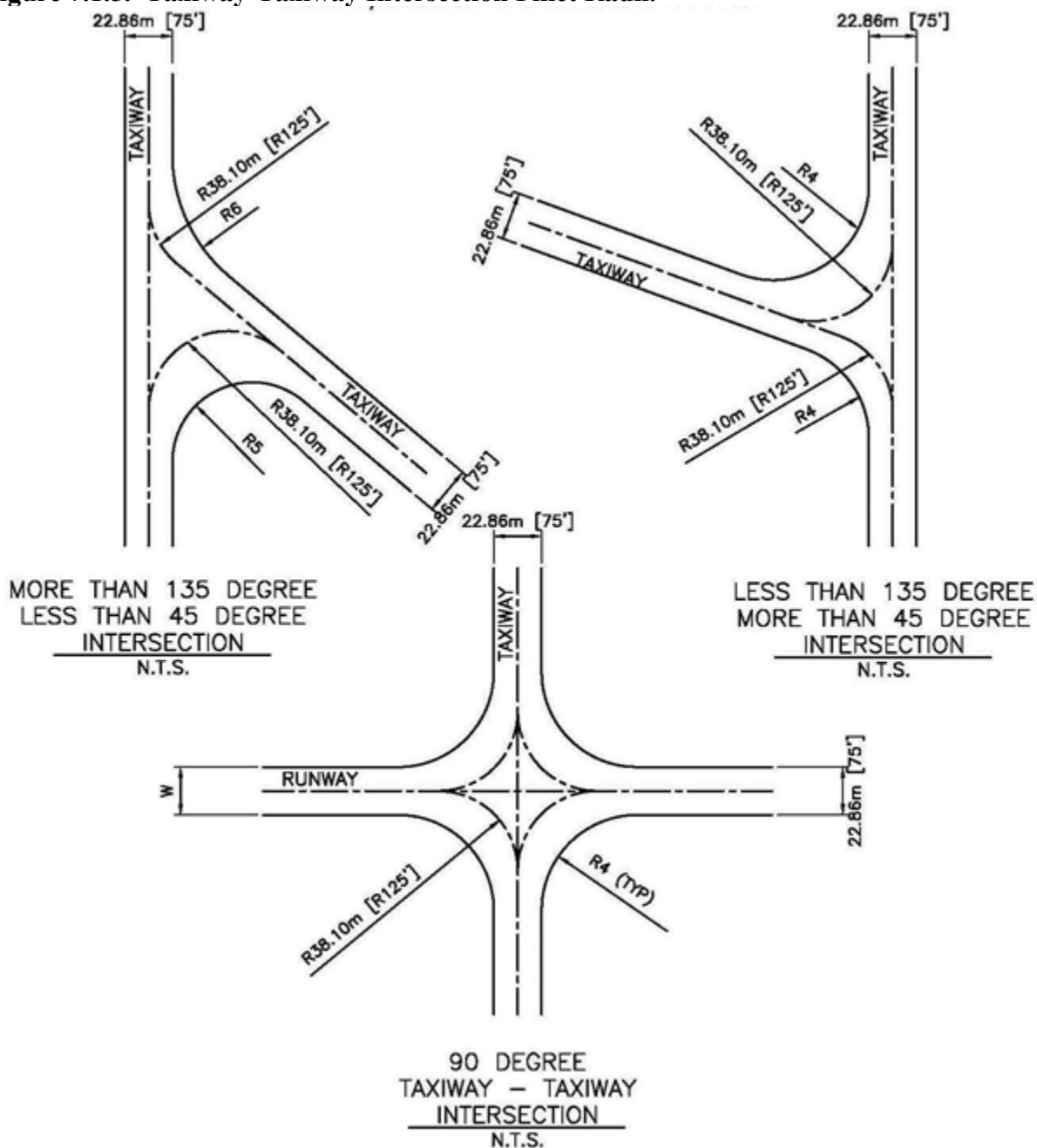
7.1.11.3.7. Taxiway/Taxiway Intersection Fillet Radii. See Table 7.1.15. and [Figure 7.1.5.](#)

7.1.11.3.8. Wingtip Clearances for Taxiing. The wingtip clearance of a parked CV-22 aircraft is 42 ft (UFC 3-260-01, Table 6-1, Item 4 and UFC 3-260-01, Figure 6-42). Wingtip clearance of aircraft on interior or secondary peripheral taxilanes is 80 feet (UFC 3-260-01, Table 6-1, Item 5 and UFC 3-260-01, Figure 6-42). Wingtip clearance on each side of moving aircraft on interior taxilanes is 42.5 feet (UFC 3-260-01, Table 6-1, Item 6 and UFC 3-260-01 Figure 6-38).

Table 7.1.15. Taxiway/Taxiway Intersection Fillet Radii.

Taxiway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	R4 ^{1,3}	R5 ²	R6 ²
75 ft	150	125	250
Notes: 1. Less than 135 and more than 45-degree intersection 2. More than 135 and less than 45-degree intersection 3. 90-degree intersection			

Figure 7.1.5. Taxiway-Taxiway Intersection Fillet Radii.



7.1.11.4. Apron (CATCODE: 113321).

7.1.11.4.1. Requirements Determination. Aprons are individually designed to support specific aircraft and missions at a particular installation. The actual dimensions of an apron are based on the number of authorized aircraft, maneuvering space, and type of activity the apron serves. (DAFMAN 32-1084, CC 113321, Paragraph 1.2). The actual dimensions of an operational parking apron for the CV-22 are based on the number of PMAI minus any authorized covered maintenance spaces. It does not include the number of BAI, PTAI, or transient requirements as these are typically located on

separate aprons or in a separate hangar. When factoring for other aircraft inventory on a single apron, consider all aircraft inventories as applicable in the total number of aircraft and follow the steps laid out in **paragraph 7.1.11.4.2**. The minimum apron clearances allowed between CV-22 aircraft are listed in **Table 7.1.16**, and **Figure 7.1.6**.

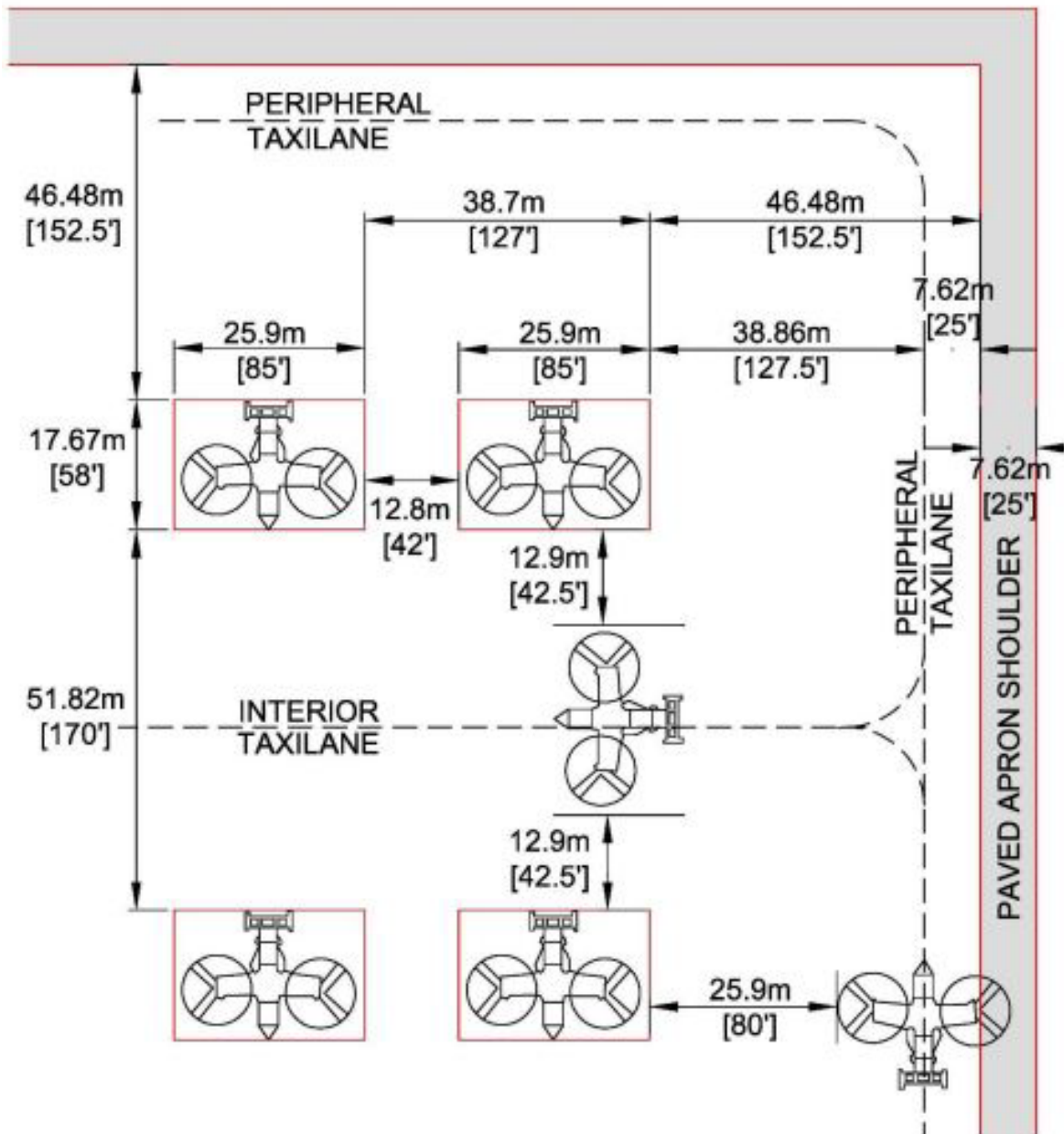
7.1.11.4.2. Scope Determination. Multiply the wingspan of the selected aircraft by its length. Multiply the product by a factor determined by the number of aircraft being supported (DAFMAN 32-1094, CC 113321 Apron, Paragraph 1.3.7). For 3 or fewer aircraft use a multiplier of 11.9. For between 4 and 8 aircraft use a multiplier of 9.5. For between 9 and 11 aircraft use a multiplier of 9.1. For 12 or more aircraft use a multiplier of 8.8.

7.1.11.4.2.1. Access to Hangars, Docks, and Shelters. Apron configuration is influenced by the size of the door openings and by the dimensions and turning radius of the largest aircraft using the buildings. A mass apron or a taxiway configuration is used depending on access requirements. To avoid building non-usable pavement, design for adequate wingtip clearances of any obstacle near the apron. For the CV-22, the minimum length of an apron to access hangars, docks, and shelters is 75 ft, although 100 ft is highly desirable (UFC 3-260-01, Table 6-5, Item 1). The width is equal to that of the hangar being accessed.

7.1.11.4.2.2. Operational Aircraft. Operational aircraft are parked on mass aprons, strip aprons, or where authorized, on dispersed stubs. To determine how many operational aircraft require apron space, proceed as follows: Begin with 100 percent of the assigned aircraft as established by official documents; subtract the number of aircraft located on separate aprons, such as alert aircraft; subtract the number of aircraft located in maintenance hangars or docks under normal maintenance schedules; and finally, subtract aircraft that are parked elsewhere on existing paving of a suitable nature and location. (DAFMAN 32-1084, CC 113321, Paragraph 1.3.3). For planning purposes, this document assumes only PMAI are operational aircraft; thus, the requirements in this document reflect only PMAI calculations for facility requirements in facility summary tables.

7.1.11.4.2.3. Assigned Aircraft. Assigned aircraft consist, at a minimum, of the Primary Assigned Aircraft (PAA) inventory established from the funded flying program for the base. Many bases have other aircraft inventory that require a parking apron. This inventory varies by base and depot repair cycles. These aircraft may be annotated as backup inventory, ready reserve, or attrition reserve. Account for the monthly average of these non-primary assigned aircraft remaining on station in determining apron requirements (DAFMAN 32-1084, CC 113321, Paragraph 1.3.2). For planning purposes, summary tables in this instruction reflect operational squadron requirements or PMAI; therefore, BAI and PTAI are considered assigned aircraft that are not included in an operational squadron's facility requirements. However, the method for calculating assigned aircraft is the same: Begin with 100 percent of BAI/PTAI, subtract the number of aircraft on separate aprons, subtract the number of aircraft located in maintenance hangars or docks under normal maintenance schedules; and finally, subtract aircraft that are parked elsewhere on existing paving of a suitable nature and location.

Figure 7.1.6. CV-22 Typical Parking Apron.



NORMAL PARKING ARRANGEMENT

NOT TO SCALE

7.1.11.5. Paved Shoulders (CATCODE: 116642).

7.1.11.5.1. Requirements Determination. Paved shoulders should be provided for all operational pavement.

7.1.11.5.2. Dimensions. The paved shoulder width adjacent to all operational pavement is 25 ft (UFC 3-260-01, Table 5-3, Item 2). Shoulders should be paved at least 2 ft to extend beyond the edge lights (DAFMAN 32-1084, CC 116642 Paved Shoulders, Paragraph 1.2).

7.1.11.6. Towway.

7.1.11.6.1. Requirements Determination. Towways are required to tow the aircraft between locations, normally an apron to a hangar.

7.1.11.6.2. Scope Determination. When designing for access to a hangar, flare the pavement to the width of the hangar door from a distance beyond the hangar sufficient to allow maintenance personnel to turn the aircraft around (UFC 3-260-01, Paragraph 5-12.1). Consider the following: width, turning radius, horizontal clearance from towway centerline to fixed or mobile obstacles, vertical clearance from the towway pavement to fixed surface or mobile obstacles, and the fillet radius at intersections. Paved shoulders are not required on towways (UFC 3-260-01, Table 5-6, Item 3).

7.1.11.6.3. Width. The minimum towway width for the CV-22 is 25 ft 5 in (Bell-Boeing FRD Paragraph 3.1.14).

7.1.11.6.4. Turning Radius. The CV-22 towway turning radius is 150 ft (UFC 3-260-01, Table 5-6, Item 8).

7.1.11.6.5. Horizontal Clearance. The minimum horizontal clearance from the towway centerline for the CV-22 is 67.5 ft (Bell-Boeing FRD Paragraph 3.1.14).

7.1.11.6.6. Vertical Clearance. The minimum vertical clearance from the towway pavement for the CV-22 is 32 ft 1 in (Bell-Boeing FRD Paragraph 3.1.14).

7.1.11.6.7. Fillet Radius. The minimum fillet radius at intersections is 100 ft (UFC 3-260-01, Table 5-6, Item 9).

7.1.11.7. Helicopter Landing Pad (CATCODE: 116663).

7.1.11.7.1. Requirements Determination. Use available, suitable operational apron or pads for helicopter landing pads if available. If no apron or pads are available, or if use of existing aprons or pads is unsuitable for mission requirements, new helicopter landing pad pavement is authorized (AFSOC/A4I).

7.1.11.7.2. Scope Determination. Provide a pad sized to support the intended use of the facility. Standard visual flight rules/instrument flight rules (VFR/IFR) helipads are 100 ft x 100 ft (DAFMAN 32-1084, CC 116663 Pad Helicopter, Paragraph 1.4).

7.1.11.7.3. Dimensions. The minimum size for a standard helicopter landing pad for the CV-22 is 10,000 net square feet (NSF) (Bell-Boeing FRD, Paragraph 3.1.10).

7.1.11.7.4. Design Considerations. All helicopter pavement, whether for takeoff, landing, taxiing, or parking, is constructed for light load (DAFMAN 32-1084, CC

116663 Pad Helicopter, Paragraph 1.5). See Paragraph 7.4.12 for guidance on Airfield Pavements.

7.1.11.8. Emergency Landing Pad.

7.1.11.8.1. Requirements Determination. An area should be designated where the CV-22 can be positioned into the wind and land on secured mattresses in the event of a landing gear malfunction (Bell-Boeing FRD, Paragraph 1.2.4). This is a limited use landing pad.

7.1.11.8.2. Emergency Landing Pad Configuration. See Figure 7.1.7. for an emergency landing pad layout and Figure 7.1.8. for emergency landing pad locations.

7.1.11.8.3. Dimensions. Minimum paved area requirement for a limited use landing pad is 66.5 ft (Length of CV-22 ft with extended fuel probe) x 50 ft (VFR helipad minimum [min.]) or 3,325 NSF (DAFMAN 32-1084, CC 116663 Pad Helicopter, Paragraph 1.4).

Figure 7.1.7. Emergency Landing Pad Layout.

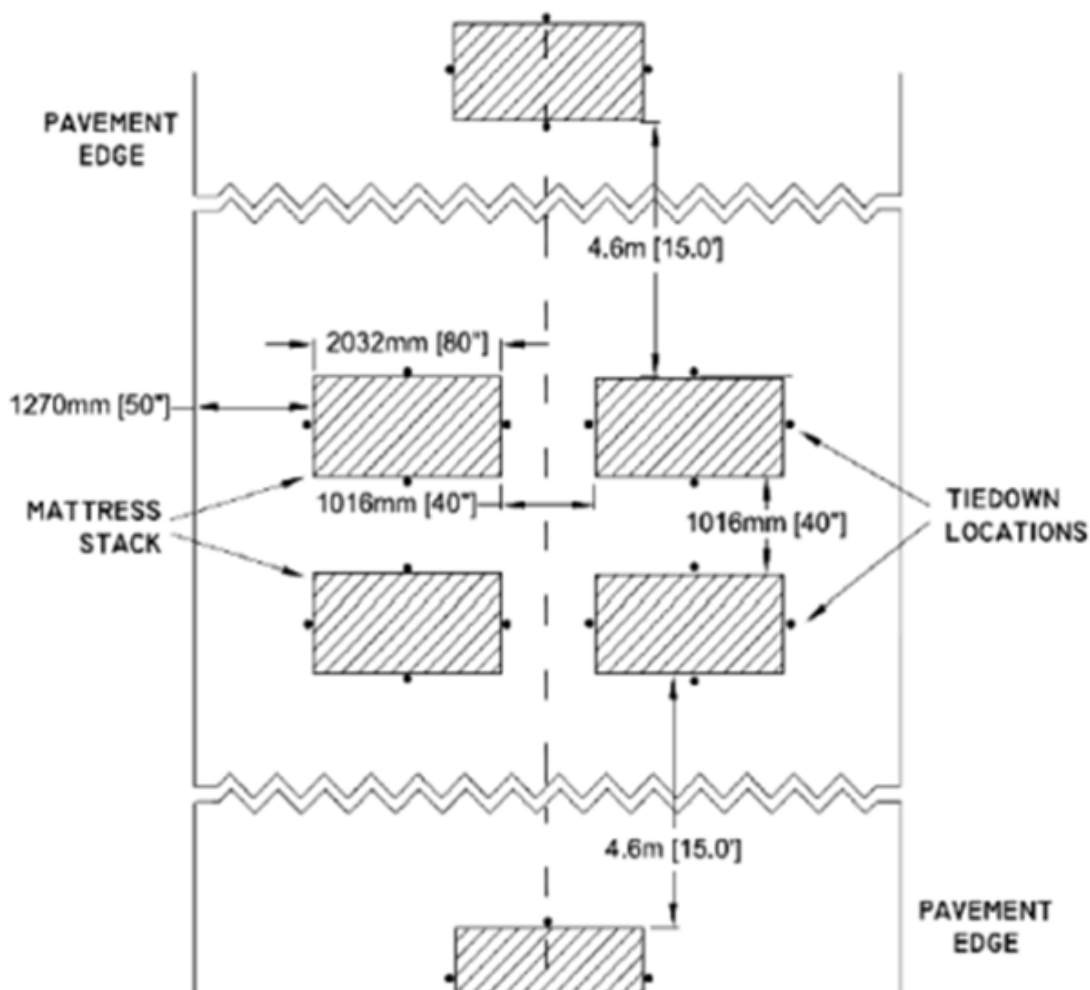
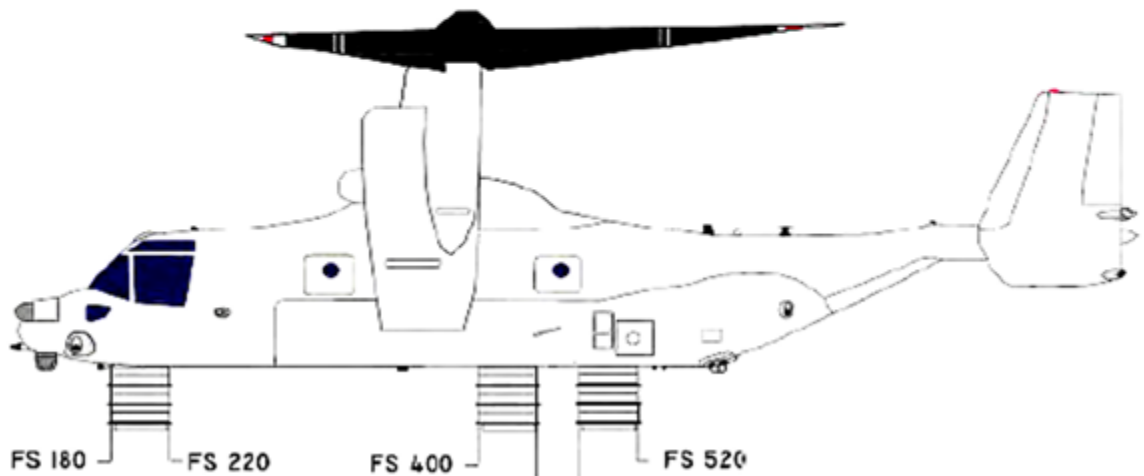


Figure 7.1.8. Emergency Landing Padding Locations.

FS = Fuselage Station

**7.1.11.9. Warm-up/Holding Pad CATCODE: 116666.**

7.1.11.9.1. Requirements Determination. A warm-up/holding pad is authorized for each end of a runway. In addition to providing a location to warm-up and hold aircraft waiting to depart, warm-up/holding pads provide a location for CV-22 aircraft to conduct hot gas refueling, Forward Area Refueling Point (FARP) training, and hot gun emergency operations.

7.1.11.9.2. Scope Determination. A warm-up/holding pad is authorized for each end of a runway sized to accommodate two aircraft (DAFMAN 32-1084, CC 116666 Pad Warm up Holding, Paragraphs 1.2 and 1.4).

7.1.11.9.3. Dimensions. The minimum warm-up/holding pad for the CV-22 is 132,789 NSF. The area is based on parking apron criteria for two CV-22 aircraft.

7.1.11.10. Aircraft Washrack CATCODE: 116672.

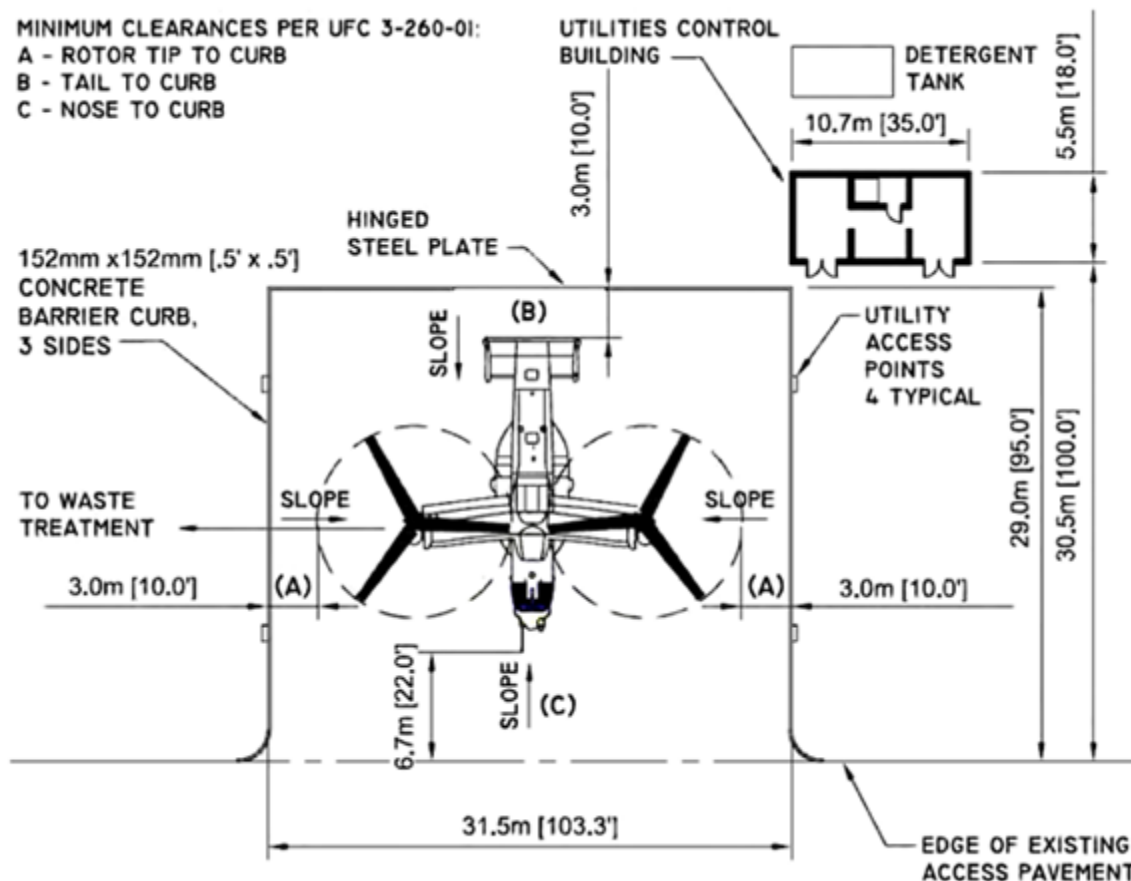
7.1.11.10.1. Requirements Determination. The recommended wash rack facility for the CV-22 aircraft is the fighter aircraft wash rack with a utility control building (Bell-Boeing FRD Paragraph 3.1.13).

7.1.11.10.2. Scope Determination. Bell-Boeing FRD Figure 3-5 illustrates a washrack 103.3 ft (W) x 95 ft (L). A utility storage building of 240 NSF is allowed (DAFMAN 32-1084, CC 116672 Pad Aircraft Washrack, Paragraphs 1.3).

7.1.11.10.3. Dimensions. The recommended size for the CV-22 washrack is 103.3 ft (W) x 95 ft (L) or 9,814 NSF. See [Figure 7.1.9](#) for a typical CV-22 washrack facility.

7.1.11.10.4. Design Considerations. See [Figure 7.1.9](#). Note that wash rack covers are considered equipment items to be purchased by the user and are not part of this CATCODE.

Figure 7.1.9. CV-22 Washrack.



7.1.11.11. Aircraft Rinse Facility.

7.1.11.11.1. Requirements Determination. CV-22 aircraft exposed to a salt-water environment require a clear water rinse (CWR) (Bell-Boeing FRD Paragraph 3.1.13).

7.1.11.11.2. Scope Determination. Currently, AFSOC CV-22 aircraft are not authorized a CWR taxi-through facility; however, a CWR may be authorized by AFSOC at a future date. Procedures for proper taxi-through will be disseminated at that time.

7.1.11.12. Hydrant Fueling System CATCODE: 121122.

7.1.11.12.1. Requirements Determination. Hydrant fueling systems are not required for the CV-22; however, when hydrant fueling systems are available or determined to be required to reduce flightline congestion, demands on fuel truck fleets, and to

improve refuel times, the following design considerations to support CV-22 aircraft are required.

7.1.11.12.2. Dimensions. No Fuels Engineers exist within HQ AFSOC or its subordinate units. Existing engineering staff with support from the MAJCOM Fuels Management section, assuming a requirement is identified, will reach out to technical experts such as the HQ Air Force Petroleum Agency and Defense Logistics Agency (DLA)/DESC for development of specific dimensions. In general, this requirement is based on installation specific mission requirements and airframe specific upload rates.

7.1.11.12.3. Design Considerations. The system is pressure limited to 345 kilopascal (kPa) (50 pounds per square inch [psi]) at the aircraft. No external power services are required during refueling of the CV-22. The CV-22 requires a 100-foot-wide taxiway accessing the refuel area with protective shoulders. Adequate clearance should be maintained between the refuel lanes to allow clearance between aircraft when refueling. A fuel safety zone of 50 ft of a pressurized fuel carrying servicing component, i.e., servicing hose, fuel nozzle, Single-Point Receptacle (SPR), hydrant hose cart, ramp hydrant connection point, etc., and 25 ft around aircraft fuel vent outlets must be maintained. Taxilane and parking spots should ensure engine exhaust is not directed onto hydrant fueling pits.

7.1.11.13. **Operating Storage, Jet Fuel CATCODE: 124135.**

7.1.11.13.1. Requirements Determination. Operating storage tanks are not required for the CV-22; however, they are provided wherever dispensing facilities are remote from bulk storage tanks. Provide separate storage for each type and grade of fuel. For aviation activities, provide a minimum of two tanks for each type of fuel (UFC 3-460-01 Paragraphs 8-3.3 and 8-3.4). Per the CV-22 FRD Table 1.15, recommended fuels for AFSOC CV-22 aircraft include JP-5 and JP-8, alternate fuels include Jet-A, and Jet A-1, and restricted fuels include JP-4 and Jet B.

7.1.11.13.2. Dimensions. The capacity or size of each fuel storage tank is based upon the logistical and mission requirements for the weapon systems to be supported from it, thus the requirement will vary. UFC 3-460-01 Paragraph 8-3.4, general guidance is to provide a minimum of two tanks at aviation activities for each type of aviation turbine fuel. Assuming a requirement is identified, the appropriate Service Headquarters with DLA Energy approval will determine the number and size of tanks required.

7.1.11.14. **Aircraft Truck Fueling Facility CATCODE: 126925.**

7.1.11.14.1. Requirements Determination. Truck fill stands are required at all Air Force installations where bulk petroleum products are stored and dispensed.

7.1.11.14.2. Scope Determination. The number of fill stands required depends on the number of trucks that must be loaded simultaneously. This is determined by the command having jurisdiction from a study of the mission and operation requirements.

7.1.11.14.3. Dimensions. Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1). Per

DAFMAN 32-1084, CC 126925 Liquid Fuel Truck Fill Stand, Paragraph 1.4.2, a minimum of one outlet for each grade of fuel is necessary. Per the CV-22 FRD Table 1.15, recommended fuels for AFSOC CV-22 aircraft include JP-5 and JP-8, alternate fuels include Jet-A, and Jet A-1, and restricted fuels include JP-4 and Jet B. For specific projects, the appropriate Service Headquarters can assist in determining the number.

7.1.11.15. Cryogenics Storage (Liquid Oxygen Storage) CATCODE: 442258.

7.1.11.15.1. Requirements Determination. CV-22 aircraft liquid oxygen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.1.11.15.2. Scope Determination. The Passenger Oxygen System (POS), which is ancillary mission equipment, is serviced with liquid oxygen typically stored in cylinders.

7.1.11.15.3. Dimensions. A cylinder that is 8 NSF (NSF to gross square feet (GSF) conversion is $8 \times 1.25 = 10$ GSF).

7.1.11.16. Gaseous Oxygen Storage.

7.1.11.16.1. Requirements Determination. CV-22 aircraft gaseous oxygen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.1.11.16.2. Scope Determination. 400-liter emergency oxygen bottles are serviced with gaseous oxygen. The emergency oxygen bottle, P/N 1550, is used for servicing and replenishment.

7.1.11.16.3. Dimensions. A cylinder that is 8 NSF (10 GSF).

7.1.11.17. Gaseous Nitrogen Storage.

7.1.11.17.1. Requirements Determination. CV-22 aircraft gaseous nitrogen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.1.11.17.2. Scope Determination. The hydraulic system accumulators, landing gear oleo struts, multimode radar, emergency extend actuation system, and tires are all serviced with gaseous nitrogen. The portable nitrogen cylinder, P/N 55D6496, and the self-generating nitrogen servicing unit, P/N PD96LDEA/TILDD-05 are used for servicing and replenishment.

7.1.11.17.3. Dimensions. A cylinder that is 8 NSF (10 GSF).

7.1.11.18. Standard Host Installation Facilities.

7.1.11.18.1. Aerial Delivery Facility. See paragraph 1.1.3.5.1.

7.1.11.18.2. FARP Equipment Storage. See paragraph 1.1.3.5.2.

7.1.11.18.3. Deployment Processing Facility. See paragraph 1.1.3.5.3.

7.1.11.18.4. Airfield Ancillary Facilities. See paragraph 1.1.3.5.4.

7.1.12. CV-22 Base Operations Ground Facilities - Pavement Requirements.

7.1.12.1. **Airfield.** Airfield mission and operational procedures have resulted in the development of six types of Air Force airfields: light, medium, heavy, modified heavy, auxiliary, and assault landing zone. The decision on which airfield type to design for is made by the appropriate MAJCOM. Airfield designs are generally based upon medium load criteria. The pavement for the CV-22 is classified as light load, index 3, under the Aircraft Group Index in accordance with AFI 32-1041. The pavement capacity for a light load airfield has a maximum gross weight of 68,000 lbs (UFC 3-260-02, Table 3-1). See [Figure 7.1.10](#) for the Traffic Areas on a Light Load Pavement Runway.

7.1.12.1.1. Exhaust effects on pavement. Attention should be paid to the effects of heat from the CV-22 exhaust on airfield pavement. Several studies have indicated damage can occur to joint and pavement sealants as well as asphalt surfaces if aircraft are routinely parked over these areas. See Appendix 2 for further information regarding joint sealants.

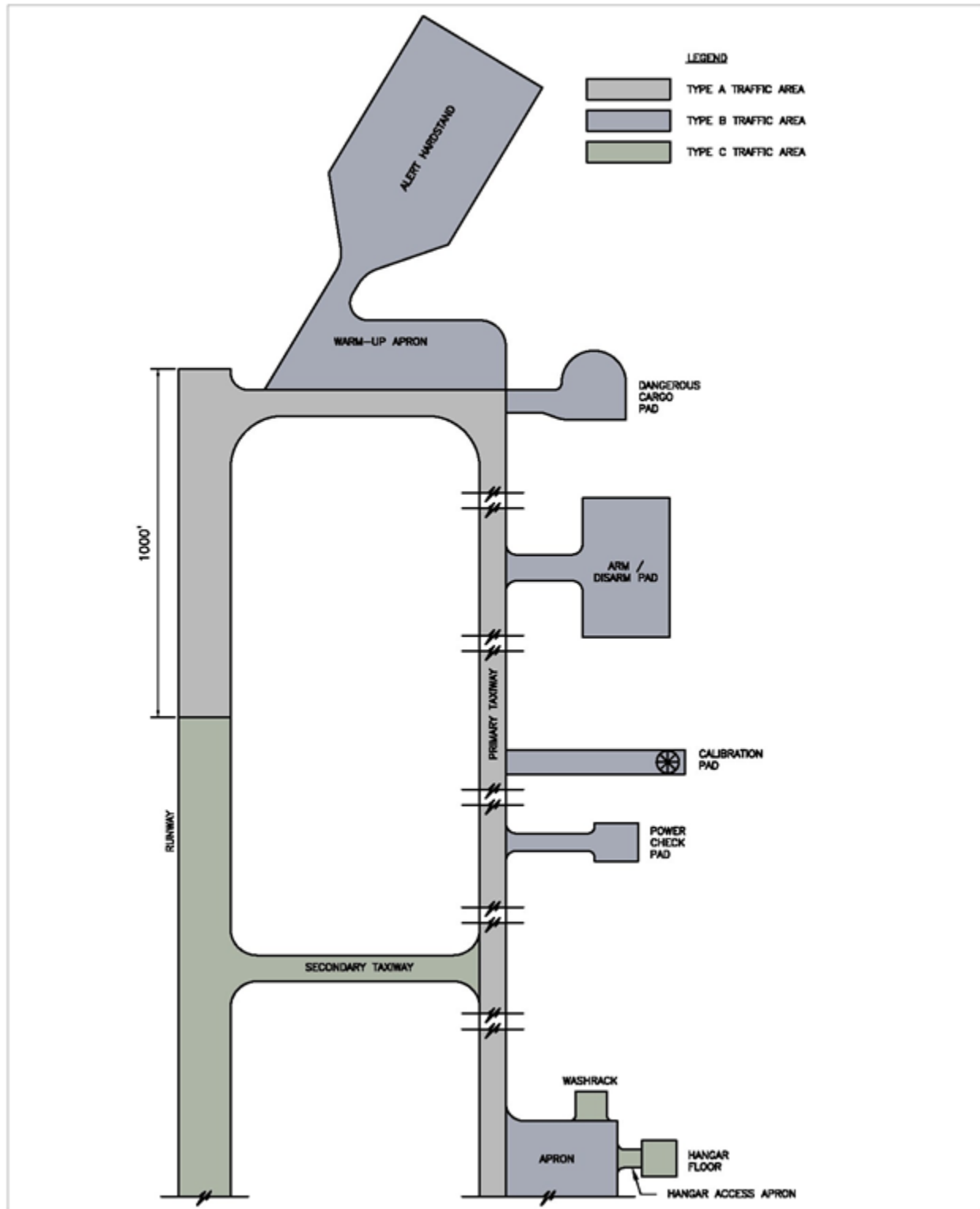
7.1.12.1.2. Preventing pavement deterioration. Guidance for preventing concrete deterioration caused by POL leakage and heat under CV-22 engine nacelles is contained in UFC 3-270-01, Chapter 21. Sodium silicate sealant on CV-22 pavements has proven ineffective and requires routine maintenance. The recommended approach is to apply a high molecular weight methyl meth acrylate (HMWMA) such as Transpo T70 or TK-2415, applied per manufacturer instructions no earlier than 90 days after concrete placement. Note that the curing compound must be removed prior to applying the sealer on new pavement. Alternatively, consider an epoxy coating such as TK-2110, Addagrip or Thiokol FEC 2234. For existing pavements, the surface must be cleaned and prepared IAW the manufacturer instructions and/or UFGS 32 13 13.43 High Temperature Concrete Paving For Airfields Using Lightweight And Traprock Aggregates.

7.1.12.1.3. Traffic Areas. Certain areas of an airfield (e.g. runway shoulders, runway overruns) do not normally carry fully loaded aircraft; therefore, they do not need to be designed for the maximum gross weight (UFC 3-260-02, Chapter 4, Section 3, Paragraph C). See [Figure 7.1.10](#) for the traffic areas in an airfield designed for the CV-22. The design gross weight for Type C (gross weight – 51,000 lbs.) traffic areas and overruns are 75 percent of the design gross weights for Types A and B (gross weight - 68,000) traffic areas. Light load airfields are not designed with Type D traffic areas (UFC 3-260-02, Table 3-1). See [Table 7.1.17](#) for Airfield Pavements by Traffic Area Type.

Table 7.1.17. Light Load Pavements by Traffic Area Type.

Pavement Use	Light Load Pavement Traffic Areas		
	Type A – Maximum Gross Weight 68,000 lbs.	Type B – Maximum Gross Weight 68,000 lbs.	Type C – Maximum Gross Weight 51,000 lbs.
Runway (First 1,000 ft on each end)		X	
Runway (Interior, between 1,000 ft ends)			X
Aprons (except hangar access)		X	
Hangar Access Aprons			X
Hangar Floors			X
Hardstands		X	
Power Check Pad		X	
Arm/Disarm Pad	X		
Dangerous Cargo Pad	X		
Primary Taxiways (all)	X		
Overruns			X

Figure 7.1.10. Traffic Areas for Light Load Pavement Airfield.



7.1.12.2. **Paved Shoulders.** As a minimum, paved shoulders should be designed to support a load of 10,000 lbs imposed by a single wheel with a tire pressure of 0.69 megapascals (MPa) [100 psi] (UFC 3-260-02, Chapter 4, Section 7, Paragraph B).

7.1.12.3. **Hangar Floors.** See Paragraph 7.1.15, Maintenance Hangar.

7.1.12.4. **Aircraft Classification Number (ACN) and Pavement Classification Number (PCN).** The required load bearing capacity of runway pavements may be determined by comparison of ACN with the PCN for the runway.

7.1.12.5. **Pavement Thickness Requirements.** The CV-22 minimum base course pavement thickness required is 6 inches for flexible pavements (UFC 3-260-02, Table 8-5) and 4 inches for rigid pavements (UFC 3-260-02, Chapter 8, Section 8, Paragraph A). The CV-22 ACN values for both rigid and flexible pavements for a range of aircraft gross weights are shown below in Table 7.1.18.

Table 7.1.18. CV-22 Aircraft Classification Number.

Aircraft Gross Weight (lbs)	Flexible Pavements - CBR Value ¹				Rigid Pavements - K Value ²			
Sub grade Category ³	A	B	C	D	A	B	C	D
34,974 (aircraft empty weight)	4.0	4.2	4.6	5.5	6.6	7.0	7.4	7.6
60,500 (max gross takeoff weight)	7.6	8.1	9.3	11.1	12.9	13.5	14.1	14.3
Notes: 1. California Bearing Ratio (CBR) Value is a measure of the supporting value of the sub grade strength. 2. K Value (Modulus of sub grade reaction) = Ratio of unit pressure to deflection of a 762 mm (30 in) diameter rigid steel plate. The modulus of sub grade reaction is calculated using the pressure (psi) corresponding to a 1.27 mm (0.05 in) deflection. ACN calculations based on maximum tire pressures. 3. Pavement type and Sub grade categories — A, B, C & D are published in the Flight Information Publication (FLIP) as the second and third part of the PCN code respectively.								

Table 7.1.19. CV-22 Base Operations Ground Facility Space Requirements.

Cat Code	Facility	UM	CV-22 CONUS (5) ¹	CV-22 CONUS (10) ¹	CV-22 OCONUS (6) ¹	DAFMAN 32-1084 Reference or Remarks/Calculations
111-111	Runway – Length (min.)	LF	1,600	1,600	1,600	UFC 3-260-01, Table 4-1: Rotary Wing Aircraft Basic Runway Length is 1,600 ft. CV-22 configurations and weights may require longer runways. See paragraph 7.1.11.1.2 for additional information.
111-111	Runway – Width (min.)	LF	100	100	100	Bell-Boeing FRD Paragraph 3.1.2
111-115	Paved Overrun - Length (min.)	LF	75	75	75	Bell-Boeing FRD Paragraph 3.1.3

111-115	Paved Overrun - Width (min.)	LF	150	150	150	UFC 3-260-01, Table 5-3, Item 2
112-211	Taxiway Width	LF	75	75	75	Bell-Boeing FRD Paragraph 3.1.4
112-211	Taxiway Paved Shoulder	LF	25	25	25	Bell-Boeing FRD Paragraph 3.1.4 and UFC 3-260-01, Table 5-3, Item 2.
113-321	Aircraft Parking Apron	NSF	200,845	358,370	213,784	CC 113321 Apron, Paragraph 1.3.7: Multiply the aircraft wingspan by the length. Multiply the product by a factor of 11.9 (3 PMAI or less), 9.5 (4-8 PMAI), 9.1 (9-11 PMAI), or 8.8 (12 or more PMAI). Subtract covered maintenance spaces from the total number of aircraft. To calculate the required apron parking spaces, subtract the covered maintenance spaces from the PMAI (does not include BAI, training, or transient aircraft); therefore, 5 PMAI= 3 apron spaces; 6 PMAI= 4 apron spaces; and 10 PMAI= 7 apron spaces.
113-321	Apron for Access to Hangars, Docks, Shelters	LF	75	75	75	UFC 3-260-01 Table 6-5 Item 1: minimum length is 75 ft, though 100 ft is highly desirable. Width is equal to the hangar door opening.
116-116	Short Takeoff & Landing Zone	LF	675	675	675	Bell-Boeing FRD Table 2.1.5: CV-22 Rolling Takeoff Distance at maximum VTOL gross weight is 675 LF at sea level and 20 degrees C.
N/A	Towway Width	LF	26	26	26	Bell-Boeing FRD Paragraph 3.1.14: The minimum design criteria dimension for the towway is 7.8 m (25 ft 5 in) wide. Rounded to 26 ft. UFC 3-260-01, Table 5-6: width of towway for Army and Air Force Facilities = (outside gear width of towed mission aircraft CV-22 15.4 ft) + 10ft = 25.4 ft.

N/A	Clearance from Towway Centerline	LF	67.50	67.50	67.50	Bell-Boeing FRD Paragraph 3.1.14: The lateral clearance dimension should be 20.6 m (67 ft 6 in) on both sides of centerline for minimal clearance.
116-642	Paved Shoulders	LF	25	25	25	CC 116642 Paved Shoulders, Paragraph 1.4.1 and UFC 3-260-01, Table 4-4, Item 2: provide 25 ft paved shoulders adjacent to all operational pavement.
116-663	Helicopter Landing Pad	NSF	10,000	10,000	10,000	Bell-Boeing FRD Paragraph 3.1.10: The standard helicopter-landing pad 30.5 m x 30.5 m (100' x 100'), as described in UFC 3-260-01, is adequate for CV-22 operation. CC 116663 Pad Helicopter, Paragraph 1.4: VFR/IFR helipads are 100' x 100'.
116-663	Emergency Landing Pad	NSF	3,325	3,325	3,325	CC 116662 Pad, Helicopter, Paragraph 1.4: 66.5 (Length of CV-22 ft) x 50 ft (VFR helipad min.). This is a limited use helipad; therefore, it is not required to be the standard 100 ft x 100ft.
116-666	Pad, Warm-up/Holding	NSF	133,896	133,896	133,896	CC116666 Pad Warm Up Holding, Paragraphs 2.1.13.2 and 2.1.13.4: sized to accommodate two of the largest aircraft assigned to a base. CV-22 area based on parking apron criteria for two aircraft.
116-672	Aircraft Washrack	NSF	9,814	9,814	9,814	Bell-Boeing FRD Figure 3-5 illustrates a washrack 103.3' (W) x 95' (L).
116-672	Aircraft Washrack Utility Building	GSF	300	300	300	CC116672 Pad Aircraft Washrack, Paragraph 1.3: Allows a utility storage building of 240 NSF. Conversion from NSF to GSF is $240 \times 1.25 = 300$ GSF.
116-672	Aircraft Rinse Facility	NSF	0	0	0	CWR is not currently authorized for AFSOC CV-22 aircraft.

126-925	Aircraft Truck Fueling Facility	EA	2	2	2	Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1). See paragraph 7.1.11.14 for more information.
442-258	Cryogenics Storage (Liquid Oxygen Storage)	GSF	10	10	10	Services provided by host or by contract facility. AFSOC only needs to store materials in cylinders. Calculated as 8 NSF x 1.25 (Net to Gross Conversion).
n/a	Gaseous Oxygen Storage	GSF	5	5	5	Services provided by host or by contract facility. AFSOC only needs to store materials in cylinders. Gaseous Oxygen servicing cart hand truck is 4 NSF (Support Equipment Requirements Document [SERD] 1226). Calculated as 4 NSF x 1.25 (Net to Gross Conversion).
n/a	Gaseous Nitrogen Storage	GSF	10	10	10	Services provided by host or by contract facility. AFSOC only needs to store materials in cylinders. Calculated as 8 NSF x 1.25 (Net to Gross Conversion).
Airfield Paving (excluding Runways and Overruns)		NSF	357,880	515,405	370,819	
Total Airfield Paving		NSF	529,130	686,555	542,069	
Total Indoor Facilities		GSF	325	325	325	
Notes: 1. Number of PMAI. 5 PMAI = 6 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 10 PMAI = 11 total aircraft (1 BAI). 2. See paragraph 1.1.3.5 for more information on base ground operating facilities assumptions for facilities assumed to be existing and adequate at existing airfields.						

7.1.13. CV-22 Training System Facilities.

7.1.13.1. Flight Simulator Training (CATCODE: 171212).

7.1.13.1.1. Requirements Determination. This facility houses aircraft flight simulators, and other special training devices. It also includes space for administration and records, classrooms, toilet facilities, trainer maintenance, and storage (DAFMAN

32-1084, CC 171212 Flight Simulator Training, Paragraph 1.1). Flight simulator training facilities are normally sized according to the type of simulator installed and vary considerably in floor area from one system to another.

7.1.13.1.2. Dimensions. DAFMAN 32-1084, CC 171212 Flight Simulator Training, Table 1.1 provides examples of typical simulator training facilities that can be used for initial planning purposes before specific requirements are identified. **Table 7.1.23** gives the facility requirements specific to the CV-22.

7.1.13.1.3. Reference. **Table 7.1.22** lists the training systems for the CV-22 by location type. A breakdown of space requirements in scenarios ranging from 6-12 aircraft is included in **Table 7.1.23**. A brief description of the space requirements and facility recommendations for flight simulator training is included below.

7.1.13.2. **CV-22 Training Systems**. Operations training devices for the CV-22 include a Full Flight Simulator (FFS), Cabin Operational Flight Trainer (COFT), and Operational Flight Trainer (OFT). Initial, mission, and requalification training will be conducted utilizing the FFS, OFT, and COFT in accordance with the applicable mission series training Standard Operating Instruction (SOI).

7.1.13.2.1. Full Flight Simulator. A bay is required to house this electric full-motion flight training simulator for the CV-22. The bay should include a 2-ton crane and a roll-up door large enough to fit the simulator through. Adjacent to the simulator bay should be areas for supply, hydraulic (some FFS may be electric motion based), computer/image generator, and maintenance rooms. The recommended space allocation for this facility can be found in **Table 7.1.23**.

Table 7.1.20. Building Utility System Requirements for FFS Bay.

System	Requirements
Mechanical	The Simulator Bay should be maintained at 65-72°F (18-23°C) at a relative humidity of 40-60% non-condensing, both above and below the floor. Air conditioning requires a minimum of 160,000 British thermal units/hour (BTU/hr) capacity to the simulator bay must be provided for cooling of the simulator and associated equipment. Lighting intensities should provide 30 to 50 foot-candles of total illumination measured 30 inches above the floor. Light should generally be of the mercury/sodium vapor type. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	The power requirement for the Ramp Control Cabinet is 480 V Alternating Current (AC), 3-phase, 4 wire, 200-amp circuit. The power requirement for the Crew Station Air Conditioner (CSAC) is 208V, 3-phase, 5 wire, 30-amp circuit. The facility should provide 120V, 1-phase, and 20-amp outlets at various locations around the simulator bay for installing service equipment. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical operations and maintenance (O&M) criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	The Simulator Bay should be equipped with a floor-level drain located near the access-way, capable of handling a minimum of 1 gallon per hour. This drain is for removing the air conditioning condensate from the CSAC. Facility water from the cooling tower should be available for CSAC cooling. One ¾-inch water supply line and one ¾-inch water return line; each capable of 6 gallons per minute at a maximum of 85° Fahrenheit (F) (29°C) should be provided. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is recommended, although a wet-pipe system is an acceptable alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.1.13.2.2. FFS Computer Room. The FFS computer room should include the following: a power distribution unit, a visual control computer, a forward looking infrared radiometer (FLIR) visual control computer, visual image generator equipment, a Database Generation Station (DBGS), a digital video recording rack, an Audio-Visual Recording Studio (AVRS) Console, and Radar simulation (Bell-Boeing FRD, Appendix J). See the Unique Facility Requirements section for other recommendations regarding this facility. The recommended space allocation for this facility can be found in [Table 7.1.23](#).

Table 7.1.21. Building Utility System Requirements for FFS Computer Room.

System	Requirements

Mechanical	The computer room shall be maintained at 65-75°F (18-24°C) at a relative humidity of 40-60% non-condensing, both above and below the floor. Air conditioning requires a minimum of 60,000 BTU/hr capacity under the computer room floor to provide cooling for the equipment cabinets. A constant pressure flow of cooling air should be maintained at all times to prevent damage to the equipment. The computer room air conditioning system should be separate from other building air conditioning systems. A capacity of 70,000 BTU/hr is sufficient to meet the above floor temperature requirements for the computer room. Lighting intensities should provide 50-75 candles of total illumination measured 30 inches above the floor. Light should generally be of the recessed florescent type. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Electrical power should be separate from the air conditioning, lighting, or other facility/computer room electrical systems. Only one electrical service (480/277V / 3 phase (Ø) / 5 watt (W) / 60Hz; ground wire is equal in size to the phase conductors) should be provided for all computer equipment. The service should be rated to supply a minimum of 150 Amps. The service should be maintained within $\pm 10V$, at a frequency of 60 Hz ± 0.5 Hz. A computer service ground plate should be provided and wall mounted below the raised floor. Emergency power off switches should be provided. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is recommended, although a wet-pipe system is an acceptable alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.1.13.2.3. Cabin Operational Flight Trainer. The COFT is a full-fuselage non-motion device that integrates real and virtual environments in an image processor. The recommended space allocation for this facility can be found in [Table 7.1.23](#).

7.1.13.2.4. Operational Flight Trainer. The OFT is the non-motion flight training device for the CV-22. The OFT utilizes fixed stairs and is identical to the FFS apart from a primary six degrees of freedom (DOF) motion base. The base assembly is supported above floor level on three steel posts (Bell-Boeing FRD, Appendix J). The space requirement of an FFS is preferred at new locations instead of the OFT because of its larger bay in consideration of future expansion. The only exception would be for training center locations where full-motion and non-motion flight simulators are collocated.

7.1.13.2.5. Visual Threat Recognition and Avoidance Trainer (VTRAT). The VTRAT will be located inside a room that can support trainees, instructors, and computer equipment. The cooling requirements for the VTRAT are similar to most simulators and should not be overlooked due to the small size of this simulator. The recommended space allocation for this facility can be found in [Table 7.1.23](#).

7.1.13.2.6. Night Vision Goggles (NVG). The space required for NVG training should be large enough to support trainees, instructors, and NVG equipment. The equipment for NVG does not require much more than desk space for students and the instructor. Lighting should also be considered to assure the equipment is being used in an environment dark enough to meet training requirements. The recommended space allocation for this facility can be found in [Table 7.1.23](#).

7.1.13.2.7. Portable Flight Planning System (PFPS). This facility needs a dedicated space that can fit multiple users and workstations. The recommended space allocation for this facility can be found in [Table 7.1.23](#).

7.1.13.2.8. Dimensions. See [Table 7.1.23](#) for the space requirements for the individual spaces within a training systems facility.

7.1.13.3. **Design Considerations.**

7.1.13.3.1. Simulator Bay. Ensure adequate grounding to device specifications. Provide perimeter lighting for accessibility. For facility air conditioning (A/C), ensure the bay A/C is on the side walls and not over the simulator (to avoid condensation dripping on visual domes) and make sure there is a condensation drain. For simulator cockpit A/C, design in flexibility to accommodate different types of A/C units (i.e. split unit, package unit, or chilled water) and make sure there is a condensation drain. Provide a separate trench from the anticipated cockpit A/C location to edge of the reaction pad. Do not install ceiling tiles because they are not accessible once the device is installed. Provide electrical disconnects for the uninterruptable power supply (UPS), drawbridge, and cockpit A/C unit, etc. Determine device/squadron requirements for a back-up power generator. Provide storage space within the bay for storage. Provide double doors into the bay, computer room, maintenance area, front entrance, and any supply points and suggest only one point of entry into the open storage area. Install an overhead 2-ton crane with variable speeds and a crane control cable on a remote cable from the hoist. Ensure that there is a sprinkler connection on the wall of the bay for a sprinkler pipe under the device (not required for electric motion; required for hydraulic motion).

7.1.13.3.2. Device/Simulator. Be very clear on who will provide the stairs or platform for the device (either military construction (MILCON) or the device provider). Make the design for the device's orientation flexible because the vendor may not be the same as the vendor under design. Determine who will provide the UPS (normally vendor provided but make sure) and that it is adequately sized.

7.1.13.3.3. Communications and Secure Internet Protocol Router (SIPR). Understand the proposed comprehensive interior design layout so that SIPR conduit can be installed in accordance with UFGS Section 27 05 29.00 10 *Protective Distribution System (PDS) for SIPRNET Communication Systems* and Air Force Systems Security Instruction (AFSSI) 7703. This includes ensuring furniture/equipment will not block access for inspection requirements and should consider the separation of secure and unsecure communication lines.

7.1.13.3.4. Intrusion Detection System (IDS), Access Control Systems (ACS), and Closed-Circuit Television (CCTV). These items are not provided by the MILCON project and are installed during construction. End user organizations are required (pre-design) to staff all IDS/ACS/CCTV requirements through the local Security Forces Squadron non-commissioned officer in charge (NCOIC) to the AF Security Forces Center for validation/funding. MILCON scope will provide power and pathways only, not installation, procurement, or processing of systems/devices. Define IDS/ACS/CCTV requirements early so that the infrastructure can be installed during construction. Ensure walls and doors meet the security requirements for the open-standards architecture approach.

7.1.13.3.5. Classroom. Provide ceiling power (junction boxes/outlets) for projectors, split ballast for front lighting in classrooms and debrief areas (overhead projectors), and dual whiteboards: one under the automated projector screen, the other on a side wall.

7.1.13.3.6. Computer Room. Ensure there is adequate grounding for all computer room equipment (provide a grounding bar under the isolated ground room floor). Provide electrical disconnects for the proposed computer room layout for the power distribution unit (PDU), UPS, etc. Ensure chiller and condensing units be adequate for proposed computer room layout based on equipment heat output. The emergency power off switch in the isolated ground room should be dual purpose for AC/direct current (DC) power and the UPS. Provide ultra-sensitive smoke detection as provided in AFMAN 91-118. Make sure trenches penetrate the walls between the computer room and bay. Provide a communications closet that complies with UFGS Division 27 - Communications and Division 33 - Utilities. The Air Force Civil Engineer Center (AFCEC) Fire Protection Office has determined that cabling associated with a flight simulator or other non-building equipment does not factor into the underfloor suppression requirement related to plenum-rated cable. For protecting electronic equipment from smoke and fire, refer to ETL 01-18, *Fire Protection Engineering Criteria – Electronic Equipment Installations*.

7.1.13.3.7. Structure. The FFS facility shall be identified as Risk Category III based on ACSE 7.

7.1.13.3.8. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

Table 7.1.22. CV-22 Training Systems by Location Type.

Simulator Type	No. of Training Systems (CONUS)				No. of Training Systems (OCONUS)		
	Training Center ¹	6 PMAI	9 PMAI	12 PMAI	6 PMAI	9 PMAI	12 PMAI
FFS ²	2	1	1	1	1	1	1
OFT ²	1	-	-	-	-	-	-
COFT	1	1	1	1	-	-	-
PFPS	2	1	1	1	1	1	1
NVG	1	1	1	1	1	1	1
VTRAT	2	1	1	1	1	1	1

1. Training Center locations are CONUS only.
2. The FSS can be either FSS or OFT. For planning purposes, facilities shall plan for the FSS due to its larger space requirement.

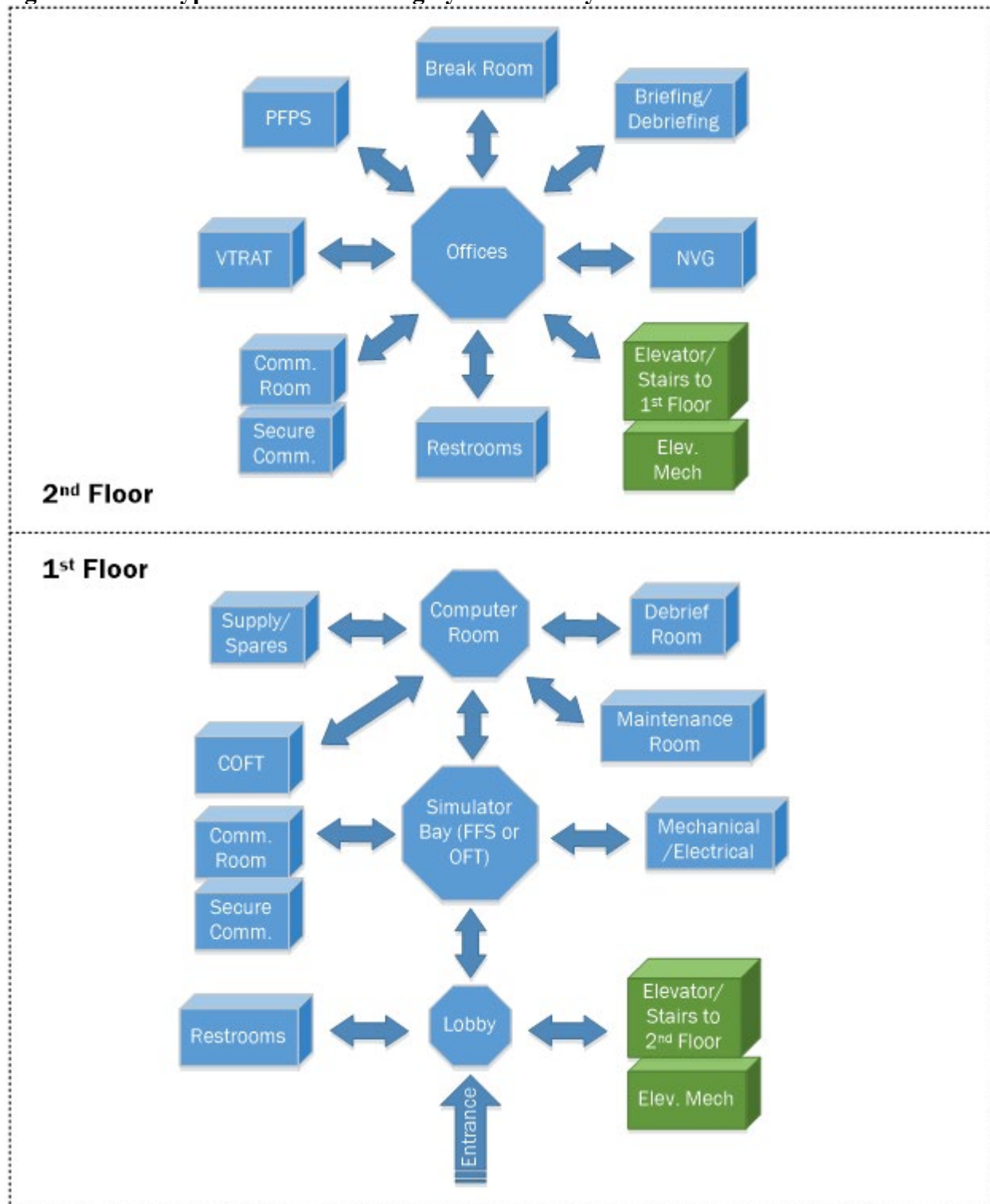
Figure 7.1.11. Typical CV-22 Training System Facility.

Table 7.1.23. CV-22 Training System Facility Space Requirements.

Cat Code	Facility	UM	CV-22 CONUS (5)¹	CV-22 CONUS (10)¹	CV-22 OCONUS (6)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
171-212	Instructor Offices ²	NSF	425	425	425	AFSOC/A4I: Space for 6 PN required. 1 Type D for supervisor, 5 Type E for others. 100 NSF min for Type D Offices. ⁴ 65 NSF min for Type E Offices. ⁵
171-212	Contractor Offices ²	NSF	425	425	425	AFSOC/A4I: Space for 6 PN required. 1 Type D for supervisor, 5 Type E for others. 100 NSF min for Type D Offices. ⁴ 65 NSF min for Type E Offices. ⁵
171-212	FFS ²	NSF	2,500	2,500	2,500	AFSOC/A4I: The standard AFSOC simulator bay size is size 50' (W) x 50' (L) x 50' (H) to allow flexibility between installed devices for weapon systems. Larger spaces will be provided to support minimum device specifications only.
171-212	COFT ²	NSF	2,660	2,660	2,660	AFSOC/A5RX: Recommended size is 70' (L) x 38' (W) x 30' (H).
171-212	PFPS ²	NSF	384	384	384	Hurlburt simulator facility PFPS is 16' x 24'
171-212	VTRAT	NSF	300	300	300	Hurlburt simulator facility VTRAT is 15' x 20'.
171-212	NVG	NSF	100	100	100	Hurlburt simulator facility NVG room is 10' x 10'.
171212	Computer Room	NSF	600	600	600	AFSOC/A4I: Computer Room 20' (W) x 30' (L) x 8' (H).
171-212	Maintenance Area	NSF	300	300	300	AFSOC/A4I: Maintenance Room 15' (W) x 20' (L) x 10' (H).
171-212	Supply Spares	NSF	160	160	160	AFSOC/A4I: 10' (W) x 16' (L) x 8' (H).
171-212	Brief/Debrief Rooms	NSF	600	600	600	AFSOC/A4I: 15' (W) x 20' (L) x 10' (H); 2 rooms, 300 NSF each.
171-212	Instructor Break Room	NSF	100	100	100	16% Occupants x 18 NSF, minimum of 100 NSF. ⁶

Cat Code	Facility	UM	CV-22 CONUS (5) ¹	CV-22 CONUS (10) ¹	CV-22 OCONUS (6) ¹	DAFMAN 32-1084 Reference or Remarks/Calculations
171-212	Student Break Room	NSF	100	100	100	16% Occupants x 18 NSF, minimum of 100 NSF. ⁶
171-212	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Mech. and Elec. Rooms	NSF	0	0	0	Included in NSF to GSF conversion. ⁷
171-212	Admin. Support Space	NSF	240	240	240	Use a maximum of 40 sf per person, and a minimum 20 sf per person. ⁸
171-212	Admin. Circulation	NSF	109	109	109	Max 10% of Administrative Space ⁹
171-212	Special Purpose Circulation	NSF	809	809	809	Max 10% of Special Purpose Space ⁹
Total Training Systems Facility		NSF	10,100	10,100	10,100	
Total Training Systems Facility		GSF	12,625	12,625	12,625	Net to Gross conversion factor of 1.25.

Notes:

1. Number of PMAI. 5 PMAI = 6 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 10 PMAI = 11 total aircraft (1 BAI).
2. These simulators require the area specified in the remarks column for clear space in the simulator room. Building structural, mechanical, and electrical equipment shall be clear of the simulator area.
3. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
4. Source: DAFMAN32-1084, Category Group (CG) 61 – Administrative Facilities Overview, Table 1.2.5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
7. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.4
8. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3.
9. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

7.1.14. CV-22 Operations Facilities.

7.1.14.1. Squadron Operations (CATCODE: 141753).

7.1.14.1.1. Requirements Determination. Each squadron needs an operational building for administration, scheduling, training, briefing, personal equipment maintenance, and storage for aircrews.

7.1.14.1.2. Scope Determination. Space must be provided for the commander and staff. Space is required for AFE systems maintenance and the care, storage, and issue of flying clothing and equipment for each crew member. Space is required for an operations officer to direct flight operations and for intelligence, mission planning, computers, radar and navigation, photos and maps, briefing room, locker area, and radio and electronic countermeasures. The recommended space allocation for this facility can be found in [Table 7.1.25](#). See **paragraph 1.1.3.6 for more information about the** unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within squadron operations facilities.

7.1.14.1.3. Typical CV-22 Operations Squadron Composition. Includes a commander, first sergeant, command staff, operations officer, assistant operations officers, flight chiefs, standardization and evaluation, safety, security, current operations, flight planning, flight management, publications, plans, weapons and tactics, intelligence, scheduling, training, aviation resource management section (ARMS), mobility, and AFE. This facility will also include an armory (which can be located at LRS), an operations/training classroom, and briefing/debriefing (B/DB) rooms.

7.1.14.1.4. Security Considerations. Plans, weapons and tactics, and intelligence require a sensitive compartmentalized information facility (SCIF). Conference and B/DB rooms as well as the mission control center require open storage up to the SECRET level.

7.1.14.1.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

7.1.14.1.6. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet

all the requirements listed above and be readily accessible to the employee should there be a need.

7.1.14.1.7. Dimensions. See [Table 7.1.25](#) for the individual spaces within a CV-22 squadron operations facility. See Paragraph [7.1.9](#) (Operational Squadron Characteristics) for the notional manning of CV-22 squadrons sized for 5, 6, and 10 PMAI.

Table 7.1.24. Building Utility System Requirements for Operations Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.1.12. Typical CV-22 Operations Facility.

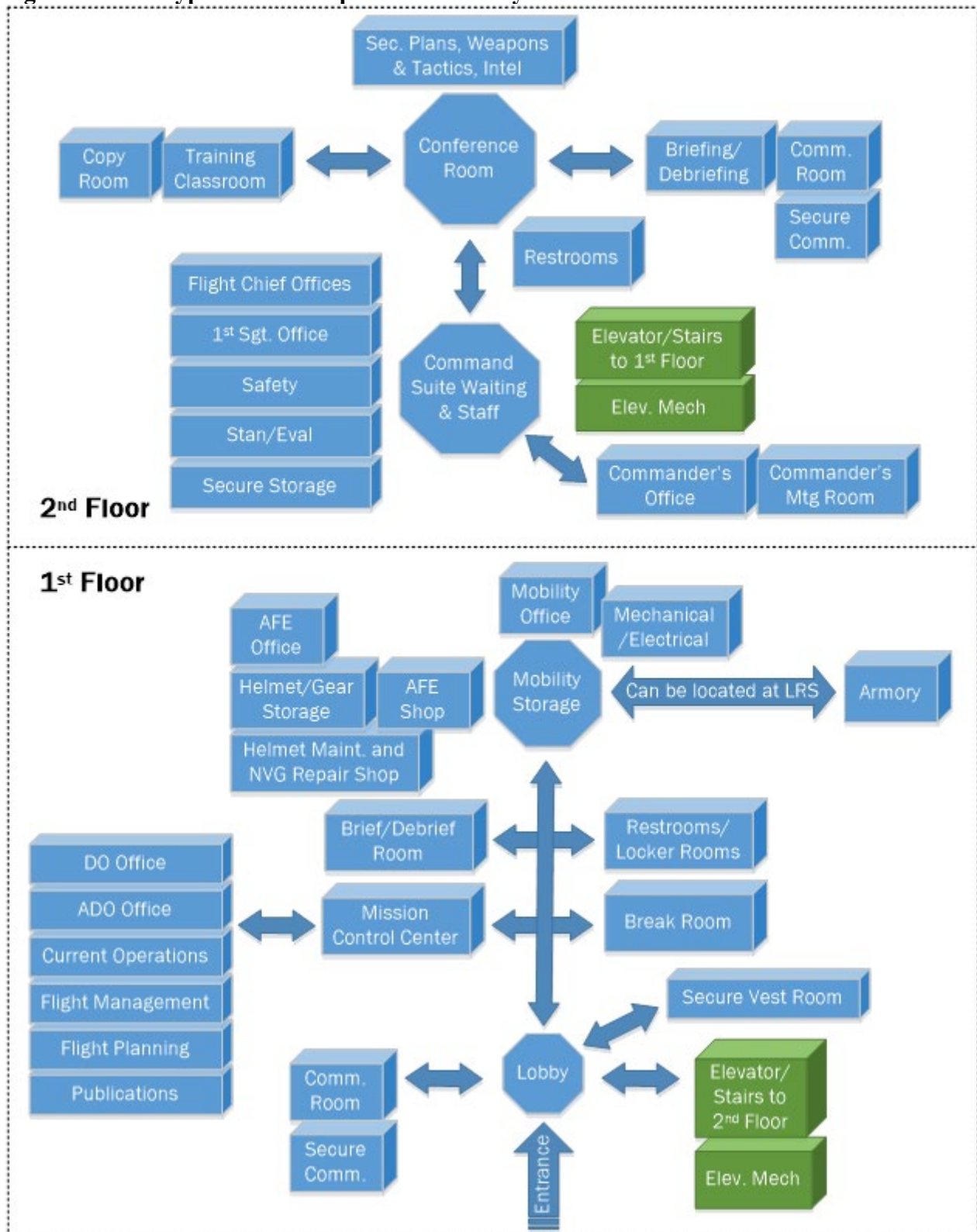


Table 7.1.25. CV-22 Operations Facility Space Requirements.

Cat Code	Facility	UM	CV-22 CONUS (5)¹	CV-22 CONUS (10)¹	CV-22 OCONUS (6)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
141-753	Command Suite – Commander’s Office	NSF	140	140	140	140 NSF min for Type C Offices. ⁴
141-753	Command Suite – First Sergeant	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Command Suite – Command Staff and Waiting Area	NSF	350	350	350	Bell-Boeing FRD Table 3.3: 350 NSF.
141-753	Director of Operations ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Assistant Ops Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Senior Enlisted Mgr ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Preservation of the Force & Family (POTFF) Office	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Current Operations ²	NSF	542	1,083	650	CV-22- FRM Table 3.3: 1,300 NSF for 12 PMAI.
141-753	Flight Planning ²	NSF	280	280	280	Assume 2 PN plus flight planning tables and storage area of 150 NSF. 65 NSF min for Type E offices. ⁵
141-753	Flight Management ²	NSF	313	625	375	Bell-Boeing FRD Table 3.3: 750 NSF for 12 PMAI.
141-753	Aviation Resource Management	NSF	325	650	390	1 PN per PMAI. 65 NSF min for Type E offices. ⁵
141-753	Secure Plans, Weapons & Tactics, Intel, SCIF ²	NSF	875	1,750	1,050	Bell-Boeing FRD Table 3.3: Recommends a 2,100 NSF for 12 PMAI.
141-753	Flight Chief Offices ²	NSF	300	300	300	AFSOC/A3: Provide space for 3 chiefs. 100 NSF min for Type D Offices. ⁴
141-753	Stan/Eval ²	NSF	188	375	225	CV-22- FRM Table 3.3: 450 NSF for 12 PMAI.

141-753	Training Office	NSF	148	148	148	Assume 2 PN: Chief/NCOIC (Type D) and Training PN (Type F). 65 NSF min for Type E offices. ⁴ 48 NSF min for Type F offices. ⁵
141-753	Safety Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Security Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Medical Offices		230	230	230	Per A1M, assume 3 personnel total per squadron integrated from SOSS. 1 officer (Type D), 2 enlisted (Type E). 100 NSF min for Type D offices. ⁴ 65 NSF min for Type E offices. ⁵
141-753	Publications ²	NSF	240	240	240	Bell-Boeing FRD, Table 3.3: 240 NSF for 12 PMAI.
141-753	Armory/Weapons Vault	NSF	125	250	150	Bell-Boeing FRD Table 3.3: 300 NSF for 12 PMAI. This facility can be located with the squadron or LRS.
141-753	Mobility/Supply Storage	NSF	1,333	2,667	1,600	Bell-Boeing FRD Table 3.3: 3,200 NSF for 12 PMAI.
141-753	Mobility Office ²	NSF	144	240	144	AFSOC/A4I: Based on assigned PN at 48 NSF each. Assumed 3 PN (<7 PMAI), 4 PN (<10 PMAI), and 5 PN (10+ PMAI).
141-753	AFE Offices ^{2,3,4}	NSF	240	480	288	1 PN per PMAI. 48 NSF min for Type F Offices. ⁵
141-753	AFE Shop ^{3,4}	NSF	525	1,050	630	Bell-Boeing FRD Table 3.3, Paragraph 3.3.1.3: minimum 235 NSF for shop space (Calculated as 50 NSF x #PMAI) plus a helmet and NVG maintenance of 650 NSF for a 12 PMAI squadron (Calculated as 55 NSF x #PMAI).
141-753	Mission Control Center ²	NSF	350	350	350	Bell-Boeing FRD Table 3.3: 350 NSF
141-753	Training Room	NSF	240	347	240	AFSOC/A4I: 240 NSF min. Total unit authorization is 3 NSF per military PN. 6 PMAI=76 PN; 9 PMAI=108 PN; 12 PMAI=139 PN.
141-753	Secure Storage	NSF	50	100	60	Bell-Boeing FRD Table 3.3: 120 NSF for 12 PMAI.

141-753	Supply Room	NSF	100	200	120	Bell-Boeing FRD Table 3.3: 240 NSF for 12 PMAI.
141-753	Break Room	NSF	170	282	193	16% of occupants x 18 NSF, minimum of 100 NSF. ⁶ Military PN: 6 PMAI - 76 PN, 9 PMAI 108 PN, and 12 PMAI 139 PN.
141-753	Conference Room	NSF	500	1,150	500	1 UTC CONUS = 61 PN; 2UTCs CONUS= 100 PN; 2 UTCs OCONUS =69 PN. ^{7,8} CG 61 Admin Overview, Paragraph 1.4.5: 50-99 PN, provide a conference room for up to 25 persons. 100-149 PN, provide a conference room for up to 50 persons with 150 SF speaker area.
141-753	Commander's Meeting Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. 15 NSF per person. ⁸
141-753	Team Room	NSF	150	300	150	1 UTC CONUS = 61 PN; 2UTCs CONUS= 100 PN; 2 UTCs OCONUS =69 PN. CG 61 Admin Overview, Paragraph 1.4.5: 50-99 personnel, provide one team room for up to 10 persons. 100-149 personnel, provide two team rooms for up to 10 persons each. ^{7,8}
141-753	Briefing & Debriefing	NSF	340	340	340	Bell-Boeing FRD Table 3.3: 340 NSF for 2 floors
141-753	Individual Equipment Storage	NSF	480	960	576	Ops facility lockers for CV-22 require 4' x 4' cage per flight crew member. Flight crew 5 PMAI= 30 PN; 6 PMAI = 36 PN; and 10 PMAI= 60 PN.
141-753	Men's Locker Room	NSF	140	280	168	80% of population assumed male. Calculated as 21/3 (lockers stacked) x 0.8 x #PMAI x 5 NSF.
141-753	Women's Locker Room	NSF	35	70	42	20% of population assumed female. Calculated as 21/3 (lockers stacked) x 0.2 x #PMAI x 5 NSF.
141-753	Men's Showers	NSF	120	150	120	Provide 4 showers plus an additional shower and drying area for every 3 PMAI over 5. UFC 3-420-1: 30 NSF per shower/drying area.

141-753	Women's Showers	NSF	60	90	60	Provide 2 showers plus an additional shower and drying area for every 3 PMAI over 5. UFC 3-420-1: 30 NSF per shower/drying area.
141-753	Comm Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Secure Comm Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Secure Vestibule	NSF	52	104	63	Bell-Boeing FRD Table 3.3: 125 NSF for 12 PMAI.
141-753	Elevator	NSF	80	80	80	Bell-Boeing FRD Table 3.3: 80 NSF
141-753	Elevator Equip. Room	NSF	90	90	90	Bell-Boeing FRD Table 3.3: 90 NSF.
141-753	Restroom and Janitor's Closet	NSF	0	0	0	Included in the NSF to GSF conversion multiplier. ⁹
141-753	Mech/Elec Rooms	NSF	0	0	0	Included in the NSF to GSF conversion multiplier. ⁹
141-753	Admin. Support Space	NSF	620	860	660	AFSOC/A4I: default is 20 sf/person. ¹¹
141-753	Admin. Circulation	NSF	539	821	593	Max 10% of Administrative Space ¹⁰
141-753	Special Purpose Circulation	NSF	562	954	621	Max 10% of Special Purpose Space ¹⁰
Total Operations Facility		NSF	12,133	19,525	13,353	
Total Operations Facility		GSF	15,142	24,406	16,692	Net to Gross conversion factor of 1.25.

Notes:

1. Number of PMAI. 5 PMAI = 6 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 10 PMAI = 11 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the command suite, meeting rooms, and conference rooms.
3. For planning purposes, AFE facility requirements for AFSOC squadrons are split between the SOSS centralized AFE facility and the squadron operations facility. If consolidated within the SOSS facility, the AFE facility requirements listed in this table are not additive to the existing SOSS AFE facility allowance.
4. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.
5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
7. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.4.
8. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.5
9. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2
10. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3
11. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

7.1.15. CV-22 Maintenance Hangar Facilities.**7.1.15.1. Maintenance Hangar (CATCODE: 211111).**

7.1.15.1.1. Requirements Determination. Hangars support aircraft maintenance, repair, and inspection activities that are most efficiently done under complete cover. The interior design of covered shelters must include the clearances between aircraft and door openings, walls, ceilings, and parking clearances between other aircraft.

7.1.15.1.2. Scope Determination. Determine the square footage requirements for maintenance hangars by the method described below for computing covered maintenance spaces:

7.1.15.1.2.1. Calculate the number of authorized covered maintenance spaces for the CV-22 by multiplying the total number of PMAI, BAI, and training aircraft by a factor of 0.25 (rounded to the nearest whole number).

7.1.15.1.2.2. To determine the interior dimensions of dock and hangar bays, use the dimensions of the aircraft plus the minimum clearances shown in [Table 7.1.27](#). To compute the gross area of the hangar, multiply the interior dimensions by a factor of 1.15 (DAFMAN 32-1084, CC 211111 Hangar Maintenance, Paragraph 1.3.4); however, to account for additional space required for hangar door pockets, use a factor of 1.25.

7.1.15.1.2.3. There is no scenario where the minimum number of covered maintenance spaces should fall below two (AFSOC/A4 2011 policy memo for the CV-22).

Table 7.1.26. CV-22 Covered Aircraft Maintenance Spaces.

Aircraft	PMAI	BAI	Training Aircraft	Total Aircraft x CV-22 Factor	Required Covered Spaces (rounded)

CV-22	5	1	-	$6 \times .25 = 1.5$	2
CV-22	6	1	-	$7 \times .25 = 1.75$	2
CV-22	10	1	-	$11 \times .25 = 2.75$	3

Table 7.1.27. CV-22 Aircraft Separation Dimensions inside Hangars.

Minimum Clearances from CV-22 Hangar Elements¹						
Aircraft Element	Door		Walls		Roof Framing	
	m	ft	m	ft	m	ft
Wing Tip - under 30.5 m (100 ft) span	3	10	3	10	-	-
Fuselage - under 30.5 m (100 ft) span	3	10	3	10	3	10
Tail - Vertical	2.1	7	-	-	3	10
Tail - Horizontal	3	10	3	10	3	10
Helicopter Rotor Blade	3	10	3	10	3	10
Note:						
1. Clearances between aircraft components should be at least 3 m (10 ft) where two or more aircraft are housed.						

7.1.15.1.3. Dimensions. Area is calculated with the fuel probe extended and dimensions (rounded up, 67 ft x 85 ft) and allowing minimum clearances [10 ft] (Bell-Boeing FRD Paragraph 3.5.2). The area required for a two-bay hangar for the CV-22 is 87 ft x 200 ft (17,400 NSF) and for a three-bay hangar is 87 ft x 295 ft (25,665 NSF). The optimum hangar ceiling height (no restriction on maintenance tasks) is 43.4 ft and is based on the aircraft configured in the maintenance position, where the nacelles are angled and reach a maximum height of 33.4 ft. The minimum hangar ceiling height (limits maintenance) is 32.3 ft and is based on the aircraft configured in flight ready position where the maximum height is 22.3 ft. The minimum hangar door height based on the aircraft configured in flight ready position is 29.3 ft. See [Tables 7.1.26](#) and [7.1.27](#) for criteria and hangar clearances for minimum space needed for each aircraft. Also, see Paragraph [7.1.15.1.4](#) for unique facility requirements for the foam room and fire pump room and other unique criteria for the maintenance hangar.

Table 7.1.28. Building Utility System Requirements for Maintenance Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.

Electrical	Use commercial grade convenience receptacles and power outlets. Provide multiple 120- and 220-volts outlets throughout the facility. Provide independent circuit breakers to support charging and computer stations since consolidated breakers can be tripped due to power demands and surges. Provide isolated circuits from hangar outlets as consolidation will cause breaker interruptions due to excessive power demand for one circuit. Design electrical systems capable of expansion to avoid increased installation costs and time delays when the electrical demand increases. Cost of additional installation can be high for O&M funds and contracting process can be lengthy, particularly at overseas locations. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Provide a commercial grade domestic water and waste water system. Ensure hot water capability to comply with requirements driven by TO, OSHA, and other safety standards. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Per UFC 3-600-01 Paragraph 4-4.1, fixed wing and rotary wing aircraft fuel cell maintenance facilities, alert, storage, depot-level and general-purpose maintenance hangars comply with UFC 4-211-01. Per UFC 4-211-01 Paragraph 3-6.17, provide a hydraulically designed, low level High-Expansion (Hi-Ex) foam system for hangar bays. Existing hangars may continue use of Aqueous Film-Forming Foam (AFFF) fire protection systems. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.1.15.1.4. Unique Facility Requirements.

7.1.15.1.4.1. Bridge Crane. A bridge crane with inching capability and a 2,000 lb minimum lifting capacity is required for major component removal and installation (Bell-Boeing FRD Paragraph 6.6.1.). However, a 5-ton capacity bridge crane will meet most all CV-22 hoisting requirements. The minimum crane hook height is 28.0 ft (Bell-Boeing FRD Paragraph 3.5.9.5); however, the recommended bridge crane hook height is 35 ft (Bell-Boeing FRD Table 3.17). The 35 ft bridge crane height provides clearance above the prop rotor blades with nacelles at 25° (Maintenance Position, [Table 7.1.2](#)).

7.1.15.1.4.2. Hangar Clearances. The minimum clearance for all aircraft features on the CV-22 from walls, doors, and the hangar roof is 10 ft. The area displaced

by one CV-22 in a flight ready configuration is 5,625.9 NSF. This area is calculated with the fuel probe extended. Allowing minimum clearances addressed above, the area needed for a CV-22 is 9,047.9 NSF.

7.1.15.1.4.3. Hangar Floors. CV-22 aircraft are normally brought into the hangar with a full fuel load. The minimum requirement for hangar floor pavements designed for the CV-22 should be designed for at least 50,930 lbs (Empty Weight + Total Fuel, [Table 7.1.3](#)).

7.1.15.1.4.4. Fall Protection. Provide fall protection in accordance with UFC 3-110-03, *Roofing* and refer to UFC 4-211-01 Appendix C-11 for information on the best practices for fall prevention and protection systems. Consider the implications of providing different types of fall protection systems and/or equipment. Note that fall protection systems not installed as a building system may require additional storage for fall protection support equipment.

7.1.15.1.4.5. Fire Protection. The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF.

7.1.15.1.4.6. Security Requirement. Secured space will be required for the storage of classified components temporarily removed from aircraft. This requirement may be satisfied by storing components at the respective intermediate level shops or other secure storage locations (Bell-Boeing FRD, Paragraph 3.5.9.2).

7.1.15.1.4.7. Structure. The maintenance hangar shall be identified as Risk Category III based on ACSE 7.

7.1.15.1.4.8. Reference. See Paragraph [7.1.16](#), Maintenance Facilities for a concept diagram for the CV-22 maintenance hangar and AMU facility.

7.1.16. CV-22 Maintenance Facilities.

7.1.16.1. Aircraft Maintenance Unit (CATCODE: 211154).

7.1.16.1.1. Description. This building is a main control point for all AMU maintenance activities, administration, task training, equipment storage, and tool storage (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational (Aircraft/Helicopter Maintenance Unit [A/HMU]), Paragraph 1.1).

7.1.16.1.2. Requirements Determination. Each AMU needs an operational building for administration, scheduling, training, briefing, and aircraft equipment/tool storage. Equipment/tool storage may be in a separate building (DAFMAN 32-1084, Paragraph 3.1.6.2).

7.1.16.1.3. Scope Determination. Space must be provided for the NCOIC, OIC, administration, debrief, training, field service representatives, Air Force Engineering and Technical Services (AFETS), scheduling, production, section flight chiefs (Production, Specialist, Aircraft, Scheduling, Weapons, Brief/Debrief, and Support), Contractor Support Representatives (CSR), Combat Oriented Supply Operations

(COSO), Comprehensive Automated Maintenance Environment Optimized (CAMEO), engine, logistics support, Integrated Electronic Technical Manual, and staff. Space is also required for test/support equipment and tools to support all mission tasks. Equipment includes aircraft test equipment, maintenance tools, mobility pallets/ (ISU 70/90s), Mission Auxiliary Tank System (MATS) containers and storage, POS, Dash 21 equipment, and other equipment listed in **Table 7.1.31**. Specific mission requirements may require additional storage space to be validated through the AFSOC/A4 (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational (Aircraft/Helicopter Maintenance Unit [A/HMU])), Paragraph 1.2.1).

7.1.16.1.3.1. Where offices are provided, an open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons.

7.1.16.1.3.2. A designated heritage room is not authorized for the AMU in DAFMAN 32-1084 and is not authorized as an AFSOC specific requirement per AFSOC/A4I.

7.1.16.1.3.3. Dimensions. Table 7.1.29 lists the maximum space requirements for the AMU.

Table 7.1.29. Maximum Space Requirements for CV-22 AMU Facilities.

MISSION Special Operations Squadrons	Gross Area ^{1,2}					
	5 PMAI (CONUS)		10 PMAI (CONUS)		6 PMAI (OCONUS)	
	m ²	ft ²	m ²	ft ²	m ²	ft ²
	3,103	33,402	4,469	48,102	3,389	36,475
Notes:						
1. This table equals the total GSF authorized from the rooms listed in Table 7.1.32. Space authorizations for individual rooms within this facility can be found in Table 7.1.32.						
2. Includes common use and maintenance areas.						

7.1.16.1.4. Design Considerations. Locate next to assigned aircraft parking apron and maintenance hangar. Special Quantity-Distance (Q-D) standards apply to hardened facilities. See AFMAN 91-201 (DAFMAN 32-1084, Paragraph 3.1.6.5).

7.1.16.1.5. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

Table 7.1.30. Building Utility System Requirements for AMU Facilities.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions in all areas via an energy efficient HVAC system.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities.
Plumbing	Provide a commercial grade domestic water and waste water system.
Fire Protection	Use fire suppression and fire detection system compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.1.17. CV-22 AMU Backshop Facilities.

7.1.17.1. Support Section. Area may include: composite tool kits (CTK), special tools, test equipment, technical orders (TO), bench stock, Dash 21 equipment, Alternate Mission Equipment (AME), vehicles, mobility equipment, and dedicated supply support functions to support the production effort. Per the Bell-Boeing FRD Table 3.5, an area of 5,695 NSF is required for a support section for 12 PMAI (approximately 474 NSF per PMAI). Additionally, the space required accommodate CV-22 Support Equipment (SE) for 12 PMAI the flight line is 8,963.1 NSF (Bell-Boeing FRD, Paragraph 3.4.1.13) or approximately 750 NSF per PMAI. There are 111 pieces of SE that have been identified as excessive in weight and size. It would not be practicable to store this SE inside the Support Section, and thus, the recommended covered storage space for 12 PMAI is 6,172 NSF (approximately 515 NSF per PMAI) and an additional 2,790.9 NSF (approximately 235 NSF per PMAI) for the remaining SE to be stored in the support section (Bell-Boeing FRD, Paragraph 3.4.1.13). The area required to for the CV-22 Support Section is 710 NSF per PMAI.

Table 7.1.31. Equipment for the CV-22 Support Section.

Equipment Name	Quantity ³
Tool Accountability System (TAS)	1
Core Automated Maintenance System (CAMS) or Integrated Management Data System (IMDS)	1
CAMEO	1
Portable Electronic Maintenance Aid (PEMA) ¹	4 per aircraft
MATS	1
POS	2 per aircraft
Ground Station	1
Batteries ²	Varies based on tool type/quantity and battery type/voltage.
Battery chargers ²	Varies based on tool type/quantity and battery type/voltage.
Hand etcher	1
Dremel tool for de-etching	1

Shredder	1
Copy/Fax/Scanner	1
Printer	1
Computer workstations	1 each for CAMEO, Ground Station, and CAMS or IMDS.
Notes: 1. Source: AFSOC/A4 2. The equipment schedules provided in the Bell-Boeing FRD list the following battery types: 24 volts DC (VDC), 9 volts, 12-volt, 48-volt, D size, 1.2-volt nickel-cadmium (Ni-Cad), Lithium Ion, and AA. The Equipment Schedule paragraph of the Bell-Boeing FRD Introduction recommends Allowance Standard (AS) 255 is reviewed for the most current support equipment requirements. PEMAs come with one battery charger and a complete set of batteries each. 3. These numbers are for a typical Support Section. Only the numbers for batteries, battery chargers, PEMA, and POS will vary based on the criteria mentioned.	

7.1.17.2. CAMEO. CAMEO provides an integrated maintenance and logistics support system for the CV-22. CAMEO will run on the Air Force's Standard Desktop Compliant (SDC) workstation or laptop.

7.1.17.3. PEMA. The PEMA is a ruggedized notebook computer used for storing aircraft data to support aircraft maintenance. The support section is responsible for issuing and charging the PEMA.

7.1.17.4. Ground Stations. Ground Station software maintains current historical data on maintenance, usage, and general configuration of assigned aircraft. The space for a ground station is the same as an office computer user. The recommended area for this is 100 NSF (Bell-Boeing FRD, Table 3.5).

7.1.17.5. MATS. The MATS is designed to meet the range requirements of the CV-22 self-deployment and special operations missions. The CV-22 can install up to two MATS tanks. For storage, MATS are recommended to be stacked only two high. The required area for 12 MATS tanks is 600 NSF if stored for daily use and 700 NSF if stored in their containers (Bell-Boeing FRD, Table 3.11).

7.1.17.6. POS. The POS is a self-contained, carry-on system that supports aircrew during high altitude operations and medical evacuation. Each aircraft contains two POS. The estimated storage area for 12 units in their containers is 260 NSF (Bell-Boeing FRD Paragraph 3.4.2.2.1).

7.1.17.7. Dash 21. Dash 21 equipment is AME designed to configure aircraft for multiple mission profiles. Bell-Boeing FRD, Paragraph 3.4.2 calculates the approximate space required to store one ship set of this equipment is 205.0 cubic feet (ft³) (DAFMAN 32-1084, Paragraph 3.4.2). The recommended space allocation for this facility can be found in [Table 7.1.32](#).

7.1.17.8. Engine Storage. This facility will include storage for two spare engines per three aircraft for the CV-22 (Bell-Boeing FRD, Paragraph 3.6.2.6.1). The area required to store 12 engines for the CV-22 is 900 NSF (CV-22- FRM Paragraph 3.6.2.6.1).

7.1.17.9. Dynamic Repair Shop. Includes space and equipment for the teardown, inspection, and buildup of CV-22 proprotor systems. Bell-Boeing FRD Figure 3-9 shows a Dynamic Repair Shop with two hub and blade stands at 95.5 ft x 107 ft or 9,791 NSF. This is the minimum size required to support this facility.

7.1.17.10. Dynamic Repair Shop Covered Storage. This area will store hub and swashplate shipping/storage containers that are maintained by the shop. These containers do not require covered storage, and due to their size are not typically stored inside the AMU support section. Bell-Boeing FRD Figure 3-9: Shows covered storage 40 ft x 26.5 ft = 1,060 NSF which can accommodate four hubs and four swashplate shipping containers. This is the minimum size required to support this facility.

7.1.17.11. **Weapons Release Systems Shop (CATCODE: 215552)**. This shop can be located within the AMU or EMS.

7.1.17.11.1. Maintenance Function. Provide coiling doors at each end, as well as other locations as needed for workflow. The minimum door width is 12 feet. Equip all overhead doors with push-button operated automatic door openers. Unique mission requirements may require additional functions to support the overall equipment operations/maintenance effort. Allow space for workbenches and to allow personnel to circulate around them. There is no requirement for a hoist to support CV-22 weapons (Bell-Boeing FRD Figure 3-31, Note). Size at least one isolated high bay, with outside access, to comfortably handle the largest piece of authorized ammunition loading equipment. Include an equipment exhaust venting system for the removal of fumes when soldering electrical components and applying lubricants and touch-up paint. Typical machine shop equipment includes drill press, grinder, and bead blasters. Bead blasting is used to prepare surfaces to receive dry film lubricant and small touch-up type paint. A small enclosure with a self-contained bead blast system is adequate for many components. Position the space with immediate access to the outside as well as to the service/maintenance bays. Provide acoustical separation from other interior areas.

7.1.17.11.2. Equipment Storage Areas. Provide concrete pavement parking apron for ammunition loading equipment, with concrete thickness and size based on maximum “dead” and “live” equipment and ammunition loads. Also, provide outside storage areas to accommodate all authorized support equipment. Additionally, provide covered/enclosed storage with a secure drive through capabilities to protect designated war reserve material (WRM), extended storage of AME, normally installed equipment (NIE), and equipment from local weather conditions.

7.1.17.11.3. Bench Stock/Special Tools. A centralized, enclosed, and secure area is required for parts and special tools. Provide a service counter with a roll-up shutter. Allow space adjacent to the service counter for parts display. Equip the room with metal storage shelving, bins, racks, and/or mezzanine to maximize storage space. Provide direct access to the exterior for deliveries.

7.1.17.11.4. Secure Area for Gun Storage. Provide a separate area for gun system storage and handling, which must comply with the explosive safety standards for armament storage. The gun room should have a minimum area of 25 ft x 25 ft. This

area should be constructed as per in accordance with MIL-HDBK-1013/1A (reference (n)) or DoD component-specified structure. A modular vault that meets Federal Specification AA-V-2737 (with General Services Administration [GSA]-approved Class 5 Armory Vault Door) may be used to meet this requirement (Bell-Boeing FRD, Paragraph 3.6.2.4.4).

7.1.17.11.5. Flammable Storage. Store flammable materials within a fire-rated enclosure with access to the exterior.

7.1.17.11.6. Hazardous Waste Accumulation Point. Designate an area to store hazardous waste generated by ongoing maintenance operations, and comply with current federal, state, and base regulations and procedures.

7.1.17.11.7. Wash Rack. Depending on local climate, a semi-enclosed or fully enclosed wash rack area is preferred for washing ammunition-loading equipment. Slip-resistant flooring surfaces, water-resistant materials, and exterior electrical fixtures are mandatory requirements to ensure safety and durability. Provide an oil-water separator for drainage and comply with Environmental Protection Agency (EPA), state, and local criteria where applicable. An independent hot water supply source, separate from the building's domestic hot water system, is highly recommended. Include a storage room nearby for soap and supplies.

7.1.17.11.8. Parts Cleaning. Components removed from gun systems, AME, NIE, and ammunitionloading equipment are cleaned in this area. An automatic jet washer type machine (size depending on type of equipment to be cleaned) is required to adequately clean parts and support a steady flow of periodic inspections required on all equipment. Provide space for parts cleaning equipment and a workbench as required.

7.1.17.11.9. Dimensions. Bell-Boeing FRD Figure 3-31 shows 3,050 NSF for the weapons shop workspace, 400 NSF for storage for tools/parts, 337.5 NSF for an equipment room with a bead blaster, grinder, and drill press, and 625 NSF for a secure armory. This totals 4,412.5 NSF for a weapons shop facility for 12 PMAI.

7.1.17.11.10. Design Considerations. Locate facilities to comply with explosives safety standards (see DoD 6055.09-M and AFMAN 91-201, Explosive Safety Standards for further guidance). Provide floor drains in maintenance areas as required. The floor drain in the cleaning room should be connected to an oil-water separator. Provide explosion-proof fixtures as required. A minimum clear ceiling height may be required in the maintenance and storage areas to allow for fire protection systems and/or installation of an overhead monorail hoist. Provide sufficient compressed air outlets throughout the maintenance area. Test equipment may have special electrical requirements. Provide grounding, surge protection, and lightning protection system. An IDS is required in accordance with Department of Defense Manual (DoDM) 5100.76, *Physical Security Standards Sensitive Conventional Arms, Ammunition and Explosives*. All alarm signals will enunciate at a central control station from which a response force can be dispatched. Large roll-up or sliding doors may be required to facilitate entry of equipment into the maintenance and storage areas. This facility should be in proximity to the

operational parking apron and be accessible to vehicles transporting weapons release components to and from the flightline.

7.1.17.12. Aircraft Inspection Section (Phase). The Aircraft Inspection Section performs aircraft (phase, periodic, isochronal (ISO), or Letter Check) inspections. In units maintaining multiple weapon systems, the inspection section may be divided into separate elements for each type of aircraft maintained. Major repair or maintenance would require use of the host installation shop.

7.1.17.12.1. Dimensions. The minimum work space required in all scenarios to support additional Phase support equipment for 12 PMAI for the CV-22 is 3,453.4 NSF (Bell-Boeing FRD Paragraph, 3.6.2.4.3).

7.1.17.13. Aircraft General Purpose Shop (CATCODE: 211152).

7.1.17.13.1. Requirements Determination. The facility provides space for specialized and general maintenance activities. These facilities may include work benches, bench stock, battery servicing area, cryogenics maintenance area, generator area, life raft bottle servicing area, tool crib, administrative space, and personnel locker space. These shops may be in one building or several buildings (DAFMAN 32-1084, CC 211152 Shop Aircraft General Purpose, Paragraph 1.3).

7.1.17.13.2. Scope Determination. DAFMAN 32-1084, CC 211152 Shop Aircraft General Purpose, Table 1.1 states the total gross space requirements for general purpose maintenance shops for a Special Operations Wing is to be determined by individual analysis and validated by AFSOC/A4M.

7.1.17.13.3. Dimensions. See Paragraph [7.4.2](#), Intermediate Maintenance Facilities for CV-22 facilities at the intermediate level.

7.1.17.13.4. Design Considerations. Ensure cleanliness and area safety requirements for cryogenic materials is maintained. Floor with grates and groves tend to accumulate debris that can create hazardous condition when in contact with cryogenics materials. Where possible, try to avoid the use of mezzanines. The use of mezzanines restricts movement of forklifts. It also limits ground floor storage due to pillars location. Provide grounding points for safety.

Figure 7.1.13. Typical CV-22 Maintenance Hangar and AMU Facility.

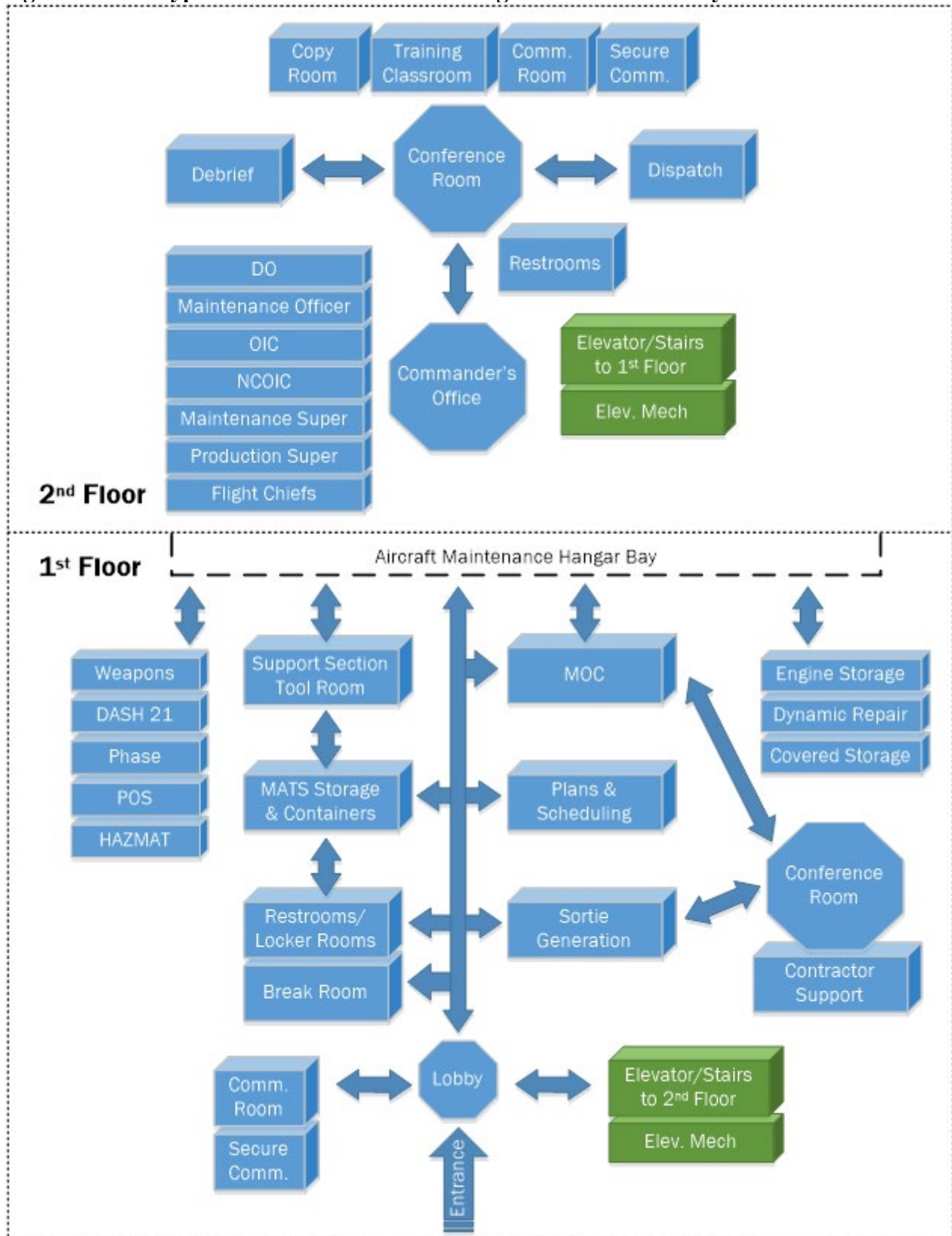


Table 7.1.32. CV-22 Maintenance (AMU) Facility Space Requirements.

Cat Code	Facility	UM	CV-22 CONUS (5)¹	CV-22 CONUS (10)¹	CV-22 OCONUS (6)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
211-154	Commander – Command Suite	NSF	140	140	140	140 NSF min for Type C Offices. ⁴
211-154	First Sergeant – Command Suite	NSF	100	100	100	Per AIM: Authorized 1 PN if squadron has 50 (all enlisted + 2% of officers). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. ⁴
211-154	Support Staff and Waiting - Command Suite	NSF	184	328	328	Waiting area is 20 NSF per person. ⁶ Reception desk is user justified. ⁶ Calculated as 2 justified waiting persons (40 NSF) x 3 PN Type F Offices per UTC. ⁵
211-154	Maintenance Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Maintenance Supt ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	AMU OIC and NCOIC ²	NSF	200	200	200	2 PN. 100 NSF min for Type D Offices. ⁴
211-154	Production Supt ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Production Staff (Expeditors)	NSF	192	240	192	<9 PMAI = 4 PN, 9+ PMAI = 5 PN. 48 NSF min for Type F Offices. ⁵
211-154	Crew Chiefs ²	NSF	345	530	375	Chiefs offices depend on number of squad. PN. 5 PMAI CONUS = 8 PN. (3 Type E, 5 Type G) 10 PMAI CONUS = 13 PN (4 Type E, 5 Type G) 6 PMAI OCONUS = 9 PN (3 Type E, 6 Type G) 65 NSF min for Type E Offices. ⁵ 30 NSF min for Type G Offices. ⁵
211-154	Specialist Sec. NCOIC ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵

211-154	Specialist Sec. Staff Offices	NSF	150	270	180	Staff offices depend on number of squadron PN. 5 PMAI CONUS = 5 PN. 10 PMAI CONUS = 9 PN 6 PMAI OCONUS = 6 PN 30 NSF min for Type G Offices. ⁵
211-154	Specialist Sec. Storage Vault	NSF	50	100	100	Provide 50 NSF per UTC.
211-154	Support Sec. NCOIC ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Weapons Sec. NCOIC ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Weapons Sec. Staff Offices	NSF	96	144	96	5 PMAI CONUS = 2 PN. 10 PMAI CONUS = 3 PN 6 PMAI OCONUS = 2 PN 48 NSF min for Type F Offices. ⁵
211-154	Resource Manager ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Training Manager ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Security Manager ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Quality Assurance	NSF	195	195	195	3 PN. 65 NSF min for Type E Offices. ⁵
211-154	Technical Order Distribution Office (TODO)	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Sortie Generation ²	NSF	130	130	130	Assume 2 PN. 65 NSF min for Type E Offices. ⁵
211-154	Plans and Scheduling	NSF	152	303	182	Bell-Boeing FRD, Table 3.6: 364 NSF for 12 PMAI.
211-154	Dispatch ²	NSF	227	409	273	Bell-Boeing FRD Table 3.5: Provides 545 NSF for If Dispatch for a 12 PMAI squadron.
211-154	COSO Manager	NSF	0	0	0	If authorized, 1 PN. 100 NSF min for Type D Offices. ⁴
211-154	COSO Staff	NSF	0	0	0	If authorized, 5 PN. 65 NSF min for Type E Offices. ⁵
211-154	COSO Cust. Service ²	NSF	0	0	0	If authorized, provide 200 NSF.

211-154	COSO Equip. Storage ²	NSF	0	0	0	If authorized, provide 300 NSF.
211-154	Field Service Representatives ²	NSF	260	260	260	Bell-Boeing FRD, Table 7.1: 4 PN. 65 NSF min for Type E Offices. ⁵
211-154	AFETS	NSF	260	260	260	4 AFETS per unit. 65 NSF min for Type E Offices. ⁵
211-154	Logistics Support Representatives ²	NSF	65	65	65	Bell-Boeing FRD, Table 7.1: 2 PN, 1 located with the AMU and another with base supply. 65 NSF min for Type E Offices. ⁵
211-154	Special Programs Office ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Engine Representatives ²	NSF	130	130	130	Bell-Boeing FRD, Table 7.1: 2 PN. 65 NSF min for Type E Offices. ⁵
211-154	Support Equipment Representative ²	NSF	65	65	65	Bell-Boeing FRD, Table 7.1: 1 PN. 65 NSF min for Type E Offices. ⁵
211-154	Interactive Electronic Technical Manual (IETM) Representative ²	NSF	65	65	65	Bell-Boeing FRD, Table 7.1: 1 PN. 65 NSF min for Type E Offices. ⁵
211-154	CAMEO Representative ²	NSF	165	165	165	AFSOC/A6: CAMEO, 1 EA contractor with server and maintenance area. Provide 10' x 10' for server and maintenance area. 65 NSF min for Type E Offices. ⁵
211-154	Vestibule/Lobby	NSF	0	0	0	User Justified. ⁶ Included in the NSF to GSF conversion. ⁹
211-154	Elevator	NSF	80	80	80	Provide 80 NSF.
211-154	Elevator Equip. Room	NSF	90	90	90	Provide 90 NSF.
211-154	Men's Shower	NSF	120	150	120	Provide 4 showers plus an additional shower and drying area for every 3 PMAI over 5. UFC 3-420-1: 30 NSF per shower/drying area.

211-154	Women's Showers	NSF	60	90	60	Provide 2 showers plus an additional shower and drying area for every 3 PMAI over 5. UFC 3-420-1: 30 NSF per shower/drying area.
211-154	Men's Lockers	NSF	223	445	284	Lockers are 18" W x 18" D x 24" H, 3-tier. With circulation, provide 5 NSF per locker. Calculated as Number of male lockers/3 x 5 NSF.
211-154	Women's Lockers	NSF	56	111	71	Lockers are 18" W x 18" D x 24" H, 3-tier. With circulation, provide 5 NSF per locker. Calculated as Number of female lockers/3 x 5 NSF.
211-154	Restrooms and Janitor's Closet	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
211-154	Mech/Elec Rooms	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
211-154	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	Mission Operations Center (MOC) ²	NSF	333	667	400	Bell-Boeing FRD Table 3.20: 800 NSF for 12 PMAI.
211-154	Aircraft Maintenance Event Ground Station	NSF	100	100	100	Bell-Boeing FRD Table 3.5: Recommended Ground Station area is 10' x 10'.
211-154	Management Information System (MIS)	NSF	65	65	65	Provide 1 Type E office per MIS. 65 NSF min for Type E Offices. ⁵
211-154	Debrief	NSF	338	454	405	Bell-Boeing FRD Table 3.5: Provides 810 NSF of debrief space for a 12 PMAI squadron.
211-154	Training Classroom	NSF	504	1,005	642	AFSOC/A4I: unit authorization will be unit PN (military only) x 3 NSF. 5 PMAI= 148 PN; 6 PMAI= 178 PN; 10 PMAI= 298 PN

211-154	Conference Room	NSF	1,150	1,150	1,150	Size based on population. 5 PMAI CONUS = 167; 10 PMAI CONUS = 334; 6 PMAI OCONUS = 213. Provide one 50-person conference room with 150 NSF speaker area. ⁶
211-154	Commander's Conference Room	NSF	150	150	150	AFSOC/A4I: Provide for up to 10 people. CG 61 Admin Overview Table 1.4: 15 NSF per person.
211-154	Team Room	NSF	450	600	450	Size based on population. 5 PMAI CONUS = 167; 10 PMAI CONUS = 334; 6 PMAI OCONUS = 213. Populations of 150: provide three 10-person team rooms and one additional 10-person team room for each additional 100 personnel. ⁶
211-154	Break Room	NSF	481	962	613	16% of occupants x 18 NSF. ⁶ 5 PMAI CONUS = 167; 10 PMAI CONUS = 334; 6 PMAI OCONUS = 213.
211-154	Secure Storage	NSF	63	125	75	Bell-Boeing FRD Table 3.5: Recommends 120 NSF for a 12 PMAI squadron.
211-154	CTK, Supply, Battery Shop	NSF	3,550	7,100	4,260	Bell-Boeing FRD Table 3.5: Recommends 5,695 NSF for 12 PMAI squadron. An additional 2,790.9 NSF for the remaining SE to be stored in the support section (Bell-Boeing FRD, Paragraph 3.4.1.13). Provide 710 NSF per PMAI total.
211-154	Dash 21 Equipment Storage	NSF	552	1,103	662	Bell-Boeing FRD Table 3.5: Provides 1,324 NSF for 12 PMAI.
211-154	Aircraft Inspection Section (Phase) Storage	NSF	1,439	2,878	1,727	Bell-Boeing FRD Paragraph 3.6.2.4.3: 3,454 NSF for 12 PMAI. This is a high-bay facility.
211-154	Hazardous Materials	NSF	113	225	135	Bell-Boeing FRD Paragraph 3.7.7: One month's supply is 7.5 NSF x 3 lockers x #PMAI.

211-154	MATS	NSF	500	1,000	600	Bell-Boeing FRD, Table 3.11: 12 MATS Storage Containers is 700 NSF. Storage containers can be located outside. The tanks can be stacked 2 high. Provide 100 NSF per PMAI. This is a high-bay facility.
211-154	MATS Accessory Storage Container	NSF	200	200	200	Bell-Boeing FRD, Table 3.11: Area recommended for storage of 12 MATS accessory containers is 200 NSF. Containers can be stacked 4 high.
211-154	POS	NSF	220	440	264	Bell-Boeing FRD Paragraph 3.4.2.2.1: Estimated storage area for 12 units in their containers is 260 NSF. Bell-Boeing FRD Paragraph 3.4.2.2: 2 individual POS units per aircraft. Provide 44 NSF per PMAI.
211-154	Weapons Shop	NSF	1,839	3,678	2,207	Bell-Boeing FRD Figure 3-31 shows 3,050 NSF for the weapons shop workspace, 400 NSF for storage for tools/parts, 338 NSF (rounded) for an equipment room with a bead blaster, grinder, and drill press, and 625 NSF for a secure armory. This totals 4,413 (rounded) for a weapons shop facility for 12 PMAI.
211-154	Engine Storage	NSF	500	1,000	600	CV-22- FRM Para 3.6.2.6.1: Space for storing 12 engines is 900 NSF without stacking. Can be stacked 2 high. Provide 100 NSF per PMAI.
211-154	Dynamic Repair Shop	NSF	9,791	9,791	9,791	Bell-Boeing FRD Figure 3-9: 95.5' x 107'.
211-154	Dynamic Repair Shop Covered Storage ³	NSF	1,060	1,060	1,060	Bell-Boeing FRD Figure 3-9: 40' x 26.5'

211-154	Support Equipment Covered Storage ³	NSF	2,575	5,150	3,090	Bell-Boeing FRD Paragraph 3.4.1 .13: 6,172 NSF for 12 PMAI. Provide 515 NSF per PMAI.
211-154	Admin. Support Space	NSF	1,280	1,500	1,320	AFSOC/A4I: default is 20 sf/person. ¹¹
211-154	Admin. Circulation	NSF	767	951	806	Max 10% of Administrative Space ¹⁰
211-154	Special Purpose Circulation	NSF	2,110	3,122	2,318	Max 10% of Special Purpose Space ¹⁰
211-154	SOMXS Commander	NSF	140	140	140	Provide 1 Type C office. 140 NSF min for Type C offices. ⁴
211-154	SOMXS First Sergeant	NSF	100	100	100	Provide 1 Type D office. 100 NSF min for Type D offices. ⁴
211-154	SOMXS Commander's Support Staff	NSF	140	140	140	Waiting area is 20 NSF per person. ⁶ Reception desk is user justified. ⁶ Calculated as 2 justified waiting persons (40 NSF) + 1 Type D office (100 NSF min) for commander secretary.
211-154	SOMXS Maint. Officer	NSF	100	100	100	100 NSF min for Type D offices.
211-154	SOMXS Superintendent	NSF	100	100	100	100 NSF min for Type D offices. ⁴
211-154	SOMXS Pro. Superintendent	NSF	100	100	100	100 NSF min for Type D offices. ⁴
211-154	SOMXS Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	SOMXS Commander's Conference Room	NSF	150	150	150	AFSOC/A4I: Provide for up to 10 people. 15 NSF per person. ⁷
211-154	SOMXS Break Room	NSF	100	100	100	16% of occupants x 18 NSF, minimum of 100 NSF. ⁶ This break room will only supports the SOMXS.
Total SOMXS Facilities		GSF	1,343	1,343	1,343	Facility can be collocated or separate from AMU. Net to Gross conversion factor:1.25.
Total AMU Facilities		NSF	31,648	44,810	34,356	
Total AMU Facilities		GSF	39,559	56,012	42,945	Net to Gross conversion factor of 1.25.
Total AMU Covered Storage		NSF	3,635	6,210	4,150	

Notes:

1. Number of PMAI. 5 PMAI = 6 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 10 PMAI = 11 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting, and conference rooms, or where noise attenuation is needed for security reasons. This concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. Tropical environments introduce increased corrosion due to high humidity with high salt content. In these instances, standard exterior covered storage may not be adequate to maintain mission essential, mission ready, spares and equipment unless the spares and equipment are stored within nearly airtight equipment containers (CONEX boxes or other containers). In these cases, AFSOC/A4I may approve additional controlled humidity warehouse space.
4. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.
5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
7. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.4.
8. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.5
9. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2
10. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3
11. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

7.1.18. CV-22 Intermediate Maintenance Facilities.**7.1.18.1. Fabrication Flight.****Table 7.1.33. Fabrication Flight Facility Minimum Areas.**

Function/Area Required in NSF	CV-22 CONUS (5 PMAI)	CV-22 CONUS (10 PMAI)	CV-22 OCONUS (6 PMAI)
Structural Repair/Sheet Metal Shop	746	746	746
Composite Repair ¹	407	407	407
Metals Technology	1,636	1,636	1,636
Non-Destructive Inspection	4,000	4,000	4,000

Note:

1. Composite Repair is normally included with the structural repair section.

7.1.18.1.1. Structural Repair. Structural repair shops include: shop administration, the sheet metal shop, corrosion control shop, and the fiberglass/composites shop.

7.1.18.1.2. Sheet Metal Shop. See [Table 7.1.34](#) for equipment in the Structural Repair/Sheet Metal Shop. Provide adequate space for all authorized shop equipment, including the working and safety zone around each piece. The shop must be able to handle a propeller rotor blade that is 18 ft x 3 ft. Equip the sheet metal shop with a 1-ton bridge crane spanning the material storage area and most the work area. Also, install ½-ton or ¼-ton cranes at strategic locations required for material handling. The sheet metal shop requires a material storage rack for sheet stock of various metals used

to fabricate aircraft parts. A moveable rack to store the sheet stock on edge will facilitate stock selection.

Table 7.1.34. Equipment in the Structural Repair/Sheet Metal Shop.

Equipment Name	Quantity	Dimensions
Do-All Band Saw ²	1	56" x 44"
Belt Sander ²	1	29" x 18"
Drill Press ²	1	25" x 20"
Power Shear ²	1	84" x 109"
Gerber Etcher ²	1	65" x 75"
Thermo Dimpler ²	1	35" x 57"
Flaring Mach ²	1	41" x 45"
Bench Grinder ²	1	21" x 21"
Notes: 1. The items in this shop are typical to all structural repair/sheet metal shops. The quantities reflect the minimum needed and could vary based on maintenance demands. 2. Provide a minimum of 3' working clearance on all sides.		

7.1.18.1.3. Composites Shops. Provide a containment area at floor level to capture drips and spillage from worktables. Special equipment required in the composites shop includes ovens for curing completed projects and a bridge crane system with a ½-ton hoist for moving large items within the shop. The shop must be able to handle a propeller rotor blade that is 18 ft x 3 ft. The composites shop requires refrigerators to store sheet adhesives used in composite component manufacture and repair. Paint and chemicals storage should also be provided. The minimum additional space required in a composite repair facility for CV-22 support equipment is 406.7 NSF (Bell-Boeing FRD, Paragraph 3.6.2.3.1.2). Major repair or maintenance would require use of the host installation shop.

7.1.18.1.3.1. Storage Area. Provide an exterior hazardous material storage facility, and position it within easy access from both the corrosion control shop and the fiberglass/composites shops. If enclosed, this storage facility must maintain temperatures between 10°C (50°F) and 27°C (80°F), and meet all federal, state, and local requirements.

7.1.18.1.4. Corrosion Control Shop (For Corrosion Control Hangar see paragraph 7.1.18.1.6). In this area, the primary workspace is a paint booth with an integral filtration system. Media booths are required to prepare surfaces before painting. One large booth (drive-in type) for large ground equipment and two medium booths for steel and aluminum aircraft parts are needed. An enclosure with a self-contained bead-blast system with High-Efficiency Particulate Air (HEPA) exhaust filtration is adequate for many components. The media booths area also supports the metals technology shops. Therefore, provide for clean/dirty room operations in this shop. The paint booth must be large enough to handle the largest component that will be processed on a regular basis. It should have a paint filtration system and a means to control volatile organic compounds (VOCs). Provide a large sealed area to prepare oversized parts and it should have a paint filtration system. A paint mixing room, separate from the paint

booth, is required to isolate any hazardous fumes from the remainder of the corrosion control shop. This room will contain paint mixing equipment, fume hood, and a daily-use locker to temporarily store hazardous materials such as paints and thinners. A prep station, with a dust collection system to capture airborne particles, should also be considered.

7.1.18.1.5. Metals Technology Work Center. The exact space requirements are determined by the amount and type of authorized equipment. The metals technology area equipment requirement varies by the functions performed. See [Table 7.1.35](#) for the typical equipment to be used in the Metals Technology area.

7.1.18.1.5.1. Welding Shop. Include an Occupational Safety and Health Administration (OSHA) compliant screen/blind system and proper ventilation/hood to protect personnel from welding operations hazards. Equip the welding shop with welding machines and curtains, grinders, and material handling devices. Provide a 1-ton capacity bridge crane with two each ½-ton hoists for handling parts, and provide a 2-ton bridge crane spanning the material storage and work areas and 1-ton hoists at strategic locations in the machine shop.

7.1.18.1.5.2. Computer-Aided Design and Drafting/Computer-Aided Manufacturing (CADD/CAM) Shop. CADD/CAM equipment is required to provide design parameters to computer numerical control (CNC) machines for automatic part fabrication. Include a separate room for the computer terminal.

7.1.18.1.5.3. Storage Area. The metals technology area requires a material storage rack for bar and plate stock needed to manufacture aircraft components. Provide storage cabinets in the welding shop for bench and operating stocks suitable for small items and ready use welding supplies. There should be additional storage space and racks with safety chains to store inert gas cylinders for aircraft welding operations.

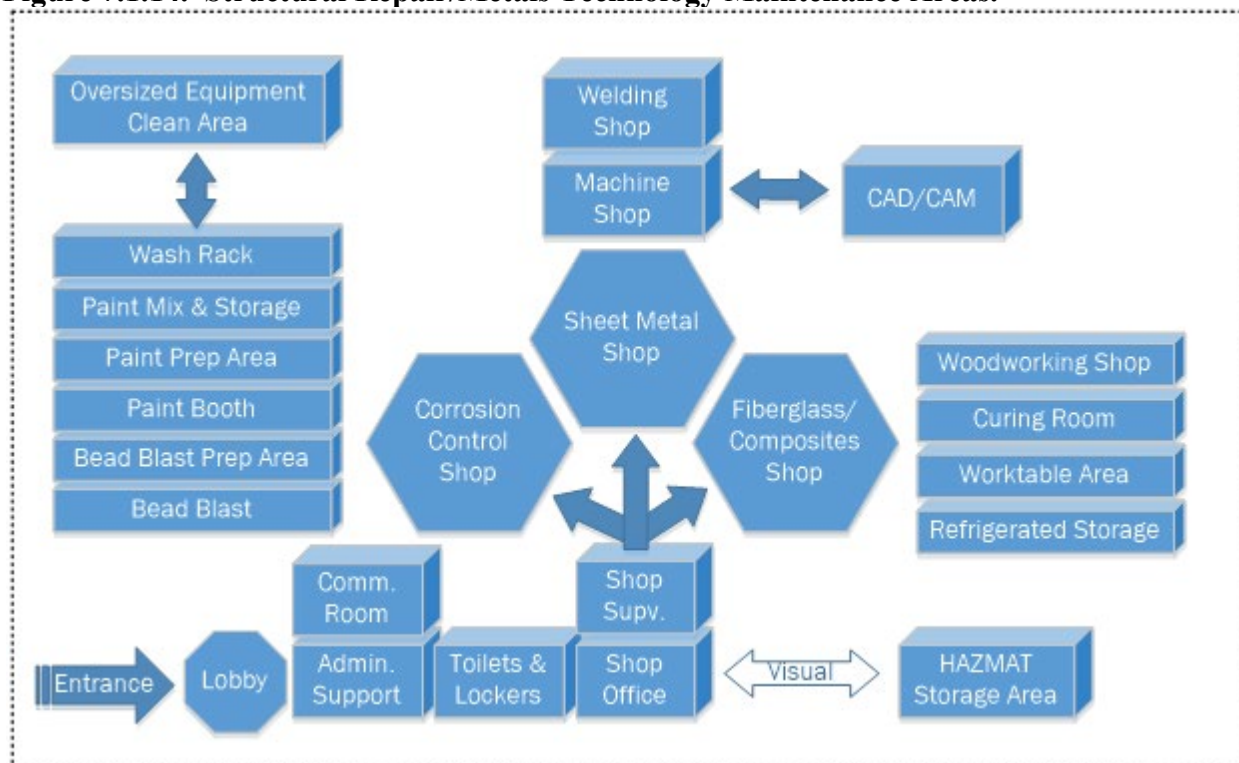
Table 7.1.35. Equipment for Metals Technology.

Equipment Name	Quantity	Dimensions
Lathe	1	10' x 10'
Vertical Machining Center (VMC)	1	6' x 12'
Cutting Table	1	6' x 10'
CNC Milling Machine	1	8' x 8'
Note: 1. The items in this shop are typical to all metals technology shops. The quantities reflect the minimum needed and could vary based on maintenance demands.		

7.1.18.1.5.4. Dimensions. 1,636 NSF is required for Metals Technology equipment ([Table 7.1.35](#)) and maneuver/work space.

Table 7.1.36. Building Utility System Requirements for Structural Repair and Metals Technology Facility.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions to prevent CADD/CAM equipment failures, corrosion of equipment/machined parts, and to assure accuracy of machined parts. Point source exhaust systems with general filtration must be installed throughout the shop at welding stations to eliminate welding fumes, airborne smoke, and cutting fluid mists. The metals technology shop requires a 150-psi high volume shop air source for specialized equipment and for general hand tool operations. Provide the fiberglass/composites shop with a specialized ventilation system, which exhausts fumes to the outdoors. Preheat the air intake, or filter exhaust air for re-circulation. The woodworking shop requires a sawdust collection system. Maintain regulated temperature and humidity conditions to prevent specialized computer equipment failures, corrosion of equipment/parts, and to aid in sealant/bonding agent curing. Structural maintenance shops require high volume 150-psi shop air for specialized equipment and general hand tool operation. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. The corrosion control shop in the structural maintenance function requires a separate male and female changing and shower area. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.1.14. Structural Repair/Metals Technology Maintenance Areas.**7.1.18.1.6. Corrosion Control Hangar (CATCODE: 211159).**

7.1.18.1.6.1. Requirements Determination. The number and size of corrosion control facilities is the minimum size required to accommodate the largest aircraft serviced and workload required to support the total Air Force corrosion control concept. A hangar provides enclosed space for aircraft washing and for inspecting the aircraft for corrosion damage. Additionally, the facility can accommodate surface preparation and repainting of the aircraft. Some installations, such as depot-type operations and MAJCOM regional corrosion prevention and control facilities, may need a strip/repaint hangar in addition to an aircraft corrosion control hangar. A corrosion control shop is also necessary to provide an enclosed area for corrosion treatment, inspections, stripping, and painting of aircraft components and other associated support equipment.

7.1.18.1.6.2. Scope Determination. Corrosion control is both a base and a depot responsibility. Specific workloads vary from base to base, but the minimum required facilities include a wash rack, shop space for complete corrosion treatment, painting removable aircraft parts, ground support equipment, and a corrosion approved facility to perform aircraft maintenance painting. Complete aircraft corrosion control and strip/repaint facilities are authorized only at regional support bases as determined by MAJCOM needs. The required size for this centralized or regional complete strip/repaint facility is the minimum size required to accommodate the largest aircraft supported. Due to the unique purpose of these facilities, do not link the centralized or regional facility to the maximum number of

covered facilities as described in **CATCODE 211111**.

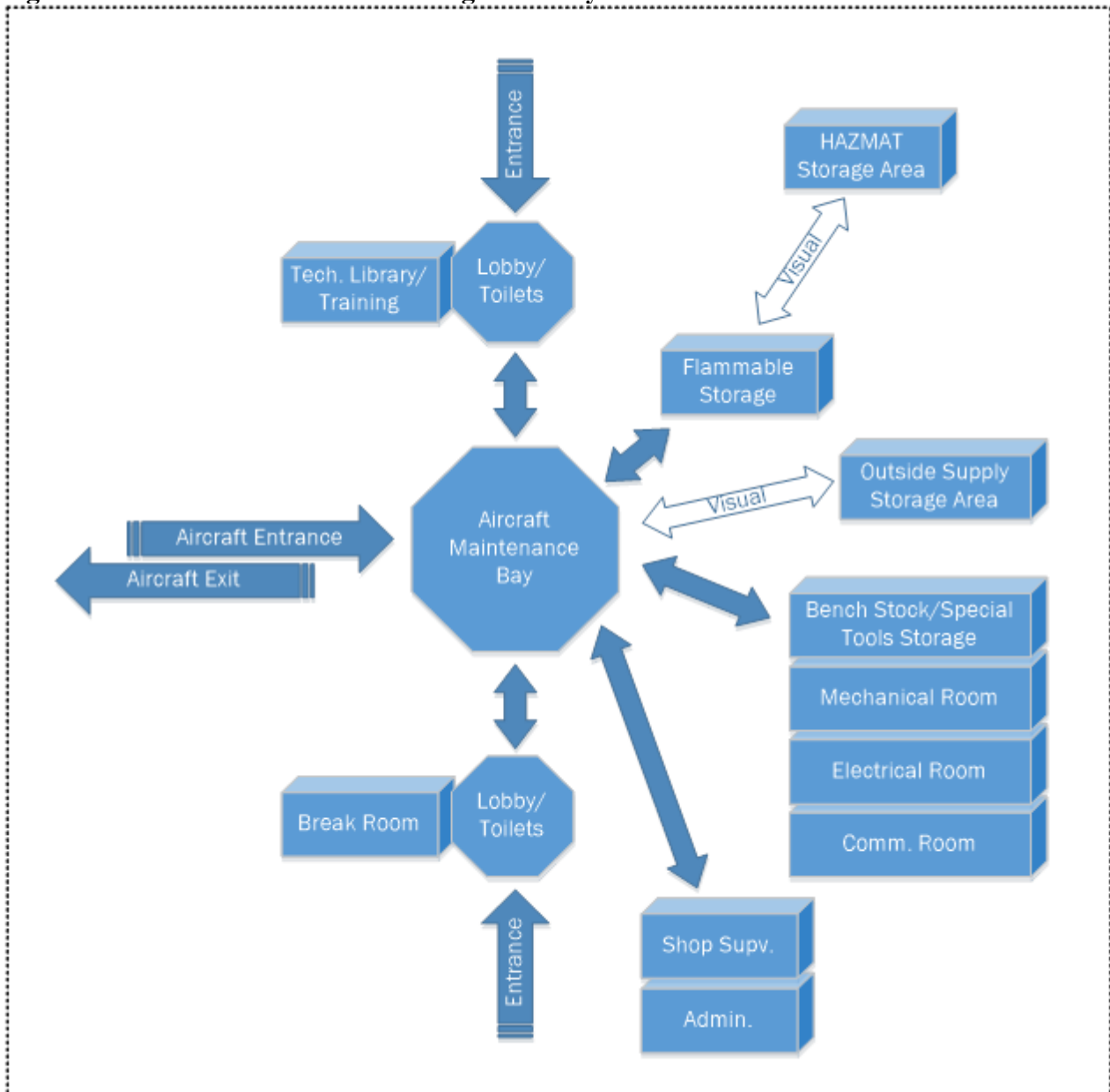
7.1.18.1.6.3. **Dimensions.** Bases with a large number of aircraft (above 40 large or medium aircraft assigned) or in a severely corrosive environment are authorized, with proper justification, a corrosion control hangar and a wash hangar (DAFMAN 32-1084, CC 211159 Aircraft Corrosion Control, Paragraph 1.4). These two activities can be collocated or separate. DAFMAN 32-1084, CC 211111 Hangar Maintenance, Figure 1.1 provides an example where the B-52 is considered a large aircraft, the KC-135 is considered a medium aircraft, and the F-16 is considered a small aircraft. Using this example, the CV-22 would be considered a small aircraft, and all AFSOC weapon systems would fall under medium or small aircraft categories. Per DAFMAN 32-1084 CC 211159 Aircraft Corrosion Control, Paragraph 1.4, bases with a large number of aircraft (above 40 large or medium aircraft assigned) or in a severely corrosive area are authorized, with proper justification, a corrosion control hangar and a wash hangar. If authorized a corrosion control hangar, provide a facility that is 26,230 NSF (32,788 GSF with 1.25 net to gross conversion). This supports a typical 10-20-person AFSOC corrosion control facility. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (2,200 NSF), a Paint Mixing Room (250 NSF), Paint Storage (560 NSF), Equipment Storage (900 NSF), Equipment Cleaning (50 NSF), Solvent Storage (50 NSF), Material Storage (900 NSF), PPE Storage (150 NSF), PPE Cleaning (50 NSF), a Stencil Room (120 NSF), a Laundry Room (100 NSF), Men's Clean and Dirty Shower/Locker Room (240 NSF), Women's Clean and Dirty Shower/Locker Room (160 NSF), a 2-person Shop Supervisor Office with Type E offices (130 NSF), a Communications Room (144 NSF), a Break Room (216 NSF), and a Copy Room (50 NSF).

Table 7.1.37. Building Utility System Requirements for Corrosion Control Facility.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source or connection (around 120 psi) and should be conveniently located throughout the maintenance bay.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Provide lightning protection system to protect the aircraft and facility.
Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide hot and cold water connections and industrial waste disposal system.

Fire Protection	The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF. An adequate water supply source with sufficient pressure should be verified prior to a system design and construction.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.1.15. Corrosion Control Hangar Facility.



7.1.18.1.7. **NDI Laboratory (CATCODE: 211153).** This facility consists of testing facilities, equipment storage, supply storage, analysis and report offices, and laboratory space. In administrative spaces an open office concept using system furniture will be used with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.1.18.1.7.1. Requirements Determination. All bases required to have a full, nondestructive testing facility are authorized 4,000 NSF for a laboratory (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2).

7.1.18.1.7.2. Shop Area. The shop space equipment includes: fluorescent penetrate and magnetic particle testing machines, portable ultrasonic and eddy current machines, and X-ray and darkroom equipment.

7.1.18.1.7.3. Storage Area. Storage requires an environmental control capability to store X-ray films and an oil analysis spectrometer.

7.1.18.1.7.4. Lab Area. An NDI laboratory requires a 1-ton capacity monorail with two ½-ton capacity hoists servicing both the X-ray shielded room and the room containing the fluorescent penetrate and magnetic particle testers. Use X-ray equipment specification to determine ceiling heights and workflow maneuverability. Provide silver recovery equipment in the darkroom, and provide radiation shielding per the National Institute of Standards Technology Information Security Handbook. A leadshielded opening should be provided in the wall between the X-ray exposure room and the control room to allow for passage of X-ray equipment control cables.

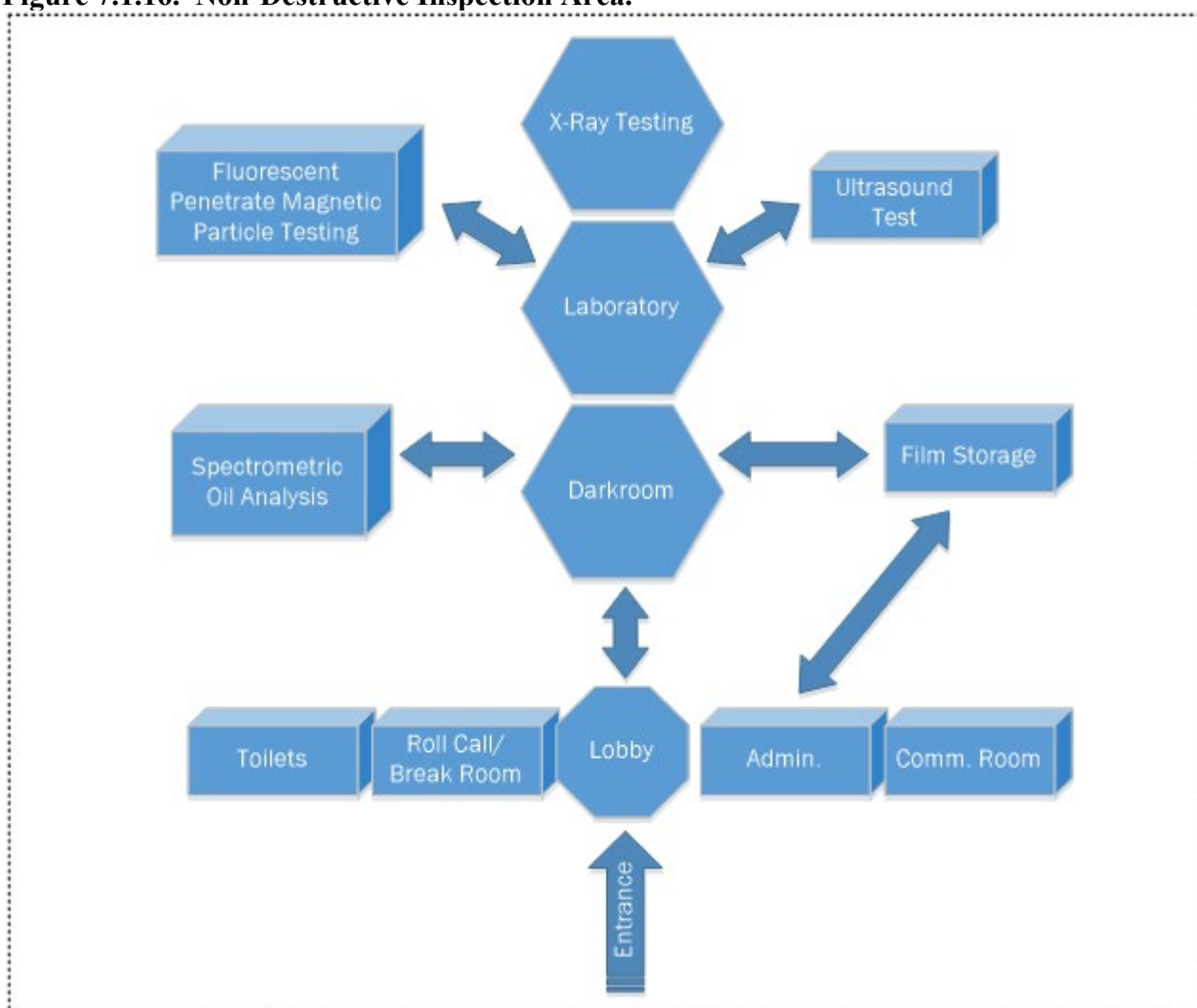
7.1.18.1.7.5. Dimensions. Bases with an NDI facility are authorized 4,000 NSF (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2: and TO 33B-1-1, Figure 1.1).

Table 7.1.38. Building Utility System Requirements for NDI Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required especially on storage functions due to delicate devices and other sensitive equipment. The NDI lab requires 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Consult X-ray and other NDI equipment specifications for their specific power requirements. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.

Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.1.16. Non-Destructive Inspection Area.



7.1.18.2. AGE Flight.

7.1.18.2.1. AGE Shop and Storage Facility (CATCODE: 218712).

7.1.18.2.1.1. Requirements Determination. The AGE shop inspects, maintains,

repairs, and services powered and non-powered AGE directly supporting aircraft and powered munitions AGE, if assigned. It normally includes maintenance stalls with work benches, an indoor wash rack, tool crib, bench stock, sealed lead acid battery servicing area, engine exhaust education system, administrative space, and personnel locker space.

7.1.18.2.1.2. Scope Determination. DAFMAN 32-1084, CC 218712 Aircraft Support Equipment Shop/Storage Facility, Table 1.1, lists the space requirements for AGE maintenance shops and standby storage facilities. These space requirements include total covered storage. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and its requirements are listed in the storage facilities section in paragraph 7.1.19.2. Requirements for the AGE Shop and Storage facility are based on the number of pieces of AGE supported.

7.1.18.2.1.3. Dimensions. The size of this facility will be based on the number of authorized pieces of AGE. If other weapon systems are supported at the installation, the number of AGE units supporting CV-22 aircraft would be added and can then be cross-referenced with DAFMAN 32-1084 CC 218712 Table 1.1 to determine the maximum space allowed. The recommended space allocation for this facility can be found in Table 7.1.46.

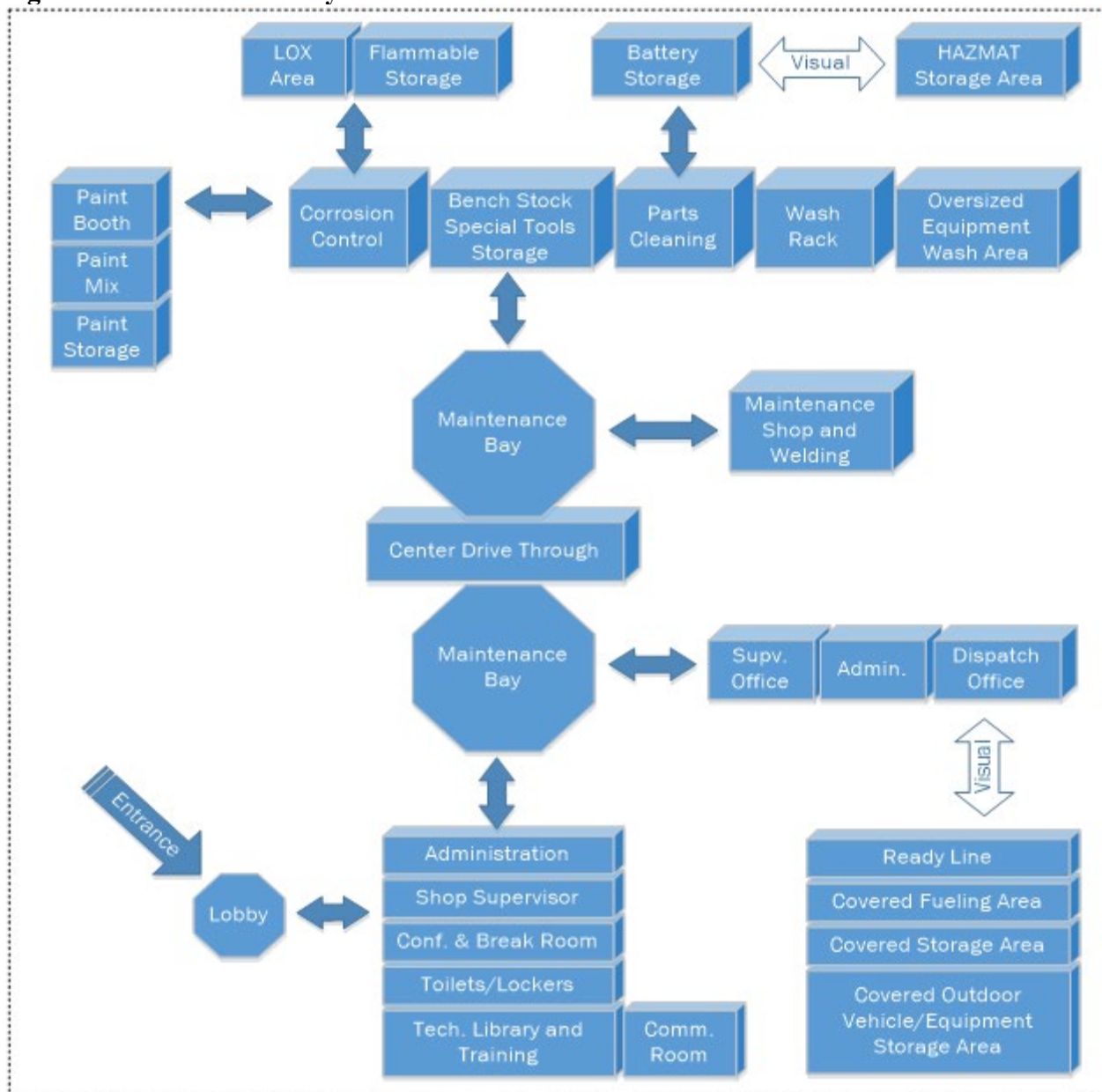
7.1.18.2.1.4. Unique Facility Requirements. An overhead hoist is required to support a minimum of 2,720 kg (6,000 pounds). A separate oil-free area is required for LOX handling equipment. The floor must be concrete. Electrical power (120 VAC and 220 VAC) is required in the area. This area must be covered, but should preferably be inside a facility.

Table 7.1.39. Building Utility System Requirements for AGE Facility.

System	Requirements
Mechanical	A compressed air source or connection (around 120 psi) and should be conveniently located throughout the maintenance bay and corrosion control areas. The facility should have energy efficient climate control and proper ventilation. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connection for equipment and workstations ranging from 120V, 240V, and 480V. Certain electrical requirements are AGE equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.

Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.1.17. AGE Facility.



7.1.18.3. Maintenance Support Flight.

Table 7.1.40. Maintenance Support Facility Minimum Areas.

Function/Area Required in NSF	CV-22 CONUS (5 PMAI)	CV-22 CONUS (10 PMAI)	CV-22 OCONUS (6 PMAI)
Aircraft Inspection Section (Phase)	Located with the AMU	Located with the AMU	Located with the AMU
Repair & Reclamation	N/A	N/A	N/A
Wheel & Tire	2,668	2,668	2,668

7.1.18.3.1. Wheel & Tire Shop.

7.1.18.3.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used with exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.1.18.3.1.2. Maintenance Area. Provide a hard rubber floor coating in the tire breakdown/assembly area to avoid damage to the wheels during operations performed in the shop. A seamless floor coating will keep fluid spills from seeping through cracks and creating maintenance problems. Cover walls and ceilings with appropriate sound insulation to reduce noise. Shop equipment in the wheel and tire shop includes: tire break-down machines, tire inflation cages, an oven for heating wheels, a freezer for cooling bearing races, an arbor press, and a jet washer. Provide a bearing/solvent room that contains a non-foaming jet washer for cleaning bearings and ample room when servicing the wheel bearings. Special equipment in the tire shop includes a ¼-ton monorail hoist to move large wheels.

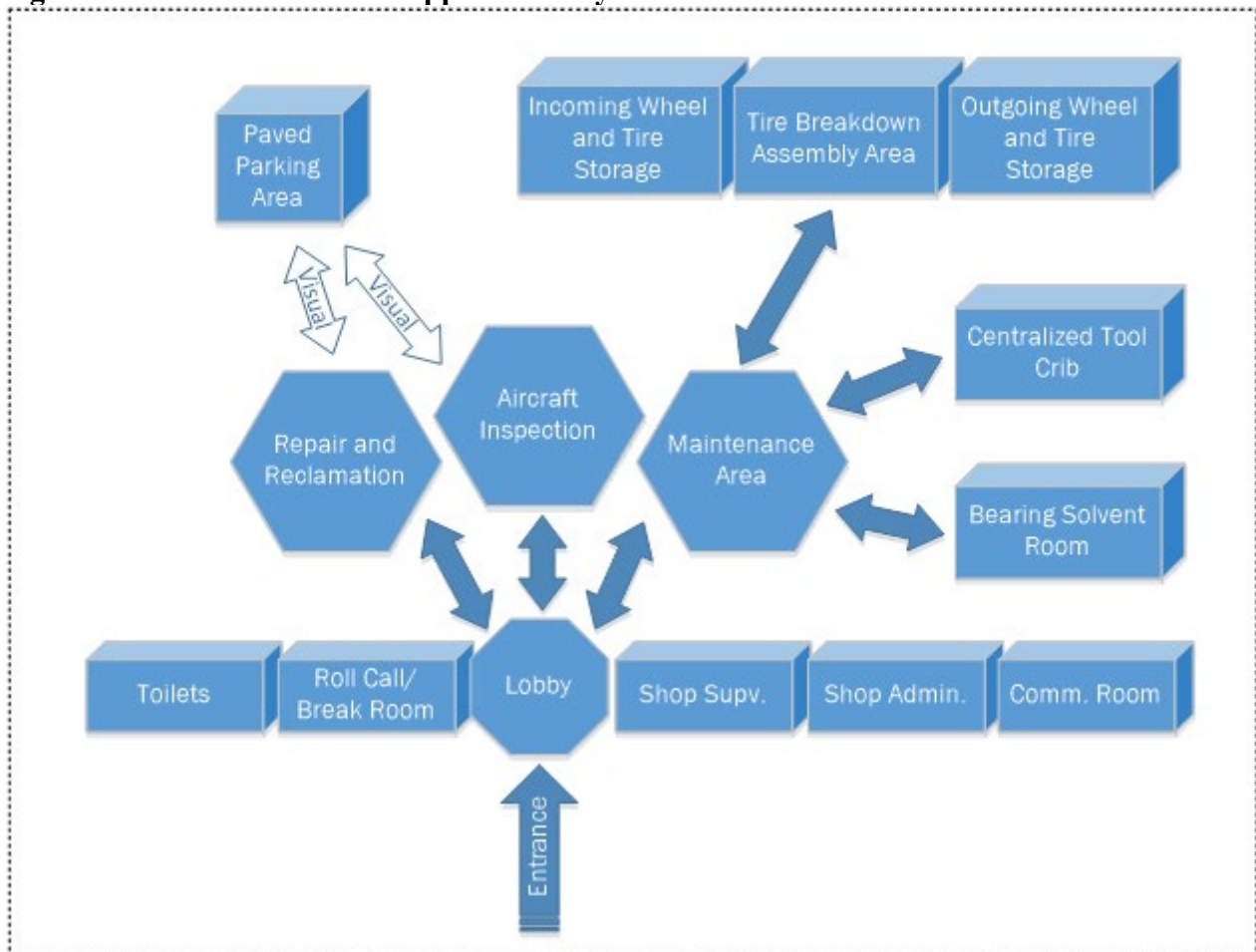
7.1.18.3.1.3. Storage Area. Provide separate material storage areas to include tire racks for both incoming (awaiting service) and outgoing (service complete) tires. Recommend using automatic vertical storage racks to store tires effectively.

7.1.18.3.1.4. Dimensions. The recommended space allocation for this facility can be found in [Table 7.1.40](#).

Table 7.1.41. Building Utility System Requirements for Maintenance Support Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required. Repair and reclamation shop requires 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.1.18. Maintenance Support Facility.**7.1.18.4. Accessories Flight.****7.1.18.4.1. Fuel Systems Maintenance Area (CATCODE: 211179).**

7.1.18.4.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used with exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.1.18.4.1.2. Maintenance Bay. This area is where all scheduled fuel system inspections and aircraft maintenance occurs. The bay will be sized for the largest aircraft assigned to the base; however, CV-22 requirements are for a maintenance bay 86.5 ft x 104.6 ft (9,047.9 NSF) [See Paragraph 7.3.2, CV-22 Maintenance Hangar]. These hangars come out of the total hangar allowance for the base or may be added to it, depending on the workload requirements.

7.1.18.4.1.3. Bench Stock/Special Tools Storage. A centralized, enclosed, secure area is required for parts and special tools.

7.1.18.4.1.4. Flammable Storage. Store flammable materials within a fire-rated

enclosure with access to the exterior.

7.1.18.4.1.5. Hazardous Waste Accumulation Point. Designate an area to store hazardous waste generated by ongoing maintenance operations, and comply with current federal, state, and base regulations and procedures.

7.1.18.4.1.6. MATS. Shop space, either a designated room or area is required for MATS tank maintenance.

7.1.18.4.1.7. Support Area. Provide a support area for maintenance crew personnel during rest cycle. The support area shall include a male and female restroom, break room, and locker area.

7.1.18.4.1.8. Dimensions. The minimum work space required in all scenarios of additional CV-22 support equipment for the Fuel Systems shop is 583.9 NSF. Per DAFMAN 32-1084 CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized a fuel systems hangar, provide a facility that is 24,512 NSF (30,640 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. This supports a typical 10-20-person AFSOC fuel systems maintenance dock. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (600 NSF), a Bladder Repair/Tool Room (480 NSF), an External Tank Maintenance Area (1,840 NSF), a Foam Storage Room (512 NSF), A 3-person office for Shop Supervisors and an NCOIC in Type E offices (195 NSF), a Dispatch office for 5 PN in Type E offices (325 NSF), a 20-person Training/Conference Room (300 NSF), and a Break Room (300 NSF).

7.1.18.4.1.9. Design Considerations. Add static discharge ports in the facility doors to ensure safety.

Table 7.1.42. Building Utility System Requirements for Fuel System Maintenance Hangar.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source or connection (around 120 psi) should be conveniently located throughout the maintenance bay. Hangars used for fuel systems maintenance also include wash down drainage trenches.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. All service equipment should be Underwriters Laboratories-listed. Provide required grounding/lightning protection system based on the National Fire Protection Association (NFPA) 780, Standard for Installation of Lightning Protection System.

Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide interior water connection capability and drains.
Fire Protection	Use aircraft fire suppression system such as HEF System, and fire/fume detection system compatible with the centralized fire department detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Table 7.1.43. Accessory Facility Minimum Areas.

Function/Area Required in NSF	CV-22 CONUS (5 PMAI)	CV-22 CONUS (10 PMAI)	CV-22 OCONUS (6 PMAI)
Electro-Environmental	468	468	468
Hydraulics	578	578	578
Egress	N/A	N/A	N/A

7.1.18.4.2. Hydraulics Shop.

7.1.18.4.2.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept using system furniture will be used with exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.1.18.4.2.2. Maintenance Area. For this area, rooms should be able to accommodate large components and shop equipment such as tube bender, hose cutting and fitting machines, a landing gear test stand for specific aircraft, a self-contained part cleaning system (jet washer) with non-foaming detergents, and a hydraulic test stand to perform hydraulic component evaluation. Certain shop equipment, such as the jet washer, requires a soundproof room. The hydraulic test stand requires a separate room large enough to allow proper equipment access. This room must be sound and explosion proof, and include windows ports, emergency eye wash/shower stations, and alarm systems. Install a 1-ton bridge crane or monorail, servicing most the work area, and ¼-ton cranes at strategic locations for material handling. Worktables require different (top) surfaces depending on the component being repaired. Provide easily cleaned aluminum work surfaces for handling parts containing hydraulic fluid, and use vinylcovered work surfaces to help protect delicate components.

7.1.18.4.2.3. Storage Area. Provide storage for hydraulic tubing of various types and sizes. Ideal storage containers for tubing are multiple polyvinyl chloride (PVC) pipes, each approximately 20 ft long and 4 inches in diameter, with caps on each end. Also, provide a secure storage area for incoming equipment and components awaiting maintenance. Finally, provide a centrally located bench stock storage and tool bin area.

7.1.18.4.2.4. Dimensions. The minimum space required in all scenarios of additional CV-22 support equipment and shop space for the Hydraulics shop is 578 NSF.

7.1.18.4.3. **Electrical and Environmental (E&E) Shop.**

7.1.18.4.3.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept using system furniture will be used with exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.1.18.4.3.2. Battery Service Area. Include a battery servicing room to recharge batteries and to perform minor maintenance. When servicing both Ni-Cad and lead acid batteries, two separate rooms are needed to prevent cross-contamination of fumes produced by the two battery types. Both rooms require an emergency shower and eyewash station with an alarm system to notify other building occupants when the shower/eyewash system is activated. All equipment in the lead acid charging area must be explosion proof. Utility rooms enclosed in or accessed from the charging room are included in this requirement.

7.1.18.4.3.3. Testing and Repair Area. A separate soundproof room is required to house test stand equipment for generators and constant speed drive equipment. This room must have penetration resistant walls to withstand a minimum 3-psi projectile force. Within the testing and repair function, provide a separate room to service oxygen bottles and life raft bottle/carbon dioxide cartridges.

7.1.18.4.3.4. Wire Maintenance Area. Provide a separate soundproof room for the generator test equipment and a ¼-ton hoist to manipulate heavy components.

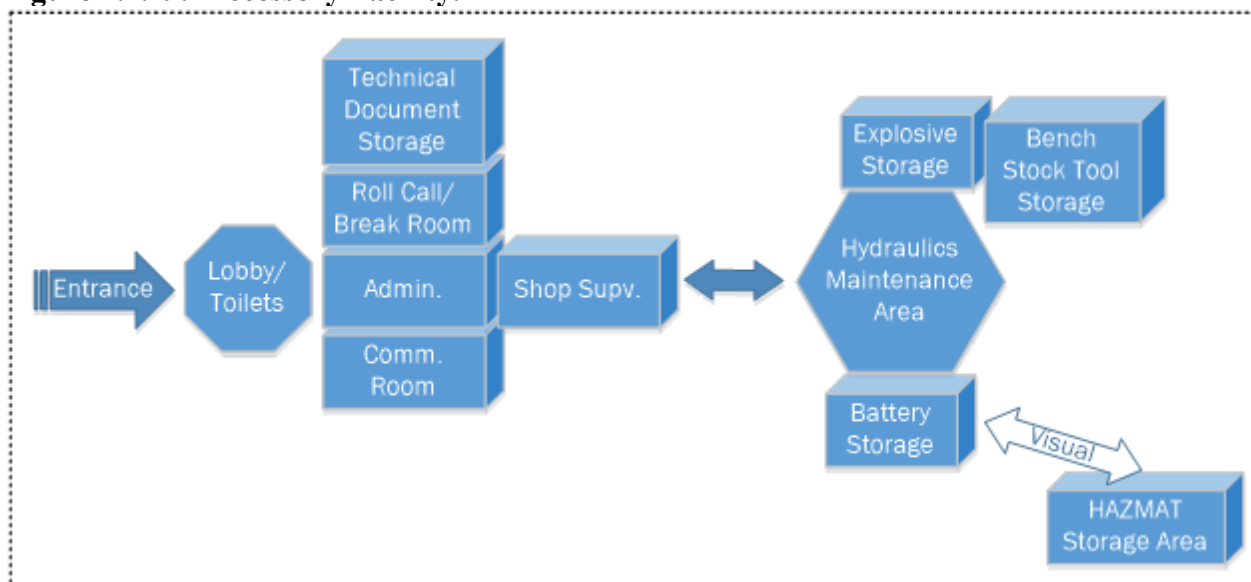
7.1.18.4.3.5. Storage Areas. Provide storage space for electronic equipment awaiting repair and/or pickup. Storage space is also required for serviceable batteries to be recharged and for unserviceable batteries to be discarded. Ensure the battery storage area is properly ventilated. Designate an area to store hazardous waste generated by ongoing maintenance operations. Provide wire dispensing cabinets and wire spool and harness storage bins in the wire maintenance area.

7.1.18.4.3.6. Dimensions. The minimum work space required in all scenarios for additional CV-22 support equipment in the E&E shop is 468 NSF.

Table 7.1.44. Building Utility System Requirements for Accessory Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required. Both the hydraulics function and the E&E shop require 150-psi shop air in designated locations and corrosion resistant drains. Special ventilation requirements need to be verified in the battery service area of the E&E shop to comply with federal and state air quality directives. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.

Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. The battery service and repair area of the E&E function requires explosion proof light fixtures and electrical devices. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide corrosion resistant drains in the E&E function. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with ETL 02-15, UFC 3-600-01, NFPA 33, and NFPA standards. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.1.19. Accessory Facility.**7.1.18.5. Avionics Flight.****7.1.18.5.1. Avionics Shop (CATCODE: 217712).**

7.1.18.5.1.1. Scope Determination. This shop will support the Reconfigurable Transportable Consolidated Automated Support System (RTCASS). Selected

avionics components of the CV-22 will be maintained at the intermediate level by the Integrated Avionics Shop through use of the RTCASS.

7.1.18.5.1.2. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used with exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.1.18.5.1.3. Maintenance/Service Function. This facility houses organizational and intermediate level maintenance activities for the following aircraft equipment and accessories: airborne communications, cameras, bombing systems, and tactical support communications security equipment.

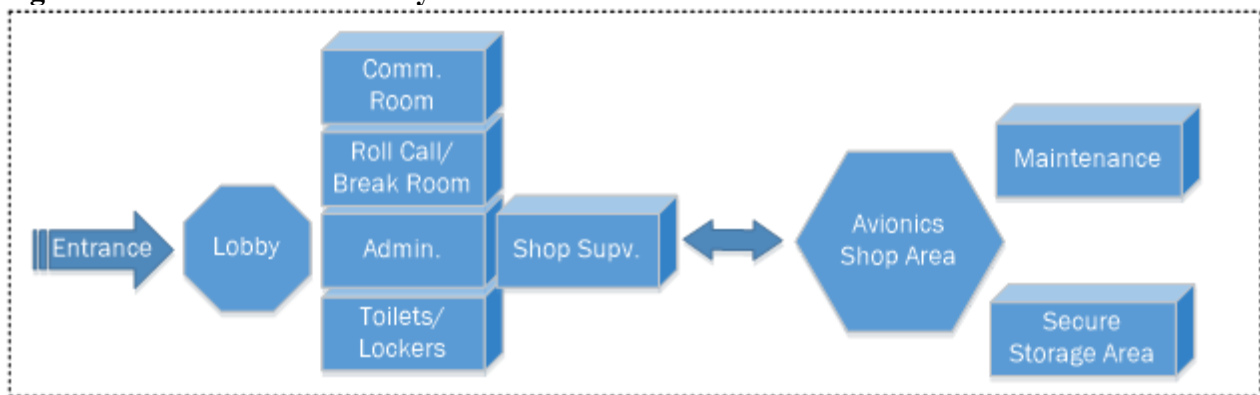
7.1.18.5.1.4. Storage Function. Major items that require shop and storage space are storage racks for serviceable equipment and equipment waiting for maintenance or parts, coding devices, technical data, and storage racks. Some storage space provides physical security and corrosion protection for delicate electronic equipment. If possible, combine maintenance and storage facilities to share secure storage area.

7.1.18.5.1.5. Dimensions. The minimum work space the Integrated Avionics Shop requires for additional CV-22 SE is 1,578.7 NSF (Bell-Boeing FRD, Paragraph 3.6.2.7.1). Operational Test Program Set (OTPS) sets 13, 16, and 18 are designated as depot level only and were not included in the floor space calculation.

Table 7.1.45. Building Utility System Requirements for Avionics Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required, especially on storage functions due to delicate devices and other sensitive equipment. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Due to vast differences in avionics systems requirements, refer to specific weapon systems maintenance technical orders for environmental and power requirements. Also, refer to Air Force Occupation Safety and Health (AFOSH) 91-66, AFOSH 91-50, TO 00-25-232, and TO 00-25-234 to ensure adherence to applicable general and electrical requirements. Additionally, provide intrusion detection and alarm system capability to the facility. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.

Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 and ETL 02-15. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.1.20. Avionics Facility.**7.1.18.6. Munitions Flight.****7.1.18.6.1. Munitions Shop.**

7.1.18.6.1.1. Administrative Area. This area includes space for an NCOIC, assistant NCOIC, crew chiefs, break room, and restrooms. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.1.18.6.1.2. Munitions Maintenance Bays. CV-22 munitions shops require 1 munitions maintenance bays that is 30' wide x 50' long with the floors being exposed concrete. The bays will be drive-through with an electrical rollup door size of 14' wide x 12' tall and emergency exit doors each side. For air circulation, provide one large high volume, low speed fan for the bay.

7.1.18.6.1.3. Container Storage. Provide a storage area for miscellaneous containers between the munitions bays and the administrative offices. The storage bay should be the same size as the munitions bays at 30' wide x 50' long.

7.1.18.6.1.4. Equipment/Special Tools Storage. A centralized, enclosed, secure area is required for parts and special tools. Include two workstations for checking in/out tools. Equip the room with metal storage shelving, bins, racks, and/or mezzanine to maximize storage space. Provide direct access to the exterior for deliveries.

7.1.18.6.1.5. Dimensions. See [Table 7.1.46](#) for the recommended space allocation for this facility.

7.1.18.7. **Armament Flight.** The CV-22 Weapons Shop is typically combined within the Equipment Maintenance Squadron (EMS) or the Maintenance Squadron (MXS).

7.1.18.8. **Test Measurement Diagnostic Equipment (TMDE) Flight.** The Precision Measurement Equipment laboratory (PMEL) is the base-level Air Force Metrology and Calibration (AFMETCAL) Program focal point. The program provides for the calibration and repair of TMDE. Headquarters Air Force (HAF)/A4LF approves the establishment of PMELs at selected installations (TO 00-20-14, Paragraph 1.2.3).

Table 7.1.46. CV-22 Intermediate Maintenance Facility Space Requirements.

Cat Code	Facility	UM	CV-22 CONUS (5) ¹	CV-22 CONUS (10) ¹	CV-22 OCONUS (6) ¹	DAFMAN 32-1084 Reference or Remarks/Calculations ²
218-712	AGE Shop	NSF	4,324	8,647	5,188	Bell-Boeing FRD Paragraph 3.6.1.1: The required shop space to support AGE maintenance is 10,376.7 NSF.
218-712	AGE Shop Covered Storage	GSF	5,170	5,170	5,170	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See DAFMAN 32-1084 CC 218712 Table 3.10. 5 PMAI = 5,170 GSF; 10 PMAI = 7,760 GSF; 6 PMAI = 10,350 GSF.
211-152	Structural Repair	NSF	746	746	746	Bell-Boeing FRD Paragraph 3.6.2.3.1.1: The minimum additional space needed to accommodate CV-22 SE for the Structural Repair Shop is 746.1 NSF (shop floor space needed is 312.7 NSF and the tool crib area will require 433.5 NSF).
211-152	Composite Repair	NSF	407	407	407	Bell-Boeing FRD Paragraph 3.6.2.3.1.2: The minimum additional space needed to accommodate CV-22 SE for Composite Repair is 406.7 NSF (shop floor space needed is 396.0 NSF and the tool crib area will require 10.7 NSF).

211-152	Metals Technology	NSF	1,636	1,636	1,636	1 SOMXG: Space is determined by the equipment used. 1 lathe 10' x 10' area (100 NSF), 1 VMC 40-20 equals 6' x 12' plus 6' around for access (432 NSF), Cutting table equals 6' x 10' plus 10' around for access (780 NSF), CNC or VF4 equals 8' x 8' plus 6' around for access (324 NSF).
211-153	NDI Section	NSF	4,000	4,000	4,000	TO 33B-1-1, Sec. 1-14, Figure 1-1: Typical NDI Facility, 4,000 NSF.
211-152	Wheel & Tire Shop	NSF	2,668	2,668	2,668	Bell-Boeing FRD Paragraph 3.6.2.4.2: Wheel & Tire Shop is 2,666 NSF. The minimum work space Wheel and Tire Shop requires for additional CV-22 SE is 2.0 NSF. Calculated as 2,666 + 2.
211-152	E&E Shop	NSF	468	468	468	Bell-Boeing FRD Paragraph 3.6.2.5.1: The minimum work space Electrical-Environment Shop requires for additional CV-22 SE is 467.7 NSF (434.9 NSF for shop floor space, and 32.8 NSF for tool crib space).
211-152	Hydraulics Shop	NSF	578	578	578	Bell-Boeing FRD Paragraph 3.6.2.5.2: The minimum work space Hydraulic Shop requires for additional CV-22 SE is 578.1 NSF (542.6 NSF for shop floor space, and 35.4 NSF for tool crib space).
211-179	Fuel Systems Maintenance Dock	NSF	584	584	584	Bell-Boeing FRD Paragraph 3.6.2.5.4: The minimum work space Fuel Systems Shop required for additional CV-22 SE is 583.9 NSF (188.9 NSF for shop floor space and 395.0 NSF for tool crib space). Per DAFMAN 32-1084 CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized a fuel systems hangar, provide a facility that is 24,512 NSF (30,640 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. See paragraph 7.1.18.4.1.8 for more information.

211-159	Corrosion Control	NSF	0	0	0	CC 211159 Aircraft Corrosion Control, Paragraph 1.4: Bases with a large number of aircraft or in a severely corrosive area are authorized, with proper justification, a corrosion control hangar and a wash hangar. If authorized provide a facility that is 26,230 NSF (32,788 GSF with 1.25 net to gross conversion). See paragraph 7.1.18.1.6.3 for more information.
211-153	NDI Section	NSF	4,000	4,000	4,000	TO 33B-1-1, Sec. 1-14, Figure 1-1: Typical NDI Facility, 4,000 NSF.
218-852	AFE Shop	NSF	0	0	0	AFE for the CV-22 is provided with squadron operations. For consolidated AFE facilities for multiple weapon systems, see Table 8.4.4 .
217-712	Integrated Avionics Shop	NSF	1,579	1,579	1,579	Bell-Boeing FRD Paragraph 3.6.2.7.1: The minimum work space Integrated Avionics Shop requires for additional CV-22 SE is 1,578.7 NSF (317.0 NSF of shop floor space and 1,261.7 NSF tool crib space).
216-642	Munitions Shop ²	NSF	3,840	3,840	3,840	Provide a minimum of one 30' by 50' work bays and one storage bay (1,500 NSF each). Administrative area includes 2 Type E offices (NCOIC and assistant NCOIC) and 3 Type F offices (Crew Chiefs). Tool room includes 250 NSF for storage and Type G workstations for tool check in/out. Provide a 16 PN break room (CG 61 Admin Overview Table 1.4 100 NSF minimum) and a 12 ft x 12 ft comm. room (per AFSOC/A6). CG 61 Admin Overview Table 1.2 and Table 1.2.1: 65 NSF min for Type E offices. 48 NSF min for Type F offices. 30 NSF min for Type G offices.

211-152	Admin. Support Space	NSF	260	1,540	620	In lieu of UMDs for each shop space, an area based assumption that 40% of all maintenance squadron personnel require administrative offices (See Table 7.1.11 , Table 7.1.12 , and Table 7.1.13). The total administrative support space from the Maintenance AMU should be subtracted from this total. AFSOC/A4I: default is 20 sf/ person.
211-152	Admin. Circulation	NSF	53	181	89	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin. Space.
211-152	Special Purpose Circulation	NSF	1,747	2,115	1,821	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
211-152	Covered Storage	NSF	208	417	250	Bell-Boeing FRD, Table 3.20:500 NSF for 12 PMAI.
Total Int. Maint. Facilities		NSF	22,890	28,989	24,224	Excludes covered storage.
Total Int. Maint. Facilities		GSF	28,613	36,237	30,281	Excludes covered storage. Net to Gross conversion factor of 1.25.
Total Covered Storage		GSF	5,378	5,587	5,420	
Notes: 1. Number of PMAI. 5 PMAI = 6 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 10 PMAI = 11 total aircraft (1 BAI). 2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being meeting and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture. 3. HAF/A4LF approves the establishment of PMELs at selected installations (TO 00-20-14, Paragraph 1.2.3).						

7.1.19. CV-22 Storage Facilities.

7.1.19.1. Aviation Bulk Fuel Storage (CATCODE: 411135).

7.1.19.1.1. Description. The aviation fuel storage facility provides an operating and reserve supply of aviation fuel.

7.1.19.1.2. Requirements Determination. The total tankage required for jet fuel will be the sum of the peacetime and war reserve tankage requirements. This may be adjusted up or down by DLA Energy based on additional distribution needs or nearby available war reserve fuel (DAFMAN 32-1084, CC 411135 Jet Fuel Storage, Paragraph 1.2).

7.1.19.1.3. Scope Determination. The average fuel consumption for the CV-22 is estimated to be 209 gallons per flight hour per engine. CV-22 fuel capacity is 2,037 gallons without additional tanks. DLA Energy requires storage of 5 to 15 days depending on location (Bell-Boeing FRD Paragraph 3.7.3). Per the Environmental Review completed for the RAF Mildenhall the annual number of sorties is expected to be 1,884. This figures approximately 7 sorties per business day/night. A 15-day fuel supply for 6 PMAI would be in the range of 176,000 gallons. Since, wartime requirements should directly support an OPLAN and identify fuel quantities to satisfy mobility, strategic air operations, civil defense, and logistics requirements (4140.25-M, Vol II, Chapter 1, Paragraph C11.3.2), the calculation for CV-22 fuel storage does not include fuel to support a war plan. Those stocks would be calculated via Integrated Consumable Item Support (ICIS) and could greatly increase the fuel storage requirements. Assume bulk fuel storage by host installation.

7.1.19.1.4. Dimensions. The recommended space allocation for this facility can be found in [Table 7.1.48](#).

7.1.19.2. Aircraft Support Equipment Storage Yard (CATCODE: 852273).

7.1.19.2.1. Requirements Determination. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and is measured in square yards.

7.1.19.2.2. Scope Determination. A minimum paved area of approximately 143.8 SY or 1,294 sf is recommended for parking mobile SE in support of a 12 PMAI CV-22 squadron. Additive to the space requirements in DAFMAN 32-1084 Table 3.10 are requirements for maintenance and storage of munitions trailers and equipment that are maintained in or near the weapon storage areas. For powered munitions trailer maintenance and storage facilities, all 192 m² (230 yd²) per authorized trailer for each facility. For planning purposes, assume 1 munitions trailer per UTC.

7.1.19.2.3. Dimensions. The recommended space allocation for this facility can be found in [Table 7.1.48](#).

7.1.19.3. Above Ground Magazine Storage Facility, Types A, B, and C (CATCODE: 422258).

7.1.19.3.1. Requirements Determination. The storage facility shall provide an environment that protects CAD and PAD from moisture, heat, and direct sunlight.

7.1.19.3.2. Scope Determination. The typical minimum storage area required to accommodate CV-22 CAD/PAD in the long-term Above Ground Magazine Storage Facility is 104 ft³ (Bell-Boeing FRD, Paragraph 3.7.4).

7.1.19.3.3. Dimensions. Calculate as follows: 104 ft³ /pallets stacked 3-4 ft high (requirement approximately two pallets or 32 square feet/aircraft. See [Table 7.1.48](#) for the recommended storage space for this facility. ft²

7.1.19.4. Ancillary Explosives Facility (CATCODE: 422275).

7.1.19.4.1. Description. This designation may be applied to pads, locations, revetments, and facilities (excluding aircraft parking) of such size and quantity as required for use such as Ready Explosives Facility or Bomb Preload Station.

7.1.19.4.2. Requirements Determination. The storage facility shall provide an environment that protects CAD and PAD from moisture, heat, and direct sunlight.

7.1.19.4.3. Scope Determination. The total storage area required to accommodate CV-22 CAD/PAD in the short-term Ancillary Explosives Facility if used, is determined by the using organization and AFSOC instruction/policies (Bell-Boeing FRD Paragraph 3.7.5). Bell-Boeing FRD, Table 3.47 indicated one ship set of explosive hazard material is 104 ft³.

7.1.19.4.4. Dimensions. Calculate as follows: 104 cubic ft /pallets stacked 3-4 ft high (requirement approximately two pallets or 32 sf/aircraft). The recommended space allocation for this facility can be found in [Table 7.1.48](#).

7.1.19.5. Munitions Storage (Training Rounds).

7.1.19.5.1. Requirements Determination. Munitions assets, including inert components, are stored in approved storage structures for security and protection (see AFMAN 91-201). If secured storage is limited, preference is given by the risk category and classification as outlined in AFI 21-201, AFMAN 10-401, and AFMAN 23-110, *USAF Supply Manual*.

7.1.19.5.2. Dimensions. See [Tables 7.1.47](#) and [Table 7.1.48](#).

Table 7.1.47. Munitions Training Rounds per Aircraft by Type.

Munitions Training Rounds per aircraft		
Weapon System	50-caliber	M-240 (7.62 mm)
CV-22	1,000 ¹	1,000 ¹
Note: 1. Assume 1,000 each, 50-caliber rounds will take a floor area of about 16 NSF and 1,000 each, 7.62-millimeter (mm) rounds will take a floor area of about 8 NSF. Assume this amount per plane, per training day (6 days a week), and assume 3 months need (12 weeks) of training rounds.		

7.1.19.6. Base Hazardous Material Storage (CATCODE: 442257).

7.1.19.6.1. Description. The facility is required to store hazardous materials that cannot be stored in supply and equipment sheds or warehouses.

7.1.19.6.2. Scope Determination. CV-22 units are authorized to store a month's supply of approved hazardous material in unit storage lockers. Unit hazardous material lockers are commonly 7.5 sf in size and three lockers are typically required to store a month supply of CV-22 hazardous material (Bell-Boeing FRD, Paragraph 3.7.7).

7.1.19.6.3. Dimensions. Storage is within the Maintenance AMU.

7.1.19.7. Base Supplies and Equipment Shed (CATCODE: 442628).

7.1.19.7.1. Requirements Determination. Cargo Tactical aircraft 30 GSF (24 NSF) (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.1). Personnel space is 2 NSF per person (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.2).

7.1.19.7.2. Dimensions. See [Table 7.1.48](#). Calculated as follows: (24 NSF x number of aircraft) + 2 NSF x number of people).

7.1.19.8. Base Supplies and Equipment Warehouse (CATCODE: 442758).

7.1.19.8.1. Requirements Determination. Warehouse space includes supplies and equipment needed to support base operations and fuels operations; receiving, storage issue, inspection, pickup, and delivery activities; warehouse offices; flyaway or mobility kit storage; dangerous material, exclusive of explosives and ammunition; property in the equipment account (DAFMAN 32-1084, CC 442758 Warehouse Supply and Equipment Base, Paragraph 1.2); and a facility with a loading dock and direct, unobstructed access is required for semi-tractor trailer size vehicle loading/unloading.

7.1.19.8.2. Mobility Bags (Readiness Spares Packages [RSP]). Space will be computed at 3 ft³ per bag if the type of bag to be stored has been approved by the Air Force. The best space utilization can be obtained by storing in bulk or on pallet racks. Mobility bag storage is the responsibility of the LRS.

7.1.19.8.3. Scope Determination. Warehouse space for SOS base supplies and equipment is determined by individual analysis and AFSOC.

7.1.19.8.4. Dimensions. 30,000 NSF of storage space and 2,180 NSF of administrative office space are required to store and maintain the RSP and warehouse locations supporting 12 CV-22 aircraft (Bell-Boeing FRD Paragraph 3.7.9). This equals approximately 2,682 NSF per PMAI. Add an additional 300 NSF per PMAI for spare bulk items for a total of 2,982 NSF per PMAI for warehouse storage.

7.1.19.8.5. Design Considerations. Use double-deck construction within the existing facility before programming a new facility or an addition to the existing facility when existing warehouses have clearances of 18 ft or more between the floor and the bottom of the ceiling joist or truss. Standard warehouse facility guidelines contained in AFMAN 23-210 apply. These include, but are not limited to fire protection systems, aisle space, fork lift access, ventilation, and property stacking. The warehouse should be centrally located within the intermediate maintenance area and in proximity to the maintenance hangars (Bell-Boeing FRD Paragraph 3.7.9).

7.1.19.9. Controlled Humidity Warehouse (CATCODE: 442758).

7.1.19.9.1. Dimensions. The controlled humidity warehouse is provided as a part of the general-purpose warehouse space (Bell-Boeing FRD, Paragraph 3.7.10).

7.1.19.10. Base Supply Open Storage (CATCODE: 452252).

7.1.19.10.1. Requirements Determination. Surface improvement of the area is required to facilitate the operation of materials-handling equipment.

7.1.19.10.2. Scope Determination. The size of the area is determined by its overall dimensions with no deductions for interior track and permanent roads.

7.1.19.10.3. Dimensions. The amount of storage space will be determined by analysis and validated by AFSOC. Base Open Storage should be 198 GSF per aircraft for tactical cargo aircraft plus 111 GSF per 200 base personnel (DAFMAN 32-1084, CG 44, Supply Storage Facilities Overview, Table 1.1 and 1.2). Add an additional 500 GSF per aircraft for unique SOF items that cannot be stored in a covered space. See [Table 7.1.48](#) for the recommended space for this facility.

7.1.19.11. **Classified Storage.**

7.1.19.11.1. Requirements Determination. Where a separate building is not available or where its use is not warranted by quantity of classified storage, a room, cage, or crib may be constructed within a warehouse building.

7.1.19.11.2. Scope Determination. All areas which contain classified material will be secured by means of approved locking systems. This will include any temporary storage space used for in-transit classified material. In addition to classified items being stored separately from other material, classified material will be segregated in storage from sensitive but unclassified items. Standards for physical protection of classified items are specifically established in Department of Defense Directive (DoDD) 5200.01, AFI 16-1404, and AFMAN 23-110.

7.1.19.11.3. Dimensions. Approximately 200 NSF of classified storage space is required per CV-22 unit (Bell-Boeing FRD, Paragraph 3.7.12). The recommended space allocation for this facility can be found in [Table 7.1.48](#).

7.1.19.12. **Chaff and Flare Build Up and Storage.**

7.1.19.12.1. Requirements Determination. These materials must be stored in an area segregated to store only ammunition and explosives, related non-explosives items, equipment, and supplies (Bell-Boeing FRD, Paragraph 3.7.13).

7.1.19.12.2. Dimensions. (Bell-Boeing FRD, Paragraph 3.7.13). The recommended storage space to store the CV-22 chaff, flares, and impulse cartridges is 10,332 ft³ assuming 8 ft ceilings or 1,296 NSF. This space assumes a 36 ft x 36 ft bay which can accommodate the required storage space for all scenarios.

7.1.19.12.2.1. The assumptions used to determine the recommended storage space include an annual allotment for one squadron (12 aircraft) of CV-22s for operational use is 12,000 each (chaff, flares, and impulse cartridges) and for training is 3,000 each (chaff, flares, and impulse cartridges). Use BBU-48/B storage dimensional data from 11A16-45-7 to establish area baseline assuming containers are stacked; a 1-inch clearance allowed between boxes for circulation; three different lot numbers of chaff, flares, and impulse cartridges with lots separated by a 36-inch aisle space for obvious lot number separation and for inspections; maintain an 18-inch clearance on the sides and rear of stacks for circulation; and assume an 8-ft ceiling (permits minimum 2-inch space from floor).

Table 7.1.48. CV-22 Storage Facility Space Requirements.

Facility	UM	CV-22 CONUS (5 ¹)	CV-22 CONUS (10 ¹)	CV-22 OCONUS (6 ¹)
Aviation Bulk Fuel Storage ²	gal	146,750	293,250	176,000
AGE Open Storage Yard ²	SY	287	517	517
Above Ground Magazine Storage, Types A, B, and C	NSF	160	320	192
Ancillary Explosives Fac / Ready Explosives Facility	NSF	160	320	192
Munitions - Training rounds	NSF	8,640	17,280	10,368
Base Supplies and Equipment Shed	NSF	485	934	595
Base Supplies and Equipment Warehouse	NSF	14,910	29,820	17,892
Base Supply Open Storage	GSF	3,601	7,202	4,299
Classified Storage	NSF	200	200	200
Chaff and Flare Build Up and Storage	NSF	1,296	1,296	1,296
Admin. Support Space ⁴	NSF	600	1,200	720
Admin. Circulation	NSF	134	259	160
Special Purpose Circulation	NSF	2,273	4,410	2,718
Total Storage Facilities	NSF	28,857	56,040	34,333
Total Storage Facilities	GSF³	36,072	70,050	42,916
Total Open Storage Yard	SY	688	1,318	995
Notes: 1. Number of PMAI. 5 PMAI = 6 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 10 PMAI = 11 total aircraft (1 BAI). 2. Storage provided by host installation. 3. Net to Gross conversion factor of 1.25. 4. Area based requirement assumption of 1 Type D Office (120 NSF max) per 10,000 NSF of storage.				

7.2. AC-130J Facility Requirements.

7.2.1. Weapon System Characteristics: AC-130J. The notional armament concept for each AC-130J includes a 105mm Howitzer with 50-100 rounds on-board, a 30mm Bushmaster with 500 rounds on-board, and various configurations of AGM-114 Hellfire missiles, AGM-176 Griffin missiles, and GBU-39 small diameter bombs. The AC-130J also includes the precision strike package (PSP), which is a modular assembly that can be loaded onto the aircraft and includes a mission management console, a robust communications suite, advanced fire control equipment, and precision-guided munitions delivery capability.

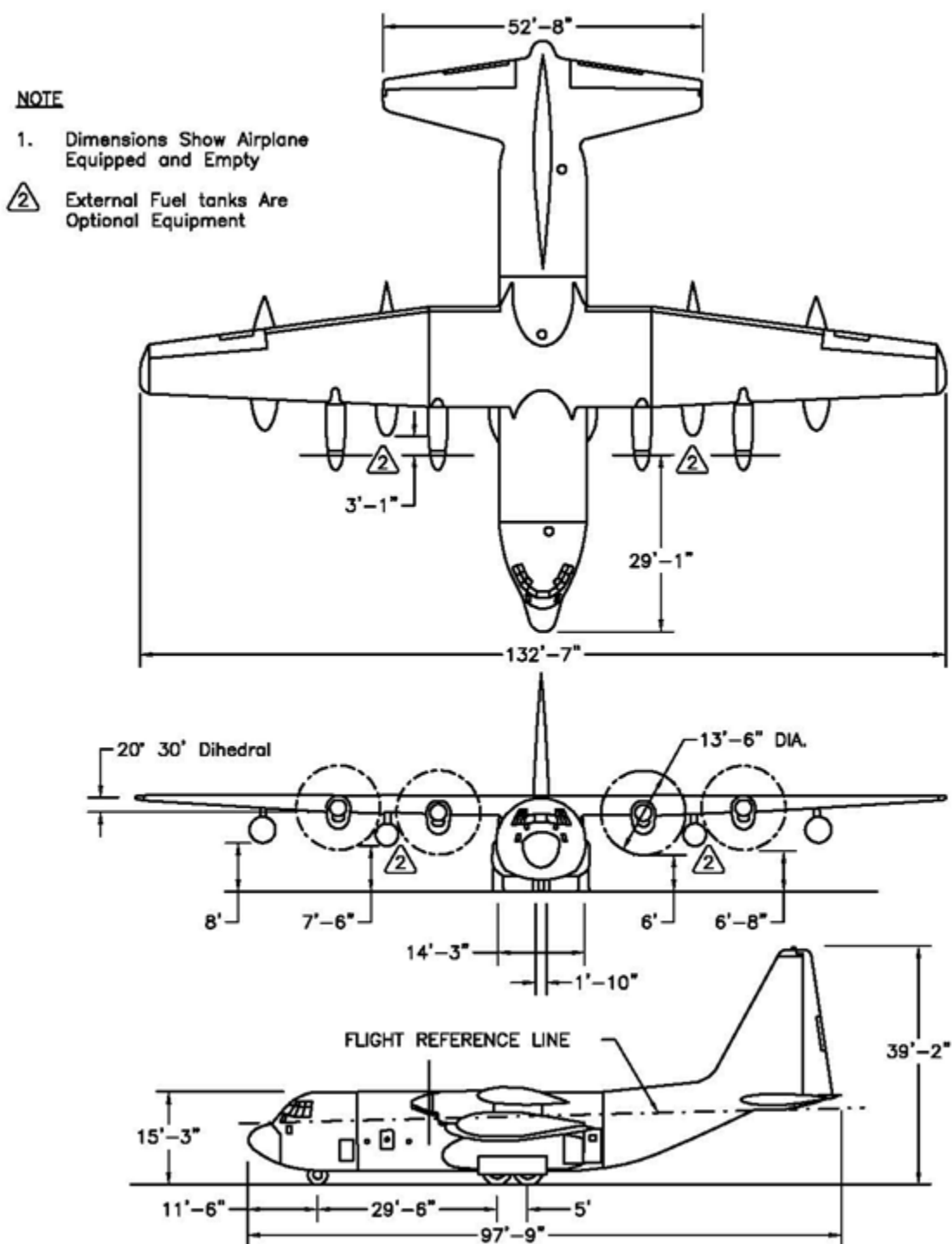
7.2.2. Aircraft Description. The AC-130J “Ghostrider” is a long-range gunship variant of the C-130J platform designed to provide precision strike support to ground forces. The normal flight crew consists of nine personnel (two pilots, two combat systems operators (CSO), one sensor operator, and four special mission aviators. The AC-130J mission is to provide close air support and air interdiction with associated collateral missions. Close air support missions include troops in contact, convoy escort, and point air defense. Air interdiction missions are conducted against preplanned targets and targets of opportunity. The AC-130J incorporates side-firing weapons integrated with sophisticated electro-optical sensors, an advanced navigation system, and fire control system to provide precision firepower or area saturation at day or night and in adverse weather.

7.2.3. Aircraft Principal Dimensions.

Table 7.2.1. AC-130J Block Dimensions.

Wingspan		Length		Height	
m	ft	m	ft	m	ft
40.4	132.6	29.8	97.75	11.94	39.17

Figure 7.2.1. AC-130J Aircraft Dimensions.



7.2.4. Aircraft Weights/Wheel Loads.

Table 7.2.2. AC-130J Gross Weight Summary.

Configuration	kg (lbs)
Basic Weight (with guns and raised floor) ¹	47,450 (104,610)
Basic Weight (without guns and raised floor) ¹	41,457 (91,397)
Estimated Operating Weight ²	70,944 (156,405)
Unusable Fuel ³	550 (1,212)
Max Fuel (Total)	27,832 (61,360)
Max Fuel Internal	19,758 (43,560)
Notes: 1. Source: AFSOC/A4MYA. 2. Estimated Operating Weight includes estimated baseline mission equipment: basic weight with guns (104,610 lbs.) + crew (~1,800 lbs.) + max internal fuel (43,560 lbs.) + 4 Hellfire Missiles (400 lbs.) + 4 Small Diameter Bombs (1,000 lbs.) + 500 rounds of 30mm (35 lbs) + cargo (5,000 lbs.) = 156,405 lbs. 2. Only Internal Tanks; 2,407 lbs with all tanks.	

Table 7.2.3. AC-130J Maximum Fuel Weights.

Tank	Weight (lbs)
No. 1	3,739 (8,310)
No. 2	3,475 (7,660)
No. 3	3,475 (7,660)
No. 4	3,739 (8,310)
Total Main Tanks	14,488 (31,940)
Left Auxiliary	2,635 (5,810)
Right Auxiliary	2,635 (5,810)
Total Internal	19,758 (43,560)
Left External (if installed)	4,037 (8,900)
Right External (if installed)	4,037 (8,900)
Total Internal and External	27,832 (61,360)

7.2.5. Aircraft Mooring Arrangement. Either 10,000 lb strength tie-down chains or 10,000 lb cable strength tiedowns or 3,000 lb cable strength tie-down fittings should be used when mooring the AC-130J.

Table 7.2.4. Maximum Allowable Wind Velocity without Mooring Airplane.

Wind Velocity - Knots						
Airplane Gross Weight (lbs)	Ice	Snow or Wet Grass	Moist Earth	Wet Concrete or Macadam	Dry Turf	Dry Concrete or Macadam
60,000	35	42	44	50	55	69
70,000	38	45	48	54	59	75
80,000	40	48	51	58	63	80
90,000	43	51	54	61	67	83.5
100,000	45	54	57	65	71	83.5
110,000	47	58	60	68	74	83.5
120,000	50	59	63	71	78	83.5
130,000	52	61	66	74	81	83.5
140,000	53	64	68	76	83.5	83.5
150,000	55	66	70	79	83.5	83.5
160,000	57	68	73	82	83.5	83.5
170,000	59	70	75	83.5	83.5	83.5
175,000	60	71	76	83.5	83.5	83.5

Figure 7.2.2. AC-130J Mooring on Standard 30-foot Spaced Ring Grid.

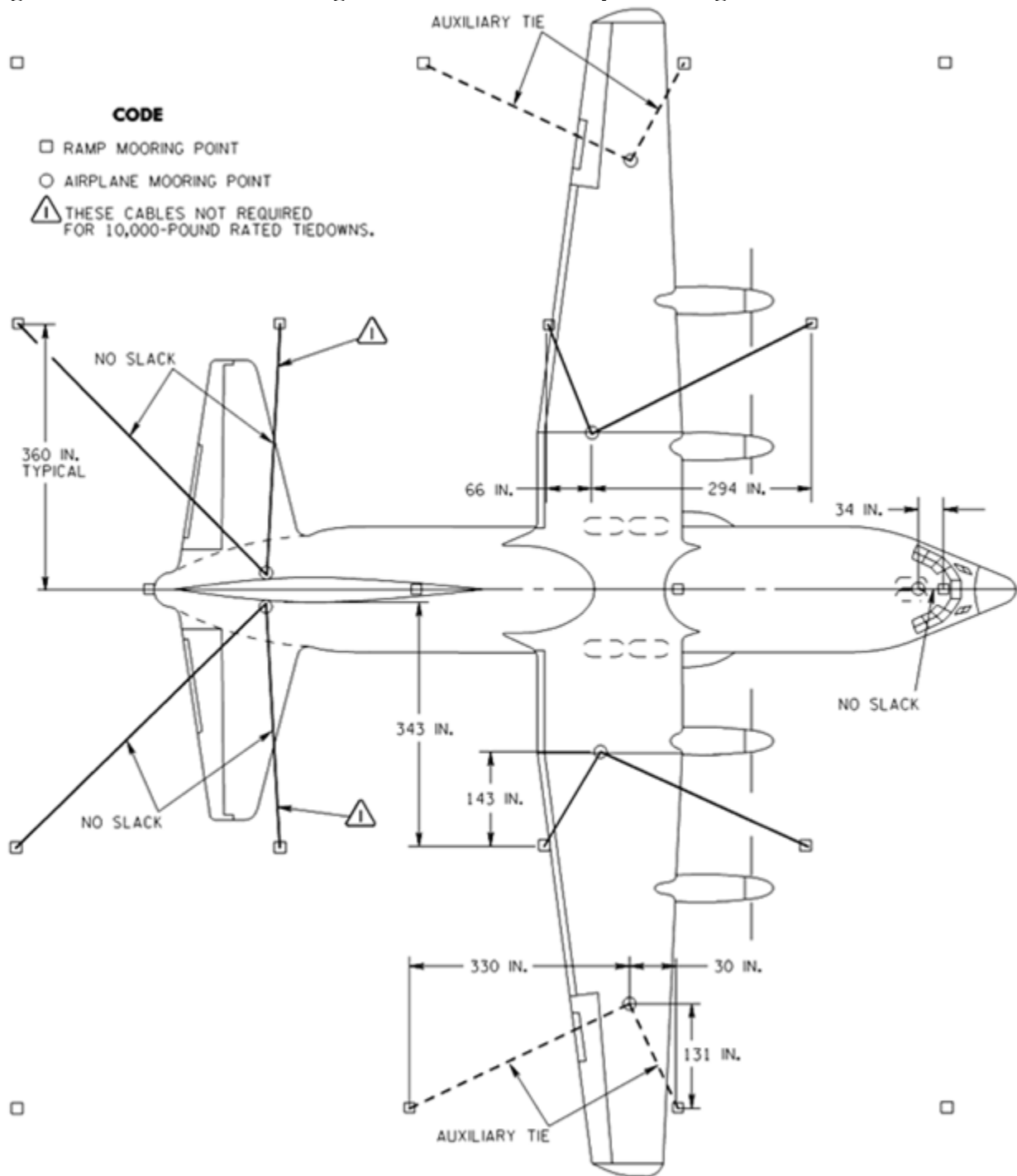
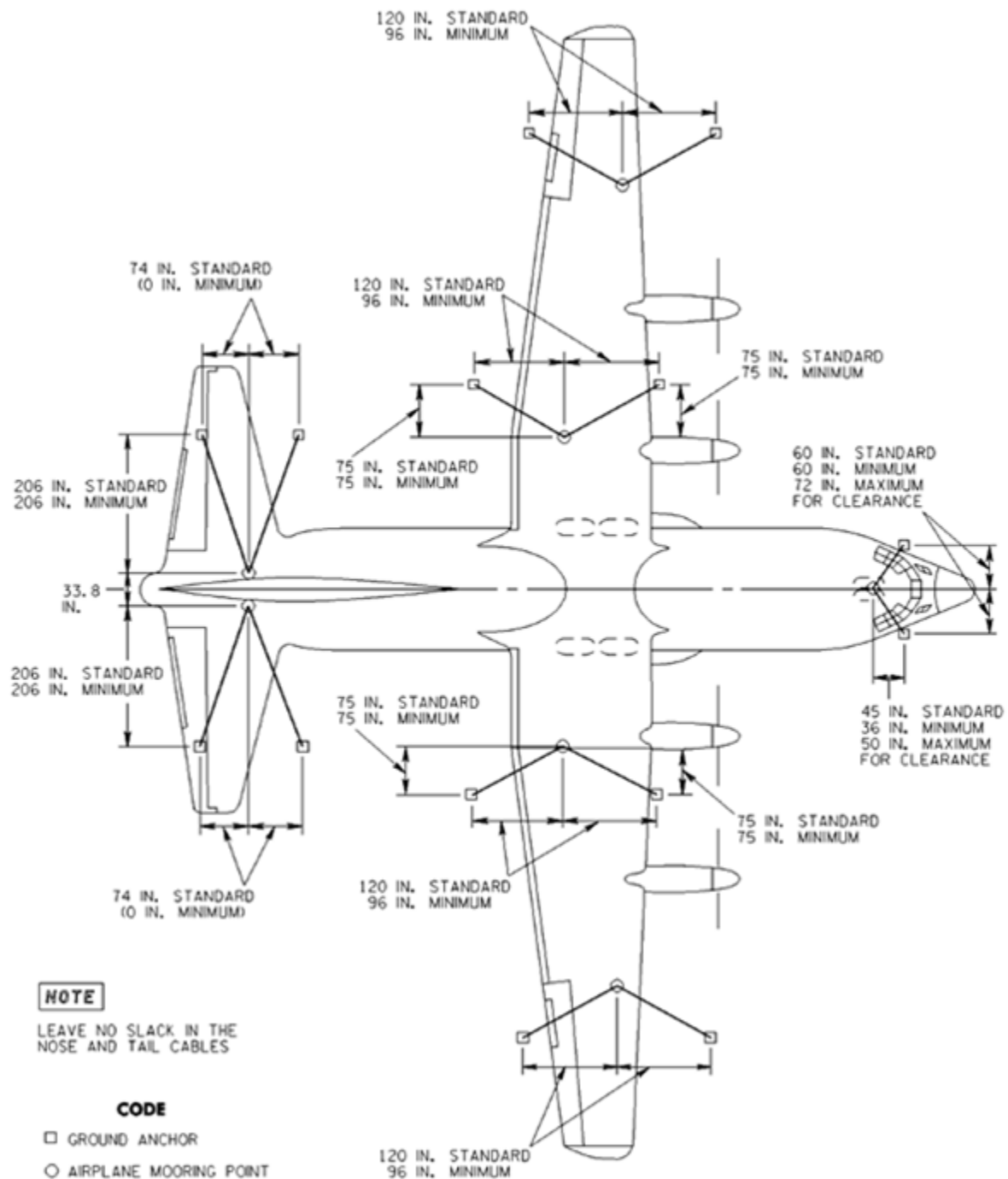


Figure 7.2.3. AC-130J Optimum Mooring Pattern on Unpaved Surfaces.



7.2.6. Minimum Takeoff and Landing Requirements.

7.2.6.1. **Reference.** See Paragraph 7.2.11, Base Operations Facilities - Airfield Requirements, for the minimum runway length required for the AC130J and other airfield requirements.

7.2.6.2. **Takeoff.** The minimum ground roll takeoff distance for the AC-130J is 3,500 ft (UFC 3-260-01, Table 7.2). See Table 7.2.5 for AC-130J maximum takeoff weights by configuration.

Table 7.2.5. AC-130J Maximum Takeoff Weights.

Aircraft Configuration	Aircraft Weight kg (lbs)	CFL Takeoff Distance m (ft)
Maximum Normal ¹	74,389 (164,000)	3,810 (12,500)
Maximum Alternate ^{2,3}	79,379 (175,000)	3,810 (12,500)
Notes: 1. Conditions- Pressure altitude: 6,000 ft; Outside air temperature: 35 degrees Celsius; Winds: direct crosswind with 10 knot gusts; Slope/Runway Surface Condition (RSC)/Runway Condition Reading (RCR): 0/0/23; Normal bleed air; Anti-skid operational; CFL for normal is 12,500 ft. 2. Conditions- Pressure altitude: 5,000 ft; Outside air temperature: 30 degrees Celsius; Winds: direct crosswind with 10 knot gusts; Slope/RSC/RCR: 0/0/23; normal bleed air; Anti-Skid operational; CFL required is 12,500 ft. 3. With or without external tanks 4. Consult applicable airframe TOs for the latest information regarding CFL takeoff distances.		

7.2.6.3. **Landing.** The minimum landing distance for the AC-130J is 3,500 ft (UFC 3-260-01, Table 7.2). See Table 7.2.6 for AC-130J maximum landing weights by configuration.

Table 7.2.6. AC-130J Maximum Landing Weight.

Aircraft Configuration	Aircraft Weight kg (lbs)	Landing Distance m (ft)
Maximum Recommended Normal	74,389 (164,000)	1,554 (5,100)
Notes: 1. Conditions- Pressure altitude, 6,000 ft; Outside air temperature, 35 degrees Celsius; Winds, direct crosswind with 10 knot gusts; Slope/RSC/RCR, 0/0/23; Normal bleed air; Anti-skid operational; 4 props in reverse. 2. Consult applicable airframe TOs for the latest information regarding landing distances.		

7.2.7. Unique Maintenance Requirements. The AC-130J has various systems that require periodic servicing and replenishment. However, none of the items drive a facility requirement that is not met within the minimum requirements for the maintenance hangar and other maintenance and intermediate maintenance facilities.

7.2.8. Unique Power Requirements. AC power is provided to the aircraft by three systems: a primary power supply, a secondary power supply, and an external AC power supply.

7.2.8.1. Primary Power. Includes five AC generators (four engine-driven, one by the Auxiliary Power Unit [APU]). Each requires three-phase, 400 Hz power at 200/115 volts. AC buses power the electronic circuit breaker units and mechanical circuit breakers.

7.2.8.2. Secondary Power. Includes two solid-state inverters. Each requires single-phase, 400 Hz power at 115 volts and 26 volts to service transient-sensitive avionics equipment.

7.2.8.3. External Power. Includes an AC power receptacle that is three-phase, 50 to 60 kVA, 400 Hz power at 115 volts. External power uses a four-wire system. Phase sequencing matches the airplane generators (phase A, B, and C 120 degrees apart).

7.2.9. AC-130J Operations Squadron Characteristics.

7.2.9.1. AC-130J UTC and Crew Constructs.

7.2.9.1.1. UTC Construct. The AC-130J currently has a single UTC construct where one UTC consists of 3 PMAI and 1 BAI (4 total airframes).

7.2.9.1.2. Crew Ratio and Crew Complement. The normal flight crew for the AC-130J, as detailed in **Paragraph 7.2.2**, is 9 PN. The crew ratio is the number of crews required to support deployments and dwell times for the unit. The AC-130J crew ratio is 1.5 crews per PMAI. The total number of flight crew members is calculated as follows: number of flight crew x crew ratio x number of PMAI. Thus, a larger flight crew or crew ratio will result in larger facilities required to support additional personnel, and vice versa.

7.2.9.1.3. Notional Squadron Concepts. For planning purposes, this FRI provides facility space requirements for the three most common AC-130J squadron scenarios: 1 UTC (3 PMAI, 1 BAI); 3 UTCs (9 PMAI, 1 BAI); and 4 UTCs (12 PMAI, 1 BAI), which represents a full squadron. To ensure the most accurate facility space requirements possible, consult AFSOC/A3/A4I for the latest information regarding the current AC-130J UTC construct, crew ratio, and crew complement. Notional manpower for AC-130J operations squadrons is presented in **Table 7.2.7**, **Table 7.2.8**, and **Table 7.2.9**. Notional manpower for AC-130J maintenance squadrons is presented in **Table 7.2.10**, **Table 7.2.11**, and **Table 7.2.12**.

Table 7.2.7. AC-130J Operations Squadron Notional Manpower, 1 UTC (3 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	0	0	0
SOS	Commander's Support Staff	0	2	1	3
SOS	Aviation Resource Mgmt	0	4	0	4
SOS	Flight Crews @ CR 1.8 ¹	26	22	0	48
	SOS Total	28	28	1	57
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	2	0	2
SOSS	ELINT Analysis	0	1	0	1
SOSS	AFE	0	4	0	4
SOSS	Operations Data Management	0	1	0	1
	SOSS Total	1	11	0	12
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3}	34	43	1	78

Notes:

1. Per AFI 65-503 Attachment 36-1 the AC-130J flight crew ratio will be 1.8.
2. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total 4 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.2.8. AC-130J Operations Squadron Notional Manpower, 3 UTCs (9 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	1	0	1
SOS	Commander's Support Staff	0	4	1	5
SOS	Aviation Resource Mgmt	0	6	0	6
SOS	Flight Crews @ CR 1.8 ¹	79	67	0	146
	SOS Total	81	78	1	160
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	6	0	6
SOSS	ELINT Analysis	0	1	0	1
SOSS	AFE	0	9	0	9
SOSS	Operations Data Management	0	1	0	1
	SOSS Total	1	20	0	21
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3}	87	102	1	190

Notes:

1. Per AFI 65-503 Attachment 36-1 the AC-130J flight crew ratio will be 1.8.
2. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total 4 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.2.9. AC-130J Operations Squadron Notional Manpower, 4 UTCs (12 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	1	0	1
SOS	Commander's Support Staff	0	5	1	6
SOS	Aviation Resource Mgmt	0	6	0	6
SOS	Flight Crews @ CR 1.8 ¹	105	89	0	194
	SOS Total	107	101	1	209
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	8	0	8
SOSS	ELINT Analysis	0	1	0	1
SOSS	AFE	0	12	0	12
SOSS	Operations Data Management	0	1	0	1
	SOSS Total	1	25	0	26
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3}	113	130	1	244

Notes:

1. Per AFI 65-503 Attachment 36-1 the AC-130J flight crew ratio will be 1.8.
2. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total 4 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.2.10. AC-130J Maintenance Squadron Characteristics.

Table 7.2.10. AC-130J Maintenance Squadron Notional Manpower, 1 UTC (3 PMAI,1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOAMXS	AMU OIC/Chief	1	0	0	1
SOAMXS	Production Superintendent	0	1	0	1
SOAMXS	Production Staff (Expeditors)	0	4	0	4
SOAMXS	Lead Crew Chiefs	0	3	0	3
SOAMXS	Aircraft Section (Crew Chief)	0	26	0	26
SOAMXS	Specialist Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Specialist Section Staff	0	52	0	52
SOAMXS	Support Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Support Section Staff	0	4	0	4
SOAMXS	Weapons Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Weapons Section Staff	0	12	0	12
	Subtotal SOAMXS Sections	1	105	0	106
SOAMXS	SOAMXS Overhead	2	4	0	6
	Total SOAMXS	3	109	0	112
SOMXS	Fabrication Flight	0	7	0	7
SOMXS	Accessories Flight	0	5	0	5
SOMXS	AGE Flight	0	3	0	3
SOMXS	Munitions Flight	0	1	0	1
SOMXS	Maintenance Support Flight	0	4	0	4
SOMXS	Propulsion Flight	0	2	0	2
SOMXS	Avionics Flight	0	2	0	2
SOMXS	Armament Flight	0	2	0	2
SOMXS	AFETS	0	0	4	4
	Subtotal SOMXS Sections	0	26	4	30
SOMXS	SOMXS Overhead	2	4	0	6
	Total SOMXS	2	30	4	36
SOMXG	SOMXG Overhead	2	1	0	3
	Total SOMXG	2	1	0	3
	TOTAL MAINTENANCE^{1,3}	7	140	4	151
	SPA^{2,4}				50.23

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total 4 airframes).
2. Per AFSOC/A1M, the planning SPA for the AC-130J is 50.23.
3. Per AFSOC/A1M, assume the total maintenance breaks down into 10% overhead (includes SOMXG, SOAMXS, and SOMXS), 70% SOAMXS sections, and 20% SOMXS sections. The notional manpower breakdown is based on existing unit structures and LCOMs and should be used for facility programming purposes only.
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.2.11. AC-130J Maintenance Squadron Notional Manpower, 3 UTCs (9 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOAMXS	AMU OIC/Chief	1	0	0	1
SOAMXS	Production Superintendent	0	1	0	1
SOAMXS	Production Staff (Expeditors)	0	5	0	5
SOAMXS	Lead Crew Chiefs	0	4	0	4
SOAMXS	Aircraft Section (Crew Chief)	0	85	0	85
SOAMXS	Specialist Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Specialist Section Staff	0	166	0	166
SOAMXS	Support Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Support Section Staff	0	12	0	12
SOAMXS	Weapons Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Weapons Section Staff	0	39	0	39
	Subtotal SOAMXS Sections	1	315	0	316
SOAMXS	SOAMXS Overhead	2	9	0	11
	Total SOAMXS	3	324	0	327
SOMXS	Fabrication Flight	0	22	0	22
SOMXS	Accessories Flight	0	17	0	17
SOMXS	AGE Flight	0	9	0	9
SOMXS	Munitions Flight	0	4	0	4
SOMXS	Maintenance Support Flight	0	13	0	13
SOMXS	Propulsion Flight	0	7	0	7
SOMXS	Avionics Flight	0	7	0	7
SOMXS	Armament Flight	0	7	0	7
SOMXS	TMDE Flight	0	1	0	1
SOMXS	AFETS	0	0	4	4
	Subtotal SOMXS Sections	0	87	4	91
SOMXS	SOMXS Overhead	2	9	0	11
	Total SOMXS	2	100	0	102
SOMXG	SOMXG Overhead	2	1	0	3
	Total SOMXG	2	21	0	23
	TOTAL MAINTENANCE^{1,3}	7	441	4	452
	SPA^{2,4}				50.23

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 9 PMAI and 1 BAI (total 10 airframes).
2. Per AFSOC/A1M, the planning SPA for the AC-130J is 50.23.
3. Per AFSOC/A1M, assume the total maintenance breaks down into 10% overhead (includes SOMXG, SOAMXS, and SOMXS), 70% SOAMXS sections, and 20% SOMXS sections. The notional manpower breakdown is based on existing unit structures and LCOMs and should be used for facility programming purposes only.
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.2.12. AC-130J Maintenance Squadron Notional Manpower, 4 UTCs (12 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOAMXS	AMU OIC/Chief	1	0	0	1
SOAMXS	Production Superintendent	0	1	0	1
SOAMXS	Production Staff (Expeditors)	0	5	0	5
SOAMXS	Lead Crew Chiefs	0	4	0	4
SOAMXS	Aircraft Section (Crew Chief)	0	114	0	114
SOAMXS	Specialist Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Specialist Section Staff	0	225	0	225
SOAMXS	Support Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Support Section Staff	0	16	0	16
SOAMXS	Weapons Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Weapons Section Staff	0	53	0	53
	Subtotal SOAMXS Sections	1	421	0	422
SOAMXS	SOAMXS Overhead	2	11	0	13
	Total SOAMXS	3	432	0	435
SOMXS	Fabrication Flight	0	29	0	29
SOMXS	Accessories Flight	0	23	0	23
SOMXS	AGE Flight	0	12	0	12
SOMXS	Munitions Flight	0	6	0	6
SOMXS	Maintenance Support Flight	0	19	0	19
SOMXS	Propulsion Flight	0	9	0	9
SOMXS	Avionics Flight	0	9	0	9
SOMXS	Armament Flight	0	9	0	9
SOMXS	TMDE Flight	0	1	0	1
SOMXS	AFETS	0	0	4	4
	Subtotal SOMXS Sections	0	117	4	121
SOMXS	SOMXS Overhead	2	11	0	13
	Total SOMXS	2	128	4	134
SOMXG	SOMXG Overhead	2	32	0	34
	Total SOMXG	2	32	0	34
	TOTAL MAINTENANCE^{1,3}	7	592	4	603
	SPA^{2,4}				50.23

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 12 PMAI and 1 BAI (total 13 airframes).
2. Per AFSOC/A1M, the planning SPA for the AC-130J is 50.23.
3. Per AFSOC/A1M, assume the total maintenance breaks down into 10% overhead (includes SOMXG, SOAMXS, and SOMXS), 70% SOAMXS sections, and 20% SOMXS sections. The notional manpower breakdown is based on existing unit structures and LCOMs and should be used for facility programming purposes only.
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.2.11. AC-130J Base Operations Ground Facilities - Airfield Requirements.

7.2.11.1. Runways (CATCODE: 111111).

7.2.11.1.1. Requirements Determination. The AC-130J requires a Class B runway (UFC 3-260-01, Table 3-1).

7.2.11.1.2. Runway Length. The AC-130J requires a minimum runway length of 3,500 ft (DAFMAN 32-1084, CC 111111 Runways, Table 4). Most normal operations will occur with conditions and weights that will require longer runways. Using the MC-130J as a template, the worst-case scenarios as listed in [Table 7.2.5](#) Notes 1 and 2 and [Table 7.3.6](#), the runway required to meet CFL is 12,500 ft.

7.2.11.1.3. Runway Width. The minimum runway width for the AC-130J is 150 ft (UFC 3-260-01, Table 3-2).

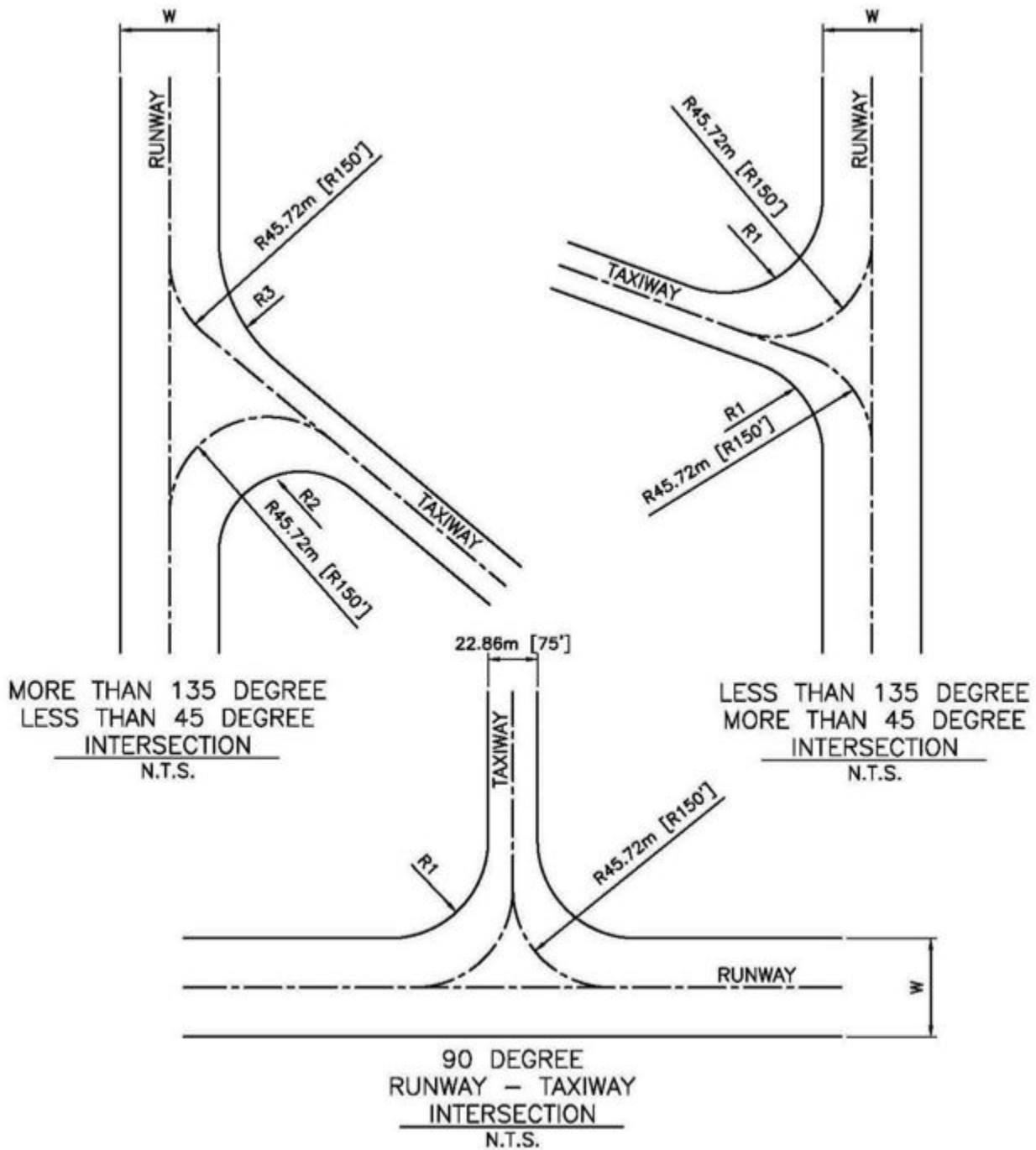
7.2.11.1.4. Shoulders. Shoulders can be both paved and unpaved, and are located on each side of the runway. The minimum paved shoulder for the AC-130J is 25 ft on each side (UFC 3-260-01, Table 3-2, Item 4). A minimum combined total of 200 ft is required for paved and unpaved shoulders for the AC-130J (UFC 3-260-01, Table 3-2).

7.2.11.1.5. Runway/Taxiway Intersection Fillet Radii. See [Table 7.2.13](#) and [Figure 7.2.4](#).

Table 7.2.13. Runway/Taxiway Intersection Fillet Radii.

Runway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	R1 ^{1,3}	R2 ²	R3 ²
More than 75 ft but less than 150 ft	150	125	250
150 ft or more	125	125	250
Notes: 1. Less than 135 and more than 45-degree intersection 2. More than 135 and less than 45-degree intersection 3. 90-degree intersection			

Figure 7.2.4. Runway-Taxiway Intersection Fillet Radii.



7.2.11.2. Paved Overrun (CATCODE: 111115).

7.2.11.2.1. Requirements Determination. All runways are required to have paved overruns.

7.2.11.2.2. Length (min.). The AC-130J paved overrun minimum length for runways is 1,000 ft (DAFMAN 32-1084, CC 111115 Paved Overrun, Table 1).

7.2.11.2.3. Width (min.). The AC-130J paved overrun minimum width for runways is 150 ft (DAFMAN 32-1084, CC 111115 Paved Overrun, Table 1).

7.2.11.3. Taxiway (CATCODE: 112211).

7.2.11.3.1. Requirements Determination. All runways are required to have taxiways.

7.2.11.3.2. Taxiway Width. The minimum taxiway width for AC-130J airfields is 75 ft (UFC 3-260-01 Table 5-1).

7.2.11.3.3. Taxiway Shoulders. The minimum paved taxiway shoulder width for AC-130J airfields is 25 ft (UFC 3-260-01, Table 5-1). The minimum total of paved and unpaved shoulders is 50 ft (UFC 3-260-01, Table 5-1, Item 2).

7.2.11.3.4. Taxiway Clearance Line (Fixed or Mobile Objects). The taxiway clearance line for fixed or mobile objects for AC-130J airfields is 200 ft from the taxiway centerline (UFC 3-260-01, Table 5-1, Item 10).

7.2.11.3.5. Taxiway Clearance Line (Parallel Taxiway). The taxiway clearance line for parallel taxiways for AC-130J airfields is 237.5 ft (UFC 3-260-01, Table 5-1, Item 11).

7.2.11.3.6. Taxiway Centerline Radius. The taxiway centerline radius is the taxiway width divided by 2 and added to 100 ft. The minimum taxiway centerline radius is 137.5 ft ($75 / 2 + 100 = 137.5$ ft). The centerline turning radius used to determine the fillet radii for and 4.2 below is 150 ft and 125 ft respectively.

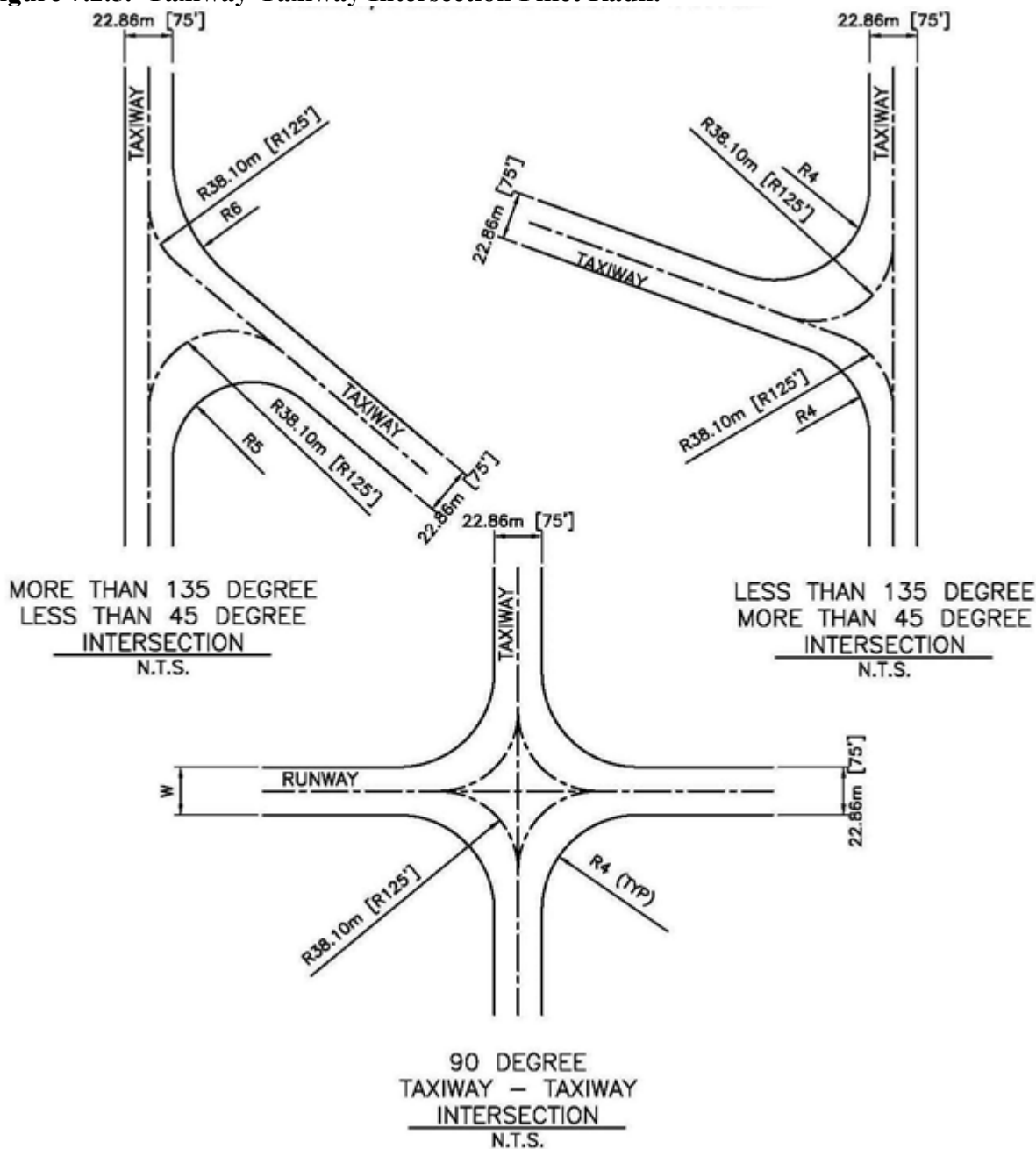
7.2.11.3.7. Wingtip Clearances for Taxiing. The wingtip clearance for parked aircraft is 20 ft (UFC 3-260-01, Table 6-1, Item 4). The wingtip clearance of aircraft on interior or secondary peripheral taxilanes is 30 ft (UFC 3-260-01, Table 6-1, Item 5). The wingtip clearance of aircraft on through or primary peripheral taxilanes is 50 ft (UFC 3-260-01, Table 6-1, Item 6).

7.2.11.3.8. Taxiway/Taxiway Intersection Fillet Radii. See [Table 7.2.14](#) and [Figure 7.2.5](#).

Table 7.2.14. Taxiway/Taxiway Intersection Fillet Radii.

Taxiway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	R4 ^{1,3}	R5 ²	R6 ²
75 ft	150	125	250
Notes: 1. Less than 135 and more than 45-degree intersection 2. More than 135 and less than 45-degree intersection 3. 90-degree intersection			

Figure 7.2.5. Taxiway-Taxiway Intersection Fillet Radii.



7.2.11.4. Apron (CATCODE: 113321).

7.2.11.4.1. Requirements Determination. Aprons are individually designed to support specific aircraft and missions at a particular installation. The actual dimensions of an apron are based on the number of authorized aircraft, maneuvering space, and type of activity the apron serves. (DAFMAN 32-1084, CC 113321, Paragraph 1.2). The actual dimensions of an operational parking apron for the AC-130J are based on the number of PMAI minus any covered parking provided. It does not include the number of BAI, PTAI, or transient requirements as these are typically located on separate aprons or in

a separate hangar. When factoring for other aircraft inventory on a single apron, consider all aircraft inventories as applicable in the total number of aircraft and follow the steps laid out in paragraph 7.2.11.4.2. The minimum clearances allowed between those aircraft in a parking configuration are shown in [Table 7.2.15](#).

7.2.11.4.2. Scope Determination.: Multiply the wingspan of the selected aircraft by its length. Multiply the wingspan of the selected aircraft by its length. Multiply the product by a factor of 5.3 (DAFMAN 32-1094, CC 113321 Apron, Paragraph 1.3.7).

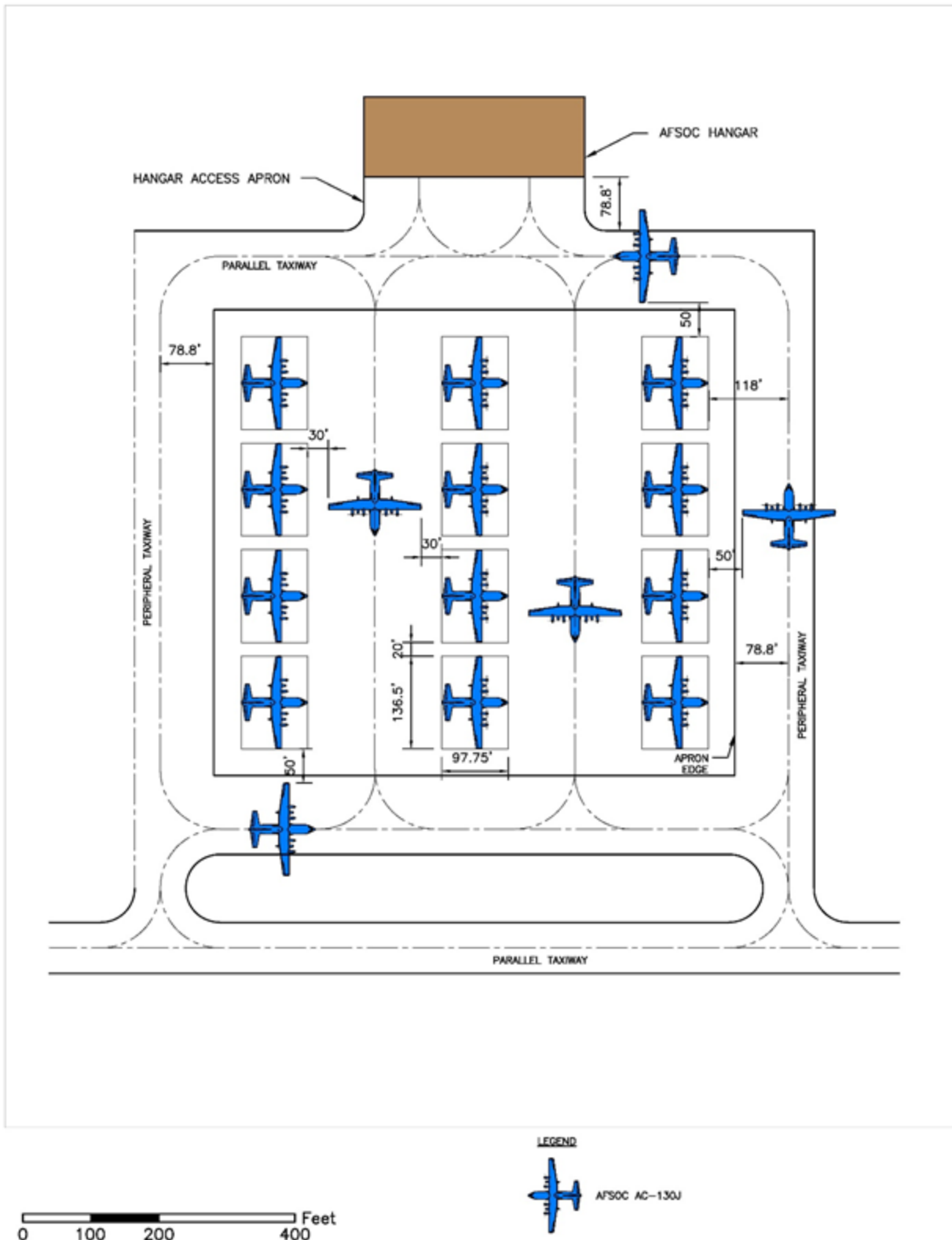
7.2.11.4.2.1. Combat Aircraft Parking Aprons. CAPAs requirements for combat loaded AC-130J aircraft are identified under **CATCAODE 116662** for Dangerous Cargo Pads. However, CAPA apron spaces count against the total number apron spaces allowed for AC-130J aircraft.

7.2.11.4.2.2. Access to Hangars, Docks, and Shelters. Apron configuration is influenced by the size of the door openings and by the dimensions and turning radius of the largest aircraft using the buildings. A mass apron or a taxiway configuration is used depending on access requirements. To avoid building non-usable pavement, design for adequate wingtip clearances of any obstacle near the apron. For the AC-130J the minimum length of apron to access hangars, docks, and shelters is 78.8 ft when accessed from through or peripheral taxilanes and 58.8 ft when accessed from an interior or secondary peripheral taxilane (UFC 3-260-01, Table 6-6, Item 1 & UFC 3-260-01, Table 6-1, Item 15). If the distance from the main operational pavement to the hangar exceeds 78.8 ft, consider constructing a maneuvering area immediately outside the hangar, large enough to allow the aircraft to turn around. The width of the hangar access area and maneuvering area should be equal to the width of the hangar door opening. Connect this maneuvering area to the main apron with a taxiway or towway.

7.1.11.4.2.3. Operational Aircraft. Operational aircraft are parked on mass aprons, strip aprons, or where authorized, on dispersed stubs. To determine how many operational aircraft require apron space, proceed as follows: Begin with 100 percent of the assigned aircraft as established by official documents; subtract the number of aircraft located on separate aprons, such as alert aircraft; subtract the number of aircraft located in maintenance hangars or docks under normal maintenance schedules; and finally, subtract aircraft that are parked elsewhere on existing paving of a suitable nature and location. (DAFMAN 32-1084, CC 113321, Paragraph 1.3.3). For planning purposes, this document assumes only PMAI are operational aircraft; thus, the requirements in this document reflect only PMAI calculations for facility requirements in facility summary tables.

7.1.11.4.2.4. Assigned Aircraft. Assigned aircraft consist, at a minimum, of the Primary Assigned Aircraft (PAA) inventory established from the funded flying program for the base. Many bases have other aircraft inventory that require a parking apron. This inventory varies by base and depot repair cycles. These aircraft may be annotated as backup inventory, ready reserve, or attrition reserve. Account for the monthly average of these non-primary assigned aircraft remaining on station in determining apron requirements (DAFMAN 32-1084, CC 113321, Paragraph

Figure 7.2.6. AC-130J Typical Aircraft Parking Apron.



7.2.11.5. Paved Shoulders (CATCODE: 116642).

7.2.11.5.1. Requirements Determination. Paved shoulders are required for all operational pavements.

7.2.11.5.2. Dimensions. The total width of paved shoulders for the AC-130J is 50 ft (25 ft per side, UFC 3-260-01, Table 6-1, Item 11). The total width of paved and unpaved shoulders is 50 ft (UFC 3-260-01, Table 6-1, Item 10).

7.2.11.6. Towway.

7.2.11.6.1. Requirements Determination. When designing for access to a hangar, flare the pavement to the width of the hangar door from a distance beyond the hangar sufficient to allow maintenance personnel to turn the aircraft around.

7.2.11.6.2. Scope Determination. Width, towway turning radius, horizontal clearance from towway centerline to fixed or mobile obstacles, and vertical clearance from the towway pavement to fixed surface or mobile obstacles.

7.2.11.6.3. Width. The minimum towway width for the AC-130J is 24.25 ft (UFC 3-260-01, Table 5-6, Item 1): Width of towway for Air Force Facilities = outside gear width of towed mission aircraft + 10 ft. AC-130J outside gear width is 14.25 ft + 10 ft = 24.25 ft).

7.2.11.6.4. Turning Radius. The AC-130J towway turning radius is 150 ft (UFC 3-260-01, Table 5-6, Item 8).

7.2.11.6.5. Horizontal Clearance. The minimum horizontal clearance from the towway centerline for the AC-130J is half the wingspan plus 25 ft ($132.6/2 + 25$ ft) or 91.3 ft (UFC 3-260-01, Table 5-6, Item 11).

7.2.11.6.6. Vertical Clearance. The minimum vertical clearance from the towway pavement for the AC-130J is the aircraft height plus 10 ft ($38.5 + 10$) or 48.5 ft (UFC 3-260-01, Table 5-6, Item 12).

7.2.11.6.7. Fillet Radius. The minimum fillet radius at intersections is 100 ft (UFC 3-260-01, Table 5-6, Item 9).

7.2.11.7. Pad, Arm and Disarm (CATCODE: 116661).

7.2.11.7.1. Requirements Determination. Arm/Disarm Pads are required for Special Operations aircraft to upload munitions prior to a mission and disarming guns that malfunction. A personnel shelter is also required for weapons loaders and quick check crews stationed at the pad.

7.2.11.7.2. Scope Determination. The allowable scope is the minimum necessary for aircraft parking and access. AFSOC arm/disarm pads are not required to support more than one aircraft with hung ordnance when a CAPA is provided.

7.2.11.7.3. Dimensions. The area required for one AC-130J on an Arm/Disarm Pad is 190,795 NSF. These sizes are based on the combat apron criteria in [Table 7.2.15](#).

7.2.11.7.4. Design Considerations. Consideration should be given to containment of runoff of potential spills; however, design pads to promote positive drainage. See apron

grading criteria in Chapter 6 of UFC 3-260-01, *Airfield and Heliport Planning and Design*. Also, locate pads at least 750 ft from an unbarricaded operating location to airfield sections for military use only (AFMAN 91-201, Table 3.3). Locate pads at least 1,250 ft from an unbarricaded operating location to non-explosives loaded aircraft (AFMAN 91-201, Table 3.3). Locate pads at least 1,106 ft from an unbarricaded location to combat aircraft parking with a maximum 50,000 lbs net explosive weight [NEW] (AFMAN 91-201, Table 3.3).

7.2.11.8. Pad, Dangerous Cargo, Load/Unload (CATCODE: 116662).

7.2.11.8.1. Requirements Determination. For AFSOC installations, there are two types of Dangerous Cargo Pads required: one for loading and unloading of munitions shipments from Air Mobility Command (AMC) aircraft and one used as a CAPA for AFSOC aircraft. Both pads are justified because while a properly configured CAPA will be parked full of AC-130Js, there is still a requirement to have a separate dedicated area for on/offloading munitions shipments from AMC aircraft.

7.2.11.8.2. Scope Determination. For installations other than aerial ports of embarkation/debarkation (APOE/APOD), a circular pad with a 110 ft radius and 4,225 yd² is authorized (DAFMAN 32-1084, CC Pad Dangerous Cargo Load Unload, Paragraph 1.3.1). This 4,225 yd² pad will be a dedicated space for on/offloading munitions shipments from large cargo aircraft (e.g., C-17 or C-5). For AC-130J CAPAs: Multiply the wingspan of the selected aircraft by its length. Use CAPA separation requirements as provided by AFSOC/SEW in [Table 7.2.15](#) and shown in [Figure 7.2.6](#). Note that CAPA spaces count against the parking apron allowances for CATCODE 113321 for Aircraft Parking Aprons.

7.2.11.8.3. Dimensions. The minimum requirement for a Dangerous Cargo Loading/Unloading Pad dedicated for on/offloading munitions shipments from AMC aircraft is 38,013 NSF (calculated by using πr^2 to find the area of the circular pad). The minimum space required for one AC-130J CAPA space is 190,795 NSF ([Table 7.2.1](#) AC-130J Block Dimensions 132.6 ft [L] x 97.75 ft [W] plus CAPA clearances in [Table 7.2.16](#)).

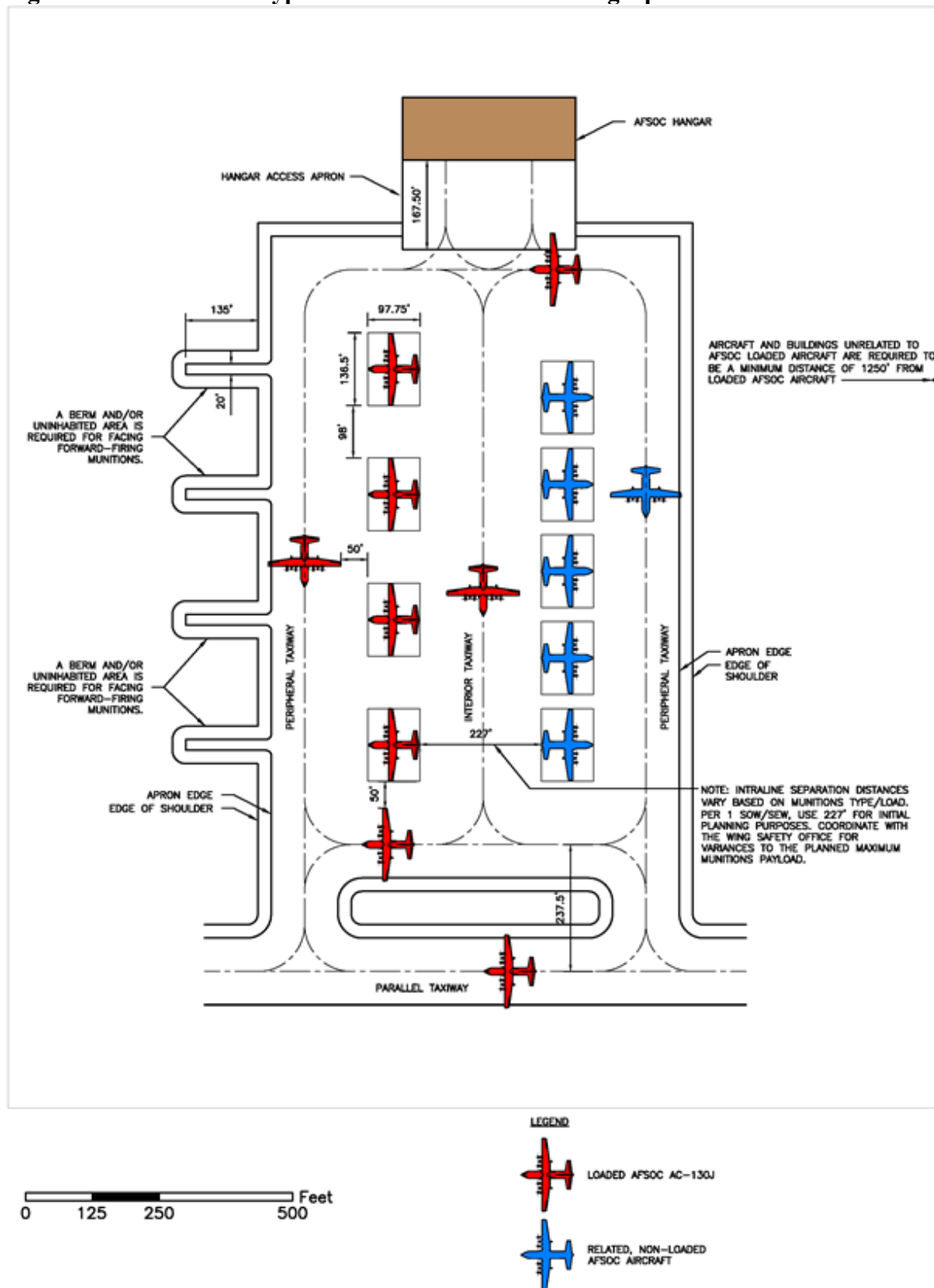
7.2.11.8.4. Design Considerations. Locate the pad to satisfy explosive safety standards, DoD 6055.09-M, and AFMAN 91-201. Siting criteria can be found in UFC -260-01, Appendix B, Section 9.

7.2.11.8.5. Aircraft Parking Arrangements. See [Figure 7.2.7](#) for a typical AC-130J CAPA.

Table 7.2.16. AC-130J CAPA Clearances.

Wingtip Separation Between Loaded AC-130J aircraft¹		Distance between related, non-loaded AFSOC aircraft and loaded AC-130J²		Distance between loaded AC-130J and non-related function³	
m	ft	m	ft	m	ft
29.9	98	69.2	227	381	1,250
Notes: 1. Distance between pylons is 139 feet, however, wingtip separation is 98 feet. 2. Distance from loaded AC-130J to inhabited AFSOC Operations or Maintenance building is 227 ft. 3. Distance from loaded AC-130J to inhabited, non-related function (i.e. an AFSOC squadron operations facility, hangar, non-AFSOC facility or aircraft, etc.) is 1,250 ft. Facilities not related to the combat loaded aircraft cannot be within the 1,250-foot arc.					

Figure 7.2.7. AC-130J Typical Combat Aircraft Parking Apron.



7.2.11.9. Warm-up/Holding Pad (CATCODE: 116666).

7.2.11.9.1. Requirements Determination. A warm-up/holding pad is authorized for each end of a runway. In addition to providing a location to warm-up and hold aircraft waiting to depart, warm-up/holding pads provide a location for AC-130J aircraft to conduct hot gas refueling, FARP training, and hot gun emergency operations.

7.2.11.9.2. Scope Determination. A warm-up/holding pad is authorized for each end of a runway sized to accommodate two of the largest aircraft assigned to a base (DAFMAN 32-1084, Paragraphs 2.1.13.2 and 2.1.13.4).

7.2.11.9.3. Dimensions. AFSOC warm-up/holding pads do not have a minimum number of aircraft to be served by each pad. The size of the pad shall be based on the number of aircraft supported and the UTC configuration. One warm-up/holding pad for the AC-130J requires 190,795 NSF and two pads require 290,600 NSF. The area is based on CAPA criteria for AC-130J aircraft found in [Table 7.2.16](#).

7.2.11.10. Compass Calibration Pad (CATCODE: 116667).

7.2.11.10.1. Requirements Determination. Per TO 1C-130(H/M) J-2-34-JG-10-1, Task 34-13-02 Calibration of Standby Magnetic Compass, the AC-130J is required to have a certified compass calibration area capable of 360-degree turns. The Air Force has the option to use the circular pad criteria provided in Federal Aviation Administration (FAA) Advisory Circular 150/5300-13, Appendix 4 (radius of 80 ft) or the square pad (120 ft x 120 ft) criteria from the UFC 3-260-01.

7.2.11.10.2. Scope Determination. The circular pad totals 20,106 NSF ($\pi 80^2 \text{ ft}^2$) and the Square pad totals 14,400 NSF pad (120 ft x 120 ft = 14,400 NSF).

7.2.11.10.3. Dimensions. The minimum requirement for the compass calibration pad for the AC-130J is a square pad that totals 14,400 NSF and is 120 ft x 120 ft.

7.2.11.11. Aircraft Washrack (CATCODE: 116672).

7.2.11.11.1. Requirements Determination. The dimensions of the aircraft plus 15 ft clearances determine the minimum washrack pavement dimensions (UFC 3-260-01, Table 6-5).

7.2.11.11.2. Scope Determination. The washrack area will be 97.75 ft (L) + 30 ft (clearance both sides) x 132.6 ft (W) + 30 ft (clearance both sides) = 20,773 NSF. A utility storage building of 240 NSF is also allowed for this facility (DAFMAN 32-1084, Paragraph 2.1.15.3; justified by UFC 3-260-01, Paragraph 6.14.4). Note that wash rack covers are considered equipment items to be purchased by the user and are not part of this CATCODE. Also, note that the lack of an indoor washrack can impact when aircraft washes are scheduled, but access to hot and cold water can help continue operations during inclement weather (per TO 1-1-691 Paragraph 3.5: where high outdoor temperatures are encountered (80°F/27°C and above) and an indoor wash rack is not available, cleaning operations should be scheduled for early morning, late afternoon, or night. Wet aircraft exteriors with fresh water before applying cleaners to

cool surfaces and help prevent fast evaporation and drying of cleaners during hot weather. For cold weather procedures, refer to TO 1-1-691 Paragraph 3.5.2.6).

7.2.11.11.3. Dimensions. The minimum paved area for the AC-130J requires 20,773 NSF (122.75 ft [L] x 162.6 ft [W]). The utility storage allowed for this facility is 240 NSF.

7.2.11.12. Aircraft Rinse Facility.

7.2.11.12.1. Requirements Determination. AC-130J aircraft exposed to a salt-water environment require a CWR.

7.2.11.12.2. Scope Determination. A CWR can be performed manually by hand held hose or spraying equipment or by use of a taxi-through automated system. AFSOC AC-130J aircraft are equipped with DIRCM and therefore are not authorized a CWR taxi through facility.

7.2.11.13. Hydrant Fueling System (CATCODE: 121122).

7.2.11.13.1. Requirements Determination. Hydrant fueling systems are not required for the AC-130J; however, when hydrant fueling systems are available or specifically authorized, follow the aircraft direct fueling system design criteria for large-frame aircraft as defined in UFC 3-460-01 Paragraph 4-4.2.3.

7.2.11.13.2. Dimensions. No Fuels Engineers exist within HQ AFSOC or its subordinate units. If a requirement is identified, existing engineering staff with support from the MAJCOM Fuels Management section, will reach out to technical experts such as the HQ Air Force Petroleum Agency and DLA/DESC for development of specific dimensions. In general, this requirement is based on installation specific mission requirements and airframe specific upload rates.

7.2.11.14. Operating Storage, Jet Fuel (CATCODE: 124135).

7.2.11.14.1. Requirements Determination. Operating storage tanks are not required for the AC-130J; however, they are provided wherever dispensing facilities are remote from bulk storage tanks. Provide separate storage for each type and grade of fuel. For aviation activities, provide a minimum of two tanks for each type of fuel (UFC 3-460-01 Paragraph 8-3.3). Per the TO 1C-130(H_M)J-2-00GV-00-1 Paragraph 13.7.1, the recommended fuels for AFSOC AC-130J aircraft include JP-5, JP-8, Jet-A, Jet A-1, JP-4, Jet B, and TS-1.

7.2.11.14.2. Dimensions. The capacity or size of each fuel storage tank is based upon the logistical and mission requirements for the weapon systems to be supported from it, thus the requirement will vary. Per UFC 3-460-01, Paragraph 8-3.4, general guidance is to provide a minimum of two tanks at aviation activities for each type of aviation turbine fuel. Assuming a requirement is identified, the appropriate Service Headquarters with DLA Energy approval will determine the number and size of tanks required.

7.2.11.15. Aircraft Truck Fueling Facility (CATCODE: 126925).

7.2.11.15.1. Requirements Determination. Truck fill stands are required at all Air Force installations where bulk petroleum products are stored and dispensed.

7.2.11.15.2. Scope Determination. The number of fill stands required depends on the number of trucks which must be loaded simultaneously. This is determined by the command having jurisdiction from a study of the mission and operation requirements.

7.2.11.15.3. Dimensions. Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1). Per DAFMAN 32-1084 Paragraph 2.2.17.4.1, a minimum of one outlet for each grade of fuel is necessary. Per the TO 1C-130(H_M)J-2-00GV-00-1 Paragraph 13.7.1, the recommended fuels for AFSOC AC-130J aircraft include JP-5, JP-8, Jet-A, Jet A-1, JP-4, Jet B, and TS-1. For specific projects, the appropriate Service Headquarters can assist in determining the number.

7.2.11.16. Cryogenics Storage (Liquid Oxygen Storage) (CATCODE: 442258).

7.2.11.16.1. Requirements Determination. AC-130J aircraft liquid oxygen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.2.11.16.2. Scope Determination. AFSOC only needs to store materials in cylinders. The portable oxygen bottle, which is ancillary mission equipment, is serviced with liquid oxygen typically stored in cylinders.

7.2.11.16.3. Dimensions. A cylinder that is 8 NSF (10 GSF).

7.2.11.17. Gaseous Nitrogen Storage.

7.2.11.17.1. Requirements Determination. AC-130J aircraft liquid gaseous nitrogen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.2.11.17.2. Scope Determination. AFSOC only needs to store materials in cylinders. The hydraulic system accumulators, landing gear oleo struts, multimode radar, emergency extend actuation system, and tires are all serviced with gaseous nitrogen. The portable nitrogen cylinder, P/N 55D6496, and the self-generating nitrogen servicing unit, P/N PD96LDEA/TILDD-05 are used for servicing and replenishment.

7.2.11.17.3. Dimensions. A cylinder that is 8 NSF (10 GSF).

7.2.11.18. Standard Host Installation Facilities.

7.2.11.18.1. Aerial Delivery Facility. See paragraph 1.1.3.5.1.

7.2.11.18.2. FARP Equipment Storage. See paragraph 1.1.3.5.2.

7.2.11.18.3. Deployment Processing Facility. See paragraph 1.1.3.5.3.

7.2.11.18.4. Airfield Ancillary Facilities. See paragraph 1.1.3.5.4.

7.2.12. AC-130J Base Operations Ground Facilities - Pavement Requirements.

7.2.12.1. **Airfield.** Airfield mission and operational procedures have resulted in the development of six types of Air Force airfields: light, medium, heavy, modified heavy, auxiliary, and assault landing zone. The decision on which airfield type to design for is made by the appropriate MAJCOM. Airfield designs are generally based upon medium load criteria. The pavement for the AC-130J is classified as medium load, index 4, under the Aircraft Group Index in accordance with AFI 32-1041, Figure 4.1. Assault landing zone criteria should be used to design runways for C-130 training (UFC 3-260-02, Chapter 3, Section 1, Paragraph D.) The pavement capacity for an assault landing zone runway airfield has a maximum gross weight of 175,000 lbs (UFC 3-260-02, Table 3-1).

7.2.12.2. **Traffic Areas.** A layout of the AC-130J assault landing zone is not shown since all areas are Type A traffic areas and should be designed for a maximum weight of 175,000 lbs (UFC 3-260-02, Table 3-1).

7.2.12.3. **Paved Shoulders.** As a minimum, paved shoulders should be designed to support a load of 10,000 lbs imposed by a single wheel with a tire pressure of 0.69 MPa [100 psi] (UFC 3-260-02, Chapter 3, Section 6, Paragraph B).

7.2.12.4. **Hangar Floors.** See Paragraph 7.2.15, Maintenance Hangar.

7.2.12.5. **Pavement Thickness Requirements.** The AC-130J minimum base course pavement thickness required is 6 inches for flexible pavements (UFC 3-260-02, Table 8-5) and 4 inches for rigid pavements (UFC 3-260-02, Chapter 8, Section 8, Paragraph A).

Table 7.2.17. AC-130J Base Operations Ground Facility Space Requirements.

Cat Code	Facility	UM	AC-130J (3) ¹	AC-130J (9) ¹	AC-130J (12) ¹	DAFMAN 32-1084 Reference or Remarks/Calculations
111-111	Runway - Length (min)	LF	3,500	3,500	3,500	Table 2.4 Runway Lengths: The minimum length for a C-130 landing zone runway is 3,500 ft.
111-111	Runway - Width	LF	150	150	150	UFC 3-260-01 Table 3.2: Class B Air Force airfield runway width, not otherwise specified shall be 150 ft.
111-115	Paved Overrun - Length	LF	1,000	1,000	1,000	CC 111115 Paved Overrun, Table 1: Runways require 1,000 ft overrun on each end.
111-115	Paved Overrun - Width	LF	150	150	150	CC 111115 Paved Overrun, Table 1: Overrun is same width as the runway. Class B runway width is 150 ft wide.
112-211	Taxiway Width	LF	75	75	75	UFC 3-260-01 Table 5.1: Fixed-Wing Class B runway taxiway width 75 ft.

112-211	Paved Taxiway Shoulder - Width	LF	25	25	25	UFC 3-260-01 Table 5.1: Fixed-Wing Class B runway taxiway shoulder width is 25 ft on each side.
113-321	Aircraft Parking Apron	NSF	68,704	274,816	343,520	CC 113321 Apron, Paragraph 1.3.7: Multiply the wingspan of the selected aircraft by its length. Multiply the product by a factor of 5.3. AC-130J dimensions are 97.75 ft (L) x 132.6 ft (W) = 12,963 NSF x 5.3 = 68,704 NSF/aircraft. To calculate the required apron parking spaces subtract the covered maintenance spaces from the PMAI; therefore, 4 total aircraft or 3 PMAI= 2 apron spaces (1 CAPA); 10 total aircraft or 9 PMAI= 7 apron spaces (3 CAPA); 13 total aircraft or 12 PMAI= 10 apron spaces. (5 CAPA) Assume half of spaces are CAPA.
113-321	Combat Aircraft Parking Apron	NSF	190,795	390,444	680,746	See paragraph 7.2.11.4. CAPA clearances are in Table 7.2.16 . 4 total aircraft or 3 PMAI= 2 apron spaces (1 CAPA); 10 total aircraft or 9 PMAI= 7 apron spaces (3 CAPA); 13 total aircraft or 12 PMAI= 10 apron spaces. (5 CAPA) Assume half of spaces will be CAPA.
113-321	Apron Paved Shoulder - Width	LF	25	25	25	UFC 3-260-01 Table 6.1. Fixed-Wing Aprons on Class B runways paved shoulder width 25 ft.
113-321	Apron for Access to Hangars, Docks, Shelters	LF	125	125	125	UFC 3-260-01 Table 6.-6: Air Force Hangar Access Apron for fixed-wing aircraft 125 ft.

116-116	Short Takeoff & Landing Zone - Length	LF	3,000	3,000	3,000	UFC 3-260-01, Table 7.2: 3,000 ft.
116-116	Short Takeoff & Landing Zone - Width	LF	60	60	60	UFC 3-260-01, Table 7.2: 60 ft.
116-642	Paved Shoulders for Fixed Wing Class B Runway	LF	25	25	25	UFC 3-260-01, Table 3.2: Air Force Class B runways require a paved shoulder width of 25 ft on each side.
-	Towway - Width	LF	25	25	25	UFC 3-260-01, Table 5.4: Width of towway for Air Force Facilities = (outside gear width of towed mission aircraft) + 10ft. AC-130J's outside gear width is 14.25 ft + 10 ft = 24.25 ft. (Rounded up to 25 ft). Total width of shoulders (paved and unpaved) = 25ft. Towway width with shoulders would be 25 ft + 25 ft = 50 ft.
116-661	Pad, Arm and Disarm	NSF	290,600	290,600	290,600	AFSOC warm-up/holding pads do not have a minimum number of aircraft to be served by each pad. The size of the pad shall be based on the number of aircraft supported and the UTC configuration. One warm-up/holding pad for the AC-130J requires 190,795 NSF and two pads require 290,600 NSF. The area is based on CAPA criteria for AC-130J aircraft found in Table 7.2.16.

116-662	Pad, Dangerous Cargo	NSF	0	0	0	Only Required if no CAPA is provided. Otherwise, a 120 ft by 120 ft pad is required (CC 116662 Pad Dangerous Cargo Load Unload). CAPA is provided in this table.
116-666	Pad, Warm-up/Holding	NSF	290,600	290,600	290,600	Paragraphs 2.1.13.2 and 2.1.13.4: AC-130J area based on combat parking apron criteria for two aircraft.
116667	Compass Calibration Pad	NSF	14,400	14,400	14,400	UFC 3-260-01: Figure 6.24. Army and Air Force Compass Calibration Pad. These are square pads 120 ft x 120 ft = 14,400 sf.
116672	Aircraft Washrack	NSF	20,773	20,773	20,773	UFC 3-260-01 Paragraph 6.14.2: The dimensions of the aircraft plus the clearances shown in CG 61 Admin Overview Table 1.4 (15 ft) determine the minimum wash rack pavement dimensions. Clearances from aircraft to curb is 15 ft. Wash rack area would be length (97.75 ft + 30 ft) x width (132.6 ft + 30 ft) = 20,773 NSF.
116-672	Aircraft Washrack Utility Building	GSF	300	300	300	Paragraph 2.1.15.3: Allows a utility storage building of 240 NSF x 1.25 = 300 GSF.
116-672	Aircraft Rinse Facility	NSF	0	0	0	Washrack can be used for this requirement.

126-925	Aircraft Truck Fueling Facility	EA	2	2	2	Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1). Per DAFMAN 32-1084 Paragraph 2.2.17.4.1, a minimum of one outlet for each grade of fuel is necessary. Per the TO 1C-130(H_M)J-2-00GV-00-1 Paragraph 13.7.1, the recommended fuels for AFSOC AC-130J aircraft include JP-5, JP-8, Jet-A, Jet A-1, JP-4, Jet B, and TS-1. For specific projects, the appropriate Service Headquarters can assist in determining the number.
442-258	Cryogenics Storage (LOX)	GSF	10	10	10	AFSOC only needs to store materials in cylinders. Calculated as 8 EA x 1.25.
	Gaseous Nitrogen Storage	GSF	10	10	10	AFSOC only needs to store materials in cylinders.
Airfield Paving (without Runways and Overruns)		NSF	623,297	1,029,057	1,235,169	
Total Airfield Paving		NSF	1,298,297	1,704,057	1,910,169	
Total Indoor Facilities		GSF	320	320	320	
Notes: 1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 12 PMAI = 13 total aircraft (1 BAI). 2. See paragraph 1.1.3.5 for more information on base ground operating facilities assumptions for facilities assumed to be existing and adequate at existing airfields.						

7.2.13. AC-130J Training System Facilities.

7.2.13.1. Flight Simulator Training (CATCODE: 171212).

7.2.13.1.1. Requirements Determination. This facility houses aircraft flight simulators, and other special training devices. It also includes space for administration and records, classrooms, toilet facilities, trainer maintenance, and storage (DAFMAN 32-1084, CC 171212 Flight Simulator Training, Paragraph 1.1). Flight simulator training facilities are normally sized according to the type of simulator installed and vary considerably in floor area from one system to another.

7.2.13.1.2. Dimensions. DAFMAN 32-1084, CC 171212 Flight Simulator Training, Table 1.1, provides examples of typical simulator training facilities that can be used for initial planning purposes before specific requirements are identified. **Table 7.2.21** gives the facility requirements specific to the AC-130J.

7.2.13.1.3. Reference. **Table 7.2.20** lists the training systems for the AC-130J by location type. A breakdown of space requirements in scenarios ranging from 3-12 PMAI is included in **Table 7.2.21**. A brief description of the space requirements and facility recommendations for flight simulator training is included below.

7.2.13.2. **AC-130J Training Systems**. The training devices for the AC-130J include a Weapon Systems Trainer (WST), a PSP trainer, a Gun Training Room (GTR), a Fuselage Trainer (FuT), a Part Task Trainer (PTT), a Weapons Load Trainer (WLT), and an Engine and Propeller Trainer (EPT).

7.2.13.2.1. WST. The WST is a maintenance and aircrew training system for the AC-130J. The WST features a flight compartment and Electro-Mechanical Motion (EMM) system that simulates a variety of AC-130J mission scenarios. A simulator bay is required to house the WST. It is highly recommended that the simulator bay includes a 2-ton crane at a minimum height of 29 ft off the floor (C-130J Training Facilities Report, Paragraph 2.2.5). The overhead crane is ideal, though not required; however, the simulator bay at a minimum should have an exterior access door opening of 20 ft (W) x 22 ft (H) and a maintenance access door minimum 8.2 ft (W) x 9.8 ft (H) (C-130J Training Facilities Report, Table 2-3). The total weight load supported by the simulator bay floor is 37,800 lbs (C-130J Training Facilities Report, Table 2-5). Adjacent to the simulator bay should be areas for computer, supply, and maintenance rooms. See **paragraph 7.2.13.2.11.1** for other design considerations regarding this WST bay. The recommended space allocation for this facility can be found in **Table 7.2.21**.

Table 7.2.18. Building Utility System Requirements for WST Bay.

System	Requirements
Mechanical	The simulator bay should be maintained between 60-80°F (15-27°C) at a relative humidity of 40-60% (non-condensing), both above and below the floor. In facilities where the EMM cabinet is stored within the simulator bay, the ambient temperature should not exceed 75 °F (24°C) to avoid damaging the electronics within the EMM cabinet. A typical 10-ton water air conditioning unit, based on the maximum ambient conditions listed above, provides a nominal cooling capacity of 120,000 BTU/hr (35.0 kilowatt [kW]). Lighting intensities should provide 50 foot-candles (approximately 500 lux) of total illumination measured 3 feet above the floor. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	The power requirement for the flight compartment is 400/230 VAC, 3-phase, 60 Hz, 5 wire, 6.5 kVA circuit. The power requirement for the EMM Cabinet is 480 VAC, 3-phase, 4 wire, 80 kVA circuit. The power requirement for the Cockpit Air Conditioner is a 480 VAC, 3-phase, 5-wire, 5 kVA circuit. The power requirement for the Electric Load Units is 400/230 VAC, 3-phase, 60 Hz, 5 wire, 6 kVA circuit. The facility should provide 120V, 1-phase, and 20-amp outlets at various locations around the simulator bay for installing service equipment. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	The simulator bay water supply requirements include an air conditioner maximum flow demand of 20 gallons per minute (GPM), a water supply maximum temperature of 45°F (7°C), and a water supply minimum and maximum pressures of 25 psi and 125 psi respectively. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is recommended, although a wet-pipe system is an acceptable alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.2.13.2.1.1. WST Computer Room. The WST computer room houses all the electronic cabinets and other electronic or computer equipment for the WST. It will include the following: a power cabinet, visual image generator cabinets, a visual operating workstation, a host control computer and peripherals, a UPS, a fire protection system, electrical grounding, a room air conditioner, a PDU, and a raised computer floor. The recommended computer room door size is 6 ft (W) x 7 ft (H) (C-130J Training Facilities Report, Table 2-17) and the computer floor should have a minimum 12 inches of clear height from the true floor to the underside of the raised floor with no obstructions (C-130J Training Facilities Report, Paragraph 2.11.3). See paragraph for other design considerations regarding this WST

Computer Room. New facilities will have this space incorporated within the hangar bay; however legacy facilities will have a separate space approximately 20' x 30'. This space is only required if the simulator bay is not large enough to support in-bay computer support.

Table 7.2.19. Building Utility System Requirements for WST Computer Room.

System	Requirements
Mechanical	The computer room shall be maintained at 65-75°F (18-24°C) at a relative humidity of 40-60% non-condensing, both above and below the floor. Air conditioning requires a minimum of 60,000 BTU/hr capacity under the computer room floor to provide cooling for the equipment cabinets. A constant pressure flow of cooling air should be maintained at all times to prevent damage to the equipment. The computer room air conditioning system should be separate from other building air conditioning systems. A capacity of 70,000 BTU/hr is sufficient to meet the above floor temperature requirements for the computer room. Lighting intensities should provide 50-75 foot-candles of total illumination measured 30 inches above the floor. Light should generally be of the recessed florescent type. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Electrical power should be separate from the air conditioning, lighting, or other facility/computer room electrical systems. Electrical service will be either 480/277V 3Ø/5W/60Hz or 400/230V 3Ø/3W/60Hz (ground wire is equal in size to the phase conductors) should be provided for all computer equipment. The service should be rated to supply a minimum of 150 Amps. The service should be maintained within $\pm 10V$, at a frequency of 60 Hz $\pm 0.5Hz$. A computer service ground plate should be provided and wall mounted below the raised floor. Emergency power off switches should be provided. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.

Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is recommended, although a wet-pipe system is an acceptable alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.
Communications	Provide Communication requirements in accordance with UFGS Division 27 - Communications, Division 33 - Utilities and UFC 3-580-01 for designing and implementing of interior and exterior telecommunications infrastructure for military construction. This infrastructure typically includes telecommunications spaces, pathways, cabling and interconnecting components.

7.2.13.2.2. PSP Trainer. The PSP trainer will include the training stations for the 30mm gun, 105mm Howitzer, small diameter bomb (SDB), and the Mission Operator Pallet (MOP). The MOP is the console used by the CSO to manage the systems that are controlled on the pallet. This type of trainer can be set up in by separating each training station in a large room or by combining all the pieces within a fuselage configured like an AC-130J. The recommended space allocation for this facility can be found in [Table 7.2.21](#).

7.2.13.2.3. GTR. The GTR is a classroom component in a depressed area around weapons mounts, academics, integrated to WST. The GTR shall contain the Gun Power Cabinet, Gun Control Cabinet, 30mm Trainable Gun, Ammo Handling System, 30 mm Gun Theory Trainer, Common Launch Tube Trainer, and Power Conversion Rack. An access door(s) with a minimum, unobstructed size of 6 ft. wide by 8 ft. high, with no or removable center post shall be provided for installation or removal of the GTR equipment. The equipment must be able to fit a minimum of 18" below the facility sprinkler heads located within the Room. Typical equipment heights and rack heights are 72 inches high. The facility shall provide 115 VAC, 3-Phase, 400 Hz, 60 KVA from a Frequency Converter to the training device. The facility power drop shall be within 100 ft. of the training device. Sufficient general room air conditioning should be supplied to maintain the room temperature between 65 -72°F (18-23°C) at a relative humidity of 40-60% when equipment is operational. Lighting intensities provided in the trainer location should provide 30 to 50 foot-candles of total illumination as measured 30 inches above the floor. Lighting should generally be of the mercury/sodium vapor-type. The recommended space allocation for this facility can be found in [Table 7.2.21](#).

7.2.13.2.4. **PTT**. The PTT is a desktop training space, where pilots and CSO learn the controls of the simulator. The recommended space allocation for this facility can be found in [Table 7.2.21](#).

7.2.13.2.5. **FuT**. The FuT includes the GFE 30mm gun system, a Mission Operator Pallet (MOP) obstruction, and the SOPGM ammunition launcher installed in the FuT. The driving factor of FuT space is the open bay that is required to house a fuselage for the AC-130J, without the wings or tail (this significantly reduces the floor space and vertical height required). The facility should provide sufficient heating and air conditioning to the training device to maintain the temperature between 65 -72°F (18-23°C) at a relative humidity of 40-60%. The facility shall provide sufficient lighting near the trainer location to provide illumination for safe entry and exit of the training device. The facility shall provide 277/480 VAC, 3-Phase, 60 Hz, 150 Amps, 4-Wire Connection using a mounted Meltric Connector Facility Jack (P/N 39-94243-K04-E323) to connect to the Solid-State Frequency Converter using harness P/N TAG526001-101 and harness P/N MS90328-28M which provides 115 VAC, 400 Hz, 60 KVA from the Frequency Converter to the training device. The facility power drop shall be within 100 ft. of the training device. The recommended space allocation for this facility can be found in [Table 7.2.21](#).

7.2.13.2.6. **WLT**. The driving factor of WLT space is the open bay that is required to house a fuselage for the AC-130J. The open bay space required is 122.75' x 162.6' based on the aircraft block dimensions in [Table 7.2.1](#) and aircraft separation distances inside hangars detailed in DAFMAN 32-1084, CC 211111 Hangar Maintenance, Table 1.2. While WLTs are based on a full-sized aircraft, they do not require the vertical stabilizer (tail) of the aircraft, reducing the vertical height requirement from just over 39 feet to approximately 16 feet before ceiling clearances. The WLT also requires a CTK storage room for 4 loading adapters (5' x 5' each), 3 loading equipment spaces (3' x 3' each), 3 tool boxes (4' x 4' each), and ladders. A Training Bay Storage area is also required to house inert munitions, 2 munitions lift trucks (one is 84" W x 214" L x 32" H, the second is 87" W x 254" L x 30" H), and a Shuttle Lift 4450 (12'3" W x 22'1" L with a maximum boom height of 45'). Provide offices for a Weapons Manager, Weapons Standardization Superintendent, a 3-person loading standardization crew, and a 3-person squadron lead crew, and two section chiefs. Space should also be provided for communications, instructor and student break rooms, a lobby, and all other core building services. The recommended space allocation for this facility can be found in [Table 7.2.21](#). The recommended space allocation for this facility can be found in [Table 7.2.21](#).

7.2.13.2.7. **EPT**. The EPT consists of inert components that replicate the components of the engine and propeller system to train the applicable maintenance tasks. The EPT requires a bay that is 47' (W) x 48' (L) x 35' (H) and an external access door that is 14' (W) x 10' (H). The EPT does not require a separate air conditioning system. Facility air conditioning system furnishes the air for the EPT bay. The EPT bay should be maintained at 14-95 degrees F (non-operating) at a relative humidity of 80% non-condensing. The EPT itself does not require power; however, facility-provided power is required to support provide power to the IOS computer, IOS monitor, network

interface computer, and the AIM. Power distribution for the IOS/AIM consists of an AC power distribution panel located in the IOS, where single phase, 240V power is distributed to five 20 amp, 120V circuits that provide power to support equipment.

7.2.13.2.8. VTRAT. The VTRAT will be located inside a room that can support trainees, instructors, and computer equipment. The cooling requirements for the VTRAT are similar to most simulators and should not be overlooked due to the small size of this simulator. The recommended space allocation for this facility can be found in [Table 7.2.21](#).

7.2.13.2.9. NVG. The space required for NVG training should be large enough to support trainees, instructors, and NVG equipment. The equipment for NVG does not require much more than desk space for students and the instructor. Lighting should also be considered to assure the equipment is being used in an environment dark enough to meet training requirements. The recommended space allocation for this facility can be found in [Table 7.2.21](#).

7.2.13.2.10. PFPS. This facility needs a dedicated space that can fit multiple users and workstations. The recommended space allocation for this facility can be found in [Table 7.2.21](#).

7.2.13.2.11. Dimensions. See [Table 7.2.21](#) for the space requirements for the individual spaces within a training systems facility.

7.2.13.2.12. Design Considerations.

7.2.13.2.12.1. Simulator Bay. Ensure adequate grounding to device specifications. Provide perimeter lighting for accessibility. For facility A/C, ensure the bay A/C is on the side walls and not over the simulator (to avoid condensation dripping on visual domes) and make sure there is a condensation drain. For simulator cockpit A/C, design in flexibility to accommodate different types of A/C units (i.e. split unit, package unit, or chilled water) and make sure there is a condensation drain. Provide a separate trench from the anticipated cockpit A/C location to edge of the reaction pad. Do not install ceiling tiles because they are not accessible once the device is installed. Consider installing an interlocking “tech flooring” throughout the simulator bay. Provide electrical disconnects for the UPS, drawbridge, and cockpit A/C unit, etc. Determine device/squadron requirements for a back-up power generator. Provide storage space within the bay for storage. Provide double doors into the bay, computer room, maintenance area, front entrance, and any supply points and suggest only one point of entry into the open storage area. Install an overhead 2ton crane with variable speeds and a crane control cable on a remote cable from the hoist. Ensure that there is a sprinkler connection on the wall of the bay for a sprinkler pipe under the device (not required for electric motion; required for hydraulic motion).

7.2.13.2.12.2. Device/Simulator. Be very clear on who will provide the stairs or platform for the device (either MILCON or the device provider). Make the design for the device’s orientation flexible because the vendor may not be the same as the vendor under design. Determine who will provide the UPS (normally vendor

provided but make sure) and that it is adequately sized.

7.2.13.2.12.3. Communications and SIPR. Understand the proposed comprehensive interior design layout so that SIPR conduit can be installed in accordance with UFGS 27 05 29.00 10 & AFSSI 7703. This includes ensuring furniture/equipment will not block access for inspection requirements and should consider the separation of secure and unsecure communication lines.

7.2.13.2.12.4. IDS, ACS, and CCTV. These items are not provided by the MILCON project and are installed during construction. End user organizations are required (pre-design) to staff all IDS/ACS/CCTV requirements through the local Security Forces Squadron NCOIC to the AF Security Forces Center for validation/funding. MILCON scope will provide power and pathways only, not installation, procurement, or processing of systems/devices. Define IDS/ACS/CCTV requirements early so that the infrastructure can be installed during construction. Ensure walls and doors meet the security requirements for the open-standards architecture approach.

7.2.13.2.12.5. Classroom. Provide ceiling power (junction boxes/outlets) for projectors, split ballast for front lighting in classrooms and debrief areas (overhead projectors), and dual whiteboards: one under automated projector screen, the other on a side wall.

7.2.13.2.12.6. Computer Room. Ensure there is adequate grounding for all computer room equipment (provide a grounding bar under the isolated ground room floor). Provide electrical disconnects for the proposed computer room layout for the PDU, UPS, etc. Ensure chiller and condensing units be adequate for proposed computer room layout based on equipment heat output. The emergency power off switch in the isolated ground room should be dual purpose for AC/DC power and the UPS. Provide ultra-sensitive smoke detection as provided in AFMAN 91-118. Make sure trenches penetrate the walls between the computer room and bay. Provide a communications closet that complies in accordance with UFGS Division 27 - Communications and Division 33 - Utilities. The AFCEC Fire Protection Office has determined that cabling associated with a flight simulator or other non-building equipment does not factor into the underfloor suppression requirement related to plenum-rated cable. For protecting electronic equipment from smoke and fire, refer to ETL 01-18.

7.2.13.2.12.7. Structure. The WST facility shall be identified as Risk Category III based on ACSE 7.

7.2.13.2.13. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that

Table 7.2.20. AC-130J Training Systems by Location Type.

Simulator Type	No. of Training Systems (CONUS)				No. of Training Systems (OCONUS)		
	Training Center ¹	3 PMAI	9 PMAI	12 PMAI	3 PMAI	9 PMAI	12 PMAI
WST ²	2	1	1	1	1	1	1
WLT	1	1	1	1	1	1	1
PSP	1	1	1	1	1	1	1
GTR	1	1	1	1	1	1	1
PTT	1	1	1	1	1	1	1
FuT	1	1	1	1	1	1	1
VTRAT	2	1	1	1	1	1	1
PFPS	2	1	1	1	1	1	1
NVG	1	1	1	1	1	1	1

Notes:

1. Training Center locations are CONUS only.
2. WSTs are currently being programmed for OCONUS locations.

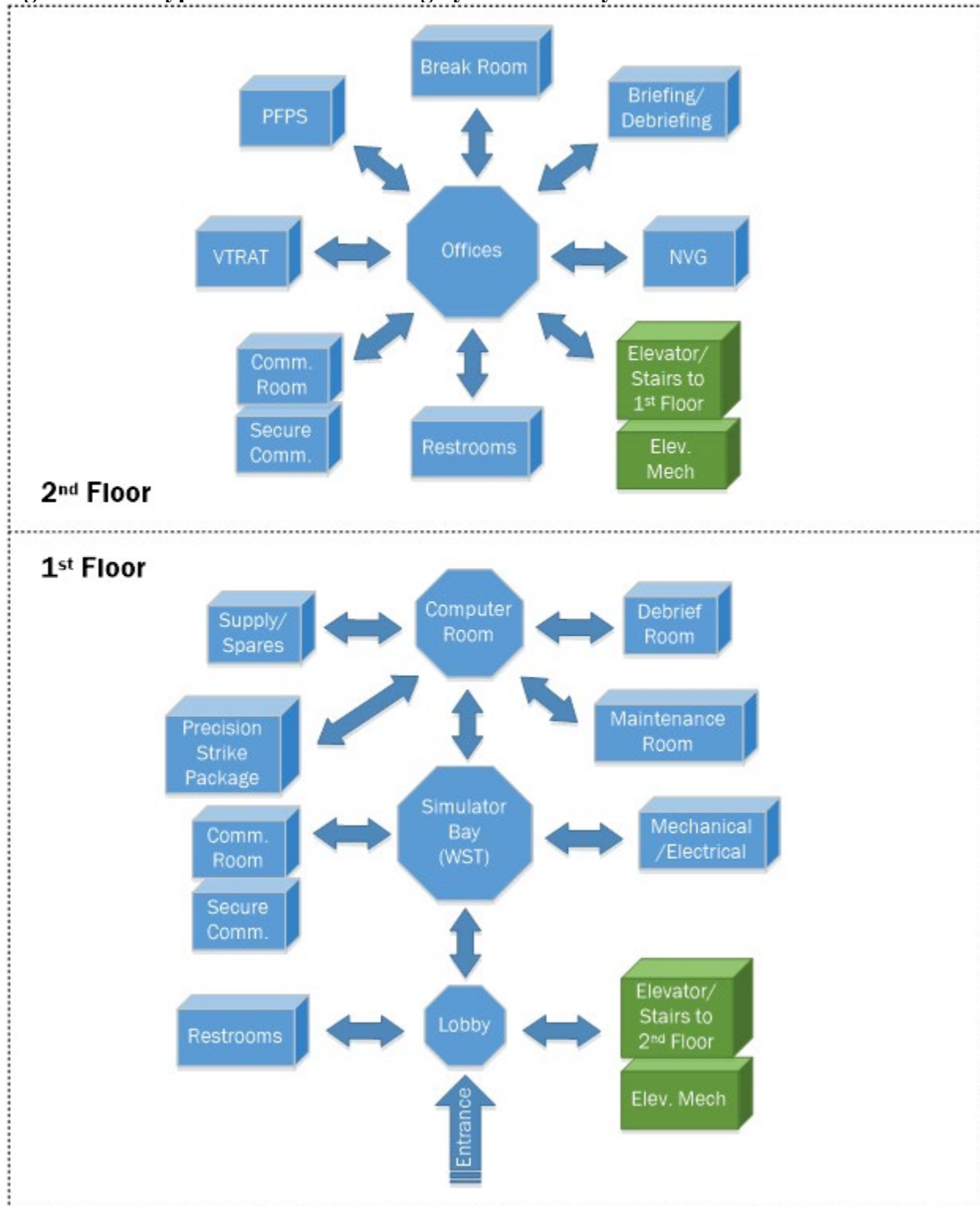
Figure 7.2.8. Typical AC-130J Training Systems Facility.

Table 7.2.21. AC-130J Training Systems Facility Space Requirements.

Cat Code	Facility	UM	AC-130J (3)¹	AC-130J (9)¹	AC-130J (12)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
171-212	Instructor Offices ²	NSF	425	425	425	AFSOC/A4I: Space for 6 PN required. 1 Type D for supervisor, 5 Type E for others. 100 NSF min for Type D Offices. ⁴ 65 NSF min for Type E Offices. ⁵
171-212	Contractor Offices ²	NSF	425	425	425	AFSOC/A4I: Space for 6 PN required. 1 Type D for supervisor, 5 Type E for others. 100 NSF min for Type D Offices. ⁴ 65 NSF min for Type E Offices. ⁵
171-212	WST ²	NSF	2,500	2,500	2,500	AFSOC/A4I: The standard AFSOC simulator bay size is size 50'(W) x 50' (L) x 50' (H) to allow flexibility between devices and weapon systems. Larger spaces will be provided to support minimum device specifications only.
171-212	PSP Trainer	NSF	900	900	900	AC-130J- 15 ft x 15 ft for each station: 30mm gun, 105mm Howitzer, SDB, and the MOP.
171-212	PSP Computer Room	NSF	480	480	480	AC-130J - Provide 480 sf.
171-212	GTR	NSF	1,200	1,200	1,200	AFSOC/A3: Provide a 30' x 40' space.
171-212	GTR Storage Room	NSF	150	150	150	AFSOC/A3: Needs to accommodate 3 ammunition cages (2 for 40mm & PSP ammo; 1 for 105mm ammo). Provide space that is 15' x 10'.
171-212	Systems Integration Laboratory	NSF	300	300	300	AFSOC/A3: Provide 15' x 20' lab for WST and PSP/MOP.

171-212	FuT	NSF	4,600	4,600	4,600	Based on Hurlburt Field FuT design: provide an open bay of 40' x 115' without wing and tails (provide 62' x 146' for a facility with the wings and tail), a 40' x 40' rollup door (note: if the aircraft does not require wing and tail sections, a roll up door of 24' W x 20' H is adequate), and a 20' x 20' sealable opening on the opposite end of the trainer. This bay includes space for FuT spaces storage.
171-212	FuT Equipment Room	NSF	352	352	352	Based on Hurlburt Field FuT design: provide 352 NSF.
171-212	FuT Tech Room	NSF	256	256	256	Based on Hurlburt Field FuT design: provide 256 NSF
171-212	PTT	NSF	600	600	600	AFSOC/A3: Provide 20' x 30'.
171-212	PFPS ²	NSF	384	384	384	Hurlburt Simulator Facility: 16' x 24'.
171-212	VTRAT	NSF	300	300	300	Hurlburt Simulator Facility: 15' x 20'.
171-212	NVG	NSF	100	100	100	Hurlburt Simulator Facility: 10' x 10'.
171-212	Computer Room	NSF	600	600	600	AFSOC/A4I: Computer Room 20' (W) x 30' (L) x 8' (H).
171-212	Maintenance Area	NSF	300	300	300	AFSOC/A4I: Maintenance Room 15' (W) x 20' (L) x 10' (H).
171-212	Supply Spares	NSF	160	160	160	AFSOC/A4I: 10' (W) x 16' (L) x 8' (H).
171-212	Brief/Debrief Rooms	NSF	600	600	600	AFSOC/A4I: 15' (W) x 20' (L) x 10' (H); 2 rooms, 300 NSF each.
171-212	Instructor Break Room	NSF	100	100	100	16% Occupants x 18 NSF, minimum of 100 NSF. ⁶
171-212	Student Break Room	NSF	100	100	100	16% Occupants x 18 NSF, minimum of 100 NSF. ⁶
171-212	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Common Areas	NSF	0	0	0	Space varies. Included in NSF to GSF conversion. ⁷
171-212	Mech. and Elec. Rooms	NSF	0	0	0	Included in NSF to GSF conversion. ⁷
171-212	Admin. Support Space	NSF	240	240	240	AFSOC/A4I: default is 20 sf per person. ⁸

171-212	Admin. Circulation	NSF	109	109	109	Max 10% of Administrative Space ⁹
171-212	Special Purpose Circulation	NSF	1,427	1,427	1,427	Max 10% of Special Purpose Space ⁹
171-212	FuT Outdoor Storage Yard	SY	16	16	16	Based on Hurlburt Field FuT design: provide 16 SY.
171-625	WLT Weapons Manager Office	NSF	100	100	100	100 NSF for Type D Office. ⁴
171-625	WLT Weapons Standardization Superintendent	NSF	100	100	100	100 NSF for Type D Office. ⁴
171-625	WLT Loading Standardization Crew	NSF	144	144	144	3 PN. 48 NSF min. per person for open office space. ⁵
171-625	WLT Squadron Lead Crew	NSF	144	144	144	3 PN. 48 NSF min. per person for open office space. ⁵
171-625	WLT Supervisor Section Chiefs	NSF	130	130	130	2 PN. 65 NSF min. per person for open office space. ⁵
171-625	WLT Conference Room	NSF	150	150	150	10-person meeting room. 15 sf per person justified. ⁶
171-625	WLT CTK Storage Room	NSF	250	250	250	4 loading adapters (5' x 5'), 3 loading equipment (3'x 3'), 3 Tool boxes (4x4), and ladders.
171-625	WLT C-130 Training Bay Storage	NSF	400	400	400	This storage will house Dud Munitions Storage, 2 Munitions Lift Truck MHU-83 (32" tall, 84" wide, and 214") and (30" tall, 87" wide, and 254"), Shuttle Lift 4450 with a max boom height of 45' with dimensions of 12' 3" wide, 22' 1" long. This area does not need to be a dedicated room but dedicated floor space.
171-625	WLT Classroom	NSF	450	450	450	Assume 15 Students. These classrooms will not have any computers. 30 NSF/student (up to 25 PN/classroom). ⁶
171-625	WLT Instructor Offices	NSF	144	144	144	3 PN. 48 NSF min. per person for open office space. ⁵

171-625	WLT C-130 Maintenance Training Bay	NSF	19,960	19,960	19,960	Table 3.2. Aircraft Separation Dimensions Inside Hangars / AC-130 RD 2013 2.3 Aircraft Principal Dimensions Table 2.1. AC-130J Block Dimensions / AFI 21-101 par. 10.7. Maintenance Training Bay needs to accommodate the fuselage of a C-130. Needs to be hurricane rated doors to 140 mph. Open bay of 122.75 ft x 162.6 ft, with either Hangar Bay Doors, Roll Up, Hangar Fabric Door.
171-625	WLT Lobby	NSF	100	100	100	User justified. ⁶ Provide 100 sf.
171-625	WLT Instructor Break Room	NSF	100	100	100	During normal operation one class will be exiting and utilizing the breakroom with a total head count of 39 Instructors. 16% Occupants x 18 NSF (min 100 NSF). ⁶
171-625	WLT Student Break Room	NSF	100	100	100	During normal operation one class will be exiting and utilizing the breakroom with a total head count of 35 students. 16% Occupants x 18 NSF (min 100 NSF). ⁶
171-625	WLT Communications Room	NSF	144	144	144	AFSOC/A6: Provide 12 ft x 12 ft per communications room.
	WLT Admin. Support Space	NSF	260	260	260	AFSOC/A4I: default is 20 sf per person. ⁸
	WLT Admin. Circulation	NSF	102	102	102	Max 10% of Administrative Space ⁹
	WLT Special Purpose Circ.	NSF	2,155	2,155	2,155	Max 10% of Special Purpose Space ⁹
Total WLT Facility		GSF	31,042	31,042	31,042	Net to Gross conversion factor of 1.25
Total Flight Training Facility		NSF	16,896	16,896	16,896	
Total Flight Training Facility		GSF	21,120	21,120	21,120	Net to Gross conversion factor of 1.25
Total Outdoor Storage Yard		SY	16	16	16	

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 12 PMAI = 13 total aircraft (1 BAI).
2. These simulators require the area specified in the remarks column for clear space in the simulator room. Building structural, mechanical, and electrical equipment shall be clear of the simulator area.
3. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons.
4. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.
5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
7. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2
8. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3.
9. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

7.2.14. AC-130J Operations Facilities.**7.2.14.1. Squadron Operations (CATCODE: 141753).**

7.2.14.1.1. Requirements Determination. Each squadron needs an operational building for administration, scheduling, training, briefing, personal equipment maintenance, and storage for aircrews.

7.2.14.1.2. Scope Determination. Space must be provided for the commander and staff. Space is required for AFE systems maintenance and the care, storage, and issue of flying clothing and equipment for each crew member. Space is required for an operations officer to direct flight operations and for intelligence, mission planning, computers, radar and navigation, photos and maps, briefing room, locker area, and radio and electronic countermeasures. The recommended space allocation for this facility can be found in [Table 7.2.23](#). See **paragraph 1.1.3.6 for more information about the** unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within squadron operations facilities.

7.2.14.1.3. Typical AC-130J Operations Squadron Composition. Includes a commander, first sergeant, command staff, operations officer, assistant operations officer, flight chiefs, standardization and evaluation, safety, security, current operations, flight planning, flight management, publications, scheduling, training, ARMS, plans, tactics, and intelligence. This facility will also include an armory (which can be located at LRS), a mission control center, an operations/training classroom, and briefing rooms.

7.2.14.1.4. Security Considerations. Secure plans, weapons and tactics, intelligence require a SCIF. Conference and briefing rooms as well as the mission control center require open storage up to the SECRET level.

7.2.14.1.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are

provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

7.2.14.1.6. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

7.2.14.1.7. Dimensions. See [Table 7.2.23](#) for the individual spaces within an AC-130J Operations facility. See Paragraph [7.2.9](#), Operations Squadron Characteristics, for the notional manning of AC-130J squadrons sized for 3, 9, and 12 PMAI.

Table 7.2.22. Building Utility System Requirements for Operations Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

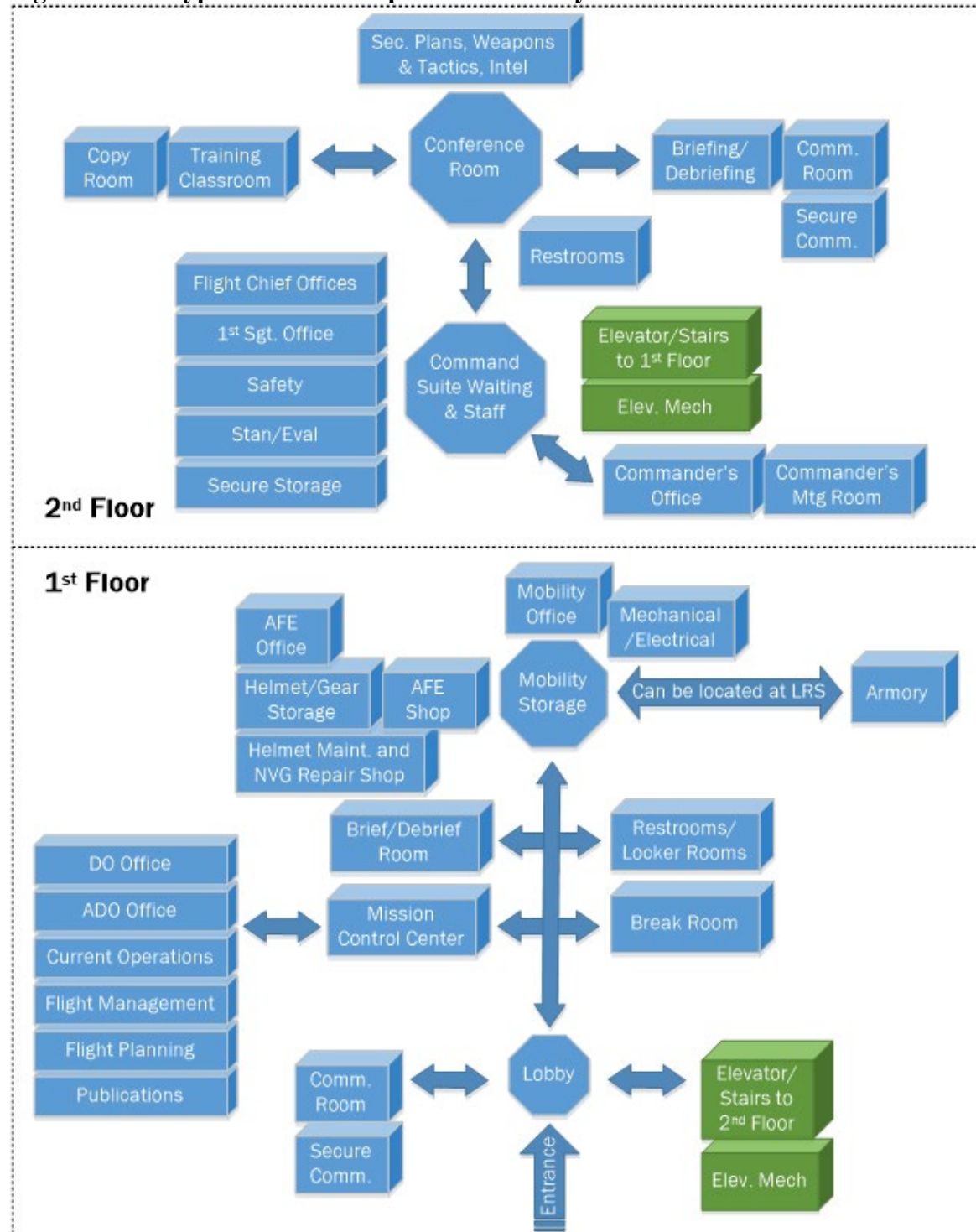
Figure 7.2.9. Typical AC-130J Operations Facility.

Table 7.2.23. AC-130J Operations Facility Space Requirements.

Cat Code	Facility	UM	AC-130J (3)¹	AC-130J (9)¹	AC-130J (12)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
141-753	Command Suite - Commander	NSF	140	140	140	140 NSF min for Type C Offices. ⁴
141-753	Command Suite - First Sergeant	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Command Suite - Command Staff	NSF	140	140	140	2 PN waiting area plus 1 office. Waiting area is 20 NSF per person. ⁶ 100 NSF min for Type D Offices. ⁴
141-753	Director of Operations ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Assistant Ops Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Senior Enlisted Mgr ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	POTFF Office	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Current Operations ²	NSF	325	455	455	One aircrew scheduler per CSA position (3) plus mission schedulers at 2 PN (2 PMAI), 5 PN (9 PMAI), and 5 PN (12 PMAI). Total PN 3 PMAI = 5 PN; 9 PMAI = 6 PN; 12 PMAI = 7 PN. 65 NSF min for Type E offices. ⁵
141-753	Flight Planning ²	NSF	160	415	445	AC-130J- 2 PN (3 PMAI), 5 PN (9 PMAI), and 5 PN (12 PMAI) at 65 NSF min each for Type E Office ⁵ plus 10 NSF of storage per aircraft.
141-753	Flight Management ²	NSF	280	280	280	Assume 2 PN plus flight planning tables and storage area of 150 NSF. 65 NSF min for Type E offices. ⁵
141-753	Aviation Resource Management	NSF	320	400	480	3 PMAI = 3 PN; 9 PMAI = 4 PN; 12 PMAI = 5 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices.
141-753	Secure Plans, Weapons & Tactics, and Intel ²	NSF	465	1,395	1,860	1 SOW: Located in 2,246 NSF B91259. Calculated as 155 NSF x #PMAI.
141-753	Flight Chief Offices ²	NSF	300	300	300	AFSOC/A3: Provide space for 3 chiefs. 100 NSF min for Type D Offices. ⁴

141-753	Stan/Eval ²	NSF	195	325	325	One evaluator per CSA position (3). 3 PMAI = 3 PN, 9 PMAI = 5 PN; 12 PMAI = 5 PN. 65 NSF min for Type E offices. ⁵
141-753	Training Office	NSF	148	148	148	Assume 2 PN: Chief/NCOIC (Type D) and Training PN (Type F). 100 NSF min for Type D offices. ⁴ 48 NSF min for Type F offices. ⁵
141-753	Safety Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Security Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Medical Offices	NSF	230	230	230	Per A1M, assume 3 personnel total per squadron integrated from SOSS. 1 officer (Type D), 2 enlisted (Type E). 100 NSF min for Type D offices. ⁴ 80 NSF for Type E offices. ⁵
141-753	Publications ²	NSF	160	415	445	Assumed 2 PN (4 PMAI), 3 PN (8 PMAI), and 5 PN (16 PMAI), 10 NSF per PMAI for storage. 65 NSF min for Type E offices. ⁵
141-753	Armory/ Weapons Vault	NSF	168	504	672	353 SOG: 17 SOS (4 PMAI) Armory, room 154, is in 279 NSF (56 NSF per AC, rounded). Calculated as 56 NSF x #PMAI. This facility can be located with the squadron or with LRS.
141-753	Mobility/ Supply Storage	NSF	900	2,700	3,600	1,200 NSF for 4 PMAI mobility storage. Provide 300 NSF per PMAI.
141-753	Mobility Office ²	NSF	96	288	288	AFSOC/A4I: Based on assigned PN at 48 NSF each. Assumed 2 PN (3 PMAI), 6 PN (9 PMAI), and 6 PN (12 PMAI).
141-753	AFE Offices ^{2,3}	NSF	384	768	768	3 PMAI= 6 PN; 9 PMAI = 12 PN; and 12 PMAI = 12 PN. 48 NSF min for Type F offices. ⁵
141-753	AFE Shop ³	NSF	270	810	1,080	Minimum shop space is 200 NSF (Calculated as 50 NSF x #PMAI) plus 40 NSF x #PMAI for helmet and gear storage.
141-753	Mission Control Center ²	NSF	500	500	500	353 SOG: Located in 514 NSF. Provide 500 NSF for all scenarios.
141-753	Training Classroom	NSF	240	385	513	AFSOC/A4I: 240 NSF minimum. Total unit authorization is 3 NSF per military PN.

141-753	Secure Storage	NSF	20	20	20	Two, five-drawer safes (4' x 5').
141-753	Supply Room	NSF	100	100	100	Provide 100 NSF.
141-753	Break Room	NSF	216	521	674	16% of occupants x 18 NSF. ⁶
141-753	Conference Room	NSF	500	1,350	1,350	Size based on number of personnel in the squadron. 50-99 PN, provide a conference room for up to 25 persons. 100-149 PN, provide a conference room for up to 50 persons with 150 SF speaker area. Add a 10-person room for populations over 150. ^{7,8}
141-753	Commander's Meeting Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. 15 NSF/person. ⁷
141-753	Team Room	NSF	150	450	450	Size based on number of personnel in the squadron. 50-99 personnel, provide one team room for up to 10 persons. 100-149 personnel, provide two team rooms for up to 10 persons each. Add an additional team room for populations over 150. ^{7,8}
141-753	Briefing & Debriefing	NSF	300	300	300	Meeting Room of up to 15 NSF per justified person. ⁷ Assume two, 10-person rooms.
141-753	Individual Equipment Storage	NSF	423	1,278	1,701	Ops facility lockers for AC-130J require 3' x 3' cage per flight crew member. 3 PMAI= 47 PN; 9 PMAI= 142 PN; 12 PMAI = 189 PN.
141-753	Men's Locker Room	NSF	84	252	336	Calculated as $21/3 \times 0.8 \times \text{\#PMAI} \times 5$ NSF.
141-753	Women's Locker Room	NSF	21	63	84	Calculated as $21/3 \times 0.2 \times \text{\#PMAI} \times 5$ NSF.
141-753	Men's Showers	NSF	120	150	180	Provide 4 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
141-753	Women's Showers	NSF	60	90	120	Provide 2 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
141-753	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.

141-753	Elevator	NSF	80	80	80	Provide 80 NSF.
141-753	Elevator Equipment Room	NSF	90	90	90	Provide 90 NSF.
141-753	Restrooms and Janitor's Closet	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
141-753	Mech/Elec Rooms	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
141-753	Admin. Support Space	NSF	800	1,280	1,300	AFSOC/A4I: default is 20 sf/person. ¹¹
141-753	Admin. Circulation	NSF	453	700	758	Max 10% of Administrative Space ¹⁰
141-753	Special Purpose Circulation	NSF	489	1,050	1,273	Max 10% of Special Purpose Space ¹⁰
Total Operations Facility		NSF	10,359	19,242	22,341	
Total Operations Facility		GSF	12,948	24,053	27,926	Net to Gross conversion factor of 1.25.

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 12 PMAI = 13 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. For planning purposes, AFE facility requirements for AFSOC squadrons are split between the SOSS centralized AFE facility and the squadron operations facility. If consolidated within the SOSS facility, the AFE facility requirements listed in this table are not additive to the existing SOSS AFE facility allowance.
4. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.
5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
7. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.4.
8. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.5
9. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2
10. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3
11. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

7.2.15. AC-130J Maintenance Hangar Facilities.

7.2.15.1. Maintenance Hangar (CATCODE: 211111).

7.2.15.1.1. Requirements Determination. Hangars support aircraft maintenance, repair, and inspection activities that are most efficiently done under complete cover. The interior design of covered shelters must include the clearances between aircraft and door openings, walls, ceilings, and parking clearances between other aircraft.

7.2.15.1.2. Scope Determination. Determine the square footage requirements for maintenance hangars by the method described below for computing covered maintenance spaces:

7.2.15.1.2.1. Calculate the number of authorized covered maintenance spaces for the AC-130J by multiplying the total number of PMAI, BAI, and training aircraft by a factor of 0.15 (rounded to nearest whole number). See [Table 7.2.24](#) for calculating the required number of spaces for 3, 9, and 12 PMAI.

7.2.15.1.2.2. To determine the interior dimensions of dock and hangar bays, use the dimensions of the aircraft plus the minimum clearances shown in [Table 7.2.25](#). To compute the gross area of the hangar, multiply the interior dimensions by a factor of 1.15 (DAFMAN 32-1084, CC 211111 Hangar Maintenance, Paragraph 1.3.4); however, to account for additional space required for hangar door pockets, use a factor of 1.25.

Table 7.2.24. AC-130J Covered Aircraft Maintenance Spaces.

Aircraft	PMAI	BAI	PTAI	Total Aircraft x AC-130J Factor	Required Covered Spaces (rounded)
AC-130J	3	1	-	4 x .15 = 0.6	1
AC-130J	9	1	-	10 x .15 = 1.5	2
AC-130J	12	1	-	13 x .15 = 1.95	2

Table 7.2.25. AC-130J Aircraft Separation Dimensions inside Hangars.

Minimum Clearances from AC-130J Hangar Elements ¹						
Aircraft Element	Door		Walls		Roof Framing	
	m	ft	m	ft	m	ft
Wing Tip - over 30.5 m (100 ft) span	3	10	4.6	15	-	-
Fuselage - over 30.5 m (100 ft) span	3	10	4.6	15	3	10
Tail - Vertical	2.1	7	-	-	3	10
Tail - Horizontal	3	10	3	10	3	10

Notes:

- Clearances between aircraft components should be at least 10 ft where two or more aircraft are housed.
- ISO stands and fire lanes need to be considered when planning hangar facilities to avoid impacting the nose, wings, and tail of the aircraft. The minimum 10 feet clearance may not be enough to fit ISO stands designed to fit entirely around the aircraft.

7.2.15.1.3. Dimensions. Area is calculated by using block dimensions ([Table 7.2.1](#)) 97.75 ft (L) x 132.6 ft (W), and allowing minimum clearances (15 ft and 10 ft, wing-to-wing/doors) 122.75 ft x 162.6 ft = 19,960 NSF for one AC-130J. The area needed for a two-bay hangar for the AC-130J is 122.75 ft x 305.2 ft (37,464 NSF). The minimum hangar ceiling height is the aircraft height (39.17 ft) plus minimum roof clearance ([Table 7.2.25](#), 10 ft) or 49.17 ft. The minimum hangar door height is 39.17 plus minimum door clearance ([Table 7.2.25](#), 7 ft) or 46.17 ft.

Table 7.2.26. Building Utility System Requirements for Maintenance Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide multiple 120- and 220-volts outlets throughout the facility. Provide independent circuit breakers to support charging and computer stations since consolidated breakers can be tripped due to power demands and surges. Provide isolated circuits from hangar outlets as consolidation will cause breaker interruptions due to excessive power demand for one circuit. Design electrical systems capable of expansion to avoid increased installation costs and time delays when the electrical demand increases. Cost of additional installation can be high for O&M funds and contracting process can be lengthy, particularly at overseas locations. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Provide a commercial grade domestic water and waste water system. Ensure hot water capability to comply with requirements driven by TO, OSHA, and other safety standards. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Per UFC 3-600-01 Paragraph 4-4.1, fixed wing and rotary wing aircraft fuel cell maintenance facilities, alert, storage, depot-level and general-purpose maintenance hangars comply with UFC 4-211-01. Per UFC 4-211-01 Paragraph 3-6.17, provide a hydraulically designed, low level Hi-Ex foam system for hangar bays. Existing hangars may continue use of AFFF fire protection systems. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.2.15.1.4. Unique Facility Requirements.

7.2.15.1.4.1. Bridge Crane. Provide a 7-ton overhead bridge crane. Minimum crane hook height AC-130J hangars is 49 ft 2 in (UFC 4-211-01, Figure 2-3 & Table 2-1 Item F).

7.2.15.1.4.2. Hangar Clearances. See [Table 7.2.25](#). ISO stands and fire lanes need to be considered when planning hangar facilities to avoid impacting the nose, wings, and tail of the aircraft. Depending on the hangar design, the minimum 10 feet clearance presented in [Table 7.2.25](#) may not be enough to fit ISO stands designed to fit entirely around the aircraft. As noted in [Table 7.2.29](#), a mobility barn locate proximate to the hangar can be used to store ISO stands and other pieces of equipment that cannot be stored in the hangar because they encroach on the minimum clearances required or are obstructions.

7.2.15.1.4.3. Hangar Floors. Floors should be designed to include withstand the weight of the aircraft including some fuel and other equipment items that may be located in the hangar such as tow vehicles, jacks, cribs, cranes, spare engines, etc. When exact data is not available, use 60 percent of the maximum gross weight of the aircraft (UFC 3-260-02, Chapter 4, Section 3, Paragraph D). The minimum requirement for hangar floor pavements designed for the AC-130J should be designed for at least 105,000 lbs (175,000 lbs [Max Gross Takeoff Weight] x 0.6).

7.2.15.1.4.4. Fall Protection. Provide fall protection in accordance with UFC 3-110-03 and refer to UFC 4-211-01 Appendix C-11 for information on the best practices for fall prevention and protection system. Consider the implications of providing different types of fall protection systems and/or equipment. Note that fall protection systems not installed as a building system may require additional storage for fall protection support equipment.

7.2.15.1.4.5. Fire Protection. The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF.

7.2.15.1.4.6. Security Requirement. Secured space will be required for the storage of classified components temporarily removed from aircraft. This requirement may be satisfied by storing components at the respective intermediate level shops or other secure storage locations.

7.2.15.1.4.7. Structure. The maintenance hangar shall be identified as Risk Category III based on ACSE 7.

7.2.15.1.4.8. Reference. See Paragraph [7.2.16](#), Maintenance Facilities for a concept diagram for the AC-130J maintenance hangar and AMU facility.

7.2.16. AC-130J Maintenance Facilities.

7.2.16.1. Aircraft Maintenance Unit (CATCODE: 211154).

7.2.16.1.1. Requirements Determination. Each AMU needs an operational building for administration, scheduling, training, briefing, and aircraft equipment/tool storage.

Equipment/tool storage may be in a separate building (DAFMAN 32-1084, Paragraph 3.1.6.2).

7.2.16.1.1.1. Submit projects for unlisted missions, AMU types, or additional space requirements through AFSOC/A4 (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational [A/HMU], Paragraph 1.2.1).

7.2.16.1.2. Scope Determination. Space must be provided for the NCOIC, OIC, administration, debrief, training, field service representatives, AFETS, scheduling, production, section flight chiefs (Production, Specialist, Aircraft, Scheduling, Weapons, Brief/Debrief, and Support), and staff. Space is also required for test/support equipment and tools to support all mission tasks. Equipment includes aircraft test equipment, maintenance tools, mobility pallets/ (ISU 70/90s), Dash 21 equipment, and equipment found in [Table 7.2.28](#). Specific mission requirements may require additional storage space to be validated through AFSOC/A4 (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational [A/HMU], Paragraph 1.3.1).

7.2.16.1.2.1. Where offices are provided, an open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons.

7.2.16.1.2.2. A designated heritage room is not authorized for the AMU in DAFMAN 32-1084 and is not authorized as an AFSOC specific requirement per AFSOC/A4I.

7.2.16.1.3. Dimensions. [Table 7.2.27](#) lists the maximum space requirements for AC-130J AMU facilities.

Table 7.2.27. Maximum Space Requirements for AC-130J AMU Facilities.

MISSION Special Operations Squadrons ¹	Gross Area ²					
	3 PMAI		9 PMAI		12 PMAI	
	m ²	ft ²	m ²	ft ²	m ²	ft ²
	4,486	48,284	5,899	63,491	6,615	71,203
Notes:						
1. This table equals the total GSF authorized from the rooms listed in Table 7.2.29. Space authorizations for individual rooms within this facility can be found in Table 7.2.29.						
2. Includes common use and maintenance areas.						

7.2.16.1.4. Design Considerations. Locate next to assigned aircraft parking apron, and maintenance hangar. Special Q-D standards apply to hardened facilities. See AFMAN 91-201 (DAFMAN 32-1084, Paragraph 3.1.6.5).

7.2.16.2. AMU Facilities.

7.2.16.2.1. Support Section. Area may include: CTKs, special tools, test equipment, TO, bench stock, Dash 21 equipment, AME, vehicles, mobility equipment, and dedicated supply support functions to support the production effort. The recommended space for this facility can be found in [Table 7.2.29](#).

Table 7.2.28. Equipment for the AC-130J Support Section.

Equipment Name	Quantity ^{1,2}
Tool Accountability System	1
CAMS or IMDS	1
Portable Oxygen Bottles	1 per flight crew member
Ground Station	1
Batteries	Varies based on tool type/quantity and battery type/voltage.
Battery chargers	Varies based on tool type/quantity and battery type/voltage.
Hand etcher	1
Dremel tool for de-etching	1
Shredder	1
Copy/Fax/Scanner	1
Printer	1
Computer workstations	1 each for CAMS or IMDS
Notes:	
1. Source: AFSOC/A4	
2. These numbers are for a typical Support Section. Only the numbers for batteries, battery chargers, and portable oxygen bottles will vary based on the criteria mentioned.	

7.2.16.2.2. Dash 21. Dash 21 equipment is AME designed to configure aircraft for multiple mission profiles. The recommended space allocation for this facility can be found in [Table 7.2.29](#).

7.2.16.2.3. PSP Storage. This facility includes all items necessary to remove the PSP from the aircraft and store it for maintenance. One PSP requires three, 9 ft x 8 ft pallet positions or 216 NSF. With 4 ft clearance on all sides, the floor space required for one PSP is 35 ft x 16 ft or 560 NSF. per UTC (4 PMAI) plus one spare, a highline trailer 27 ft (L) x 12 ft with five feet clearance around the vehicle, and a highline dock 55 ft (L) x 13 ft (W) that supports two complete PSPs. See [Table 7.2.29](#) for the PSP storage requirements for the AC-130J.

7.2.16.2.4. Engine/Propeller Maintenance Shop. AFSOC AC-130J aircraft require a space for contractor and unit performed engine and propeller maintenance. Per AFSOC/A4M, provide 4,500 NSF. If contractors are required, it is recommended that an additional 400 NSF is provided to support administrative spaces for contractor personnel. This space should be collocated with the maintenance facility.

7.2.16.2.4.1. Design Considerations. Per AFSOC/A4M, provide an access door of 12 ft or higher; environmental controls from drafts, dirt/sand, and humidity; adequate HVAC, electrical, and lighting to support offices; an overhead hoist system 12 ft or higher, with a minimum rating of 1,000 lbs (2,500 lbs for engine hoisting capability); a work table/bench for blade buildup and repair; a level floor free from obstruction for mounting propeller buildup stand and propeller balancing machine; part storage; HAZMAT storage cabinets; and a parts cleaning machine/system.

7.2.16.2.5. Mobility Barn. Per AFSOC/A4M, this facility houses storage for mobility items that cannot be stored in the maintenance hangar because they encroach upon fire

lanes and minimum clearances between the aircraft and hangar walls. This space includes storage for engines, stands, ISUs, propellers, gun equipment. It would also include a mezzanine and a single aisle for forklift access. This facility can be separated from the hangar/AMU if necessary, though collocation with the hangar/AMU is ideal. Provide 5,000 GSF per 6 PMAI (4,000 NSF with 1.25 net to gross conversion) or 667 NSF per PMAI.

7.2.16.2.6. Avionics Shop (CATCODE: 217712).

7.2.16.2.6.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.2.16.2.6.2. Maintenance/Service Function. This facility houses organizational maintenance activities for the following aircraft equipment and accessories: airborne communications, cameras, and tactical support communications security equipment.

7.2.16.2.6.3. Storage Function. Major items that require shop and storage space are storage racks for serviceable equipment and equipment waiting for maintenance or parts, coding devices, technical data and code books, pod lifting devices, cradles, and storage racks. Some storage space provides physical security and corrosion protection for delicate electronic equipment. If possible, combine maintenance and storage facilities to share secure storage area.

7.2.16.2.7. Weapons Shop (CATCODE: 215552).

7.2.16.2.7.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, admin storage, latrines, and a small break room. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.2.16.2.7.2. Open Floor Gun Maintenance Bay. The minimum door dimensions are 16 ft W x 25 ft H to accommodate Bomb Rack Units (BRU-61 and MAU-40). Incorporate an overhead crane with a 3-ton lifting capacity to cover the maintenance bay. The gun maintenance bay should have direct flightline access.

7.2.16.2.7.3. Equipment Storage Areas. Provide concrete pavement parking apron for ammunition loading equipment, with concrete thickness and size based on maximum “dead” and “live” equipment and ammunition loads. Also, provide outside storage areas to accommodate all authorized support equipment. Additionally, provide enclosed storage, that can be collocated or separate from the gun maintenance bay. Consider the use of a raised-floor mezzanine to maximize the useable area.

7.2.16.2.7.4. Bench Stock/Special Tools. A centralized, enclosed, and secure area is required for parts and special tools. Provide a service counter with a roll-up

window. Provide direct access to the exterior for deliveries.

7.2.16.2.7.5. Secure Weapons Storage. Provide a separate area for gun system storage and handling, which must comply with the explosive safety standards for armament storage.

7.2.16.2.7.6. Hazardous Waste Accumulation Point. Designate an area to store hazardous waste generated by ongoing maintenance operations, and comply with current federal, state, and base regulations and procedures. This area is ideally located adjacent to the bench stock/tool storage area.

7.2.16.2.7.7. Dimensions. See [Table 7.2.29](#) for the required space allocation for the AC-130J weapons shop.

7.2.16.2.7.8. Design Considerations. Locate facilities to comply with explosives safety standards (see DoD 6055.09-M and AFMAN 91-201 for further guidance). Adequate ventilation is necessary in the weapons cleaning room. Provide floor drains in maintenance areas as required. The floor drain in the cleaning room should be connected to an oil-water separator. Provide explosion-proof fixtures as required. A minimum clear ceiling height may be required in the maintenance and storage areas to allow for fire protection systems and/or installation of an overhead monorail hoist. Provide sufficient compressed air outlets throughout the maintenance area. Test equipment may have special electrical requirements. Provide grounding, surge protection, and lightning protection system. Facilities storing aircraft guns require a secure room/vault with high security locks; size is dependent on number of assets stored and caliber of weapons. An intrusion detection and alarm systems may be required in accordance with AFI 31101. Large roll-up or sliding doors may be required to facilitate entry of equipment into the maintenance and storage areas. This facility should be in proximity to the operational parking apron and be accessible to vehicles transporting weapons release and gun system components to and from the flightline.

7.2.16.2.8. Aircraft General Purpose Shop (CATCODE: 211152).

7.2.16.2.8.1. Description. The facility provides space for specialized maintenance activities such as fabrication shops, aerospace systems shops, and reclamation operations on crash damaged aircraft and equipment (DAFMAN 32-1084, Paragraph 3.1.4.1).

7.2.16.2.8.2. Requirements Determination. This facility provides for specialized and general aircraft maintenance functions. These facilities may include work benches, bench stock, battery servicing area, cryogenics maintenance area, generator area, life raft bottle servicing area, tool crib, administrative space, and personnel locker space. These shops may be in one building or several buildings (DAFMAN 32-1084, CC 211152 Shop Aircraft General Purpose, Paragraph 1.3).

7.2.16.2.8.3. Scope Determination. DAFMAN 32-1084, CC 211152 Shop Aircraft General Purpose, Table 1.1 states the total gross space requirements for general purpose maintenance shops for a Special Operations Wing is to be determined by individual analysis and validated by AFSOC/A4M.

7.2.16.2.8.4. Dimensions. See Table 7.2.29 for AC-130J AMU facility space requirements,

7.2.16.2.8.5. Design Considerations. Ensure cleanliness and area safety requirements for cryogenic materials is maintained. Floor with grates and groves tend to accumulate debris that can create hazardous condition when in contact with cryogenics materials. Where possible, try to avoid the use of mezzanines. The use of mezzanines restricts movement of forklifts. It also limits ground floor storage due to pillars location. Provide grounding points for safety.

Figure 7.2.10. Typical AC-130J Maintenance Hangar and AMU Facility.

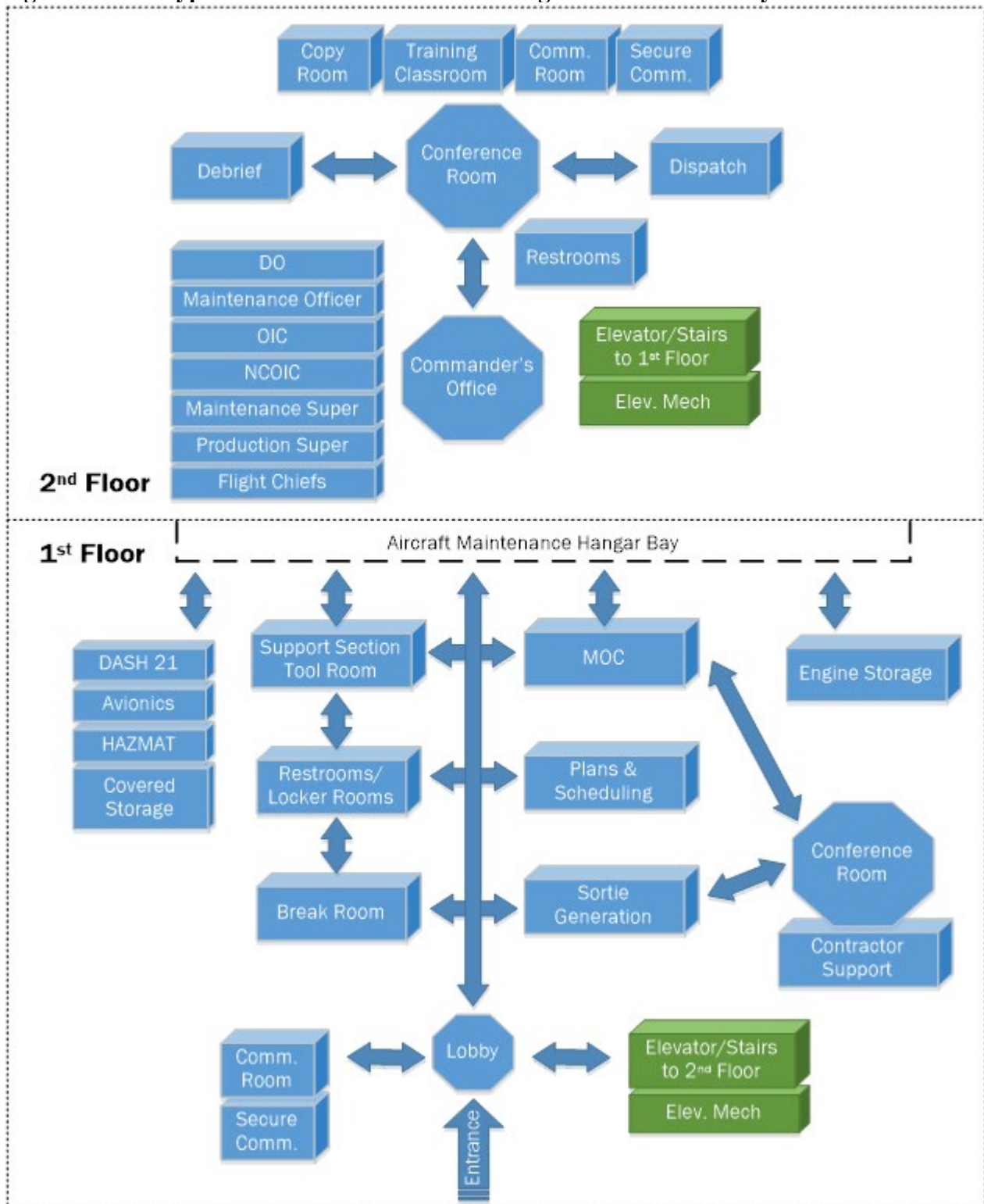


Table 7.2.29. AC-130J Maintenance (AMU) Facility Space Requirements.

Cat Code	Facility	UM	AC-130J (3)¹	AC-130J (9)¹	AC-130J (12)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
211-154	Commander – Command Suite	NSF	140	140	140	140 NSF min for Type C Offices. ⁴
211-154	First Sergeant – Command Suite	NSF	100	100	100	Per A1M: 1 PN if squadron has 50 (all enlisted + 2% of officers). 100 NSF min for Type D Offices. ⁴
211-154	Support Staff and Waiting - Command Suite	NSF	264	440	440	2 PN waiting area. Support staff varies. 3 PMAI = 3 PN, 9 PMAI = 5 PN, and 12 PMAI = 5 PN. Waiting area is 20 NSF per person. ⁶ 48 NSF min for Type F Offices. ⁵
211-154	Maintenance Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Maintenance Superintendent ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	AMU OIC and NCOIC ²	NSF	200	200	200	2 PN. 100 NSF min for Type D Offices. ⁴
211-154	Production Superintendent ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Production Staff (Expeditors)	NSF	192	240	240	<9 PMAI = 4 PN, 9+ PMAI = 5 PN. 48 NSF min for Type F Offices. ⁵
211-154	Crew Chiefs ²	NSF	380	715	835	3 PMAI = 7 PN (3 Type E, 4 Type G). 9 PMAI = 17 PN (4 Type E, 13 Type G). 12 PMAI = 21 PN (4 Type E, 17 Type G). 65 NSF min for Type E Offices. ⁵ 30 NSF min for Type G Offices. ⁵
211-154	Specialist Sec. NCOIC ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Specialist Sec. Staff Offices	NSF	120	360	510	3 PMAI = 4 PN. 9 PMAI = 12 PN 12 PMAI = 17 PN. 30 NSF min for Type G Offices. ⁵
211-154	Specialist Sec. Storage Vault	NSF	50	150	200	Provide 50 NSF per UTC.
211-154	Support Sec. NCOIC ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Support Sec. Staff Offices	NSF	60	150	180	3 PMAI = 2 PN. 9 PMAI = 5 PN. 12 PMAI = 7 PN. 30 NSF min for Type G Offices. ⁵
211-154	Weapons Sec. NCOIC ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵

211-154	Weapons Sec. Staff Offices	NSF	48	192	288	3 PMAI = 1 PN. 9 PMAI = 4 PN. 12 PMAI = 6 PN. 48 NSF min for Type F Offices.
211-154	Resource Manager ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Training Manager ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Security Manager ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Quality Assurance	NSF	195	195	260	<10 PMAI = 3 PN, 9+PMAI = 4 PN. 65 NSF min for Type E Offices. ⁵
211-154	Technical Order Distribution Office (TODO)	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Sortie Generation ²	NSF	130	130	130	Assume 2 PN. 65 NSF min for Type E Offices.
211-154	Plans and Scheduling	NSF	130	130	130	Assume 2 PN. 65 NSF min for Type E Offices.
211-154	Dispatch ²	NSF	130	130	130	Assume 2 PN. 65 NSF min for Type E Offices.
211-154	COSO Manager	NSF	0	0	0	If authorized, 1 PN. 100 NSF min for Type D Offices. ⁴
211-154	COSO Staff	NSF	0	0	0	If authorized, 5 PN. 65 NSF min for Type E Offices. ⁵
211-154	COSO Cust. Service ²	NSF	0	0	0	If authorized, provide 200 NSF.
211-154	COSO Equip. Storage ²	NSF	0	0	0	If authorized, provide 300 NSF.
211-154	Field Service Representative ²	NSF	260	260	260	4 FSRs per unit. 65 NSF min for Type E Offices. ⁵
211-154	AFETS	NSF	260	260	260	4 AFETS per unit. 65 NSF min for Type E Offices. ⁵
211-154	Engine Representative ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Support Equipment Representative ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	IETM Representative ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Elevator	NSF	80	80	80	Provide 80 NSF.
211-154	Elevator Equip. Room	NSF	90	90	90	Provide 90 NSF.

211-154	Men's Shower	NSF	120	150	180	Provide 4 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
211-154	Women's Showers	NSF	60	90	120	Provide 2 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
211-154	Men's Lockers	NSF	228	685	914	Lockers are 18" W x 18" D x 24" H, 3-tier. With circulation, provide 5 NSF per locker. Calculated as Number of male lockers/3 x 5 NSF.
211-154	Women's Lockers	NSF	57	171	228	Lockers are 18" W x 18" D x 24" H, 3-tier. With circulation, provide 5 NSF per locker. Calculated as Number of female lockers/3 x 5 NSF.
211-154	Restrooms and Janitor's Closet	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
211-154	Mech/Elec Rooms	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
211-154	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	MOC ²	NSF	155	465	620	353 SOG: Located in 413 NSF at B3670. Calculated as #PMAI x 51.625 NSF.
211-154	MIS	NSF	65	65	65	Provide 1 Type E office per MIS. 65 NSF min for Type E Offices. ⁵
211-154	Debrief Room	NSF	270	270	270	Typical room size is for twice the flight crew. 15 NSF per person. ⁷ Calc. = 9 (Flight Crew) x 2 x 15 NSF.
211-154	Training Classroom	NSF	243	729	972	AFSOC/A4I: Minimum training room size will be 240 NSF and total unit authorization will be Unit PN (military only) x 3 NSF. (military only) x 3 NSF (a multiplier of 1.5 is used instead of 3 to bring maximum authorization to a reasonable square footage within the AMU); rounded up.

211-154	Conference Room	NSF	350	350	700	CG 61 Admin Overview Paragraph 1.4.5: Based on personnel, the maximum authorization exceeds the necessary space since most meetings will not involve the entire squadron. Calculations provide two, 10person conference rooms to 11 PMAI and above, and one 10-person conference room for 10 PMAI and below. 20 NSF per person plus 150 NSF speaking area. ⁶
211-154	Commander's Conference Rm	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. 15 NSF/person. ⁷
211-154	Team Room	NSF	0	0	0	SOAMXS sections' staff open offices, lockers, and break areas can be separated or consolidated. For a consolidated SOAMXS ready room, provide open offices for the following sections: production, specialist, crew chiefs, and support. Provide lockers and break rooms in proportion to the number of personnel that will use the facility. If consolidated, see the areas required below. 3 PMAI = 4 Type F (256 NSF), 10 Type G (360 NSF), 138 lockers (230 NSF), Break Room (199 NSF) or 1,045 NSF total area. 9 PMAI = 5 Type F (320 NSF), 33 Type G (1,188 NSF), 432 lockers (720 NSF), Break Room (622 NSF) or 2,562 NSF total area. 12 PMAI = 5 Type F (320 NSF), 47 Type G (1,692 NSF), 602 lockers (1,003 NSF), Break Room (867 NSF) or 3,882 NSF total area.
211-154	Break Room	NSF	270	812	1,000	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF. The maximum authorization exceeds the reasonable AMU break room size based on the peak shift. To bring this area to within a reasonable size within the AMU the percentage occupants in the calculation is reduced from 16% to 10%.

211-154	Secure Storage	NSF	100	100	100	Provide 100 NSF.
211-154	CTK, Supply, Battery Shop	NSF	1,800	5,400	7,200	353 SOG: Located in 6,289 NSF at B3670. Calc. = 600 NSF x #PMAI.
211-154	Dash 21 Equip. Storage	NSF	3,150	4,890	5,760	353 SOG: Dash 21 in B3586 = 2,180 NSF. Calc. = 200 NSF x #PMAI.
211-154	Haz. Materials and Waste	NSF	90	270	240	One month's storage = 15 NSF per locker x # PMAI.
211-154	Passenger Oxygen Bottles	NSF	24	72	128	Dimensions for POS are approx. 21" x 6". Assuming 2 per aircraft at 4' x 1' each. Calc. = 8 NSF x # PMAI.
211-154	PSP Storage	NSF	2,475	5,175	5,175	Each highline dock is 55 ft (L) x 13 ft (W) and will support two complete PSPs. Assume 1 rack per 4 PMAI. Racks require 10' clearance around the perimeter, plus 5' aisle clearance between racks.
211-154	PSP Highline Trailer	NSF	1,628	1,628	1,628	Provide storage for two trailers. Each highline trailer is 27' L x 12' W. Provide 5' clearance each side (37 L x 22 W) or 814 NSF each.
211-154	Avionics ²	NSF	300	900	1,200	100 NSF per aircraft. AFSOC does not have intermediate level avionics maintenance.
215-552	Armament Shop Weapons Production Rm	NSF	75	75	75	Based on Hurlburt Weapons Hangar (FTEV153009): Minimum of 225 sf; otherwise, provide 75 sf per UTC.
215-552	Armament Shop Gun Maintenance Bay	NSF	6,000	6,000	6,000	Based on Hurlburt Weapons Hangar (FTEV153009): Provide 6,000 NSF. Space requirements are based on equipment size and maintenance function, not personnel.
215-552	Armament Shop Equip. Storage	NSF	2,000	2,000	2,000	Based on Hurlburt Weapons Hangar (FTEV153009): Provide 2,000 NSF.
215-552	Armament Shop CTR Sec. Wep. Storage	NSF	2,000	2,000	2,000	Based on Hurlburt Weapons Hangar (FTEV153009): 2,000 NSF per contract requirement.
215-552	Armament CTR Admin Service Lead	NSF	80	80	80	Based on Hurlburt Weapons Hangar (FTEV153009): 80 NSF office per contract requirement.
215-552	Armament CTR Admin Open Offices	NSF	500	500	500	Based on Hurlburt Weapons Hangar (FTEV153009): 500 NSF per contract requirement. Supports 5 PN.

215-552	Armament Support Section Storage	NSF	1,900	1,900	1,900	Based on Hurlburt Weapons Hangar (FTEV153009): Provide 1,900 NSF.
215-552	Armament CTR Logistics Warehouse	NSF	2,000	2,000	2,000	Based on Hurlburt Weapons Hangar (FTEV153009): Provide 2,000 NSF. This supports storage for 3 UTCs.
215-552	Armament CTR Admin Private Offices	NSF	480	480	480	Based on Hurlburt Weapons Hangar (FTEV153009): 4 Type D offices for 3 field mgrs. and 1 technical mgr. ⁴
215-552	Armament CTR Admin Staff Open Offices	NSF	192	192	192	Based on Hurlburt Weapons Hangar (FTEV153009): 3 Type F offices for aircraft maintenance mgr., logistics mgr., and quality assurance. 48 NSF min for Type F Offices.
215-552	Armament CTR Admin Logistics Open Offices	NSF	192	192	192	Based on Hurlburt Weapons Hangar (FTEV153009): 120 NSF office per contract requirement.
215-552	Armament CTR Admin Logistics Cryptographic Storage	NSF	168	168	168	Based on Hurlburt Weapons Hangar (FTEV153009): Provide 168 NSF per contract requirement. Must meet DoD requirements for cryptographic storage. Requires cypher lock.
215-552	Armament CTR Admin Storage	NSF	400	400	400	Based on Hurlburt Weapons Hangar (FTEV153009): Provide 400 NSF per contract requirement.
215-552	Armament CTR Admin Ready Room	NSF	500	500	500	Based on Hurlburt Weapons Hangar (FTEV153009): 1,000 NSF per contract requirement. Includes 10 workstations to support 53 PN.
215-552	Armament CTR Restrooms, Showers, and Locker	NSF	400	400	400	Based on Hurlburt Weapons Hangar (FTEV153009): Provide 400 NSF. This supports 2-3 shower facilities and toilets as needed for occupancy. 10 shared lockers
211-154	Engine Storage	NSF	400	400	800	Provide 400 NSF for 9 PMAI or fewer and 800 NSF for more than 9 PMAI. Propeller storage is at the depot/intermediate level.
211-154	Engine/Prop. Repair Shop	NSF	4,900	4,900	4,900	Per AFSOC/A5: Provide 4,900 NSF. Requires overhead hoist.
211-154	Support Equip. Cov. Storage ³	NSF	900	2,700	3,600	Provide 300 NSF per PMAI.
211-154	Armament Cov. Storage	NSF	5,000	5,000	5,000	Based on Hurlburt Weapons Hangar (FTEV153009): Provide 5,000 sf.

211-154	Mobility Barn	NSF	2,001	6,003	8,004	AFSOC/A4M: Provide 5,000 GSF per 6 PMAI (4,000 NSF with 1.25 net to gross conversion) or 667 NSF per PMAI. This space includes storage for engines, stands, ISUs, propellers, gun equipment. Provide a mezzanine and a single aisle for forklift access. This facility can be separated from the hangar/AMU if necessary.
211-154	Admin. Support Space	NSF	1,380	1,920	2,180	AFSOC/A4I: default is 20 sf/person. ¹¹
211-154	Admin. Circulation	NSF	752	958	1,092	Max 10% of Administrative Space ¹⁰
211-154	Special Purpose Circulation	NSF	3,171	4,231	4,711	Max 10% of Special Purpose Space ¹⁰
211-154	SOMXS Commander	NSF	140	140	140	Provide 1 Type C office 140 NSF min for Type C offices. ⁴
211-154	SOMXS First Sergeant	NSF	100	100	100	100 NSF min for Type D offices. ⁴
211-154	SOMXS Commander's Support Staff	NSF	140	140	140	Waiting area is 20 NSF per person. ⁶ Reception desk is user justified. ⁶ 2 waiting persons (40 NSF) + (100 NSF Type D office ⁴) for secretary.
211-154	SOMXS Maint. Officer	NSF	100	100	100	100 NSF min for Type D offices. ⁴
211-154	SOMXS Superintendent	NSF	100	100	100	100 NSF min for Type D offices. ⁴
211-154	SOMXS Prod. Superintendent	NSF	100	100	100	100 NSF min for Type D offices. ⁴
211-154	SOMXS Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	SOMXS CC's Conf. Room	NSF	150	150	150	AFSOC/A4I: Provide for up to 10 people. 15 NSF per person. ⁷
211-154	SOMXS Break Room	NSF	100	100	100	16% of occupants x 18 NSF, minimum of 100 NSF. ⁶ This break room only supports the SOMXS.
Total SOMXS Facilities		GSF	1,343	1,343	1,343	Net to Gross conversion factor of 1.25.
Total Mobility Barn		GSF	2,501	7,504	10,005	
Total AMU Facilities		NSF	43,146	57,073	63,828	
Total AMU Facilities		GSF	53,933	71,341	79,786	Net to Gross conversion factor of 1.25.
Total AMU Covered Storage³		GSF	6,000	7,800	8,700	Net to Gross conversion factor of 1.25.

Total AMU Storage Yard	SY	222	222	222	
Notes: 1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 12 PMAI = 13 total aircraft (1 BAI). 2. An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture. 3. Tropical environments introduce increased corrosion due to high humidity with high salt content. In these instances, standard exterior covered storage may not be adequate to maintain mission essential, mission ready, spares and equipment unless the spares and equipment are stored within nearly airtight equipment containers (CONEX boxes or other containers). In these cases, AFSOC/A4I may approve additional controlled humidity warehouse space. 4. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2. 5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1 6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3. 7. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.4. 8. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.5 9. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2 10. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3 11. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2					

7.2.17. Intermediate Maintenance Facilities.

7.2.17.1. Fabrication Flight.

Table 7.2.30. Fabrication Flight Facility Minimum Areas.

Function/Area Required in NSF	AC-130J (3 PMAI)	AC-130J (9 PMAI)	AC-130J (12 PMAI)
Structural Repair/Sheet Metal Shop	4,267	4,267	4,267
Metals Technology	1,636	1,636	1,636
Non-Destructive Inspection	4,000	4,000	4,000

7.2.17.1.1. Structural Repair. Structural repair shops include: shop administration, the sheet metal shop, corrosion control shop, and the fiberglass/composites shop.

7.2.17.1.2. Sheet Metal Shop. See Table 7.2.31 for Structural Repair/Sheet Metal Shop. Provide adequate space for all authorized shop equipment, including the working and safety zone around each piece. Equip the sheet metal shop with a 1-ton bridge crane spanning the material storage area and the majority of the work area. Also, install ½-ton or ¼-ton cranes at strategic locations required for material handling. The sheet metal shop requires a material storage rack for various metals sheet stock used to fabricate aircraft parts. A moveable rack to store the sheet stock on edge will facilitate stock selection.

Table 7.2.31. Equipment in the Structural Repair/Sheet Metal Shop.

Equipment Name	Quantity	Dimensions
Do-All Band Saw ²	1	56" x 44"
Belt Sander ²	1	29" x 18"
Drill Press ²	1	25" x 20"
Power Shear ²	1	84" x 109"
Gerber Etcher ²	1	65" x 75"
Thermo Dimpler ²	1	35" x 57"
Flaring Mach ²	1	41" x 45"
Bench Grinder ²	1	21" x 21"
Notes: 1. The items in this shop are typical to all structural repair/sheet metal shops. The quantities reflect the minimum needed and could vary based on maintenance demands. 2. Provide a minimum of 3' working clearance on all sides.		

7.2.17.1.3. Fiberglass/Composites Shops. Provide a containment area at floor level to capture drips and spillage from worktables. Special equipment required in the fiberglass/composites shop includes ovens for curing completed projects and a bridge crane system with a ½-ton hoist for moving large items within the shop. The composites shop requires refrigerators to store sheet adhesives used in composite component manufacture and repair. Paint and chemicals storage should also be provided.

7.2.17.1.4. Storage Area. Provide an exterior hazardous material storage facility, and position it within easy access from both the corrosion control shop and the fiberglass/composites shops. If enclosed, this storage facility must maintain temperatures between 10°C (50°F) and 27°C (80°F), and meet all federal, state, and local requirements.

7.2.17.1.5. Corrosion Control Shop (For Corrosion Control Hangar, see paragraph 7.2.17.1.7). In this area, the primary workspace is a paint booth with an integral filtration system. Media booths are required to prepare surfaces before painting. One large booth (drive-in type) for large ground equipment and two medium booths for steel and aluminum aircraft parts are needed. An enclosure with a self-contained bead-blast system with HEPA exhaust filtration is adequate for many components. The media booths area also supports the metals technology shops. Therefore, provide for clean/dirty room operations in this shop. The paint booth must be large enough to handle the largest component that will be processed on a regular basis. It should have a paint filtration system and a means to control VOCs. Provide a large sealed area to prepare oversized parts with a paint filtration system. A paint mixing room, separate from the paint booth, is required to isolate any hazardous fumes from the remainder of the corrosion control shop. This room will contain paint mixing equipment, fume hood, and a daily-use locker to temporarily store hazardous materials such as paints and thinners. A prep station, with a dust collection system to capture airborne particles, should also be considered.

7.2.17.1.6. **Metals Technology Work Center.** The exact space requirements are determined by the amount and type of authorized equipment. The metals technology area equipment requirement varies by the functions performed. See [Table 7.2.32](#) for the equipment for Metals Technology area.

7.2.17.1.6.1. Welding Shop. Include an OSHA compliant screen/blind system and proper ventilation/hood to protect personnel from welding operations hazards. Equip the welding shop with welding machines and curtains, grinders, and material handling devices. Provide a 1-ton capacity bridge crane with two each ½-ton hoists for handling parts, and provide a 2-ton bridge crane spanning the material storage and work areas and 1-ton hoists at strategic locations in the machine shop.

7.2.17.1.6.2. CADD/CAM Shop. CADD/CAM equipment is required to provide design parameters to CNC machines for automatic part fabrication. When CADD/CAM equipment is used, include a separate room for the computer terminal.

7.2.17.1.6.3. Storage Area. The metals technology area requires a material storage rack for bar and plate stock needed to manufacture aircraft components. Provide storage cabinets in the welding shop for bench and operating stocks suitable for small items and ready use welding supplies. There should be additional storage space and racks with safety chains to store inert gas cylinders for aircraft welding operations.

Table 7.2.32. Equipment for Metals Technology.

Equipment Name	Quantity	Dimensions
Lathe	1	10' x 10'
Vertical Machining Center (VMC)	1	6' x 12'
Cutting Table	1	6' x 10'
CNC Milling Machine	1	8' x 8'
Notes: 1. The items in this shop are typical to all metals technology shops. The quantities reflect the minimum needed and could vary based on maintenance demands. 2. Provide a minimum of 3' working clearance on all sides.		

7.2.17.1.6.4. Dimensions. 1,636 NSF is required for Metals Technology equipment ([Table 7.2.32](#)) and maneuver/work space.

Table 7.2.33. Building Utility System Requirements for Structural Maintenance and Metals Technology Facility.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions to prevent CNC/CAM equipment failures, corrosion of equipment/machined parts, and to ensure accuracy of machined parts. Point source exhaust systems with general filtration must be installed throughout the shop at welding stations to eliminate welding fumes, airborne smoke, and cutting fluid mists. The metals technology shop requires a 150-psi high volume shop air source for specialized equipment and for general hand tool operations. Provide the fiberglass/composites shop with a specialized ventilation system, which exhausts fumes to the outdoors. Preheat the air intake, or filter exhaust air for re-circulation. The woodworking shop requires a sawdust collection system. Maintain regulated temperature and humidity conditions to prevent specialized computer equipment failures, corrosion of equipment/parts, and to aid in sealant/bonding agent curing. Structural maintenance shops require high volume 150-psi shop air for specialized equipment and general hand tool operation. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. The corrosion control shop in the structural maintenance function requires a separate male and female changing and shower area. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.2.11. Structural Repair/Metals Technology Maintenance Areas.**7.2.17.1.7. Corrosion Control Hangar (CATCODE: 211159).**

7.2.17.1.7.1. Requirements Determination. A hangar provides enclosed space for aircraft washing and inspecting the aircraft for corrosion damage. Additionally, the facility can accommodate surface preparation and repainting of the aircraft.

7.2.17.1.7.2. Scope Determination. Corrosion control is both a base and a depot responsibility. Specific workloads vary from base to base, but the minimum required facilities include a wash rack, shop space for complete corrosion treatment, painting removable aircraft parts, ground support equipment, and a corrosion approved facility to perform aircraft maintenance painting. Base facility requirements emphasize prevention and detection. Since freedom from dirt, oil, and other contaminants is important in this regard, base facilities are primarily designed for cleaning and maintaining protective coating/corrosion control systems.

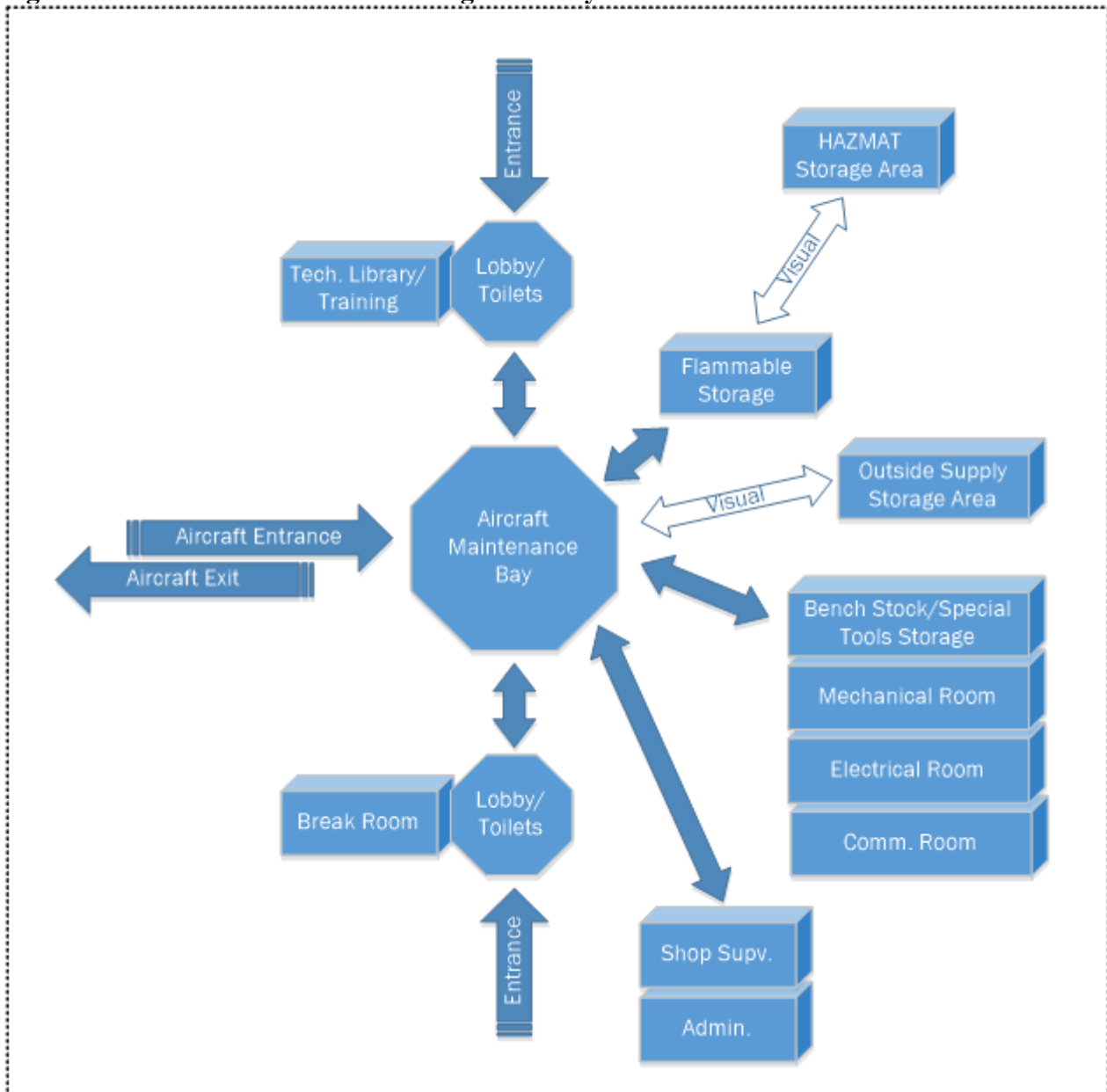
7.2.17.1.7.3. Dimensions. Bases with a large number of aircraft (above 40 large or medium aircraft assigned) or in a severely corrosive environment are authorized, with proper justification, a corrosion control hangar and a wash hangar (DAFMAN 32-1084, CC 211159 Aircraft Corrosion Control, Paragraph 1.4). These two activities can be collocated or separate. DAFMAN 32-1084, CC 211111 Hangar Maintenance, Figure 1.1 provides an example where the B-52 is considered a large aircraft, the KC-135 is considered a medium aircraft, and the F-16 is considered a small aircraft. Using this example, the AC-130J would be considered a medium aircraft, and all AFSOC weapon systems would fall under medium or small aircraft

categories. Per DAFMAN 32-1084 CC 211159 Aircraft Corrosion Control, Paragraph 1.4, bases with a large number of aircraft (above 40 large or medium aircraft assigned) or in a severely corrosive area are authorized, with proper justification, a corrosion control hangar and a wash hangar. If authorized a corrosion control hangar, provide a facility that is 26,230 NSF (32,788 GSF with 1.25 net to gross conversion). This supports a typical 10-20-person AFSOC corrosion control facility. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (2,200 NSF), a Paint Mixing Room (250 NSF), Paint Storage (560 NSF), Equipment Storage (900 NSF), Equipment Cleaning (50 NSF), Solvent Storage (50 NSF), Material Storage (900 NSF), PPE Storage (150 NSF), PPE Cleaning (50 NSF), a Stencil Room (120 NSF), a Laundry Room (100 NSF), Men's Clean and Dirty Shower/Locker Room (240 NSF), Women's Clean and Dirty Shower/Locker Room (160 NSF), a 2-person Shop Supervisor Office with Type E offices (130 NSF), a Communications Room (144 NSF), a Break Room (216 NSF), and a Copy Room (50 NSF).

Table 7.2.34. Building Utility System Requirements for Corrosion Control Facility.

System	Requirements
Mechanical	Where "comfort cooling" is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source and connections (around 120 psi) should be conveniently located throughout the maintenance bay. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Provide lightning protection system to protect the aircraft and facility. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide hot and cold water connections and industrial waste disposal system. Applicable criteria include UFC 3-420-01 for plumbing.

Fire Protection	The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF. An adequate water supply source with sufficient pressure should be verified prior to a system design and construction.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.2.12. Corrosion Control Hangar Facility.

7.2.17.1.8. **NDI Laboratory (CATCODE: 211153).** This facility consists of testing facilities, equipment storage, supply storage, analysis and report offices, and laboratory space. In administrative spaces an open office concept using system furniture will be used with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.2.17.1.8.1. All bases required to have a full, nondestructive testing facility are authorized 4,000 NSF for a laboratory (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2).

7.2.17.1.8.2. Shop Area. The shop space equipment includes: fluorescent penetrate and magnetic particle testing machines, portable ultrasonic and eddy current machines, and X-ray and darkroom equipment.

7.2.17.1.8.3. Storage Area. Storage requires an environmental control capability to store X-ray films and an oil analysis spectrometer.

7.2.17.1.8.4. Lab Area. An NDI laboratory requires a 1-ton capacity monorail with two ½-ton capacity hoists servicing both the X-ray-shielded room and the room containing the fluorescent penetrate and magnetic particle testers. Use X-ray equipment specification to determine ceiling heights and workflow maneuverability. Provide silver recovery equipment in the darkroom, and provide radiation shielding per the National Institute of Standards Technology Information Security Handbook. A leadshielded opening should be provided in the wall between the X-ray exposure room and the control room to allow for passage of X-ray equipment control cables.

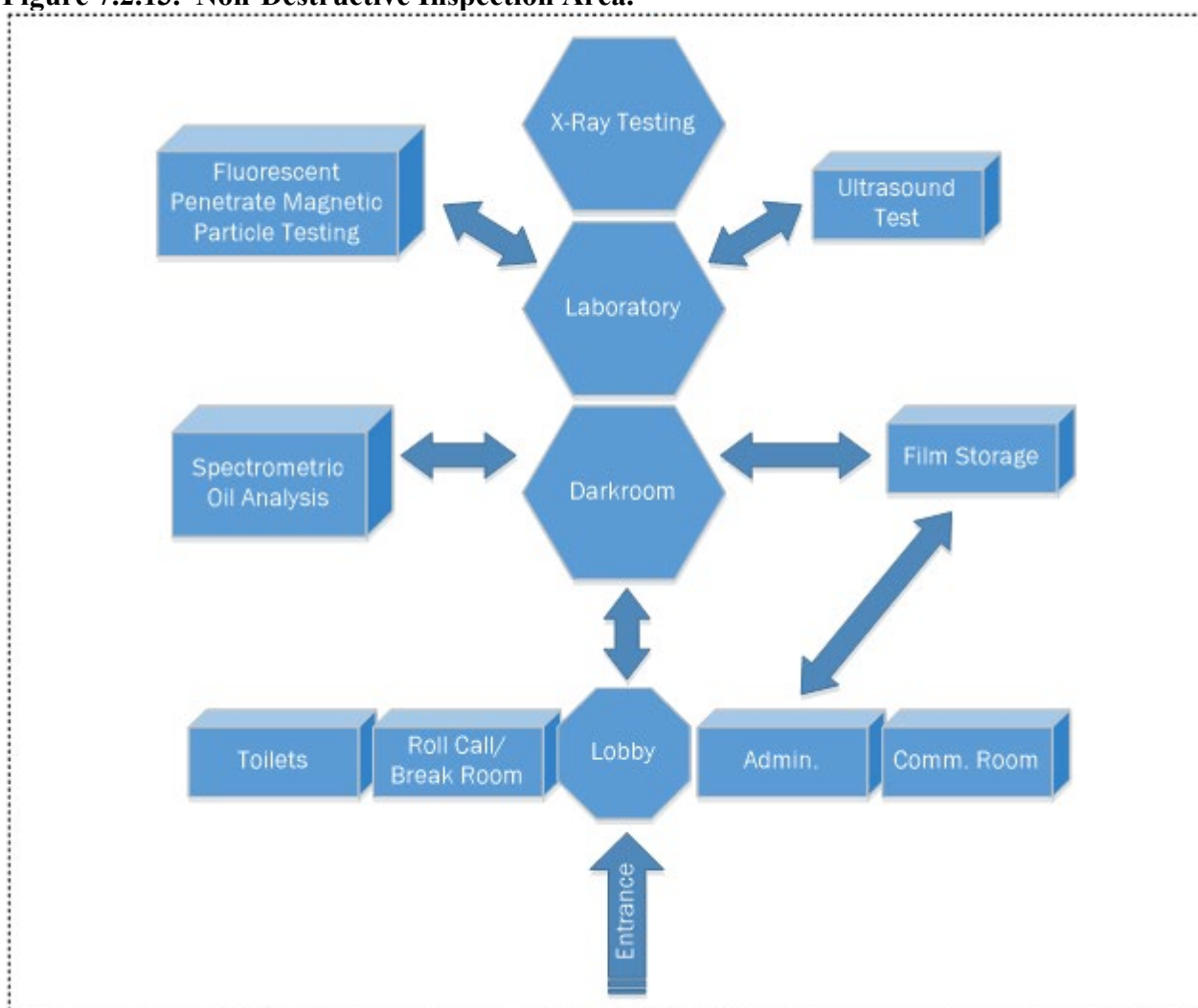
7.2.17.1.8.5. Dimensions. Bases with an NDI facility are authorized 4,000 NSF (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2: and TO 33B-1-1, Figure 1.1).

Table 7.2.35. Building Utility System Requirements for NDI Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required especially on storage functions due to delicate devices and other sensitive equipment. The NDI lab requires 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Consult X-ray and other NDI equipment specifications for their specific power requirements. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.

Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.2.13. Non-Destructive Inspection Area.



7.2.17.2. Aerospace Ground Equipment Flight.

7.2.17.2.1. AGE Shop and Storage Facility (CATCODE: 218712).

7.2.17.2.1.1. Requirements Determination. The AGE shop inspects, maintains,

repairs, and services powered and non-powered AGE directly supporting aircraft and powered munitions AGE, if assigned. It normally includes maintenance stalls with work benches, an indoor wash rack, tool crib, bench stock, sealed lead acid battery servicing area, engine exhaust education system, administrative space, and personnel locker space.

7.2.17.2.1.2. Scope Determination. DAFMAN 32-1084, CC 218712 Aircraft Support Equipment Shop/Storage Facility, Table 1.1, lists the space requirements for AGE maintenance shops and standby storage facilities. These space requirements include total covered storage. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and its requirements are listed in the storage facilities section in **paragraph 7.2.18.2**. Requirements for the AGE Shop and Storage facility are based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per UTC.

7.2.17.2.1.3. Dimensions. The size of this facility will be based on the number of authorized pieces of AGE. If other weapon systems are supported at the installation, the number of AGE units supporting AC-130J aircraft would be added and can then be cross-referenced with DAFMAN 32-1084 CC 218712 Table 1.1 to determine the maximum space allowed. The recommended space allocation for this facility can be found in **Table 7.2.43**.

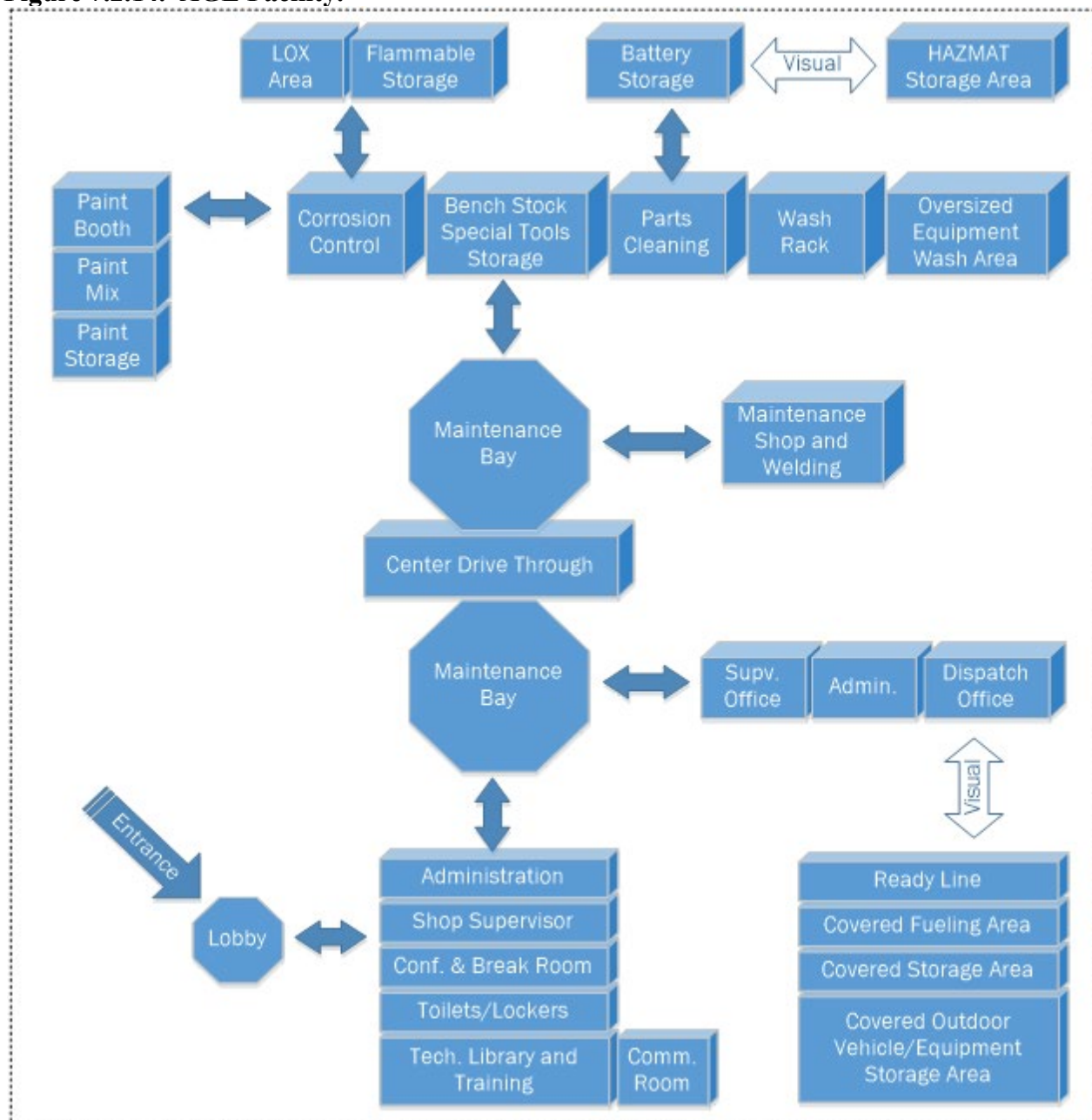
7.2.17.2.1.4. Unique Facility Requirements. An overhead hoist is required to support a minimum of 2,720 kg (6,000 pounds). A separate oil-free area is required for LOX handling equipment. The floor must be concrete. Electrical power (120 VAC and 220 VAC) is required in the area. This area must be covered, but should preferably be inside a facility.

Table 7.2.36. Building Utility System Requirements for AGE Facility.

System	Requirements
Mechanical	A compressed air source or connection (around 120 psi) should be conveniently located throughout the maintenance bay and corrosion control areas. The facility should have energy efficient climate control and proper ventilation. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connection for equipment and workstations ranging from 120V, 240V, and 480V. Certain electrical requirements are AGE equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.

Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.2.14. AGE Facility.



7.2.17.3. Maintenance Support Flight

Table 7.2.37. Maintenance Support Facility Minimum Areas.

Function/Area Required in NSF	AC-130J (3 PMAI)	AC-130J (9 PMAI)	AC-130J (12 PMAI)
Repair & Reclamation	1,425	4,275	5,700
Wheel & Tire	1,611	1,611	1,611
Aircraft Inspection Section (Phase)	N/A	N/A	N/A

7.2.17.3.1. **Repair and Reclamation (R&R) Shop.**

7.2.17.3.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.2.17.3.1.2. Maintenance Area. Work performed in the maintenance bay includes: repair and replacements of landing gears, actuated doors, canopies, and any associated equipment. Provide an area for aircraft jacks and/or a 3-ton hoist to use in disassembling components. This hoist (specialized trailers) can be located either inside or outside the facility.

7.2.17.3.1.3. Storage Area. Provide a paved area adjacent to the facility for parking transportation trailers and other heavy equipment. In extremely cold climates, provide indoor heated storage space.

7.2.17.3.1.4. Dimensions. The recommended space allocation for this facility can be found in [Table 7.2.37](#).

7.2.17.3.2. **Wheel & Tire Shop.**

7.2.17.3.2.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used, with exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.2.17.3.2.2. Maintenance Area. Provide a hard rubber floor coating in the tire breakdown/assembly area to avoid damage to the wheels during operations performed in the shop. A seamless floor coating will keep fluid spills from seeping through cracks and creating maintenance problems. Cover walls and ceilings with appropriate sound insulation to reduce noise. Shop equipment in the wheel and tire shop includes: tire break-down machines, tire inflation cages, an oven for heating wheels, a freezer for cooling bearing races, an arbor press, and a jet washer. Provide a bearing/solvent room that contains a non-foaming jet washer for cleaning bearings and ample room when servicing the wheel bearings. Special equipment in the tire shop includes a ¼-ton monorail hoist to move large wheels.

7.2.17.3.2.3. Storage Area. Provide separate material storage areas to include tire racks for both incoming (awaiting service) and outgoing (service complete) tires. Recommend using automatic vertical storage racks to store tires effectively.

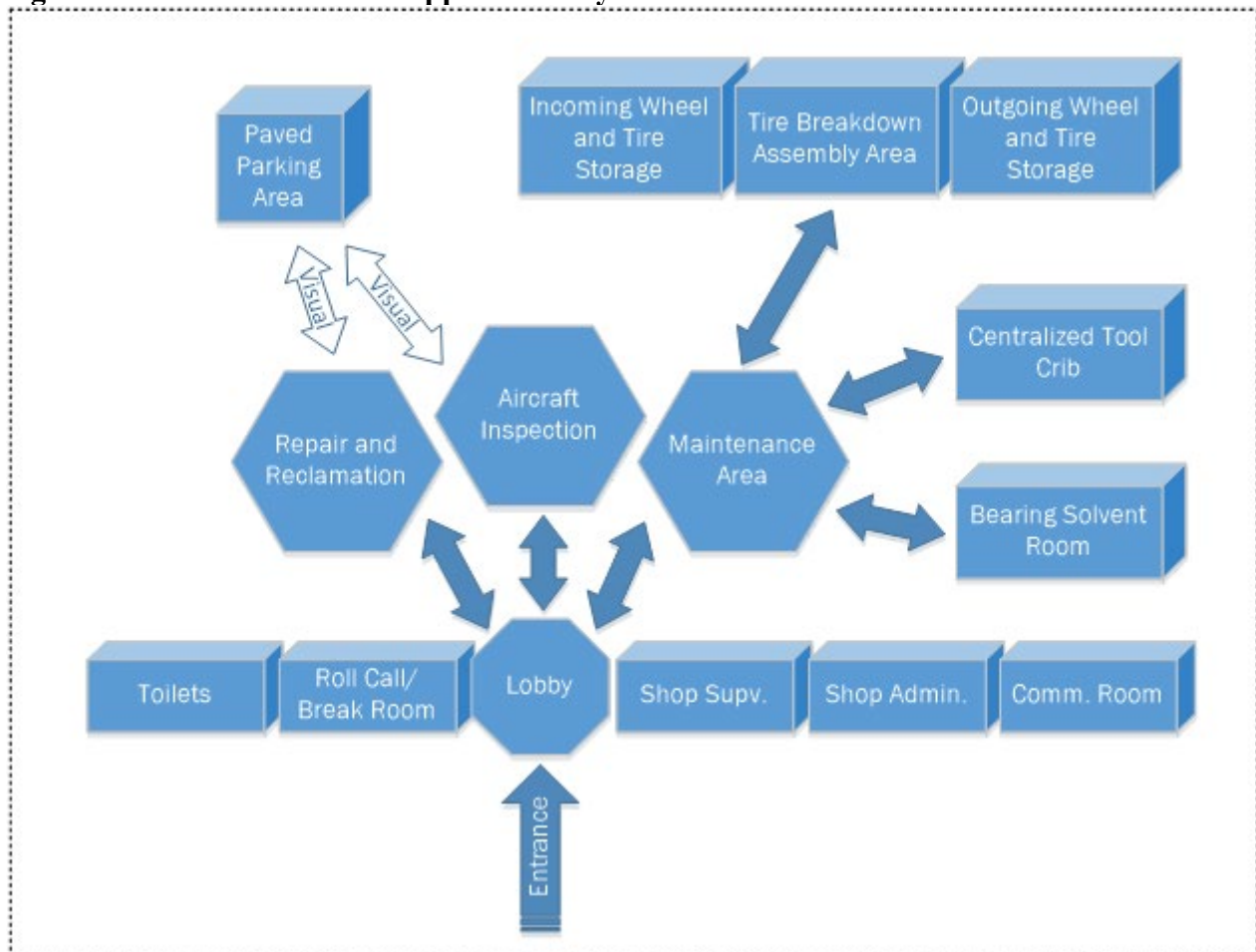
7.2.17.3.2.4. Dimensions. See the recommended space for this facility in [Table 7.2.37](#).

7.2.17.3.3. **Aircraft Inspection Section (Phase).** The Aircraft Inspection Section performs aircraft (phase, periodic, isochronal, or Letter Check) inspections. In units maintaining multiple weapon systems, the inspection section may be divided into

separate elements for each type aircraft maintained. Aircraft inspection occurs within the maintenance hangar.

Table 7.2.38. Building Utility System Requirements for Maintenance Support Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required. Repair and reclamation shop requires 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.2.15. Maintenance Support Facility.**7.2.17.4. Accessories Flight.****7.2.17.4.1. Fuel Systems Maintenance Area (CATCODE: 211179).**

7.2.17.4.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.2.17.4.1.2. Maintenance Bay. This area is where all scheduled fuel system inspections and aircraft maintenance occurs. The bay will be the size of the largest aircraft assigned to the base; however, AC-130J requirements are for a maintenance bay 122.75 ft x 162.6 ft (19,960 NSF) [Paragraph 7.2.15, Maintenance Hangar]. These hangars come out of the total hangar allowance for the base or may be added to it, depending on the workload requirements. The AC-130J requires storage for external fuel tanks because not all aircraft will routinely fly with the tanks installed. Assume storage is provided by the host installation.

7.2.17.4.1.3. External Tank Storage. AC-130J aircraft will routinely fly without

external storage tanks installed. An area of approximately 400 NSF for tank storage should be provided.

7.2.17.4.1.4. Bench Stock/Special Tools Storage. A centralized, enclosed, secure area is required for parts and special tools.

7.2.17.4.1.5. Flammable Storage. Store flammable materials within a fire-rated enclosure with access to the exterior.

7.2.17.4.1.6. Hazardous Waste Accumulation Point. Designate an area to store hazardous waste generated by ongoing maintenance operations, and comply with current federal, state, and base regulations and procedures.

7.2.17.4.1.7. Support Area. Provide a support area for maintenance crew personnel during rest cycle. The support area shall include male and female restrooms, break room, and locker area.

7.2.17.4.1.8. Dimensions. 400 NSF is required for external fuel tank storage. Fuel systems repairs and equipment needed are performed and stored in the maintenance hangar. Major repair or maintenance would require use of the host installation shop. Fuel systems maintenance area requires storage for external tanks: 400 NSF. Per DAFMAN 32-1084 CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized provide a facility that is 24,632 NSF (30,790 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. This supports a typical 10-20-person AFSOC fuel systems maintenance dock. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (600 NSF), a Bladder Repair/Tool Room (480 NSF), an External Tank Maintenance Area (1,840 NSF), a Foam Storage Room (512 NSF), A 3-person office for Shop Supervisors and an NCOIC in Type E offices (240 NSF), a Dispatch office for 5 PN in Type E offices (400 NSF), a 20-person Training/Conference Room (300 NSF), and a Break Room (300 NSF).

7.2.17.4.1.9. Design Considerations. Add static discharge ports in the facility doors to ensure safety.

Table 7.2.39. Building Utility System Requirements for Fuel System Maintenance Hangar.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source or connection (around 120 psi) should be conveniently located throughout the maintenance bay. Hangars used for fuel systems maintenance also include wash down drainage trenches. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. All service equipment should be Underwriters Laboratories-listed. Provide required grounding/lightning protection system based on the NFPA 780, <i>Standard for Installation of Lightning Protection System</i> . Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide interior water connection capability and drains. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 and ETL 02-15. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Table 7.2.40. Accessory Facility Minimum Areas.

Function/Area Required in NSF	AC-130J (3 PMAI)	AC-130J (9 PMAI)	AC-130J (12 PMAI)
Electro-Environmental	2,119	2,119	2,119
Hydraulics	2,943	2,943	2,943
Egress	N/A	N/A	N/A

7.2.17.4.2. Hydraulics Shop.

7.2.17.4.2.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.2.17.4.2.2. Maintenance Area. For this area, rooms should be able to accommodate large components and shop equipment such as tube bender, hose cutting and fitting machines, a landing gear test stand for specific aircraft, a self-contained part cleaning system (jet washer) with non-foaming detergents, and a hydraulic test stand to perform hydraulic component evaluation. Certain shop equipment, such as the jet washer, requires a soundproof room. The hydraulic test stand requires a separate room large enough to allow proper equipment access. This

room must be sound and explosion proof, and include windows ports, emergency eye wash/shower stations, and alarm systems. Install a 1-ton bridge crane or monorail, servicing most the work area, and ¼-ton cranes at strategic locations for material handling. Worktables require different (top) surfaces depending on the component being repaired. Provide easily cleaned aluminum work surfaces for handling parts containing hydraulic fluid, and use vinyl covered work surfaces to help protect delicate components.

7.2.17.4.2.3. Storage Area. Provide storage for hydraulic tubing of various types and sizes. Ideal storage containers for tubing are multiple PVC pipes, each approximately 20-ft long and 4-inches in diameter, with caps on each end. Also, provide a secure storage area for incoming equipment and components awaiting maintenance. Finally, provide a centrally located bench stock storage and tool bin area.

7.2.17.4.2.4. Dimensions. The recommended space allocation for this facility can be found in [Table 7.2.40](#).

7.2.17.4.3. **E&E Shop.**

7.2.17.4.3.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.2.17.4.3.2. Battery Service Area. Include a battery servicing room to recharge batteries and to perform minor maintenance. When servicing both Ni-Cad and lead acid batteries, two separate rooms are needed to prevent cross-contamination of fumes produced by the two battery types. Both rooms require an emergency shower and eyewash station with an alarm system to notify other building occupants when the shower/eyewash system is activated. All equipment in the lead acid charging area must be explosion proof. Utility rooms enclosed in or accessed from the charging room are included in this requirement.

7.2.17.4.3.3. Testing and Repair Area. A separate sound proof room is required to house test stand equipment for generators and constant speed drive equipment. This room must have penetration resistant walls to withstand a minimum 3-psi projectile force. Also, within the testing and repair function, provide a separate room to service oxygen bottles and life raft bottle/carbon dioxide cartridges.

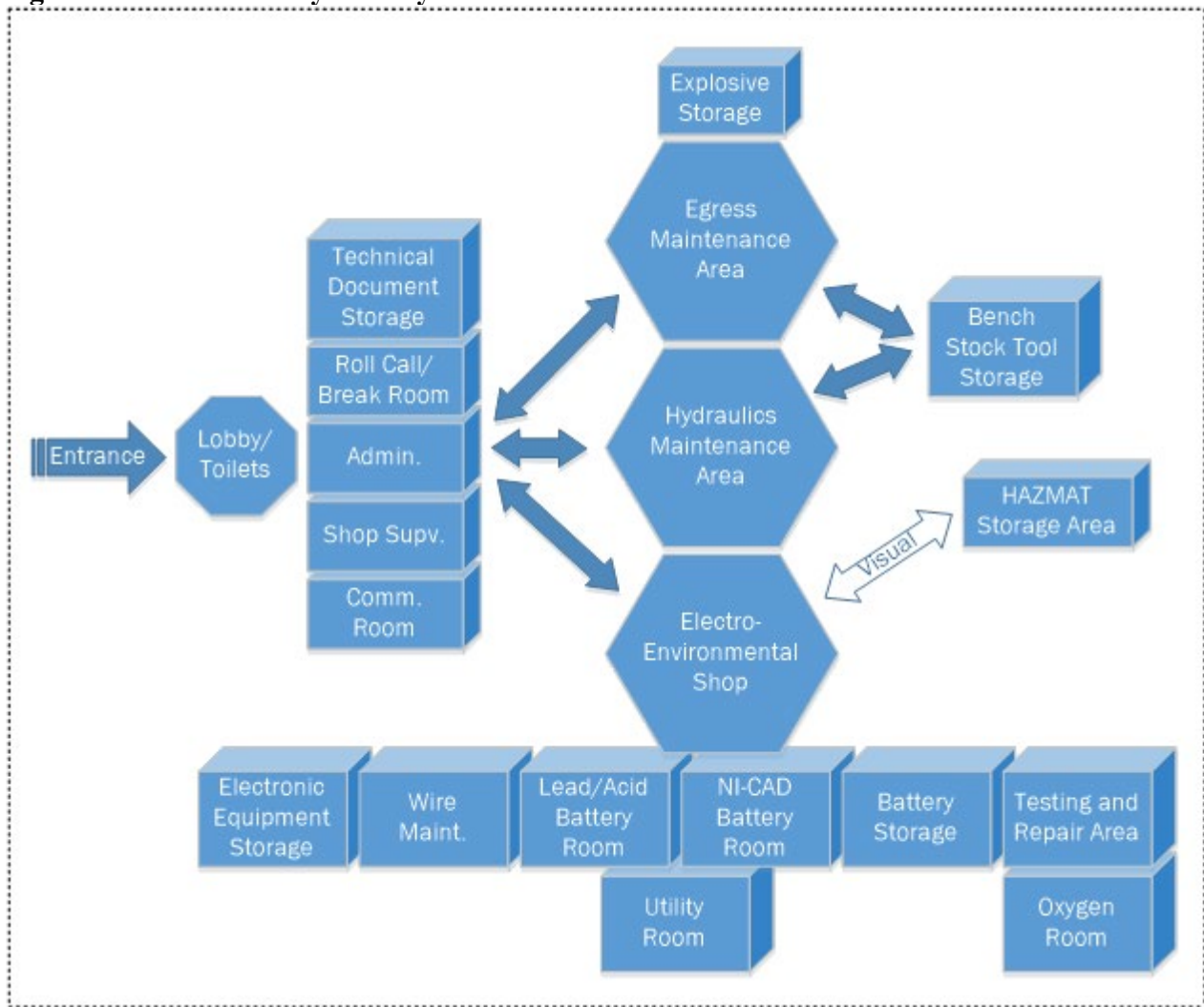
7.2.17.4.3.4. Wire Maintenance Area. Provide a separate soundproof room for the generator test equipment and a ¼-ton hoist to manipulate heavy components.

7.2.17.4.3.5. Storage Areas. Provide storage space for electronic equipment awaiting repair and/or pickup. Storage space is also required for serviceable batteries to be recharged and for unserviceable batteries to be discarded. Ensure the battery storage area is properly ventilated. Designate an area to store hazardous waste generated by ongoing maintenance operations. Provide wire dispensing cabinets and wire spool and harness storage bins in the wire maintenance area.

7.2.17.4.3.6. Dimensions. The recommended space allocation for this facility can be found in [Table 7.2.40](#).

Table 7.2.41. Building Utility System Requirements for Accessory Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required. Both the hydraulics function and the E&E shop require 150-psi shop air in designated locations and corrosion resistant drains. Special ventilation requirements need to be verified in the battery service area of the E&E shop to comply with federal and state air quality directives.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. The battery service and repair area of the E&E function requires explosion proof light fixtures and electrical devices. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System.
Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide corrosion resistant drains in the E&E function.
Fire Protection	Use an aircraft fire suppression system such as High Expansive Foam System or Aqueous Foam Forming System, and a fire/fume detection system compatible with the centralized fire department detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.2.16. Accessory Facility.**7.2.17.5. Propulsion Flight.**

7.2.17.5.1. Propeller Storage. AC-130J propellers are stored in dollies or crates that measure 13.5 (L) x 10 ft (W). While propeller storage can vary based on geographic location, a minimum of one propeller per UTC (4 PMAI) plus a spare is required. See [Table 7.2.43](#) for the propeller storage area required for the AC-130J.

7.2.17.5.2. Engine Storage. Engine storage is held within the AMU.

7.2.17.5.3. Engine/Propeller Maintenance Shop. Located within the AMU.

7.2.17.6. **Avionics Flight.** AFSOC will not be performing intermediate level maintenance on the AC-130J. All Avionics maintenance will occur in the AMU.

7.2.17.7. Munitions Flight.**7.2.17.7.1. Munitions Shop.**

7.2.17.7.1.1. Administrative Area. This area includes space for an NCOIC,

assistant NCOIC, crew chiefs, break room, and restrooms. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.2.17.7.1.2. Munitions Maintenance Bays. AC-130J munitions shops require 6 total munitions maintenance bays each 33 ft wide x 50 ft long. Three bays will be used for conventional munitions (105MM, 30MM, and Chaff/Flare) and three bays will be used for precision guided munitions including Standoff Precision Guidance (AGM-176), Hellfire Missile (AGM-114), and Small Diameter Bombs (GBU-39). Each bay supports a different type of munition with the floors being exposed concrete. The bays will be drive-through with an electrical rollup door size of 14 ft wide x 12 ft tall and emergency exit doors each side. For air circulation, provide one large high volume, low speed fan for each of the bays.

7.2.17.7.1.3. Container Storage. Provide a storage area for miscellaneous containers between the munitions bays and the administrative offices. The storage bay should be the same size as the munitions bays at 33 ft wide x 50 ft long.

7.2.17.7.1.4. Equipment/Special Tools Storage. A centralized, enclosed, secure area is required for parts and special tools. Include two workstations for checking in/out tools. Equip the room with metal storage shelving, bins, racks, and/or mezzanine to maximize storage space. Provide direct access to the exterior for deliveries.

Table 7.2.42. Building Utility System Requirements for Munitions Facility.

System	Requirements
Mechanical	Proper ventilation and energy efficient HVAC systems are required. The HVAC systems in the admin portion of this facility will be split system heat pump with auxiliary electric strip heat. For the bay areas, heating will be provided by electric infra-red heaters along the room perimeter walls. Ventilation of the bay areas will be delivered by through wall axial exhaust fans. Additional air circulation in the bay areas will be provided by high volume low speed fans. Provide ample pneumatic connections for power tool connections conveniently located throughout the facility. Provide low pressure and high-pressure (0-150 psi) air connection capabilities in each bay with dual compression system. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	Use three-phase, 400 Hz power converters in each bay with back-up power generation units with either a manual or automatic transfer switches. Provide sufficient interior and especially exterior lighting system throughout the facility to include the munitions pad, in accordance to the IES Lighting Handbooks for lighting intensities. Provide intrusion detection systems. Use commercial grade convenience receptacles and special power outlets. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System and AFMAN 91-201, Explosive Safety Standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Plumbing system for this facility shall include outdoor hose bibs along the building perimeter, janitor sink, small kitchen sink, water cooler, handicapped accessible water closets, urinal, emergency eyewash, showers, and lavatories. Hot water shall be supplied via electric water heater and instantaneous water heaters. Floor drains will be provided in the men and women restrooms, and mechanical room. Floor drains shall be furnished with connection for trap primer lines. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.2.17.8. Armament Flight.

7.2.17.8.1. **Weapons Shop (CATCODE: 215552).** This shop is located with the AMU.

7.2.17.9. **TMDE Flight.** The PMEL is the base-level AFMETCAL Program focal point. The program provides for the calibration and repair of TMDE. HAF/A4LF approves the establishment of PMELs at selected installations (TO 00-20-14, Paragraph 1.2.3).

Table 7.2.43. AC-130J Intermediate Maintenance Facility Space Requirements.

Cat Code	Facility	UM	AC-130J (3) ¹	AC-130J (9) ¹	AC-130J (12) ¹	DAFMAN 32-1084 Reference or Remarks/Calculations
215-552	Weapons Shop, Storage, and Offices ² .	NSF	0	0	0	See Paragraph 7.2.16.2.7 and Table 7.2.29 for AC-130J weapons shop requirements located with the AMU.

216-642	Munitions Shop ²	NSF	12,468	12,468	12,468	Provide a minimum of six 33' by 50' work bays (three for conventional munitions and three for precision guided munitions) and one storage bay at 1,650 NSF each. Administrative area includes 2 Type E offices (NCOIC and assistant NCOIC) and 3 Type F offices (Crew Chiefs). Tool room includes 250 NSF for storage and Type G workstations for tool check in/out. Provide a 16 PN break room (CG 61 Admin Overview Table 1.4 100 NSF minimum) and a 12 ft x 12 ft communications room (per AFSOC/A6). CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G offices.
218-712	AGE Shop ²	NSF	4,320	5,520	6,440	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See DAFMAN 32-1084 Table 3.10 for step table. 3 PMAI = 5,400 GSF; 9 PMAI = 6,900 GSF; 12 PMAI = 8,050 GSF. The conversion from GSF to NSF is calculated as 5,400/1.25.
218-712	AGE Covered Storage	GSF	5,170	7,760	10,350	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See DAFMAN 32-1084 Table 3.10 for step table. 3 PMAI = 5,170 GSF; 9 PMAI = 7,760 GSF; 12 PMAI = 10,350 GSF.
211-152	Hydraulics ²	NSF	2,943	2,943	2,943	1 SOMXG: 2,943 NSF in B90700. AFSOC/A5: Hydraulics should be consistently sized with CV-22 and the standard size is adequate for each facility.
211-152	E&E Shop ²	NSF	2,119	2,119	2,119	1 SOMXG: 2,119 NSF in B90700. AFSOC/A5: E&E should be consistently sized with CV-22 and the standard size is adequate for each facility.

211-152	Aircraft Inspection Section (Phase) ²	NSF	0	0	0	Aircraft inspection occurs within the maintenance hangar.
211-152	R&R Shop ²	NSF	1,900	3,800	7,600	1 SOMXG: 7,852 NSF at B90700. Calculated as 475 NSF x #PMAI.
211-179	Fuel Systems Maintenance Dock ²	NSF	400	400	400	Major repair or maintenance would require use of the host installation shop. Fuel systems maintenance area requires storage for external tanks: 400 NSF. Per DAFMAN 32-1084 CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized provide a facility that is 24,632 NSF (30,790 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. See paragraph 7.2.17.4.1.8 for more information.
217-712	Avionics Shop ²	NSF	0	0	0	Shop is located with AMU.
211-159	Corrosion Control Facility ²	NSF	0	0	0	CC 211159 Aircraft Corrosion Control, Paragraph 1.4: Bases with a large number of aircraft (above 40 large or medium aircraft assigned) or in a severely corrosive area are authorized, with proper justification, a corrosion control hangar and a wash hangar. If authorized provide a facility that is 26,260 NSF (32,825 GSF with 1.25 net to gross conversion). See paragraph 7.2.17.1.7.3 for more information.
211-152	Sheet Metal Shop ²	NSF	4,267	4,267	4,267	353 SOG: Sheet Metal Shop is in 4,267 NSF at building 3670.
211-152	Wheel and Tire ²	NSF	1,611	1,611	1,611	1 SOW: The Wheel & Tire Shop is in 1,611 NSF at building 90700, floor 1.
211-152	Metals Technology ²	NSF	1,636	1,636	1,636	1 SOMXG: Space is determined by the equipment used. 1 lathe 10' x 10' area (100 NSF), 1 VMC 40-20 equals 6' x 12' plus 6' around for access (432 NSF), Cutting table equals 6' x 10' plus 10' around for access (780 NSF), CNC or VF4 equals 8' x 8' plus 6' around for access (324 NSF).

211-153	NDI Section ²	NSF	4,000	4,000	4,000	CC 211153 NDI Laboratory, Paragraph 1.2: All bases required to have a full, nondestructive testing facility are authorized 4,000 NSF for a laboratory. See TO 33B-1-1, Sec. 1-14, Figure 1-1 Typical DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2 Facility
211-152	Propulsion	NSF	412	824	1,648	Propellers dollies are 13.5' (L) x 19.5 each. Provide two feet clearance on each side for maneuvering or 412 NSF each. Store 1 per 4 PMAI. A spare will be stored in the AMU. All engines are stored with the AMU. Engine/Propeller maintenance is also located in the AMU.
218-852	AFE Shop ²	NSF	0	0	0	AFE for the AC-130J is provided with squadron operations. For consolidated AFE facilities for multiple weapon systems, see Table 8.4.4.
211-152	Covered Storage with fencing ²	NSF	150	450	600	Calculated as 50 NSF x #PMAI.
211-152	Admin. Support Space	NSF	0	1,680	2,640	In lieu of UMDs for each shop space, an area based assumption that 40% of all maintenance squadron personnel require administrative offices (See Table 7.2.10 , Table 7.2.11 , and Table 7.2.12). The total administrative support space from the Maintenance AMU should be subtracted from this total. AFSOC/A4I: default is 20 sf/ person (CG 61 Admin Overview paragraph 1.4.2).
211-152	Admin. Circulation	NSF	35	203	299	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
211-152	Special Purpose Circulation	NSF	2,996	3,375	3,610	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Total Int. Maint. Facilities		NSF	38,632	45,322	49,369	
Total Int. Maint. Facilities		GSF	48,290	56,652	61,711	Net to Gross conversion factor of 1.25.
Total Covered Storage		GSF	5,320	8,210	10,950	

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 12 PMAI = 13 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. HAF/A4LF approves the establishment of PMELs at selected installations (TO 00-20-14, Paragraph 1.2.3).

7.2.18. AC-130J Storage Facilities.**7.2.18.1. Aviation Bulk Fuel Storage (CATCODE: 411135).**

7.2.18.1.1. Requirements Determination. The total tankage required for aviation fuel will be the sum of the peacetime and war reserve tankage requirements. This may be adjusted up or down by DLA Energy based on additional distribution needs or nearby available war reserve fuel (DAFMAN 32-1084, CC 411135 Jet Fuel Storage, Paragraph 1.2).

7.2.18.1.2. Scope Determination. The Deputy Under Secretary of Defense for Logistics and Material Readiness (DUSDL&MR) Memorandum, "Bulk Petroleum Peacetime Operating Stock Authorization," May 20, 1993, calls for a safety level requiring storage of 5 days (CONUS) or 15 days (OCONUS) at the normal demand rate (DoDM 4140.25-M, Vol II, Chapter 1, Paragraph C11.2.4). AFPAM 23-221 Attachment 7 Table A7.1 lists the average C-130 fuel load at 6,662 gallons per sortie. Additional fuel is required to cover the Unobtainable Inventory and Economic Resupply (AFSOC/A4RE). Assumption is one sortie per aircraft each day. The AC-130J fuel storage requirement is calculated as follows: 9,350 gallons x number of aircraft x 5 days (CONUS) or 15 days (OCONUS) storage. Wartime requirements should directly support an OPLAN and identify fuel quantities to satisfy mobility, strategic air operations, civil defense, and logistics requirements (4140.25-M, Vol II, Chapter 1, Paragraph C11.3.2). The calculation for AC-130J fuel storage does not include fuel to support a war plan. Those stocks would be calculated via ICIS and could greatly increase the fuel storage requirements. Assume bulk fuel storage is provided by the host installation.

7.2.18.1.3. Dimensions. Varies. See Table 7.2.45 for the recommended area for this facility.

7.2.18.1.4. Design Considerations. The determination of the number of tanks to be used for Aviation Bulk Fuel Storage will be based on the following requirements: a minimum of two bulk tanks are required, regardless of the storage quantity, due to fuels quantity control measures; three or more tanks are required for all requirements over 31,800 m³ (200,000 barrels); and the individual capacity of any tank will not exceed 15,900 m³ (100,000 barrels) unless authorization is obtained from AFCESA/CEO.

7.2.18.2. Aircraft Support Equipment Storage Yard (CATCODE: 852273).

7.2.18.2.1. Requirements Determination. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and is measured in square yards.

7.2.18.2.2. Scope Determination. DAFMAN 32-1084, CC 218712 Aircraft Support Equipment Shop/Storage Facility, Table 1.1, lists the space requirements for AGE open storage yard facilities. These requirements are based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per UTC. Additive to the space requirements in DAFMAN 32-1084 Table 3.10 are requirements for maintenance and storage of munitions trailers and equipment that are maintained in or near the weapon storage areas. For powered munitions trailer maintenance and storage facilities, all 192 m² (230 yd²) per authorized trailer for each facility. For planning purposes, assume 1 powered trailer per UTC.

7.2.18.2.3. Dimensions. The recommended space allocation for this facility can be found in [Table 7.2.45](#).

7.2.18.3. Above Ground Magazine Storage Facility, Types A, B, and C (CATCODE: 422258).

7.2.18.3.1. Description. The Above Ground Magazine Storage Facility will be used for long-term storage of CAD and PAD. Training rounds and combat rounds should be included in this storage facility, although [Table 7.2.45](#) doesn't include specific numbers for combat rounds.

7.2.18.3.2. Requirements Determination. The storage facility shall provide an environment that protects CAD and PAD from moisture, heat, and direct sunlight.

7.2.18.3.3. Dimensions. 30 ft x 10 ft or 300 NSF (Hurlburt Field Minutes; Munitions).

7.2.18.4. Ancillary Explosives Facility (CATCODE: 422275).

7.2.18.4.1. Description. This facility can be used for short-term storage of CAD and PAD.

7.2.18.4.2. Ready Explosives Facility. A facility or designated area, usually near the flight line, where munitions and components are temporarily positioned awaiting transfer to aircraft (often called a flight line "holding area," "point," or "transfer point").

7.2.18.4.3. Bomb Preload Station. The station consists of equipment used to preload bombs on bomb racks and supporting site improvements. Typical equipment includes a gantry and conveyer operation lines to inspect, assemble, and load bombs on bomb racks. There are various types of stations, and the amount of equipment required depends on unit missions.

7.2.18.4.4. Requirements Determination. The storage facility shall provide an environment that protects CAD and PAD from moisture, heat, and direct sunlight.

7.2.18.4.5. Dimensions. Calculated as Munitions NSF/number of training days per week (6) x number of PMAI. See [Table 7.2.44](#) for the area required for AC-130J munitions training rounds. The recommended space allocation for this facility can be found in [Table 7.2.45](#).

7.2.18.5. Munitions Storage (Training Rounds).

7.2.18.5.1. Requirements Determination. Munitions assets, including inert components, are stored in approved storage structures for security and protection (see AFMAN 91-201). If secured storage is limited, preference is given by the risk category and classification as outlined in AFI 21-201, AFMAN 10-401, and AFMAN 23-110, USAF Supply Manual.

7.2.18.5.2. Dimensions. See [Table 7.2.45](#).

Table 7.2.44. Munitions Training Rounds per Aircraft by Type.

Munitions Training Rounds per Aircraft ¹				
Weapon System	Small Diameter Bombs ²	30 mm	105 mm	Griffin/Hellfire Missiles
AC-130J	4	500	50-100	4
Notes: 1. Number of rounds per aircraft 2. Assume 4 small diameter bombs take a floor area of about 48 NSF; 50-100, 105 mm rounds take a floor area of about 32-48 NSF; four, Hellfire Missiles take a floor area of about 48 NSF, and 500, 30mm rounds take a floor area of 32 NSF. Assume they will need this amount per plane, per training day (6 days a week), and assume they need 3 months (12 weeks) of training rounds.				

7.2.18.6. Base Hazardous Material Storage (CATCODE: 442257).

7.2.18.6.1. Requirements Determination. Normal authorization is for one month's storage. Storage is usually within three lockers (10 NSF) each per PMAI.

7.2.18.6.2. Scope Determination. Storage is provided in the maintenance AMU.

7.2.18.7. Base Supplies and Equipment Shed (CATCODE: 442628).

7.2.18.7.1. Description. Shed space is required to store base supplies, equipment, and material not requiring closed warehouse space but requiring covered protection from the weather because of nature of material or way they are packed. It may also include lumber storage exclusive of that stored by the Civil Engineer. Space for receiving and shipping activities may be included. Shed storage space is constructed without side and end walls.

7.2.18.7.2. Requirements Determination. Allows Cargo Tactical aircraft 30 GSF (24 NSF) (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.1). Personnel space is 2 NSF per person (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.2).

7.2.18.7.3. Dimensions. Calculated as follows: 24 NSF x number of aircraft + 2 NSF per person. See [Table 7.2.45](#) for the recommended area for this facility.

7.2.18.8. Base Supplies and Equipment Warehouse (CATCODE: 442758).

7.2.18.8.1. Requirements Determination. Warehouse space includes supplies and equipment needed to support base operations and fuels operations; receiving, storage issue, inspection, pickup, and delivery activities; warehouse offices; flyaway or

mobility kit storage; dangerous material, exclusive of explosives and ammunition; property in the equipment account (DAFMAN 32-1084, CC 442758 Warehouse Supply and Equipment Base, Paragraph 1.2); and a facility with a loading dock and direct, unobstructed access is required for semi-tractor trailer size vehicle loading/unloading.

7.2.18.8.2. Mobility Bags (RSP). Space will be computed at 3 ft³ per bag if the type of bag to be stored has been approved by the Air Force. The best space utilization can be obtained by storing in bulk or on pallet racks. Mobility bag storage is the responsibility of the LRS.

7.2.18.8.3. Scope Determination. For SOS base supplies and equipment warehouse space is determined by individual analysis and validated by AFSOC. Warehouse space = 525 NSF for Aircraft space + 3,500 NSF RSP space + Personnel space (15 NSF per person).

7.2.18.8.4. Dimensions. For 3 PMAI the Base Warehouse requirement is 8,525 NSF; for 9 PMAI the requirement is 17,840 NSF; and for 12 PMAI the requirement is 22,511 NSF.

7.2.18.8.5. Design Considerations. When existing warehouses have clearances between the floor and the bottom of the ceiling joist or truss of 18 ft or more, use double-deck construction within the existing facility before programming a new facility or an addition to the existing facility. The effects of double-decking on the building fire protection system should be recognized. Standard warehouse facility guidelines contained in AFMAN 23-210 apply. These include, but are not limited to fire protection systems, aisle space, fork lift access, ventilation, and property stacking. Ideally, the warehouse should be centrally located within the intermediate maintenance area and in proximity to the maintenance hangars.

7.2.18.9. **Controlled Humidity Warehouse (CATCODE: 442758).**

7.2.18.9.1. Requirements Determination. Included in the Base Warehouse Storage Facility.

7.2.18.10. **Base Supply Open Storage (CATCODE: 452252).**

7.2.18.10.1. Requirements Determination. Surface improvement of the area is required to facilitate the operation of materials-handling equipment.

7.2.18.10.2. Scope Determination. The size of the area is determined by its overall dimensions with no deductions for interior track and permanent roads.

7.2.18.10.3. Dimensions. The amount of storage space will be determined by analysis and validated by AFSOC. Base Open Storage should be 198 GSF per aircraft for tactical cargo aircraft plus 111 GSF per 200 base personnel (DAFMAN 32-1084, CG 44, Supply Storage Facilities Overview, Table 1.1 and 1.2). Add an additional 500 GSF per aircraft for unique SOF items that cannot be stored in a covered space. See [Table 7.2.45](#) for the recommended space for this facility.

7.2.18.10.4. Design Considerations. Exterior lights and fencing may be installed as required to deter theft. This area should be adjacent to the general warehouse to enhance inventory control and issue of material.

7.2.18.11. **Classified Storage.**

7.2.18.11.1. Description. Storage for classified materials.

7.2.18.11.2. Requirements Determination. Where a separate building is not available or where its use is not warranted by quantity of classified storage, a room, cage, or crib may be constructed within a warehouse building.

7.2.18.11.3. Scope Determination. All areas that contain classified material will be secured by means of approved locking systems. This will include any temporary storage space used for in-transit classified material. In addition to classified items being stored separately from other material, classified material will be segregated in storage from sensitive but unclassified items. Standards for physical protection of classified items are specifically established in DoDD 5200.01, AFI 16-1404, and AFMAN 23-110.

7.2.18.11.4. Dimensions. The recommended space allocation for this facility can be found in [Table 7.2.45](#).

7.2.18.12. **Chaff and Flare Build Up and Storage.**

7.2.18.12.1. Description. The facility is required for storage, handling, inspection, maintenance, and preparation for use of chaff and flares.

7.2.18.12.2. Requirements Determination. These materials must be stored in an area segregated to store only ammunition and explosives, related non-explosives items, equipment and supplies. The guidance on storage criteria and fire safety is given in AFMAN 91-201, Explosives Safety Standards. Chaff and flare storage can be held within the AC-130J munitions facility but needs a dedicated bay area.

7.2.18.12.3. Dimensions. Chaff and flare storage will be within a 36 ft x 36 ft (1,296 NSF) bay for all PMAI scenarios.

Table 7.2.45. AC-130J Storage Facility Space Requirements.

Facility	UM	AC-130J (3) ¹	AC-130J (9) ¹	AC-130J (12) ¹
Aviation Fuel Storage ⁴	GA	140,000 ² or 422,000 ³	422,000 ² or 1,266,000 ³	562,000 ² or 1,688,000 ³
AGE Open Storage Yard	SY	287	776	1,035
Above Ground Magazine Storage Facility, Types A, B, and C	NSF	300	300	300
Ancillary Explosives Facility/Ready Explosives Facility	NSF	6,336	19,009	25,344
Munitions - Training rounds	NSF	38,016	114,048	152,064
Base Supplies and Equipment Shed	NSF	440	1,242	2,184
Base Supplies and Equipment Warehouse	NSF	8,525	17,840	22,511

Base Supply Open Storage	GSF	2,205	6,615	8,820
Classified Storage	NSF	98	293	390
Chaff and Flare Build Up and Storage	NSF	1,296	1,296	1,296
Admin. Support Space ⁶	NSF	1,320	3,720	4,920
Admin. Circulation	NSF	283	792	1,047
Special Purpose Circulation	NSF	4,808	13,467	17,797
Total Storage Facilities	NSF	61,372	171,923	227,179
Total Storage Facilities	GSF⁵	76,715	214,903	283,974
Total Open Storage Yard	SY	532	1,511	2,015

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 12 PMAI = 13 total aircraft (1 BAI).
2. CONUS location requirement
3. OCONUS location requirement
4. Storage is provided by host installation.
5. Net to Gross conversion factor of 1.25.
6. Area based requirement assumption of 1 Type D Office (120 NSF max) per 10,000 NSF of storage.

7.3. MC-130J Facility Requirements.

7.3.1. Weapon System Characteristics: MC-130J. This aircraft has no armament.

7.3.2. Aircraft Description. The MC-130J “Commando II” will be equipped to fly various missions to include: low visibility, low-level air refueling missions for special operations helicopters and tilt-rotor aircraft, infiltration, exfiltration, and resupply of special operations forces by airdrop or airland intruding politically sensitive or hostile territories. The MC-130J includes a two-pilot flight station with fully integrated avionics, CSO and auxiliary flight deck stations, integrated navigation and global positioning systems, integrated defense systems, and an enhanced cargo-handling system. The MC-130J is powered by four turboprop engines driving six-bladed, all-composite propellers.

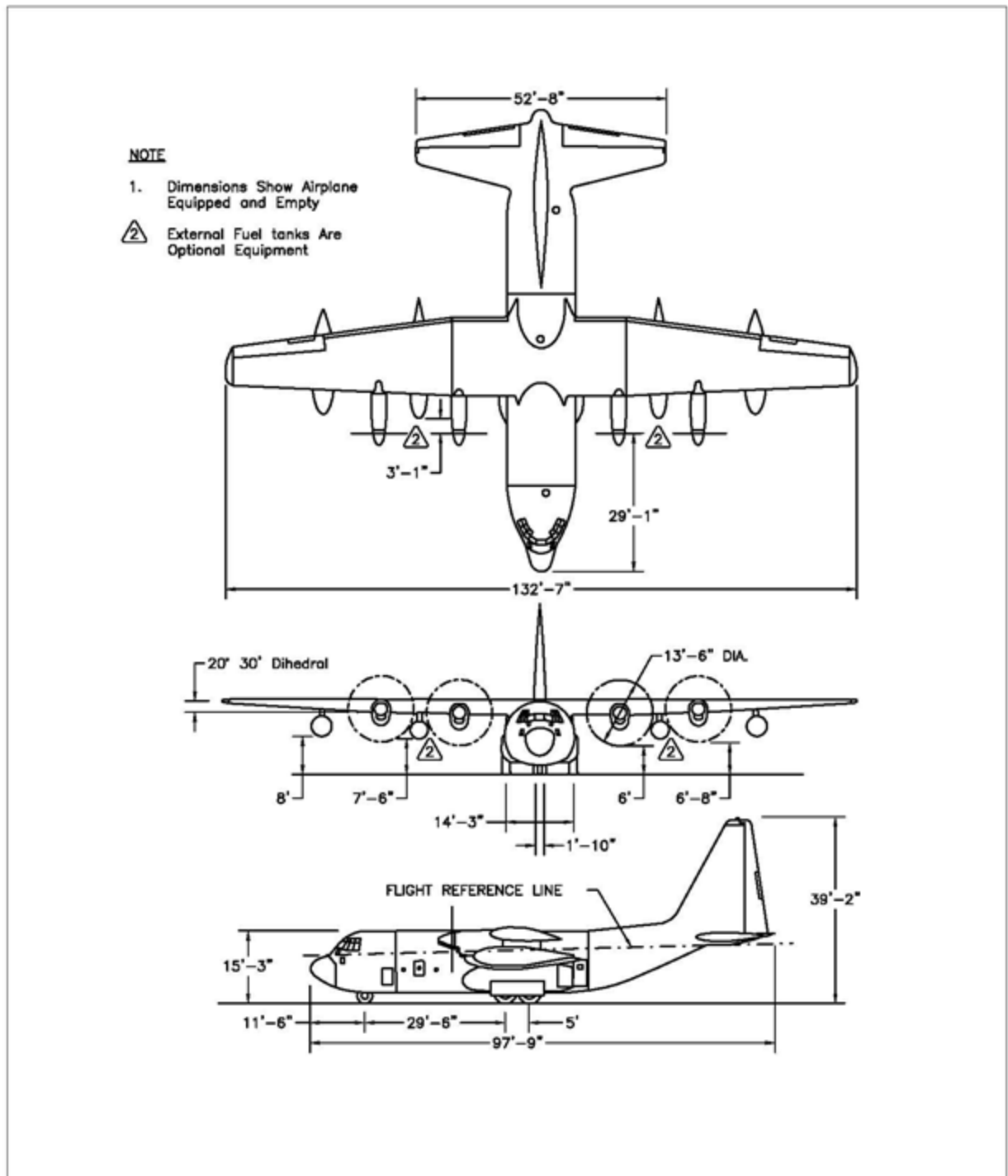
7.3.2.1. Crew and Aircraft Configuration. The normal flight crew for an MC-130J will be five (a pilot, co-pilot, CSO, and two loadmasters). The airplane can land and take off on short runways and it can be used on landing strips such as those usually found in base operations. The landing gear is tricycle type. Dual wheels on the nose gear pivot to turn the airplane. The main gear consists of two vertical strut assemblies for each side. A wheel is mounted on each vertical strut. Each vertical strut is linked in tandem by a horizontal torque strut. The main landing gears are mounted in wheel-well pods on each side of the fuselage under the wings. A clear cube cargo space is fully accessible through an aft-mounted cargo door and ramp. The ramp can be lowered for drive-on loading from the ground level or can be raised for loading from truck bed height. The clear cube loading dimensions are 108 in high and 120 in wide for the full length of the cargo section (TO 1C-130(H_M) J-2-00GV-00-1, Paragraph 3.1).

7.3.3. Aircraft Principal Dimensions. The MC-130J cargo compartment is 41 ft long x 10 ft wide x 9 ft high (TO 1C-130(H_M)J-2-00GV-00-1, Paragraph 3.4.1).

Table 7.3.1. MC-130J Block Dimensions.

Wingspan		Length		Height	
m	ft	m	ft	m	ft
40.4	132.6	29.8	97.75	11.94	39.17

Figure 7.3.1. MC-130J Aircraft Dimensions.



7.3.4. Aircraft Weights/Wheel Loads.

Table 7.3.2. MC-130J Gross Weight Summary.

Configuration	kg (lbs)
Basic Weight ¹	41,457 (91,397)
Estimated Operating Weight ²	70,741 (155,957)
Unusable Fuel ³	550 (1,212)
Max Fuel (Total)	27,832 (61,360)
Max Fuel Internal	19,758 (43,560)
Notes: 1. Source AFSOC/A4MYA. 2. Estimated Operating Weight includes estimated baseline mission equipment: basic weight (91,397 lbs.) + max internal fuel (43,560 lbs.) + cargo (20,000 lbs) + crew members (~1,000 lbs.). 3. Only Internal Tanks; 2,407 lbs with all tanks.	

Table 7.3.3. MC-130J Maximum Fuel Weights.

Tank	Weight kg (lbs)
No. 1	3,739 (8,310)
No. 2	3,475 (7,660)
No. 3	3,475 (7,660)
No. 4	3,739 (8,310)
Total Main Tanks	14,488 (31,940)
Left Auxiliary	2,635 (5,810)
Right Auxiliary	2,635 (5,810)
Total Internal	19,758 (43,560)
Left External (if installed)	4,037 (8,900)
Right External (if installed)	4,037 (8,900)
Total Internal and External	27,832 (61,360)

7.3.5. Aircraft Mooring Arrangement. Either 10,000 lb strength tie-down chains or 10,000 lb cable strength tiedowns or 3,000 lb cable strength tie-down fittings should be used when mooring the MC-130J.

Table 7.3.4. Maximum Allowable Wind Velocity without Mooring Airplane.

Wind Velocity - Knots						
Airplane Gross Weight (lbs)	Ice	Snow or Wet Grass	Moist Earth	Wet Concrete or Macadam	Dry Turf	Dry Concrete or Macadam
60,000	35	42	44	50	55	69
70,000	38	45	48	54	59	75
80,000	40	48	51	58	63	80
90,000	43	51	54	61	67	83.5
100,000	45	54	57	65	71	83.5
110,000	47	58	60	68	74	83.5

120,000	50	59	63	71	78	83.5
130,000	52	61	66	74	81	83.5
140,000	53	64	68	76	83.5	83.5
150,000	55	66	70	79	83.5	83.5
160,000	57	68	73	82	83.5	83.5
170,000	59	70	75	83.5	83.5	83.5
175,000	60	71	76	83.5	83.5	83.5

Figure 7.3.2. MC-130J Mooring on Standard 30-foot Spaced Ring Grid.

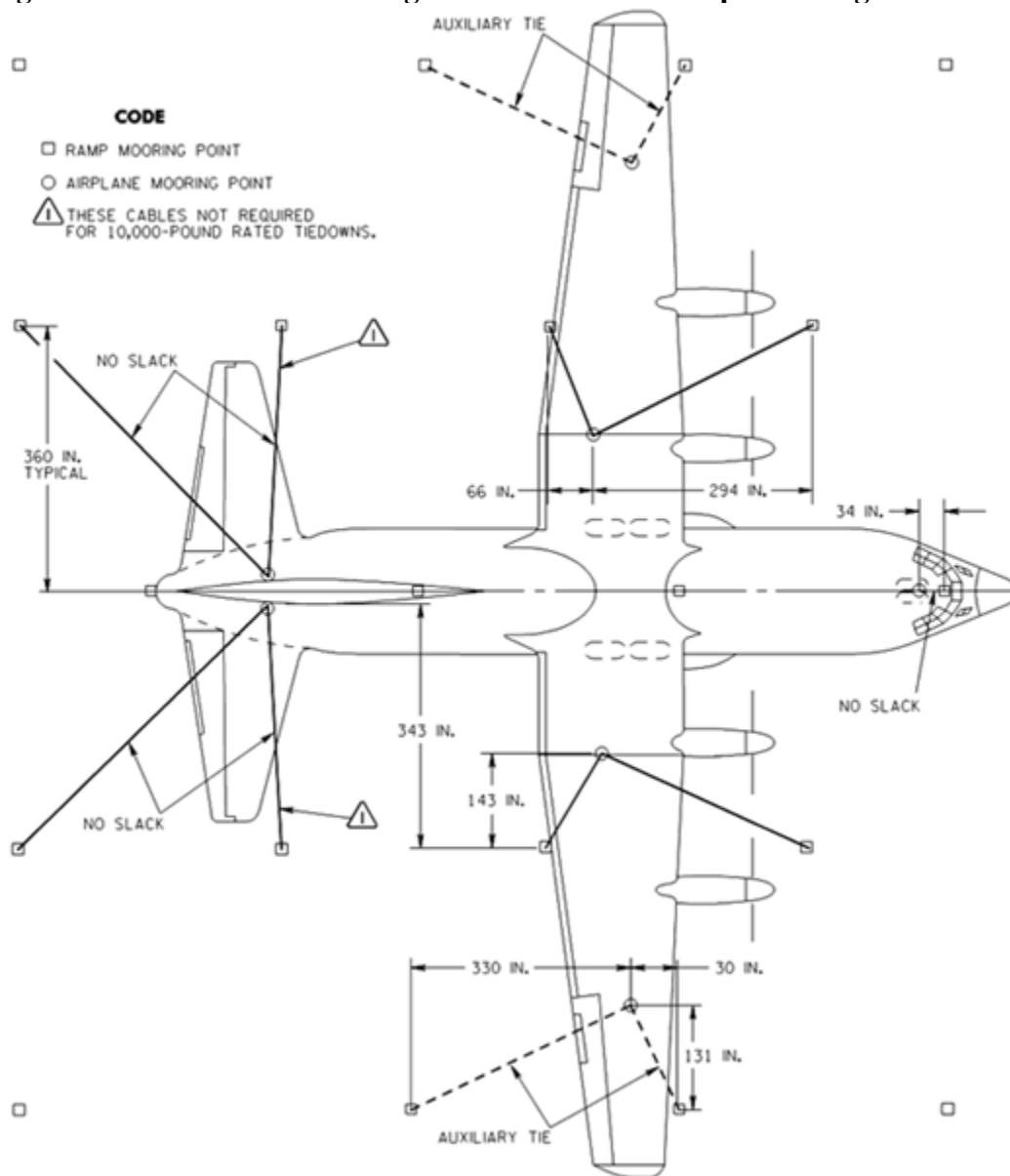
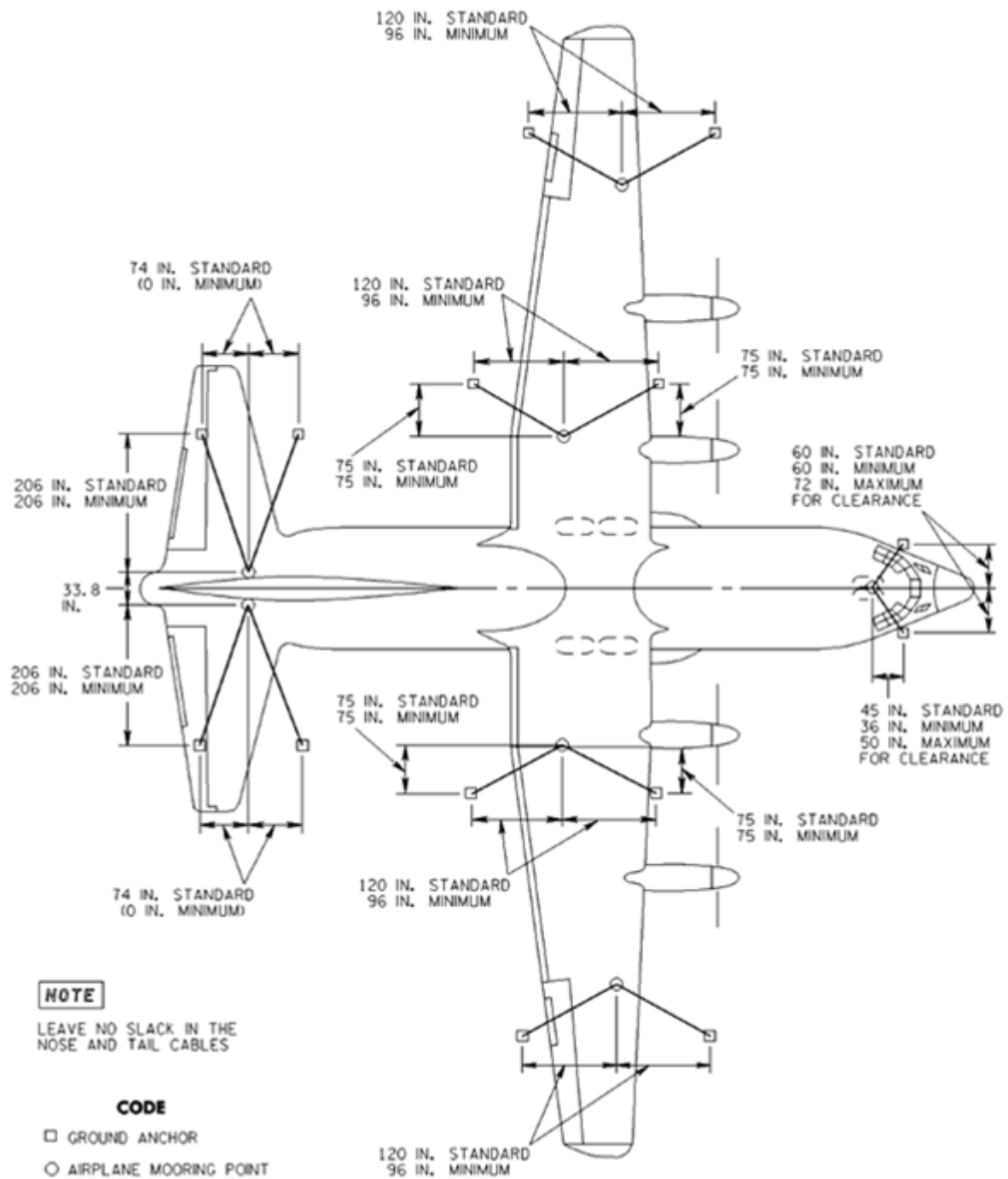


Figure 7.3.3. MC-130J Optimum Mooring Pattern on Unpaved Surfaces.



7.3.6. Minimum Takeoff and Landing Requirements.

7.3.6.1. **Reference.** See Paragraph 7.3.11, Airfield Requirements, for the minimum runway length required for the MC-130J and other airfield requirements.

7.3.6.2. **Takeoff.** The minimum ground roll takeoff distance for the MC-130J is 3,500 ft (UFC 2-360-01, Table 7.1). See Table 7.3.5 for MC-130J takeoff distances at maximum weights by configuration.

Table 7.3.5. MC-130J Maximum Takeoff Weights.

Aircraft Configuration	Aircraft Weight kg (lbs)	Takeoff Distance
Maximum Normal ¹	74,389 (164,000)	3,810 (12,500)
Maximum Alternate ^{2,3}	79,379 (175,000)	3,810 (12,500)
Notes: 1. Conditions - Pressure altitude: 6,000 ft; Outside air temperature: 35 degrees Celsius; Winds: direct crosswind with 10 knot gusts; Slope/RSC/RCR: 0/0/23; Normal bleed air; Anti-skid operational; CFL for normal is 12,500 ft. 2. Conditions- Pressure altitude: 5,000 ft; Outside air temperature: 30 degrees Celsius; Winds, direct crosswind with 10 knot gusts; Slope/RSC/RCR:0/0/23; normal bleed air; Anti-Skid operational; CFL required is 12,500 ft. 3. With or without external tanks 4. Consult applicable airframe TOs for the latest information regarding CFL takeoff distances.		

7.3.6.3. **Landing.** The minimum landing distance for the MC-130J on a paved runway is 3,500 ft (UFC 2-360-01, Table 7.2). See Table 7.3.6 for MC-130J maximum landing weights by configuration.

Table 7.3.6. MC-130J Maximum Landing Weight.

Aircraft Configuration	Aircraft Weight kg (lbs)	Landing Distance (ft)
Maximum Recommended Normal	74,389 (164,000)	1,554 (5,100)
Notes: 1. Conditions - 50 ft obstacle; Pressure altitude: 6,000 ft; Outside air temperature: 35 degrees Celsius; Winds: direct crosswind with 10 knot gusts; Slope/RSC/RCR: 0/0/23; Normal bleed air; Anti-skid operational; 4 props in reverse. 2. Consult applicable airframe TOs for the latest information regarding landing distances.		

7.3.7. **Unique Maintenance Requirements.** The MC-130J has various systems that require periodic servicing and replenishment. However, none of the items drive a facility requirement that is not met within the minimum requirements for the maintenance hangar and other maintenance and intermediate maintenance facilities.

7.3.8. **Unique Power Requirements.** AC power is provided to the aircraft by three systems: a primary power supply, a secondary power supply, and an external AC power supply.

7.3.8.1. **Primary Power.** Includes five AC generators (four engine-driven, one by the APU). Each requires three-phase, 400 Hz power at 200/115 volts. AC buses power the electronic circuit breaker units and mechanical circuit breakers.

7.3.8.2. **Secondary Power.** Includes two solid-state inverters. Each requires single-phase, 400 Hz power at 115 volts and 26 volts to service transient-sensitive avionics equipment.

7.3.8.3. **External Power.** Includes an AC power receptacle that is three-phase, 50 to 60 kVA, 400 Hz power at 115 volts. External power uses a four-wire system. Phase sequencing matches the airplane generators (phase A, B, and C 120 degrees apart).

7.3.9. MC-130J Operations Squadron Characteristics.

7.3.9.1. MC-130J UTC and Crew Construct.

7.3.9.1.1. UTC Construct. The MC-130J currently has a single UTC construct where one UTC consists of 3 PMAI and 1 BAI (4 total airframes).

7.3.9.1.2. Crew Ratio and Crew Complement. The normal flight crew for the MC-130J, as detailed in Paragraph 7.3.2, is 5 PN. The crew ratio is the number of crews required to support deployments and dwell times for the unit. The MC-130J crew ratio is 1.5 crews per PMAI. The number total of flight crew members is calculated as follows: number of flight crew x crew ratio x number of PMAI. Thus, a larger flight crew or crew ratio will result in larger facilities required to support additional personnel, and vice versa.

7.3.9.1.3. Notional Squadron Concepts. For planning purposes, this FRI provides facility space requirements for the three most common MC-130J squadron scenarios: 2 UTCs (6 PMAI, 1 BAI); 3 UTCs (9 PMAI, 1 BAI), which represents a full OCONUS squadron; and 5 UTCs (15 PMAI, 1 BAI), which represents a full CONUS squadron. To ensure the most accurate facility space requirements possible, consult AFSOC/A3/A4I for the latest information regarding the current MC-130J UTC construct, crew ratio, and crew complement. Notional manpower for MC-130J operations squadrons is presented in Tables 7.3.7, 7.3.8, and 7.3.9. Notional manpower for MC-130J maintenance squadrons is presented in Tables 7.3.10, 7.3.11, and 7.3.12.

Table 7.3.7. MC-130J Operations Squadron Notional Manpower, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	0	0	0
SOS	Commander's Support Staff	0	2	1	3
SOS	Aviation Resource Management	0	4	0	4
SOS	Flight Crews @ CR 1.5 ¹	27	18	0	45
	SOS Total	29	24	1	54
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	4	0	4
SOSS	ELINT Analysis	0	1	0	1
SOSS	AFE	0	6	0	6
SOSS	Operations Data Management	0	1	0	1
	SOSS Total	1	15	0	16
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3}	35	43	1	79

Notes:

1. Per AFI 65-503 Attachment 36-1, the MC-130J flight crew ratio will be 1.5.
2. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 6 PMAI and 1 BAI (total 7 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.3.8. MC-130J Operations Squadron Notional Manpower, 3 UTC Squadron (9 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	1	0	1
SOS	Commander's Support Staff	0	3	1	4
SOS	Aviation Resource Management	0	5	0	5
SOS	Flight Crews @ CR 1.5 ¹	41	27	0	63
	SOS Total	43	36	1	80
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	6	0	6
SOSS	ELINT Analysis	0	1	0	1
SOSS	AFE	0	9	0	9
SOSS	Operations Data Management	0	1	0	1
	SOSS Total	1	20	0	21
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3}	49	60	1	110

Notes:

1. Per AFI 65-503 Attachment 36-1 the MC-130J flight crew ratio will be 1.5.
2. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 9 PMAI and 1 BAI (total 10 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.3.9. MC-130J Operations Squadron Notional Manpower, 5 UTC Squadron (15 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	1	0	1
SOS	Commander's Support Staff	0	3	1	4
SOS	Aviation Resource Management	0	6	0	6
SOS	Flight Crews @ CR 1.5 ¹	68	45	0	113
	SOS Total	70	55	1	126
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	10	0	10
SOSS	ELINT Analysis	0	1	0	1
SOSS	AFE	0	15	0	15
SOSS	Operations Data Management	0	1	0	1
	SOSS Total	1	30	0	31
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3}	76	89	1	166

Notes:

1. Per AFI 65-503 Attachment 36-1 the MC-130J flight crew ratio will be 1.5.
2. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 15 PMAI and 1 BAI (total 16 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.3.10. MC-130J Maintenance Squadron Characteristics.

Table 7.3.10. MC-130J Maintenance Squadron Notional Manpower, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOAMXS	AMU OIC/Chief	1	0	0	1
SOAMXS	Production Superintendent	0	1	0	1
SOAMXS	Production Staff (Expeditors)	0	4	0	4
SOAMXS	Lead Crew Chiefs	0	3	0	3
SOAMXS	Aircraft Section (Crew Chief)	0	53	0	53
SOAMXS	Specialist Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Specialist Section Staff	0	119	0	119
SOAMXS	Support Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Support Section Staff	0	9	0	9
	Subtotal SOAMXS Sections	1	191	0	192
SOAMXS	SOAMXS Overhead	2	6	0	8
	Total SOAMXS	3	197	0	200
SOMXS	Fabrication Flight	0	8	0	8
SOMXS	Accessories Flight	0	9	0	9
SOMXS	AGE Flight	0	5	0	5
SOMXS	Munitions Flight	0	4	0	4
SOMXS	Maintenance Support Flight	0	8	0	8
SOMXS	Propulsion Flight	0	5	0	5
SOMXS	Avionics Flight	0	11	0	11
SOMXS	Armament Flight	0	1	0	1
SOMXS	TMDE Flight	0	0	0	0
SOMXS	AFETS	0	0	4	4
	Subtotal SOMXS Sections	0	51	4	55
SOMXS	SOMXS Overhead	2	6	0	8
	Total SOMXS	2	57	4	63
SOMXG	SOMXG Overhead	2	9	0	11
	Total SOMXG	2	9	0	11
	TOTAL MAINTENANCE^{1,3}	7	263	4	274
	SPA^{2,4}				45.6

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 9 PMAI and 1 BAI (total 10 airframes).
2. Per AFSOC/A1M, the planning SPA for the MC-130J is 45.6.
3. Per AFSOC/A1M, assume the total maintenance breaks down into 10% overhead (includes SOMXG, SOAMXS, and SOMXS), 70% SOAMXS sections, and 20% SOMXS sections. The notional manpower breakdown is based on existing unit structures and LCOMs and should be used for facility programming purposes only.
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.3.11. MC-130J Maintenance Squadron Notional Manning, 3 UTC Squadron (9 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOAMXS	AMU OIC/Chief	1	0	0	1
SOAMXS	Production Superintendent	0	1	0	1
SOAMXS	Production Staff (Expeditors)	0	5	0	5
SOAMXS	Lead Crew Chiefs	0	4	0	4
SOAMXS	Aircraft Section (Crew Chief)	0	79	0	79
SOAMXS	Specialist Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Specialist Section Staff	0	181	0	181
SOAMXS	Support Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Support Section Staff	0	14	0	14
	Subtotal SOAMXS Sections	1	286	0	287
SOAMXS	SOAMXS Overhead	2	9	0	11
	Total SOAMXS	3	295	0	298
SOMXS	Fabrication Flight	0	12	0	12
SOMXS	Accessories Flight	0	14	0	14
SOMXS	AGE Flight	0	7	0	7
SOMXS	Munitions Flight	0	8	0	8
SOMXS	Maintenance Support Flight	0	12	0	12
SOMXS	Propulsion Flight	0	8	0	8
SOMXS	Avionics Flight	0	16	0	16
SOMXS	Armament Flight	0	1	0	1
SOMXS	TMDE Flight	0	0	0	0
SOMXS	AFETS	0	0	4	4
	Subtotal SOMXS Sections	0	78	4	82
SOMXS	SOMXS Overhead	2	9	0	11
	Total SOMXS	2	87	4	93
SOMXG	SOMXG Overhead	2	17	0	19
	Total SOMXG	2	17	0	19
	TOTAL MAINTENANCE^{1,3}	7	399	4	410
	SPA^{2,4}				45.6

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 9 PMAI and 1 BAI (total 10 airframes).
2. Per AFSOC/A1M, the planning SPA for the MC-130J is 45.6.
3. Per AFSOC/A1M, assume the total maintenance breaks down into 10% overhead (includes SOMXG, SOAMXS, and SOMXS), 70% SOAMXS sections, and 20% SOMXS sections. The notional manpower breakdown is based on existing unit structures and LCOMs and should be used for facility programming purposes only.
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.3.12. MC-130J Maintenance Squadron Notional Manning, 5 UTC Squadron (15 PMAI, 2 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOAMXS	AMU OIC/Chief	1	0	0	1
SOAMXS	Production Superintendent	0	1	0	1
SOAMXS	Production Staff (Expeditors)	0	5	0	5
SOAMXS	Lead Crew Chiefs	0	4	0	4
SOAMXS	Aircraft Section (Crew Chief)	0	135	0	135
SOAMXS	Specialist Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Specialist Section Staff	0	308	0	308
SOAMXS	Support Sect. NCOIC/Chief	0	1	0	1
SOAMXS	Support Section Staff	0	23	0	23
	Subtotal SOAMXS Sections	1	479	0	480
SOAMXS	SOAMXS Overhead	2	13	0	15
	Total SOAMXS	3	491	0	494
SOMXS	Fabrication Flight	0	21	0	21
SOMXS	Accessories Flight	0	24	0	24
SOMXS	AGE Flight	0	12	0	12
SOMXS	Munitions Flight	0	13	0	13
SOMXS	Maintenance Support Flight	0	20	0	20
SOMXS	Propulsion Flight	0	13	0	13
SOMXS	Avionics Flight	0	28	0	28
SOMXS	Armament Flight	0	1	0	1
SOMXS	TMDE Flight	0	0	0	0
SOMXS	AFETS	0	0	4	4
	Subtotal SOMXS Sections	0	133	4	137
SOMXS	SOMXS Overhead	2	13	0	15
	Total SOMXS	2	145	4	151
SOMXG	SOMXG Overhead	2	37	0	39
	Total SOMXG	2	37	0	39
	TOTAL MAINTENANCE^{1,3}	7	674	4	684
	SPA^{2,4}				45.6

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 15 PMAI and 2 BAI (total 17 airframes).
2. Per AFSOC/A1M, the planning SPA for the MC-130J is 45.6.
3. Per AFSOC/A1M, assume the total maintenance breaks down into 10% overhead (includes SOMXG, SOAMXS, and SOMXS), 70% SOAMXS sections, and 20% SOMXS sections. The notional manpower breakdown is based on existing unit structures and LCOMs and should be used for facility programming purposes only.
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.3.11. Base Operations Ground Facilities - Airfield Requirements.

7.3.11.1. Runways (CATCODE: 111111).

7.3.11.1.1. Requirements Determination. The MC-130J requires a Class B runway (UFC 3-260-01, Table 3-1).

7.3.11.1.2. Runway Length. The MC-130J requires a minimum runway length of 3,500 ft (DAFMAN 32-1084, CC 111111 Runways, Table 4). Most normal operations will occur with conditions and weights that will require longer runways. In the worst-case scenarios as listed in [Table 7.3.5](#) Notes 1 and 2 and [Table 7.3.6](#), the runway required to meet CFL is 12,500 ft.

7.3.11.1.3. Runway Width. The minimum runway width for the MC-130J is 150 ft (UFC 3-260-01, Table 3-2).

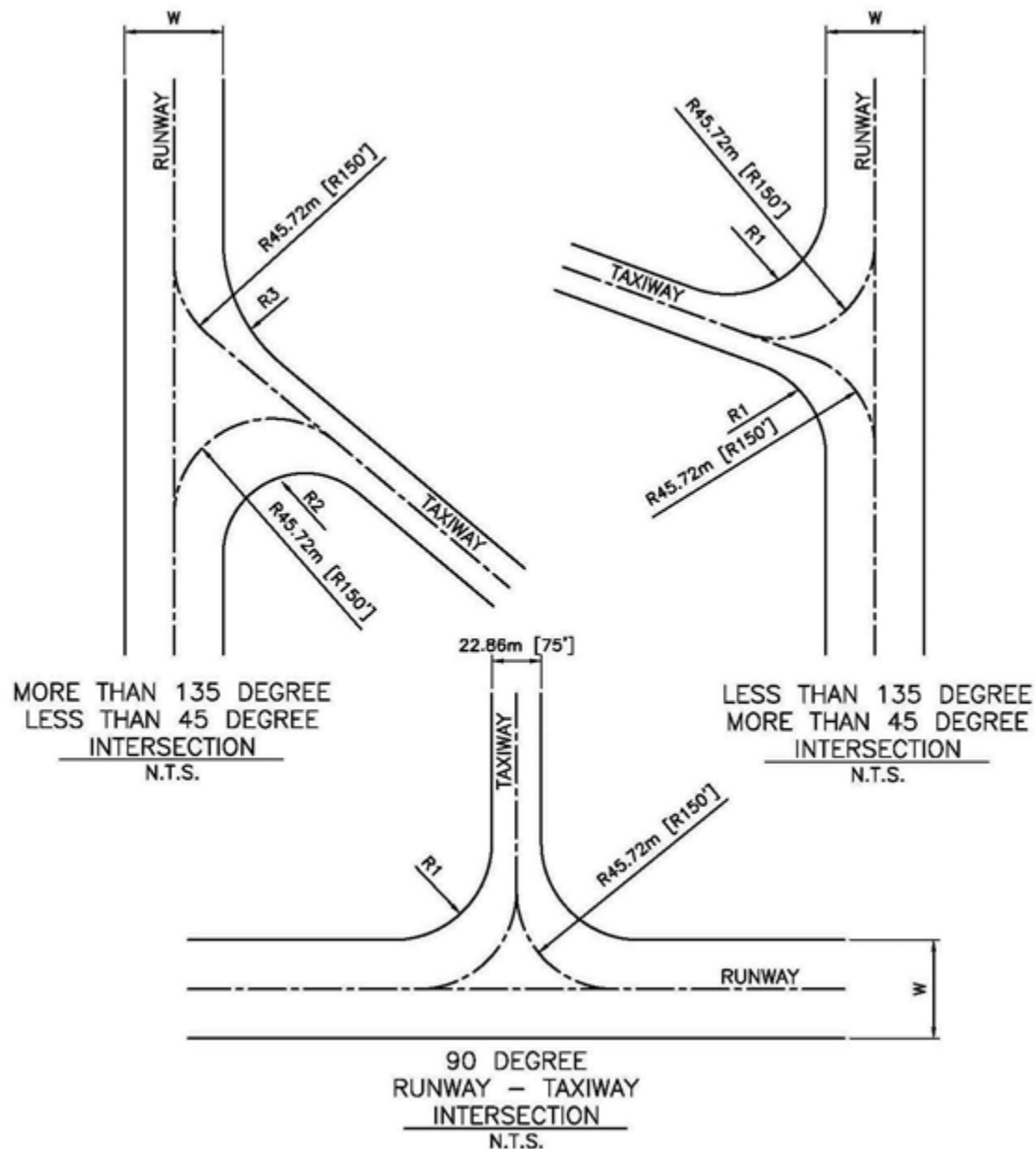
7.3.11.1.4. Shoulders. Shoulders can be both paved and unpaved, and are located on each side of the runway. The minimum paved shoulder for the MC-130J is 25 ft on each side (UFC 3-260-01, Table 3-2, Item 4). A minimum combined total of 200 ft is required for paved and unpaved shoulders for the MC-130J (UFC 3-260-01, Table 3-2, Item 3).

7.3.11.1.5. Runway/Taxiway Intersection Fillet Radii. See [Table 7.3.13](#) and [Figure 7.3.4](#).

Table 7.3.13. Runway/Taxiway Intersection Fillet Radii.

Runway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	R1 ^{1,3}	R2 ²	R3 ²
More than 75 ft but less than 150 ft	150	125	250
150 ft or more	125	125	250
Notes: 1. Less than 135 and more than 45-degree intersection. 2. More than 135 and less than 45-degree intersection. 3. 90-degree intersection.			

Figure 7.3.4. Runway-Taxiway Intersection Fillet Radii.



7.3.11.2. Paved Overrun (CATCODE: 111115).

7.3.11.2.1. Requirements Determination. All runways are required to have paved overruns.

7.3.11.2.2. Length (min.). The MC-130J paved overrun minimum length for runways is 1,000 ft (AFMAN 32-1084, CC 111115 Paved Overrun, Table 1).

7.3.11.2.3. Width (min.). The MC-130J paved overrun minimum width for runways is 150 ft (AFMAN 32-1084, CC 111115 Paved Overrun, Table 1).

7.3.11.3. Taxiway (CATCODE: 112211).

7.3.11.3.1. Requirements Determination. All runways are required to have taxiways.

7.3.11.3.2. Taxiway Width. The minimum taxiway width for MC-130J airfields is 75 ft (UFC 3-260-01 Table 5.1).

7.3.11.3.3. Taxiway Paved Shoulders. The minimum paved taxiway shoulder width for MC-130J airfields is 25 ft (UFC 3-260-01, Table 5-1, Item 3).

7.3.11.3.4. Taxiway Clearance Line (Fixed or Mobile Objects). The taxiway clearance line for fixed or mobile objects for MC-130J airfields with Class B runways is 200 ft from the taxiway centerline (UFC 3-260-01, Table 5-1, Item 10).

7.3.11.3.5. Taxiway Clearance Line (Parallel Taxiway). The taxiway clearance line for parallel taxiways for MC-130J airfields with Class B runways is 237.5 ft (UFC 3-260-01, Table 5-1, Item 11).

7.3.11.3.6. Taxiway Centerline Radius. The taxiway centerline radius is the taxiway width divided by 2 and added to 100 ft. The minimum taxiway centerline radius is 137.5 ft ($75 / 2 + 100 = 137.5$ ft). The centerline turning radius used to determine the fillet radii for **Figure 7.3.4** and **Figure 7.3.5** below is 150 ft and 125 ft respectively.

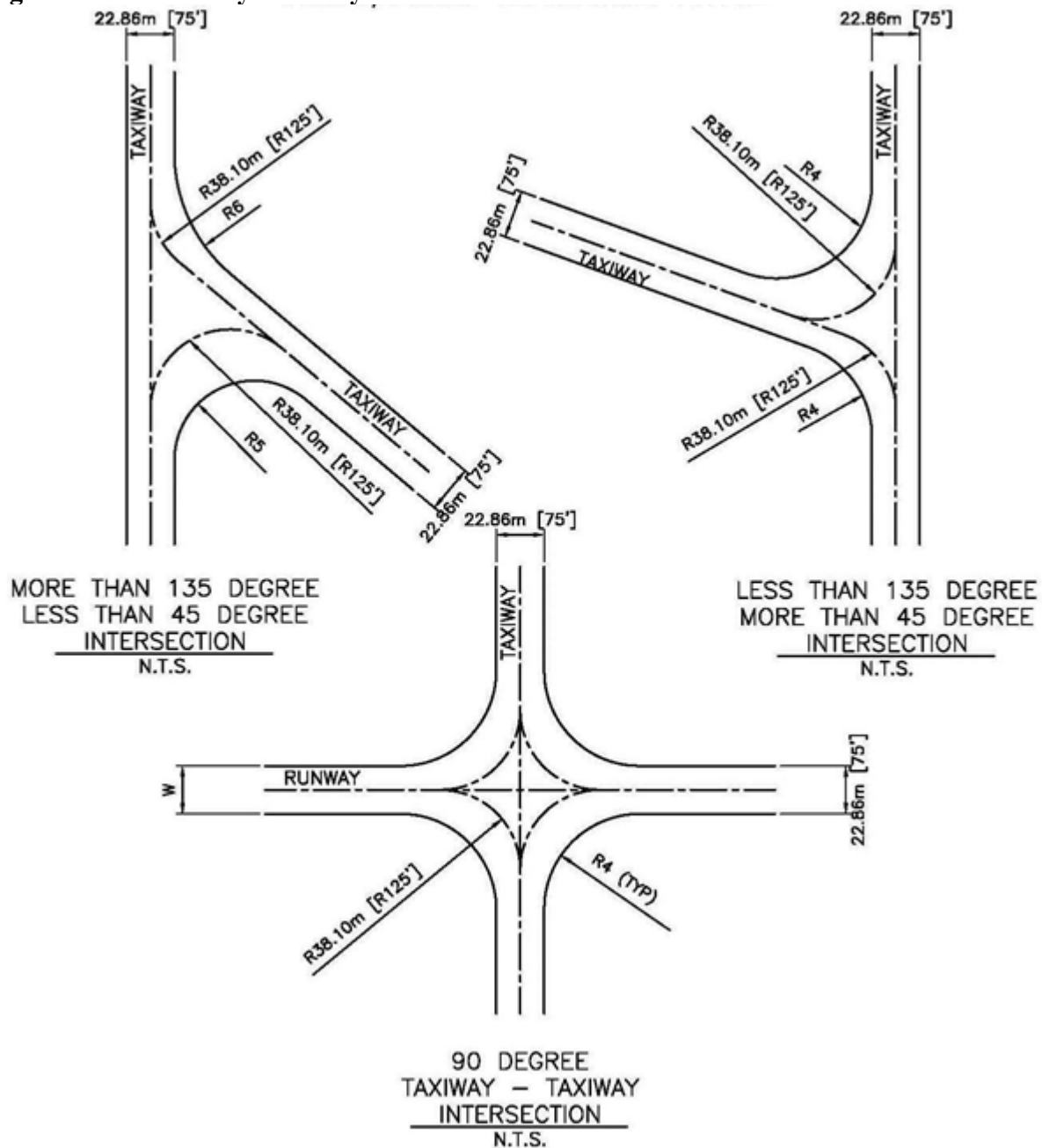
7.3.11.3.7. Wingtip Clearances for Taxiing. The wingtip clearance for parked aircraft is 20 ft (UFC 3-260-01, Table 6-1, Item 4). The wingtip clearance of aircraft on interior or secondary peripheral taxilanes is 30 ft (UFC 3-260-01, Table 6-1, Item 5). The wingtip clearance of aircraft on through or primary peripheral taxilanes is 50 ft (UFC 3-260-01, Table 6-1, Item 6).

7.3.11.3.8. Taxiway/Taxiway Intersection Fillet Radii. See **Table 7.3.14** and **Figure 7.3.5**.

Table 7.3.14. Taxiway/Taxiway Intersection Fillet Radii.

Taxiway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	R4 ^{1,3}	R5 ²	R6 ²
75 ft	150	125	250
Notes: 1. Less than 135 and more than 45-degree intersection 2. More than 135 and less than 45-degree intersection 3. 90-degree intersection			

Figure 7.3.5. Taxiway-Taxiway Intersection Fillet Radii.



7.3.11.4. Apron (CATCODE: 113321).

7.3.11.4.1. Requirements Determination. Aprons are individually designed to support specific aircraft and missions at a particular installation. The actual dimensions of an apron are based on the number of authorized aircraft, maneuvering space, and type of activity the apron serves. (DAFMAN 32-1084, CC 113321, Paragraph 1.2). The actual dimensions of an operational parking apron for the MC-130J are based on the number of PMAI minus any covered parking provided. It does not include the number of BAI, PTAI, or transient requirements as these are typically located on separate aprons or in

a separate hangar. When factoring for other aircraft inventory on a single apron, consider all aircraft inventories as applicable in the total number of aircraft and follow the steps laid out in paragraph 7.3.11.4.2. The minimum clearances allowed between those aircraft in a parking configuration are shown in [Table 7.3.15](#) and [Figure 7.3.6](#).

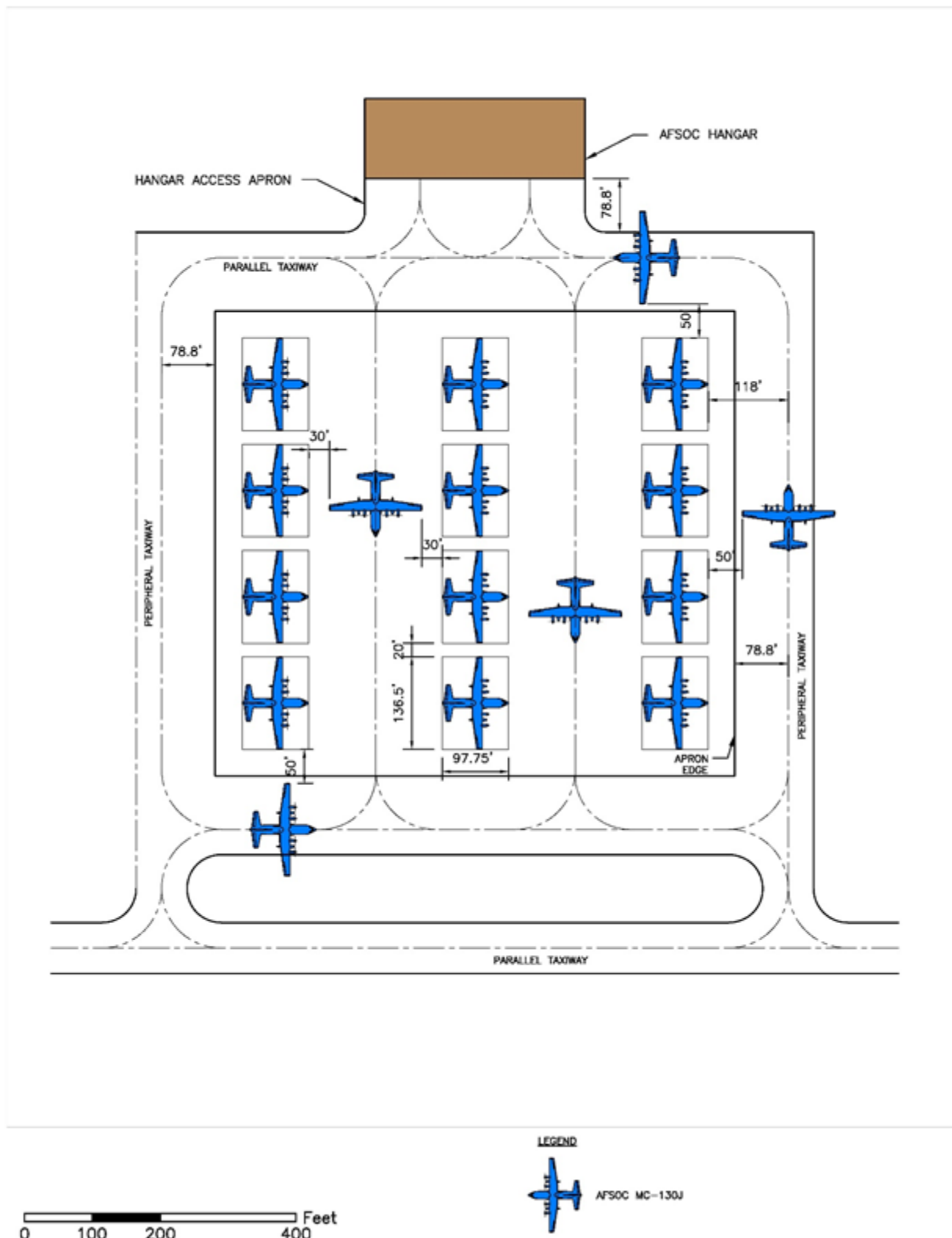
7.3.11.4.2. Scope Determination. Multiply the wingspan of the selected aircraft by its length. Multiply the product by a factor of 5.3 (DAFMAN 32-1094, CC 113321 Apron, Paragraph 1.3.7).

7.3.11.4.2.1. Access to Hangars, Docks, and Shelters. Apron configuration is influenced by the size of the door openings and by the dimensions and turning radius of the largest aircraft using the buildings. A mass apron or a taxiway configuration is used depending on access requirements. To avoid building non-usable pavement, design for adequate wingtip clearances of any obstacle near the apron. For the MC-130J the minimum length of apron to access hangars, docks, and shelters is 78.8 ft when accessed from through or peripheral taxilanes and 58.8 ft when accessed from an interior or secondary peripheral taxilane (UFC 3-260-01, Table 6-6, Item 1 & UFC 3-260-01, Table 6-1, Item 15). If the distance from the main operational pavement to the hangar exceeds 78.8 ft, consider constructing a maneuvering area immediately outside the hangar, large enough to allow the aircraft to turn around. The width of the hangar access area and maneuvering area should be equal to the width of the hangar door opening. Connect this maneuvering area to the main apron with a taxiway or towway.

7.3.11.4.2.2. Operational Aircraft. Operational aircraft are parked on mass aprons, strip aprons, or where authorized, on dispersed stubs. To determine how many operational aircraft require apron space, proceed as follows: Begin with 100 percent of the assigned aircraft as established by official documents; subtract the number of aircraft located on separate aprons, such as alert aircraft; subtract the number of aircraft located in maintenance hangars or docks under normal maintenance schedules; and finally, subtract aircraft that are parked elsewhere on existing paving of a suitable nature and location. (DAFMAN 32-1084, CC 113321, Paragraph 1.3.3). For planning purposes, this document assumes only PMAI are operational aircraft; thus, the requirements in this document reflect only PMAI calculations for facility requirements in facility summary tables.

7.3.11.4.2.3. Assigned Aircraft. Assigned aircraft consist, at a minimum, of the Primary Assigned Aircraft (PAA) inventory established from the funded flying program for the base. Many bases have other aircraft inventory that require a parking apron. This inventory varies by base and depot repair cycles. These aircraft may be annotated as backup inventory, ready reserve, or attrition reserve. Account for the monthly average of these non-primary assigned aircraft remaining on station in determining apron requirements (DAFMAN 32-1084, CC 113321, Paragraph 1.3.2). For planning purposes, summary tables in this instruction reflect operational squadron requirements or PMAI; therefore, BAI and PTAI are considered assigned aircraft that are not included in an operational squadron's facility requirements. However, the method for calculating assigned aircraft is the same: Begin with 100 percent of BAI/PTAI, subtract the number of aircraft on separate aprons, subtract

Figure 7.3.6. MC-130J Typical Parking Apron.



7.3.11.5. Paved Shoulders (CATCODE: 116642).

7.3.11.5.1. Requirements Determination. Paved shoulders are required for all operational pavements.

7.3.11.5.2. Dimensions. The total width of paved shoulders for the MC-130J is 50 ft (25 ft per side, UFC 3-260-01, Table 6-1, Item 11). The total width of paved and unpaved shoulders is 50 ft (UFC 3-260-01, Table 6-1, Item 10).

7.3.11.6. Towway.

7.3.11.6.1. Requirements Determination. When designing for access to a hangar, flare the pavement to the width of the hangar door from a distance beyond the hangar sufficient to allow maintenance personnel to turn the aircraft around.

7.3.11.6.2. Scope Determination. Width, towway turning radius, horizontal clearance from towway centerline to fixed or mobile obstacles, and vertical clearance from the towway pavement to fixed surface or mobile obstacles.

7.3.11.6.3. Width. The minimum towway width for the MC-130J is 24.25 ft (UFC 3-260-01 Table 5-6, Item 1): Width of towway for Air Force Facilities = outside gear width of towed mission aircraft + 10ft. MC-130J's outside gear width is 14.25 ft + 10 ft = 24.25 ft).

7.3.11.6.4. Turning Radius. The MC-130J towway turning radius is 150 ft (UFC 3-260-01, Table 5.6).

7.3.11.6.5. Horizontal Clearance. The minimum horizontal clearance from the towway centerline for the MC-130J is half the wingspan plus 25 ft ($132.6/2 + 25$ ft) or 91.3 ft (UFC 3-260-01, Table 5.6).

7.3.11.6.6. Vertical Clearance. The minimum vertical clearance from the towway pavement for the MC-130J is the aircraft height plus 10 ft ($38.5 + 10$) or 48.5 ft (UFC 3-260-01, Table 5.6).

7.3.11.6.7. Fillet Radius. The minimum fillet radius at intersections is 100 ft (UFC 3-260-01, Table 5.6).

7.3.11.7. Warm-up/Holding Pad (CATCODE: 1116660).

7.3.11.7.1. Requirements Determination. A warm-up/holding pad is authorized for each end of a runway.

7.3.11.7.2. Scope Determination. A warm-up/holding pad is authorized for each end of a runway sized to accommodate two of the largest aircraft assigned to a base (DAFMAN 32-1084, Paragraphs 2.1.13.2 and 2.1.13.4).

7.3.11.7.3. Dimensions. The minimum warm-up/holding pad for the MC-130J is 137,408 NSF. The area is based on parking apron criteria for two MC-130J aircraft.

7.3.11.8. Compass Calibration Pad (CATCODE: 116667).

7.3.11.8.1. Requirements Determination. The Air Force has the option to use the circular pad criteria provided in FAA Advisory Circular 150/5300-13, Appendix 4 (radius of 80 ft) or the square pad (120 ft x 120 ft) criteria from the UFC 3-260-01.

7.3.11.8.2. Scope Determination. The circular pad totals 20,106 NSF ($\pi 80^2 \text{ ft}^2$) and the square pad totals 14,400 NSF pad (120 ft x 120 ft = 14,400 NSF). Per TO 1C-130 (H/M) J-2-34-JG-10-1, Task 34-13-02 Calibration of Standby Magnetic Compass, the AC-130J is required to have a certified compass calibration area capable of 360-degree turns.

7.3.11.8.3. Dimensions. The minimum requirement for the compass calibration pad for the AC-130J is a square pad that totals 14,400 NSF and is 120 ft x 120 ft.

7.3.11.9. Aircraft Washrack (CATCODE: 116672).

7.3.11.9.1. Requirements Determination. The dimensions of the aircraft plus 15 ft clearances determine the minimum washrack pavement dimensions (UFC 3-260-01, Paragraph 6-14.3).

7.3.11.9.2. Scope Determination. The washrack area will be 97.75 ft (L) + 30 ft (clearance both sides) x 132.6 ft (W) + 30 ft (clearance both sides) = 22,130 NSF. A utility storage building of 240 NSF is also allowed for this facility (DAFMAN 32-1084, Paragraph 2.1.15.3; justified by UFC 3-260-01, Paragraph 6.14.4). Note that wash rack covers are considered equipment items to be purchased by the user and are not part of this CATCODE. Also, note that the lack of an indoor washrack can impact when aircraft washes are scheduled, but access to hot and cold water can help continue operations during inclement weather (per TO 1-1-691 Paragraph 3.5: where high outdoor temperatures are encountered (80°F/27°C and above) and an indoor wash rack is not available, cleaning operations should be scheduled for early morning, late afternoon, or night. Wet aircraft exteriors with fresh water before applying cleaners to cool surfaces and help prevent fast evaporation and drying of cleaners during hot weather. For cold weather procedures, refer to TO 1-1-691 Paragraph 3.5.2.6).

7.3.11.9.3. Dimensions. The minimum paved area for the MC-130J requires 20,773 NSF (127.75 ft [L] x 162.6 ft [W]). The utility storage allowed for this facility is 240 NSF.

7.3.11.10. Aircraft Rinse Facility.

7.3.11.10.1. Requirements Determination. MC-130J aircraft exposed to a salt-water environment require a CWR.

7.3.11.10.2. Scope Determination. A CWR can be performed manually by hand held hose or spraying equipment or by use of a taxi-through automated system. AFSOC MC-130J aircraft are equipped with DIRCM and therefore are not authorized a CWR taxi through facility.

7.3.11.11. Hydrant Fueling System (CATCODE: 121122).

7.3.11.11.1. Requirements Determination. Hydrant fueling systems are not required for the MC-130J; however, when hydrant fueling systems are available or specifically

authorized, follow the aircraft direct fueling system design criteria for large-frame aircraft as defined in UFC 3-460-01 Paragraph 4-4.2.3.

7.3.11.11.2. Dimensions. No Fuels Engineers exist within HQ AFSOC or its subordinate units. If a requirement is identified, existing engineering staff with support from the MAJCOM Fuels Management section, will reach out to technical experts such as the Air Force Fuels Engineer (HQ AFCEA/CEOA), HQ Air Force Petroleum Agency and DLA/DESC for development of specific dimensions. In general, this requirement is based on installation specific mission requirements and airframe specific upload rates.

7.3.11.12. Operating Storage, Jet Fuel (CATCODE: 124135).

7.3.11.12.1. Requirements Determination. Operating storage tanks for jet fuel are provided wherever dispensing facilities are remote from bulk storage tanks. Provide separate storage for each type and grade of fuel. For aviation activities, provide a minimum of two tanks for each type of fuel (UFC 3-460-01 Paragraph 8-3.3). Per the TO 1C-130(H_M)J-2-00GV-00-1 Paragraph 13.7.1, the recommended fuels for AFSOC MC-130J aircraft include JP-5, JP-8, Jet-A, Jet A-1, JP-4, Jet B, and TS1.

7.3.11.12.2. Dimensions. The capacity or size of each fuel storage tank is based upon the logistical and mission requirements for the weapon systems to be supported from it, thus the requirement will vary. Per UFC 3-460-01, Paragraph 8-3.4, general guidance is to provide a minimum of two tanks at aviation activities for each type of aviation turbine fuel. Assuming a requirement is identified, the appropriate Service Headquarters with DLA Energy approval will determine the number and size of tanks required.

7.3.11.13. Aircraft Truck Fueling Facility (CATCODE: 126925).

7.3.11.13.1. Requirements Determination. Truck fill stands are required at all Air Force installations where bulk petroleum products are stored and dispensed.

7.3.11.13.2. Scope Determination. The number of fill stands required depends on the number of trucks which must be loaded simultaneously. This is determined by the command having jurisdiction from a study of the mission and operation requirements.

7.3.11.13.3. Dimensions. Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1). Per DAFMAN 32-1084 Paragraph 2.2.17.4.1, a minimum of one outlet for each grade of fuel is necessary. Per the TO 1C-130(H_M)J-2-00GV-00-1 Paragraph 13.7.1, the recommended fuels for AFSOC MC-130J aircraft include JP-5, JP-8, Jet-A, Jet A-1, JP-4, Jet B, and TS-1. For specific projects, the appropriate Service Headquarters can assist in determining the number.

7.3.11.14. Cryogenics Storage (Liquid Oxygen Storage) (CATCODE: 442258).

7.3.11.14.1. Requirements Determination. MC-130J aircraft liquid oxygen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.3.11.14.2. Scope Determination. AFSOC only needs to store materials in cylinders. The portable oxygen bottle, which is ancillary mission equipment, is serviced with liquid oxygen typically stored in cylinders.

7.3.11.14.3. Dimensions. A cylinder that is 8 NSF (10 GSF).

7.3.11.15. Gaseous Nitrogen Storage.

7.3.11.15.1. Requirements Determination. MC-130J aircraft liquid gaseous nitrogen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.3.11.15.2. Scope Determination. AFSOC only needs to store materials in cylinders. The hydraulic system accumulators, landing gear oleo struts, multimode radar, emergency extend actuation system, and tires are all serviced with gaseous nitrogen. The portable nitrogen cylinder, P/N 55D6496, and the self-generating nitrogen servicing unit, P/N PD96LDEA/TILDD-05 are used for servicing and replenishment.

7.3.11.15.3. Dimensions. A cylinder that is 8 NSF (10 GSF).

7.3.11.16. Standard Host Installation Facilities.

7.3.11.16.1. Aerial Delivery Facility. See **paragraph 1.1.3.5.1**.

7.3.11.16.2. FARP Equipment Storage. See **paragraph 1.1.3.5.2**.

7.3.11.16.3. Deployment Processing Facility. See **paragraph 1.1.3.5.3**.

7.3.11.16.4. Airfield Ancillary Facilities. See **paragraph 1.1.3.5.4**.

7.3.12. Base Operations Ground Support - Pavement Requirements.

7.3.12.1. **Airfield.** Airfield mission and operational procedures have resulted in the development of six types of Air Force airfields: light, medium, heavy, modified heavy, auxiliary, and assault landing zone. The decision on which airfield type to design for is made by the appropriate MAJCOM. Airfield designs are generally based upon medium load criteria. The pavement for the MC-130J is classified as medium load, index 4, under the Aircraft Group Index in accordance with AFI 32-1041, Figure 4-1. Assault landing zone criteria should be used to design runways for C-130 training (UFC 3-260-02, Chapter 3, Paragraph 1D). The pavement capacity for an assault landing zone runway airfield has a maximum gross weight of 175,000 lbs (UFC 3-260-02, Table 3-1).

7.3.12.2. **Traffic Areas.** A layout of the MC-130J assault landing zone is not shown since all areas are Type A traffic areas and should be designed for a maximum weight of 175,000 lbs (UFC 3-260-02, Table 3-1).

7.3.12.3. **Paved Shoulders.** As a minimum, paved shoulders should be designed to support a load of 10,000 lbs imposed by a single wheel with a tire pressure of 0.69 MPa [100 psi] (UFC 3-260-02, Chapter 4, Section 7, Paragraph B).

7.3.12.4. **Hangar Floors.** See **Paragraph 7.3.15**, Maintenance Hangar.

7.3.12.5. **Pavement Thickness Requirements.** The MC-130J minimum base course pavement thickness required is 6 inches for flexible pavements (UFC 3-260-02, Table 8-5) and 4 inches for rigid pavements (UFC 3-260-02, Chapter 8, Section 8, Paragraph A).

Table 7.3.16. MC-130J Base Operations Ground Facility Space Requirements.

Cat Code	Facility	UM	MC-130J (6) ¹	MC-130J (9) ¹	MC-130J (15) ¹	DAFMAN 32-1084 Reference or Remarks/ Calculations
111-111	Runway - Length (min)	LF	3,500	3,500	3,500	Table 2.4 Runway Lengths: The minimum length for a C-130 landing zone runway is 3,500 ft.
111-111	Runway - Width	LF	150	150	150	UFC 3-260-01 Table 3-2: Class B Air Force airfield runway width, not otherwise specified shall be 150 ft.
111-115	Paved Overrun - Length	LF	1,000	1,000	1,000	CC 111115 Paved Overrun, Table 1: Runways require 1,000 ft overrun on each end.
111-115	Paved Overrun - Width	LF	150	150	150	CC 111115 Paved Overrun, Table 1: Overrun is same width as the runway. Class B runway width is 150 ft wide.
112-211	Taxiway Width	LF	75	75	75	UFC 3-260-01 Table 5.1: Fixed-Wing Class B runway taxiway width 75 ft.
112-211	Paved Taxiway Shoulder - Width	LF	25	25	25	UFC 3-260-01 Table 5.1: Fixed-Wing Class B runway taxiway shoulder width is 25 ft on each side.
113-321	Aircraft Parking Apron	NSF	274,816	480,928	824,448	CC 113321 Apron, Paragraph 1.3.7: Multiply the wingspan of the selected aircraft by its length. Multiply the product by a factor of 5.3. MC-130J dimensions are 97.75 ft (L) x 132.6 ft (W) = 12,963 NSF x 5.3 = 68,704 NSF/aircraft. To calculate the required apron parking spaces subtract the covered maintenance spaces from the PMAI (does not include BAI, training, or transient aircraft); therefore, 6 PMAI= 4 apron spaces; 9 PMAI= 7 apron spaces; and 15 PMAI= 12 apron spaces.

113-321	Apron Paved Shoulder - Width	LF	25	25	25	UFC 3-260-01 Table 6.1. Fixed-Wing Aprons on Class B runways paved shoulder width 25 ft.
113-321	Apron for Access to Hangars, Docks, Shelters	LF	125	125	125	UFC 3-260-01 Table 6-6: Air Force Hangar Access Apron for fixed-wing aircraft 125 ft.
116-116	Short Takeoff & Landing Zone - Length	LF	3,000	3,000	3,000	UFC 3-260-01, Table 7.2: 3,000 ft.
116-116	Short Takeoff & Landing Zone - Width	LF	60	60	60	UFC 3-260-01, Table 7.2: 60 ft.
116-642	Paved Shoulders for Fixed Wing Class B Runway	LF	25	25	25	UFC 3-260-01, Table 3-2: Air Force Class B runways require a paved shoulder width of 25 ft on each side.
	Towway - Width	LF	25	25	25	UFC 3-260-01, Table 5-6: Width of towway for Air Force Facilities = (outside gear width of towed mission aircraft) + 10ft. MC-130J's outside gear width is 14.25 ft + 10 ft = 24.25 ft. (Rounded up to 25 ft). Total width of shoulders (paved and unpaved) = 25ft. Towway width with shoulders would be 25 ft + 25 ft = 50 ft.
116-666	Pad, Warm-up/Holding	NSF	137,408	137,408	137,408	CC 116666 Pad Warm up/Holding, Paragraph 1.4: MC-130J area based on parking apron criteria for two aircraft.
116-667	Compass Calibration Pad	NSF	14,400	14,400	14,400	UFC 3-260-01: Figure 6-29. Army and Air Force Compass Calibration Pad. These are square pads 120 ft x 120 ft = 14,400 NSF.

116-672	Aircraft Washrack	NSF	20,773	20,773	20,773	UFC 3-260-01 Paragraph 6.14.2: The dimensions of the aircraft plus the clearances shown in CG 61 Admin Overview Table 1.4 (15 ft) determine the minimum washrack pavement dimensions. Clearances from aircraft to curb is 15 ft. Washrack area would be length (97.75 ft + 30 ft) x width (132.6 ft + 30 ft) = 20,773 NSF.
116-672	Aircraft Washrack Utility Bldg.	GSF	300	300	300	Paragraph 2.1.15.3: Allows a utility storage building of 240 NSF x 1.25 = 300 GSF.
126-925	Aircraft Truck Fueling Facility	EA	2	2	2	Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1).
442-258	Cryogenics Storage (Liquid Oxygen Storage)	GSF	10	10	10	MC-130J aircraft liquid oxygen storage requirements do not typically drive facility requirements beyond what is required by the host installation. AFSOC only needs to store materials in cylinders. Calc. = 8 EA x 1.25.
	Gaseous Nitrogen Storage	GSF	10	10	10	MC-130J aircraft gaseous nitrogen storage requirements do not typically drive facility requirements beyond what is required by the host installation. AFSOC only needs to store materials in cylinders. Calc. = 8 EA x 1.25.
Airfield Paving (w/o Runways and Overruns)		NSF	447,397	653,509	997,029	
Total Airfield Paving		NSF	1,122,397	1,328,509	1,672,029	
Total Indoor Facilities		GSF	320	320	320	

Notes:

1. Number of PMAI. 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 15 PMAI = 17 total aircraft (2 BAI).
2. See **paragraph 1.1.3.5** for more information on base ground operating facilities assumptions for facilities assumed to be existing and adequate at existing airfields.

7.3.13. MC-130J Training System Facilities.**7.3.13.1. Flight Simulator Training (CATCODE: 171212).**

7.3.13.1.1. Requirements Determination. This facility houses aircraft flight simulators, and other special training devices. It also includes space for administration and records, classrooms, toilet facilities, trainer maintenance, and storage (DAFMAN 32-1084, CC 171212 Flight Simulator Training, Paragraph 1.1). Flight simulator training facilities are normally sized according to the type of simulator installed and vary considerably in floor area from one system to another.

7.3.13.1.2. Dimensions. DAFMAN 32-1084, CC 171212 Flight Simulator Training, Table 1.1 provides examples of typical simulator training facilities that can be used for initial planning purposes before specific requirements are identified. [Table 7.3.21](#) gives the facility requirements specific to the MC-130J.

7.3.13.1.3. Reference. [Table 7.3.19](#) lists the training systems for the MC-130J by location type. A breakdown of space requirements in scenarios ranging from 5-13 PMAI is included in [Table 7.3.20](#). A brief description of the space requirements and facility recommendations for flight simulator training is included below.

7.3.13.2. MC-130J Training Systems. Training will be conducted at each MC-130J base utilizing the WST, Enhanced Integrated Cockpit Systems Trainer (EICST), Load Master Part Task Trainer (LMPTT), and an Engine and Propeller Trainer (EPT); however, initial and requalification training will utilize the WST, EICST, LMPTT, and a Loadmaster Fuselage Trainer (LFT), and is normally performed at Training Center locations. A LFT is not currently planned for the operational unit locations, but an existing FuT could be used at its existing location to support MC-130J training.

7.3.13.2.1. WST. The WST is a maintenance and aircrew training system for the MC-130J. The WST features a flight compartment and EMM system that simulates a variety of MC-130J mission scenarios. A simulator bay is required to house the WST. It is highly recommended that the simulator bay includes a 2-ton crane at a minimum height of 29 ft off the floor (C-130J Training Facilities Report, Paragraph 2.2.5). The overhead crane is ideal though not required; however, the simulator bay at a minimum should have an exterior access door opening of 20 ft (W) x 22 ft (H) and a maintenance access door minimum 8.2 ft (W) x 9.8 ft (H) (C-130J Training Facilities Report, Table 23). The total weight load supported by the simulator bay floor is 37,800 lbs (C-130J Training Facilities Report, Table 2-5). Adjacent to the simulator bay should be areas for computer, supply, and maintenance rooms. See [paragraph 7.3.13.2.8.1](#) for other design considerations regarding this WST bay. The recommended space allocation for this facility can be found in [Table 7.3.20](#).

Table 7.3.17. Building Utility System Requirements for WST Bay.

System	Requirements
Mechanical	The simulator bay should be maintained between 60-80°F (15-27°C) at a relative humidity of 40-60% (non-condensing), both above and below the floor. In facilities where the EMM cabinet is stored within the simulator bay, the ambient temperature should not exceed 75 °F (24°C) to avoid damaging the electronics within the EMM cabinet. A typical 10-ton water air conditioning unit, based on the maximum ambient conditions listed above, provides a nominal cooling capacity of 120,000 BTU/hr (35.0 kW). Lighting intensities should provide 50 foot-candles (approximately 500 lux) of total illumination measured 3 feet above the floor. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	The power requirement for the flight compartment is 400/230 VAC, 3-phase, 60 Hz, 5 wire, 6.5 kVA circuit. The power requirement for the EMM Cabinet is 480 VAC, 3-phase, 4 wire, 80 kVA circuit. The power requirement for the Cockpit Air Conditioner is a 480 VAC, 3-phase, 5-wire, 5 kVA circuit. The power requirement for the Electric Load Units is 400/230 VAC, 3-phase, 60 Hz, 5 wire, 6 kVA circuit. The facility should provide 120V, 1-phase, and 20-amp outlets at various locations around the simulator bay for installing service equipment. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification system requirements.
Plumbing	The simulator bay water supply requirements include an air conditioner maximum flow demand of 20 GPM, a water supply maximum temperature of 45°F (7°C), and a water supply minimum and maximum pressures of 25 psi and 125 psi respectively. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is recommended, although a wet-pipe system is an acceptable alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.

Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.3.13.2.2. WST Computer Room. The WST computer room houses all electronic cabinets and other electronic or computer equipment for the WST. It will include the following: a power cabinet, visual image generator cabinets, a visual operating workstation, a host control computer and peripherals, a UPS, a fire protection system, electrical grounding, a room air conditioner, a PDU, and a raised computer floor. The recommended computer room door size is 6 ft (W) x 7 ft (H) (C-130J Training Facilities Report, Table 2-17) and the computer floor should have a minimum of 12 inches of clear height from the true floor to the underside of the raised floor with no obstructions (C-130J Training Facilities Report, Paragraph 2.11.3). See paragraph [7.3.13.2.8.6](#) for other design considerations regarding this WST Computer Room. The recommended space allocation for this facility can be found in [Table 7.3.20](#).

Table 7.3.18. Building Utility System Requirements for WST Computer Room.

System	Requirements
Mechanical	The computer room shall be maintained at 65-75°F (18-24°C) at a relative humidity of 40-60% non-condensing, both above and below the floor. Air conditioning requires a minimum of 60,000 BTU/hr capacity under the computer room floor to provide cooling for the equipment cabinets. A constant pressure flow of cooling air should be maintained at all times to prevent damage to the equipment. The computer room air conditioning system should be separate from other building air conditioning systems. A capacity of 70,000 BTU/hr is sufficient to meet the above floor temperature requirements for the computer room. Lighting intensities should provide 50-75 foot-candles of total illumination measured 30 inches above the floor. Light should generally be of the recessed florescent type. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Electrical power should be separate from the air conditioning, lighting, or other facility/computer room electrical systems. Electrical service will be either 480/277V 3Ø/5W/60Hz or 400/230V 3Ø/3W/60Hz (Ground wire is equal in size to the phase conductors) should be provided for all computer equipment. The service should be rated to supply a minimum of 150 Amps. The service should be maintained within $\pm 10V$, at a frequency of 60 Hz $\pm 0.5Hz$. A computer service ground plate should be provided and wall mounted below the raised floor. Emergency power off switches should be provided. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification system requirements.

Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is recommended, although a wet-pipe system is an acceptable alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.
Communications	Provide Communication requirements in accordance with UFGS Division 27 - Communications, Division 33 - Utilities and UFC 3-580-01 for designing and implementing of interior and exterior telecommunications infrastructure for military construction. This infrastructure typically includes telecommunications spaces, pathways, cabling and interconnecting components. The design of interior telecommunications infrastructure is a specialized technical area. This provides general guidance to those parties tasked with implementing existing and emerging interior telecommunications infrastructure requirements. The basic requirements follow industry standards. Due to service-specific unique operating requirements and existing infrastructure and topology, this instruction includes a chapter for each service.

7.3.13.2.3. **EICST**. The EICST is a multiple role trainer supporting a pilot, CSO, and maintenance training tasks. It consists of a trainer room and a computer room. The trainer room houses the trainer cockpit, instructor station, module board, and air interface monitor (AIM) board. The computer room shall house the computers, peripherals, power cabinet, visual system's cabinets, and associated electronic equipment (EICST Production Specification, Paragraph 3.5). The recommended space allocation for this facility can be found in [Table 7.3.20](#).

7.2.13.2.4. **EPT**. The EPT consists of inert components that replicate the components of the engine and propeller system to train the applicable maintenance tasks. The EPT requires a bay that is 47' (W) x 48' (L) x 35' (H) and an external access door that is 14' (W) x 10' (H). The EPT does not require a separate air conditioning system. Facility air conditioning system furnishes the air for the EPT bay. The EPT bay should be maintained at 14-95 degrees F (non-operating) at a relative humidity of 80% non-condensing. The EPT itself does not require power; however, facility-provided power is required to support provide power to the IOS computer, IOS monitor, network interface computer, and the AIM. Power distribution for the IOS/AIM consists of an AC power distribution panel located in the IOS, where single phase, 240V power is distributed to five 20 amp, 120V circuits that provide power to support equipment.

7.3.13.2.5. VTRAT. The VTRAT will be located inside a room that can support trainees, instructors, and computer equipment. The cooling requirements for the VTRAT are similar to most simulators and should not be overlooked due to the small size of this simulator. The recommended space allocation for this facility can be found in [Table 7.3.20](#).

7.3.13.2.6. NVG. The space required for NVG training should be large enough to support trainees, instructors, and NVG equipment. The equipment for NVG does not require much more than desk space for students and the instructor. Lighting should also be considered to assure the equipment is being used in an environment dark enough to meet training requirements. The recommended space allocation for this facility can be found in [Table 7.3.20](#).

7.3.13.2.7. PFPS. This facility needs a dedicated space that can fit multiple users and workstations. The recommended space allocation for this facility can be found in [Table 7.3.21](#).

7.3.13.2.8. Dimensions. See [Table 7.3.20](#) for the space requirements for the individual spaces within a training systems facility.

7.3.13.2.9. Design Considerations.

7.3.13.2.9.1. Simulator Bay. Ensure adequate grounding to device specifications. Provide perimeter lighting for accessibility. For facility A/C, ensure the bay A/C is on the side walls and not over the simulator (to avoid condensation dripping on visual domes) and make sure there is a condensation drain. For simulator cockpit A/C, design in some flexibility to accommodate different types of A/C units (i.e. split unit, package unit, or chilled water) and make sure there is a condensation drain. Provide a separate trench from the anticipated cockpit A/C location to edge of the reaction pad. Do not install ceiling tiles because they are not accessible once the device is installed. Provide electrical disconnects for the UPS, drawbridge, and cockpit A/C unit, etc. Determine device/squadron requirements for a back-up power generator. Provide space within the bay for storage. Provide double doors into the bay, computer room, maintenance area, front entrance, and any supply points and suggest only one point of entry into the open storage area. Install an overhead 2-ton crane with variable speeds and a crane control cable on a remote cable from the hoist. Ensure that there is a sprinkler connection on the wall of the bay for a sprinkler pipe under the device (not required for electric motion; required for hydraulic motion).

7.3.13.2.9.2. Device/Simulator. Be very clear on who will provide the stairs or platform for the device (either MILCON or the device provider). Make the device orientation design flexible because the vendor may not be the same as the vendor under design. Determine who will provide the UPS (normally vendor provided but make sure) and that it is adequately sized.

7.3.13.2.9.3. Communications and SIPR. Understand the proposed comprehensive interior design layout so that SIPR conduit can be installed in accordance with UFGS 27 05 29.00 10 & AFSSI 7703. This includes ensuring furniture/equipment

will not block access for inspection requirements and should consider the separation of secure and unsecure communication lines.

7.3.13.2.9.4. IDS, ACS, and CCTV. These items are not provided by the MILCON project and are installed during construction. End user organizations are required (pre-design) to staff all IDS/ACS/CCTV requirements through the local Security Forces Squadron NCOIC to the AF Security Forces Center for validation/funding. MILCON scope will provide power and pathways only, not installation, procurement, or processing of systems/devices. Define IDS/ACS/CCTV requirements early so that the infrastructure can be installed during construction. Ensure walls and doors meet the security requirements for the open-standards architecture approach.

7.3.13.2.9.5. Classroom. Provide ceiling power (junction boxes/outlets) for projectors, split ballast for front lighting in classrooms and debrief areas (overhead projectors), and dual whiteboards: One under automated projector screen, the other on a side wall.

7.3.13.2.9.6. Computer Room. Ensure there is adequate grounding for all computer room equipment (provide a grounding bar under the isolated ground room floor). Provide electrical disconnects for proposed computer room layout (PDU, UPS, etc.). Ensure chiller and condensing units be adequate for proposed computer room layout based on equipment heat output. The emergency power off switch in the isolated ground room should be dual purpose for AC/DC power and the UPS. Provide ultra-sensitive smoke detection as provided in AFMAN 91-118. Make sure trenches penetrate the walls between the computer room and bay. Provide a communications closet that complies with UFGS Division 27 - Communications and Division 33 - Utilities. The AFCEC Fire Protection Office has determined that cabling associated with a flight simulator or other non-building equipment does not factor into the underfloor suppression requirement related to plenum-rated cable. For protecting electronic equipment from smoke and fire, refer to ETL 01-18.

7.3.13.2.9.7. Structure. The WST facility shall be identified as Risk Category III based on ACSE 7.

7.3.13.2.10. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

Table 7.3.19. MC-130J Training Systems by Location Type.

Simulator Type	Number for Training Systems (CONUS)				Number for Training Systems (OCONUS)		
	Training Center ¹	5 PMAI	9 PMAI	13 PMAI	5 PMAI	9 PMAI	13 PMAI
WST ²	2	1	1	1	1	1	1
EICST	1	1	1	1	-	-	-
LMPTT	1	1	1	1	1	1	1
VTRAT	2	1	1	1	1	1	1
PFPS	2	1	1	1	1	1	1
NVG	1	1	1	1	1	1	1

Notes:

1. Training Center locations are CONUS only.
2. WSTs are currently being programmed for OCONUS locations.

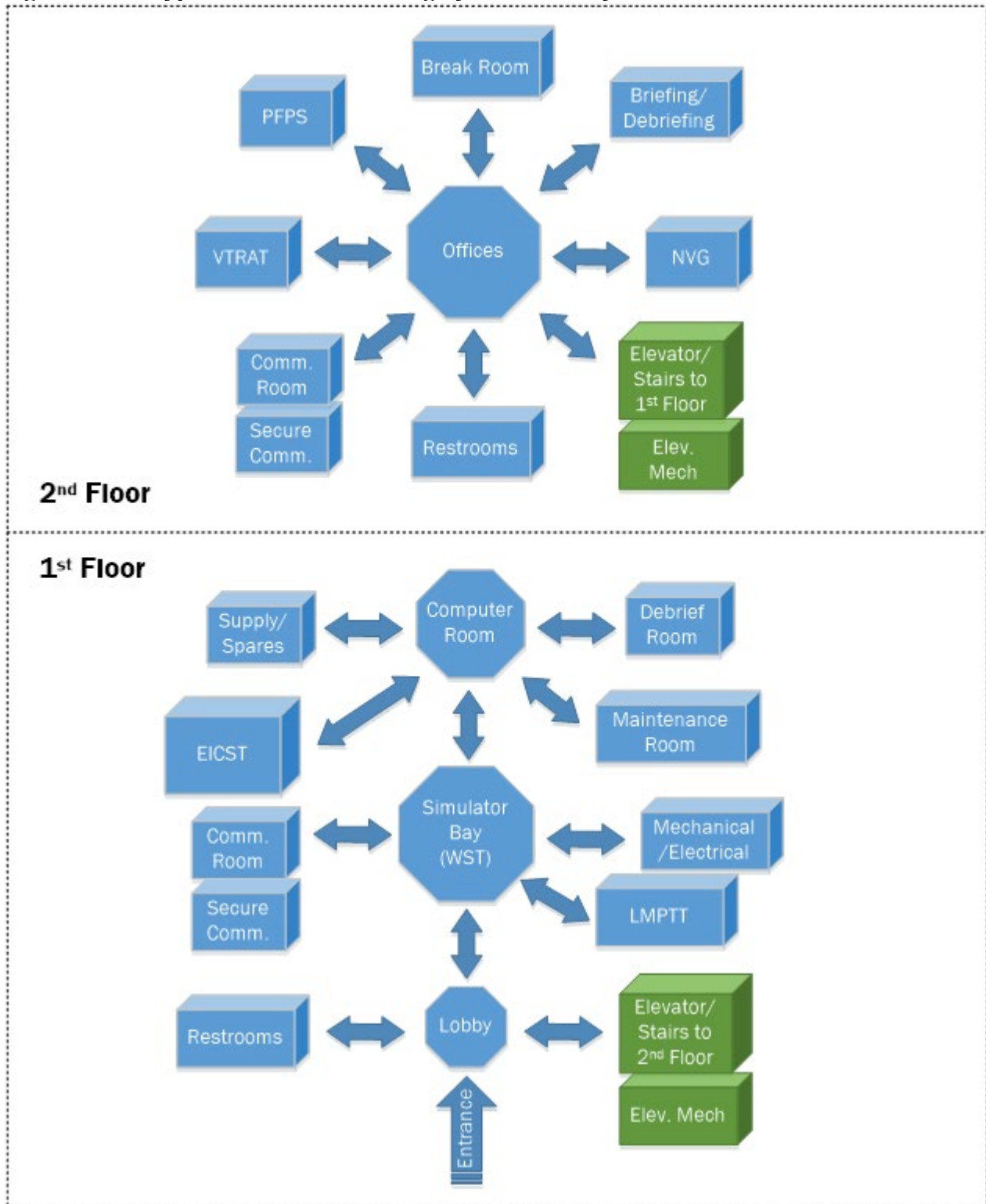
Figure 7.3.7. Typical MC-130J Training Systems Facility.

Table 7.3.20. MC-130J Training Systems Facility Space Requirements.

Cat Code	Facility	UM	MC-130J (6) ¹	MC-130J (9) ¹	MC-130J (15) ¹	DAFMAN 32-1084 Reference or Remarks/Calculations
171-212	Instructor Offices ²	NSF	425	425	425	AFSOC/A4I: 6 PN required. 1 Type D for supervisor, 5 Type E for others. 100 NSF min for Type D Offices. ⁵ 65 NSF min for Type E Offices. ⁶
171-212	Contractor Offices ²	NSF	425	425	425	AFSOC/A4I: 6 PN required. 1 Type D for supervisor, 5 Type E for others. 100 NSF min for Type D Offices. ⁵ 65 NSF min for Type E Offices. ⁶
171-212	WST ²	NSF	2,500	2,500	2,500	AFSOC/A4I: The standard AFSOC simulator bay size is size 50' (W) x 50' (L) x 50' (H) to allow flexibility between devices and weapon systems. Larger spaces will be provided to support minimum device specifications only.
171-212	EICST ²	NSF	1,200	1,200	1,200	MC-130J MATS: EICST dimensions are 20' (W) x 60' (L).
171-212	LMPTT ^{2,3}	NSF	192	192	192	C-130J MATS Figure A-1: LMPTT is in a room that is 12' x 16'.
171-212	PFPS ²	NSF	384	384	384	Hurlburt Simulator Facility: 16' x 24'
171-212	VTRAT	NSF	300	300	300	Hurlburt Simulator Facility: 15' x 20'
171-212	NVG	NSF	100	100	100	Hurlburt Simulator Facility: 10' x 10'
171-212	Computer Room	NSF	600	600	600	AFSOC/A4I: Computer Room 20' (W) x 30' (L) x 8' (H).
171-212	Maintenance Area	NSF	300	300	300	AFSOC/A4I: Maintenance Room 15' (W) x 20' (L) x 10' (H).
171-212	Supply Spares	NSF	160	160	160	AFSOC/A4I: 10' (W) x 16' (L) x 8' (H).
171-212	Brief/Debrief Rooms	NSF	600	600	600	AFSOC/A4I: 15' (W) x 20' (L) x 10' (H); 2 rooms, 300 NSF each.
171-212	Instructor Break Room	NSF	100	100	100	16% Occupants x 18 NSF, minimum of 100 NSF. ⁷
171-212	Student Break Room	NSF	100	100	100	16% Occupants x 18 NSF, minimum of 100 NSF. ⁷
171-212	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Secure Comm. Rm	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.

171-212	Common Areas	NSF	0	0	0	Included in NSF to GSF conversion. ⁸
171-212	Mech. and Elec. Rooms	NSF	0	0	0	Included in NSF to GSF conversion. ⁸
171-212	Admin. Support Space	NSF	240	240	240	AFSOC/A4I: default is 20 sf per person. ⁹
171-212	Admin. Circulation	NSF	109	109	109	Max 10% of Administrative Space ¹⁰
171-212	Special Purpose Circulation	NSF	682	682	682	Max 10% of Special Purpose Space ¹⁰
Total Training System Facility		NSF	8,705	8,705	8,705	
Total Training System Facility		GSF	10,882	10,882	10,882	Net to Gross conversion factor of 1.25.

Notes:

1. Number of PMAI. 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 15 PMAI = 16 total aircraft (1 BAI).
2. These simulators require the area specified in the remarks column for clear space in the simulator room. Building structural, mechanical, and electrical equipment shall be clear of the simulator area.
3. Provide a minimum height of 8'. Requires a 36" doorway for access, 20-amp power circuits, room temperature between 60 and 80 degrees Fahrenheit, and 20-80% relative humidity (non-condensing).
4. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons.
5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.
6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
7. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
8. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2
9. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3.
10. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

7.3.14. MC-130J Operations Facilities.**7.3.14.1. Squadron Operations (CATCODE: 141753).**

7.3.14.1.1. Requirements Determination. Each squadron needs an operational building for administration, scheduling, training, briefing, personal equipment maintenance, and storage for aircrews.

7.3.14.1.2. Scope Determination. Space must be provided for the commander and staff. Space is required for AFE systems maintenance and the care, storage, and issue of flying clothing and equipment for each crew member. Space is required for an operations officer to direct flight operations and for intelligence, mission planning,

computers, radar and navigation, photos and maps, briefing room, locker area, and radio and electronic countermeasures. The recommended space allocation for this facility can be found in [Table 7.3.22](#). See [paragraph 1.1.3.6](#) for more information about the unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within squadron operations facilities.

7.3.14.1.3. Typical MC-130J Operations Squadron Composition. Includes a commander, first sergeant, command staff, operations officer, assistant operations officer, flight chiefs, standardization and evaluation, safety, security, current operations, flight planning, flight management, publications, scheduling, training, ARMS, plans, tactics, and intelligence. This facility will also include an armory (which can be located at LRS), a mission control center, an operations/training classroom, and briefing rooms.

7.3.14.1.4. Security Considerations. Secure plans, weapons and tactics, intelligence require a SCIF. Conference and briefing rooms as well as the mission control center require open storage up to the SECRET level.

7.3.14.1.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

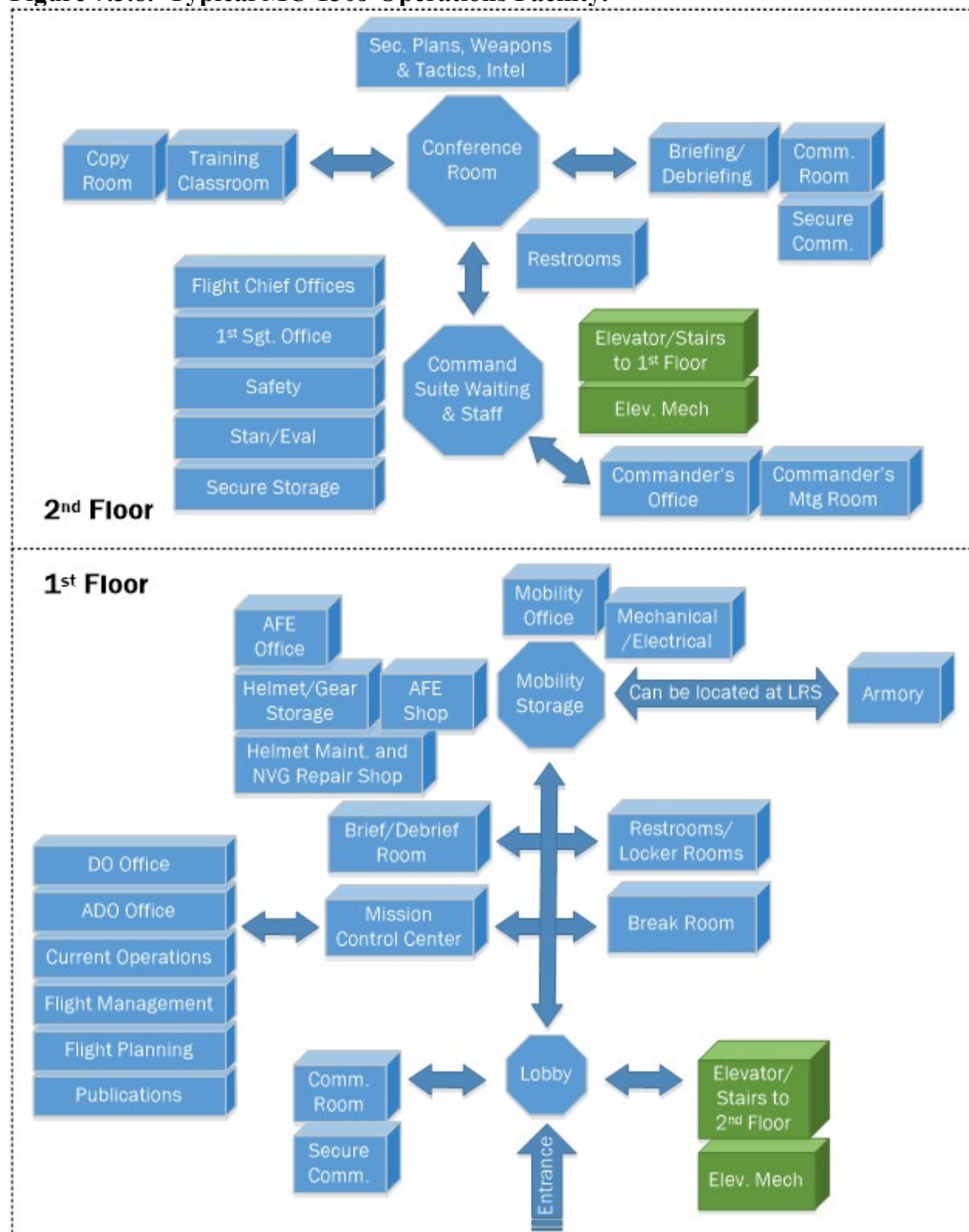
7.3.14.1.5.1. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

7.3.14.1.6. Dimensions. See [Table 7.3.22](#) for the individual spaces within an MC-130J operations facility. See [Paragraph 7.3.9](#) (Operational Squadron Characteristics) for the notional manning of MC-130J squadrons sized for 6, 9, and 15 PMAI.

Table 7.3.21. Building Utility System Requirements for Operations Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.

Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.3.8. Typical MC-130J Operations Facility.**Table 7.3.22. MC-130J Operations Facility Space Requirements.**

Cat Code	Facility	UM	MC-130J (6) ¹	MC-130J (9) ¹	MC-130J (15) ¹	DAFMAN 32-1084 Reference or Remarks/Calculations

141-753	Command Suite - Commander	NSF	140	140	140	140 NSF min for Type C Offices. ⁴
141-753	Command Suite - First Sergeant	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Command Suite - Command Staff	NSF	160	160	160	2 PN waiting area plus 1 office. Waiting area is 20 NSF per person. ⁶ 100 NSF min for Type D Offices. ⁴
141-753	Director of Operations ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Assistant Ops Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Senior Enl. Manager ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	POTFF Office	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Current Operations ²	NSF	325	325	455	One aircrew scheduler per Loadmaster position (2) plus mission schedulers at 3 PN (6-9 PMAI) and 5 PN (12 PMAI). Total PN 6-9 PMAI = 5 PN; 16 PMAI = 7 PN. 65 NSF min for Type E offices. ⁵
141-753	Flight Planning	NSF	255	285	410	Provide 2 NSF of storage per aircrew x #PMAI. 6 PMAI = 2 PN, 9 PMAI = 3 PN, 16 PMAI = 4 PN. 65 NSF min for Type E offices. ⁵
141-753	Flight Mgmt. ²	NSF	280	280	280	Assume 2 PN plus flight planning tables and storage area of 150 NSF. 65 NSF min for Type E offices. ⁵
141-753	Aviation Resource Mgmt. ²	NSF	260	260	325	6 PMAI = 4 PN, 9 PMAI = 4 PN, 15 PMAI = 5 PN. 65 NSF min for Type E offices. ⁵
141-753	Secure Plans, Weapons & Tactics, Intel, SCIF ²	NSF	930	1,395	2,325	1 SOW: Located in 2,246 NSF at B91259. Calculated as 155 NSF x #PMAI.
141-753	Flight Chief Offices ²	NSF	300	300	300	AFSOC/A3: Provide space for 3 chiefs. 100 NSF min for Type D Offices. ⁴
141-753	Stan/Eval ²	NSF	260	260	390	Assume 4 PN for 3 PMAI, 4 PN for 9 PMAI, and 6 PN for 12 PMAI. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices.

141-753	Training Office	NSF	184	184	184	Assume 2 PN: Chief/NCOIC (Type D) and Training PN (Type F). 100 NSF min for Type D offices. ⁴ 48 NSF min for Type F offices. ⁵
141-753	Safety Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Security Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
141-753	Medical Offices	NSF	230	230	230	Per A1M, assume 3 personnel total per squadron integrated from SOSS. 1 officer (Type D), 2 enlisted (Type E). 100 NSF min for Type D offices. ⁴ 80 NSF for Type E offices. ⁵
141-753	Publications ²	NSF	255	285	410	Provide 10 NSF of storage per PMAI. 6 PMAI = 2 PN, 9 PMAI = 3 PN, 16 PMAI = 5 PN. 65 NSF min for Type E offices. ⁵
141-753	Armory/Weapons Vault	NSF	336	504	840	353 SOG: 17 SOS Armory, room 154, is in 279 NSF. Calculated as 56 NSF x #PMAI. This facility can be located with the squadron or LRS.
141-753	Mobility/Supply Storage	NSF	1,800	2,700	4,500	1,500 NSF for 5 PMAI mobility storage. Calc. = 300 NSF x #PMAI.
141-753	Mobility Office ²	NSF	192	192	240	AFSOC/A4I: Based on assigned PN at 48 NSF each. Assumed 4 PN for 6-9 PMAI & 5 PN for 16 PMAI.
141-753	AFE Offices ^{2,3}	NSF	288	432	720	1 PN per PMAI. 48 NSF min for Type F offices.
141-753	AFE Shop ³	NSF	540	810	1,350	Minimum shop space is 200 NSF (Calc.= 50 NSF x #PMAI) plus 40 NSF x #PMAI for helmet and gear storage.
141-753	Mission Control Center ²	NSF	500	500	500	353 SOG: Located in 514 NSF. Provide 500 NSF for all scenarios
141-753	Training Classroom	NSF	240	270	420	AFSOC/A4I: 240 NSF minimum. Total unit authorization is 3 NSF per military PN. 6 PMAI= 77 PN; 9 PMAI= 105 PN; 15 PMAI=162 PN.
141-753	Secure Storage	NSF	20	20	20	Two, five-drawer safes (4' x 5').
141-753	Supply Room	NSF	100	100	100	Provide 100 NSF.
141-753	Break Room	NSF	222	302	467	16% of occupants x 18 NSF. ⁶

141-753	Conference Room	NSF	500	1,150	1,350	Size based on number of personnel in the squadron. 50-99 personnel, provide one team room for up to 10 persons. 100-149 personnel, provide two team rooms for up to 10 persons each. Add a 10-person room for populations over 150. ^{7,8}
141-753	Commander Meeting Rm	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. 15 NSF/person. ⁷
141-753	Team Room	NSF	150	300	450	Size based on number of personnel in the squadron. 50-99 personnel, provide one team room for up to 10 persons. 100-149 personnel, provide two team rooms for up to 10 persons each. Add an additional team room for populations over 150. ^{7,8}
141-753	Briefing & Debriefing	NSF	300	300	300	Assume two, 10-person rooms. 15 NSF per justified person. ⁷
141-753	Individual Equipment Storage	NSF	720	1,088	1,808	Ops facility lockers for MC-130J require 4' x 4' cage per flight crew member. 6 PMAI= 45 PN; 9 PMAI = 68 PN; 15 PMAI = 113 PN.
141-753	Men's Locker Rm.	NSF	168	252	420	Calculated as $21/3 \times 0.8 \times \#PMAI \times 5$ NSF.
141-753	Women's Locker Rm.	NSF	42	63	105	Calculated as $21/3 \times 0.2 \times \#PMAI \times 5$ NSF.
141-753	Men's Showers	NSF	120	150	210	Provide 4 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
141-753	Women's Showers	NSF	60	90	150	Provide 2 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
141-753	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Secure Comm. Rm.	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Elevator	NSF	80	80	80	Provide 80 NSF.
141-753	Elevator Equip. Room	NSF	90	90	90	Provide 90 NSF.
141-753	Restrooms and Janitor's Closet	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹

141-753	Mech/Elec Rooms	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
141-753	Admin. Spt. Space	NSF	900	960	1,260	AFSOC/A4I: default is 20 sf/ person. ¹¹
141-753	Admin. Circulation	NSF	535	605	806	Max 10% of Administrative Space ¹⁰
141-753	Special Purp. Circulation	NSF	683	970	1,435	Max 10% of Special Purpose Space ¹⁰
Total Operations		NSF	13,398	17,322	24,651	
Total Operations		GSF	16,747	21,652	30,814	Net to Gross conversion factor of 1.25.

Notes:

1. Number of PMAI. 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 15 PMAI = 16 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used, with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. For planning purposes, AFE facility requirements for AFSOC squadrons are split between the SOSS centralized AFE facility and the squadron operations facility. If consolidated within the SOSS facility, the AFE facility requirements listed in this table are not additive to the existing SOSS AFE facility allowance.
4. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.
5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
7. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.4.
8. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.5
9. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2
10. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3
11. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

7.3.15. Maintenance Hangar Facilities.**7.3.15.1. Maintenance Hangar (CATCODE: 211111).**

7.3.15.1.1. Requirements Determination. Hangars support aircraft maintenance, repair, and inspection activities that are most efficiently done under complete cover. The interior design of covered shelters must include the clearances between aircraft and door openings, walls, ceilings, and parking clearances between other aircraft.

7.3.15.1.2. Scope Determination. Determine the square footage requirements for maintenance hangars by the method described below for computing covered maintenance spaces:

7.3.15.1.2.1. Calculate the number of authorized covered maintenance spaces for the AC-130J by multiplying the total number of PMAI, BAI, and training aircraft by a factor of 0.15 (rounded to the nearest whole number). See [Table 7.3.23](#) for

calculating the required number of spaces for 4, 8, and 16 PMAI.

7.3.15.1.2.2. To determine the interior dimensions of dock and hangar bays, use the dimensions of the aircraft plus the minimum clearances shown in [Table 7.3.24](#). To compute the gross area of the hangar, multiply the interior dimensions by a factor of 1.15 (DAFMAN 32-1084, CC 211111 Hangar Maintenance, Paragraph 1.3.4); however, to account for additional space required for hangar door pockets, use a factor of 1.25.

Table 7.3.23. MC-130J Covered Aircraft Maintenance Spaces.

Aircraft	PMAI	BAI	PTAI	Total Aircraft x MC-130J Factor	Required Covered Spaces (rounded)
MC-130J	6	1	-	$7 \times .15 = 1.05$	1
MC-130J	9	1	-	$10 \times .15 = 1.5$	2
MC-130J	15	2	-	$17 \times .15 = 2.55$	3

Table 7.3.24. MC-130J Aircraft Separation Dimensions inside Hangars.

Minimum Clearances from MC-130J Hangar Elements ¹						
Aircraft Element	Door		Walls		Roof Framing	
	m	ft	m	ft	m	ft
Wing Tip - over 30.5 m (100 ft) span	3	10	4.6	15	-	-
Fuselage - over 30.5 m (100 ft) span	3	10	4.6	15	3	10
Tail - Vertical	2.1	7	-	-	3	10
Tail - Horizontal	3	10	3	10	3	10
Notes: 1. Clearances between aircraft components should be at least 3 m (10 ft) where two or more aircraft are housed. 2. ISO stands and fire lanes need to be considered when planning hangar facilities to avoid impacting the nose, wings, and tail of the aircraft. The minimum 10 feet clearance may not be enough to fit ISO stands designed to fit entirely around the aircraft.						

7.3.15.1.3. **Dimensions.** Area is calculated by using block dimensions ([Table 7.3.23](#)) 97.75 ft (L) x 132.6 ft (W), and allowing minimum clearances (15 ft and 10 ft, wing-to-wing/doors) 122.75 ft x 162.6 ft = 19,960 NSF for one MC-130J. The area needed for a two-bay hangar for the MC-130J is 122.75 ft x 305.2 ft (37,464 NSF). The minimum hangar ceiling height is the aircraft height (39.4 ft) plus minimum roof clearance ([Table 7.3.24](#), 10 ft) or 49.4 ft. The minimum hangar door height is 39.4 plus minimum door clearance (Table 7.3.24, 7 ft) or 46.4 ft. ft.

Table 7.3.25. Building Utility System Requirements for Maintenance Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.

Electrical	Use commercial grade convenience receptacles and power outlets. Provide multiple 120- and 220-volts outlets throughout the facility. Provide independent circuit breakers to support charging and computer stations since consolidated breakers can be tripped due to power demands and surges. Provide isolated circuits from hangar outlets as consolidation will cause breaker interruptions due to excessive power demand for one circuit. Design electrical systems capable of expansion to avoid increased installation costs and time delays when the electrical demand increases. Cost of additional installation can be high for O&M funds and contracting process can be lengthy, particularly at overseas locations. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Provide a commercial grade domestic water and waste water system. Ensure hot water capability to comply with requirements driven by TO, OSHA, and other safety standards. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Per UFC 3-600-01 Paragraph 4-4.1, fixed wing and rotary wing aircraft fuel cell maintenance facilities, alert, storage, depot-level and general-purpose maintenance hangars comply with UFC 4-211-01. Per UFC 4-211-01 Paragraph 3-6.17, provide a hydraulically designed, low level Hi-Ex foam system for hangar bays. Existing hangars may continue use of AFFF fire protection systems. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.3.15.1.4. Unique Facility Requirements.

7.3.15.1.4.1. Bridge Crane. Provide a 7-ton overhead bridge crane. Minimum crane hook height for MC-130J hangars is 49 ft 2 in (UFC 4-211-01, Figure 2-3 & Table 2-1 Item F).

7.3.15.1.4.2. Hangar Clearances. See [Table 7.3.24](#). ISO stands and fire lanes need to be considered when planning hangar facilities to avoid impacting the nose, wings, and tail of the aircraft. Depending on the hangar design, the minimum 10 feet clearance presented in Table 7.3.24 may not be enough to fit ISO stands designed to fit entirely around the aircraft. As noted in [Table 7.3.28](#), a mobility barn locate proximate to the hangar can be used to store ISO stands and other pieces of equipment that cannot be stored in the hangar because they encroach on the minimum clearances required or are obstructions.

7.3.15.1.4.3. Hangar Floors. Since aircraft in hangars are not normally loaded with cargo, fuel, or armaments hangar floors should be designed for the empty weight of the aircraft. When exact data is not available use 60 percent of the maximum gross weight of the aircraft (UFC 3-260-02, Chapter 4, Section 3, Paragraph D). The minimum requirement for hangar floor pavements designed for the MC-130J should be designed for at least 72,562 lbs. for the empty weight or 105,000 lbs (175,000 lbs [Maximum Gross Takeoff Weight] x 0.6).

7.3.15.1.4.4. Fall Protection. Provide fall protection in accordance with UFC 3-110-03 and refer to UFC 4-211-01 Appendix C-11 for information on the best practices for fall prevention and protection systems. Consider the implications of providing different types of fall protection systems and/or equipment. Note that fall protection systems not installed as a building system may require additional storage for fall protection support equipment.

7.3.15.1.4.5. Fire Protection. The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF.

7.3.15.1.4.6. Security Requirement. Secured space will be required for the storage of classified components temporarily removed from aircraft. This requirement may be satisfied by storing components at the respective intermediate level shops or other secure storage locations.

7.3.15.1.4.7. Reference. See Paragraph 7.3.16, Maintenance Facilities for a concept diagram for a typical MC-130J Maintenance Hangar and AMU Facility.

7.3.16. Maintenance Facilities.

7.3.16.1. Aircraft Maintenance Unit (CATCODE: 211154).

7.3.16.1.1. Requirements Determination. Each AMU needs an operational building for administration, scheduling, training, briefing, and aircraft equipment/tool storage. Equipment/tool storage may be in a separate building (DAFMAN 32-1084, Paragraph 3.1.6.2). Submit projects for unlisted missions, AMU types, or additional space requirements through the AFSOC/A4 to AF/A4O-A (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational [A/HMU], Paragraph 1.2.1).

7.3.16.1.2. Scope Determination. Space must be provided for the NCOIC, OIC, administration, debrief, training, field service representatives, AFETS, scheduling, production, section chiefs and flight chiefs (Production, Specialist, Aircraft, Scheduling, Brief/Debrief, and Support), and staff. Space is also required for test/support equipment and tools to support all mission tasks. Equipment includes aircraft test equipment, maintenance tools, mobility pallets/ (ISU 70/90s), Dash 21 equipment, and equipment found in [Table 7.3.28](#). Specific mission requirements may require additional storage space to be validated through the AFSOC/A4 (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational [A/HMU], Paragraph 1.3.1).

7.3.16.1.2.1. Where offices are provided, an open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons.

7.3.16.1.2.2. A designated heritage room is not authorized for the AMU in DAFMAN 32-1084 and is not authorized as an AFSOC specific requirement per AFSOC/A4I.

7.3.16.1.3. Dimensions. Table 7.3.26 lists the maximum space requirements for MC-130J AMU Facilities.

Table 7.3.26. Maximum Space Requirements for MC-130J AMU Facilities.

MISSION Special Operations Squadrons ¹	Gross Area ²					
	6 PMAI		9 PMAI		15 PMAI	
	m ²	ft ²	m ²	ft ²	m ²	ft ²
	1,961	21,113	2,666	28,699	3,792	40,819
Notes:						
1. This table equals the total GSF authorized from the rooms listed in Table 7.3.30. Space authorizations for individual rooms within this facility can be found in Table 7.3.30.						
2. Includes common use and maintenance areas.						

7.3.16.1.4. Design Considerations. Locate next to assigned aircraft parking apron, and maintenance hangar. Special Q-D standards apply to hardened facilities. See AFMAN 91-201 (DAFMAN 32-1084, Paragraph 3.1.6.5).

7.3.16.2. AMU Facilities.

7.3.16.2.1. Support Section. Area may include: CTKs, special tools, test equipment, TO, bench stock, Dash 21 equipment, AME, vehicles, mobility equipment, and dedicated supply support functions to support the production effort. The recommended space for this facility can be found in [Table 7.3.28](#).

Table 7.3.27. Equipment for the MC-130J Support Section.

Equipment Name	Quantity ^{1,2}
TAS	1
Portable Oxygen Bottles	1 per flight crew member
CAMS or IMDS	1
DTADS	1
Batteries	Varies based on tool type/quantity and battery type/voltage.
Battery chargers	Varies based on tool type/quantity and battery type/voltage.
Hand etcher	1
Dremel tool for de-etching	1
Shredder	1
Copy/Fax/Scanner	1
Printer	1
Computer workstations	1 each for DTADS, CAMS, or IMDS

Notes:

1. Source: AFSOC/A4.
2. These numbers are for a typical Support Section. Only the numbers for batteries, battery chargers, and portable oxygen bottles will vary based on the criteria mentioned.

7.3.16.2.1.1. Dash 21. Dash 21 equipment is AME designed to configure aircraft for multiple mission profiles. The recommended space allocation for this facility can be found in [Table 7.3.28](#).

7.3.16.2.2. Avionics Shop (CATCODE: 217712).

7.3.16.2.2.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.3.16.2.2.2. Maintenance/Service Function. This facility houses organizational maintenance activities for the following aircraft equipment and accessories: airborne communications, cameras, bombing systems, and tactical support communications security equipment.

7.3.16.2.2.3. Storage Function. Major items that require shop and storage space are storage racks for serviceable equipment and equipment waiting for maintenance or parts, coding devices, technical data and code books, pod lifting devices, cradles, and storage racks. Some storage space provides physical security and corrosion protection for delicate electronic equipment. If possible, combine maintenance and storage facilities to share secure storage area.

7.3.16.2.2.4. Mobility Barn. Per AFSOC/A4M, this facility houses storage for mobility items that cannot be stored in the maintenance hangar because they encroach upon fire lanes and minimum clearances between the aircraft and hangar walls. This space includes storage for engines, stands, ISUs, propellers, gun equipment. It would also include a mezzanine and a single aisle for forklift access. This facility can be separated from the hangar/AMU if necessary, though collocation with the hangar/AMU is ideal. Provide 5,000 GSF per 6 PMAI (4,000 NSF with 1.25 net to gross conversion) or 667 NSF per PMAI.

7.3.16.2.2.5. Engine/Propeller Maintenance Shop. AFSOC MC-130J aircraft require a space for contractor and unit performed engine and propeller maintenance. Per AFSOC/A4M, provide 4,500 NSF. If contractors are required, it is recommended that an additional 400 NSF is provided to support administrative spaces for contractor personnel. This space should be collocated with the maintenance facility.

7.3.16.2.2.5.1. Design Considerations. Per AFSOC/A4M, provide an access door of 12 ft or higher; environmental controls from drafts, dirt/sand, and humidity; adequate HVAC, electrical, and lighting to support offices; an overhead hoist system 12 ft or higher, with a minimum rating of 1,000 lbs (2,500 lbs for engine hoisting capability); a work table/bench for blade buildup and repair; a level floor free from obstruction for mounting propeller buildup stand and propeller balancing

machine; part storage; HAZMAT storage cabinets; and a parts cleaning machine/system.

7.3.16.3. Aircraft General Purpose Shop (CATCODE: 211152).

7.3.16.3.1. Requirements Determination. This facility provides for specialized and general aircraft maintenance functions. These facilities may include work benches, bench stock, battery servicing area, cryogenics maintenance area, generator area, life raft bottle servicing area, tool crib, administrative space, and personnel locker space. These shops may be in one building or several buildings (DAFMAN 32-1084, CC 211152 Shop Aircraft General Purpose, Paragraph 1.3).

7.3.16.3.2. Scope Determination. DAFMAN 32-1084, Table 3-3 states the total gross space requirements for general purpose maintenance shops for a Special Operations Wing is to be determined by individual analysis and validated by AFSOC/A4M.

7.3.16.3.3. Dimensions. See Paragraph [7.3.17](#) Intermediate Maintenance Facilities for the facilities that are at the intermediate level.

7.3.16.3.4. Design Considerations. Ensure cleanliness and area safety requirements for cryogenic materials is maintained. Floor with grates and groves tend to accumulate debris that can create hazardous condition when in contact with cryogenics materials. Where possible, try to avoid the use of mezzanines. The use of mezzanines restricts movement of forklifts. It also limits ground floor storage due to pillars location. Provide grounding points for safety.

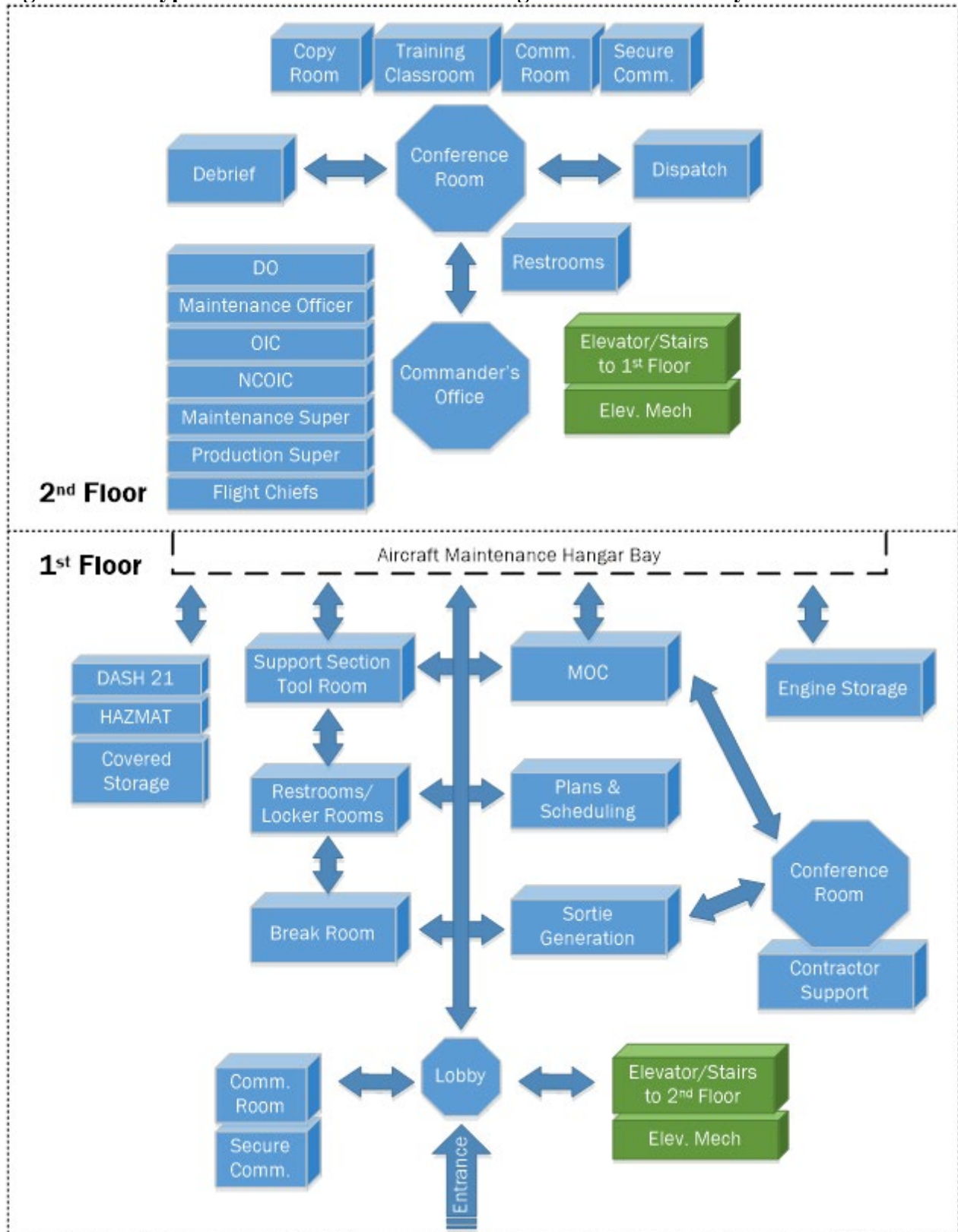
Figure 7.3.9. Typical MC-130J Maintenance Hangar and AMU Facility.

Table 7.3.28. MC-130J Maintenance (AMU) Facility Space Requirements.

Cat Code	Facility	UM	MC-130J (6)¹	MC-130J (9)¹	MC-130J (15)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
211-154	Commander – Cmd. Suite	NSF	140	140	140	140 NSF min for Type C Offices. ⁴
211-154	First Sergeant – Cmd. Suite	NSF	100	100	100	Per A1M: Authorized 1 PN if squadron has 50 (all enlisted + 2% of officers). 100 NSF min for Type D Offices. ⁴
211-154	Support Staff and Waiting – Cmd. Suite	NSF	264	264	352	2 PN waiting area. Support staff offices depends on number of squadron PN. 6 PMAI = 5 PN, 9 PMAI = 7 PN, 15 PMAI = 10 PN Waiting area is 20 NSF per person. ⁶ 48 NSF min for Type F Offices. ⁵
211-154	Maintenance Officer ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Maintenance Supt ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	AMU OIC and NCOIC ²	NSF	200	200	200	2 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Production Supt ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Prod. Staff (Expeditors)	NSF	192	240	240	<9 PMAI = 4 PN, 9+ PMAI = 5 PN. 48 NSF min for Type F Offices. ⁵
211-154	Crew Chiefs ²	NSF	500	655	895	6 PMAI = 11 PN. (3 Type E, 5 Type G) 9 PMAI = 15 PN (4 Type E, 11 Type G) 15 PMAI = 23 PN (4 Type E, 19 Type G) 65 NSF min for Type E Offices. ⁵ 30 NSF min for Type G Offices. ⁵
211-154	Specialist Sec. NCOIC ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Specialist Sec. Staff Offices	NSF	270	390	660	6 PMAI = 9 PN, 9 PMAI = 13 PN, & 15 PMAI = 22 PN 30 NSF min for Type G Offices. ⁵
211-154	Specialist Sec. Storage Vault	NSF	50	100	100	Provide 50 NSF per UTC.
211-154	Support Sec. NCOIC ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Support Sec. Staff Offices	NSF	108	144	252	6 PMAI = 3 PN; 9 PMAI = 4 PN; 15 PMAI = 7 PN 30 NSF min for Type G Offices. ⁵

211-154	Resource Manager ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Training Manager ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Security Manager ²	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	Quality Assurance	NSF	195	195	195	<10 PMAI = 3 PN, 9+PMAI = 4 PN. 65 NSF min for Type E Offices.
211-154	Tech. Order Distribution Office-TODO	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Sortie Generation ²	NSF	130	130	130	Assume 2 PN. 65 NSF min for Type E Offices. ⁵
211-154	Plans and Scheduling	NSF	130	130	130	Assume 2 PN. 65 NSF min for Type E Offices. ⁵
211-154	Dispatch ²	NSF	130	130	130	Assume 2 PN. 65 NSF min for Type E Offices. ⁵
211-154	COSO Manager	NSF	0	0	0	If authorized, 1 PN. 100 NSF min for Type D Offices. ⁴
211-154	COSO Staff	NSF	0	0	0	If authorized, 5 PN. 65 NSF min for Type E Offices. ⁵
211-154	COSO Cust. Service ²	NSF	0	0	0	If authorized, provide 200 NSF.
211-154	COSO Equip. Storage ²	NSF	0	0	0	If authorized, provide 300 NSF.
211-154	Field Service Reps. ²	NSF	260	260	260	4 FSRs per unit. 65 NSF min for Type E Offices. ⁵
211-154	AFETS	NSF	260	260	260	4 AFETS per unit. 65 NSF min for Type E Offices. ⁵
211-154	Engine Rep. ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Support Equip. Rep. ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	IETM Rep. ²	NSF	65	65	65	65 NSF min for Type E Offices. ⁵
211-154	Elevator	NSF	80	80	80	Provide 80 NSF.
211-154	Elevator Equip. Room	NSF	90	90	90	Provide 90 NSF.
211-154	Men's Shower	NSF	120	120	150	Provide 4 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.

211-154	Women's Showers	NSF	60	90	150	Provide 2 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
211-154	Men's Lockers	NSF	365	547	911	Lockers are 18" W x 18" D x 24" H, 3-tier. With circulation, provide 5 NSF per locker. Calculated as Number of male lockers/3 x 5 NSF
211-154	Women's Lockers	NSF	91	137	228	Lockers are 18" W x 18" D x 24" H, 3-tier. With circulation, provide 5 NSF per locker. Calculated as Number of female lockers/3 x 5 NSF
211-154	Restrooms & Janitor Closet	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
211-154	Mech/Elec Rooms	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
211-154	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	MOC ²	NSF	310	465	774	353 SOG: Located in 413 NSF at B3670. Calc. = #PMAI x 51.625 NSF.
211-154	MIS ²	NSF	130	130	130	Provide 1 Type E office per MIS (2 MISs). 65 NSF min for Type E Offices. ⁵
211-154	Debrief Room	NSF	150	150	150	Typical room size is for twice the flight crew. 15 NSF per person. ⁶ Calc. = 5 (Flight Crew) x 2 x 15 NSF.
211-154	Training Classroom	NSF	417	626	1,044	AFSOC/A4I: Minimum training room size will be 240 NSF and total unit authorization will be Unit PN (military only) x 3 NSF (a multiplier of 1.5 is used instead of 3 to bring maximum authorization to a reasonable square footage within the AMU); rounded up.

211-154	Conference Room	NSF	350	350	700	CG 61 Admin Overview Paragraph 1.4.5: Based on personnel, the maximum authorization exceeds the necessary space since most meetings will not involve the entire squadron. Calculations provide two, 10person conference rooms to 11 PMAI and above, and one 10person conference room for 10 PMAI and below. DAFMAN 32-1084, CG 61 Admin Overview Table 1.4: 20 NSF per person plus 150 NSF speaking area.
211-154	Commander's Conf. Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. 15 NSF/person. ⁶
211-154	Team Room	NSF	0	0	0	SOAMXS sections' staff open offices, lockers, and break areas can be separated or consolidated. For a consolidated SOAMXS ready room, provide open offices for the following sections: production, specialist, crew chiefs, and support. Provide lockers and break rooms in proportion to the number of personnel that will use the facility. If consolidated, see the areas required below. 6 PMAI = 4 Type F (256 NSF), 20 Type G (720 NSF), 267 lockers (445 NSF), Break Room (384 NSF) or 1,045 NSF total area. 9 PMAI = 5 Type F (320 NSF), 28 Type G (1,008 NSF), 379 lockers (632 NSF), Break Room (546 NSF) or 2,562 NSF total area. 15 PMAI = 5 Type F (320 NSF), 48 Type G (1,728 NSF), 642 lockers (1,070 NSF), Break Room (924 NSF) or 3,882 NSF total area.
211-154	Break Room	NSF	493	738	1,000	16% of occupants x 18 NSF. ⁶ The maximum authorization exceeds the reasonable AMU break room size based on the peak shift. To bring this area to within a reasonable size within the AMU the percentage occupants in the calculation is reduced from 16% to 10%.

211-154	Secure Storage	NSF	100	100	100	Provide 100 NSF.
211-154	CTK, Supply, Battery Shop	NSF	3,600	5,400	9,000	353 SOG: Located in 6,289 NSF at B3670. Calculated as 600 NSF x #PMAI.
211-154	Dash 21 Equip Storage	NSF	4,020	4,890	5,760	353 SOG: Dash 21 in B3586 = 2,180 NSF. Calculated as 200 NSF x #PMAI.
211-154	Haz. Mat. and Waste	NSF	180	270	450	One month's storage = 15 NSF per locker x # PMAI.
211-154	Passenger Oxygen Bottles	NSF	48	72	120	Dimensions for POS are approximately 21" x 6". Assuming 2 per aircraft at 4' x 1' each. Calculated as 8 NSF x # PMAI.
211-154	Avionics ²	NSF	600	900	1,500	Organizational level maintenance 100 NSF per aircraft. AFSOC does not have intermediate level Avionics maintenance.
211-154	Engine Storage	NSF	400	400	800	Provide 400 NSF for 9 PMAI or fewer and 800 NSF for more than 9 PMAI. Propeller storage is at the depot/intermediate level.
211-154	Engine/ Propeller Repair Shop	NSF	4,900	4,900	4,900	Per AFSOC/A5: Provide 4,900 NSF. Requires overhead hoist.
211-154	Spt. Equip. Covered Storage ³	NSF	1,800	2,700	4,500	Provide 300 NSF per PMAI.
211-154	Mobility Barn	NSF	4,002	6,003	10,005	AFSOC/A4M: Provide 5,000 GSF per 6 PMAI (4,000 NSF with 1.25 net to gross conversion) or 667 NSF per PMAI. This space includes storage for engines, stands, ISUs, propellers, equipment. It would also include a mezzanine and a single aisle for forklift access. This facility can be separated from the hangar/AMU if necessary.
211-154	Admin. Support Space	NSF	1,380	1,580	1,980	AFSOC/A4I: default is 20 sf/ person. ¹¹
211-154	Admin. Circulation	NSF	613	689	876	Max 10% of Administrative Space ¹⁰
211-154	Special Purpose Circulation	NSF	1,584	1,963	2,655	Max 10% of Special Purpose Space ¹⁰

211-154	SOMXS Commander	NSF	140	140	140	140 NSF min for Type C offices.
211-154	SOMXS First Sergeant	NSF	120	120	120	Provide 1 Type D office. DAFMAN 32-1084 CG 61 Admin Overview Table 1.2 authorizes 100 NSF min for Type D offices.
211-154	SOMXS Commander's Support Staff	NSF	160	160	160	Waiting area is 20 NSF per person. ⁶ Reception desk is user justified. ⁶ Calculated as 2 justified waiting persons (40 NSF) + 100 NSF (Type D min ⁴) for commander secretary office.
211-154	SOMXS Maint Officer	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	SOMXS Super-intendent	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	SOMXS Production Sup.	NSF	100	100	100	100 NSF min for Type D Offices. ⁴
211-154	SOMXS Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	SOMXS CC's Conf. Room	NSF	150	150	150	AFSOC/A4I: Provide for up to 10 people. 15 NSF per person. ⁷
211-154	SOMXS Break Room	NSF	100	100	100	16% of occupants x 18 NSF, minimum of 100 NSF. ⁶ This break room only supports the SOMXS overhead positions.
Total SOMXS Facilities		GSF	1,343	1,343	1,343	NSF to GSF conversion factor:1.25
Total Mobility Barn		GSF	5,003	7,504	12,506	NSF to GSF conversion factor:1.25
Total AMU Facilities		NSF	24,169	29,176	38,840	
Total AMU Facilities		GSF	30,211	36,470	48,550	NSF to GSF conversion factor:1.25
Total AMU Covered Storage³		NSF	1,184	2,700	4,500	

Notes:

1. Number of PMAI. 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 15 PMAI = 16 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. Tropical environments introduce increased corrosion due to high humidity with high salt content. In these instances, standard exterior covered storage may not be adequate to maintain mission essential, mission ready, spares and equipment unless the spares and equipment are stored within nearly airtight equipment containers (CONEX boxes or other containers). In these cases, AFSOC/A4I may approve additional controlled humidity warehouse space.
4. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.
5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
7. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.4.
8. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.5
9. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2
10. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3
11. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

7.3.17. Intermediate Maintenance Facilities.**7.3.17.1. Fabrication Flight.****Table 7.3.29. Fabrication Flight Facility Minimum Areas.**

Function/Area Required in NSF	MC-130J (6 PMAI)	MC-130J (9 PMAI)	MC-130J (15 PMAI)
Structural Repair/Sheet Metal Shop	4,267	4,267	4,267
Metals Technology	1,636	1,636	1,636
Non-Destructive Inspection	4,000	4,000	4,000

7.3.17.1.1. Structural Repair. Structural repair shops include: shop administration, the sheet metal shop, corrosion control shop, and the fiberglass/composites shop.

7.3.17.1.2. Sheet Metal Shop. See [Table 7.3.30](#) for equipment in the Structural Repair/Sheet Metal Shop. Provide adequate space for all authorized shop equipment, including the working and safety zone around each piece. Equip the sheet metal shop with a 1-ton bridge crane spanning the material storage area and most the work area. Also, install ½-ton or ¼-ton cranes at strategic locations required for material handling. The sheet metal shop requires a material storage rack for various metals sheet stock used to fabricate aircraft parts. A moveable rack to store the sheet stock on edge will facilitate stock selection. This shop can be combined with the Metals Technology Shop.

Table 7.3.30. Equipment in the Structural Repair/Sheet Metal Shop.

Equipment Name	Quantity	Dimensions

Do-All Band Saw ²	1	56" x 44"
Belt Sander ²	1	29" x 18"
Drill Press ²	1	25" x 20"
Power Shear ²	1	84" x 109"
Gerber Etcher ²	1	65" x 75"
Thermo Dimpler ²	1	35" x 57"
Flaring Mach ²	1	41" x 45"
Bench Grinder ²	1	21" x 21"

Notes:

1. The items in this shop are typical to all structural repair/sheet metal shops. The quantities reflect the minimum needed and could vary based on maintenance demands.
2. Provide a minimum of 3 ft working clearance on all sides.

7.3.17.1.3. Fiberglass/Composites Shops. Provide a containment area at floor level to capture drips and spillage from worktables. Special equipment required in the fiberglass/composites shop includes ovens for curing completed projects and a bridge crane system with a ½-ton hoist for moving large items within the shop. The composites shop requires refrigerators to store sheet adhesives used in composite component manufacture and repair. Paint and chemicals storage should also be provided.

7.3.17.1.4. Storage Area. Provide an exterior hazardous material storage facility, and position it within easy access from both the corrosion control shop and the fiberglass/composites shops. If enclosed, this storage facility must maintain temperatures between 10°C (50°F) and 27°C (80°F), and meet all federal, state, and local requirements.

7.3.17.1.5. Corrosion Control Shop (For Corrosion Control Hangar see paragraph 7.3.17.1.11). In this area, the primary workspace is a paint booth with an integral filtration system. Media booths are required to prepare surfaces before painting. One large booth (drive-in type) for large ground equipment and two medium booths for steel and aluminum aircraft parts are needed. An enclosure with a self-contained bead-blast system with HEPA exhaust filtration is adequate for many components. The media booths area also supports the metals technology shops. Therefore, provide for clean/dirty room operations in this shop. The paint booth must be large enough to handle the largest component that will be processed on a regular basis. It should have a paint filtration system and a means to control VOCs. Provide a large sealed area to prepare oversized parts and with a paint filtration system. A paint mixing room, separate from the paint booth, is required to isolate any hazardous fumes from the remainder of the corrosion control shop. This room will contain paint mixing equipment, fume hood, and a daily-use locker to temporarily store hazardous materials such as paints and thinners. A prep station, with a dust collection system to capture airborne particles, should also be considered.

7.3.17.1.6. Metals Technology Work Center. The exact space requirements are determined by the amount and type of authorized equipment. The metals technology area equipment requirement varies by the functions performed. This shop can be

combined with the Sheet Metal Shop. See **Table 7.3.31** for the equipment for Metals Technology area.

7.3.17.1.7. Welding Shop. Include an OSHA compliant screen/blind system and proper ventilation/hood to protect personnel from welding operations hazards. Equip the welding shop with welding machines and curtains, grinders, and material handling devices. Provide a 1-ton capacity bridge crane with two each ½-ton hoists for handling parts, and provide a 2-ton bridge crane spanning the material storage and work areas and 1-ton hoists at strategic locations in the machine shop.

7.3.17.1.8. CADD/CAM Shop. CADD/CAM equipment is required to provide design parameters to CNC machines for automatic part fabrication. When CADD/CAM equipment is used, include a separate room for the computer terminal.

7.3.17.1.9. Storage Area. The metals technology area requires a material storage rack for bar and plate stock needed to manufacture aircraft components. Provide storage cabinets in the welding shop for bench and operating stocks suitable for small items and ready use welding supplies. There should be additional storage space and racks with safety chains to store inert gas cylinders for aircraft welding operations.

Table 7.3.31. Equipment for Metals Technology.

Equipment Name	Quantity	Dimensions
Lathe	1	10' x 10'
Vertical Machining Center (VMC)	1	6' x 12'
Cutting Table	1	6' x 10'
CNC Milling Machine	1	8' x 8'
Notes: 1. The items in this shop are typical to all metals technology shops. The quantities reflect the minimum needed and could vary based on maintenance demands. 2. Provide a minimum of 3 ft working clearance on all sides.		

7.3.17.1.10. Dimensions. 1,636 NSF is required for Metals Technology equipment (**Table 7.3.31**) and maneuver/work space.

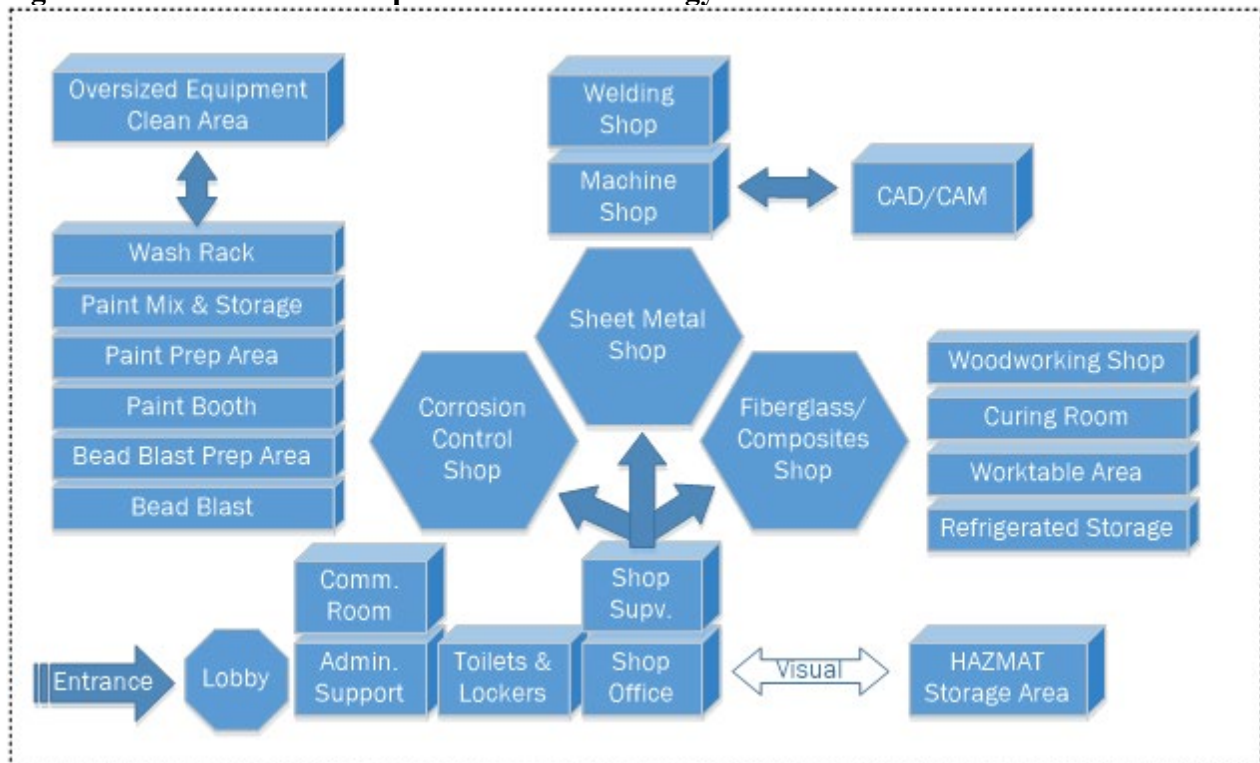
Figure 7.3.10. Structural Repair/Metals Technology Maintenance Areas.

Table 7.3.32. Building Utility System Requirements for Structural Maintenance and Metals Technology Facility.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions to prevent CADD/CAM equipment failures, corrosion of equipment/machined parts, and to ensure accuracy of machined parts. Point source exhaust systems with general filtration must be installed throughout the shop at welding stations to eliminate welding fumes, airborne smoke, and cutting fluid mists. The metals technology shop requires a 150-psi high volume shop air source for specialized equipment and for general hand tool operations. Provide the fiberglass/composites shop with a specialized ventilation system, which exhausts fumes to the outdoors. Preheat the air intake, or filter exhaust air for re-circulation. The woodworking shop requires a sawdust collection system. Maintain regulated temperature and humidity conditions to prevent specialized computer equipment failures, corrosion of equipment/parts, and to aid in sealant/bonding agent curing. Structural maintenance shops require high volume 150-psi shop air for specialized equipment and general hand tool operation. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification system requirements.
Plumbing	Ensure hot water capability to comply with requirements driven by TO, OSHA, and other safety standards. Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. The corrosion control shop in the structural maintenance function requires a separate male and female changing and shower area. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.3.17.1.11. Corrosion Control Hangar (CATCODE: 211159).

7.3.17.1.11.1. Requirements Determination. A hangar provides enclosed space for aircraft washing and inspecting the aircraft for corrosion damage. Additionally, the facility can accommodate surface preparation and repainting of the aircraft.

7.3.17.1.11.2. Scope Determination. Corrosion control is both a base and a depot responsibility. Specific workloads vary from base to base, but the minimum

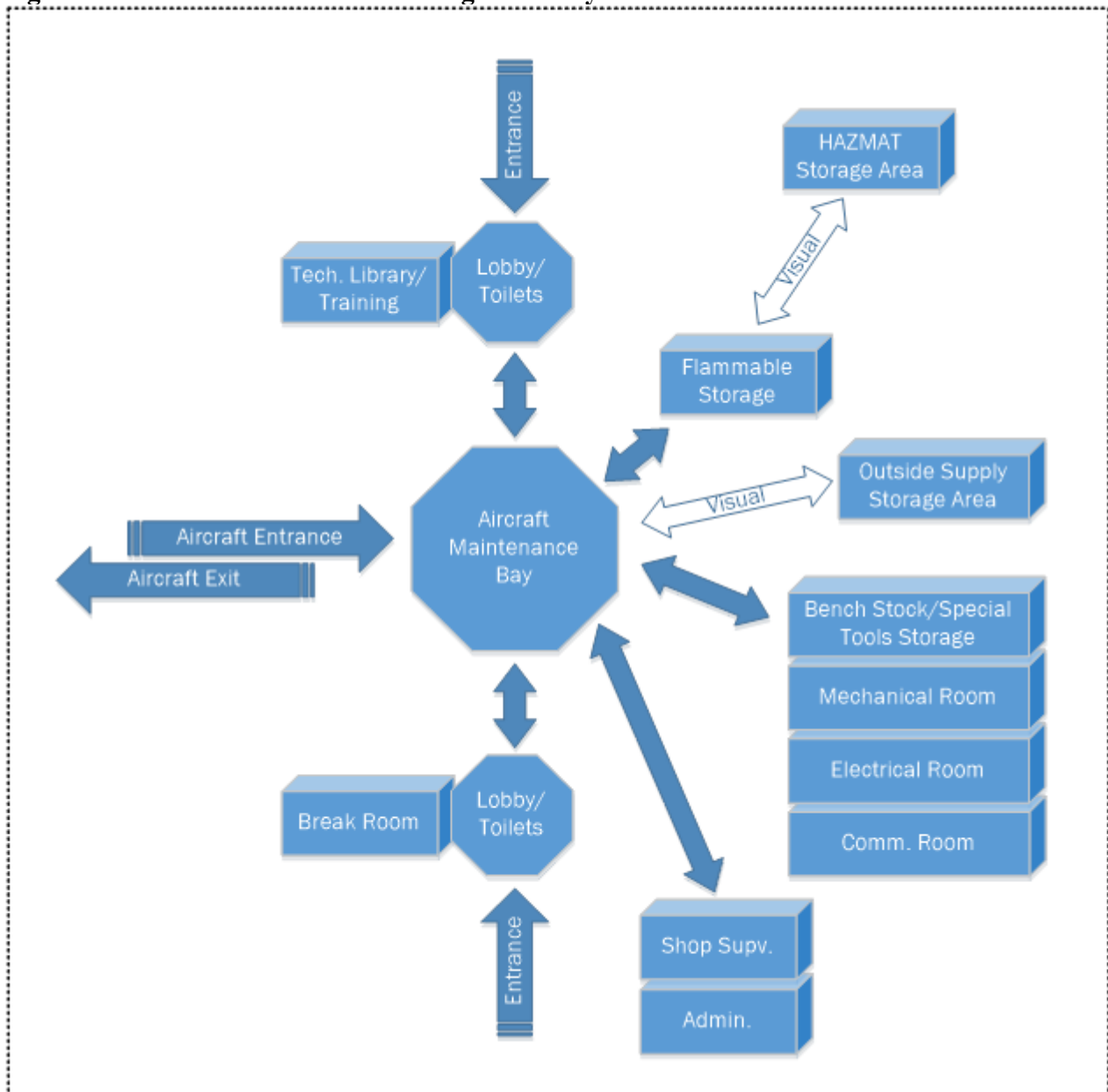
required facilities include a wash rack, shop space for complete corrosion treatment, painting removable aircraft parts, ground support equipment, and a corrosion approved facility to perform aircraft maintenance painting. Base facility requirements emphasize prevention and detection. Since freedom from dirt, oil, and other contaminants is important in this regard, base facilities are primarily designed for cleaning and maintaining protective coating/corrosion control systems.

7.3.17.1.11.3. Dimensions. Bases with above 40 large or medium aircraft assigned or in a severely corrosive environment are authorized, with proper justification, a corrosion control hangar and a wash hangar (DAFMAN 32-1084, CC 211159 Aircraft Corrosion Control, Paragraph 1.4). These two activities can be collocated or separate. DAFMAN 32-1084, CC 211111 Hangar Maintenance, Figure 1.1 provides an example where the B-52 is considered a large aircraft, the KC-135 is considered a medium aircraft, and the F-16 is considered a small aircraft. Using this example, the MC-130J would be considered a medium aircraft, and all AFSOC weapon systems would fall under medium or small aircraft categories. If authorized a corrosion control hangar, provide a facility that is 26,230 NSF (32,788 GSF with 1.25 net to gross conversion). This supports a typical 10-20-person AFSOC corrosion control facility. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (2,200 NSF), a Paint Mixing Room (250 NSF), Paint Storage (560 NSF), Equipment Storage (900 NSF), Equipment Cleaning (50 NSF), Solvent Storage (50 NSF), Material Storage (900 NSF), PPE Storage (150 NSF), PPE Cleaning (50 NSF), a Stencil Room (120 NSF), a Laundry Room (100 NSF), Men's Clean and Dirty Shower/Locker Room (240 NSF), Women's Clean and Dirty Shower/Locker Room (160 NSF), a 2-person Shop Supervisor Office with Type E offices (130 NSF), a Communications Room (144 NSF), a Break Room (216 NSF), and a Copy Room (50 NSF).

Table 7.3.33. Building Utility System Requirements for Corrosion Control Facility.

System	Requirements
Mechanical	Where "comfort cooling" is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source and connections (around 120 psi) should be conveniently located throughout the maintenance bay. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Provide lightning protection system to protect the aircraft and facility. Applicable criteria include UFC 3-501-01 for general electrical requirement criteria UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification system requirements.
Plumbing	Ensure hot water capability to comply with requirements driven by TO, OSHA, and other safety standards. Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. The corrosion control shop in the structural maintenance function requires a separate male and female changing and shower area. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF. An adequate water supply source with sufficient pressure should be verified prior to a system design and construction.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.3.11. Corrosion Control Hangar Facility.

7.3.17.1.12. NDI Laboratory (CATCODE: 211153). This facility consists of testing facilities, equipment storage, supply storage, analysis and report offices, and laboratory space. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.3.17.1.12.1. Requirements Determination. All bases required to have a full, nondestructive testing facility are authorized 4,000 NSF for a laboratory (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2).

7.3.17.1.12.2. Shop Area. The shop space equipment includes: fluorescent

penetrate and magnetic particle testing machines, portable ultrasonic and eddy current machines, and X-ray and darkroom equipment.

7.3.17.1.12.3. Storage Area. Storage requires an environmental control capability to store X-ray films and an oil analysis spectrometer.

7.3.17.1.12.4. Lab Area. An NDI laboratory requires a 1-ton capacity monorail with two ½-ton capacity hoists servicing both the X-ray shielded room and the room containing the fluorescent penetrate and magnetic particle testers. Use X-ray equipment specification to determine ceiling heights and workflow maneuverability. Provide silver recovery equipment in the darkroom, and provide radiation shielding per the National Institute of Standards Technology Information Security Handbook. A lead shielded opening should be provided in the wall between the X-ray exposure room and the control room to allow for passage of X-ray equipment control cables.

7.3.17.1.12.5. Dimensions. Bases with an NDI facility are authorized 4,000 NSF (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2 and TO 33B-1-1, Figure 1.1).

Table 7.3.34. Building Utility System Requirements for NDI Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required especially on storage functions due to delicate devices and other sensitive equipment. The NDI lab requires 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Consult X-ray and other NDI equipment specifications for their specific power requirements. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications, and UFC 4-021-01 for mass notification system requirements.
Plumbing	Ensure hot water capability to comply with requirements driven by TO, OSHA, and other safety standards. Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. The corrosion control shop in the structural maintenance function requires a separate male and female changing and shower area. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.

Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.3.12. Non-Destructive Inspection Area.



7.3.17.2. Aerospace Ground Equipment Flight.

7.3.17.2.1. AGE Shop and Storage Facility (CATCODE: 218712).

7.3.17.2.1.1. Requirements Determination. The AGE shop inspects, maintains, repairs, and services powered and non-powered AGE directly supporting aircraft and powered munitions AGE, if assigned. It normally includes maintenance stalls with work benches, an indoor wash rack, tool crib, bench stock, sealed lead acid battery servicing area, engine exhaust education system, administrative space, and personnel locker space.

7.3.17.2.1.2. Scope Determination. DAFMAN 32-1084, CC 218712 Aircraft Support Equipment Shop/Storage Facility, Table 1.1, lists the space requirements for AGE maintenance shops and standby storage facilities. These space

requirements include total covered storage. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and its requirements are listed in the storage facilities section in paragraph 7.3.17.2. Requirements for the AGE Shop and Storage facility are based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per UTC.

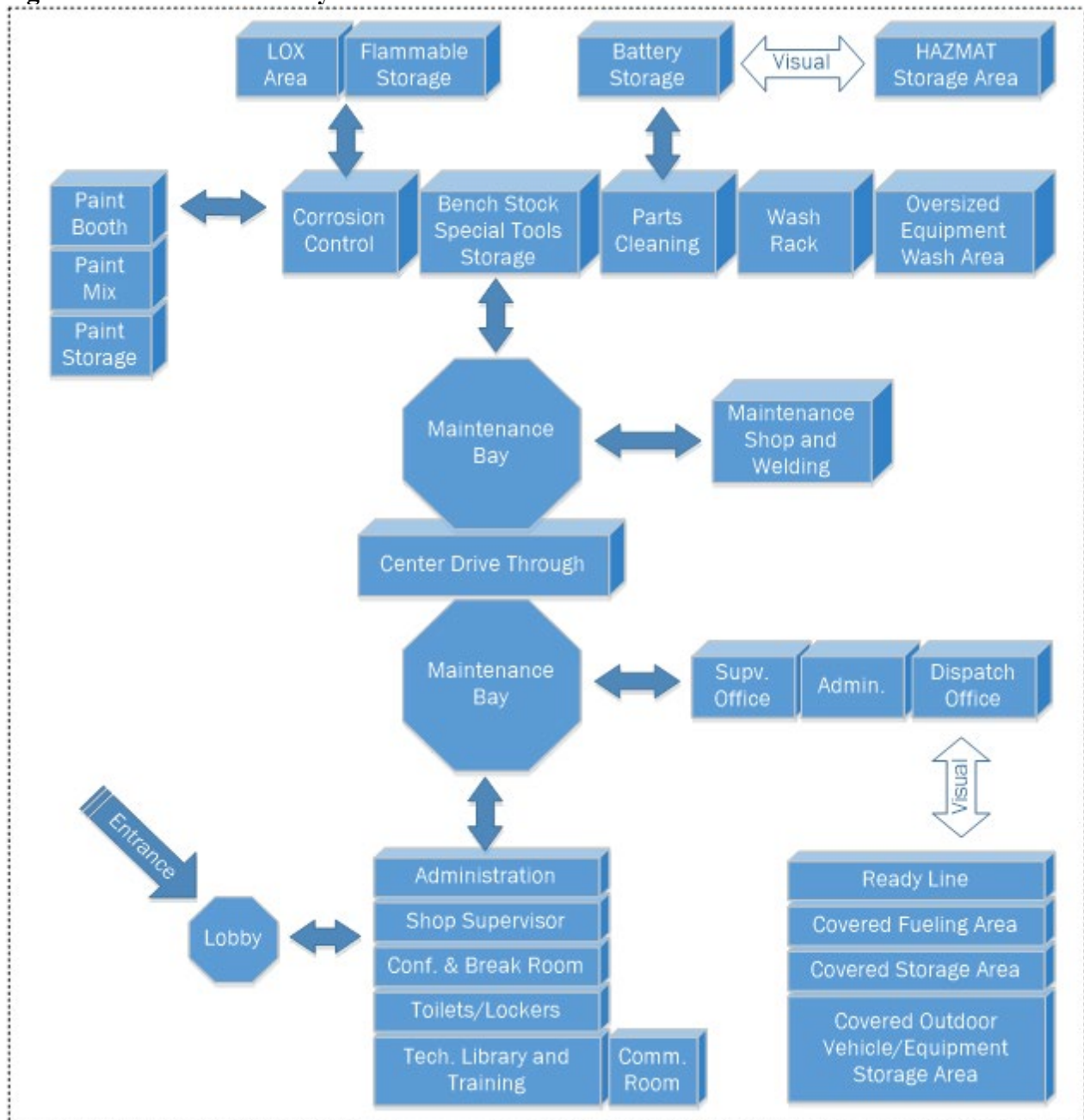
7.3.17.2.1.3. Dimensions. The size of this facility will be based on the number of authorized pieces of AGE. If other weapon systems are supported at the installation, the number of AGE units supporting AC-130J aircraft would be added and can then be cross-referenced with DAFMAN 32-1084 CC 218712 Table 1.1 to determine the maximum space allowed. The recommended space allocation for this facility can be found in Table 7.3.41.

7.3.17.2.1.4. Unique Facility Requirements. An overhead hoist is required to support a minimum of 2,720 kg (6,000 pounds). A separate oil-free area is required for LOX handling equipment. The floor must be concrete. Electrical power (120 VAC and 220 VAC) is required in the area. This area must be covered, but should preferably be inside a facility.

Table 7.3.35. Building Utility System Requirements for AGE Facility.

System	Requirements
Mechanical	A compressed air source or connection (around 120 psi) should be conveniently located throughout the maintenance bay and corrosion control areas. The facility should have energy efficient climate control and proper ventilation. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connection for equipment and workstations ranging from 120V, 240V, and 480V. Certain electrical requirements are AGE equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification system requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.3.13. AGE Facility.



7.3.17.3. Maintenance Support Flight.

Table 7.3.36. Maintenance Support Facility Minimum Areas.

Function/Area Required in NSF	MC-130J (6 PMAI)	MC-130J (9 PMAI)	MC-130J (15 PMAI)
Repair & Reclamation	2,850	4,275	7,125
Wheel & Tire	1,611	1,611	1,611
Aircraft Inspection Section	N/A	N/A	N/A

7.3.17.3.1. R&R Shop.

7.3.17.3.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.3.17.3.1.2. Maintenance Area. Work performed in the maintenance bay includes: repair and replacements of landing gears, actuated doors, canopies, and any associated equipment. Provide an area for aircraft jacks and/or a 3-ton hoist to use in disassembling components. This hoist (specialized trailers) can be located either inside or outside the facility.

7.3.17.3.1.3. Storage Area. Provide a paved area adjacent to the facility for parking transportation trailers and other heavy equipment. In extremely cold climates, provide indoor heated storage space.

7.3.17.3.1.4. Dimensions. The recommended space allocation for this facility can be found in Table 7.3.37.

7.3.17.3.2. Wheel & Tire Shop.

7.3.17.3.2.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.3.17.3.2.2. Maintenance Area. Provide a hard rubber floor coating in the tire breakdown/assembly area to avoid damage to the wheels during operations performed in the shop. Cover walls and ceilings with appropriate sound insulation to reduce noise. Shop equipment in the wheel and tire shop includes: tire breakdown machines, tire inflation cages, an oven for heating wheels, a freezer for cooling bearing races, an arbor press, and a jet washer. Provide a bearing/solvent room that contains a non-foaming jet washer for cleaning bearings and ample room when servicing the wheel bearings. Special equipment in the tire shop includes a ¼-ton monorail hoist to move large wheels.

7.3.17.3.2.3. Storage Area. Provide separate material storage areas to include tire racks for both incoming (awaiting service) and outgoing (service complete) tires.

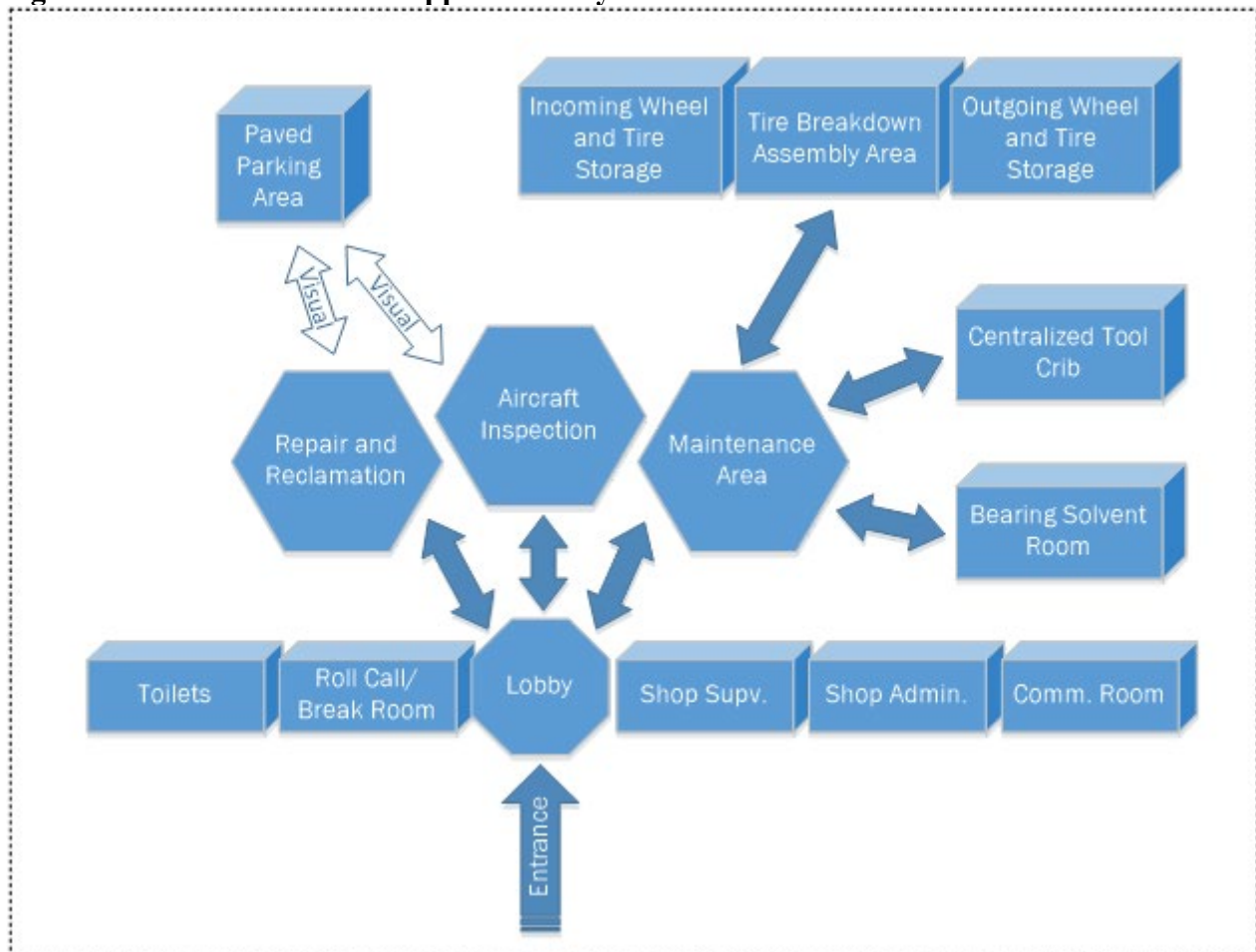
Recommend using automatic vertical storage racks to store tires effectively.

7.3.17.3.2.4. **Dimensions.** The recommended space allocation for this facility can be found in [Table 7.3.36](#).

7.3.17.3.3. **Aircraft Inspection Section (Phase).** The Aircraft Inspection Section performs aircraft (phase, periodic, isochronal, or Letter Check) inspections. In units maintaining multiple weapon systems, the inspection section may be divided into separate elements for each type aircraft maintained. Major repair or maintenance would require use of the host installation shop.

Table 7.3.37. Building Utility System Requirements for Maintenance Support Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required. Both repair and reclamation and wheel and tire shops require 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Applicable criteria include UFC 3-501-01 for general electrical requirement criteria UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification system requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.3.14. Maintenance Support Facility.**7.3.17.4. Accessories Flight.****7.3.17.4.1. Fuel Systems Maintenance Area (CATCODE: 211179).**

7.3.17.4.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.3.17.4.1.2. Maintenance Bay. This area is where all scheduled fuel system inspections and aircraft maintenance occurs. The bay will be the size of the largest aircraft assigned to the base; however, MC-130J requirements are for a bay 122.75 ft x 162.6 ft (19,960 NSF) [Paragraph 7.3.15, Maintenance Hangar]). These hangars come out of the total hangar allowance for the base or may be added to it, depending on the workload requirements. Assume storage is provided by the host installation.

7.3.17.4.1.3. Tank Storage Area. MC-130J aircraft will routinely fly without external storage tanks installed. MC-130J aircraft should have an area of

approximately 400 NSF for external fuel tank storage.

7.3.17.4.1.4. Bench Stock/Special Tools Storage. A centralized, enclosed, secure area is required for parts and special tools.

7.3.17.4.1.5. Flammable Storage. Store flammable materials within a fire-rated enclosure with access to the exterior.

7.3.17.4.1.6. Hazardous Waste Accumulation Point. Designate an area to store hazardous waste generated by ongoing maintenance operations, and comply with current federal, state, and base regulations and procedures.

7.3.17.4.1.7. Support Area. Provide a support area for maintenance crew personnel during rest cycle. The support area shall include male and female restrooms, break room, and locker area.

7.3.17.4.1.8. Dimensions. 400 NSF is required for external fuel tank storage. Fuel systems repairs and equipment needed are performed and stored in the maintenance hangar. Major repair or maintenance would require use of the host installation shop. Fuel systems maintenance area requires storage for external tanks: 400 NSF. Per DAFMAN 32-1084 CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized provide a facility that is 24,632 NSF (30,790 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. This supports a typical 10-20-person AFSOC fuel systems maintenance dock. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (600 NSF), a Bladder Repair/Tool Room (480 NSF), an External Tank Maintenance Area (1,840 NSF), a Foam Storage Room (512 NSF), A 3-person office for Shop Supervisors and an NCOIC in Type E offices (240 NSF), a Dispatch office for 5 PN in Type E offices (400 NSF), a 20-person Training/Conference Room (300 NSF), and a Break Room (300 NSF).

7.3.17.4.1.9. Design Considerations. Add static discharge ports in the facility doors to ensure safety.

Table 7.3.38. Building Utility System Requirements for Fuel System Maintenance Hangar.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source or connection (around 120 psi) should be conveniently located throughout the maintenance bay. Hangars used for fuel systems maintenance also include wash down drainage trenches. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.

Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. All service equipment should be Underwriters Laboratories-listed. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System. Provide emergency shower/eye wash stations. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification system requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide interior water connection capability and drains. Applicable criteria include UFC 3-420-01 for Plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Table 7.3.39. Accessory Facility Minimum Areas.

Function/Area Required in NSF	MC-130J (6 PMAI)	MC-130J (9 PMAI)	MC-130J (15 PMAI)
Electro-Environmental	2,119	2,119	2,119
Hydraulics	2,943	2,943	2,943
Egress	N/A	N/A	N/A

7.3.17.4.2. Hydraulics Shop.

7.3.17.4.2.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept using system furniture will be used with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.3.17.4.2.2. Maintenance Area. For this area, rooms should be able to accommodate large components and shop equipment such as tube bender, hose cutting and fitting machines, a landing gear test stand for specific aircraft, a self-contained part cleaning system (jet washer) with non-foaming detergents, and a hydraulic test stand to perform hydraulic component evaluation. Certain shop equipment, such as the jet washer, requires a soundproof room. The hydraulic test stand requires a separate room large enough to allow proper equipment access. This room must be sound and explosion proof, and include windows ports, emergency

eye wash/shower stations, and alarm systems. Install a 1-ton bridge crane or monorail, servicing most the work area, and ¼-ton cranes at strategic locations for material handling. Worktables require different (top) surfaces depending on the component being repaired.

7.3.17.4.2.3. Storage Area. Provide storage for hydraulic tubing of various types and sizes. Ideal storage containers for tubing are multiple PVC pipes, each approximately 20 ft long and 4 inches in diameter, with caps on each end. Also, provide a secure storage area for incoming equipment and components awaiting maintenance. Finally, provide a centrally located bench stock storage and tool bin area.

7.3.17.4.2.4. Dimensions. The recommended space allocation for this facility can be found in [Table 7.3.39](#).

7.3.17.4.3. **E&E Shop.**

7.3.17.4.3.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.3.17.4.3.2. Battery Service Area. Include a battery servicing room to recharge batteries and to perform minor maintenance. When servicing both Ni-Cad and lead acid batteries, two separate rooms are needed to prevent cross-contamination of fumes produced by the two battery types. Both rooms require an emergency shower and eyewash station with an alarm system to notify other building occupants when the shower/eyewash system is activated. All equipment in the lead acid charging area must be explosion proof. Utility rooms enclosed in or accessed from the charging room are included in this requirement.

7.3.17.4.3.3. Testing and Repair Area. A separate sound proof room is required to house test stand equipment for generators and constant speed drive equipment. This room must have penetration resistant walls to withstand a minimum 3-psi projectile force. Also, within the testing and repair function, provide a separate room to service oxygen bottles and life raft bottle/carbon dioxide cartridges.

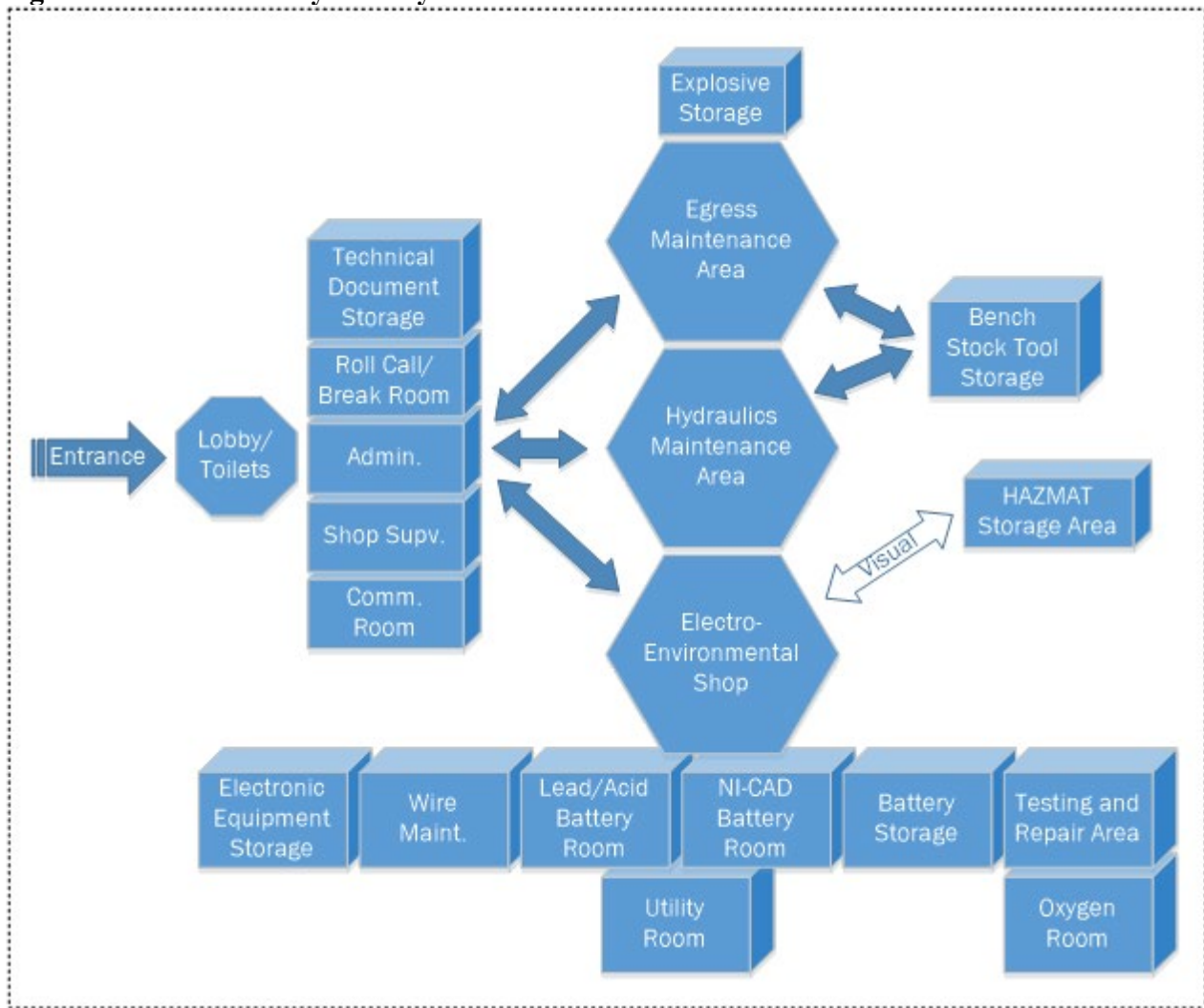
7.3.17.4.3.4. Wire Maintenance Area. Provide a separate soundproof room for the generator test equipment and a ¼-ton hoist to manipulate heavy components.

7.3.17.4.3.5. Storage Areas. Provide storage space for electronic equipment awaiting repair and/or pickup. Storage space is also required for serviceable batteries to be recharged and for unserviceable batteries to be discarded. Ensure the battery storage area is properly ventilated. Designate an area to store hazardous waste generated by ongoing maintenance operations. Provide wire dispensing cabinets and wire spool and harness storage bins in the wire maintenance area.

7.3.17.4.3.6. Dimensions. The recommended space allocation for this facility can be found in [Table 7.3.39](#).

Table 7.3.40. Building Utility System Requirements for Accessory Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required. Both the hydraulics function and the E&E shop require 150-psi shop air in designated locations and corrosion resistant drains. Special ventilation requirements need to be verified in the battery service area of the E&E shop to comply with federal and state air quality directives. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. The battery service and repair area of the E&E function requires explosion proof light fixtures and electrical devices. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification system requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide corrosion resistant drains in the E&E function. Applicable criteria include UFC 3-420-01 for Plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.3.15. Accessory Facility.**7.3.17.5. Propulsion Flight.**

7.3.17.5.1. Propeller Storage. MC-130J propellers are stored in dollies or crates that measure 13.5 (L) x 10 ft (W). While propeller storage can vary based on geographic location, a minimum of one propeller per UTC (3 PMAI) plus a spare is required. See [Table 7.3.41](#) for the propeller storage area required for the MC-130J.

7.3.17.5.2. Engine Storage. Engine storage is held within the AMU.

7.3.17.5.3. Engine/Propeller Maintenance Shop. Located within the AMU.

7.3.17.6. **Avionics Flight.** AFSOC will not be performing intermediate level maintenance on the MC-130J. All Avionics maintenance will occur in the AMU.

7.3.17.7. Munitions Flight.

7.3.17.7.1. Scope Determination. Not required for the MC-130J.

7.3.17.8. Armament Flight.

7.3.17.8.1. **Weapons Shop (CATCODE: 215552).** Not required for the MC-130J.

7.3.17.9. **TMDE Flight.** The PMEL is the base-level AFMETCAL Program focal point. The program provides for the calibration and repair of TMDE. HAF/A4LF approves the establishment of PMELs at selected installations (TO 00-20-14, Paragraph 1.2.3).

Table 7.3.41. MC-130J Intermediate Maintenance Facility Space Requirements.

Cat Code	Facility²	UM	MC-130J (6)¹	MC-130J (9)¹	MC-130J (15)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
218-712	AGE Shop	NSF	4,320	5,520	7,360	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See DAFMAN 32-1084 Table 3.10 for step table. 6 PMAI = 5,400 GSF; 9 PMAI = 6,900 GSF; 15 PMAI = 9,200 GSF. The conversion from GSF to NSF is calculated as GSF/1.25.
218-712	AGE Shop Covered Storage	GSF	5,170	7,760	12,940	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See DAFMAN 32-1084 Table 3.10 for step table. 6 PMAI = 5,170 GSF; 9 PMAI = 7,760 GSF; 15 PMAI = 12,940 GSF.
211-152	Hydraulics	NSF	2,943	2,943	2,943	1 SOMXG: 2,943 NSF in B90700. AFSOC/A5: Hydraulics should be consistently sized with CV-22 and the standard size is adequate for each facility.
211-152	E&E Shop	NSF	2,119	2,119	2,119	1 SOMXG: 2,119 NSF in B90700. AFSOC/A5: E&E should be consistently sized with CV-22 and the standard size is adequate for each facility.
211-152	R&R Shop	NSF	2,850	4,275	7,125	1 SOMXG: 7,852 NSF at B90700. Calculated as 475 NSF x #PMAI.

211-179	Fuel Systems Maint. Dock	NSF	400	400	400	Major repair or maintenance would require use of the host installation shop. Fuel systems maintenance area requires storage for external tanks: 400 NSF. Per CC 211179 Fuel System Maintenance Dock Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized provide a facility that is 24,632 NSF (30,790 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. See paragraph 7.3.17.4.1.8 for more information.
211-159	Corrosion Control Facility	NSF	0	0	0	CC 211159 Aircraft Corrosion Control, Paragraph 1.4: Bases with a large number of aircraft (above 40 large or medium aircraft assigned) or in a severely corrosive area are authorized, with proper justification, a corrosion control hangar and a wash hangar. If authorized provide a facility that is 26,260 NSF (32,825 GSF with 1.25 net to gross conversion). See paragraph 7.3.17.1.11.3 for more information.
211-152	Sheet Metal Shop	NSF	4,267	4,267	4,267	353 SOMXG: Sheet Metal Shop is in 4,267 NSF at building 3670. The size of this shop does not vary because the equipment used is standard for the aircraft.
211-152	Wheel and Tire	NSF	1,611	1,611	1,611	1 SOMXG: The Wheel & Tire Shop is in 1,611 NSF at building 90700, floor 1. Calculated as 134 NSF (1,611 NSF/12, rounded) x # PMAI.
211-152	Metals Technology	NSF	1,636	1,636	1,636	1 SOMXG: Space is determined by the equipment used. 1 lathe 10' x 10' area (100 NSF), 1 VMC 40-20 equals 6' x 12' plus 6' around for access (432 NSF), Cutting table equals 6' x 10' plus 10' around for access (780 NSF), CNC or VF4 equals 8' x 8' plus 6' around for access (324 NSF).

211-153	NDI Section	NSF	4,000	4,000	4,000	CC 211153 NDI Laboratory, Paragraph 1.2: All bases required to have a full, nondestructive testing facility are authorized 4,000 NSF for a laboratory. See TO 33B-1-1, Sec. 1-14, Figure 1-1 Typical NDI Facility, 15 September 2010.
211-152	AFE (Survival Equip.) Shop	NSF	0	0	0	AFE for the MC-130J is provided with squadron operations. For consolidated AFE facilities for multiple weapon systems, see Table 8.4.4.
211-152	Covered Storage w/fencing	NSF	300	450	750	Calculated as 50 NSF x #PMAI.
211-152	Propulsion	NSF	490	735	1,225	Propellers dollies are 13.5 ft (L) x 19.5 each. Provide two feet clearance on each side for maneuvering. Store 1 per 4 PMAI. A spare will be stored in the AMU. All engines are stored with the AMU. Engine/Propeller maintenance is located with the AMU.
211-152	Admin. Support Space	NSF	0	0	0	In lieu of UMDs for each shop space, an area based assumption that 40% of all maintenance squadron personnel require administrative offices (See Table 7.3.10 , Table 7.3.11 , and Table 7.3.12). The total administrative support space from the Maintenance AMU should be subtracted from this total. AFSOC/A4I: default is 20 sf/ person (CG 61 Admin Overview paragraph 1.4.2).
211-152	Admin. Circulation	NSF	0	0	0	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
211-152	Special Purpose Circulation	NSF	2,094	2,338	2,778	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Total Int. Maint. Facilities		NSF	26,730	29,844	35,464	
Total Int. Maint. Facilities		GSF	33,413	37,305	44,330	Net to Gross conversion factor of 1.25.
Total Covered Storage		NSF	5,470	8,210	13,690	

Notes:

1. Number of PMAI. 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 15 PMAI = 16 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. HAF/A4LF approves the establishment of PMELs at selected installations (TO 00-20-14, Paragraph 1.2.3).

7.3.18. MC-130J Storage Facilities.**7.3.18.1. Aviation Bulk Fuel Storage (CATCODE: 411135).**

7.3.18.1.1. Requirements Determination. The total tankage required for aviation fuel will be the sum of the peacetime and war reserve tankage requirements. This may be adjusted up or down by DLA Energy based on additional distribution needs or nearby available war reserve fuel (DAFMAN 32-1084, CC 411135 Jet Fuel Storage, Paragraph 1.2).

7.3.18.1.2. Scope Determination. The DUSDL&MR Memorandum, "Bulk Petroleum Peacetime Operating Stock Authorization," May 20, 1993, calls for a safety level requiring storage of 5 days (CONUS) or 15 days (OCONUS) at the normal demand rate (DoDM 4140.25-M, Vol II, Chapter 1, Paragraph C11.2.4). AFPAM 23-221 Attachment 7 Table A7.1 lists the average C-130 fuel load at 6,662 gallons per sortie. Additional fuel is required to cover the Unobtainable Inventory and Economic Resupply (AFSOC/A4RE). Assumption is one sortie per aircraft each day. The MC-130J fuel storage requirement is calculated as follows: 9,320 gallons x number of aircraft x 5 days (CONUS) or 15 days (OCONUS) storage. Wartime requirements should directly support an OPLAN and identify fuel quantities to satisfy mobility, strategic air operations, civil defense, and logistics requirements (4140.25-M, Vol II, Chapter 1, Paragraph C11.3.2). The calculation for AC-130J fuel storage does not include fuel to support a war plan. Those stocks would be calculated via ICIS and could vastly increase the fuel storage requirements. Assume bulk fuel storage is provided by the host installation.

7.3.18.1.3. Dimensions. Varies. See [Table 7.3.42](#) for the recommended area for this facility.

7.3.18.1.4. Design Considerations. The determination of the number of tanks to be used for Aviation Bulk Fuel Storage will be based on the following requirements: a minimum of two bulk tanks are required, regardless of the storage quantity, due to fuels quantity control measures; three or more tanks are required for all requirements over 31,800 m³ (200,000 barrels); and the individual capacity of any tank will not exceed 15,900 m³ (100,000 barrels) unless authorization is obtained from AFCESA/CEO.

7.3.18.2. Aircraft Support Equipment Storage Yard (CATCODE: 852273).

7.3.18.2.1. Requirements Determination. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and is measured in square yards.

7.3.18.2.2. Scope Determination. DAFMAN 32-1084, CC 218712 Aircraft Support Equipment Shop/Storage Facility, Table 1.1, lists the space requirements for AGE open storage yard facilities. These requirements are based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per UTC.

7.3.18.2.3. Dimensions. The recommended space allocation for this facility can be found in [Table 7.3.42](#).

7.3.18.3. Above Ground Magazine Storage Facility, Types A, B, and C (CATCODE: 422258).

7.3.18.3.1. Requirements Determination. Not required for the MC-130J.

7.3.18.4. Ancillary Explosives Facility (CATCODE: 422275).

7.3.18.4.1. Requirements Determination. Not required for the MC-130J.

7.3.18.5. Munitions Storage (Training Rounds).

7.3.18.5.1. Requirements Determination. Not required for the MC-130J.

7.3.18.6. Base Hazardous Material Storage (CATCODE: 442257).

7.3.18.6.1. Requirements Determination. Normal authorization is for one month's storage. Storage is usually within three lockers (10 NSF) each per PMAI.

7.3.18.6.2. Scope Determination. Storage is provided in the maintenance AMU.

7.3.18.7. Base Supplies and Equipment Shed (CATCODE: 442628).

7.3.18.7.1. Description. Shed space is required to store base supplies, equipment, and material not requiring closed warehouse space but requiring covered protection from the weather because of nature of material or way they are packed. It may also include lumber storage exclusive of that stored by the Civil Engineer. Space for receiving and shipping activities may be included. Shed storage space is constructed without side and end walls.

7.3.18.7.2. Requirements Determination. Allows Cargo Tactical aircraft 30 GSF (24 NSF) (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.1). Personnel space is 2 NSF per person (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.2).

7.3.18.7.3. Dimensions. Calculated as follows $24 \text{ NSF} \times \text{number of aircraft} + 2 \text{ NSF per person}$. See [Table 7.3.42](#) for the recommended area for this facility.

7.3.18.8. Base Supplies and Equipment Warehouse (CATCODE: 442758).

7.3.18.8.1. Requirements Determination. Warehouse space includes supplies and equipment needed to support base operations and fuels operations; receiving, storage issue, inspection, pickup, and delivery activities; warehouse offices; flyaway or mobility kit storage; dangerous material, exclusive of explosives and ammunition;

property in the equipment account (DAFMAN 32-1084, CC 442758 Warehouse Supply and Equipment Base, Paragraph 1.2); and a facility with a loading dock and direct, unobstructed access is required for semi-tractor trailer size vehicle loading/unloading.

7.3.18.8.2. Mobility Bags (RSP). Space will be computed at 3 ft³ per bag if the type of bag to be stored has been approved by the Air Force. The best space utilization can be obtained by storing in bulk or on pallet racks. Mobility bag storage is the responsibility of the LRS.

7.3.18.8.3. Scope Determination. For SOS base supplies and equipment warehouse space is determined by individual analysis and validated by AFSOC. Warehouse space = 525 NSF for Aircraft space + 3,500 NSF RSP space + Personnel space (15 NSF per person)

7.3.18.8.4. Dimensions. See [Table 7.3.42](#) for the recommended area for this facility.

7.3.18.8.5. Design Considerations: When existing warehouses have clearances between the floor and the bottom of the ceiling joist or truss of 18 ft or more, use double-deck construction within the existing facility before programming a new facility or an addition to the existing facility. The effects of double-decking on the building fire protection system should be recognized. Standard warehouse facility guidelines contained in AFJMAN 23-210 apply. These include, but are not limited to fire protection systems, aisle space, fork lift access, ventilation, and property stacking. Ideally, the warehouse should be centrally located within the intermediate maintenance area and in proximity to the maintenance hangars.

7.3.18.9. **Controlled Humidity Warehouse (CATCODE: 442758).**

7.3.18.9.1. Requirements Determination. Included in the Base Warehouse Storage Facility.

7.3.18.10. **Base Supply Open Storage (CATCODE: 452252).**

7.3.18.10.1. Requirements Determination. Surface improvement of the area is required to facilitate the operation of materials-handling equipment.

7.3.18.10.2. Scope Determination. The size of the area is determined by its overall dimensions with no deductions for interior track and permanent roads.

7.3.18.10.3. Dimensions. The amount of storage space will be determined by analysis and validated by AFSOC. Base Open Storage should be 198 GSF per aircraft for tactical cargo aircraft plus 111 GSF per 200 base personnel (DAFMAN 32-1084, CG 44, Supply Storage Facilities Overview, Table 1.1 and 1.2). Add an additional 500 GSF per aircraft for unique SOF items that cannot be stored in a covered space. See [Table 7.3.42](#) for the recommended space for this facility.

7.3.18.10.4. Design Considerations. Exterior lights and fencing may be installed as required to deter theft. This area should be adjacent to the general warehouse to enhance inventory control and issue of material.

7.3.18.11. **Classified Storage.**

7.3.18.11.1. Description. Storage for classified materials.

7.3.18.11.2. Requirements Determination. Where a separate building is not available or where its use is not warranted by quantity of classified storage, a room, cage, or crib may be constructed within a warehouse building.

7.3.18.11.3. Scope Determination. All areas that contain classified material will be secured by means of approved locking systems. This will include any temporary storage space used for in-transit classified material. In addition to classified items being stored separately from other material, classified material will be segregated in storage from sensitive but unclassified items. Standards for physical protection of classified items are specifically established in DoDD 5200.01, AFI 16-1404 and AFMAN 23-110.

7.3.18.11.4. Dimensions. The recommended space allocation for this facility can be found in [Table 7.3.42](#).

7.3.18.12. Chaff and Flare Build Up and Storage.

7.3.18.12.1. Description. The facility is required for storage, handling, inspection, maintenance, and preparation for use of chaff and flares.

7.3.18.12.2. Requirements Determination. These materials must be stored in an area segregated to store only ammunition and explosives, related non-explosives items, equipment and supplies. The guidance on storage criteria and fire safety is given in AFMAN 91-201, Explosives Safety Standards. Chaff and flare storage can be held within the MC-130J munitions facility but needs a dedicated bay area (Hurlburt, Munitions).

7.3.18.12.3. Dimensions. Chaff and flare storage will be within a 36 ft x 36 ft (1,296 NSF) bay for all PMAI scenarios.

Table 7.3.42. MC-130J Storage Facility Space Requirements.

Facility	UM	MC-130J (6) ¹	MC-130J (9) ¹	MC-130J (15) ¹
Aviation Fuel Storage ⁴	GA	281,000 ² or 844,000 ³	422,000 ² or 1,266,000	703,000 ² or 2,110,000
AGE Storage Yard ⁴	SY	57	86	144
Base Supplies and Equipment Shed	NSF	709	1,043	1,720
Base Supplies and Equipment Warehouse	NSF	11,945	15,980	24,125
Base Supply Open Storage	NSF	4,299	6,504	10,914
Classified Storage	NSF	195	293	488
Chaff and Flare Build Up and Storage	NSF	1,296	1,296	1,296
Admin. Support Space ⁶	NSF	360	480	720
Admin. Circulation	NSF	73	97	144
Special Purpose Circulation	NSF	1,248	1,646	2,446
Total Storage Facilities	NSF	15,942	21,017	31,220
Total Storage Facilities	GSF⁵	19,928	26,271	39,026
Total Open Storage Yard	SY	535	809	1,356

Notes:

1. Number of PMAI. 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI); 12 PMAI = 17 total aircraft (2 BAI).
2. CONUS location requirement
3. OCONUS location requirement
4. Storage provided by host installation.
5. Net to Gross conversion factor of 1.25.
6. Area based requirement assumption of 1 Type D Office (120 NSF max) per 10,000 NSF of storage.

7.4. U-28 Facility Requirements.

7.4.1. **Weapon System Characteristics: U-28.** For detailed characteristics of this weapon system, consult with AFSOC A3V or A5K.

7.4.2. **Aircraft Description.** The U-28A (or U-28) “Draco” is a modified, single-engine Pilatus PC-12 aircraft and is part of the AFSOC manned, airborne intelligence, surveillance, and reconnaissance fleet (ISR). The U-28A provides manned fixed-wing tactical airborne ISR support to humanitarian operations, search and rescue and conventional and special operation missions.

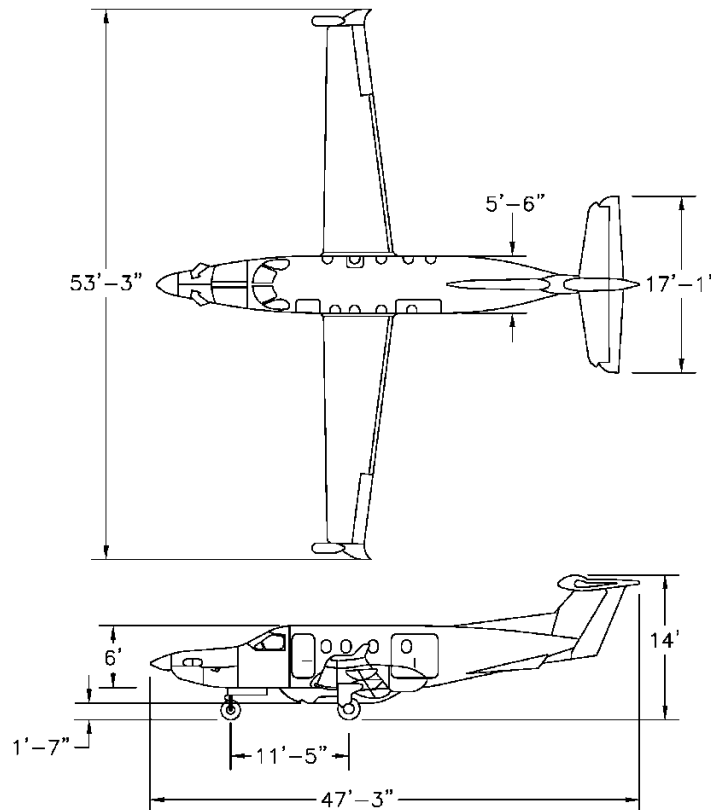
7.4.2.1. **Crew.** The normal flight crew consists of four personnel: a pilot, co-pilot, combat systems officer (CSO), and tactical systems operator (TSO). TSOs are part of Air Combat Command (ACC) and are not on the AFSOC U-28 unit manpower document (UMD); however, TSO-required spaces must be present at the same installation as AFSOC U-28 squadrons. See paragraph 7.4.14.1.3.1 for details regarding TSO-required spaces.

7.4.3. Aircraft Principal Dimensions.

Table 7.4.1. U-28 Block Dimensions.

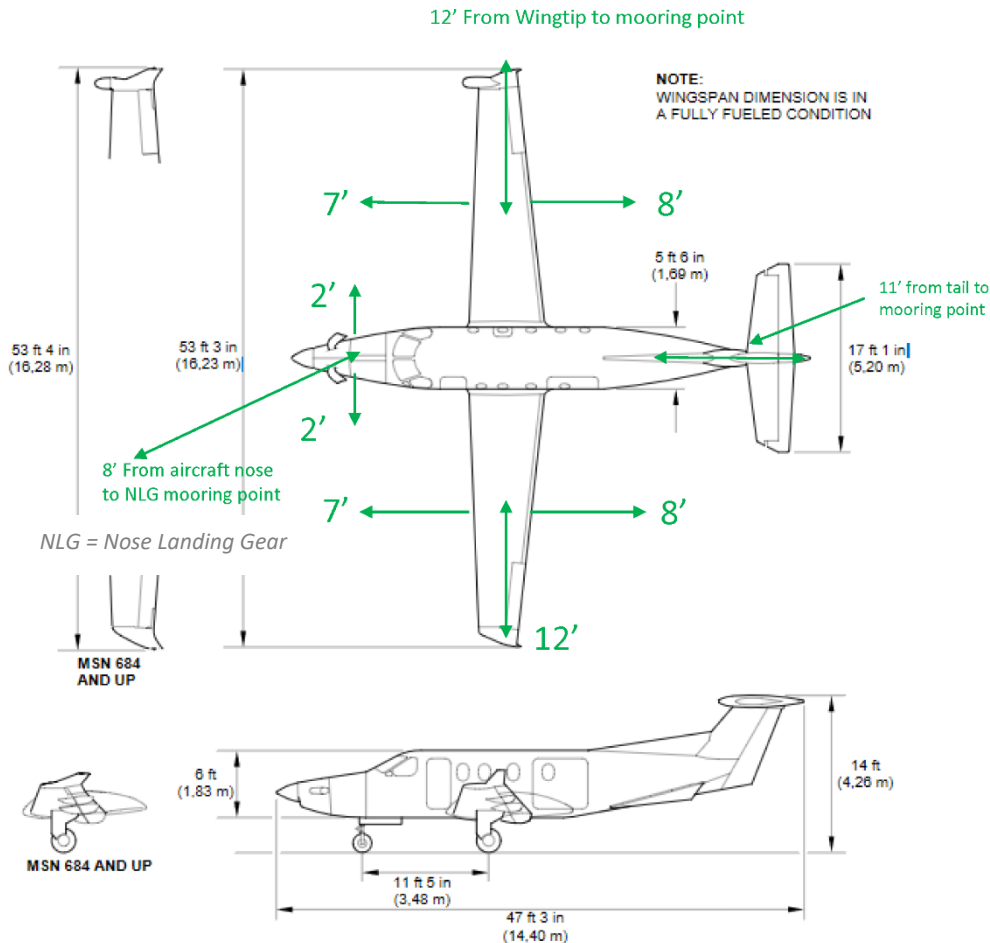
Wingspan		Length		Height	
m	ft	m	ft	m	ft
16.23	53.25	14.40	47.25	4.27	14

Figure 7.4.1. U-28 Aircraft Dimensions.



7.4.4. Aircraft Mooring Arrangement. U-28 aircraft are moored to ensure immovability, protection, and security under various weather conditions. The U-28 has four mooring eyes: one underneath each wing, one at the nose, and one at the tail.

Figure 7.4.2. U-28 Mooring Arrangement.



7.4.5. Aircraft Weights/Wheel Loads.

Table 7.4.2. U-28 Basic Weights Summary.

Configuration	Weight kg (lbs.)
Basic Empty Weight ¹	3,538 (7,800)
Standard Combat Load ¹	901 (2,000)
Standard Training Load ¹	726 (1,600)
Standard Operating Weight (Standard) ¹	4,960 (10,935)
Minimum Fuel Load ¹	91 (200)
Emergency Fuel ¹	68 (150)
Notes:	
1. Source: U-28 Aircrew Operating Handbook (AOH) excerpts provided by 645 AESG/WIJP	

7.4.6. Minimum Takeoff and Landing Requirements.

7.4.6.1. **Reference.** See Paragraph 7.4.11, Base Operations Facilities - Airfield Requirements, for the minimum runway length required for the U-28 and other airfield requirements.

7.4.6.2. **Takeoff.** The minimum ground roll takeoff distance for the U-28 varies based on aircraft gross weight, performance, and weather conditions. See Table 7.4.3 for U-28 maximum takeoff weights by configuration.

Table 7.4.3. U-28 Maximum Takeoff Weights.

Aircraft Configuration	Aircraft Weight kg (lbs.)	Takeoff Distance (ft)
Maximum Gross Takeoff Weight ¹	4,960 (10,935)	Varies ²
Notes: 1. Source: U-28 Aircrew Operating Handbook (AOH) excerpts provided by 645 AESG/WIJP. 2. Consult A3O or A3V for takeoff distances based on weather conditions and altitude. Per https://www.pilatus-aircraft.com/en/fly/pc-12 , takeoff distance over a 50' obstacle (Maximum takeoff weight, ISA, sea level, dry paved runway) is 2,485 ft.		

7.4.6.3. **Landing.** The minimum landing distance for the U-28 varies based on aircraft gross weight, performance, and weather conditions. See Table 7.4.4 for U-28 maximum landing weights by configuration.

Table 7.4.4. U-28 Maximum Landing Weight.

Aircraft Configuration	Aircraft Weight kg (lbs.)	Landing Distance (ft)
Maximum Gross Landing Weight ¹	4,500 (9,921)	Varies ²
Notes: 1. Source: U-28 Aircrew Operating Handbook (AOH) excerpts provided by 645 AESG/WIJP. 2. Consult A3O or A3V for landing distances based on weather conditions and altitude. Per https://www.pilatus-aircraft.com/en/fly/pc-12 , landing distance over a 50' obstacle (maximum landing weight, ISA, sea level, dry paved runway) is 2,170 ft.		

7.4.7. **Unique Maintenance Requirements.** The U-28 has various systems that require periodic servicing and replenishment; however, none of these systems drive a facility requirement that is not met within the minimum space allocation of the maintenance hangar and other maintenance and intermediate maintenance facilities.

7.4.8. **Unique Power Requirements.** The U-28 employs both DC and AC electrical power. The DC electrical power supply is the basic power system energizing most aircraft currents. AC power is obtained from the DC power system through inverters. The AC power system is single phase. The sources of DC power include one nickel cadmium 24V, 40A/hour battery storage system and two generators (one main generator at 300 or 400A and one secondary generator at 115A). DC power may be applied to the aircraft through an external power receptacle under the rear fuselage left side using a 28V, 1,000A ground power unit.

7.4.9. U-28 Operations Squadron Characteristics.

7.4.9.1. U-28 Unit Type Code (UTC) and Crew Construct.

7.4.9.1.1. UTC Construct. The U-28 currently has a single UTC construct where one UTC consists of 3 Primary Mission Aircraft Inventory (PMAI), 1 Backup Aircraft Inventory (BAI), and 0 Primary Training Aircraft Inventory (PTAI) for a total of 4 airframes. When cross-referencing this facility requirements instruction (FRI) and DAFMAN32-1084, note that this FRI refers to PMAI and DAFMAN-32-1084 refers to Primary Assigned Aircraft (PAA). For AFSOC planning purposes, this term is clarified to directly associate planning factors to types of weapon system uses within the aircraft inventory. This provides improved awareness of variances between requirements for AFSOC PMAI, BAI, and PTAI. Of note, the addition of PTAI impacts aprons, covered maintenance spaces, aircraft maintenance unit (AMU) manpower, and Field Training Unit (FTU) manpower. This reference has been updated in this document in the re-calculation for U-28 aprons in paragraph 7.4.11.4; however, this document assumes PTAI are not part of an AFSOC operational squadron and would be assigned to an FTU at a training school location.

7.4.9.1.1.1. U-28 Operational Squadrons assigned PTAI. U-28 operational squadrons assigned PTAI will receive an allowance at a rate of 1.0 flight crew per PTAI assigned to the squadron. Unless otherwise allowed per the office allowances identified in DAFMAN32-1084, FC_6_CG_61_Admin_Overview, Table 1.2 and 1.2.1, provide a Type E office space for a section chief (Type E office is 65 NSF each) and provide all other offices should be standard workstations (Type F office is 48 NSF each).

7.4.9.1.2. Crew Ratio and Crew Complement. The normal flight crew for the U-28, as detailed in **Paragraph 7.4.2**, is 4 people (PN or persons). The crew ratio is the number of crews required to support deployments and dwell times for the unit. For purposes of this AFSOCI the U-28 crew ratio is 3.3 crews per PMAI and 1 crew per PTAI; the actual crew ratio published in AFI 65-503 will likely differ. The total number of flight crew members is calculated as follows: number of flight crew x crew ratio x number of PMAI (or PTAI). Thus, a larger flight crew or crew ratio will result in larger facilities required to support additional personnel, and vice versa.

7.4.9.1.3. Notional Squadron Concepts. For planning purposes, this FRI provides facility space requirements for the three most common U-28 squadron scenarios: 1 UTC (3 PMAI, 1 BAI); 2 UTC (6 PMAI, 1 BAI); and 3 UTCs (9 PMAI, 1 BAI), which represents a full squadron. To ensure the most accurate facility space requirements possible, consult AFSOC/A3O/A4I for the latest information regarding the current

U-28 UTC construct, crew ratio, and crew complement. Notional manpower for U-28 operations squadrons is presented in **Table 7.4.5**, **Table 7.4.6**, and **Table 7.4.7**. Notional manpower for U-28 active duty (AD) military maintenance squadrons is presented in **Table 7.4.8**, **Table 7.4.10**, and **Table 7.4.12**. Notional manpower for U-28 contractor logistics support (CLS) maintenance squadrons is presented in **Table 7.4.9**, **Table 7.4.11**, and **Table 7.4.13**.

Table 7.4.5. U-28 Operations Squadron Notional Manning, 1 UTC (3 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	0	0	0
SOS	Commander's Support Staff	0	1	2	3
SOS	Aviation Resource Mgmt.	0	3	0	3
SOS	Flight Crews @ CR 3.3 ¹	30	0	0	30
	SOS Total	32	4	2	38
SOSS	Communications	0	2	0	2
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Intelligence	0	2	0	2
SOSS	AFE	0	3	0	3
SOSS	Weather	0	4	0	4
	SOSS Total	1	13	0	14
SOG	Stand/Eval	1	1	0	2
SOG	Weapons and Tactics	1	1	0	2
	SOG Total	2	2	0	4
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3,4}	37	20	2	59

Notes:

1. The U-28 crew ratio is based on the total number of crews available; therefore, the actual U-28 SPA will vary from the crew ratio used for planning purposes. For purposes of this AFSOCI, the U-28 crew ratio is 3.3 crews per PMAI and 1 crew per PTAI; the actual crew ratio published in AFI 65-503 will likely differ.
2. Per AFSOC/A3TO, the current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total 4 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.4.6. U-28 Operations Squadron Notional Manning, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	1	0	1
SOS	Commander's Support Staff	0	1	2	3
SOS	Aviation Resource Mgmt.	0	4	0	4
SOS	Flight Crews @ CR 3.3 ¹	60	0	0	60
	SOS Total	62	5	2	69
SOSS	Communications	0	4	0	4
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Intelligence	0	4	0	4
SOSS	AFE	0	6	0	6
SOSS	Weather	0	4	0	4
	SOSS Total	1	20	0	21
SOG	Stan/Eval	1	1	0	2
SOG	Weapons and Tactics	1	1	0	2
	SOG Total	2	2	0	4
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3,4}	67	28	2	97

Notes:

1. The U-28 crew ratio is based on the total number of crews available; therefore, the actual U-28 SPA will vary from the crew ratio used for planning purposes. For purposes of this AFSOCI, the U-28 crew ratio is 3.3 crews per PMAI and 1 crew per PTAI; the actual crew ratio published in AFI 65-503 will likely differ.
2. Per AFSOC/A3TO, the current notional UTC concept will be a three-ship configuration. In this case that equals 6 PMAI and 1 BAI (total 7 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.4.7. U-28 Operations Squadron Notional Manning, 3 UTCs (9 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	1	0	1
SOS	Commander's Support Staff	0	1	3	4
SOS	Aviation Resource Mgmt.	0	5	0	5
SOS	Flight Crews @ CR 3.3 ¹	90	0	0	90
	SOS Total	92	7	2	101
SOSS	Communications	0	6	0	6
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Intelligence	0	6	0	6
SOSS	AFE	0	9	0	9
SOSS	Weather	0	5	0	5
	SOSS Total	1	28	0	29
SOG	Stan/Eval	1	1	0	2
SOG	Weapons and Tactics	1	1	0	2
	SOG Total	2	2	0	4
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3,4}	97	38	2	137

Notes:

1. The U-28 crew ratio is based on the total number of crews available; therefore, the actual U-28 SPA will vary from the crew ratio used for planning purposes. For purposes of this AFSOCI, the U-28 crew ratio is 3.3 crews per PMAI and 1 crew per PTAI; the actual crew ratio published in AFI 65-503 will likely differ.

2. Per AFSOC/A3TO, the current notional UTC concept will be a three-ship configuration. In this case that equals 9 PMAI, 1 BAI, and 0 PTAI (total 10 airframes).

3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.4.10. Maintenance Squadron Characteristics.

Table 7.4.8. U-28 AD Military Maintenance Squadron Notional Manning, 1 UTC (3 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOMXS	Commander	1	0	0	1
SOMXS	First Sergeant	0	1	0	1
SOMXS	Maintenance Officer	1	0	0	1
	Flight Total	2	1	0	3
SOAMXS	Flight Chief	0	2	0	2
SOAMXS	Section Chief	0	2	0	2
SOAMXS	Supply	0	2	0	2
SOAMXS	Aircraft Flight Equipment	0	2	0	3
	Flight Total	0	8	0	8
SOAMXS	Crew Chief	0	15	0	15
SOAMXS	Engines	0	9	0	9
SOAMXS	Avionics	0	9	0	9
SOAMXS	E&E	0	6	0	6
SOAMXS	Fuel Cell	0	3	0	3
SOAMXS	AGE	0	3	0	3
SOAMXS	Structures	0	3	0	3
	Flight Total	0	48	0	48
SOMXG	Quality Assurance	0	3	0	3
	SOMXG Total	0	3	0	3
CLS	Contractor Logistics Support	0	0	3	3
	CLS Total	0	0	3	3
	TOTAL MAINTENANCE¹	2	60	3	65
	SPA^{2,3,4}				21.67

Notes:

1. Per AFSOC/A3TO current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total 4 airframes).
2. Per AFSOC/A1M, the U-28 does not have an official SPA because it is a CLS weapon system. However, for planning purposes, this document will assume the AD Military planning SPA for the U-28 is 21.67 (Based on an estimate of maintainers for 3 PMAI/BAI).
3. PTAI: Per A1M, the programmatic estimate for PTAI is 70% of the SPA for maintenance. This methodology only applies to AFSOC-owned PTAI at AFSOC host installations. This does not apply to AFSOC airframes that use CLS.
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.4.9. U-28 Contractor Maintenance Squadron Notional Manning, 1 UTC (3 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
CLS	Contractor Logistics Support	0	0	21	21
	TOTAL MAINTENANCE^{1,2,3}	0	0	21	21
Notes: 1. This table shows estimates for consideration and initial planning purposes only. These numbers will be updated pending receipt of validated CLS manpower documentation. This estimate is based on similar AFSOC CLS maintenance program notional concepts. 2. The current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total of 4 airframes). 3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.					

Table 7.4.10. U-28 Active Duty Military Maintenance Squadron Notional Manning, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOMXS	Commander	1	0	0	1
SOMXS	First Sergeant	0	1	0	1
SOMXS	Maintenance Officer	1	0	0	1
	Flight Total	2	1	0	3
SOAMXS	Flight Chief	0	2	0	2
SOAMXS	Section Chief	0	2	0	2
SOAMXS	Supply	0	4	0	4
SOAMXS	Aircraft Flight Equipment	0	3	0	3
	Flight Total	0	11	0	11
SOAMXS	Crew Chief	0	33	0	33
SOAMXS	Engines	0	20	0	20
SOAMXS	Avionics	0	20	0	20
SOAMXS	E&E	0	13	0	13
SOAMXS	Fuel Cell	0	7	0	7
SOAMXS	AGE	0	7	0	7
SOAMXS	Structures	0	7	0	7
	Flight Total	0	107	0	107
SOMXG	Quality Assurance	0	3	0	3
	SOMXG Total	0	3	0	3
CLS	Contractor Logistics Support	0	0	6	6
	CLS Total	0	0	6	6
	TOTAL MAINTENANCE¹	2	122	6	130
	SPA^{2,3}				21.67

Notes:

1. Per AFSOC/A3TO current notional UTC concept will be a three-ship configuration. In this case that equals 9 PMAI and 1 BAI (total 10 airframes).

Per AFSOC/A1M, the U-28 does not have an official SPA because it is a CLS weapon system. However, for planning purposes, this document will assume the AD Military planning SPA for the U-28 is 21.67 (Based on an estimate of 65 PN maintainers for 3 PMAI/BAI).

3. PTAI: Per A1M, the programmatic estimate for PTAI is 70% of the SPA for maintenance. This methodology only applies to AFSOC-owned PTAI at AFSOC host installations. This does not apply to AFSOC airframes that use CLS.

4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.4.11. U-28 Contractor Maintenance Squadron Notional Manning, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
CLS	Contractor Logistics Support	0	0	32	32
	TOTAL MAINTENANCE^{1,2,3}	0	0	32	32
Notes: 1. This table shows estimates for consideration and initial planning purposes only. These numbers will be updated pending receipt of validated CLS manpower documentation. This estimate is based on similar AFSOC CLS maintenance program notional concepts and provides 21 personnel for a 3-ship UTC, plus an additional 11 personnel (1 maintainer per aircraft plus 2 support staff [QA, records, etc.]) each additional 3-ship UTC. 2. The current notional UTC concept will be a three-ship configuration. In this case that equals 6 PMAI and 1 BAI (total of 7 airframes). 3. Per A1M, the programmatic estimate for PTAI is 70% of the SPA for maintenance. This methodology only applies to AFSOC-owned PTAI at AFSOC host installations. This does not apply to AFSOC airframes that use CLS. 4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.					

Table 7.4.12. U-28 Maintenance Squadron Notional Manning, 3 UTCs (9 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOMXS	Commander	1	0	0	1
SOMXS	First Sergeant	0	1	0	1
SOMXS	Maintenance Officer	1	0	0	1
	Flight Total	2	1	0	3
SOAMXS	Flight Chief	0	2	0	2
SOAMXS	Section Chief	0	2	0	2
SOAMXS	Supply	0	4	0	4
SOAMXS	Aircraft Flight Equipment	0	3	0	3
	Flight Total	0	11	0	11
SOAMXS	Crew Chief	0	55	0	55
SOAMXS	Engines	0	30	0	30
SOAMXS	Avionics	0	30	0	30
SOAMXS	E&E	0	21	0	21
SOAMXS	Fuel Cell	0	11	0	11
SOAMXS	AGE	0	11	0	11
SOAMXS	Structures	0	11	0	11
	Flight Total	0	169	0	169
SOMXG	Quality Assurance	0	3	0	3
	SOMXG Total	0	3	0	3
CLS	Contractor Logistics Support	0	0	9	9
	CLS Total	0	0	9	9
	TOTAL MAINTENANCE¹	2	184	9	195
	SPA^{2,3}				21.67

Notes:

1. Per AFSOC/A3TO current notional UTC concept will be a three-ship configuration. In this case that equals 9 PMAI and 1 BAI (total 10 airframes).

Per AFSOC/A1M, the U-28 does not have an official SPA because it is a CLS weapon system. However, for planning purposes, this document will assume the AD Military planning SPA for the U-28 is 21.67 (Based on an estimate of 65 PN Maintainers for 3 PMAI).

3. PTAI: Per A1M, the programmatic estimate for PTAI is 70% of the SPA for maintenance. This methodology only applies to AFSOC-owned PTAI at AFSOC host installations. This does not apply to AFSOC airframes that use CLS.

4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.4.13. U-28 Maintenance Squadron Notional Manning, 3 UTCs (9 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
CLS	Contractor Logistics Support	0	0	43	43
TOTAL MAINTENANCE^{1,2,3}		0	0	43	43

Notes:

1. This table shows estimates for consideration and initial planning purposes only. These numbers will be updated pending receipt of validated CLS manpower documentation. This estimate is based on similar AFSOC CLS maintenance program notional concepts, and provides 21 personnel for a 3-ship UTC, plus an additional 11 personnel (1 maintainer per aircraft plus 2 support staff [QA, records, etc.]) each additional 3-ship UTC.
2. The current notional UTC concept will be a three-ship configuration. In this case that equals 9 PMAI and 1 BAI (total of 10 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.4.11. Base Operations Ground Facilities - Airfield Requirements.**7.4.11.1. Runways (CATCODE: 11111).**

7.4.11.1.1. Requirements Determination. The U-28 requires a Class A runway (UFC 3-260-01, Table 3-1, Note 1 – based on C-12 designation).

7.4.11.1.2. Runway Length. The U-28 requires a minimum runway length of 7,000 ft for operations at elevations between 0 and 2,500 ft MSL, an 8,500-foot runway for operations at elevations between 2,500 and 5,000 MSL, and an 11,000-foot runway and at elevations above 5,000 ft MSL (A3VZ).

7.4.11.1.2.1. Flight Test Runway Length. The following references are from AFI 11-2FTV3, *Flying Operations Procedures* and are provided as examples of U-28 runway flight test requirements and do not supersede AFSOC U-28 runway lengths for operations in paragraph 7.4.11.1.2. Air Force Materiel Command (AFMC) uses these instructions in lieu of AFI 11-2 Mission Design Series (MDS)-specific volumes for flying operations. Per AFI 11-2FTV3 Table 2.1 lists the minimum runway length for U-28 aircraft as 2,500 ft. Per AFI 11-2FTV3, Appendix 24, Paragraph A24.3.6, the minimum runway length for touch and go operations is 5,000 feet for full and partial flap landings and 6,000 feet for no-flap landings.

7.4.11.1.3. Runway Width. The minimum runway width allowed for the U-28 is 50 ft (AFI 11-2FTV3, Table 2.1); however, Class A runways have a minimum runway width requirement of 100 ft (UFC 3-260-01, Table 3-2, Item 2). Therefore, provide a 100-foot-wide runway for U-28 airfields to meet the minimum Class A airfield criteria.

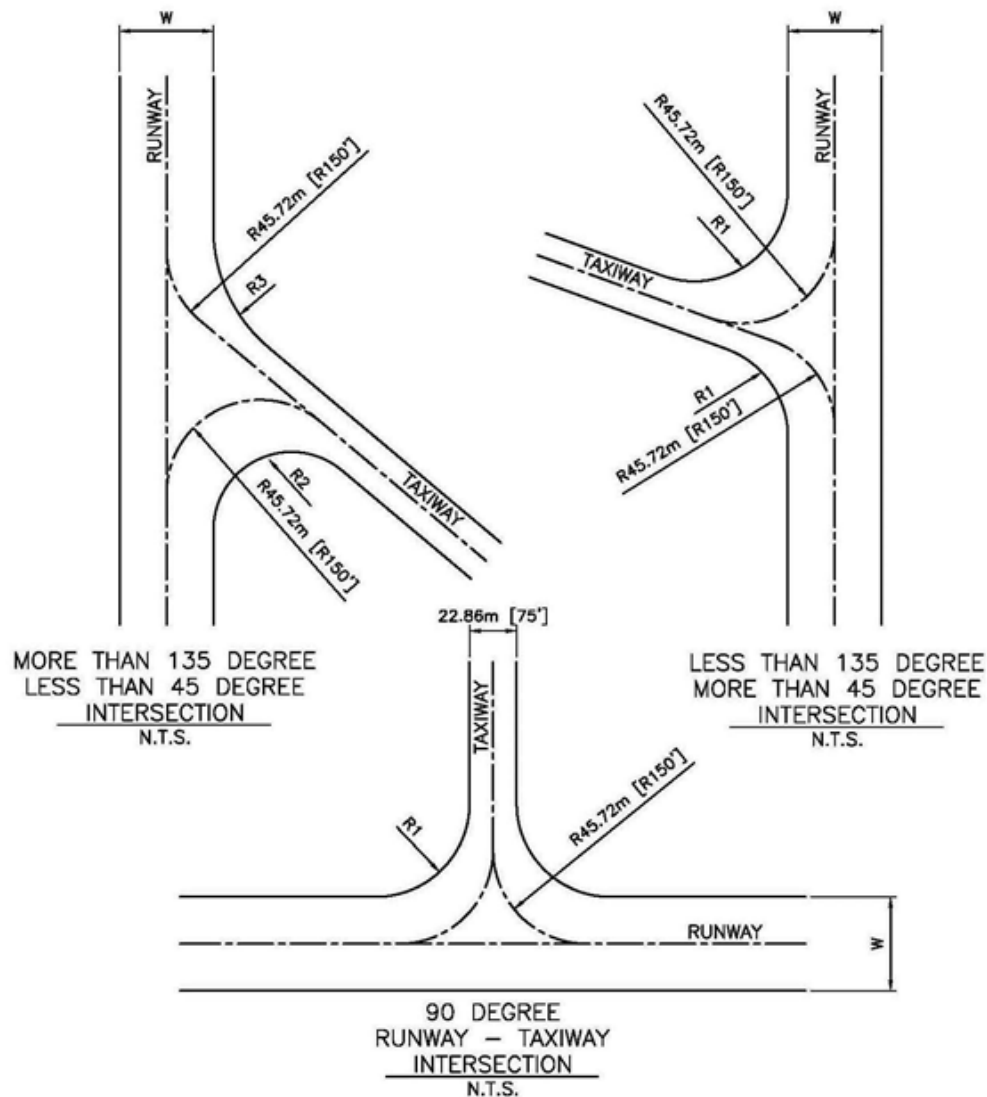
7.4.11.1.4. Shoulders. Shoulders can be both paved or unpaved and are located on each side of the runway. The minimum paved shoulder for the U-28 is 25 ft on each side of the runway (UFC 3-260-01, Table 3-2, Item 4). A minimum combined total of paved and unpaved shoulders for the U-28 is 50 ft (UFC 3-260-01, Table 3-2).

7.4.11.1.5. Runway/Taxiway Intersection Fillet Radii. See [Table 7.4.14](#) and [Figure 7.4.2](#).

Table 7.4.14. Runway/Taxiway Intersection Fillet Radii.

Runway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	$R1^{1,3}$	$R2^2$	$R3^2$
More than 75 ft but less than 150 ft	150	125	250
150 ft or more	125	125	250
Notes: 1. Less than 135 and more than 45-degree intersection 2. More than 135 and less than 45-degree intersection 3. 90-degree intersection			

Figure 7.4.3. Runway-Taxiway Intersection Fillet Radii.



7.4.11.2. Paved Overrun (CATCODE: 111115).

7.4.11.2.1. Requirements Determination. All runways are required to have paved overruns.

7.4.11.2.2.1. Length (min.). The U-28 paved overrun minimum length for Class A runways is 200 ft (UFC 3-260-01, Table 3-4, Item 1).

7.4.11.2.2.2. Width (min.). The U-28 paved overrun minimum width for Class A runways is 100 ft (UFC 3-260-01, Table 3-4, Item 3).

7.4.11.3. Taxiway (CATCODE: 112211).

7.4.11.3.1. Requirements Determination. All runways are required to have taxiways.

7.4.11.3.2.1. Taxiway Width. The minimum taxiway width for the U-28 is 25 ft (AFI 11-2FTV3, Table 2.1). Class A Runways have a minimum taxiway requirement of 50 ft (UFC 3-260-01 Table 5-1, Item 1).

7.4.11.3.2.2. Taxiway Paved Shoulders. The minimum paved taxiway shoulder width for U-28 airfields is 25 ft (UFC 3-260-01, Table 5-1, Item 3).

7.4.11.3.2.3. Taxiway Clearance Line (Fixed or Mobile Objects). The taxiway clearance line for fixed or mobile objects for U-28 airfields is 150 ft from the taxiway centerline (UFC 3-260-01, Table 5-1, Item 10).

7.4.11.3.2.4. Taxiway Clearance Line (Parallel Taxiway). The taxiway clearance line for parallel taxiways for U-28 airfields is 175 ft (UFC 3-260-01, Table 5-1, Item 11).

7.4.11.3.2.5. Taxiway Centerline Radius. The taxiway centerline radius is the taxiway width divided by 2 and added to 100 ft. The minimum taxiway centerline radius is 125 ft ($50 / 2 + 100 = 125$ ft). The centerline turning radii used to determine the fillet radii for **Figure 2.3** and **Figure 2.4** are 150 ft and 125 ft respectively.

7.4.11.3.2.6. Wingtip Clearances for Taxiing. The wingtip clearance for parked aircraft is 10 ft (UFC 3-260-01, Table 6-1, Item 4). The wingtip clearance of aircraft on interior or secondary peripheral taxilanes is 20 ft (UFC 3-260-01, Table 6-1, Item 5). The wingtip clearance of aircraft on through or primary peripheral taxilanes is 30 ft (UFC 3-260-01, Table 6-1, Item 6).

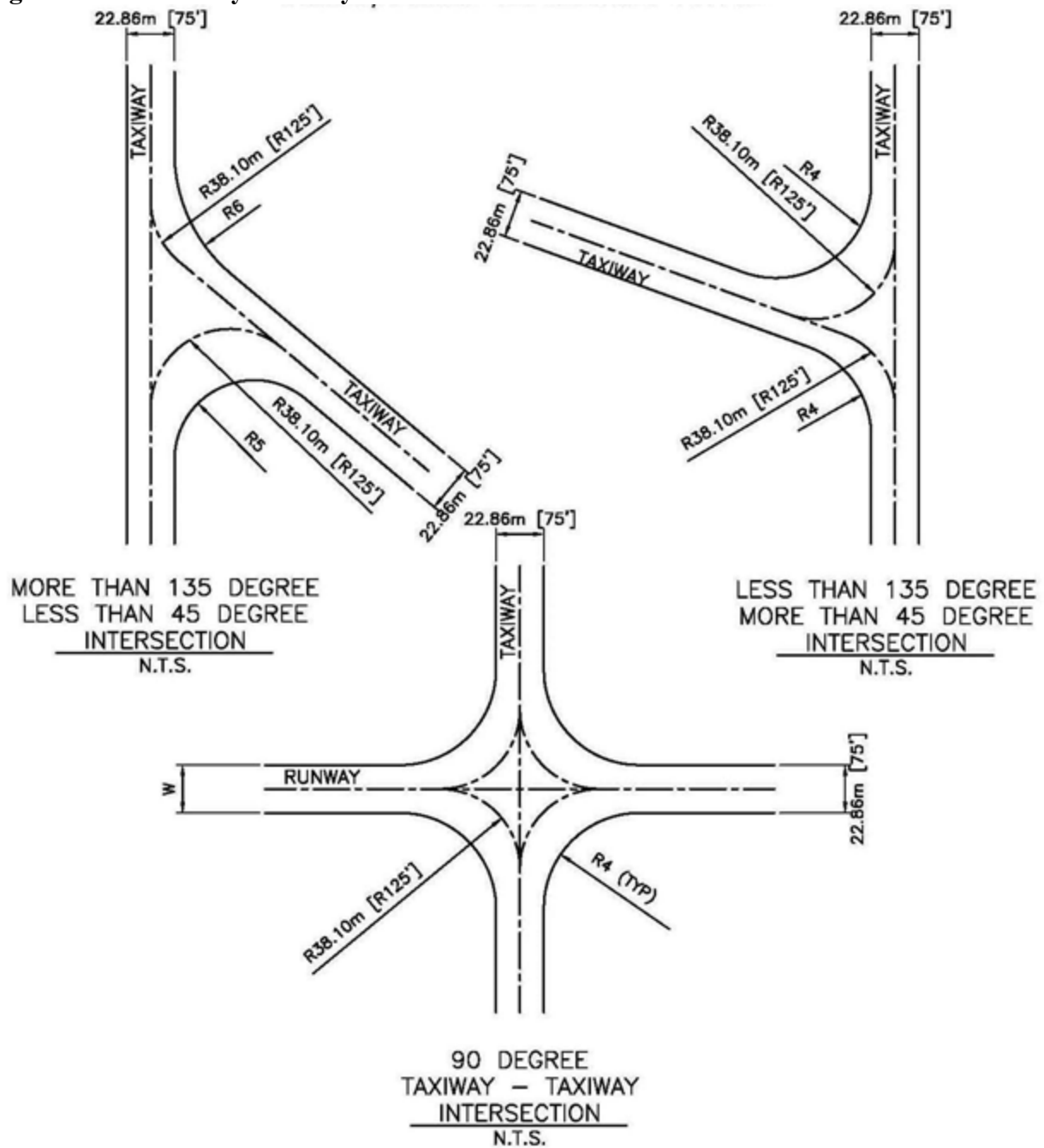
7.4.11.3.2.7. Taxiway/Taxiway Intersection Fillet Radii. See **Table 7.4.15** and **Figure 7.4.4**.

Table 7.4.15. Taxiway/Taxiway Intersection Fillet Radii.

Taxiway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	$R4^{1,3}$	$R5^2$	$R6^2$
75 ft	150	125	250

Notes:

1. Less than 135 and more than 45-degree intersection
2. More than 135 and less than 45-degree intersection
3. 90-degree intersection

Figure 7.4.4. Taxiway-Taxiway Intersection Fillet Radii.**7.4.11.4. Apron (CATCODE: 113321).**

7.4.11.4.1. Requirements Determination. Aprons are individually designed to support specific aircraft and missions at a particular installation. The actual dimensions of an apron are based on the number of authorized aircraft, maneuvering space, and type of activity the apron serves. (DAFMAN 32-1084, CC 113321, Paragraph 1.2). The dimensions of an operational parking apron for the U-28 are based on the number of PMAI minus any covered parking provided. It does not include the number of BAI, PTAI, or transient requirements as these are typically located on separate aprons or in a separate hangar. When factoring for other aircraft inventory on a single apron, consider all aircraft inventories as applicable in the total number of aircraft and follow the steps laid out in paragraph 7.4.11.4.2. The minimum clearances allowed between U-28 aircraft in a parking configuration are shown in [Table 7.4.16](#).

7.4.11.4.2. Scope Determination. A proper apron allowance is the amount required to afford maximum operational efficiency with a minimum amount of paving. The paragraphs below describe the basis for calculating apron allowances for various types of operations. Paragraph 7.4.11.4.2.5 describes a method for estimating apron requirements for broad planning purposes. High Threat areas may require additional pavement to meet aircraft dispersal requirements (DAFMAN32-1084, CC 113321, Paragraph 1.3).

7.4.11.4.2.1. Access to Hangars, Docks, and Shelters. Apron configuration is influenced by the size of the door openings and by the dimensions and turning radius of the largest aircraft using the buildings. A mass apron or a taxiway configuration is used depending on access requirements. To avoid building non-usable pavement, design for adequate wingtip clearances of any obstacle near the apron. For the U-28, the minimum length of apron to access hangars, docks, and shelters is 32 ft (rounded from 31.625 ft) when accessed from through or peripheral taxilanes and 22 ft (rounded from 21.625 ft) when accessed from an interior or secondary peripheral taxilane (UFC 3-260-01 Table 6-1, Item 15). Class A runways require a minimum hangar access apron length of 100 ft (UFC 3-260-1, Table 6-6, Item 1). The width must be at least as wide as the hangar door (UFC 3-260-1, Table 6-6, Item 2).

7.4.11.4.2.2. Operational Aircraft. Operational aircraft are parked on mass aprons, strip aprons, or where authorized, on dispersed stubs. To determine how many operational aircraft require apron space, proceed as follows: Begin with 100 percent of the assigned aircraft as established by official documents; subtract the number of aircraft located on separate aprons, such as alert aircraft; subtract the number of aircraft located in maintenance hangars or docks under normal maintenance schedules; and finally, subtract aircraft that are parked elsewhere on existing paving of a suitable nature and location. (DAFMAN 32-1084, CC 113321, Paragraph 1.3.3). For planning purposes, this document assumes only PMAI are operational aircraft; thus, the requirements in this document reflect only PMAI calculations for facility requirements in facility summary tables.

7.4.11.4.2.3. Assigned Aircraft. Assigned aircraft consist, at a minimum, of the Primary Assigned Aircraft (PAA) inventory established from the funded flying program for the base. Many bases have other aircraft inventory that require a

parking apron. This inventory varies by base and depot repair cycles. These aircraft may be annotated as backup inventory, ready reserve, or attrition reserve. Account for the monthly average of these non-primary assigned aircraft remaining on station in determining apron requirements (DAFMAN 32-1084, CC 113321, Paragraph 1.3.2). For planning purposes, summary tables in this instruction reflect operational squadron requirements or PMAI; therefore, BAI and PTAI are considered assigned aircraft that are not included in an operational squadron's facility requirements. However, the method for calculating assigned aircraft is the same: Begin with 100 percent of BAI/PTAI, subtract the number of aircraft on separate aprons, subtract the number of aircraft located in maintenance hangars or docks under normal maintenance schedules; and finally, subtract aircraft that are parked elsewhere on existing paving of a suitable nature and location.

7.4.11.4.2.4. Aircraft Parking Arrangements. See [Figure 7.4.5](#) for a typical parking apron for the U-28.

7.4.11.4.2.5. Estimating New Apron Requirements. For broad planning purposes, use the following method to estimate new apron requirements. Multiply the wingspan of the selected aircraft by its length (DAFMAN 32-1084, CC 113321, Paragraph 1.3.7), then multiply the product by a factor determined by the total number of aircraft being supported on the apron. For one aircraft use a multiplier of 11.6, for two aircraft use a multiplier of 8.4, for three aircraft use a multiplier of 7.3, for four aircraft use a multiplier of 6.8, for five aircraft use a multiplier of 7.1, and for 6 aircraft use a multiplier of 6.8.

7.4.11.4.3. Dimensions. The parking apron size for the U-28 is determined by calculating the aircraft dimensions 47.25 ft (L) x 53.25 ft (W) and adding the minimum apron clearances. To calculate the required apron parking spaces, subtract the covered maintenance spaces (and aircraft parked on other aprons) from the PMAI (See [Table 7.4.25](#) for an example). Multiply the product by the corresponding factor/multiplier in paragraph 7.4.11.4.2.5. Therefore, 4 total aircraft or 3 PMAI = 1 apron space or 29,178 NSF (this includes 12,978 NSF apron and 16,200 NSF of taxilanes for two access points attaching the apron to a primary taxiway); 7 total aircraft or 6 PMAI = 4 apron spaces or 68,112 NSF (this includes 51,912 NSF apron and 16,200 NSF of taxilanes for two access points attaching to the apron to a primary taxiway); and 10 total aircraft or 9 PMAI = 6 apron spaces or 102,168 NSF (this includes 77,868 NSF apron and 24,300 NSF of taxilanes for three access points attaching the apron to a primary taxiway).

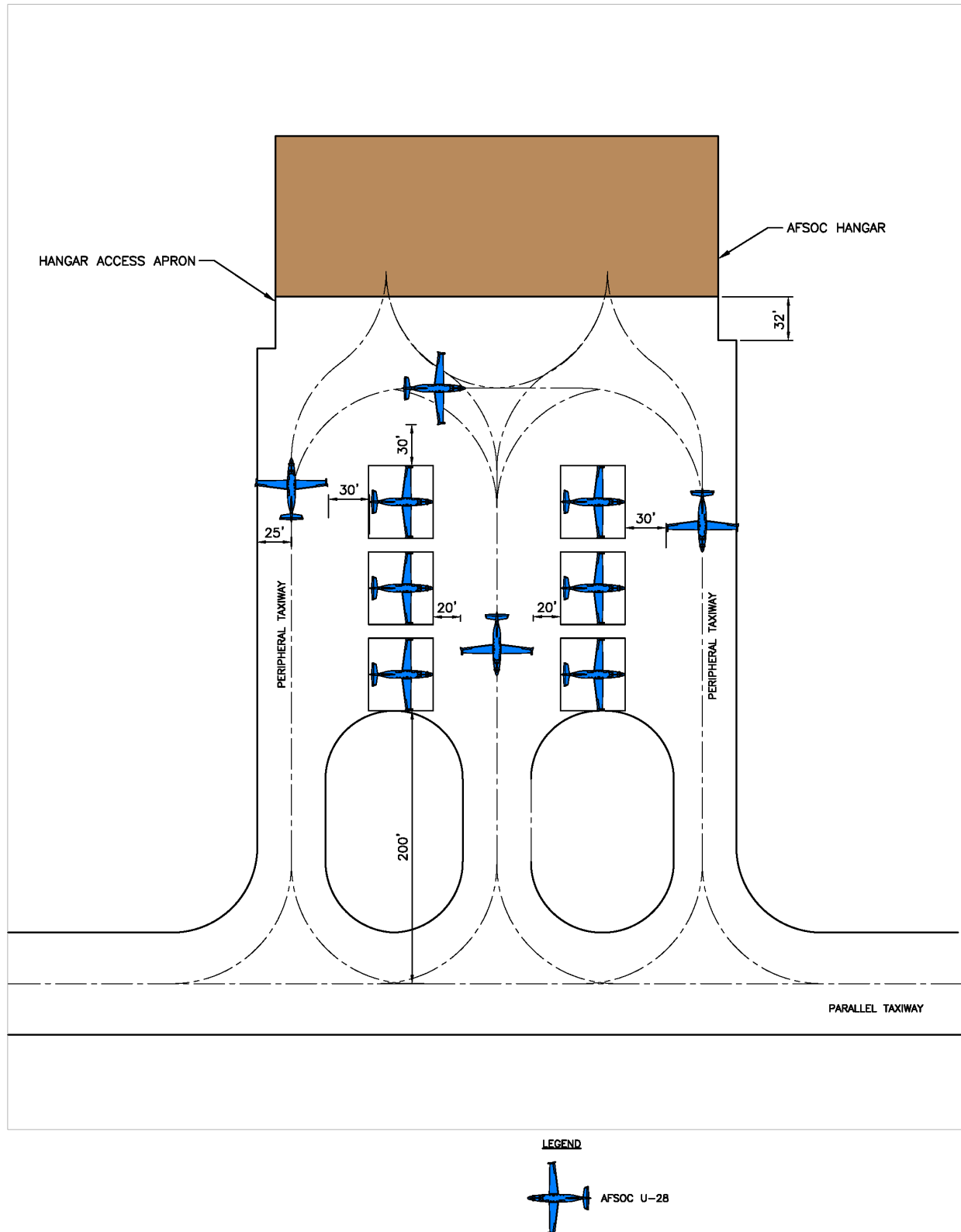
Table 7.4.16. U-28 Parking Apron Clearances.

Hangar Access Apron – Off Through or Peripheral Taxilanes ¹		Wingtip Clearance on Peripheral or Through Taxilanes ²		Wingtip Clearance on Interior/Secondary Peripheral Taxilanes ³		Min. Distance Between Wings of Parked Aircraft ⁴	
m	ft	m	ft	m	ft	m	ft
9.75	32	9.14	30	6.10	20	3.05	10

Notes:

1. UFC 3-260-01, Table 6-5, Item 1: 26.625 ft (0.5 x wingspan) + 30 ft (wingtip clearance for aircraft on peripheral or through taxilanes) - 25 (dist. from peripheral taxilane centerline to edge of apron).
2. Source: UFC 3-260-01, Table 6-1, Item 6.
3. Source: UFC 3-260-01, Table 6-1, Item 5.
4. Source: UFC 3-260-01, Table 6-1, Item 4.

Figure 7.4.5. U-28 Typical Parking Apron.



7.4.11.5. Paved Shoulders (CATCODE: 116642).

7.4.11.5.1. Requirements Determination. Paved shoulders are required for all operational pavements.

7.4.11.5.2. Dimensions. The minimum total width of paved shoulders for the U-28 is 50 ft (25 ft per side, UFC 3-260-01, Table 6-1, Item 11). The total width of paved and unpaved shoulders is 50 ft (UFC 3-260-01, Table 6-1, Item 10).

7.4.11.6. Towway.

7.4.11.6.1. Requirements Determination. UFC 3-260-01 Table 5-6 presents the criteria for towway layout and design, including clearances, slopes, and grading dimensions. When designing for access to a hangar, flare the pavement to the width of the hangar door from a distance beyond the hangar sufficient to allow maintenance personnel to turn the aircraft around (UFC 3-260-01 Paragraph 5-12.1).

7.4.11.6.2. Scope Determination. Width, towway turning radius, horizontal clearance from towway centerline to fixed or mobile obstacles, and vertical clearance from the towway pavement to fixed surface or mobile obstacles.

7.4.11.6.3. Width. The minimum towway width for the U-28 is 25 ft (UFC 3-260-01, Table 5-6, Item 1): Width of towway for Air Force facilities equals the outside gear width of towed mission aircraft plus 10 ft. The U-28 outside gear width is 14.83 ft plus 10 ft, so $14.83 + 10 \text{ ft} = 24.83 \text{ ft}$ (rounded up to 25 ft).

7.4.11.6.4. Turning Radius. The U-28 towway turning radius is 150 ft (UFC 3-260-01, Table 5-6, Item 8).

7.4.11.6.5. Horizontal Clearance. The minimum horizontal clearance from the towway centerline for the U-28 is 60 ft (UFC 3-260-01, Table 5-6, Item 11).

7.4.11.6.6. Vertical Clearance. The minimum vertical clearance from the towway pavement for the U-28 is the aircraft height (14 ft) plus 10 ft or 24 ft (UFC 3-260-01, Table 5-6, Item 12).

7.4.11.6.7. Fillet Radius. The minimum fillet radius at intersections is 100 ft (UFC 3-260-01, Table 5-6, Item 9).

7.4.11.7. Warm-up/Holding Pad (CATCODE: 116666).

7.4.11.7.1. Requirements Determination. A warm-up/holding pad is authorized for each end of a runway. In addition to providing a location to warm-up and hold aircraft waiting to depart, warm-up/holding pads provide a location for U-28 aircraft to conduct hot gas refueling, FARP training, and hung flare emergency operations.

7.4.11.7.2. Scope Determination. A warm-up/holding pad is authorized for each end of a runway sized to accommodate two of the largest aircraft assigned to a base (DAFMAN32-1084, CC 116666, Paragraphs 1.2 and 1.4)

7.4.11.7.3. Dimensions. The minimum warm-up/holding pad for the U-28 is 42,156 NSF. The area is based on parking apron criteria for two U-28 aircraft.

7.4.11.8. Aircraft Washrack (CATCODE: 116672).

7.4.11.8.1. Requirements Determination. The dimensions of the aircraft plus 10 ft clearances determine the minimum washrack pavement dimensions (UFC 3-260-01, Table 6-5, Fighter aircraft requirement).

7.4.11.8.2. Scope Determination. The washrack area will be 47.25 ft (L) + 20 ft (clearance both sides) x 53.25 ft (W) + 20 ft (clearance both sides) = 4,927 NSF (rounded up). A utility storage building of 240 NSF is also allowed for this facility (DAFMAN32-1084, CC 116672, Paragraph 1.2; justified by UFC 3-260-01, Paragraph 6.14.4). Note that wash rack covers are considered equipment items to be purchased by the user and are not part of this CATCODE.

7.4.11.8.3. Dimensions. The minimum paved area for the U-28 requires 4,927 NSF (67.25 ft [L] x 73.25 ft [W]) rounded. Utility storage allowed for this facility is 240 NSF.

7.4.11.9. Aircraft Rinse Facility.

7.4.11.9.1. Requirements Determination. U-28 aircraft exposed to a saltwater environment require a clear water rinse (CWR).

7.4.11.9.2. Scope Determination. A CWR can be performed manually by hand-held hose or spraying equipment, or by using a taxi-through automated system. AFSOC U-28 aircraft are equipped with directional infrared countermeasures (DIRCM); therefore, the U-28 is not authorized a CWR taxi through facility and CWR is performed manually.

7.4.11.10. Hydrant Fueling System (CATCODE: 121122).

7.4.11.10.1. Requirements Determination. Hydrant fueling systems are not required for the U-28; however, when hydrant fueling systems are available or specifically authorized, follow the aircraft direct fueling system design criteria for fixed-wing small-frame as defined in UFC 3-460-01 Paragraph 4-4.2.2.

7.4.11.10.2. Dimensions. No Fuels Engineers exist within HQ AFSOC or its subordinate units. If a requirement is identified, existing engineering staff with support from the MAJCOM Fuels Management section, will reach out to technical experts such as the HQ Air Force Petroleum Agency and DLA/DESC for development of specific dimensions. In general, this requirement is based on installation specific mission requirements and airframe specific upload rates.

7.4.11.11. Operating Storage, Jet Fuel (CATCODE: 124135).

7.4.11.11.1. Requirements Determination. Operating storage tanks are not required for the U-28; however, they are provided wherever dispensing facilities are remote from bulk storage tanks. Provide separate storage for each type and grade of fuel. For aviation activities, provide a minimum of two tanks for each type of fuel (UFC 3-460-01 Paragraph 8-3.3). Acceptable fuels for AFSOC U-28 aircraft include Jet-A, Jet A-1, Jet B, JP-4, JP-5, JP-8, and JP-8+100.

7.4.11.11.2. Dimensions. The capacity or size of each fuel storage tank is based upon the logistical and mission requirements of the weapon systems it supports; thus, the requirements vary. Per UFC 3-460-01, Paragraph 8-3.4, general guidance is to provide

a minimum of two tanks at aviation activities for each type of aviation turbine fuel. Assuming a requirement is identified, the appropriate Service Headquarters with DLA Energy approval will determine the number and size of tanks required.

7.4.11.12. Aircraft Truck Fueling Facility (CATCODE: 126925).

7.4.11.12.1. Requirements Determination. Truck fill stands are required at all Air Force installations where bulk petroleum products are stored and dispensed.

7.4.11.12.2. Scope Determination. The number of fill stands required depends on the number of trucks which must be loaded simultaneously. This is determined by the command having jurisdiction from a study of the mission and operation requirements.

7.4.11.12.3. Dimensions. Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1). Per DAFMAN32-1084, CC 126925, Paragraph 1.4.1, a minimum of one outlet for each grade of fuel is necessary. Acceptable fuels for AFSOC U-28 aircraft are listed in paragraph 7.4.11.11.2.

7.4.11.13. Cryogenics Storage (Liquid Oxygen Storage) (CATCODE: 442258).

7.4.11.13.1. Requirements Determination. U-28 aircraft liquid oxygen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.4.11.13.2. Scope Determination. AFSOC only needs to store materials in cylinders. The portable oxygen bottle, P/N OX CY-OXAV 200, which is ancillary mission equipment, is serviced with liquid oxygen typically stored in cylinders. Per 645 AESG/WIJP, three cylinders of oxygen may support three PC-12s for about a month depending on the operations tempo. For planning purposes, assume storage for one month's storage (one cylinder) per assigned U-28 aircraft.

7.4.11.13.3. Dimensions. One cylinder is 8 NSF (10 GSF). Multiply 8 NSF (10 GSF) by number of PMAI.

7.4.11.14. Gaseous Nitrogen Storage.

7.4.11.14.1. Requirements Determination. U-28 aircraft gaseous nitrogen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.4.11.14.2. Scope Determination. AFSOC only needs to store materials in cylinders. The portable nitrogen cylinder, P/N CY-NI 200, and the self-generating nitrogen servicing unit, P/N 791600-003 are used for servicing and replenishment. Per 645 AESG/WIJP, three cylinders of nitrogen may support three PC-12s for about a month depending on the operations tempo. For planning purposes, assume storage for one month's storage (one cylinder) per assigned U-28 aircraft.

7.4.11.14.3. Dimensions. Each cylinder is 8 NSF (10 GSF). Multiply 8 NSF (10 GSF) by number of PMAI.

7.4.11.15. Standard Host Installation Facilities.

7.4.11.15.1. Aerial Delivery Facility. See **paragraph 1.1.3.5.1**.

7.4.11.15.2. FARP Equipment Storage. See **paragraph 1.1.3.5.2**.

7.4.11.15.3. Deployment Processing Facility. See **paragraph 1.1.3.5.3**.

7.4.11.15.4. Airfield Ancillary Facilities. See **paragraph 1.1.3.5.4**.

7.4.12. **Base Operations Ground Facilities - Pavement Requirements.**

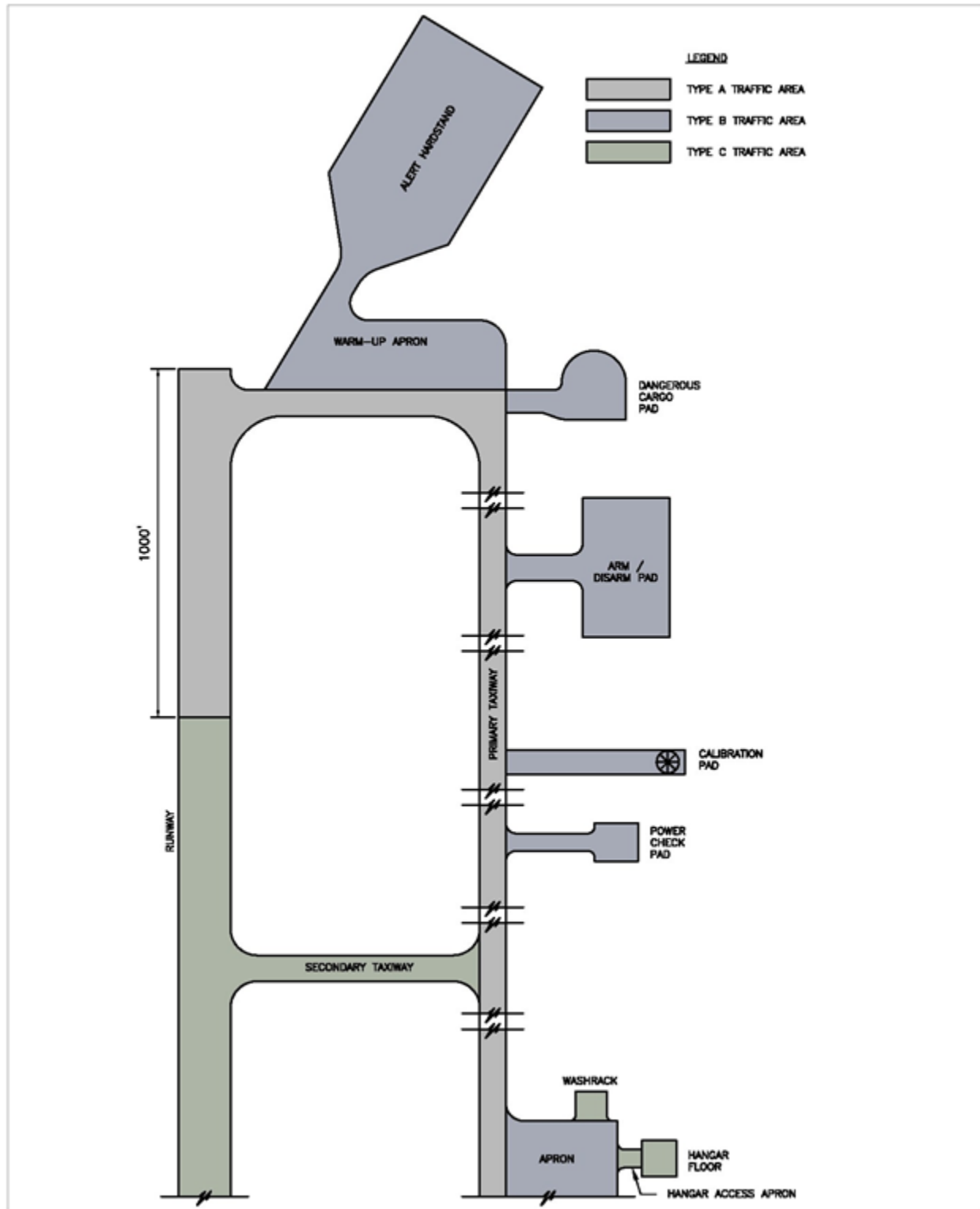
7.4.12.1. **Airfield.** Airfield mission and operational procedures have resulted in the development of six types of Air Force airfields: light, medium, heavy, modified heavy, auxiliary, and assault landing zone. The decision on which airfield type to design for is made by the appropriate MAJCOM. Airfield designs are generally based upon medium load criteria. The pavement for the U-28 is classified as light load, index 1, under the Aircraft Group Index in accordance with AFI 32-1041, Figure 4.1 (this figure lists the C-12). An airfield pavement with a given pavement classification number (PCN) can support, without weight restriction, an aircraft with an aircraft classification number (ACN) rating equal to or less than the airfield PCN. Verify the U-28 ACN is equal to or less than airfield pavement PCN in areas of operation. The pavement capacity for a light airfield type has a maximum gross weight of 68,000 lbs. at 400,000 passes (UFC 3-260-02, Table 3-1).

7.4.12.2. **Traffic Areas.** Certain areas of an airfield (e.g. runway shoulders, runway overruns) do not normally carry fully loaded aircraft; therefore, they do not need to be designed for the maximum gross weight (UFC 3-260-02, Chapter 4, Section 3, Paragraph C). See **Figure 7.4.6** for the traffic areas in an airfield designed for the U-28. The design gross weight for Type C (gross weight – 51,000 lbs.) traffic areas and overruns are 75 percent of the design gross weights for Types A and B (gross weight - 68,000) traffic areas. Light load airfields are not designed with Type D traffic areas (UFC 3-260-02, Table 3-1). See **Table 7.4.17** for Airfield Pavements by Traffic Area Type.

Table 7.4.17. Light Load Airfield Pavements by Traffic Area Type.

Pavement Use	Light Load Pavement Traffic Areas		
	Type A – Design Gross Weight 68,000 lbs.	Type B – Design Gross Weight 68,000 lbs.	Type C – Design Gross Weight 51,000 lbs.
Runway (First 1,000 ft on each end)	X		
Runway (Interior section between 1,000 ft ends)			X
Aprons (except hangar access)		X	
Hangar Access Aprons			X
Hangar Floors			X
Hardstands		X	
Power Check Pad		X	
Arm/Disarm Pad	X		
Dangerous Cargo Pad	X		
Primary Taxiways (all)	X		
Overruns			X

Figure 7.4.6. Traffic Areas for Light Load Pavement Airfield.



7.4.12.3. **Paved Shoulders.** As a minimum, paved shoulders should be designed to support a load of 10,000 lbs. imposed by a single wheel with a tire pressure of 0.69 MPa [100 psi] (UFC 3-260-02, Chapter 3, Section 6, Paragraph B).

7.4.12.4. **Hangar Floors.** See Paragraph 7.4.15, Maintenance Hangar.

7.4.12.5. **Pavement Thickness Requirements.** The U-28 minimum base course pavement thickness required is 6 inches for flexible pavements (UFC 3-260-02, Table 8-5) and 4 inches for rigid pavements (UFC 3-260-02, Chapter 8, Section 8, Paragraph A).

Table 7.4.18. U-28 Base Operations Ground Facility Requirements.

Cat Code	Facility	UM	U-28 (3) ¹	U-28 (6) ¹	U-28 (9) ¹	DAFMAN32-1084 Reference or Remarks/Calculations
111-111	Runway – Length (min.)	LF	7,000	7,000	7,000	The U-28 requires a minimum runway length of 7,000 ft at elevations between 0 and 2,500 ft MSL; a length of 8,500 ft between 2,500 and 5,000 MS; and a length of 11,000 ft at elevations above 5,000 ft MSL (A3VZ).
111-111	Runway - Width (min.)	LF	50	50	50	The minimum runway width for the U-28 is 50 ft (AFI 11-2FTV3, Table 2.1).
111-115	Paved Overrun - Length (min.)	LF	200	200	200	Corresponds to Air Force Class A runway, per UFC 3-260-01 Table 3-4.
111-115	Paved Overrun - Width (min.)	LF	100	100	100	Corresponds to Air Force Class A runway, per UFC 3-260-01 Table 3-4.
112-211	Taxiway Width	LF	25	25	25	The minimum taxiway width for the U-28 is 25 ft (AFI 11-2FTV3, Table 2.1).
112-211	Taxiway Paved Shoulder	LF	25	25	25	UFC 3-260-01, Table 5-1, Item 3.

113-321	Aircraft Parking Apron	NSF	29,178	68,112	102,168	DAFMAN 32-1084, CC 113321, Paragraph 1.3.7: Subtract covered maintenance spaces from PMAI. Multiply the aircraft wingspan by the length. Multiply the product by a factor determined by the number of aircraft being supported. 1 apron space = 11.6 (3 PMAI) 2 apron spaces = 8.4 3 apron spaces = 7.3 4 apron spaces = 6.8 (6 PMAI) 5 apron spaces = 7.1 6 apron spaces = 6.8 (9 PMAI)
113-321	Apron for Access to Hangars, Docks, Shelters	LF	32	32	32	For the U-28, the minimum length of apron to access hangars, docks, and shelters is 32 ft (rounded from 31.625 ft) when accessed from through or peripheral taxilanes. (UFC 3-260-01 Table 6-1, Item 15).
	Towway Width	LF	25	25	25	UFC 3-260-01 Table 5-6. Width is 5 ft on each side of gear. U-28 landing gear width is 14.83 ft. Rounded up to 25 ft.
	Clearance from Towway Centerline	LF	60	60	60	UFC 3-260-01 Table 5-6: Clearance is the greater of 1/2 the wingspan + 25 ft or the minimum of 60 ft. U-28 wingspan is 53.25 ft. $53.25/2 + 25 = 51.625$ ft.
116-642	Paved Shoulders	LF	25	25	25	UFC 3-260-01 Table 3-2.
116-666	Pad, Warm-up/Holding	NSF	42,156	42,156	42,156	CC 116666 Pad, Warm-up/Holding, Paragraph 1.4: Sized to accommodate two aircraft. Based on parking apron criteria for 2 aircraft.
116-672	Aircraft Washrack	NSF	4,927	4,927	4,927	The washrack dimensions are the length x width of the aircraft plus 10 feet on all side for clearance (UFC 3-260-01 Table 6-5). The minimum paved area for the U-28 washrack is 4,927 NSF (67.25 ft L x 73.25 ft W, rounded).
116-672	Aircraft Washrack Utility Building	GSF	300	300	300	CC 116672, Paragraph 1.2: Allows a utility storage building of 240 NSF. Conversion from NSF to GSF is $240 \times 1.25 = 300$ GSF.

126-925	Aircraft Truck Fueling Facility	EA	2	2	2	Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1).
n/a	Cryogenics Storage (Liquid Oxygen)	GSF	30	60	90	Facility not required to be dedicated to AFSOC unit, verify capacity of host installation. AFSOC only needs to store materials in cylinders. Calculated as 8 NSF (1 cylinder is a one-month supply) x #PMAI x 1.25 net to gross.
n/a	Gaseous Nitrogen Storage	GSF	30	60	90	Facility not required to be dedicated to AFSOC unit, verify capacity of host installation. AFSOC only needs to store materials in cylinders. Calculated as 8 NSF (1 cylinder is a one-month supply) x #PMAI x 1.25 net to gross.
Airfield Paving (w/o Runways and Overruns)		NSF	76,261	115,195	149,251	
Total Airfield Paving		NSF	446,261	485,195	519,251	
Total Indoor Facilities		GSF	360	420	480	
Notes: 1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI). 2. See paragraph 1.1.3.5 for more information on base ground operating facilities assumptions for facilities assumed to be existing and adequate at existing airfields.						

7.4.13. U-28 Training System Facilities.

7.4.13.1. Flight Simulator Training (CATCODE: 171212).

7.4.13.1.1. Requirements Determination. This facility houses aircraft flight simulators, and other special training devices. It also includes space for administration and records, classrooms, toilet facilities, trainer maintenance, and storage (DAFMAN32-1084, CC 171212, Paragraph 1.1). Flight simulator training facilities are normally sized according to the type of simulator installed and vary considerably in floor area from one system to another.

7.4.13.1.2. Dimensions. DAFMAN32-1084, CC 171212, Table 1.1 provides examples of typical simulator training facilities that can be used for initial planning purposes before specific requirements are identified. **Table 7.4.19** gives the facility requirements specific to the U-28.

7.4.13.1.3. Reference. **Table 7.4.21** lists the training systems for the U-28 by location type. A breakdown of space requirements in scenarios ranging from 3-9 PMAI is included in **Table 7.4.22**. A brief description of the space requirements and facility recommendations for flight simulator training is included below.

7.4.13.2. **U-28 Training Systems**. Operations training will be conducted using a Weapon System Trainer (WST), Mission Training Device (MTD), and a Part Task Trainer (PTT). Training center locations (CONUS only) will house WSTs, MTDs, and PTTs; however, WSTs will be provided at CONUS and OCONUS locations that support a full U-28 squadron of 9 PMAI and 1 BAI.

7.4.13.2.1. WST Simulator. The WST is an aircrew training system for the U-28. The WST features a flight compartment and motion control system that simulates a variety of U-28 mission scenarios. An overhead crane is ideal, though not required; however, the simulator bay at a minimum should have an exterior access door opening of 20 ft (W) x 20 ft (H) and a maintenance access door minimum 8.2 ft (W) x 9.8 ft (H). The simulator bay floor “Reaction Pad” should be able to support a total weight load of 37,800 lbs. Adjacent to the simulator bay should be areas for computer, supply, and maintenance rooms. See paragraph **7.4.13.2.7.1** for other design considerations regarding this WST bay. The required space allocation for this facility can be found in **Table 7.4.22**.

Table 7.4.19. Building Utility System Requirements for WST Bay.

System	Requirements
Mechanical	The simulator bay should be maintained between 60-80°F (15-27°C) at a relative humidity of 40-60% (non-condensing), both above and below the floor. In facilities where the motion control cabinet is stored within the simulator bay, the ambient temperature should not exceed 75°F (24°C) to avoid damaging the electronics within the motion control cabinet. A typical 10-ton water air conditioning unit, based on the maximum ambient conditions listed above, provides a nominal cooling capacity of 120,000 BTU/hr. (35.0 kW). Lighting intensities should provide 50 foot-candles (approximately 500 lux) of total illumination measured 3 feet above the floor. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	The power requirement for the control loading / motion power distribution unit (PDU) is a 480V/160-amp at 50/60 Hz. The facility should provide 120V, 1-phase, and 20-amp outlets at various locations around the simulator bay for installing service equipment. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.

Plumbing	The simulator bay water supply requirements include an air conditioner maximum flow demand of 20 GPM, a water supply maximum temperature of 45°F (7°C), and a water supply minimum and maximum pressures of 25 psi and 125 psi, respectively. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is recommended, although a wet-pipe system is an acceptable alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 (NOTE: This table references a table found in a different section of AFSOCI 32-1084 and is not linked into the document.) for general communication criteria/references.

7.4.13.2.2. WST Computer Room. The WST computer room houses all the electronic cabinets and other electronic or computer equipment for the WST. It may include the following: a power cabinet, visual image generator cabinets, a visual operating workstation, a host control computer and peripherals, a UPS, a fire protection system, electrical grounding, a room air conditioner, a power distribution unit (PDU), and a raised computer floor. The recommended computer room door size is 6 ft (W) x 7 ft (H) and the computer floor should have a minimum of 12 inches of clear height from the true floor to the underside of the raised floor with no obstructions. See **paragraph 7.4.13.2.7.6** for other design considerations regarding this WST computer room. The required space allocation for this facility can be found in [Table 7.4.22](#).

Table 7.4.20. Building Utility System Requirements for WST Computer Room.

System	Requirements

Mechanical	The computer room shall be maintained at 65-75°F (18-24°C) at a relative humidity of 40-60% non-condensing, both above and below the floor. Air conditioning requires a minimum of 60,000 BTU/hr. capacity under the computer room floor to provide cooling for the equipment cabinets. A constant pressure flow of cooling air should be maintained at all times to prevent damage to the equipment. The computer room air conditioning system should be separate from other building air conditioning systems. A capacity of 70,000 BTU/hr. is sufficient to meet the above floor temperature requirements for the computer room. Lighting intensities should provide 50-75 foot-candles of total illumination measured 30 inches above the floor. Light should generally be of the recessed florescent type. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Electrical power should be separate from the air conditioning, lighting, or other facility/computer room electrical systems. Electrical service will be either 480/277V 3Ø/5W/60Hz or 400/230V 3Ø/3W/60Hz (ground wire is equal in size to the phase conductors) should be provided for all computer equipment. The power requirement for the UPS is a 480V, 3-phase, 4 wire, 70-amp circuit. The service should be rated to supply a minimum of 150 Amps. The service should be maintained within $\pm 10V$, at a frequency of 60 Hz ± 0.5Hz. A computer service ground plate should be provided, and wall mounted below the raised floor. Emergency power off switches should be provided. The facility should provide 120V, 1-phase, and 20-amp outlets at various locations around the WST computer room for the fire detection panel and printer. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is preferred, with a wet-pipe system an acceptable second alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.

Communication	Provide Communication requirements in accordance with UFGS Division 27 - Communications, Division 33 - Utilities and UFC 3-580-01 for designing and implementing of interior and exterior telecommunications infrastructure for military construction. This infrastructure typically includes telecommunications spaces, pathways, cabling, and interconnecting components. The design of interior telecommunications infrastructure is a specialized technical area. This provides general guidance to those parties tasked with implementing existing and emerging interior telecommunications infrastructure requirements. The basic requirements follow industry standards. Due to service-specific unique operating requirements and existing infrastructure and topology, this instruction includes a chapter for each service.

7.4.13.2.3. MTD. The MTD should be located adjacent to the WST. This simulator can operate with the flight deck of the WST as well as independently and simultaneously with the WST. This space includes the cabin simulator (21' 8" ft L x 7 ft W) with 3-foot clearance on all sides, five trainee workstations (Type G Offices at 30 NSF each), an instructor station (Type F Offices at 48 NSF each), communications racks (6 racks at 4' x 4' each), and air handling equipment (60 NSF). The minimum area required for the U-28 MTD is 714 NSF.

7.4.13.2.4. PTT. The PTT should be located adjacent to the WST or MTD. This space includes the five trainee workstations (Type G Offices at 30 NSF max each), an instructor station (Type F Offices at 48 NSF max each), and communications racks (2 racks at 4' x 4' each). The minimum area required for the U-28 PTT is 230 NSF.

7.4.13.2.5. VTRAT. The Visual Threat Resistance and Avoidance Trainer (VTRAT) is an interactive, computer-based simulator. This simulator should be located inside a room that can support trainees, instructors, and computer equipment. The cooling requirements for the VTRAT are like most simulators and should not be overlooked due to the smaller size of this simulator. Each VTRAT requires an area of 15' x 20' or 300 NSF.

7.4.13.2.6. Night Vision Goggle (NVG). The space required for NVG testing and training should be large enough to support trainees, instructors, and NVG equipment. The NVG room also requires an environment where lighting is dark enough to meet training requirements. The area required for NVG testing and training is 100 NSF.

7.4.13.2.7. Dimensions. See [Table 7.4.22](#) for the space requirements for the individual spaces within a U-28 training systems facility.

7.4.13.2.8. **Design Considerations.**

7.4.13.2.8.1. Simulator Bay. Ensure adequate grounding to device specifications. Provide perimeter lighting for accessibility. For facility air conditioning (a/c), ensure the bay a/c is on the side walls and not over the simulator (to avoid condensation dripping on visual domes) and make sure there is a condensation drain. For simulator cockpit a/c, designs should be flexible to accommodate different types of a/c units (i.e. split unit, package unit, or chilled water) and should

also include a condensation drain. Provide a separate trench from the anticipated cockpit a/c location to edge of the reaction pad. Do not install ceiling tiles as they will not be accessible once the device is installed. Provide electrical disconnects for the UPS, drawbridge, and cockpit a/c unit, etc. Determine device/squadron requirements for a back-up power generator. Provide space within the bay for storage. Provide double doors into the bay, computer room, maintenance area, front entrance, and any supply points. Provide only one point of entry into the open storage area. Install an overhead 2-ton crane with variable speeds and a crane control cable on a remote cable from the hoist. Ensure that there is a sprinkler connection on the wall of the bay for a sprinkler pipe under the device (not required for electric motion; required for hydraulic motion).

7.4.13.2.8.2. Device/Simulator. Ensure device's orientation is flexible as the vendor may not be the same as the vendor under design. Ensure clarity regarding what furnishings and equipment are provided with the MILCON and what will be included from the device provider. For example, since the simulator is a piece of equipment and stairs/platforms are generally custom designed to the configuration of the simulator, the stair/platform would be an equipment expense, not a MILCON expense. In addition to how support equipment is funded, ensure the capacity for support equipment such as UPS (typically vendor provided) are adequately sized.

7.4.13.2.8.3. Communications and SIPR. Install the SIPR conduit in accordance with UFGS 27 05 29.00 10 & AFSSI 7703, and ensure it is supported by the comprehensive interior design layout. This includes ensuring furniture/equipment will not block access for inspection requirements and ensuring the separation of secure and unsecure communication lines.

7.4.13.2.8.4. IDS, ACS, and CCTV. These items are not provided by the MILCON project and are installed during construction. End user organizations are required (pre-design) to staff all IDS/ACS/CCTV requirements through the local Security Forces Squadron NCOIC to the AF Security Forces Center for validation/funding. MILCON scope will provide power and pathways only, not installation, procurement, or processing of systems/devices. Define IDS/ACS/CCTV requirements early so that the infrastructure can be installed during construction. Ensure walls and doors meet the security requirements for the open-standards architecture approach.

7.4.13.2.8.5. Classroom. Provide ceiling power (junction boxes/outlets) for projectors, split ballast for front lighting in classrooms and debrief areas (overhead projectors), and dual whiteboards: one under automated projector screen, the other on a side wall.

7.4.13.2.8.6. Computer Room. Ensure there is adequate grounding for all computer room equipment (provide a grounding bar under the isolated ground room floor). Provide electrical disconnects for the proposed computer room layout for the PDU, UPS, etc. Ensure chiller and condensing units are adequate for computer room layouts based on equipment heat outputs. The emergency power off switch in the isolated ground room should be dual purpose for AC/DC power and the UPS.

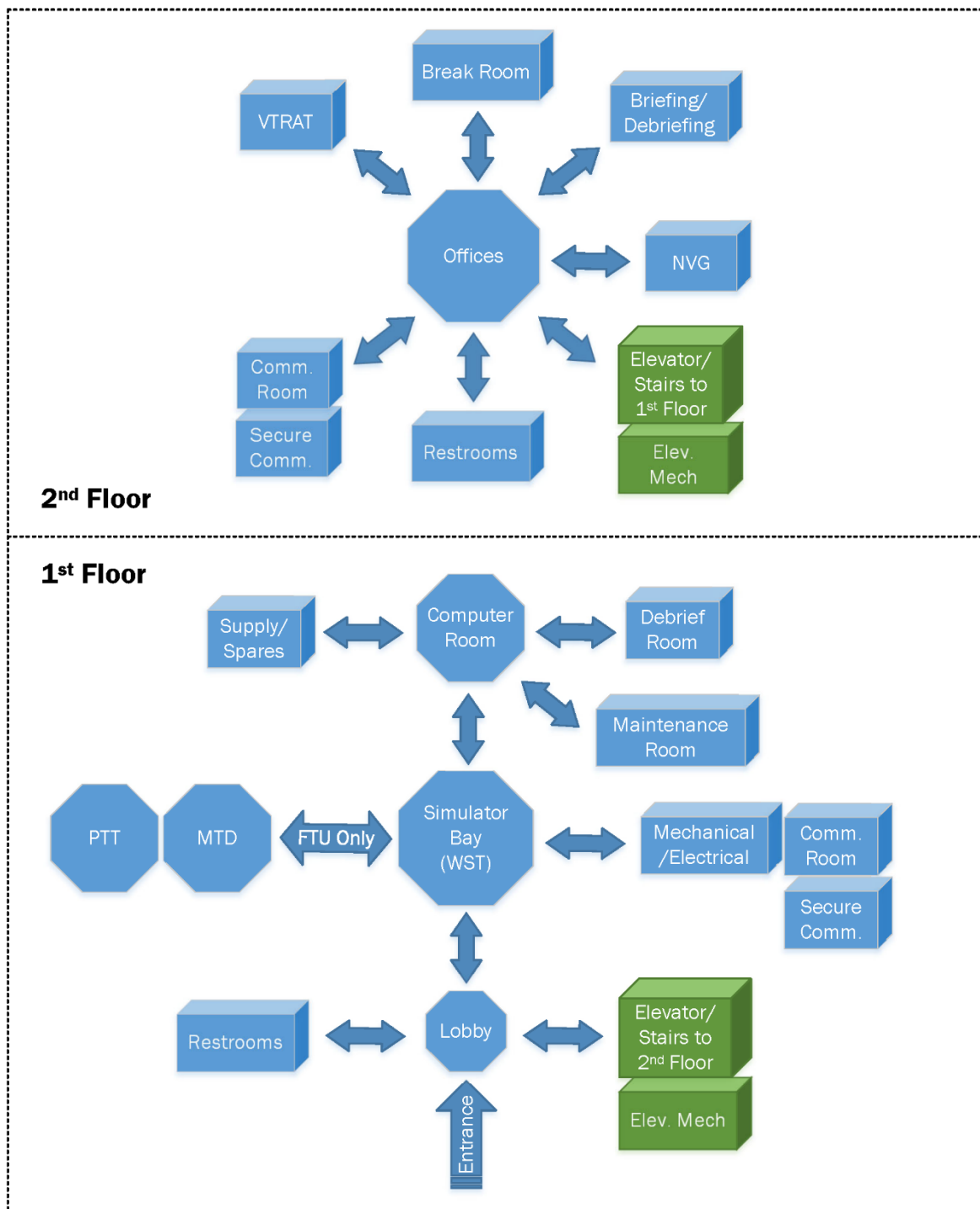
Figure 7.4.7. Typical U-28 Training Systems Facility.

Table 7.4.22. U-28 Training Systems Facility Requirements.

Cat Code	Facility	UM	U-28 (3)¹	U-28 (6)¹	U-28 (9)¹	DAFMAN32-1084 Reference or Remarks/Calculations
171-212	Instructor Offices ²	NSF	0	0	425	AFSOC/A4I: Space for 6 PN required. 1 Type D for supervisor, 5 Type E for others. 100 NSF for Type D Offices. ³ 65 NSF for Type E Offices. ⁴
171-212	Contractor Offices ²	NSF	0	0	425	AFSOC/A4I: Space for 6 PN required. 1 Type D for supervisor, 5 Type E for others. 100 NSF for Type D Offices. ³ 65 NSF for Type E Offices. ⁴
171-212	WST	NSF	0	0	2,500	AFSOC/A4I: The standard AFSOC simulator bay size is size 50' (W) x 50' (L) x 50' (H) to allow flexibility between devices and weapon systems. Larger spaces will be provided to support minimum device specifications only.
171-212	MTD	NSF	0	0	714	This space includes the cabin simulator (21' 8" ft L x 7 ft W) with 3-foot clearance on all sides, five trainee workstations (Type G Offices at 30 NSF each ⁴), an instructor station (Type F Offices at 48 NSF each ⁴), communications racks (6 racks at 4' x 4' each), and air handling equipment (60 NSF).
171-212	PTT	NSF	0	0	230	This space includes the five trainee workstations (Type G Offices at 30 NSF each ⁴), an instructor station (Type F Offices at 48 NSF each ⁴), and communications racks (2 racks at 4' x 4' each).
171-212	VTRAT	NSF	0	0	300	Each VTRAT requires an area of 15' x 20' or 300 NSF.
171-212	NVG Room	NSF	0	0	100	The area required for NVG testing and training is 100 NSF.
171-212	Computer Room	NSF	0	0	600	AFSOC/A4I: Computer Room 20 ft x 30 ft.
171-212	Supply Spares	NSF	0	0	160	AFSOC/A4I: 10' (W) x 16' (L) x 8' (H).
171-212	Maintenance Area	NSF	0	0	300	AFSOC/A4I: Maintenance Room 15' (W) x 20' (L) x 10' (H).
171-212	Brief/Debrief Rooms	NSF	0	0	600	AFSOC/A4I: 15' (W) x 20' (L) x 10' (H); 2 rooms, 300 NSF each. One of the two rooms should accommodate open storage up to Secret.
171-212	Lobby	NSF	0	0	0	User Justified. ⁵ Included in NSF to GSF conversion. ⁶

171-212	Instructor Break Rm	NSF	0	0	100	16% Occupants x 18 NSF. Minimum of 100 NSF. ⁵
171-212	Student Break Rm	NSF	0	0	100	16% Occupants x 18 NSF. Minimum of 100 NSF. ⁵
171-212	Common Areas	NSF	0	0	0	Space varies. Included in NSF to GSF conversion. ⁶
171-212	Mech. and Elec. Rooms	NSF	0	0	0	NSF to GSF conversion. ⁶
171-212	Comm. Room	NSF	0	0	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Secure Comm. Room	NSF	0	0	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Admin. Support Space	NSF	0	0	240	Use a maximum of 40 sf per person, and a minimum 20 sf per person. ⁸
171-212	Admin. Circulation	NSF	0	0	109	Max 10% of Administrative Space ⁷
171-212	Special Purpose Circulation	NSF	0	0	599	Max 10% of Special Purpose Space ⁷
Total Training Systems Facilities		NSF	-	-	7,790	
Total Training Systems Facilities		GSF	-	-	9,738	Net to Gross conversion factor of 1.25.

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions for the command suite and meeting and conference rooms. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. Source: DAFMAN32-1084, Category Group (CG) 61 – Administrative Facilities Overview, Table 1.2.
4. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
6. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2
7. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.1.
8. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

7.4.14. U-28 Operations Facilities.

7.4.14.1. Squadron Operations (CATCODE: 141753).

7.4.14.1.1. Requirements Determination. Each squadron needs an operational building for administration, scheduling, training, briefing, personal equipment maintenance, and storage for aircrews.

7.4.14.1.2. Scope Determination. Space must be provided for the commander and staff. Space is required for AFE systems maintenance and the care, storage, and issue of flying clothing and equipment for each crew member. Space is required for an operations officer to direct flight operations and for intelligence, mission planning, computers, radar and navigation, photos and maps, briefing room, locker area, and radio and electronic countermeasures. The required space allocation for this facility can be found in [Table 7.4.24](#). See **paragraph 1.1.3.6 for more information about the unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within squadron operations facilities.**

7.4.14.1.3. Typical U-28 Operations Squadron Composition. Includes a commander, first sergeant, operations officer, assistant operations officers, resource advisors, commander's executives, standardization and evaluation, safety, mobility/supply (which can be located at a Special Operations Logistics Readiness Squadron [SOLRS]), aircrew flight equipment (AFE), a mission control center (this includes current operations, flight planning, flight management, and publications), scheduling, training, realistic mission training (RMT), an aviation resource management section (ARMS), combat operations, plans, tactics, and intelligence. This facility will also include an armory (which can be located at LRS), combat training center (CTC), a mission control center, and briefing rooms.

7.4.14.1.3.1. TSO Facility Requirements. U-28 ISR operations utilize non-AFSOC aircrew operators. Planners should consider these personnel in generating requirements for U-28 beddown scenarios. Although TSOs and their equipment are not AFSOC assets, they support the U-28 mission and must be accounted for during facility planning. Currently, these assets are provided by Air Combat Command (ACC) supported by 25th Intelligence Squadron (IS) or 43rd IS under 16th Air Force (AF). TSO equipment is currently stored and maintained in an ACC facility.

7.4.14.1.3.1.1. TSO Equipment Maintenance and Storage Area. This area provides classified storage and maintenance area for the TSO mission. Provide TSOs an equipment maintenance area that is 20' (L) x 10' (W) for 1 full U-28 squadron (9 PMAI) and 30' (L) x 10' (W) for 2 full U-28 squadrons. Provide an equipment storage area for variable pelican cases stored on racks for one of each case type, plus 10% spares (case 1 – 4' x 4', cases 2 and 3 – 2' x 2' each; stacked 2 high). Provide a roll up door for vehicle access and truck loading cases. Include one, four-drawer safe for storing cryptographic keys. This space requires TS-SCI level access control and design specifications.

7.4.14.1.3.2. U-28 Combat Training Center. Each U-28 installation requires the capability to support a CTC with a minimum of 16 console positions. This provides

each location with the capability to train two 8-person CTCs simultaneously. Additional U-28 squadrons at a location that already includes a 16-person CTC should add an 8-person CTC to the CTC requirement per additional U-28 squadron. Based on the largest CTC in Hurlburt Building 90250, 17' (W) x 24' (L) or approximately 400 NSF is required to support this requirement. Typically, AFSOC squadrons earn a total unit authorization of 3 NSF per military PN (In this case, that would total (3 PMAI = 56 PN, 6 PMAI = 91 PN, and 9 PMAI = 128 PN); however, the U-28 deviates from the typical training requirement because the U-28 training requirement is not a per-person variable authorization due to the nature of the classified mission training to be performed in the space. Consult AFSOC/A4I for determination on U-28 training authorizations that deviate from either of the methods mentioned in this paragraph.

7.4.14.1.3.3. CTC Antenna Tower and SATCOM Pad. Antenna requirements for CTC include 12 line-of-sight (LOS) Radio Frequency (RF) antennas, four satellite communication (SATCOM) antennas, four directional "bucket" LOS full-motion video (FMV) antennas, 2 Tactical Datalink (TDL) antennas, and 2 mobile ad hoc network (MANET) antennas. Depending on RF saturation and natural or manmade terrain clutter, the antenna tower could be up to 120 feet tall. The tower will also require several cross masts to host all the antennas. Provide a minimum area of 10' x 10' for the antenna tower and another 10' x 15' for the SATCOM pad.

7.4.14.1.3.3.1. CTC Antenna siting considerations. Antenna towers often do not meet terminal instrument procedures (TERPS) criteria near active airfield areas and must be installed away from squadron operations buildings. Consider avoiding antenna siting locations near tall trees or structures, as the antennae require line-of-sight communications for operability. SATCOM antennas can be hosted on a fenced ground pad if they have a clear view of the overhead sky. This antenna location and SATCOM antenna pad should be collocated with the CTC secure communications room. It does not necessarily have to be physically located in the squadron operations building depending on site requirements.

7.4.14.1.3.4. CTC Maintenance. A maintenance work area is required to sustain the CTC capabilities with minimal downtime to prevent critical impacts to the unit's training mission. The total space allocation for this maintenance area is 10' x 10' or 100 NSF. This area is based on the CTC maintenance area provided in Hurlburt Field building 91250.

7.4.14.1.3.5. CTC Spares Storage. Spare parts storage is required to support the maintenance function of the CTC. The total space allocation for this spare parts storage area is 10' x 20' for all other equipment sparing associated with the CTC. This area is based on the CTC spares area provided in Hurlburt Field building 91250.

7.4.14.1.3.6. CTC Secure Communications Room. Per A6, provide 12' x 12' for each communications room. This secured space stores communications equipment, servers, an uninterrupted power supply (UPS), and a computer room air conditioning (CRAC) system. Communications equipment includes 12 LOS radios,

5 SATCOM radios, 1 SATCOM RF Email radio, 4 LOS FMV receivers, 2 MANNET Wideband radios, 2 Tactical Datalink (TDL) terminals. The server racks must also hold Radio Over Internet Protocol (ROIP) servers and radio connection appliances for NIPR and SIPR radio allocation. The server racks must also hold power conditioning units to send power and signal to directional LOS FMV antennas. The server racks must also hold additional space for a SIPRNet switch, a NIPR switch, and an enclaved SIPRNet switch.

7.4.14.1.3.7. Mobile CTC. Provide securable storage for the mobile CTC that is installed in five separate 4' W x 4' L x 3' H ruggedized cases. Provide 1 foot on each side of the case for maneuvering and assume they can stack two high. With this configuration, the Mobile CTC requirement is 6' x 6' x 3 floor spaces or 108 NSF.

7.4.14.1.4. Security Considerations. At a minimum, plans, tactics, intelligence, conference and brief/debrief rooms, the CTC (one per workstation and 1 voice over secure internet protocol [VoSIP]), and RMT require a vault with open storage up to the SECRET level. In addition to the vault space, the U-28 intelligence section requires an additional Sensitive Compartmented Information Facility (SCIF) – the requirement for TS/SCI SCIF facility is documented in the draft DOTMLPF-P Change Recommendation (DCR) for the 4th U-28 squadron at Cannon AFB (See A5/8 for further detail). TSO mission-related equipment also requires TS-SCI level facilities for maintenance and storage (typically provided by ACC within an ACC intelligence squadron facility, not AFSOC). Consult with A5/8 or the operational unit for more information about U-28 secure area requirements. Consult DoD Manual 5205.07, Volume 1 (dated June 18, 2015 with Change 2, effective September 30, 2020) for general procedures regarding DoD special access programs.

7.4.14.1.5. Communications Considerations. At a minimum, one SIPR drop each is required for the Commander's office, Director of Operations, main squadron conference room, the vault briefing/training room, RMT, mobility, and one between current operations or the unit/mission control center, and the. In the CTC, provide at least 20 SIPR drops (assuming one drop supports a workstation and one drop supports a VoSIP device). Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

7.4.14.1.6. Other Considerations. This facility should include space for a "wellness room" that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child's birth each time such employee has need to express milk; and 2) a place, other

than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

7.4.14.1.6. Dimensions. See [Table 7.4.24](#) for the spaces within a U-28 Operations facility.

Table 7.4.23. Building Utility System Requirements for Operations Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.4.8. Typical U-28 Operations Facility.

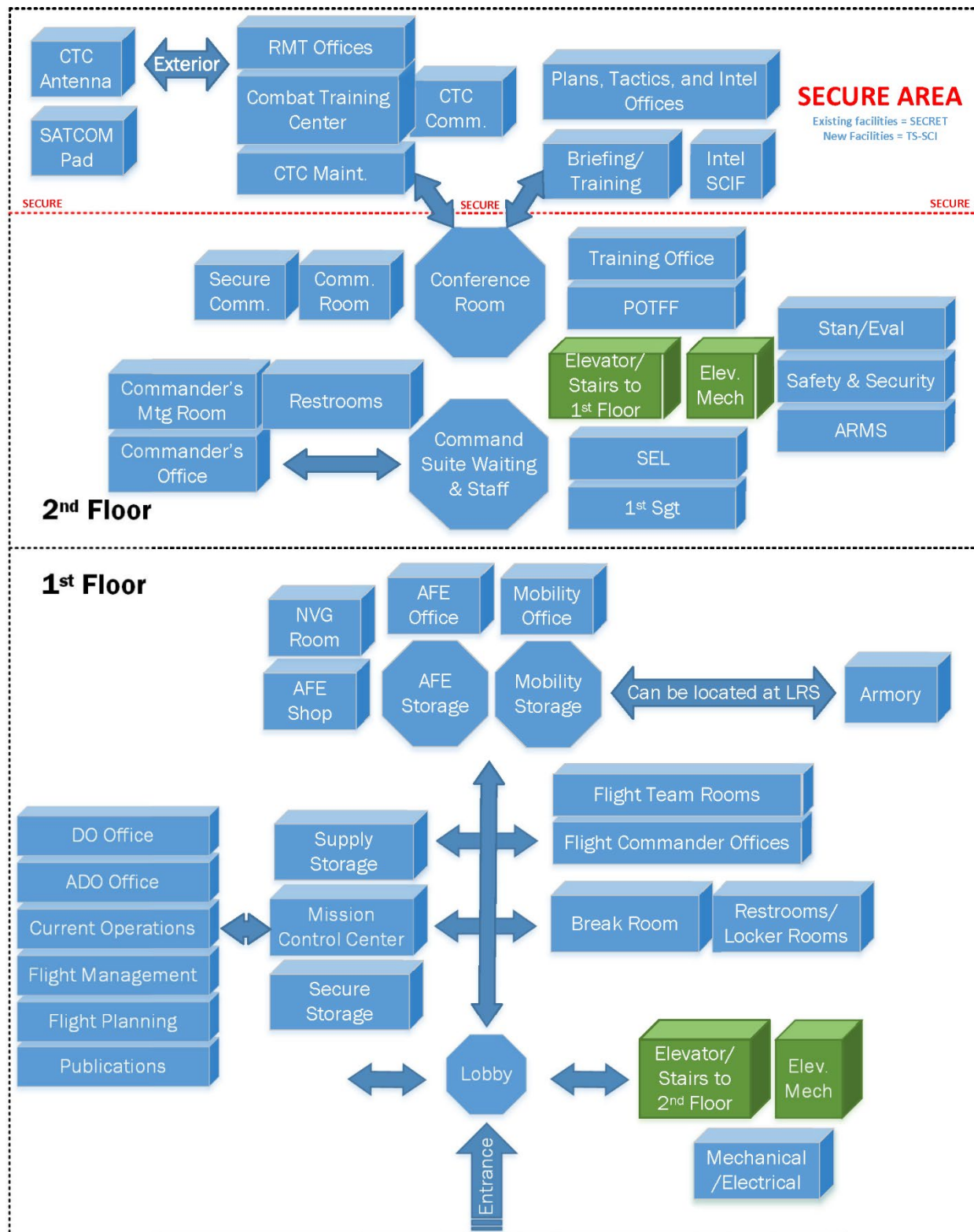


Table 7.4.24. U-28 Operations Facility Requirements.

Cat Code	Facility	UM	U-28 (3) ¹	U-28 (6) ¹	U-28 (9) ¹	DAFMAN32-1084 Ref. or Remarks/Calculations
141-753	Command Suite – Commander’s Office	NSF	140	140	140	140 NSF for Type C Offices. ⁴
141-753	Command Suite – First Sergeant	NSF	100	100	100	100 NSF for Type D Offices. ⁴
141-753	Command Suite – Command Staff and Waiting Area	NSF	235	300	300	2 PN waiting area, 2 offices minimum, and an additional office per 4 PMAI. Waiting area is 20 NSF per person (PN). ⁴ 65 NSF for Type E Offices. ⁵
141-753	Commander’s Meeting Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. 15 NSF per person. ⁷
141-753	Flight Commander & Staff Offices ²	NSF	444	1,036	1,480	1 Flight CC and 1 Assistant Flight CC per flight. 1 flight per 3 aircrews (9 PN). 3 PMAI = 30 crew, 4 flights 6 PMAI = 60 crew, 7 flights 9 PMAI = 90 crew, 10 flights Flight CCs -100 NSF for Type D Offices. ⁴ Assistant Flight CCs - 48 NSF for Type F Offices. ⁵
141-753	Director of Operations ²	NSF	100	100	100	100 NSF for Type D Offices. ⁴
141-753	Assistant Ops Officer ²	NSF	195	455	650	1 per flight. 65 NSF for Type E Offices. ⁵
141-753	Senior Enlisted Leader (SEL) ²	NSF	100	100	100	100 NSF for Type D Offices. ⁴
141-753	Security Officer ²	NSF	100	100	100	100 NSF for Type D Offices. ⁴
141-753	Safety Officer ²	NSF	100	100	100	100 NSF for Type D Offices. ⁴
141-753	POTFF Office ²	NSF	100	100	100	1 PN, psychological provider. 100 NSF for Type D Offices. ⁴ Per A1M, all other domains are at the group level or work out of the Human Performance Training Center (HPTC) at the base supporting all SOG members.

141-753	Training Office ²	NSF	220	340	430	Provide space a Chief and Assistant Chief (Type E), plus 1 PN per flight in a shared workstation (Type G). 3 PMAI = 30 crew, 4 flights 6 PMAI = 60 crew, 7 flights 9 PMAI = 90 crew, 10 flights 65 NSF for Type E offices and 30 NSF for Type G Offices. ⁵
141-753	Medical Office ²	NSF	230	230	230	Per AIM, assume 3 PN total per squadron integrated from SOSS. 1 officer (Type D), 2 enlisted (Type E). 100 NSF each for Type D Offices. ⁴ 65 NSF each for Type E Offices. ⁵
141-753	Standardization and Evaluation ²	NSF	226	370	514	1 PN per flight. 3 PMAI = 4 flights 6 PMAI = 7 flights 9 PMAI = 10 flights Provide Type E offices for 1 Chief and 1 Assistant Chief. Subtract the flight chiefs/assistant flight chiefs from the total PN per flight and provide Type F Offices for all remaining personnel. 65 NSF each for Type E Offices and 48 NSF each for Type F Offices. ⁵
141-753	Aviation Resource Management Section ²	NSF	228	276	324	Chief and Assist Chief (Type E Office) plus 1 PN per 3 PMAI (Type F Offices) in standard workstations. Provide 50 NSF for storage. 65 NSF each for Type E Offices and 48 NSF each for Type F Offices. ⁵
141-753	TSO Offices	NSF	190	280	370	Assume 1 TSO per PMAI plus 1 additional as embedded personnel within the AFSOC facility. These offices will be split between their assigned functional shop. Assume 1 SNCO in a Type D office and others in shared workstations (Type G office). 100 NSF each for Type D Offices and 30 NSF each for Type G Offices. ⁵
141-753	Systems Program Office (SPO) ²	NSF	100	100	100	1 Type D office for the Program Officer. 100 NSF for Type D Offices. ⁴

141-753	Realistic Mission Training ²	NSF	215	430	645	Assume 1 Chief (Type E) and 5 shared workstations (Type G) per 3 PMAI. 65 NSF each for Type E Offices and 30 NSF each for Type G Offices. ⁵ This section supports the CTC and should be located adjacent to the CTC.
141-753	Plans Offices ² - Vault	NSF	285	375	465	Provide space for 1 chief (Type D) and 1 assistant chief (Type E) plus 1 Plans PN per flight (Type G). Collocate this section within the secure vault with Intel and Tactics. 100 NSF each for Type D Offices, 65 NSF each for Type E Offices, and 30 NSF each for Type G Offices. ⁵
141-753	Tactics Offices ² - Vault	NSF	285	375	465	Provide space for 1 Chief and 1 Asst. Chief (Type E 65 NSF each offices) plus 1 Tactics PN per flight (Type G Offices 30 NSF each ⁵). Collocate this section within the secure vault with Plans and Intel.
141-753	Intel Offices – Vault	NSF	285	375	465	Provide space for 1 chief (Type D) and 1 assistant chief (Type E) plus 1 Plans PN per flight (Type G). Collocate this section within the secure vault with Plans and Tactics. 100 NSF each for Type D Offices, 65 NSF each for Type E Offices, and 30 NSF each for Type G Offices. ⁵
141-753	Intel SCIF	NSF	100	100	100	Provide 100 NSF (TS-SCI for new facilities). See Paragraph 7.4.14.1.4. and 7.4.14.1.4.1. for information on security considerations for U-28 operations facilities.
141-753	Vault Briefing/ Training Room	NSF	150	150	150	Provide a briefing / training room for 10 PN. 15 NSF per person ⁷
141-753	Vault Publications Storage	NSF	50	50	50	Provide publications storage of 50 NSF.
141-753	Vault Study Area	NSF	40	40	40	Provide a study area for 2 PN (Type H Task Stations are 20 NSF each ⁵)

141-753	Mission Control Center - Flight Planning ²	NSF	240	360	450	150 NSF for planning tables and storage and 1 shared workstation (Type G office) per flight. 30 NSF each for Type G Offices. ⁵ 3 PMAI = 30 crew, 4 flights 6 PMAI = 60 crew, 7 flights 9 PMAI = 90 crew, 10 flights
141-753	Mission Control Center - Flight Management ²	NSF	144	144	144	3 PN. 48 NSF for Type F Offices. ⁵
141-753	Mission Control Center - Publications ²	NSF	30	60	90	Provide 10 NSF per PMAI for storage.
141-753	Mission Control Center - Current Operations ²	NSF	192	288	480	1 aircrew scheduler per 2 PMAI, plus 1 mission scheduler per 2 PMAI. 48 NSF for Type F Offices. ⁵
141-753	Elevator	NSF	80	80	80	Major Vertical Penetrations ⁹ included in the NSF to GSF conversion. Provide 80 NSF.
141-753	Elevator Equipment Room	NSF	90	90	90	Common Areas ⁹ included in the NSF to GSF conversion. Provide 90 NSF.
141-753	Women's Showers	NSF	30	30	30	Allows one 3' x 3' shower stall and a 3' x 7' drying area.
141-753	Women's Locker Room	NSF	11	19	27	Calculated as (Squad Ops PN x 0.2 (% women per squadron) x 2 NSF (locker))/ 2 (stacked lockers).
141-753	Men's Showers	NSF	60	60	60	Allows two 3' x 3' shower stalls and a 3' x 7' drying area per stall.
141-753	Men's Locker Room	NSF	46	76	108	Calculated as (Squad Ops PN x 0.8 (% males per squadron) x 2 NSF (locker))/ 2 (stacked lockers).
141-753	Restrooms and Janitor's Closet	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
141-753	Mech/Elec Rooms	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
141-753	Supply Room	NSF	300	400	500	Provide 20' x 10', plus 100 NSF per UTC. Stacking and the use of rolling shelving systems will maximize the use of this space.
141-753	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.

141-753	Combat Training Center	NSF	800	800	800	Each U-28 squadron requires the capability to support a 16-person CTC. If more than one U-28 squadron is located at a location, provide an additional 8-person CTC. Based on the largest CTC (Hurlburt Building 90250), 17' W x 24' L, an 8-person CTC requires 400 NSF and a 16-person CTC requires 800 NSF.
141-753	CTC Secure Communications Room		144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor. CTC siting criteria may not allow the secure communications room for the squad ops facility be collocated with the CTC. Since the CTC requires a secure communications room, assume a dedicated space is required until feasibility of a collocated comm room has been determined based on CTC siting criteria.
141-753	CTC Maintenance		100	100	100	Provide a 10' x 10' room to conduct CTC maintenance and repair. Based on CTC maintenance space provided in Hurlburt Field Building 91250.
141-753	CTC Supply/Spares Storage		200	200	200	Provide a 10' x 20' space to store spare parts and supply items for the CTC. Based on CTC supply/spares storage provided in Hurlburt Field Building 91250.
141-753	Secure/Classified Storage	NSF	20	40	60	Two, five-drawer safes (4' x 5' for both) per 3 PMAI.
141-753	Armory/Weapons Vault	NSF	30	60	90	Calculated as 10 NSF x #PMAI. This can be stored at the consolidated armory if there is an LRS presence.
141-753	Break Room	NSF	164	274	389	16% of occupants x 18 NSF. Minimum of 100 NSF. ⁶

141-753	Conference Room	NSF	500	500	1,150	For organizations with 50-99 personnel [1-2 UTCs], provide a conference room for up to 25 persons. For organizations with 100-149 personnel [3 UTCs], provide a conference room for up to 50 persons. ⁸ 25 PN conference room = 20 NSF per person. 50-person conference room = 20 NSF per person + 150 NSF speaker area. ⁷
141-753	Team Room	NSF	150	150	300	For organizations with 50-99 personnel [1-2 UTCs], provide one team room for up to 10 persons. For organizations with 100-149 personnel [3 UTCs], provide two team rooms for up to 10 persons each. ⁸ Provide 15 NSF per person for team rooms from 6 to 10 people. ⁷
141-753	Briefing & Debriefing	NSF	330	440	550	Provide 3 rooms for 3 PMAI and 1 room for each additional 3 PMAI. (3 PMAI = 3 rooms; 6 PMAI = 4 rooms; 9 PMAI = 5 rooms). Meeting Room up to 15 NSF per person ⁷ (6 people per room), plus a task station per room (20 NSF). ⁵ 110 NSF per room.
141-753	Mobility Storage	NSF	0	0	0	For CONUS locations, mobility storage is handled by SOLRS. OCONUS locations will also store mobility gear with LRS where possible. If no LRS present, mobility storage will be located within the squadron. Assume 2 mobility bags per PN. Each mobility bag is 3 NSF.
141-753	Mobility Office ²	NSF	96	192	288	AFSOC/A4I: Based on assigned PN at 48 NSF each. Assume 2 PN minimum, 2 additional PN per every additional 3 PMAI.
141-753	Individual Equipment Storage	NSF	120	236	356	Individual equipment lockers require 4' x 2' per locker per flight crew member. Lockers stack 2 high. This space is for alert/ready professional gear and personal gear.

141-753	AFE Offices ^{2,3}	NSF	160	250	340	Assume 1 per aircraft with a minimum of 3 offices. Provide 1 Chief and Assistant Chief Type E Offices (65 NSF) and Type G offices (30 NSF) for all other personnel. ⁵
141-753	AFE Shop ³	NSF	714	927	1,141	Helmets are stored in 18" x 18" cubes stacked 5 high (Approx. 2.25 NSF every 5 helmets. Provide 1 helmet per pilot, plus 20% for spares. 300 NSF for shop space. 400 NSF (minimum) for dry storage plus 200 NSF for every additional 3 PMAI/UTC above 1.
141-753	CTC Antenna (exterior)	GSF	100	100	100	Provide a pad that is 10' x 10'. If using a building-mounted antenna, remove this requirement.
141-753	SATCOM Pad (exterior)	GSF	150	150	150	Provide a minimum area of 10' x 15' for the SATCOM pad.
141-753	Administrative Support Space	NSF	1,620	2,500	3,400	Use a maximum of 40 sf per person, and a minimum 20 sf per person. ¹¹ The default is the minimum.
141-753	Administrative Circulation	NSF	648	927	1,210	Max 10% of Administrative Space ¹⁰
141-753	Special Purpose Circulation	NSF	480	555	711	Max 10% of Special Purpose Space ¹⁰
Total Operations Facilities		NSF	12,416	16,299	21,131	
Total Operations Facilities		GSF	15,521	20,374	26,414	Net to Gross conversion factor of 1.25.
Exterior: Antenna Tower and Pad		GSF	250	250	250	

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used with exceptions for the command suite, meeting rooms, and conference rooms. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. For planning purposes, AFE facility requirements for AFSOC squadrons are split between the SOSS centralized AFE facility and the squadron operations facility. If consolidated within the SOSS facility, the AFE facility requirements listed in this table are not additive to the existing SOSS AFE facility allowance.
4. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.
5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
7. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.4.
8. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.5
9. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2
10. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3
11. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

7.4.15. Maintenance Hangar Facilities.**7.4.15.1. Maintenance Hangar (CATCODE: 211111).**

7.4.15.1.1. Requirements Determination. Maintenance hangars support aircraft maintenance, repair, and inspection activities that are most efficiently done under complete cover. The interior design of hangars must include the clearances between aircraft and door openings, walls, ceilings, and parking clearances between other aircraft.

7.4.15.1.2. Scope Determination. Determine the square footage requirements for maintenance hangars by the method described below for computing covered maintenance spaces:

7.4.15.1.2.1. Calculate the number of authorized covered maintenance spaces for the U-28 by multiplying the total number of PMAI, BAI, and training aircraft by a factor of 0.25 (rounded to the nearest whole number). See Table 7.4.25 for calculating the required number of spaces for 3, 6, and 9 PMAI.

7.4.15.1.2.2. To determine the interior dimensions of dock and hangar bays, use the dimensions of the aircraft plus the minimum clearances shown in Table 7.4.26. To compute the gross area of the hangar, multiply the interior dimensions by a factor of 1.15 (DAFMAN32-1084, CC 211111, Paragraph 1.3.4); however, to account for additional space required for hangar door pockets, use a factor of 1.25.

Table 7.4.25. U-28 Covered Aircraft Maintenance Spaces.

Aircraft	PMAI	BAI	PTAI	Total Aircraft x U-28 Hangar Factor	Required Covered Spaces (rounded)
U-28	3	1	0	4 x .25 = 1	1

U-28	6	1	0	$7 \times .25 = 1.75$	2
U-28	9	1	0	$10 \times .25 = 2.5$	3

Table 7.4.26. U-28 Aircraft Separation Dimensions inside Hangars.

Minimum Clearances from U-28 Hangar Elements¹						
Aircraft Element	Door		Walls		Roof Framing	
	m	ft	m	ft	m	ft
Wing Tip - under 30.5 m (100 ft) span	3	10	4.6	10	-	-
Fuselage - under 30.5 m (100 ft) span	3	10	4.6	10	3	10
Tail - Vertical	2.1	7	-	-	3	10
Tail - Horizontal	3	10	3	10	3	10
Note:						
1. Clearances between aircraft components should be at least 10 ft where two or more aircraft are housed.						

7.4.15.1.3. **Dimensions.** The area is calculated by using block dimensions (**Table 7.4.1**) 47.25 ft (L) x 53.25 ft (W), and allowing minimum clearances (10 ft, wing-to-wing/doors) 67.25 ft x 73.25 ft = 4,927 NSF (rounded up) for one U-28. The area needed for a two-bay hangar for the U-28 is 67.25 ft x 136.5 ft (9,180 NSF, rounded up). The area needed for a three-bay hangar for the U-28 is 67.25 ft x 199.75 ft (13,434 NSF, rounded up). The minimum hangar ceiling height is the aircraft height (14 ft) plus minimum roof clearance (**Table 7.4.26**, 10 ft) or 24 ft. The minimum hangar door height is the aircraft height (14 ft) plus minimum door clearance (**Table 7.4.26**, 7 ft) or 21 ft.

Table 7.4.27. Building Utility System Requirements for Maintenance Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.

Electrical	Use commercial grade convenience receptacles and power outlets. Provide multiple 120- and 220-volts outlets throughout the facility. Provide independent circuit breakers to support charging and computer stations since consolidated breakers can be tripped due to power demands and surges. Provide isolated circuits from hangar outlets as consolidation will cause breaker interruptions due to excessive power demand for one circuit. Design electrical systems capable of expansion to avoid increased installation costs and time delays when the electrical demand increases. Cost of additional installation can be high for O&M funds and contracting process can be lengthy, particularly at overseas locations. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Provide a commercial grade domestic water and wastewater system. Ensure hot water capability to comply with requirements driven by TO, OSHA, and other safety standards. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Per UFC 3-600-01 Paragraph 4-4.1, fixed wing and rotary wing aircraft fuel cell maintenance facilities, alert, storage, depot-level and general-purpose maintenance hangars comply with UFC 4-211-01. Per UFC 4-211-01 Paragraph 3-6.17, provide a hydraulically designed, low level Hi-Ex foam system for hangar bays. Existing hangars may continue use of AFFF fire protection systems. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.4.15.1.4. Unique Facility Requirements.

7.4.15.1.4.1. Bridge Crane. Provide a 5-ton overhead bridge crane. Minimum crane hook height for U-28 hangars is 24 ft (UFC 4-211-01, Figure 2-3 & Table 2-1 Item F).

7.4.15.1.4.2. Hangar Clearances. See [Table 7.4.26](#).

7.4.15.1.4.3. Hangar Floors. Floors should be designed to withstand the weight of the aircraft and its fuel plus other equipment items that may be located in the hangar such as tow vehicles, jacks, cribs, cranes, spare engines, etc. When exact data is not available, use 60 percent of the maximum gross weight of the aircraft (UFC 3-260-02, Chapter 4, Section 3, Paragraph D). The minimum requirement for hangar floor pavements for the U-28 should be designed for at least 6,600 lbs. (10,935 lbs.

[Maximum Takeoff Weight] x 0.6).

7.4.15.1.4.4. Fall Protection. Provide fall protection in accordance with UFC 3-110-03 and refer to UFC 4-211-01 Appendix C-11 for information on the best practices for fall prevention and protection systems. Consider the implications of providing different types of fall protection systems and/or equipment. Note that fall protection systems not installed as a building system may require additional storage for fall protection support equipment.

7.4.15.1.4.5. Fire Protection. The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF.

7.4.15.1.4.6. Security Requirement. Secured space will be required for the storage of classified components temporarily removed from aircraft. This requirement may be satisfied by storing components at respective intermediate level shops or other secure storage locations.

7.4.15.1.4.7. Structure. The maintenance hangar shall be identified as Risk Category III based on ACSE 7.

7.4.15.1.4.8. Reference. See Paragraph **7.4.16**, Maintenance Facilities for a concept diagram of the U-28 Maintenance Hangar and AMU facility.

7.4.16. Maintenance Facilities.

7.4.16.1. Aircraft Maintenance Unit (CATCODE: 211154).

7.4.16.1.1. Requirements Determination. Each AMU needs an operational building for administration, scheduling, training, briefing, and aircraft equipment/tool storage. Equipment/tool storage may be in a separate building (DAFMAN32-1084, CC 211154, Paragraph 1.2).

7.4.16.1.1.1. Submit projects for unlisted missions, AMU types, or additional space requirements through the AFSOC/A4 (DAFMAN32-1084, CC 211154, Paragraph 1.2.1).

7.4.16.1.2. Scope Determination. Space must be provided for the NCOIC, OIC, administration, debrief, training, field service representatives, AFETS, scheduling, production, section flight chiefs (Production, Specialist, Aircraft, Scheduling, Tactics, Brief/Debrief, and Support), and staff. Space is also required for test/support equipment and tools to support all mission tasks. Equipment includes aircraft test equipment, maintenance tools, mobility pallets/ (ISU 70/90s), Dash 21 equipment, and equipment found in **Table 7.4.30**. Specific mission requirements may require additional storage space to be validated through the AFSOC/A4 (DAFMAN32-1084, CC 211154, Paragraph 1.3.1).

7.4.16.1.2.1. Where offices are provided, an open office concept using system furniture will be used with the exceptions for the command suite and meeting and conference rooms. The open office concept will significantly reduce real property

modifications to support future function and organization changes by rearranging the system furniture.

7.4.16.1.2.2. A designated heritage room is not authorized for the AMU in DAFMAN32-1084 and is not authorized as an AFSOC specific requirement per AFSOC/A4I.

7.4.16.1.3. Dimensions. **Table 7.4.28** lists the maximum space requirements for U-28 AMU facilities.

Table 7.4.28. Maximum Space Requirements for U-28 AMU Facilities.

Gross Area^{1,2}					
AD Military – 3 PMAI		AD Military – 6 PMAI		AD Military – 9 PMAI	
m²	ft²	m²	ft²	m²	ft²
1,231	13,256	1,524	16,400	1,770	19,056
CLS – 3 PMAI		CLS – 6 PMAI		CLS – 9 PMAI	
m²	ft²	m²	ft²	m²	ft²
936	10,075	1,067	11,482	1,200	12,916
Notes:					
1. This table equals the total GSF authorized from the rooms listed in Table 7.4.33 (AD Military) and Table 7.4.34 (CLS). Space authorizations for individual rooms within this facility can be found in Table 7.4.33 (AD Military) and Table 7.4.34 (CLS).					
2. Includes common use and maintenance areas.					

Table 7.4.29. Building Utility System Requirements for AMU Administrative Areas.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.4.16.1.4. Design Considerations. Locate the AMU next to assigned aircraft parking apron, and maintenance hangar. Special Q-D standards apply to hardened facilities. See AFMAN 91-201 (DAFMAN32-1084, CC 211154, Paragraph 1.5).

7.4.16.2. U-28 AMU Backshop Facilities.

7.4.16.2.1. **Support Section**. Area may include composite tool kits (CTKs), special tools, test equipment, TO, bench stock, Dash 21 equipment, alternate mission equipment (AME), vehicles, mobility equipment, and dedicated supply support functions to support the production effort. The required space for this facility can be found in [Table 7.4.31](#).

7.4.16.2.1.1. CTK. The space needed to accommodate U-28 CTK support equipment is dependent on the amount of general storage and tool storage required.

7.4.16.2.1.2. Supply. U-28 supply includes two bins for bench stock, a general aircraft supply area, a due-in from maintenance (DIFM) area, tail number bins (TNBs) and follow-on maintenance (FOM) stored in an ISU (8 ft x 9 ft), and one standard workstation (48 NSF each per DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1).

7.4.16.2.1.3. Hazardous Materials. Requires an area sized for one pallet, typically on the hangar floor. One pallet is 8 ft x 9 ft or 72 NSF.

7.4.16.2.1.4. Hazardous Waste Accumulation. Requires an area sized for one pallet, typically on the hangar floor. One pallet is 8 ft x 9 ft or 72 NSF.

7.4.16.2.1.5. Dash 21. Dash 21 equipment is alternate mission equipment designed to configure aircraft for multiple mission profiles. U-28 Dash 21 storage requires 50 NSF per PMAI.

Table 7.4.30. Support Equipment for the U-28 Support Section.

Equipment Name	Quantity ^{1,2}
Tool Accountability System	1
CAMS or IMDS	1
Land Mobile Radios	4 per aircraft
Tactical Radios	1 per aircraft
Portable Oxygen Bottles	1 per flight crew member.
Batteries	Varies based on tool type/quantity and battery type/voltage.
Battery chargers	Varies based on tool type/quantity and battery type/voltage.
Hand etcher	1
Dremel tool for de-etching	1
Shredder	1
Copy/Fax/Scanner	1
Printer	1
Computer workstations	1 for each CAMS or IMDS
Notes:	
1. These numbers are for a typical Support Section. Only the numbers for batteries, battery chargers, and portable oxygen bottles will vary based on the criteria mentioned.	

7.4.16.2.2. Avionics Shop (CATCODE: 217712).

7.4.16.2.2.1. Maintenance/Service Function. This facility houses organizational maintenance activities for the following aircraft equipment and accessories: airborne communications, cameras, and tactical support communications security equipment.

7.4.16.2.2.2. Storage Function. Major items that require shop and storage space include storage racks for serviceable equipment and equipment waiting for maintenance or parts, coding devices, technical data and code books, pod lifting

devices, cradles, and storage racks. Some storage space provides physical security and corrosion protection for delicate electronic equipment. If possible, combine maintenance and storage facilities to share secure storage areas.

7.4.16.2.3.2. Dimensions. See [Table 7.4.33](#) for the space required for the AD military U-28 avionics shop and [Table 7.4.34](#) for the space required for the CLS U-28 avionics shop.

7.4.16.2.3. **Wheel and Tire Shop.**

7.4.16.2.3.1. Maintenance Area. Provide a hard rubber floor coating in the tire breakdown/assembly area to avoid damage to the wheels during operations performed in the shop. A seamless floor coating will keep fluid spills from seeping through cracks and creating maintenance problems. Cover walls and ceilings with appropriate sound insulation to reduce noise. Shop equipment in the wheel and tire shop includes tire break-down machines, tire inflation cages, an oven for heating wheels, a freezer for cooling bearing races, an arbor press, and a jet washer. Provide a bearing/solvent room that contains a non-foaming jet washer for cleaning bearings and ample room when servicing the wheel bearings. Special equipment in the tire shop includes a ¼-ton monorail hoist to move large wheels.

7.4.16.2.3.2. Storage Area. Provide separate material storage areas to include tire racks for both incoming (awaiting service) and outgoing (service complete) tires. Recommend using automatic vertical storage racks to store tires efficiently.

7.4.16.2.3.3. Dimensions. AD military and CLS units require 735 NSF for the U-28 wheel and tire shop based on the CLS Wheel & Tire shop in Hurlburt Building 90815 (24.5' x 30'). [Table 7.4.33](#) provides the space required for the AD military U-28 wheel and tire shop and [Table 7.4.34](#) provides the space required for the CLS U-28 wheel and tire shop.

7.4.16.2.4. **Structural Repair (Sheet Metal Shop and Metals Technology).**

7.4.16.2.4.1. Sheet Metal Shop. See [Table 7.4.31](#) for equipment in the Structural Repair Shop. Provide adequate space for all authorized shop equipment, including the working and safety zone around each piece. Equip the sheet metal shop with a 1-ton bridge crane spanning the material storage area and most the work area. Also, install ½-ton or ¼-ton cranes at strategic locations required for material handling. The sheet metal shop requires a material storage rack for various metals sheet stock used to fabricate aircraft parts. A moveable rack to store the sheet stock on edge will facilitate stock selection.

7.4.16.2.4.2. **Metals Technology Work Center.** See [Table 7.4.31](#) for the equipment for Metals Technology area. The exact space requirements are determined by the amount and type of authorized equipment. The metals technology area equipment requirement varies by the functions performed.

7.4.16.2.4.2.1. Welding Shop. Include an OSHA compliant screen/blind system and proper ventilation/hood to protect personnel from welding operation hazards. Equip the welding shop with welding machines and curtains, grinders, and material

handling devices. Provide a 1-ton capacity bridge crane with two ½-ton hoists for handling parts and provide a 2-ton bridge crane spanning the material storage and work areas and 1-ton hoists at strategic locations in the machine shop.

7.4.16.2.4.2.2. CADD/CAM Shop. CADD/CAM equipment is required to provide design parameters to CNC machines for automatic part fabrication. When CADD/CAM equipment is used, include a separate room for the computer terminal.

7.4.16.2.4.2.3. Storage Area. The metals technology area requires a material storage rack for bar and plate stock used to manufacture aircraft components. Provide storage cabinets in the welding shop for bench and operating stocks suitable for small items and ready use welding supplies. There should be additional storage space and racks with safety chains to store flammable gas cylinders for aircraft welding operations.

7.4.16.2.4.2.4. Dimensions. The minimum size for a U-28 structural repair shop is 1,267 NSF based on sheet metal shop in Hurlburt Field B90815. This area provides administrative space for two Type E Offices (65 NSF min each plus 20 NSF administrative support space and 10% circulation or 220 NSF total admin area), 20' x 35' for shop floor space (Welding and CADD/CAM), 150 NSF for storage, and 10% for special purpose space circulation.

Table 7.4.31. Equipment in the U-28 Structural Repair Shop.

Equipment Name	Quantity
Folding Machine (BAR)	1
Throatless Shear	1
Small Box & Pan Brake	1
Large Box & Pan Brake	1
Large Hand Brake	1
Brake Machine Sheet	1
Machine Rotary Punch	1
Foot Shear	1
Do-All Band Saw	1
Utility Shear (Pneumatic)	1
Belt Sander	1
Drill Press	1
Lathe	1
VMC	1
Cutting Table	1
CNC Milling Machine or VF4	1
Power Shear	1
Power Roller	1
Hand Roller	1
Metal, inert gas (MIG) Welder	1
Tungsten, inert gas (TIG) Welder	1
Oxy-Acetylene Cutting Torch	1

Plasma Cutter	1
Chop Saw	1
Bench Grinder	1
Oven	2
Note: 1. The items in this shop are typical to all structural repair shops. The quantities reflect the minimum needed and can vary based on maintenance workload.	

7.4.16.2.5. Sensor Maintenance Shop.

7.4.16.2.5.1. The U-28 has Electro-Optical / Infrared (EO/IR) Sensor Turrets that require periodic testing and maintenance. This space requires a room for testing and firing lasers, a repair and central work area, bench stock and turret storage, and offices for shop personnel. Provide temperature and humidity control, an intrusion detection system, workbenches and bench stock, a 1-ton crane, and roll-up door access for loading/unloading sensor turrets onto trucks. Assume this shop requires maneuver area to work on 3 turrets at a time. To determine the area required for the shop, assume the largest sensor type dimensions (MTS B sensor crate is 4' L x 4' W x 4' H each) and add 3 feet clearance on either side of crates. Calculates to 100 NSF per turret to include maneuver room for operating crane, etc. Provide 300 NSF at a minimum central/repair workspace. Provide 100 NSF per turret and assume storage for 1 turret per 3 PMAI. Based on existing space in Hurlburt Building 90033 (approximately 800 NSF), the current workspace can support 5 turrets and has 300 NSF of bench space. Assume 50 NSF of bench space per 3 PMAI. Provide 1 Type D office for a supervisor (100 NSF min) and 5 Type G shared offices for shop personnel (DAFMAN32-1084, Category 61, Table 1.2 and Table 1.2.1). The total area required for the U-28 sensor maintenance shop is listed in [Table 7.4.33](#) and [Table 7.4.34](#).

7.4.16.2.6. Engine/Propeller Storage.

7.4.16.2.6.1. Two engines and two propellers will be stored within the maintenance hangar. This storage space requires temperature and humidity control. Engines are 6 ft (L) x 5 ft (W); however, a storage space that is 8 ft (L) x 7 ft (W) allows for clearance on either side. The propeller has a 105-in diameter; however, a storage space that is 10 ft (L) x 10 ft (W) allows for clearance on either side. The total area required for U-28 engines and propellers is 312 NSF.

7.4.16.4. Aircraft General Purpose Shop (CATCODE: 211152).

7.4.16.4.1. Description. The shop provides space for specialized maintenance activities such as metals technology, aerospace systems shops, egress shop and reclamation operations on crash damaged aircraft and equipment. The shop also has space for work, administration, telecommunications, tool cribs, bench stocks, lockers, storage, and security of supplies and reparable parts. (DAFMAN32-1084, CC 211152, Paragraph 1.1).

7.4.16.4.2. Requirements Determination. This facility provides for specialized and general aircraft maintenance functions. It may also be a holding area for aircraft cryogenic servicing carts. It normally includes work benches, bench stock, battery servicing area (two separate areas, if Ni-Cad and lead acid batteries both require servicing), cryogenics maintenance area, generator and constant speed drive (CSD) test stand area (if required), life raft bottle servicing area, tool crib, administrative space, and personnel locker space. (DAFMAN32-1084, CC 211152, Paragraph 1.2). These shops may be in one building or several buildings. If storage for explosives is required, no maintenance can be performed in this area in accordance with AFMAN 91-201 (DAFMAN32-1084, CC 211152, Paragraph 1.2.4).

7.4.16.4.3. Scope Determination. DAFMAN32-1084, CC 211152, Table 1.1 states the total gross space requirements for general purpose maintenance shops for a Special Operations Wing is to be determined by individual analysis and validated by the appropriate HQ/A4M. AFSOC/A4I conducted an analysis study of requirements for CC 211152 and AFSOC/A4M validated the findings of that study. The validated requirements for CC 211152 are presented in this instruction. Consult AFSOC/A4M for facility requirements that deviate from this instruction.

7.4.16.4.4. Dimensions. **Table 7.4.33** and **Table 7.4.34** show U-28 aircraft general purpose shop spaces at the AMU organizational level for AD Military and CLS maintenance, respectively. See **Paragraph 7.4.17**, Intermediate Maintenance Facilities, for the facilities that are at the intermediate level.

7.4.16.4.5. Design Considerations.

7.4.16.4.5.1. Floor space and door openings should allow movement and repair of the largest item to be repaired in each shop. See **Table 1.2** in CATCODE 211111.

7.4.16.4.5.2. Special ventilation and floor drainage are necessary for, but not limited to, the following electrical and environmental (E&E) maintenance areas: Battery servicing, life-raft servicing, cryogenic cart maintenance, and generator and CSD test stand areas. An emergency eye wash station and shower are mandatory near the battery servicing area. A waste oil disposal system to reclaim petroleum-based oils and synthetic oils, is needed. Consider providing a storage area for shop support equipment (e.g., portable hoists, jacks, refrigerant and ODC recovery systems, and cryogenic vacuum and purge carts). Provide a fire suppression system, ventilation systems (to accommodate fiberglass, plastic, welding, and plating shop operations), a compressed air source in each shop providing 1,030 kPa (150 psi) of air, a monorail crane hoist system, a multi-phase (110, 240 and 480 voltage) electrical system as required, and air conditioning to protect Computer Numerically Controlled industrial plant equipment as required.

7.4.16.4.5.3. Locate facilities to comply with UFC 3-260-01. See paragraph 1.2 and 1.3 of the Category Group 21 General Criteria for general maintenance facility criteria.

7.4.16.4.5.4. Ensure cleanliness and area safety requirements for cryogenic materials is maintained. Floor with grates and groves tend to accumulate debris that can create hazardous condition when in contact with cryogenics materials.

7.4.16.4.5.5. Where possible, try to avoid the use of mezzanines. The use of mezzanines restricts movement of forklifts. Mezzanines also limit ground floor storage due to pillar locations.

7.4.16.4.5.6. Provide grounding points for safety.

Table 7.4.32. Building Utility System Requirements for U-28 AMU Backshop Areas.

System	Requirements
Mechanical	All U-28 backshops require a 1,030 kPa (150 psi) compressed air source for specialized equipment and for general hand tool operations. Provide air conditioning to protect CNC industrial plant equipment as required. Maintain regulated temperature and humidity conditions to prevent equipment failures, corrosion of equipment/machined parts to ensure accuracy of machined parts and to aid in sealant/bonding agent curing. Ensure humidity control for sensor maintenance and avionics shops is provided. Point source exhaust systems must be installed at welding stations to eliminate welding fumes with general filtration used throughout the shop to eliminate airborne smoke and cutting fluid mists. Woodworking requires a sawdust collection system. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Provide a multi-phase (110, 240 and 480 voltage) electrical system. Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references. Provide NIPR/SIP in the sensor maintenance and avionics shops.

Figure 7.4.9. Typical U-28 AD Military Maintenance Hangar and AMU Facility.

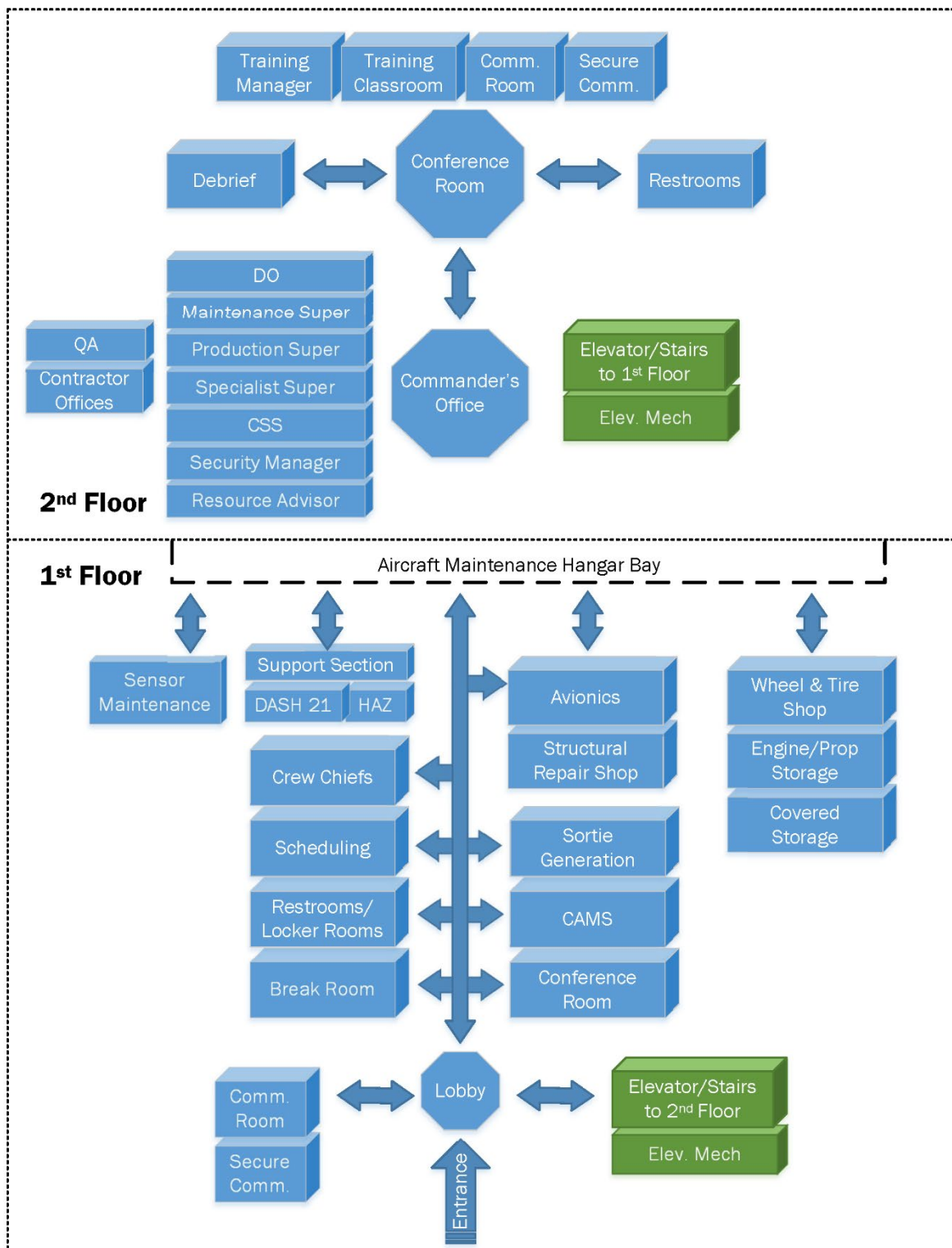


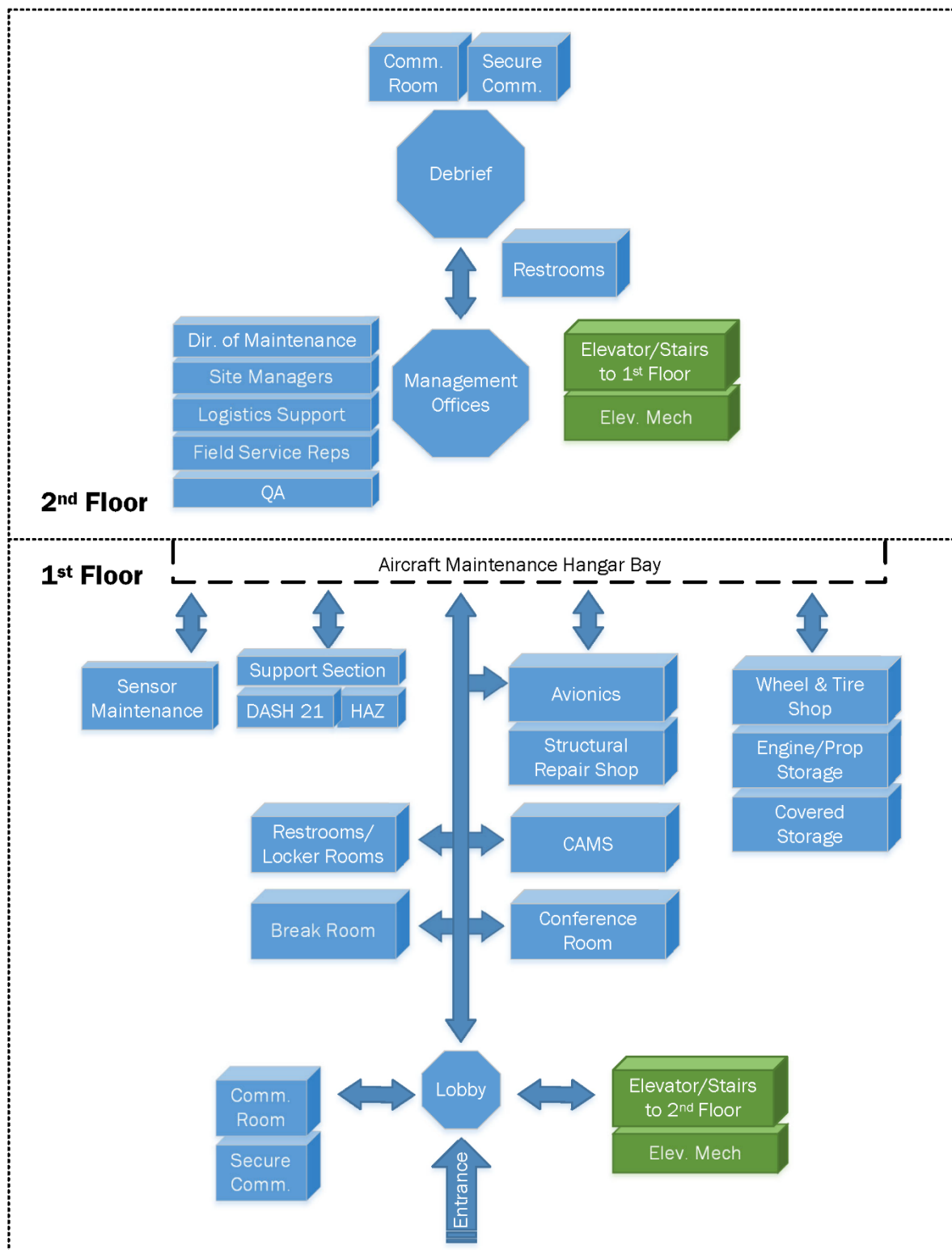
Figure 7.4.10. Typical U-28 CLS Maintenance Hangar and AMU Facility.

Table 7.4.33. U-28 AD Military Maintenance Facility (AMU) Space Requirements.

Cat Code	Facility	UM	U-28 (3)¹	U-28 (6)¹	U-28 (9)¹	DAFMAN32-1084 Ref. or Remarks/Calculations
211-154	Commander - Command Suite -	NSF	140	140	140	140 NSF for Type C Offices. ⁴
211-154	First Sergeant - Command Suite	NSF	100	100	100	100 NSF for Type D Offices. ⁴
211-154	Support Staff and Waiting – Command Suite	NSF	140	140	140	2 PN waiting area plus 1 office. Waiting area is 20 NSF per person. ⁶ 100 NSF for Type D Offices. ⁴
211-154	Maintenance Officer ²	NSF	100	100	100	100 NSF for Type D Offices. ⁴
211-154	Maintenance Superintendent ²	NSF	100	100	100	100 NSF for Type D Offices. ⁴
211-154	AMU OIC & NCOIC ²	NSF	200	200	200	2 PN. 100 NSF for Type D Offices. ⁴
211-154	Production Superintendent ²	NSF	100	100	100	100 NSF for Type D Offices. ⁴
211-154	Crew Chiefs ²	NSF	195	195	195	AFSOC/A5: 3 PN. 65 NSF for Type E Offices. ⁵
211-154	Specialist Sec. NCOIC/Chief ²	NSF	65	65	65	65 NSF for Type E Offices. ⁵
211-154	Support Sec. NCOIC/Chief ²	NSF	65	65	65	65 NSF for Type E Offices. ⁵
211-154	Resource Advisor	NSF	100	100	100	100 NSF for Type D Offices. ⁴
211-154	Training Manager	NSF	100	100	100	100 NSF for Type D Offices. ⁴
211-154	Security Manager	NSF	100	100	100	100 NSF for Type D Offices. ⁴
211-154	Quality Assurance ²	NSF	130	130	130	2 PN (Quality Assurance (QA) Chief and Evaluator). 65 NSF for Type E Offices. ⁵
211-154	Technical Order Distribution Office (TODO) ²	NSF	65	65	65	65 NSF for Type E Offices. ⁵
211-154	Plans and Scheduling ²	NSF	130	130	130	Assume 2 PN. 65 NSF for Type E Offices. ⁵
211-154	Sortie Generation ²	NSF	130	130	130	Assume 2 PN. 65 NSF for Type E Offices. ⁵
211-154	Field Service Representatives ²	NSF	130	130	130	Assume 2 PN. 65 NSF for Type E Offices. ⁵
211-154	Logistics Support Representatives ²	NSF	65	65	65	Assume 1 PN. 65 NSF for Type E Offices. ⁵

211-154	Vestibule/Lobby	NSF	0	0	0	User Justified. ⁹ NSF to GSF conv.
211-154	Elevator	NSF	80	80	80	Core Building Services (NSF to GSF conv.) ⁹
211-154	Elevator Equipment Room	NSF	90	90	90	Core Building Services (NSF to GSF conv.) ⁹
211-154	Mech/Elec Rooms	NSF	0	0	0	This space will vary. ⁸ NSF to GSF conv.
211-154	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 'x 12' (144 NSF) per floor.
211-154	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 'x 12' (144 NSF) per floor.
211-154	Break Room	NSF	187	374	562	16% of occupants x 18 NSF. ⁶
211-154	Restrooms and Janitor's Closet	NSF	0	0	0	Common Areas (NSF to GSF conv.). ⁸
211-154	Men's Shower	NSF	120	120	150	Provide 4 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
211-154	Women's Showers	NSF	60	60	90	Provide 2 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
211-154	Men's Lockers	NSF	65	130	195	Calculated as 21/3 (lockers stacked) x 0.8 x #PMAI x 4 NSF.
211-154	Women's Lockers	NSF	17	34	50	Calculated as 21/3 (lockers stacked) x 0.2 x #PMAI x 4 NSF.
211-154	Conference Room	NSF	500	1,150	1,350	For organizations with 50-99 personnel [1 UTC], provide a conference room for up to 25 persons. For organizations with 100-149 personnel [2 UTCs], provide a conference room for up to 50 persons. For organizations over 150 personnel [3 UTCs], provide an additional 10-person conference room capacity for up to 10 persons for each additional 100 personnel in the organization. ⁸ 25 PN conference room = 20 NSF per person. 50-person conference room = 20 NSF per person + 150 NSF speaker area. 10-person conference room = 20 NSF per person. ⁷

211-154	Commander's Conference Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. Allowance provides 15 NSF/person. ⁷
211-154	Team Room/Ready Room	NSF	150	300	450	For organizations with 50-99 personnel [1 UTC], provide one team room for up to 10 persons. For organizations with 100-149 personnel [2 UTCs], provide two team rooms for up to 10 persons each. For organizations over 150 personnel [3 UTCs], provide an additional 10-person team room with capacity for up to 10 persons for each additional 100 personnel in the organization. ⁸ Provide 15 NSF per person for each team room. ⁷
211-154	CAMS Room	NSF	65	65	65	1 Type E office per MIS (CAMS). 65 NSF for Type E Offices. ⁵
211-154	Secure Storage	NSF	35	35	35	Provide 35 NSF.
211-154	Training Classroom	NSF	240	390	585	AFSOC/A4I: 240 NSF minimum. Total unit authorization is 3 NSF per military personnel.
211-154	Debrief	NSF	150	150	150	One 10-person room for <11 PMAI and Two 10-person rooms for more than 10 PMAI. 15 NSF/person. ⁷
211-154	Avionics Systems	NSF	200	359	539	Based on Hurlburt Building 90815 Avionics Shop: size 22' x 24.5' or 539 NSF. Calculated as 539/9 PMAI x number of PMAI. Minimum of 200 NSF.
211-154	Support Section /CTK	NSF	550	1,100	1,650	Based on the CLS Support Section/CTK in Hurlburt Building 90815 (3,320 NSF) supporting 6 UTCs. Provide 550 NSF per 3 PMAI for the support section.
211-154	Dash 21 Equipment Storage	NSF	150	300	450	50 NSF per PMAI. Minimum of 100 NSF.
211-154	POS/Portable Oxygen Bottles	NSF	12	24	36	Assume 4 NSF per PMAI.
211-154	Hazardous Materials and Hazardous Waste	NSF	144	144	144	Requires an area sized for one pallet each for material and waste, typically on the hangar floor. One pallet is 8 ft x 9 ft or 72 NSF.

211-154	Propulsion/Engine Storage	NSF	312	312	312	Assume 2 spare engines and 2 spare propellers per unit. Engines are 6 in (L) x 5 in (W); however, a storage space that is 8 ft (L) x 7 ft (W) allows for clearance on either side. The propeller has a 105 in diameter; however, a storage space that is 10 ft (L) x 10 ft (W) allows for clearance on either side.
211-154	Wheel and Tire Shop	NSF	735	735	735	Based on Hurlburt Building 90815 Wheel and Tire shop: 24.5' x 30' or 735 sf.
211-154	Structural Repair Shop	NSF	1,267	1,267	1,267	Based on Hurlburt Building sheet metal shop Hurlburt Field B90815: 1,267 sf. This area provides administrative space for two Type E Offices (65 NSF min each plus 20 NSF administrative support space and 10% circulation or 220 NSF total admin area), 20' x 35' for shop floor space (Welding and CADD/CAM), 150 NSF for storage, and 10% for special purpose space circulation.
211-154	Sensor Maintenance Shop	NSF	1,150	1,300	1,450	Provide 20' x 20' area for a laser firing room. Provide 300 NSF at a minimum central/repair workspace. Provide 100 NSF per turret and assume storage for 1 turret per 3 PMAI. Assume 50 NSF of bench space per 3 PMAI. Provide 1 Type D office for a supervisor (100 NSF min) and 5 Type G shared offices (30 NSF min) for shop personnel. ^{4,5}
211-154	Covered Storage ³	GSF	150	300	450	50 NSF x number of PMAI.
211-154	Covered Vehicle Storage ³	GSF	486	972	1,458	Provide 1 one 3/4 -ton truck each for the CTK, sensor maintenance, and avionics shops. Assume minimum of 3 vehicles or 1 per PMAI. Provide each vehicle 9' x 18' or 162 GSF.
211-154	SOMXS Commander	NSF	140	140	140	Provide 1 Type C office. 140 NSF for Type C offices. ⁴
211-154	SOMXS First Sergeant	NSF	100	100	100	Provide 1 Type D office. 100 NSF for Type D offices. ⁴

211-154	SOMXS Commander's Support Staff	NSF	140	140	140	Waiting area is 20 NSF per person. ⁶ Reception desk is user justified. Calculated as 2 justified waiting persons (40 NSF) + 100 NSF for Type D secretary office ⁴ .
211-154	SOMXS Maintenance Officer	NSF	100	100	100	100 NSF for Type D offices. ⁴
211-154	SOMXS Superintendent	NSF	100	100	100	100 NSF for Type D offices. ⁴
211-154	SOMXS Production Superintendent	NSF	100	100	100	100 NSF for Type D offices. ⁴
211-154	SOMXS Communications Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	SOMXS Commander's Conference Room	NSF	150	150	150	AFSOC/A4I: Provide for up to 10 people. Allowance provides 15 NSF per person. ⁷
211-154	SOMXS Break Room	NSF	100	100	100	16% of occupants x 18 NSF. Minimum of 100 NSF. ⁶ Since SOMXS backshops are consolidated with the AMU, this break room will only support the SOMXS overhead positions.
211-154	Administrative Support Space	NSF	780	780	780	Use a maximum of 40 sf per person, and a minimum 20 sf per person. ¹¹ The default is the minimum.
211-154	Administrative Circulation	NSF	460	540	580	Max 10% of Administrative Space ¹⁰
211-154	Special Purpose Circulation	NSF	560	703	854	Max 10% of Special Purpose Space ¹⁰
Total SOMXS Facilities		GSF	1,343	1,343	1,343	Facility can be collocated or separate from AMU. Net to Gross conversion factor of 1.25.
Total AMU Facilities (w/o covered storage)		NSF	11,222	13,673	15,767	
Total AMU Facilities (w/o covered storage)		GSF	14,028	17,092	19,709	Net to Gross conversion factor of 1.25.
Total AMU Facilities (covered storage only)		GSF	636	1,272	1,908	

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used with exceptions for the command suite, meeting, and conference rooms. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. Tropical environments introduce increased corrosion due to high humidity with high salt content. In these instances, standard exterior covered storage may not be adequate to maintain mission essential, mission ready, spares and equipment unless the spares and equipment are stored within nearly airtight equipment containers (CONEX boxes or other containers). In these cases, AFSOC/A4I may approve additional controlled humidity warehouse space.
4. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.
5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
7. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.4.
8. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.5
9. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2
10. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.1.
11. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

Table 7.4.34. U-28 Maintenance Facility (AMU) CLS Space Requirements.

Cat Code	Facility	UM	U-28 (3) ¹	U-28 (6) ¹	U-28 (9) ¹	DAFMAN32-1084 Ref. or Remarks/Calculations
211-154	Director of Maintenance. ²	NSF	100	100	100	100 NSF for Type D Offices. ⁴
211-154	Site Managers ²	NSF	200	200	200	2 PN. 100 NSF each for Type D Offices. ⁴
211-154	Field Service Representatives ²	NSF	260	260	260	4 FSRs per unit. 65 NSF for Type E Offices. ⁵
211-154	Logistics Support Representatives ²	NSF	455	455	455	7 PN (2 technicians and 5 front office PN). 65 NSF for Type E Offices. ⁵
211-154	Elevator	NSF	80	80	80	Provide 80 NSF.
211-154	Elevator Equipment Room	NSF	90	90	90	Provide 90 NSF.
211-154	Mech/Elec Rooms	NSF	0	0	0	Included in the NSF to GSF conversion. ⁹
211-154	Communications Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.

211-154	Break Room	NSF	100	100	100	16% of occupants x 18 NSF. Minimum of 100 NSF. ⁷
211-154	Restrooms and Janitor's Closet	NSF	0	0	0	Included in the NSF to GSF conversion. ⁸
211-154	Men's Lockers	NSF	67	67	67	Calculated as 21 PN x 0.8 (80%) x 4 NSF.
211-154	Women's Lockers	NSF	11	11	11	Calculated as 21 PN x 0.2 (20%) x 4 NSF.
211-154	Conference Room	NSF	300	300	300	Provide a 15 PN conference room for all scenarios. 20 NSF per person. ⁷
211-154	Team Room/Ready Room	NSF	208	208	208	3 shared workstations plus 2 tables at 50 NSF each. 30 NSF min for Type G Offices. ⁵
211-154	CAMS Room	NSF	65	65	65	1 Type E office per MIS (CAMS). 65 NSF for Type E Offices. ⁵
211-154	Training Classroom	NSF	0	0	0	Not required. Contractors utilize the break room or hangar for training.
211-154	Debrief	NSF	150	150	150	One 10-person room. 15 NSF/person. ⁷
211-154	Avionics Systems	NSF	200	359	539	Based on Hurlburt Building 90815 Avionics Shop: size 22' x 24.5' or 539 NSF. Calculated as 539/9 PMAI x number of PMAI. Minimum of 200 NSF.
211-154	Support Section /CTK	NSF	550	1,100	1,650	Based on the CLS Support Section/CTK in Hurlburt Building 90815 (3,320 NSF) supporting 6 UTCs. Provide 550 NSF per 3 PMAI for the support section.
211-154	Dash 21 Equipment Storage	NSF	150	300	450	50 NSF per PMAI. Minimum of 100 NSF.
211-154	Passenger Oxygen Storage (POS)/Portable Oxygen Bottles	NSF	12	24	36	Assume 4 NSF per PMAI.
211-154	Hazardous Materials and Hazardous Waste	NSF	144	144	144	Requires an area sized for one pallet each for material and waste, typically on the hangar floor. One pallet is 8 ft x 9 ft or 72 NSF.

211-154	Propulsion/Engine Storage	NSF	312	312	312	Assume 2 spare engines and 2 spare propellers per unit. Engines are 6 in (L) x 5 in (W); however, a storage space that is 8 ft (L) x 7 ft (W) allows for clearance on either side. The propeller has a 105 in diameter; however, a storage space that is 10 ft (L) x 10 ft (W) allows for clearance on either side.
211-154	Sensor Maintenance Shop	NSF	1,150	1,300	1,450	Provide 20' x 20' area for a laser firing room. Provide 300 NSF at a minimum central/repair workspace. Provide 100 NSF per turret and assume storage for 1 turret per 3 PMAI. Assume 50 NSF of bench space per 3 PMAI. Provide 1 Type D office for a supervisor (100 NSF min) and 5 Type G shared offices (30 NSF min) for shop personnel. ^{4,5}
211-154	Wheel and Tire Shop	NSF	735	735	735	Based on Hurlburt Building 90815 Wheel and Tire shop: 24.5' x 30' or 735 sf.
211-154	Structural Repair Shop	NSF	1,267	1,267	1,267	Based on Hurlburt Building sheet metal shop Hurlburt Field B90815: 1,267 sf. This area provides administrative space for two Type E Offices (65 NSF min each plus 20 NSF administrative support space and 10% circulation or 220 NSF total admin area), 20' x 35' for shop floor space (Welding and CADD/CAM), 150 NSF for storage, and 10% for special purpose space circulation.
211-154	Covered Storage ³	GSF	150	300	450	50 NSF x number of PMAI.
211-154	Covered Vehicle Storage ³	GSF	486	486	486	Provide one 3/4 -ton truck each for the CTK, sensor maintenance, and avionics shops. Provide each vehicle 9' x 18' or 162 GSF.
211-154	Administrative Support Space	NSF	460	460	460	Use a maximum of 40 sf per person, and a minimum 20 sf per person. ¹¹ The default is the minimum.
211-154	Administrative Circulation	NSF	232	232	232	Max 10% of Administrative Space ¹⁰

211-154	Special Purpose Circulation	NSF	539	640	743	Max 10% of Special Purpose Space ¹⁰
Total Maint. Facilities (w/o covered storage)		NSF	8,473	9,583	10,716	
Total Maint. Facilities (w/o covered storage)		GSF	10,591	11,979	13,394	Net to Gross conversion factor of 1.25.
Total Maint. Facilities (covered storage only)		GSF	636	786	936	

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used with exceptions for the command suite, meeting, and conference rooms. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. Tropical environments introduce increased corrosion due to high humidity with high salt content. In these instances, standard exterior covered storage may not be adequate to maintain mission essential, mission ready, spares and equipment unless the spares and equipment are stored within nearly airtight equipment containers (CONEX boxes or other containers). In these cases, AFSOC/A4I may approve additional controlled humidity warehouse space.
4. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.
5. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.2.1
6. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.3.
7. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.4.
8. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.5
9. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.5.2
10. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Table 1.1.
11. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2

7.4.17. Intermediate Maintenance Facilities.

7.4.17.1. Fabrication Flight.

Table 7.4.35. Fabrication Flight Facility Minimum Areas.

Function/Area Required in NSF	AD Military U-28 (3 PMAI)	AD Military U-28 (6 PMAI)	AD Military U-28 (9 PMAI)	CLS U-28 (3 PMAI)	CLS U-28 (6 PMAI)	CLS U-28 (9 PMAI)
Sheet Metal Shop ¹	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU
Metals Technology ¹	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU
NDI	4,000	4,000	4,000	4,000	4,000	4,000
Note:						
1. The sheet metal shop and metals technology are consolidated as the structural repair shop in the AMU.						

7.4.17.1.1. Structural Repair. Structural repair shops include shop administration, the sheet metal shop, corrosion control shop, and the fiberglass/composites shop. The U-28 does not have composite materials and does not require a composite shop. The structural repair shop (sheet metal and metals technology) is located in the AMU.

7.4.17.1.2. Corrosion Control Shop (For Corrosion Control Hangar, see paragraph 7.4.17.1.3). In this area, the primary workspace is a paint booth with an integral filtration system. Media booths are required to prepare surfaces before painting. One large booth (drive-in type) for large ground equipment and two medium booths for steel and aluminum aircraft parts are needed. An enclosure with a self-contained bead-blast system with HEPA exhaust filtration is adequate for many components. The media booths area also supports the metals technology shops. Therefore, provide space for clean/dirty room operations in this shop. The paint booth must be large enough to handle the largest component that will be processed on a regular basis. It should have a paint filtration system and a means to control VOCs. Provide a large, sealed area to prepare oversized parts with a paint filtration system. A paint mixing room, separate from the paint booth, is required to isolate any hazardous fumes from the remainder of the corrosion control shop. This room will contain paint mixing equipment, fume hood, and a daily-use locker to temporarily store hazardous materials such as paints and thinners. A prep station, with a dust collection system to capture airborne particles, should also be provided.

7.4.17.1.3. Aircraft Corrosion Control (CATCODE: 211159).

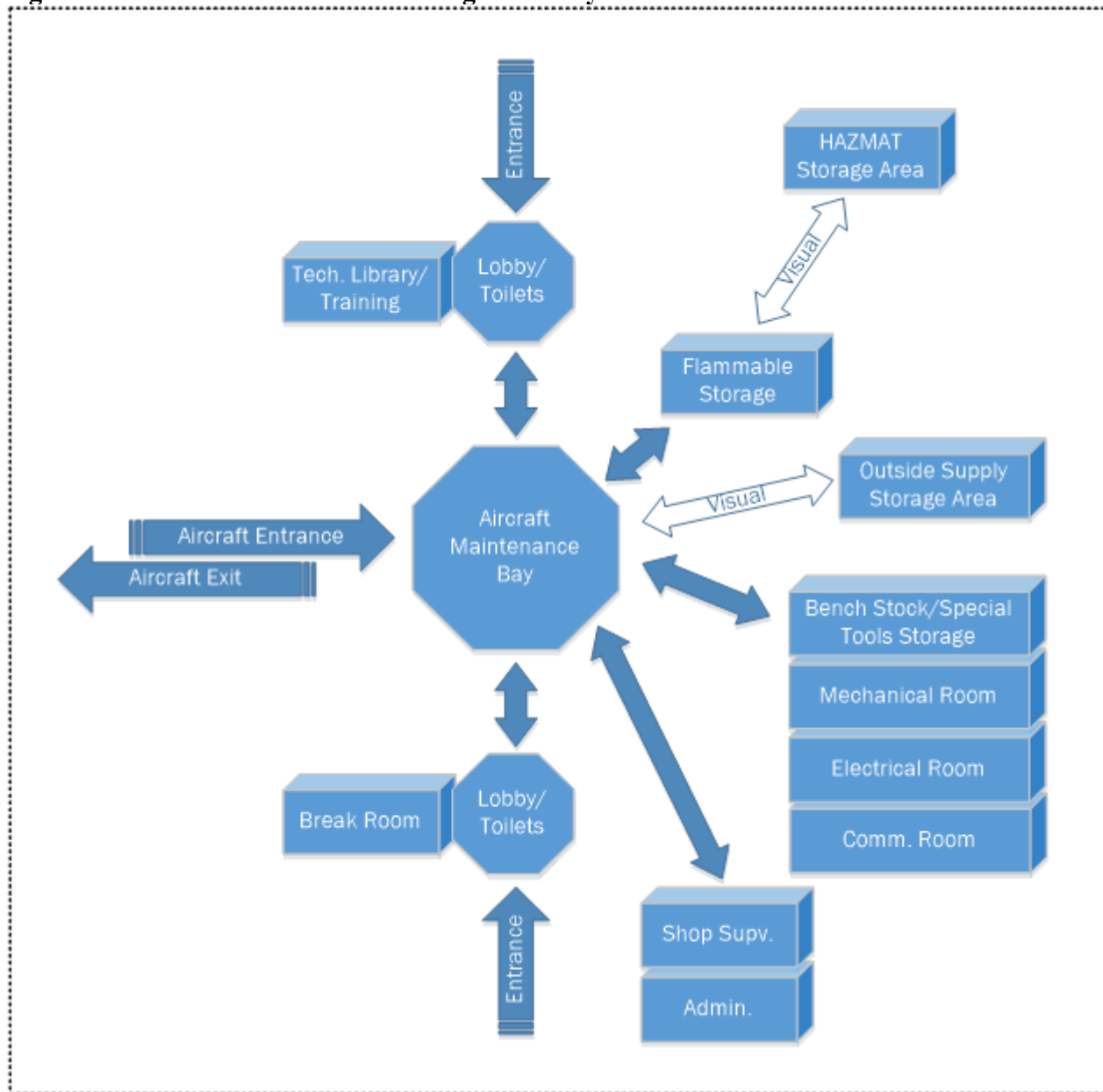
7.4.17.1.3.1. Requirements Determination. The number and size of corrosion control facilities is the minimum size required to accommodate the largest aircraft serviced and workload required to support the total Air Force corrosion control concept. A hangar provides enclosed space for aircraft washing and inspecting the aircraft for corrosion damage. Additionally, the facility can accommodate surface preparation and repainting of the aircraft. The corrosion control shops are necessary to provide an enclosed area for corrosion treatment, inspections, stripping, and painting of aircraft components and other associated support equipment.

7.4.17.1.3.2. Scope Determination. Corrosion control is both a base and a depot responsibility. Specific workloads vary from base to base, but the minimum required facilities include a wash rack, shop space for complete corrosion treatment, painting removable aircraft parts, ground support equipment, and a corrosion approved facility to perform aircraft maintenance painting. Base facility requirements emphasize prevention and detection. Since freedom from dirt, oil, and other contaminants is important in this regard, base facilities are primarily designed for cleaning and maintaining protective coating/corrosion control systems.

7.4.17.1.3.3. Dimensions. Determine the required interior dimension of an aircraft bay by the largest aircraft dimensions and the required structural clearances listed in DAFMAN32-1084, CC 211111, Table 1.2. The corrosion control shops may require up to 530 m² (5,700 ft²) for medium size aircraft. Bases with above 40 large or medium aircraft assigned or in a severely corrosive environment are authorized, with proper justification, a corrosion control hangar and a wash hangar (DAFMAN32-1084, CC 211111, Paragraph 1.4). The wash hangar and corrosion control hangar activities can be collocated or separate and must ensure siting of new hangars complies with UFC 3-260-01. If authorized a corrosion control hangar, provide a facility that is 26,230 NSF (32,788 GSF with 1.25 net to gross conversion). This supports a typical 10-20-person AFSOC corrosion control facility. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (2,200 NSF), a Paint Mixing Room (250 NSF), Paint Storage (560 NSF), Equipment Storage (900 NSF), Equipment Cleaning (50 NSF), Solvent Storage (50 NSF), Material Storage (900 NSF), PPE Storage (150 NSF), PPE Cleaning (50 NSF), a Stencil Room (120 NSF), a Laundry Room (100 NSF), Men's Clean and Dirty Shower/Locker Room (240 NSF), Women's Clean and Dirty Shower/Locker Room (160 NSF), a 2-person Shop Supervisor Office with Type E offices (130 NSF), a Communications Room (144 NSF), a Break Room (216 NSF), and a Copy Room (50 NSF).

Table 7.4.36. Building Utility System Requirements for Corrosion Control Facility.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source or connection (around 120 psi) and should be conveniently located throughout the maintenance bay. Applicable criteria include UFC 3-401-01 for mechanical and UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Provide lightning protection system to protect the aircraft and facility. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Use domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide hot and cold water connections and industrial waste disposal system. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF. An adequate water supply source with sufficient pressure should be verified prior to a system design and construction.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.4.11. Corrosion Control Hangar Facility.

7.4.17.1.4. NDI Laboratory (CATCODE: 211153). This facility consists of testing facilities, equipment storage, supply storage, analysis and report offices, and laboratory space. In administrative spaces an open office concept using system furniture will be used with exceptions for meeting and conference rooms or where noise attenuation is needed for security reasons.

7.4.17.1.4.1. Requirements Determination. All bases required to have a full, nondestructive testing facility are authorized 4,000 NSF for a laboratory (DAFMAN32-1084, CC 211153, Paragraph 1.2).

7.4.17.1.4.2. Shop Area. The shop space equipment includes fluorescent penetrate

and magnetic particle testing machines, portable ultrasonic and eddy current machines, and X-ray and darkroom equipment.

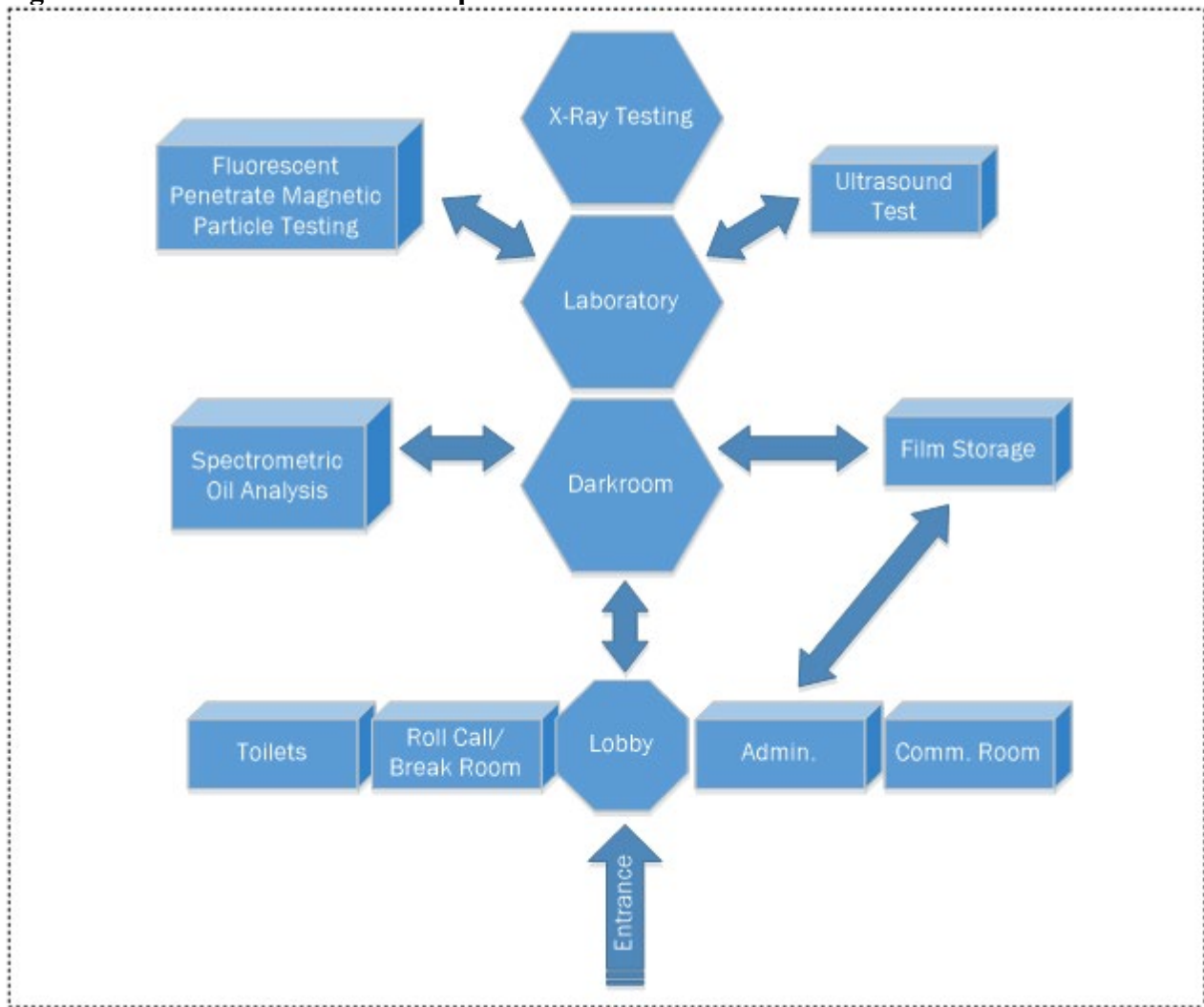
7.4.17.1.4.3. Storage Area. Storage requires an environmental control capability to store X-ray films and an oil analysis spectrometer.

7.4.17.1.4.4. Lab Area. An NDI laboratory requires a 1-ton capacity monorail with two ½-ton capacity hoists servicing both the X-ray shielded room and the room containing the fluorescent penetrate and magnetic particle testers. Use X-ray equipment specification to determine ceiling heights and workflow maneuverability. Provide silver recovery equipment in the darkroom, and provide radiation shielding per the National Institute of Standards Technology Information Security Handbook. A lead shielded opening should be provided in the wall between the X-ray exposure room and the control room to allow for passage of X-ray equipment control cables.

7.4.17.1.4.5. Dimensions. Space requirements depend on the size of required equipment and the working area required to perform the functions. Bases with an NDI facility are authorized 4,000 NSF (DAFMAN32-1084, CC 211153, Paragraph 1.2).

Table 7.4.37. Building Utility System Requirements for NDI Facility.

System	Requirements
Mechanical	Proper ventilation and an energy efficient HVAC system are required on storage functions due to delicate devices and other sensitive equipment. The NDI lab requires 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Consult X-ray and other NDI equipment specifications for their specific power requirements. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Use domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.4.12. Non-Destructive Inspection Area.**7.4.17.2. AGE Flight.****7.4.17.2.1. AGE Shop and Storage Facility (CATCODE: 218712).**

7.4.17.2.1.1. Requirements Determination. The AGE shop inspects, maintains, repairs, and services powered and non-powered AGE directly supporting aircraft and powered munitions AGE, if assigned. It normally includes maintenance stalls with work benches, an indoor wash rack, tool crib, bench stock, sealed lead acid battery servicing area, engine exhaust education system, administrative space, and personnel locker space.

7.4.17.2.1.2. Scope Determination. DAFMAN32-1084, CC 218712, Table 1.1, lists the space requirements for AGE maintenance shops and standby storage facilities. These space requirements include total covered storage. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and its requirements are listed in the storage facilities section in **paragraph 7.4.17.2**. Requirements for the AGE Shop and Storage facility are

based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per 3 PMAI.

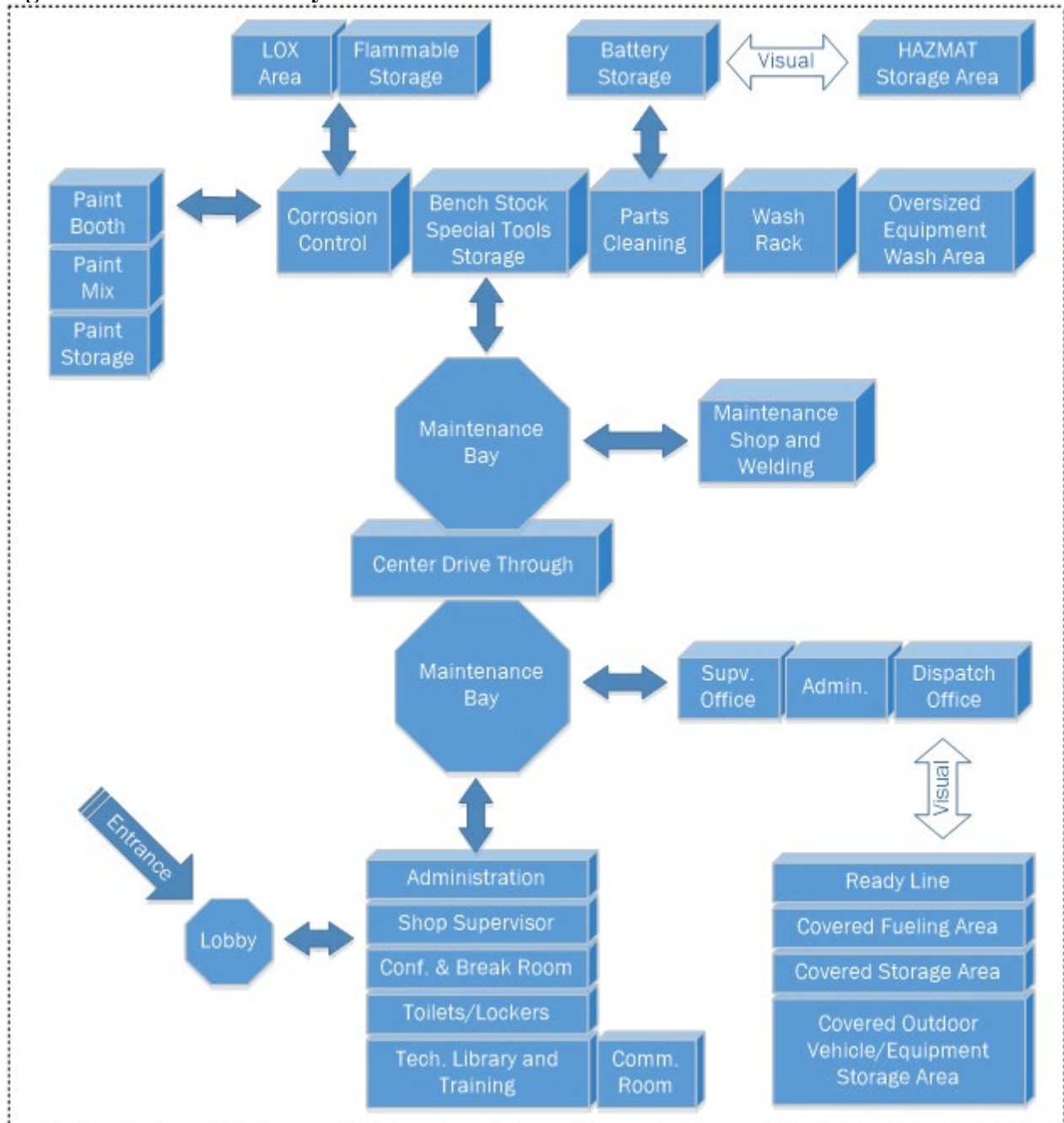
7.4.17.2.1.3. Dimensions. The size of this facility will be based on the number of authorized pieces of AGE. The required space allocation for this facility can be found in [Table 7.4.44](#), and [Table 7.4.45](#). If other weapon systems are supported at the installation, the number of AGE units supporting U-28 aircraft will be added and cross-referenced with DAFMAN32-1084, CC 218712, Table 1.1, to determine the maximum space allowed.

7.4.17.2.1.4. Unique Facility Requirements. Special ventilation and floor drainage with oil/water separation is necessary in the maintenance area. An overhead hoist to support a minimum of 2,720 kg (6,000 pounds), electrical power (120 VAC, 240 VAC, and 480 VAC), compressed air source (0-120 psig), and waste oil disposal system to reclaim petroleum based oil, synthetic oil, and hydraulic fluid are required. Consider a storage area for shop support equipment (e.g., portable hoists, hacks, refrigerant recovery system, antifreeze recycle). A separate oil free area is necessary for liquid oxygen handling equipment. Ensure the floor is concrete. Electrical power (120 VAC and 220 VAC) is needed in the area. Ensure this area is covered and should preferably be inside a facility. Refer to CATCODE 213335 for fuel storage tank authorization

Table 7.4.38. Building Utility System Requirements for AGE Facility.

System	Requirements
Mechanical	A compressed air source or connection (around 120 psi) and should be conveniently located throughout the maintenance bay and corrosion control areas. The facility should have energy efficient climate control and proper ventilation. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connection for equipment and workstations ranging from 120V, 240V, and 480V. Certain electrical requirements are AGE equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Use domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.

Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.4.13. AGE Facility.

7.4.17.3. Maintenance Support Flight.

Table 7.4.39. Maintenance Support Facility Minimum Areas.

Function/Area Required in NSF	AD Military U-28 (3 PMAI)	AD Military U-28 (6 PMAI)	AD Military U-28 (9 PMAI)	CLS U-28 (3 PMAI)	CLS U-28 (6 PMAI)	CLS U-28 (9 PMAI)
Repair & Reclamation	600	1,200	1,800	500	500	500
Wheel & Tire	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU
Aircraft Inspection Section (Phase)	Phase uses the hangar bay	Phase uses the hangar bay	Phase uses the hangar bay	Phase uses the hangar bay	Phase uses the hangar bay	Phase uses the hangar bay

7.4.17.3.1. R&R Shop.

7.4.17.3.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to, a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used with exceptions for meeting and conference rooms or where noise attenuation is needed for security reasons.

7.4.17.3.1.2. Maintenance Area. Work performed in the maintenance bay includes repair and replacement of landing gear, actuated doors, and any associated equipment. Provide an area for aircraft jacks and/or a 3-ton hoist to use in disassembling components. This hoist (specialized trailers) can be located either inside or outside the facility.

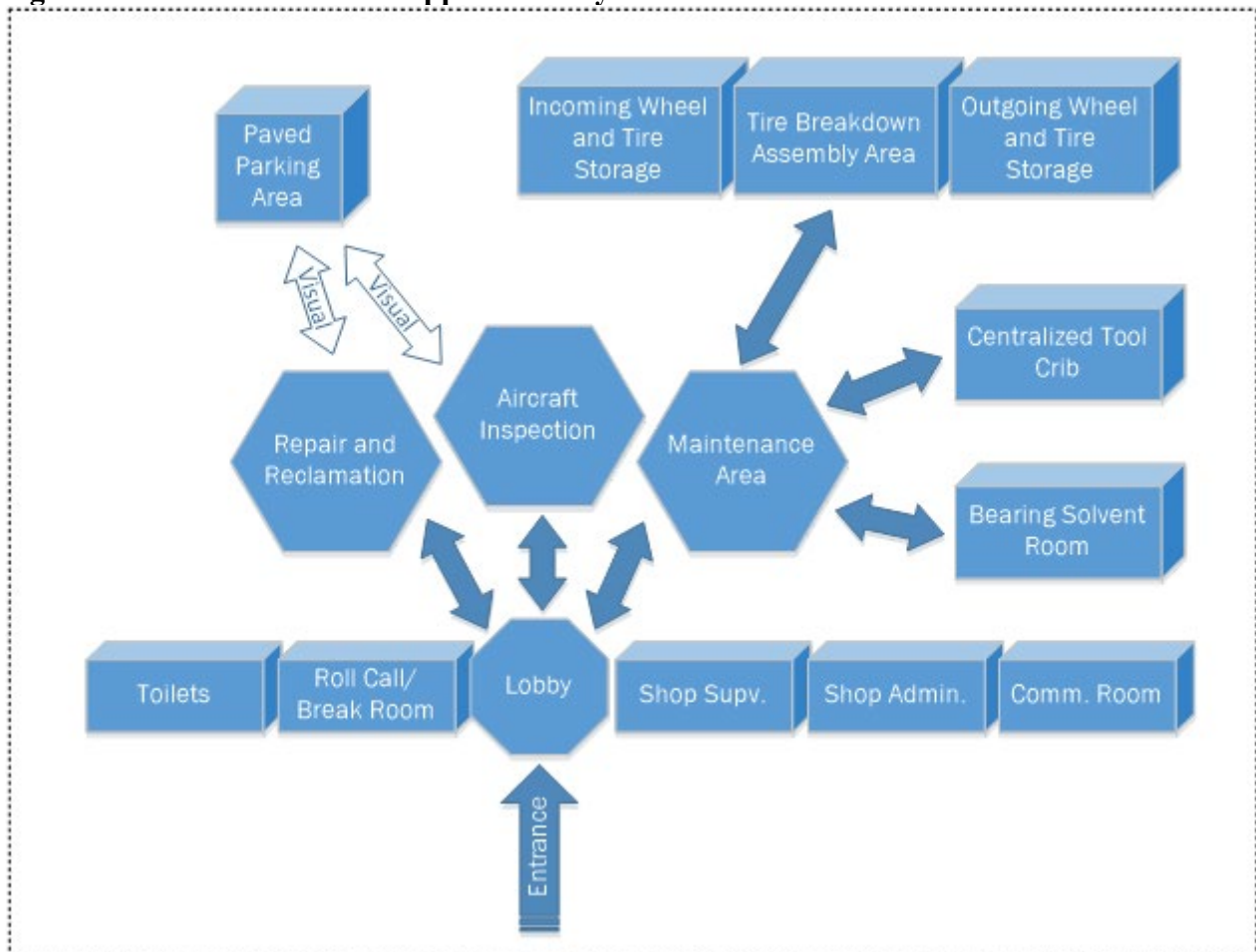
7.4.17.3.1.3. Storage Area. Provide a paved area adjacent to the facility for parking transportation trailers and other heavy equipment. In extremely cold climates, provide indoor heated storage space.

7.4.17.3.1.4. Dimensions. Based on 1 SOMXG R&R Shop located in 7,852 NSF in Hurlburt Field B90700. Determination assumes this shop supports approximately 40 aircraft. Calculated as 200 NSF x #PMAI. The required space allocation for this facility can be found in [Table 7.4.39](#), [Table 7.4.44](#), and [Table 7.4.45](#).

Table 7.4.40. Building Utility System Requirements for Maintenance Support Facility.

System	Requirements
Mechanical	Proper ventilation and an energy efficient HVAC system are required. Both repair & reclamation and wheel & tire shops require 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.

Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Use domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.4.14. Maintenance Support Facility.**7.4.17.5. Accessories Flight.****7.4.17.5.1. Fuel Systems Maintenance Area (CATCODE: 211179).**

7.4.17.5.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to, a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used, with the exceptions for meeting and conference rooms or where noise attenuation is needed for security reasons.

7.4.17.5.1.2. Maintenance Bay. This area is where all scheduled fuel system inspections and aircraft maintenance occurs. The bay will be the size of the largest aircraft assigned to the base; however, U-28 requires a maintenance bay 67.25 x 73.25 ft (4,927 NSF) [Paragraph 7.4.15, Maintenance Hangar]. These hangars come out of the total hangar allowance for the base or may be added to it, depending on the workload requirements. The U-28 requires storage for external fuel tanks because not all aircraft will routinely fly with the tanks installed. Assume storage is provided by the host installation.

7.4.17.5.1.3. Storage Area. A centralized, enclosed, secure area is required for

parts and special tools. Store flammable materials within a fire-rated enclosure with access to the exterior. Designate an area to store hazardous waste generated by ongoing maintenance operations, and comply with current federal, state, and base regulations and procedures.

7.4.17.5.1.4. Support Area. Provide a support area for maintenance crew personnel during rest cycle. The support area shall include male and female restrooms, break room, and locker area.

7.4.17.5.1.5. Dimensions. Major repair or maintenance would require use of the host installation shop. Fuel systems maintenance area requires storage for external tanks: 400 NSF. Per DAFMAN 32-1084 CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized provide a facility that is 24,632 NSF (30,790 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. This supports a typical 10-20-person AFSOC fuel systems maintenance dock. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (600 NSF), a Bladder Repair/Tool Room (480 NSF), an External Tank Maintenance Area (1,840 NSF), a Foam Storage Room (512 NSF), A 3-person office for Shop Supervisors and an NCOIC in Type E offices (240 NSF), a Dispatch office for 5 PN in Type E offices (400 NSF), a 20-person Training/Conference Room (300 NSF), and a Break Room (300 NSF).

7.4.17.5.1.6. Design Considerations. Add static discharge ports in the facility doors to ensure safety.

Table 7.4.41. Building Utility System Requirements for Fuel System Maintenance Hangar.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source or connection (around 120 psi) should be conveniently located throughout the maintenance bay. Hangars used for fuel systems maintenance also include wash down drainage trenches. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.

Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. All service equipment should be Underwriters Laboratories-listed. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Use domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide interior water connection capability and drains. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with ETL 02-15, UFC 3-600-01, NFPA 33, and NFPA standards. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Table 7.4.42. Accessory Facility Minimum Areas.

Function/Area Required in NSF	AD Military U-28 (3 PMAI)	AD Military U-28 (6 PMAI)	AD Military U-28 (9 PMAI)	CLS U-28 (3 PMAI)	CLS U-28 (6 PMAI)	CLS U-28 (9 PMAI)
E&E	2,119	2,119	2,119	500	500	500
Hydraulics	2,943	2,943	2,943	500	500	500
Egress	N/A	N/A	N/A	N/A	N/A	N/A

7.4.17.5.2. Hydraulics Shop.

7.4.17.5.2.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept using system furniture will be used, with the exceptions for meeting and conference rooms, or where noise attenuation is needed for security reasons.

7.4.17.5.2.2. Maintenance Area. For this area, rooms should be able to accommodate large components and shop equipment such as tube bender, hose cutting and fitting machines, a landing gear test stand, a self-contained part cleaning system (jet washer) with non-foaming detergents, and a hydraulic test stand to perform hydraulic component evaluation. Certain shop equipment, such as the jet washer, requires a soundproof room. The hydraulic test stand requires a separate room large enough to allow proper equipment access. This room must be sound

and explosion proof, and include window ports, emergency eye wash/shower stations, and alarm systems. Install a 1-ton bridge crane or monorail, servicing most the work area, and ¼-ton cranes at strategic locations for material handling. Worktable tops require different surfaces depending on the component being repaired. Provide easily cleaned aluminum work surfaces for handling parts containing hydraulic fluid and use vinyl-covered work surfaces to help protect delicate components.

7.4.17.5.2.3. Storage Area. Provide storage for hydraulic tubing of various types and sizes. Ideal storage containers for tubing are multiple PVC pipes, each approximately 20 ft long and 4 inches in diameter with caps on each end. Also, provide a secure storage area for incoming equipment and components awaiting maintenance. Finally, provide a centrally located bench stock storage and tool bin area.

7.4.17.5.2.4. Dimensions. 1 SOMXG: Hydraulics area 2,943 NSF in Building 90700 floor 1. Hydraulics shop includes a hydraulic test stand (30' x 40'), shop floor (25' x 30'), shop storage (15' x 20'). or 2,250 net shop area; Assume 1 Type D office for shop supervisor and 3 Type F workstations for shop staff. Including 10% for administrative and special purpose space circulation and administrative support of 20 NSF per office totals 2,906 NSF. The required space allocation for this facility can be found in [Table 7.4.42](#), [Table 7.4.44](#), and [Table 7.4.45](#).

7.4.17.5.3. **E&E Shop.**

7.4.17.5.3.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept with system furniture will be used, with the exceptions for meeting and conference rooms or where noise attenuation is needed for security reasons.

7.4.17.5.3.2. Battery Service Area. Include a battery servicing room to recharge batteries and to perform minor maintenance. When servicing both Ni-Cad and lead acid batteries, two separate rooms are needed to prevent cross-contamination of fumes produced by the two battery types. Both rooms require an emergency shower and eyewash station with an alarm system to notify other building occupants when the shower/eyewash system is activated. All equipment in the lead acid charging area must be explosion proof. Space for utility rooms enclosed in, or accessed from, the charging room are included in this requirement.

7.4.17.5.3.3. Testing and Repair Area. A separate soundproof room is required to house test stand equipment for generators and constant speed drive equipment. This room must have penetration resistant walls to withstand a minimum 3-psi projectile force. Also, within the testing and repair function, provide a separate room to service oxygen bottles and life raft bottle/carbon dioxide cartridges within the testing and repair function.

7.4.17.5.3.4. Wire Maintenance Area. Provide a separate soundproof room for the generator test equipment and a ¼-ton hoist to manipulate heavy components.

7.4.17.5.3.5. Storage Areas. Provide storage space for electronic equipment

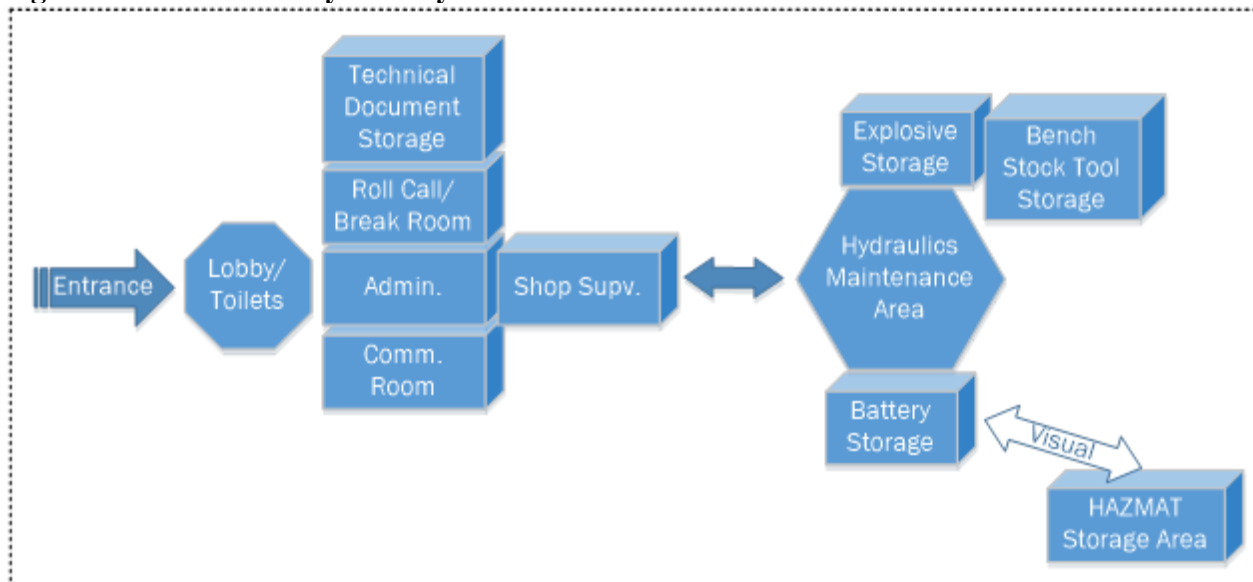
awaiting repair and/or pickup. Storage space is also required for serviceable batteries to be recharged and for unserviceable batteries to be discarded. Ensure the battery storage area is properly ventilated. Designate an area to store hazardous waste generated by ongoing maintenance operations. Provide wire dispensing cabinets and wire spool and harness storage bins in the wire maintenance area.

7.4.17.5.3.6. Dimensions. Based on the 1 SOMXG E&E shop located in 2,119 NSF in Hurlburt Field B90700. E&E shop includes a shop floor (25' x 30') with electrical test station, soldering station, parts storage, and a work bench), bottle storage, testing, and servicing area (22' x 16'), and a battery charging station and storage area (31' x 13') or 1,505 net shop area. Assume 1 Type D office for shop supervisor and 3 Type F workstations for shop staff. Including 10% for administrative and special purpose space circulation and administrative support of 20 NSF per office totals 2,087 NSF. The required space allocation for this facility can be found in [Table 7.4.42](#), [Table 7.4.44](#), and [Table 7.4.45](#).

Table 7.4.43. Building Utility System Requirements for Accessory Facility.

System	Requirements
Mechanical	Proper ventilation and an energy efficient HVAC system are required. Both the hydraulics function and the E&E shop require 150-psi shop air in designated locations and corrosion resistant drains. Special ventilation requirements need to be verified in the battery service area of the E&E shop to comply with federal and state air quality directives. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. The battery service and repair area of the E&E function requires explosion proof light fixtures and electrical devices. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System. Applicable criteria include UFC 3-501-01 for general electrical requirement requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Use domestic water plumbed eyewash stations in the maintenance and storage functions. Provide corrosion resistant drains in the E&E function. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with ETL 02-15, UFC 3-600-01, NFPA 33, and NFPA standards. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.

Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.4.15. Accessory Facility.

7.4.17.5. **Propulsion Flight.** Engine/propeller storage is located within the AMU.

7.4.17.6. **Avionics Flight.** AFSOC will not be performing intermediate level maintenance on the U-28. All avionics maintenance will occur in the AMU.

7.4.17.7. **Munitions Flight.** Not required for the U-28.

7.4.17.8. **Armament Flight.** Not required for the U-28.

7.4.17.9. **TMDE Flight.** The precision measurement equipment laboratory (PMEL) is the base-level AFMETCAL Program focal point. The program provides for the calibration and repair of TMDE. HAF/A4LF approves the establishment of PMELs at selected installations (TO 00-20-14, Paragraph 1.2.3).

Table 7.4.44. U-28 AD Military Intermediate Maintenance Facility Space Requirements.

Cat Code	Facility	UM	U-28 (3)¹	U-28 (6)¹	U-28 (9)¹	DAFMAN32-1084 Reference or Remarks/Calculations
218-712	AGE Shop	NSF	4,320	4,320	5,520	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per 3 PMAI. See CC 218712, Table 1.1 for AGE shop space requirements listed by number of authorized pieces of AGE. 3 PMAI = 5,400 GSF; 6 PMAI = 5,400 GSF; 9 PMAI = 6,900 GSF. The conversion from GSF to NSF is calculated as GSF/1.25.
218-712	AGE Shop Covered Storage	GSF	5,170	5,170	7,760	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per 3 PMAI. See CC 218712, Table 1.1 for AGE covered storage space requirements listed by number of authorized pieces of AGE. 6 PMAI = 5,170 GSF; 9 PMAI = 5,170 GSF; 15 PMAI = 7,760 GSF.
211-152	Sheet Metal Shop	NSF	0	0	0	Located with the AMU. Consolidated with metals technology as the structural repair shop.
211-152	Metals Technology	NSF	0	0	0	Located with the AMU. Consolidated with sheet metal shop as the structural repair shop.
211-153	NDI Section	NSF	4,000	4,000	4,000	CC 211153 NDI Laboratory, Paragraph 1.2: Authorized 4,000 NSF.
211-152	R&R Shop	NSF	600	1,200	1,800	Based on 1 SOMXG R&R Shop located in 7,852 NSF in Hurlburt Field B90700. Determination assumes this shop supports approximately 40 aircraft. Calculated as 200 NSF x #PMAI.
211-152	Aircraft Inspection Section (Phase)	NSF	0	0	0	Perform in a maintenance hangar bay. Aircraft may occupy this maintenance bay for days at a time while they receive periodic phase maintenance.
211-152	Wheel and Tire	NSF	0	0	0	Located with the AMU.

211-152	E&E Shop	NSF	2,119	2,119	2,119	Based on the 1 SOMXG E&E shop located in 2,119 NSF in Hurlburt Field B90700. E&E shop includes a shop floor (25' x 30') with electrical test station, soldering station, parts storage, and a work bench), bottle storage, testing, and servicing area (22' x 16'), and a battery charging station and storage area (31' x 13') or 1,505 net shop area. Assume 1 Type D office for shop supervisor and 3 Type F workstations for shop staff. Including 10% for administrative and special purpose space circulation and administrative support of 20 NSF per office totals 2,087 NSF.
211-152	Hydraulics Shop	NSF	2,943	2,943	2,943	1 SOMXG: Hydraulics area 2,943 NSF in Building 90700 floor 1. Hydraulics shop includes a hydraulic test stand (30' x 40'), shop floor (25' x 30'), shop storage (15' x 20'). or 2,250 net shop area; Assume 1 Type D office for shop supervisor and 3 Type F workstations for shop staff. Including 10% for administrative and special purpose space circulation and administrative support of 20 NSF per office totals 2,906 NSF.
211-179	Fuel Systems Shop	NSF	0	0	0	Fuel Systems maintenance is done in a hangar or outside. No additional space for support equipment is required. CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized provide a facility that is 24,632 NSF (30,790 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. See paragraph 7.4.17.4.1.5 for more information.
218-852	AFE (Survival Equipment) Shop	NSF	0	0	0	AFE for the U-28 is provided with squadron operations. For consolidated AFE facilities for multiple weapon systems, see Table 8.4.4 .
211-152	Admin. Spt Space	NSF	460	1,000	1,480	AFSOC/A4I: Default is 20 sf per person. ³ For CLS, this space is located in the AMU.
211-152	Admin. Circulation	NSF	46	100	148	Max 10% of Administrative Space. ³ For CLS, this space is located in the AMU.

211-152	Special Purpose Circulation	NSF	1,188	1,239	1,392	Max 10% of Special Purpose Space ²
Total Int. Maint. Facilities (w/o covered storage)		NSF	15,676	16,921	19,402	
Total Int. Maint. Facilities (w/o covered storage)		GSF	19,596	21,152	24,253	Net to Gross conversion factor of 1.25.
Total Covered Storage		GSF	5,170	5,170	7,760	
Notes: 1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI). 2. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3 3. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2						

Table 7.4.45. U-28 CLS Intermediate Maintenance Facility Space Requirements.

Cat Code	Facility	UM	U-28 (3)¹	U-28 (6)¹	U-28 (9)¹	DAFMAN32-1084 Reference or Remarks/Calculations
218-712	AGE Shop	NSF	4,320	4,320	5,520	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per 3 PMAI. See CC 218712, Table 1.1 for AGE shop space requirements listed by number of authorized pieces of AGE. 3 PMAI = 5,400 GSF; 6 PMAI = 5,400 GSF; 9 PMAI = 6,900 GSF. The GSF to NSF conversion is calculated as GSF/1.25.
218-712	AGE Shop Covered Storage	GSF	5,170	5,170	7,760	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per 3 PMAI. See CC 218712, Table 1.1 for AGE covered storage space requirements listed by number of authorized pieces of AGE. 6 PMAI = 5,170 GSF; 9 PMAI = 5,170 GSF; 15 PMAI = 7,760 GSF.
211-152	Sheet Metal Shop	NSF	0	0	0	Located with the AMU. Consolidated with metals technology as the structural repair shop.
211-152	Metals Technology	NSF	0	0	0	Located with the AMU. Consolidated with sheet metal shop as the structural repair shop.

211-153	NDI Section	NSF	4,000	4,000	4,000	CC 211153 NDI Laboratory, Paragraph 1.2 & TO 33B-1-1, Sec. 1-14, Figure 1-1: Typical NDI Facility, 4,000 NSF.
211-152	R&R Shop	NSF	500	500	500	Cannon AFB: Contractors require 500 NSF for R&R shop.
211-152	Wheel and Tire Shop	NSF	0	0	0	Located with the AMU.
211-152	E&E Shop	NSF	500	500	500	Cannon AFB: Contractors require 500 NSF for E&E shop.
211-152	Hydraulics Shop	NSF	500	500	500	Cannon AFB: Contractors require 500 NSF for Hydraulics shop.
211-179	Fuel Systems Shop	NSF	0	0	0	Fuel Systems maintenance is done in a hangar or outside. No additional space for support equipment is required.
218-852	AFE (Survival Equipment) Shop	NSF	0	0	0	AFE for the U-28 is provided with squadron operations. For consolidated AFE facilities for multiple weapon systems, see Table 8.4.4 .
211-152	Admin. Spt Space	NSF	0	0	0	AFSOC/A4I: Default is 20 sf per person. ³ For CLS, this space is located in the AMU.
211-152	Admin. Circulation	NSF	0	0	0	Max 10% of Administrative Space. ³ For CLS, this space is located in the AMU.
211-152	Special Purpose Circulation	NSF	835	835	937	Max 10% of Special Purpose Space ²
Total Int. Maint. Facilities		NSF	10,655	10,655	11,957	Excludes covered storage.
Total Int. Maint. Facilities		GSF	13,318	13,318	14,946	Excludes covered storage. Net to Gross conversion factor of 1.25.
Total Covered Storage		GSF	5,170	5,170	7,760	
Note:						
1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).						
2. Source: DAFMAN32-1084, CG 61 – Administrative Facilities Overview, Paragraph 1.4.3						
3. Source: DAFMAN32-1084 - CG 61 – Administrative Facilities Overview, Paragraph 1.4.2						

7.4.18. U-28 Storage Facilities.

7.4.18.1. Aviation Bulk Fuel Storage (CATCODE: 411135).

7.4.18.1.1. Requirements Determination. The total tankage required for aviation fuel will be the sum of the peacetime and war reserve tankage requirements. This may be adjusted up or down by DLA Energy based on additional distribution needs or nearby available war reserve fuel (DAFMAN 32-1084, CC 411135 Jet Fuel Storage, Paragraph 1.2).

7.4.18.1.2. Scope Determination. The DLA Energy requires storage of 5 to 15 days depending on location. Per AFI 11-2FT, Volume 3 dated 1 March 2017, Table 2.1, the U-28 has a “normal fuel load” for flight testing of 350 GA (2,345lbs; JP-8 is 6.7 lbs./gallon) without additional tanks. AFPAM 23-221 Attachment 7 Table A7.1 lists the average C-12 fuel load at 250 gallons per testing sortie. Per A3VN, U-28 aircraft operate approximately 10 sorties per business day/night. A 15-day fuel supply for 9 PMAI would be in the range of 38,000 gallons. Assume bulk fuel storage by host installation. Wartime requirements should directly support an OPLAN and identify fuel quantities to satisfy mobility, strategic air operations, civil defense, and logistics requirements (4140.25-M, Vol II, Chapter 1, Paragraph C11.3.2). The calculation for U-28 fuel storage does not include fuel to support a war plan. Those stocks would be calculated via ICIS and could greatly increase the fuel storage requirements.

7.4.18.1.3. Dimensions. Varies. See [Table 7.4.46](#) & [Table 7.4.47](#) for the required area for this facility. Contractor maintained squadrons have the same requirement as AD Military units.

7.4.18.1.4. Design Considerations. The determination of the number of tanks to be used for Aviation Bulk Fuel Storage will be based on the following requirements: a minimum of two bulk tanks are required, regardless of the storage quantity, due to fuel quantity control measures; three or more tanks are required for all requirements over 31,800 m³ (200,000 barrels); and the individual capacity of any tank will not exceed 15,900 m³ (100,000 barrels) unless authorization is obtained from AFCESA/CEO.

7.4.18.2. Aircraft Support Equipment Storage Yard (CATCODE: 852273).

7.4.18.2.1. Requirements Determination. The requirement applies to yards adjoining Aircraft Support Equipment Shop/Storage (CATCODE 218712) or at dispersed sub-pool locations. The storage yards are part of the total AGE standby storage requirement which may include heated and unheated buildings or sheds. For reasons of economy, yards are the preferred facility wherever climate and operational factors permit.

7.4.18.2.1.1. Yard space requirements (in square meters) are provided out of the total space allowances for standby storage facilities given in DAFMAN32-1084, CC 852273, Table 1.

7.4.18.2.1.2. The above-mentioned requirements do not apply to spacing and/or placing fueling vehicles in structures designed for servicing equipment of this nature.

7.4.18.2.2. Scope Determination. These requirements are based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per 3 PMAI and match the open storage requirement to the total listed in DAFMAN32-1084, CC 852273, Table 1 that lists the space requirements for AGE open storage yard facilities.

7.4.18.2.3. Dimensions. See Scope Determination above. The required space allocation for this facility can be found in [Table 7.4.46](#). Contractor maintained squadrons have the same requirement as AD Military units.

7.4.18.3. Base Hazardous Material Storage (CATCODE: 442257).

7.4.18.3.1. Requirements Determination. Space requirements vary with the availability of other suitable storage facilities as indicated above. Flammable/combustible liquids and compressed gases are stored in this facility. Standard sheds and warehouses may be used when available, and no serious fire or safety hazards result. This facility is a single purpose structure preferably of non-combustible construction, one story in height without basement or crawl space, and detached or separated from other buildings by at least 15 m (50 ft). This space requirement is included in CATCODE 442758 and/or CATCODE 442628 and is computed as described in CG-44 Supply Storage Fac paragraph 1.1.1.2 when standard facilities are used. As indicated in safety requirements, limit the size of single facilities to 1,860 m² (20,000 ft²). See Note 1 in Table 1.1 (DAFMAN32-1084 CC 442257, Paragraph 1.2).

7.4.18.3.2. Scope Determination. CATCODE 442257 applies only to the specially designed storage facility and not to standard structures that are used to store hazardous material. Furthermore, the category code does not apply to small outbuildings used to store an activity's working supply of hazardous materials. Such outbuildings are properly reported under the category code of the activity's operating building or shop. See notes in DAFMAN32-1084 CC 442257, Table 1.1. For a base population of up to 2,000, recommended warehouse space is 260 m² (2,800 ft²) and safety storage or shed space is 93 m² (1,000 ft²).

7.4.18.4. **Base Supplies and Equipment Shed (CATCODE: 442628).**

7.4.18.4.1. Description. Shed space is required to store base supplies, equipment, and material not requiring closed warehouse space but requiring covered protection from the weather because of nature of material or way they are packed. It may also include lumber storage exclusive of that stored by the Civil Engineer. Space for receiving and shipping activities may be included. Shed storage space is constructed without side and end walls.

7.4.18.4.2. Requirements Determination. Utility aircraft space is 5 GSF (4 NSF) per aircraft (DAFMAN32-1084, CG 44 Supply Storage Facs, Table 1.1). Personnel space is 2 NSF per person (DAFMAN32-1084, CG 44 Supply Storage Facs, Table 1.2).

7.4.18.4.3. Dimensions. Calculated as follows: 4 NSF x number of aircraft + 2 NSF per person. See [Table 7.4.46](#) for the AD Military base supply and equipment shed requirements and [Table 7.4.47](#) for the CLS base supply and equipment shed requirements.

7.4.18.5. **Base Supplies and Equipment Warehouse (CATCODE: 442758).**

7.4.18.5.1. Requirements Determination. Warehouse space includes: supplies and equipment needed to support base operations and fuels operations; receiving, storage issue, inspection, pickup and delivery activities; warehouse offices; flyaway or mobility kit storage; exclusive of explosives and ammunition, whose storage accommodations satisfy guidance given in AFJMAN 24-204 and AFJMAN 23- 210; property in the equipment account (DAFMAN32-1084, CC 442758 Warehouse Supply and Equipment Base, Paragraph 1.2); and a facility with a loading dock and direct,

unobstructed access is required for semi-tractor trailer size vehicle loading/unloading; and mobility bags (see paragraph [7.4.18.5.2](#)).

7.4.18.5.2. Mobility Bags. Compute space at 0.85 m³ (3 ft³) per bag if the type of bag to be stored has been approved by the Air Force (DAFMAN 32-1084, CC 442758 Warehouse Supply and Equipment Base, Paragraph 1.2.7.2). Ensure commands store bags in a manner to utilize the maximum attainable stacking heights in warehouses. The best space utilization can be obtained by storing in bulk or on pallet racks. Mobility bag storage is the responsibility of the LRS. While actual storage may be decentralized to other organizations if they have existing facilities available to store the bags, do not build facilities at decentralized locations in order to accommodate mobility bag storage. Further, there is no objection to commanders issuing bags to personnel with mobility assignments in lieu of storing bags within the unit on a centralized or decentralized basis.

7.4.18.5.3. Scope Determination. Warehouse space for SOS base supplies and equipment is determined by individual analysis and validated by AFSOC.

7.4.18.5.3.1. U-28 Base Supply and Equipment Warehouse space = 250 NSF for utility aircraft space + mobile readiness spares package (MRSP) space (319th SOS MSRP space is 11,000 NSF for 27 aircraft or 407.4 NSF x number of PMAI) + Personnel space (15 NSF per person).

7.4.18.5.4. Dimensions. See [Table 7.4.45](#) & [Table 7.4.46](#) for the AD Military base supply and equipment warehouse requirements and [Table 7.4.47](#) for the CLS base supply and equipment warehouse requirements.

7.4.18.5.5. Design Considerations. When existing warehouses have clearances between the floor and the bottom of the ceiling joist or truss of 18 ft or more, use double-deck construction within the existing facility before programming a new facility or an addition to the existing facility. The effects of double-decking on the building's fire protection system should be evaluated. Standard warehouse facility guidelines contained in AFMAN 23-210 apply. These include, but are not limited to, fire protection systems, aisle space, forklift access, ventilation, and property stacking. Ideally, the warehouse should be centrally located within the intermediate maintenance area and in proximity to the maintenance hangars.

7.4.18.6. Controlled Humidity Warehouse (CATCODE: 442758).

7.4.18.6.1. Requirements Determination. Included in the Base Warehouse Storage Facility.

7.4.18.7. Base Supply Open Storage (CATCODE: 452252).

7.4.18.7.1. Requirements Determination. At bases where mission generates a sufficient volume of wrecked or damaged aircraft and/or equipment to require a continuing reclamation activity, there may be a requirement for a storage yard.

7.4.18.7.2. Scope Determination. The open yard is used to park aircraft and equipment being disassembled, to maneuver ground equipment used in the reclamation operation, and to store parts and equipment temporarily pending disposition. At bases where this

requirement exists, the area of the open storage yard, as provided under CG 44 Supply Storage Fac. Table 1.2, may be increased by 1,250 m² (1,500 yd²). The size of the area is determined by its overall dimensions with no deductions for interior trackage and permanent roads. Exterior lights and fencing may be installed as required to deter theft (DAFMAN32-1084, CC 452252, Paragraph 1.3).

7.4.18.7.3. Dimensions. The amount of storage space will be determined by analysis and validated by AFSOC. Base Open Storage should be 54 GSF per utility aircraft and 111 GSF for base personnel (DAFMAN32-1084, CG 44 Supply Storage Facs, Tables 1.1 and 1.2). Add an additional 100 GSF per aircraft for unique SOF items that cannot be stored in a covered space. See [Table 7.4.46](#) for the AD Military requirements and [Table 7.4.47](#) for the CLS requirements for this facility.

7.4.18.7.4. Design Considerations. Exterior lights and fencing may be installed as required to deter theft. This area should be adjacent to the general warehouse to enhance inventory control and issue of material.

7.4.18.8. **Classified Storage.**

7.4.18.8.1. Description. Storage for classified materials.

7.4.18.8.2. Requirements Determination. Where a separate building is not available or where its use is not warranted by quantity of classified storage, a room, cage, or crib may be constructed within a warehouse building.

7.4.18.8.3. Scope Determination. All areas that contain classified material will be secured by means of approved locking systems. This will include any temporary storage space used for in-transit classified material. In addition to classified items being stored separately from other material, classified material will be segregated in storage from sensitive but unclassified items. Standards for physical protection of classified items are specifically established in DoDD 5200.01, AFI 16-1404, and AFMAN 23-110.

7.4.18.8.4. Dimensions. Classified storage within the AMU facility satisfies this requirement. Requires an 1,800 NSF space on the installation for the H system. Contact AFSOC/A4I/A5K for more information about H system requirements.

7.4.18.9. **Chaff and Flare Build Up and Storage.**

7.4.18.9.1. Description. The facility is required for storage, handling, inspection, maintenance, and preparation for use of chaff and flares.

7.4.18.9.2. Requirements Determination. These materials must be stored in an area segregated to store only ammunition and explosives, related non-explosives items, equipment, and supplies. The guidance on storage criteria and fire safety is provided in AFMAN 91-201, Explosives Safety Standards. Chaff and flare storage can be held within the U-28 munitions facility but needs a dedicated bay area (Hurlburt Field, Munitions).

7.4.18.9.3. Dimensions. Chaff and flare storage will be within a 36 ft x 36 ft (1,296 NSF) bay for all U-28 scenarios.

Table 7.4.46. U-28 AD Military Storage Facility Space Requirements.

Cat Code	Facility	UM	U-28 (3)¹	U-28 (6)¹	U-28 (9)¹
441135	Aviation Bulk Fuel Storage ²	gal	13,000	26,000	38,000
852273	AGE Open Storage Yard	SY	57	57	86
442257	Base Hazardous Material Pharmacy Storage	NSF	3,800	3,800	3,800
442628	Base Supplies and Equipment Shed	NSF	159	288	418
442758	Base Supplies and Equipment Warehouse	NSF	8,000	10,000	11,100
452252	Base Supply Open Storage	GSF	2,205	4,299	6,393
n/a	Classified Storage	NSF	1,800	1,800	1,800
n/a	Chaff and Flare Build Up and Storage	NSF	1,296	1,296	1,296
n/a	Admin. Support Space	NSF	60	60	60
n/a	Admin. Circulation	NSF	70	81	87
n/a	Special Purpose Circulation	NSF	1,184	1,369	1,481
Total Storage Facilities		NSF	15,126	15,945	18,907
Total Storage Facilities		GSF	18,907	19,932	23,633
Total Open Storage Yard		SY	302	535	797
Notes:					
1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).					
2. Storage provided by host installation.					
3. Administrative support space based on assumption of 1 office per 5,000 NSF of storage.					

Table 7.4.47. U-28 CLS Storage Facility Space Requirements.

Cat Code	Facility	UM	U-28 (3)¹	U-28 (6)¹	U-28 (9)¹
441135	Aviation Bulk Fuel Storage ²	gal	13,000	26,000	38,000
852273	AGE Shop and Storage ²	SY	57	57	86
442257	Base Hazardous Material Pharmacy Storage	NSF	3,800	3,800	3,800
442628	Base Supplies and Equipment Shed	NSF	89	114	140
442758	Base Supplies and Equipment Warehouse	NSF	8,000	10,000	11,100
452252	Base Supply Open Storage	NSF	2,205	4,299	6,393
n/a	Classified Storage	NSF	1,800	1,800	1,800
n/a	Chaff and Flare Build Up and Storage	NSF	1,296	1,296	1,296
n/a	Admin. Support Space	NSF	60	60	60
n/a	Admin. Circulation	NSF	69	80	86
n/a	Special Purpose Circulation	NSF	1,181	1,358	1,460
Total Storage Facilities		NSF	15,087	17,352	18,642
Total Storage Facilities		GSF	18,859	21,690	23,302
Total Open Storage Yard		SY	302	535	797
Notes:					
1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).					
2. Storage provided by host installation.					
3. Administrative support space based on assumption of 1 office per 5,000 NSF of storage.					

7.5. MC-12 Facility Requirements.

7.5.1. **Weapon System Characteristics: MC-12.** This aircraft has no armament.

7.5.2. **Aircraft Description.** The MC-12 “Liberty” is a manned, medium-to-low altitude, ISR asset that is a variant of the C-12 aircraft, which is a modified Beechcraft King Air 350. The MC-12 is a twin-engine, turboprop aircraft that is capable of coordinated air-to-ground operations, providing real-time data and information. The MC-12 is designed to provide full motion video (FMV), signals intelligence (SIGINT), and other intelligence data to ground forces. Given its flexibility to loiter low and slow or cruise at 300 knots (345 mph) up to 35,000 ft above ground level (AGL), the MC-12 is equipped to perform medium-altitude surveillance for more than seven hours with full fuel and payload. The MC-12’s primary mission is to provide support directly to ground forces.

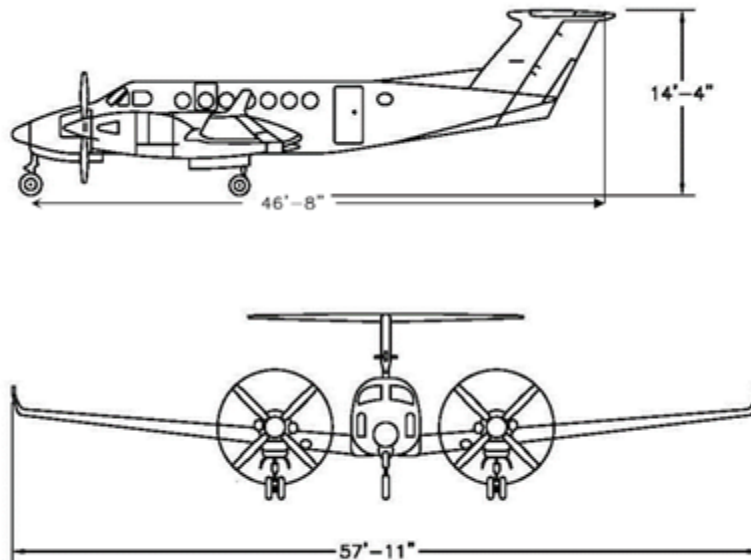
7.5.2.1. **Crew.** The normal flight crew consists of four personnel (pilot, co-pilot, and two sensor operators), although one of the sensor operators is under Air Combat Command (ACC) manpower.

7.5.3. Aircraft Principal Dimensions.

Table 7.5.1. MC-12 Block Dimensions.

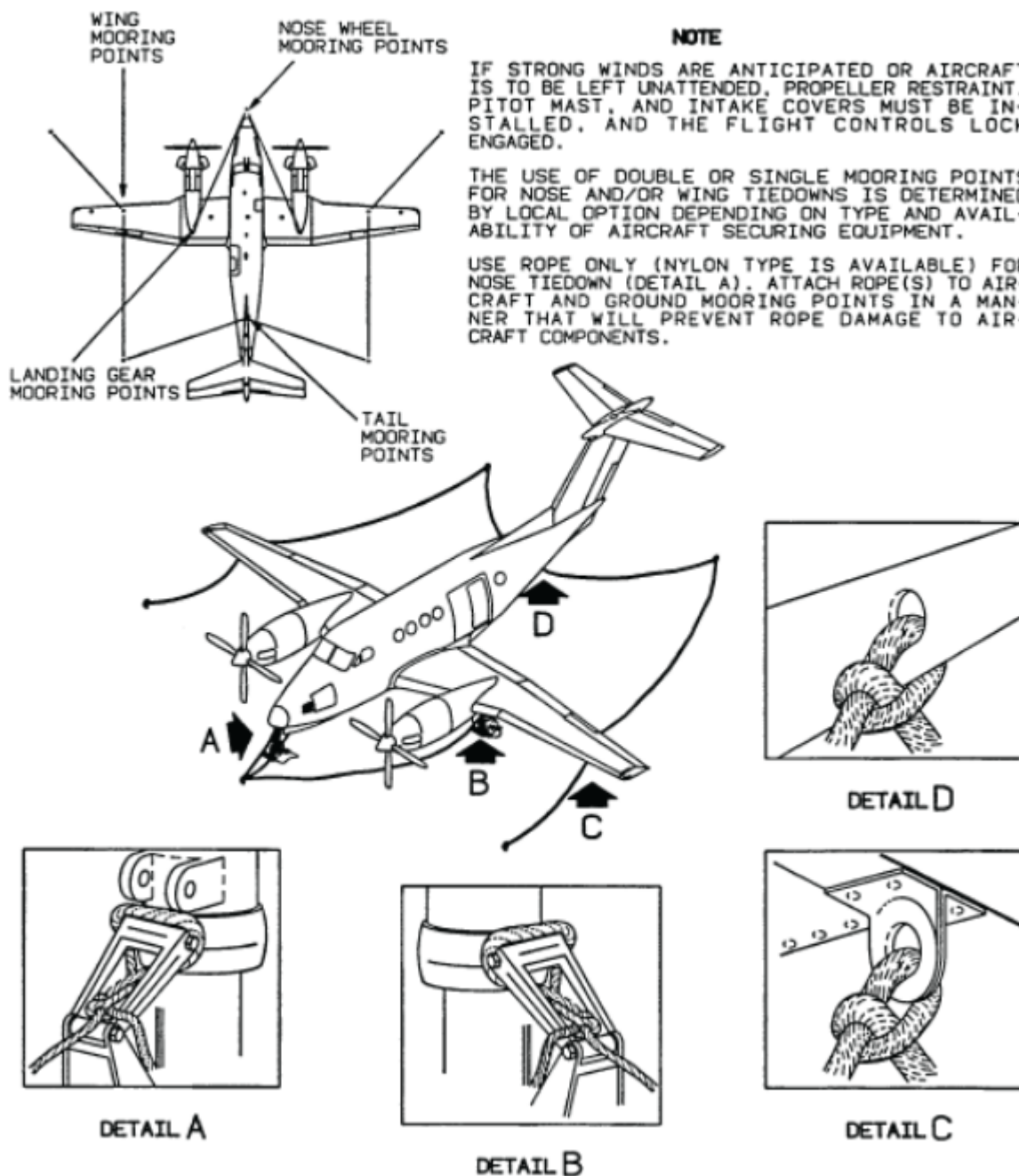
Wingspan		Length		Height	
m	ft	m	ft	m	ft
17.65	57.92	14.22	46.67	4.37	14.33

Figure 7.5.1. MC-12 Aircraft Dimensions.



7.5.4. Aircraft Mooring Arrangement. MC-12 aircraft are moored to ensure immovability, protection, and security under various weather conditions. The MC-12 has three mooring eyes: one underneath each wing and one in the ventral fin. Additional mooring cables may be attached to each landing gear. Each tie-down point requires two wire rope clips or bolts and a chain tested for 3,000 lbs.

Figure 7.5.2. MC-12 Mooring Arrangement.



7.5.5. Aircraft Weights/Wheel Loads.

Table 7.5.2. MC-12 Basic Weights Summary.

Configuration	Weight kg (lbs)
Empty Weight (Standard) ¹	5,670 (12,500)
Empty Weight (Extended Range) ²	7,110 (15,675)
Useful Load (Standard) ¹	2,313 (5,100)
Useful Load (Extended Range) ²	2,903 (6,400)
Maximum Payload (Standard) ¹	1,134 (2,500)
Maximum Payload (Extended Range) ²	1,361 (3,000)
Standard Operating Weight (Standard) ³	4,536 (15,000)
Standard Operating Weight (Extended Range) ³	4,627 (16,500)
Fuel Capacity (Standard) ¹	1,638 (3,611)
Fuel Capacity (Extended Range) ²	2,355 (5,192)
Fuel Capacity w/Max Payload (Standard) ¹	1,179 (2,600)
Fuel Capacity w/Max Payload (Extended Range) ²	1,633 (3,600)
Notes: 1. Source: http://www.beechcraft.com/beechcraft/king_air_350i/specifications.aspx 2. Source: https://beechcraft.txtav.com/en/king-air-350i/#Specs 3. Based on Maximum Takeoff Weight from Table 7.5.3.	

7.5.6. Minimum Takeoff and Landing Requirements.

7.5.6.1. **Reference.** See Paragraph **7.5.11**, Base Operations Facilities - Airfield Requirements, for the minimum runway length required for the MC-12 and other airfield requirements.

7.5.6.2. **Takeoff.** The minimum ground roll takeoff distance for the MC-12 standard is 3,300 ft (http://www.beechcraft.com/beechcraft/king_air_350i/specifications.aspx) and 4,473 ft for the MC-12 extended range (<http://jetav.com/hawker-beechcraft-king-air-350er-performance-specs/>). See **Table 7.5.3** for MC-12 maximum takeoff weights by configuration.

Table 7.5.3. MC-12 Maximum Takeoff Weights.

Aircraft Configuration	Aircraft Weight kg (lbs)	Takeoff Distance (ft)
Max. Takeoff Weight ¹ (Standard)	6,804 (15,000) ¹	3,300 ¹
Max. Takeoff Weight ² (Extended Range)	7,484 (16,500) ²	4,473 ³
Notes: 1. Source: http://www.beechcraft.com/beechcraft/king_air_350i/specifications.aspx 2. Source: http://www.beechcraft.eu/Specifications-King-Air-350ER.203+B6Jkw9MQ_.0.html 3. Source: http://jetav.com/hawker-beechcraft-king-air-350er-performance-specs/ . Conditions: Sea level, ISA Temperature		

7.5.6.3. **Landing.** The minimum landing distance for the MC-12 standard is 2,692 ft (http://www.beechcraft.com/beechcraft/king_air_350i/specifications.aspx) and 2,728 ft for the MC-12 extended range (<http://jetav.com/hawker-beechcraft-king-air-350er->

[performance-specs/](#)). See **Table 7.5.4** for MC-12 maximum landing weights by configuration.

Table 7.5.4. MC-12 Maximum Landing Weight.

Aircraft Configuration	Aircraft Weight kg (lbs)	Landing Distance (ft)
Max. Landing Weight ¹ (Standard)	6,804 (15,000) ¹	2,692 ¹
Max. Landing Weight ² (Extended Range)	7,110 (15,675) ²	2,728 ³
Notes: 1. Source: http://www.beechcraft.com/beechcraft/king_air_350i/specifications.aspx 2. Source: http://www.beechcraft.eu/Specifications-King-Air-350ER.203+B6Jkw9MQ_.0.html 3. Source: http://jetav.com/hawker-beechcraft-king-air-350er-performance-specs/ . Conditions: With 4 crew.		

7.5.7. Unique Maintenance Requirements. The MC-12 has various systems that require periodic servicing and replenishment; however, none of these systems drive a facility requirement that is not met within the minimum space allocation of the maintenance hangar and other maintenance and intermediate maintenance facilities.

7.5.8. Unique Power Requirements. The MC-12 employs both DC and AC electrical power. The DC electrical power supply is the basic power system energizing most aircraft currents. AC power is obtained from the DC power system through inverters. The AC power system is single phase. The three sources of DC power include one 20 cell 34A/hour battery and two 250A starter generators. DC power may be applied to the aircraft through an external power receptacle on the underside of the right wing, just outboard of the nacelle. Generator control units control the starter generators.

7.5.9. MC-12 Operations Squadron Characteristics.

7.5.9.1. MC-12 UTC and Crew Construct.

7.5.9.1.1. UTC Construct. The MC-12 currently has a single UTC construct where one UTC consists of 3 PMAI and 1 BAI (4 total airframes).

7.5.9.1.2. Crew Ratio and Crew Complement. The normal flight crew for the MC-12, as detailed in **Paragraph 7.5.2**, is 4 PN. The crew ratio is the number of crews required to support deployments and dwell times for the unit. The MC-12 crew ratio is 2 crews per PMAI. The total number of flight crew members is calculated as follows: number of flight crew x crew ratio x number of PMAI. Thus, a larger flight crew or crew ratio will result in larger facilities required to support additional personnel, and vice versa.

7.5.9.1.3. Notional Squadron Concepts. For planning purposes, this FRI provides facility space requirements for the three most common MC-12 squadron scenarios: 1 UTC (3 PMAI, 1 BAI); 2 UTC (6 PMAI, 1 BAI); and 3 UTCs (9 PMAI, 1 BAI), which represents a full squadron. To ensure the most accurate facility space requirements possible, consult AFSOC/A3/A4I for the latest information regarding the current MC-12 UTC construct, crew ratio, and crew complement. Notional manpower for MC-12 operations squadrons is presented in **Table 7.5.5**, **Table 7.5.6**, and **Table 7.5.7**. Notional manpower for MC-12 active duty (AD) military maintenance squadrons is

presented in [Table 7.5.8](#), [Table 7.5.10](#), and [Table 7.5.12](#). Notional manpower for MC-12 contractor logistics support (CLS) maintenance squadrons is presented in [Table 7.5.9](#), [Table 7.5.11](#), and [Table 7.5.13](#).

Table 7.5.5. MC-12 Operations Squadron Notional Manning, 1 UTC (3 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	0	0	0
SOS	Commander's Support Staff	0	1	1	2
SOS	Aviation Resource Management	0	4	0	4
SOS	Flight Crews @ CR 2.0 ¹	24	0	0	24
	SOS Total	26	5	1	32
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	0	0	0
SOSS	ELINT Analysis	0	0	0	0
SOSS	AFE	0	3	0	3
SOSS	Operations Data Management	0	1	0	1
SOSS	Weather	0	8	0	8
	SOSS Total	1	15	0	16
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3}	32	24	1	57

Notes:

1. Per AFI 65-503 Attachment 36-1 the MC-12 flight crew ratio will be 2.0.
2. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total 4 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.5.6. MC-12 Operations Squadron Notional Manning, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	0	0	0
SOS	Commander's Support Staff	0	3	1	4
SOS	Aviation Resource Management	0	4	0	4
SOS	Flight Crews @ CR 2.0 ¹	48	0	0	48
	SOS Total	50	7	1	58
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	0	0	0
SOSS	ELINT Analysis	0	0	0	0
SOSS	AFE	0	6	0	6
SOSS	Operations Data Management	0	1	0	1
SOSS	Weather	0	8	0	8
	SOSS Total	1	18	0	19
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3}	56	29	1	86

Notes:

1. Per AFI 65-503 Attachment 36-1 the MC-12 flight crew ratio will be 2.0.
2. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 6 PMAI and 1 BAI (total 7 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.5.7. MC-12 Operations Squadron Notional Manning, 3 UTCs (9 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	0	0	0
SOS	Commander's Support Staff	0	3	1	4
SOS	Aviation Resource Management	0	5	0	5
SOS	Flight Crews @ CR 2.0 ¹	72	0	0	72
	SOS Total	74	8	1	83
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	0	0	0
SOSS	ELINT Analysis	0	0	0	0
SOSS	AFE	0	9	0	9
SOSS	Operations Data Management	0	1	0	1
SOSS	Weather	0	8	0	8
	SOSS Total	1	21	0	22
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{2,3}	80	33	1	114

Notes:

1. Per AFI 65-503 Attachment 36-1 the MC-12 flight crew ratio will be 2.0.
2. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 6 PMAI and 1 BAI (total 7 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.5.10. Maintenance Squadron Characteristics.

Table 7.5.8. MC-12 AD Military Maintenance Squadron Notional Manning, 1 UTC (3 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOMXS	Commander	1	0	0	1
SOMXS	First Sergeant	0	1	0	1
SOMXS	Maintenance Officer	1	0	0	1
	Flight Total	2	1	0	3
SOMXS	All Other Flights	0	67	0	67
	Flight Total	0	67	0	67
SOMXG	Quality Assurance	0	3	0	3
	SOMXG Total	0	3	0	3
CLS	Contractor Logistics Support	0	0	3	3
	CLS Total	0	0	3	3
	TOTAL MAINTENANCE¹	2	71	3	76
	SPA^{2,3}				25.3

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total 4 airframes).
2. Per AFSOC/A1M, the AD Military planning SPA for the MC-12 is 25.3.
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.5.9. MC-12 Contractor Maintenance Squadron Notional Manning, 1 UTC (3 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
CLS	Contractor Logistics Support	0	0	14	14
	TOTAL MAINTENANCE^{1,2,3}	0	0	14	14

Notes:

1. These numbers were provided by A1M.
2. The current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total of 4 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.5.10. MC-12 Active Duty Military Maintenance Squadron Notional Manning, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOMXS	Commander	1	0	0	1
SOMXS	First Sergeant	0	1	0	1
SOMXS	Maintenance Officer	1	0	0	1
	Flight Total	2	1	0	3
SOMXS	All Other Flights	0	140	0	140
	Flight Total	0	140	0	140
SOMXG	Quality Assurance	0	3	0	3
	SOMXG Total	0	3	0	3
CLS	CLS COMBS	0	0	6	6
	CLS Total	0	0	6	6
	TOTAL MAINTENANCE¹	2	144	6	152
	SPA^{2,3}				25.3

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total 4 airframes).
2. Per AFSOC/A1M, the AD Military planning SPA for the MC-12 is 25.3.
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.5.11. MC-12 Contractor Maintenance Squadron Notional Manning, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
CLS	Contractor Logistics Support	0	0	14	14
	TOTAL MAINTENANCE^{1,2,3}	0	0	14	14

Notes:

1. These numbers were provided by A1M.
2. The current notional UTC concept will be a three-ship configuration. In this case that equals 6 PMAI and 1 BAI (total of 7 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.5.12. MC-12 Maintenance Squadron Notional Manning, 3 UTCs (9 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOMXS	Commander	1	0	0	1
SOMXS	First Sergeant	0	1	0	1
SOMXS	Maintenance Officer	1	0	0	1
	Flight Total	2	1	0	3
SOMXS	All Other Flights	0	216	0	216
	Flight Total	0	216	0	216
SOMXG	Quality Assurance	0	3	0	3
	SOMXG Total	0	3	0	3
CLS	CLS COMBS	0	0	9	9
	CLS Total	0	0	9	9
	TOTAL MAINTENANCE¹	2	220	9	231
	SPA^{2,3}				25.3

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 9 PMAI and 1 BAI (total 10 airframes).
2. Per AFSOC/A1M, the AD Military planning SPA for the MC-12 is 25.3.
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.5.13. MC-12 Maintenance Squadron Notional Manning, 3 UTCs (9 PMAI , 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
CLS	Contractor Logistics Support	0	0	14	14
	TOTAL MAINTENANCE^{1,2,3}	0	0	14	14

Notes:

1. These numbers were provided by A1M.
2. The current notional UTC concept will be a three-ship configuration. In this case that equals 9 PMAI and 1 BAI (total of 10 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.5.11. Base Operations Ground Facilities - Airfield Requirements.**7.5.11.1. Runways (CATCODE: 111111).**

7.5.11.1.1. Requirements Determination. The MC-12 requires a Class A runway (UFC 3-260-01, Table 3-1, Note 1).

7.5.11.1.2. Runway Length. The MC-12 requires a minimum runway length of 5,000 ft for normal touch and go operations (A3TN). For no flap touch and go operations the minimum runway requirement is 6,000 ft (A3TN).

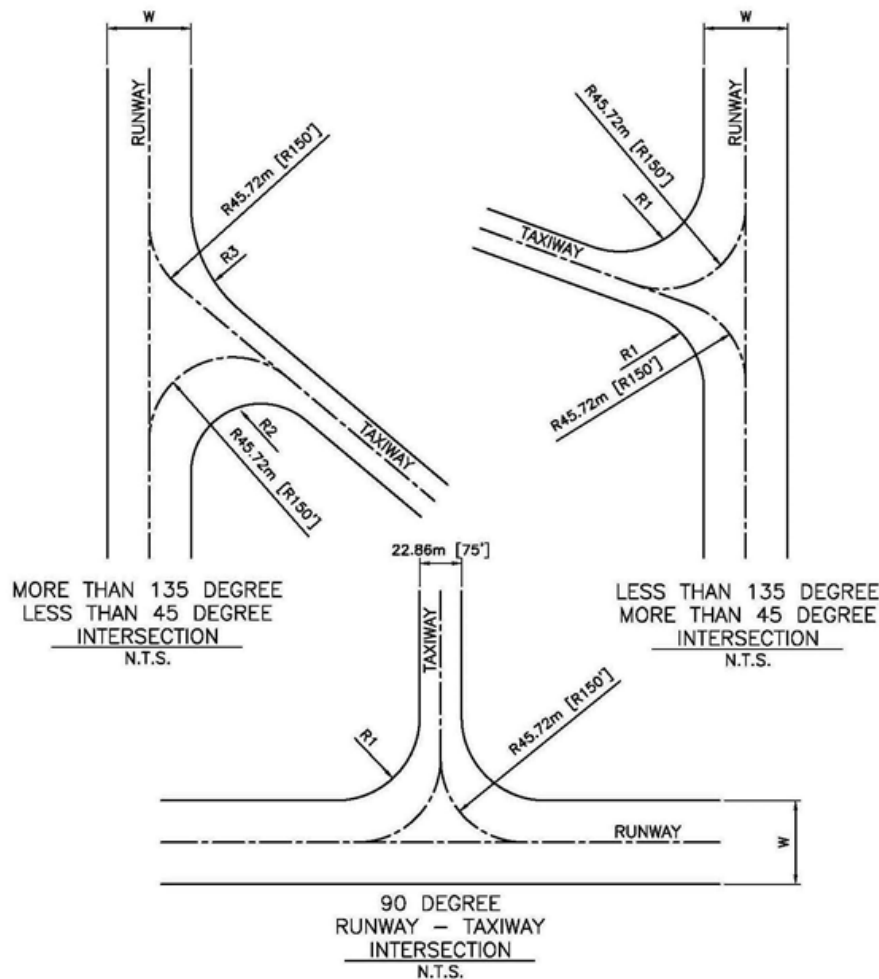
7.5.11.1.3. Runway Width. The minimum runway width for the MC-12 is 60 ft (AFI11-2MC-12WV3, Paragraph 3.12.1). Class A runways have a minimum runway width requirement of 100 ft (UFC 3-260-01, Table 3-2, Item 2).

7.5.11.1.4. Shoulders. Shoulders can be both paved and unpaved, and are located on each side of the runway. The minimum paved shoulder for the MC-12 is 25 ft on each side of the runway (UFC 3-260-01, Table 3-2, Item 4). A minimum combined total of 50 ft is required for paved and unpaved shoulders for the MC-12 (UFC 3-260-01, Table 3-2).

7.5.11.1.5. Runway/Taxiway Intersection Fillet Radii. See **Table 7.5.14** and **Figure 7.5.2**.

Table 7.5.14. Runway/Taxiway Intersection Fillet Radii.

Runway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	R1 ^{1,3}	R2 ²	R3 ²
More than 75 ft but less than 150 ft	150	125	250
150 ft or more	125	125	250
Notes: 1. Less than 135 and more than 45-degree intersection 2. More than 135 and less than 45-degree intersection 3. 90-degree intersection			

Figure 7.5.3. Runway-Taxiway Intersection Fillet Radii.**7.5.11.2. Paved Overrun (CATCODE: 111115).**

7.5.11.2.1. Requirements Determination. All runways are required to have paved overruns.

7.5.11.2.2.1. Length (min.). The MC-12 paved overrun minimum length for Class A runways is 200 ft (UFC 3-260-01, Table 3-4, Item 1).

7.5.11.2.2.2. Width (min.). The MC-12 paved overrun minimum width for Class A runways is 100 ft (UFC 3-260-01, Table 3-4, Item 3).

7.5.11.3. Taxiway (CATCODE: 112211).

7.5.11.3.1. Requirements Determination. All runways are required to have taxiways.

7.5.11.3.2.1. Taxiway Width. The minimum taxiway width for the MC-12 is 30 ft (AFI11-2MC-12WV3, Paragraph 3.13.4). Class A Runways have a minimum taxiway requirement of 50 ft (UFC 3-260-01 Table 5-1, Item 1).

7.5.11.3.2.2. Taxiway Paved Shoulders. The minimum paved taxiway shoulder width for MC-12 airfields is 25 ft (UFC 3-260-01, Table 5-1, Item 3).

7.5.11.3.2.3. Taxiway Clearance Line (Fixed or Mobile Objects). The taxiway clearance line for fixed or mobile objects for MC-12 airfields is 200 ft from the taxiway centerline (UFC 3-260-01, Table 5-1, Item 10).

7.5.11.3.2.4. Taxiway Clearance Line (Parallel Taxiway). The taxiway clearance line for parallel taxiways for MC-12 airfields 175 ft (UFC 3-260-01, Table 5-1, Item 11).

7.5.11.3.2.5. Taxiway Centerline Radius. The taxiway centerline radius is the taxiway width divided by 2 and added to 100 ft. The minimum taxiway centerline radius is 125 ft ($50 / 2 + 100 = 125$ ft). The centerline turning radii used to determine the fillet radii for **Figure 2.3** and **Figure 2.4** are 150 ft and 125 ft respectively.

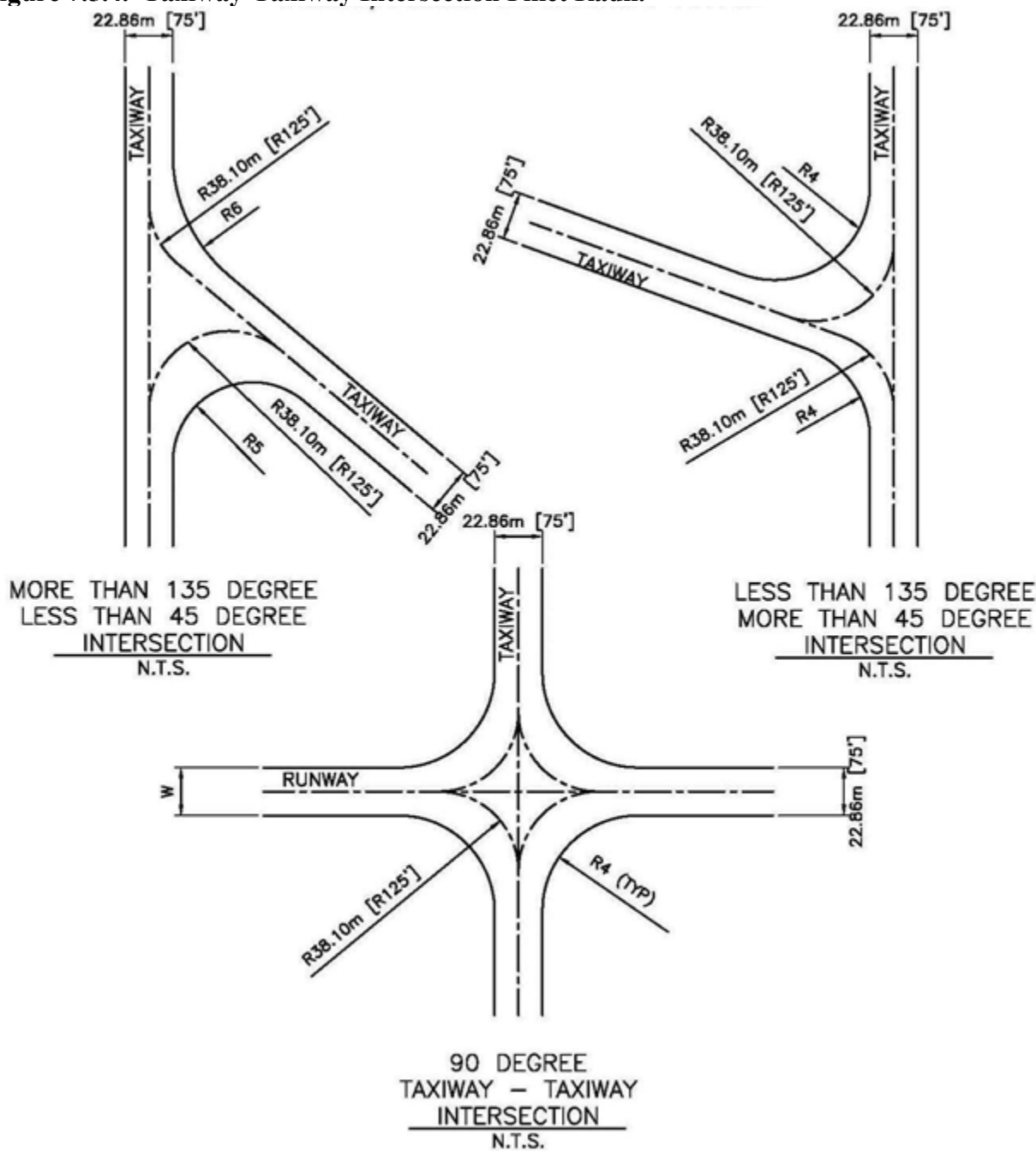
7.5.11.3.2.6. Wingtip Clearances for Taxiing. The wingtip clearance for parked aircraft is 10 ft (UFC 3-260-01, Table 6-1, Item 4). The wingtip clearance of aircraft on interior or secondary peripheral taxilanes is 20 ft (UFC 3-260-01, Table 6-1, Item 5). The wingtip clearance of aircraft on through or primary peripheral taxilanes is 30 ft (UFC 3-260-01, Table 6-1, Item 6).

7.5.11.3.2.7. Taxiway/Taxiway Intersection Fillet Radii. See **Table 7.5.15** and **Figure 7.5.4**.

Table 7.5.15. Taxiway/Taxiway Intersection Fillet Radii.

Taxiway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	R4 ^{1,3}	R5 ²	R6 ²
75 ft	150	125	250
Notes: 1. Less than 135 and more than 45-degree intersection 2. More than 135 and less than 45-degree intersection 3. 90-degree intersection			

Figure 7.5.4. Taxiway-Taxiway Intersection Fillet Radii.



7.5.11.4. Apron (CATCODE: 113321).

7.5.11.4.1. Requirements Determination. Aprons are individually designed to support specific aircraft and missions at a particular installation. The actual dimensions of an apron are based on the number of authorized aircraft, maneuvering space, and type of activity the apron serves. (DAFMAN 32-1084, CC 113321, Paragraph 1.2). The dimensions of an operational parking apron for the MC-12 are based on the number of PMAI minus any covered parking provided. It does not include the number of BAI,

PTAI, or transient requirements as these are typically located on separate aprons or in a separate hangar. When factoring for other aircraft inventory on a single apron, consider all aircraft inventories as applicable in the total number of aircraft and follow the steps laid out in paragraph 7.5.11.4.2. The minimum clearances allowed between MC-12 aircraft in a parking configuration are shown in **Table 7.5.16**.

7.5.11.4.2. Scope Determination. Multiply the wingspan of the selected aircraft by its length. Multiply the product by a factor determined by the number of aircraft being supported (DAFMAN 32-1094, CC 113321 Apron, Paragraph 1.3.7). For one aircraft use a multiplier of 11.12, for two aircraft use a multiplier of 8.11, for three aircraft use a multiplier of 7.12, for four aircraft use a multiplier of 6.53, and for five aircraft use a multiplier of 6.08.

7.5.11.4.3. Dimensions. The parking apron size for the MC-12 is determined by calculating the aircraft dimensions 46.67 ft (L) x 57.92 ft (W) and adding the minimum apron clearances. To calculate the required apron parking spaces subtract the covered maintenance spaces from the PMAI (See **Table 7.5.22**); therefore, 4 total aircraft or 3 PMAI= 1 apron space or 30,047 NSF (this includes 13,847 NSF apron and 16,200 NSF of taxilanes for two access points attaching to the apron to a primary taxiway); 7 total aircraft or 6 PMAI= 2 apron spaces or 43,894 NSF (this includes 27,694 NSF apron and 16,200 NSF of taxilanes for two access points attaching to the apron to a primary taxiway); and 10 total aircraft or 9 PMAI= 3 apron spaces or 57,741 NSF (this includes 41,541 NSF apron and 16,200 NSF of taxilanes for two access points attaching to the apron to a primary taxiway).

7.5.11.4.4. Access to Hangars, Docks, and Shelters. Apron configuration is affected by the size of the door openings and by the dimensions and turning radius of the largest aircraft using the buildings. For the MC-12, the minimum length of apron to access hangars, docks, and shelters is 24 ft (rounded from 33.96 ft) when accessed from through or peripheral taxilanes and 34 ft (rounded from 33.96 ft) when accessed from an interior or secondary peripheral taxilane (UFC 3-260-01 Table 6-1, Item 15). The width is equal to that of the hangar being accessed.

7.5.11.4.5. Aircraft Parking Arrangements. See **Figure 7.5.5** for a typical parking apron for the MC-12.

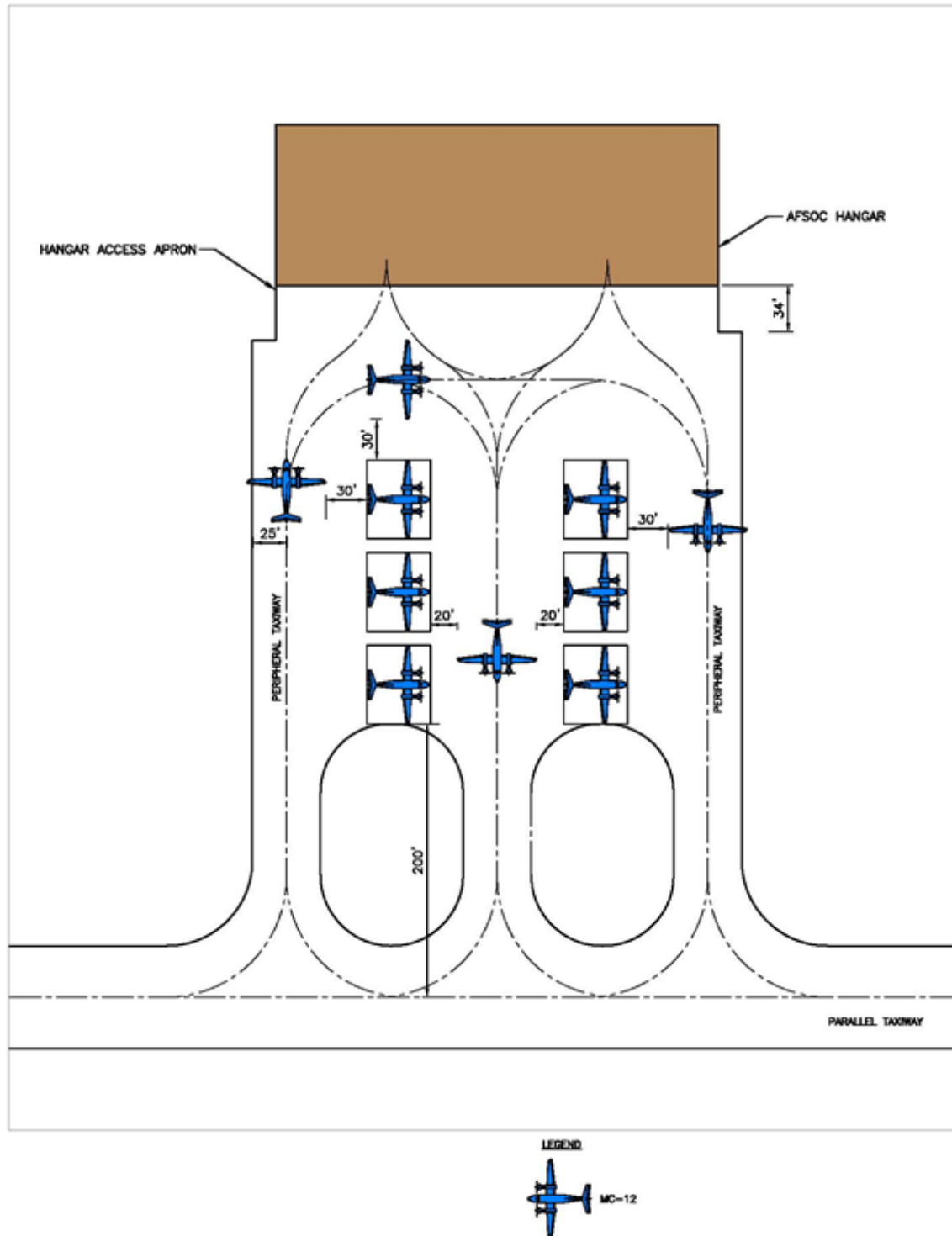
Table 7.5.16. MC-12 Parking Apron Clearances.

Hangar Access Apron – Off Through or Peripheral Taxilanes ¹		Wingtip Clearance on Peripheral or Through Taxilanes ²		Wingtip Clearance on Interior/Secondary Peripheral Taxilanes ³		Min. Distance Between Wings of Parked Aircraft ⁴	
m	ft	m	ft	m	ft	m	ft
10.36	34	9.14	30	6.10	20	3.05	10

Notes:

1. UFC 3-260-01, Table 6-5, Item 1: 28.96 ft (0.5 x wingspan) + 30 ft (wingtip clearance for aircraft on peripheral or through taxilanes) - 25 (dist. from peripheral taxilane centerline to edge of apron).
2. Source: UFC 3-260-01, Table 6-1, Item 6.
3. Source: UFC 3-260-01, Table 6-1, Item 5.
4. Source: UFC 3-260-01, Table 6-1, Item 4.

Figure 7.5.5. MC-12 Typical Parking Apron.



7.5.11.5. Paved Shoulders (CATCODE: 116642).

7.5.11.5.1. Requirements Determination. Paved shoulders are required for all operational pavements.

7.5.11.5.2. Dimensions. The total width of paved shoulders for the MC-12 is 50 ft (25 ft per side, UFC 3-260-01, Table 6-1, Item 11). The total width of paved and unpaved shoulders is 50 ft (UFC 3-260-01, Table 6-1, Item 10).

7.5.11.6. Towway.

7.5.11.6.1. Requirements Determination. When designing for access to a hangar, flare the pavement to the width of the hangar door from a distance beyond the hangar sufficient to allow maintenance personnel to turn the aircraft around.

7.5.11.6.2. Scope Determination. Width, towway turning radius, horizontal clearance from towway centerline to fixed or mobile obstacles, and vertical clearance from the towway pavement to fixed surface or mobile obstacles.

7.5.11.6.3. Width. The minimum towway width for the MC-12 is 27.17 ft (UFC 3-260-01, Table 5-6, Item 1): Width of towway for Air Force facilities = outside gear width of towed mission aircraft + 10 ft. MC-12 outside gear width is 17.17 ft + 10 ft = 27.17 ft).

7.5.11.6.4. Turning Radius. The MC-12 towway turning radius is 150 ft (UFC 3-260-01, Table 5-6, Item 8).

7.5.11.6.5. Horizontal Clearance. The minimum horizontal clearance from the towway centerline for the MC-12 is 60 ft (UFC 3-260-01, Table 5-6, Item 11).

7.5.11.6.6. Vertical Clearance. The minimum vertical clearance from the towway pavement for the MC-12 is the aircraft height plus 10 ft (14.33 + 10) or 24.33 ft (UFC 3-260-01, Table 5-6, Item 12).

7.5.11.6.7. Fillet Radius. The minimum fillet radius at intersections is 100 ft (UFC 3-260-01, Table 5-6, Item 9).

7.5.11.7. Warm-up/Holding Pad (CATCODE: 111666).

7.5.11.7.1. Requirements Determination. A warm-up/holding pad is authorized for each end of a runway. In addition to providing a location to warm-up and hold aircraft waiting to depart, warm-up/holding pads provide a location for MC-12 aircraft to conduct hot gas refueling, FARP training, and hot gun emergency operations.

7.5.11.7.2. Scope Determination. A warm-up/holding pad is authorized for each end of a runway sized to accommodate two of the largest aircraft assigned to a base (DAFMAN 32-1084, Paragraphs 2.1.13.2 and 2.1.13.4).

7.5.11.7.3. Dimensions. The minimum warm-up/holding pad for the MC-12 is 43,894 NSF. The area is based on parking apron criteria for two MC-12 aircraft.

7.5.11.8. Aircraft Washrack (CATCODE: 116672).

7.5.11.8.1. Requirements Determination. The dimensions of the aircraft plus 10 ft clearances determine the minimum washrack pavement dimensions (UFC 3-260-01, Table 6-5, Fighter aircraft requirement).

7.5.11.8.2. Scope Determination. The washrack area will be 46.67 ft (L) + 20 ft (clearance both sides) x 57.92 ft (W) + 20 ft (clearance both sides) = 5,373 NSF. A utility storage building of 240 NSF is also allowed for this facility (DAFMAN 32-1084, Paragraph 2.1.15.3; justified by UFC 3-260-01, Paragraph 6.14.4). Note that wash rack covers are considered equipment items to be purchased by the user and are not part of this CATCODE.

7.5.11.8.3. Dimensions. The minimum paved area for the MC-12 requires 5,373 NSF (67.67 ft [L] x 57.92 ft [W]). The utility storage allowed for this facility is 240 NSF.

7.5.11.9. Aircraft Rinse Facility.

7.5.11.9.1. Requirements Determination. MC-12 aircraft exposed to a salt water environment require a CWR.

7.5.11.9.2. Scope Determination. A CWR can be performed manually by hand-held hose or spraying equipment or by use of a taxi-through automated system. AFSOC MC-12 aircraft are equipped with DIRCM and therefore are not authorized a CWR taxi through facility.

7.5.11.10. Hydrant Fueling System (CATCODE: 121122).

7.5.11.10.1. Requirements Determination. Hydrant fueling systems are not required for the MC-12; however, when hydrant fueling systems are available or specifically authorized, follow the aircraft direct fueling system design criteria for fixed-wing small-frame as defined in UFC 3-460-01 Paragraph 4-4.2.2.

7.5.11.10.2. Dimensions. No Fuels Engineers exist within HQ AFSOC or its subordinate units. If a requirement is identified, existing engineering staff with support from the MAJCOM Fuels Management section, will reach out to technical experts such as the HQ Air Force Petroleum Agency and DLA/DESC for development of specific dimensions. In general, this requirement is based on installation specific mission requirements and airframe specific upload rates.

7.5.11.11. Operating Storage, Jet Fuel (CATCODE: 124135).

7.5.11.11.1. Requirements Determination. Operating storage tanks are not required for the MC-12; however, they are provided wherever dispensing facilities are remote from bulk storage tanks. Provide separate storage for each type and grade of fuel. For aviation activities, provide a minimum of two tanks for each type of fuel (UFC 3-460-01 Paragraph 8-3.3). Acceptable fuels for AFSOC MC-12 aircraft include Jet-A, Jet A-1, Jet B, JP-4, JP-5, and JP-8.

7.5.11.11.2. Dimensions. The capacity or size of each fuel storage tank is based upon the logistical and mission requirements for the weapon systems to be supported from it, thus the requirement will vary. Per UFC 3-460-01, Paragraph 8-3.4, general guidance is to provide a minimum of two tanks at aviation activities for each type of aviation turbine fuel. Assuming a requirement is identified, the appropriate Service

Headquarters with DLA Energy approval will determine the number and size of tanks required.

7.5.11.12. Aircraft Truck Fueling Facility (CATCODE: 126925).

7.5.11.12.1. Requirements Determination. Truck fill stands are required at all Air Force installations where bulk petroleum products are stored and dispensed.

7.5.11.12.2. Scope Determination. The number of fill stands required depends on the number of trucks which must be loaded simultaneously. This is determined by the command having jurisdiction from a study of the mission and operation requirements.

7.5.11.12.3. Dimensions. Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1). Per DAFMAN 32-1084 Paragraph 2.2.17.4.1, a minimum of one outlet for each grade of fuel is necessary. Acceptable fuels for AFSOC MC-12 aircraft include Jet-A, Jet A-1, Jet B, JP-4, JP-5, and JP-8. For specific projects, the appropriate Service Headquarters can assist in determining the number.

7.5.11.13. Cryogenics Storage (Liquid Oxygen Storage) (CATCODE: 442258).

7.5.11.13.1. Requirements Determination. MC-12 aircraft liquid oxygen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.5.11.13.2. Scope Determination. AFSOC only needs to store materials in cylinders. The portable oxygen bottle, which is ancillary mission equipment, is serviced with liquid oxygen typically stored in cylinders.

7.5.11.13.3. Dimensions. One cylinder is 8 NSF (10 GSF).

7.5.11.14. Gaseous Nitrogen Storage.

7.5.11.14.1. Requirements Determination. MC-12 aircraft liquid gaseous nitrogen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.5.11.14.2. Scope Determination. AFSOC only needs to store materials in cylinders. The portable nitrogen cylinder, P/N 55D6496, and the selfgenerating nitrogen servicing unit, P/N PD96LDEA/TILDD-05 are used for servicing and replenishment.

7.5.11.14.3. Dimensions. One cylinder is 8 NSF (10 GSF).

7.5.11.15. Standard Host Installation Facilities.

7.5.11.15.1. Aerial Delivery Facility. See **paragraph 1.1.3.5.1.**

7.5.11.15.2. FARP Equipment Storage. **paragraph 1.1.3.5.2.**

7.5.11.15.3. Deployment Processing Facility. See **paragraph 1.1.3.5.3.**

7.5.11.15.4. Airfield Ancillary Facilities. See **paragraph 1.1.3.5.4.**

7.5.12. Base Operations Ground Facilities - Pavement Requirements.

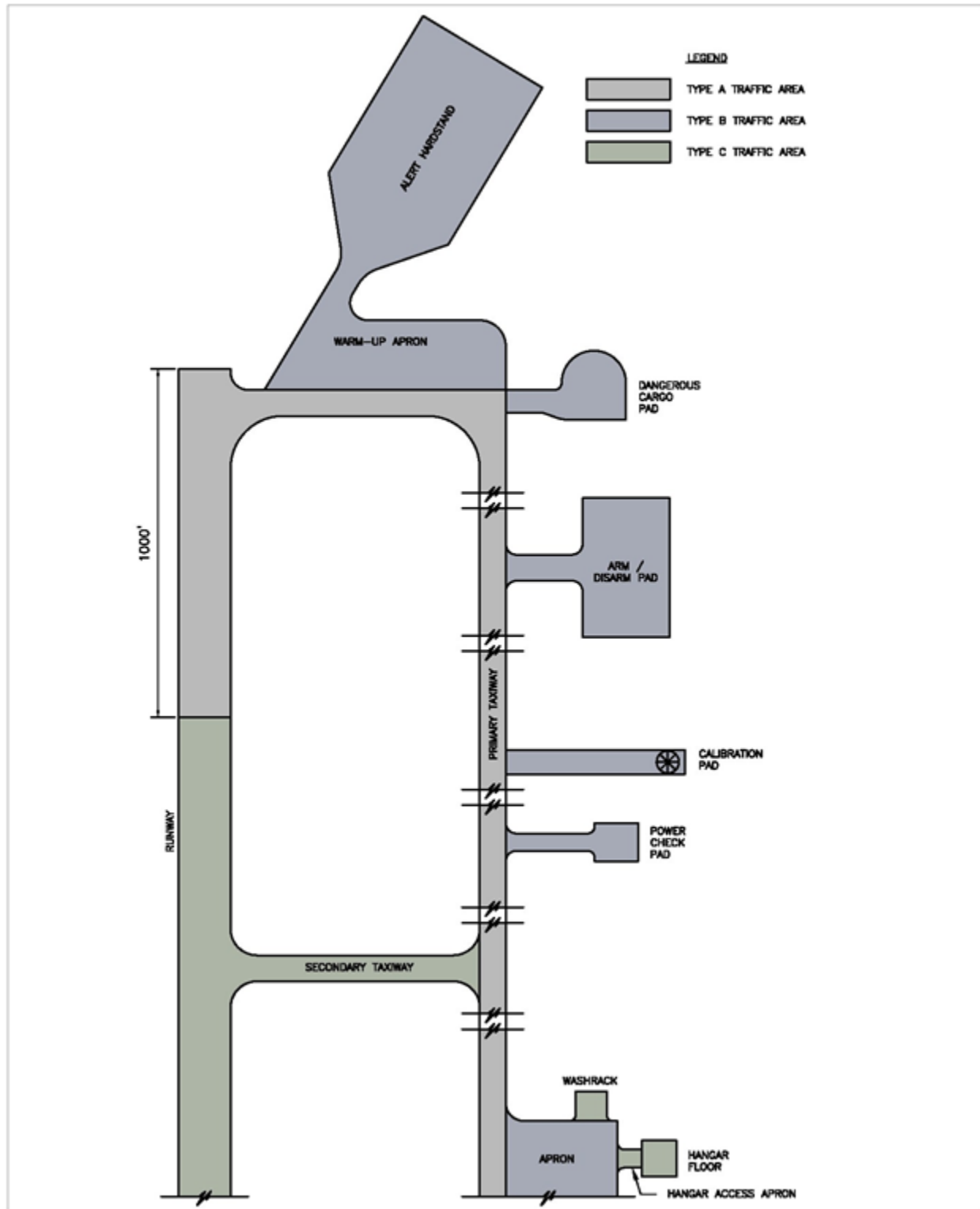
7.5.12.1. Airfield. Airfield mission and operational procedures have resulted in the development of six types of Air Force airfields: light, medium, heavy, modified heavy, auxiliary, and assault landing zone. The decision on which airfield type to design for is made by the appropriate MAJCOM. Airfield designs are generally based upon medium load criteria. The pavement for the MC-12 is classified as light load, index 1, under the Aircraft Group Index in accordance with AFI 32-1041, Figure 4.1. An airfield pavement with a given pavement classification number (PCN) can support, without weight restriction, an aircraft with an ACN rating equal to or less than the airfield pavement PCN. Verify the MC-12 ACN is equal to or less than airfield pavement PCN in areas of operation. The pavement capacity for a light airfield type has a maximum gross weight of 68,000 lbs at 400,000 passes (UFC 3-260-02, Table 3-1).

7.5.12.2. Traffic Areas. Certain areas of an airfield (e.g. runway shoulders, runway overruns) do not normally carry fully loaded aircraft; therefore, they do not need to be designed for the maximum gross weight (UFC 3-260-02, Chapter 4, Section 3, Paragraph C). See [Figure 7.5.6](#) for the traffic areas in an airfield designed for the MC-12. The design gross weight for Type C (gross weight – 51,000 lbs.) traffic areas and overruns are 75 percent of the design gross weights for Types A and B (gross weight - 68,000) traffic areas. Light load airfields are not designed with Type D traffic areas (UFC 3-260-02, Table 3-1). See [Table 7.5.17](#) for Airfield Pavements by Traffic Area Type.

Table 7.5.17. Light Load Airfield Pavements by Traffic Area Type.

Pavement Use	Light Load Pavement Traffic Areas		
	Type A – Design Gross Weight 68,000 lbs.	Type B – Design Gross Weight 68,000 lbs.	Type C – Design Gross Weight 51,000 lbs.
Runway (First 1,000 ft on each end)	X		
Runway (Interior section between 1,000 ft ends)			X
Aprons (except hangar access)		X	
Hangar Access Aprons			X
Hangar Floors			X
Hardstands		X	
Power Check Pad		X	
Arm/Disarm Pad	X		
Dangerous Cargo Pad	X		
Primary Taxiways (all)	X		
Overruns			X

Figure 7.5.6. Traffic Areas for Light Load Pavement Airfield.



7.5.12.3. **Paved Shoulders.** As a minimum, paved shoulders should be designed to support a load of 10,000 lbs imposed by a single wheel with a tire pressure of 0.69 MPa [100 psi] (UFC 3-260-02, Chapter 3, Section 6, Paragraph B).

7.5.12.4. **Hangar Floors.** See Paragraph 7.5.15, Maintenance Hangar.

7.5.12.5. **Pavement Thickness Requirements.** The MC-12 minimum base course pavement thickness required is 6 inches for flexible pavements (UFC 3-260-02, Table 8-5) and 4 inches for rigid pavements (UFC 3-260-02, Chapter 8, Section 8, Paragraph A).

Table 7.5.18. MC-12 Base Operations Ground Facility Requirements.

Cat Code	Facility	UM	MC-12 (3) ¹	MC-12 (6) ¹	MC-12 (9) ¹	DAFMAN 32-1084 Reference or Remarks/Calculations
111-111	Runway – Length (min.)	LF	5,000	5,000	5,000	From AFSOC/A3TN: 5,000 LF for normal touch & go operations; 6,000 LF for no flap touch & go operations.
111-111	Runway - Width (min.)	LF	60	60	60	AFI11-2MC-12WV3, Paragraph 5.9.1: Minimum runway width is 60 ft.
111-115	Paved Overrun - Length (min.)	LF	200	200	200	Corresponds to Air Force Class A runway, per ETL 09-1, Section 6.1.2 and UFC 3-260-01 Table 3-4.
111-115	Paved Overrun - Width (min.)	LF	100	100	100	Corresponds to Air Force Class A runway, per ETL 09-1, Section 6.1.2 and UFC 3-260-01 Table 3-4.
112-211	Taxiway Width	LF	30	30	30	AFI11-2MC-12WV3 Paragraph 5.10.2: Minimum taxiway width is 30 ft.
112-211	Taxiway Paved Shoulder	LF	25	25	25	UFC 3-260-01, Table 5-1, Item 3.
113-321	Aircraft Parking Apron	NSF	30,047	43,894	57,741	Para 2.1.5.3.3 and 2.1.5.3.4: Multiply the aircraft wingspan by the length. Multiply the product by a factor. One aircraft use 11.11; Two aircraft use 8.12; Three aircraft use 7.12, Four aircraft use 6.53, and Five aircraft use 6.08. Subtract covered maintenance spaces, deployed aircraft, cradled aircraft, and aircraft stored in caskets from the total number of aircraft.

113-321	Apron for Access to Hangars, Docks, Shelters	LF	34	34	34	UFC 3-260-01, Table 6-6, Item 1 & UFC 3-260-01, Table 6-1, Item 15: Width equals hangar door opening (34 ft).
	Towway Width	LF	28	28	28	UFC 3-260-01 Table 5-6. Width is 5 ft on each side of gear. MC-12 landing gear width is 18 ft.
	Clearance from Towway Centerline	LF	60	60	60	UFC 3-260-01 Table 5-6. Clearance is the greater of 1/2 the wingspan + 25 ft or the minimum of 60 ft. MC-12 wingspan is 58 ft. $54/2 + 25 = 54$ ft.
116-642	Paved Shoulders	LF	25	25	25	UFC 3-260-01 Table 3-2.
116-666	Pad, Warm-up/Holding	NSF	43,894	43,894	43,894	Para 2.1.13.2: Sized to accommodate two aircraft. Based on parking apron criteria for 2 aircraft.
116-666	Compass Calibration Pad	NSF	0	0	0	Not required.
116-672	Aircraft Washrack	NSF	5,373	5,373	5,373	The washrack dimensions are the length of the aircraft plus 30 feet x the wingspan of the aircraft plus 30 feet.
116-672	Aircraft Washrack Utility Building	GSF	300	300	300	Para 2.1.15.3: Allows a utility storage building of 240 NSF. Conversion from NSF to GSF is $240 \times 1.25 = 300$ GSF.
126-925	Aircraft Truck Fueling Facility	EA	2	2	2	Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1).
n/a	Cryogenics Storage (Liquid Oxygen)	GSF	10	10	10	Facility not required to be dedicated to AFSOC unit, verify capacity of host installation. AFSOC only needs to store materials in cylinders. Calculated as 8 NSF X 1.25 net to gross.
n/a	Gaseous Nitrogen Storage	GSF	10	10	10	Facility not required to be dedicated to AFSOC unit, verify capacity of host installation. AFSOC only needs to store materials in cylinders. Calculated as 8 NSF X 1.25 net to gross.
Airfield Paving (w/o Runways and Overruns)		NSF	107,008	93,161	79,314	

Total Airfield Paving	NSF	427,008	413,161	399,314	
Total Indoor Facilities	GSF	320	320	320	
Notes: 1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI). 2. See paragraph 1.1.3.5 for more information on base ground operating facilities assumptions for facilities assumed to be existing and adequate at existing airfields.					

7.5.13. MC-12 Training System Facilities.

7.5.13.1. Flight Simulator Training (CATCODE: 171212).

7.5.13.1.1. Requirements Determination. This facility houses aircraft flight simulators, and other special training devices. It also includes space for administration and records, classrooms, toilet facilities, trainer maintenance, and storage (DAFMAN 32-1084, CC 171212 Flight Simulator Training, Paragraph 1.1). Flight simulator training facilities are normally sized according to the type of simulator installed and vary considerably in floor area from one system to another.

7.5.13.1.2. Dimensions. DAFMAN 32-1084, Table 2-32 provides examples of typical simulator training facilities that can be used for initial planning purposes before specific requirements are identified. **Table 7.5.19** gives the facility requirements specific to the MC-12.

7.5.13.1.3. Reference. **Table 7.5.21** lists the training systems for the MC-12 by location type. A breakdown of space requirements in scenarios ranging from 3-9 PMAI is included in **Table 7.5.22**. A brief description of the space requirements and facility recommendations for flight simulator training is included below.

7.5.13.2. **MC-12 Training Systems**. Operations training will be conducted using a WST and a cabin mission training device (MTD). Training center locations (CONUS only) will house WSTs and MTDs; however, WSTs and MTDs will be provided at CONUS and OCONUS locations that support a full MC-12 squadron of 9 PMAI and 1 BAI.

7.5.13.2.1. WST Simulator. The WST is an aircrew training system for the MC-12. The WST features a flight compartment and EMM system that simulates a variety of MC-12 mission scenarios. An overhead crane is ideal, though not required; however, the simulator bay at a minimum should have an exterior access door opening of 20 ft (W) x 20 ft (H) and a maintenance access door minimum 8.2 ft (W) x 9.8 ft (H). The simulator bay floor should be able to support a total weight load of 37,800 lbs. Adjacent to the simulator bay should be areas for computer, supply, and maintenance rooms. See **paragraph 7.5.13.2.7.1** for other design considerations regarding this WST bay. The required space allocation for this facility can be found in **Table 7.5.22**.

Table 7.5.19. Building Utility System Requirements for WST Bay.

System	Requirements
Mechanical	The simulator bay should be maintained between 60-80°F (15-27°C) at a relative humidity of 40-60% (non-condensing), both above and below the floor. In facilities where the EMM cabinet is stored within the simulator bay, the ambient temperature should not exceed 75°F (24°C) to avoid damaging the electronics within the EMM cabinet. A typical 10-ton water air conditioning unit, based on the maximum ambient conditions listed above, provides a nominal cooling capacity of 120,000 BTU/hr (35.0 kW). Lighting intensities should provide 50 foot-candles (approximately 500 lux) of total illumination measured 3 feet above the floor. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	The power requirement for the flight compartment is 400/230 VAC, 3-phase, 60 Hz, 5 wire, 6.5 kVA circuit. The power requirement for the EMM Cabinet is 480 VAC, 3-phase, 4 wire, 80 kVA circuit. The power requirement for the Cockpit Air Conditioner is a480 VAC, 3-phase, 5-wire, 5 kVA circuit. The power requirement for the Electric Load Units is 400/230 VAC, 3-phase, 60 Hz, 5 wire, 6 kVA circuit. The facility should provide 120V, 1-phase, and 20-amp outlets at various locations around the simulator bay for installing service equipment. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	The simulator bay water supply requirements include an air conditioner maximum flow demand of 20 GPM, a water supply maximum temperature of 45°F (7°C), and a water supply minimum and maximum pressures of 25 psi and 125 psi respectively. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is recommended, although a wet-pipe system is an acceptable alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.

Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.5.13.2.2. WST Computer Room. The WST computer room houses all the electronic cabinets and other electronic or computer equipment for the WST. It will include the following: a power cabinet, visual image generator cabinets, a visual operating workstation, a host control computer and peripherals, a UPS, a fire protection system, electrical grounding, a room air conditioner, a PDU, and a raised computer floor. The recommended computer room door size is 6 ft (W) x 7 ft (H) and the computer floor should have a minimum of 12 inches of clear height from the true floor to the underside of the raised floor with no obstructions. See [paragraph 7.5.13.2.7.6](#) for other design considerations regarding this WST Computer Room. The required space allocation for this facility can be found in [Table 7.5.22](#).

Table 7.5.20. Building Utility System Requirements for WST Computer Room.

System	Requirements
Mechanical	The computer room shall be maintained at 65-75°F (18-24°C) at a relative humidity of 40-60% non-condensing, both above and below the floor. Air conditioning requires a minimum of 60,000 BTU/hr capacity under the computer room floor to provide cooling for the equipment cabinets. A constant pressure flow of cooling air should be maintained at all times to prevent damage to the equipment. The computer room air conditioning system should be separate from other building air conditioning systems. A capacity of 70,000 BTU/hr is sufficient to meet the above floor temperature requirements for the computer room. Lighting intensities should provide 50-75 foot-candles of total illumination measured 30 inches above the floor. Light should generally be of the recessed florescent type. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Electrical power should be separate from the air conditioning, lighting, or other facility/computer room electrical systems. Electrical service will be either 480/277V 3Ø/5W/60Hz or 400/230V 3Ø/3W/60Hz (ground wire is equal in size to the phase conductors) should be provided for all computer equipment. The service should be rated to supply a minimum of 150 Amps. The service should be maintained within ±10V, at a frequency of 60 Hz ±0.5Hz. A computer service ground plate should be provided and wall mounted below the raised floor. Emergency power off switches should be provided. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.

Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is recommended, although a wet-pipe system is an acceptable alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.
Communication	Provide Communication requirements in accordance with UFGS Division 27 - Communications, Division 33 - Utilities and UFC 3-580-01 for designing and implementing of interior and exterior telecommunications infrastructure for military construction. This infrastructure typically includes telecommunications spaces, pathways, cabling and interconnecting components. The design of interior telecommunications infrastructure is a specialized technical area. This provides general guidance to those parties tasked with implementing existing and emerging interior telecommunications infrastructure requirements. The basic requirements follow industry standards. Due to service-specific unique operating requirements and existing infrastructure and topology, this instruction includes a chapter for each service.

7.5.13.2.3. Cabin MTD. The cabin MTD should be located adjacent to the WST. This simulator is capable of operating with the flight deck of the WST as well as independently and simultaneously with the WST. This space includes the cabin simulator (25 ft L x 7 ft W), an IOS station, an instructor station, communications racks, and tool storage. The required space allocation for this facility can be found in [Table 7.5.22](#).

7.5.13.2.4. VTRAT. The VTRAT will be located inside a room that can support trainees, instructors, and computer equipment. The cooling requirements for the VTRAT are similar to those of most simulators and should not be overlooked due to the small size of this simulator. The required space allocation for this facility can be found in [Table 7.5.22](#).

7.5.13.2.5. NVG. The space required for NVG training should be large enough to support trainees, instructors, and NVG equipment. The equipment for NVG does not require much more than desk space for students and the instructor. Lighting should also be considered to ensure the equipment is being used in an environment that is dark enough to meet training requirements. The required space allocation for this facility can be found in [Table 7.5.22](#).

7.5.13.2.6. Dimensions. See [Table 7.5.22](#) for the space requirements for the individual spaces within an MC-12 training systems facility.

7.5.13.2.7. Design Considerations.

7.5.13.2.7.1. Simulator Bay. Ensure adequate grounding to device specifications. Provide perimeter lighting for accessibility. For facility A/C, ensure the bay A/C is on the side walls and not over the simulator (to avoid condensation dripping on visual domes) and make sure there is a condensation drain. For simulator cockpit A/C, design in flexibility to accommodate different types of A/C units (i.e. split unit, package unit, or chilled water) and make sure there is a condensation drain. Provide a separate trench from the anticipated cockpit A/C location to edge of the reaction pad. Do not install ceiling tiles because they are not accessible once the device is installed. Provide electrical disconnects for the UPS, drawbridge, and cockpit A/C unit, etc. Determine device/squadron requirements for a back-up power generator. Provide storage space within the bay for storage. Provide double doors into the bay, computer room, maintenance area, front entrance, and any supply points and suggest only one point of entry into the open storage area. Install an overhead 2-ton crane with variable speeds and a crane control cable on a remote cable from the hoist. Ensure that there is a sprinkler connection on the wall of the bay for a sprinkler pipe under the device (not required for electric motion; required for hydraulic motion).

7.5.13.2.7.2. Device/Simulator. Be very clear on who will provide the stairs or platform for the device (either MILCON or the device provider). Make the design for the device's orientation flexible because the vendor may not be the same as the vendor under design. Determine who will provide the UPS (normally vendor provided but make sure) and that it is adequately sized.

7.5.13.2.7.3. Communications and SIPR. Understand the proposed comprehensive interior design layout so that SIPR conduit can be installed in accordance with UFGS 27 05 29.00 10 & AFSSI 7703. This includes ensuring furniture/equipment will not block access for inspection requirements and should consider the separation of secure and unsecure communication lines.

7.5.13.2.7.4. IDS, ACS, and CCTV. These items are not provided by the MILCON project and are installed during construction. End user organizations are required (pre-design) to staff all IDS/ACS/CCTV requirements through the local Security Forces Squadron NCOIC to the AF Security Forces Center for validation/funding. MILCON scope will provide power and pathways only, not installation, procurement, or processing of systems/devices. Define IDS/ACS/CCTV requirements early so that the infrastructure can be installed during construction. Ensure walls and doors meet the security requirements for the open-standards architecture approach.

7.5.13.2.7.5. Classroom. Provide ceiling power (junction boxes/outlets) for projectors, split ballast for front lighting in classrooms and debrief areas (overhead projectors), and dual whiteboards: one under automated projector screen, the other on a side wall.

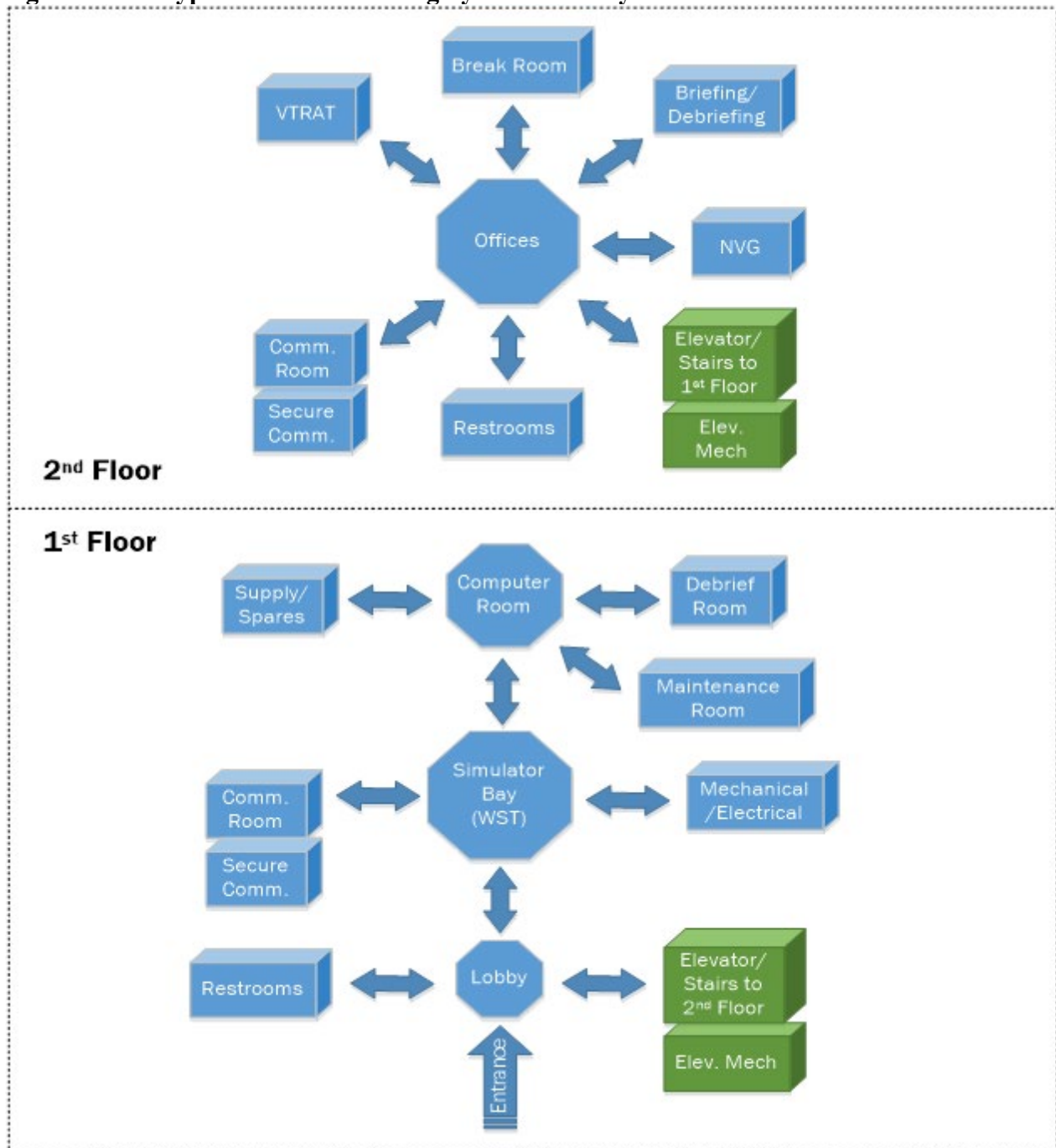
Figure 7.5.7. Typical MC-12 Training Systems Facility.

Table 7.5.22. MC-12 Training Systems Facility Requirements.

Cat Code	Facility	UM	MC-12 (3)¹	MC-12 (6)¹	MC-12 (9)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
171-212	Instructor Offices ²	NSF	0	0	425	AFSOC/A4I: Space for 6 PN required. 1 Type D for supervisor, 5 Type E for others. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
171-212	Contractor Offices ²	NSF	0	0	425	AFSOC/A4I: Space for 6 PN required. 1 Type D for supervisor, 5 Type E for others. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
171-212	WST	NSF	0	0	2,500	AFSOC/A4I: The standard AFSOC simulator bay size is size 50' (W) x 50' (L) x 50' (H) to allow flexibility between devices and weapon systems. Larger spaces will be provided to support minimum device specifications only.
171-212	Cabin MTD	NSF	0	0	500	A3TS: The Cabin MTD includes a 25' x 7' simulator, a vital communication rack (2' x 3.5'), a graphic intelligence support terminal (GIST) rack (3' x 4'), a tool box (3' x 6'), an IOS station (7' x 4'), and an instructor station (DAFMAN 32-1084 CG 61 Admin Overview Table 1.2.1 authorizes 64 NSF for standard workstation) 64 NSF. To allow for separation of communications racks and work spaces the recommended room size is 20' (W) x 25' (L).
171-212	VTRAT	NSF	0	0	300	Hurlburt Simulator Facility: VTRAT room 15' x 20'.
171-212	NVG Room	NSF	0	0	100	Hurlburt Simulator Facility: NVG room 10' X 10'.
171-212	Computer Room	NSF	0	0	600	AFSOC/A4I: Computer Room 20 ft x 30 ft. MC-130J Sim Design Analysis, Paragraph 3.3.1.2: Computer room 30 ft x 27 ft.
171-212	Supply Spares	NSF	0	0	160	AFSOC/A4I: 10' (W) x 16' (L) x 8' (H).
171-212	Maint. Area	NSF	0	0	300	AFSOC/A4I: Maintenance Room 15' (W) x 20' (L) x 10' (H).

171-212	Brief/Debrief Rm	NSF	0	0	600	AFSOC/A4I: 15' (W) x 20' (L) x 10' (H); 2 rooms, 300 NSF each.
171-212	Instructor Break Rm	NSF	0	0	100	CG 61 Admin Overview Table 1.3: 16% Occupants x 18 NSF, minimum of 100 NSF.
171-212	Student Break Rm	NSF	0	0	100	CG 61 Admin Overview Table 1.3: 16% Occupants x 18 NSF, minimum of 100 NSF.
171-212	Common Areas	NSF	0	0	0	CG 61 Admin Overview Paragraph 1.5.2: Included in NSF to GSF conversion.
171-212	Mech. and Elec. Rms	NSF	0	0	0	CG 61 Admin Overview Paragraphs 1.4.4 & 1.5.2: NSF to GSF conversion
171-212	Comm. Rom	NSF	0	0	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Secure Comm. Rm	NSF	0	0	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Admin. Support Space	NSF	0	0	240	CG 61 Admin Overview Paragraph 1.4.3 Use a maximum of 40 sf per person, and a minimum 20 sf per person.
171-212	Admin. Circulation	NSF	0	0	109	CG 61 Admin Overview Paragraph 1.4.2: Max 10% of Administrative Space
171-212	Special Purpose Circulation	NSF	0	0	555	CG 61 Admin Overview Paragraph 1.4.2: Max 10% of Special Purpose Space
Total Training Facilities		NSF	-	-	7,302	
Total Training Facilities		GSF	-	-	9,127	Net to Gross conversion factor of 1.25.

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).
2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.

7.5.14. MC-12 Operations Facilities.**7.5.14.1. Squadron Operations (CATCODE: 141753).**

7.5.14.1.1. Requirements Determination. Each squadron needs an operational building for administration, scheduling, training, briefing, personal equipment maintenance, and storage for aircrews.

7.5.14.1.2. Scope Determination. Space must be provided for the commander and staff. Space is required for AFE systems maintenance and the care, storage, and issue

of flying clothing and equipment for each crew member. Space is required for an operations officer to direct flight operations and for intelligence, mission planning, computers, radar and navigation, photos and maps, briefing room, locker area, and radio and electronic countermeasures. The required space allocation for this facility can be found in [Table 7.5.24](#). See **paragraph 1.1.3.6 for more information about the** unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within squadron operations facilities.

7.5.14.1.3. Typical MC-12 Operations Squadron Composition. Includes a commander, first sergeant, operations officer, assistant operations officers, resource advisors, commander's executives, standardization and evaluation, safety, security, research and development, mobility/supply (which can be located at LRS), AFE, a mission control center (this includes current operations, flight planning, flight management, and publications), scheduling, training, ARMS, combat operations, plans, tactics, and intelligence. This facility will also include an armory (which can be located at LRS), tactical training center, mission control center, and briefing rooms.

7.5.14.1.3.1. MC-12 ISR operations utilize non-AFSOC aircrew operators. Planners should consider these personnel in generating requirements for MC-12 beddown scenarios.

7.5.14.1.4. Security Considerations. Plans, tactics, intelligence, conference and B/DB rooms, the tactical training center, and the mission control center require open storage up to the SECRET level.

7.5.14.1.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

7.5.14.1.5.1. Other Considerations. This facility should include space for a "wellness room" that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child's birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

7.5.14.1.6. Dimensions. See [Table 7.5.24](#) for the spaces within an MC-12 Operations facility.

Table 7.5.23. Building Utility System Requirements for Operations Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.5.8. Typical MC-12 Operations Facility.

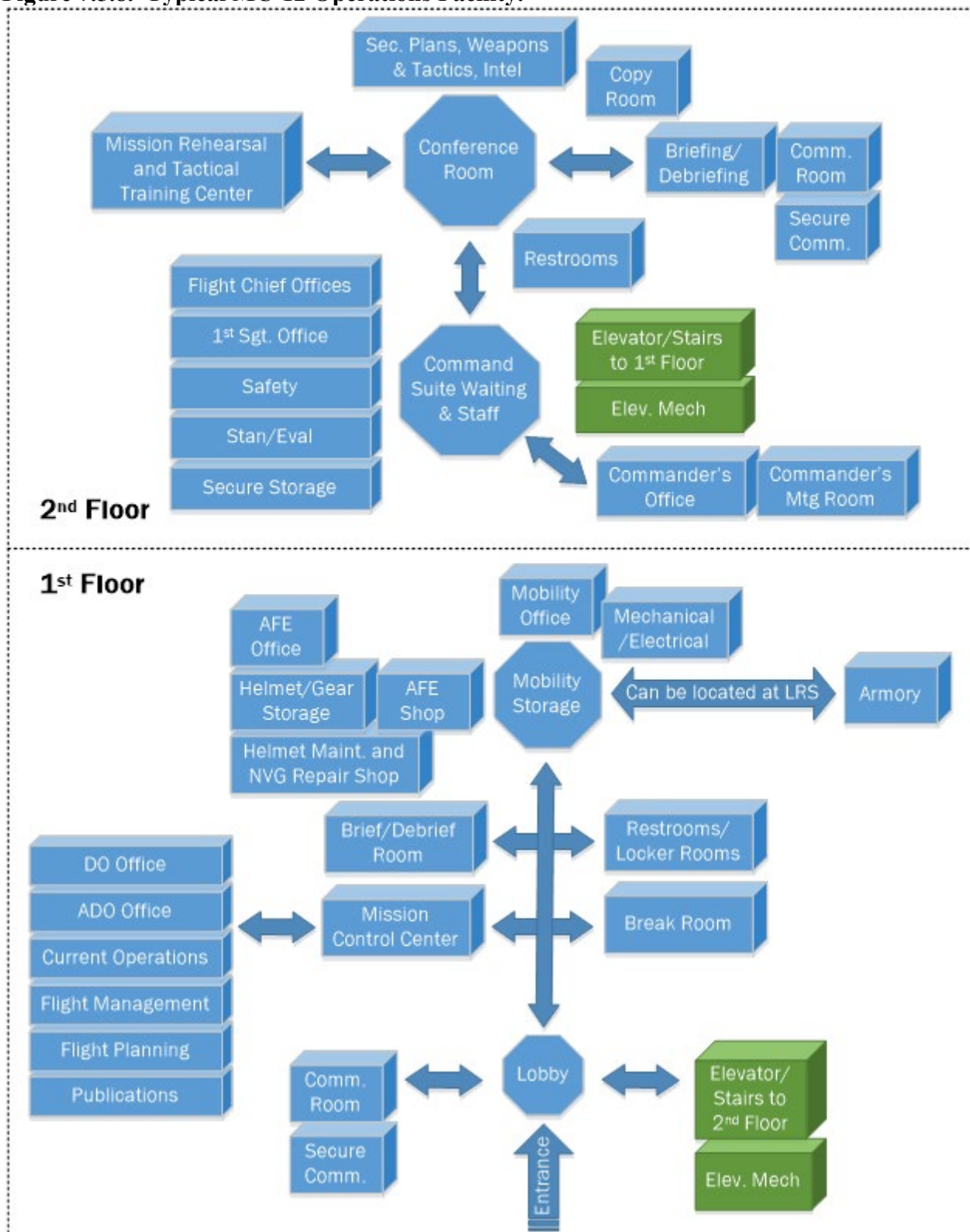


Table 7.5.24. MC-12 Operations Facility Requirements.

Cat Code	Facility	UM	MC-12 (3)¹	MC-12 (6)¹	MC-12 (9)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
141-753	Command Suite – Commander’s Office	NSF	140	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
141-753	Command Suite – First Sergeant	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Command Suite – Command Staff and Waiting Area	NSF	235	300	300	2 PN waiting area plus 4 offices. CG 61 Admin Overview Table 1.3: Waiting area is 20 NSF per person. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices. Add 1 additional Type E office per 4 PMAI.
141-753	Commander’s Meeting Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
141-753	Flight Chief Offices ²	NSF	200	300	480	1-4 PMAI = 2 PN; 5-8 PMAI = 3 PN; 9+ PMAI = 4 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Director of Operations ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Assistant Ops Officer ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Senior Enlisted Mgr ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Security Officer ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Safety Officer ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	POTFF Office	NSF	100	100	100	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Training Office	NSF	148	148	148	Assume 2 PN: Chief/NCOIC (Type D) and Training PN (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.

141-753	Medical Office	NSF	230	230	230	Per A1M, assume 3 personnel total per squadron integrated from SOSS. 1 officer (Type D), 2 enlisted (Type E). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Standardization and Evaluation ²	NSF	130	260	390	Assume 2 PN per 4 PMAI. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices
141-753	Aviation Resource Management Section	NSF	115	180	245	Assume 1 PN per 4 PMAI plus 50 NSF for storage. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Research and Development ²	NSF	325	325	325	Assume 5 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Plans, Tactics, and Intel	NSF	567	1,133	1,700	319th SOS secure area for Plans, Tactics, and Intel: 1,700 sf. Calculated as 1,700/9 x #PMAI.
141-753	Mission Control Center - Flight Planning ²	NSF	270	330	390	2 shared workstations per flight authorized 30 NSF min each per DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1. 3 PMAI = 2 flights; 6 PMAI = 3 flights; 9 PMAI = 4 flights. Plus 150 NSF for planning tables.
141-753	Mission Control Center - Flight Management ²	NSF	130	130	130	Assume 2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Mission Control Center - Publications ²	NSF	160	190	220	Assume 2 PN plus 10 NSF per PMAI for storage. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices
141-753	Mission Control Center - Current Operations ²	NSF	192	288	480	1 aircrew scheduler per 2 PMAI or 5 aircrew schedulers per full squadron of 9 PMAI, plus additional mission scheduler per 2 PMAI. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices
141-753	Elevator	NSF	80	80	80	Provide 80 NSF.
141-753	Elevator Equipment Room	NSF	90	90	90	Provide 90 NSF.

141-753	Women's Showers	NSF	30	30	30	Allows one 3' x 3' shower stall and a 3' x 7' drying area.
141-753	Women's Locker Room	NSF	28	42	55	Calculated as (Squad Ops PN x 0.2 (% women per squadron) x 2 NSF (locker))/ 2 (stacked lockers).
141-753	Men's Showers	NSF	60	60	60	Allows two 3' x 3' shower stalls and a 3' x 7' drying area per stall.
141-753	Men's Locker Room	NSF	55	83	110	Calculated as (Squad Ops PN x 0.8 (% males per squadron) x 2 NSF (locker))/ 2 (stacked lockers).
141-753	Restrooms and Janitor's Closet	NSF	0	0	0	CG 61 Admin Overview Paragraph 1.5.2: Included in the NSF to GSF conversion.
141-753	Mech/Elec Rooms	NSF	0	0	0	CG 61 Admin Overview, Paragraph 1.5.2: Included in the NSF to GSF conversion.
141-753	Supply Room	NSF	100	100	100	Provide 100 NSF.
141-753	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Tactical Training Center	NSF	240	249	330	AFSOC/A4I: 240 NSF minimum. Total unit authorization is 3 NSF per military PN. This space authorization should also house training open offices or workstations as required.
141-753	Secure/Classified Storage	NSF	20	20	20	Two, five-drawer safes (4' x 5' each).
141-753	Armory/Weapons Vault	NSF	60	120	180	Calculated as 20 NSF x #PMAI. This can be stored at the consolidated armory if there is an LRS presence.
141-753	Break Room	NSF	158	239	317	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF. Minimum of 100 NSF.

141-753	Conference Room	NSF	500	500	1,150	Size based on number of personnel in the squadron. CG 61 Admin Overview, Paragraph 1.4.5 and Table 1.4: 50-99 PN, provide a conference room for up to 25 persons. 100-149 PN, provide a conference room for up to 50 persons with 150 SF speaker area. Add a 10-person room for populations over 150.
141-753	Team Room	NSF	150	150	300	Size based on number of personnel in the squadron. CG 61 Admin Overview, Paragraph 1.4.5 and Table 1.4: 50-99 personnel, provide one team room for up to 10 persons. 100-149 personnel, provide two team rooms for up to 10 persons each. Add an additional team room for populations over 150.
141-753	Briefing & Debriefing	NSF	230	345	460	CG 61 Admin Overview Table 1.4: Meeting Room up to 15 NSF per person (6 people per room), plus a task station in each room (25 NSF max DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1). 1 room per flight (3 PMAI = 2 flights; 6 PMAI = 3 flights; 9 PMAI = 4 flights). 115 NSF per room.
141-753	Mobility/Supply Storage	NSF	0	0	0	For CONUS locations, mobility storage is handled by LRS. OCONUS locations will also store mobility gear with LRS where possible. If no LRS present, mobility storage will be located within the squadron. Assume 2 mobility bags per PN. Each mobility bag is 3 NSF.
141-753	Mobility Office ²	NSF	96	192	288	AFSOC/A4I: Based on assigned PN at 48 NSF each. 2 PN for 3 PMAI, 4 PN for 9 PMAI, 6 PN for 12 PMAI.
141-753	Alert Storage	NSF	48	48	48	Storage for two aircraft crews (4 PN each crew) to include two bags each PN for professional gear and personal gear. Each bag is 3 NSF.

141-753	Individual Equipment Storage	NSF	96	192	288	Ops facility lockers for MC-12 require 4' x 2' locker per flight crew member. Lockers stack 2 high.
141-753	AFE Offices ^{2,3}	NSF	192	256	256	3 PMAI = 3 PN; 6 PMAI = 4 PN; and 9 PMAI = 4 PN. CG 61 Admin Overview Table 1.2.1 authorizes 64 NSF for Type F offices.
141-753	AFE Shop ³	NSF	300	600	900	Minimum shop space is 200 NSF (Calculated as 50 NSF x #PMAI) plus 50 NSF x #PMAI for helmet and gear storage.
141-753	Administrative Support Space	NSF	860	1,100	1,340	CG 61 Admin Overview paragraph 1.4.2: minimum 20 sf per person. AFSOC/A4I: Default is the minimum.
141-753	Administrative Circulation	NSF	453	595	748	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space.
141-753	Special Purpose Circulation	NSF	283	355	514	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Total Operations Facilities		NSF	8,092	10,449	13,883	
Total Operations Facilities		GSF	10,115	13,061	17,354	Net to Gross conversion factor of 1.25.
Notes: 1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI). 2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting, and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture. 3. For planning purposes, AFE facility requirements for AFSOC squadrons are split between the SOSS centralized AFE facility and the squadron operations facility. If consolidated within the SOSS facility, the AFE facility requirements listed in this table are not additive to the existing SOSS AFE facility allowance.						

7.5.15. Maintenance Hangar Facilities.

7.5.15.1. Maintenance Hangar (CATCODE: 211111).

7.5.15.1.1. Requirements Determination. Hangars support aircraft maintenance, repair, and inspection activities that are most efficiently done under complete cover. The interior design of hangars must include the clearances between aircraft and door openings, walls, ceilings, and parking clearances between other aircraft.

7.5.15.1.2. Scope Determination. Determine the square footage requirements for maintenance hangars by the method described below for computing covered maintenance spaces:

7.5.15.1.2.1. Calculate the number of authorized covered maintenance spaces for the MC-12 by multiplying the total number of PMAI, BAI, and training aircraft by a factor of 0.25 (rounded to the nearest whole number). See **Table 7.5.25** for calculating the required number of spaces for 3, 6, and 9 PMAI.

7.5.15.1.2.2. To determine the interior dimensions of dock and hangar bays, use the dimensions of the aircraft plus the minimum clearances shown in Table 7.5.26. To compute the gross area of the hangar, multiply the interior dimensions by a factor of 1.15 (DAFMAN 32-1084, CC 211111 Hangar Maintenance, Paragraph 1.3.4); however, to account for additional space required for hangar door pockets, use a factor of 1.25.

Table 7.5.25. MC-12 Covered Aircraft Maintenance Spaces.

Aircraft	PMAI	BAI	PTAI	Total Aircraft x MC-12 Factor	Required Covered Spaces (rounded)
MC-12	3	1	-	$4 \times .25 = 1$	1
MC-12	6	1	-	$7 \times .25 = 1.75$	2
MC-12	9	1	-	$10 \times .25 = 2.5$	3

Table 7.5.26. MC-12 Aircraft Separation Dimensions inside Hangars.

Minimum Clearances from MC-12 Hangar Elements ¹						
Aircraft Element	Door		Walls		Roof Framing	
	m	ft	m	ft	m	ft
Wing Tip - under 30.5 m (100 ft) span	3	10	4.6	10	-	-
Fuselage - under 30.5 m (100 ft) span	3	10	4.6	10	3	10
Tail - Vertical	2.1	7	-	-	3	10
Tail - Horizontal	3	10	3	10	3	10
Note:						
1. Clearances between aircraft components should be at least 10 ft where two or more aircraft are housed.						

7.5.15.1.3. Dimensions. The area is calculated by using block dimensions (**Table 7.5.1**) 46.67 ft (L) x 57.92 ft (W), and allowing minimum clearances (10 ft, wing-to-wing/doors) 66.67 ft x 77.92 ft = 5,195 NSF (rounded up) for one MC-12. The area needed for a two-bay hangar for the MC-12 is 122.75 ft x 145.84 ft (9,723 NSF). The area needed for a three-bay hangar for the MC-12 is 122.75 ft x 213.76 ft (14,251 NSF). The minimum hangar ceiling height is the aircraft height (14.33 ft) plus minimum roof clearance (**Table 7.5.26**, 10 ft) or 24.33 ft. The minimum hangar door height is the aircraft height (14.33 ft) plus minimum door clearance (**Table 7.5.26**, 7 ft) or 21.33 ft.

Table 7.5.27. Building Utility System Requirements for Maintenance Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide multiple 120- and 220-volts outlets throughout the facility. Provide independent circuit breakers to support charging and computer stations since consolidated breakers can be tripped due to power demands and surges. Provide isolated circuits from hangar outlets as consolidation will cause breaker interruptions due to excessive power demand for one circuit. Design electrical systems capable of expansion to avoid increased installation costs and time delays when the electrical demand increases. Cost of additional installation can be high for O&M funds and contracting process can be lengthy, particularly at overseas locations. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Provide a commercial grade domestic water and waste water system. Ensure hot water capability to comply with requirements driven by TO, OSHA, and other safety standards. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Per UFC 3-600-01 Paragraph 4-4.1, fixed wing and rotary wing aircraft fuel cell maintenance facilities, alert, storage, depot-level and general-purpose maintenance hangars comply with UFC 4-211-01. Per UFC 4-211-01 Paragraph 3-6.17, provide a hydraulically designed, low level Hi-Ex foam system for hangar bays. Existing hangars may continue use of AFFF fire protection systems. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.5.15.1.4. Unique Facility Requirements.

7.5.15.1.4.1. Bridge Crane. Provide a 5-ton overhead bridge crane. The minimum crane hook height for MC-12 hangars is 24 ft 4 in (UFC 4-211-01, Figure 2-3 & Table 2-1 Item F).

7.5.15.1.4.2. Hangar Clearances. See [Table 7.5.26](#).

7.5.15.1.4.3. Hangar Floors. Floors should be designed to withstand the weight of the aircraft and its fuel plus other equipment items that may be located in the hangar

such as tow vehicles, jacks, cribs, cranes, spare engines, etc. When exact data is not available, use 60 percent of the maximum gross weight of the aircraft (UFC 3-260-02, Chapter 4, Section 3, Paragraph D). The minimum requirement for hangar floor pavements for the MC-12 should be designed for at least 9,900 lbs (16,500 lbs [Maximum Takeoff Weight] x 0.6).

7.5.15.1.4.4. Fall Protection. Provide fall protection in accordance with UFC 3-110-03 and refer to UFC 4-211-01 Appendix C-11 for information on the best practices for fall prevention and protection systems. Consider the implications of providing different types of fall protection systems and/or equipment. Note that fall protection systems not installed as a building system may require additional storage for fall protection support equipment.

7.5.15.1.4.5. Fire Protection. The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF.

7.5.15.1.4.6. Security Requirement. Secured space will be required for the storage of classified components temporarily removed from aircraft. This requirement may be satisfied by storing components at the respective intermediate level shops or other secure storage locations.

7.5.15.1.4.7. Structure. The maintenance hangar shall be identified as Risk Category III based on ACSE 7.

7.5.15.1.4.8. Reference. See **Paragraph 7.5.16**, Maintenance Facilities for a concept diagram for the MC-12 Maintenance Hangar and AMU facility.

7.5.16. Maintenance Facilities.

7.5.16.1. Aircraft Maintenance Unit (CATCODE: 211154).

7.5.16.1.1. Requirements Determination. Each AMU needs an operational building for administration, scheduling, training, briefing, and aircraft equipment/tool storage. Equipment/tool storage may be in a separate building (DAFMAN 32-1084, Paragraph 3.1.6.2).

7.5.16.1.1.1. Submit projects for unlisted missions, AMU types, or additional space requirements through the AFSOC/A4 (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational [A/HMU], Paragraph 1.2.1).

7.5.16.1.2. Scope Determination. Space must be provided for the NCOIC, OIC, administration, debrief, training, field service representatives, AFETS, scheduling, production, section flight chiefs (Production, Specialist, Aircraft, Scheduling, Tactics, Brief/Debrief, and Support), and staff. Space is also required for test/support equipment and tools to support all mission tasks. Equipment includes aircraft test equipment, maintenance tools, mobility pallets/ (ISU 70/90s), Dash 21 equipment, and equipment found in **Table 7.5.30**. Specific mission requirements may require

additional storage space to be validated through the AFSOC/A4 (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational [A/HMU], Paragraph 1.3.1).

7.5.16.1.2.1. Where offices are provided, an open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons.

7.5.16.1.2.2. A designated heritage room is not authorized for the AMU in DAFMAN 32-1084 and is not authorized as an AFSOC specific requirement per AFSOC/A4I.

7.5.16.1.3. **Dimensions.** **Table 7.5.28** lists the maximum space requirements for MC-12 AMU facilities.

Table 7.5.28. Maximum Space Requirements for MC-12 AMU Facilities.

Gross Area^{1,2}											
AD Military 3 PMAI		AD Military 6 PMAI		AD Military 9 PMAI		CLS 3 PMAI		CLS 6 PMAI		CLS 9 PMAI	
m²	ft²	m²	ft²	m²	ft²	m²	ft²	m²	ft²	m²	ft²
1,003	10,798	1,263	13,592	1,525	16,410	709	7,636	883	9,505	1,057	11,375
Notes:											
1. This table equals the total GSF authorized from the rooms listed in Table 7.5.33 (AD Military) and Table 7.5.34 (CLS). Space authorizations for individual rooms within this facility can be found in Table 7.5.33 (AD Military) and Table 7.5.34 (CLS).											
2. Includes common use and maintenance areas.											

Table 7.5.29. Building Utility System Requirements for AMU Administrative Areas.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.5.16.1.4. **Design Considerations.** Locate the AMU next to assigned aircraft parking apron, and maintenance hangar. Special Q-D standards apply to hardened facilities. See AFMAN 91-201 (DAFMAN 32-1084, Paragraph 3.1.6.5).

7.5.16.2. MC-12 AMU Backshop Facilities.

7.5.16.2.1. **Support Section.** Area may include: CTKs, special tools, test equipment, TO, bench stock, Dash 21 equipment, AME, vehicles, mobility equipment, and

dedicated supply support functions to support the production effort. The required space for this facility can be found in [Table 7.5.31](#).

7.5.16.2.1.1. CTK. The space needed to accommodate MC-12 CTK support equipment is dependent on the amount of general storage and tool storage required.

7.5.16.2.1.2. Supply. MC-12 supply includes two bins for bench stock, a general aircraft supply area, a due-in from maintenance (DIFM) area, tail number bins (TNBs) and follow-on maintenance (FOM) stored in an ISU (8 ft x 9 ft), and one standard workstation (64 NSF each per DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1).

7.5.16.2.1.3. Hazardous Materials. Requires an area sized for one pallet, typically on the hangar floor. One pallet is 8 ft x 9 ft or 72 NSF.

7.5.16.2.1.4. Hazardous Waste Accumulation. Requires an area sized for one pallet, typically on the hangar floor. One pallet is 8 ft x 9 ft or 72 NSF.

Table 7.5.30. Support Equipment for the MC-12 Support Section.

Equipment Name	Quantity ^{1,2}
Tool Accountability System	1
CAMS or IMDS	1
Land Mobile Radios	4 per aircraft
Tactical Radios	1 per aircraft
Portable Oxygen Bottles	1 per flight crew member.
Batteries	Varies based on tool type/quantity and battery type/voltage.
Battery chargers	Varies based on tool type/quantity and battery type/voltage.
Hand etcher	1
Dremel tool for de-etching	1
Shredder	1
Copy/Fax/Scanner	1
Printer	1
Computer workstations	1 for each CAMS or IMDS
Notes:	
1. These numbers are for a typical Support Section. Only the numbers for batteries, battery chargers, and portable oxygen bottles will vary based on the criteria mentioned.	

7.5.16.2.2. Dash 21. Dash 21 equipment is AME designed to configure aircraft for multiple mission profiles. MC-12 Dash 21 storage requires 50 NSF per PMAI.

7.5.16.2.3. Avionics Shop (CATCODE: 217712).

7.5.16.2.3.1. Maintenance/Service Function. This facility houses organizational maintenance activities for the following aircraft equipment and accessories: airborne communications, cameras, and tactical support communications security equipment.

7.5.16.2.3.2. Storage Function. Major items that require shop and storage space are storage racks for serviceable equipment and equipment waiting for maintenance

or parts, coding devices, technical data and code books, pod lifting devices, cradles, and storage racks. Some storage space provides physical security and corrosion protection for delicate electronic equipment. If possible, combine maintenance and storage facilities to share secure storage area.

7.5.16.2.3.3. Dimensions. AD military units require a shop for avionics repairs; however, CLS units perform avionics repairs in the maintenance hangar. See [Table 7.5.32](#) for the space required for the AD military MC-12 avionics shop and [Table 7.5.33](#) for the space required for the CLS MC-12 avionics shop.

7.5.16.2.4. **Wheel and Tire Shop.**

7.5.16.2.4.1. Maintenance Area. Provide a hard rubber floor coating in the tire breakdown/assembly area to avoid damage to the wheels during operations performed in the shop. A seamless floor coating will keep fluid spills from seeping through cracks and creating maintenance problems. Cover walls and ceilings with appropriate sound insulation to reduce noise. Shop equipment in the wheel and tire shop includes: tire break-down machines, tire inflation cages, an oven for heating wheels, a freezer for cooling bearing races, an arbor press, and a jet washer. Provide a bearing/solvent room that contains a non-foaming jet washer for cleaning bearings and ample room when servicing the wheel bearings. Special equipment in the tire shop includes a ¼-ton monorail hoist to move large wheels.

7.5.16.2.4.2. Storage Area. Provide separate material storage areas to include tire racks for both incoming (awaiting service) and outgoing (service complete) tires. Recommend using automatic vertical storage racks to store tires efficiently.

7.5.16.2.4.3. Dimensions. AD military units require 600 NSF for the MC-12 wheel and tire shop; however, since CLS units ship wheels and tires off-site for repair and require only 300 NSF for is required storage. [Table 7.5.32](#) provides the space required for the AD military MC-12 wheel and tire shop and [Table 7.5.33](#) provides the space required for the CLS MC-12 wheel and tire shop.

7.5.16.2.4.4. Engine/Propeller Storage. Two engines and two propellers will be stored within the maintenance hangar. This storage space requires temperature and humidity control. Engines are 7 ft 5 in (L) x 19 in (W); however, a storage space that is 10 ft (L) x 6 ft (W) allows for clearance on either side. The propeller has a 105 in diameter; however, a storage space that is 9.5 ft (L) x 9.5 ft (W) allows for clearance on either side. The total area required for MC-12 engines and propellers is 301 NSF.

7.5.16.3. **Structural Repair (Sheet Metal Shop and Metals Technology).**

7.5.16.3.1. Sheet Metal Shop. See [Table 7.5.31](#) for equipment in the Structural Repair Shop. Provide adequate space for all authorized shop equipment, including the working and safety zone around each piece. Equip the sheet metal shop with a 1-ton bridge crane spanning the material storage area and most the work area. Also, install ½-ton or ¼-ton cranes at strategic locations required for material handling. The sheet metal shop requires a material storage rack for various metals sheet stock used to

fabricate aircraft parts. A moveable rack to store the sheet stock on edge will facilitate stock selection.

7.5.16.3.2. Metals Technology Work Center. See [Table 7.5.31](#) for the equipment for Metals Technology area. The exact space requirements are determined by the amount and type of authorized equipment. The metals technology area equipment requirement varies by the functions performed.

7.5.16.3.2.1. Welding Shop. Include an OSHA compliant screen/blind system and proper ventilation/hood to protect personnel from welding operations hazards. Equip the welding shop with welding machines and curtains, grinders, and material handling devices. Provide a 1-ton capacity bridge crane with two each ½-ton hoists for handling parts, and provide a 2-ton bridge crane spanning the material storage and work areas and 1-ton hoists at strategic locations in the machine shop.

7.5.16.3.2.2. CADD/CAM Shop. CADD/CAM equipment is required to provide design parameters to CNC machines for automatic part fabrication. When CADD/CAM equipment is used, include a separate room for the computer terminal.

7.5.16.3.2.3. Storage Area. The metals technology area requires a material storage rack for bar and plate stock used to manufacture aircraft components. Provide storage cabinets in the welding shop for bench and operating stocks suitable for small items and ready use welding supplies. There should be additional storage space and racks with safety chains to store flammable gas cylinders for aircraft welding operations.

7.5.16.3.3. Dimensions. The minimum size for an MC-12 structural repair shop is 1,267 NSF.

Table 7.5.31. Equipment in the MC-12 Structural Repair Shop.

Equipment Name	Quantity
Folding Machine (BAR)	1
Throatless Shear	1
Small Box & Pan Brake	1
Large Box & Pan Brake	1
Large Hand Brake	1
Brake Machine Sheet	1
Machine Rotary Punch	1
Foot Shear	1
Do-All Band Saw	1
Utility Shear (Pneumatic)	1
Belt Sander	1
Drill Press	1
Lathe	1
VMC	1
Cutting Table	1
CNC Milling Machine or VF4	1
Power Shear	1

Power Roller	1
Hand Roller	1
Metal, inert gas (MIG) Welder	1
Tungsten, inert gas (TIG) Welder	1
Oxy-Acetylene Cutting Torch	1
Plasma Cutter	1
Chop Saw	1
Bench Grinder	1
Oven	2
Note:	
1. The items in this shop are typical to all structural repair shops. The quantities reflect the minimum needed and could vary based on maintenance workload.	

7.5.16.4. Aircraft General Purpose Shop (CATCODE: 211152).

7.5.16.4.1. Description. The facility provides space for specialized maintenance activities such as fabrication shops, aerospace systems shops, and reclamation operations on crash damaged aircraft and equipment (DAFMAN 32-1084, Paragraph 3.1.4.1).

7.5.16.4.2. Requirements Determination. This facility provides for specialized and general aircraft maintenance functions. These facilities may include work benches, bench stock, battery servicing area, cryogenics maintenance area, generator area, life raft bottle servicing area, tool crib, administrative space, and personnel locker space. These shops may be in one building or several buildings (DAFMAN 32-1084, CC 211152 Shop Aircraft General Purpose, Paragraph 1.3).

7.5.16.4.3. Scope Determination. DAFMAN 32-1084, CC 211152 Shop Aircraft General Purpose, Table 1.1 states the total gross space requirements for general purpose maintenance shops for a Special Operations Wing is to be determined by individual analysis and validated by the appropriate AFSOC/A4M.

7.5.16.4.4. Dimensions. See **Paragraph 7.5.17**, Intermediate Maintenance Facilities, for the facilities that are at the intermediate level.

7.5.16.4.5. Design Considerations. Ensure cleanliness and area safety requirements for cryogenic materials is maintained. Floor with grates and groves tend to accumulate debris that can create hazardous condition when in contact with cryogenics materials. Where possible, try to avoid the use of mezzanines. The use of mezzanines restricts movement of forklifts. It also limits ground floor storage due to pillars location. Provide grounding points for safety.

Table 7.5.32. Building Utility System Requirements for MC-12 AMU Backshop Areas.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions to prevent equipment failures, corrosion of equipment/machined parts to ensure accuracy of machined parts and to aid in sealant/bonding agent curing. Point source exhaust systems must be installed at welding stations to eliminate welding fumes with general filtration used throughout the shop to eliminate airborne smoke and cutting fluid mists. Metals technology requires a 150-psi high volume shop air source for specialized equipment and for general hand tool operations. Woodworking requires a sawdust collection system. Structural repair shops require high volume 150-psi shop air for specialized equipment and general hand tool operation. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.5.9. Typical MC-12 AD Military Maintenance Hangar and AMU Facility.

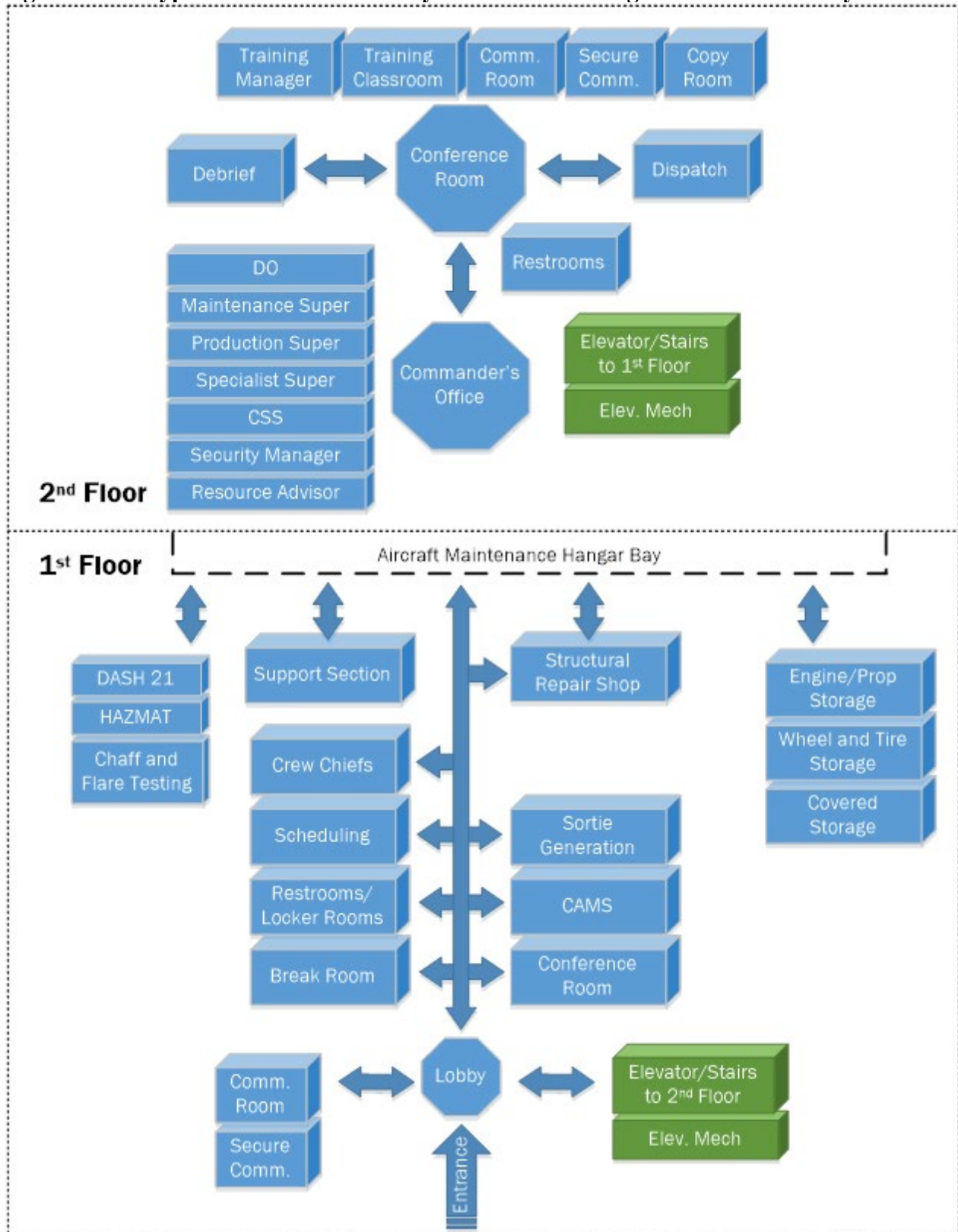


Figure 7.5.10. Typical MC-12 CLS Maintenance Hangar and AMU Facility.

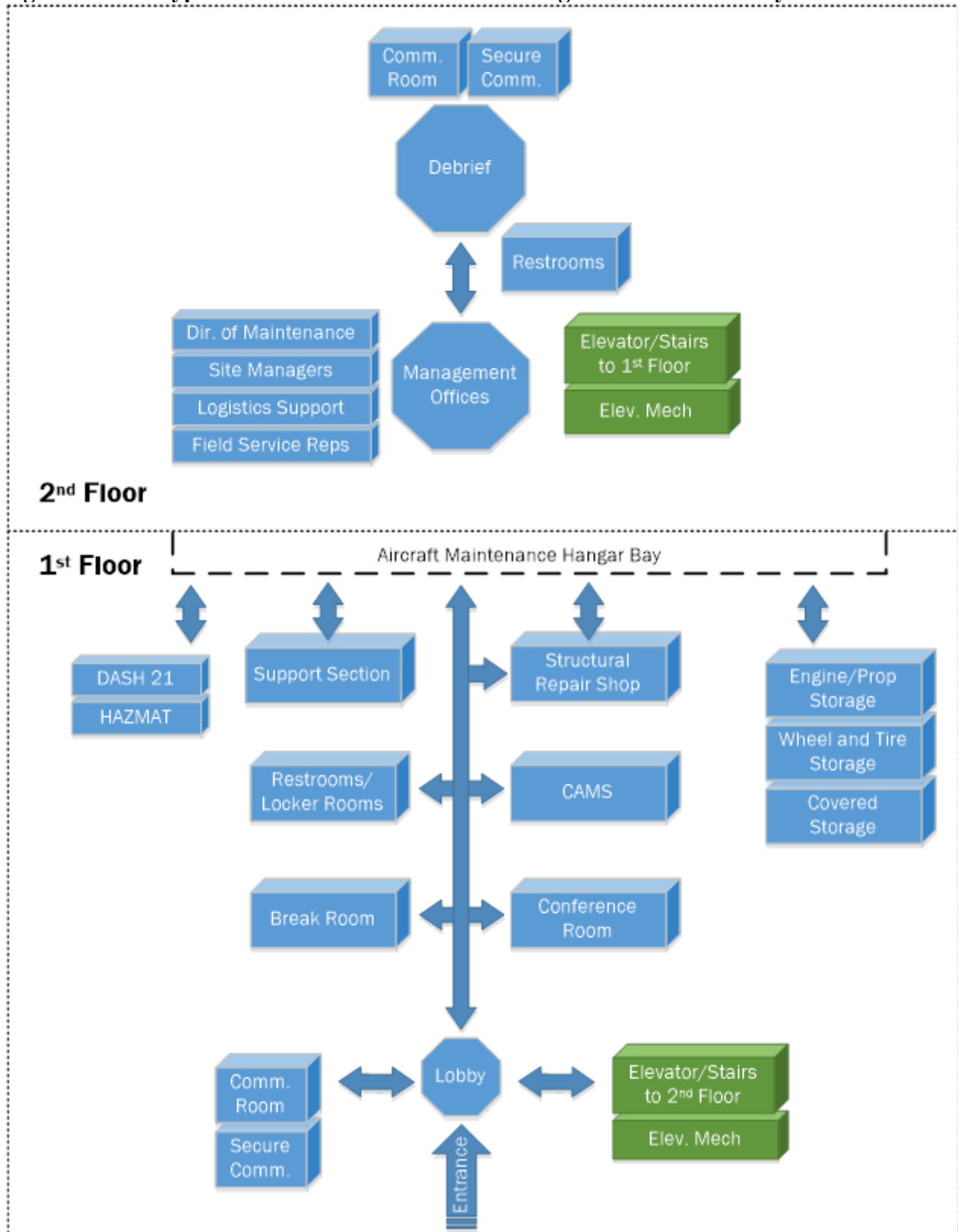


Table 7.5.33. MC-12 AD Military Maintenance Facility (AMU) Space Requirements.

Cat Code	Facility	UM	MC-12 (3)¹	MC-12 (6)¹	MC-12 (9)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
211-154	Commander - Command Suite -	NSF	140	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
211-154	First Sergeant - Command Suite	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Support Staff and Waiting – Command Suite	NSF	184	184	232	2 PN waiting area plus 1 office. CG 61 Admin Overview Table 1.3: Waiting area is 20 NSF per person. CG 61 Admin Overview Table 1.2: 48 NSF min for Type F Offices.
211-154	Maintenance Officer ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Maintenance Sup ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	AMU OIC & NCOIC ²	NSF	100	100	100	2 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Production Sup ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Crew Chiefs ²	NSF	195	195	195	AFSOC/A5: 3 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Specialist Sec. NCOIC/Chief ²	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Support Sec. NCOIC/Chief ²	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Resource Advisor	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Training Manager	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Security Manager	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Quality Assurance	NSF	130	130	130	2 PN (Chief and Evaluator). CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	TODO	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Plans and Scheduling	NSF	130	130	130	Assume 2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.

211-154	Sortie Generation	NSF	130	130	130	Assume 2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Elevator	NSF	80	80	80	Provide 80 NSF.
211-154	Elevator Equipment Room	NSF	90	90	90	Provide 90 NSF.
211-154	Mech/Elec Rooms	NSF	0	0	0	CG 61 Admin Overview Paragraph 1.5.2: Included in the NSF to GSF conversion.
211-154	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 'x 12' (144 NSF) per floor.
211-154	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 'x 12' (144 NSF) per floor.
211-154	Break Room	NSF	219	446	674	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF.
211-154	Restrooms and Janitor's Closet	NSF	0	0	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
211-154	Men's Shower	NSF	120	120	150	Provide 4 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
211-154	Women's Showers	NSF	60	60	90	Provide 2 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
211-154	Men's Lockers	NSF	68	137	205	Calculated as 21/3 (lockers stacked) x 0.8 x #PMAI x 4 NSF.
211-154	Women's Lockers	NSF	17	34	50	Calculated as 21/3 (lockers stacked) x 0.2 x #PMAI x 4 NSF.
211-154	Conference Room	NSF	350	350	350	CG 61 Admin Overview Paragraph 1.4.5: Based on personnel, the maximum authorization exceeds the necessary space required since most meetings will not involve the entire squadron. Calculations provide two, 10person conference rooms plus 150 NSF speaker area.
211-154	Commander's Conference Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. CG 61 Admin Overview Table 1.4 authorizes 15 NSF/person.

211-154	Team Room	NSF	208	294	294	For <4 PMAI = 2 shared workstations plus 1 table at 50 NSF each. For 4-10 PMAI = 3 shared workstations plus 2 tables at 50 NSF each. For >10 PMAI = 4 shared workstations plus 3 tables at 50 NSF each. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices
211-154	CAMS Room	NSF	65	65	65	1 Type E office per MIS (CAMS). CG 61 Admin Overview Table 1.2.1.
211-154	Training Classroom	NSF	240	456	684	AFSOC/A4I: 240 NSF minimum. Total unit authorization is 3 NSF per military personnel.
211-154	Debrief	NSF	150	150	150	One 10-person room for <11 PMAI and Two 10-person rooms for more than 10 PMAI. CG 61 Admin Overview Table 1.4 authorizes 15 NSF/person.
217-712	Avionics Systems	NSF	200	333	500	Based on 319th SOS Avionics Shop: 500 NSF. Calculated as 500/9 PMAI x number of PMAI. Minimum of 200 NSF.
211-154	Support Section /CTK	NSF	1,319	2,637	3,956	Based on 319th SOS Contractor AMU B90800 the CTK and aircraft parts storage is 3,956 NSF. Calc. = 3,956/9 x number of PMAI.
211-154	Dash 21 Equipment Storage	NSF	150	300	450	50 NSF per PMAI.
211-154	POS/Portable Oxygen Bottles	NSF	12	24	36	Assume 4 NSF per PMAI.
211-154	Hazardous Materials and Hazardous Waste	NSF	15	30	45	Requires 5 NSF per PMAI.
211-154	Propulsion/Engine Storage	NSF	301	301	301	Assume 2 spare engines and 2 spare propellers per unit. Engines are 72' 5 in (L) x 19 in (W). Recommend 8' x 4' plus 2' clearance either side. Propeller has a 105 in diameter. Recommend 7.5' x 7.5' plus 2' clearance on either side.
211-154	Wheel and Tire Shop	NSF	600	600	600	Based on 319th SOS wheel and tire shop Hurlburt Field B90800: 600 sf.

211-154	Structural Repair Shop	NSF	1,267	1,267	1,267	Based on 319th SOS sheet metal shop Hurlburt Field B90800: 1267 sf.
211-154	Chaff and Flare Testing Area	NSF	225	225	225	Requires a testing area of 225 NSF. Storage of chaff and flares is provided by the host installation. See Section 7.5.18, Storage Facilities for storage requirement.
211-154	Covered Storage ³	GSF	300	600	900	100 NSF x number of PMAI.
211-154	Covered Vehicle Storage ³	GSF	1,751	1,751	1,751	Assume 1 bobtail, 7 step vans, 2 tow vehicles, 3 airdrop bundle vehicles, 1 forklift, and 1 crane. Area required is approximately 1,751 NSF.
211-154	Admin. Spt Space	NSF	800	800	820	CG 61 Admin Overview paragraph 1.4.2: 20 NSF min per person. AFSOC/A4I: Default is 20 sf.
211-154	Admin. Circulation	NSF	419	442	472	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space.
211-154	Special Purpose Circulation	NSF	524	727	930	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
211-154	SOMXS Commander	NSF	140	140	140	Provide 1 Type C office. DAFMAN 32-1084 CG 61 Admin Overview Table 1.2 authorizes 140 NSF min for Type C offices.
211-154	SOMXS First Sergeant	NSF	100	100	100	Provide 1 Type D office. DAFMAN 32-1084 CG 61 Admin Overview Table 1.2 authorizes 100 NSF min for Type D offices.
211-154	SOMXS Commander's Support Staff	NSF	140	140	140	CG 61 Admin Overview Table 1.3: Waiting area is 20 NSF per person. Reception desk is user justified. Calculated as 2 justified waiting persons (40 NSF) + 120 NSF (CG 61 Admin Overview Table 1.2: 100 NSF min) for commander secretary office.
211-154	SOMXS Maint. Officer	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices.
211-154	SOMXS Superintendent	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices.
211-154	SOMXS Prod. Superintendent	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices.

211-154	SOMXS Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	SOMXS Commander's Conference Room	NSF	150	150	150	AFSOC/A4I: Provide for up to 10 people. DAFMAN 32-1084 CG 61 Admin Overview Table 1.4: 15 NSF per person.
211-154	SOMXS Break Room	NSF	100	100	100	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF. Minimum of 100 NSF. Since SOMXS backshops are consolidated with the AMU, this break room will only support the SOMXS overhead positions.
Total SOMXS Facilities		GSF	1,343	1,343	1,343	Facility can be collocated or separate from AMU. Net to Gross conversion factor of 1.25.
Total AMU Facilities (excluding covered storage)		NSF	10,374	12,852	15,426	
Total AMU Facilities (excluding covered storage)		GSF	12,967	16,065	19,282	Net to Gross conversion factor of 1.25.
Total AMU Facilities (covered storage only)		GSF	2,051	2,351	2,651	
Notes: 1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI). 2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting, and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture. 3. Tropical environments introduce increased corrosion due to high humidity with high salt content. In these instances, standard exterior covered storage may not be adequate to maintain mission essential, mission ready, spares and equipment unless the spares and equipment are stored within nearly airtight equipment containers (CONEX boxes or other containers). In these cases, AFSOC/A4I may approve additional controlled humidity warehouse space.						

Table 7.5.34. MC-12 Maintenance Facility (AMU) CLS Space Requirements.

Cat Code	Facility	UM	MC-12 (3)¹	MC-12 (6)¹	MC-12 (9)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
211-154	Director of Maint. ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.

211-154	Site Managers ²	NSF	200	200	200	2 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Field Service Representatives ²	NSF	260	260	260	4 FSRs per unit. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Logistics Support Representatives ²	NSF	336	336	336	7 PN (2 technicians and 5 front office PN). CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
211-154	Elevator	NSF	80	80	80	Provide 80 NSF.
211-154	Elevator Equipment Room	NSF	90	90	90	Provide 90 NSF.
211-154	Mech/Elec Rooms	NSF	0	0	0	CG 61 Admin Overview Paragraph 1.5.2: Included in the NSF to GSF conversion.
211-154	Communications Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	Break Room	NSF	100	100	100	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF. Minimum of 100 NSF.
211-154	Restrooms and Janitor's Closet	NSF	0	0	0	CG 61 Admin Overview Paragraph 1.5.2: Included in the NSF to GSF conversion.
211-154	Men's Lockers	NSF	45	45	45	Calculated as 14 PN x 0.8 (80%) x 4 NSF.
211-154	Men's Shower	NSF	30	30	30	1 shower. FC 4-470-02F: 30 NSF per shower/drying.
211-154	Women's Showers	NSF	30	30	30	1 shower. FC 4-470-02F: 30 NSF per shower/drying.
211-154	Women's Lockers	NSF	11	11	11	Calculated as 14 PN x 0.2 (20%) x 4 NSF.
211-154	Conference Room	NSF	280	280	280	DAFMAN 32-1084, CG 61 Admin Overview Table 1.4: authorized 20 NSF per person. 14 PN conference room for all scenarios.
211-154	Team Room	NSF	208	208	208	3 shared workstations plus 2 tables at 50 NSF each. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices

211-154	CAMS/Ready Room	NSF	72	72	72	2 shared workstations. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices
211-154	CAMS/Ready Room Server	NSF	25	25	25	25 NSF for a server.
211-154	Training Classroom	NSF	0	0	0	Not required. Contractors utilize the break room or hangar for training.
211-154	Debrief	NSF	150	150	150	One 10-person room. CG 61 Admin Overview Table 1.4 authorizes 15 NSF/person.
217-712	Avionics Systems	NSF	0	0	0	Contractors perform avionics repairs in the hangar; however, a separate shop is preferred.
211-154	Support Section /CTK	NSF	1,319	2,637	3,956	Based on 319th SOS Contractor AMU B90800 the CTK and aircraft parts storage is 3,956 NSF. Calculated as 3956/9 x number of PMAI.
211-154	Dash 21 Equipment Storage	NSF	150	300	450	50 NSF x number of PMAI. Minimum of 100 NSF.
211-154	Passenger Oxygen Storage (POS)/Portable Oxygen Bottles	NSF	12	24	36	Assume 4 NSF x #PMAI.
211-154	Hazardous Materials and Hazardous Waste	NSF	15	30	40	Requires 5 NSF per PMAI.
211-154	Propulsion/ Engine Storage	NSF	301	301	301	Assume 2 spare engines and 2 spare propellers per unit. Engines are 72' 5 in (L) x 19 in (W). Recommend 8' x 4' plus 2' clearance either side. Propeller has a 105 in diameter. Recommend 7.5' x 7.5' plus 2' clearance on either side.
211-154	Wheel and Tire Shop	NSF	300	300	300	Contractor sends wheels and tires off-site for repair. Storage requires 300 NSF.
211-154	Structural Repair Shop	NSF	1,267	1,267	1,267	Based on 319th SOS sheet metal shop Hurlburt B90800: 1,267 sf.

211-154	Chaff and Flare Testing Area	NSF	225	225	225	Requires a testing area of 225 NSF. Storage of chaff and flares is provided by the host installation. See Section 7.5.18, Storage Facilities for storage requirement.
211-154	Covered Storage ³	GSF	300	600	900	100 NSF x number of PMAI.
211-154	Covered Vehicle Storage ³	GSF	500	500	500	Contractor has 5 vehicles that require approximately 100 NSF each.
211-154	Admin. Spt Space	NSF	500	500	500	CG 61 Admin Overview paragraph 1.4.2: 20 NSF min per person. AFSOC/A4I: Default is 20 sf.
211-154	Admin. Circulation	NSF	215	215	215	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space.
211-154	Special Purpose Circulation	NSF	447	597	746	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Total Maint. Facilities (w/o covered storage)		NSF	7,284	8,929	10,574	
Total Maint. Facilities (w/o covered storage)		GSF	9,105	11,161	13,218	Net to Gross conversion factor of 1.25.
Total Maint. Facilities (covered storage only)		GSF	800	1,100	1,400	
Notes: 1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI). 2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting, and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture. 3. Tropical environments introduce increased corrosion due to high humidity with high salt content. In these instances, standard exterior covered storage may not be adequate to maintain mission essential, mission ready, spares and equipment unless the spares and equipment are stored within nearly airtight equipment containers (CONEX boxes or other containers). In these cases, AFSOC/A4I may approve additional controlled humidity warehouse space.						

7.5.17. Intermediate Maintenance Facilities.

7.5.17.1. Fabrication Flight.

Table 7.5.35. Fabrication Flight Facility Minimum Areas.

Function/Area Required in NSF	AD Military MC-12 (3 PMAI)	AD Military MC-12 (6 PMAI)	AD Military MC-12 (9 PMAI)	CLS MC-12 (3 PMAI)	CLS MC-12 (6 PMAI)	CLS MC-12 (9 PMAI)
Sheet Metal Shop ¹	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU
Metals Technology ¹	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU
NDI	4,000	4,000	4,000	4,000	4,000	4,000
Note: 1. The sheet metal shop and metals technology are consolidated as the structural repair shop in the AMU.						

7.5.17.1.1. Structural Repair. Structural repair shops include: shop administration, the sheet metal shop, corrosion control shop, and the fiberglass/composites shop. The MC-12 does not have composite materials and does not require a composite shop. The structural repair shop (sheet metal and metals technology) is located in the AMU.

7.5.17.1.2. Corrosion Control Shop (For Corrosion Control Hangar, see [paragraph 7.5.17.1.3](#)). In this area, the primary workspace is a paint booth with an integral filtration system. Media booths are required to prepare surfaces before painting. One large booth (drive-in type) for large ground equipment and two medium booths for steel and aluminum aircraft parts are needed. An enclosure with a self-contained bead-blast system with HEPA exhaust filtration is adequate for many components. The media booths area also supports the metals technology shops. Therefore, provide for clean/dirty room operations in this shop. The paint booth must be large enough to handle the largest component that will be processed on a regular basis. It should have a paint filtration system and a means to control VOCs. Provide a large sealed area to prepare oversized parts with a paint filtration system. A paint mixing room, separate from the paint booth, is required to isolate any hazardous fumes from the remainder of the corrosion control shop. This room will contain paint mixing equipment, fume hood, and a daily-use locker to temporarily store hazardous materials such as paints and thinners. A prep station, with a dust collection system to capture airborne particles, should also be considered.

7.5.17.1.3. Corrosion Control Hangar (CATCODE: 211159).

7.5.17.1.3.1. Requirements Determination. A hangar provides enclosed space for aircraft washing and inspecting the aircraft for corrosion damage. Additionally, the facility can accommodate surface preparation and repainting of the aircraft.

7.5.17.1.3.2. Scope Determination. Corrosion control is both a base and a depot responsibility. Specific workloads vary from base to base, but the minimum required facilities include a wash rack, shop space for complete corrosion treatment, painting removable aircraft parts, ground support equipment, and a corrosion approved facility to perform aircraft maintenance painting. Base facility requirements emphasize prevention and detection. Since freedom from dirt, oil,

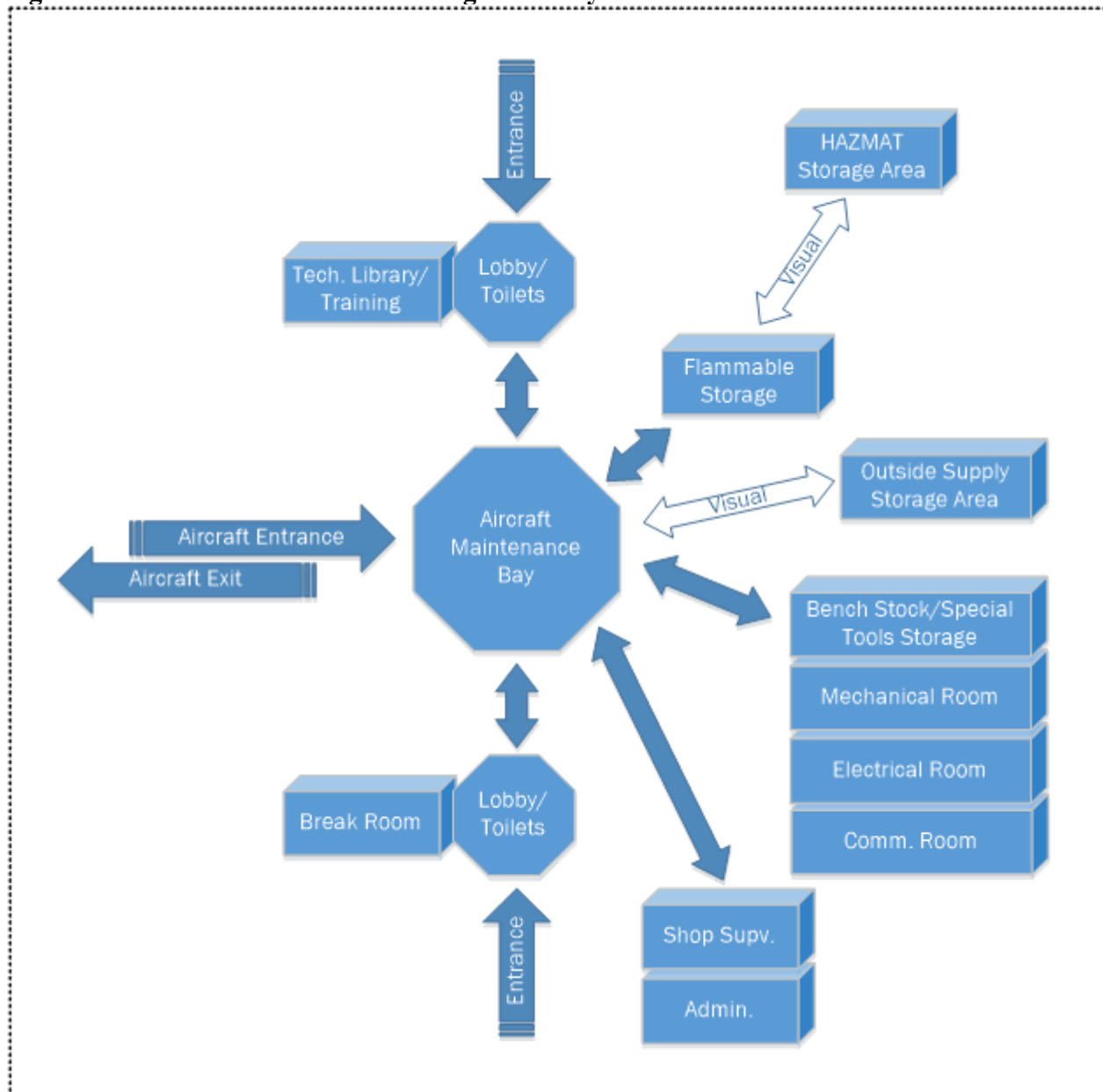
and other contaminants is important in this regard, base facilities are primarily designed for cleaning and maintaining protective coating/corrosion control systems.

7.5.17.1.3.3. Dimensions. Bases with above 40 large or medium aircraft assigned or in a severely corrosive environment are authorized, with proper justification, a corrosion control hangar and a wash hangar (DAFMAN 32-1084, CC 211159 Aircraft Corrosion Control, Paragraph 1.4). These two activities can be collocated or separate. DAFMAN 32-1084, CC 211111 Hangar Maintenance, Figure 1.1 provides an example where the B-52 is considered a large aircraft, the KC-135 is considered a medium aircraft, and the F-16 is considered a small aircraft. Using this example, the MC-12 would be considered a small aircraft, and all AFSOC weapon systems would fall under medium or small aircraft categories. If authorized a corrosion control hangar, provide a facility that is 26,230 NSF (32,788 GSF with 1.25 net to gross conversion). This supports a typical 10-20-person AFSOC corrosion control facility. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (2,200 NSF), a Paint Mixing Room (250 NSF), Paint Storage (560 NSF), Equipment Storage (900 NSF), Equipment Cleaning (50 NSF), Solvent Storage (50 NSF), Material Storage (900 NSF), PPE Storage (150 NSF), PPE Cleaning (50 NSF), a Stencil Room (120 NSF), a Laundry Room (100 NSF), Men's Clean and Dirty Shower/Locker Room (240 NSF), Women's Clean and Dirty Shower/Locker Room (160 NSF), a 2-person Shop Supervisor Office with Type E offices (130 NSF), a Communications Room (144 NSF), a Break Room (216 NSF), and a Copy Room (50 NSF).

Table 7.5.36. Building Utility System Requirements for Corrosion Control Facility.

System	Requirements
Mechanical	Where "comfort cooling" is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source or connection (around 120 psi) and should be conveniently located throughout the maintenance bay. Applicable criteria include UFC 3-401-01 for mechanical and UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Provide lightning protection system to protect the aircraft and facility. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.

Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide hot and cold water connections and industrial waste disposal system. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF. An adequate water supply source with sufficient pressure should be verified prior to a system design and construction.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.5.11. Corrosion Control Hangar Facility.

7.5.17.1.4. NDI Laboratory (CATCODE: 211153). This facility consists of testing facilities, equipment storage, supply storage, analysis and report offices, and laboratory space. In administrative spaces an open office concept using system furniture will be used with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.5.17.1.4.1. Requirements Determination. All bases required to have a full, nondestructive testing facility are authorized 4,000 NSF for a laboratory (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2).

7.5.17.1.4.2. Shop Area. The shop space equipment includes: fluorescent penetrate

and magnetic particle testing machines, portable ultrasonic and eddy current machines, and X-ray and darkroom equipment.

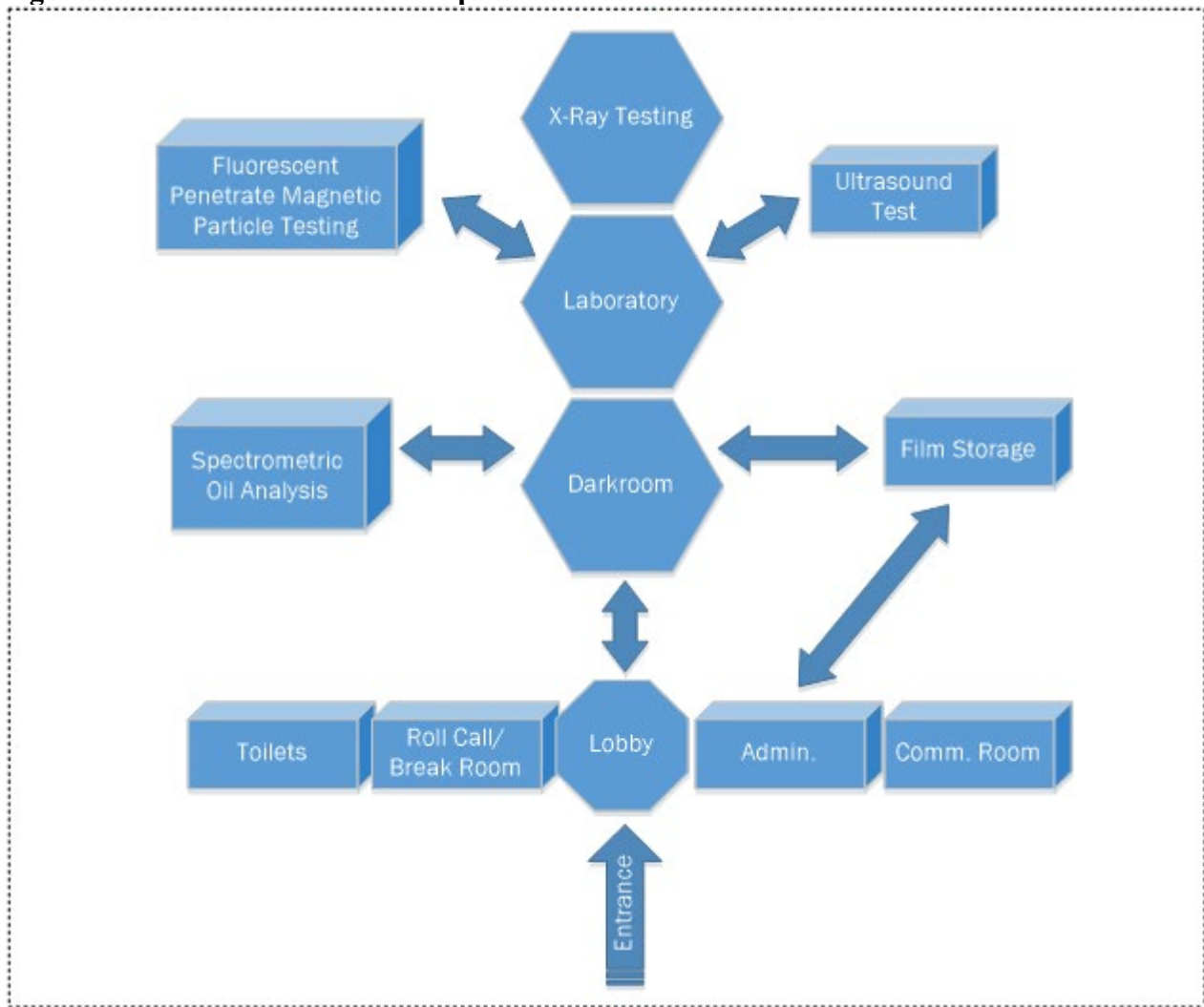
7.5.17.1.4.3. Storage Area. Storage requires an environmental control capability to store X-ray films and an oil analysis spectrometer.

7.5.17.1.4.4. Lab Area. An NDI laboratory requires a 1-ton capacity monorail with two ½-ton capacity hoists servicing both the X-ray shielded room and the room containing the fluorescent penetrate and magnetic particle testers. Use X-ray equipment specification to determine ceiling heights and workflow maneuverability. Provide silver recovery equipment in the darkroom, and provide radiation shielding per the National Institute of Standards Technology Information Security Handbook. A leadshielded opening should be provided in the wall between the X-ray exposure room and the control room to allow for passage of X-ray equipment control cables.

7.5.17.1.4.5. Dimensions. Bases with an NDI facility are authorized 4,000 NSF (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2 and TO 33B-1-1, Figure 1.1).

Table 7.5.37. Building Utility System Requirements for NDI Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required especially on storage functions due to delicate devices and other sensitive equipment. The NDI lab requires 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Consult X-ray and other NDI equipment specifications for their specific power requirements. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.5.12. Non-Destructive Inspection Area.**7.5.17.2. AGE Flight.****7.5.17.2.1. AGE Shop and Storage Facility (CATCODE: 218712).**

7.5.17.2.1.1. Requirements Determination. The AGE shop inspects, maintains, repairs, and services powered and non-powered AGE directly supporting aircraft and powered munitions AGE, if assigned. It normally includes maintenance stalls with work benches, an indoor wash rack, tool crib, bench stock, sealed lead acid battery servicing area, engine exhaust education system, administrative space, and personnel locker space.

7.5.17.2.1.2. Scope Determination. DAFMAN 32-1084, CC 218712 Aircraft Support Equipment Shop/Storage Facility, Table 1.1, lists the space requirements for AGE maintenance shops and standby storage facilities. These space requirements include total covered storage. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and its requirements are listed in the storage facilities section in paragraph [7.5.17.2.](#)

Requirements for the AGE Shop and Storage facility are based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per UTC.

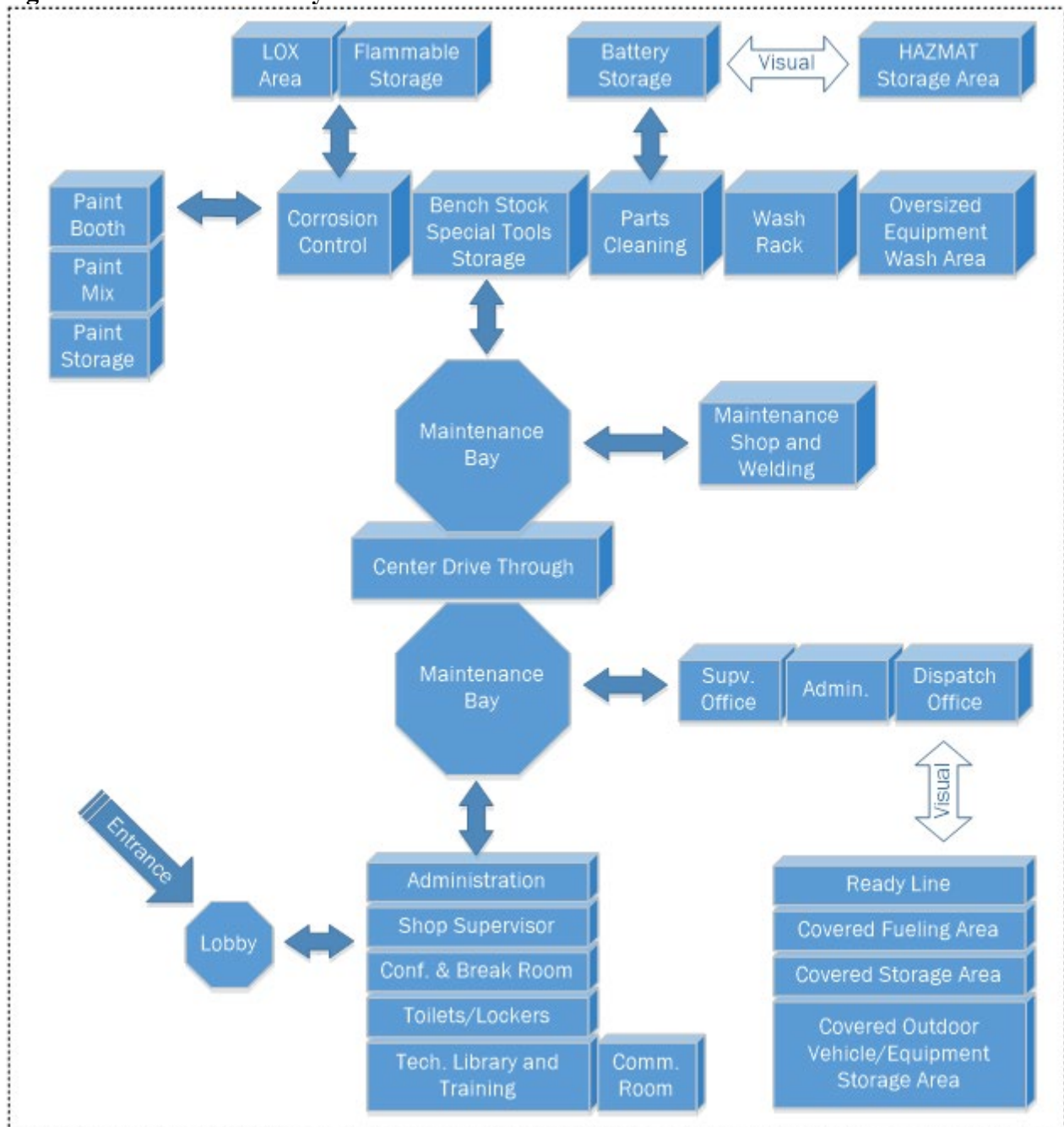
7.5.17.2.1.3. Dimensions. The size of this facility will be based on the number of authorized pieces of AGE. The required space allocation for this facility can be found in [Table 7.5.44](#) and [Table 7.5.45](#). If other weapon systems are supported at the installation, the number of AGE units supporting MC-12 aircraft would be added and can then be cross-referenced with DAFMAN 32-1084 CC 218712 Table 1.1 to determine the maximum space allowed.

7.5.17.2.1.4. Unique Facility Requirements. An overhead hoist is required to support a minimum of 2,720 kg (6,000 pounds). A separate oil-free area is required for LOX handling equipment. The floor must be concrete. Electrical power (120 VAC and 220 VAC) is required in the area. This area must be covered, but should preferably be inside a facility.

Table 7.5.38. Building Utility System Requirements for AGE Facility.

System	Requirements
Mechanical	A compressed air source or connection (around 120 psi) and should be conveniently located throughout the maintenance bay and corrosion control areas. The facility should have energy efficient climate control and proper ventilation. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connection for equipment and workstations ranging from 120V, 240V, and 480V. Certain electrical requirements are AGE equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.5.13. AGE Facility.



7.5.17.3. Maintenance Support Flight.

Table 7.5.39. Maintenance Support Facility Minimum Areas.

Function/Area Required in NSF	AD Military MC-12 (3 PMAI)	AD Military MC-12 (6 PMAI)	AD Military MC-12 (9 PMAI)	CLS MC-12 (3 PMAI)	CLS MC-12 (6 PMAI)	CLS MC-12 (9 PMAI)
Repair & Reclamation	600	1,200	1,800	500	500	500
Wheel & Tire	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU
Aircraft Inspection Section	N/A	N/A	N/A	N/A	N/A	N/A

7.5.17.3.1. R&R Shop.

7.5.17.3.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.5.17.3.1.2. Maintenance Area. Work performed in the maintenance bay includes: repair and replacements of landing gear, actuated doors, and any associated equipment. Provide an area for aircraft jacks and/or a 3-ton hoist to use in disassembling components. This hoist (specialized trailers) can be located either inside or outside the facility.

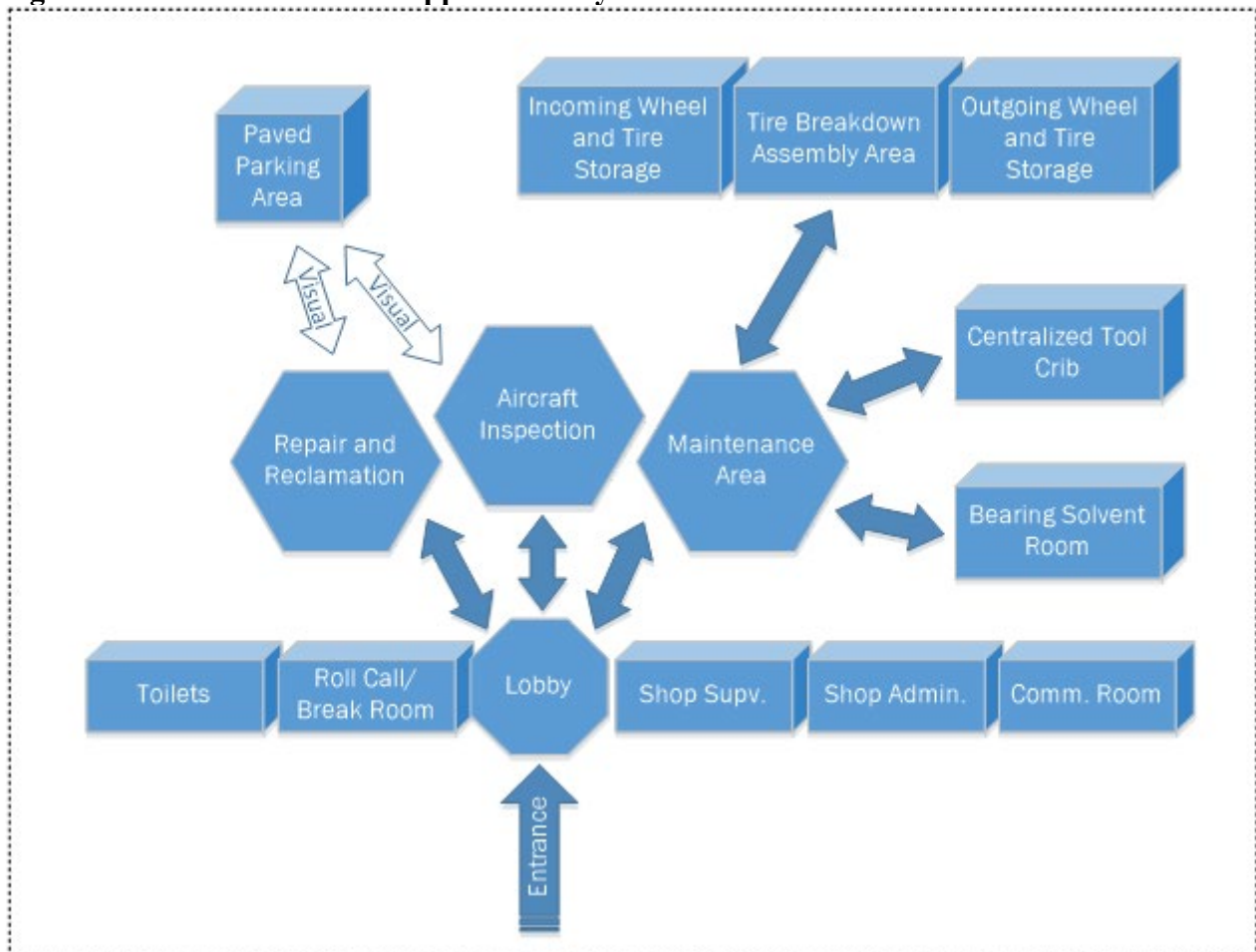
7.5.17.3.1.3. Storage Area. Provide a paved area adjacent to the facility for parking transportation trailers and other heavy equipment. In extremely cold climates, provide indoor heated storage space.

7.5.17.3.1.4. Dimensions. The required space allocation for this facility can be found in [Table 7.5.39](#), [Table 7.5.44](#), and [Table 7.5.45](#).

Table 7.5.40. Building Utility System Requirements for Maintenance Support Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required. Both repair and reclamation and wheel and tire shops require 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.

Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.5.14. Maintenance Support Facility.**7.5.17.5. Accessories Flight.****7.5.17.5.1. Fuel Systems Maintenance Area (CATCODE: 211179).**

7.5.17.4.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.5.17.4.1.2. Maintenance Bay. This area is where all scheduled fuel system inspections and aircraft maintenance occurs. The bay will be the size of the largest aircraft assigned to the base; however, MC-12 requirements are for a maintenance bay 66.67 x 77.92 ft (5,195 NSF) [Paragraph 7.5.15, Maintenance Hangar]. These hangars come out of the total hangar allowance for the base or may be added to it, depending on the workload requirements. The MC-12 requires storage for external fuel tanks because not all aircraft will routinely fly with the tanks installed. Assume storage is provided by the host installation.

7.5.17.4.1.3. Storage Area. A centralized, enclosed, secure area is required for

parts and special tools. Store flammable materials within a fire-rated enclosure with access to the exterior. Designate an area to store hazardous waste generated by ongoing maintenance operations, and comply with current federal, state, and base regulations and procedures.

7.5.17.4.1.4. Support Area. Provide a support area for maintenance crew personnel during rest cycle. The support area shall include male and female restrooms, break room, and locker area.

7.5.17.5.1.5. Dimensions. Major repair or maintenance would require use of the host installation shop. Fuel systems maintenance area requires storage for external tanks: 400 NSF. Per DAFMAN 32-1084 CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized provide a facility that is 24,632 NSF (30,790 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. This supports a typical 10-20-person AFSOC fuel systems maintenance dock. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (600 NSF), a Bladder Repair/Tool Room (480 NSF), an External Tank Maintenance Area (1,840 NSF), a Foam Storage Room (512 NSF), A 3-person office for Shop Supervisors and an NCOIC in Type E offices (240 NSF), a Dispatch office for 5 PN in Type E offices (400 NSF), a 20-person Training/Conference Room (300 NSF), and a Break Room (300 NSF).

7.5.17.4.1.6. Design Considerations. Add static discharge ports in the facility doors to ensure safety.

Table 7.5.41. Building Utility System Requirements for Fuel System Maintenance Hangar.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source or connection (around 120 psi) should be conveniently located throughout the maintenance bay. Hangars used for fuel systems maintenance also include wash down drainage trenches. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.

Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. All service equipment should be Underwriters Laboratories-listed. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide interior water connection capability and drains. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with ETL 02-15, UFC 3-600-01, NFPA 33, and NFPA standards. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Table 7.5.42. Accessory Facility Minimum Areas.

Function/Area Required in NSF	AD Military MC-12 (3 PMAI)	AD Military MC-12 (6 PMAI)	AD Military MC-12 (9 PMAI)	CLS MC-12 (3 PMAI)	CLS MC-12 (6 PMAI)	CLS MC-12 (9 PMAI)
E&E	2,119	2,119	2,119	500	500	500
Hydraulics	2,943	2,943	2,943	500	500	500
Egress	N/A	N/A	N/A	N/A	N/A	N/A

7.5.17.4.2. Hydraulics Shop.

7.5.17.4.2.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.5.17.4.2.2. Maintenance Area. For this area, rooms should be able to accommodate large components and shop equipment such as tube bender, hose cutting and fitting machines, a landing gear test stand, a self-contained part cleaning system (jet washer) with non-foaming detergents, and a hydraulic test stand to perform hydraulic component evaluation. Certain shop equipment, such as the jet

washer, requires a soundproof room. The hydraulic test stand requires a separate room large enough to allow proper equipment access. This room must be sound and explosion proof, and include window ports, emergency eye wash/shower stations, and alarm systems. Install a 1-ton bridge crane or monorail, servicing most the work area, and ¼-ton cranes at strategic locations for material handling. Worktable tops require different surfaces depending on the component being repaired. Provide easily cleaned aluminum work surfaces for handling parts containing hydraulic fluid, and use vinyl-covered work surfaces to help protect delicate components.

7.5.17.4.2.3. Storage Area. Provide storage for hydraulic tubing of various types and sizes. Ideal storage containers for tubing are multiple PVC pipes, each approximately 20 ft long and 4 inches in diameter with caps on each end. Also, provide a secure storage area for incoming equipment and components awaiting maintenance. Finally, provide a centrally located bench stock storage and tool bin area.

7.5.17.4.2.4. Dimensions. The required space allocation for this facility can be found in [Table 7.5.42](#), [Table 7.5.44](#), and [Table 7.5.45](#).

7.5.17.4.3. **E&E Shop.**

7.5.17.4.3.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept with system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.5.17.4.3.2. Battery Service Area. Include a battery servicing room to recharge batteries and to perform minor maintenance. When servicing both Ni-Cad and lead acid batteries, two separate rooms are needed to prevent cross-contamination of fumes produced by the two battery types. Both rooms require an emergency shower and eyewash station with an alarm system to notify other building occupants when the shower/eyewash system is activated. All equipment in the lead acid charging area must be explosion proof. Space for utility rooms enclosed in or accessed from the charging room are included in this requirement.

7.5.17.4.3.3. Testing and Repair Area. A separate sound proof room is required to house test stand equipment for generators and constant speed drive equipment. This room must have penetration resistant walls to withstand a minimum 3-psi projectile force. Also, within the testing and repair function, provide a separate room to service oxygen bottles and life raft bottle/carbon dioxide cartridges within the testing and repair function.

7.5.17.4.3.4. Wire Maintenance Area. Provide a separate soundproof room for the generator test equipment and a ¼-ton hoist to manipulate heavy components.

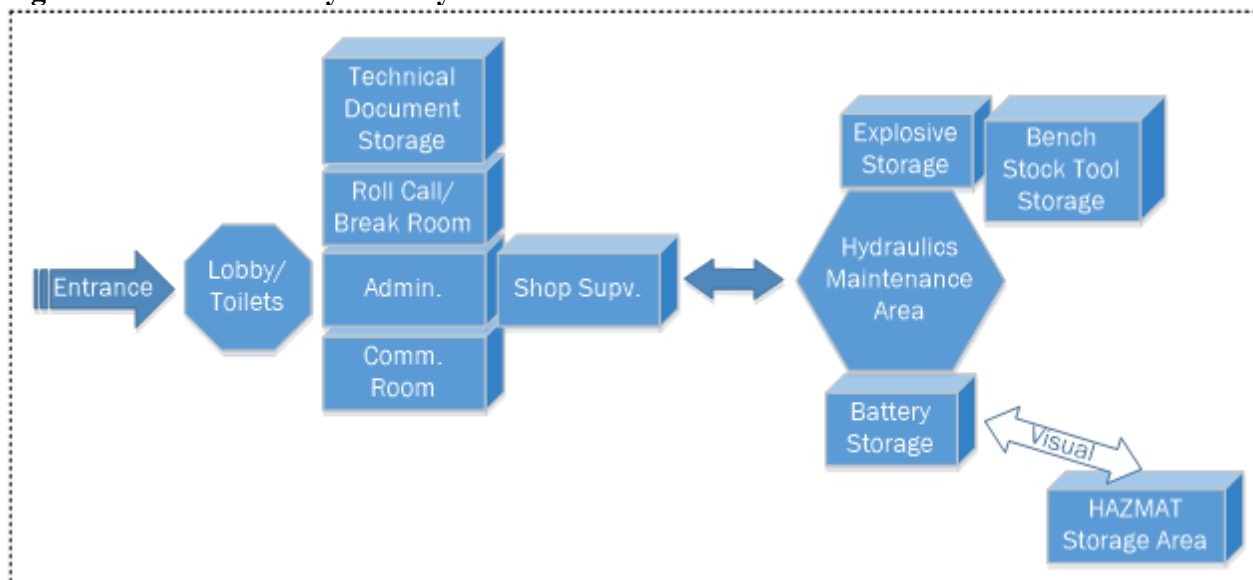
7.5.17.4.3.5. Storage Areas. Provide storage space for electronic equipment awaiting repair and/or pickup. Storage space is also required for serviceable batteries to be recharged and for unserviceable batteries to be discarded. Ensure

the battery storage area is properly ventilated. Designate an area to store hazardous waste generated by ongoing maintenance operations. Provide wire dispensing cabinets and wire spool and harness storage bins in the wire maintenance area.

7.5.17.4.3.6. Dimensions. The required space allocation for this facility can be found in **Table 7.5.42**, **Table 7.5.44**, and **Table 7.5.45**.

Table 7.5.43. Building Utility System Requirements for Accessory Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required. Both the hydraulics function and the E&E shop require 150-psi shop air in designated locations and corrosion resistant drains. Special ventilation requirements need to be verified in the battery service area of the E&E shop to comply with federal and state air quality directives. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. The battery service and repair area of the E&E function requires explosion proof light fixtures and electrical devices. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System. Applicable criteria include UFC 3-501-01 for general electrical requirement requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide corrosion resistant drains in the E&E function. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with ETL 02-15, UFC 3-600-01, NFPA 33, and NFPA standards. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.5.15. Accessory Facility.

7.5.17.5. **Propulsion Flight.** Engine/propeller storage is located within the AMU.

7.5.17.6. **Avionics Flight.** AFSOC will not be performing intermediate level maintenance on the MC-12. All avionics maintenance will occur in the AMU.

7.5.17.7. **Munitions Flight.** Not required for the MC-12.

7.5.17.8. **Armament Flight.** Not required for the MC-12.

7.5.17.9. **TMDE Flight.** The PMEL is the base-level AFMETCAL Program focal point. The program provides for the calibration and repair of TMDE. HAF/A4LF approves the establishment of PMELs at selected installations (TO 00-20-14, Paragraph 1.2.3).

Table 7.5.44. MC-12 AD Military Intermediate Maintenance Facility Space Requirements.

Cat Code	Facility	UM	MC-12 (3) ¹	MC-12 (6) ¹	MC-12 (9) ¹	DAFMAN 32-1084 Reference or Remarks/Calculations
218-712	AGE Shop	NSF	4,320	4,320	5,520	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See CC 218712 Table 3.10 for step table. 3 PMAI = 5,400 GSF; 6 PMAI = 5,400 GSF; 9 PMAI = 6,900 GSF. The conversion from GSF to NSF is calculated as GSF/1.25.

218-712	AGE Shop Covered Storage	GSF	5,170	5,170	7,760	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See CC 218712 Table 3.10 for step table. 6 PMAI = 5,170 GSF; 9 PMAI = 5,170 GSF; 15 PMAI = 7,760 GSF.
211-152	Sheet Metal Shop	NSF	0	0	0	Located with the AMU. Consolidated with metals technology as the structural repair shop.
211-152	Metals Technology	NSF	0	0	0	Located with the AMU. Consolidated with sheet metal shop as the structural repair shop.
211-153	NDI Section	NSF	4,000	4,000	4,000	CC 211153 NDI Laboratory, Paragraph 1.2 & TO 33B-1-1, Sec. 1-14, Figure 1-1: Typical NDI Facility, 4,000 NSF.
211-152	R&R Shop	NSF	600	1,200	1,800	1 SOMXG: Located in 7,852 NSF B90700. Calculated as 200 NSF x #PMAI.
211-152	Wheel and Tire	NSF	0	0	0	Located with the AMU.
211-152	E&E Shop	NSF	2,119	2,119	2,119	1 SOMXG: 2,119 NSF in B90700.
211-152	Hydraulics Shop	NSF	2,943	2,943	2,943	1 SOMXG: Hydraulics area 2,943 NSF in Building 90700 floor 1.
211-179	Fuel Systems Shop	NSF	0	0	0	Fuel Systems maintenance is done in a hangar or outside. Per DAFMAN 32-1084 CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized provide a facility that is 24,632 NSF (30,790 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. See paragraph 7.5.17.5.1.5 for more information.
218-852	AFE (Survival Equipment) Shop	NSF	0	0	0	AFE for the MC-12 is provided with squadron operations. For consolidated AFE facilities for multiple weapon systems, see Table 8.4.4 .

211-152	Admin. Spt Space	NSF	0	0	0	In lieu of UMDs for each shop space, an area based assumption that 40% of all maintenance squadron personnel required administrative offices. The total administrative support space from the Maintenance AMU should be subtracted from this total. CG 61 Admin Overview paragraph 1.4.2: 20 NSF min per person. AFSOC/A4I: Default is 20 sf.
211-152	Admin. Circulation	NSF	0	0	0	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space.
211-152	Special Purpose Circulation	NSF	1,398	1,458	1,638	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Total Int. Maint. Facilities (w/o covered storage)		NSF	15,380	16,040	18,020	
Total Int. Maint. Facilities (w/o covered storage)		GSF	19,225	20,050	22,525	Net to Gross conversion factor of 1.25.
Total Covered Storage		GSF	5,170	5,170	7,760	
Notes:						
1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).						

Table 7.5.45. MC-12 CLS Intermediate Maintenance Facility Space Requirements.

Cat Code	Facility	UM	MC-12 (3)¹	MC-12 (6)¹	MC-12 (9)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
218-712	AGE Shop	NSF	4,320	4,320	5,520	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See DAFMAN 32-1084 Table 3.10 for step table. 3 PMAI = 5,400 GSF; 6 PMAI = 5,400 GSF; 9 PMAI = 6,900 GSF. The conversion from GSF to NSF is calculated as GSF/1.25.
218-712	AGE Shop Covered Storage	GSF	5,170	5,170	7,760	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See DAFMAN 32-1084 Table 3.10 for step table. 6 PMAI = 5,170 GSF; 9 PMAI = 5,170 GSF; 15 PMAI = 7,760 GSF.

211-152	Sheet Metal Shop	NSF	0	0	0	Located with the AMU. Consolidated with metals technology as the structural repair shop.
211-152	Metals Technology	NSF	0	0	0	Located with the AMU. Consolidated with sheet metal shop as the structural repair shop.
211-153	NDI Section	NSF	4,000	4,000	4,000	CC 211153 NDI Laboratory, Paragraph 1.2 & TO 33B-1-1, Sec. 1-14, Figure 1-1: Typical NDI Facility, 4,000 NSF.
211-152	R&R Shop	NSF	500	500	500	Cannon AFB: Contractors require 500 NSF for R&R shop.
211-152	Wheel and Tire Shop	NSF	0	0	0	Located with the AMU.
211-152	E&E Shop	NSF	500	500	500	Cannon AFB: Contractors require 500 NSF for E&E shop.
211-152	Hydraulics Shop	NSF	500	500	500	Cannon AFB: Contractors require 500 NSF for Hydraulics shop.
211-179	Fuel Systems Shop	NSF	0	0	0	Fuel Systems maintenance is done in a hangar or outside. No additional space for support equipment is required.
218-852	AFE (Survival Equipment) Shop	NSF	0	0	0	AFE for the MC-12 is provided with squadron operations. For consolidated AFE facilities for multiple weapon systems, see Table 8.4.4 .
211-152	Admin. Spt Space	NSF	0	0	0	In lieu of UMDs for each shop space, an area based assumption that 40% of all maintenance squadron personnel required administrative offices. The total administrative support space from the Maintenance AMU should be subtracted from this total. CG 61 Admin Overview paragraph 1.4.2: 20 NSF min per person. AFSOC/A4I: Default is 20 sf.
211-152	Admin. Circulation	NSF	0	0	0	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space.
211-152	Special Purpose Circulation	NSF	982	982	982	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space ²
Total Int. Maint. Facilities		NSF	10,802	10,802	12,122	Excludes covered storage.
Total Int. Maint. Facilities		GSF	13,503	13,503	15,153	Excludes covered storage. Net to Gross conversion factor of 1.25.
Total Covered Storage		GSF	5,170	5,170	7,760	

Note:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).

7.5.18. MC-12 Storage Facilities.**7.5.18.1. Aviation Bulk Fuel Storage (CATCODE: 411135).**

7.5.18.1.1. Requirements Determination. The total tankage required for aviation fuel will be the sum of the peacetime and war reserve tankage requirements. This may be adjusted up or down by DLA Energy based on additional distribution needs or nearby available war reserve fuel (DAFMAN 32-1084, CC 411135 Jet Fuel Storage, Paragraph 1.2).

7.5.18.1.2. Scope Determination. The DLA Energy requires storage of 5 to 15 days depending on location. The aircraft has a maximum fuel capacity of 537 GA (3,600 lbs; JP-8 is 6.7 lbs/gallon) without additional tanks. AFPAM 23-221 Attachment 7 Table A7.1 lists the average C-12 fuel load at 250 gallons per sortie. Per the Environmental Review completed for Beale AFB the annual number of sorties for the MC-12 aircraft is expected to be 4,320. This figures approximately 12 sorties per business day/night. A 15-day fuel supply for 9 PMAI would be in the range of 45,000 gallons. Assume bulk fuel storage by host installation. Wartime requirements should directly support an OPLAN and identify fuel quantities to satisfy mobility, strategic air operations, civil defense, and logistics requirements (4140.25-M, Vol II, Chapter 1, Paragraph C11.3.2). The calculation for MC-12 fuel storage does not include fuel to support a war plan. Those stocks would be calculated via ICIS and could greatly increase the fuel storage requirements.

7.5.18.1.3. Dimensions. Varies. See [Table 7.5.46](#) & [Table 7.5.47](#) for the required area for this facility. Contractor maintained squadrons have the same requirement as AD Military units.

7.5.18.1.4. Design Considerations. The determination of the number of tanks to be used for Aviation Bulk Fuel Storage will be based on the following requirements: a minimum of two bulk tanks are required, regardless of the storage quantity, due to fuels quantity control measures; three or more tanks are required for all requirements over 31,800 m³ (200,000 barrels); and the individual capacity of any tank will not exceed 15,900 m³ (100,000 barrels) unless authorization is obtained from AFCESA/CEO.

7.5.18.2. Aircraft Support Equipment Storage Yard (CATCODE: 852273).

7.5.18.2.1. Requirements Determination. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and is measured in square yards.

7.5.18.2.2. Scope Determination. DAFMAN 32-1084, CC 218712 Aircraft Support Equipment Shop/Storage Facility, Table 1.1, lists the space requirements for AGE open storage yard facilities. These requirements are based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per UTC.

7.5.18.2.3. Dimensions. See Scope Determination above. The required space allocation for this facility can be found in [Table 7.5.46](#). Contractor maintained squadrons have the same requirement as AD Military units.

7.5.18.3. Base Hazardous Material Storage (CATCODE: 442257).

7.5.18.3.1. Requirements Determination. Normal authorization is for one month's storage. Storage is usually within lockers (5 NSF) each per PMAI.

7.5.18.3.2. Scope Determination. Storage is provided in the maintenance AMU.

7.5.18.4. Base Supplies and Equipment Shed (CATCODE: 442628).

7.5.18.4.1. Description. Shed space is required to store base supplies, equipment, and material not requiring closed warehouse space but requiring covered protection from the weather because of nature of material or way they are packed. It may also include lumber storage exclusive of that stored by the Civil Engineer. Space for receiving and shipping activities may be included. Shed storage space is constructed without side and end walls.

7.5.18.4.2. Requirements Determination. Utility aircraft space is 5 GSF (4 NSF) per aircraft (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.1). Personnel space is 2 NSF per person (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.2).

7.5.18.4.3. Dimensions. Calculated as follows: 4 NSF x number of aircraft + 2 NSF per person. See [Table 7.5.46](#) for the AD Military base supply and equipment shed requirements and [Table 7.5.47](#) for the CLS base supply and equipment shed requirements.

7.5.18.5. Base Supplies and Equipment Warehouse (CATCODE: 442758).

7.5.18.5.1. Requirements Determination. Warehouse space includes: supplies and equipment needed to support base operations and fuels operations; receiving, storage issue, inspection, pickup and delivery activities; warehouse offices; flyaway or mobility kit storage; dangerous material, exclusive of explosives and ammunition; property in the equipment account (DAFMAN 32-1084, CC 442758 Warehouse Supply and Equipment Base, Paragraph 1.2); and a facility with a loading dock and direct, unobstructed access is required for semi-tractor trailer size vehicle loading/unloading; and mobility bags (see paragraph 7.5.18.5.2).

7.5.18.5.2. Mobility Bags (RSP). Space will be computed at 3 ft³ per bag if the type of bag to be stored has been approved by the Air Force. The best space utilization can be obtained by storing in bulk or on pallet racks. Mobility bag storage is the responsibility of the LRS.

7.5.18.5.3. Scope Determination. Warehouse space for SOS base supplies and equipment is determined by individual analysis and validated by AFSOC.

7.5.18.5.3.1. Warehouse space = 250 NSF for utility aircraft space + MRSP space (319th SOS MSRP space is 11,000 NSF for 27 aircraft or 407.4 NSF x number of PMAI) + Personnel space (15 NSF per person).

7.5.18.5.4. Dimensions. See [Table 7.5.45](#) & [Table 7.5.46](#) for the AD Military base supply and equipment warehouse requirements and [Table 7.5.47](#) for the CLS base supply and equipment warehouse requirements.

7.5.18.5.5. Design Considerations. When existing warehouses have clearances between the floor and the bottom of the ceiling joist or truss of 18 ft or more, use double-deck construction within the existing facility before programming a new facility or an addition to the existing facility. The effects of double-decking on the building's fire protection system should be evaluated. Standard warehouse facility guidelines contained in AFMAN 23-210 apply. These include, but are not limited to: fire protection systems, aisle space, fork lift access, ventilation, and property stacking. Ideally, the warehouse should be centrally located within the intermediate maintenance area and in proximity to the maintenance hangars.

7.5.18.6. Controlled Humidity Warehouse (CATCODE: 442758).

7.5.18.6.1. Requirements Determination. Included in the Base Warehouse Storage Facility.

7.5.18.7. Base Supply Open Storage (CATCODE: 452252).

7.5.18.7.1. Requirements Determination. Surface improvement of the area is required to facilitate the use of materials-handling equipment.

7.5.18.7.2. Scope Determination. The size of the area is determined by its overall dimensions with no deductions for interior track and permanent roads.

7.5.18.7.3. Dimensions. The amount of storage space will be determined by analysis and validated by AFSOC. Base Open Storage should be 54 GSF per utility aircraft and 111 GSF for base personnel (DAFMAN 32-1084, CG 44, Supply Storage Facilities Overview, Table 1.1 and 1.2). Add an additional 100 GSF per aircraft for unique SOF items that cannot be stored in a covered space. See [Table 7.5.46](#) for the AD Military requirements and [Table 7.5.47](#) for the CLS requirements for this facility.

7.5.18.7.4. Design Considerations. Exterior lights and fencing may be installed as required to deter theft. This area should be adjacent to the general warehouse to enhance inventory control and issue of material.

7.5.18.8. Classified Storage.

7.5.18.8.1. Description. Storage for classified materials.

7.5.18.8.2. Requirements Determination. Where a separate building is not available or where its use is not warranted by quantity of classified storage, a room, cage, or crib may be constructed within a warehouse building.

7.5.18.8.3. Scope Determination. All areas that contain classified material will be secured by means of approved locking systems. This will include any temporary storage space used for in-transit classified material. In addition to classified items being stored separately from other material, classified material will be segregated in storage from sensitive but unclassified items. Standards for physical protection of

classified items are specifically established in DoDD 5200.01, AFI 16-1404, and AFMAN 23-110.

7.5.18.8.4. Dimensions. Classified storage within the AMU facility satisfies this requirement.

7.5.18.9. Chaff and Flare Build Up and Storage.

7.5.18.9.1. Description. The facility is required for storage, handling, inspection, maintenance, and preparation for use of chaff and flares.

7.5.18.9.2. Requirements Determination. These materials must be stored in an area segregated to store only ammunition and explosives, related non-explosives items, equipment and supplies. The guidance on storage criteria and fire safety is provided in AFMAN 91-201, Explosives Safety Standards. Chaff and flare storage can be held within the MC-12 munitions facility but needs a dedicated bay area (Hurlburt Field, Munitions).

7.5.18.9.3. Dimensions. Chaff and flare storage will be within a 36 ft x 36 ft (1,296 NSF) bay for all MC-12 scenarios.

Table 7.5.46. MC-12 AD Military Storage Facility Space Requirements.

Cat Code	Facility	UM	MC-12 (3) ¹	MC-12 (6) ¹	MC-12 (9) ¹
441135	Aviation Bulk Fuel Storage ²	gal	15,000	30,000	45,000
852273	AGE Open Storage Yard	SY	57	57	86
442257	Base Hazardous Material Pharmacy Storage	NSF	0	0	0
442628	Base Supplies and Equipment Shed	NSF	116	178	239
442758	Base Supplies and Equipment Warehouse	NSF	2,947	5,384	7,822
452252	Base Supply Open Storage	GSF	573	1,035	1,497
n/a	Classified Storage	NSF	0	0	0
n/a	Chaff and Flare Build Up and Storage	NSF	1,296	1,296	1,296
n/a	Admin. Support Space ³	NSF	120	120	240
n/a	Admin. Circulation	NSF	23	35	48
n/a	Special Purpose Circulation	NSF	386	598	823
Total Storage Facilities		NSF	4,887	7,611	10,468
Total Storage Facilities		GSF	6,109	9,514	13,085
Total Open Storage Yard		SY	121	172	253

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).
2. Storage provided by host installation.
3. Administrative support space based on assumption of 1 office per 5,000 NSF of storage.

Table 7.5.47. MC-12 CLS Storage Facility Space Requirements.

Cat Code	Facility	UM	MC-12 (3) ¹	MC-12 (6) ¹	MC-12 (9) ¹
441135	Aviation Bulk Fuel Storage ²	gal	15,000	30,000	45,000
852273	AGE Shop and Storage ²	SY	57	57	86
442257	Base Hazardous Material Pharmacy Storage	NSF	0	0	0
442628	Base Supplies and Equipment Shed	NSF	126	182	239
442758	Base Supplies and Equipment Warehouse	NSF	3,037	5,429	7,822
452252	Base Supply Open Storage	NSF	573	1,035	1,497
n/a	Classified Storage	NSF	0	0	0
n/a	Chaff and Flare Build Up and Storage	NSF	1,296	1,296	1,296
n/a	Admin. Support Space ³	NSF	120	120	240
n/a	Admin. Circulation	NSF	23	35	48
n/a	Special Purpose Circulation	NSF	394	602	823
Total Storage Facilities		NSF	4,996	7,665	10,468
Total Storage Facilities		GSF	6,245	9,582	13,085
Total Open Storage Yard		SY	121	172	253
Notes:					
1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 9 PMAI = 10 total aircraft (1 BAI).					
2. Storage provided by host installation.					
3. Administrative support space based on assumption of 1 office per 5,000 NSF of storage.					

7.6. C-146 Facility Requirements.

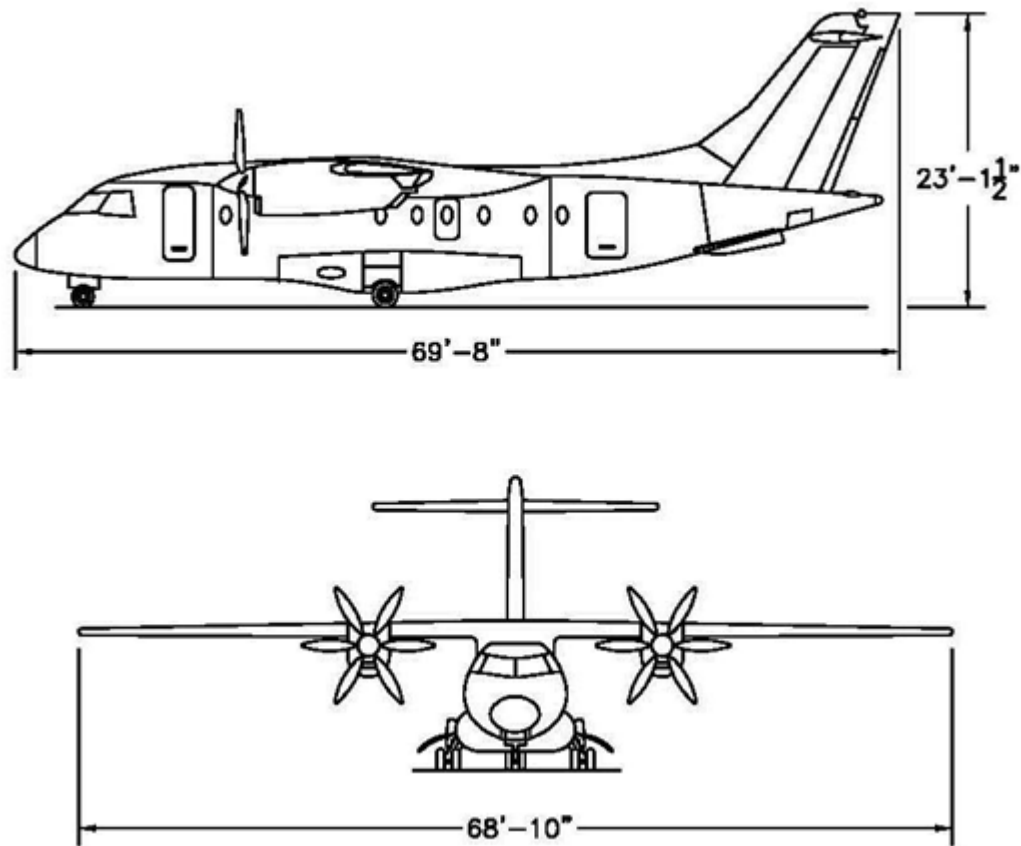
7.6.1. **Weapon System Characteristics: C-146.** This aircraft has no armament.

7.6.2. **Aircraft Description.** The C-146 “Wolf Hound” is a non-standard aviation (NSAv) platform. The aircraft is a Dornier 328-100 modified for specialized tactical airlift of SOF. The C-146 includes a two-pilot flight station with fully integrated avionics, integrated navigation and global positioning systems, integrated defense systems, and an enhanced cargo-handling system. The C-146 is powered by two turbo-prop engines driving six-bladed, all-composite propellers. The airplane can land and take off on short runways and it can be used on landing strips such as those usually found in base operations. The landing gear is tricycle type. The cargo compartment contains approximately 226 ft³ of space accessible through an aft mounted cargo door that is 55 in (L) x 36 in (W).

7.6.2.1. **Crew.** The normal flight crew for a C-146 is three persons (a pilot, co-pilot, and a loadmaster).

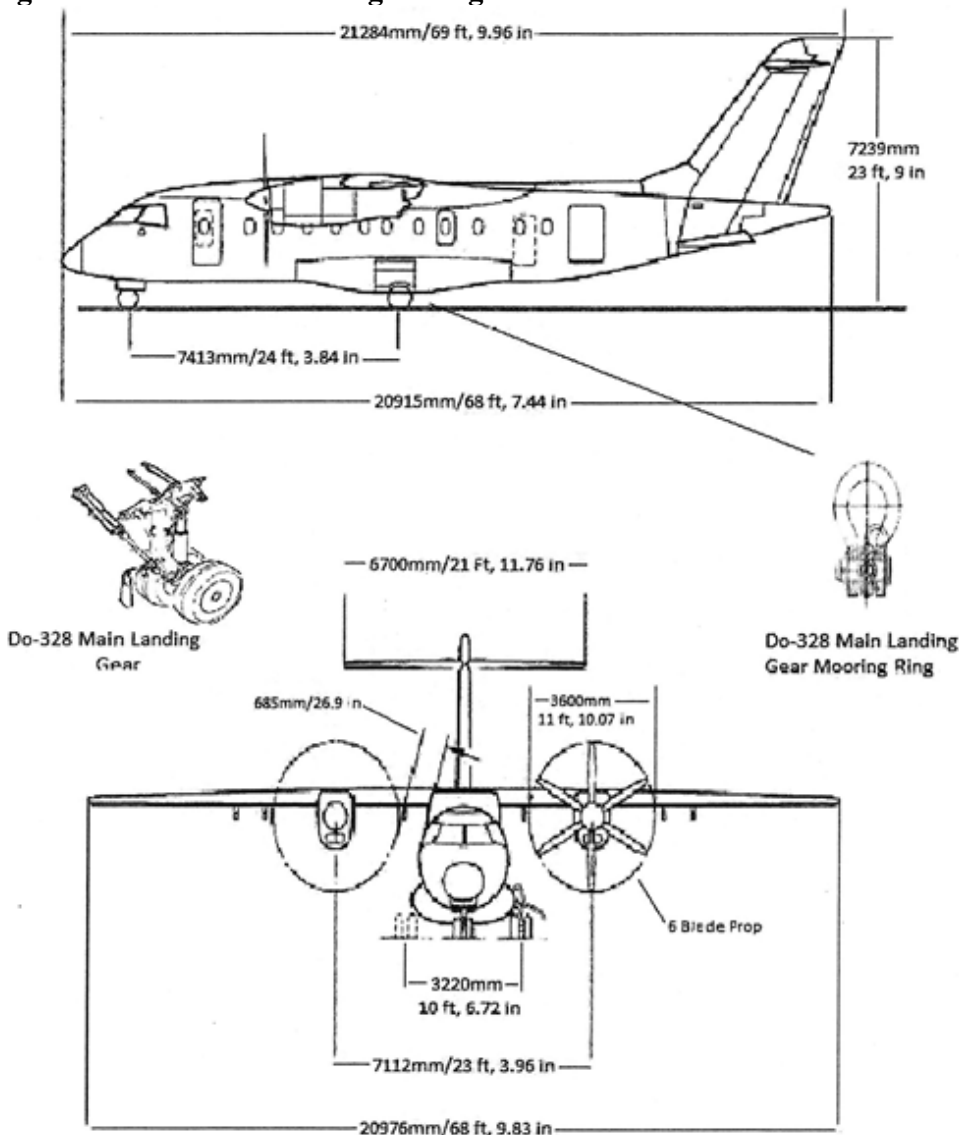
7.6.3. Aircraft Principal Dimensions.**Table 7.6.1. C-146 Block Dimensions.**

Wingspan		Length		Height	
m	ft	m	ft	m	ft
20.98	68.83	21.28	69.83	7.24	23.75

Figure 7.6.1. C-146 Aircraft Dimensions.**7.6.4. Aircraft Weights/Wheel Loads.****Table 7.6.2. C-146 Basic Weights Summary.**

Configuration	kg (lbs) or specified units
Basic Empty Gross Weight (lbs)	9,979 (22,000)
Basic Mission Take-off Weight (lbs)	13,990 (30,843)
Basic Mission Landing Weight (lbs)	13,230 (29,167)
Max Landing Gross Weight (lbs)	13,230 (29,167)
Internal Fuel Load	3,416 (7,531)

7.6.5. Aircraft Mooring Arrangement. The mooring ring should have a minimum breaking strength of 22,000 lbs. The distance of mooring points is from main mooring track 3,220 mm (10 ft, 6.72 in) between main landing gear mooring points.

Figure 7.6.2. C-146 Mooring Configuration.**7.6.6. Minimum Takeoff and Landing Requirements.**

7.6.6.1. Reference. See Paragraph 7.6.11, Airfield Requirements, for the minimum runway length required for the C-146 and other airfield requirements.

7.6.6.2. Takeoff. The minimum ground roll takeoff distance for the C-146 is 3,000 ft (AFSOC/A3VN).

7.6.6.3. Landing. The minimum ground roll landing distance for the C-146 is 2,250 ft (AFSOC/A3VN).

7.6.7. Unique Maintenance Requirements. The C-146 has various systems that require periodic servicing and replenishment; however, none of these systems drive a facility requirement that is not met within the minimum space allocation of the maintenance hangar and other maintenance and intermediate maintenance facilities.

7.6.8. Unique Power Requirements. Standard operating procedures do not drive any unique power requirement. For maintenance purposes and in the event of system degradation, the C-146 uses ground power units (GPU) with a minimum output of 1700 Amps at 28.5 VDC. Access to the aircraft GPU is for maintenance purposes only.

7.6.9. Operations Squadron Characteristics.

7.6.9.1. C-146 UTC and Crew Construct.

7.6.9.1.1. UTC Construct. The C-146 is currently a site-employed airframe, therefore it does not have a UTC construct and flight crew ratio. However, for facility planning purposes, notional UTC and flight crew ratios have been developed to allow the scaling of requirements. Per AFSOC/A5KG, the notional UTC concept will be a three-ship configuration where one UTC consists of 3 PMAI and 1 BAI (4 total airframes).

7.6.9.1.2. Crew Ratio and Crew Complement. The normal flight crew for the C-146, as detailed in **Paragraph 7.6.2**, is 3 PN. The crew ratio is the number of crews required to support deployments and dwell times for the unit. Per AFSOC/A1M, the notional C-146 crew ratio is 3.2 crews per PMAI. The number total of flight crew members is calculated as follows: number of flight crew x crew ratio x number of PMAI. Thus, a larger flight crew or crew ratio will result in larger facilities required to support additional personnel, and vice versa.

7.6.9.1.3. Notional Squadron Concepts. For planning purposes, this FRI provides facility space requirements for the three most common C-146 squadron scenarios: 1 UTCs (3 PMAI, 1 BAI); 2 UTCs (6 PMAI, 1 BAI); and 5 UTCs (15 PMAI, 2 BAI), which represents a full squadron. To ensure the most accurate facility space requirements possible, consult AFSOC/A3/A4I for the latest information regarding the current C-146 UTC construct, crew ratio, and crew complement. Notional manpower for C-146 operations squadrons is presented in **Table 7.6.3**, **Table 7.6.4**, and **Table 7.6.5**. Notional manpower for C-146 AD military maintenance squadrons is presented in **Table 7.6.6**, **Table 7.6.8**, and **Table 7.6.10**. Notional manpower for C-146 CLS maintenance squadrons is presented in **Table 7.6.7**, **Table 7.6.9**, and **Table 7.6.11**.

Table 7.6.3. C-146 Operations Squadron Notional Manpower, 1 UTC (3 PMAI , 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	0	0	0
SOS	Commander's Support Staff	0	2	1	3
SOS	Aviation Resource Mgmt	0	4	0	4
SOS	Flight Crews @ CR 3.2 ^{1,2}	19	10	0	29
	SOS Total	21	16	1	38
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	0	0	0

SOSS	ELINT Analysis	0	0	0	0
SOSS	AFE	0	3	0	3
SOSS	Operations Data Management	0	1	0	1
SOSS	Weather	0	7	0	7
	SOSS Total	1	15	0	16
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{3,4}	27	34	1	62
Notes: 1. The C-146 is currently a site-employed airframe, therefore it does not have a UTC construct and flight crew ratio. However, for facility planning purposes, notional UTC and flight crew ratios have been developed to allow the scaling of requirements. 2. Per AFSOC/A1M, the notional C-146 flight crew ratio will be 3.2. 3. Per AFSOC/A5KG, the notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total 4 airframes). 4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.					

Table 7.6.4. C-146 Operations Squadron Notional Manpower, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	0	0	0
SOS	Commander's Support Staff	0	2	1	3
SOS	Aviation Resource Management	0	5	0	5
SOS	Flight Crews @ CR 3.2 ^{1,2}	38	20	0	58
	SOS Total	40	27	1	68
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	0	0	0
SOSS	ELINT Analysis	0	0	0	0
SOSS	AFE	0	6	0	6
SOSS	Operations Data Management	0	1	0	1
SOSS	Weather	0	7	0	7

	SOSS Total	1	17	0	18
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6
SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{3,4}	46	48	1	95

Notes:

1. The C-146 is currently a site-employed airframe, therefore it does not have a UTC construct and flight crew ratio. However, for facility planning purposes, notional UTC and flight crew ratios have been developed to allow the scaling of requirements.
2. Per AFSOC/A1M, the notional C-146 flight crew ratio will be 3.2.
3. Per AFSOC/A5KG, the notional UTC concept will be a three-ship configuration. In this case that equals 6 PMAI and 1 BAI (total 7 airframes).
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.6.5. C-146 Operations Squadron Notional Manpower, 5 UTCs (15 PMAI, 2 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOS	Commander	1	0	0	1
SOS	Director of Operations	1	0	0	1
SOS	First Sergeant	0	1	0	1
SOS	Commander's Support Staff	0	3	1	4
SOS	Aviation Resource Management	0	6	0	6
SOS	Flight Crews @ CR 3.2 ^{1,2}	95	49	0	144
	SOS Total	97	59	1	157
SOSS	Aerospace Medicine	1	2	0	3
SOSS	Plans and Scheduling	0	1	0	1
SOSS	Intelligence	0	0	0	0
SOSS	ELINT Analysis	0	0	0	0
SOSS	AFE	0	15	0	15
SOSS	Operations Data Management	0	1	0	1
SOSS	Weather	0	7	0	7
	SOSS Total	1	26	0	27
SOG	Standardization and Evaluation	1	1	0	2
SOG	Weapons and Tactics	2	2	0	4
	SOG Total	3	3	0	6

SOW	Flight Safety	1	0	0	1
SOW	Plans and Programs	1	1	0	2
	SOW Total	2	1	0	3
	TOTAL OPERATIONS^{3,4}	103	89	1	193

Notes:

1. The C-146 is currently a site-employed airframe, therefore it does not have a UTC construct and flight crew ratio. However, for facility planning purposes, notional UTC and flight crew ratios have been developed to allow the scaling of requirements.
2. Per AFSOC/A1M, the notional C-146 flight crew ratio will be 3.2.
3. Per AFSOC/A5KG, the notional UTC concept will be a three-ship configuration. In this case that equals 15 PMAI and 2 BAI (total 17 airframes).
4. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.6.10. Maintenance Squadron Characteristics.**Table 7.6.6. C-146 AD Military Maintenance Squadron Notional Manpower, 1 UTC (3 PMAI, 1 BAI).**

Unit	Function	Officer	Enlisted	Civilian	Total
SOMXS	Commander	1	0	0	1
SOMXS	First Sergeant	0	1	0	1
SOMXS	Maintenance Officer	1	0	0	1
	Flight Total	2	1	0	3
SOMXS	All Other Flights	0	55	0	55
	Flight Total	0	55	0	55
SOMXG	Quality Assurance	0	3	0	3
	SOMXG Total	0	3	0	3
CLS	Contractor Logistics Support	0	0	3	3
	CLS Total	0	0	3	3
	TOTAL MAINTENANCE¹	2	59	3	64
	SPA^{2,3}				21.3

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total 4 airframes).
2. Per AFSOC/A1M, the AD Military planning SPA for the C-146 is 21.3.
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.6.7. C-146 CLS Maintenance Squadron Notional Manpower, 1 UTC (3 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
CLS	Contractor Logistics Support	0	0	14	14
	TOTAL MAINTENANCE^{1,2,3}	0	0	14	14

Notes:

1. These numbers were provided by A1M.
2. The current notional UTC concept will be a three-ship configuration. In this case that equals 3 PMAI and 1 BAI (total of 4 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.6.8. C-146 AD Military Maintenance Squadron Notional Manning, 2 UTCs (6 PMAI, 1 BAI)

Unit	Function	Officer	Enlisted	Civilian	Total
SOMXS	Commander	1	0	0	1
SOMXS	First Sergeant	0	1	0	1
SOMXS	Maintenance Officer	1	0	0	1
	Flight Total	2	1	0	3
SOMXS	All Other Flights	0	116	0	116
	Flight Total	0	116	0	116
SOMXG	Quality Assurance	0	3	0	3
	SOMXG Total	0	3	0	3
CLS	Contractor Logistics Support	0	0	6	6
	CLS Total	0	0	6	6
	TOTAL MAINTENANCE¹	2	120	6	128
	SPA^{2,3}				21.3

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 6 PMAI and 1 BAI (total 7 airframes).
2. Per AFSOC/A1M, the AD Military planning SPA for the C-146 is 21.3.
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.6.9. C-146 CLS Maintenance Squadron Notional Manning, 2 UTCs (6 PMAI, 1 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
CLS	Contractor Logistics Support	0	0	14	14
	TOTAL MAINTENANCE^{1,2,3}	0	0	14	14

Notes:

1. These numbers were provided by A1M.
2. The current notional UTC concept will be a three-ship configuration. In this case that equals 6 PMAI and 1 BAI (total of 7 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.6.10. C-146 AD Military Maintenance Squadron Notional Manning, 5 UTCs (15 PMAI, 2 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
SOMXS	Commander	1	0	0	1
SOMXS	First Sergeant	0	1	0	1
SOMXS	Maintenance Officer	1	0	0	1
	Flight Total	2	1	0	3
SOMXS	All Other Flights	0	299	0	299
	Flight Total	0	299	0	299
SOMXG	Quality Assurance	0	3	0	3
	SOMXG Total	0	3	0	3
CLS	Contractor Logistics Support	0	0	15	15
	CLS Total	0	0	15	15
	TOTAL MAINTENANCE¹	2	303	15	320
	SPA^{2,3}				21.3

Notes:

1. Per AFSOC/A5KG current notional UTC concept will be a three-ship configuration. In this case that equals 15 PMAI and 2 BAI (total 17 airframes).
2. Per AFSOC/A1M, the AD Military planning SPA for the C-146 is 21.3.
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.6.11. C-146 CLS Maintenance Squadron Notional Manning, 5 UTCs (15 PMAI, 2 BAI).

Unit	Function	Officer	Enlisted	Civilian	Total
CLS	Contractor Logistics Support	0	0	14	14
	TOTAL MAINTENANCE^{1,2,3}	0	0	14	14

Notes:

1. These numbers were provided by A1M.
2. The current notional UTC concept will be a three-ship configuration. In this case that equals 15 PMAI and 2 BAI (total of 17 airframes).
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.6.11. Base Operations Ground Facilities - Airfield Requirements.**7.6.11.1. Runways (CATCODE: 111111).**

7.6.11.1.1. Requirements Determination. The C-146 requires a Class A runway (UFC 3-260-01, Table 3-1, Notes 1 and 2). Though the C-146 is not specified as requiring a Class A runway in UFC 3-260-0 Table 3-1, Class A runways are primarily intended for small, light aircraft, while Class B runways are intended for high-performance and large, heavy aircraft (UFC 3-260-01, Paragraph 3-3.1).

7.6.11.1.2. Runway Length. The C-146 requires a minimum runway length of 3,250 ft; however, a 4,500 ft runway provides a more practical length for normal operations (AFSOC/A3VN). For permanent basing, the C-146 should be located on or near an

airfield with at least 7,000 feet of paved runway to allow standard touch-and-go training operations (AFSOCI 11-2C-146A V3, Paragraph 5.7.3.2).

7.6.11.1.3. Runway Width. The minimum runway width for the C-146 is 35 ft (AFSOC/A3VN). Class A runways have a minimum runway width requirement of 100 ft (UFC 3-260-01, Table 3-1).

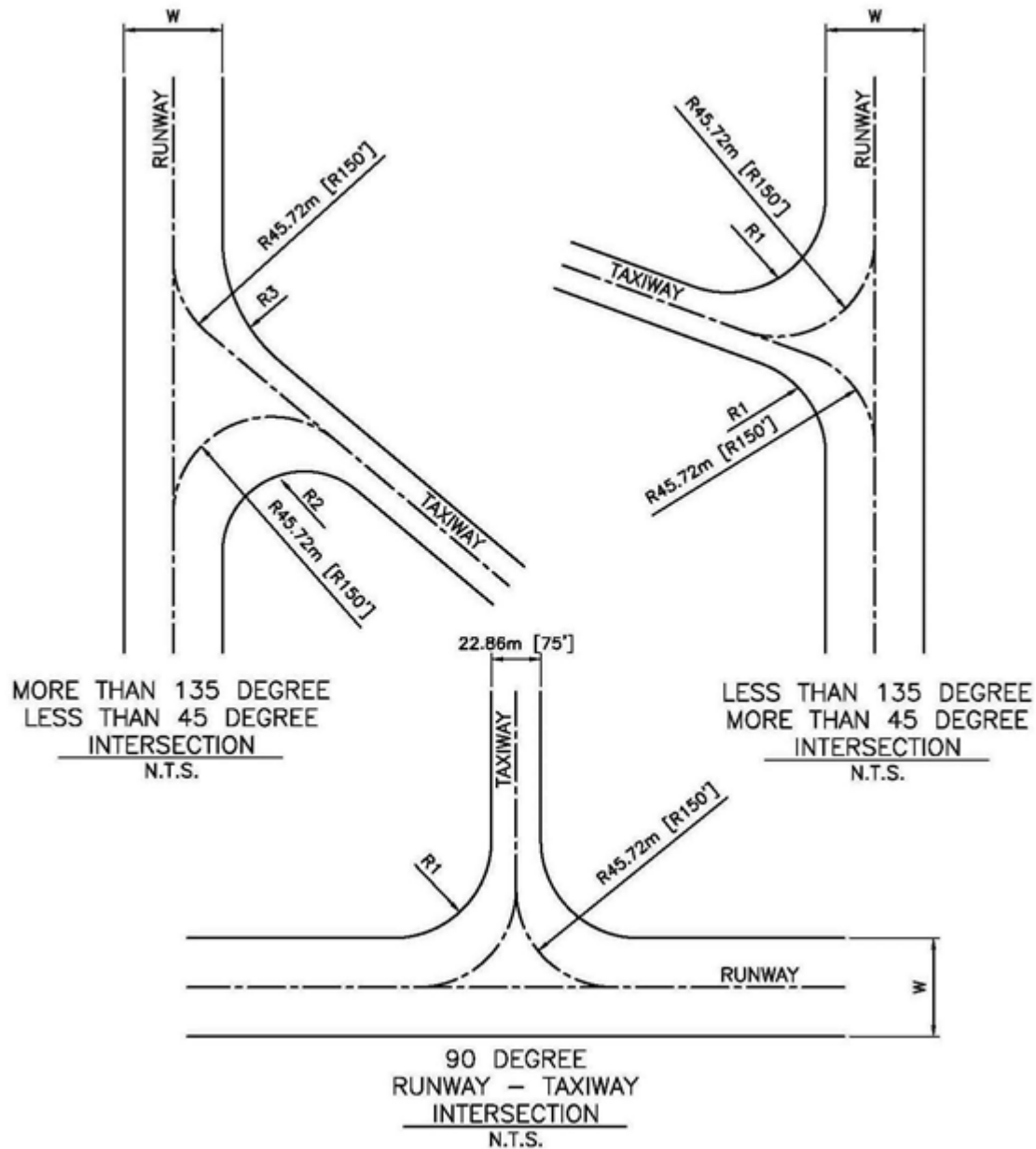
7.6.11.1.4. Shoulders. Shoulders can be both paved and unpaved, and are located on each side of the runway. The minimum paved shoulder for the C-146 is 25 ft on each side (UFC 3-260-01, Table 3.2, Item 4). A minimum combined total of 50 ft is required for paved and unpaved shoulders for the C-146 (UFC 3-260-01, Table 3-2, Item 3).

7.6.11.1.5. Runway/Taxiway Intersection Fillet Radii. See **Table 7.6.12** and **Figure 7.6.3**.

Table 7.6.12. Runway/Taxiway Intersection Fillet Radii.

Runway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	R1 ^{1,3}	R2 ²	R3 ²
More than 75 ft but less than 150 ft	150	125	250
150 ft or more	125	125	250
Notes: 1. Less than 135 and more than 45-degree intersection. 2. More than 135 and less than 45-degree intersection. 3. 90-degree intersection.			

Figure 7.6.3. Runway-Taxiway Intersection Fillet Radii.



7.6.11.2. Paved Overrun (CATCODE: 111115).

7.6.11.2.1. Requirements Determination. All runways are required to have paved overruns.

7.6.11.2.2. Length (min.). The C-146 paved overrun minimum length for runways is 200 ft (UFC 3-260-01, Table 3-4, Item 1).

7.6.11.2.3. Width (min.). The C-146 paved overrun minimum width for runways is 100 ft (UFC 3-260-01, Table 3-4, Item 3).

7.6.11.3. Taxiway (CATCODE: 112211).

7.6.11.3.1. Requirements Determination. All runways are required to have taxiways.

7.6.11.3.2. Taxiway Width. The minimum taxiway width for C-146 airfields is 22 ft (AFSOC/A3VN). Class A runways have a minimum requirement of 50 ft (UFC 3-260-01, Table 5-1, Item 1)

7.6.11.3.3. Taxiway Paved Shoulders. The minimum paved taxiway shoulder width for C-146 airfields is 25 ft (UFC 3-260-01, Table 5-1, Item 3).

7.6.11.3.4. Taxiway Clearance Line (Fixed or Mobile Objects). The taxiway clearance line for fixed or mobile objects for C-146 airfields is 150 ft from the taxiway centerline (UFC 3-260-01, Table 5-1, Item 10).

7.6.11.3.5. Taxiway Clearance Line (Parallel Taxiway). The taxiway clearance line for parallel taxiways for C-146 airfields 175 ft (UFC 3-260-01, Table 5-1, Item 11).

7.6.11.3.6. Taxiway Centerline Radius. The taxiway centerline radius is the taxiway width divided by 2 and added to 100 ft. The minimum taxiway centerline radius is 111 ft ($22/2 + 100 = 111$ ft). The centerline turning radii used to determine the fillet radii for **Figures 7.6.3** and **Figure 7.6.4** are 150 ft and 125 ft respectively.

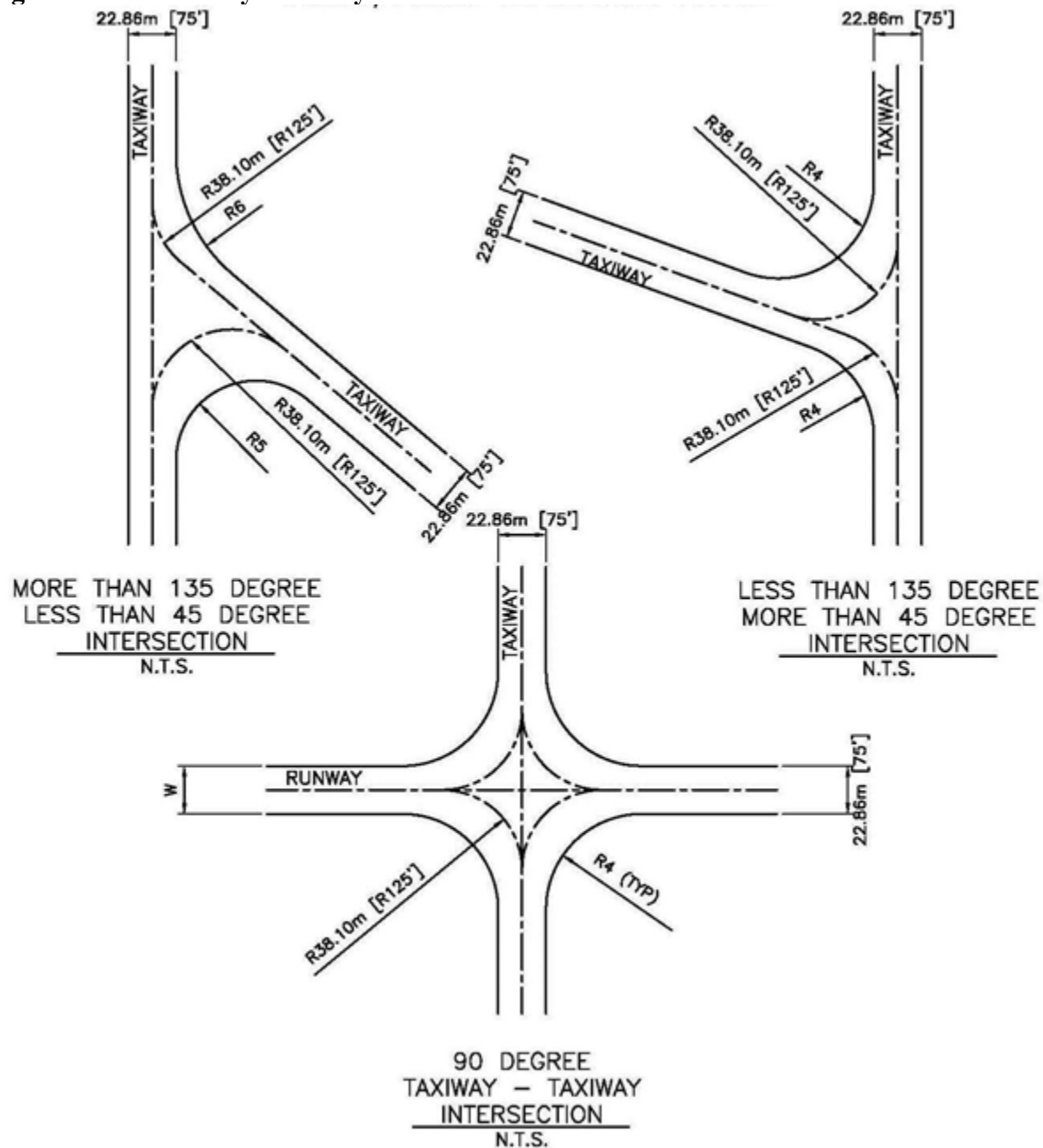
7.6.11.3.7. Wingtip Clearances for Taxiing. The wingtip clearance for parked aircraft is 10 ft (UFC 3-260-01, Table 6-1, Item 4). The wingtip clearance of aircraft on interior or secondary peripheral taxilanes is 20 ft (UFC 3-260-01, Table 6-1, Item 5). The wingtip clearance for aircraft on interior or secondary peripheral taxilanes is 30 ft (UFC 3-260-01, Table 6-1, Item 6).

7.6.11.3.8. Taxiway/Taxiway Intersection Fillet Radii. See **Table 7.6.13** and **Figure 7.6.4**

Table 7.6.13. Taxiway/Taxiway Intersection Fillet Radii.

Taxiway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	R4^{1,3}	R5²	R6²
75 ft	150	125	250
Notes: 1. Less than 135 and more than 45-degree intersection 2. More than 135 and less than 45-degree intersection 3. 90-degree intersection			

Figure 7.6.4. Taxiway-Taxiway Intersection Fillet Radii.



7.6.11.4. Apron (CATCODE: 113321).

7.6.11.4.1. Requirements Determination. Aprons are individually designed to support specific aircraft and missions at a particular installation. The actual dimensions of an apron are based on the number of authorized aircraft, maneuvering space, and type of activity the apron serves. (DAFMAN 32-1084, CC 113321, Paragraph 1.2). The dimensions of an operational parking apron for the C-146 are based on the number of PMAI minus any covered parking provided. It does not include the number of BAI, PTAI, or transient requirements as these are typically located on separate aprons or in

a separate hangar. When factoring for other aircraft inventory on a single apron, consider all aircraft inventories as applicable in the total number of aircraft and follow the steps laid out in paragraph 7.6.11.4.2. The minimum clearances allowed between those aircraft in a parking configuration are shown in **Table 7.6.14** and **Figure 7.6.5**.

7.6.11.4.2. Scope Determination. Multiply the wingspan of the selected aircraft by its length. Multiply the product by a factor determined by the number of aircraft being supported (DAFMAN 32-1094, CC 113321 Apron, Paragraph 1.3.7). For one aircraft use a multiplier of 7.31, for two aircraft use a multiplier of 5.63, for five aircraft use a multiplier of 4.4, for eight aircraft use a multiplier of 4.02, and for five aircraft use a multiplier of 3.82.

7.6.11.4.3. Dimensions. The parking apron size for the C-146 is determined by calculating the aircraft dimensions 69.83 ft (L) x 68.83 ft (W) and adding the minimum apron clearances. To calculate the required apron parking spaces subtract the covered maintenance spaces from the PMAI (See **Table 7.6.20**); therefore, 4 total aircraft or 3 PMAI= 2 apron spaces or 54,164 NSF (this area includes 37,964 NSF apron and 16,200 NSF of taxilanes for two access points attaching to the apron to a primary taxiway); 7 total aircraft or 6 PMAI= 5 apron spaces or 105,850 NSF (this area includes 81,550 NSF apron and 24,300 NSF of taxilanes for three access points attaching to the apron to a primary taxiway); and 23 total aircraft or 15 PMAI= 11 apron spaces or 202,009 NSF (this area includes 169,609 NSF apron and 32,400 NSF of taxilanes for four access points attaching to the apron to a primary taxiway).

7.6.11.4.4. Access to Hangars, Docks, and Shelters. Apron configuration is affected by the size of the door openings and by the dimensions and turning radius of the largest aircraft using the buildings. For the C-146, the minimum length of apron to access hangars, docks, and shelters is 40 ft when accessed from through or peripheral taxilanes and 40 ft when accessed from an interior or secondary peripheral taxilane (UFC 3-260-01, Table 6-6, Item 1 & UFC 3-260-01, Table 6-1, Item 15). If the distance from the main operational pavement to the hangar exceeds 40 ft, consider constructing a maneuvering area immediately outside the hangar, large enough to allow the aircraft to turn around. The width of the hangar access area and maneuvering area should be equal to the width of the hangar door opening. Connect this maneuvering area to the main apron with a taxiway or towway.

7.6.11.4.5. Aircraft Parking Arrangements. See **Figure 7.6.5** for a typical parking apron for the C-146.

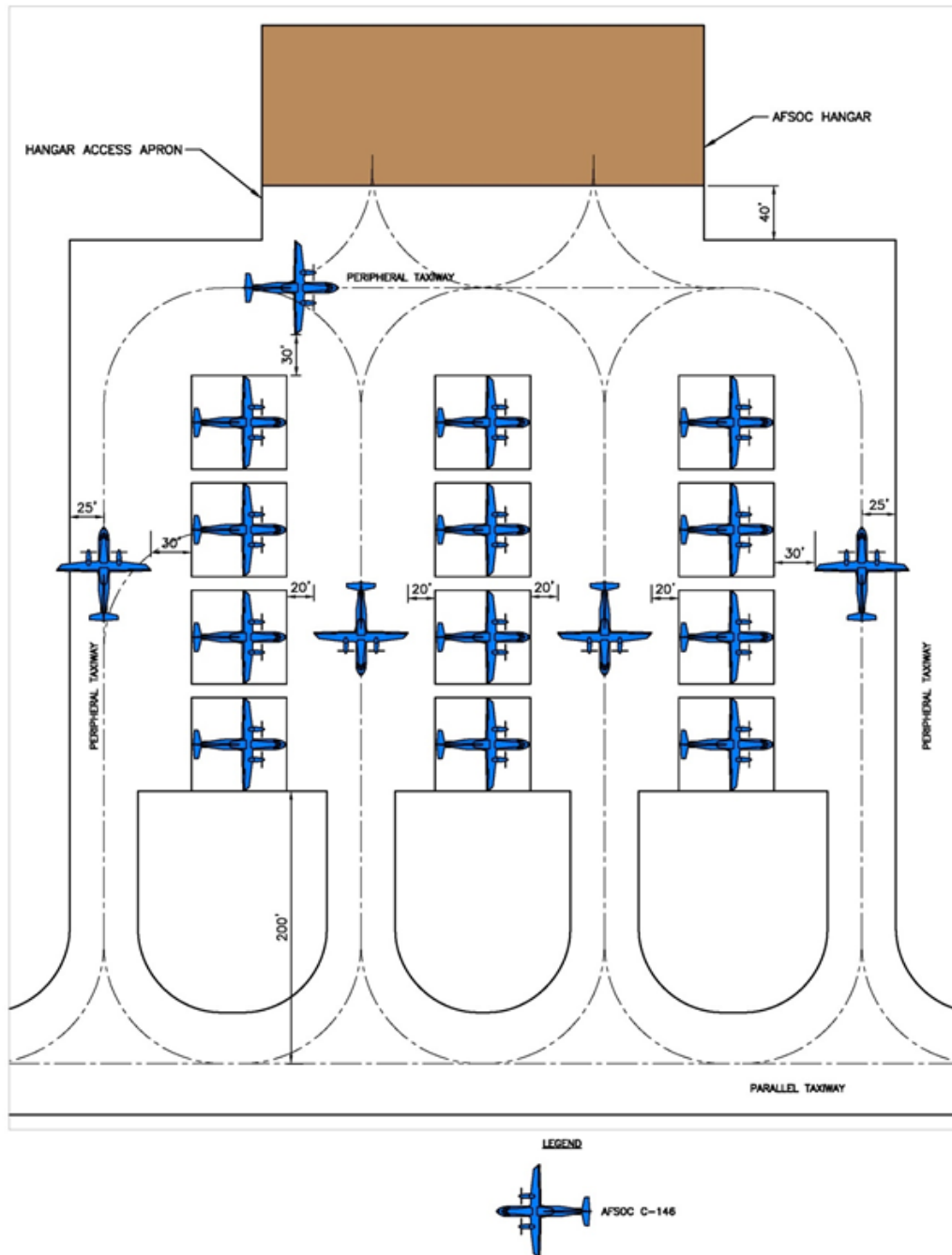
Table 7.6.14. C-146 Parking Apron Clearances.

Hangar Access Apron – From Through or Peripheral Taxilanes ¹		Wingtip Clearance on Peripheral or Through Taxilanes ²		Wingtip Clearance on Interior/Secondary Peripheral Taxilanes ³		Min. Distance Between Wings of Parked Aircraft ⁴	
m	ft	m	ft	m	ft	m	ft
10.36	40	9.14	30	6.10	20	3.05	10

Notes:

1. UFC 3-260-01, Table 6-5, Item 1: 34.42 ft (0.5 x wingspan) + 30 ft (wingtip clearance for aircraft on peripheral or through taxilanes) - 25 (dist. from peripheral taxilane centerline to edge of apron); rounded.
2. Source: UFC 3-260-01, Table 6-1, Item 6.
3. Source: UFC 3-260-01, Table 6-1, Item 5.
4. Source: UFC 3-260-01, Table 6-1, Item 4.

Figure 7.6.5. C-146 Typical Parking Apron.



7.6.11.5. Paved Shoulders (CATCODE: 116642).

7.6.11.5.1. Requirements Determination. Paved shoulders are required for all operational pavements.

7.6.11.5.2. Dimensions. The total width of paved shoulders for the C-146 is 50 ft (25 ft per side, UFC 3-260-01, Table 6-1, Item 11). The total width of paved and unpaved shoulders is 50 ft (UFC 3-260-01, Table 6-1, Item 10).

7.6.11.6. Towway.

7.6.11.6.1. Requirements Determination. When designing for access to a hangar, flare the pavement to the width of the hangar door from a distance beyond the hangar sufficient to allow maintenance personnel to turn the aircraft around.

7.6.11.6.2. Scope Determination. Width, towway turning radius, horizontal clearance from towway centerline to fixed or mobile obstacles, and vertical clearance from the towway pavement to fixed surface or mobile obstacles.

7.6.11.6.3. Width. The minimum towway width for the C-146 is 20.58 ft (UFC 3-260-01, Table 5-6, Item 1): Width of towway for Air Force facilities = outside gear width of towed mission aircraft + 10 ft. C-146 outside gear width is 10.58 ft + 10 ft = 20.58 ft).

7.6.11.6.4. Turning Radius. The C-146 towway turning radius is 150 ft (UFC 3-260-01, Table 5-6, Item 8).

7.6.11.6.5. Horizontal Clearance. The minimum horizontal clearance from the towway centerline for the C-146 is 60 ft (UFC 3-260-01, Table 5-6, Item 11).

7.6.11.6.6. Vertical Clearance. The minimum vertical clearance from the towway pavement for the C-146 is the aircraft height plus 10 ft (14.33 + 10) or 24.33 ft (UFC 3-260-01, Table 5-6, Item 12).

7.6.11.6.7. Fillet Radius. The minimum fillet radius at intersections is 100 ft (UFC 3-260-01, Table 5-6, Item 9).

7.6.11.7. Warm-up/Holding Pad (CATCODE: 111666).

7.6.11.7.1. Requirements Determination. A warm-up/holding pad is authorized for each end of a runway. In addition to providing a location to warm up and hold aircraft waiting to depart, warm-up/holding pads provide a location for C-146 aircraft to conduct hot gas refueling and FARP training.

7.6.11.7.2. Scope Determination. A warm-up/holding pad is authorized for each end of a runway sized to accommodate two of the largest aircraft assigned to a base (DAFMAN 32-1084, Paragraphs 2.1.13.2 and 2.1.13.4).

7.6.11.7.3. Dimensions. The minimum warm-up/holding pad for C-146 is 54,164 NSF. The area is based on parking apron criteria for two C-146 aircraft.

7.6.11.8. Aircraft Washrack (CATCODE: 116672).

7.6.11.8.1. Requirements Determination. The dimensions of the aircraft plus 10 ft clearances determine the minimum washrack pavement dimensions (UFC 3-260-01, Table 6-5, Fighter aircraft requirement).

7.6.11.8.2. Scope Determination. The washrack area will be 69.83ft (L) + 20 ft (clearance both sides) x 68.83 ft (W) + 20 ft (clearance both sides) = 7,980 NSF. A utility storage building of 240 NSF is also allowed for this facility (DAFMAN 32-1084, Paragraph 2.1.15.3; justified by UFC 3-260-01, Paragraph 6.14.4). Note that wash rack

covers are considered equipment items to be purchased by the user and are not part of this CATCODE.

7.6.11.8.3. Dimensions. The minimum paved area for the C-146 requires 7,980 NSF (89.83 ft [L] x 88.83 ft [W]). The utility storage allowed for this facility is 240 NSF.

7.6.11.9. Aircraft Rinse Facility.

7.6.11.9.1. Requirements Determination. C-146 aircraft exposed to a salt water environment require a CWR.

7.6.11.9.2. Scope Determination. A CWR can be performed manually by hand-held hose or spraying equipment or by use of a taxi-through automated system. AFSOC C-146 aircraft are equipped with DIRCM and therefore are not authorized a CWR taxi through facility.

7.6.11.10. Hydrant Fueling System (CATCODE: 121122).

7.6.11.10.1. Requirements Determination. Hydrant fueling systems are not required for the C-146; however, when hydrant fueling systems are available or specifically authorized, follow the aircraft direct fueling system design criteria for fixed-wing small-frame as defined in UFC 3-460-01 Paragraph 4-4.2.2.

7.6.11.10.2. Dimensions. No Fuels Engineers exist within HQ AFSOC or its subordinate units. If a requirement is identified, existing engineering staff with support from the MAJCOM Fuels Management section, will reach out to technical experts such as the HQ Air Force Petroleum Agency and DLA/DESC for development of specific dimensions. In general, this requirement is based on installation specific mission requirements and airframe specific upload rates.

7.6.11.11. Operating Storage, Jet Fuel (CATCODE: 124135).

7.6.11.11.1. Requirements Determination. Operating storage tanks are not required for the C-146; however, they are provided wherever dispensing facilities are remote from bulk storage tanks. Provide separate storage for each type and grade of fuel. For aviation activities, provide a minimum of two tanks for each type of fuel (UFC 3-460-01 Paragraph 8-3.3). Acceptable fuels for AFSOC C-146 aircraft include Jet-A, Jet A-1, Jet B, JP-4, JP-5, and JP-8.

7.6.11.11.2. Dimensions. The capacity or size of each fuel storage tank is based upon the logistical and mission requirements for the weapon systems to be supported from it, thus the requirement will vary. Per UFC 3-460-01, Paragraph 8-3.4, general guidance is to provide a minimum of two tanks at aviation activities for each type of aviation turbine fuel. Assuming a requirement is identified, the appropriate Service Headquarters with DLA Energy approval will determine the number and size of tanks required.

7.6.11.12. Aircraft Truck Fueling Facility (CATCODE: 126925).

7.6.11.12.1. Requirements Determination. Truck fill stands are required at all Air Force installations where bulk petroleum products are stored and dispensed.

7.6.11.12.2. Scope Determination. The number of fill stands required depends on the number of trucks which must be loaded simultaneously. This is determined by the command having jurisdiction from a study of the mission and operation requirements.

7.6.11.12.3. Dimensions. Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1). Per DAFMAN 32-1084 Paragraph 2.2.17.4.1, a minimum of one outlet for each grade of fuel is necessary. Acceptable fuels for AFSOC C-146 aircraft include Jet-A, Jet A-1, Jet B, JP-4, JP-5, and JP-8. For specific projects, the appropriate Service Headquarters can assist in determining the number.

7.6.11.13. Cryogenics Storage (Liquid Oxygen Storage) (CATCODE: 442258).

7.6.11.13.1. Requirements Determination. C-146 aircraft liquid oxygen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.6.11.13.2. Scope Determination. AFSOC only needs to store materials in cylinders. The portable oxygen bottle, which is ancillary mission equipment, is serviced with liquid oxygen typically stored in cylinders.

7.6.11.13.3. Dimensions. One cylinder is 8 NSF (10 GSF).

7.6.11.14. Gaseous Nitrogen Storage.

7.6.11.14.1. Requirements Determination. C-146 aircraft liquid gaseous nitrogen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.6.11.14.2. Scope Determination. AFSOC only needs to store materials in cylinders. The portable nitrogen cylinder, P/N 55D6496, and the self-generating nitrogen servicing unit, P/N PD96LDEA/TILDD-05 are used for servicing and replenishment.

7.6.11.14.3. Dimensions. One cylinder is 8 NSF (10 GSF).

7.6.11.15. Standard Host Installation Facilities.

7.6.11.15.1. Aerial Delivery Facility. See **paragraph 1.1.3.5.1.**

7.6.11.15.2. FARP Equipment Storage. See **paragraph 1.1.3.5.2.**

7.6.11.15.3. Deployment Processing Facility. See **paragraph 1.1.3.5.3.**

7.6.11.15.4. Airfield Ancillary Facilities. See **paragraph 1.1.3.5.4.**

7.6.12. Base Operations Ground Support - Pavement Requirements.

7.6.12.1. **Airfield.** Airfield mission and operational procedures have resulted in the development of six types of Air Force airfields: light, medium, heavy, modified heavy, auxiliary, and assault landing zone. The decision on which airfield type to design for is made by the appropriate MAJCOM. Airfield designs are generally based upon medium load criteria. Though it is not specifically listed, the pavement for the C-146 should be classified as light load, index 3, under the Aircraft Group Index in accordance with AFI 32-1041, Figure 4.1 based on aircraft with similar gear types (AFI 32-1041, Figure 4.2).

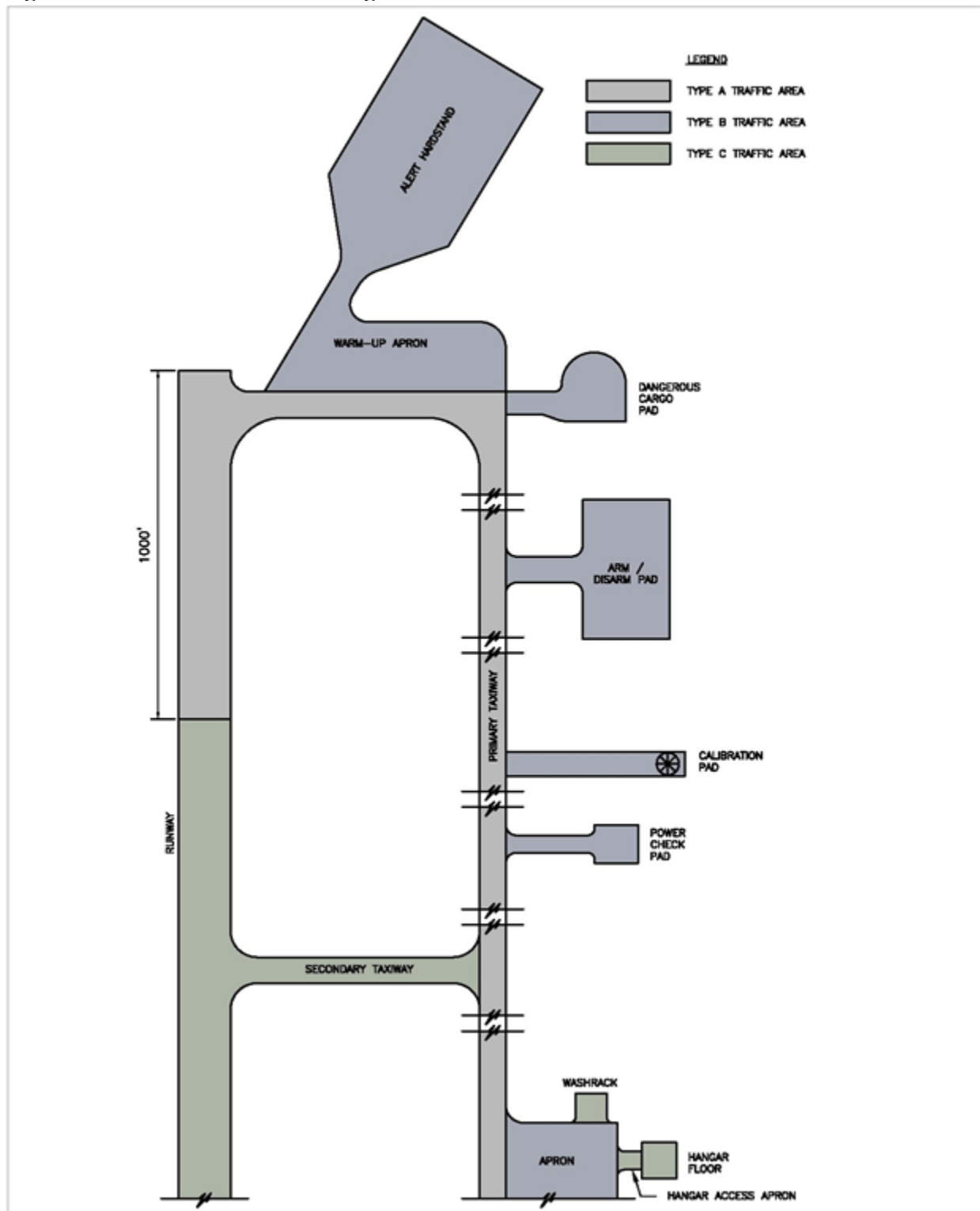
An airfield pavement with a given PCN can support, without weight restriction, an aircraft with an ACN rating equal to or less than the airfield pavement PCN. Verify the C-146 ACN is equal to or less than airfield pavement PCNs in areas of operation. The design gross weight and passes for a light airfield type is 68,000 lbs at 400,000 passes (UFC 3-260-02, Table 3-1).

7.6.12.2. Traffic Areas. Certain areas of an airfield (e.g. runway shoulders, runway overruns) do not normally carry fully loaded aircraft; therefore, they do not need to be designed for the maximum gross weight (UFC 3-260-02, Chapter 4, Section 3, Paragraph C). See [Figure 7.6.4](#) for the traffic areas in an airfield designed for the C-146. The design gross weight for Type C (gross weight – 51,000 lbs.) traffic areas and overruns are 75 percent of the design gross weights for Types A and B (gross weight - 68,000 lbs.) traffic areas. Light load airfields are not designed with Type D traffic areas (UFC 3-260-02, Table 3-1). See [Table 7.6.15](#) for Light Load Airfield Pavements by Traffic Area Type.

Table 7.6.15. Light Load Pavements by Traffic Area Type.

Pavement Use	Light Load Pavement Traffic Areas		
	Type A – Maximum Gross Weight 68,000 lbs.	Type B – Maximum Gross Weight 68,000 lbs.	Type C – Maximum Gross Weight 51,000 lbs.
Runway (First 1,000 ft on each end)	X		
Runway (Interior section between 1,000 ft ends)			X
Aprons (except hangar access)		X	
Hangar Access Aprons			X
Hangar Floors			X
Hardstands		X	
Power Check Pad		X	
Arm/Disarm Pad	X		
Dangerous Cargo Pad	X		
Primary Taxiways (all)	X		
Overruns			X

Figure 7.6.6. Traffic Areas for Light Load Pavement Airfield.



7.6.12.3. **Paved Shoulders.** As a minimum, paved shoulders should be designed to support a load of 10,000 lbs imposed by a single wheel with a tire pressure of 0.69 MPa [100 psi] (UFC 3-260-02, Chapter 4, Section 7, Paragraph B).

7.6.12.4. **Hangar Floors.** See **Paragraph 7.6.16**, Maintenance Hangar Facilities.

7.6.12.5. **ACN and CBR.** The C-146 has a worst-case scenario CAN of 9.4 (AOH, Vol.1 Supplement page S-2). For operations from unpaved runways, the C-146 requires a worst-case scenario CBR of 26 percent (AOH, Vol. 1 pages 5-39).

7.6.12.6. **Pavement Thickness Requirements.** The C-146 minimum base course pavement thickness required is 6 inches for flexible pavements (UFC 3-260-02, Table 8-5) and 4 inches for rigid pavements (UFC 3-260-02, Section 8, Paragraph A).

Table 7.6.16. C-146 Base Operations Ground Facility Space Requirements.

Cat Code	Facility	UM	C-146 (3) ¹	C-146 (6) ¹	C-146 (15) ¹	DAFMAN 32-1084 Reference or Remarks/Calculations
111-111	Runway – Length (min.)	LF	3,250	3,250	3,250	From AFSOC/A3VN: 3,250 ft min; 4,500 ft for most operations.
111-111	Runway - Width (min.)	LF	35	35	35	From AFSOC/A3VN: 35 ft min.; UFC 3-260-01, Table 3-2: Class A runway width minimum 100 ft.
111-115	Paved Overrun - Length (min.)	LF	200	200	200	Corresponds to Air Force Class A runway, per ETL 09-1, Section 6.1.2 and UFC 3-260-01 Table 3-4.
111-115	Paved Overrun - Width (min.)	LF	100	100	100	Corresponds to Air Force Class A runway, per ETL 09-1, Section 6.1.2 and UFC 3-260-01 Table 3-4.
112-211	Taxiway Width	LF	22	22	22	From AFSOC/A3VN: 22 ft minimum.
112-211	Taxiway Paved Shoulder	LF	25	25	25	UFC 3-260-01, Table 5-1, Item 3.

113-321	Aircraft Parking Apron	NSF	54,164	92,128	202,009	DAFMAN 32-1084 CC 113321 Apron, Paragraph 1.3.7: Multiply the aircraft wingspan by the length. Multiply the product by a factor. Factor for 3 PMAI = 5.63; factor for 6 PMAI = 4.4; and factor for 15 PMAI = 3.82. 4 total aircraft or 3 PMAI= 2 apron spaces or 54,164 NSF; 7 total aircraft or 6 PMAI= 5 apron spaces or 105,850 NSF; and 23 total aircraft or 15 PMAI= 11 apron spaces or 202,009 NSF. Subtract covered maintenance spaces from the total number of aircraft.
113-321	Apron for Access to Hangars, Docks, Shelters	LF	40	40	40	UFC 3-260-01, Table 6-6, Item 1 & UFC 3-260-01, Table 6-1, Item 15: Width equals the hangar door opening (40 ft).
N/A	Towway Width	LF	21	21	21	UFC 3-260-01 Table 5-6. Width is 5 ft on each side of gear. C-146 landing gear width is 10.6 ft.
N/A	Clearance from Towway Centerline	LF	60	60	60	UFC 3-260-01 Table 5-6. Clearance is the greater of 1/2 the wingspan + 25 ft or the min of 60 ft. C-146 wingspan is 69 ft. $54/2 + 25 = 59.5$ ft.
116-642	Paved Shoulders	LF	25	25	25	UFC 3-260-01 Table 3-2.
116-666	Pad, Warm-up/Holding	NSF	54,164	54,164	54,164	DAFMAN 32-1084 Para 2.1.13.2: Sized to accommodate two aircraft. Based on parking apron criteria for 2 aircraft.
116-672	Aircraft Washrack	NSF	7,980	7,980	7,980	The washrack dimensions are the length of the aircraft plus 30 feet x the wingspan of the aircraft plus 30 feet.
116-672	Aircraft Washrack Utility Building	GSF	300	300	300	DAFMAN 32-1084 Para 2.1.15.3: Allows a utility storage building of 240 NSF. Conversion from NSF to GSF is $240 \times 1.25 = 300$ GSF.

126-925	Aircraft Truck Fueling Facility	EA	2	2	2	Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1). .
n/a	Cryogenics Storage (Liquid Oxygen)	GSF	10	10	10	Facility not required to be dedicated to AFSOC unit, verify capacity of host installation. AFSOC only needs to store materials in cylinders. Calc. = 8 NSF X 1.25 net to gross.
n/a	Gaseous Nitrogen Storage	GSF	10	10	10	Facility not required to be dedicated to AFSOC unit, verify capacity of host installation. AFSOC only needs to store materials in cylinders. Calc. = 8 NSF X 1.25 net to gross.
Airfield Paving (w/o Runways and Overruns)		NSF	113,098	151,062	260,943	
Total Airfield Paving		NSF	246,848	284,812	394,693	
Total Indoor Facilities		GSF	320	320	320	
Notes: 1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 15 PMAI = 23 total aircraft (2 BAI, 6 Training aircraft). 2. See paragraph 1.1.3.5 for more information on base ground operating facilities assumptions for facilities assumed to be existing and adequate at existing airfields.						

7.6.13. C-146 Training System Facilities.

7.6.13.1. Flight Simulator Training (CATCODE: 171212).

7.6.13.1.1. Requirements Determination. This facility houses aircraft flight simulators, and other special training devices. It also includes space for administration and records, classrooms, toilet facilities, trainer maintenance, and storage (DAFMAN 32-1084, CC 171212 Flight Simulator Training, Paragraph 1.1). Flight simulator training facilities are normally sized according to the type of simulator installed and vary considerably in floor area from one system to another.

7.6.13.1.2. Dimensions. DAFMAN 32-1084, CC 171212 Flight Simulator Training, Table 1.1 provides examples of typical simulator training facilities that can be used for initial planning purposes before specific requirements are identified. **Table 7.6.17** gives the facility requirements specific to the C-146.

7.6.13.1.3. Reference. **Table 7.6.19** lists the training systems for the C-146 by location type. A breakdown of space requirements in scenarios ranging from 3-15 PMAI is included in **Table 7.6.20**. A brief description of the space requirements and facility recommendations for flight simulator training is included below.

7.6.14. C-146 Training Systems. Operations training will be conducted at each C-146 base using the WST. Loadmaster training will be performed in the maintenance hangar using an existing aircraft. CONUS and OCONUS loadmaster training will utilize an aircraft hangar bay that is dual purpose and shared with maintenance activities. The loadmaster training bay is not a separate square footage requirement in addition to the covered maintenance spaces calculated in [Table 7.6.20](#).

7.6.14.1. WST. The WST is a maintenance and aircrew training system for the C-146. The WST features a flight compartment and EMM system that simulates a variety of C-146 mission scenarios. A simulator bay is required to house the WST. An overhead crane is ideal though not required; however, the simulator bay at a minimum should have an exterior access door opening of 20 ft (W) x 20 ft (H) and a maintenance access door of 8.2 ft (W) x 9.8 ft (H). The simulator bay floor should be able to support a total weight load of 37,800 lbs. Adjacent to the simulator bay should be areas for computer, supply, and maintenance rooms. See paragraph [7.6.14.6.1](#) for other design considerations regarding this WST bay. The required space allocation for this facility can be found in [Table 7.6.20](#).

Table 7.6.17. Building Utility System Requirements for WST Bay.

System	Requirements
Mechanical	The simulator bay should be maintained between 60-80°F (15-27°C) at a relative humidity of 40-60% (non-condensing), both above and below the floor. In facilities where the EMM cabinet is stored within the simulator bay, the ambient temperature should not exceed 75°F (24°C) to avoid damaging the electronics within the EMM cabinet. A typical 10-ton water air conditioning unit, based on the maximum ambient conditions listed above, provides a nominal cooling capacity of 120,000 BTU/hr (35.0 kW). Lighting intensities should provide 50 foot-candles (approximately 500 lux) of total illumination measured 3 feet above the floor. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	The power requirement for the flight compartment is 400/230 VAC, 3-phase, 60 Hz, 5 wire, 6.5 kVA circuit. The power requirement for the EMM Cabinet is 480 VAC, 3-phase, 4 wire, 80 kVA circuit. The power requirement for the Cockpit Air Conditioner is a 480 VAC, 3-phase, 5-wire, 5 kVA circuit. The power requirement for the Electric Load Units is 400/230 VAC, 3-phase, 60 Hz, 5 wire, 6 kVA circuit. The facility should provide 120V, 1-phase, and 20-amp outlets at various locations around the simulator bay for installing service equipment. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.

Plumbing	The simulator bay water supply requirements include an air conditioner maximum flow demand of 20 GPM, a water supply maximum temperature of 45°F (7°C), and a water supply minimum and maximum pressures of 25 psi and 125 psi respectively. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is recommended, although a wet-pipe system is an acceptable alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.6.14.2. **WST Computer Room.** The WST is a maintenance and aircrew training system for the C-146. The WST features a flight compartment and EMM system that simulates a variety of C-146 mission scenarios. An overhead crane is ideal, though not required; however, the simulator bay at a minimum should have an exterior access door opening of 20 ft (W) x 20 ft (H) and a maintenance access door minimum 8.2 ft (W) x 9.8 ft (H). The simulator bay floor should be able to support a total weight load of 37,800 lbs. Adjacent to the simulator bay should be areas for computer, supply, and maintenance rooms. See [paragraph 7.6.14.6.6](#) for other design considerations regarding this WST bay. The required space allocation for this facility can be found in [Table 7.6.20](#).

Table 7.6.18. Building Utility System Requirements for WST Computer Room.

System	Requirements
Mechanical	The computer room shall be maintained at 65-75°F (18-24°C) at a relative humidity of 40-60% non-condensing, both above and below the floor. Air conditioning requires a minimum of 60,000 BTU/hr capacity under the computer room floor to provide cooling for the equipment cabinets. A constant pressure flow of cooling air should be maintained at all times to prevent damage to the equipment. The computer room air conditioning system should be separate from other building air conditioning systems. A capacity of 70,000 BTU/hr is sufficient to meet the above floor temperature requirements for the computer room. Lighting intensities should provide 50-75 foot-candles of total illumination measured 30 inches above the floor. Light should generally be of the recessed florescent type. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.

Electrical	Electrical power should be separate from the air conditioning, lighting, or other facility/computer room electrical systems. Electrical service will be either 480/277V 3Ø/5W/60Hz or 400/230V 3Ø/3W/60Hz (Ground wire is equal in size to the phase conductors) should be provided for all computer equipment. The service should be rated to supply a minimum of 150 Amps. The service should be maintained within $\pm 10V$, at a frequency of 60 Hz $\pm 0.5Hz$. A computer service ground plate should be provided and wall mounted below the raised floor. Emergency power off switches should be provided. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118, and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system. The simulator should be equipped with an ultrasensitive smoke and fire protection system. This system should interface with the facility fire detection system to send and receive alarm annunciation signals. Sprinkler systems are not recommended for use in the simulator bay; however, if such systems are used, a dry-pipe system is recommended, although a wet-pipe system is an acceptable alternative. The sprinkler system should be activated by cross-zoned smoke detectors, ionization detectors, and heat detectors and should be equipped such that any zones in alarm will sound prior to the discharge of water. Manual abort stations should be provided to allow personnel the ability to abort water discharge under false alarm conditions.
Communication	Provide Communication requirements in accordance with UFGS Division 27 - Communications, Division 33 - Utilities and UFC 3-580-01 for designing and implementing of interior and exterior telecommunications infrastructure for military construction. This infrastructure typically includes telecommunications spaces, pathways, cabling and interconnecting components.

7.6.14.3. **VTRAT.** The VTRAT will be located inside a room that can support trainees, instructors, and computer equipment. The cooling requirements for the VTRAT are similar to those of most simulators and should not be overlooked due to the small size of this simulator. The required space allocation for this facility can be found in [Table 7.6.20](#).

7.6.14.4. **NVG.** The space required for NVG training should be large enough to support trainees, instructors, and NVG equipment. The equipment for NVG does not require much more than desk space for students and the instructor. Lighting should also be considered to ensure the equipment is being used in an environment dark enough to meet training requirements. The required space allocation for this facility can be found in [Table 7.6.20](#).

7.6.14.5. **Dimensions.** See [Table 7.6.20](#) for the space requirements for the individual spaces within a C-146 training systems facility.

7.6.14.6. **Design Considerations.**

7.6.14.6.1. Simulator Bay. Ensure adequate grounding to device specifications. Provide perimeter lighting for accessibility. For facility A/C, ensure the bay A/C is on the side walls and not over the simulator (to avoid condensation dripping on visual domes) and make sure there is a condensation drain. For simulator cockpit A/C, design in some flexibility to accommodate different types of A/C units (i.e. split unit, package unit, or chilled water) and make sure there is a condensation drain. Provide a separate trench from the anticipated cockpit A/C location to edge of the reaction pad. Do not install ceiling tiles because they are not accessible once the device is installed. Provide electrical disconnects for the UPS, drawbridge, and cockpit A/C unit, etc. Determine device/squadron requirements for a back-up power generator. Provide space within the bay for storage. Provide double doors into the bay, computer room, maintenance area, front entrance, and any supply points and suggest only one point of entry into the open storage area. Install an overhead 2-ton crane with variable speeds and a crane control cable on a remote cable from the hoist. Ensure that there is a sprinkler connection on the wall of the bay for a sprinkler pipe under the device (not required for electric motion; required for hydraulic motion).

7.6.14.6.2. Device/Simulator. Be very clear on who will provide the stairs or platform for the device (either MILCON or the device provider). Make the device orientation design flexible because the vendor may not be the same as the vendor under design. Determine who will provide the UPS (normally vendor provided but make sure) and that it is adequately sized.

7.6.14.6.3. Communications and SIPR. Understand the proposed comprehensive interior design layout so that SIPR conduit can be installed in accordance with UFGS 27 05 29.00 10 & AFSSI 7703. This includes ensuring furniture/equipment will not block access for inspection requirements and should consider the separation of secure and unsecure communication lines.

7.6.14.6.4. IDS, ACS, and CCTV. These items are not provided by the MILCON project and are installed during construction. End user organizations are required (pre-design) to staff all IDS/ACS/CCTV requirements through the local Security Forces Squadron NCOIC to the AF Security Forces Center for validation/funding. MILCON scope will provide power and pathways only, not installation, procurement, or processing of systems/devices. Define IDS/ACS/CCTV requirements early so that the infrastructure can be installed during construction. Ensure walls and doors meet the security requirements for the open-standards architecture approach.

7.6.14.6.5. Classroom. Provide ceiling power (junction boxes/outlets) for projectors, split ballast for front lighting in classrooms and debrief areas (overhead projectors), and dual whiteboards: One under automated projector screen, the other on a side wall.

7.6.14.6.6. Computer Room. Ensure there is adequate grounding for all computer room equipment (provide a grounding bar under the isolated ground room floor).

Provide electrical disconnects for proposed computer room layout (PDU, UPS, etc.). Ensure chiller and condensing units be adequate for proposed computer room layout based on equipment heat output. The emergency power off switch in the isolated ground room should be dual purpose for AC/DC power and the UPS. Provide ultra-sensitive smoke detection as provided in AFMAN 91-118. Make sure trenches penetrate the walls between the computer room and bay. Provide a communications closet that complies in accordance with UFGS Division 27 - Communications and Division 33 – Utilities. The AFCEC Fire Protection Office has determined that cabling associated with a flight simulator or other non-building equipment does not factor into the underfloor suppression requirement related to plenum-rated cable. For protecting electronic equipment from smoke and fire, refer to ETL 01-18.

7.6.14.6.7. Structure. The WST facility shall be identified as Risk Category III based on ACSE 7.

7.6.14.6.8. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

Table 7.6.19. C-146 Training Systems by Location Type.

Simulator Type	No. of Training Systems (CONUS)				No. of Training Systems (OCONUS)		
	Training Center ¹	3 PMAI	6 PMAI	15 PMAI	3 PMAI	6 PMAI	15 PMAI
WST	2	0	0	1	0	0	1
VTRAT	2	1	1	1	1	1	1
NVG	1	1	1	1	1	1	1

Note:
1. Training Center locations are CONUS only.

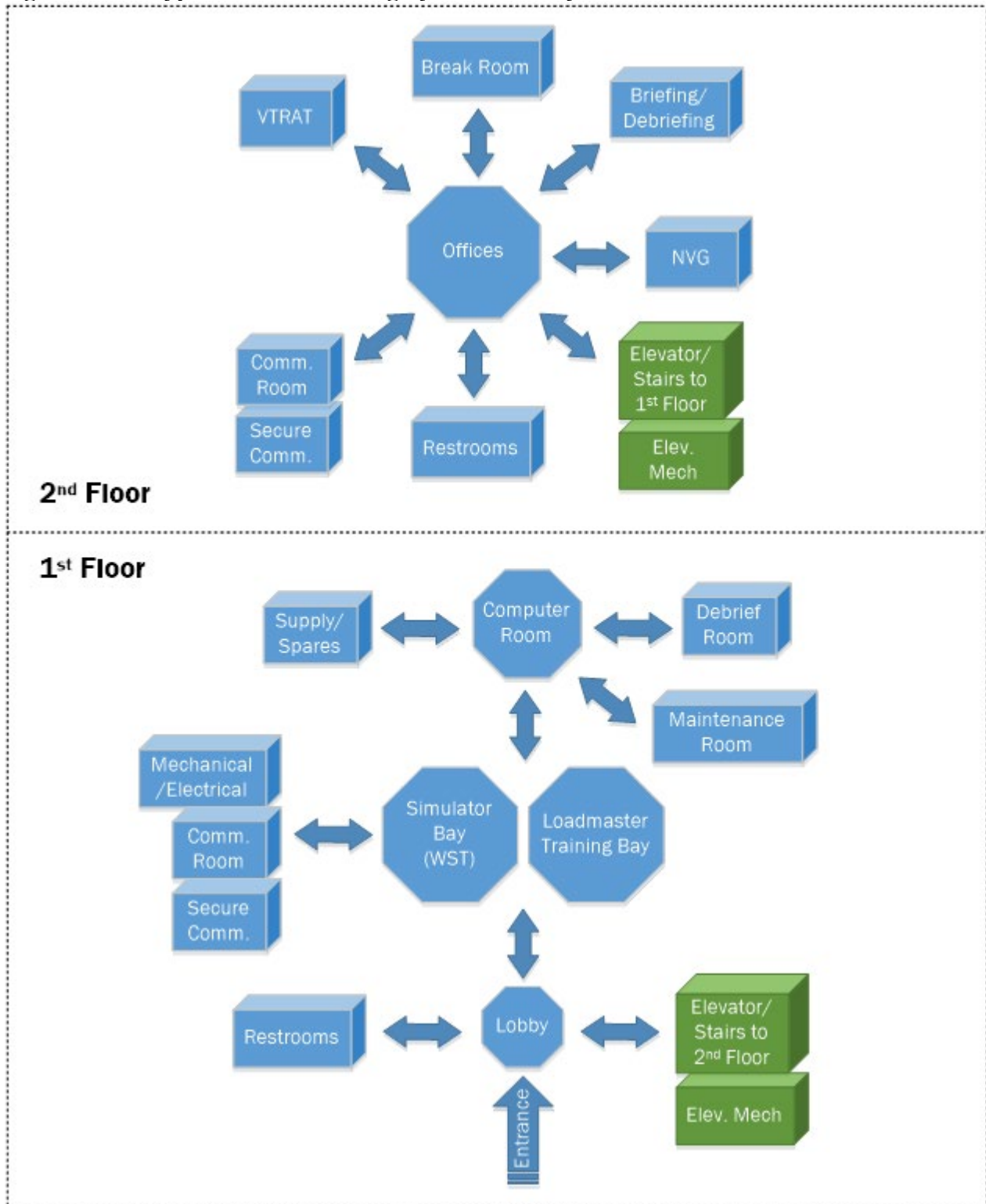
Figure 7.6.7. Typical C-146 Training Systems Facility.

Table 7.6.20. C-146 Training Systems Facility Space Requirements.

Cat Code	Facility	UM	C-146 (3)¹	C-146 (6)¹	C-146 (15)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
171-212	Instructor Offices ²	NSF	0	0	425	AFSOC/A4I: Space for 6 PN required. 1 Type D for supervisor, 5 Type E for others. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
171-212	Contractor Offices ²	NSF	0	0	425	AFSOC/A4I: Space for 6 PN required. 1 Type D for supervisor, 5 Type E for others. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices
171-212	WST	NSF	0	0	2,500	AFSOC/A4I: The standard AFSOC simulator bay size is size 50' (W) x 50' (L) x 50' (H) to allow flexibility between devices and weapon systems. Larger spaces will be provided to support minimum device specifications only. Only located at full squadron (15 PMAI, 2 BAI) locations.
171-212	Loadmaster Training Bay	NSF	0	0	0	Loadmaster training bays will be dual-use with maintenance activities. The area required (7,980 NSF) is accounted for in the maintenance hangar section because the training bay will be dual purpose and is part of the covered maintenance space calculation in Table 7.6.20.
171-212	VTRAT	NSF	0	0	300	Hurlburt Simulator Facility: VTRAT room 15' x 20'.
171-212	NVG Room	NSF	0	0	100	Hurlburt Simulator Facility: NVG room 10' X 10'.
171-212	Computer Room	NSF	0	0	600	AFSOC/A4I: Computer Room 20 ft x 30 ft.
171-212	Supply Spares	NSF	0	0	160	AFSOC/A4I: 10ft (W) x 16' (L) x 8' (H).
171-212	Maintenance Area	NSF	0	0	300	AFSOC/A4I: Maintenance Room 15' (W) x 20' (L) x 10ft (H).
171-212	Brief/Debrief Rooms	NSF	0	0	600	AFSOC/A4I: 15' (W) x 20ft (L) x 10' (H); 2 rooms, 300 NSF each.
171-212	Lobby	NSF	0	0	100	CG 61 Admin Overview Table 1.3: User Justified. Provide 100 NSF.

171-212	Break Room	NSF	0	0	100	CG 61 Admin Overview Table 1.3: 16% Occupants x 18 NSF. Minimum of 100 NSF.
171-212	Common Areas	NSF	0	0	0	CG 61 Admin Overview Paragraph 1.5.2: Space varies. Included in NSF to GSF conversion.
171-212	Mech. and Elec. Rooms	NSF	0	0	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conversion
171-212	Comm. Room	NSF	0	0	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Secure Comm. Rm	NSF	0	0	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Admin. Support Space	NSF	0	0	240	CG 61 Admin Overview Paragraph 1.4.3 Minimum 20 sf per person. AFSOC/A4I: default is the minimum.
171-212	Admin. Circulation	NSF	0	0	109	CG 61 Admin Overview Paragraph 1.4.2: Max 10% of Administrative Space
171-212	Special Purpose Circulation	NSF	0	0	505	CG 61 Admin Overview Paragraph 1.4.2: Max 10% of Special Purpose Space
Total Training Facilities		NSF	0	0	6,752	
Total Training Facilities		GSF	0	0	8,440	Net to Gross conversion factor of 1.25.
Notes: 1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 15 PMAI = 23 total aircraft (2 BAI and 6 Training aircraft). 2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting, and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.						

7.6.15. C-146 Operations Facilities.

7.6.15.1. Squadron Operations (CATCODE: 141753).

7.6.15.1.1. Requirements Determination. Each squadron needs an operational building for administration, scheduling, training, briefing, personal equipment maintenance, and storage for aircrews.

7.6.15.1.2. Scope Determination. Space must be provided for the commander and staff. Space is required for AFE systems maintenance and the care, storage, and issue of flying clothing and equipment for each crew member. Space is also required for an operations officer to direct flight operations and for intelligence, mission planning, computers, radar and navigation, photos and maps, briefing room, locker area, and radio and electronic countermeasures. The required space allocation for this facility

can be found in [Table 7.6.19](#). See **paragraph 1.1.3.6 for more information about the unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within squadron operations facilities.**

7.6.15.1.3. Typical C-146 Operations Squadron Composition. Includes a commander, first sergeant, operations officer, assistant operations officers, resource advisors, commander's executives, senior enlisted manager, flight staff, standardization and evaluation, safety, security, technology, mobility/supply (which can be located at LRS), AFE (can also be located with SOSS), a Mission Control Center (this includes current operations, plans, flight planning, flight management, and research and development), scheduling, training, ARMS, tactics, and intelligence. This facility will also include an armory (which can be located at LRS; squadrons require nearby access), a tactical operations center, training room, conference room, and briefing rooms.

7.6.15.1.4. Security Considerations. Plans, intelligence, and the tactical operations center require a SECRET open storage facility. C-146 squadrons need access to SCIF; however, one does not need to be collocated with the operations facility.

7.6.15.1.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

7.6.15.1.5.1. This facility should include space for a "wellness room" that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child's birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

7.6.15.1.6. Dimensions. See [Table 7.6.19](#) for the individual spaces within a C-146 operations facility. See **Paragraph 7.6.9**, Operational Squadron Characteristics, for the notional manpower of C-146 squadrons sized for 3, 6, and 15 PMAI.

Table 7.6.21. Building Utility System Requirements for Operations Facilities.

System	Requirements

Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions in all areas via an energy efficient HVAC system. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.6.8. Typical C-146 Operations Facility.

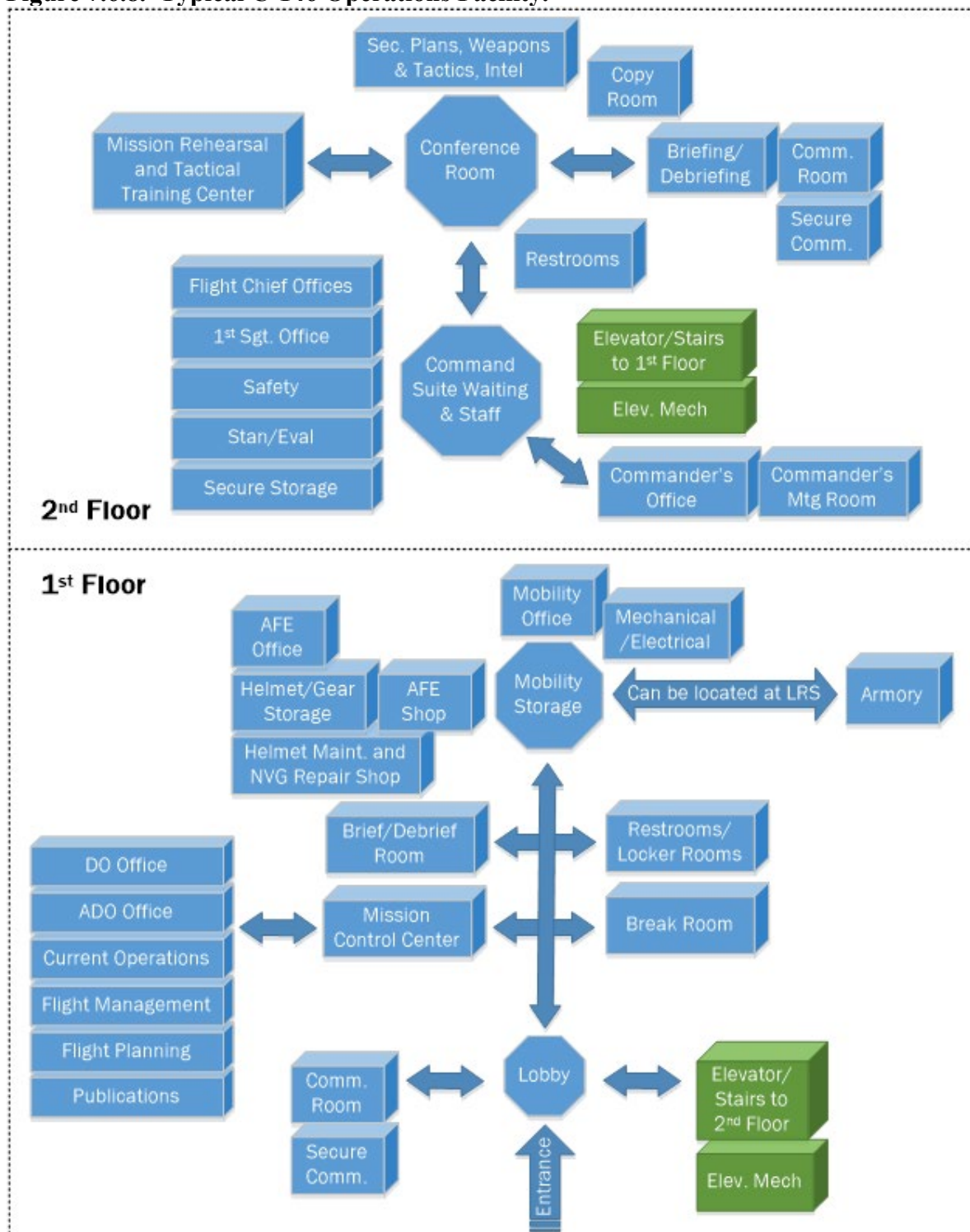


Table 7.6.22. C-146 Operations Facility Requirements.

Cat Code	Facility	UM	C-146 (3)¹	C-146 (6)¹	C-146 (15)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
141-753	Commander - Command Suite	NSF	140	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
141-753	First Sergeant - Command Suite	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Staff and Waiting Area – Command Suite	NSF	235	300	430	2 PN waiting area plus 4 offices. Add 1 Type E office per 4 PMAI. CG 61 Admin Overview Table 1.3: Waiting area is 20 NSF per person. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Commander's Meeting Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
141-753	Flight Staff Offices ²	NSF	444	1,104	1,332	< 6 PMAI: 3 flight chiefs and 3 assistants; Between 6 and 12 PMAI = 6 flight chiefs and 6 assistants; 13+ PMAI = 9 flight chiefs and 9 assistants. DAFMAN 32-1084 CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices (flight chiefs). CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices (assistants).
141-753	Director of Operations ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Assistant Operations Officers ²	NSF	144	288	432	< 6 PMAI: 3 ADOs; Between 6 and 12 PMAI = 6 ADOs; 13+ PMAI = 9 ADOs. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Senior Enlisted Manager ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Security Officer ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Safety Officer ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	POTFF Office	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.

141-753	Training Office	NSF	148	148	148	Assume 2 PN: Chief/NCOIC (Type D) and Training PN (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Medical Office	NSF	230	230	230	Per AIM, assume 3 personnel total per squadron integrated from SOSS. 1 officer (Type D), 2 enlisted (Type E). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Research and Development ²	NSF	160	190	280	2 PN plus 10 NSF per PMAI for storage. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Tactical Operations Center ²	NSF	200	200	350	Calculated as 23.3 NSF per #PMAI greater than or equal to 9. Not required if #PMAI is 8 or less. Minimum of 200 NSF.
141-753	Flight Planning ²	NSF	200	283	708	Based on 524th SOS B3102 Flight Planning: 425 sf. Calculated as 425/9 x number PMAI. Minimum of 200 sf.
141-753	Flight Management ²	NSF	130	130	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Standardization and Evaluation ²	NSF	130	130	260	Assume 2 PN per 5 PMAI. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	ARMS	NSF	115	180	245	Assume 1 PN per 5 PMAI plus 50 NSF for storage. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Tactics and Intel ²	NSF	350	440	710	Based on 524th B3102 Tactics Bullpen and Offices for 4 PN at 80 NSF each Plus 1 shared workstation per PMAI. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.

141-753	Current Operations/Plans ²	NSF	240	480	1,200	Based on 524th SOS B3102 Current Operations: 1,200 sf. Calculated as 1,200/15 x number PMAI.
141-753	Publications	NSF	60	60	60	Provide 60 NSF.
141-753	Women's Showers ³	NSF	30	30	30	1 shower. FC 4-470-02F: 30 NSF per shower/drying area.
141-753	Women's Locker Room ³	NSF	30	46	94	Calculated as (Squad Ops PN x 0.2 (% women per squadron) x 7.5 NSF (locker))/ 2 (stacked lockers).
141-753	Men's Showers ³	NSF	60	60	60	2 showers. FC 4-470-02F: 30 NSF per shower/drying area.
141-753	Men's Locker Room ³	NSF	118	184	376	Calculated as (Squad Ops PN x 0.8 (% males per squadron) x 7.5 NSF (locker))/ 2 (stacked lockers).
141-753	Restrooms and Janitor's Closet	NSF	0	0	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
141-753	Elevator	NSF	80	80	80	Provide 80 NSF.
141-753	Elevator Equipment Room	NSF	90	90	90	Provide 90 NSF.
141-753	Mech/Elec Rooms	NSF	0	0	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conversion.
141-753	Supply Room	NSF	100	100	100	Provide 100 NSF.
141-753	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) each floor.
141-753	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) each floor.
141-753	Training Room	NSF	240	276	564	AFSOC/A4I: 240 NSF minimum. Total unit authorization is 3 NSF per military PN. This space authorization should also house training open offices or workstations as required.
141-753	Secure/Classified Storage	NSF	20	20	20	Two, five-drawer safes (4' x 5').
141-753	Armory/Weapons Vault	NSF	60	120	300	Calculated as 20 NSF x #PMAI. Can be located at LRS.
141-753	Break Room	NSF	170	265	541	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF. Minimum of 100 NSF.

141-753	Conference Room	NSF	500	500	1,350	Size based on number of personnel in the squadron. CG 61 Admin Overview, Paragraph 1.4.5 and Table 1.4: 50-99 PN, provide a conference room for up to 25 persons. 100-149 PN, provide a conference room for up to 50 persons with 150 SF speaker area. Add a 10-person room for populations over 150.
141-753	Team Room	NSF	150	150	450	Size based on number of personnel in the squadron. CG 61 Admin Overview, Paragraph 1.4.5 and Table 1.4: 50-99 personnel, provide one team room for up to 10 persons. 100-149 personnel, provide two team rooms for up to 10 persons each. Add an additional team room for populations over 150.
141-753	Briefing & Debriefing	NSF	345	690	1,035	6-person room plus one task station per room. 1 room per flight. < 6 PMAI: 3 flights; Between 6 and 12 PMAI = 6 flights; 13+ PMAI = 9 flights. CG 61 Admin Overview Table 1.4: meeting room up to 15 NSF per person. CG 61 Admin Overview Table 1.2.1: 25 NSF max for Type H Offices.
141-753	Mobility Supply Storage	NSF	452	904	2,260	Based on mobility storage for 524th SOS: 10, ISUs approx. 66 NSF each (9' x 7.33') plus 2, CONEX containers approx. 800 NSF each (20' x 40'). Total of approximately 2,320 sf. Calculated as 2320/15 aircraft x number of PMAI.
141-753	Mobility Office ²	NSF	96	192	288	Based on #PMAI. For 6 or fewer PMAI= 96 NSF; between 7 and 11 PMAI= 192 NSF; between 12 and 16 PMAI= 288 NSF; greater than 17 PMAI= 384 sf.
141-753	Individual Equipment Storage	NSF	116	232	576	Ops facility lockers for C-146 require 4' x 2' locker per flight crew member. Lockers stack 2 high.

141-753	AFE Offices ^{2,4}	NSF	144	288	624	DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices. 3 PMAI= 3 PN; 6 PMAI = 6 PN; & 15 PMAI = 13 PN.
141-753	AFE Shop ⁴	NSF	300	600	1,500	Minimum shop space is 200 NSF (Calculated as 50 NSF x #PMAI) plus 50 NSF x #PMAI for helmet and gear storage.
141-753	Administrative Support Space	NSF	860	1,240	1,880	CG 61 Admin Overview paragraph 1.4.2: minimum 20 sf per person. AFSOC/A4I: Default is the minimum.
141-753	Administrative Circulation	NSF	437	636	964	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space
141-753	Special Purpose Circulation	NSF	357	507	1,032	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Total Operations Facilities		NSF	8,733	12,574	21,955	
Total Operations Facilities		GSF	10,916	15,718	27,443	Net to Gross conversion factor of 1.25.

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 15 PMAI = 23 total aircraft (2 BAI and 6 Training aircraft).
2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting, and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. Based on their missions, C-146 personnel require showers and lockers to preserve concealment. If not provided within the squadron, access to locker and shower facilities should be made available.
4. For planning purposes, AFE facility requirements for AFSOC squadrons are split between the SOSS centralized AFE facility and the squadron operations facility. If consolidated within the SOSS facility, the AFE facility requirements listed in this table are not additive to the existing SOSS AFE facility allowance.

7.6.16. Maintenance Hangar Facilities.**7.6.16.1. Maintenance Hangar (CATCODE: 211111).**

7.6.16.1.1. Requirements Determination. Hangars support aircraft maintenance, repair, and inspection activities that are most efficiently done under complete cover. The interior design of covered shelters must include the clearances between aircraft and door openings, walls, ceilings, and parking clearances between other aircraft.

7.6.16.1.2. Scope Determination. Determine the square footage requirements for maintenance hangars by the method described below for computing covered maintenance spaces:

7.6.16.1.2.1. Calculate the number of authorized covered maintenance spaces for the C-146 by multiplying the total number of PMAI, BAI, and training aircraft by a factor of 0.18 (NSAv Playbook Attachment 5.5 Paragraph 1c) rounded to the nearest whole number. See **Table 7.6.24** for calculating the required number of spaces for 3, 6, and 15 PMAI.

7.6.16.1.2.2. To determine the interior dimensions of dock and hangar bays, use the dimensions of the aircraft plus the minimum clearances shown in Table 7.6.24. To compute the gross area of the hangar, multiply the interior dimensions by a factor of 1.15 (DAFMAN 32-1084, CC 211111 Hangar Maintenance, Paragraph 1.3.4); however, to account for additional space required for hangar door pockets, use a factor of 1.25.

Table 7.6.23. C-146 Covered Aircraft Maintenance Spaces.

Aircraft	PMAI	BAI	PTAI	Total Aircraft x C-146 Factor	Required Covered Spaces (rounded)
C-146	3	1	0	4 x .18 = 0.72	1
C-146	6	1	0	7 x .18 = 1.26	1
C-146	15	2	6	23 x .18 = 4.14	4

Table 7.6.24. C-146 Aircraft Separation Dimensions inside Hangars.

Minimum Clearances from C-146 Hangar Elements ¹						
Aircraft Element	Door		Walls		Roof Framing	
	m	ft	m	ft	m	ft
Wing Tip - under 30.5 m (100 ft) span	3	10	4.6	10	-	-
Fuselage - under 30.5 m (100 ft) span	3	10	4.6	10	3	10
Tail - Vertical	2.1	7	-	-	3	10
Tail - Horizontal	3	10	3	10	3	10
Note:						
1. Clearances between aircraft components should be at least 10 ft where two or more aircraft are housed.						

7.6.16.1.3. Dimensions. Area is calculated by using block dimensions (**Table 7.6.1**) 69.83 ft (L) x 68.83 ft (W), and allowing minimum clearances (10 ft, wing-to-wing/doors) 89.83 ft x 88.83 ft = 7,980 NSF for a one-bay hangar for the C-146. The area needed for a four-bay hangar for the C-146 is 89.83 ft x 325.32 ft (29,223 NSF). The minimum hangar ceiling height is the aircraft height (23.75 ft) plus minimum roof clearance (**Table 7.6.24**, 10 ft) or 34.75 ft. The minimum hangar door height is 23.75 plus minimum door clearance (**Table 7.6.24**, 7 ft) or 30.75 ft.

Table 7.6.25. Building Utility System Requirements for Maintenance Facilities.

System	Requirements

Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide multiple 120- and 220-volts outlets throughout the facility. Provide independent circuit breakers to support charging and computer stations since consolidated breakers can be tripped due to power demands and surges. Provide isolated circuits from hangar outlets as consolidation will cause breaker interruptions due to excessive power demand for one circuit. Design electrical systems capable of expansion to avoid increased installation costs and time delays when the electrical demand increases. Cost of additional installation can be high for O&M funds and contracting process can be lengthy, particularly at overseas locations. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Provide a commercial grade domestic water and waste water system. Ensure hot water capability to comply with requirements driven by TO, OSHA, and other safety standards. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Per UFC 3-600-01 Paragraph 4-4.1, fixed wing and rotary wing aircraft fuel cell maintenance facilities, alert, storage, depot-level and general-purpose maintenance hangars comply with UFC 4-211-01. Per UFC 4-211-01 Paragraph 3-6.17, provide a hydraulically designed, low level Hi-Ex foam system for hangar bays. Existing hangars may continue use of AFFF fire protection systems. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.6.16.1.4. Unique Facility Requirements.

7.6.16.1.4.1. Bridge Crane. Provide a 7-ton overhead bridge crane. The minimum crane hook height for C-146 hangars is 33 ft 1.5 in (UFC 4-211-01, Figure 2-3 & Table 2-1 Item F).

7.6.16.1.4.2. Hangar Clearances. See [Table 7.6.24](#).

7.6.16.1.4.3. Hangar Floors. Floors should be designed to include withstand the weight of the aircraft and its fuel plus other equipment items that may be located in the hangar such as tow vehicles, jacks, cribs, cranes, spare engines, etc. When exact data is not available, use 60 percent of the maximum gross weight of the aircraft

(UFC 3-260-02, Chapter 4, Section 3, Paragraph D). The minimum requirement for hangar floor pavements designed for the C-146 should be designed for at least 18,506 lbs (30,843 lbs [Maximum Takeoff Weight] x 0.6).

7.6.16.1.4.4. Fall Protection. Provide fall protection in accordance with UFC 3-110-03 and refer to UFC 4-211-01 Appendix C-11 for information on the best practices for fall prevention and protection systems. Consider the implications of providing different types of fall protection systems and/or equipment. Note that fall protection systems not installed as a building system may require additional storage for fall protection support equipment.

7.6.16.1.4.5. Fire Protection. The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF.

7.6.16.1.4.6. Security Requirement. Secured space will be required for the storage of classified components temporarily removed from aircraft. This requirement may be satisfied by storing components at the respective intermediate level shops or other secure storage locations.

7.6.16.1.4.7. Reference. See **Paragraph 7.6.17**, Maintenance Facilities for a concept diagram for a typical C-146 Maintenance Hangar and AMU Facility.

7.6.17. Maintenance Facilities.

7.6.17.1. Aircraft Maintenance Unit (CATCODE: 211154).

7.6.17.1.1. Requirements Determination. Each AMU needs an operational building for administration, scheduling, training, briefing, and aircraft equipment/tool storage. Equipment/tool storage may be in a separate building (DAFMAN 32-1084, Paragraph 3.1.6.2).

7.6.17.1.1.1. Submit projects for unlisted missions, AMU types, or additional space requirements through the AFSOC/A4 (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational [A/HMU], Paragraph 1.2.1)

7.6.17.1.2. Scope Determination. Space must be provided for supervision, administration, debrief, training, field service representatives, scheduling, production, and ready room. Where office space is provided, an open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons. Space is also required for test/support equipment and tools to support all mission tasks. Equipment includes aircraft test equipment, maintenance tools, mobility pallets/ (ISU 70/90s), Dash 21 equipment, and equipment found in **Table 7.6.26**.

7.6.17.1.2.1. Where offices are provided, an open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons.

7.6.17.1.2.2. A designated heritage room is not authorized for the AMU in

DAFMAN 32-1084 and is not authorized as an AFSOC specific requirement per AFSOC/A4I.

7.6.17.1.3. Dimensions. For C-146 CLS maintenance squadrons, per NSAv Playbook Attachment 5.5 Paragraph 3, HQ AFSOC/A4M determined the individual space requirement for each AMU will be met based on the F-16 (18PMAI) weapon system requirement of 9,520 GSF listed in DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational [A/HMU], Table 1.1. Additionally, the NSAv Playbook Paragraph 3.1.1.2.2 requires that NSAv AMUs each require 7,900 NSF of flightline maintenance facilities in addition to required covered hangar spaces and storage. The space allocations in **Table 7.6.23** represent the maximum allowable AMU sizes for both AD military and CLS maintenance squadrons.

Table 7.6.26. Maximum Space Requirements for C-146 AMU Facilities.

Gross Area²											
AD Military 3 PMAI		AD Military 6 PMAI		AD Military 15 PMAI		CLS 3 PMAI		CLS 6 PMAI		CLS 15 PMAI	
m²	ft²	m²	ft²	m²	ft²	m²	ft²	m²	ft²	m²	ft²
994	10,694	1,138	12,254	1,598	17,205	641	6,898	728	7,833	926	9,970
Notes:											
1. This table equals the total GSF authorized from the rooms listed in Table 7.6.27 (AD Military) and Table 7.6.28 (CLS). Space authorizations for individual rooms within this facility can be found in Table 7.6.27 (AD Military) and Table 7.6.28 (CLS).											
2. Includes common use and maintenance areas.											

7.6.17.1.4. Design Considerations. Locate next to assigned aircraft parking apron, and maintenance hangar. Special Q-D standards apply to hardened facilities. See AFMAN 91-201 (DAFMAN 32-1084, Paragraph 3.1.6.5).

7.6.17.2. C-146 Backshop AMU Facilities.

7.6.17.2.1. **Support Section**. Area may include: CTKs, bench stock, electro-static discharge (ESD) work area, Dash 21 equipment, AME, non-powered equipment, land mobile radio issue, and personal protective equipment (PPE), secure area for high value assets, racks, bins, and storage systems to support the NSAv mission. See **Table 7.6.27** for the space required for the AD military C-146 support section and **Table 7.6.28** for the space required for the CLS support section.

7.6.17.2.1.1. CTK. The space needed to accommodate MC-12 CTK support equipment is dependent on the amount of general storage and tool storage required.

7.6.17.2.1.2. Supply. C-146 supply includes two bins for bench stock, a general aircraft supply area, a DIFM area, TNBs and FOM stored in an ISU (8 ft x 9 ft), and one standard workstation (64 NSF each per DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1).

7.6.17.2.1.3. Hazardous Materials. Storage is typically in lockers or on pallets. The area required is 5 NSF per aircraft.

7.6.17.2.1.4. Hazardous Waste Accumulation. Storage is typically located in the

hangar bay. The area required is 5 NSF per aircraft.

Table 7.6.27. Equipment for the C-146 Support Section.

Equipment Name	Quantity ^{1,2}
Laptop Storage	1 per maintainer
Land Mobile Radios	5 per aircraft
Tactical Radios	1 per aircraft
CAMS or IMDS	1
Batteries	Varies based on tool type/quantity and battery type/voltage.
Battery chargers	Varies based on tool type/quantity and battery type/voltage.
Hand etcher	1
Dremel tool for de-etching	1
Shredder	1
Copy/Fax/Scanner	1
Printer	1
Computer workstations	1 for each CAMS or IMDS
Notes:	
1. These numbers are for a typical Support Section. Only the numbers for batteries and battery chargers will vary based on the criteria mentioned.	

7.6.17.2.2. Dash 21. Dash 21 equipment is AME designed to configure aircraft for multiple mission profiles. C-146 Dash 21 storage requires 100 NSF per PMAI.

7.6.17.2.3. Propulsion Section.

7.6.17.2.3.1. Engine and Propeller Storage. C-146 aircraft require one engine and one propeller per PMAI. This storage space requires temperature and humidity control. Recommend 13 ft x 9 ft plus 2 ft clearance on either side. Engines are 84 in (L) x 25 in (W); however, a storage space that is 13 ft (L) x 9 ft (W) allows for clearance on either side. Propeller has a 142 in diameter; however, storage space is provided on carts that require 15 ft (L) x 7 ft (W) to allow for clearance on either side. Each cart can support two C-146 propellers. See [Table 7.6.27](#) for the space required for the AD military C-146 engine/propeller storage and [Table 7.6.28](#) for the space required for the CLS C-146 engine/propeller storage.

7.6.17.2.3.2. Propeller Shop. C-146 requires access to a propeller repair shop. If one is not available, the spaced required is 25 ft x 40 ft.

7.6.17.2.4. Avionics Shop (CATCODE: 217712).

7.6.17.2.4.1. Maintenance/Service Function. This facility houses organizational maintenance activities for the following aircraft equipment and accessories: airborne communications, cameras, bombing systems, and tactical support communications security equipment.

7.6.17.2.4.2. Storage Function. Major items that require shop and storage space are storage racks for serviceable equipment and equipment waiting for maintenance or parts, coding devices, technical data and code books, pod lifting devices, cradles, and storage racks. Some storage space provides physical security and corrosion

protection for delicate electronic equipment. If possible, combine maintenance and storage facilities to share secure storage area.

7.6.17.2.4.3. Dimensions. AD military units require a shop for avionics repairs; however, CLS units perform avionics repairs in the maintenance hangar. See [Table 7.6.27](#) for the space required for the AD military C-146 avionics shop and [Table 7.6.28](#) for the space required for the CLS C-146 avionics shop.

7.6.17.2.5. Wheel and Tire Shop.

7.6.17.2.5.1. Maintenance Area. Provide a hard rubber floor coating in the tire breakdown/assembly area to avoid damage to the wheels during operations performed in the shop. A seamless floor coating will keep fluid spills from seeping through cracks and creating maintenance problems. Cover walls and ceilings with appropriate sound insulation to reduce noise. Shop equipment in the wheel and tire shop includes: tire break-down machines, tire inflation cages, an oven for heating wheels, a freezer for cooling bearing races, an arbor press, and a jet washer. Provide a bearing/solvent room that contains a non-foaming jet washer for cleaning bearings and ample room when servicing the wheel bearings. Special equipment in the tire shop includes a ¼-ton monorail hoist to move large wheels.

7.6.17.2.5.2. Storage Area. Provide separate material storage areas to include tire racks for both incoming (awaiting service) and outgoing (service complete) tires. Recommend using automatic vertical storage racks to store tires efficiently.

7.6.17.2.5.3. Dimensions. AD military units require 600 NSF for C-146 wheel and tire shop; however, CLS units ship wheels and tires off-site for repair and require only 300 NSF for storage. [Table 7.6.27](#) provides the space required for the AD military C-146 wheel and tire shop and [Table 7.6.28](#) provides the space required for the CLS MC-12 wheel and tire shop.

7.6.17.2.6. Structural Repair (Sheet Metal, Metals Technology, and Composite Shops).

7.6.17.2.6.1. Sheet Metal Shop. See [Table 7.6.25](#) for equipment in the Structural Repair Shop. Provide adequate space for all authorized shop equipment, including the working and safety zone around each piece. Equip the structural repair with a 1-ton bridge crane spanning the material storage area and most the work area. Also, install ½-ton or ¼-ton cranes at strategic locations required for material handling. The sheet metal shop requires a material storage rack for various metals sheet stock used to fabricate aircraft parts. A moveable rack to store the sheet stock on edge will facilitate stock selection.

7.6.17.2.6.2. Metals Technology Work Center. The exact space requirements are determined by the amount and type of authorized equipment. The metals technology area equipment requirement varies by the functions performed. See [Table 7.6.30](#) for the equipment for Metals Technology area.

7.6.17.2.6.3. Welding Shop. Include an OSHA compliant screen/blind system and proper ventilation/hood to protect personnel from welding operations hazards.

Equip the welding shop with welding machines and curtains, grinders, and material handling devices. Provide a 1-ton capacity bridge crane with two each ½-ton hoists for handling parts, and provide a 2-ton bridge crane spanning the material storage and work areas and 1-ton hoists at strategic locations in the machine shop.

7.6.17.2.6.4. CADD/CAM Shop. CADD/CAM equipment is required to provide design parameters to CNC machines for automatic part fabrication. When CADD/CAM equipment is used, include a separate room for the computer terminal.

7.6.17.2.6.5. Storage Area. The metals technology area requires a material storage rack for bar and plate stock needed to manufacture aircraft components. Provide storage cabinets in the welding shop for bench and operating stocks suitable for small items and ready use welding supplies. There should be additional storage space and racks with safety chains to store inert gas cylinders for aircraft welding operations.

7.6.17.2.6.6. Composites Shop. C-146 aircraft have composite materials in the aft pressure bulkhead, the tail cone, and empennage. The top fuselage fairing, main landing gear fairings, most of the nacelles, and the propeller blades are also made of composite materials. Provide a containment area at floor level to capture drips and spills from worktables. Special equipment required in the composites shop includes ovens for curing completed projects and a bridge crane system with a ½-ton hoist for moving large items. The composites shop requires refrigerators to store sheet adhesives used in composite component manufacture and repair. Paint and chemicals storage should also be provided. Major composite repairs are performed by the host installation; however, support equipment and PPE to perform inspections require 300 NSF of storage within the AMU.

7.6.17.2.6.7. Storage Area. Provide an exterior hazardous material storage facility, and position it within easy access from both the corrosion control shop and the fiberglass/composites shops. If enclosed, this storage facility must maintain temperatures between 10°C (50°F) and 27°C (80°F), and meet all federal, state, and local requirements.

Table 7.6.28. Equipment in the Structural Repair Shop.

Equipment Name	Quantity
Folding Machine (BAR)	1
Throatless Shear	1
Small Box & Pan Brake	1
Large Box & Pan Brake	1
Large Hand Brake	1
Brake Machine Sheet	1
Machine Rotary Punch	1
Foot Shear	1
Do-All Band Saw	1
Utility Shear (Pneumatic)	1
Belt Sander	1

Drill Press	1
Power Shear	1
Power Roller	1
Hand Roller	1
Metal, inert gas (MIG) Welder	1
Tungsten, inert gas (TIG) Welder	1
Oxy-acetylene Cutting Torch	1
Plasma Cutter	1
Chop Saw	1
Bench Grinder	1
Oven	2
Note: 1. The items in this shop are typical to all structural repair shops. The quantities reflect the minimum needed and could vary based on maintenance demands.	

7.6.17.3. Aircraft General Purpose Shop (CATCODE: 211152).

7.6.17.3.1. Requirements Determination. This facility provides for specialized and general aircraft maintenance functions. These facilities may include work benches, bench stock, battery servicing area, cryogenics maintenance area, generator area, life raft bottle servicing area, tool crib, administrative space, and personnel locker space. These shops may be in one building or several buildings (DAFMAN 32-1084, CC 211152 Shop Aircraft General Purpose, Paragraph 1.3).

7.6.17.3.2. Scope Determination. DAFMAN 32-1084, CC 211152 Shop Aircraft General Purpose, Table 1.1 states the total gross space requirements for general purpose maintenance shops for a Special Operations Wing will be determined by individual analysis and validated by the appropriate AFSOC/A4M.

7.6.17.3.3. Dimensions. See Paragraph [7.6.18](#), Intermediate Maintenance Facilities, for the facilities that are at the intermediate level.

7.6.17.3.4. Design Considerations. Ensure cleanliness and area safety requirements for cryogenic materials is maintained. Floor with grates and groves tend to accumulate debris that can create hazardous condition when in contact with cryogenics materials. Where possible, try to avoid the use of mezzanines. The use of mezzanines restricts movement of forklifts. It also limits ground floor storage due to pillars location. Provide grounding points for safety.

Table 7.6.29. Building Utility System Requirements for C-146 AMU Backshop Areas.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions to prevent equipment failures, corrosion of equipment/machined parts to ensure accuracy of machined parts and to aid in sealant/bonding agent curing. Point source exhaust systems must be installed at welding stations to eliminate welding fumes with general filtration used throughout the shop to eliminate airborne smoke and cutting fluid mists. Metals technology requires a 150-psi high volume shop air source for specialized equipment and for general hand tool operations. Woodworking requires a sawdust collection system. Structural repair shops require high volume 150-psi shop air for specialized equipment and general hand tool operation. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.6.9. Typical C-146 AD Military Maintenance Hangar and AMU Facility.

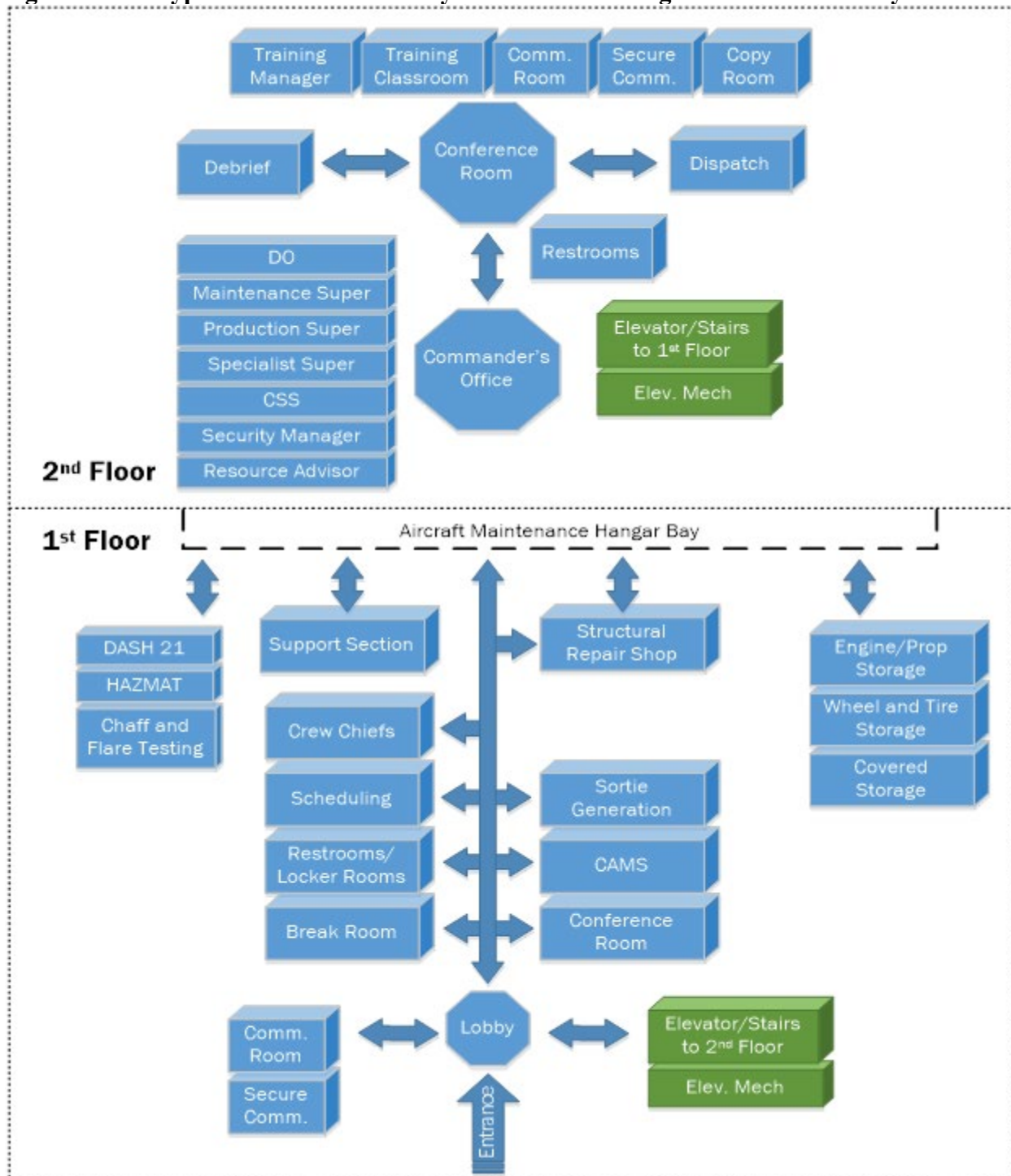


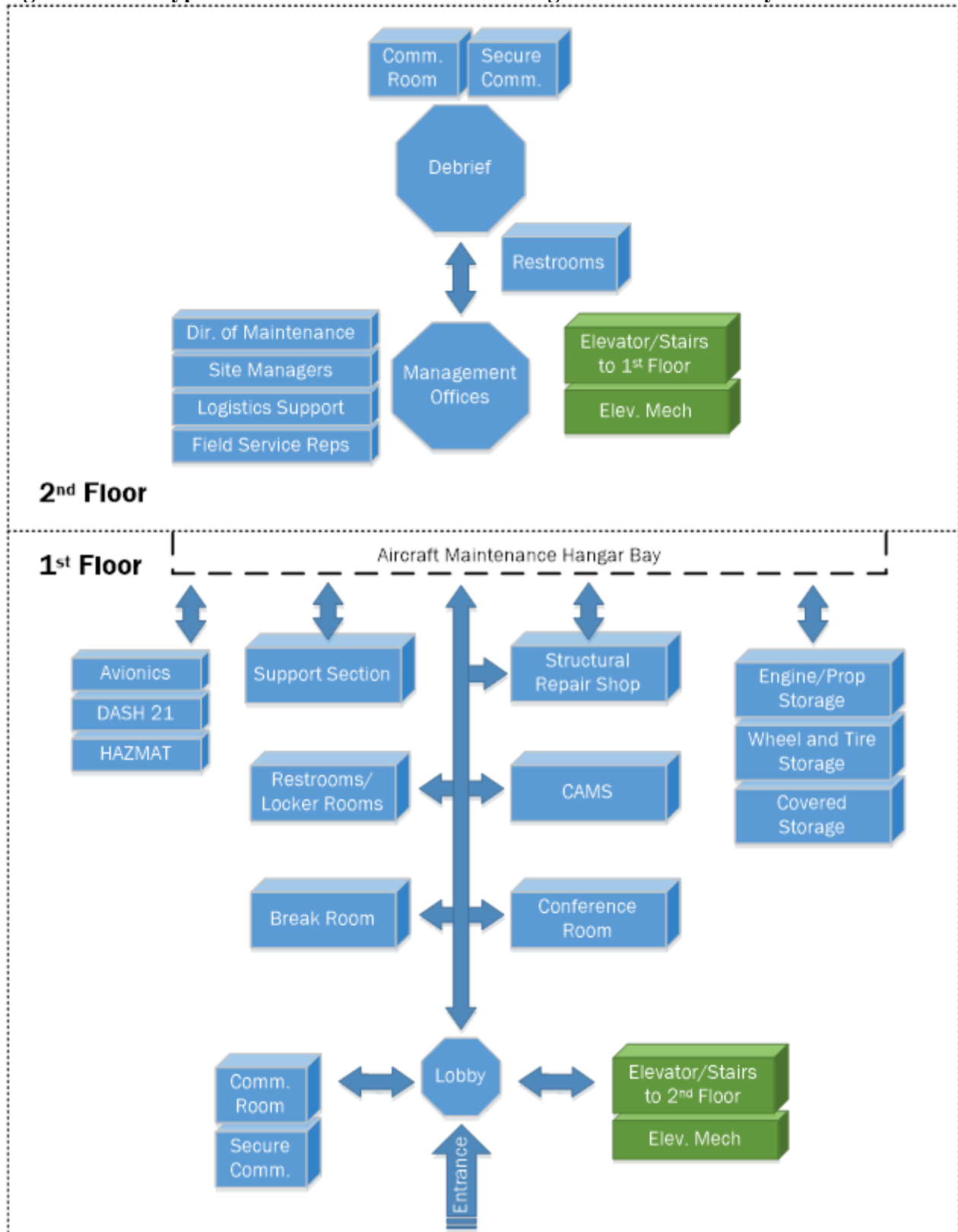
Figure 7.6.10. Typical C-146 CLS Maintenance Hangar and AMU Facility.

Table 7.6.30. C-146 AD Military Maintenance (AMU) Facility Space Requirements.

Cat Code	Facility	UM	C-146 (3)¹	C-146 (6)¹	C-146 (15)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
211-154	Commander - Command Suite	NSF	140	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
211-154	First Sergeant - Command Suite	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Support Staff and Waiting – Command Suite	NSF	136	136	136	2 PN waiting area plus 1 office. CG 61 Admin Overview Table 1.3: Waiting area is 20 NSF per person. CG 61 Admin Overview Table 1.2: 48 NSF min for Type E Offices.
211-154	Maintenance Officer ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Maintenance Sup ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	AMU OIC/NCOIC ²	NSF	200	200	200	2 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Production Sup ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Crew Chiefs ²	NSF	195	195	195	AFSOC/A5: 3 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Specialist Sec. NCOIC/Chief ²	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Support Sec. NCOIC/Chief ²	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Resource Advisor ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Training Manager ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Security Manager ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Quality Assurance ²	NSF	130	130	130	2 PN (QA Chief and Evaluator). CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	TODO ²	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Plans and Scheduling ²	NSF	130	130	130	Assume 2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Sortie Generation ²	NSF	130	130	130	Assume 2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.

211-154	Field Service Representatives ²	NSF	130	130	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Logistics Support Rep. ²	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Elevator	NSF	80	80	80	Provide 80 NSF.
211-154	Elevator Equip. Room	NSF	90	90	90	Provide 90 NSF.
211-154	Mech/Elec Rooms	NSF	0	0	0	CG 61 Admin Overview Para 1.5.2: Included in the NSF to GSF conv.
211-154	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 'x 12' (144 NSF) per floor.
211-154	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 'x 12' (144 NSF) per floor.
211-154	Break Room	NSF	193	377	933	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF.
211-154	Men's Shower	NSF	60	60	150	Provide 2 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
211-154	Women's Showers	NSF	60	60	150	Provide 2 showers plus an additional shower and drying area for every 3 PMAI over 5. FC 4-470-02F: 30 NSF per shower/drying area.
211-154	Men's Lockers	NSF	68	137	342	Calculated as 21/3 (lockers stacked) x 0.8 x #PMAI x 4 NSF.
211-154	Women's Lockers	NSF	17	34	84	Calculated as 21/3 (lockers stacked) x 0.2 x #PMAI x 4 NSF.
211-154	Conference Room	NSF	350	350	700	DAFMAN 32-1084, CG 61 Admin Overview Paragraph 1.4.5: Based on personnel, the maximum authorization exceeds the necessary space since most meetings will not involve the entire squadron. Calculations provide two, 10person conference rooms plus 150 NSF speaker area for 11 PMAI and above, and one 10person conference room plus 150 NSF speaker area for 10 PMAI and below.
211-154	Commander's Conference Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. CG 61 Admin Overview Table 1.4 authorizes 15 NSF/person.

211-154	Team Room	NSF	122	208	294	For <4 PMAI = 2 shared workstations plus 1 table at 50 NSF each. For 4-10 PMAI = 3 shared workstations plus 2 tables at 50 NSF each. For >10 PMAI = 4 shared workstations plus 3 tables at 50 NSF each. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices
211-154	CAMS Room	NSF	65	65	65	Provide 1 Type office per MIS (CAMS). CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices
211-154	Secure/Classified Storage Vault	NSF	35	35	35	NSAv Playbook Paragraph 3.1.1.2.3.5: a desk, chair and a 4-drawer safe for classified storage. Add 10 NSF for a 4-drawer safe. CG 61 Admin Overview Table 1.2.1: 25 NSF max for Type H Offices
211-154	Training Classroom	NSF	240	384	960	AFSOC/A4I: 240 NSF minimum. Total unit authorization is 3 NSF per military personnel.
211-154	Debrief	NSF	150	150	150	One 10-person room. CG 61 Admin Overview Table 1.4 authorizes 15 NSF/person.
217-712	Avionics Systems	NSF	200	200	450	30 NSF x number of PMAI, minimum of 200 NSF.
211-154	Support Section CTK	NSF	500	510	1,275	85 NSF x number of PMAI. Minimum of 500 NSF.
211-154	Dash 21 Equipment Storage	NSF	300	600	1,500	100 NSF x number of PMAI. Minimum of 100 NSF.

211-154	Engine and Propeller Storage	NSF	729	1,152	1,152	C-146 aircraft require one engine and one propeller per PMAI up to five each. Engines are 84 in (L) x 25 in (W); however, a storage space that is 13 ft (L) x 9 ft (W) allows for clearance on either side. Propeller has a 142 in diameter; however, storage space is provided on carts that require 18 ft (L) x 10.5 ft (W) to allow for clearance on either side. Each cart can support two C-146 propellers. Access to a propeller repair shop is required. If one is not available, the space required is 25 ft x 40 ft.
211-154	Hazardous Materials	NSF	15	30	75	Assume 5 NSF x #PMAI.
211-154	Wheel and Tire Shop	NSF	600	600	600	Based on 319th SOS wheel and tire shop Hurlburt Field B90800: 600 sf.
211-154	Structural Repair Shop	NSF	1,567	1,567	1,567	Based on 319th SOS sheet metal shop Hurlburt Field B90800: 1,267 sf. Composites requires an additional 300 NSF for support equipment. This shop consolidates Metals Technology, Sheet Metal, and Composites into one shop.
211-154	Covered Storage ³	GSF	500	600	1,000	NSAv Playbook Paragraph 3.1.1.4.4: 1,000 for 15 PMAI. Calculated as 1000/15 x number of PMAI. Minimum of 500 GSF.
211-154	Covered Vehicle Storage	GSF	1,751	1,751	1,751	Assume 1 bobtail, 7 step vans, 2 tow vehicles, 3 airdrop bundle vehicles, 1 forklift, and 1 crane. Area required is approximately 1,751 GSF.
211-154	Admin. Spt Space	NSF	860	900	1,060	CG 61 Admin Overview paragraph 1.4.2: 20 NSF min per person. AFSOC/A4I: Default is 20 sf.
211-154	Admin. Circulation	NSF	440	469	533	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space.
211-154	Special Purpose Circulation	NSF	492	603	823	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
211-154	SOMXS Commander	NSF	140	140	140	CG 61 Admin Overview Table 1.2 authorizes 140 NSF min for Type C offices.

211-154	SOMXS First Sergeant	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices.
211-154	SOMXS Commander's Support Staff	NSF	140	140	140	CG 61 Admin Overview Table 1.3: Waiting area is 20 NSF per person. Reception desk is user justified. Calculated as 2 justified waiting persons (40 NSF) + 100 NSF (CG 61 Admin Overview Table 1.2: 100 NSF min) for commander secretary office.
211-154	SOMXS Maint. Officer	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices.
211-154	SOMXS Superintendent	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices.
211-154	SOMXS Prod. Superintendent	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices.
211-154	SOMXS Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	SOMXS CC's Conf. Room	NSF	150	150	150	AFSOC/A4I: Provide for up to 10 people. CG 61 Admin Overview Table 1.4: 15 NSF per person.
211-154	SOMXS Break Room	NSF	100	100	100	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF. Minimum of 100 NSF. Since SOMXS backshops are consolidated with the AMU, this break room will only support the SOMXS overhead positions.
Total SOMXS Facilities		GSF	1,343	1,343	1,343	Facility can be collocated or separate from AMU. Net to Gross conversion factor of 1.25.
Total AMU Facilities (w/o covered storage)		NSF	10,257	11,788	16,644	
Total AMU Facilities (w/o covered storage)		GSF	12,821	14,735	20,805	Net to Gross conversion factor of 1.25.
Total AMU Facilities (covered storage only)		GSF	2,251	2,251	2,751	

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 15 PMAI = 23 total aircraft (2 BAI, 6 Training aircraft).
2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting, and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.
3. Tropical environments introduce increased corrosion due to high humidity with high salt content. In these instances, standard exterior covered storage may not be adequate to maintain mission essential, mission ready, spares and equipment unless the spares and equipment are stored within nearly airtight equipment containers (CONEX boxes or other containers). In these cases, AFSOC/A4I may approve additional controlled humidity warehouse space.

Table 7.6.31. C-146 CLS Maintenance (AMU) Facility Space Requirements.

Cat Code	Facility	UM	C-146 (3) ¹	C-146 (6) ¹	C-146 (15) ¹	DAFMAN 32-1084 Reference or Remarks/Calculations
211-154	Director of Maintenance ²	NSF	100	100	100	NSAv Playbook Paragraph 3.1.1.2.3.1: 1 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices
211-154	Site Managers ²	NSF	200	200	200	2 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices
211-154	Field Service Representatives ²	NSF	100	100	100	NSAv Playbook Paragraph 3.1.1.2.3.1: 1 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices
211-154	Logistics Support Representatives ²	NSF	65	65	65	NSAv Playbook Paragraph 3.1.1.2.4: 1 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices
211-154	Elevator	NSF	80	80	80	Para 1.9.6: Core Building Services (NSF to GSF conv.)
211-154	Elevator Equipment Room	NSF	90	90	90	Para 1.9.6: Core Building Services (NSF to GSF conv.)
211-154	Mech/Elec Rooms	NSF	0	0	0	CG 61 Admin Overview Paragraph 1.5.2: This space will vary. (NSF to GSF conv.)
211-154	Communications Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.

211-154	Break Room	NSF	100	100	100	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF. Minimum of 100 NSF.
211-154	Men's Lockers	NSF	45	45	45	Calculated as 14 PN x 0.8 x4 NSF.
211-154	Women's Lockers	NSF	11	11	11	Calculated as 14 PN x 0.2 x 4 NSF.
211-154	Conference Room	NSF	350	350	350	CG 61 Admin Overview Paragraph 1.4.5: The maximum authorization exceeds the necessary space since most meetings will not involve the entire squadron. Calculations provide two, 10person conference rooms.
211-154	Team Room	NSF	208	208	208	3 shared workstations plus 2 tables at 50 NSF each. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices
211-154	CAMS Room	NSF	72	72	72	2 shared workstations. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices
211-154	Storage	NSF	80	80	80	Provide 80 NSF.
211-154	Secure/Classified Storage Vault	NSF	35	35	35	NSAv Playbook Paragraph 3.1.1.2.3.5: a desk, chair and a 4-drawer safe for classified storage. Add 10 NSF for a 4-drawer safe. CG 61 Admin Overview Table 1.2.1: 25 NSF max for Type H Offices
211-154	Training Classroom	NSF	0	0	0	Contractors perform training in break and conference areas.
211-154	Debrief	NSF	150	150	150	One 10-person room. CG 61 Admin Overview Table 1.4 authorizes 15 NSF/person.
217-712	Avionics Systems	NSF	0	0	0	Contractors perform avionics repairs are done in the hangar; however, a separate shop is preferred.
211-154	Support Section /CTK	NSF	500	510	1,275	85 NSF x number of PMAI. Minimum of 500 NSF.
211-154	Dash 21 Equipment Storage	NSF	300	600	1,500	100 NSF x number of PMAI.

211-154	Engine and Propeller Storage	NSF	729	1,152	1,152	C-146 aircraft require one engine and one propeller per PMAI up to five each. Engines are 84 in (L) x 25 in (W); however, a storage space that is 13 ft (L) x 9 ft (W) allows for clearance on either side. Propeller has a 142 in diameter; however, storage space is provided on carts that require 18 ft (L) x 10.5 ft (W) to allow for clearance on either side. Each cart can support two C-146 propellers. Access to a propeller repair shop is required. If one is not available, the space required is 25 ft x 40 ft.
211-154	Hazardous Materials	NSF	45	90	225	Requires 5 NSF per PMAI.
211-154	Wheel and Tire Shop	NSF	300	300	300	Contractor sends wheels and tires off-site for repair. Storage requires 300 NSF.
211-154	Structural Repair Shop	NSF	1,567	1,567	1,567	Based on 319th SOS sheet metal shop Hurlburt B90800: 1,267 sf. Composites requires an additional 300 NSF for support equipment. This shop consolidates Metals Technology, Sheet Metal, and Composites into one shop.
211-154	Covered Storage ³	GSF	500	500	1,000	NSAv Playbook Paragraph 3.1.1.4.4: 1,000 for 15 PMAI. Calculated as 1000/15 x number of PMAI. Minimum of 500 GSF.
211-154	Covered Vehicle Storage	GSF	500	500	500	Contractor has 5 vehicles that require approximately 100 GSF each.
211-154	Admin. Spt Space	NSF	360	400	520	CG 61 Admin Overview paragraph 1.4.2: 20 NSF min per person. AFSOC/A4I: Default is 20 sf.
211-154	Admin. Circulation	NSF	175	188	229	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space.
211-154	Special Purpose Circulation	NSF	427	502	673	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Total Maint. Facilities (w/o covered storage)		NSF	6,615	7,588	9,918	
Total Maint. Facilities (w/o covered storage)		GSF	8,269	9,485	12,397	Net to Gross conversion factor of 1.25.

Total Maint. Facilities (covered storage only)	GSF	1,000	1,000	1,500	
Notes: 1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 15 PMAI = 23 total aircraft (2 BAI, 6 TA). 2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting, and conference rooms, or where noise attenuation is needed for security reasons. This will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture. 3. Tropical environments introduce increased corrosion due to high humidity with high salt content. In these instances, standard exterior covered storage may not be adequate to maintain mission essential, mission ready, spares and equipment unless the spares and equipment are stored within nearly airtight equipment containers (CONEX boxes or other containers). In these cases, AFSOC/A4I may approve additional controlled humidity warehouse space.					

7.6.18. Intermediate Maintenance Facilities.

7.6.18.1. Fabrication Flight.

Table 7.6.32. Fabrication Flight Facility Minimum Areas.

Function/Area Required in NSF	AD Military C-146 (3 PMAI)	AD Military C-146 (6 PMAI)	AD Military C- 146 (15 PMAI)	CLS C-146 (3 PMAI)	CLS C-146 (6 PMAI)	CLS C-146 (15 PMAI)
Composites Shop ¹	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU
Sheet Metal Shop ¹	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU
Metals Technology ¹	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU
Non-Destructive Inspection	4,000	4,000	4,000	4,000	4,000	4,000
Note: 1. Consolidated as the structural repair shop in the AMU.						

7.6.18.1.1. Corrosion Control Hangar (CATCODE: 211159).

7.6.18.1.1.1. Requirements Determination. A hangar provides enclosed space for aircraft washing and inspecting the aircraft for corrosion damage. Additionally, the facility can accommodate preparing the surface and repainting the aircraft.

7.6.18.1.1.2. Scope Determination. Corrosion control is both a base and a depot responsibility. Specific workloads vary from base to base, but the minimum required facilities include a wash rack, shop space for complete corrosion treatment, painting removable aircraft parts, ground support equipment, and a corrosion approved facility to perform aircraft maintenance painting. Base facility requirements emphasize prevention and detection. Since freedom from dirt, oil,

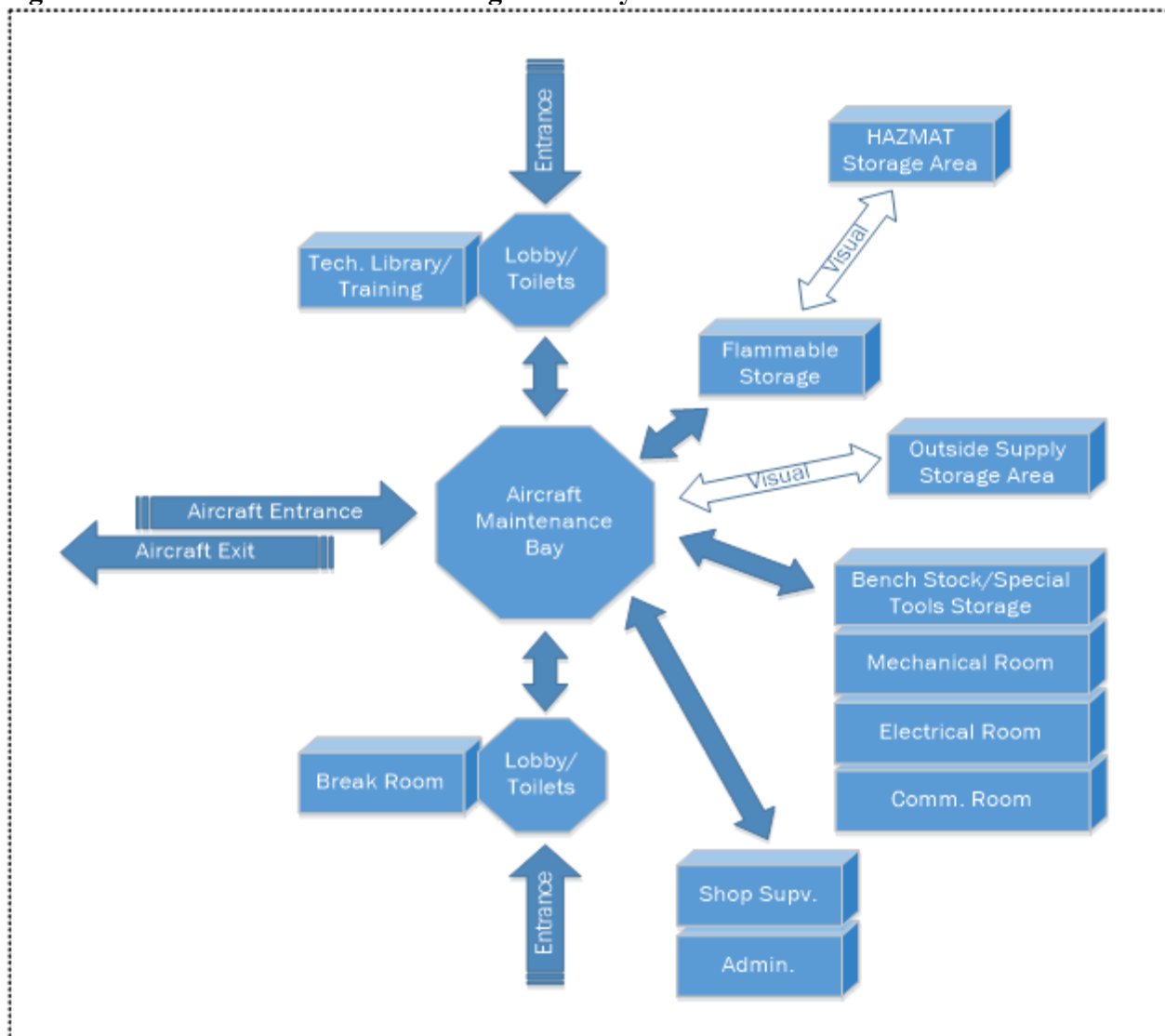
and other contaminants is important in this regard, base facilities are primarily designed for cleaning and maintaining protective coating/corrosion control systems.

7.6.18.1.1.3. Dimensions. Bases with more than 40 large or medium aircraft assigned or ones that are located in a severely corrosive environment are authorized, with proper justification, a corrosion control hangar and a wash hangar (DAFMAN 32-1084, CC 211159 Aircraft Corrosion Control, Paragraph 1.4). These two activities can be collocated or separate. DAFMAN 32-1084, CC 211111 Hangar Maintenance, Figure 1.1 provides an example where the B-52 is considered a large aircraft, the KC-135 is considered a medium aircraft, and the F-16 is considered a small aircraft. Using this example, the C-146 would be considered a small aircraft, and all AFSOC weapon systems would fall under medium or small aircraft categories. If authorized a corrosion control hangar, provide a facility that is 26,230 NSF (32,788 GSF with 1.25 net to gross conversion). This supports a typical 10-20-person AFSOC corrosion control facility. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (2,200 NSF), a Paint Mixing Room (250 NSF), Paint Storage (560 NSF), Equipment Storage (900 NSF), Equipment Cleaning (50 NSF), Solvent Storage (50 NSF), Material Storage (900 NSF), PPE Storage (150 NSF), PPE Cleaning (50 NSF), a Stencil Room (120 NSF), a Laundry Room (100 NSF), Men's Clean and Dirty Shower/Locker Room (240 NSF), Women's Clean and Dirty Shower/Locker Room (160 NSF), a 2-person Shop Supervisor Office with Type E offices (130 NSF), a Communications Room (144 NSF), a Break Room (216 NSF), and a Copy Room (50 NSF).

Table 7.6.33. Building Utility System Requirements for Corrosion Control Facility.

System	Requirements
Mechanical	Where "comfort cooling" is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source or connection (around 120 psi) and should be conveniently located throughout the maintenance bay. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Provide lightning protection system to protect the aircraft and facility. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.

Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide hot and cold water connections and industrial waste disposal system. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF. An adequate water supply source with sufficient pressure should be verified prior to a system design and construction.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.6.11. Corrosion Control Hangar Facility.

7.6.18.1.2. NDI Laboratory (CATCODE: 211153) . This facility consists of testing facilities, equipment storage, supply storage, analysis and report offices, and laboratory space. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.6.18.1.2.1. Requirements Determination. All bases required to have a full, nondestructive testing facility are authorized 4,000 NSF for a laboratory (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2).

7.6.18.1.2.2. Shop Area. The shop space equipment includes: fluorescent penetrate and magnetic particle testing machines, portable ultrasonic and eddy current machines, and X-ray and darkroom equipment.

7.6.18.1.2.3. Storage Area. Storage requires an environmental control capability

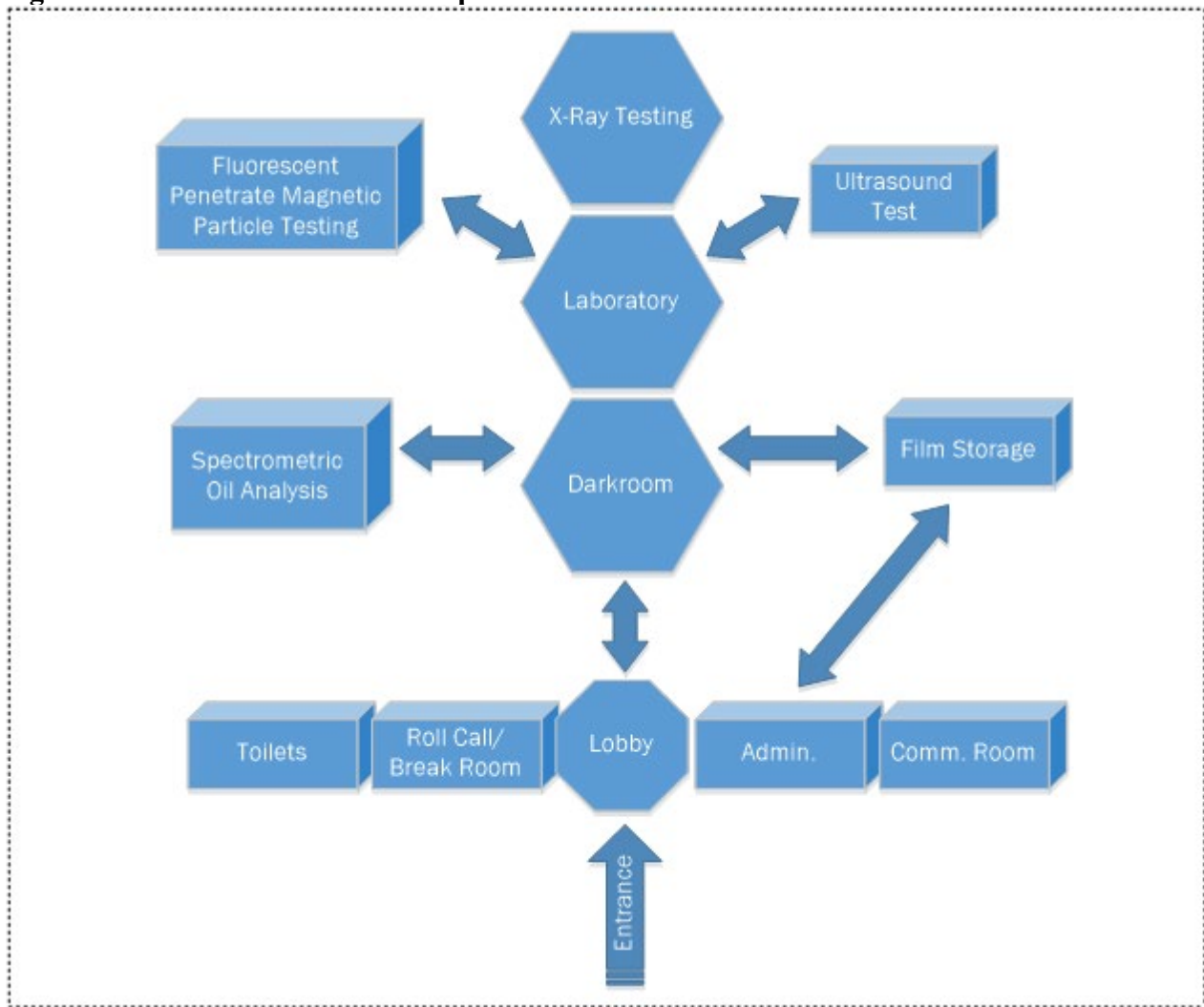
to store X-ray films and an oil analysis spectrometer.

7.6.18.1.2.4. Lab Area. An NDI laboratory requires a 1-ton capacity monorail with two ½-ton capacity hoists servicing both the X-ray shielded room and the room containing the fluorescent penetrate and magnetic particle testers. Use X-ray equipment specification to determine ceiling heights and workflow maneuverability. Provide silver recovery equipment in the darkroom, and provide radiation shielding per the National Institute of Standards Technology Information Security Handbook. A lead shielded opening should be provided in the wall between the X-ray exposure room and the control room to allow for passage of X-ray equipment control cables.

7.6.18.1.2.5. Dimensions. Bases with an NDI facility are authorized 4,000 NSF (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2 and TO 33B-1-1, Figure 1.1).

Table 7.6.34. Building Utility System Requirements for NDI Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required especially on storage functions due to delicate devices and other sensitive equipment. The NDI lab requires 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Consult X-ray and other NDI equipment specifications for their specific power requirements. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.6.12. Non-Destructive Inspection Area.**7.6.18.2. AGE Flight.****7.6.18.2.1. AGE Shop and Storage Facility (CATCODE: 218712).**

7.6.18.2.1.1. Requirements Determination. The AGE shop inspects, maintains, repairs, and services powered and non-powered AGE directly supporting aircraft and powered munitions AGE, if assigned. It normally includes maintenance stalls with work benches, an indoor wash rack, tool crib, bench stock, sealed lead acid battery servicing area, engine exhaust education system, administrative space, and personnel locker space.

7.6.18.2.1.2. Scope Determination. DAFMAN 32-1084, CC 218712 Aircraft Support Equipment Shop/Storage Facility, Table 1.1, lists the space requirements for AGE maintenance shops and standby storage facilities. These space requirements include total covered storage. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and its requirements are listed in the storage facilities section in **paragraph 7.6.19.2.**

Requirements for the AGE Shop and Storage facility are based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per UTC.

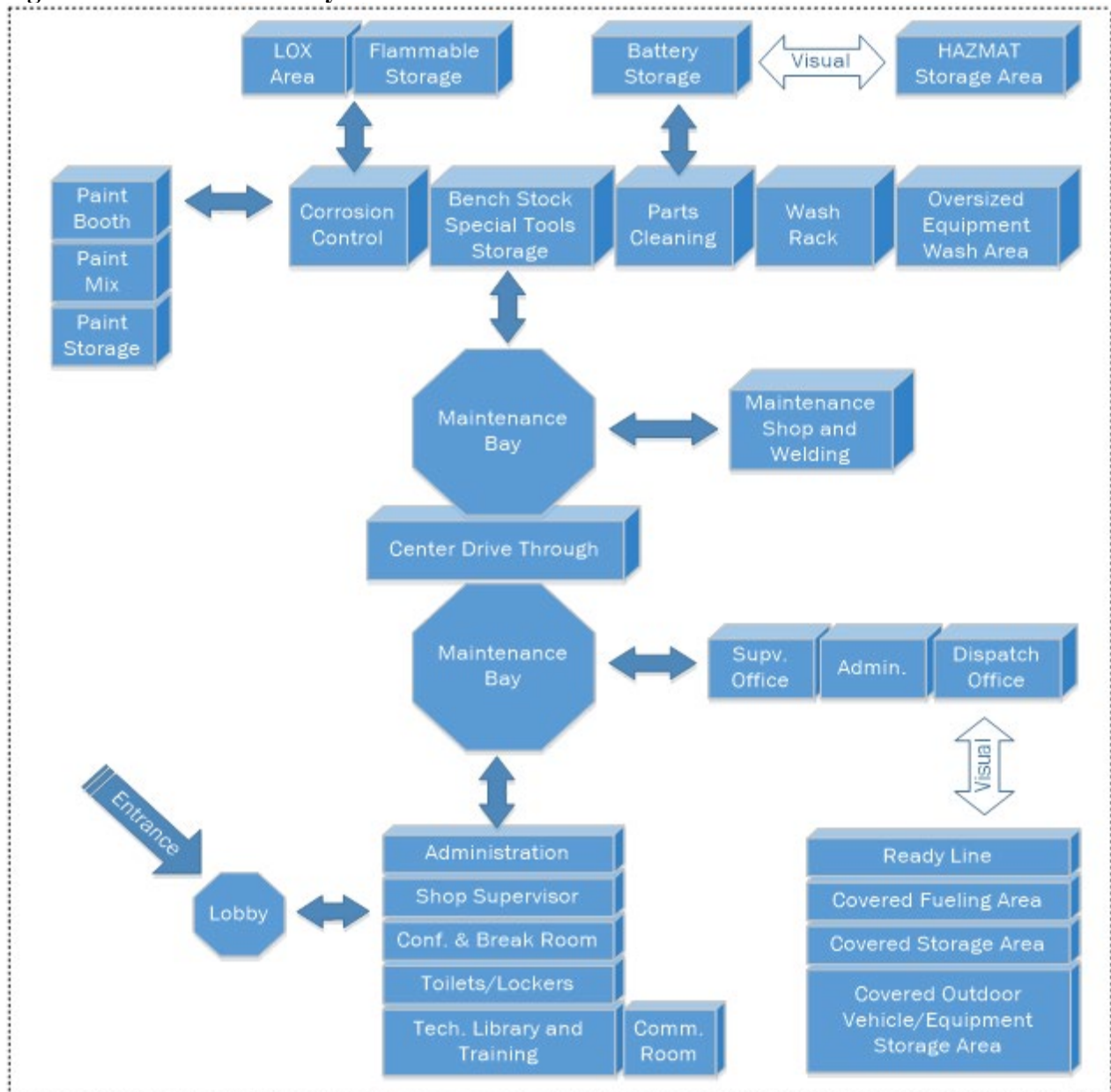
7.6.18.2.2. Dimensions. The size of this facility will be based on the number of authorized pieces of AGE. The required space allocation for this facility can be found in [Table 7.6.41](#) and [Table 7.6.42](#). If other weapon systems are supported at the installation, the number of AGE units supporting C-146 aircraft would be added and can then be cross-referenced with DAFMAN 32-1084 CC 218712 Table 1.1 to determine the maximum space allowed.

7.6.18.2.3. Unique Facility Requirements. An overhead hoist is required to support a minimum of 2,720 kg (6,000 pounds). A separate oil-free area is required for LOX handling equipment. The floor must be concrete. Electrical power (120 VAC and 220 VAC) is required in the area. This area must be covered, but should preferably be inside a facility.

Table 7.6.35. Building Utility System Requirements for AGE Facility.

System	Requirements
Mechanical	A compressed air source or connection (around 120 psi) and should be conveniently located throughout the maintenance bay and corrosion control areas. The facility should have energy efficient climate control and proper ventilation. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connection for equipment and workstations ranging from 120V, 240V, and 480V. Certain electrical requirements are AGE equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.6.13. AGE Facility.



7.6.18.3. Maintenance Support Flight.

Table 7.6.36. Maintenance Support Facility Minimum Areas.

Function/Area Required in NSF	AD Military C-146 (3 PMAI)	AD Military C-146 (6 PMAI)	AD Military C-146 (15 PMAI)	CLS C-146 (3 PMAI)	CLS C-146 (6 PMAI)	CLS C-146 (15 PMAI)
Repair & Reclamation	750	1,500	3,750	750	1,500	3,750
Wheel & Tire	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU	Located in the AMU
Aircraft Inspection Section	N/A	N/A	N/A	N/A	N/A	N/A

7.6.18.3.1. R&R Shop.

7.6.18.3.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.6.18.3.1.2. Maintenance Area. Work performed in the maintenance bay includes: repair and replacements of landing gears, actuated doors, canopies, and any associated equipment. Provide an area for aircraft jacks and/or a 3-ton hoist to use in disassembling components. This hoist (specialized trailers) can be located either inside or outside the facility.

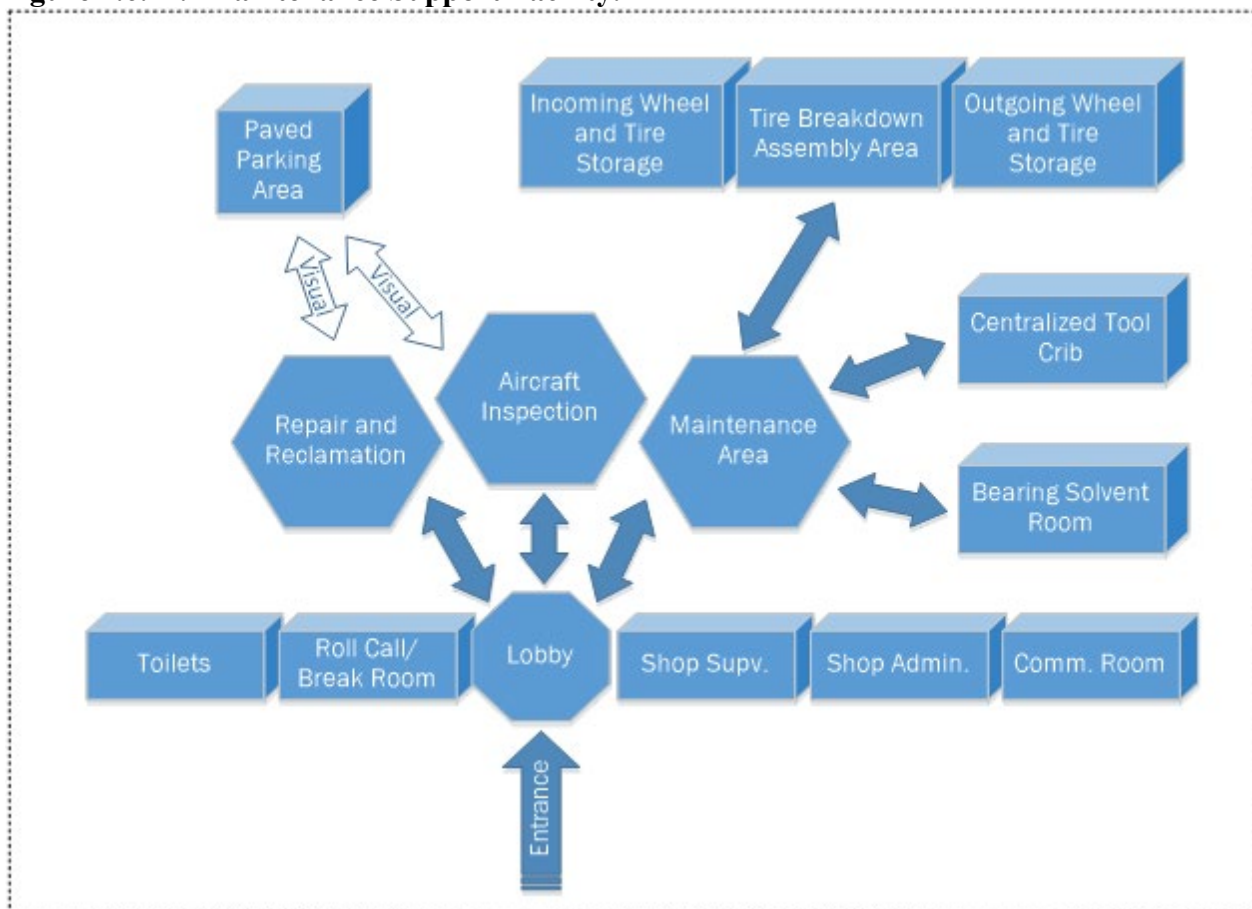
7.6.18.3.1.3. Storage Area. Provide a paved area adjacent to the facility for parking transportation trailers and other heavy equipment. In extremely cold climates, provide indoor heated storage space.

7.6.18.3.1.4. Dimensions. The required space allocation for this facility can be found in [Table 7.6.36](#), [Table 7.6.41](#), and [Table 7.6.42](#).

Table 7.6.37. Building Utility System Requirements for Maintenance Support Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required. Both repair and reclamation and wheel and tire shops require 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.

Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Applicable criteria include UFC 3-501-01 for general electrical requirement criteria UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.6.14. Maintenance Support Facility.

7.6.18.4. Accessories Flight.

7.6.18.4.1. Fuel Systems Maintenance Area (CATCODE: 211179) .

7.6.18.4.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.6.18.4.1.2. Maintenance Bay. This area is where all scheduled fuel system inspections and aircraft maintenance occurs. The bay will be the size of the largest aircraft assigned to the base; however, C-146 requirements are for a bay that is 88.83 ft x 89.83 ft (7,980 NSF) [**Paragraph 7.6.16**, Maintenance Hangar]). These hangars come out of the total hangar allowance for the base or may be added to it, depending on the workload requirements. Assume storage is provided by the host installation.

7.6.18.4.1.3. Storage Area. A centralized, enclosed, secure area is required for parts and special tools. Store flammable materials within a fire-rated enclosure with access to the exterior. Designate an area to store hazardous waste generated by ongoing maintenance operations, and comply with current federal, state, and base regulations and procedures.

7.6.18.4.1.4. Support Area. Provide a support area for maintenance crew personnel during rest cycle. The support area shall include male and female restroom, break room, and locker area.

7.6.18.4.1.5. Dimensions. Major repair or maintenance would require use of the host installation shop. Fuel systems maintenance area requires storage for external tanks: 400 NSF. Per DAFMAN 32-1084 CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized provide a facility that is 24,632 NSF (30,790 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. This supports a typical 10-20-person AFSOC fuel systems maintenance dock. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (600 NSF), a Bladder Repair/Tool Room (480 NSF), an External Tank Maintenance Area (1,840 NSF), a Foam Storage Room (512 NSF), A 3-person office for Shop Supervisors and an NCOIC in Type E offices (240 NSF), a Dispatch office for 5 PN in Type E offices (400 NSF), a 20-person Training/Conference Room (300 NSF), and a Break Room (300 NSF).

7.6.18.4.1.6. Design Considerations. Add static discharge ports in the facility doors to ensure safety.

Table 7.6.38. Building Utility System Requirements for Fuel System Maintenance Hangar.

System	Requirements

Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source or connection (around 120 psi) should be conveniently located throughout the maintenance bay. Hangars used for fuel systems maintenance also include wash down drainage trenches. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. All service equipment should be Underwriters Laboratories-listed. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System. Provide emergency shower/eye wash stations. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide interior water connection capability and drains. Applicable criteria include UFC 3-420-01 for Plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Table 7.6.39. Accessory Facility Minimum Areas.

Function/Area Required in NSF	AD Military C-146 (3 PMAI)	AD Military C-146 (6 PMAI)	AD Military C-146 (15 PMAI)	CLS C-146 (3 PMAI)	CLS C-146 (6 PMAI)	CLS C-146 (15 PMAI)
E&E	2,119	2,119	2,119	500	500	500
Hydraulics	2,943	2,943	2,943	500	500	500
Egress	N/A	N/A	N/A	N/A	N/A	N/A

7.6.18.4.2. Hydraulics Shop.

7.6.18.4.2.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept using system furniture will be used with the exceptions being

meeting and conference rooms or where noise attenuation is needed for security reasons.

7.6.18.4.2.2. Maintenance Area. For this area, rooms should be able to accommodate large components and shop equipment such as tube bender, hose cutting and fitting machines, a landing gear test stand for specific aircraft, a self-contained part cleaning system (jet washer) with non-foaming detergents, and a hydraulic test stand to perform hydraulic component evaluation. Certain shop equipment, such as the jet washer, requires a soundproof room. The hydraulic test stand requires a separate room large enough to allow proper equipment access. This room must be sound and explosion proof, and include windows ports, emergency eye wash/shower stations, and alarm systems. Install a 1-ton bridge crane or monorail, servicing most the work area, and ¼-ton cranes at strategic locations for material handling. Worktables require different (top) surfaces depending on the component being repaired.

7.6.18.4.2.3. Storage Area. Provide storage for hydraulic tubing of various types and sizes. Ideal storage containers for tubing are multiple PVC pipes, each approximately 20 ft long and 4 inches in diameter, with caps on each end. Also, provide a secure storage area for incoming equipment and components awaiting maintenance. Finally, provide a centrally located bench stock storage and tool bin area.

7.6.18.4.2.4. Dimensions. The required space allocation for this facility can be found in [Table 7.6.36](#).

7.6.18.4.3. **E&E Shop.**

7.6.18.4.3.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, break room, toilets, and locker rooms. An open office concept using system furniture will be used, with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.6.18.4.3.2. Battery Service Area. Include a battery servicing room to recharge batteries and to perform minor maintenance. When servicing both Ni-Cad and lead acid batteries, two separate rooms are needed to prevent cross-contamination of fumes produced by the two battery types. Both rooms require an emergency shower and eyewash station with an alarm system to notify other building occupants when the shower/eyewash system is activated. All equipment in the lead acid charging area must be explosion proof. Utility rooms enclosed in or accessed from the charging room are included in this requirement.

7.6.18.4.3.3. Testing and Repair Area. A separate sound proof room is required to house test stand equipment for generators and constant speed drive equipment. This room must have penetration resistant walls to withstand a minimum 3-psi projectile force. Also, within the testing and repair function, provide a separate room to service oxygen bottles and life raft bottle/carbon dioxide cartridges.

7.6.18.4.3.4. Wire Maintenance Area. Provide a separate soundproof room for the

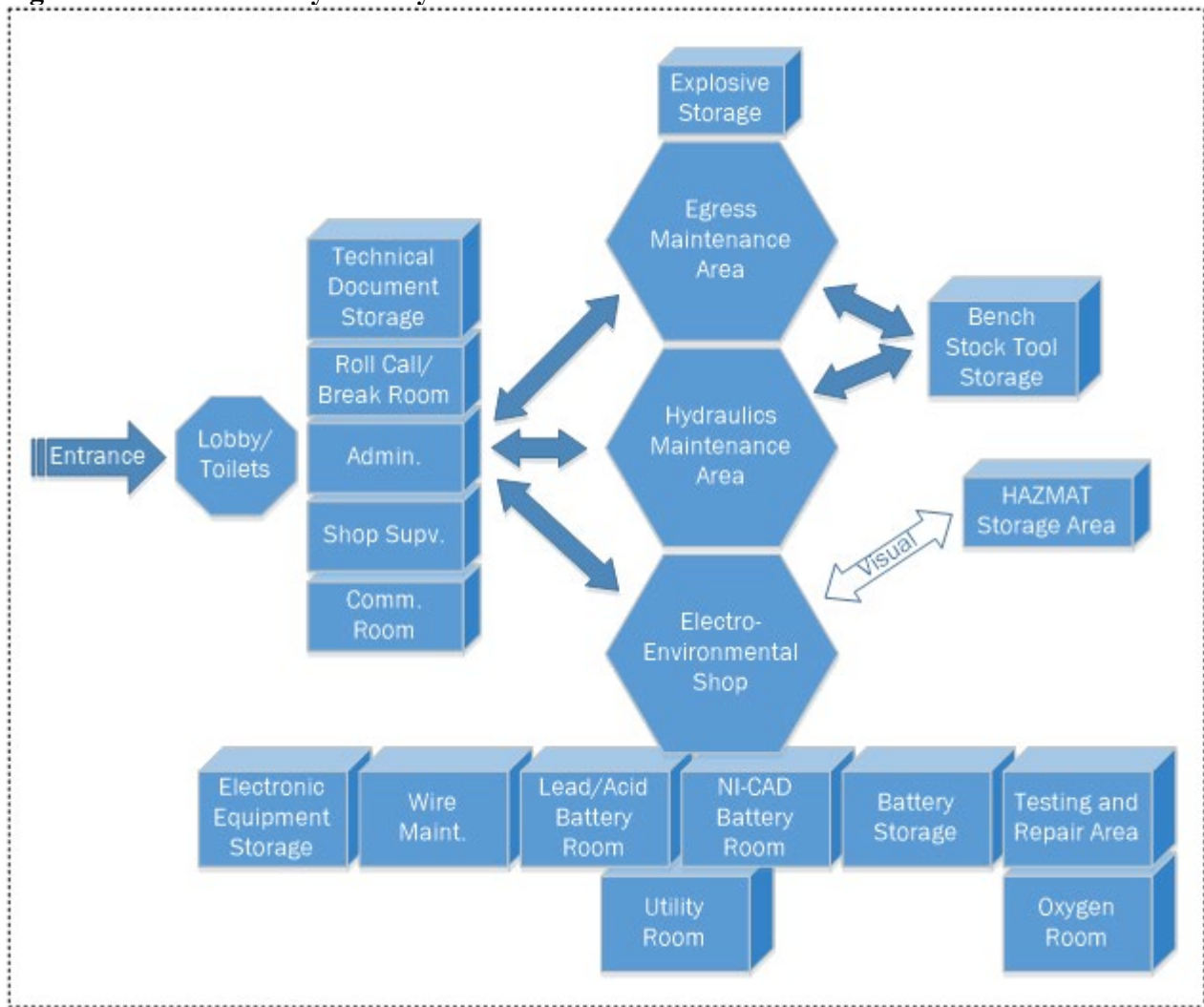
generator test equipment and a ¼-ton hoist to manipulate heavy components.

7.6.18.4.3.5. Storage Areas. Provide storage space for electronic equipment awaiting repair and/or pickup. Storage space is also required for serviceable batteries to be recharged and for unserviceable batteries to be discarded. Ensure the battery storage area is properly ventilated. Designate an area to store hazardous waste generated by ongoing maintenance operations. Provide wire dispensing cabinets and wire spool and harness storage bins in the wire maintenance area.

7.6.18.4.3.6. Dimensions. The required space allocation for this facility can be found in [Table 7.6.39](#), [Table 7.6.41](#) & [Table 7.6.42](#).

Table 7.6.40. Building Utility System Requirements for Accessory Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required. Both the hydraulics function and the E&E shop require 150-psi shop air in designated locations and corrosion resistant drains. Special ventilation requirements need to be verified in the battery service area of the E&E shop to comply with federal and state air quality directives. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. The battery service and repair area of the E&E function requires explosion proof light fixtures and electrical devices. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide corrosion resistant drains in the E&E function. Applicable criteria include UFC 3-420-01 for Plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.6.15. Accessory Facility.

7.6.18.5. **Propulsion Flight.** Engine/propeller storage is located within the AMU.

7.6.18.6. **Avionics Flight.** AFSOC does not perform intermediate level maintenance on the C-146. All avionics maintenance will occur in the AMU.

7.6.18.7. **Munitions Flight.** Not required for the C-146.

7.6.18.8. **Armament Flight.** Not required for the C-146.

7.6.18.9. **TMDE Flight.** The PMEL is the base-level AFMETCAL Program focal point. The program provides for the calibration and repair of TMDE. HAF/A4LF approves the establishment of PMELs at selected installations (TO 00-20-14, Paragraph 1.2.3).

Table 7.6.41. C-146 AD Military Intermediate Maintenance Facility Space Requirements.

Cat Code	Facility	UM	C-146 (3)¹	C-146 (6)¹	C-146 (15)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
218-712	AGE Shop	NSF	4,320	4,320	7,360	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See CC 218712 Table 3.10 for step table. 3 PMAI = 5,400 GSF; 6 PMAI = 5,400 GSF; 15 PMAI = 9,200 GSF. The conversion from GSF to NSF is calculated as GSF/1.25.
218-712	AGE Shop Covered Storage	GSF	5,170	5,170	12,940	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See CC 218712 Table 3.10. 6 PMAI = 5,170 GSF; 15 PMAI = 5,170 GSF; 15 PMAI = 12,940 GSF.
211-152	Sheet Metal Shop	NSF	0	0	0	Consolidated into the Structural Repair Shop in the AMU.
211-152	Composite Repair Shop	NSF	0	0	0	Consolidated into the Structural Repair Shop in the AMU.
211-152	Metals Technology	NSF	0	0	0	Consolidated into the Structural Repair Shop in the AMU.
211-153	NDI Section	NSF	4,000	4,000	4,000	CC 211153 NDI Laboratory, Paragraph 1.2 & TO 33B-1-1, Sec. 1-14, Figure 1-1: Typical NDI Facility, 4,000 NSF.
211-152	R&R Shop	NSF	750	1,500	3,750	Calculated as 250 NSF x #PMAI.
211-152	Wheel and Tire	NSF	0	0	0	Located with the AMU.
211-152	E&E Shop	NSF	2,119	2,119	2,119	Hurlburt Field Site Visit: E&E area occupies 2,119 NSF in Building 90700 floor 1.
211-152	Hydraulics Shop	NSF	2,943	2,943	2,943	Hurlburt Field Site Visit: Hydraulics area 2,943 NSF in Building 90700 floor 1.

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 15 PMAI = 23 total aircraft (2 BAI, 6 Training aircraft).

Table 7.6.42. C-146 CLS Intermediate Maintenance Facility Space Requirements.

Cat Code	Facility	UM	C-146 (3)¹	C-146 (6)¹	C-146 (15)¹	DAFMAN 32-1084 Reference or Remarks/Calculations
218-712	AGE Shop	NSF	4,320	4,320	7,360	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See DAFMAN 32-1084 Table 3.10 for step table. 3 PMAI = 5,400 GSF; 6 PMAI = 5,400 GSF; 15 PMAI = 9,200 GSF. The conversion from GSF to NSF is calculated as GSF/1.25.
218-712	AGE Shop Covered Storage	GSF	5,170	5,170	12,940	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See DAFMAN 32-1084 Table 3.10 for step table. 3 PMAI = 5,170 GSF; 6 PMAI = 5,170 GSF; 15 PMAI = 12,940 GSF.
211-152	Sheet Metal Shop	NSF	0	0	0	Consolidated into the Structural Repair Shop in the AMU.
211-152	Composite Repair Shop	NSF	0	0	0	Consolidated into the Structural Repair Shop in the AMU.
211-152	Metals Technology	NSF	0	0	0	Consolidated into the Structural Repair Shop in the AMU.
211-153	NDI Section	NSF	4,000	4,000	4,000	CC 211153 NDI Laboratory, Paragraph 1.2 & TO 33B-1-1, Sec. 1-14, Figure 1-1: Typical NDI Facility, 4,000 NSF.
211-152	R&R Shop	NSF	750	1,500	3,750	Calculated as 250 NSF x #PMAI.
211-152	Wheel and Tire	NSF	0	0	0	Located with the AMU.
211-152	Electrical and Environmental Shop	NSF	500	500	500	Contractors require 500 NSF.
211-152	Hydraulics Shop	NSF	500	500	500	Contractors require 500 NSF.
211-179	Fuel Systems Shop	NSF	0	0	0	C-146 fuel systems maintenance is performed in the hangar or outside. Major repairs will use host shop.
218-852	AFE (Survival Equipment) Shop	NSF	0	0	0	AFE for the C-146 is provided with squadron operations. For consolidated AFE facilities for multiple weapon systems, see Table 8.4.4.

211-152	Comm. Room	NSF	144	144	144	AFSOC/A6: minimum of 12 ft x 12 ft (144 NSF) per floor.
211-152	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: minimum of 12 ft x 12 ft (144 NSF) per floor.
211-152	Admin. Support Space	NSF	0	0	0	In lieu of UMDs for each shop space, an area based assumption that 40% of all maintenance squadron personnel require administrative offices (See Table 7.6.7 , Table 7.6.9 , and Table 7.6.11). The total administrative support space from the Maintenance AMU should be subtracted from this total. AFSOC/A4I: default is 20 sf/ person.
211-152	Admin. Circulation	NSF	0	0	0	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
211-152	Special Purpose Circulation	NSF	1,007	1,082	1,611	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Total Int. Maint. Facilities (w/o covered storage)		NSF	11,077	11,902	17,721	
Total Int. Maint. Facilities (w/o covered storage)		GSF	13,846	14,878	22,151	Net to Gross conversion factor of 1.25.
Total Covered Storage		GSF	5,170	5,170	12,940	
Notes:						
1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 15 PMAI = 23 total aircraft (2 BAI, 6 Training aircraft).						

7.6.19. C-146 Storage Facilities.

7.6.19.1. Aviation Bulk Fuel Storage (CATCODE: 411135).

7.6.19.1.1. Requirements Determination. The total tankage required for aviation fuel will be the sum of the peacetime and war reserve tankage requirements. This may be adjusted up or down by DLA Energy based on additional distribution needs or nearby available war reserve fuel (DAFMAN 32-1084, CC 411135 Jet Fuel Storage, Paragraph 1.2).

7.6.19.1.2. Scope Determination. The DLA Energy requires storage of 5 to 15 days depending on location. Per A3VN, the C-146 has a maximum internal fuel capacity of 1,124 GA (7,531 lbs; JP-8 is 6.7 lbs/gallon). Assumption is one sortie per aircraft each day. The C-146 fuel storage requirement is calculated as follows: 1,124 gallons x number of aircraft (maximum of five aircraft due to deployments and depot maintenance) x 15 days of storage. Wartime requirements should directly support an

OPLAN and identify fuel quantities to satisfy mobility, strategic air operations, civil defense, and logistics requirements (4140.25-M, Vol II, Chapter 1, Paragraph C11.3.2). The calculation for C-146 fuel storage does not include fuel to support a war plan. Those stocks would be calculated via ICIS and could vastly increase the fuel storage requirements. Assume bulk fuel storage is provided by the host installation.

7.6.19.1.3. Dimensions. Varies. See [Table 7.6.43](#) & [Table 7.6.44](#) for the required area for this facility. Contractor maintained squadrons have the same requirement as AD Military units.

7.6.19.1.4. Design Considerations. The determination of the number of tanks to be used for Aviation Bulk Fuel Storage will be based on the following requirements: a minimum of two bulk tanks are required, regardless of the storage quantity, due to fuels quantity control measures; three or more tanks are required for all requirements over 31,800 m³ (200,000 barrels); and individual capacity of any tank will not exceed 15,900 m³ (100,000 barrels) unless authorization is obtained from AFCESA/CEO.

7.6.19.2. Aircraft Support Equipment Storage Yard (CATCODE: 852273).

7.6.19.2.1. Requirements Determination. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and is measured in square yards.

7.6.19.2.2. Scope Determination. DAFMAN 32-1084, CC 218712 Aircraft Support Equipment Shop/Storage Facility, Table 1.1, lists the space requirements for AGE open storage yard facilities. These requirements are based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per UTC.

7.6.19.2.3. Dimensions. The required space allocation for this facility can be found in [Table 7.6.40](#). Contractor maintained squadrons have the same requirement as AD Military units.

7.6.19.3. Base Hazardous Material Storage (CATCODE: 442257).

7.6.19.3.1. Requirements Determination. Normal authorization is for one month's storage. Storage is usually within lockers (5 NSF) each per PMAI.

7.6.19.3.2. Scope Determination. Storage is provided in the maintenance AMU.

7.6.19.4. Base Supplies and Equipment Shed (CATCODE: 442628).

7.6.19.4.1. Description. Shed space is required to store base supplies, equipment, and material not requiring closed warehouse space but requiring covered protection from the weather because of nature of material or way they are packed. It may also include lumber storage exclusive of that stored by the Civil Engineer. Space for receiving and shipping activities may be included. Shed storage space is constructed without side and end walls.

7.6.19.4.2. Requirements Determination. Allows utility aircraft 5 GSF (4 NSF) (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.1). Personnel space is 2 NSF per person (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.2).

7.6.19.4.3. Dimensions. Calculated as follows 4 NSF x number of aircraft + 2 NSF per person. See **Table 7.6.40** for the AD Military base supply and equipment shed requirements and **Table 7.6.44** for the CLS base supply and equipment shed requirements.

7.6.19.5. Base Supplies and Equipment Warehouse (CATCODE: 442758).

7.6.19.5.1. Requirements Determination. Warehouse space includes: supplies and equipment needed to support base operations and fuels operations; receiving, storage issue, inspection, pickup and delivery activities; warehouse offices; flyaway or mobility kit storage; dangerous material, exclusive of explosives and ammunition; property in the equipment account (DAFMAN 32-1084, CC 442758 Warehouse Supply and Equipment Base, Paragraph 1.2); a facility with a loading dock and direct, unobstructed access is required for semi-tractor trailer size vehicle loading/unloading; and

7.6.19.5.2. Mobility Bags (RSP). Space will be computed at 3 ft³ per bag if the type of bag to be stored has been approved by the Air Force. The best space utilization can be obtained by storing in bulk or on pallet racks. Mobility bag storage is the responsibility of the LRS.

7.6.19.5.3. Scope Determination. For SOS base supplies and equipment warehouse space is determined by individual analysis and validated by AFSOC. NSAv Playbook Paragraph 3.1.1.4.2: Warehouse storage is 18,500 NSF with 12 ft ceilings for 15 PMAI.

7.6.19.5.4. Dimensions. See **Table 7.6.43** for the AD Military base supply and equipment warehouse requirements and **Table 7.6.44** for the CLS base supply and equipment warehouse requirements.

7.6.19.5.5. Design Considerations. When existing warehouses have clearances between the floor and the bottom of the ceiling joist or truss of 18 ft or more, use double-deck construction within the existing facility before programming a new facility or an addition to the existing facility. The effects of double-decking on the building fire protection system should be recognized.

7.6.19.5.5.1. Standard warehouse facility guidelines contained in AFMAN 23-210 apply. These include, but are not limited to: fire protection systems, aisle space, fork lift access, ventilation, and property stacking. Ideally, the warehouse should be centrally located within the intermediate maintenance area and in proximity to the maintenance hangars.

7.6.19.6. Controlled Humidity Warehouse (CATCODE: 442758).

7.6.19.6.1. Requirements Determination. Included in the Base Warehouse Storage Facility.

7.6.19.7. Base Supply Open Storage (CATCODE: 452252).

7.6.19.7.1. Requirements Determination. Surface improvement of the area is required to facilitate the operation of materials-handling equipment.

7.6.19.7.2. Scope Determination. The size of the area is determined by its overall dimensions with no deductions for interior track and permanent roads.

7.6.19.7.3. Dimensions. The amount of storage space will be determined by analysis and validated by AFSOC. Base Open Storage should be 54 GSF (43.2 NSF) per aircraft for utility aircraft plus 111 GSF (88 NSF) per 200 base personnel (DAFMAN 32-1084, CG 44, Supply Storage Facilities Overview, Table 1.1 and 1.2). Add an additional 100 NSF per aircraft for unique SOF items that cannot be stored in a covered space. See [Table 7.6.43](#) & [Table 7.6.44](#) for the required space for this facility.

7.6.19.7.4. Design Considerations. Exterior lights and fencing may be installed as required to deter theft. This area should be adjacent to the general warehouse to enhance inventory control and issue of material.

7.6.19.8. **Classified Storage.**

7.6.19.8.1. Description. Storage for classified materials.

7.6.19.8.2. Requirements Determination. Where a separate building is not available or where its use is not warranted by quantity of classified storage, a room, cage, or crib may be constructed within a warehouse building.

7.6.19.8.3. Scope Determination. All areas that contain classified material will be secured by means of approved locking systems. This will include any temporary storage space used for in-transit classified material. In addition to classified items being stored separately from other material, classified material will be segregated in storage from sensitive but unclassified items. Standards for physical protection of classified items are specifically established in DoDD 5200.01, AFI 16-1404 and AFMAN 23-110.

7.6.19.8.4. Dimensions. Classified storage within the AMU facility satisfies this requirement.

Table 7.6.43. C-146 AD Military Storage Facility Space Requirements.

Cat Code	Facility	UM	C-146 (3) ¹	C-146 (6) ¹	C-146 (15) ¹
441135	Aviation Bulk Fuel Storage ²	gal	15,000	30,000	75,000
852273	AGE Open Storage Yard	SY	57	57	144
442257	Base Hazardous Material Pharmacy Storage	NSF	0	0	0
442628	Base Supplies and Equipment Shed	NSF	122	192	391
442758	Base Supplies and Equipment Warehouse	NSF	8,000	10,000	18,500
452252	Base Supply Open Storage	GSF	2,205	4,299	10,692
n/a	Classified Storage	NSF	0	0	0
n/a	Admin. Support Space ³	NSF	240	240	480
n/a	Admin. Circulation	NSF	42	52	98
n/a	Special Purpose Circulation	NSF	716	892	1,659
Total Storage Facilities		NSF	8,269	9,120	11,376
Total Storage Facilities		GSF	10,337	11,400	14,220
Total Open Storage Yard		SY	302	535	1,332

Notes:

1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 15 PMAI = 23 total aircraft (2 BAI and 6 Training aircraft).
2. Storage provided by host installation.
3. Administrative support space based on assumption of 1 office per 5,000 NSF of storage.

Table 7.6.44. C-146 CLS Storage Facility Space Requirements.

Cat Code	Facility	UM	C-146 (3)¹	C-146 (6)¹	C-146 (15)¹
441135	Aviation Bulk Fuel Storage ²	gal	15,000	30,000	75,000
852273	AGE Open Storage Yard ²	SY	57	57	144
442257	Base Hazardous Material Pharmacy Storage	NSF	0	0	0
442628	Base Supplies and Equipment Shed	NSF	132	197	390
442758	Base Supplies and Equipment Warehouse	NSF	8,000	10,000	18,500
452252	Base Supply Open Storage	GSF	2,205	4,299	10,581
n/a	Classified Storage	NSF	0	0	0
n/a	Admin. Support Space ³	NSF	240	240	480
n/a	Admin. Circulation	NSF	42	52	98
n/a	Special Purpose Circulation	NSF	716	892	1,659
Total Storage Facilities		NSF	9,131	11,381	21,126
Total Storage Facilities		GSF	11,413	14,227	26,407
Total Open Storage Yard		SY	302	535	1,319
Notes:					
1. Number of PMAI. 3 PMAI = 4 total aircraft (1 BAI); 6 PMAI = 7 total aircraft (1 BAI); 15 PMAI = 23 total aircraft (2 BAI and 6 Training aircraft).					
2. Storage provided by host installation.					
3. Administrative support space based on assumption of 1 office per 5,000 NSF of storage.					

7.7. MQ-9 Facility Requirements.

7.7.1. Weapon System Characteristics: MQ-9. The armament for the MQ-9 includes Hellfire missiles, GBU-12 and GBU-49 laser-guided bombs, and GBU-38 Joint Direct Attack Munitions.

7.7.2. Aircraft Description. The MQ-9 “Reaper” is an armed, multi-mission, medium-altitude, long-endurance remotely piloted aircraft (RPA) that is employed primarily as an intelligence-collection asset and secondarily against dynamic execution targets. The normal flight crew consists of two personnel (one pilot and one sensor operator). The aircraft consists of a single turboprop engine, advanced composite materials, and retractable landing gear. The MQ-9 baseline system carries the Multi-Spectral Targeting System that integrates an infrared sensor, color/monochrome daylight TV camera, image-intensified TV camera, laser designator, and laser illuminator. The FMV from each of the imaging sensors can be viewed as separate or fused video streams. Also, included in the baseline system is synthetic aperture radar (SAR), that allows for a streamlined approach to targeting and quicker decision making for the crew. The MQ-9’s capabilities make it uniquely qualified to conduct irregular warfare operations in support of combatant commander objectives including strike, coordination, and reconnaissance against high-value, fleeting, and time-sensitive targets.

7.7.2.1. RPA System Elements. The MQ-9 is part of an RPA system that includes several sensor/weapons equipped aircraft, a ground control station (GCS), Predator Primary Satellite Link (PPSL) or Satellite Earth Terminal SubSystem (SETSS), and spare equipment along with operations and maintenance crews deployed for 24-hour combat air patrols (CAP). Although the number may change in the future, for planning purposes AFSOC/A3V has determined that the number of aircraft in an MQ-9 CAP per each geographically separated location is equal to the number of CAPs multiplied by two plus one aircraft (Number of CAPs x 2) +1. There are two squadron types of the RPA system: Mission Control (MC) and Launch and Recovery (LR). Table 7.7.1 provides squadron type definitions.

Table 7.7.1. MQ-9 Squadron Definitions.

Element	Description
MC	Conducts flight operations from home station via satellite link; requires a squadron operations center (SOC).
LR	Conducts flight operations both at home station and deployed locations via line-of-sight (LOS) link.

7.7.2.2. Unique Operations and Maintenance Concepts for RPA. The MQ-9’s ability to conduct remote split operations allows pilots and sensor operators at the LR squadron to conduct takeoffs and landings through LOS communications and transfer aircraft control to the MC via beyond line-of-sight communications to conduct each mission. Organization level (O-level) maintenance for the MQ-9 is performed in support of LR operations and MC operations. O-level maintenance personnel will provide support for all GCSs, subsystems, ancillary equipment, and GDT. O-level maintenance crews will perform all pre-, thru-, and post-flight inspections and launch and recovery activities. O-level maintenance will also operate and maintain all Command, Control, Intelligence, Surveillance, and Reconnaissance (C2ISR) systems infrastructure interfacing or supporting

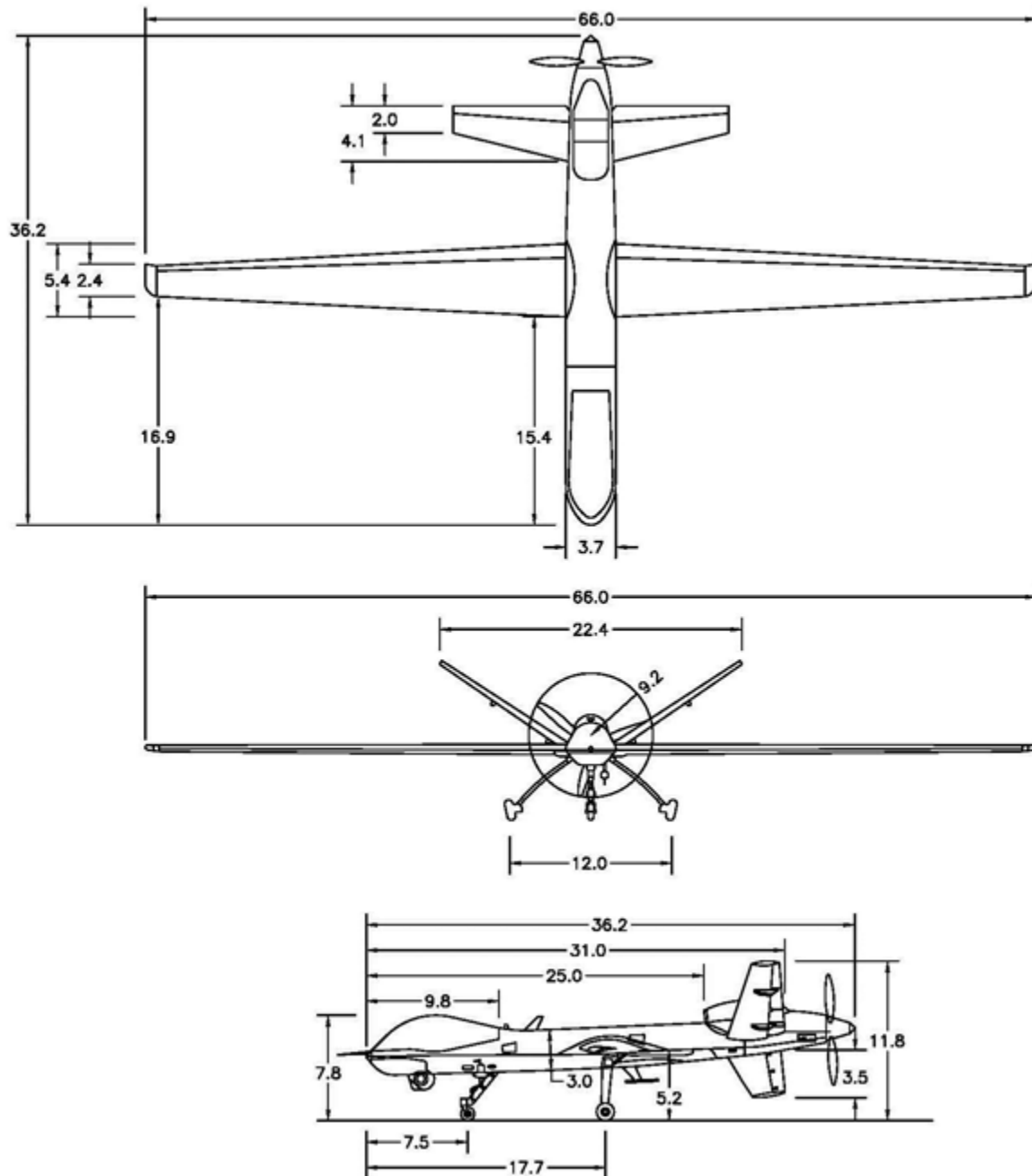
GCS operations (MQ-1/9 Maintenance Concept of Operations, Paragraph 2.1). Depot-level (D-level) is maintenance beyond the capabilities and/or facilities of O-level maintenance. It will consist of verifying the shop replaceable unit (SRU) and line replaceable unit (LRU) faults, isolation and repair of piece part(s), and verification and return of serviceable units to inventory (MQ-1/9 Maintenance Concept of Operations, Paragraph 2.2). No programmed depot maintenance inspections have been developed for the MQ-9 or GCSs at this time (MQ-1/9 Maintenance Concept of Operations, Paragraph 2.3).

7.7.2.3. Reference. The unique concepts described in **paragraph 7.7.2.2** differ from traditional piloted aircraft and require additional guidance in support of facility requirements development. Facility requirements for four of the eight categories discussed in this instruction (training facilities, operations facilities, storage facilities, and base operations support facilities) identify the MC facility requirements, while all eight categories (base operations ground facilities, training facilities, operations facilities, maintenance hangar facilities, maintenance facilities, intermediate maintenance facilities, storage facilities, and base operations support facilities) apply to LR facility requirements. Note that descriptions, utility requirements, design considerations, and facility space requirements throughout this section can vary between MC and LR facilities.

7.7.3. Aircraft Principal Dimensions. There are currently two variants of MQ-9 in use by AFSOC: Block 1 and Block 5. The block dimensions for both variants of the MQ-9 are presented in **Table 7.7.2**. These and other principal dimensions for the Block 1 variant are also shown in **Figure 7.7.1**. Note that the key difference for facility planning between the Block 1 and Block 5 variants are that the Block 5 has a taller tail height. This impacts hangar clearances for bridge cranes, hangar doors, and hangar ceilings discussed further in **paragraph 7.7.15.1.5**.

Table 7.7.2. MQ-9 Block Dimensions.

Variant	Wingspan		Length		Height	
	m	ft	m	ft	m	ft
Block 1	20.1	66	11.03	36.2	3.6	11.8
Block 5	20.1	66	11.03	36.2	3.93	12.9

Figure 7.7.1. MQ-9 Aircraft Dimensions.**7.7.4. Aircraft Weights.****Table 7.7.3. MQ-9 Gross Weight Summary.**

Item	kg (lbs) or specified units
Basic Empty Gross Weight ¹	2,223 (4,900)
Basic Mission Take-off Weight ¹	4,763 (10,500)
Basic Mission Landing Weight ¹	3,856 (8,500)
Maximum Take-off Gross Weight ²	5,670 (12,500)

Maximum Landing Gross Weight ¹	4,763 (10,500)
Maximum internal fuel capacity ²	1,814 (4,000) or 602 gallons
Notes: 1. Source: ETL 09-1: Airfield Planning and Design Criteria for UAS, Table 3 2. Source: AFSOC/A5KJ 3. Source: USAF Factsheet for MQ-9 Reaper (http://www.af.mil/AboutUs/FactSheets/Display/tabid/224/Article/104470/mq-9-reaper.aspx)	

7.7.5. Aircraft Mooring Configuration. An aircraft mooring configuration is not required for the MQ-9. MQ-9 aircraft are typically parked under sun screens during the daytime and in hangars at night and during severe weather, negating the need for tie-downs. However, there are specific MQ-9 maintenance tasks that require tie-down points. These tie-down points should be provided on the MQ-9 apron.

7.7.6. Minimum Takeoff and Landing Requirements.

7.7.6.1. Reference. See **Paragraph 7.7.11**, Base Operations Facilities - Airfield Requirements, for the minimum runway length required for the MQ-9 and other airfield requirements.

7.7.6.2. Takeoff. The minimum ground roll takeoff distance for the MQ-9 is 3,450 ft (ETL 09-1, Airfield Planning and Design Criteria for UAS, Table 3).

7.7.6.3. Landing. The minimum ground roll distance for the MQ-9 is 4,375 ft (ETL 09-1, Airfield Planning and Design Criteria for UAS, Table 3).

7.7.7. Unique Maintenance Requirements. The MQ-9 has various systems that require periodic servicing and replenishment; however, none of these systems drive a facility requirement that is not met within the minimum space allocation of the maintenance hangar and other maintenance and intermediate maintenance facilities.

7.7.8. Unique Power Requirements. Specific power requirements are needed in the MQ-9 maintenance facilities to support MQ-9 avionics power and battery reconditioning. The battery room requires 30 Amp 115V and the capacity of the facility should be able to meet battery reconditioning requirements discussed in **Paragraph 7.7.17.2.1.3**. The electrical power system for the aircraft includes a 3-kilowatt starter/alternator, a 28-volt DC power supply, Ni-Cad battery packs, and the ground power panel. The alternator provides AC energy from the engine.

7.7.9. Operational Squadron Characteristics. AFSOC/A3V has determined that the number of aircraft in an MQ-9 CAP per each geographically separated location is equal to the number of CAPs multiplied by two plus one aircraft (Number of CAPs x 2) +1. The notional manpower for MQ-9 Operations Squadrons are presented in **Table 7.7.4**, **Table 7.7.5**, and **Table 7.7.6**. The notional manpower for MQ-9 Maintenance Squadrons is presented in **Table 7.7.7**.

7.7.9.1. Notional Squadron Concepts. For planning purposes, this instruction provides facility space requirements for the three most common MQ-9 squadron scenarios: 2 CAPs (5 PMAI); 4 CAPs (9 PMAI), and 8 CAPs (17 PMAI). To ensure the most accurate facility

space requirements possible, consult AFSOC/A3/A4I for the latest information regarding the current MQ-9 CAP construct.

Table 7.7.4. MQ-9 Operations Squadron Notional Manpower, 5 PMAI (2 CAPs).

Function	Unit	Title	Personnel			
			Officers	Enlisted	CIV/CME	Total
MC	SOS	Pilots ¹	26	0	0	26
MC	SOS	Sensors ¹	0	26	0	26
MC	SOS	5 CAP Squadron Leadership/Overhead	2	11	0	13
		Total MC	28	37	0	65
LR	SOS	Pilots ²	24	0	0	24
LR	SOS	Sensors ²	0	24	0	24
		Total LR	24	24	0	48
Support	SOSS	Training	1	2	0	3
Support	SOSS	Ops Data Management	0	1	0	1
Support	SOSS	Doctor	1	0	0	1
Support	SOSS	Medical Technician	0	2	0	2
Support	SOSS	Weather	0	10	0	10
		Total SOSS	2	15	0	17
Support	SOG	Stan/Eval	1	1	0	2
		Total SOG	1	1	0	2
Support	SOW	Flight Safety	1	0	0	1
Support	SOW	Plans and Programs	1	1	0	2
		Total SOW	2	1	0	3
		TOTAL OPERATIONS	57	78	0	135

Notes:

1. Per AFI 65-503 Table 36-1: The MC crew (1 pilot and 1 sensor operator) to CAP ratio is 13:1; therefore, 2 CAPs require 26 crews (26 pilots and 26 sensor operators).
2. Per AFI 65-503 Table 36-1: The LR crew (1 pilot and 1 sensor operator) to LR ratio is 12:1; therefore, 2 LREs require 24 crews (24 pilots and 24 sensor operators).
3. Per AFSOC/A3V, the number of PMAI per CAP will be calculated by taking the number of CAPs multiplied by two and adding one to the total. In this case that equals 5 PMAI and 0 BAI (total 5 airframes).
4. For planning purposes, this instruction assumes LR will support the same number of CAPs as the squadron represented, but not to exceed 5, which is AFSOC's current program of record.
5. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.7.5. MQ-9 Operations Squadron Notional Manpower, 9 PMAI (4 CAPs).

Function	Unit	Title	Personnel			
			Officers	Enlisted	CIV/CME	Total
MC	SOS	Pilots ¹	52	0	0	52
MC	SOS	Sensors ¹	0	52	0	52
MC	SOS	5 CAP Squadron Leadership/Overhead	2	11	0	13
		Total MC	54	63	0	117
LR	SOS	Pilots ²	48	0	0	48
LR	SOS	Sensors ²	0	48	0	48
		Total LR	48	48	0	96
Support	SOSS	Training	1	2	0	3
Support	SOSS	Ops Data Management	0	1	0	1
Support	SOSS	Doctor	1	0	0	1
Support	SOSS	Medical Technician	0	2	0	2
Support	SOSS	Weather	0	10	0	10
		Total SOSS	2	15	0	17
Support	SOG	Stan/Eval	1	1	0	2
		Total SOG	1	1	0	2
Support	SOW	Flight Safety	1	0	0	1
Support	SOW	Plans and Programs	1	1	0	2
		Total SOW	2	1	0	3
		TOTAL OPERATIONS	107	128	0	235

Notes:

1. Per AFI 65-503 Table 36-1: The MC crew (1 pilot and 1 sensor operator) to CAP ratio is 13:1; therefore, 4 CAPs require 52 crews (52 pilots and 52 sensor operators).
2. Per AFI 65-503 Table 36-1: The LR crew (1 pilot and 1 sensor operator) to LR ratio is 12:1; therefore, 4 LREs require 48 crews (48 pilots and 48 sensor operators).
3. Per AFSOC/A3V, the number of PMAI per CAP will be calculated by taking the number of CAPs multiplied by two and adding one to the total. In this case that equals 9 PMAI and 0 BAI (total 9 airframes).
4. For planning purposes, this instruction assumes LR will support the same number of CAPs as the squadron represented, but not to exceed 5, which is AFSOCs current program of record.
5. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.7.6. MQ-9 Operations Squadron Notional Manpower, 17 PMAI (8 CAPs).

Function	Unit	Title	Personnel			
			Officers	Enlisted	CIV/CME	Total
MC	SOS	Pilots ¹	104	0	0	104
MC	SOS	Sensors ¹	0	104	0	104
MC	SOS	5 CAP Squadron Leadership/Overhead	2	11	0	13
		Total MC	106	115	0	221
LR	SOS	Pilots ²	96	0	0	96
LR	SOS	Sensors ²	0	96	0	96
		Total LR	96	96	0	192
Support	SOSS	Training	1	2	0	3
Support	SOSS	Ops Data Management	0	2	0	2
Support	SOSS	Doctor	1	0	0	1
Support	SOSS	Medical Technician	0	2	0	2
Support	SOSS	Weather	0	10	0	10
		Total SOSS	2	16	0	18
Support	SOG	Stan/Eval	1	1	0	2
		Total SOG	1	1	0	2
Support	SOW	Flight Safety	1	0	0	1
Support	SOW	Plans and Programs	1	1	0	2
		Total SOW	2	1	0	3
		TOTAL OPERATIONS	207	229	0	436

Notes:

1. Per AFI 65-503 Table 36-1: The MC crew (1 pilot and 1 sensor operator) to CAP ratio is 13:1; therefore, 8 CAPs require 104 crews (104 pilots and 104 sensor operators).
2. Per AFI 65-503 Table 36-1: The LR crew (1 pilot and 1 sensor operator) to LR ratio is 12:1; however, the AFSOC program of record includes a maximum of 5 LREs. Thus, 8 CAPs will have 5 LREs that require 60 crews (60 pilots and 60 sensor operators).
3. Per AFSOC/A3V, the number of PMAI per CAP will be calculated by taking the number of CAPs multiplied by two and adding one to the total. In this case that equals 17 PMAI and 0 BAI (total 17 airframes).
4. For planning purposes, this instruction assumes LR will support the same number of CAPs as the squadron represented, but not to exceed 5, which is AFSOCs current program of record.
5. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.7.10. Maintenance Squadron Characteristics.

Table 7.7.7. MQ-9 AD Military Maintenance Squadron Notional Manpower, All Scenarios.

Unit	Title	Personnel			
AD Military Maintenance					
		Officers	Enlisted	CIV/CME	Total
SOMXS	Commander	1	0	0	1
SOMXS	First Sergeant	0	1	0	1
SOAMXS	Maintenance Officer	1	0	0	1
SOAMXS	Crew Chief	0	27	0	27
SOAMXS	Aircraft Maintenance	0	19	0	19
SOAMXS	Aerospace Ground Equipment	0	6	0	6
SOAMXS	Nondestructive Inspection	0	5	0	5
SOAMXS	Aircraft Structural Maintenance	0	6	0	6
SOAMXS	RPA Support	0	15	0	15
SOAMXS	Munitions	0	5	0	5
SOAMXS	RPA Specialists	0	23	0	23
SOAMXS	RPA Avionics	0	28	0	28
SOAMXS	Weapons	0	1	0	1
SOAMXS	CAST	0	14	0	14
SOAMXS	Line Delivery	0	3	0	3
SOAMXS	AFETS	0	0	2	2
SOAMXS	Plans & Scheduling	0	1	0	1
Total AD Military Maintenance ¹		2	154	2	158

Notes:

1. Numbers were derived by AFSOC/A1M manpower. These numbers support 2:1 dwells for deployments.

2. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.7.11. Base Operations Ground Facilities - Airfield Requirements (LR Component).

7.7.11.1. Runways (CATCODE: 111111).

7.7.11.1.1. Requirements Determination. The MQ-9 requires a Class A runway (ETL 09-1, Airfield Planning and Design Criteria for UAS, Paragraph 6.1).

7.7.11.1.2. Runway Length. The required minimum runway length for the MQ-9 is 5,000 ft (AFI 11-2MQ-1&MQ-9V3 Paragraph 3.7.1). Most normal operations will occur with conditions and weights that will require runways of 8,000 ft in length (AFSOC/A5KJ).

7.7.11.1.3. Runway Width. The minimum runway width for the MQ-9 is 75 ft (AFI11-2MQ-1&MQ-9V3 Paragraph 3.7.2).

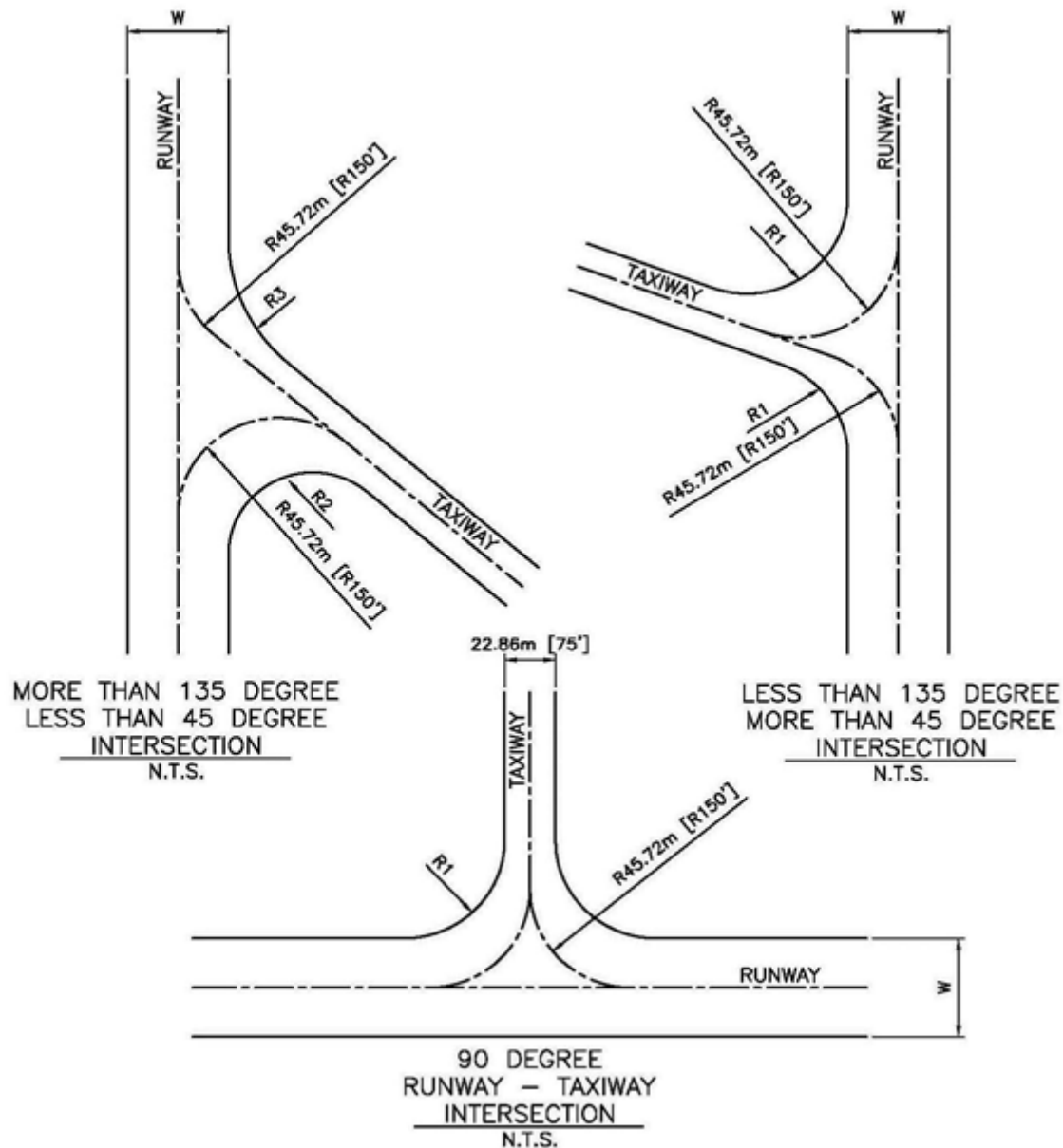
7.7.11.1.4. Shoulders. A minimum of 25 ft of paved shoulders on each side of a runway should be provided for the MQ-9 (DAFMAN 32-1084, Table 2.5).

7.7.11.1.5. Runway/Taxiway Intersection Fillet Radii. See **Table 7.7.8** and **Figure 7.7.2**.

Table 7.7.8. Runway/Taxiway Intersection Fillet Radii.

Runway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	R1 ^{1,3}	R2 ²	R3 ²
More than 75 ft but less than 150 ft	150	125	250
150 ft or more	125	125	250
Notes: 1. Less than 135 and more than 45-degree intersection. 2. More than 135 and less than 45-degree intersection. 3. 90-degree intersection.			

Figure 7.7.2. Runway-Taxiway Intersection Fillet Radii.



7.7.11.2. Paved Overrun (CATCODE: 111115).

7.7.11.2.1. Requirements Determination. All runways are required to have paved overruns.

7.7.11.2.2. Length (min.). The MQ-9 paved overrun minimum length for runways is 200 ft (UFC 3-260-01, Table 3-4, Item 1).

7.7.11.2.3. Width (min.). The MQ-9 paved overrun minimum width for runways is 75 ft (UFC 3-260-01, Table 3-4, Item 3, same width as the runway).

7.7.11.3. Taxiway (CATCODE: 112211).

7.7.11.3.1. Requirements Determination. Taxiways are required for all runways.

7.7.11.3.2. Taxiway Width. The minimum taxiway width for the MQ-9 is 50 ft (AFI 11-2MQ-1&MQ-9V3 Paragraph 3.7.3).

7.7.11.3.3. Taxiway Paved Shoulders. The minimum paved taxiway shoulder width for MQ-9 airfields is 25 ft (UFC 3-260-01, Table 5-1, Item 3).

7.7.11.3.4. Taxiway Clearance Line (Fixed or Mobile Objects). The taxiway clearance line for fixed or mobile objects for MQ-9 airfields with Class A runways is 150 ft or 200 ft for Class B runways (UFC 3-260-01, Table 5-1, Item 10).

7.7.11.3.5. Taxiway Clearance Line (Parallel Taxiway). The taxiway clearance line for parallel taxiways for MQ-9 airfields with Class A runways is 175 ft and 237.5 ft for Class B runways (UFC 3-260-01, Table 5-1, Item 11).

7.7.11.3.6. Taxiway Centerline Radius. The taxiway centerline radius is the taxiway width divided by 2 and added to 100 ft. The minimum taxiway centerline radius is 125 ft ($50/2 + 100 = 125$ ft). The centerline turning radii used to determine the fillet radii for Figures 1.2 and 1.3 are 150 ft and 125 ft respectively (UFC 3-260-01 Paragraph 5-8.1).

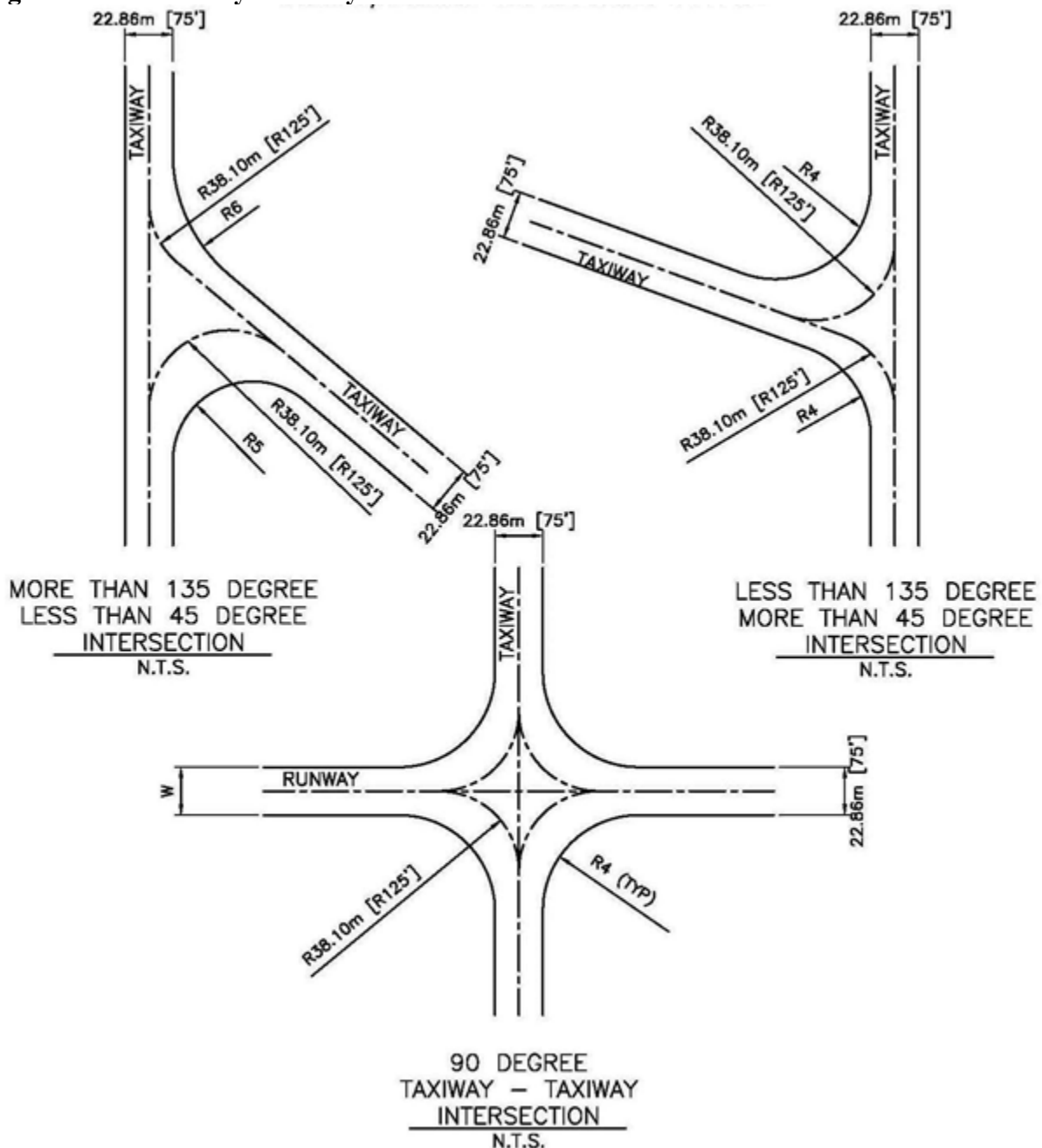
7.7.11.3.7. Taxiway/Taxiway Intersection Fillet Radii. See [Table 7.7.9](#) and [Figure 7.7.3](#).

7.7.11.3.8. Wingtip Clearances for Taxiing. The wingtip clearance of parked MQ-9 aircraft is 10 ft (UFC 3-260-01, Table 6-1, Item 4). Wingtip clearance of aircraft on interior or secondary peripheral taxilanes is 20 ft (UFC 3-260-01, Table 6-1, Item 5). Wingtip clearance of aircraft on through or primary peripheral taxilanes is 30 ft (UFC 3-260-01, Table 6-1, Item 6).

Table 7.7.9. Taxiway/Taxiway Intersection Fillet Radii.

Taxiway Width	Fillet Radius	Fillet Radius	Fillet Radius
W	$R4^{1,3}$	$R5^2$	$R6^2$
75 ft	150	125	250
Notes: 1. Less than 135 and more than 45-degree intersection 2. More than 135 and less than 45-degree intersection 3. 90-degree intersection			

Figure 7.7.3. Taxiway-Taxiway Intersection Fillet Radii.



7.7.11.4. Apron (CATCODE: 113321).

7.7.11.4.1. Requirements Determination. The dimensions of an operational parking apron for the MQ-9 are based on the number of PMAI minus any authorized covered spaces. Per A4MYS, for planning purposes assume MQ-9 LR squadrons will have a minimum of two cradled aircraft (for expeditionary LR) and one casketed aircraft. Also assume two-thirds of PMAI will be assembled with a minimum of three total assembled to support training and maintenance requirements. For any remaining aircraft, assume

they are either deployed or stored in caskets. Based on this, deployed, cradled, and stored aircraft can be subtracted from the number of PMAI before subtracting any authorized maintenance spaces. The minimum apron clearances for MQ-9 aircraft are listed in [Table 7.7.10](#) and illustrated in [Figure 7.7.4](#).

7.7.11.4.1.1. Sun shade criteria. MQ-9 aircraft are typically parked under sunscreens or sun shades during the daytime and in hangars at night and during severe weather. Standard sun shade dimensions for the MQ-9 are 60 ft (L) x 80 ft (W).

7.7.11.4.1.2. New sun shades. New sun shade procurements shall follow criteria defined in AFI 21-101, Paragraphs 15.7 and 15.8.

7.7.11.4.1.3. Existing sun shades. Existing sun shades shall follow criteria defined in AFI 21-101, Paragraphs 15.8 and 15.9.

7.7.11.4.2. **Scope Determination.**

7.7.11.4.2.1. MQ-9 aprons without sun shades. Multiply the wingspan of the aircraft by its length. Multiply the product by a factor determined by the number of aircraft being supported (DAFMAN 32-1094, CC 113321 Apron, Paragraph 1.3.7). For one aircraft use a multiplier of 12.63, for two aircraft use a multiplier of 9.69, for three aircraft use a multiplier of 8.71, for four aircraft use a multiplier of 8.22, and for five aircraft use a multiplier of 8.42.

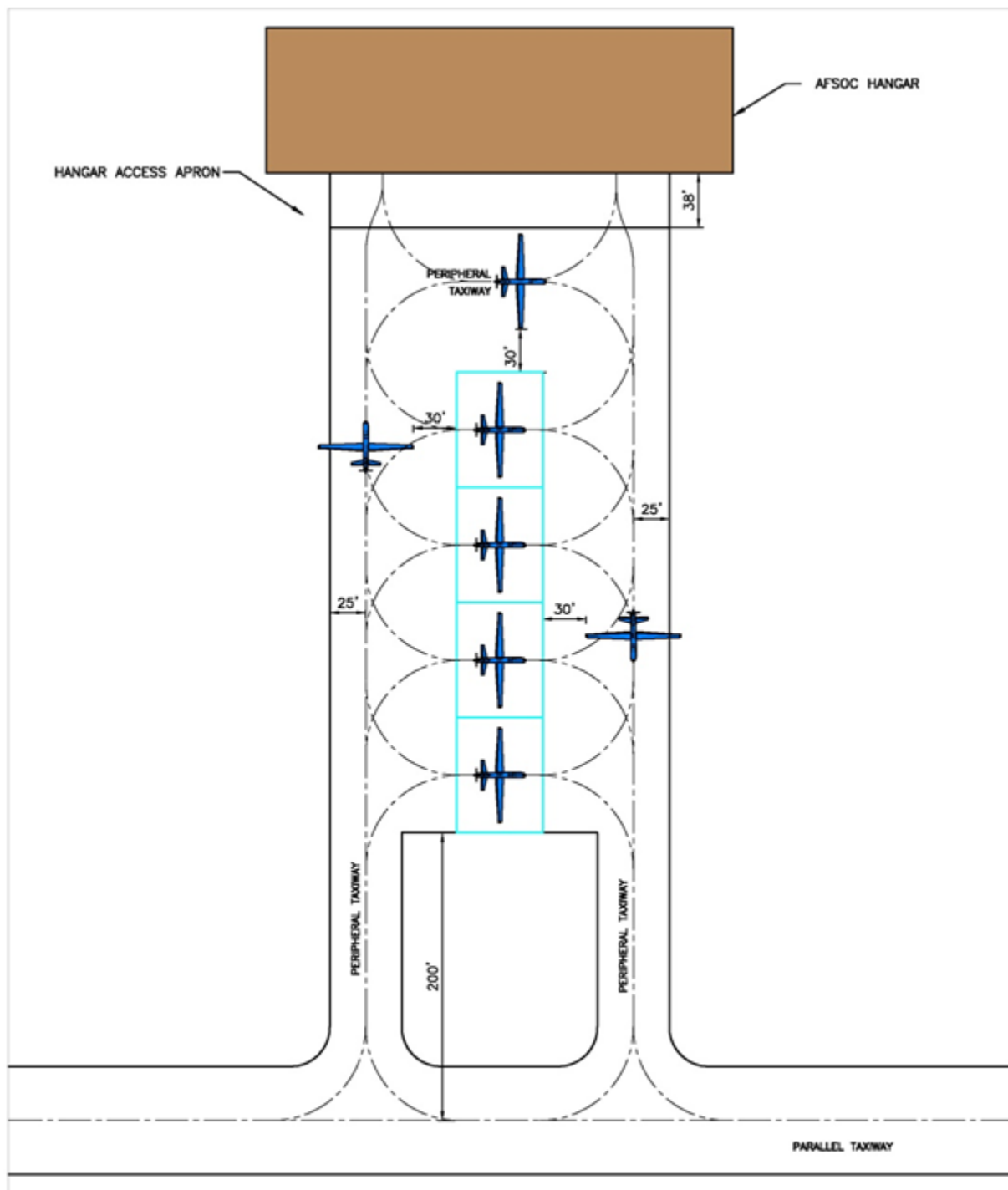
7.7.11.4.2.2. MQ-9 aprons with sun shades. Multiply the wingspan of the aircraft by its length. Multiply the product by a factor determined by the number of aircraft being supported. Multiply the wingspan of the selected aircraft by its length (DAFMAN 32-1094, CC 113321 Apron, Paragraph 1.3.7). Multiply the product by a factor determined by the number of aircraft being supported. For one aircraft use a multiplier of 14.67, for two aircraft use a multiplier of 11.28, for three aircraft use a multiplier of 10.15, for four aircraft use a multiplier of 9.59, and for five aircraft use a multiplier of 9.93.

7.7.11.4.3. **Dimensions.** The parking apron size for the MQ-9 is determined by the number of PMAI minus cradled aircraft (assumed 2 for all scenarios) and stored aircraft (assumed 1 for all scenarios) minus any additional covered maintenance spaces. Provide a minimum of one apron space. 2 CAPs = 1 apron space; 4 CAPs = 4 apron spaces; and 8 CAPs = 7 apron spaces. If authorized by AFSOC/A4I, an additional apron or covered storage space will allow for an MQ-9 covered maintenance spot to be used for the packing/unpacking of the aircraft into/from the casket. See [Table 7.7.12](#) for the space required for 2, 4, and 8 CAPs (5, 9, and 17 PMAI respectively).

7.7.11.4.3.1. MQ-9 aprons without sun shades. For aprons without sun shades, the apron size is calculated by multiplying the MQ-9 block dimensions (36.2 ft (L) x 66 ft (W)) and applying minimum apron clearances.

7.7.11.4.3.2. MQ-9 aprons with sun shades. For aprons with sun shades, the apron size is calculated by multiplying the sun shade dimensions (60 ft x 80 ft) and applying minimum apron clearances. 2 CAPs = 35,080 NSF, which includes

Figure 7.7.4. MQ-9 Typical Parking Apron.



LEGEND



7.7.11.5. Paved Shoulders (CATCODE: 116642).

7.7.11.5.1. Requirements Determination. Paved shoulders should be provided for all operational pavement.

7.7.11.5.2. Dimensions. The paved shoulder width adjacent to all operational pavement is 25 ft (UFC 3-260-01, Table 6-1, Item 11). Shoulders should be paved at least 2 ft beyond the edge lights (DAFMAN 32-1084, Paragraph 2.1.7.2).

7.7.11.6. Towway.

7.7.11.6.1. Requirements Determination. Towways are required to tow the aircraft between locations, normally an apron to a hangar.

7.7.11.6.2. Scope Determination. When designing access to a hangar, flare the pavement to the width of the hangar door from a distance beyond the hangar sufficient to allow maintenance personnel to turn the aircraft around (UFC 3-260-01, Paragraph 5-12.1). Consider the following: width, turning radius, horizontal clearance from towway centerline to fixed or mobile obstacles, vertical clearance from the towway pavement to fixed surface or mobile obstacles, and the fillet radius at intersections.

7.7.11.6.3. Width. The minimum towway width for the MQ-9 is 22 ft (Wheel Track = 12 ft [ETL 09-1, Airfield Planning and Design Criteria for UAS, Figure 5] + 10ft [UFC 3-260-01, Table 5-6, Item 1]).

7.7.11.6.4. Turning Radius. The MQ-9 towway turning radius is 150 ft (UFC 3-260-01, Table 5-6, Item 8).

7.7.11.6.5. Horizontal clearance. The minimum horizontal clearance from the towway centerline for the MQ-9 is 60 ft (Half wing span = 33 ft, plus 25 ft is 58 ft. [UFC 3-260-01, Table 5-6, Item 11: minimum of 60 ft]).

7.7.11.6.6. Vertical clearance. The minimum vertical clearance from the towway pavement for the MQ-9 is 21.8 ft (Aircraft height = 11.8 ft, plus 10 ft [UFC 3-260-01, Table 5-6, Item 12]).

7.7.11.6.7. Fillet Radius. The minimum fillet radius at intersections is 100 ft (UFC 3-260-01, Table 5-6, Item 9).

7.7.11.7. Warm-up/Holding Pad (CATCODE: 116666).

7.7.11.7.1. Requirements Determination. A warm-up/holding pad is authorized for each end of a runway. In addition to providing a location to warm up and hold aircraft waiting to depart, warm-up/holding pads provide a location for MQ-9 aircraft to conduct hung ordnance emergency operations.

7.7.11.7.2. Scope Determination. A warm-up/holding pad is authorized for each end of a runway sized to accommodate two aircraft (DAFMAN 32-1084, Paragraphs 2.1.13.2 and 2.1.13.4).

7.7.11.7.3. Dimensions. The minimum warm-up/holding pad for the MQ-9 is 46,332 NSF. The area is based on parking apron criteria without sun shades for two MQ-9 aircraft.

7.7.11.8. Pad, Arm and Disarm (CATCODE: 116661).

7.7.11.8.1. Requirements Determination. Arm/Disarm Pads are required for Special Operations aircraft to upload munitions prior to a mission and disarming guns that malfunction. A personnel shelter is also required for weapons loaders and quick check crews stationed at the pad.

7.7.11.8.2. Scope Determination. The allowable scope is the minimum necessary for aircraft parking and access. CONUS locations are unlikely to require an arm/disarm pad due to the restricted use of munitions; however, live munitions on up to two MQ-9 aircraft are occasionally used at CONUS ranges during exercises. If a CONUS arm/disarm pad is authorized by AFSOC/A4I, the space will be sized for two MQ-9 aircraft. OCONUS requirements will depend on the number of CAPS deployed, since the typical employment is one aircraft per CAP in use at any one time. Based on the typical employment of aircraft per CAP, OCONUS units that support eight or more CAPs can be authorized arm/disarm pads for up to four MQ-9 aircraft and require a minimum size that accommodates two MQ-9 aircraft. OCONUS units that support fewer than eight CAPs are authorized an arm/disarm pad sized for two MQ-9 aircraft. A site survey that includes an analysis of MQ-9 flight schedules and training exercises that require live munitions should be conducted prior to any new arm/disarm pad construction.

7.7.11.8.3. Dimensions. The minimum area required for two MQ-9 aircraft on an Arm/Disarm Pad is 46,332 NSF. The area is based on parking apron criteria without sun shades for two MQ-9 aircraft. The area required for four MQ-9 aircraft on an arm/disarm pad is 78,587 NSF.

7.7.11.8.4. Design Considerations. All aircraft undergoing arm/dis-arm operations are in transportation mode and are exempt from QD criteria as a potential explosion site. Siting considerations can be found in UFC 3-260-01, Paragraph 6-10.3.

7.7.11.9. Pad, Dangerous Cargo, Load/Unload (CATCODE: 116662).

7.7.11.9.1. Requirements Determination. The pad is required only when a properly configured CAPA is not provided. Otherwise, a dangerous cargo pad (hot cargo pad) would be required to upload Hellfire missiles and GBU's.

7.7.11.9.2. Scope Determination. For installations other than aerial ports of embarkation/debarkation (APOE/APOD), a circular pad with a 110 ft radius and 4,225 square yards (SY) is authorized (DAFMAN 32-1084, CC Pad Dangerous Cargo Load Unload, Paragraph 1.3.1).

7.7.11.9.3. Dimensions. The minimum requirement for a Dangerous Cargo Loading/Unloading Pad is 38,013 NSF (calculated by using πr^2 to find the area of the circular pad). This is only authorized when no CAPA is provided. To date, no CAPA has been required for MQ-9 parking.

7.7.11.9.4. Design Considerations. Locate the pad to satisfy explosive safety standards, DoD 6055.09-M, and AFMAN 91-201. Siting criteria can be found in UFC -260-01, Appendix B, Section 9.

7.7.11.10. Aircraft Washrack (CATCODE: 116672).

7.7.11.10.1. Scope Determination. Not required for the MQ-9.

7.7.11.11. Aircraft Rinse Facility.

7.7.11.11.1. Scope Determination. Not required for the MQ-9.

7.7.11.12. Hydrant Fueling System (CATCODE: 121122).

7.7.11.12.1. Requirements Determination. Hydrant fueling systems are not required for the MQ-9; however, when hydrant fueling systems are available or specifically authorized, follow the aircraft direct fueling system design criteria for fixed-wing small-frame as defined in UFC 3-460-01 Paragraph 4-4.2.2.

7.7.11.12.2. Dimensions. No Fuels Engineers exist within HQ AFSOC or its subordinate units. If a requirement is identified, existing engineering staff with support from the MAJCOM Fuels Management section, will reach out to technical experts such as the HQ Air Force Petroleum Agency and DLA/DESC for development of specific dimensions. In general, this requirement is based on installation specific mission requirements and airframe specific upload rates.

7.7.11.13. Operating Storage, Jet Fuel (CATCODE: 124135).

7.7.11.13.1. Requirements Determination. Operating storage tanks are not required for the MQ-9; however, they are provided wherever dispensing facilities are remote from bulk storage tanks. Provide separate storage for each type and grade of fuel. For aviation activities, provide a minimum of two tanks for each type of fuel (UFC 3-460-01 Paragraph 8-3.3). Acceptable fuels for AFSOC MQ-9 aircraft include Jet-A, Jet A-1, Jet B, JP-4, JP-5, and JP-8.

7.7.11.13.2. Dimensions. The capacity or size of each fuel storage tank is based upon the logistical and mission requirements for the weapon systems to be supported from it, thus the requirement will vary. Per UFC 3-460-01, Paragraph 8-3.4, general guidance is to provide a minimum of two tanks at aviation activities for each type of aviation turbine fuel. Assuming a requirement is identified, the appropriate Service Headquarters with DLA Energy approval will determine the number and size of tanks required.

7.7.11.14. Aircraft Truck Fueling Facility (CATCODE: 126925).

7.7.11.14.1. Requirements Determination. Truck fill stands are required at all Air Force installations where bulk petroleum products are stored and dispensed.

7.7.11.14.2. Scope Determination. The number of fill stands required depends on the number of trucks that must be loaded simultaneously. This is determined by the command having jurisdiction from a study of the mission and operation requirements.

7.7.11.14.3. Dimensions. Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1). For specific projects, the appropriate Service Headquarters can assist in determining the number.

7.7.11.15. Gaseous Nitrogen Storage.

7.7.11.15.1. Requirements Determination. MQ-9 aircraft gaseous nitrogen storage requirements do not typically drive facility requirements beyond what is required by the host installation.

7.7.11.15.2. Scope Determination. AFSOC only needs to store materials in cylinders. The portable nitrogen cylinder, P/N 55D6496, and the self-generating nitrogen servicing unit, P/N PD96LDEA/TILDD-05 are used for servicing and replenishment.

7.7.11.15.3. Dimensions. One cylinder is 8 NSF (10 GSF).

7.7.11.16. Standard Host Installation Facilities.

7.7.11.16.1. Aerial Delivery Facility. See **paragraph 1.1.3.5.1.**

7.7.11.16.2. FARP Equipment Storage. See **paragraph 1.1.3.5.2.**

7.7.11.16.3. Deployment Processing Facility. See **paragraph 1.1.3.5.3.**

7.7.11.16.4. Airfield Ancillary Facilities. See **paragraph 1.1.3.5.4.**

7.7.12. Base Operations Ground Facilities - Pavement Requirements.

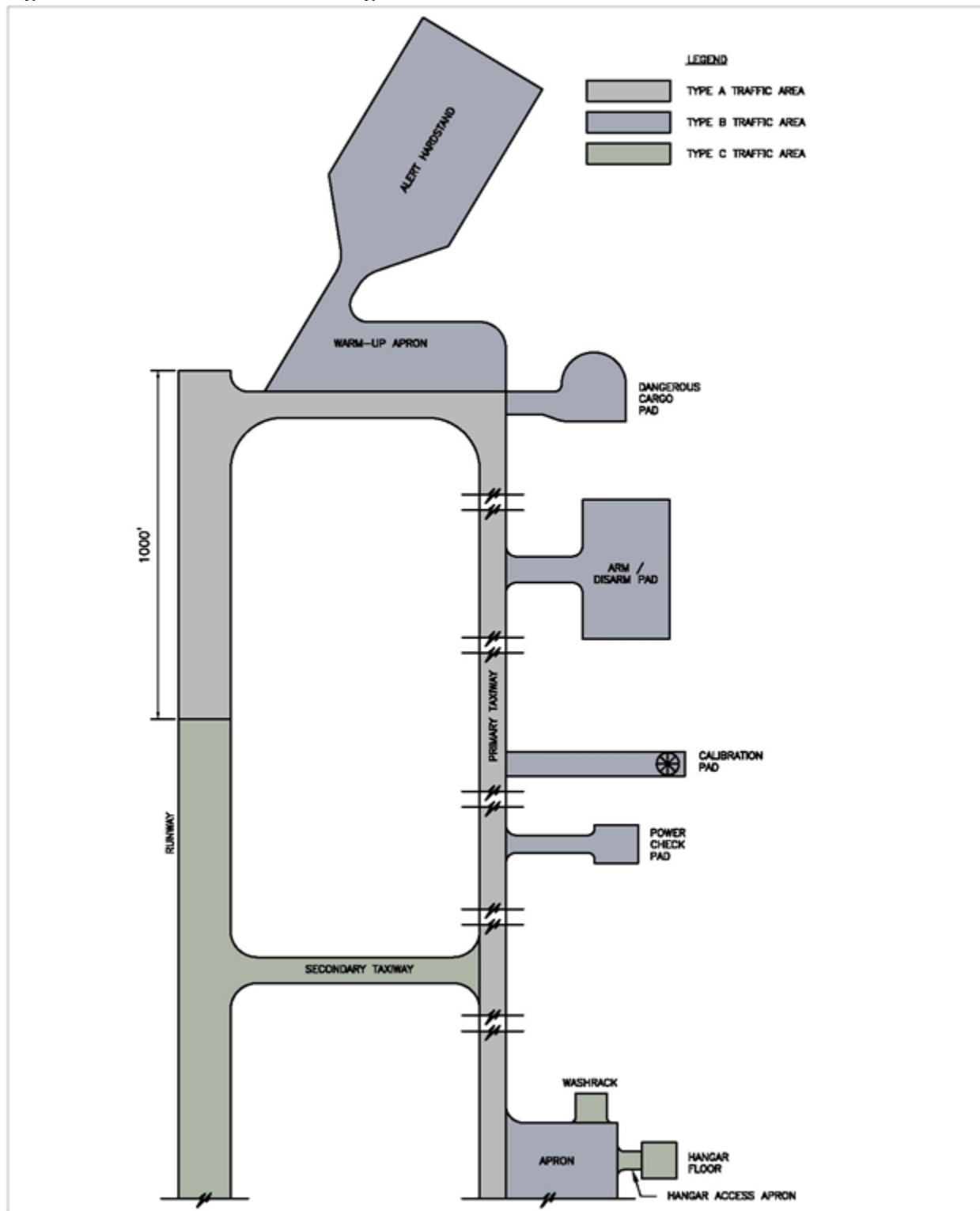
7.7.12.1. **Airfield.** Airfield mission and operational procedures have resulted in the development of six types of Air Force airfields: light, medium, heavy, modified heavy, auxiliary, and assault landing zone. The decision on which airfield type to design for is made by the appropriate MAJCOM. Airfield designs are generally based upon medium load criteria. Though not listed in AFMAN 32-1041, Figure 4.1, the MQ-9 should be classified as light load, index 1, under the Aircraft Group Index based on its alignment with aircraft of similar gross weights and landing gear types (AFMAN 32-1041, Figures 4.1 and 4.2). The design gross weight and passes for a light airfield type is 68,000 lbs at 400,000 passes (UFC 3-260-02, Table 3-1). See **Figure 7.7.5** for the traffic areas on a light load airfield.

7.7.12.2. **Traffic Areas.** Certain areas of an airfield (e.g., runway shoulders, runway overruns) do not normally carry fully loaded aircraft; therefore, they do not need to be designed for the maximum gross weight (UFC 3-260-02, Chapter 4, Section 3, Paragraph C). See **Figure 7.7.5** for the traffic areas in an airfield designed for the MQ-9. The design gross weight for Type C (gross weight – 51,000 lbs.) traffic areas and overruns are 75 percent of the design gross weights for Types A and B (gross weight - 68,000 lbs.) traffic areas. Light load airfields are not designed with Type D traffic areas (UFC 3-260-02, Table 3-1). See **Table 7.7.11** for airfield pavements by traffic area type.

Table 7.7.11. Light Load Pavements by Traffic Area Type.

Pavement Use	Light Load Pavement Traffic Areas		
	Type A – Design Gross Weight 68,000 lbs.	Type B – Design Gross Weight 68,000 lbs.	Type C – Design Gross Weight 51,000 lbs.
Runway (First 1,000 ft on each end)	X		
Runway (Interior section between 1,000 ft ends)			X
Aprons (except hangar access)		X	
Hangar Access Aprons			X
Hangar Floors			X
Hardstands		X	
Power Check Pad		X	
Arm/Disarm Pad	X		
Dangerous Cargo Pad	X		
Primary Taxiways (all)	X		
Overruns			X

Figure 7.7.5. Traffic Areas for Light Load Pavement Airfield.



7.7.12.3. **Paved Shoulders.** As a minimum, paved shoulders should be designed to support a load of 10,000 lbs imposed by a single wheel with a tire pressure of 0.69 MPa [100 psi] (UFC 3-260-02, Chapter 4, Section 7, Paragraph B).

7.7.12.4. **Hangar Floors.** See Paragraph 7.7.15, Maintenance Hangar.

7.7.12.5. **ACN and PCN.** The International Civil Aviation Organization (ICAO) manual specifies that the bearing strength of a pavement intended for aircraft of mass greater than 5,000 kg (12,500 lbs) shall be made available using the ACN/PCN method (ETL 09-1, Airfield Planning and Design Criteria for UAS Paragraph 5.2). Therefore, the MQ-9 does not have published ACN value.

7.7.12.6. **Pavement Thickness Requirements.** Designs for MQ-9 aircraft should follow the minimum thickness requirements for both rigid and flexible pavements as outlined in UFC 3-260-02 (ETL 09-1, Airfield Planning and Design Criteria for UAS, Paragraph 7.2). The MQ-9 minimum base course pavement thickness required is 6 inches for flexible pavements (UFC 3-260-02, Table 8-5) and 4 inches for rigid pavements (UFC 3-260-02, Chapter 8, Section 8, Paragraph A).

Table 7.7.12. MQ-9 Base Operations Ground Facility Space Requirements.

Cat Code	Facility	UM	MQ-9 2 CAPs ¹	MQ-9 4 CAPs ¹	MQ-9 8 CAPs ¹	DAFMAN 32-1084 Reference or Remarks/Calculations
111-111	Runway – Length (min.)	LF	5,000	5,000	5,000	AFI11-2MQ-1&MQ-9V3 Paragraph 3.7.2: Minimum MQ-9 runway length is 5,000 ft.
111-111	Runway - Width (min.)	LF	75	75	75	AFI11-2MQ-1&MQ-9V3 Paragraph 3.7.2: Minimum MQ-9 runway width is 75 ft.
111-115	Paved Overrun - Length (min.)	LF	200	200	200	Corresponds to Air Force Class A runway, per ETL 09-1, Section 6.1.2 and UFC 3-260-01 Table 3-4.
111-115	Paved Overrun - Width (min.)	LF	75	75	75	Corresponds to Air Force Class A runway, per ETL 09-1, Section 6.1.2 and UFC 3-260-01 Table 3-4.
112-211	Taxiway Width	LF	50	50	50	AFI11-2MQ-1&MQ-9V3 Paragraph 3.7.3: Minimum MQ-9 taxiway width is 50ft.
112-211	Taxiway Paved Shoulder	LF	25	25	25	Corresponds to Air Force Class A runway, per ETL 09-1, Section 6.1.2 and UFC 3-260-01 Table 5-1.

113-321	Aircraft Parking Apron	NSF	35,080	91,720	156,460	The numbers in this table are requirements with sun shades. DAFMAN 32-1084 Para 2.1.5.3.3 and 2.1.5.3.4: Multiply the aircraft wingspan by the length. Multiply the product by a factor. Factors for aprons with sun shades: One aircraft use 14.67; two aircraft use 11.28, three aircraft use 10.15, four aircraft use 9.59, and five aircraft use 9.93. Subtract covered maintenance spaces, deployed aircraft, cradled aircraft, and aircraft stored in caskets from the total number of apron spaces.
113-321	Apron for Access to Hangars, Docks, Shelters	LF	38	38	38	UFC 3-260-01, Table 6-6, Item 1 & UFC 3-260-01, Table 6-1, Item 15: Width is equal to the hangar door opening (38 ft).
	Towway Width	LF	22	22	22	UFC 3-260-01 Table 5-6. Width is 5 ft on each side of gear. MQ-9 landing gear width is 12 ft.
	Clearance from Towway Centerline	LF	60	60	60	UFC 3-260-01 Table 5-6. Clearance is the greater of $1/2$ the wingspan + 25 ft or the minimum of 60 ft. MQ-9 wingspan is 66 ft. $66/2 + 25 = 58$ ft.
116-642	Paved Shoulders	LF	25	25	25	Corresponds to Air Force Class A runway, per ETL 09-1, Section 6.1.2 and UFC 3-260-01 Table 3-2.
116-661	Pad, Arm and Disarm	NSF	0	0	0	If a CONUS arm/disarm pad is authorized, the space will be sized for two MQ-9 aircraft (46,332 NSF). OCONUS requirements will be dependent on the number of CAPs, as the typical employment is one aircraft per CAP in use at any one time. OCONUS units greater than eight CAPs can be authorized arm/disarm pads for up to four MQ-9 aircraft (78,587 NSF), but have a minimum requirement for two MQ-9 aircraft (46,332 NSF). OCONUS units that support fewer than eight CAPs are authorized an arm/disarm pad sized for two MQ-9 aircraft (46,332 NSF).

116-662	Pad, Dangerous Cargo	NSF	38,025	38,025	38,025	Para 2.1.9.3.1: Only required if no Combat Aircraft Parking Apron is provided. Otherwise, a 120 ft by 120 ft pad is required.
116-666	Pad, Warm-up/Holding	NSF	46,332	43,332	46,332	Para 2.1.13.2: Sized to accommodate two aircraft. Based on apron criteria for two MQ-9 aircraft without sun shades.
126-925	Aircraft Truck Fueling Facility	EA	2	2	2	Mission and turn-around times will establish the number of fill positions, with two being the minimum (UFC 3-460-01, Paragraph 4-4.1).
n/a	Gaseous Nitrogen Storage	GSF	10	10	10	This facility is not required to be dedicated to AFSOC unit, verify capacity of host installation. AFSOC only needs to store materials in cylinders. Calculated as 8 NSF X 1.25 net to gross.
Airfield Paving (w/o Runways and Overruns)		NSF	119,437	176,077	240,817	
Total Airfield Paving		NSF	509,437	566,077	630,817	
Total Indoor Facilities		GSF	10	10	10	
Notes: 1. Number of PMAI. 5 PMAI = 5 total aircraft (0 BAI); 9 PMAI = 9 total aircraft (0 BAI); 17 PMAI = 17 total aircraft (0 BAI). 2. See paragraph 1.1.3.5 for more information on base ground operating facilities assumptions for facilities assumed to be existing and adequate at existing airfields.						

7.7.13. MQ-9 Training System Facilities (MC and LR Component).

7.7.13.1. Flight Simulator Training (CATCODE: 171212).

7.7.13.1.1. Requirements Determination. This facility houses aircraft flight simulators and other special training devices. It also includes space for administration and records, classrooms, toilet facilities, trainer maintenance, and storage (DAFMAN 32-1084, CC 171212 Flight Simulator Training, Paragraph 1.1). Flight simulator training facilities are normally sized according to the type of simulator installed and vary considerably in floor area from one system to another.

7.7.13.1.2. Dimensions. DAFMAN 32-1084, CC 171212 Flight Simulator Training, Table 1.1 provides examples of typical simulator training facilities that can be used for initial planning purposes before specific requirements are identified. **Table 7.7.18** provides the facility requirements specific to the MQ-9. MQ-9 flight training simulators are typically collocated within the MC squadron operations facility, while

maintenance and WLT require a training bay that can be located in either an existing hangar or standalone facility.

7.7.13.1.3. Reference. **Table 7.7.15** provides the number of simulators at each location type. The space requirements for the MQ-9 flight training system can be found in **Paragraph 7.7.14**, MQ-9 Operations Facility. A brief description of the space requirements and facility recommendations for MQ-9 training facilities is included below.

7.7.13.2. **MQ-9 Training Systems**. There are several flight training/simulator options for the MQ-9 that vary in size and design criteria. For planning purposes, space for a stand-alone simulator shall be provided. Stand-alone trainers are used and sited at the MC squadron only. A WLT bay is also required to support weapons and maintenance training for MQ-9 LR squadrons only. The WLT should have a dedicated space at CONUS locations, while OCONUS locations will use the existing maintenance hangar facility.

7.7.13.2.1. **Stand-Alone Trainer Room**. This space is required to support flight simulator training. It typically will include space for an instructor operator station (IOS), trainee stations, and all related trainer/simulator support systems. Two stand-alone trainers will be required for each CONUS MC squadron and Training Center locations. OCONUS MC locations are not planned to have any stand-alone trainers since there are no plans to locate an MC squadron OCONUS.

7.7.13.2.1.1. Dimensions. For initial planning purposes, provide space equal to a GCS (28 feet x 14 feet or 392 NSF) for each stand-alone trainer provided. This will accommodate a stand-alone trainer that is 123 inches wide, 56 inches deep, and 86 inches high; an instructor operator station (IOS) that is 44 inches wide, 30 inches deep, and 72 inches high; a scenario generation station that sits on an office desk and is 40 inches wide, 23 inches deep, and 24 inches high and all trainer/simulator supports systems required (servers, computer room air conditioning, safes, support cabinets, etc.). For project-specific MQ-9 flight training requirements, contact AFSOC/A5KJ for the latest requirements. Since the stand-alone trainer is typically located within the squadron operations facility, **Table 7.7.18**, MQ-9 MC Operations Facility Space Requirements provides the flight training space required for the MQ-9.

Table 7.7.13. Building Utility System Requirements for the Stand-Alone Trainer Room.

System	Requirements
Mechanical	Stand-alone trainers require conditioned air for proper operation and normal life cycle. Maintain a temperature between 75 degrees F +/- 5 degrees with 50% +/- 10% relative humidity measured at the equipment while operating, not ambient. Assume typical equipment A/C loads for a single stand-alone trainer room are approximately 9,480 BTUs. Applicable criteria include UFC 3-401-01 for mechanical and UFC 3-420-01 for plumbing.

Electrical	The facility shall provide four 20A duplex outlets with a minimum of one on each wall. The facility shall provide a 50-amp, 208/120-volt, 5-wire (3-phase, neutral, and chassis) feed to each stand-alone trainer power panel. Assume typical power loads for a single stand-alone trainer room are approximately 1,752 watts. The facility shall provide lighting at general office illumination levels. Dimmable lighting is recommended. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	No plumbing is required to support the stand-alone trainer.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.7.13.2.2. **Stand-alone Trainer CLS.** For planning purposes, provide an area 15 ft (W) x 20 ft (L) x 9 ft (H) high or 300 square feet per stand-alone trainer provided. This area includes sufficient open office space for any personnel, spares storage area, and maintenance area/electronic repair stations/workbenches. Since the stand-alone trainer is typically located within the squadron operations facility, [Table 7.7.18](#), MQ-9 MC Operations Facility Space Requirements provides the flight training space required for the MQ-9.

7.7.13.2.3. **WLT Facility.** A facility that includes a training bay equal to the area displaced by one MQ-9 with a minimum 5-foot clearance around the aircraft and a 5-person classroom is required for MQ-9 weapons load training. Training equipment includes two Hellfire missiles, one MHU-141 trailer, and tools stored in a 5-drawer locker. When using a dedicated bay, WLT tools and equipment can be stored in the training bay. This facility is authorized at CONUS locations only. OCONUS locations will conduct WLT in the maintenance hangar. If a dedicated aircraft is used for WLT in the training bay, maintenance training could share the same training bay if training schedules can be de-conflicted. Maintenance training requires a 5-ton bridge crane in the training bay. WLT does not require a bridge crane.

7.7.13.2.3.1. **Dimensions.** WLT requires a training bay of 41.2 ft x 71 ft, offices for two instructors, and a 5-person classroom.

Table 7.7.14. Building Utility System Requirements for the WLT Facility.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions in classroom and common areas via an energy efficient heating, ventilation, and air conditioning (HVAC) system.

Electrical	Provide standard 110V and 220V outlets at various locations throughout the facility. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities.
Plumbing	Provide a commercial grade domestic water and waste water system.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 & AFOSH Std 91-118 and ETL 01-18. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.7.13.2.4. Design Considerations.

7.7.13.2.4.1. Communications and SIPR. Provide comprehensive interior design layout so that SIPR conduit can be installed in accordance with USGS 27 05 29.00 10 and AFSSI 7703. This includes ensuring furniture/equipment will not block access for inspection requirements and should consider the separation of secure and unsecure communication lines.

7.7.13.2.4.2. IDS, ACS, and CCTV. These items are not provided by the MILCON project and are installed during construction. End user organizations are required (pre-design) to staff all IDS/ACS/CCTV requirements through the local Security Forces Squadron NCOIC to the AF Security Forces Center for validation/funding. MILCON scope will provide power and pathways only, not installation, procurement, or processing of systems/devices. Define IDS/ACS/CCTV requirements early so that the infrastructure can be installed during construction. Ensure walls and doors meet the security requirements for the open-standards architecture approach.

7.7.13.2.4.3. Briefing Room. Provide ceiling power (junction boxes/outlets) for projectors, split ballast for front lighting in classrooms and debrief areas (overhead projectors), and dual whiteboards: One under the automated projector screen, the other on a side wall.

7.7.13.2.4.4. Structure. The stand-alone trainer facility shall be identified as Risk Category III based on ACSE 7.

7.7.13.2.5. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

Table 7.7.15. MQ-9 Training Systems by Location Type.

Simulator Type	No. of Training Systems (CONUS)				No. of Training Systems (OCONUS)		
	Training Center ¹	2 CAPs 5 PMAI	4 CAPs 9 PMAI	8 CAPs 17 PMAI	2 CAPs 5 PMAI	4 CAPs 9 PMAI	8 CAPs 17 PMAI
Stand-alone Trainer ²	2	1	1	1	0	0	0
WLT	1	1	1	1	0 ³	0 ³	0 ³

Notes:

1. Training Center locations are CONUS only.
2. Stand-alone trainer types and quantities will vary by location. For planning purposes assume a minimum of 2 trainers at training centers and a minimum of 1 trainer all CONUS MC squadrons. Note that additional trainers may be required beyond the minimums shown in this table. Contact AFSOC/A5KJ for project-specific flight simulator requirements for the MQ-9.
3. AFSOC/A3V: OCONUS locations will use the existing hangar space to conduct weapons load training.

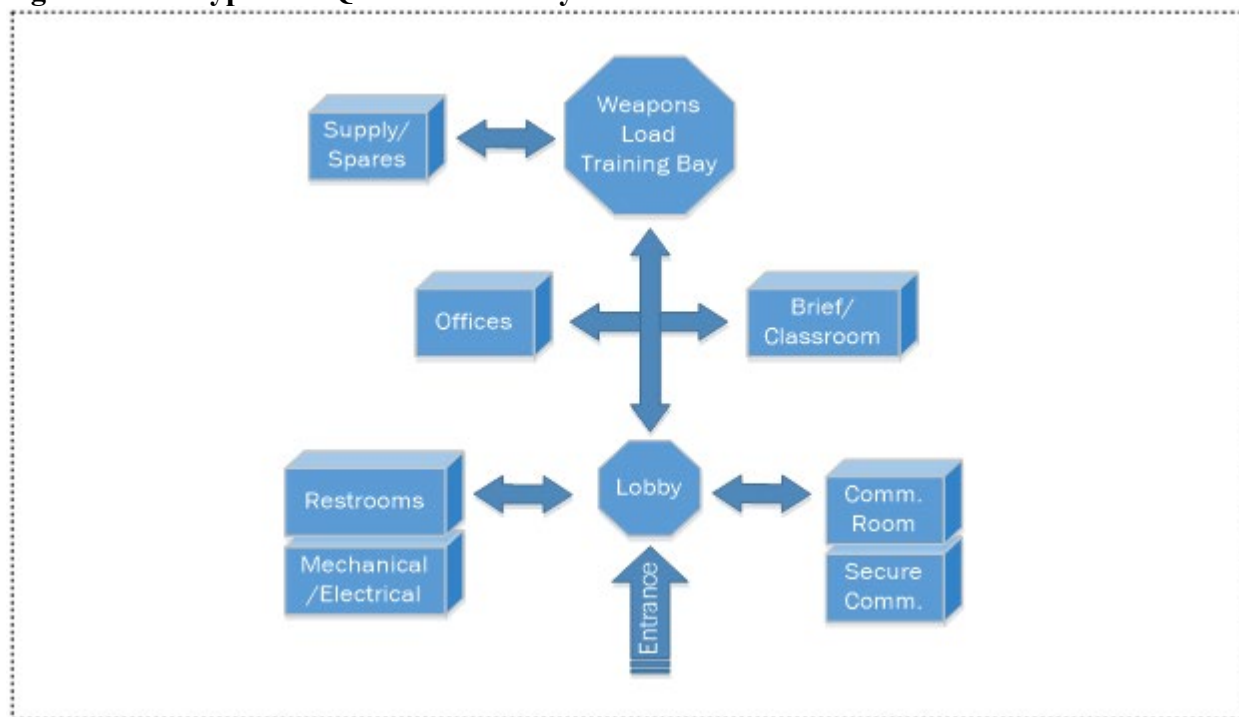
Figure 7.7.6. Typical MQ-9 WLT Facility.

Table 7.7.16. MQ-9 Training System Facility Space Requirements.

Cat Code	Facility	UM	MQ-9 2 CAPs¹	MQ-9 4 CAPs¹	MQ-9 8 CAPs¹	DAFMAN 32-1084 Reference or Remarks/Calculations
171-212	Instructor Offices ²	NSF	130	130	130	Offices are required for 2 instructors CG 61 Admin Overview Table 1.2.1 authorizes 65 NSF min each.
171-212	Contractor Offices ²	NSF	130	130	130	Offices are required for 2 instructors CG 61 Admin Overview Table 1.2.1 authorizes 65 NSF min each.
171-212	WLT Bay	NSF	2,925	2,925	2,925	Facility is equal to MQ-9 block dimensions plus 10-foot clearance around the aircraft. Only authorized at CONUS locations. OCONUS locations use an existing hangar bay.
171-212	Supply Spares	NSF	160	160	160	AFSOC/A4I: 10ft (W) x 16' (L) x 8' (H).
171-212	Briefing/ Classroom Rooms	NSF	125	125	125	Each weapons training class has a maximum capacity of 3 students and 2 instructors plus an additional 5' x 10' area for audiovisual aids and demonstrations. CG 61 Admin Overview Table 1.4: 15 NSF per person.
171-212	Break Room	NSF	100	100	100	CG 61 Admin Overview Table 1.3: 16% Occupants x 18 NSF. Minimum of 100 NSF.
171-212	Restrooms	NSF	-	-	-	CG 61 Admin Overview Paragraph 1.5.2: Varies. NSF to GSF conversion.
171-212	Janitor's Room	NSF	-	-	-	CG 61 Admin Overview Paragraph 1.5.2: Varies. NSF to GSF conversion.
171-212	Mech./Elec. Rooms	NSF	-	-	-	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conversion.
171-212	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Secure Comm. Rm	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
171-212	Admin. Support Space	NSF	80	80	80	CG 61 Admin Overview Paragraph 1.4.3 Minimum 20 sf per person. AFSOC/A4I: default is the minimum.
171-212	Admin. Circulation	NSF	34	34	34	CG 61 Admin Overview Paragraph 1.4.2: Max 10% of Administrative Space

171-212	Special Purpose Circulation	NSF	77	77	77	CG 61 Admin Overview Paragraph 1.4.2: Max 10% of Special Purpose Space
Total WLT Facility		GSF	3,656	3,656	3,656	Net to Gross conv. factor of 1.25.
Total Flight Training Facility		NSF	1,224	1,224	1,224	
Total Flight Training Facility		GSF	1,530	1,530	1,530	Net to Gross conv. factor of 1.25.
Notes: 1. Number of PMAI. 5 PMAI = 5 total aircraft (0 BAI); 9 PMAI = 9 total aircraft (0 BAI); 17 PMAI = 17 total aircraft (0 BAI). 2. AFSOC/A4I: An open office concept using system furniture will be used.						

7.7.14. MQ-9 Operations Facilities (MC and LR Component).

7.7.14.1. Squadron Operations (CATCODE: 141753).

7.7.14.1.1. Requirements Determination. Each squadron needs an operational building for administration, scheduling, training, briefing, personal equipment maintenance, and storage for aircrews. Since the MQ-9 system uses remote split operations that involve MC operations in locations that can be separate from LR operations, operations requirements for facilities will be divided into MC squadron requirements and LR squadron requirements.

7.7.14.1.2. Scope Determination. Space must be provided for the commander and staff. Space is required for an operations officer to direct flight operations and for intelligence, mission planning, computers, radar and navigation, photos and maps, briefing room, locker area, and radio and electronic countermeasures. The required space allocation for this facility can be found in [Table 7.7.18](#). See [paragraph 1.1.3.6](#) for more information about the unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within squadron operations facilities.

7.7.14.1.2.1. For purposes of this instruction, MC and LR squadrons are assumed to be at the same location, but in separated facilities. If LR facilities are located on a different installation than the MC, no additional personnel and facilities will be required.

7.7.14.1.3. Typical MQ-9 MC and LR Operations Composition. Includes a squadron commander, first sergeant, operations officer, assistant operations officers, resource advisor, commander's executive, standardization and evaluation, safety, security, client systems, current operations, scheduling, training, aviation resource management section (ARMS), readiness, flight planning, flight management, combat operations, plans, weapons and tactics, intelligence, and stand-alone trainer (includes a simulator room and CLS). This facility will also include multiple GCSs (fixed for MC and either containerized or dual control mobile GCS for LR) and ground data terminals (GDTs), GCS maintenance and spare parts storage, a training room, classroom, and B/DB rooms. For LR, a PPSL or SETSS is required; however, additional support may not be required based upon existing PPSLs or SETSSs supporting the region.

7.7.14.1.3.1. SOC. All MC RPA squadrons are authorized a SOC. SOCs report to the MC squadron commander. This facility includes an operations floor for mission directors, intel, communications systems, and weather personnel from the squadron. It should be located adjacent to, or collocated with the squadrons' fixed GCSs and GCS support spaces. All SOCs are required to be located in a SCIF. When more than one RPA squadron is located at the same installation, multiple SOCs may be authorized to consolidate into a RPA Reconnaissance Operation Center (ROC). For RPA ROC requirements, see [Table 8.3.7](#) for Special Operations Group facility space requirements, as the RPA ROC reports to the group commander.

7.7.14.1.4. Security Considerations. Plans, weapons and tactics, intelligence, fixed GCSs, stand-alone trainers, and the SOC require a SCIF. Conference and B/DB rooms will also require open storage up to the SECRET level.

7.7.14.1.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

7.7.14.1.6. Other Considerations. This facility should include space for a "wellness room" that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child's birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

7.7.14.1.7. Dimensions. See [Table 7.7.18](#) for the individual spaces within a MQ-9 MC operations facility and [Table 7.7.19](#) for the individual spaces within a MQ-9 LR operations facility.

Table 7.7.17. Building Utility System Requirements for MQ-9 Operations Facilities.

System	Requirements
Mechanical	Where "comfort cooling" is authorized, maintain regulated temperature and humidity conditions in all areas via an energy efficient HVAC system. For MC, see Table 7.7.13 for stand-alone trainer simulator room mechanical requirements.

Electrical	Use commercial grade convenience receptacles and power outlets. 240V, 20 Amp, 3-prong wall outlets eliminate the need for light-alls and external power sources for the standard base supply system (SBSS) and GCSs. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. For MC, see Table 7.7.13 for stand-alone trainer simulator room electrical requirements.
Plumbing	Provide a commercial grade domestic water and waste water system.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.7.7. Typical MQ-9 MC or LR Operations Facility.

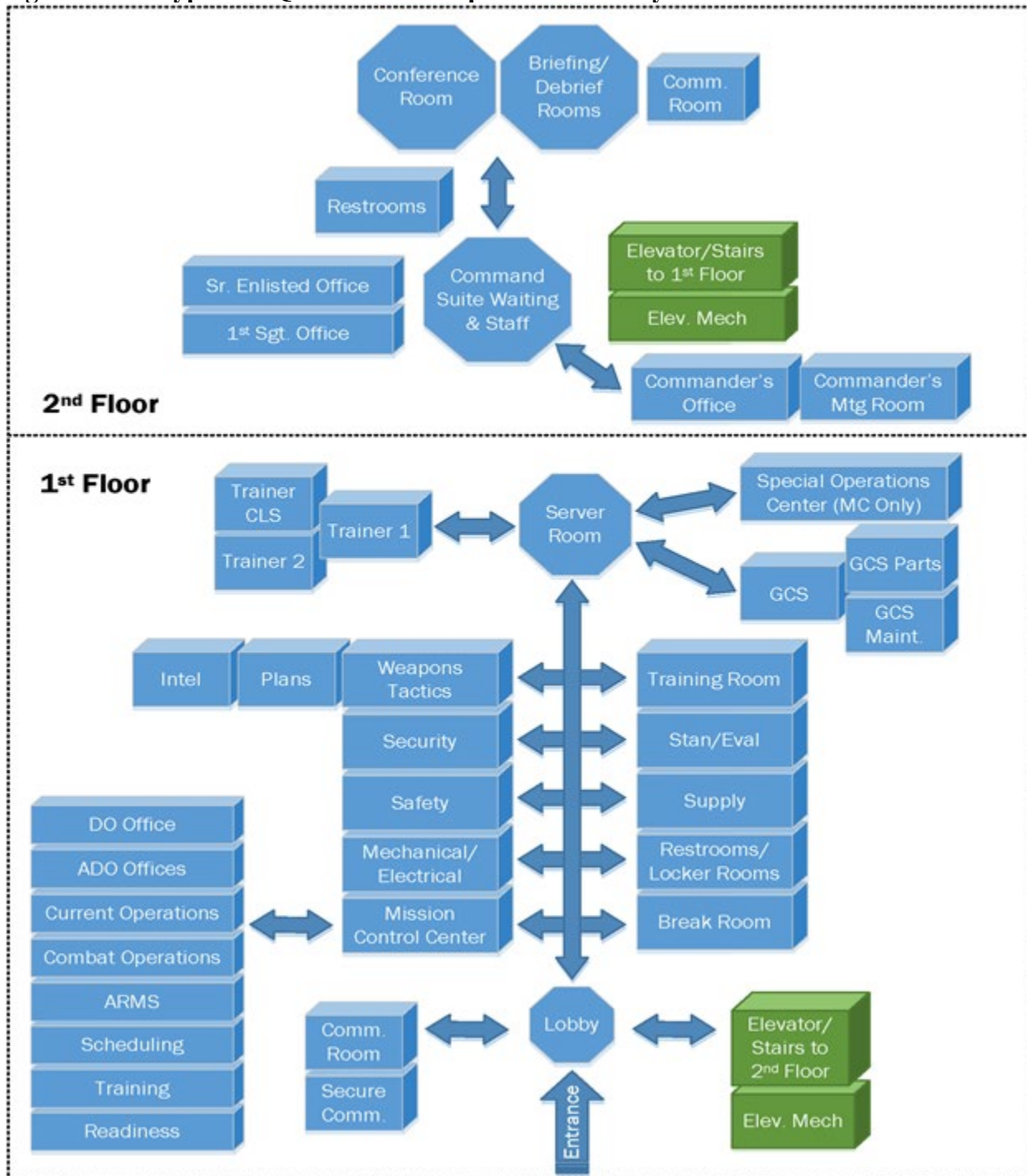


Table 7.7.18. MQ-9 MC Operations Facility Space Requirements.

Cat Code	Facility	UM	MQ-9 MC 2 CAPs	MQ-9 MC 4 CAPs	MQ-9 MC 8 CAPs	DAFMAN 32-1084 Reference or Remarks/Calculations
141-753	Command Suite – Commander’s Office	NSF	140	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
141-753	Command Suite – First Sergeant	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Command Suite – Command Staff and Waiting Area	NSF	335	465	465	2 PN Waiting Area. CG 61 Admin Overview Table 1.3: 20 NSF per person. Executives (1-2 CAPs = 1 PN; 3+ CAPs = 2 PN) and RAs (1-2 CAPs = 2 PN; 3+ CAPs = 3 PN). CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices
141-753	Commander’s Meeting Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
141-753	Flight Chief Offices ²	NSF	0	0	0	Located with the LR squadron.
141-753	Director of Operations ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices
141-753	Assistant Operations Officer ²	NSF	195	325	455	1-2 CAPs = 3 PN; 3-4 CAPs = 5 PN; 5+ CAPs = 7 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Senior Enlisted Manager ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	POTFF Office	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Training Office	NSF	148	148	148	Assume 2 PN: Chief/NCOIC (Type D) and Training PN (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Medical Office	NSF	230	230	230	Per A1M, assume 3 personnel total per squadron integrated from SOSS. 1 officer (Type D), 2 enlisted (Type E). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.

141-753	Security Office ²	NSF	100	130	195	Where multiple security officers are required, use open offices; otherwise use a private office. 1-2 CAPs = 1 PN; 3-4 CAPs = 2 PN; 5+ CAPs = 3 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Safety Office ²	NSF	100	130	195	Where multiple safety officers are required, use open offices; otherwise use a private office. 1-2 CAPs = 1 PN; 3-4 CAPs = 2 PN; 5+ CAPs = 3 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Publications	NSF	60	60	60	Provide 60 NSF for storage.
141-753	Squadron Operations Center ²	NSF	1,336	1,464	1,720	AFSOC/A5/8/9: Assume SOC's have minimum of 4 GCSs (listed separately in this table). Ops floor spaces includes 1 mission director, 2 weather PN, 2 comm PN, 1 intel PN per CAP, 1 intel ops supervisor, 1 adv. tactics, 1 support CTR, and 2 satellite comm CTRs. Provide ops floor space using Type F offices to account for circulation. Support offices include 3 wing plans PN and 2 aircraft manufacturer PN. Provide support offices using Type F offices, except for 1 Type D office for wing plans supervisor. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices. 2 CAPs = 20 PN, 4 CAPs = 22 PN, and 8 CAPs = 26 PN.
141-753	Server Room	NSF	553	813	1,333	1-2 CAPs = 17 racks; 3-4 racks = 25 racks; 5-6 racks = 33 racks; 7-8 CAPs = 41 racks. Rack dimensions are 6.5' (rack width with clearance) x 5' (rack length with clearance). The calculated configuration is racks on either side of one aisle.

141-753	Number of Fixed GCS	EA	5	5	10	AFSOC/A5/8/9: Provide 1 Fixed GCS per #CAP, plus 20% spares at MC (rounded up).
141-753	Fixed GCS	NSF	1,960	1,960	3,920	Per AFSOC/A5/8/9: assume 1 Fixed GCS per #CAP (minimum of 4), plus 20% spares at MC. Based on Block 50 Inline Layout for GCS: 28' x 14' or 392 NSF each. Note: a secondary Block 50 configuration is the L-shaped layout that is 25' 14' or 350 NSF each.
141-753	GCS Maintenance	NSF	525	525	1,050	27 SOG ROC GCS Maintenance is approx.. 1,500 sf and supports 14 GCSs. Provide 105 NSF per GCS.
141-753	GCS Parts/Spares Storage	NSF	500	500	1,000	27 SOG ROC GCS Parts Storage is approximately 1,400 sf. Provide 100 NSF per GCS.
141-753	Stand-Alone Trainer Room	NSF	784	784	784	AFSOC/A3V: 2 per CONUS squadron, 0 per OCONUS squadron. Stand-alone trainers support MC, which is currently not planned for OCONUS locations. Per A5KJ, provide an area equivalent to a GCS for each stand-alone trainer. Based on Block 50 Inline Layout for GCS: 28' x 14' or 392 NSF each.
141-753	Stand-Alone Trainer CLS Support	NSF	600	600	600	Provide an area 30' wide x 20' long x 9' high or equal to ~600 square feet of space. This area includes cubicle space for three personnel, spares storage area, and maintenance area/electronic repair stations/workbenches. This will satisfy CLS support for two stand-alone trainers.
141-753	Flight Planning ²	NSF	246	246	246	2 PN plus table and storage area of 150 NSF. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Flight Management ²	NSF	210	210	210	2 PN for ops desk plus table/storage area of 150 NSF. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.

141-753	Standardization and Evaluation ²	NSF	195	325	455	1-2 CAPs = 3 PN; 3-4 CAPs = 5 PN; 5+ CAPs = 7 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	ARMS	NSF	235	365	495	1-2 CAPs = 3 PN; 3-4 CAPs = 5 PN; 5+ CAPs = 7 PN. Add 40 NSF for storage. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Combat Operations, Plans, Weapons & Tactics, and Intel ²	NSF	468	936	1,872	3 PN per CAP (1 Plans, 1 Intel, 1 Wep/Tac = Type F). Additional 3 shared workstations per CAP for Combat Operations (Type G). CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices and 30 NSF min for Type G Offices. Area requires SCIF.
141-753	Current Operations ²	NSF	288	576	1,152	3 workstations per CAP. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Women's Showers	NSF	60	60	120	Provide 2 showers for every 5 CAPs. UFC 3-420-1: 30 NSF per shower/drying area. Facilities where operations are 24 hours and shifts are 12 hours each are authorized showers.
141-753	Women's Locker Room	NSF	16	29	55	Calculated as (MC PN x 0.2 (% women per squadron) x 2 NSF locker/ 2 (stacked lockers)).
141-753	Men's Showers	NSF	90	90	180	Provide 3 showers for every 5 CAPs. UFC 3-420-1: 30 NSF per shower/drying area. Facilities where operations are 24 hours and shifts are 12 hours each are authorized showers.
141-753	Men's Locker Room	NSF	65	117	221	Calculated as (MC PN x 0.8 (% males per squadron) x 2.5 NSF (locker))/ 2 (stacked lockers).
141-753	Elevator	NSF	80	80	80	Provide 80 NSF.
141-753	Elevator Equip. Room	NSF	90	90	90	Provide 90 NSF.
141-753	Mech/Elec Rooms	NSF	-	-	-	CG 61 Admin Overview Para 1.5.2: This space is accounted for in the conversion from NSF to GSF.

141-753	Restrooms & Janitor's Closet	NSF	-	-	-	CG 61 Admin Overview Para 1.5.2: This space is accounted for in the conversion from NSF to GSF.
141-753	Supply Room	NSF	100	100	100	Provide 100 NSF.
141-753	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Secure Comm. /UPS Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Training Room	NSF	240	351	663	AFSOC/A4I: 240 NSF minimum. Total unit authorization is 3 NSF per military MC PN.
141-753	Secure Storage	NSF	20	20	20	Two, five-drawer safes (4' x 5').
141-753	Break Room	NSF	187	337	636	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF. Minimum of 100 NSF. Maximum of 1,000 NSF. Facilities where operations are 24 hours and shifts are 12 hours each are authorized full kitchens.
141-753	Conference Room	NSF	500	1,150	1,350	Size based on number of personnel in the squadron. CG 61 Admin Overview, Paragraph 1.4.5 and Table 1.4: 50-99 PN, provide a conference room for up to 25 persons. 100-149 PN, provide a conference room for up to 50 persons with 150 SF speaker area. Add a 10-person room for populations over 150.
141-753	Team Room	NSF	150	300	450	Size based on number of personnel in the squadron. CG 61 Admin Overview, Paragraph 1.4.5 and Table 1.4: 50-99 personnel, provide one team room for up to 10 persons. 100-149 personnel, provide two team rooms for up to 10 persons each. Add an additional team room for populations over 150.
141-753	Briefing & Debriefing	NSF	300	300	300	10 PN. 2 rooms. CG 61 Admin Overview Table 1.4: 15 NSF per person. 150 NSF per room.
141-753	Mobility/ Supply Storage	NSF	0	0	0	Located at LR.

141-753	Mobility Office ²	NSF	0	0	0	Located at LR.
141-753	Administrative Support Space	NSF	940	1,500	2,380	CG 61 Admin Overview paragraph 1.4.2: minimum 20 sf per person. AFSOC/A4I: Default is the min.
141-753	Administrative Circulation	NSF	483	673	964	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space
141-753	Special Purpose Circulation	NSF	851	1,016	1,516	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Total MC Operations Facilities		NSF	14,829	18,577	27,277	
Total MC Operations Facilities		GSF	18,536	23,221	34,096	Net to Gross conversion factor of 1.25.
Notes: 1. Number of PMAI. 2 CAPs (5 PMAI) = 5 total aircraft (0 BAI); 4 CAPs (9 PMAI) = 9 total aircraft (0 BAI); 8 CAPs (17 PMAI) = 17 total aircraft (0 BAI). 2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting, and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture.						

Table 7.7.19. MQ-9 LR Operations Facility Space Requirements.

Cat Code	Facility	UM	MQ-9 LR 2 CAPs	MQ-9 LR 4 CAPs	MQ-9 LR 8 CAPs	DAFMAN 32-1084 Reference or Remarks/Calculations
141-753	Command Suite – Commander’s Office	NSF	140	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
141-753	Command Suite – First Sergeant	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Command Suite – Command Staff and Waiting Area	NSF	335	465	465	2 PN Waiting Area. CG 61 Admin Overview Table 1.3: 20 NSF per person. Executives (1-2 CAPs = 1 PN; 3+ CAPs = 2 PN) and RAs (1-2 CAPs = 2 PN; 3+ CAPs = 3 PN). CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices
141-753	Commander’s Meeting Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.

141-753	Flight Chief Offices ²	NSF	100	200	400	1 flight chief per 2 CAPs. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Director of Operations ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices
141-753	Assistant Operations Officer ²	NSF	130	195	260	1-2 CAPs = 2 PN; 3-4 CAPs = 3 PN; 5+ CAPs = 4 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Senior Enlisted Manager ²	NSF	0	0	0	No dedicated PN, this is an additional duty.
141-753	POTFF Office	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Training Office	NSF	148	148	148	Assume 2 PN: Chief/NCOIC (Type D) and Training PN (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Medical Office	NSF	230	230	230	Per AIM, assume 3 PN total per squadron integrated from SOSS. 1 officer (Type D), 2 enlisted (Type E). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Security Office ²	NSF	100	130	195	Where multiple safety officers are required, use open offices; otherwise use a private office. 1-2 CAPs = 1 PN; 3-4 CAPs = 2 PN; 5+ CAPs = 3 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Safety Office ²	NSF	100	130	195	Where multiple safety officers are required, use open offices; otherwise use a private office. 1-2 CAPs = 1 PN; 3-4 CAPs = 2 PN; 5+ CAPs = 3 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.

141-753	Flight Planning ²	NSF	246	246	246	2 PN plus table and storage area of 150 NSF. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Flight Management ²	NSF	210	210	210	2 PN for ops desk plus table/storage area of 150 NSF. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
141-753	Standardization and Evaluation ²	NSF	195	325	455	1-2 CAPs = 3 PN; 3-4 CAPs = 5 PN; 5+ CAPs = 7 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	ARMS	NSF	105	170	235	1-2 CAPs = 1 PN; 3-4 CAPs = 2 PN; 5+ CAPs = 3 PN. Add 40 NSF for storage. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Combat Operations, Plans, Weapons & Tactics, and Intel ²	NSF	276	552	1,104	1 PN per CAP (1 Plans, 1 Intel, 1 Weapons/Tactics). CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices. Area requires SCIF. Additional 3 shared workstations per CAP for Combat Operations. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
141-753	Current Operations ²	NSF	96	192	384	1 workstations per CAP. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Publications	NSF	60	60	60	Provide 60 NSF for storage.
141-753	Server Room	NSF	325	325	650	Provide 2 racks per GCS. Rack dimensions are 6.5' (rack width with clearance) x 5' (rack length with clearance). The calculated configuration is racks on either side of one aisle.
141-753	Number of Fixed GCS	EA	5	5	10	AFSOC/A5/8/9: Provide 1 Fixed GCS per #CAP, plus 20% spares at MC (rounded up).

141-753	Fixed GCS	NSF	1,960	1,960	3,920	Per AFSOC/A5/8/9: assume 1 Fixed GCS per #CAP (minimum of 4), plus 20% spares at MC. Based on Block 50 Inline Layout for GCS: 28' x 14' or 392 NSF each. Note: a secondary Block 50 configuration is the L-shaped layout that is 25' 14' or 350 NSF each.
141-753	GCS Maintenance	NSF	525	525	1,050	27 SOG ROC GCS Maintenance is approximately 1,500 sf and supports 14 GCSs. Provide 105 NSF per GCS.
141-753	GCS Parts/Spares Storage	NSF	500	500	1,000	27 SOG ROC GCS Parts Storage is approximately 1,400 sf. Provide 100 NSF per GCS.
141-753	Women's Showers	NSF	30	30	60	Provide 1 shower plus an additional shower and drying area over 4 CAPS. UFC 3-420-1: 30 NSF per shower/drying area. One. Facilities where operations are 24 hours and shifts are 12 hours each are authorized showers.
141-753	Women's Locker Room	NSF	12	24	48	Calculated as (LR Operations PN x 0.2 (% women per squadron) x 2 NSF (locker))/ 2 (stacked lockers).
141-753	Men's Showers	NSF	60	60	90	Provide 2 showers plus an additional shower and drying area over 4 CAPS. UFC 3-420-1: 30 NSF per shower/drying area. One. Facilities where operations are 24 hours and shifts are 12 hours each are authorized showers.
141-753	Men's Locker Room	NSF	48	96	192	Calculated as (LR Operations PN x 0.8 (% males per squadron) x 2.5 NSF (locker))/ 2 (stacked lockers).
141-753	Elevator	NSF	80	80	80	Para 1.9.5: Major Vertical Penetrations (NSF to GSF conv.). 80 NSF is typical.
141-753	Elevator Equipment Room	NSF	90	90	90	Para 1.9.5: Major Vertical Penetrations (NSF to GSF conv.) 90 NSF is typical.
141-753	Mech./Elec. Room	NSF	-	-	-	CG 61 Admin Overview Para 1.5.2: This space is accounted for in the conversion from NSF to GSF.

141-753	Restrooms & Janitor's Closet	NSF	-	-	-	CG 61 Admin Overview Para 1.5.2: This space is accounted for in the conversion from NSF to GSF.
141-753	Supply Room	NSF	100	100	100	Provide 100 NSF.
141-753	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Secure Comm. /UPS Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Training Room	NSF	240	288	576	AFSOC/A4I: 240 NSF minimum. Total unit authorization is 3 NSF per military LR PN. This space authorization should also house training open offices or workstations as required.
141-753	Secure Storage	NSF	20	20	20	Two, five-drawer safes (4' x 5').
141-753	Armory	NSF	60	60	60	LR requires a small armory approximately 60 NSF.
141-753	Break Room	NSF	138	276	553	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF. Minimum of 100 NSF. Facilities where operations are 24 hours and shifts are 12 hours each are authorized full kitchens.
141-753	Conference Room	NSF	0	500	1,350	Size based on number of personnel in the squadron. CG 61 Admin Overview, Paragraph 1.4.5 and Table 1.4: Less than 50 PN, provide one 10-person team room (see Team Room below). 50-99 PN, provide a conference room for up to 25 persons. 100-149 PN, provide a conference room for up to 50 persons with 150 SF speaker area. Add a 10-person room for populations over 150.

141-753	Team Room	NSF	150	150	450	Size based on number of personnel in the squadron. CG 61 Admin Overview, Paragraph 1.4.5 and Table 1.4: Less than 50 PN, provide one 10-person team room. 50-99 PN, provide one team room for up to 10 persons. 100-149 PN, provide two team rooms for up to 10 persons each. Add an additional team room for populations over 150.
141-753	Briefing & Debriefing	NSF	300	300	300	10 PN. 2 rooms. CG 61 Admin Overview Table 1.4: 15 NSF per person. 150 NSF per room.
141-753	Mobility/ Supply Storage	NSF	413	825	1,650	Calculated as 206.25 NSF per CAP, based on 27 SOG DET 1 requirement of 1,650 NSF for 8 CAPs.
141-753	Mobility Office ²	NSF	96	96	96	Assume 2 PN. AFSOC/A4I: Based on assigned PN at 48 NSF each.
141-753	Administrative Support Space	NSF	760	1,080	1,700	CG 61 Admin Overview paragraph 1.4.2: minimum 20 sf per person. AFSOC/A4I: Default is the min.
141-753	Administrative Circulation	NSF	357	468	676	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space
141-753	Special Purpose Circulation	NSF	570	671	1,274	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.

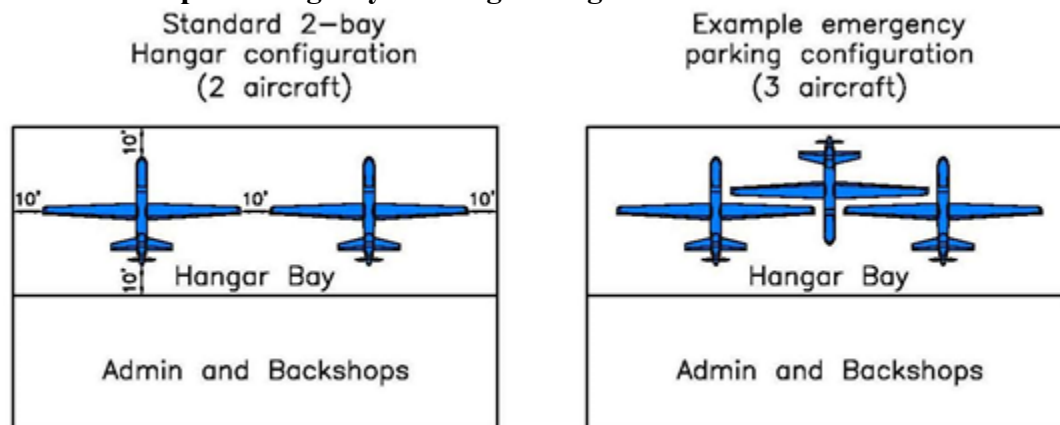
7.7.15. Maintenance Hangar Facilities (LR Component).

7.7.15.1. Maintenance Hangar (CATCODE: 211111).

7.7.15.1.1. Requirements Determination. MQ-9 aircraft are typically parked under sunscreens during the daytime and in hangars at night and during severe weather. Hangars support aircraft maintenance, repair, and inspection activities that are most efficiently done under complete cover. The interior design of covered shelters must include the clearances between aircraft and door openings, walls, ceilings, and parking clearances between other aircraft.

7.7.15.1.2. Emergency Parking Configuration. Due to the lack of tie-down points on the aircraft and sensitivity of onboard components, MQ-9 aircraft must be provided a covered parking space for storage when weather conditions do not allow parking under sun shades on an apron. Based on an emergency aircraft storage configuration that uses the maintenance clearance space in a hangar for aircraft emergency storage, each authorized covered maintenance space can store approximately 1.7 MQ-9 aircraft (Figure 7.7.8 shows an example, though the actual dimension may vary based on the hangar being used and support equipment surrounding each aircraft). Any additional authorized aircraft unable to fit within the maintenance hangar with the 1.7 multiplier of the maintenance hangar shall be provided additional covered storage space, not additional covered maintenance hangar space. See **Paragraph 7.7.16**, Covered Aircraft Parking Facilities, for the method and determination for calculating MQ-9 covered aircraft parking.

Figure 7.7.8. Example Emergency Parking Configuration.



7.7.15.1.3. Scope Determination. Determine the square footage requirements for maintenance hangars by the method described below for computing covered maintenance spaces.

7.7.15.1.3.1. Per A4/MYS, for planning purposes assume MQ-9 units will have a minimum of 2 cradled aircraft (for expeditionary LR) and 1 casketed aircraft. Also assume two-thirds of PMAI will be assembled (minimum of 3 total assembled) to support training and maintenance requirements. For any remaining aircraft, assume they are either deployed or stored in caskets.

7.7.15.1.3.2. Calculate the number of authorized covered maintenance spaces for the MQ-9 by adding the total number of PMAI, BAI, and training aircraft (TA), subtract deployed, cradled, and casket-stored aircraft and multiply by a factor of 0.33 (with a minimum of one space provided) rounded to the nearest whole number.

7.7.15.1.3.3. To determine the interior dimensions of hangar bays, use the dimensions of the aircraft plus the minimum clearances shown in [Table 7.7.21](#). To compute the gross area of the hangar, multiply the interior dimensions by a net-to-gross factor of 1.15 (DAFMAN 32-1084, CC 211111 Hangar Maintenance, Paragraph 1.3.4); however, to account for additional space required for hangar door pockets, use a factor of 1.25.

Table 7.7.20. MQ-9 Covered Aircraft Maintenance Spaces.

No. of CAPs	PMAI	BAI	Cradled Aircraft	Casket-Stored Aircraft	Assembled Aircraft	Assembled Aircraft x MQ-9 Covered Maintenance Factor	Required Covered Maint. Spaces
2	5	0	2	1	2 ¹	2 x 0.33 = 0.66	1
4	9	0	2	1	6 ²	6 x 0.33 ² = 1.98	2
8	17	0	2	1	11 ²	11 x 0.33 ² = 3.63	4
Notes: 1. For less than 4 CAPs, calculate the number of assembled aircraft by subtracting the number of cradled and casket-stored aircraft from the number of PA 2. Allows two-thirds of assigned aircraft are assembled and a minimum of 1 casketed aircraft and 2 cradled aircraft. 3. Provide a minimum of one apron space.							

Table 7.7.21. MQ-9 Aircraft Separation Dimensions inside Hangars.

Minimum Clearances from MQ-9 Hangar Elements ¹						
Aircraft Element	Door		Walls		Roof Framing	
	m	ft	m	ft	m	ft
Wing Tip - under 30.5 m (100 ft) span	3	10	3	10	-	-
Fuselage - under 30.5 m (100 ft) span	3	10	3	10	3	10
Tail - Vertical	2.1	7	-	-	3	10
MQ-9 Emergency Parking –Wing Tip	0.6	2	0.6	2	-	-
MQ-9 Emergency Parking –Fuselage	0.6	2	0.6	2	0.6	2
Notes: 1. Clearances between aircraft components should be at least 3 m (10 ft) where two or more aircraft are housed. Evaluate existing hangars for the above clearances and waivers in accordance with UFC 3-260-01, Attachment 2 (Waiver Processing Procedures), for facilities that do not provide the minimum clearances. The above clearances are also applicable to alert and hardened aircraft.						

7.7.15.1.4. Dimensions. An area sized for one aircraft (36.2 ft x 66 ft) plus the allowances for minimum clearances (10 ft each side). The area required for a one-bay

hangar is 56.2 ft x 86 ft (4,834 NSF, rounded up) and for a two-bay hangar is 56.2 ft x 162 ft (9,105 NSF, rounded up).

7.7.15.1.5. **Unique Facility Requirements.**

7.7.15.1.5.1. Bridge Crane. A bridge crane with a 5-ton lifting capacity is required for aircraft assembly and maintenance training. The minimum crane hook height is 21.8 ft for Block 1 and 22.9 ft for Block 5 aircraft (Aircraft height of 11.8 ft for Block 1 or 12.9 for Block 5 plus roof clearance of 10 ft from Table 7.7.21). Existing facilities may not include a bridge crane. In this event, a working mobile crane or similar is required to lift the fuselage from the casket.

7.7.15.1.5.2. Hangar Clearances. The minimum standard parking clearance for all aircraft features on the MQ-9 from walls, doors, and the hangar roof is 10 ft. The area displaced by one MQ-9 without clearances is 2,390 NSF (rounded up). Allowing minimum clearances addressed above, the area needed for a MQ-9 is 4,834 NSF (rounded up). The minimum hangar ceiling height is 21.8 ft for Block 1 and 22.9 ft for Block 5 aircraft. The minimum hangar door height is 18.8 ft. for Block 1 and 19.9 ft for Block 5 aircraft

7.7.15.1.5.3. Hangar Floors. The minimum requirement for hangar floor pavements designed for the MQ-9 should be designed for the maximum long wing weight of 12,500 lbs.

7.7.15.1.5.4. Fall Protection. Provide fall protection in accordance with UFC 3-110-03 and refer to UFC 4-211-01 Appendix C-11 for information on the best practices for fall prevention and protection systems. Consider the implications of providing different types of fall protection systems and/or equipment. Note that fall protection systems not installed as a building system may require additional storage for fall protection support equipment.

7.7.15.1.5.5. Fire Protection. Provide fire protection in accordance with UFC 3-600-01, UFC 4-021-01, and UFC 4-211-01. Fire alarm/mass notification systems must be compatible with the installation's centralized radio receiving equipment. The aircraft maintenance area must be protected with a foam-water system and wet pipe sprinkler system in accordance with UFC 4-211-01. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Draft curtains must be installed in the hangar bays per UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF. The foam inductor and concentrate foam tank must be provided in accordance with UFC 4-211-01 and must be located in an equipment room with a minimum 1-hour fire barrier. Fire department connection must be located outside the dedicated fire protection room and must not serve the high expansion foam generators.

7.7.15.1.5.6. Security Requirement. Secured space will be required for the storage of classified components temporarily removed from aircraft. This requirement may be satisfied by storing components at the respective intermediate level shops or

other secure storage locations.

7.7.15.1.5.7. Structure. The maintenance hangar shall be identified as Risk Category III based on ACSE 7.

Table 7.7.22. Building Utility System Requirements for Maintenance Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide multiple 120- and 220-volts outlets throughout the facility and provide two 480V three-phase 200A outlets in each hangar bay. All receptacles in the hangar area shall be Class I, Division 1 and installed at a minimum of 18 inches from floor. Provide a 480-volt, three-phase power for the bridge crane per UFC 4-211-01. Provide independent circuit breakers to support charging and computer stations since consolidated breakers can be tripped due to power demands and surges. Provide isolated circuits from hangar outlets as consolidation will cause breaker interruptions due to excessive power demand for one circuit. Provide a minimum of six 30A 120V quad-plex receptacles shall be installed for the battery shop area. The facility requires a location for a dedicated power outlet for MQ-9 testing equipment for a 440 Hz frequency converter. Design electrical systems capable of expansion to avoid increased installation costs and time delays when the electrical demand increases. Cost of additional installation can be high for O&M funds and contracting process can be lengthy, particularly at overseas locations. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Provide a commercial grade domestic water and waste water system in accordance with the International Plumbing Code (IPC). Provide emergency showers and eye wash stations. Provide wall mounted hose stations and hose reels for cold water. In the hangar bay, no trench drains in accordance with UFC 4-211-01 and no floor drains except at emergency shower and wash stations as necessary. Ensure hot water capability to comply with requirements driven by TO, OSHA, and other safety standards. Applicable criteria include UFC 3-420-01 for plumbing.

Fire Protection	Provide fire protection in accordance with UFC 3-600-01, UFC 4-021-01, and UFC 4-211-01. Per UFC 3-600-01 Paragraph 4-4.1, fixed wing and rotary wing aircraft fuel cell maintenance facilities, alert, storage, depot-level and general-purpose maintenance hangars comply with UFC 4-211-01. Per UFC 4-211-01 Paragraph 3-6.17, provide a hydraulically designed, low level Hi-Ex foam system for hangar bays. Existing hangars may continue use of AFFF fire protection systems. Provide draft curtains in the hangar bays per UFC 4-211-1 Paragraph 3-3.1.10. Provide a foam inductor and concentrate tank per UFC 4-211-1 Paragraph 3-3.6. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.7.15.1.5.8. Reference. See **Paragraph 7.7.17**, Maintenance Facilities **Figure 7.7.9** for a concept diagram for the MQ-9 Maintenance Hangar and AMU facility.

7.7.16. Covered Aircraft Parking Facilities (LR Component).

7.7.16.1. Small Aircraft Maintenance Dock (CATCODE: 211177).

7.7.16.1.1. Description. This facility provides emergency covered storage for MQ-9 aircraft during weather events that do not allow parking on an apron.

7.7.16.1.2. Requirements Determination. Due to the lack of tie-down points on the aircraft and sensitivity of onboard components, MQ-9 aircraft must be provided a covered parking space for storage when weather conditions do not allow parking under sun shades on an apron. This parking shelter provides a temporary area to store aircraft to prevent rain, snow, ice, and wind from causing damage to the aircraft and aircraft components.

7.7.16.1.3. Scope Determination. These covered parking spaces do not require the same building elements (i.e. specialized lighting and power, hydraulics, bridge cranes, communications, maintenance backshops, etc.) as a maintenance hangar; therefore, not all elements included in the category code 211777 in DAFMAN 32-1084 apply.

7.7.16.1.3.1. For planning purposes, apply the emergency storage capacity multiplier of 1.7 (**paragraph 7.7.15.1.2**) to the number of covered maintenance spaces (**Table 7.7.20**). Subtract the product from the number of assembled aircraft.

7.7.16.1.3.2. To determine the interior dimensions of parking bays, use the dimensions of the aircraft plus the minimum clearances shown in **Table 7.7.21**. To compute the gross area of the parking area, multiply the interior dimensions by a net-to-gross factor of 1.15 (DAFMAN 32-1084, CC 211111 Hangar Maintenance, Paragraph 1.3.4); however, to account for additional space required for hangar door pockets, use a factor of 1.25.

Table 7.7.23. MQ-9 Covered Aircraft Parking Spaces.

No. of CAPs	Required Covered Maintenance Spaces	Covered Maintenance Space Emergency Storage Capacity ^{1,2}	Assembled Aircraft - Covered Maintenance Space Emergency Storage Capacity	Required Covered Parking Spaces
2	1	1 x 1.7 = 1.7 or 2	2 – 2 = 0	0
4	2	2 x 1.7 = 3.4 or 3	6 – 3 = 3	3
8	4	4 x 1.7 = 6.8 or 7	11 – 7 = 4	4
Notes: 1. Required Covered Maintenance Spaces x Emergency Storage Parking Factor (1.7). 2. Round to the nearest whole number. 3. See Table 7.7.20 for the determination of assembled aircraft.				

7.7.16.1.4. Dimensions. This facility requires an area sized for MQ-9 aircraft (36.2 ft x 66 ft) plus the allowances for minimum emergency parking clearances (10 ft each side). The area required for a one-bay parking facility is 56.2 ft x 86 ft (4,834 NSF, rounded up). The area required for a two-bay parking facility is 56.2 ft x 162 ft (9,105 NSF, rounded up). The area required for a three-bay parking facility is 56.2 ft x 238 ft (13,376 NSF, rounded up). If authorized by AFSOC/A4I, an additional apron or covered storage space will allow for an MQ-9 covered maintenance spot to be used for the packing/unpacking of the aircraft into/from the casket.

7.7.16.1.5. Unique Facility Requirements.

7.7.16.1.5.1. Covered Aircraft Parking Clearances. See [Table 7.7.21](#) for the clearances within hangars and shelters. The area displaced by one MQ-9 without clearances is 2,390 NSF (rounded up). Allowing minimum clearances addressed above, the area needed for a MQ-9 is 4,834 NSF (rounded up). The minimum hangar ceiling height is 21.8 ft and the minimum hangar door height is 18.8 ft. The clearances listed in [Table 7.7.21](#) are defined by UFC 3-260-01, Table 8-2; however, this facility does not require maintenance clearances and should be used only for emergency parking due to inclement weather. If an existing facility does not meet the minimum clearances in [Table 7.7.21](#), a waiver should be obtained using the procedures in UFC 3-260-01, Appendix B, Section B1-2.1.1.

7.7.16.1.5.2. Fire Protection. The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF. If the fire protection system requires HVAC to prevent freezing, HVAC should be provided as well.

Table 7.7.24. Building Utility System Requirements for Covered Aircraft Parking Facilities.

System	Requirements

Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide multiple 120- and 220-volts outlets throughout the facility. Provide independent circuit breakers to support charging and computer stations since consolidated breakers can be tripped due to power demands and surges. Provide isolated circuits from hangar outlets as consolidation will cause breaker interruptions due to excessive power demand for one circuit. Design electrical systems capable of expansion to avoid increased installation costs and time delays when the electrical demand increases. Cost of additional installation can be high for O&M funds and contracting process can be lengthy, particularly at overseas locations. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems criteria, UFC 3-530-01 for interior and exterior lighting and controls criteria, UFC 3-550-01 for exterior power distribution systems criteria, UFC 3-560-01 for electrical safety and electrical O&M criteria, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Per UFC 3-600-01 Paragraph 4-4.1, fixed wing and rotary wing aircraft fuel cell maintenance facilities, alert, storage, depot-level and general-purpose maintenance hangars comply with UFC 4-211-01. Per UFC 4-211-01 Paragraph 3-6.17, provide a hydraulically designed, low level Hi-Ex foam system for hangar bays. Existing hangars may continue use of AFFF fire protection systems. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.7.17. Maintenance Facilities (LR Component).

7.7.17.1. Aircraft Maintenance Unit (CATCODE: 211154).

7.7.17.1.1. Description. This building is a main control point for all AMU maintenance activities, administration, task training, equipment storage, and tool storage (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational A/HMU, Paragraph 1.1). MQ-9 maintenance facilities are part of the LR squadron. MC squadrons do not require these facilities.

7.7.17.1.2. Requirements Determination. Each AMU needs an operational building for administration, scheduling, training, briefing, and aircraft equipment/tool storage. Equipment/tool storage may be in a separate building (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational A/HMU, Paragraph 1.2). Submit projects

for unlisted missions, AMU types, or additional space requirements through the AFSOC/A4 (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational A/HMU, Paragraph 1.2.1).

7.7.17.1.3. Scope Determination. Space must be provided for the NCOIC or AMU superintendent, AMU OIC or maintenance officer, superintendents and section chiefs (production, crew chief, specialist, and maintenance), and administration including training, dispatch, plans & scheduling, sortie generation, TODO, quality assurance, and CLS. Space is also required for debriefing as well as test/support equipment and tools to support all mission tasks. Equipment includes aircraft test equipment, maintenance tools, airframe caskets, mobility pallets/ISU 70/90s, Dash 21 equipment, and other equipment listed in [Table 7.7.28](#). Specific mission requirements may require additional storage space to be validated through the AFSOC/A4 (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational A/HMU, Paragraph 1.3.1).

7.7.17.1.3.1. Where offices are provided, an open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons.

7.7.17.1.3.2. A designated heritage room is not authorized for the AMU in DAFMAN 32-1084 and is not authorized as an AFSOC specific requirement.

7.7.17.1.4. Dimensions. [Table 7.7.25](#) lists the maximum space requirements for the AMU.

Table 7.7.25. Maximum Space Requirements for MQ-9 AMU Facilities.

MISSION Special Operations Squadrons	Gross Area ^{1,2}					
	2 CAPs (5 PMAI)		4 CAPs (9 PMAI)		8 CAPs (17 PMAI)	
	m ²	ft ²	m ²	ft ²	m ²	ft ²
	1,229	13,231	1,378	14,830	2,050	22,065
Notes:						
1. This table lists the total GSF authorized from the rooms listed in Table 7.7.29. Space authorizations for individual rooms within this facility can be found in Table 7.7.29.						
2. Includes common use and maintenance areas.						

7.7.17.1.5. Design Considerations. Locate next to assigned aircraft parking apron and maintenance hangar. Special Q-D standards apply to hardened facilities. See AFMAN 91-201 (DAFMAN 32-1084, CC 211154 Shop, Aircraft Maintenance, Organizational A/HMU, Paragraph 1.5).

Table 7.7.26. Building Utility System Requirements for AMU Administrative Areas.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions to support fire protection system as required. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	Use commercial grade convenience receptacles and power outlets. Power and data outlets shall be provided for each cubicle work station. Provide Floor-mounted quad-plex receptacles (power and data) for conference/training rooms. Above ceiling junction boxes shall be provided for data and power drops in open office areas for cubicle configurations. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include UFC 3-501-01 for general electrical requirement criteria UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Provide plumbing as required to support fire protection system. Applicable criteria include UFC 3-420-01 for Plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.7.17.2. MQ-9 AMU Backshop Facilities.

7.7.17.2.1. **Support Section.** Area may include: CTK, battery shop, special tools & bench stock, Dash 21 equipment, AME, vehicles, mobility equipment, hazardous materials & waste, and dedicated supply support functions to support the production effort.

7.7.17.2.1.1. CTK. The space needed to accommodate MQ-9 CTK SE is dependent on the amount of general storage and tool storage ISU 90s required (See Table 7.7.27 for the number of ISUs required by CAP). Since the items in storage are quantified by the number of ISUs required, the area for storage is calculated by doubling the ISU storage area to account for unpacking. Per AFSOC/A4, 80 percent of support equipment should be indoors (does not require conditioned spaces), while the remaining 20 percent can be located under covered storage (canopy) adjacent to the AMU.

Table 7.7.27. ISUs required for the MQ-9 Support Section CTK.

Number of CAPs	General Storage (ISU 90s required)	Tool Storage (ISU 90s required)
1	4	2
2-4	7	4
5-7	9	8
8+	14	9

7.7.17.2.1.2. Supply. MQ-9 supply includes two bins for bench stock (approximately 3 ft x 4 ft each) per CAP, a general aircraft supplies area of 150 NSF per CAP, a DIFM area of 50 NSF, TNB and FOM supplies stored in an ISU

(8 ft x 9 ft), and one standard workstation per CAP (64 NSF each per DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1).

7.7.17.2.1.3. Battery Shop. Each battery shop requires 6 NiCad 25.2V batteries per aircraft x number of PMAI x 0.6 (60% spares). This shop should also have NiCad battery chargers (12 for 1-4 CAPs and 24 for up to 8 CAPs) to allow charging and discharging sets of six at a time. A computer task station is also required (25 NSF per DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1). The battery shop must be temperature and humidity controlled.

7.7.17.2.1.4. Hazardous Materials. Requires an area sized for one or two pallets, typically on the hangar floor. One pallet (8 ft x 9 ft or 72 NSF) will support 1-2 CAPs and two pallets (144 NSF) will support up to 8 CAPs.

7.7.17.2.1.5. Hazardous Waste Accumulation. Requires an area sized for one or two pallets, typically on the hangar floor. One pallet (8 ft x 9 ft or 72 NSF) will support 1-2 CAPs and two pallets (144 NSF) will support up to 8 CAPs.

7.7.17.2.1.6. Dimensions. See [Table 7.7.29](#) for the space allocation for the MQ-9 support section totals.

Table 7.7.28. Support Equipment for the MQ-9 Support Section.

Equipment Name	Quantity ¹
TAS	1
CAMS or IMDS	1
Land Mobile Radios	15/CAP
Tactical Radios	4/CAP
Laptop Storage	1 per maintainer
Batteries ²	6 NiCad 25.2V batteries per aircraft x #PMAI x 0.6 (60% spares). Other varieties will vary based on tool type/quantity and battery type/voltage.
Battery chargers	Minimum of 12 Christie CASP/2000 chargers. Other varieties will vary based on tool type/quantity and battery type/voltage.
Hand etcher	1
Dremel tool for de-etching	1
Shredder	1
Copy/Fax/Scanner	1
Printer	1
Computers stations	1 for each CAMS or IMDS; 1 per 2 CAPs for CTK and 1 per CAP for Supply.
Notes:	
1. These numbers are for a typical support section. Numbers for batteries and battery chargers will vary based on the criteria described.	

7.7.17.2.2. Dash 21. Dash 21 equipment is AME designed to configure aircraft for multiple mission profiles. The required space allocation for this facility can be found in [Table 7.7.29](#).

7.7.17.2.3. Engine/Propeller Storage. At least one engine and one propeller per CAP should be stored within the maintenance hangar. Engines will be provided by the engine management section as needed. Air Force Packaging Technology and Engineering Facility (AFPTEF) describes the MQ-9 engine container (Part: CNU-696/E) as 81.3 in (L) x 49.8 in (W) x 58.1 in (H) (<http://handle.dtic.mil/100.2/ADA476960>) and the MQ-9 propeller container (Part: CNU-690/E) at 107 in (L) x 93.8 in (W) x 36.2 in (H) (Source: <http://www.dtic.mil/dtic/tr/fulltext/u2/a477347.pdf>).

7.7.17.2.4. Loaded Casket Storage. Each assigned aircraft for the AMU is accompanied by a 'casket' which is the shipping container for the disassembled airframe. The dimensions for each casket are 39 feet, 4 inches (L) by 8 feet (W) x 7 feet, 1-inch (H). Per AFSOC/A4MYS, each MQ-9 AMU will have a minimum of one casketed aircraft (AFSOCI 32-1084, Paragraph 7.6.15.1.3.1). However, additional casketed aircraft may also be required space since they can be deployed or at home station. The minimum space requirement is 43-foot by 24-foot total or a minimum of 43 feet by 12 feet for each casket. This will provide approximately 2 feet clearance on each side. Loaded caskets cannot be stacked; however, empty caskets can be stacked on commercially available shelving above loaded caskets to maximize floor space. If high-bay storage is available and commercially available mezzanines are installed, provide a forklift access aisle approximately 21 feet wide and reduce the amount of empty casket covered storage by the amount of indoor provided in the mezzanine storage.

7.7.17.2.5. Empty Casket Storage Area. Each assigned aircraft for the AMU is accompanied by a casket. These caskets require storage even when the airframe is assembled; therefore, an AMU will require space to store empty caskets using covered storage in addition to loaded caskets containing the airframe and are stored indoors. Commercially available mezzanine shelving will allow stacking empty caskets up to two high. Each shelving platform is approximately 40 feet by 9 feet and supports two caskets each: one above and one below. The space requirement for empty caskets provides an area of 45 feet x 30 feet for every two caskets stored. This area allows for approximately 5 feet of total clearance on the side of the mezzanine and a 21-foot access aisle for bobtail or forklift.

7.7.17.2.6. Casket Support Equipment. Each MQ-9 aircraft is accompanied by two pallet positions of support equipment. These pallets include containerized parts of an assembled MQ-9. Each 463L pallet is approximately 8 feet by 9 feet (rounded to account for some clear area around the pallet). Like the caskets, when containers are loaded with equipment, they should be stored indoors to reduce equipment damage and when empty, they can be placed under covered storage. Allocate indoor and covered storage casket support equipment based on the number of loaded and empty caskets to be stored.

7.7.17.2.7. Maintenance Support Equipment. Per 12th AMU, each CAP requires approximately one pallet position of support equipment. Each 463L pallet is approximately 8 feet by 9 feet (rounded to account for some clear area around the pallet). To maintain the viability of mechanized and maintenance equipment for

the airframe, these maintenance support equipment pallets should be stored indoors to reduce equipment damage and potential delays to repairs and assembly of airframes. The requirement for maintenance support equipment pallets provides 12 feet by 15 feet per pallet (2 feet on each side of the pallet and 6 feet on the front side to account for forklift access and circulation) divided by two to account for stacking pallets two high.

7.7.17.2.8. Fuel Tank Storage Area. Each assigned MQ-9 can be accompanied by two fuel tanks. The actual number of fuel tanks assigned to the unit depends on the mission, though typically only 50 percent of the aircraft required assigned fuel tanks storage area. Each fuel tank is 3 feet (W) by 15 feet (L) by 4 feet (H) and can be stacked two high (top tank must be empty unless provided rack shelving). Fuel tanks are not required to be indoors, therefore, they are provided covered storage. The space requirement of 8 feet by 19 feet for each fuel pod includes 5 feet front clearance and 4 feet side clearance, and is divided by two to account for stacking.

7.7.17.3. Aircraft General Purpose Shop (CATCODE: 211152).

7.7.17.3.1. Requirements Determination. The facility provides space for specialized and general maintenance activities. These facilities may include work benches, bench stock, battery servicing area, cryogenics maintenance area, generator area, tool crib, administrative space, and personnel locker space. These shops may be in one building or several buildings (DAFMAN 32-1084, CC 211152 Shop Aircraft General Purpose, Paragraph 1.3).

7.7.17.3.2. Scope Determination. DAFMAN 32-1084, CC 211152 Shop Aircraft General Purpose, Table 1.1 states the total gross space requirements for general purpose maintenance shops for a Special Operations Wing will be determined by individual analysis and validated by the appropriate MAJCOM/A4M.

7.7.17.3.3. Dimensions. See [Table 7.7.29](#) for MQ-9 AMU facility requirements.

7.7.17.3.4. Design Considerations. Ensure cleanliness and area safety requirements for cryogenic materials is maintained. Floor with grates and groves tend to accumulate debris that can create hazardous condition when in contact with cryogenics materials. Where possible, try to avoid the use of mezzanines. The use of mezzanines restricts movement of forklifts. It also limits ground floor storage due to pillars location. Provide grounding points for safety.

7.7.17.3.5. Reference. See [Paragraph 7.7.8](#), Intermediate Maintenance Facilities, for MQ-9 facilities at the intermediate level.

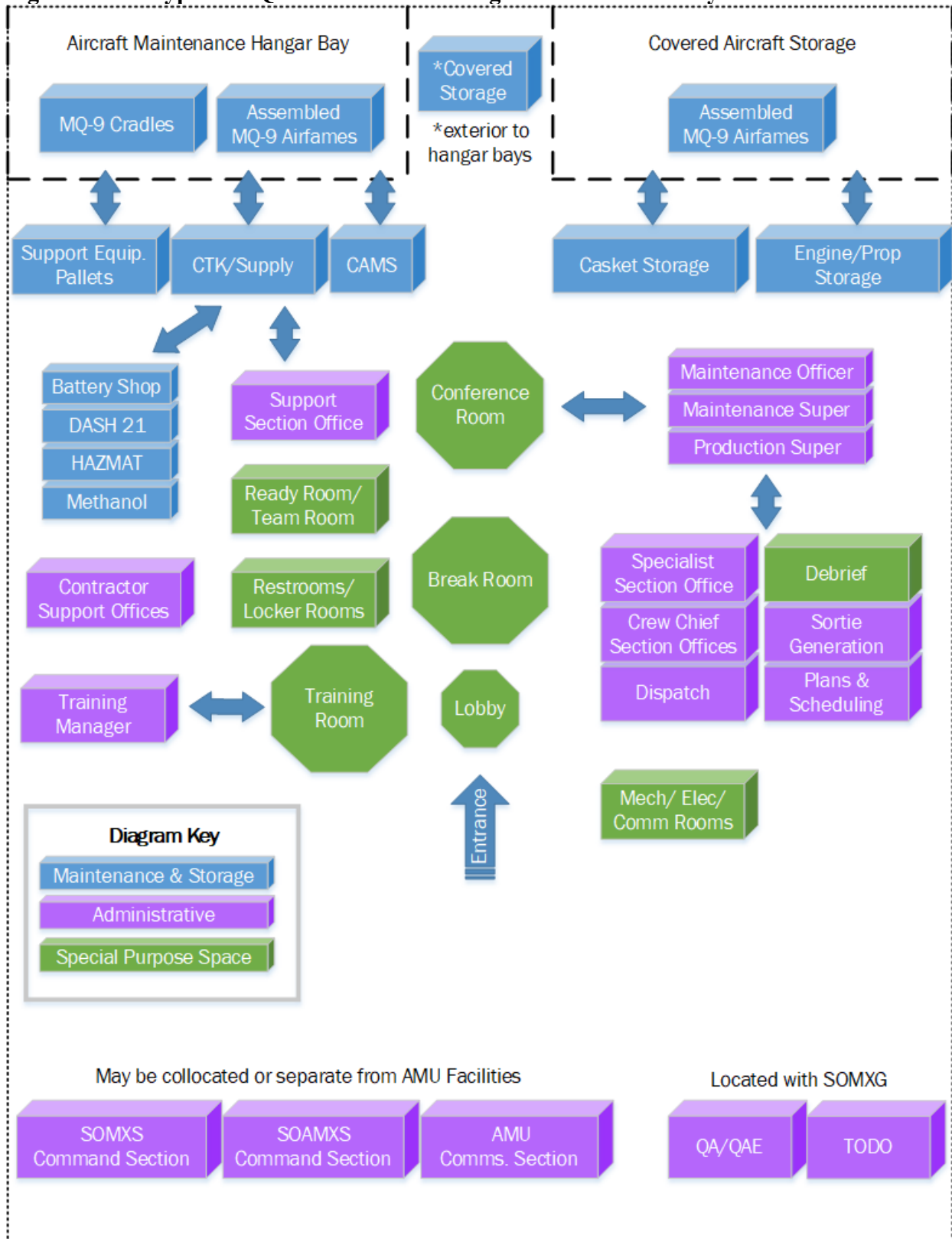
Figure 7.7.9. Typical MQ-9 Maintenance Hangar and AMU Facility.

Table 7.7.29. MQ-9 Maintenance (AMU) Facility Space Requirements.

Cat Code	Facility	UM	MQ-9 2 CAPs	MQ-9 4 CAPs	MQ-9 8 CAPs	DAFMAN 32-1084 Reference or Remarks/Calculations
211-154	Cmd Suite - Commander's Office	NSF	140	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
211-154	Cmd Suite - First Sergeant Office	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Cmd Suite - Support Staff and Waiting	NSF	400	400	400	2 PN waiting area plus secretary (1 Type D), 1 RA, 1 security manager, and 2 support staff (4 Type E). CG 61 Admin Overview Table 1.3: 20 NSF per person. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Maintenance Officer ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Maintenance Sup ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	AMU OIC & NCOIC ²	NSF	130	130	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Production Sup ²	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
211-154	Prod. Staff (Expeditors) ²	NSF	260	325	325	<9 PMAI = 4 PN, 9+ PMAI = 5 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Crew Chief Sec. NCOIC/Chief ²	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Crew Chief Shared Offices ²	NSF	195	195	195	AFSOC/A5: 3 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Specialist NCOIC/Chief ²	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Support Sec. NCOIC/Chief ²	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Training Manager ²	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Quality Assurance	NSF	130	130	130	2 PN (1 QA, 1 QA evaluator). CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.

211-154	TODO	NSF	65	65	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Sortie Generation	NSF	130	130	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Plans and Scheduling	NSF	130	130	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Dispatch Office ²	NSF	130	130	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Field Service Reps. ²	NSF	130	130	130	2 FSRs per unit. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	AFETS	NSF	130	130	130	2 AFETS per unit. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
211-154	Elevator	NSF	80	80	80	Provide 80 NSF.
211-154	Elevator Equip. Room	NSF	90	90	90	Provide 90 NSF.
211-154	Mech./Elec. Room	NSF	-	-	-	CG 61 Admin Overview Paragraph 1.5.2: This space is accounted for in the conversion from NSF to GSF.
211-154	Secure Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	Break Room	NSF	461	461	461	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF.
211-154	Men's Lockers	NSF	256	256	256	Calculated as #PN (lockers stacked) x 4 NSF x 0.8.
211-154	Men's Showers	NSF	60	60	60	Provide 2 showers. UFC 3-420-1: 30 NSF per shower/drying area.
211-154	Women's Showers	NSF	60	60	60	Provide 2 showers. UFC 3-420-1: 30 NSF per shower/drying area.
211-154	Women's Lockers	NSF	64	64	64	Calculated as 160/2 (lockers stacked) x 4 NSF x 0.2.
211-154	Conference Room	NSF	350	350	350	CG 61 Admin Overview Paragraph 1.4.5: The maximum authorization exceeds the necessary space since most meetings will not involve the entire squadron. Provide one 20-person conference room plus 150 NSF speaker area.
211-154	Commander's Conference Room	NSF	150	150	150	AFSOC/A4I: Up to 10 PN. CG 61 Admin Overview Table 1.4 authorizes 15 NSF per person.

211-154	CAMS Room	NSF	65	65	65	Provide 1 Type Workstation per MIS (CAMS). CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices.
211-154	Team Room/Ready Room	NSF	288	288	288	1 shared workstation per 20 maintainers. 156 PN. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
211-154	Secure/Classified Storage	NSF	50	50	50	Provide 50 NSF. Locate proximate to the Battery Shop.
211-154	Restrooms & Janitor's Closet	NSF	-	-	-	CG 61 Admin Overview Paragraph 1.5.2: This space is accounted for in the conversion from NSF to GSF.
211-154	Training Classroom	NSF	468	468	468	AFSOC/A4I: 240 NSF minimum. Total unit authorization is 3 NSF per AMU military personnel.
211-154	Debrief	NSF	150	150	150	One 10-person room. CG 61 Admin Overview Table 1.4: 15 NSF/person.
211-154	Support Section (CTK/Supply/Battery Shop)	NSF	1,962	2,491	5,027	Per AFSOC/A4: 20% can be stored under covered storage and 80% is stored indoors. 1 CAP = 6 ISUs; 2-4 CAPs = 11 ISUs; 5-7 CAPs = 17 ISUs; 8+ CAPs = 23 ISUs. Each ISU 90 is 8'x 9'. Assume each unpacked ISU requires 2 times the space for shelving and circulation, plus two 3' x 4' spaces per CAP for bench stock; 9' x 8' for TNB & FOM; 50 NSF for DIFM; 150 general supply area per CAP; 6 batteries per aircraft plus 60% spares at 2 NSF per battery (chargers can be stacked below batteries; stacked four high) plus one task station; one standard workstation per CAP for supply. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices. CG 61 Admin Overview Table 1.2.1: 25 NSF max for Type H Offices.
211-154	Dash 21 Equipment Storage	NSF	50	90	170	10 NSF x number of PMAI. Largest items store are aircraft covers. Provide shelving for stacking.
211-154	Hazardous Materials and Hazardous Waste	NSF	144	288	288	1-2 CAPs = 1 pallet each for hazardous materials and hazardous waste. 3+ CAPs = 2 pallets each. Each pallet is 9' x 8'.

211-154	Methanol Storage	NSF	50	90	170	Extended range variants of the MQ-9 use methanol at a rate of 4 gallons per aircraft per sortie. At an estimated sortie rate of 2 sorties per day for 5 days a week that equals 40 gallons of methanol per aircraft per week. Storage is in 55 gal drums. Assume one, 55-gallon drum stored per assigned aircraft. Provide 10 NSF per 55-gallon drum.
211-154	Cradled Aircraft Storage Area	NSF	1,360	1,360	1,360	Provide space for 2 cradled aircraft for expeditionary LR. Consists of 2 wing stands and 2 fuselage stands. Wing stand is 20'1" (L) x 3'1" (W). Fuselage is 36'2" (L) and fuselage stand is 4' 2" (W). Add approximately 3 feet on all sides for clearance or 26' x 10' for the cradled wing stand and 42' x 10' for the cradled fuselage and stand.
211-154	Loaded Casket Storage Area	NSF	516	516	2,064	Total loaded caskets = minimum of 1 + deployed caskets as described in paragraph 7.7.15.1.3.1. Caskets are (39'4" x 8' x 7'1" (H) each). Provide approximately 2 ft clearance on each side or 43' by 12' total area per casket (minimum). Loaded caskets cannot be stacked; however, empty caskets can be stacked on commercially available shelving above loaded caskets to maximize floor space. If high-bay storage is available and commercially available mezzanines are installed, provide a forklift access aisle approximately 21 feet wide and reduce the amount of empty casket covered storage by the amount of indoor provided in the mezzanine storage.
211-154	Casket Support Equipment	NSF	180	180	720	Provide 2 pallet positions per loaded casket. Each pallet is 9' x 8' and staked 2 high. Assume 6' front clearance and 4' side clearance to calculate NSF for forklift aisle dimensions.
211-154	Admin. Spt Space	NSF	760	780	780	CG 61 Admin Overview paragraph 1.4.2: 20 NSF min per person. AFSOC/A4I: Default is 20 sf.

211-154	Admin. Circulation	NSF	464	472	472	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space.
211-154	Special Purpose Circulation	NSF	646	772	1,350	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
211-154	Maintenance Support Equipment	NSF	180	360	720	Provide 1 pallet position per CAP. Each pallet is 9' x 8' and staked 2 high. Assume 6' front clearance and 4' side clearance to calculate NSF for forklift aisle dimensions.
211-154	Propulsion/ Engine Storage	NSF	322	644	1,288	Assume 1 spare engine and 1 spare propeller per CAP. AFPTEF documents the MQ-9 engine container (Part: CNU-696/E) at 81.3 inches (L) x 49.8 in (W) x 58.1 in (H) (approximately 54 NSF each with 2 ft clearance on either side) and MQ-9 propeller container (Part: CNU-690/E) at 107 inches (L) x 93.8 in (W) x 36.2 in (H) (approximately 107 NSF each with 2 ft clearance on either side).
211-154	Empty Casket Covered Storage	GSF	2,700	5,400	9,450	Caskets are (39'4" x 8' x 7'1" (H) each). Commercially available shelving (approximately 40' x 9') allows stacking caskets up to two high. Provide an area of 45' x 30' for every two caskets stored. This area allows approximately 5' total clearance on the side of the mezzanine and a 21-foot access aisle for bobtail or forklift.
211-154	Empty Casket Support Equipment Pallets Covered Storage	GSF	720	1,440	2,340	Provide 2 pallet positions per empty casket. Each pallet is 9' x 8' and staked 2 high. Assume 6' front clearance and 4' side clearance to calculate NSF for forklift aisle dimensions.
211-154	Fuel Tank Covered Storage	GSF	380	684	1,292	1 tank per PMAI. Each tank is 3' W x 15' L x 4' H. Assume 5' front clearance and 4' side clearance to calculate NSF for forklift aisle dimensions.
211-154	Covered Vehicle Storage ³	GSF	1,432	2,148	4,296	MQ-9 Material List Report provides approximately 716 NSF per CAP. This includes space for one bobtail, one JIB crane, one ruggedized aircraft vehicle, one 15-ton crane, and 4 aerial lift trucks per CAP.

211-154	CTK/Supply Covered Storage ³	GSF	173	317	662	Material List Report for MQ-9 requires 803 GSF per PMAI for support equipment. Per A4: 20% of storage space can be in outdoor covered, paved spaces.
211-154	SOMXS Commander	NSF	140	140	140	CG 61 Admin Overview Table 1.2 authorizes 140 NSF min for Type C offices.
211-154	SOMXS First Sergeant	NSF	100	100	100	CG 61 Admin Overview Table 1.2 authorizes 100 NSF min for Type D offices.
211-154	SOMXS Commander's Support Staff	NSF	140	140	140	CG 61 Admin Overview Table 1.3: Waiting area is 20 NSF per person. Reception desk is user justified. Calculated as 2 justified waiting persons (40 NSF) + 100 NSF (CG 61 Admin Overview Table 1.2: 100 NSF min) for commander secretary office.
211-154	SOMXS Maint Officer	NSF	100	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices.
211-154	SOMXS Superintendent	NSF	120	120	120	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices.
211-154	SOMXS Prod. Sup	NSF	120	120	120	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices.
211-154	SOMXS Comm. Room	NSF	144	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
211-154	SOMXS CC's Conference Room	NSF	150	150	150	AFSOC/A4I: Provide for up to 10 people. CG 61 Admin Overview Table 1.4: 15 NSF per person.
211-154	SOMXS Break Room	NSF	100	100	100	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF. Minimum of 100 NSF. This break room will only support the SOMXS overhead positions.
Total SOMXS Facilities		GSF	1,343	1,343	1,343	Facility can be collocated or separate from AMU. Net to Gross conversion factor of 1.25.
Total AMU Facilities (w/o covered storage)		NSF	12,209	13,683	20,049	
Total AMU Facilities (w/o covered storage)		GSF	15,261	17,103	25,062	Net to Gross conversion factor of 1.25.

Total AMU Facilities (covered storage only)	GSF	5,405	9,989	18,040	
Notes: 1. 2 CAPs (5 PMAI) = 5 total aircraft (0 BAI); 4 CAPs (9 PMAI) = 9 total aircraft (0 BAI); 8 CAPs (17 PMAI) = 17 total aircraft (0 BAI). 2. AFSOC/A4I: An open office concept using system furniture will be used with the exceptions being the Command Suite, meeting, and conference rooms, or where noise attenuation is needed for security reasons. The open office concept will significantly reduce real property modifications to support future function and organization changes by rearranging the system furniture. 3. Tropical environments introduce increased corrosion due to high humidity with high salt content. In these instances, standard exterior covered storage may not be adequate to maintain mission essential, mission ready, spares and equipment unless the spares and equipment are stored within nearly airtight equipment containers (CONEX boxes or other containers). In these cases, AFSOC/A4I may approve additional controlled humidity warehouse space.					

7.7.18. Intermediate Maintenance Facilities (LR Component).

7.7.18.1. Fabrication Flight.

Table 7.7.30. Fabrication Flight Facility Minimum Areas.

Function/Area Required in NSF	MQ-9 (3 PMAI, 1 CAP)	MQ-9 (5 PMAI, 2 CAPs)	MQ-9 (11 PMAI, 5 CAPs)
Structural Repair/Sheet Metal Shop	400	400	400
Composite Repair	2,318	2,318	2,318
Metals Technology	1,636	1,636	1,636
Non-Destructive Inspection	4,000	4,000	4,000

7.7.18.1.1. Structural Repair. Structural repair shops include: shop administration, the sheet metal shop, corrosion control shop, and the fiberglass/composites shop.

7.7.18.1.1.1. Sheet Metal Shop. See **Table 7.7.31** for equipment in the Structural Repair/Sheet Metal Shop. Provide adequate space for all authorized shop equipment, including the working and safety zone around each piece. The shop must be able to handle the width of the MQ-9 wings which is approximately 5.4 ft at its widest point. Equip the sheet metal shop with a 1-ton bridge crane spanning the material storage area and most the work area. Also, install ½-ton or ¼-ton cranes at strategic locations required for material handling. The sheet metal shop requires a material storage rack for sheet stock of various metals used to fabricate aircraft parts. A moveable rack to store the sheet stock on edge will facilitate stock selection.

Table 7.7.31. Equipment in the Structural Repair/Sheet Metal Shop.

Equipment Name	Quantity	Dimensions
Do-All Band Saw ²	1	56" x 44"
Belt Sander ²	1	29" x 18"
Drill Press ²	1	25" x 20"
Power Shear ²	1	84" x 109"
Gerber Etcher ²	1	65" x 75"
Thermo Dimpler ²	1	35" x 57"
Flaring Mach ²	1	41" x 45"
Bench Grinder ²	1	21" x 21"
Notes: 1. The items in this shop are typical to all structural repair/sheet metal shops. The quantities reflect the minimum needed and could vary based on maintenance demands. 2. Provide a minimum of 3' working clearance on all sides.		

7.7.18.1.1.2. Composites Shop. Provide a containment area at floor level to capture drips and spillage from worktables. Special equipment required in the composites shop includes ovens for curing completed projects and a bridge crane system with a ½-ton hoist for moving large items within the shop. The composites shop requires refrigerators to store sheet adhesives used in composite component manufacture and repair. Paint and chemicals storage should also be provided. The shop must be able to handle the width of the MQ-9 wings approximately 5.4 ft at its widest point and the MQ-9 fuselage which is approximately 36 ft long. Equivalent spaces must be provided to prepare the component (dirty room) as well a room for final preparation to conduct final finishing (i.e., clean room). Some of these spaces can be dual purpose. Space is also required to provide OSHA-compliant areas for dressing, decontamination, etc. Major repair or maintenance would require use of the host installation's shop.

7.7.18.1.1.3. Storage Area. Provide an exterior hazardous material storage facility, and position it within easy access from both the corrosion control shop and the fiberglass/composites shops. If enclosed, this storage facility must maintain temperatures between 10°C (50°F) and 27°C (80°F), and meet all federal, state, and local requirements.

7.7.18.1.1.4. Corrosion Control Shop (For Corrosion Control Hangar see paragraph 7.7.18.1.4). In this area, the primary workspace is a paint booth with an integral filtration system. Media booths are required to prepare surfaces before painting. One large booth (drive-in type) for large ground equipment and two medium booths for steel and aluminum aircraft parts are needed. An enclosure with a self-contained bead-blast system with HEPA exhaust filtration is adequate for many components. The media booths area also supports the metals technology shops. Therefore, provide for clean/dirty room operations in this shop. The paint booth must be large enough to handle the largest component that will be processed on a regular basis. It should have a paint filtration system and a means to control VOCs. Provide a large sealed area to prepare oversized parts and it should have a paint filtration system. A paint mixing room, separate from the paint booth, is

required to isolate any hazardous fumes from the remainder of the corrosion control shop. This room will contain paint mixing equipment, fume hood, and a daily-use locker to temporarily store hazardous materials such as paints and thinners. A prep station, with a dust collection system to capture airborne particles, should also be considered.

7.7.18.1.2. Metals Technology Work Center. The exact space requirements are determined by the amount and type of authorized equipment. The metals technology area equipment requirement varies by the functions performed. See [Table 7.7.32](#) for the equipment to be used in the Metals Technology area.

7.7.18.1.2.1. Welding Shop. Include an OSHA-compliant screen/blind system and proper ventilation/hood to protect personnel from welding operations hazards. Equip the welding shop with welding machines and curtains, grinders, and material handling devices. Provide a 1-ton capacity bridge crane with two each ½-ton hoists for handling parts, and provide a 2-ton bridge crane spanning the material storage and work areas and 1-ton hoists at strategic locations in the machine shop.

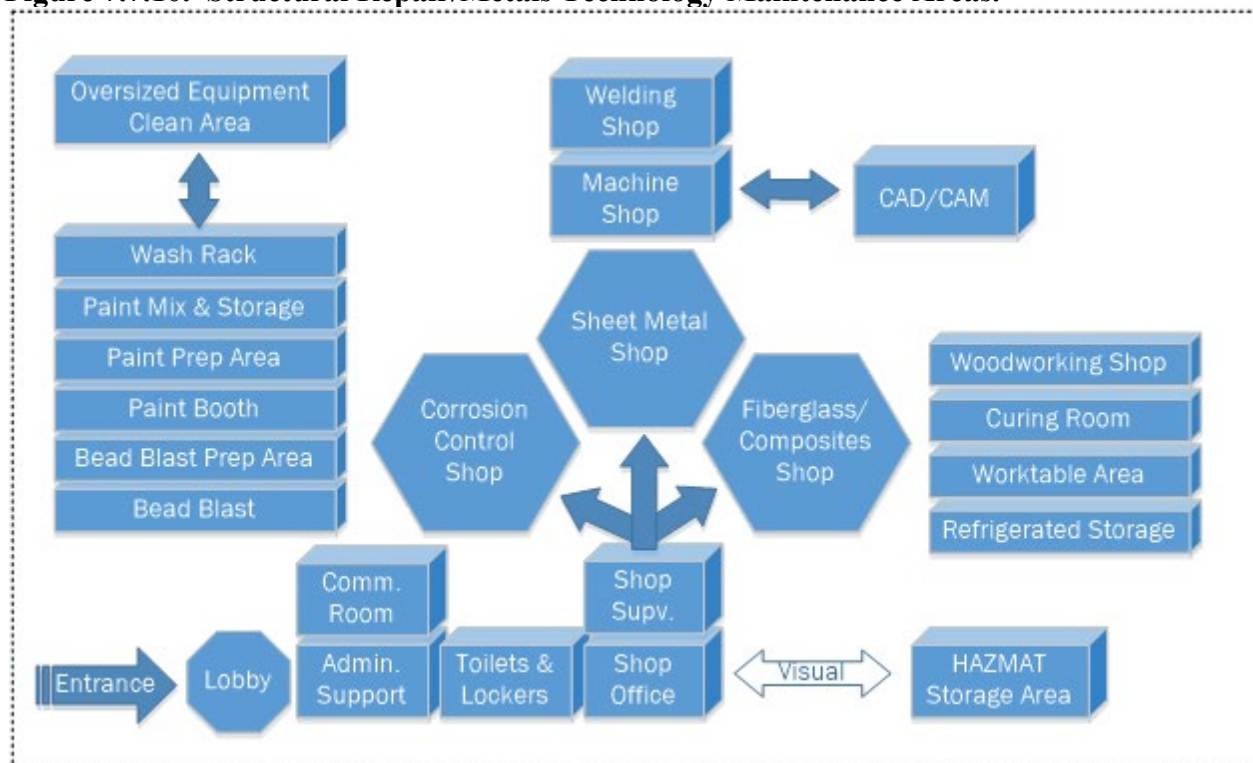
7.7.18.1.2.2. CADD/CAM Shop. CADD/CAM equipment is required to provide design parameters to CNC machines for automatic part fabrication. When CADD/CAM equipment is used, include a separate room for the computer terminal.

7.7.18.1.2.3. Storage Area. The metals technology area requires a material storage rack for bar and plate stock needed to manufacture aircraft components. Provide storage cabinets in the welding shop for bench and operating stocks suitable for small items and ready use welding supplies. There should be additional storage space and racks with safety chains to store inert gas cylinders for aircraft welding operations.

Table 7.7.32. Equipment for Metals Technology.

Equipment Name	Quantity	Dimensions
Lathe	1	10' x 10'
VMC	1	6' x 12'
Cutting Table	1	6' x 10'
CNC Milling Machine	1	8' x 8'
Notes: 1. The items in this shop are typical to all metals technology shops. The quantities reflect the minimum needed and could vary based on maintenance demands. 2. Provide a minimum of 3' working clearance on all sides.		

7.7.18.1.3. Dimensions. See [Table 7.7.30](#) for space allocations for Structural Repair and related shops.

Figure 7.7.10. Structural Repair/Metals Technology Maintenance Areas.**Table 7.7.33. Building Utility System Requirements for Structural Repair and Metals Technology Facility.**

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions to prevent CADD/CAM equipment failures, corrosion of equipment/machined parts, and to ensure accuracy of machined parts. Point source exhaust systems with general filtration must be installed throughout the shop at welding stations to eliminate welding fumes, airborne smoke, and cutting fluid mists. The metals technology shop requires a 150-psi high volume shop air source for specialized equipment and for general hand tool operations. Provide the fiberglass/composites shop with a specialized ventilation system, which exhausts fumes to the outdoors. Preheat the air intake, or filter exhaust air for re-circulation. The woodworking shop requires a sawdust collection system. Maintain regulated temperature and humidity conditions to prevent specialized computer equipment failures, corrosion of equipment/parts, and to aid in sealant/bonding agent curing. Structural maintenance shops require high volume 150-psi shop air for specialized equipment and general hand tool operation. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. The corrosion control shop in the structural maintenance function requires a separate male and female changing and shower area. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.7.18.1.4. **Corrosion Control Hangar (CATCODE: 211159) .**

7.7.18.1.4.1. Requirements Determination. A hangar provides enclosed space for aircraft washing and inspecting the aircraft for corrosion damage. Additionally, the facility can accommodate surface preparation and repainting of the aircraft.

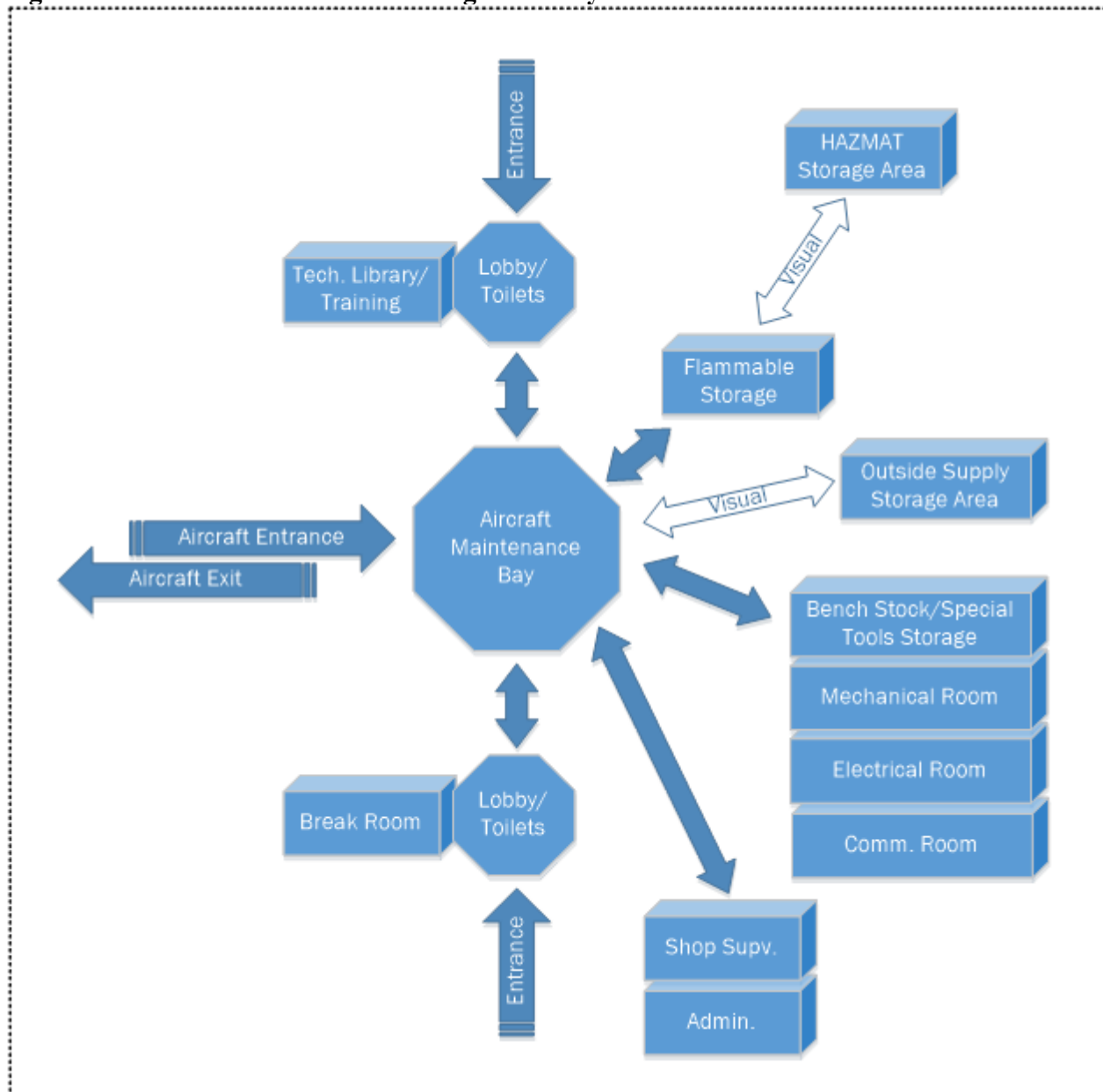
7.7.18.1.4.2. Scope Determination. Corrosion control is both a base and a depot responsibility. Specific workloads vary from base to base, but the minimum required facilities include a wash rack, shop space for complete corrosion treatment, painting removable aircraft parts, ground support equipment, and a corrosion approved facility to perform aircraft maintenance painting. Base facility requirements emphasize prevention and detection. Since freedom from dirt, oil, and other contaminants is important in this regard, base facilities are primarily designed for cleaning and maintaining protective coating/corrosion control systems.

7.7.18.1.4.3. Dimensions. Bases with a large number of aircraft (above 40 large or medium aircraft assigned) or in a severely corrosive environment are authorized, with proper justification, a corrosion control hangar and a wash hangar (DAFMAN 32-1084, CC 211159 Aircraft Corrosion Control, Paragraph 1.4). These two activities can be collocated or separate. DAFMAN 32-1084, CC 211111 Hangar Maintenance, Figure 1.1 provides an example where the B-52 is considered a large aircraft, the KC-135 is considered a medium aircraft, and the F-16 is considered a small aircraft. Using this example, the MQ-9 would be considered a small aircraft, and all AFSOC weapon systems would fall under medium or small aircraft categories. If authorized a corrosion control hangar, provide a facility that is 26,230 NSF (32,788 GSF with 1.25 net to gross conversion). This supports a typical 10-20-person AFSOC corrosion control facility. It includes a dry media depaint bay

sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (2,200 NSF), a Paint Mixing Room (250 NSF), Paint Storage (560 NSF), Equipment Storage (900 NSF), Equipment Cleaning (50 NSF), Solvent Storage (50 NSF), Material Storage (900 NSF), PPE Storage (150 NSF), PPE Cleaning (50 NSF), a Stencil Room (120 NSF), a Laundry Room (100 NSF), Men's Clean and Dirty Shower/Locker Room (240 NSF), Women's Clean and Dirty Shower/Locker Room (160 NSF), a 2-person Shop Supervisor Office with Type E offices (130 NSF), a Communications Room (144 NSF), a Break Room (216 NSF), and a Copy Room (50 NSF).

Table 7.7.34. Building Utility System Requirements for Corrosion Control Facility.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source and connections (around 120 psi) should be conveniently located throughout the maintenance bay. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Provide lightning protection system to protect the aircraft and facility. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide hot and cold water connections and industrial waste disposal system. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	The aircraft maintenance area must be protected with a foam-water system. Existing hangars may continue use of AFFF fire protection systems; however, new hangars must use a Hi-Ex Foam System in accordance with UFC 3-600-01 and UFC 4-211-01. Adjacent to the hangar bay, provide a rectangular foam room of 300 NSF and a rectangular fire pump room of 1,000 NSF. An adequate water supply source with sufficient pressure should be verified prior to a system design and construction.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.7.11. Corrosion Control Hangar Facility.

7.7.18.1.5. NDI Laboratory (CATCODE: 211153) . This facility consists of testing facilities, equipment storage, supply storage, analysis and report offices, and laboratory space. In administrative spaces an open office concept using system furniture will be used with the exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.7.18.1.5.1. Requirements Determination. All bases required to have a full, nondestructive testing facility are authorized 4,000 NSF for a laboratory (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2).

7.7.18.1.5.2. Shop Area. The shop space equipment includes: fluorescent penetrate

and magnetic particle testing machines, portable ultrasonic and eddy current machines, and X-ray and darkroom equipment.

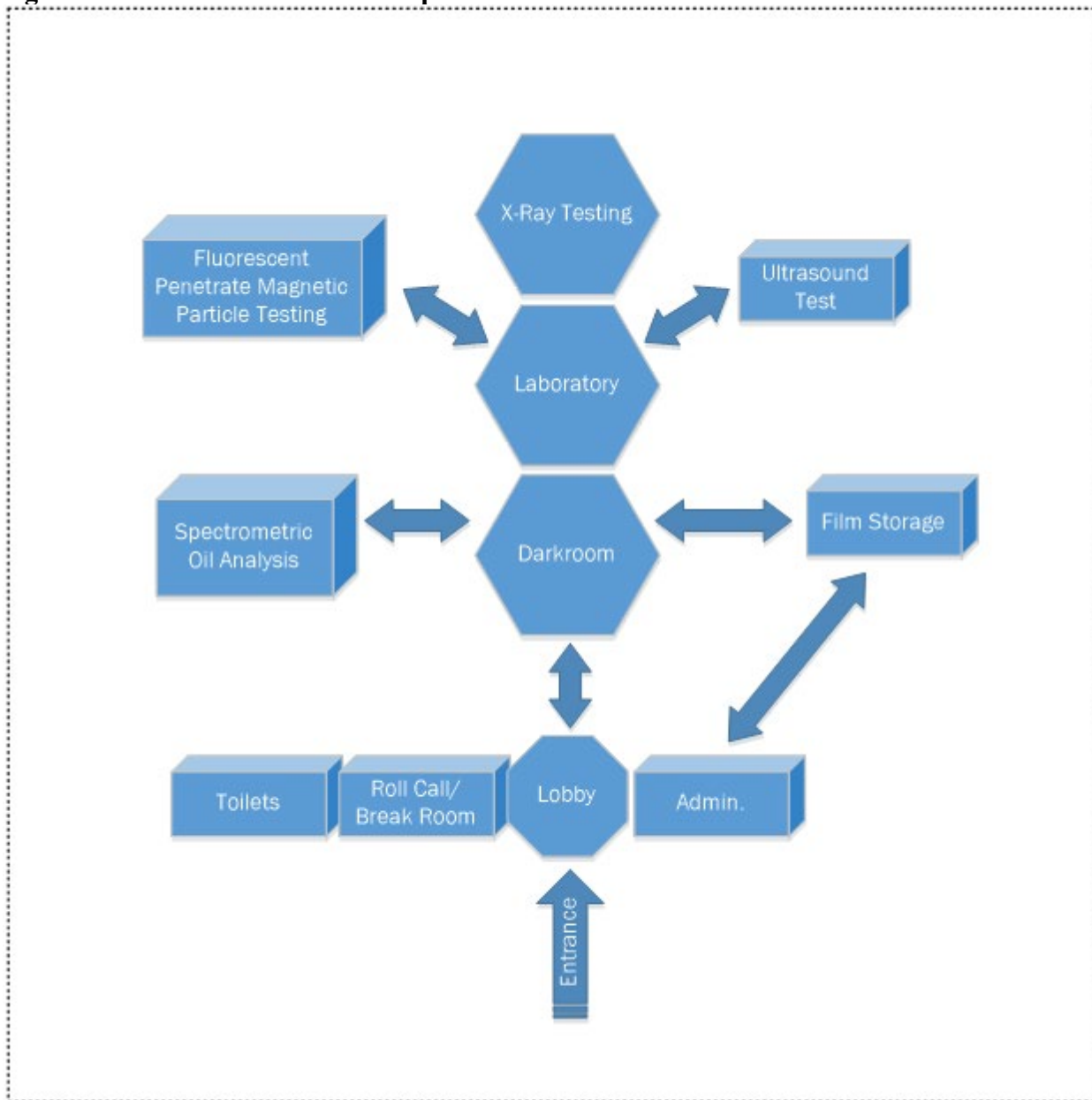
7.7.18.1.5.3. Storage Area. Storage requires an environmental control capability to store X-ray films and an oil analysis spectrometer.

7.7.18.1.5.4. Lab Area. An NDI laboratory requires a 1-ton capacity monorail with two ½-ton capacity hoists servicing both the X-ray-shielded room and the room containing the fluorescent penetrate and magnetic particle testers. Use X-ray equipment specification to determine ceiling heights and workflow maneuverability. Provide silver recovery equipment in the darkroom, and provide radiation shielding per the National Institute of Standards Technology Information Security Handbook. A leadshielded opening should be provided in the wall between the X-ray exposure room and the control room to allow for passage of X-ray equipment control cables.

7.7.18.1.5.5. Dimensions. Bases with an NDI facility are authorized 4,000 NSF (DAFMAN 32-1084, CC 211153 NDI Laboratory, Paragraph 1.2: and TO 33B-1-1, Figure 1.1).

Table 7.7.35. Building Utility System Requirements for NDI Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required especially on storage functions due to delicate devices and other sensitive equipment. The NDI lab requires 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Consult X-ray and other NDI equipment specifications for their specific power requirements. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.7.12. Non-Destructive Inspection Area.**7.7.18.2. Aerospace Ground Equipment (AGE) Flight.****7.7.18.2.1. AGE Shop and Storage Facility (CATCODE: 218712).**

7.7.18.2.1.1. Requirements Determination. The AGE shop inspects, maintains, repairs, and services powered and non-powered AGE directly supporting aircraft and powered munitions AGE, if assigned. It normally includes maintenance stalls with work benches, an indoor wash rack, tool crib, bench stock, sealed lead acid battery servicing area, engine exhaust education system, administrative space, and personnel locker space.

7.7.18.2.1.2. Scope Determination. DAFMAN 32-1084, CC 218712 Aircraft

Support Equipment Shop/Storage Facility, Table 1.1, lists the space requirements for AGE maintenance shops and standby storage facilities. These space requirements include total covered storage. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and its requirements are listed in the storage facilities section in **paragraph 7.7.19.2**. Requirements for the AGE Shop and Storage facility are based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per UTC.

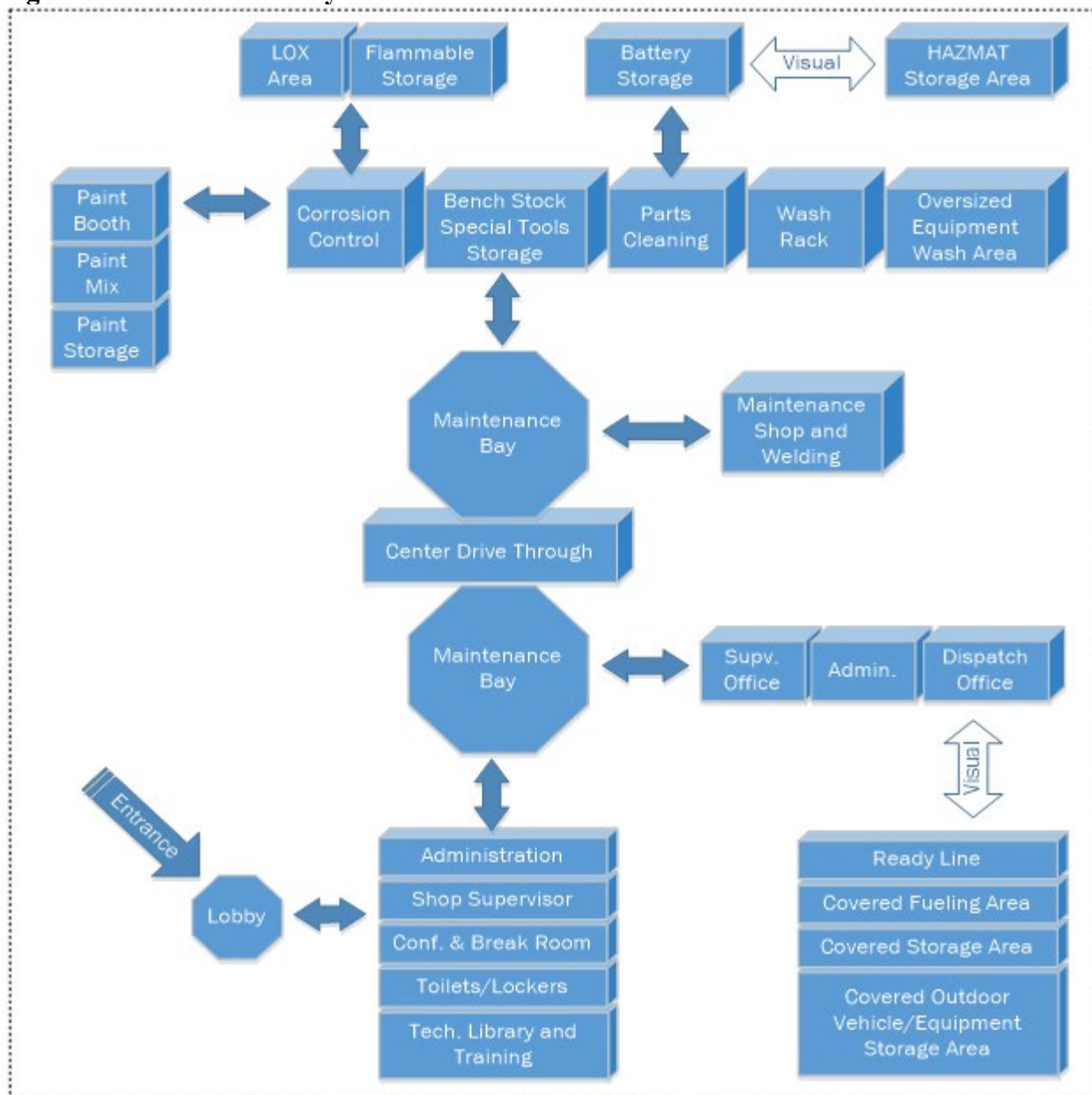
7.7.18.2.2. Dimensions. The size of this facility will be based on the number of authorized pieces of AGE. The required space allocation for this facility can be found in **Table 7.7.41** and **Table 7.7.44**. If other weapon systems are supported at the installation, the number of AGE units supporting MQ-9 aircraft would be added and can then be cross-referenced with DAFMAN 32-1084 CC 218712 Table 1.1 to determine the maximum space allowed.

7.7.18.2.3. Unique Facility Requirements. An overhead hoist is required to support a minimum of 2,720 kg (6,000 pounds). A separate oil-free area is required for LOX handling equipment. The floor must be concrete. Electrical power (120 VAC and 220 VAC) is required in the area. This area must be covered, but should preferably be inside a facility.

Table 7.7.36. Building Utility System Requirements for AGE Facility.

System	Requirements
Mechanical	A compressed air source or connection (around 120 psi) should be conveniently located throughout the maintenance bay and corrosion control areas. The facility should have energy efficient climate control and proper ventilation. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connection for equipment and workstations ranging from 120V, 240V, and 480V. Certain electrical requirements are AGE equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.

Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.7.13. AGE Facility.**7.7.18.3. Maintenance Support Flight.****Table 7.7.37. Maintenance Support Facility Minimum Areas.**

Function/Area Required in NSF	MQ-9 (5 PMAI, 2 CAPs)	MQ-9 (9 PMAI, 4 CAPs)	MQ-9 (17 PMAI, 8 CAPs)
Aircraft Inspection Section	N/A	N/A	N/A
Repair & Reclamation	950	1,900	3,800

Wheel & Tire	N/A	N/A	N/A

7.7.18.3.1. Repair & Reclamation Shop.

7.7.18.3.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used with exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.7.18.3.1.2. Maintenance Area. The aircraft repair and reclamation function removes, replaces, and rigs flight control surfaces/systems. Work performed in the maintenance bay includes: repair and replacement of landing gears, actuated doors, canopies, and any associated equipment. Provide suitable access and space to move heavy aircraft parts. Provide an area for aircraft jacks and/or a 3-ton hoist to use in disassembling components. This hoist (specialized trailers) can be located either inside or outside the facility.

7.7.18.3.1.3. Storage Area. Provide a paved area adjacent to the facility for parking transportation trailers and other heavy equipment. In extremely cold climates, provide indoor heated storage space.

Table 7.7.38. Building Utility System Requirements for Maintenance Support Facility.

System	Requirements
Mechanical	Proper ventilation system and energy efficient HVAC system are required. Repair and reclamation shop requires 150-psi shop air and corrosion resistant drains. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.7.18.4. Accessories Flight.

7.7.18.4.1. Fuel Systems Maintenance Area (CATCODE: 211179) .

7.7.18.4.1.1. Administrative Area. Typical industrial administrative support includes, but is not limited to: a separate shop supervisor office, workstations, storage, toilets, and a small break room. An open office concept using system furniture will be used with exceptions being meeting and conference rooms or where noise attenuation is needed for security reasons.

7.7.18.4.1.2. Maintenance Bay. This area is where all scheduled fuel system inspections and aircraft maintenance occurs. The bay will be sized for the largest aircraft assigned to the base; however, MQ-9 requirements are for a maintenance bay 56.2 ft x 86 ft (4,834 NSF, rounded up) [See Paragraph 7.5.16, Maintenance Hangar]. These hangars come out of the total hangar allowance for the base or may be added to it, depending on the workload requirements.

7.7.18.4.1.3. Bench Stock/Special Tools Storage. A centralized, enclosed, secure area is required for parts and special tools.

7.7.18.4.1.4. Flammable Storage. Store flammable materials within a fire-rated enclosure with access to the exterior.

7.7.18.4.1.5. Hazardous Waste Accumulation Point. Designate an area to store hazardous waste generated by ongoing maintenance operations, and comply with current federal, state, and base regulations and procedures.

7.7.18.4.1.6. Support Area. Provide a support area for maintenance crew personnel during rest cycle. The support area shall include male and female restrooms, break room, and locker area.

7.7.18.4.1.7. Dimensions. MQ-9 Fuel support equipment requires 25 NSF per CAP. Per DAFMAN 32-1084 CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized provide a facility that is 24,632 NSF (30,790 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. This supports a typical 10-20-person AFSOC fuel systems maintenance dock. It includes a dry media depaint bay sized to accommodate an AFSOC C-130J (19,960 NSF), a CTK (600 NSF), a Bladder Repair/Tool Room (480 NSF), an External Tank Maintenance Area (1,840 NSF), a Foam Storage Room (512 NSF), A 3-person office for Shop Supervisors and an NCOIC in Type E offices (240 NSF), a Dispatch office for 5 PN in Type E offices (400 NSF), a 20-person Training/Conference Room (300 NSF), and a Break Room (300 NSF).

7.7.18.4.1.8. Design Considerations. Add static discharge ports in the facility doors to ensure safety.

Table 7.7.39. Building Utility System Requirements for Fuel System Maintenance Hangar.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions within the hangar areas and energy efficient HVAC system in the support area. Provide mechanical air circulation in public areas with limited or no air conditioning. A compressed air source or connection (around 120 psi) should be conveniently located throughout the maintenance bay. Hangars should include wash down drainage trenches. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Industrial equipment typically requires 240- and 480-volt, three-phase electrical current. Use commercial grade convenience receptacles and special power outlets. All service equipment should be Underwriters Laboratories-listed. Provide required grounding/lightning protection system based on NFPA 780. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide frost-free hose bibs on all exterior walls if local climate conditions justify use. Provide interior water connection capability and drains. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 and ETL 02-15. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.7.18.5. Propulsion Flight. Engine/propeller storage is located within the AMU facility.

7.7.18.6. Avionics Flight.

7.7.18.6.1. Avionics Shop (CATCODE: 217712) .

7.7.18.6.1.1. Maintenance/Service Function. This facility houses organizational maintenance activities for the following aircraft equipment and accessories: airborne communications, cameras, bombing systems, and tactical support communications security equipment.

7.7.18.6.1.2. Storage Function. Major items that require shop and storage space are storage racks for serviceable equipment and equipment waiting for maintenance or parts, coding devices, technical data and code books, pod lifting devices, cradles, and storage racks. Some storage space provides physical security and corrosion

protection for delicate electronic equipment. If possible, combine maintenance and storage facilities to share secure storage area.

7.7.18.7. Munitions Flight.

7.7.18.7.1. Munitions Storage and Handling Facility.

7.7.18.7.1.1. Administrative Area. This area includes a shop supervisor office, technical document storage areas, general administration area, break room, restrooms, and locker rooms.

7.7.18.7.1.2. Munitions Warehouse. This area serves as temporary storage for munitions containers before delivering them to the proper storage facility or for immediate use. This large open bay facility has a high ceiling capable of handling shipping containers. Provide as a minimum, a 10-ton crane/hoist to load/unload containers from rail cars and provide enough driving space within the warehouse to maneuver a 50,000 lb forklift. Design the concrete foundation to account for “live” loads due to the vehicle equipment and munitions container.

7.7.18.7.1.3. Equipment/Special Tools Storage. A centralized, enclosed, secure area is required for parts and special tools. Provide a service counter with a roll-up shutter. Allow space adjacent to the service counter for parts display. Equip the room with metal storage shelving, bins, racks, and/or mezzanine to maximize storage space. Provide direct access to the exterior for deliveries.

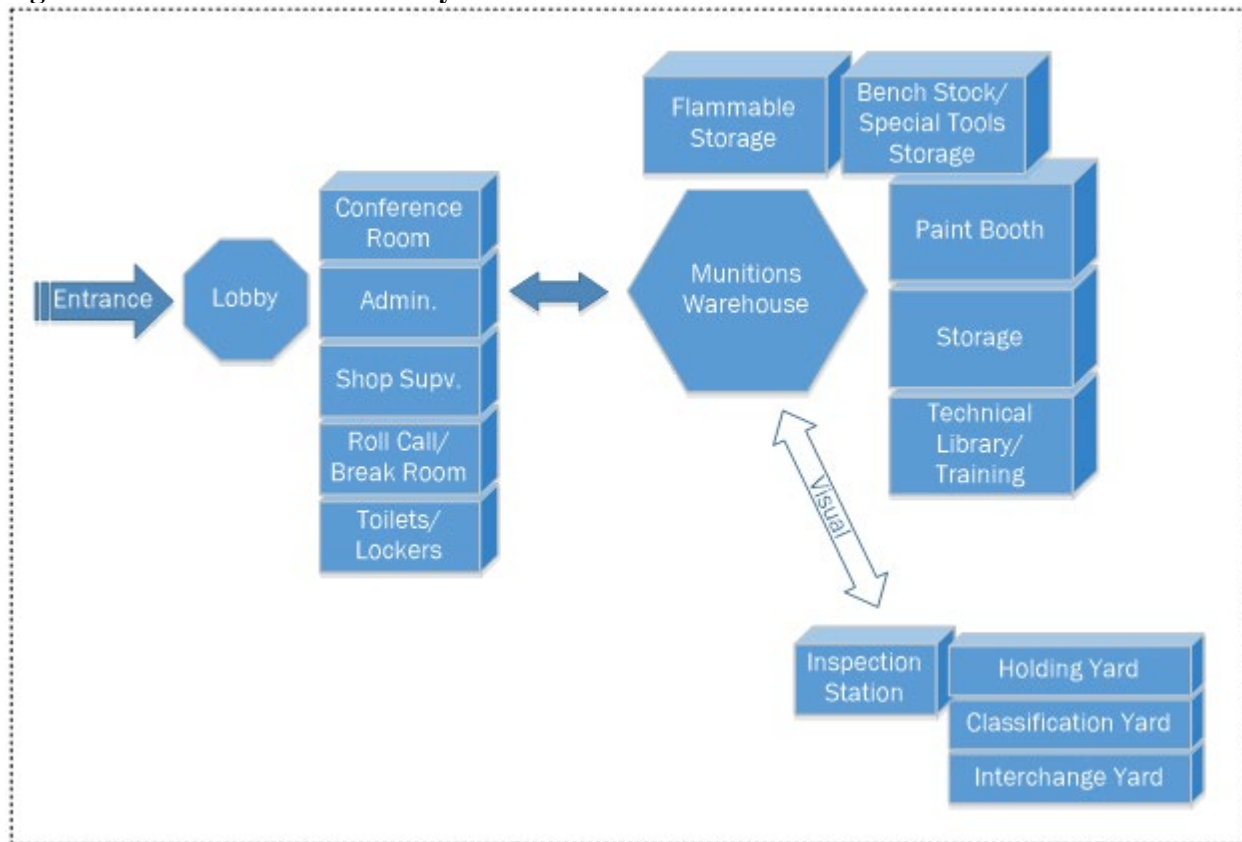
7.7.18.7.1.4. Flammable Storage. Store flammable materials within a fire-rated enclosure with access to the exterior.

7.7.18.7.1.5. Dimensions. See [Table 7.7.41](#) for the required space allocation for the MQ-9 munitions shop.

Table 7.7.40. Building Utility System Requirements for Munitions Facility.

System	Requirements
Mechanical	Proper ventilation and energy efficient HVAC systems are required. Provide ample pneumatic connections for power tool connections conveniently located throughout the facility. Provide low pressure and high-pressure (0-150 psi) air connection capabilities in each bay with dual compression system. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	Use three-phase, 400 Hz power converters in each bay with back-up power generation units with either a manual or automatic transfer switches. Provide sufficient interior and especially exterior lighting system throughout the facility to include the munitions pad, in accordance to the IES Lighting Handbooks for lighting intensities. Provide intrusion detection systems. Use commercial grade convenience receptacles and special power outlets. Provide required grounding/lightning protection system based on the NFPA 780, Standard for Installation of Lightning Protection System and AFMAN 91-201, Explosive Safety Standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems requirements.
Plumbing	Place emergency shower/eye wash stations as per OSHA guidelines and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 7.7.14. Munitions Facility.**7.7.18.8. Armament Flight.****7.7.18.8.1. Weapons Release Systems Shop (CATCODE: 215552) .**

7.7.18.8.1.1. Maintenance Function. Provide roll-up doors at each end, as well as other locations as needed for workflow. The minimum door width is 12 ft. Equip all overhead doors with push-button operated automatic door openers. Unique mission requirements may require additional functions to support the overall equipment operations/maintenance effort. Allow space for workbenches and to enable personnel to circulate around them. Size at least one isolated high bay, with outside access, to comfortably handle the largest piece of authorized ammunition loading equipment. Include an equipment exhaust venting system for the removal of fumes when soldering electrical components and applying lubricants and touch-up paint. Typical machine shop equipment includes drill presses, grinders, and bead blasters. Bead blasting is used to prepare surfaces to receive dry film lubricant and touch-up paint. A small enclosure with a self-contained bead blast system is adequate for many components. Position the space with immediate access to the outside as well as to the service/maintenance bays. Provide acoustical separation from other interior areas.

7.7.18.8.1.2. Equipment Storage Areas. Provide a concrete parking apron for ammunition loading equipment, with concrete thickness and size based on maximum “dead” and “live” equipment and ammunition loads. Also, provide

outside storage areas to accommodate all authorized support equipment. Additionally, provide covered/enclosed storage with secure drive-through capabilities to protect designated WRM, extended storage of AME, NIE, and equipment from local weather conditions.

7.7.18.8.1.3. Bench Stock/Special Tools. A centralized, enclosed, and secure area is required for parts and special tools. Provide a service counter with a roll-up shutter. Allow space adjacent to the service counter for parts display. Equip the room with metal storage shelving, bins, racks, and/or mezzanine to maximize storage space. Provide direct access to the exterior for deliveries.

7.7.18.8.1.4. Flammable Storage. Store flammable materials within a fire-rated enclosure with access to the exterior.

7.7.18.8.1.5. Hazardous Waste Accumulation Point. Designate an area to store hazardous waste generated by ongoing maintenance operations and comply with current federal, state, and base regulations and procedures.

7.7.18.8.1.6. Wash Rack. Depending on local climate, a semi-enclosed or fully enclosed wash rack area is preferred for washing ammunition-loading equipment. Slip-resistant flooring surfaces, water-resistant materials, and exterior electrical fixtures are mandatory requirements to ensure safety and durability. Provide an oil-water separator for drainage and comply with EPA, state, and local criteria where applicable. An independent hot water supply source, separate from the building's domestic hot water system, is highly recommended. Include a storage room nearby for soap and supplies.

7.7.18.8.1.7. Parts Cleaning. Components removed from pylons, AME, NIE, and ammunition loading equipment are cleaned in this area. An automatic jet washer type machine (size depending on type of equipment to be cleaned) is required to adequately clean parts and support a steady flow of periodic inspections required on all equipment. Provide space for parts cleaning equipment and a workbench as required.

7.7.18.8.1.8. Dimensions. For one or two CAPs, an area of 300 NSF is required. For more than three CAPs, an area of 600 NSF is required.

7.7.18.8.1.9. Design Considerations. Locate facilities to comply with explosives safety standards (see DoD 6055.09-M and AFMAN 91-201, *Explosive Safety Standards* for further guidance). Provide floor drains in maintenance areas as required. The floor drain in the cleaning room should be connected to an oil-water separator. Provide explosion-proof fixtures as required. A minimum clear ceiling height may be required in the maintenance and storage areas to allow for fire protection systems and/or installation of an overhead monorail hoist. Provide sufficient compressed air outlets throughout the maintenance area. Test equipment may have special electrical requirements. Provide grounding, surge protection, and lightning protection system. An IDS is required in accordance with DoDM 5100.76, *Physical Security Standards Sensitive Conventional Arms, Ammunition and Explosives*. All alarm signals will enunciate at a central control station from

which a response force can be dispatched. Large roll-up or sliding doors may be required to facilitate entry of equipment into the maintenance and storage areas. This facility should be in proximity to the operational parking apron and be accessible to vehicles transporting weapons release components to and from the flightline.

7.7.18.9. TMDE Flight. The PMEL is the base-level AFMETCAL Program focal point. The program provides for the calibration and repair of TMDE. HAF/A4LF approves the establishment of PMELs at selected installations (TO 00-20-14, Paragraph 1.2.3).

Table 7.7.41. MQ-9 Intermediate Maintenance Facility Space Requirements.

Cat Code	Facility	UM	MQ-9 2 CAPs	MQ-9 4 CAPs	MQ-9 8 CAPs	DAFMAN 32-1084 Reference or Remarks/Calculations
218-712	AGE Shop	NSF	4,320	6,440	8,280	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See DAFMAN 32-1084 Table 3.10 for step table. 2 CAPs = 5,400 GSF; 4 CAPs = 8,050 GSF; 8 CAPs = 10,350 GSF. The conversion from GSF to NSF is calculated as GSF/1.25.
218-712	AGE Shop Covered Storage	GSF	5,170	10,350	15,530	The space required is determined by the authorized pieces of AGE. Assume 50 pieces of AGE per UTC. See DAFMAN 32-1084 Table 3.10 for step table. 2 CAPs = 5,170 GSF; 4 CAPs = 10,350 GSF; 8 CAPs = 15,530 GSF.
211-152	Structural Repair/ Sheet Metal Shop	NSF	400	400	400	The shop must be able to handle the width of the MQ-9 wings which is approximately 5.4' at its widest point. Per 727 SOAMXS: This area requires 400 NSF.

211-152	Composite Repair Shop	NSF	2,318	2,318	2,318	The shop must be able to handle the width of the MQ-9 wings which is approximately 5.4' at its widest point and the MQ-9 fuselage which is approximately 36' long. For the paint booth/dirty room and clean room, provide clearances of 5 ft on either side of the longest dimensions (46' [L] x 15.4' [W] rounded up or 709 NSF). Assume 5 peak shift workers [per UFC 4-211-02 Appendix B decontamination areas = total shift PN x 40 NSF + 500 NSF. Calculated as 709 (paint booth/dirty room) + 709 (clean room) + 10 x 40 + 500].
211-152	Metals Technology	NSF	1,636	1,636	1,636	Table 7.7.32 lists the equipment and maintenance area required.
211-153	NDI Section	NSF	4,000	4,000	4,000	CC 211153 NDI Laboratory, Paragraph 1.2 & TO 33B-1-1, Sec. 1-14, Figure 1-1: 4,000 NSF.
211-152	R&R Shop	NSF	950	1,900	3,800	Calculated as 475 NSF x #CAPs.
211-152	Wheel and Tire	NSF	0	0	0	Wheels and Tires are shipped out for repairs. Wheel and tire storage is in the hangar bay.
211-159	Corrosion Control Facility	NSF	0	0	0	If authorized provide a facility that is 26,260 NSF (32,825 GSF with 1.25 net to gross conversion). See paragraph 7.7.8.1.3.3 for more information.
211-179	Fuel Systems Shop	NSF	50	100	200	Fuel support equipment requires 25 NSF per CAP. Per CC 211179 Paragraph 1.3, the normal requirement for a Fuel Systems Maintenance Dock is one per base. If authorized provide a facility that is 24,632 NSF (30,790 GSF with 1.25 net to gross conversion) with 303 SY for covered storage. See paragraph 7.7.18.4.1.7 for more information.
217-712	Avionics Systems	NSF	200	270	510	30 NSF x number of PMAI, minimum of 200 NSF.

7.7.19. MQ-9 Storage Facilities (MC and LR Component).**7.7.19.1. Aviation Bulk Fuel Storage CATCODE: 411135.**

7.7.19.1.1. Description. The aviation fuel storage facility provides an operating and reserve supply of aviation fuel.

7.7.19.1.2. Requirements Determination. The total tankage required for jet fuel will be the sum of the peacetime and war reserve tankage requirements. This may be adjusted up or down by DLA Energy based on additional distribution needs or nearby available war reserve fuel (DAFMAN 32-1084, CC 411135 Jet Fuel Storage, Paragraph 1.2).

7.7.19.1.3. Scope Determination. DLA Energy requires storage of 5 to 15 days depending on location. The MQ-9's fuel capacity is 602 gallons without additional tanks. AFPAM 23-221 Attachment 7 Table A7.1 lists the average MQ-9 fuel load as 75 gallons per sortie. A home station LR squadron conducts approximately ten sorties per week or two sorties per business day/night. Therefore, a 15-day fuel supply for all scenarios would be in the range of 2,250 gallons. Since wartime requirements should directly support an OPLAN and identify fuel quantities to satisfy mobility, strategic air operations, civil defense, and logistics requirements (4140.25-M, Vol II, Chapter 1, Paragraph C11.3.2), the calculation for MQ-9 fuel storage does not include fuel to support a war plan. Those stocks would be calculated via ICIS and could greatly increase the fuel storage requirements. Assume bulk fuel storage is provided by the host installation.

7.7.19.1.4. Dimensions. A 15-day fuel supply for all scenarios would be in the range of 2,250 gallons.

7.7.19.2. Aircraft Support Equipment Storage Yard (CATCODE: 852273).

7.7.19.2.1. Requirements Determination. The open storage yard for AGE is identified as Aircraft Support Equipment Storage Yard (CATCODE 852273) and is measured in square yards.

7.7.19.2.2. Scope Determination. DAFMAN 32-1084, CC 218712 Aircraft Support Equipment Shop/Storage Facility, Table 1.1, lists the space requirements for AGE open storage yard facilities. These requirements are based on the number of pieces of AGE supported. For planning purposes, assume 50 pieces of AGE per UTC. Additive to the space requirements in DAFMAN 32-1084 Table 3.10 are requirements for maintenance and storage of munitions trailers and equipment that are maintained in or near the weapon storage areas. For powered munitions trailer maintenance and storage facilities, all 192 m² (230 yd²) per authorized trailer for each facility. For planning purposes, assume 1 powered munitions trailer per UTC.

7.7.19.2.3. Dimensions. The required space allocation for this facility can be found in [Table 7.7.43](#).

7.7.19.3. Above Ground Magazine Storage Facility, Types A, B, and C (CATCODE: 422258).

7.7.19.3.1. Requirements Determination. The storage facility shall provide an environment that protects CAD and (PAD from moisture, heat, and direct sunlight.

7.7.19.3.2. Scope Determination. The storage facility shall provide an environment that protects CAD and PAD from moisture, heat, and direct sunlight.

7.7.19.3.3. Dimensions. 30 ft x 10 ft or 300 NSF.

7.7.19.4. Ancillary Explosives Facility (CATCODE: 422275).

7.7.19.4.1. Description. This designation may be applied to pads, locations, revetments, and facilities (excluding aircraft parking) of such size and quantity as required for use such as Ready Explosives Facility or Bomb Preload Station.

7.7.19.4.2. Requirements Determination. The storage facility shall provide an environment that protects CAD and PAD from moisture, heat, and direct sunlight.

7.7.19.4.3. Dimensions. Calculated as Munitions NSF/number of training days per week (6) x number of PMAI. See **Table 7.7.42** for the area required for MQ-9 AGM-114, M36, and GBU training rounds. The required space allocation for this facility can be found in **Table 7.7.43**.

7.7.19.5. Munitions Storage (Training Rounds).

7.7.19.5.1. Requirements Determination. Munitions assets, including inert components, are stored in approved storage structures for security and protection (see AFMAN 91-201). If secured storage is limited, preference is given by the risk category and classification as outlined in AFI 21-201, AFMAN 10-401, and AFMAN 23-110, *USAF Supply Manual*.

7.7.19.5.2. Dimensions. See **Table 7.7.42** and **Table 7.7.43**.

Table 7.7.42. Munitions Training Rounds per Aircraft by Type.

Munitions Training Rounds per CAP		
Weapon System	Hellfire Missiles	GBU-12/38/49
MQ-9	288 ¹	72
Notes: 1. Per AFSOC/A5KJ: Assume 1 GBU and 4 Hellfire Missiles per CAP. Assume one, GBU-38 bomb takes a floor area of about 42 NSF and four, Hellfire Missiles take a floor area of about 48 NSF. Assume they will need this amount per CAP, per training day (6 days a week), and assume they need 3 months (12 weeks) of training rounds.		

7.7.19.6. Base Hazardous Material Storage (CATCODE: 442257).

7.7.19.6.1. Requirements Determination. Normal authorization is for one month's storage. Storage is usually within a storage locker.

7.7.19.6.2. Dimensions. Storage is located within the Maintenance AMU.

7.7.19.7. Base Supplies and Equipment Shed (CATCODE: 442628).

7.7.19.7.1. Requirements Determination. Utility aircraft 5 GSF (4 NSF) (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.1). Personnel space is

2 NSF per person (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.2).

7.7.19.7.2. Dimensions. See [Table 7.7.43](#). Calculated as follows: (4 NSF x number of aircraft) + 2 NSF x number of people).

7.7.19.8. Base Supplies and Equipment Warehouse (CATCODE: 442758).

7.7.19.8.1. Requirements Determination. Warehouse space includes supplies and equipment needed to support base operations and fuels operations; receiving, storage issue, inspection, pickup, and delivery activities; warehouse offices; flyaway or mobility kit storage; dangerous material, exclusive of explosives and ammunition; property in the equipment account (DAFMAN 32-1084, CC 442758 Warehouse Supply and Equipment Base, Paragraph 1.2); and a facility with a loading dock and direct, unobstructed access is required for semi-tractor trailer size vehicle loading/unloading.

7.7.19.8.2. Mobility Bags (RSP). Space will be computed at 3 ft³ per bag if the type of bag to be stored has been approved by the Air Force. The best space utilization can be obtained by storing in bulk or on pallet racks. Mobility bag storage is the responsibility of the LRS.

7.7.19.8.3. Scope Determination. Warehouse space for SOS base supplies and equipment is determined by individual analysis and AFSOC. Warehouse space equal to 250 NSF for utility aircraft space (DAFMAN 32-1084, CG 44 - Supply Storage Facilities Overview, Table 1.1) + 132 NSF RSP space per aircraft (MQ-9 Material List Report: Two 66 sf MRSPs per aircraft) + Personnel space of 15 NSF per person).

7.7.19.8.4. Dimensions. The base warehouse requirement is 8,437 NSF for 5 PMAI (2 CAPs), 13,434 NSF for 9 PMAI (4 CAPs), and 23,429 NSF for 17 PMAI (8 CAPs).

7.7.19.8.5. Design Considerations. Use double-deck construction within the existing facility before programming a new facility or an addition to the existing facility when existing warehouses have clearances of 18 ft or more between the floor and the bottom of the ceiling joist or truss. Standard warehouse facility guidelines contained in AFJMAN 23-210 apply. These include, but are not limited to fire protection systems, aisle space, fork lift access, ventilation, and property stacking. The warehouse should be centrally located within the intermediate maintenance area and proximate to the maintenance hangars.

7.7.19.9. Controlled Humidity Warehouse (CATCODE: 442758).

7.7.19.9.1. Dimensions. The controlled humidity warehouse is provided as a part of the general-purpose warehouse space.

7.7.19.10. Base Supply Open Storage (CATCODE: 452252).

7.7.19.10.1. Requirements Determination. Surface improvement of the area is required to facilitate the operation of materials-handling equipment.

7.7.19.10.2. Scope Determination. The size of the area is determined by its overall dimensions with no deductions for interior track and permanent roads.

7.7.19.10.3. Dimensions. The amount of storage space will be determined by analysis and validated by AFSOC. Base Open Storage should be 54 GSF per aircraft for utility aircraft plus 111 GSF per 200 base personnel (DAFMAN 32-1084, CG 44, Supply Storage Facilities Overview, Table 1.1 and 1.2). Add an additional 100 NSF per aircraft for unique SOF items that cannot be stored in a covered space. See [Table 7.7.43](#) for the required space for this facility.

7.7.19.11. Classified Storage.

7.7.19.11.1. Requirements Determination. Where a separate building is not available or where its use is not warranted by quantity of classified storage, a room, cage, or crib may be constructed within a warehouse building.

7.7.19.11.2. Scope Determination. All areas which contain classified material will be secured by means of approved locking systems. This will include any temporary storage space used for in-transit classified material. In addition to classified items being stored separately from other material, classified material will be segregated in storage from sensitive but unclassified items. Standards for physical protection of classified items are specifically established in DoDD 5200.01, AFI 16-1404, and AFMAN 23-110.

7.7.19.11.3. Dimensions. Classified storage within the AMU facility satisfies this requirement.

Table 7.7.43. MQ-9 Storage Facility Space Requirements.

Cat Code	Facility	UM	MQ-9 2 CAPs (5)¹	MQ-9 4 CAPs (9)¹	MQ-9 8 CAPs (17)¹
411135	Aviation Bulk Fuel Storage ²	gal	2,250	2,250	2,250
852273	AGE Open Storage Yard	GSF	517	1,035	2,012
422258	Above Ground Mag. Storage, Type A, B, & C	NSF	300	300	300
422475	Ancillary Explosives / Ready Explosives Fac	NSF	5,400	9,720	18,360
	Munitions - Training rounds	NSF	12,960	25,920	51,840
442257	Base Hazardous Material Pharmacy Storage	NSF	0	0	0
442628	Base Supplies and Equip Shed	NSF	350	442	628
442758	Base Supplies and Equipment Warehouse	NSF	8,437	13,434	21,749
442252	Base Supply Open Storage	GSF	2,804	4,977	9,322
n/a	Classified Storage	NSF	0	0	0
n/a	Admin. Support Space ³	NSF	600	1,200	2,280
n/a	Admin. Circulation	NSF	143	260	494
n/a	Special Purpose Circulation	NSF	2,428	4,424	8,402
Total Storage Facilities		NSF	30,617	55,701	105,733
Total Storage Facilities		GSF	38,271	69,626	132,166
Total Open Storage Yard		SY	829	1,588	3,048
Notes:					
1. Number of PMAI. 2 CAPs (5 PMAI) = 5 total aircraft (0 BAI); 4 CAPs (9 PMAI) = 9 total aircraft (0 BAI); 8 CAPs (17 PMAI) = 17 total aircraft (0 BAI).					
2. Storage provided by host installation.					
3. Administrative support space based on assumption of 1 office per 5,000 NSF of storage.					

7.8. Special Tactics Squadron (STS) Facility Requirements.

7.8.1. Weapon System Characteristics: Special Tactics. ST is comprised of Air Force Specialty Codes (AFSCs) discussed in the following paragraphs.

7.8.1.1. Combat Control (CCT).

7.8.1.1.1. Description. Combat controllers (CCTs) are FAA certified air traffic controllers capable of infiltrating via sea, air, or land and controlling air assets. Airfield assessment and control is a capability used for combat missions and humanitarian relief.

7.8.1.1.2. Mission. Deploy undetected into combat and hostile environments to establish assault zones or airfields, while simultaneously conducting air traffic control, fire support, command and control, direct action, counterterrorism, foreign internal defense, humanitarian assistance, and special reconnaissance.

7.8.1.2. Pararescue (PJ).

7.8.1.2.1. Description. PJs are expert combat medical professionals capable of providing live-saving measures in hostile areas. This combat rescue capability protects high-risk special operations and is USSOCOMs personnel recovery (PR) action-arm.

7.8.1.2.2. Mission. Conduct full spectrum PR to include both conventional and unconventional combat rescue operations.

7.8.1.3. Special Operations Weather Team (SOWT).

7.8.1.3.1. Description. Special operations weather team members (SOWTs) are professional meteorologists that provide environmental reconnaissance. Their reconnaissance provides critical go/no-go recommendations to commanders and unit leaders for operations including, but not limited to, insertion, close air support, and evacuation.

7.8.1.3.2. Mission. Deploy into restricted environments by air, land, or sea conducting weather operations to observe and analyze all environmental data.

7.8.1.4. Tactical Air Control Party (TACP).

7.8.1.4.1. Description. As network specialists, TACPs conduct close air support and control communication networks in hostile areas. Joint terminal air control (JTAC) is a qualification and special skill that many ST airmen possess. It maximizes the lethal and non-lethal effects of airpower and minimizes risk to non-combatants such as medial and religious teams and civilians.

7.8.1.4.2. Mission. Establish and maintain command and control communications, control air traffic and naval gunfire, and provide precision terminal attack guidance of United States and coalition close air support.

7.8.1.5. Command and Operations Support Personnel.

7.8.1.5.1. Description. Overhead personnel for ST teams can vary depending on ST unit location. See **Paragraph 7.8.3.3** for tables showing the command and operations support personnel by location type.

7.8.2. Special Tactics Squadron Description. ST forces provide AFSOC with rapid global deployment capabilities that enable global access, precision strike, and personnel recovery operations. Each STS is comprised of teams and support personnel that vary in size and unit composition based on specific mission requirements. The variances between the squadrons and teams also produce a facility and equipment footprint that can change depending on geographic location, squadron/team size, and mission requirements.

7.8.2.1. ST Teams. ST teams are a component of an STS, comprised of combat controllers, pararescue, special operations weathermen, and tactical air control operators. Team operators make up the deployable units that are uniquely trained and equipped to execute a wide range of missions working as a stand-alone unit or as part of joint special operations forces.

7.8.3. Typical Squadron Size by Team and UTC.

7.8.3.1. Team Construct. The squadron composition of ST is based on the number of operator teams being supported at any given geographic location. Currently, there are two different constructs that define the number of operators per team and the number of teams per squadron. While there are currently two constructs for STS teams, the structure of ST may change at a future date. Since operator team composition and structures are rapidly changing based on mission requirements, consult the 24 SOW for the latest information regarding the current STS team construct. The current model for a typical STS is listed in the paragraphs below.

7.8.3.1.1. CONUS STS. The CONUS construct is comprised of sixteen, 9-operator teams or 144 operators in the squadron. The CONUS construct also includes a support element of 92 personnel.

7.8.3.1.2. OCONUS STS. The OCONUS construct is comprised of three teams that can vary in size and includes 53 operators in the squadron. The OCONUS construct also includes a support element of 54 personnel.

7.8.3.2. UTC Construct. For ST, changes to the UTCs can drive significantly different facility requirements because the number of operators, operator teams, and support personnel can vary based on the mission the STS is supporting. For both STS team constructs, there are two types of UTCs: a Deployable UTC that is one ST operator team (CONUS: 1 team = 9 operators = 1 Deployable UTC; or OCONUS: 1 team = variable number of operators = 1 Deployable UTC) and a Support UTC (92 personnel CONUS and 54 personnel OCONUS) that includes all the command and support personnel that remains at their home-station. Changes to the number of UTCs in an STS can impact facility space requirements; therefore, the facility space requirements in this FRI are based on the UTC construct for full squadron CONUS and OCONUS. For planning purposes, consider the Support UTC as a constant, since this will represent the largest size of the support personnel required for each squadron. For project-specific plans for the Support UTC and changes in the Deployable UTC, consult the 24 SOW for the latest information regarding the current STS UTC construct.

7.8.3.3. STS Characteristics.

Table 7.8.1. STS (CONUS) Notional Manpower – 16 Teams (16 CONUS UTCs).

OSC	Title	Officer	Enlisted	CIV/CME	Total
CC	Commander	1	1	0	2
CCF	First Sergeant	0	1	0	1
CCQ	Orderly Room	0	6	1	7
DO	Directory of Operations	1	0	0	1
DOFA	Global Access 1	1	8	0	9
DOFB	Global Access 2	1	8	0	9
DOFC	Global Access 3	1	8	0	9
DOFD	Global Access 4	1	8	0	9
DOFE	Global Access 5	1	8	0	9
DOFF	Global Access 6	1	8	0	9
DOFG	Precision Strike 1	1	8	0	9
DOFH	Precision Strike 2	1	8	0	9
DOFI	Precision Strike 3	1	8	0	9
DOFJ	Precision Strike 4	1	8	0	9
DOFH	Precision Strike 5	1	8	0	9
DOFL	Precision Strike 6	1	8	0	9
DOFM	Personnel Recovery 1	1	8	0	9
DOFN	Personnel Recovery 2	1	8	0	9
DOFO	Personnel Recovery 3	1	8	0	9
DOFP	Personnel Recovery 4	1	8	0	9
DOO	Current Operations	0	3	5	5
DOT	Training	0	5	0	5
DOW	Weather	1	3	0	4
DOX	Plans & Programs	0	6	0	6
HC	Chaplain	1	0	0	1
IN	Intel	1	5	0	6
MS	Mission Support	1	0	0	1
MSC	Communications Systems Maintenance	0	12	0	12
MSI	Information Systems	0	3	0	3
MSL	AFE	0	13	1	14
MSM	Medical Logistics	4	4	0	8
MSS	Supply	0	4	0	4
MST	Vehicles	0	5	0	5
MSW	Weapons Maintenance & Training	0	7	0	7
	TOTAL ST PERSONNEL¹	26	206	7	236

Note:

1. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

Table 7.8.2. STS (OCONUS) Notional Manpower – 3 Teams (3 OCONUS UTCs).

OSC	Title	Officer	Enlisted	CIV/CME	Total
CC	Commander	1	0	0	1
CCF	Chief Enlisted Manager	0	1	0	1
CCF	First Sergeant	0	1	0	1
CCQ	Orderly Room	2	0	2	4
DO	Deputy	1	0	0	1
DOO	Current Operations	0	3	0	3
DOF	SOF Team STO/CRO	5	0	0	5
DOF	SOF Team- PJ	0	14	0	14
DOF	SOF Team- CCT	0	33	0	33
DOF	SOF Team- SERE	0	1	0	1
DOT	Training	0	5	2	7
DOW	Weather	0	4	0	4
DOX	Plans	0	4	0	4
IN	Intel	1	2	0	3
MS	Mission Support	0	1	0	1
MSC	Communications – Airfield Systems	0	6	0	6
MSC	Communications – Radio	0	1	0	1
MSL	Survival Life Support	0	3	0	3
MSM	Medical Logistics	2	1	4	7
MST	Supply	0	2	0	2
MST	Vehicle Maint	0	2	0	2
MSW	Weapons/MX/Train	0	2	0	2
OSL	AFE	1	0	0	1
	TOTAL ST PERSONNEL¹	13	86	8	107

Note:

1. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

7.8.4. STS Facilities.**7.8.4.1. Special Operations (CATCODE: 141454).**

7.8.4.1.1. General. **Table 7.8.12** provides the total facility space requirements for a CONUS or OCONUS STS. A detailed breakdown of the individual STS facilities is presented in the sections below. See **paragraph 1.1.3.6 for more information about the** unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within squadron operations facilities.

7.8.4.1.2. Administrative Area. ST administrative areas include the Command Suite, support staff, current operations, training, weather, plans and programs, chaplain, intelligence, mission support, communications, information systems, medical staff, and weapons maintenance and training. Other office spaces will be defined below since the office component represents part of a facility where the primary use is non-administrative.

7.8.4.1.3. Special Purpose Area. Standard special purpose areas include a conference room, briefing rooms, break room, copy room, administrative supply storage, and restrooms. STS-specific special purpose areas include vehicle maintenance and storage, watercraft maintenance and storage, bulk equipment storage, individual gear/equipment, team rooms, AFE shop, dive shop, medical material and equipment storage, radio maintenance shop and battery storage, computer shop, intel vault, weapons cleaning room, combat arms training and maintenance (CATM), war readiness storage, human performance training center (HPTC), air traffic control (ATC)/ JTAC simulator, climbing tower, aquatic training, and small arms range. Each of these ST-specific special purpose spaces is defined in the following sections.

7.8.4.1.4. **Vehicle Maintenance and Storage Area**. This area contains the vehicle maintenance bays, storage for each type of vehicle, and maintenance personnel (for vehicles and watercraft).

7.8.4.1.4.1. Dimensions. The size of this facility depends on the number of vehicles being supported. Vehicle storage will be directly based on the number and types of vehicles being supported. Workstations will be provided based on the number of teams being supported. See [Table 7.8.7](#) for Special Tactics vehicles/watercraft. See [Table 7.8.12](#) for ST vehicle maintenance and storage space requirements.

7.8.4.1.4.2. Design Considerations. As a minimum, each maintenance facility should have two bays sized to fit a High-Mobility Multi-Purpose Wheel Vehicle (HMMWV) with 8 ft clearance front and back and 4 ft clearance on each side. This clearance area should not be overlapped with adjacent bays to allow each bay to operate independently from the maintenance performed in the adjacent bay. See [Table 7.8.3](#) for vehicle maintenance bays and area requirements by operators supported.

Table 7.8.3. STS Vehicle Maintenance Bays and Area Requirements by Operators Supported.

Vehicle Maintenance Area			
No. of Operators	No. of Bays ¹	No. of All-Terrain Vehicle (ATV) Bays ²	Area (NSF)
1-36	2	0	1,024
37-72	3	1	1,606
73-108	4	1	2,118
109+	5	1	2,630
Notes:			
1. Vehicle maintenance bays should be sized for HMMWVs (16 ft x 8 ft) plus 8 ft front and back and 4 ft on each side. Total 32 ft x 16 ft or 512 NSF.			
2. ATV lift bay is 10 ft x 7 ft (allows 2 ft clearance around Lightweight (LT)/ATV dimensions: 8 ft x 5 ft). Total 70 NSF.			

7.8.4.1.4.3. Unique Facility Requirements. A roll-up door should be provided that can accommodate the width of a HMMWV (8 ft). The roll-up door minimum height should accommodate a HMMWV at 8 ft, although 10-15 ft is highly desired

with a hoist. Ensure there are adequate areas to accommodate battery charging stations (varies by vehicle or tool type and quantity), fuel storage (ventilated shed), tool storage (shed), and painting activities. Painting is limited to corrosion control and does not require paint/spray booths. LRS will perform other painting as necessary. See **Table 7.8.4** for building system requirements for a vehicle maintenance facility.

Table 7.8.4. Building Utility System Requirements for STS Vehicle Maintenance Facility.

System	Requirements
Mechanical	A compressed air source or connection (around 120 psi) should be conveniently located in the maintenance bay area. The facility should have energy efficient climate control and proper exhaust ventilation. Provide a ventilated shed for fuels storage. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connections for equipment and workstations ranging from 120V, 240V, and 480V. Electrical requirements are equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Provide an oil/water separator. Provide hose bibs on all exterior walls (frost-free hose bibs if local climate conditions justify use). Provide hot and cold water connections and industrial waste disposal system. Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 and ETL 02-15. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.8.4.1.5. Watercraft Maintenance and Storage Area. This area contains watercraft maintenance bays and storage for each type of watercraft used. Personnel working in the vehicle maintenance and storage area will also work on watercraft assigned to each team.

7.8.4.1.5.1. Dimensions. The size of this facility depends on the number of watercraft being supported. Watercraft storage will be directly based on the number and types of watercraft being supported. Workstations for the section are accounted

for in vehicle maintenance workstations (**Paragraph 7.8.5.**). See **Table 7.8.7** for a list of ST vehicles/watercraft. See **Table 7.8.12** for ST watercraft maintenance space requirements.

Table 7.8.5. STS Watercraft Maintenance Area and Number of Bay Requirements.

Watercraft Maintenance Area				
No. of Operators	Boats¹ Supported	No. of Bays	Small Engine Repair^{2,3}	Area (NSF)
1-36	2	1	1	720
37-72	4	1	1	720
73-108	6	2	1	1,404
109+	8	2	1	1,404
Notes:				
1. The facility is sized for a large boat (30 x 10) plus 4 ft clearance around = 38 ft x 18 ft or 684 NSF.				
2. This maintenance is currently being performed outside.				
3. Small engine repair area = 6 ft x 6 ft or 36 NSF (allows a Zodiac engine: 2ft x 2 ft plus 2 ft clearance around). One area of this type will support up to 4 teams.				

7.8.4.1.5.2. Unique Facility Requirements. A roll-up door should be provided that can accommodate the height and width of a large boat (10 ft W x 15ft H), although a 20-25 ft height is highly desired with a hoist installed. Ensure there are adequate areas to accommodate fuel storage (ventilated shed), tool storage (shed). See **Table 7.8.7** for building system requirements for a watercraft maintenance facility.

Table 7.8.6. Building Utility System Requirements for STS Watercraft Maintenance Facility.

System	Requirements
Mechanical	A compressed air source or connection (around 120 psi) should be conveniently located in the maintenance bay area. The facility should have energy efficient climate control and proper exhaust ventilation. Provide a ventilated shed for fuels storage. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connections for equipment and workstations ranging from 120V, 240V, and 480V. Electrical requirements are equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.

Plumbing	Provide an oil/water separator. Provide hose bibs on all exterior walls (frost-free hose bibs if local climate conditions justify use). Provide hot and cold water connections and industrial waste disposal system. Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 and ETL 02-15. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Table 7.8.7. STS Vehicles/Watercraft Space Requirements.

Vehicle Type	Dimensions	CONUS STS (16 UTCs) Quantity	Area (NSF)	OCONUS STS (3 UTCs) Quantity	Area (NSF)
Motorcycle - 250cc	5 ft x 3 ft	20	300	4	60
Motorcycle - 80cc	5 ft x 3 ft	6	90	6	90
ATV ¹	8 ft x 5 ft	12	480	10	400
LT-ATV ²	8 ft x 5 ft	12	480	6	240
ITV ³	8 ft x 5 ft	3	120	2	80
HMMWV/Gun Truck ⁴	16 ft x 8 ft	6	768	4	512
GMV ⁵	16 ft x 8 ft	6	768	4	512
Van - 15pax	15 ft x 6 ft	4	360	4	360
Bread (Box) Truck	15 ft x 6 ft	2	180	1	90
Truck - 6pax	15 ft x 6 ft	6	540	2	180
Truck - 6pax Dually	15 ft x 6 ft	2	180	2	180
NSCV ⁶ (Typ: Truck)	15 ft x 6 ft	2	180	4	360
Boat - 27ft, Support	34 ft x 8 ft	3	816	1	272
Boat – Zodiac ⁷	8 ft x 8 ft	32	2048	10	640
ARC (Jet Ski) ^{8,9}	10 ft x 4 ft	5	200	5	200
Boat Trailer	28 ft x 8 t	8	1,792	3	672
Forklift - Large	16 ft x 6ft	1	96	1	96
Forklift - Small	13 ft x 6 ft	1	78	0	0
Snowmobile ⁹	10 ft x 4 ft	4	160	4	160
Totals¹⁰		135	9,636	73	5,104

Notes:

1. All-Terrain Vehicle
2. Lightweight Tactical All-Terrain Vehicle
3. Internally Transportable Vehicle
4. High-Mobility Multipurpose Wheeled Vehicle
5. Ground Mobility Vehicle (modified HMMWV)
6. Non-Standard Commercial Vehicle
7. Stacked Three High
8. Advanced Rescue Craft
9. Varies based on geographic location and team mission requirements
10. While these numbers may vary slightly based on geographic conditions, climate, and specific mission criteria, increases in the requirements listed require Wing and AFSOC approval.

7.8.4.1.6. **Bulk Equipment Storage.** This facility holds spare equipment for the vehicle and watercraft maintenance, spare parts, and other bulk items that do not require storage in a specific facility.

7.8.4.1.6.1. Dimensions. The size of this facility will depend on the number of operators being supported. **Table 7.8.8** shows the ratio to determine bulk equipment storage units to teams. See **Table 7.8.12** for STS bulk equipment space requirements.

Table 7.8.8. STS Bulk Equipment Storage Unit to Operator Ratio.

Bulk Equipment Storage Units¹	
Number of Operators	Number of Units¹
1-36	1
37-72	1.33
73-108	1.66
109+	2
Note:	
1. Each unit is approx. 15 ft x 20 ft	

7.8.4.1.7. **Individual Gear/Equipment.** This area houses the personal gear and equipment assigned to each operator.

7.8.4.1.7.1. Dimensions. Per 24 SOW, each operator (including staff and team members) requires a cage that is 8' (W) x 10' (L). Cages also require a 6' aisle for gear prep and transport. To accommodate the 6-foot aisles, provide an additional 3' in front of each cage for a total of 8' (W) x 13' (L) or 104 NSF per cage. This number is based on a cage layout that has two, 10-cage rows with a 6-foot aisle in between each row. Note that increasing the number cages per row will reduce the total area required per cage, just as decreasing the number of cages per row will increase the total area required per cage. See **Table 7.8.12** for STS individual gear/equipment storage space requirements.

7.8.4.1.7.2. Design Considerations. Designs that vary from the typical cage structure are encouraged if they can promote a more efficient working area and layout for operator gear storage.

7.8.4.1.8. **Team Rooms.** A Team Room combines the functional spaces into an open office concept that provides an area for ST teams to conduct briefings, perform office duties, and serves as the general purpose meeting space for a range of activities. The suite includes offices for the flight commander, assistant team leader, flight superintendent, and flight NCOIC as well as shared workstations for 30 percent of the team operators and a briefing/conference area.

7.8.4.1.8.1. Since most uses of the shared workstations are for operators where there is 25-50 percent full-time usage, providing 30 percent of enlisted operators a shared workstation (DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1: 30 NSF min each) creates a planning factor that allows each team flexibility to provide workstations sized to fit team needs for limited administrative purposes. For example, a team with 35 enlisted operators would be assigned 378 NSF (35 PN x 30 percent x 36 NSF) or approximately ten, 36 NSF workstations (not including the four offices for flight leadership). However, the same 378 NSF could be divided into 15, 25 NSF workstations or roughly a shared space for every two operators. Since CONUS squadrons have more teams, space will be provided for 30 percent of the squadrons teams with the assumption that no more than 30 percent of the teams will require access to Team Rooms at any given time.

7.8.4.1.8.2. Dimensions. The area required for the Team Rooms will vary based on the number of operators being supported. See [Table 7.8.12](#) for the STS team room space requirements.

7.8.4.1.8.3. Unique Facility Requirements. This facility requires an alarms and security system, noise attenuation between rooms and hallways (for conversations up to the SECRET level), and SIPRNet connections.

7.8.4.1.9. **AFE Shop.** This facility manages the packing, storage, and repair of parachutes and life support equipment including NVG and portable oxygen bottles. Room for parachute storage, tables, and open floor space for parachute packing, and a quality control/staging/issuing area - where parachutes waiting for service can be separated from those in need of repair and those ready for use - are required for this facility. A sewing section with multiple sewing stations and a parachute wash tank are also required for repair, deterioration prevention, and cleaning of parachutes. Access to a drying tower is also required and can be provided by the host installation, although an independent drying tower is highly desired. The life support section of the AFE shop includes a maintenance area for NVGs and a separate area for pre-breathing equipment maintenance and oxygen bottle maintenance. Oxygen bottle storage and a safe room for oxygen bottle repairs is typically stored within the dive shop. Administrative workstations should also be provided based on the number of personnel assigned to the facility. The administrative area should also incorporate a small break area.

7.8.4.1.9.1. The AFE shop cannot be located at a host facility. Storage, maintenance, and cleaning need to occur within the ST organization because the host installation does not gain space for supporting ST.

7.8.4.1.9.2. Dimensions. The size of this facility is dependent upon the number of

operators being supported. The parachute quality control area requires 100 NSF in all scenarios. The parachute staging/issuing area requires 2 NSF per operator and the sewing section requires a minimum of 128 NSF plus 1 NSF for each operator. The parachute wash tank is 3 ft (W) x 36 ft (L). DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1 authorizes 64 NSF each for workstations. See [Table 7.8.1](#) and 4.2 for ST CONUS and OCONUS AFE shop manpower respectively. Provide two console areas for pre-breathing machines used prior to jumps (1.5 ft W x 3 ft L, each). An oxygen bottle maintenance table for every 36 operators (3 ft x 6 ft, plus 3 ft clearance around), plus an additional table (3 ft x 6 ft, plus 3 ft clearance around) should be provided to perform routine maintenance checks in all scenarios. A 16 ft W x 28 ft L x 60 ft H drying tower is recommended if one is not already present and available at host installation. [Table 7.8.9](#) shows parachute table and floor space requirements. See [Table 7.8.12](#) ST AFE shop space requirements.

Table 7.8.9. STS Parachute Table and Floor Space Requirements.

Number of Operators	Number of Packing Tables	Dimensions for Packing Tables (Area - NSF)	Parachutes accommodated on the floor	Dimensions for Floor Parachutes (Area – NSF) ¹
1-36	2	52 ft x 13 ft (676)	2	32 ft x 38 ft (1,216)
37-72	2	52 ft x 13 ft (676)	2	32 ft x 38 ft (1,216)
73-108	3	52 ft x 19 ft (988)	3	42 ft x 38 ft (1,596)
109+	3	52 ft x 19 ft (988)	3	42 ft x 38 ft (1,596)
Notes: 1. The dimensions and area required for parachute floor space can be reduced depending on configuration. These numbers represent a side by side configuration with the widest sides of the parachute opposite each other.				

7.8.4.1.9.3. Unique Facility Requirements. This facility requires hot and cold water for the parachute wash tank and a compressed air source (2-gal compressor or source between 100-120 psi). See [Table 7.8.12](#) for AFE shop building utility system requirements.

Table 7.8.10. Building Utility System Requirements for STS AFE Shop.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions between 40°F and 85°F to prevent parachute deterioration or failure. A compressed air source (2-gal compressor) or connection (around 100-120 psi) should be conveniently located in the maintenance bay area for pneumatic tools and inflatable rafts. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connection for equipment and workstations ranging from 120V, 240V, and 480V. Electrical requirements are equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 and ETL 02-15. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.8.4.1.10. **Dive Shop.** This facility is responsible for the storage and maintenance of dive equipment including SCUBA gear, breathing equipment, portable oxygen bottles, dry suits, and spare parts. A safe room should be provided for oxygen bottle servicing as well as a separate maintenance room for other general repairs. An area for short-term storage and issuing of materials should also be provided along with a covered storage area for ISUs. The Air Force Dive Program (AFI 10-3501, Paragraph 5.10) requires proximity to a hyperbaric facility capable of treating dive casualties; however, a hyperbaric facility does not need to be present at each location.

7.8.4.1.10.1. Dimensions. The dimensions of this facility vary by the number of operators being supported. The maintenance area provides 300 NSF for the oxygen bottle safe room, a 30' x 40' (1,200 NSF) oxygen servicing area, 450 NSF for general maintenance and repairs, and 200 NSF for ISU storage. Each operator supported will be provided 4 NSF for short-term storage and issuing equipment, 1 NSF for oxygen storage racks, and 2 NSF for dry suits and breathing equipment. See [Table 7.8.12](#) ST dive shop space requirements.

7.8.4.1.10.2. Unique Facility Requirements. See [Table 7.8.11](#).

Table 7.8.11. Building Utility System Requirements for STS Dive Shop.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions between 40°F and 85°F to prevent self-contained underwater breather apparatus (SCUBA) equipment, dry suits, and spare parts from deterioration or failure. A compressed air source connection (around 100-120 psi) should be conveniently located in the maintenance bay area. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connection for equipment and workstations ranging from 120V, 240V, and 480V. Electrical requirements are equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems requirements, UFC 3-530-01 for interior and exterior lighting and controls requirements, UFC 3-550-01 for exterior power distribution systems requirements, UFC 3-560-01 for electrical safety and electrical O&M requirements, UFC 3-580-01 for building telecommunications requirements, and UFC 4-021-01 for mass notification systems criteria.
Plumbing	Provide commercial grade domestic water and waste water systems. Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide permanent back-up power generation capability capable to handle facility operations. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 and ETL 02-15. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

7.8.4.1.11. **Medical Material and Equipment Storage.** This area contains WRM, squadron medical supplies, and administrative personnel. PJs have an additional requirement for a secure medical supply vault.

7.8.4.1.11.1. Dimensions. The dimensions of this facility vary based on the number of operators being supported. The secure medical supply vault requires 60 NSF. See [Table 7.8.12](#) STS medical material and equipment storage space requirements.

7.8.4.1.11.2. Unique Facility Requirements. This facility requires manually operated rolling storage and a secure medical supply vault with an IDS.

7.8.4.1.12. **Medical Training Area.** Training classroom required for operators.

7.8.4.1.12.1. Dimensions. A minimum of 500 NSF is required. Provide 10 NSF

per operator.

7.8.4.1.13. Radio Equipment and Batteries Storage and Maintenance. This facility includes workbenches and a maintenance area as well as storage of all radio equipment including tools and batteries.

7.8.4.1.13.1. Dimensions. The size of this facility is based on the number of operators being supported. See [Table 7.8.12](#) STS radio maintenance and equipment storage space requirements.

7.8.4.1.14. Computer Shop. This facility provides maintenance and storage of computers and computer equipment.

7.8.4.1.14.1. Dimensions. Computer shops vary in size based on the number of personnel supported. The facility is assigned 5 NSF per operator plus one person for the computer shop assigned 64 NSF each (DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1). See [Table 7.8.12](#) STS computer shop space requirements.

7.8.4.1.15. Intel Offices and Vault. This secure area includes workstations for intelligence (intel) personnel and storage of sensitive materials.

7.8.4.1.15.1. Dimensions. Intel vaults vary in size based on the number of operators being supported. The facility is assigned 20 NSF/per intel personnel for special equipment and storage and 80 NSF/per intel personnel for offices per DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1 (Intel persons are defined in [Tables 7.8.1](#) and 7.8.2). See [Table 7.8.12](#) ST intel vault space requirements.

7.8.4.1.15.2. Unique Facility Requirements. This facility requires air conditioning to cool SIPRNet server racks and computers and an IDS (does not require TEMPEST security measures)

7.8.4.1.16. Armory. This facility is the weapons and munitions storage center for the ST unit.

7.8.4.1.16.1. Dimensions. DAFMAN 32-1084 CC 171141 Armory Paragraph 1.2 states that all requirements are user justified until a standard is established or adopted. Therefore, per 24 SOW provide the armory requirement at 2,084 NSF for 160 PN or 13 NSF per operator. See [Table 7.8.12](#) STS armory space requirements.

7.8.4.1.17. Weapons Cleaning Room. Ideally adjacent to the armory, the weapons cleaning room contains long workbenches where weapons can be disassembled, cleaned, and reassembled.

7.8.4.1.17.1. Dimensions. The weapons cleaning room varies in size based on the number of operators supported. This facility is assigned 5 NSF per operator given that most periods of use will not involve an entire team at the same time. See [Table 7.8.12](#) ST weapons cleaning room space requirements.

7.8.4.1.18. CATM Room. This training classroom is ideally located near the armory; however, it could also be part of a small arms range facility if one is provided for the squadron. See [paragraph 7.8.4.2.2](#) for details about the STS small arms range facility.

7.8.4.1.18.1. Dimensions. The size of this training classroom varies based on the number of operators being supported. This facility is assigned 4 NSF per operator. See [Table 7.8.12](#) STS CATM training space requirements.

7.8.4.1.19. **Supply Storage**. This facility stores bulk items, resupply, and initial use gear.

7.8.4.1.19.1. Dimensions. Supply storage area varies based on the number of operators being supported. The facility is assigned 10 NSF per operator. See [Table 7.8.12](#) STS supply storage space requirements.

7.8.4.1.20. **War Readiness**. This area is typically a build-up area in a high bay warehouse, hangar, or outdoor space that houses WRM, ISUs, and Air Force pallets containing materials ready for deployment.

7.8.4.1.20.1. Dimensions. War readiness area varies based on the number of operators supported. The facility is assigned 20 NSF per operator. See [Table 7.8.12](#) STS war readiness space requirements.

7.8.4.1.20.2. Design Considerations. This area should be located in an area where forklift equipment or hoists have access to the items being moved.

7.8.4.1.21. **Covered Storage**. Canopy area adjacent to or separate from another facility.

7.8.4.1.21.1. Dimensions. Covered storage area varies based on the number of personnel supported. This facility is assigned 25 NSF per person. See [Table 7.8.12](#) STS covered storage space requirements.

7.8.4.1.22. **HPTC**. This area is designated for the physical training requirements of the ST Human Performance Program. The facility will include a performance area, staff offices, mobility area, hydrotherapy, physical therapy bay and office, screening and measurement area, and a classroom.

7.8.4.1.22.1. Dimensions. The dimension of this facility will vary based on the number of operators the facility will support. See [Table 7.8.12](#) ST Human Performance Training Center space requirements.

7.8.4.1.23. **ATC/JTAC Simulator**. This area is the combined simulator facility for ATC and JTAC training.

7.8.4.1.23.1. Dimensions. Based on the 1 Special Operations Civil Engineering Squadron drawing to construct a combined ATC/JTAC simulator, this facility should be sized at 55 ft x 35 ft or 1,925 NSF. This total excludes restrooms, offices, and a classroom that are accounted for in the net-to gross conversion (NSF x 1.25).

7.8.4.1.23.2. Unique Facility Requirements. This facility requires cooling for computer systems and power to support various simulators, computers, and other unique facility components.

7.8.4.1.24. **Climbing Tower**. ST teams can use existing facilities located at the host installation though it is highly desired to have this facility located proximate the STS campus.

7.8.4.1.24.1. Dimensions. 15 ft x 15 ft. Height to be determined by AFSOC/A4I.

7.8.4.2. **Required facilities typically provided by host installation.** These facilities are required for qualification training, but could potentially be shared using existing facilities provided by the host installation that are available and adequate.

7.8.4.2.1. **Aquatic Training.** This type of facility is to be provided by the host base unless qualification/proficiency requirements demand usage of X percent of "pool days". X percent of "pool days" to be determined by AFSOC/A4I.

7.8.4.2.1.1. Typical "Pool Day" = 1 hr (1,500-meter swim).

7.8.4.2.1.2. Potential "Pool Days" Per Year = 280 (based on 40 swimming weeks per year excluding 4 leave, 1 Thanksgiving, 1 Christmas, 2 shooting school, 2 post-deployment, 2 miscellaneous temporary duty assignments (TDYs))

7.8.4.2.1.3. Minimum Qualification Requirements = 3 "pool days" per year (based on AFI 13-219V2 2.3, AFI 10-3502V1 Table 5.1, AFI 16-1301 4.4.2, AFI 10-3501 Paragraph 1.2, and AFI 13-219V1 Attachment 3).

7.8.4.2.1.4. Proficiency Pool Use = 40 "pool days" per year (including minimum qualification requirements).

7.8.4.2.1.5. Dimensions. DAFMAN 32-1084, Table 2.15: Aquatic Simulator is 2,000 NSF (2,500 GSF with 1.25 NSF to GSF multiplier) with a depth of 6 meters.

7.8.4.2.2. **Small Arms Range.** This facility will be provided by the host base unless qualification/proficiency requirements demand usage of X percent of "range days". X percent of "range days" to be determined by AFSOC/A4I.

7.8.4.2.2.1. Typical "Range Day" = 6 hours (1.5 hours each on 4 primary weapons).

7.8.4.2.2.2. Potential "Range Days" Per Year = 280 (based on 40 shooting weeks per year excluding 4 leave, 1 Thanksgiving, 1 Christmas, 2 shooting school, 2 post-deployment, 2 miscellaneous TDYs).

7.8.4.2.2.3. Minimum Qualification Requirements = 3 "range days" per year (based on AFI 13-219V1 Attachment 3, AFI 10-3502V1 Table 5.1, and Career Field Education and Training Plan [CFETP]).

7.8.4.2.2.4. Proficiency Range Use = 40 "range days" per year (including minimum qualification requirements).

7.8.4.2.2.5. Dimensions. Typical 7-lane facility with an office, storage, a control booth, restroom, and classroom is 8,542 NSF or 10,676 GSF (based on 22 STS Firing Range).

Table 7.8.12. STS Facility Space Requirements.

Facility	UM	ST – CONUS 16 UTC	ST – OCONUS 3 UTC	DAFMAN 32-1084 Reference or Remarks/Calculations
Commander	NSF	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
Chief Enlisted Manager	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
First Sergeant	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
Commander Secretary	NSF	140	140	2 PN waiting area plus 1 open office. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.3: 20 NSF per waiting person.
Support Staff	NSF	455	195	CONUS: 1-8 tm = 4 PN; 9+ tm = 7 PN. OCONUS: 1-4 tm = 4 PN; 5+ tm = 9 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
Operations Officer	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
Current Operations	NSF	325	195	CONUS: 1-8 tm = 3 PN; 9+ tm = 5 PN. OCONUS: 1-4 tm = 3 PN; 5+ tm = 6 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
Plans Offices	NSF	390	260	CONUS: 6 PN; OCONUS: 4 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices
Training Offices	NSF	325	455	CONUS: 1-8 tm = 3 PN, 9+ tm = 5 PN. OCONUS: 1-2 tm = 3 PN, 3-4 tm = 7 PN, 5+tm = 10 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
Logistics Offices	NSF	0	195	CONUS: 0 PN; OCONUS: 1 PN per team. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
Medical Logistics and Exam Room	NSF	790	690	130 for an exam room, plus office space (half private, half open). CONUS: Assumes 1 PN every 18 operators. OCONUS: 1-2 tm = 5 PN, 3-4 tm = 7 PN, 5+ tm = 11 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
Chaplain	NSF	100	0	CONUS only. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
Commander's Meeting Room	NSF	150	150	AFSOC/A4I: Recommended 150 NSF.

Conference Room	NSF	1,350	1,150	Size based on number of personnel in the squadron. CG 61 Admin Overview, Paragraph 1.4.5 and Table 1.4: 50-99 PN, provide a conference room for up to 25 persons. 100-149 PN, provide a conference room for up to 50 persons with 150 SF speaker area. Add a 10-person room for populations over 150.
Break Room	NSF	683	314	CG 61 Admin Overview Table 1.3: 16% x Number of occupants x 18 NSF.
Laundry	NSF	413	158	Provide 2.5 NSF per operator.
Men's Showers	NSF	690	270	1 shower for every five operators. 80% of showers are male. FC 4-470-02F: 30 NSF per shower/drying area.
Women's Showers	NSF	180	60	1 shower for every five operators. 20% of showers are female. FC 4-470-02F: 30 NSF per shower/drying area.
Men's Lockers	NSF	136	76	Lockers are 1.67'(W) x 3'(H), stacked 2 high. Number of lockers = support personnel x 0.8 (male requirement). This facility can be adjacent to or combined with the men's showers.
Women's Lockers	NSF	34	19	Lockers are 1.67'(W) x 3' (H), stacked 2 high. Number of lockers = support personnel x 0.2 (female requirement). This facility can be adjacent to or combined with the women's showers.
Individual Gear/ Equipment Storage	NSF	17,160	6,552	Per 24 SOW, each operator (including staff and team members) requires a cage that is 8' (W) x 10' (L). Cages also require a 6' aisle for gear prep and transport. To accommodate 6-foot aisles, provide an additional 3' in front of each cage for a total of 8' (W) x 13' (L) or 104 NSF per cage. This number is based on a cage layout that has two, 10-cage rows with a 6-foot aisle in between each row. Note: increasing the number cages per row will reduce the total area required per cage. CONUS: 16 UTCs = 165 operators OCONUS: 3 UTCs = 63 operators
Men's Restroom(s)	NSF	711	327	Provide 3.75 sf/person x 0.8 for men.
Women's Restroom(s)	NSF	178	82	Provide 3.75 sf/person x 0.2 for women.

Team Rooms (Line not totaled)	NSF	4,710	1,890	¹ NOTE: CONUS assumes 30% of teams require access at any given time. OCONUS: 1 room per team.
Flight Commander	NSF	500	300	1 PN per team plus 1 combat mission support flight commander per squadron. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
Assistant Team Leader	NSF	500	300	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
Flight Superintendent	NSF	325	195	1 PN per team CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices.
Flight NCOIC	NSF	325	195	1 PN per team. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices.
Briefing/Conference	NSF	1,920	480	CG 61 Admin Overview Table 1.4: Authorizes 20 NSF per person for room sized for up to 49 people. Authorization exceeds practical space required for team briefing functions. 10 NSF per operator.
Shared Workstations	NSF	1,140	420	CG 61 Admin Overview Table 1.2.1 authorizes 36 NSF for each shared workstation. Workstations provided for 30% of enlisted operators.
Supply Storage	NSF	1,650	630	10 NSF per operator.
Supply Offices	NSF	192	96	CONUS: 1 PN per 36 operators OCONUS: 1-2 tm =1 PN, 3 tm =2 PN, 4 tm = 3 PN, 5+ tm = 5 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices
Intel Offices and Vault	NSF	510	255	CONUS: 1 PN per 24 operators; OCONUS: 1 PN per team. Add 20 NSF per team for storage on sensitive items. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices.
Armory	NSF	2,145	819	Provide 13 NSF per operator. Based on Table 2.15: 2,084 sf for 160 PN.
Weapons Cleaning Room	NSF	125	125	Provide 5 NSF per operator. Room for up to 25 PN.
Weapons Section Workstations	NSF	336	96	CONUS: 1 PN per 20 operators; OCONUS: 1-2 tm =1 PN, 3 tm =2 PN, 4 tm = 3 PN, 5 tm = 4 PN, 6-8 tm = 5 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices
War Readiness	NSF	2,880	1,060	20 NSF per operator.
Medical Storage	NSF	780	325	Provide 5 NSF per operator plus 60 NSF for PJ Medical Vault.

Medical Training Area	NSF	720	500	CONUS: 5 NSF/operator, min. of 500 NSF. OCONUS: 100 NSF per team, min. 500 NSF
Flammable Storage	NSF	144	144	Provide an area of 12 ft x 12 ft.
Bulk Equipment	NSF	600	399	Equipment units are approximately 20' x 15' each. 1-36 operators = 1 unit; 37-72 operators = 1.33 units; 73-108 operators = 1.66 units; 109+ operators 2 units.
Vehicle Maintenance Workstations	NSF	320	128	CONUS: 5 PN; OCONUS: 2 PN. DAFMAN 32-1084 CG 61 Admin Overview Table 1.2.1: Authorizes 48 NSF min each.
Vehicle Storage	NSF	6,412	3,832	Information provided by 23 STS Vehicle MXS personnel.
Vehicle Maintenance	NSF	2,630	1,606	Information provided by 23 STS Vehicle MXS personnel.
Number of Bays	NSF	5	3	Multiple bay facilities include one LT/ATV Bay and an HMMWV Bays for each team plus one additional. Single Bay includes an HMMWV Bay. 1 HMMWV bay can support 2 Teams. 1 Small Engine Bay can support 4 Teams.
Watercraft Storage	NSF	3,224	1,272	Information provided by 23 STS Vehicle MXS personnel.
Watercraft Maintenance	NSF	1,404	720	Information provided by 23 STS Vehicle MXS Personnel.
Number of Bays	NSF	3	2	Bay facilities include one Small Engine Area and a Boston Whaler Bay for every increment of 72 operators.
Dive Equipment and Storage	NSF	1,155	441	Each operator supported will be provided 4 NSF for short-term storage and issuing equipment, 1 NSF for oxygen storage racks, and 2 NSF for dry suits and breathing equipment.
Dive Equipment Maintenance	NSF	2,150	2,150	23 STS Dive Shop: 300 NSF for the oxygen bottle safe room, 1,200 NSF (30' x 40') for the oxygen servicing area, 450 NSF for general maintenance and repairs, and 200 NSF for ISU storage.
Dive Shop Admin	NSF	48	48	1 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
Radio Equipment Storage	NSF	1,980	756	12 NSF per operator.
Radio Maintenance Shop	NSF	720	256	5 NSF per operator.

Radio Maintenance Workstations	NSF	576	288	CONUS: 12 PN; OCONUS: 6 PN CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
Computer Shop and Offices	NSF	954	388	2 NSF per operator for shop space plus workstations for 3 PN CONUS and 1 PN OCONUS. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
Comm. Room	NSF	144	144	AFSOC/A6: Provide 12 ft x 12 ft per floor.
Secure Comm. Rm	NSF	144	144	AFSOC/A6: Provide 12 ft x 12 ft per floor.
Aircrew Flight Equipment Shop	NSF	4,215	2,548	Includes Packing Tables (<72 operators: 13 ft x 52 ft; 73_ operators: 19 ft x 52 ft), Floor Packing Space (<73 operators: 32 ft x 38 ft; 73+ operators: 42 ft x 38 ft), Staging/Issue Area (2 NSF/operator), Quality Control (100 NSF), Sewing Section (1 NSF/operator), Wash Tank (3 ft x 36 ft), two pre-breathing console tables (1.5 ft x 3 ft each), and oxygen bottle maintenance tables (one, 6 ft x 9 ft table including clearance per 36 operators plus an additional table 6 ft x 9 ft). More than 16 CONUS UTCs or 4 OCONUS UTCs assumes two separate AFE shops.
Aircrew Flight Equipment Storage	NSF	990	378	Parachute Storage (120 NSF per team = 100 parachutes stored; Racks/cubes are 18 in (H) x 24 in (W)) and Spare Parts Storage Provide 4 NSF/operator for parachute storage plus 2 NSF/operator for spare equipment storage.
Aircrew Flight Equipment Workstations	NSF	672	48	CONUS: 14 PN; OCONUS: 1 PN. DAFMAN 32-1084 CG 61 Admin Overview Table 1.2.1: Authorizes 48 NSF min each.
Drying Tower	NSF	0	0	If a drying tower is not present and available at the host installation, provide a 16 ft x 28 ft tower.
SOWT Equipment Maintenance	NSF	120	40	10 NSF per SOWT operator.
SOWT Equipment Storage	NSF	240	80	20 NSF per SOWT operator.
Meteorological Equipment	NSF	300	100	25 NSF per SOWT operator.
Administrative Support Space	NSF	2,900	1,420	CG 61 Admin Overview paragraph 1.4.2: minimum 20 sf per person. AFSOC/A4I: Default is the min.
Administrative Circulation	NSF	1,108	614	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Admin Space.

Special Purpose Circulation	NSF	5,367	2,668	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Antennae Farm	GSF	480	160	40 GSF per SOWT operator.
Covered Storage ²	NSF	5,925	2,725	25 NSF per total personnel.
HPTC Performance Area	NSF	14,213	6,161	61 NSF/operator ¹ .
HPTC Athletic Trainer	NSF	100	100	DAFMAN 32-1084 CG 61 Admin Overview Table 1.2 Authorizes 100 NSF min.
HPTC Strength Coach	NSF	100	100	DAFMAN 32-1084 CG 61 Admin Overview Table 1.2 Authorizes 100 NSF min.
HPTC Screening & Measurement	NSF	225	225	225 NSF/facility.
HPTC Mobility Area (exterior)	NSF	3,495	1,515	15 NSF/operator.
HPTC Hydrotherapy	NSF	225	225	225 NSF/facility.
HPTC Physical Therapy Bay	NSF	650	650	650 NSF/facility.
HPTC Physical Therapist Office and Storage	NSF	250	250	DAFMAN 32-1084 CG 61 Admin Overview Table 1.2 Authorizes 100 NSF min plus 150 NSF for storage.
HPTC Classroom	NSF	400	400	400 NSF/facility
HPTC Restroom	NSF	300	300	300 NSF/facility
Aquatic Training	EA	0	0	Facility to be provided by the Host Base unless qualification/proficiency requirements demand usage of X% of "pool days". X% to be determined by AFSOC/A4I. If provided the facility should be 19,000 NSF per 24 SOW.
Climbing Tower	NSF	225	225	15 ft x 15 ft.

ATC/JTAC Simulator	NSF	2,406	2,406	55 ft x 35 ft plus 481 NSF for classrooms and training areas based on 1 SOCES floor plan. If separated, per the Tower Simulator System FRD paragraph 4.1, the minimum room size ATC Simulator is 15' (W) x 18' (L). Per ATC instructor guidance, the ideal size adds 3 feet on the back side of the simulator (15' + 3' = 18' wide and 18' + 3' = 21' long) for maintenance and a briefing area for 6 people (2 instructors, 3 students). Per the JTC TRS Simulator Facility Report Figure 3-6, the minimum size for the JTAC Simulator and its associated components is 25' (W) x 32' (L); however, the report also notes in paragraph 3.1 that the preferred dimensions are 30' (W) x 40' (L).
CATM Training	NSF	995	458	23 STS: CATM should be approximately 4.2 NSF per person.
Small Arms Range	EA	0	0	Facility to be provided by the Host Base unless qualification/proficiency requirements demand usage of X% of "range days". X% to be determined by AFSOC/A4I. If provided the facility should be 9,200 NSF or 11,500 GSF based on the 26 STS firing range.
Antennae Farm Total GSF (Not in ST Facility Total)		480	160	40 NSF per SOWT operator.
HPTC Exterior Training GSF (Not in ST Facility Total)		3,495	1,515	
HPTC Facility Total NSF (Not in ST Facility Total)		16,463	8,471	
HPTC Facility Total GSF (Not in ST Facility Total)		20,579	10,589	Net to gross multiplier of 1.25.
ST Facility Total NSF		71,224	36,096	
ST Facility Total GSF		89,030	45,121	Net to gross multiplier of 1.25.
ST Covered Storage GSF (includes vehicles/watercraft)		15,561	7,829	

Notes:

1. CONUS assumes that only 30% of the teams will require team room access at any given time.
2. Tropical environments introduce increased corrosion due to high humidity with high salt content. In these instances, standard exterior covered storage may not be adequate to maintain mission essential, mission ready, spares and equipment unless the spares and equipment are stored within nearly airtight equipment containers (CONEX boxes or other containers). In these cases, AFSOC/A4I may approve additional controlled humidity warehouse space.

Chapter 8

OVERHEAD REQUIREMENTS

8.1. MAJCOM (HQ AFSOC) Facility Requirements.

8.1.1. **General.** This section provides the facility requirements to support the MAJCOM-level or HQ AFSOC facility requirements.

8.1.2. HQ AFSOC Description.

8.1.2.1. **Mission.** AFSOC provides Air Force SOF for global deployment and assignment to regional unified commands. The command's core missions include battlefield air operations, agile combat support, aviation foreign internal defense (AvFID), information operations/military support operations, precision strike, specialized air mobility, command and control, and ISR. AFSOCs active duty and reserve component flying units operate a variety of fixed and rotary-wing aircraft. Most of which are included in this FRI in Section 7, though some have been excluded because its requirements align with a weapon system in this FRI or they are not enduring weapons systems in the AFSOC inventory.

8.1.2.2. **Structure.** AFSOC is an Air Force MAJCOM that is directly subordinate to HQ USAF. As an Air Force MAJCOM, AFSOC is a major subdivision of the Air Force that is assigned a major part of the Air Force mission: serve as the Air Force component of U.S. Special Operations Command (USSOCOM). HQ AFSOC is classified as a management HQ, and thus has a full range of functional staff. Leadership for HQ AFSOC includes a Commander, Deputy Commander, and Executive Director and their staff. HQ AFSOC is further divided into directorates, divisions, branches, and sections that report to leadership, plus various Field Operating Agencies (FOAs) that perform specialized field activities beyond the scope of any of the MAJCOMs primary subordinate units, Direct Reporting Units (DRUs) that perform a mission that does not fit into any of the MAJCOMs primary subordinate units, and other supporting units that perform various levels of administrative and technical support.

8.1.2.3. **Strength.** AFSOC presently has more than 19,500 active-duty, Air Force Reserve, Air National Guard, and civilian personnel; however, there is no set minimum assigned personnel threshold for a MAJCOM, rather its size is determined by its unit type and mission. Since there is the potential for significant variability in its scope, the facility requirements for HQ AFSOC can vary based on the required force structure and organizations necessary to support its mission. Consult AFSOC/A1M and AFSOC/A4I for the latest information regarding changes to HQ AFSOC personnel and organizational structure.

8.1.2.4. **Organization.** The command's forces are organized under the following primary units:

8.1.2.4.1. Wings. AFSOC SOWs currently include three typical operational wings (1 SOW, 27 SOW, and 352 SOW), and two specialized mission wings including one for Special Tactics (24 SOW) and one for Training and Irregular Warfare (T&IW) (492 SOW).

8.1.2.4.2. Groups. Organized under the 1 SOW, 27 SOW, and 352 SOW are various groups including SOGs: 1 SOG, 27 SOG, and 352 SOG; Special Operations Maintenance Groups (SOMXGs): 1 SOMXG, 27 SOMXG, and 352 SOMXG; Special Operations Mission Support Group (SOMSGs): 1 SOMSG and 27 SOMSG; Special Operations Medial Group (SOMDGs): 1 SOMSG and 27 SOMSG. There is also a Special Tactics Group (STG) under the 24 SOW (720 STG), an operations group under HQ AFSOC (353 SOG), an operations group under 492 SOW (492 SOG), and a Special Operations Training Group (SOTRG) under the 492 SOW (492 SOTRG).

8.1.2.4.3. Gained Components. AFSOC also includes several gained units whose components are aligned under the primary units listed in Table 8.1.1, are part of the gained Air Force Reserve Component that align under the 919 SOW, or are one of the ANG units that align under either 137 SOW or 193 SOW.

8.1.3. **HQ AFSOC Characteristics**. The notional manpower for the MAJCOM are presented in the following tables: Table 8.1.1 (HQ AFSOC), [Table 8.1.2](#) (HQ AFSOC DRUs), [Table 8.1.3](#) (HQ AFSOC FOAs), and [Table 8.1.4](#) (HQ AFSOC Other Supporting Units).

Table 8.1.1. HQ AFSOC Notional Manpower.

OSC	Function	OFF	ENL	CIV	CTR	Total
CC	HQ AFSOC Commander	1	0	0	0	1
CC	HQ AFSOC Commander Staff	7	5	2	0	14
	HQ AFSOC Commander Total^{1,2}	8	5	2	0	15
CD	HQ AFSOC Deputy Commander	1	0	0	0	1
CD	HQ AFSOC Deputy Commander Staff	4	6	9	0	19
	HQ AFSOC Deputy Commander Total^{1,2}	5	6	9	0	20
CA	HQ AFSOC Executive Director	0	0	1	0	1
CA	HQ AFSOC Executive Director Staff	0	3	3	0	6
	HQ AFSOC Executive Director Total^{1,2}	0	3	4	0	7
A1	Director	1	0	0	0	1
A1	Deputy Director	0	0	1	0	1
A1	Superintendent	0	1	0	0	1
A1	Administration	0	1	2	0	3
A1K	Personnel Division	2	2	8	0	12
A1L	Senior Leader Division	2	2	8	0	12
A1M	Manpower Division	2	2	8	0	12
A1F	POTFF/CAIB Division Total	2	2	8	0	12
	A1 Directorate Total^{1,2}	9	10	35	0	54
A2	Director ¹	1	0	0	0	1
A2	Deputy Director	0	0	1	0	1
A2	Chief Enlisted Manager ¹	0	1	0	0	1
A2E	Executive Officer	1	0	0	0	1
A2E	Secretary	0	0	1	0	1
A2E	Knowledge Operator/NCOIC	0	1	0	0	1
A2X	A2 Divisions	5	8	23	0	36
A2	National Geospatial-Intelligence Agency (NGA)	0	0	3	0	3

A2	ISR Group Staff (361st)	0	4	0	0	4
A2	Contractor	0	0	0	22	22
A2	Assigned Personnel from Other AFSOC Units	21	3	1	0	25
A2	AETC IFTU Instructors	1	3	0	0	4
	A2 Directorate Total^{1,2}	29	20	29	22	100
A3/9	Director	1	0	0	0	1
A3	Deputy Director ¹	2	0	1	0	2
A3	MA	1	0	0	0	1
A3	Chief Enlisted Manager	0	1	0	0	1
A3	Secretary	0	0	1	0	1
A3	Administrative Support	0	3	2	0	5
A3	Finance	0	0	1	0	1
A3F	Test and Evaluation Division Total	7	1	18	2	28
A3O	Operations Division Total	9	0	19	6	34
A3T	Operations Training Division Total	8	1	11	0	20
A3V	Stan/Eval Division Total	3	0	10	0	13
A9	A9 Division Total	2	3	0	0	5
	A3 Directorate Total^{1,2}	31	5	63	8	107
A4	Director	1	0	0	0	1
A4	Executive Director	0	0	1	0	1
A4	Deputy Director	1	0	0	0	1
A4	Executive Officer	1	0	0	0	1
A4	Executive Secretary	0	0	1	0	1
A4	Executive Administration	0	2	0	0	2
A4I	Installations Division	3	4	9	0	16
A4M	Maintenance Division	6	46	22	1	75
A4R	Logistics Readiness Division	4	22	21	2	49
	A4 Directorate Total^{1,2}	16	74	54	3	147
A5/8	Director	1	0	0	0	1
A5	Deputy Director	1	0	1	0	2
A5/8	MA	1	0	0	0	1
A5	Executive	1	0	0	0	1
A5	Secretary	0	0	1	0	1
A5	Administrative Support	0	3	2	0	5
A5	Finance	0	0	1	0	1
A5K	Strike Division	7	1	18	2	28
A5R	Mobility Division	9	0	19	6	34
A8P	Programs Division	8	1	11	0	20
A8X	Strategic Planning Division	3	0	10	0	13
	A5/8 Directorate Total^{1,2}	31	5	63	8	107
A6	AFSOC Chief Information Officer (CIO)	1	0	0	0	1
A6	Executive Director	0	0	1	0	1
A6	Executive Officer	1	0	0	0	1

A6	Secretary/Administrator	0	0	1	0	1
A6	Knowledge Operator	0	0	1	0	1
A6O	Operations Division Total	4	4	5	4	17
A6X	Requirements and Capabilities Division Total	5	10	10	4	29
	A6 Directorate Total^{1,2}	11	14	18	8	51
SCM	Chief	1	0	0	0	1
SCM	Superintendent	0	1	0	0	1
SCMO	Operations Branch	2	11	0	16	29
SCMP	Operations Planning Branch	1	3	4	0	8
SCMC	Mission Assurance Branch	1	4	0	0	5
	AFSOC Computer Systems Flight (CSF) Total^{1,2}	5	19	4	16	44
FM	Director	0	0	1	0	1
FM	Deputy Director	0	0	1	0	1
FM	Executive/Secretary	0	0	1	0	1
FM	Functional Area Manager (FAM)	0	1	0	0	1
FMA	Financial Analysis Division	4	1	10	0	15
FMF	Financial Operations Division	0	3	11	1	15
	Financial Management Total^{1,2}	4	5	24	1	34
HC	Chaplain	2	0	0	0	2
HC	Chaplain Assistant	0	1	0	0	1
HC	Administrator	0	0	1	0	1
	Chaplain Total^{1,2}	2	1	1	0	2
HO	Command Historian	0	0	1	0	1
HO	Historian	0	0	2	0	2
HO	Administrator	0	0	1	0	1
	Historian Directorate Total^{1,2}	0	0	4	0	4
IG	Inspector General	1	0	0	0	1
IG	Senior Enlisted Leader (SEL)	0	1	0	0	1
IGE	Secretary	0	0	1	0	1
IGS	Continuous Process Improvement (CPI)	0	0	2	0	2
IGT	Training	0	1	1	0	2
IGQ	Chief of Complaints	0	0	1	0	1
IGI	Chief of Inspections	1	0	0	0	1
IGI	Bands of Oversight	4	5	0	0	9
IGIS	Support	0	2	2	0	4
	Inspector General Total^{1,2}	6	9	7	0	22
IP	Information Protection Total	0	0	2	0	2
JA	Staff Judge Advocate	1	0	0	0	1
JA	Deputy Staff Judge Advocate	1	0	0	0	1
JA	Judge Advocate	3	0	2	0	5
JA	Paralegal	0	2	1	0	3
	Judge Advocate Total^{1,2}	5	2	4	0	11
SA	SA Total^{1,2}	0	1	18	0	19

SAG	SAG Total^{1,2}	8	4	0	0	12
SE	Director	1	0	0	0	1
SE	Chief Enlisted Manager	0	1	0	0	1
SE	Administrator	0	0	1	0	1
SE	Client Systems	0	1	0	0	1
SE	Flight Safety	5	0	2	0	7
SE	Ground Safety	0	1	2	0	3
SE	System Safety	0	0	1	0	1
SE	Weapons Safety	0	1	1	0	2
	Safety Total^{1,2}	6	4	7	0	17
SG	Surgeon General	1	0	0	0	1
SG1	Deputy Surgeon General	0	0	1	0	1
SGC	Chief Enlisted Manager	0	1	0	0	1
CCS	Administrator	1	0	0	0	1
SGX	Medical Readiness/Training Division	5	5	4	1	15
SGP	Aerospace Medicine Division	7	0	0	1	8
SGA	Programming/Resources Division	1	2	1	0	4
SGR	Medical Modernization Division	1	1	3	3	8
SGO	Medical Operations Division	2	1	1	2	6
	Surgeon General Total^{1,2}	18	10	10	7	45
	HQ AFSOC Total^{1,2}	194	197	357	73	819

Notes:

1. These numbers are based on the manpower of for HQ AFSOC as of October 2016. Actual requirements may vary from what is presented in this table.
2. Prior to using any numbers for facility requirements determination, A1M must be contacted to provide most current numbers.

Table 8.1.2. HQ AFSOC Direct Reporting Units Notional Manpower.

OSC	Function	OFF	ENL	CIV	CTR	Total
AFOTEC	Chief	1	0	0	0	1
AFOTEC	Deputy	1	0	0	0	1
AFOTEC	Evaluator	1	0	0	0	1
AFOTEC	Chief Enlisted Manager	0	1	0	0	1
AFOTEC	Support Staff	3	2	1	0	6
AFOTEC	Administration	0	0	1	0	1
	AFOTEC Total^{1,2}	6	3	2	0	11
	DRU Total^{1,2}	6	3	2	0	11

Notes:

1. These numbers are based on the manpower of for HQ AFSOC as of October 2016. Actual requirements may vary from what is presented in this table.
2. Prior to using any numbers for facility requirements determination, A1M must be contacted to provide most current numbers.

Table 8.1.3. HQ AFSOC Field Operating Agencies Notional Manpower.

OSC	Function	OFF	ENL	CIV	CTR	Total
AFCEC	Air Force Civil Engineering Center Total	0	0	1	0	1
AFICA	Air Force Installation Contracting Agency Staff	2	2	4	0	8
AFICA	765 Specialized Contracting Flight (SCONF)	0	0	7	0	7
	AFICA Total^{1,2}	2	2	11	0	15
AFLOA	Judge Advocate	4	0	0	0	4
AFLOA	Paralegal	0	2	0	0	2
	AFLOA Total^{1,2}	4	2	0	0	6
AFMSA	Air Force Medical Support Agency Total^{1,2}	0	0	2	0	2
AFPAA	Air Force Public Affairs Agency Total^{1,2}	0	5	0	0	5
	FOA Total^{1,2}	6	9	14	0	29

Notes:

1. These numbers are based on the manpower of for HQ AFSOC as of October 2016. Actual requirements may vary from what is presented in this table.
2. Prior to using any numbers for facility requirements determination, A1M must be contacted to provide most current numbers.

Table 8.1.4. HQ AFSOC Other Supporting Units Notional Manpower.

OSC	Function	OFF	ENL	CIV	CTR	Total
AMIC	Acquisition Mgmt. and Int. Center Total^{1,2}	1	0	2	0	3
AFLCMC	Air Force Life Cycle Mgmt. Center Total^{1,2}	0	0	4	0	4
AFIMSC	Commander	1	0	0	0	1
AFIMSC	Executive	0	0	1	0	1
AFIMSC	Civil Engineer Branch	1	0	3	0	3
AFIMSC	Financial Management Branch	0	0	1	0	1
AFIMSC	Communications Branch	0	0	2	0	2
AFIMSC	Security Forces Branch	1	1	1	0	3
	AFIMSC Det 3 Total^{1,2}	3	1	8	0	12
AOC	Commander	1	0	0	0	1
AOC	Deputy Commander	1	0	0	0	1
AOC	Executive	1	0	0	0	1
AOC	Air Force Operations Staff Officer	1	0	1	0	2
AOC	Airfield Operations	0	0	2	0	2
AOC	Command Post	2	13	0	15	17
AOC	Logistics Plans and Readiness	1	0	1	0	2
AOC	Network Operations	0	0	1	0	1
AOC	Operations Management	0	0	12	0	12
AOC	Space & Missile	4	0	2	0	6
AOC	Other Personnel	19	5	1	0	25
AOC	Unit Deployment	0	1	0	0	1
	AFSOC Air Operations Center Total	27	19	22	0	68

Notes:

1. These numbers are based on the manpower of for HQ AFSOC as of October 2016. Actual requirements may vary from what is presented in this table.
2. Prior to using any numbers for facility requirements determination, A1M must be contacted to provide most current numbers.

8.1.4. HQ AFSOC Facilities.**8.1.4.1. Major Command Headquarters (CATCODE: 610284).**

8.1.4.1.1. Requirements Determination. Each MAJCOM requires a facility that houses the HQ staff offices including field extensions.

8.1.4.1.2. Scope Determination. Space includes the staff offices for the commander, deputy commander, and executive director and their staff, directorates, divisions, branches, and sections. Offices are also provided for FOAs, DRUs, and other supporting units. Space should also be provided for special purpose spaces such as conferences rooms and break rooms in a manner that allows sharing where possible and that utilizes the most efficient use of special purpose space. Dedicated special purpose spaces have been identified in [Table 8.1.6](#); however, all shared spaces should be rolled up to the MAJCOM-level.

8.1.4.1.2.1. Where offices are provided, an open office concept using system furniture will be used with the exceptions being the Command Suite, meeting and conference rooms, or where noise attenuation is needed for security reasons.

8.1.4.1.2.2. Geographically separated units from the primary HQ facility (e.g., an HQ annex) earn special purpose spaces such as conference rooms, training rooms, break rooms, copy rooms, etc., in accordance with DAFMAN 32-1084 Tables 6.3 and 6.4 based on the personnel assigned in their building or space. Dedicated spaces for these units are accounted for in the facility requirements shown in [Table 8.1.6](#).

8.1.4.1.3. HQ AFSOC Composition. The composition of HQ AFSOC includes the commander, deputy commander, and executive director. Directorates and command staff include Manpower (A1), Intelligence (A2), Operations and Lessons Learned (A3/9), Logistics (A4), Requirements, Strategic Plans, and Programs (A5/8), Financial Management & Comptroller (FM), Chaplain (HC), Historian (HO), Inspector General (IG), Information Protection (IP), Judge Advocate (JA), Public Affairs (PA), Staff Activities (SA), Special Activities Group (SAG), Safety (SE), and Surgeon General (SG). Offices are also provided for FOAs, DRUs, and other supporting units such as AFIMSC Det 3 and the AFSOC Air Operations Center (AOC).

8.1.4.1.4. Security Considerations. MAJCOM facilities will require secure facilities for MAJCOM-assigned conference rooms, A6, the AOC, and various personnel offices. Some facilities may also require open storage up to the SECRET level. Contact AFSOC/A4I for the latest information regarding MAJCOM-level secure spaces.

8.1.4.1.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements. For A2 and A6, provide 20-amp power circuits throughout the work areas to support spaces requiring multiple circuits.

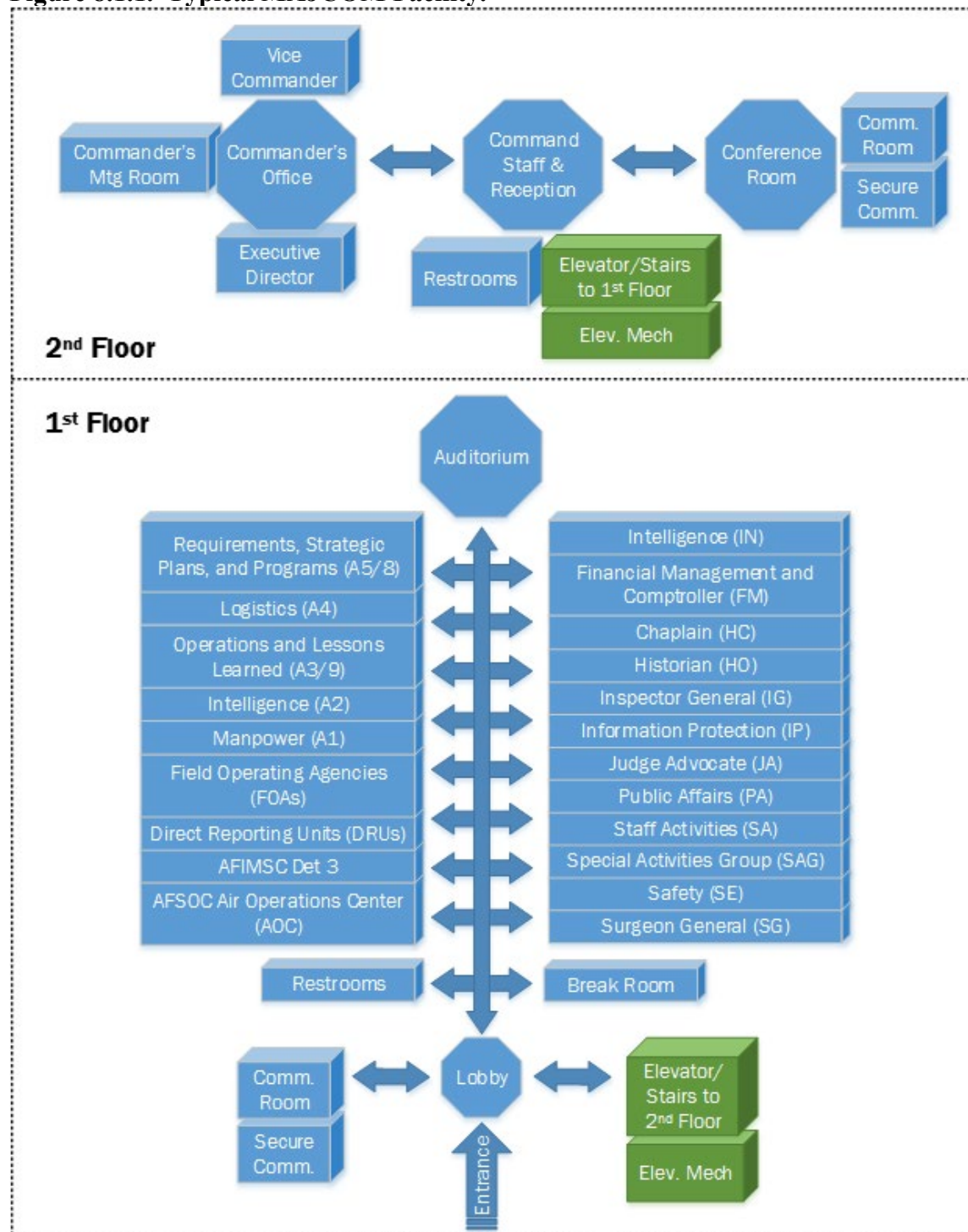
8.1.4.1.6. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

8.1.4.1.7. Dimensions. See [Table 8.1.6](#) for the individual spaces within a MAJCOM (HQ AFSOC) facility.

Table 8.1.5. Building Utility System Requirements for MAJCOM Facilities.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions in all areas via an energy efficient HVAC system. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC. For A2 and A6 spaces, HVAC requirements are higher than a typical office environment. Consult UFC 3-580-01, UFGS Division 27 - Communications and Division 33 – Utilities, and all applicable local communications specifications to determine the HVAC requirements for systems in those spaces.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include: UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems, UFC 3-530-01 for interior and exterior lighting and controls, UFC 3-550-01 for exterior power distribution systems, UFC 3-560-01 for electrical safety and electrical O&M, UFC 3-580-01 for building telecommunications, and UFC 4-021-01 for mass notification systems.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.

Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 8.1.1. Typical MAJCOM Facility.**Table 8.1.6. MAJCOM (HQ AFSOC) Facility Space Requirements.**

Cat Code	Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations

610-284	MAJCOM Commander - Cmd Suite	NSF	300	CG 61 Admin Overview Table 1.2: 300 NSF min for Type A Offices.
610-284	MAJCOM Commander Command Staff - Cmd Suite	NSF	1,084	1 Type B, 3 Type C, 1 Type D, 4 Type E, 3 Type F. CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices, 140 NSF min for Type C Offices, and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	MAJCOM Commander Command Staff	NSF	161	1 Type E, 2 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	MAJCOM Deputy CC - Cmd Suite	NSF	300	CG 61 Admin Overview Table 1.2: 300 NSF min for Type A Offices.
610-284	MAJCOM Deputy Commander Command Staff - Cmd Suite	NSF	801	1 Type B, 2 Type C, 2 Type D, 1 Type E, 2 Type F. CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices, 140 NSF min for Type C Offices, 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	MAJCOM Deputy Commander Command Staff	NSF	596	4 Type E, 7 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	MAJCOM Executive Director - Cmd Suite	NSF	300	CG 61 Admin Overview Table 1.2: 300 NSF min for Type A Offices.
610-284	MAJCOM Executive Director Staff - Cmd Suite	NSF	253	1 Type C, 1 Type E, 1 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	MAJCOM Executive Director Staff	NSF	48	1 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	MAJCOM Command Staff Reception Area	NSF	300	15 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	MAJCOM Commander Conf. Room	NSF	300	15 PN. CG 61 Admin Overview Table 1.4: 20 NSF per person.
610-284	MAJCOM Shared Auditorium	NSF	1,250	This space assumes an auditorium for 10% of the population or 82 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person plus 20 NSF for an instructor.

610-284	MAJCOM Shared Conference Room	NSF	360	There are 28 PN in HQ AFSOC organizations without a dedicated conference room requirement. This includes HC, HO, IP, SA, and SAG. The largest of these groups (SAG) has 18 PN. This facility is sized to accommodate SAG, but is also to be shared with units without a dedicated space.
610-284	MAJCOM Shared Break Room	NSF	236	82 PN (10% of MAJCOM). CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF.
610-284	MAJCOM Administrative Support	NSF	820	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	MAJCOM Admin. Circulation	NSF	466	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	MAJCOM Special Purpose Circ.	NSF	245	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	MAJCOM Facility Total	NSF	7,820	
610-284	A1 Director - Cmd Suite	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-284	A1 Deputy Director - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	A1 Superintendent - Cmd Suite	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	A1 Reception Area - Cmd Suite	NSF	100	5 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	A1 Administration - Cmd Suite	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A1 Personnel Division	NSF	700	2 Type D, 4 Type E, 5 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A1 Senior Leader Division	NSF	700	2 Type D, 4 Type E, 5 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A1 Manpower Division	NSF	700	2 Type D, 4 Type E, 5 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A1 Preservation of the Force and Family (POTFF)/CAB Division	NSF	700	2 Type D, 4 Type E, 5 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.

610-284	A1 Conference Room	NSF	150	10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	A1 Administrative Support	NSF	980	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	A1 Administrative Circulation	NSF	428	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	A1 Special Purpose Circulation	NSF	25	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	A1 Facility Total	NSF	4,979	
610-284	A2 Director - Cmd Suite	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-284	A2 Deputy Director - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	A2 Chief Enlisted Mgr - Cmd Suite	NSF	100	CG 61 Admin Overview Table 1.2: 140 NSF min for Type D Offices.
610-284	A2 Executive Officer - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A2 Knowledge Ops/ NCOIC - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A2 Secretary - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A2 Reception - Cmd Suite	NSF	100	5 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	A2 IMAs	NSF	200	2 Type D. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	A2 Director Conference Room - Cmd Suite	NSF	120	8 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	A2 ISR Analysis Division	NSF	665	1 Type D, 5 Type E, 5 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A2 ISR Forces Division	NSF	1,004	1 Type D, 8 Type E, 8 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A2 ISR Operations Division	NSF	600	1 Type D, 4 Type E, 5 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A2 Human Intelligence (HUMINT) Division	NSF	374	1 Type D, 2 Type E, 3 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.

610-284	A2 Security Management Division	NSF	1,052	1 Type D, 8 Type E, 9 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A2 Requirements Division	NSF	100	1 Type D. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	A2 ISR Strategy & Policy Division	NSF	1,165	1 Type D, 9 Type E, 10 Type F. CG61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A2 Support - NGA	NSF	144	3 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A2 Support - ISR Group Staff (361st)	NSF	192	4 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A2 Support - Contractor	NSF	1,056	22 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A2 Small Conference Room	NSF	150	10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	A2 Large Conference Room	NSF	500	25 PN. CG 61 Admin Overview Table 1.4: 20 NSF per person.
610-284	A2 Break Room	NSF	660	Sized for 18 students & 4 instructors. CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF.
610-284	A2 IFTU Training Room	NSF	440	22 PN. CG 61 Admin Overview Table 1.4: 20 NSF per person.
610-284	A2 IFTU Mission Planning Room	NSF	2,100	Approximately 2,100 NSF. This is based on existing space (3,824 GSF/1.25 for gross to net conversion, minus 660 NSF for IFTU Training Room and 288 NSF for IFTU instructor offices).
610-284	A2 Vestibule/Man Trap	NSF	30	Approximately 5 ft (L) x 6 ft (W) or 30 NSF
610-284	A2 Administrative Support	NSF	2,400	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	A2 Administrative Circulation	NSF	240	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	A2 Special Purpose Circulation	NSF	410	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	A2 Facility Total	NSF	14,246	
610-284	A3/9 Director - Cmd Suite	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-284	A3 Deputy Director - Cmd Suite	NSF	280	2 Type C. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	A3 MA - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.

610-284	A3 Chief Enlisted Manager - Cmd Suite	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	A3 Technical Advisor - Cmd Suite	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	A3 Finance - Cmd Suite	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	A3 IMAs - Cmd Suite	NSF	200	2 Type D. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	A3 Executive Officer	NSF	144	3 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A3 Administration - Cmd Suite	NSF	244	1 Type D, 3 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A3 Knowledge Ops - Cmd Suite	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A3 Reception - Cmd Suite	NSF	200	10 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	A3 Director Conference Room - Cmd Suite	NSF	150	10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	A3 Test and Evaluation Division	NSF	532	1 Type D, 9 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A3 Operations Division	NSF	1,828	1 Type C, 4 Type D, 8 Type E, 16 Type F CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices ND 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A3 Operations Training Division	NSF	4,895	1 Type C, 8 Type D, 35 Type E, 35 Type F CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A3 Stan/Eval Division	NSF	2,011	1 Type C, 1 Type D, 11 Type E, 22 Type F CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E and 48 NSF min for Type F Offices.
610-284	A9 Division	NSF	196	1 Type D, 2 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A3 Small Conference Room	NSF	150	10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.

610-284	A3 Large Conference Room	NSF	500	25 PN. CG 61 Admin Overview Table 1.4: 20 NSF per person.
610-284	A3 Administrative Support	NSF	3,480	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	A3 Administrative Circulation	NSF	1,447	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	A3 Special Purpose Circulation	NSF	100	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	A3 Facility Total	NSF	17,018	
610-284	A4 Director - Cmd Suite	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-284	A4 Executive Director - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	A4 Deputy Director - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	A4 Executive Officer - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A4 Executive Admin- Cmd Suite	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A4 Executive Secretary - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A4 Reception - Cmd Suite	NSF	100	5 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	A4 Installations Division	NSF	998	1 Type C, 2 Type D, 2 Type E, 11 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A4 Maintenance Division	NSF	2,944	6 Type D, 8 Type E, 38 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E and 48 NSF min for Type F Offices.
610-284	A4 Logistics Readiness Division	NSF	1,541	4 Type D, 5 Type E, 17 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E and 48 NSF min for Type F Offices.
610-284	A4 Small Conference Room	NSF	150	10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	A4 Large Conference Room	NSF	500	25 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	A4 Administrative Support	NSF	2,020	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	A4 Administrative Circulation	NSF	814	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.

610-284	A4 Special Purpose Circulation	NSF	75	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	A4 Facility Total	NSF	9,774	
610-284	A5/A8 Director - Cmd Suite	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-284	A5 Deputy Director - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	A5/A8 MA - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	A5 Executive Officer - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A5 Administrative Support - Cmd Suite	NSF	257	1 Type E, 4 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A5 Finance - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A5 Secretary - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A5 Reception - Cmd Suite	NSF	160	8 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	A5 Strike Requirements Division	NSF	1,984	1 Type C, 4 Type D, 20 Type E, 3 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A5 Mobility Division	NSF	2,275	1 Type C, 7 Type D, 11 Type E, 15 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E and 48 NSF min for Type F Offices.
610-284	A5/A8 Programs Division	NSF	1,516	1 Type C, 5 Type D, 12 Type E, 2 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A5/A8 Strategic Planning Division	NSF	1,026	1 Type C, 4 Type D, 6 Type E, 2 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A5 Small Conference Room	NSF	150	10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	A5 Large Conference Room	NSF	500	25 PN. CG 61 Admin Overview Table 1.4: 20 NSF per person.

610-284	A5 Administrative Support	NSF	2,120	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	A5 Administrative Circulation	NSF	976	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	A5 Special Purpose Circulation	NSF	81	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	A5 Facility Total	NSF	11,629	
610-284	A6 AFSOC Chief Information Officer - Cmd Suite	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-284	A6 Executive Director - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	A6 Executive Officer - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A6 Knowledge Ops - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A6 Secretary/Admin - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A6 Reception Area - Cmd Suite	NSF	60	3 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	A6 Operations Division	NSF	1,012	1 Type C, 2 Type D, 14 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C and 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610-284	A6 Requirements and Capabilities Division	NSF	1,742	1 Type C, 3 Type D, 6 Type E, 19 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A6 AFSOC Computer Systems Flight	NSF	2,272	1 Type C, 4 Type E, 39 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	A6 Small Conference Room	NSF	300	15 PN. CG 61 Admin Overview Table 1.4: 20 NSF per person.
610-284	A6 Large Conference Room	NSF	500	25 PN. CG 61 Admin Overview Table 1.4: 20 NSF per person.
610-284	A6 Computer Parts Storage	NSF	400	For received computer equipment, staging area for distribution. Provide 400 NSF.
610-284	A6 Computer Maintenance Lab	NSF	200	Provide 200 NSF.
610-284	A6 Administrative Support	NSF	1,900	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	A6 Administrative Circulation	NSF	721	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.

610-284	A6 Special Purpose Circulation	NSF	146	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	A6 Facility Total	NSF	9,697	
610-284	FM Director - Cmd Suite	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-284	FM Deputy Director - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	FM Chief Enlisted Mgr - Cmd Suite	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	FM Exec/Secretary - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	FM Reception Area - Cmd Suite	NSF	40	2 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	FM Financial Analysis Division	NSF	984	1 Type C, 2, Type D, 4 Type E, 8 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	FM Financial Operations Division	NSF	950	1 Type C, 2 Type D, 2 Type E, 10 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	FM FIAR Contractors	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	FM Conference Room	NSF	120	8 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	FM SIPR Room	NSF	50	A dedicated space for a hard wired, Thick Client, SIPRNET terminal for FM functions that cannot be performed on thin client terminals. 50 NSF.
610-284	FM Administrative Support	NSF	720	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	FM Administrative Circulation	NSF	320	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	FM Special Purpose Circulation	NSF	21	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	FM Facility Total	NSF	3,749	
610-284	HC Chaplain	NSF	260	1 Type B, 1 Type D. CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices and 100 NSF min for Type D Offices.
610-284	HC Chaplain Assistant	NSF	48	1 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	HC Administration	NSF	48	1 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.

610-284	HC Reception	NSF	60	3 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	HC Administrative Support	NSF	80	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	HC Administrative Circulation	NSF	44	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	HC Special Purpose Circulation	NSF	6	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	HC Facility Total	NSF	546	
610-284	HO Historian	NSF	295	1 Type D, 3 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
610-284	HO Administration	NSF	48	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	HO Administrative Support	NSF	100	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	HO Administrative Circulation	NSF	44	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	HO Facility Total	NSF	487	
610-284	IG Inspector General	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	IG Senior Enlisted Leader (SEL)	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	IG Administration	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	IG Secretary	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	IG Reception Area	NSF	80	4 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	IG CPI	NSF	130	2 Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	IG Training	NSF	130	2 Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	IG Chief of Complaints	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	IG Chief of Inspections	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	IG Bands of Oversight	NSF	520	8 Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	IG Support	NSF	243	3 Type E, 1 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610-284	IG Conference Room	NSF	150	10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.

610-284	IG Interview Room	NSF	150	Assumed 10 PN conference room for investigations. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	IG Records Storage	NSF	100	Provide 100 NSF.
610-284	IG Communications Room	NSF	120	AFSOC/A6: 12 ft x 12 ft NSF minimum per floor.
610-284	IG Break Room	NSF	100	CG 61 Admin Overview Table 1.3: 100 NSF minimum.
610-284	IG Administrative Support	NSF	440	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	IG Administrative Circulation	NSF	200	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	IG Special Purpose Circulation	NSF	70	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	IG Facility Total	NSF	2,969	
610-284	IP Information Protection Office	NSF	130	2 Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	IP Administrative Support	NSF	40	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	IP Administrative Circulation	NSF	17	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
	IP Facility Total	NSF	187	
610-284	JA Staff Judge Advocate Office	NSF	216	Per FC 4-610-04F Figure 4-1: SJA Office is 216 sf.
610-284	JA Deputy Staff Judge Advocate Office	NSF	150	Per FC 4-610-04F Figure 4-1: Deputy SJA Office is 150 sf.
610-284	JA Attorney Offices	NSF	840	Per FC 4-610-04F Figure 4-1: Attorney Offices are 120 sf each. 7 PN.
610-284	JA General Office/Visiting Attorney	NSF	100	Per FC 4-610-04F Figure 4-1: General Office/Visiting Attorney Offices are 100 sf each. 1 PN.
610-284	JA Paralegal Open Workspace	NSF	64	Per FC 4-610-04F Figure 4-1: Paralegal open workspaces are 64 sf each. 1 PN.
610-284	JA Paralegal Standard Workspace	NSF	100	Per FC 4-610-04F Figure 4-1: Paralegal standard workspaces are 100 sf each. 1 PN.
610-284	JA Paralegal MAJCOM Functional Manager Workspace	NSF	120	Per FC 4-610-04F Figure 4-1: Paralegal MAJCOM Functional Manager workspaces are 120 sf each. 1 PN.
610-284	JA Conference Room	NSF	304	Per FC 4-610-04F Figure 4-1: Conference Room for 12 PN is 304 sf.
610-284	JA Work Room	NSF	200	Per FC 4-610-04F Figure 4-1: Work Room for 12 PN is 200 sf.

610-284	JA Break Room	NSF	120	Per FC 4-610-04F Figure 4-1: Break Room for 12 PN is 120 sf.
610-284	JA Storage Room	NSF	0	Per FC 4-610-04F Figure 4-1: Total storage should equal 30 LF + (# authorized PN on UMD x 10 LF). General storage space is provided within the administrative support space for open offices. Other general storage to be accommodated within secure storage or private offices.
610-284	JA Secure Storage	NSF	215	Per FC 4-610-04F Figure 4-1: Secure storage for 12 PN is 215 sf.
610-284	JA Waiting/Reception Area	NSF	220	Per FC 4-610-04F Figure 4-1: Waiting/Reception area is 220 sf. Space accommodates waiting persons and two administrators/receptionists.
610-284	JA Administrative Support	NSF	260	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	JA Administrative Circulation	NSF	159	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	JA Special Purpose Circulation	NSF	106	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	JA Facility Total	NSF	3,174	
610-284	PA Director	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	PA Deputy Director	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	PA Chief Enlisted Manager	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	PA Public Affairs Staff	NSF	209	1 Type E, 3 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Office and 48 NSF min for Type F Offices.
610-284	PA Broadcaster	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	PA Career Broadener	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	PA Intern Position (permanent)	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	PA Reception Area	NSF	60	3 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	PA Conference Room	NSF	150	10 PN. Used for interviews with media and staff meetings. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	PA Broadcast Studio	NSF	150	Provide a 10' x 15' area. Includes space for audiovisual workstation and equipment.

610-284	PA Public Off-Network Workstation	NSF	36	Need to be able to access an off-network computer. This is a shared asset within PA.1 Type G. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
610-284	PA Materials Storage	NSF	100	Provide 100 NSF. For marketing materials, equipment, and supplies for trade shows.
610-284	PA Administrative Support	NSF	200	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	PA Administrative Circulation	NSF	93	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	PA Special Purpose Circulation	NSF	46	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	PA Facility Total	NSF	1,189	
610-284	SA Chief - Cmd Suite	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-284	SA Deputy - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	SA MA - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	SA Administration	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	SA Reception Area	NSF	40	2 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	SA Staff	NSF	859	11 Type E, 3 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	SA Administrative Support	NSF	360	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	SA Administrative Circulation	NSF	171	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	SA Special Purpose Circulation	NSF	4	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	SA Facility Total	NSF	1,922	
610-284	SAG Chief	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	SAG Staff	NSF	613	5 Type E, 6 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	SAG Administrative Support	NSF	240	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	SAG Administrative Circulation	NSF	95	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
	SAG Facility Total	NSF	1,048	

610-284	SE Director	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-284	SE Chief Enlisted Manager	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	SE Administrator	NSF	100	1 Type D. This position runs the Budget & Focus magazine. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	SE Client Systems	NSF	48	1 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	SE Flight Safety	NSF	422	1 Type D, 2 Type E, 4 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	SE Ground Safety	NSF	230	1 Type D, 2 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
610-284	SE System Safety	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	SE Weapons Safety	NSF	130	2 Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	SE Reception Area	NSF	40	2 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	SE Conference Room	NSF	240	12 PN. Can be used for simultaneous Safety Investigation Boards (SIBs). CG 61 Admin Overview Table 1.4: 20 NSF per person.
610-284	SE Investigation Room	NSF	400	20 PN. Used for SIBs. CG 61 Admin Overview Table 1.4: 20 NSF per person.
610-284	SE Administrative Support	NSF	340	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	SE Administrative Circulation	NSF	160	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	SE Special Purpose Circulation	NSF	68	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	SE Facility Total	NSF	2,503	
610-284	SG Surgeon General - Cmd Suite	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-284	SG Deputy Surgeon General - Cmd Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	SG Chief Enlisted Manager - Cmd Suite	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	SG Administrator - Cmd Suite	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	SG Reception	NSF	40	2 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.

610-284	SG Medical Readiness/Training Division	NSF	891	1 Type D, 7 Type E, 7 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	SG Aerospace Medicine Division	NSF	798	3 Type C, 2 Type D, 2 Type E, 1 Type F. CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	SG Programming/Resources Division	NSF	261	1 Type D, 1 Type E, 2 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	SG Medical Modernization Division	NSF	436	1 Type D, 7 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610-284	SG Medical Operations Division	NSF	548	5 Type D, 1 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
610-284	SG Conference Room	NSF	150	10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	SG Administrative Support	NSF	900	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	SG Administrative Circulation	NSF	428	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	SG Special Purpose Circulation	NSF	19	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	SG Facility Total	NSF	4,919	
610-284	MAJCOM Facility Lobby/ Secured Entry	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
610-284	MAJCOM Facility Elevator	NSF	80	Provide 80 NSF.
610-284	MAJCOM Facility Elevator Equip. Room	NSF	90	Provide 90 NSF.
610-284	MAJCOM Facility Centralized Comm. Room	NSF	1,000	AFSOC/A6: Assume 1,000 NSF in a centralized space. Provide a minimum of 12 ft x 12 ft (144 NSF) per floor.
610-284	MAJCOM Facility Centralized Secure Comm. Room	NSF	500	AFSOC/A6: Assume 500 NSF. Provide a minimum of 12 ft x 12 ft (144 NSF) per floor.
610-284	MAJCOM Facility Restrooms & Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
610-284	MAJCOM Facility Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.

610-284	MAJCOM Facility Supply Room	NSF	200	Provide 200 NSF.
Total MAJCOM Primary Facility		NSF	100,064	
Total MAJCOM Primary Facility		GSF	125,080	Net to Gross conversion factor of 1.25.

Table 8.1.7. MAJCOM (HQ AFSOC) DRU Facility Space Requirements.

Cat Cod e	Facility	UM	DRU Area	DAFMAN 32-1084 Reference or Remarks/Calculations
610-284	AFOTEC Chief	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	AFOTEC Deputy	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	AFOTEC Evaluator	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	AFOTEC Chief Enlisted Manager	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	AFOTEC Support Staff	NSF	339	3 Type E, 3 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	AFOTEC Administration	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	AFOTEC Reception Area	NSF	60	3 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	AFOTEC Conference Room	NSF	700	Space is required for 35 PN. Approximately 4 weeks per year, AFOTEC conducts integrated testing meetings where personnel from various agencies attend. This space is dedicated because the meetings often are scheduled without advanced notice, so de-conflicting schedules with existing conference spaces is not a viable option. CG 61 Admin Overview Table 1.4: 20 NSF per person.
610-284	AFOTEC Equipment Storage	NSF	240	For equipment, supplies, and parts awaiting DRMO. Approximately 12' x 20'.
610-284	AFOTEC Break Room	NSF	100	CG 61 Admin Overview Table 1.4: 16% of occupants x 18 NSF. Minimum size is 100 NSF.
610-284	AFOTEC Communications Room	NSF	144	AFSOC/A6: minimum of 12 ft x 12 ft (144 NSF) per floor.
610-284	AFOTEC Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).

610-284	AFOTEC Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
610-284	AFOTEC Administrative Support	NSF	220	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	AFOTEC Admin. Circulation	NSF	105	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	AFOTEC Special Purpose Circulation	NSF	124	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Total MAJCOM DRU Facility		NSF	2,520	
Total MAJCOM DRU Facility		GSF	3,150	Net to Gross conversion factor of 1.25.

Table 8.1.8. MAJCOM (HQ AFSOC) FOA Facility Space Requirements.

Cat Code	Facility	UM	FOA Area	DAFMAN 32-1084 Reference or Remarks/Calculations
610-284	AFCEC Administration	NSF	130	2 Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	AFCEC Break Room	NSF	100	CG 61 Admin Overview Table 1.4: minimum size is 100 NSF.
610-284	AFCEC Communications Room	NSF	144	Minimum of 12 ft x 12 ft room per AFSOC/A6.
610-284	AFCEC Restrooms Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
610-284	AFCEC Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
610-284	AFCEC Administrative Support	NSF	40	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	AFCEC Administrative Circulation	NSF	17	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	AFCEC Special Purpose Circulation	NSF	24	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	AFCEC Facility Total	NSF	455	
610-284	AFICA Director of Contracting	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	AFICA Technical Director	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	AFICA Chief Enlisted Manager	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	AFICA Operations	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	AFICA Policy & Procurement	NSF	265	2 Type D, 1 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.

610-284	AFICA 765 SCONF	NSF	603	1 Type D, 7 Type E, 1 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	AFICA Records Storage	NSF	200	Provide 200 NSF for records storage of items that require space in addition to that provided for administrative support.
610-284	AFICA Source Selections Area	NSF	2,000	This area requires room to support up to 7 people. Each person requires a separate room with storage for up to 7 volumes of material from 10 vendors each in triplicate. Existing facility is approximately 2,000 NSF.
610-284	AFICA Conference Room	NSF	150	10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	AFICA Break Room	NSF	100	CG 61 Admin Overview Table 1.4: 16% of occupants x 18 NSF. Minimum size is 100 NSF.
610-284	AFICA Communications Room	NSF	144	Minimum of 10' x 12' room per AFSOC/A6.
610-284	AFICA Restrooms and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
610-284	AFICA Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
610-284	AFICA Administrative Support	NSF	320	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	AFICA Administrative Circulation	NSF	159	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	AFICA Special Purpose Circulation	NSF	259	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	AFICA Facility Total	NSF	4,605	
610-284	AFLOA Judge Advocate	NSF	600	6 Type D. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	AFLOA Paralegal	NSF	192	4 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	AFLOA Waiting/ Reception Area	NSF	100	AF Legal Facilities Design Guide Table 2.2
610-284	AFLOA Library/Work Area	NSF	150	AF Legal Facilities Design Guide Table 2.2
610-284	AFLOA Break Room	NSF	100	CG 61 Admin Overview Table 1.4: 16% of occupants x 18 NSF. Minimum size is 100 NSF.
610-284	AFLOA Communications Room	NSF	144	Minimum of 12 ft x 12 ft room per AFSOC/A6.

610-284	AFLOA Restrooms and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
610-284	AFLOA Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
610-284	AFLOA Administrative Support	NSF	200	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	AFLOA Administrative Circulation	NSF	99	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	AFLOA Special Purpose Circulation	NSF	49	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	AFLOA Facility Total	NSF	1,634	
610-284	AFMSA Staff	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	AFMSA Conference Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AFMSA Break Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AFMSA Communications Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AFMSA Restrooms and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
610-284	AFMSA Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
610-284	AFMSA Administrative Support	NSF	20	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	AFMSA Administrative Circulation	NSF	7	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	AFMSA Special Purpose Circulation	NSF	0	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	AFMSA Facility Total	NSF	92	
610-284	AFPAA Broadcast Journalist	NSF	208	1 Type E, 2 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	AFPAA Photojournalist	NSF	128	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	AFPAA Conference Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AFPAA Break Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AFPAA Communications Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AFPAA Restrooms and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).

610-284	AFPAA Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
610-284	AFPAA Administrative Support	NSF	100	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	AFPAA Administrative Circulation	NSF	26	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	AFPAA Special Purpose Circulation	NSF	0	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	AFPAA Facility Total	NSF	470	
	Total MAJCOM FOA Facility	NSF	7,169	
	Total MAJCOM FOA Facility	GSF	8,961	Net to Gross conversion factor of 1.25.

Table 8.1.9. MAJCOM (HQ AFSOC) Other Supporting Units Facility Requirements.

Cat Code	Facility	UM	FOA Area	DAFMAN 32-1084 Reference or Remarks/Calculations
610-284	AFIMSC Det 3 Commander	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-284	AFIMSC Det 3 Executive	NSF	48	CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-284	AFIMSC Det 3 Reception	NSF	120	6 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per person.
610-284	AFIMSC Det 3 Civil Engineer Branch	NSF	326	1 Type D, 2 Type E, 2 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-284	AFIMSC Det 3 Financial Management Branch	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	AFIMSC Det 3 Communications Branch	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-284	AFIMSC Det 3 Security Forces Branch	NSF	196	1 Type D, 2 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610-284	AFIMSC Det 3 Conference Room	NSF	150	10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-284	AFIMSC Det 3 Break Room	NSF	100	CG 61 Admin Overview Table 1.4: minimum size is 100 NSF.
610-284	AFIMSC Det 3 Comm. Room	NSF	144	Minimum of 12 ft x 12 ft room per AFSOC/A6.
610-284	AFIMSC Det 3 Restrooms and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
610-284	AFIMSC Det 3 Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.

610-284	AFIMSC Det 3 Administrative Support	NSF	240	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	AFIMSC Det 3 Admin. Circulation	NSF	96	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	AFIMSC Det 3 Special Purpose Circulation	NSF	51	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	AFIMSC Det 3 Facility Total	NSF	1,811	
610-284	AMIC Contracting Staff	NSF	230	1 Type D, 2 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	AMIC Conference Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AMIC Copy Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AMIC Break Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AMIC Comm. Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AMIC Restrooms and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
610-284	AMIC Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
610-284	AMIC Administrative Support	NSF	60	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	AMIC Administrative Circulation	NSF	23	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	AMIC Special Purpose Circulation	NSF	0	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	AMIC Facility Total	NSF	313	
610-284	AFLCMC Staff	NSF	260	4 Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-284	AFLCMC Conference Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AFLCMC Copy Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AFLCMC Break Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AFLCMC Comm. Room	NSF	0	This organization will share space with other units based on the small size of the unit.
610-284	AFLCMC Restrooms & Janitor Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).

610-284	AFLCMC Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
610-284	AFLCMC Administrative Support	NSF	80	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610-284	AFLCMC Admin. Circulation	NSF	26	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-284	AFLCMC Special Purpose Circulation	NSF	0	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	AFLCMC Facility Total	NSF	366	
141-461	AOC Commander	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
141-461	AOC Deputy Commander	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-461	AOC Executive	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-461	AOC Air Force Operations Staff Officer	NSF	165	1 Type D, 1 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
141-461	AOC Airfield Operations	NSF	72	2 Type G Consoles. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
141-461	AOC Command Post	NSF	468	13 Type G Consoles. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
141-461	AOC Logistics Plans and Readiness	NSF	72	2 Type G Consoles. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
141-461	AOC Network Operations	NSF	36	1 Type G Console. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
141-461	AOC Operations Management	NSF	468	13 Type G Consoles. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
141-461	AOC Space & Missile	NSF	216	6 Type G Consoles. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
141-461	AOC Special Personnel	NSF	900	25 Type G Consoles. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
141-461	AOC Unit Deployment	NSF	36	1 Type G Console. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.
141-461	AOC Planning Area	NSF	600	Provide 600 NSF.
141-461	AOC Secure Conf./VTC Room	NSF	480	Provide 480 NSF.
141-461	AOC Break Room	NSF	196	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF.
141-461	AOC UPS/Generator Room	NSF	150	Provide 150 NSF.

141-461	AOC Communications Room	NSF	144	AFSOC/A6: minimum of 12 ft x 12 ft (144 NSF) per floor.
141-461	AOC Secure Comm. Room	NSF	144	AFSOC/A6: minimum of 12 ft x 12 ft (144 NSF) per floor.
141-461	AOC Server Equipment Room	NSF	300	Provide 300 NSF.
141-461	AOC Restrooms and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
141-461	AOC Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
141-461	AOC Administrative Support	NSF	1,380	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
141-461	AOC Administrative Circulation	NSF	415	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
141-461	AOC Special Purpose Circulation	NSF	201	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
	AOC Facility Total	NSF	6,783	
	Total MAJCOM Other Supporting Units Facility	NSF	9,273	
	Total MAJCOM Other Supporting Units Facility	GSF	11,591	Net to Gross conversion factor of 1.25.

8.2. Wing Facility Requirements.

8.2.1. **General.** This section provides the facility requirements to support wing overhead. Subordinate commands including groups and squadrons will not have facility requirements listed in this section except for the T&IW SOW. For reference, the unique mission requirements of the T&IW SOW and its subordinate units are grouped in their entirety, thus all T&IW requirements are included in Section 8.2.6.

8.2.2. **Description.** A wing is a level of command below the Numbered Air Force (NAF) or higher headquarters. A wing has a distinct mission with significant scope and typically comprises a primary mission (e.g., operations, training, etc.) and the necessary supporting groups. By assembling and coordinating the mission and support elements, a wing provides a significant capability under a single commander. A wing has several squadrons in more than one dependent group and has a minimum adjusted population of at least 1,000 (AFI 38-101 Paragraph 25.2.6). A wing may be either an operational wing, an air base wing, or a specialized mission wing. The three types of wings are described in **Table 8.2.1**.

Table 8.2.1. Wing types and descriptions.

Wing Types	Description
Air Base Wing	A wing that performs a support rather than an operational mission. It maintains and operates a base.

Operational Wing	A wing that has an operations group and related operational mission activity assigned to it. When an operational wing performs the primary mission of the base, it usually maintains and operates the base. In addition, an operational wing is capable of self-support in functional areas like maintenance, supply, and conventional munitions, as needed. When an operational wing is a tenant organization, the host organization provides it with varying degrees of base logistics and support.
Specialized Mission Wing	A wing that performs a specialized mission and usually does not have aircraft or missiles assigned to it. For example, an ISR wing; training wing and so on. This wing may be either a host wing or a tenant wing, depending on whether it maintains and operates the base.

8.2.2.1. Host and Tenant Installation Requirements. For planning purposes, this instruction assumes that AFSOC is the installation host at CONUS locations and an installation tenant at OCONUS locations. To establish requirements that do not follow this assumption, the facility requirements for CONUS tenant units should follow OCONUS authorizations in this FRI and the facility requirements for OCONUS host units should follow CONUS authorizations in this FRI. This instruction provides unique AFSOC operational facility requirements that vary from traditional AF units because of unique Special Operations missions. Units such as SOMSG and SOMDG with a more traditional AF mission should refer to DAFMAN 32-1084 for their facility requirements.

8.2.3. Wing Characteristics. The notional manpower for CONUS Operational Wings are presented in Table 8.2.2 and the notional manpower for OCONUS Operational Wings are presented in [Table 8.2.3](#). Notional manpower for Specialized Mission Wings including the ST SOW and the T&IW SOW are presented in [Tables 8.2.4](#) and 8.2.5 respectively.

Table 8.2.2. CONUS Operational Wing Overhead Notional Manpower.

Function	Unit	Title	Personnel			
			Officers	Enlisted	CIV/CME	Total
Command	SOW	Commander	1	0	0	1
Command	SOW	Vice Commander	1	0	0	1
Command	SOW	Command Chief	0	1	0	1
Command	SOW	Commander Support Staff	1	4	2	7
Total Command Section^{1,2}			3	5	2	10
Staff	SOW	Director of Staff	0	0	1	1
Staff	SOW	Antiterrorism	0	0	1	1
Staff	SOW	Command Post	1	18	0	19
Staff	SOW	Community Support Coord.	0	0	1	1
Staff	SOW	Finance ³	0	0	0	0
Staff	SOW	Inspector General	3	1	1	5
Staff	SOW	Information Protection	1	1	3	5
Staff	SOW	Installation Resilience	0	0	1	1
Staff	SOW	Equal Opportunity	0	2	1	3
Staff	SOW	Chaplain	6	5	0	11

Staff	SOW	Historian	0	0	1	1
Staff	SOW	Manpower	0	0	4	4
Staff	SOW	Plans ⁴	0	0	0	0
Staff	SOW	Protocol	0	0	1	1
Staff	SOW	Public Affairs	2	9	1	12
Staff	SOW	Safety	9	6	1	16
Staff	SOW	Sexual Assault Response Coord.	0	0	2	2
Staff	SOW	Staff Judge Advocate	6	7	4	17
		Total Wing Staff^{1,2}	28	49	23	100
SOAOS	SOAOS	SOAOS - Commander	1	0	0	1
SOAOS	SOAOS	SOAOS - Superintendent	0	1	0	1
SOAOS	SOAOS	SOAOS - Command Staff	0	1	0	1
SOAOS	SOAOS	SOAOS - Operations Officer	1	0	0	1
SOAOS	SOAOS	SOAOS - Current Operations	2	0	0	2
SOAOS	SOAOS	SOAOS - Scheduling	5	11	2	18
SOAOS	SOAOS	SOAOS - Combat Readiness	1	0	1	2
SOAOS	SOAOS	SOAOS – Tactical Comm	0	4	0	4
SOAOS	SOAOS	SOAOS – Personnel & Log Readiness	0	4	0	4
SOAOS	SOAOS	SOAOS – Maint & Mobility	0	2	0	2
SOAOS	SOAOS	SOAOS – Plans ⁴	3	2	0	5
SOAOS	SOAOS	SOAOS – Special Mission Plans	2	3	0	5
SOAOS	SOAOS	SOAOS - Hosting	4	2	0	6
SOAOS	SOAOS	SOAOS – Commit Scheduling	1	3	0	4
SOAOS	SOAOS	SOAOS – Theater Plans	4	2	0	6
SOAOS	SOAOS	SOAOS - RMO	8	6	9	23
		Total SOAOS^{1,2,3,5}	32	41	12	85
SOCPTS	SOCPTS	SOCPTS - Commander	1	0	0	1
SOCPTS	SOCPTS	SOCPTS - First Sergeant	0	1	0	1
SOCPTS	SOCPTS	SPCPTS – Superintendent	0	1	0	1
SOCPTS	SOCPTS	SOCPTS - Command Staff	0	2	1	3
SOCPTS	SOCPTS	SOCPTS - Financial Analysis	1	0	3	4
SOCPTS	SOCPTS	SOCPTS - Budget & Accounting Operations Section	0	7	2	9
SOCPTS	SOCPTS	SOCPTS - Financial Services	0	15	2	17
SOCPTS	SOCPTS	SOCPTS – Comptroller Manager	0	1	0	1
SOCPTS	SOCPTS	SOCPTS - Resource Advisor	0	0	5	5

Notes:

1. Although the size of a wing can vary due to its type, mission, and size of its subordinate units, this table provides a typical operations wing notional manpower. This basic structure also largely applies to air base wings and specialized mission wings.
2. The numbers in this table were provided by AFSOC/A1M based on the manpower for the 27 SOW at Cannon AFB.
3. Special Operations Air Operations Squadron (SOAOS) provides the wing plans function.
4. Special Operations Comptroller Squadron (SOCPTS) provides the financial management function.
5. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide the most current numbers.

Table 8.2.3. OCONUS Operational Wing Overhead Notional Manpower.

Function	Unit	Title	Personnel			
			Officers	Enlisted	CIV/CME	Total
Command	SOW	Commander	1	0	2	3
Command	SOW	Vice Commander	1	0	0	1
Command	SOW	Command Chief	0	1	0	1
Command	SOW	Commander Support Staff	2	3	1	6
Command	SOW	Director of Staff	1	0	0	1
Total Command Section^{1,2,3}			5	4	3	12
Wing Staff	SOW	Civil Engineer	0	1	0	1
Wing Staff	SOW	Command Post	0	5	0	5
Wing Staff	SOW	Finance	1	4	0	5
Wing Staff	SOW	Chaplain	1	1	0	2
Wing Staff	SOW	Staff Judge Advocate	2	1	0	3
Wing Staff	SOW	Public Affairs	1	0	0	1
Wing Staff	SOW	Inspector General	2	2	0	4
Wing Staff	SOW	Quality	1	11	0	12
Wing Staff	SOW	Plans and Programs	11	15	1	27
Wing Staff	SOW	C2 Planning Team	1	1	0	2
Wing Staff	SOW	Historian	0	0	1	1
Wing Staff	SOW	Manpower	0	2	0	2
Wing Staff	SOW	Safety	3	3	0	6
		Total Wing Staff^{1,2,3}	23	46	2	71

Total OCONUS Wing Overhead^{1,2,3}	28	56	6	83
Notes: 1. Although the size of a wing can vary due to its type, mission, and size of its subordinate units, this table provides a typical operations wing notional manpower. This basic structure also largely applies to air base wings and specialized mission wings. 2. The numbers in this table were provided by AFSOC/A1M based on the manpower for the 352 SOW at RAF Mildenhall. 3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide the most current numbers.				

Table 8.2.4. ST SOW Notional Manpower.

Function	Unit	Title	Personnel			
			Officers	Enlisted	CIV/CME	Total
Command	SOW	Commander	1	0	0	1
Command	SOW	Vice Commander	1	0	0	1
Command	SOW	Command Chief	0	1	0	1
Command	SOW	Commander Support Staff	1	1	1	3
Command	SOW	Director of Staff	0	0	1	1
		Total Command Section^{1,2,3}	3	2	2	7
Wing Staff	SOW	Finance	0	1	1	2
Wing Staff	SOW	Chaplain	1	0	0	1
Wing Staff	SOW	Staff Judge Advocate	1	0	0	1
Wing Staff	SOW	Public Affairs	1	0	0	1
Wing Staff	SOW	Inspector General	1	2	1	4
Wing Staff	SOW	Communications/Information	1	1	0	2
Wing Staff	SOW	Surgeon General	3	2	1	6
Wing Staff	SOW	Plans and Programs	5	4	6	15
Wing Staff	SOW	Historian	0	0	1	1
Wing Staff	SOW	Manpower	0	1	1	2
Wing Staff	SOW	Safety	0	0	1	1
		Total Wing Staff^{1,2,3}	13	11	12	36
Total ST SOW Overhead			16	13	14	43

Notes:

1. Although the size of a wing can vary due to its type, mission, and size of its subordinate units, this table provides a typical operations wing notional manpower. This basic structure also largely applies to air base wings and specialized mission wings.
2. The numbers in this table were provided by AFSOC/A1M based on the manpower for the 24 SOW at Hurlburt Field, FL
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide the most current numbers.

Table 8.2.5. T&IW SOW (all components) Notional Manpower.

OSC	Function	OFF	ENL	CIV	CTR	Total
SOW	Commander	1	0	0	0	1
SOW	Vice Commander	1	0	0	0	1
SOW	Command Chief	0	1	0	0	1
SOW	Commander Support Staff	1	2	0	0	3
SOW	Wing Staff	10	6	23	4	43
SOW	Special Missions	0	0	0	66	66
SOW	Training and Education	0	0	0	45	45
	T&IW SOW Total^{1,2}	13	9	23	115	160
SOG	Commander	1	0	0	0	1
SOG	Deputy Commander	1	0	0	0	1
SOG	Superintendent	0	1	0	0	1
SOG	Commander Support Staff	1	0	3	0	4
SOG	Stan/Eval	1	2	4	0	7
SOG	T&IW SOG Total^{1,2}	4	3	7	0	14
USAFSOS	Commandant	1	0	0	0	1
USAFSOS	Vice Commandant	1	0	0	0	1
USAFSOS	Secretary	0	0	1	0	1
USAFSOS	Dean of Academics	0	0	3	0	3
USAFSOS	Irregular Warfare	7	4	2	0	13
USAFSOS	Language and Culture	1	6	0	3	10
USAFSOS	Operations	5	0	1	0	6
USAFSOS	Regional Affairs	10	0	1	2	13
USAFSOS	Support	0	2	12	0	14
	USAFSOS Total^{1,2}	25	12	20	5	62
FLTS	Commander	1	2	1	0	4
FLTS	Orderly Room	0	2	1	0	3
FLTS	Director of Operations	1	0	0	0	1
FLTS	Current Operations	7	0	6	0	13
FLTS	Training	0	0	1	0	1
FLTS	Operations Analysis Flight	2	1	3	0	6
FLTS	Combat Appl Flight	1	4	4	0	9
FLTS	Fixed Wing Flight	11	18	0	0	29
FLTS	Instrumentation Flight	1	1	5	0	7
FLTS	Vertical Lift Flight	2	4	0	0	6
	Flight Test Squadron Total^{1,2}	26	32	21	0	79
SOS	Commander	1	0	0	0	1
SOS	First Sergeant	0	1	0	0	1
SOS	Orderly Room	0	1	1	0	2
SOS	Director of Operations	1	0	0	0	1
SOS	Aircrew Training	0	7	6	158	171
SOS	Contract Management	0	0	6	0	6
SOS	MC-130H Training Flight ³	8	6	0	19	33

SOS	U-28 Training Flight ³	24	0	0	23	47
SOS	AC-130J Training Flight ³	20	25	0	13	58
SOS	AC-130U Training Flight ³	15	15	0	32	62
	Formal Training Unit Total^{1,2}	69	55	13	245	382
SOS	Commander	1	0	0	0	1
SOS	Orderly Room	0	1	1	0	2
SOS	Training Support	0	3	0	0	3
SOS	Training	3	6	9	26	44
SOS	Intelligence Training	1	2	0	11	14
SOS	Director of Operations	1	0	0	0	1
	Ground Training Unit Total^{1,2}	6	12	10	37	65
SOS	Commander	1	0	0	0	1
SOS	First Sergeant	0	1	0	0	1
SOS	Orderly Room	0	3	1	0	4
SOS	Director of Operations	1	0	0	0	1
SOS	Foreign Internal Defense	47	54	0	0	101
SOS	Aviation Resource Management	0	3	0	0	3
	AvFID/Irregular Warfare Unit Total^{1,2}	49	61	1	0	111
SOS	Commander	1	0	0	0	1
SOS	Orderly Room	0	2	2	0	4
SOS	Director of Operations	1	0	0	0	1
SOS	Aircraft Crews	64	32	0	0	96
SOS	Life Support	0	4	0	0	4
SOS	Aviation Resource Management	0	5	0	0	5
SOS	Intelligence	1	5	0	0	6
SOS	Aerospace Medicine	1	2	0	0	3
	NSAv Unit Total^{1,2}	68	50	2	0	120
SOACS	Commander	1	0	0	0	1
SOACS	Director of Operations	1	0	0	0	1
SOACS	Commander Support Staff	1	2	0	0	3
SOACS	Communications	1	0	0	0	1
SOACS	Mission Systems	0	0	20	0	20
SOACS	Special Missions	4	0	0	111	4
SOACS	Operations	3	13	2	0	18
SOACS	Policy & Evaluations	0	0	2	0	2
SOACS	Plans & Resources	0	0	2	0	2
	Advanced Capabilities Unit Total^{1,2}	11	15	26	111	164
SOMXS	Commander	1	1	0	0	2
SOMXS	First Sergeant	0	1	0	0	1
SOMXS	Orderly Room	0	3	1	0	4
SOMXS	Maintenance Supervision	1	0	0	0	1
SOMXS	Metals	0	6	0	0	6
SOMXS	NDI	0	1	0	0	1
SOMXS	Aircraft Maintenance Unit	0	6	0	0	6

SOMXS	Crew Chief	0	36	0	0	36
SOMXS	Specialist	0	54	0	0	54
SOMXS	Repair and Reclamation	0	6	0	0	6
SOMXS	Maintenance Operations Flight	0	3	0	0	3
SOMXS	Maintenance Operations Center	0	4	0	0	4
SOMXS	Quality Assurance	0	4	0	0	4
	Specialized Mission SOMXS Total^{1,2}	2	125	1	0	128
SOSS	Commander	1	0	0	0	1
SOSS	Intelligence	2	5	1	0	8
SOSS	Weapons & Tactics	1	1	0	0	2
SOSS	AFE	0	4	0	0	4
SOSS	Current Operations	2	1	1	0	4
SOSS	Medical Operations	7	9	0	0	16
SOSS	Operations Plans	1	4	0	0	5
	Specialized Mission SOSS Total^{1,2}	14	24	2	0	40
	T&IW All Components Total^{1,2}	287	398	126	402	1,213

Notes:

1. The manpower listed in this table represents a notional concept for 492 SOW, that is subject to change and reorganization. It does not include manpower from operating locations and is representative of the typical number of people in the organization. It should be used as a guide towards developing facility requirements only.
2. Prior to using any numbers for facility requirements determination, A1M must be contacted to provide most current numbers.
3. Flights for the FTU in this table represent the structure of the 19 SOS. Actual flights for the FTU may vary based on the weapon system training required at a given location. Contact the 492 SOW for the latest information.

8.2.4. Operational Wing Facilities.**8.2.4.1. Wing Headquarters (CATCODE: 610249).**

8.2.4.1.1. Requirements Determination. Each wing requires a facility to accommodate the staff offices of the wing headquarters.

8.2.4.1.2. Scope Determination. Space must be provided for wing leadership, commander support staff, wing staff agencies, offices, and positions that directly report to either the wing commander or vice commander. These spaces support the administrative affairs of a military establishment and should be programmed and designed such that they enhance the main mission or functions of the organization. In addition to the area requirements, administrative and support spaces should be programmed and designed so that these facilities can be flexible, cost-effective, and create an atmosphere that increases morale, productivity, and collaboration. See **paragraph 1.1.3.6 for more information about the** unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within wing headquarters facilities.

8.2.4.1.3. Typical Operational Wing Composition. Includes a commander, vice commander, command chief, command support staff, and various wing staff agencies,

offices, and positions. OCONUS (tenant) wings require eight wing staff agencies, offices, and position types including civil engineering, command post, financial management, chaplain, history, manpower, safety, and plans. CONUS (host) wings require all tenant wing staff components as well as additional wing staff agencies, offices, and position types including SOCPTS (replaces the financial management office in OCONUS wings), SOAOS (replaces plans element in OCONUS wings), inspector general, staff judge advocate, protocol, information protection, equal opportunity, director of staff, community support coordinator, sexual assault prevention and response coordinator, and antiterrorism. Wings also include an ICC which can consist of the air operation squadron (AOS), command post (CP), maintenance operations center (MOC), emergency operations center (EOC), crisis action team (CAT)/battle staff and applicable AOS, as well as CP and MOC supervisory and administrative functions. The CP includes facility areas for the OIC, superintendent, quality assurance/training, emergency actions, systems, and reports (operational [OPREP-3], status of resources and training [SORTS]/defense readiness reporting system [DRRS] functions). An alternate location duplicating emergency CP functions is required to be a minimum of 2,000 feet from the primary CP.

8.2.4.1.4. Dimensions. See [Table 8.2.7](#) for the individual spaces within a wing headquarters facility.

8.2.4.2. **Installation Control Center (CATCODE: 141461).**

8.2.4.2.1. Requirements Determination. ICCs are authorized under AFI 10-207, Command Posts. It is intended to promote maximum efficiency in resource control and management by consolidating command and control elements of all units. Relocating individual functions such as weather, intelligence, communications, and staff offices to one of these facilities must be justified in terms of efficiency and economy. Space must also be provided for entry control point personnel. Obtain further guidance through AFSOC/A3O/A4I.

8.2.4.2.2. Scope Determination. Space requirements are determined by the number of occupants and the number and size of special purpose rooms. Space criteria for administrative facilities apply. Command posts may include space for base operations, maintenance training, maintenance analysis, quality control, records storage, and appropriate functions. An alternate ICC is required at a minimum distance of 2,000 feet away from the primary (AFI 10-207 Paragraph 2.5.9.1).

8.2.4.2.2.1. High-threat areas. Storage space should be allocated for chemical and biological filtering equipment.

8.2.4.2.3. Dimensions. See [Table 8.2.7](#) for ICC facility requirements at CONUS and OCONUS locations.

8.2.4.2.4. Design Considerations. An UPS and emergency generator are necessary to maintain operational capability. Semi-hardened, splinter-protected, and hardened construction criteria may apply.

8.2.4.3. **Squadron Operations (CATCODE: 141753).**

8.2.4.3.1. Requirements Determination. Each squadron requires an operational building for administration, scheduling, training, briefing, personal equipment maintenance, and storage for aircrews.

8.2.4.3.2. Scope Determination. Space must be provided for the commander and staff. The SOCPTS and SOAOS are not flying squadrons, and therefore, only require administrative and administrative storage space. For planning purposes, both the SOCPTS and SOAOS are assumed to be collocated in the wing headquarters. See **paragraph 1.1.3.6 for more information about the** unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within squadron operations facilities.

8.2.4.3.3. Typical Special Operations Air Operations Squadron Composition. A SOAOS includes a commander, superintendent, command staff, operations officer, current operations, scheduling, combat readiness, and plans. See **Table 8.2.2** for notional manpower numbers.

8.2.4.3.4. Typical Special Operations Comptroller Squadron Composition. A SOCPTS includes a commander, superintendent, first sergeant, command staff, financial analysis, budget and accounting operations section, financial services, resource advisor, and computer system specialist. See **Table 8.2.2** for notional manpower numbers.

8.2.4.3.5. Dimensions. See **Table 8.2.7** for the SOAOS and SOCPTS spaces within the wing headquarters.

8.2.4.4. **Facility Considerations for Operational Wing Facilities.**

8.2.4.4.1. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

8.2.4.4.2. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

Table 8.2.6. Building Utility System Requirements for Operational Wing Facilities.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions in all areas via an energy efficient HVAC system. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include: UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems, UFC 3-530-01 for interior and exterior lighting and controls, UFC 3-550-01 for exterior power distribution systems, UFC 3-560-01 for electrical safety and electrical O&M, UFC 3-580-01 for building telecommunications criteria, and UFC 4-021-01 for mass notification systems.
Plumbing	Provide a commercial grade domestic water and waste water system. The applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 8.2.1. Typical Operational Wing Facility.

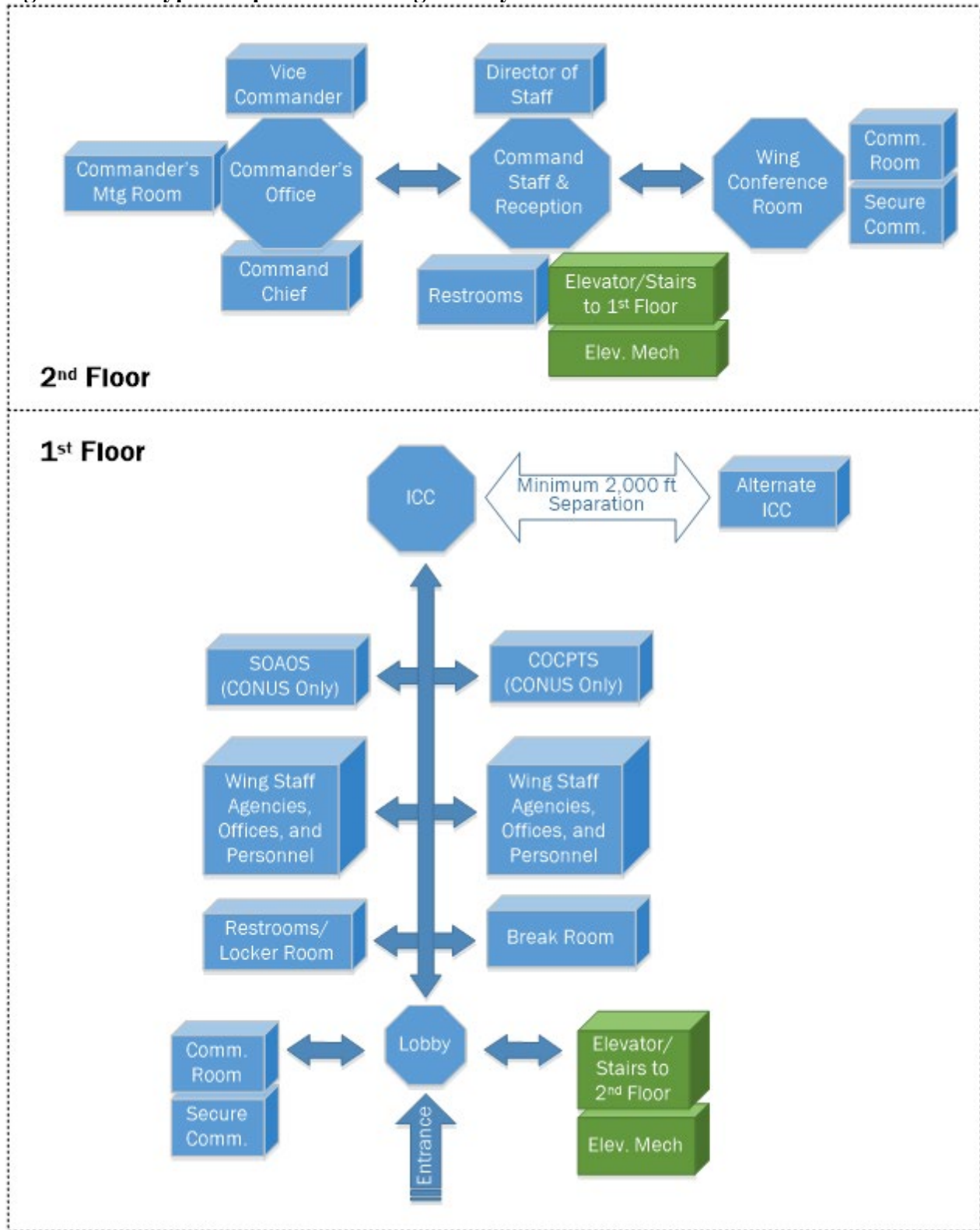


Table 8.2.7. SOW Facility Space Requirements.

Cat Code	Facility	UM	CONUS SOW	OCONUS SOW	DAFMAN 32-1084 Reference or Remarks/Calculations
610-249	Cmd Section - Commander	NSF	300	300	CG 61 Admin Overview Table 1.2: 300 NSF min for Type A Offices.
610-249	Cmd Section - Vice Commander	NSF	300	300	CG 61 Admin Overview Table 1.2: 300 NSF min for Type A Offices.
610-249	Cmd Section - Command Chief	NSF	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-249	Cmd Section - Commander's Meeting Room	NSF	150	150	AFSOC/A4I: Up to 10 people. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-249	Cmd Section - Commander's Support Staff	NSF	400	200	4 PN CONUS and 2 PN OCONUS. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-249	Cmd Section - Reception Area/Support Workstations	NSF	284	188	3 PN CONUS or 1 PN OCONUS (Type F), 1 receptionist desk (Type D), plus 2 PN waiting area.CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices. Table 1.2.1: 64 NSF for Type F offices.
610-249	Cmd Section - Wing Conference Room	NSF	1,150	1,150	CG 61 Admin Overview Table 1.4: Conference Room for 50+ people is authorized 20 NSF per person plus a 150 NSF speaker area. Assume 50 people.
610-249	Director of Staff	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-249	Antiterrorism	NSF	100	0	1 PN Host Only: CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-249	Chaplain	NSF	790	140	Tenant:1 Type D. Host: 1 Type D, 10 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices. Table 1.2.1: 80NSF for Type E offices.
610-249	Civil Engineer	NSF	0	200	1 PN Tenant Only: CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-249	Command Post	NSF	100	100	1 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. This office is separate from the offices located on the ICC Operations Floor.

610-249	Community Support Coordinator	NSF	100	0	1 PN Host Only: CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-249	Equal Opportunity	NSF	144	0	3 PN Host Only: CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-249	Finance	NSF	0	400	OCONUS Only: 4PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CONUS financial management is performed by a SOCPTS.
610-249	Historian	NSF	100	100	Assume 40 NSF for records storage. Plus 1 Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Information Protection	NSF	500	0	Host Only: DAFMAN 32-1084 CG 61 Admin Overview Table 1.2: Authorizes 100 NSF min for open office space for 5 PN.
610-249	Inspector General	NSF	360	295	CONUS: 1 PN (IG, Type D), 4 PN (Staff, Type E) OCONUS: 1 PN (IG, Type D), 3 PN (Staff, Type E) CG 61 Admin Overview Table 1.2: 100 NSF min for Type D. Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Installation Resilience Program	NSF	100	0	1 PN Host Only: CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-249	Manpower	NSF	200	200	2 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-249	Chief of Plans	NSF	0	100	OCONUS Only: 1 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CONUS wing plans are performed by a SOAOS.
610-249	Plans Open Offices	NSF	0	1,296	OCONUS Only: 27 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices. CONUS wing plans are performed by a SOAOS.
610-249	Protocol	NSF	100	0	1 PN Host Only: CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.

610-249	Public Affairs	NSF	680	100	CONUS: 2 PN (Type D) 10 PN (Type F). OCONUS: 1 PN (Type D) CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610-249	Safety	NSF	820	292	CONUS: 1 Type D, 15 Type F OCONUS: 1 Type D, 4 Type F CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-249	Sexual Assault Prevention and Response	NSF	130	0	Host Only: 2 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-249	Staff Judge Advocate	NSF	3,184	338	CONUS: This requirement was based on 1 SOW manpower. CC 610112, Table 1.1: max of 250 NSF for 1 Staff JA, 150 NSF for 1 assistant JA, 120 NSF each for 2 attorneys, 80 NSF each 2 supervisors, and 64 NSF each for 10 court reporters. 6 PN waiting area. CG 61 Admin Overview Table 1.4: 20 NSF per person; Reception and Library area: CG 61 Admin Overview Table 1.4: User justified (assumed 100 NSF each), a 15-person conference room (Table 1.4 authorizes 20 NSF per person), a 1,200 NSF courtroom (CC 610112, Table 1.1), courtroom support spaces (assumed 10% of court room area), and 64 NSF for a discussion room (CC 610112, Table 1.1). OCONUS: CC 610112 Table 1.1 max of 250 NSF for 1 Staff JA, 80 NSF each for 2 supervisors, and 64 NSF for 1 staff position.
610-249	Break Room	NSF	688	259	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF. Minimum of 100 NSF.
610-249	Restrooms & Janitor's Closet	NSF	0	0	CG 61 Admin Overview Para 1.5.2: NSF to GSF conversion.

610-249	Mech/Elec Room	NSF	0	0	CG 61 Admin Overview Para 1.5.2: NSF to GSF conversion.
610-249	Comm Room	NSF	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
610-249	Secure Comm Room	NSF	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
610-249	Administrative Support	NSF	3,640	1,600	CG 61 Admin Overview Table 1.1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
610-249	Administrative Circulation	NSF	1,651	723	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-249	Special Purpose Circulation	NSF	428	385	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
141-753	SOAOS - Commander	NSF	140	0	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
1417 53	SOAOS - Superintendent	NSF	100	0	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices
1417 53	SOAOS - Command Staff	NSF	65	0	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
1417 53	SOAOS - Operations Officer	NSF	100	0	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
1417 53	SOAOS - Current Operations	NSF	200	0	2 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
1417 53	SOAOS - Scheduling	NSF	918	0	5 PN officers and 1 civilian (Type E), 11 enlisted (Type F). CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
1417 53	SOAOS - Combat Readiness	NSF	576	0	12 PN. Manpower based on 27 SOAOS combat readiness 2 PN, tactical communication 4 PN, personnel & logistics readiness 4 PN, and maintenance & mobility 2 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.

141-753	SOAOS - Plans	NSF	1,348	0	CONUS only: CG 61 Admin Overview Table 1.2: 1 Type D, 25 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices. CONUS manpower based on 27 SOAOS plans 5 PN, special mission plans 5 PN, hosting 6 PN, commit scheduling 4 PN, RMO 1 PN, and theater plans 6 PN. OCONUS plans are performed as wing staff plans office and not by SOAOS.
141-753	SOCPTS - Commander	NSF	140	0	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
141-753	SOCPTS - First Sergeant	NSF	100	0	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	SOCPTS - Superintendent	NSF	100	0	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	SOCPTS - Command Staff	NSF	195	0	3 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	SOCPTS - Financial Analysis	NSF	325	0	5 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	SOCPTS - Budget & Accounting Ops Section	NSF	532	0	9 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	SOCPTS - Financial Services	NSF	864	0	18 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	SOCPTS - Resource Advisor	NSF	240	0	5 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	SOCPTS - Computer System Specialist	NSF	65	0	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.

141-461	Primary ICC Operations Floor	NSF	2,145	1,870	Requires space for 39 PN CONUS, (Squadron Representatives, Wing CC Staff, Wing and Group Leadership, Battle Staff/EOC/CAT Director, Battle Staff/EOC/CAT Chief, Battle Staff/EOC/CAT Admin, Battle Staff/EOC/CAT NCO) and 34 PN OCONUS (no battle staff). Based on Installation Control Center at Cannon AFB each workstation was 5'x 3'. CG 61 Admin Overview Paragraph 1.4.2 authorizes administrative support space of 40 NSF max/person.
141-461	Primary ICC CP Operations	NSF	1,000	0	Host Only: CG 61 Admin Overview Table 1.2: Authorizes 100 NSF min each for 3 watch controllers, 1 OIC, 1 Superintendent, NCOIC console ops, NCOIC QA/training, systems, reports (2 PN) for a total of 10 PN.
141-461	Primary ICC Emergency Action (EA) Cell	NSF	270	270	5 emergency action controllers (EAC). CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G offices.
141-461	Primary ICC Reports	NSF	60	60	2 SORTS PN. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G offices.
141-461	Primary ICC Training	NSF	230	230	1 training manager. Assume 200 NSF for EAC training area. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G offices.
141-461	Primary ICC SDO Area	NSF	90	90	Requires space for 3 PN (SDO, ONCO, and ODO). Based on Installation Control Center at Cannon AFB. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G offices.
141-461	Primary ICC Maintenance Operations Center	NSF	704	0	Host Only: Requires space for 8 PN. Based on Installation Control Center at Cannon AFB. CG 61 Admin Overview Table 1.2.1 authorizes 48 NSF min per PN. CG 61 Admin Overview Paragraph 1.4.2 authorizes administrative support space of 40 NSF max/person.

141-461	Primary ICC Planning Area	NSF	600	600	Minimum of 300 NSF. Maximum of 600 NSF.
141-461	Primary ICC Secure Conf./ VTC Room	NSF	480	480	Minimum of 240 NSF. Maximum of 480 NSF.
141-461	Primary ICC Break Room	NSF	167	167	CG 61 Admin Overview Table 1.3: 16% of occupants x 18 NSF. Minimum of 100 NSF.
141-461	Primary ICC Storage	NSF	320	320	Minimum of 160 NSF. Maximum of 320 NSF.
141-461	Primary ICC UPS/Generator	NSF	150	150	Assume 150 NSF.
141-461	Primary ICC Comm Room	NSF	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-461	Primary ICC Secure Comm Room	NSF	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-461	Primary ICC Server Equip./ Cable Room	NSF	300	300	Assume 300 NSF.
141-461	Alternate ICC Operations Floor	NSF	1,330	0	Requires space for 38 PN (Squadron Representatives, Wing CC Staff, Wing and Group Leadership, Battle Staff/EOC/CAT Director, Battle Staff/EOC/CAT Chief, Battle Staff/EOC/CAT Admin, Battle Staff/EOC/CAT NCO). Based on Installation Control Center at Cannon AFB each workstation was 5' x 3'. CG 61 Admin Overview Paragraph 1.4.2 authorizes administrative support space of 20 NSF min/person.
141-461	Alternate ICC CP Operations	NSF	180	0	CG 61 Admin Overview Table 1.2.1: 20 NSF min each for 1 OIC, 1 Sup, 1 Ops Manager, 2 C2 Ops, 2 CBRN, and 2 SOMXG for a total of 9 PN.
141-461	Alternate ICC EA Cell	NSF	270	0	CG 61 Admin Overview Table 1.2.1: 48 NSF min for 5 emergency action controllers (EAC). Add 36 NSF for EAC Vault.
141-461	Alternate ICC Reports	NSF	60	0	CG 61 Admin Overview Table 1.2.1: 30 NSF min for 2 SORTS PN.

141-461	Alternate ICC Training	NSF	230	0	CG 61 Admin Overview Table 1.2.1: 30 NSF min for 1 training manager. Assume 200 NSF for EAC training area.
141-461	Alternate ICC SDO Area	NSF	90	0	Requires space for 3 PN (SDO, ONCO, and ODO). Based on Installation Control Center at Cannon AFB. CG 61 Admin Overview Table 1.2.1: 30 NSF min each.
141-461	Alternate ICC Maintenance Operations Center	NSF	560	0	Requires space for 8 PN. Based on Installation Control Center at Cannon AFB. CG 61 Admin Overview Table 1.2.1 authorizes 30 NSF min each. CG 61 Admin Overview Paragraph 1.4.2: use a maximum of 40 NSF per person and a minimum of 20 NSF per person for administrative support space (alternate ICC uses the minimum).
141-461	Alternate ICC Planning Area	NSF	300	0	Minimum of 300 NSF. Maximum of 600 NSF.
141-461	Alternate ICC Secure Conf./ VTC Room	NSF	240	0	Minimum of 240 NSF. Maximum of 480 NSF.
141-461	Alternate ICC Break Room	NSF	167	0	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF. Minimum of 100 NSF.
141-461	Alternate ICC Storage	NSF	320	0	Minimum of 160 NSF. Maximum of 320 NSF.
141-461	Alternate ICC UPS/Generator Room	NSF	150	0	Assume 150 NSF.
141-461	Alternate ICC Comm Room	NSF	144	0	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-461	Alternate ICC Secure Comm Room	NSF	144	0	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-461	Alternate ICC Server Equip./ Cable Room	NSF	300	0	Assume 300 NSF.
Total Wing HQ		NSF	22,935	9,344	
Total Wing HQ		GSF	24,480	11,681	Net to Gross conv. factor of 1.25.
Total Primary ICC		NSF	6,804	4,825	
Total Primary ICC		GSF	8,505	6,031	Net to Gross conv. factor of 1.25.

Total Alternate ICC	NSF	4,485	0	
Total Alternate ICC	GSF	5,606	0	Net to Gross conv. factor of 1.25.

8.2.5. ST Wing Facilities.

8.2.5.1. Wing Headquarters (CATCODE: 610249).

8.2.5.1.1. Requirements Determination. An ST wing requires a facility to accommodate the staff offices of the wing headquarters.

8.2.5.1.2. Scope Determination. Space must be provided for wing leadership, commander support staff, wing staff agencies, offices, and positions that directly report to either the wing commander or vice commander. These spaces support the administrative affairs of a military establishment and should be programmed and designed such that they enhance the main mission or functions of the organization. In addition to the area requirements, administrative and support spaces should be programmed and designed so that these facilities can be flexible, cost-effective, and create an atmosphere that increases morale, productivity, and collaboration. See **paragraph 1.1.3.6 for more information about the** unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within wing headquarters facilities.

8.2.5.1.3. Typical ST Wing Composition. Includes a commander, vice commander, command chief, command support staff, and various wing staff agencies, offices, and positions.

8.2.5.1.4. Dimensions. See [Table 8.2.9](#) for the individual spaces within an ST wing HQ facility.

8.2.5.1.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet IP requirements.

8.2.5.1.6. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet

all the requirements listed above and be readily accessible to the employee should there be a need.

Table 8.2.8. Building Utility System Requirements for ST Wing Facilities.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions in all areas via an energy efficient HVAC system. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include: UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems, UFC 3-530-01 for interior and exterior lighting and controls, UFC 3-550-01 for exterior power distribution systems, UFC 3-560-01 for electrical safety and electrical O&M, UFC 3-580-01 for building telecommunications, and UFC 4-021-01 for mass notification systems.
Plumbing	Provide a commercial grade domestic water and waste water system. The applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

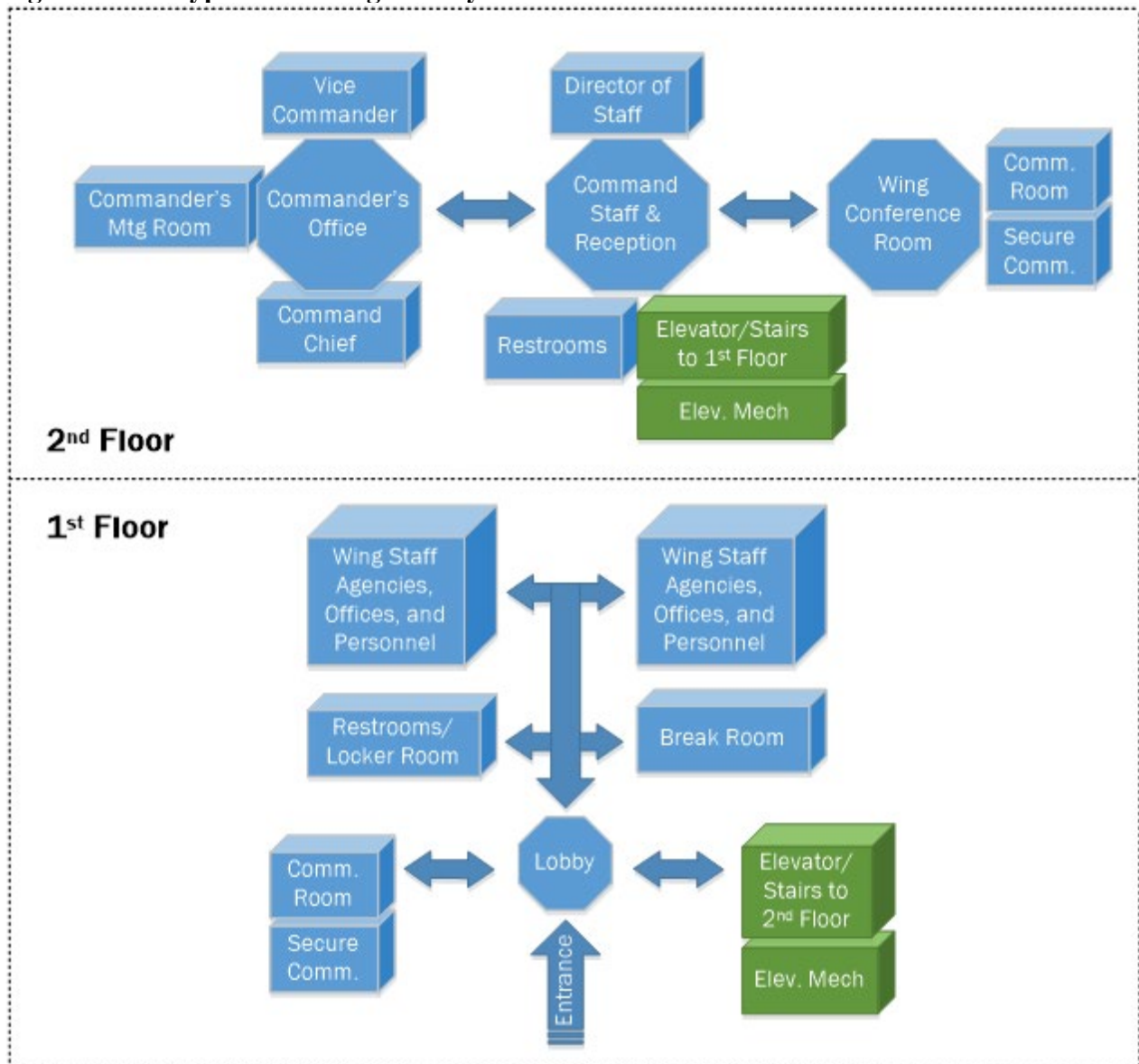
Figure 8.2.2. Typical ST Wing Facility.

Table 8.2.9. ST Wing Facility Space Requirements.

Cat Code	Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations
610-249	Commander	NSF	300	CG 61 Admin Overview Table 1.2: 300 NSF min for Type A Offices.
610-249	Vice Commander	NSF	300	CG 61 Admin Overview Table 1.2: 300 NSF min for Type A Offices.
610-249	Commander Executive	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Commander Secretary	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Commander Support Staff	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Command Chief	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-249	Director of Staff	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-249	Protocol	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Financial Mgmt & Comptroller	NSF	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Chaplain	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-249	Historian	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Inspector General	NSF	295	1 Type D, 3 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Judge Advocate	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-249	Manpower	NSF	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Public Affairs	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-249	Comm/Information	NSF	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Safety	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-249	Surgeon	NSF	500	1 Type C, 1 Type D, 4 Type E CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.

610-249	Plans and Programs	NSF	891	1 Type D, 7 Type E, 7 Type F CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-249	Storage	NSF	100	Provide 100 NSF.
610-249	Wing Conference Room	NSF	1,150	CG 61 Admin Overview Table 1.4: Conference Room for 50+ people authorized 20 NSF per person plus 150 NSF speaker area. Assume 50 people.
610-249	Male Lockers	NSF	90	Lockers are 1.67'(W) x 3'(H), stacked 2 high. Number of lockers = support personnel x 0.8 (male rqmt). This facility can be adjacent to or combined with the men's showers. Provide 18 male lockers.
610-249	Female Lockers	NSF	25	Lockers are 1.67'(W) x 3' (H), stacked 2 high. Number of lockers = support personnel x 0.2 (female rqmt). This facility can be adjacent to or combined with the women's showers. Provide 5 female lockers.
610-249	Male Showers	NSF	60	Provide 2 showers. UFC 3-420-1: 30 NSF per shower/drying area.
610-249	Female Showers	NSF	30	Provide 1 shower. UFC 3-420-1: 30 NSF per shower/drying area.
610-249	Individual Equipment Storage	NSF	1,600	Per 24 SOW, each operator requires a cage that is 8 ft (W) x 10 ft (L). Cages also require a 6' aisle for gear prep and transport. To accommodate the 6-foot aisles and cage space, provide 104 NSF per cage. This number is based on a cage layout with two, 10-cage rows with a 6-foot aisle between and along each side of the rows. Note that increasing the number cages per row will reduce the total area required per cage, just as decreasing the number of cages per row will increase the total area required per cage.
610-249	Break Room	NSF	124	DAFMAN 32-1084 CG 61 Admin Overview Table 1.4: 16% of occupants' x 18 NSF.
610-249	Communications Room	NSF	144	AFSOC/A6: Minimum of 12 ft x 12 ft each per floor.
610-249	Secure Comm. Room	NSF	144	AFSOC/A6: Minimum of 12 ft x 12 ft each per floor.
610-249	Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
610-249	Mechanical and Electrical Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
610-249	Administrative Support	NSF	880	CG 61 Admin Overview Table 1.1.1: 20 sf/ office. AFSOC/A4I: Default is the min.

610-249	Administrative Circulation	NSF	464	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-249	Special Purpose Circulation	NSF	337	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
Total ST Wing HQ		NSF	8,809	
Total ST Wing HQ		GSF	11,011	Net to Gross conversion factor of 1.25.

8.2.6. Training & Irregular Warfare (T&IW) Facilities (formerly AFSOAWC).

8.2.6.1. **General.** This section provides the facility requirements for a T&IW SOW and its subordinate units. As a SOF Specialized Mission Wing per AFI 38-101 Paragraph 25.2.6.3, the requirements of all components are wholly unique to a typical AFSOC Operational Wing and its traditional operations and maintenance components. For reference and ease of navigating between T&IW components, all T&IW components are listed in this section.

8.2.6.2. **Description.** A T&IW SOW organizes, trains, educates and equips forces to conduct special operations missions; leads AFSOC Irregular Warfare (IW) activities; executes special operations test and evaluation and lessons learned programs; and develops doctrine, tactics, techniques and procedures for Air Force Special Operations Forces. T&IW SOWs also provide training for personnel from other Services and other partner nations. A T&IW SOW is a specialized mission wing per AFI 38-101 Paragraph 25.2.6.3, and as such is organized into a SOW, a SOG with four squadrons (6 SOS/AvFID, 524 SOS/NSAv, 592 SOMXS and 492 SOSS), and a SOTRG with five squadrons and one school (19 SOS/Formal Training Unit (FTU), 551 SOS/FTU, 371 SOCTS/ Ground Training Unit (GTU), 18 Flight Test Squadron (FLTS), 492 Special Operations Advanced Capabilities Squadron (SOACS), and the U.S. Air Force Special Operations School (USAFSOS)). While the current structure of T&IW SOW includes the unit types listed above, the organization is subject to change based on irregular warfare and training requirements for Air Force Special Operations Forces. Facilities for these units are discussed in the subsections below.

8.2.6.2.1. T&IW SOW Composition Drivers. With training and education for AFSOC as a part of its mission, T&IW SOW facility requirements are primarily driven by the weapon system-specific training (CV-22, AC-130J, MC-130J, MC-12, C-146, MQ-9); the type, quantity, and frequency of courses being taught; the student loads for each course; and overall student throughput for the training program. Since these factors can impact significant changes to the facility requirements, prior to the development of facilities, the 492 SOW should be consulted for the latest information regarding the current organization and composition of the training unit(s) facilities being developed.

8.2.6.3. Wing Headquarters (CATCODE: 610249).

8.2.6.3.1. Requirements Determination. A T&IW wing requires a facility to accommodate the staff offices of the wing headquarters.

8.2.6.3.2. Scope Determination. Space must be provided for wing leadership, commander support staff, wing staff agencies, offices, and positions that directly report to either the wing commander or vice commander. These spaces support the

administrative affairs of a military establishment and should be programmed and designed such that they enhance the main mission or functions of the organization. In addition to the area requirements, administrative and support spaces should be programmed and designed so that these facilities can be flexible, cost-effective, and create an atmosphere that increases morale, productivity, and collaboration. See **paragraph 1.1.3.6 for more information about the** unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within wing headquarters facilities.

8.2.6.3.3. Typical T&IW SOW Composition. Includes a commander, vice commander, command chief, command support staff, and various wing staff agencies, offices, and positions. T&IW facility types include a Wing Headquarters, an Operations Group(s) Headquarters, and Special Operations facilities for an FTU, GTU, AvFID Unit, FLTS, NSAv Unit, SOACS, specialized mission SOMXS, specialized mission SOSS, and USAFSOS. Facilities for these units are discussed in the subsections below.

8.2.6.3.4. Dimensions. See **Table 8.2.11** for the individual spaces within an T&IW HQ facility.

8.2.6.3.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet IP requirements.

8.2.6.3.6. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

Table 8.2.10. Building Utility System Requirements for T&IW SOW Facilities.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions in all areas via an energy efficient HVAC system. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.

Electrical	Use commercial grade convenience receptacles and power outlets. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include: UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems, UFC 3-530-01 for interior and exterior lighting and controls, UFC 3-550-01 for exterior power distribution systems, UFC 3-560-01 for electrical safety and electrical O&M, UFC 3-580-01 for building telecommunications, and UFC 4-021-01 for mass notification systems.
Plumbing	Provide a commercial grade domestic water and waste water system. The applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 8.2.3. Typical T&IW SOW Facility.

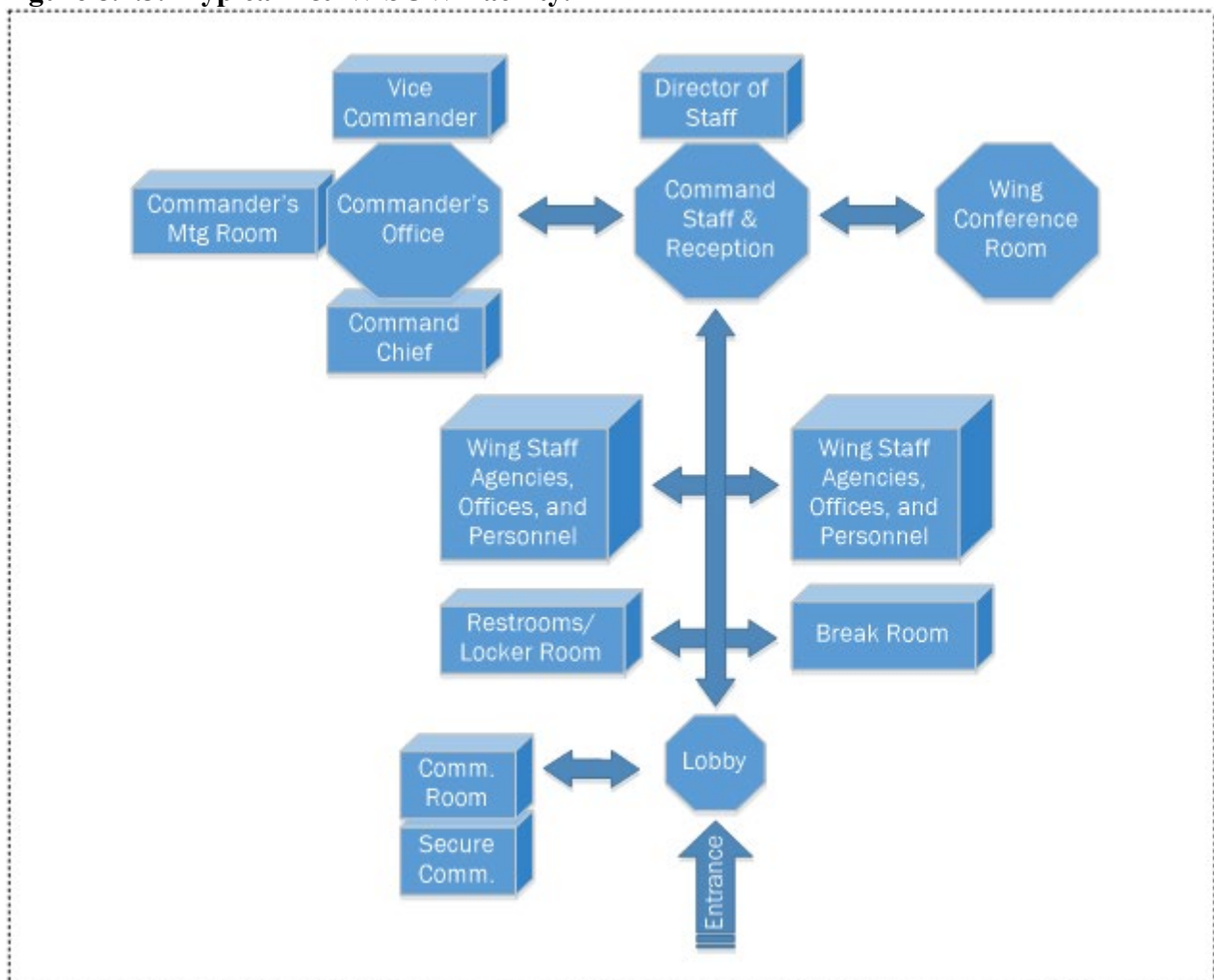


Table 8.2.11. T&IW SOW Facility Space Requirements.

Cat Code	Facility	UM	T&IW SOW	DAFMAN 32-1084 Reference or Remarks/Calculations
610-249	Commander - Command Suite	NSF	300	CG 61 Admin Overview Table 1.2: 300 NSF min for Type A Offices.
610-249	Vice Commander - Command Suite	NSF	300	CG 61 Admin Overview Table 1.2: 300 NSF min for Type A Offices.
610-249	Command Chief - Command Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-249	Commander Support Staff - Command Suite	NSF	144	3 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-249	Reception Area - Command Suite	NSF	100	5 PN waiting area. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-249	Wing Conference Room - Command Suite	NSF	1,150	CG 61 Admin Overview Table 1.4: Conference Room for 50+ people is authorized 20 NSF per person plus 150 NSF speaker area. Assume 50 people.
610-249	Director of Staff	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-249	Protocol	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Financial Mgmt & Comptroller	NSF	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Chaplain	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-249	Historian	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Inspector General	NSF	295	1 Type D, 3 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Judge Advocate	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-249	Manpower	NSF	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Public Affairs	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-249	Comm/Information	NSF	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Safety	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.

610-249	Surgeon	NSF	500	1 Type C, 1 Type D, 4 Type E CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
610-249	Plans and Programs	NSF	1,230	1 Type D, 10 Type E, 10 Type F CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
610-249	Break Room	NSF	461	CG 61 Admin Overview Table 1.4: 16% of occupants x 18 NSF.
610-249	Communications Room	NSF	288	Minimum of 12 ft x 12 ft room per AFSOC/A6. 2 rooms (1 secure).
610-249	Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
610-249	Mechanical and Electrical Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
610-249	Administrative Support	NSF	1,000	CG 61 Admin Overview Table 1.1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
610-249	Administrative Circulation	NSF	505	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610-249	Special Purpose Circulation	NSF	200	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
T&IW SOW Requirement Total		NSF	7,753	
T&IW SOW Requirement Total		GSF	9,691	Net to Gross conversion factor of 1.25.

8.2.6.4. Group Headquarters (CATCODE: 610243).

8.2.6.4.1. Requirements Determination. T&IW group headquarters facilities accommodate the staff offices of the headquarters.

8.2.6.4.2. Scope Determination. Space must be provided for the commander, deputy commander, group superintendent, commander's support staff, and standardization and evaluation offices. Space must also be provided for a testing and evaluation space, conference, and break room areas. See **paragraph 1.1.3.6 for more information about the** unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within group headquarters facilities.

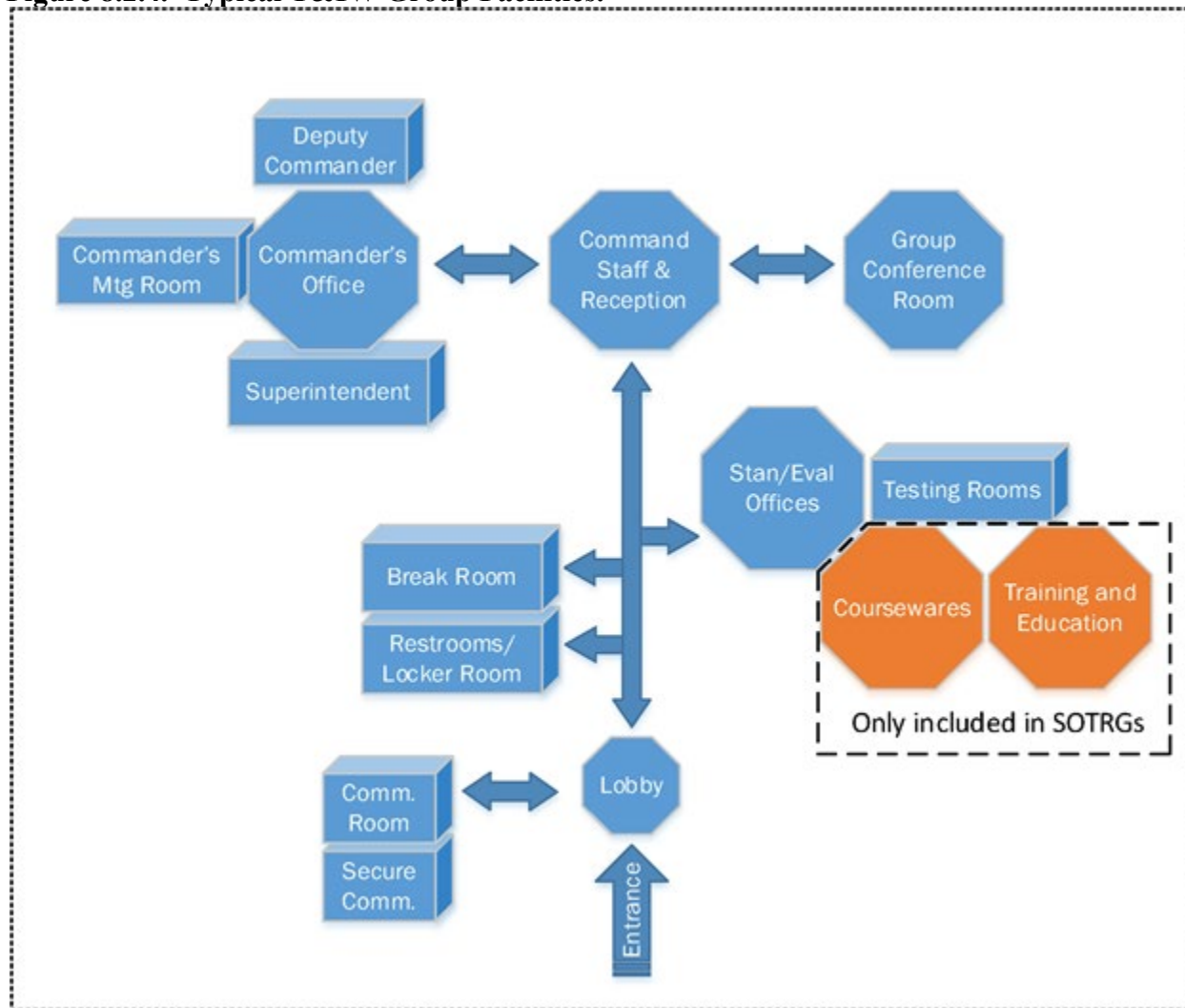
8.2.6.4.3. Typical T&IW Group Composition. A T&IW Group includes a commander, deputy commander, superintendent, command support staff, and standardization and evaluation personnel.

8.2.6.4.4. Dimensions. See **Table 8.3.13** for the individual spaces within a T&IW SOG and SOTRG headquarters facility.

8.2.6.4.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

Table 8.2.12. Building Utility System Requirements for T&IW Group Facilities.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions in all areas via an energy efficient HVAC system. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include: UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems, UFC 3-530-01 for interior and exterior lighting and controls, UFC 3-550-01 for exterior power distribution systems, UFC 3-560-01 for electrical safety and electrical O&M, UFC 3-580-01 for building telecommunications, and UFC 4-021-01 for mass notification systems.
Plumbing	Provide a commercial grade domestic water and waste water system. The applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Use fire suppression and fire detection system compatible with the base centralized fire detection system. Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 8.2.4. Typical T&IW Group Facilities.**Table 8.2.13. T&IW SOG and SOTRG Facility Space Requirements.**

Cat Code	Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations
610243	Commander - Command Suite	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610243	Deputy Commander - Command Suite	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610243	Superintendent - Command Suite	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610243	Commander's Meeting Room - Command Suite	NSF	150	AFSOC/A4I: Up to 10 people. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610243	Commander's Support Staff - Command Suite	NSF	192	4 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.

610243	Reception Area - Command Suite	NSF	40	2 PN waiting area. CG 61 Admin Overview Table 1.3: 20 per waiting person.
610243	Group Conference Room - Command Suite	NSF	400	CG 61 Admin Overview Table 1.4: Conference Room for up to 49 people is authorized 20 NSF per person. Assume 20 people.
610243	Stan/Eval	NSF	440	2 Type D (OIC and NCOIC), 5 Type F CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610243	Testing Room	NSF	300	Assume 10 trainees. CG 61 Admin Overview Table 1.4: 30 NSF per person.
610243	Break Room	NSF	100	CG 61 Admin Overview Table 1.4: 16% of occupants x 18 NSF.
610243	Communications Room	NSF	288	Minimum of 12 ft x 12 ft room per AFSOC/A6. 2 rooms (1 secure).
610243	Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
610243	Mechanical and Electrical Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
610243	Administrative Support	NSF	280	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
610243	Administrative Circulation		137	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
610243	Special Purpose Circulation		128	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
T&IW SOG Requirement Total		NSF	2,915	
T&IW SOG Requirement Total		GSF	3,644	Net to Gross conversion factor of 1.25.
141454	HPTC Performance Area	NSF	1,525	61 NSF/person. Assumed 25 people.
141454	HPTC Athletic Trainer	NSF	100	DAFMAN 32-1084 CG 61 Admin Overview Table 1.2 Authorizes 100 NSF min.
141454	HPTC Strength Coach	NSF	100	DAFMAN 32-1084 CG 61 Admin Overview Table 1.2 Authorizes 100 NSF min.
141454	HPTC Screening & Measurement	NSF	225	225 NSF/Facility
141454	HPTC Mobility Area (exterior)	NSF	375	15 NSF/Operator. Assumed 25 people.
141454	HPTC Hydrotherapy	NSF	225	225 NSF/Facility
141454	HPTC Physical Therapy Bay	NSF	650	650 NSF/Facility

141454	HPTC Physical Therapist Office and Storage	NSF	250	DAFMAN 32-1084 CG 61 Admin Overview Table 1.2 Authorizes 100 NSF min plus 150 NSF for storage.
141454	HPTC Classroom	NSF	400	400 NSF/Facility
141454	HPTC Restrooms	NSF	300	300 NSF/Facility
T&IW SOG HPTC Exterior Training Area		GSF	375	
T&IW SOG HPTC Requirement Total		NSF	3,775	
T&IW SOG HPTC Requirement Total		GSF	4,719	Net to Gross conversion factor of 1.25.
T&IW SOTRG facility requirements include T&IW SOG Facility Requirements (excluding the HPTC), plus the spaces listed below.				
610243	Coursewares	NSF	292	1 Type D (OIC and NCOIC), 4 Type F CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610243	Training & Education	NSF	292	1 Type D (OIC and NCOIC), 4 Type F CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
T&IW SOTRG Requirement Total		NSF	3,719	
T&IW SOTRG Requirement Total		GSF	4,649	Net to Gross conversion factor of 1.25.

8.2.6.5. Special Operations (CATCODE: 141454).

8.2.6.5.1. Requirements Determination. Each T&IW SOS requires an operational building for administration, training, briefing, and equipment storage for aircrews, students, and instructors.

8.2.6.5.2. Scope Determination. Space must be provided for the commander and staff. Space is required for AFE equipment storage. Space is also required for an operations officer to direct flight operations and for intelligence, current operations, operations plans, communication, AvFID, NSAv, simulator training, test programs, and a variety of other training activities based on the unit type. Classrooms and training labs should also be provided where justified. See **paragraph 1.1.3.6** for more information about the unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within special operations facilities.

8.2.6.5.2.1. Classroom Planning and Considerations. Space should also be provided for classrooms in a manner that allows sharing between courses, where possible and that considers the most efficient use of all classrooms spaces. In non-school-related facilities such as squadron operations, training spaces are limited or make use of existing conference or multi-purpose spaces; however, T&IW requires dedicated classroom spaces identified in the various facility space requirements

tables within Section 8.2.6.5. These facility requirements are primarily driven by the weapon system-specific training; the type, quantity, and frequency of courses being taught; the student loads for each course, and overall student throughput for the training program. Since these factors can impact significant changes to the facility requirements, prior to the development of facilities, T&IW SOW should be consulted for the latest information regarding the current organization and composition of the training unit(s) facilities being developed.

8.2.6.5.3. Technical Training Classroom (CATCODE 171621). Classrooms will be considered Technical Training Classrooms if 1) they are used to conduct lectures and demonstrations with the aid of computers, audiovisual, and portable training equipment suitable for table-top demonstrations and 2) training courses are prescribed in the Education and Training Course Announcements (ETCA) database located at <https://etca.randolph.af.mil> or they support SOF-specific training courses directed by AFSOC or USSOCOM. This space may include tables, chairs, storage cabinets for training aids, and projection rooms between classrooms, where required.

8.2.6.5.4. Technical Training Laboratory/Shop (CATCODE 171623). Classrooms will be considered Technical Training Laboratory/Shop if 1) they house training which uses various types of large, stationary equipment used to support demonstration and hands-on systems operations and maintenance training and 2) training courses are prescribed in the ETCA database or they support SOF-specific training courses directed by AFSOC or USSOCOM. Space requirements are determined by the size and required operational areas for training equipment and any maintenance that equipment may require.

8.2.6.5.5. Other Considerations.

8.2.6.5.5.1. All other T&IW classrooms will be designated as CATCODE 141454.

8.2.6.5.6. Typical T&IW USAFSOS Composition. Includes a commandant, vice commandant, secretary, and dean of academics. Sections include irregular warfare, language and culture, operations, regional affairs, and support. See [Table 8.2.15](#) for the individual spaces within an T&IW USAFSOS facility.

8.2.6.5.7. Typical T&IW FLTS Composition. Includes a commander, commander's support staff, a director of operations, current operations and training. Flights include operations analysis, combat applications, fixed wing, instrumentation, and vertical lift. See [Table 8.2.16](#) for the individual spaces within a T&IW FLTS facility.

8.2.6.5.8. Typical T&IW SOS Composition. Includes a commander, first sergeant, commander's support staff, and a director of operations. Other SOS components may vary between FTUs, GTUs, NSAv units, and AvFID units. See [Tables 8.2.17](#), 8.2.18, 8.2.19, and 8.2.20 for the individual spaces within each type of T&IW SOS facility listed respectively.

8.2.6.5.9. Typical T&IW SOACS Composition. Includes a commander, commander's support staff, director of operations, communications, mission systems, special missions, operations, policy & evaluations, and plans & resources. See [Table 8.2.20](#) for the individual spaces within a T&IW SOACS facility.

8.2.6.5.10. Typical T&IW SOSS Composition. Includes a commander, command support staff, director of operations, superintendent, intelligence, weapons & tactics, current operations, medical operations, and operations plans. See [Table 8.2.21](#) for the individual spaces within a T&IW SOSS facility.

8.2.6.5.11. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

8.2.6.5.12. Security Considerations. GTU, USAFSOS, and SOSS Intelligence areas and their associated communications rooms are required to be located within a SCIF. For programming, consult 492 SOW for latest information about T&IW SCIF and facility security requirements.

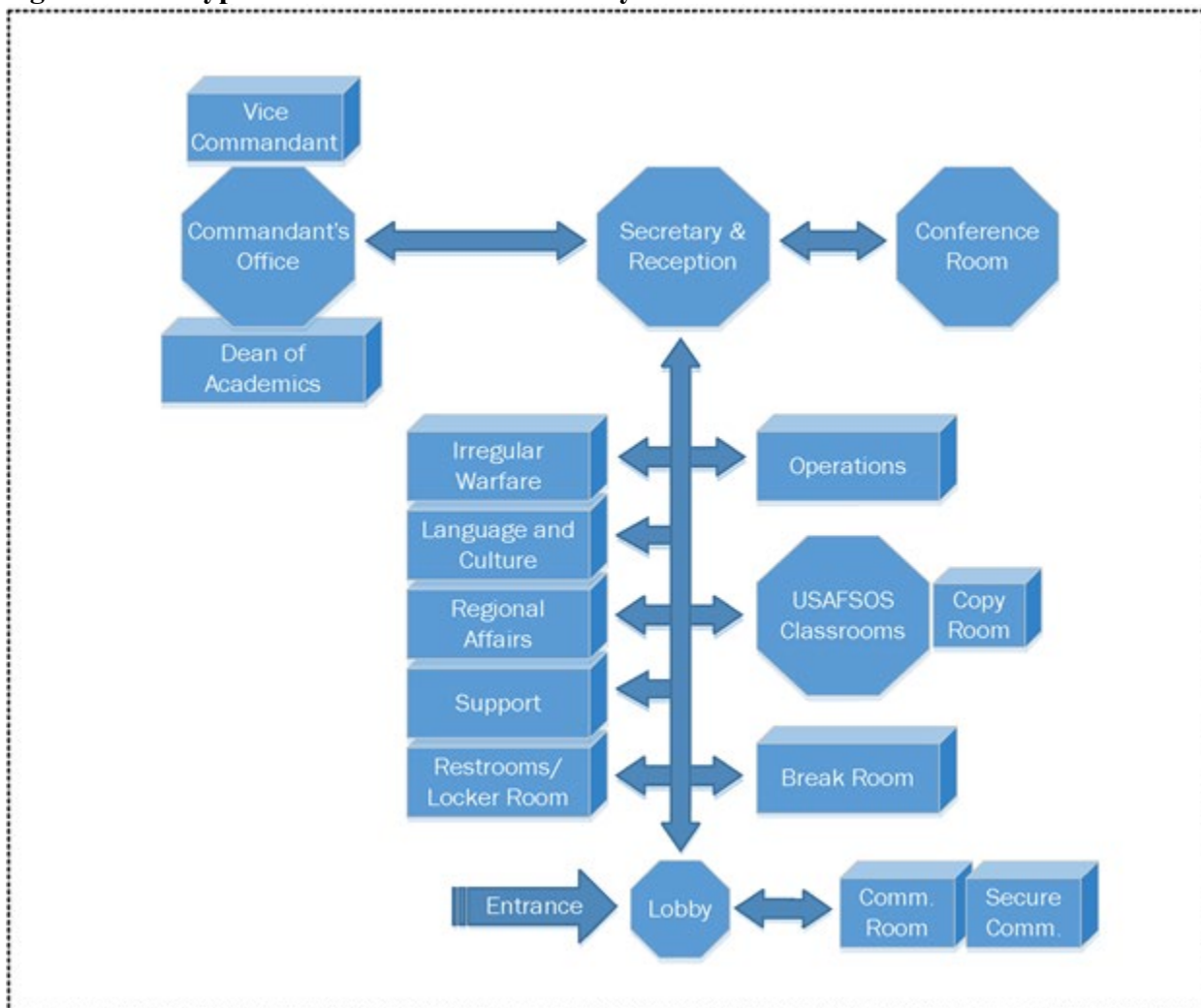
8.2.6.5.13. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

Table 8.2.14. Building Utility System Requirements for T&IW Special Operations Facilities.

System	Requirements
Mechanical	Where “comfort cooling” is authorized, maintain regulated temperature and humidity conditions in all areas via an energy efficient HVAC system. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include: UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems, UFC 3-530-01 for interior and exterior lighting and controls, UFC 3-550-01 for exterior power distribution systems, UFC 3-560-01 for electrical safety and electrical O&M, UFC 3-580-01 for building telecommunications, and UFC 4-021-01 for mass notification systems.

Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 8.2.5. Typical T&IW USAFSOS Facility.



8.2.6.5.14. T&IW USAFSOS Facility Space Requirements. T&IW USAFSOS facility requirements are presented in Table 8.2.15.

Table 8.2.15. T&IW USAFSOS Facility Space Requirements.

Cat Code	Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations
141454	Commandant	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.

141454	Vice Commandant	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Secretary & Reception	NSF	148	5 PN waiting area plus 1 Type F office. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices. Table 1.3: 20 NSF per waiting person.
141454	Dean of Academics	NSF	230	1 Type D, 2 Type E. CG 61 Admin Overview Table 1.2: 140 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
141454	Irregular Warfare - SCIF	NSF	726	6 Type E, 7 Type F . CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices. Table 1.2.1: 48 NSF min for Type F Offices.
141454	Language and Culture	NSF	480	10 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Operations	NSF	356	4 Type E, 2 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Regional Affairs	NSF	709	5 Type E, 8 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Support	NSF	706	2 Type E, 12 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
171621	USAFSOS Classrooms	NSF	4,280	Classrooms include two 15-person rooms (450 sf ea.), two 25-person rooms (625 sf ea.), and two 50-person auditoriums for training and T&IW history (770 sf ea.). Language Center includes two 9-person classrooms (135 ea.) and one 16-person classroom (320 NSF) based on space in Eglin AFB B3144. CG 61 Admin Overview Table 1.4: 20 NSF/person for rooms up to 50 PN. 15 NSF/person plus 20 NSF for instructor for auditorium.
141454	Conference Room	NSF	650	One 10-person conference rooms (150 sf ea.), One 25-person conference room (750 sf)
141454	Break Room	NSF	176	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF.
141454	Communications Room	NSF	288	Minimum of 12 ft x 12 ft room per AFSOC/A6. 2 rooms (1 secure).
141454	Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
141454	Mech/Elec. Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
141454	Administrative Support	NSF	1,240	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.

141454	Administrative Circulation	NSF	484	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
141454	Special Purpose Circulation	NSF	539	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
T&IW USAFSOS Total		NSF	11,252	
T&IW USAFSOS Total		GSF	14,065	Net to Gross conversion factor of 1.25.

8.2.6.5.15. T&IW FLTS Facility Space Requirements. T&IW FLTS facility requirements are presented in [Table 8.2.16](#).

Figure 8.2.6. Typical T&IW FLTS Facility.

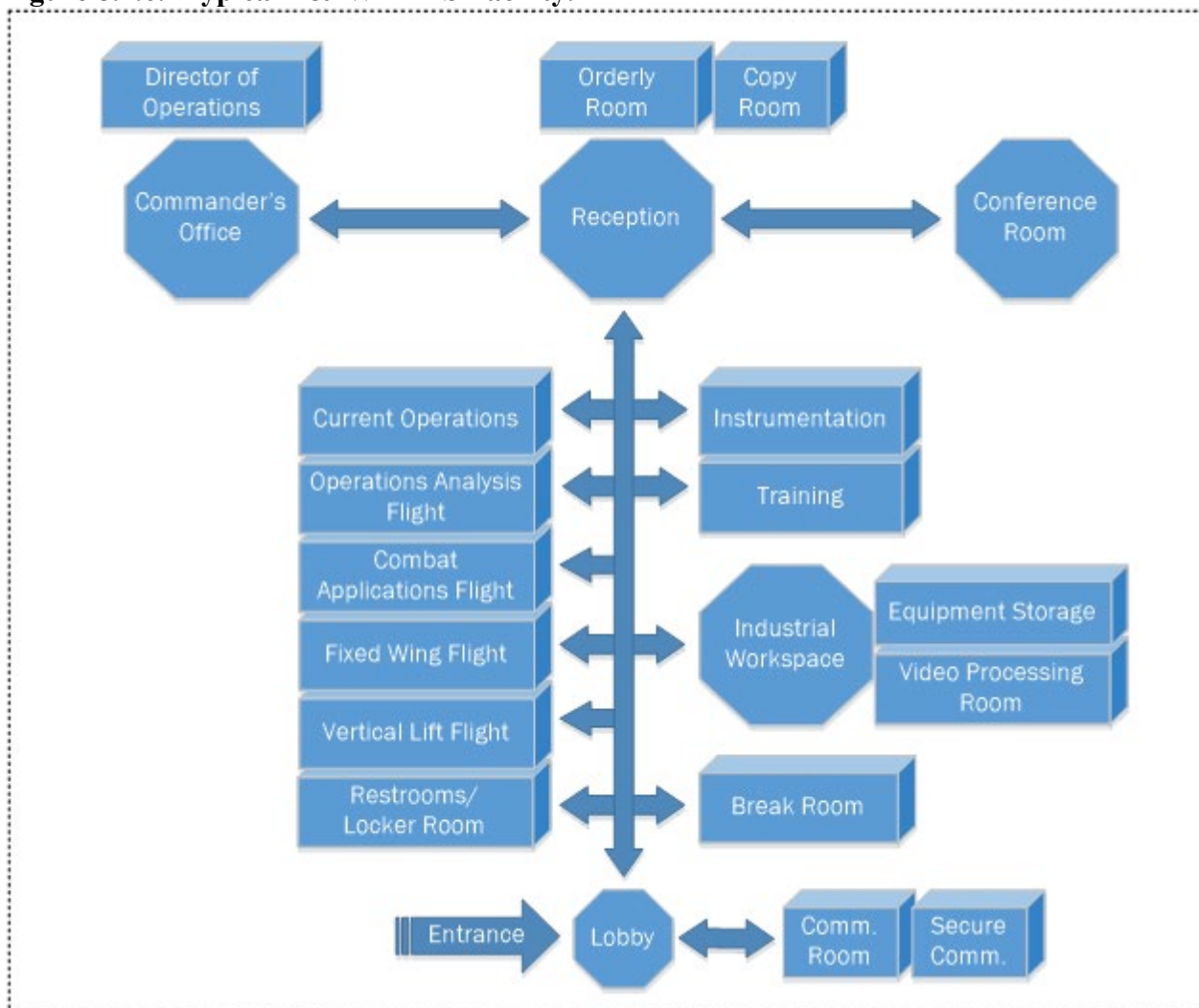


Table 8.2.16. T&IW FLTS Facility Requirements.

Cat Code	Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations

141454	Commander	NSF	336	1 Type C, 1 Type D, 2 Type F CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices and 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
141454	Orderly Room	NSF	144	3 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Director of Operations	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Reception Area	NSF	40	2 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per waiting person.
141454	Current Operations	NSF	777	9 Type E, 4 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Training	NSF	48	Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141454	Operations Analysis Flight	NSF	339	3 Type E, 3 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Combat Applications Flight	NSF	534	6 Type E, 3 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Fixed Wing Flight	NSF	1,545	9 Type E, 20 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Instrumentation	NSF	387	3 Type E, 4 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Vertical Lift Flight	NSF	288	6 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
171623	Industrial Workspace	NSF	1,000	Per 18 FLTS: Provide 1,000 NSF.
141454	Equipment Storage	NSF	1,665	Storage includes: Shelves: 930 sf, Drawers: 820 sf/ Shed: Shelves: 561 sf, Drawers: 86 sf, Open Storage: 420 sf, ISU-90s (x4): 512 sf. These spaces are shared with another FLTS at Hurlburt Field. Assume 50% of the space is designated for T&IW.
141454	Video Processing Room	NSF	150	Area segregated to house Video Processing equipment. This area needs to be collocated with industrial area. The current video processing room is 10' x 15'.

141454	Conference Room	NSF	650	One 10-person conference rooms (150 sf ea.), One 25-person conference room (750 sf). CG 61 Admin Overview Table 1.4: 15 NSF/person for rooms up to 10 PN. 20 NSF/person for rooms up to 50 PN. per person for conference area.
141454	Break Room	NSF	228	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF.
141454	Communications Room	NSF	288	Minimum of 12 ft x 12 ft room per AFSOC/A6. 2 rooms (1 secure).
141454	Restroom, Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
141454	Mech/Elec. Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
141454	Administrative Support	NSF	1,580	CG 61 Admin Overview Table 1.1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
141454	Administrative Circulation	NSF	608	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
141454	Special Purpose Circulation	NSF	402	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
T&IW FLTS Total		NSF	11,109	
T&IW FLTS Total		GSF	13,886	Net to Gross conversion factor of 1.25.

8.2.6.5.16. T&IW FTU Facility Space Requirements. T&IW FTU facility requirements are presented in [Table 8.2.17](#). WSTs and other flight simulator training facilities are also required to be within near the FTU. See the Training System Requirements section of this FRI for the simulator training requirements for the specific weapon system(s) required to support the FTU.

Figure 8.2.7. Typical T&IW FTU Facility. Note: Training flights detailed here are subject to change based upon requirements for specific weapon system support from AFSOC/USSOCOM.

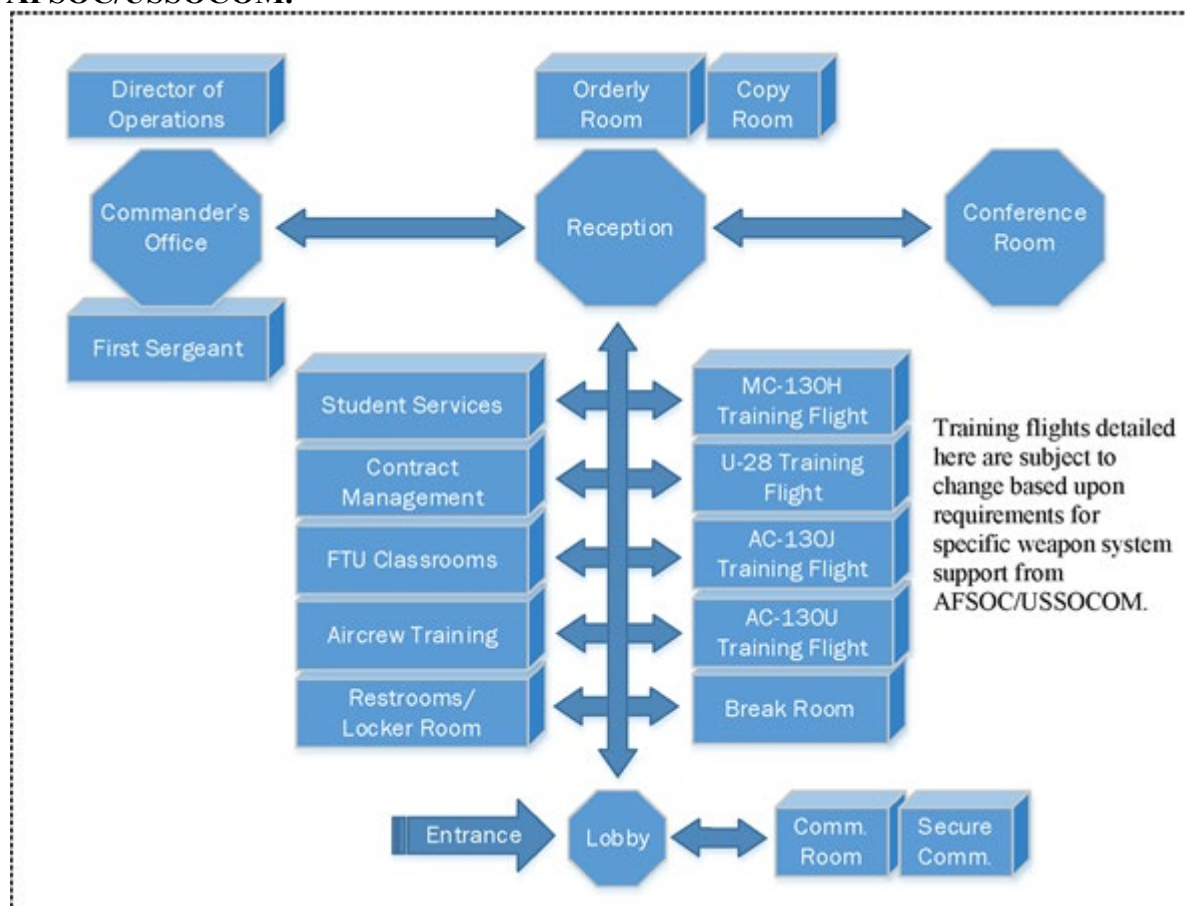


Table 8.2.17. T&IW FTU Facility Requirements.

Cat Code	Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations
141454	Commander	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
141454	First Sergeant	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Orderly Room	NSF	96	2 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices. 2 PN waiting area.
141454	Director of Operations	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Reception Area	NSF	40	CG 61 Admin Overview Table 1.3: 20 NSF per waiting person.

141454	Aircrew Training	NSF	8,345	1 Type D, 5 Type E, 165 Type F CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Contract Management	NSF	390	6 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141454	MC-130H Training Flight	NSF	1,618	2 Type E, 31 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	U-28 Training Flight	NSF	2,290	2 Type E, 45 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	AC-130J Training Flight	NSF	3,383	7 Type E, 61 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Student Services Section	NSF	1,190	This section should include a computer lab, reference library, and student break room. 19 SOS currently has these spaces set up to accommodate 15 students. Provide 100 NSF for reference library. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices. Table 1.3: 16% of occupants' x 18 NSF, minimum 100 NSF. 15 PN. CG 61 Admin Overview Table 1.4: 30 NSF/person for rooms up to 25 PN.
171623	FTU Classrooms	NSF	2,920	Assumed two 15-person rooms (450 sf ea.), two 25-person rooms (625 sf ea.), and one 50-person auditorium (770 sf). CG 61 Admin Overview Table 1.4: 20 NSF/person for rooms up to 50 PN. 15 NSF/person plus 20 NSF for instructor for auditorium.
141454	Conference Room	NSF	650	One 10-person conference rooms (150 sf ea.), One 25-person conference room (750 sf). CG 61 Admin Overview Table 1.4: 15 NSF/person for rooms up to 10 PN. 20 NSF/person for rooms up to 50 PN.
141454	Break Room	NSF	1,100	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF. 382 PN.
141454	Communications Room	NSF	288	Minimum of 12 ft x 12 ft room per AFSOC/A6. 2 rooms (1 secure).
141454	Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
141454	Mech/Elec. Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.

141454	Administrative Support	NSF	6,600	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
141454	Administrative Circulation	NSF	2,300	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
141454	Special Purpose Circulation	NSF	625	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
T&IW FTU Total		NSF	32,175	
T&IW FTU Total		GSF	40,219	Net to Gross conversion factor of 1.25.
Note: 1. WSTs and other flight simulator training facilities are also required to be within or near the FTU. See the Training System Requirements section of this FRI for the simulator training requirements for the specific weapon system(s) required to support the FTU. Links to each section are provided here: (CV-22, AC-130J, MC-130J, U-28, MC-12, C-146, MQ-9).				

8.2.6.5.17. T&IW GTU Facility Space Requirements. T&IW GTU facility requirements are presented in [Table 8.2.18](#).

Figure 8.2.8. Typical T&IW GTU Facility.**Table 8.2.18. T&IW GTU Facility Requirements.**

Cat Code	Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations
141454	Commander	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
141454	Orderly Room	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Reception Area	NSF	40	2 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per waiting person.
141454	Training Support	NSF	144	3 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.

141454	Training	NSF	2,369	2 Type D, 9 Type E, 33 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Intelligence - SCIF	NSF	724	1 Type D, 13 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
141454	Director of Operations	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
171621	Classrooms	NSF	2,520	Three, 28-person classrooms. CG 61 Admin Overview Table 1.4 authorized 30 NSF per person.
171621	Specialized SOF Classroom	NSF	2,160	Based on existing space (approximately 43' x 50') in Hurlburt building 90505
141454	Conference Room	NSF	650	One 10-person team room (150 sf ea.), One 25-person conference room (500 sf). CG 61 Admin Overview Table 1.4: 15 NSF/person for rooms up to 10 PN. 20 NSF/person for rooms up to 50 PN.
171623	Tactical Operations Medical Simulator (TOMS) Lab	NSF	1,500	Recommended size per 492 SOW/SR is 1,500 sf. Dimensions may vary based on simulator design. The TOMS lab is used to train medical scenarios (i.e., Combat Casualty Care) and is used during 29 classes a year, with each class having 28 students. This area facilitates the realistic scenarios by use of vehicle and aircraft mock ups to meet mission needs. Examples are; Hull of an aircraft, area for conducting medical simulations with realistic dummies, and a roll up door for simulations were the HMMWV pulls up to rescue and transport to the aircraft hull.
141454	Equipment Storage	NSF	5,750	Recommended size per 492 SOW/SR is approximately 5,750 NSF. If storage is spread out between multiple facilities, consider adding a mezzanine raised floor system for additional space.
141454	Instructor Gear/ Equipment Storage	NSF	1,827	Provide 1 rack per instructor. Recommended size per 492 SOW/SR is x 7' W x 3' L x 7' H.
141454	Student Gear/ Equipment Storage	NSF	1,792	One locker per student. The students will be storing a full bag of tactical gear (4' x 4'). Storage is required to be lockable.
141454	Student Break Room	NSF	323	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF.

141454	Instructor Break Room	NSF	279	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF.
141454	Student Services Section	NSF	1,190	This section should include a computer lab, reference library, and student break room. 19 SOS currently has these spaces set up to accommodate 15 students. Provide 100 NSF for reference library. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices. Table 1.3: 16% of occupants' x 18 NSF, minimum 100 NSF. 15 PN. Table 1.4: 30 NSF/person for rooms up to 25 PN.
141454	Medical Supply Storage	NSF	500	Storage includes Manikins, medical packs, shelving, bandages, fluids, defibrillators. Tactical Combat Casualty Care, will also utilize this space. Recommended size per 492 SOW/SR is 500 NSF.
141454	Weapons Cleaning Area	NSF	800	Requires an ultrasonic cleaner for guns needing three 110 outlets. Recommended size per 492 SOW/SR is 20' x 30'.
141454	Armory/Weapons Vault	NSF	480	Recommended size per 492 SOW/SR is 24' x 20'. Storage includes a total of 250 guns, grenades, flares, and bullets. The armory is used by all students with a total of 112 students and 70 instructors. 5,000 rounds/day. Training munitions require storage with the squadron.
141454	Munitions Tool Area	NSF	216	Recommended size per 492 SOW/SR is 18' x 12.
141454	Ready Room	NSF	1,000	Area is required for classes to ready up to train with 70 Instructors. Total of 3 classes training at one time with a total of 84 students. Does not need to be attached to the building. Provide 1,000 NSF.
141454	Communications Rooms	NSF	288	Minimum of 12 ft x 12 ft room per AFSOC/A6. 2 rooms (1 secure).
141454	Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
141454	Mech/Elec. Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
141454	Administrative Support	NSF	1,300	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
141454	Administrative Circulation	NSF	487	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
141454	Special Purpose Circulation	NSF	2,132	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.

141454	Small Unmanned Aerial System (SUAS) Offices	NSF	525	2 Type D Offices (Det Commander and Chief of Operations), 5 Type E (Instructors). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
141454	SUAS Conference Room	NSF	150	One 10-person team room (150 sf ea.) CG 61 Admin Overview Table 1.4: 15 NSF/person for rooms up to 10 PN.
141454	SUAS Classrooms	NSF	1,080	3 classrooms are required to support up to 12 students each. CG 61 Admin Overview Table 1.4 authorized 30 NSF per person.
141454	SUAS Student Training and Break Room	NSF	244	Provide 4 Type G workstations plus break room for 24 PN. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices. Table 1.3: 16% of occupants' x 18 NSF, minimum 100 NSF. 24 PN.
141454	SUAS Instructor Break Room	NSF	100	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF, min. of 100 NSF. 7 PN.
141454	SUAS Men's Shower	NSF	30	Based on remote location and field training activities, provide 1 shower. UFC 3-420-1: 30 NSF per shower/drying area.
141454	SUAS Women's Shower	NSF	30	Based on remote location and field training activities, provide 1 shower. UFC 3-420-1: 30 NSF per shower/drying area.
141454	SUAS Maintenance Bay	NSF	336	Based on existing maintenance bay in NOLF Choctaw Bldg. 2253: 21' x 16' or 336 NSF.
141454	SUAS Radio Room	NSF	100	Based on existing radio room in NOLF Choctaw Bldg. 2253: 6' x 17' or approximately 100 NSF.
141454	SUAS IT Storage	NSF	1,960	Based on existing IT storage in NOLF Choctaw Bldg. 2253: 40' x 49' or 1,960 NSF.
141454	SUAS Systems Storage	NSF	1,552	Based on existing SUAS systems storage in NOLF Choctaw Bldg. 2253: 40' x 32' plus 16' x 17' or 1,552 NSF.
141454	SUAS Comm. Rooms	NSF	288	Minimum of 12 ft x 12 ft room per AFSOC/A6. 2 rooms (1 secure).
141454	SUAS Vehicle Storage Yard	SY	2,200	This is a fenced, exterior parking lot. Based on existing SUAS vehicle storage yard at NOLF Choctaw: 2,200 SY.
T&IW SUAS Facility Total		GSF	7,994	Net to Gross conversion factor of 1.25.
T&IW SUAS Vehicle Storage Yard		SY	2,200	
T&IW GTU Total		NSF	28,807	
T&IW GTU Total		GSF	36,009	Net to Gross conversion factor of 1.25.

8.2.6.5.18. T&IW AvFID/Irregular Warfare Facility Space Requirements. T&IW AvFID facility requirements are presented in [Table 8.2.19](#).

Figure 8.2.9. Typical T&IW AvFID/IW Facility.

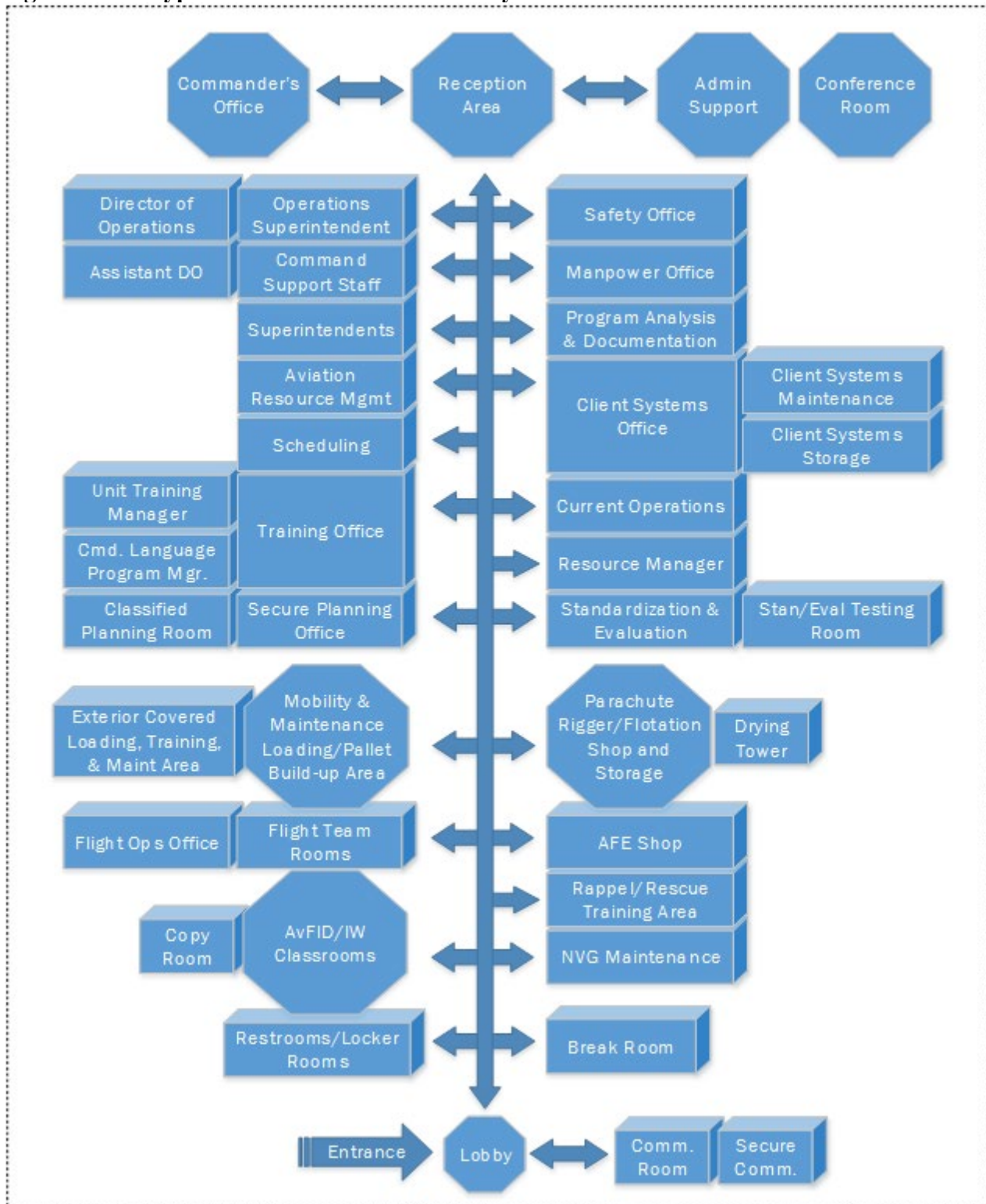


Table 8.2.19. T&IW AvFID/IW Facility Requirements.

Cat Code	Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations
141454	Commander	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
141454	First Sergeant	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Commander Support Staff	NSF	144	3 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Superintendents	NSF	192	4 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Safety	NSF	209	1 Type E, 3 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and Table 1.2.1: 48 NSF min for Type F Offices.
141454	Manpower	NSF	130	2 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141454	Mobility Office	NSF	418	2 Type E, 6 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E and Table 1.2.1: 48 NSF min for Type F Offices.
141454	Program Analysis & Documentation	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Client Systems Office	NSF	336	7 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Client Systems Maintenance	NSF	100	Per 492 SOW/SR, provide 100 NSF.
141454	Client Systems Storage	NSF	120	Per 492 SOW/SR, provide 120 NSF.
141454	Director of Operations	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Operations Superintendent	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Assistant Director of Operations	NSF	260	4 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141454	Aviation Resource Management	NSF	209	1 Type E, 3 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Training Office	NSF	370	2 Type E, 5 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Scheduling	NSF	226	2 Type E, 2 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Current Operations	NSF	274	2 Type E, 3 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.

141454	Edu. & Training/Unit Training Mgr	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141454	Command Language Prgm Mgr	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141454	Resource Manager	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Standardization & Evaluation	NSF	322	2 Type E, 4 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Stan/Eval Testing Room	NSF	120	4 PN. CG 61 Admin Overview Table 1.4: 30 NSF per person.
141454	Lockers	NSF	185	184 PN require lockers. Lockers are 18" W x 18" D x 24" H, 3-tier. With circulation, provide 5 NSF per locker. Calculated as Number of lockers/3 x 5 NSF.
141454	Secure Planning Office	NSF	1,364	Intel = 11 Type F; Plans = 2 Type E; 5 Type F; Tactics = 2 Type E; 2 Type F; SERE = 2 Type F, and Shared = 4 Type G. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices, 48 NSF min for Type F Offices, and 30 NSF min for Type G Offices.
141454	Classified Planning Room	NSF	450	Per 492 SOW/SR, provide 250 NSF plus two private offices. 2 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Flight Operations Office	NSF	432	Aircrew = 7 Type F; Maint Chief & MCOIC = 2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Flight Team Rooms	NSF	720	5 Flight Total. Each flight has a dedicated area with 1 Flight CC, 1 ADO, and 1 Flight Chief. Provide 15 Type F Office. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	AFE Shop	NSF	625	This area is required for the maintenance and life support test bench. Per 492 SOW/SR, provide 625 NSF.

141454	Parachute Rigger/Floatation Shop and Storage	NSF	3,465	Includes Packing Tables (19 ft x 52 ft), Floor Packing Space (42 ft x 38 ft), Staging/Issue Area (200 NSF), Quality Control (100 NSF), Sewing Section (128 NSF), Wash Tank (3 ft x 36 ft), and Floatation System Maintenance Area 15 ft x 15 ft, and parachute storage (120 NSF stores 100 parachutes). Locate adjacent to loading bay and loading area.
141454	Drying Tower	NSF	0	No requirement for a dedicated drying tower, unless an existing facility is not available.
141454	Rappel/Rescue Training Area	NSF	800	Per 492 SOW/SR, provide 800 NSF. This facility houses a helicopter fuselage on an elevated platform (15' to 20' high) with stairs to the top of the platform.
141454	NVG Maintenance	NSF	100	Per 492 SOW/SR, provide 100 NSF.
141454	Mobility & Maint. Loading/Pallet Build Up Area	NSF	2,000	Per 492 SOW/SR, provide 2,000 NSF.
141454	Exterior Covered Loading, Training, and Maintenance Area	SY	156	Per 492 SOW/SR: Provide 1,400 sf or 156 SY.
141454	AvFID/IW Classrooms	NSF	2,150	Assumed two 15-person rooms (450 sf ea.) and two 25-person rooms (625 sf ea.). CG 61 Admin Overview Table 1.4: 20 NSF/person for rooms up to 50 PN.
141454	Conference Room	NSF	650	One 25-person conference room (750 sf)
141454	Break Room	NSF	320	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF.
141454	Communications Room	NSF	288	Minimum of 12 ft x 12 ft room per AFSOC/A6. 2 rooms (1 secure).
141454	Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
141454	Mech/Elec. Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
141454	Administrative Support	NSF	2,320	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
141454	Administrative Circulation	NSF	870	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
141454	Special Purpose Circulation	NSF	1,153	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
T&IW AvFID/IW Fac. Total		NSF	22,248	
T&IW AvFID/IW Fac. Total		GSF	27,810	Net to Gross conversion factor of 1.25.

T&IW AvFID/IW Covered Loading, Maint., & Training Area Total	SY	156	

8.2.6.5.19. T&IW NSAv Facility Space Requirements. T&IW NSAv facility requirements are equivalent to the operations squadron requirements for the C-146 presented in [Paragraph 7.5.15](#) and [Table 7.5.22](#). A diagram for the typical C-146 operations facility can be found in [Figure 7.5.7](#).

8.2.6.5.20. T&IW SOACS Facility Space Requirements. T&IW SOACS facility requirements are presented in [Table 8.2.20](#).

Figure 8.2.10. Typical T&IW SOACS Facility.

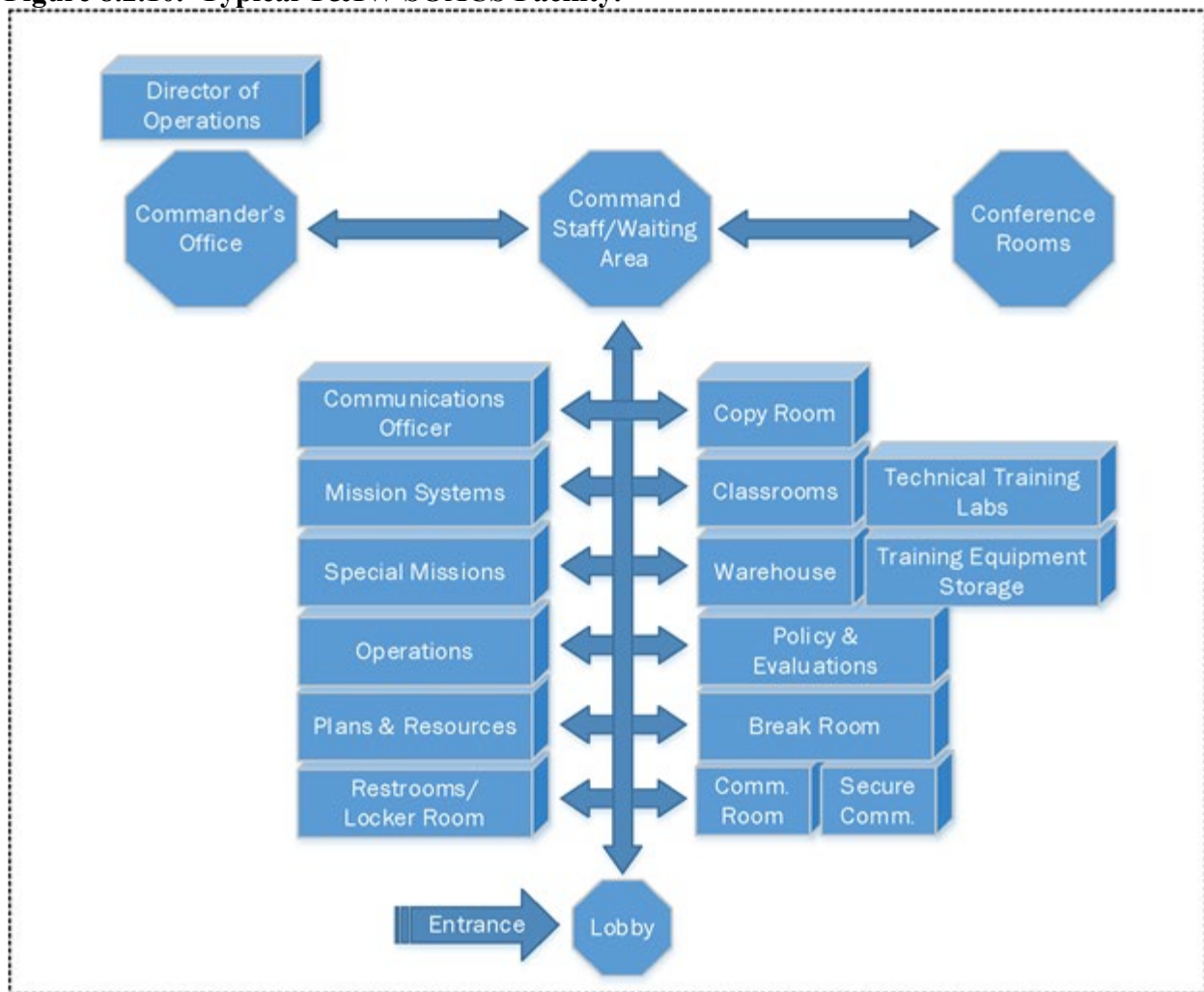


Table 8.2.20. T&IW SOACS Facility Requirements.

Cat Code	Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations
141454	Commander	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.

141454	Director of Operations	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Commander Support Staff	NSF	144	3 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Reception Area	NSF	100	5 PN waiting area. CG 61 Admin Overview Table 1.3: 20 NSF per waiting person.
141454	Communications Officer	NSF	65	1 Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141454	Mission Systems	NSF	1,164	12 Type E, 8 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Special Missions	NSF	9,666	Per 492 SOW/SR: Advanced Capabilities Unit is growing at a rapid rate. Use a total of 200 PN as a planning factor for facility requirements. There are currently 111 contractors in this unit. An additional 36 PN was added to this section to bring the unit total to 200 PN. 4 Type D, 120 Type E, 27 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Operations	NSF	1,139	3 Type D, 7 Type E, 8 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Policy & Evaluations	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Plans & Resources	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
171621	Classrooms	NSF	2,000	Per 492 SOW/SR: 2,000 NSF should be provided to support 2 classrooms. Space was determined using existing spaces in Hurlburt buildings 90349 and 90322.
171623	Technical Training Labs	NSF	5,000	Per 492 SOW/SR: 5,000 NSF should be provided to support 4 lab spaces. Space was determined using existing spaces in Hurlburt buildings 90068, 90328, 90322, and 90612.
141454	Warehouse	NSF	6,000	Per 492 SOW/SR: 6,000 NSF should be provided to support 2 warehouse spaces. Space was determined using existing spaces in Hurlburt buildings 90328 and 90618.
141454	Training Equipment Storage	NSF	1,000	Per 492 SOW/SR: 1,000 NSF should be provided. Storage includes space for training aids and sensitive/classified training equipment.

141454	Conference Rooms	NSF	1,750	DAFMAN 32-1084, Para 6.1.4.5: At 163-200 PN, the Advanced Capabilities unit is authorized four small conference rooms for 10 people each (4 x 150 NSF), and one 50 PN conference room with 150 NSF (1000 NSF +150 NSF). Typically, these authorizations exceed practical use for squadron operations, however, they can be used to support future requirements if necessary.
141454	Break Room	NSF	472	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF.
141454	Communications Room	NSF	288	Minimum of 12 ft x 12 ft room per AFSOC/A6. 2 rooms (1 secure).
141454	Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
141454	Mech/Elec. Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
141454	Administrative Support	NSF	3,980	CG 61 Admin Overview Table 1.1.1: 20 sf/office. AFSOC/A4I: Default is the min.
141454	Administrative Circulation	NSF	1,659	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
141454	Special Purpose Circulation	NSF	1,661	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
T&IW SOACS Total		NSF	36,520	
T&IW SOACS Total		GSF	45,650	Net to Gross conversion factor of 1.25.

8.2.6.5.21. T&IW SOSS Facility Space Requirements. T&IW SOSS facility requirements are presented in [Table 8.2.21](#).

Figure 8.2.11. Typical T&IW SOSS Facility.

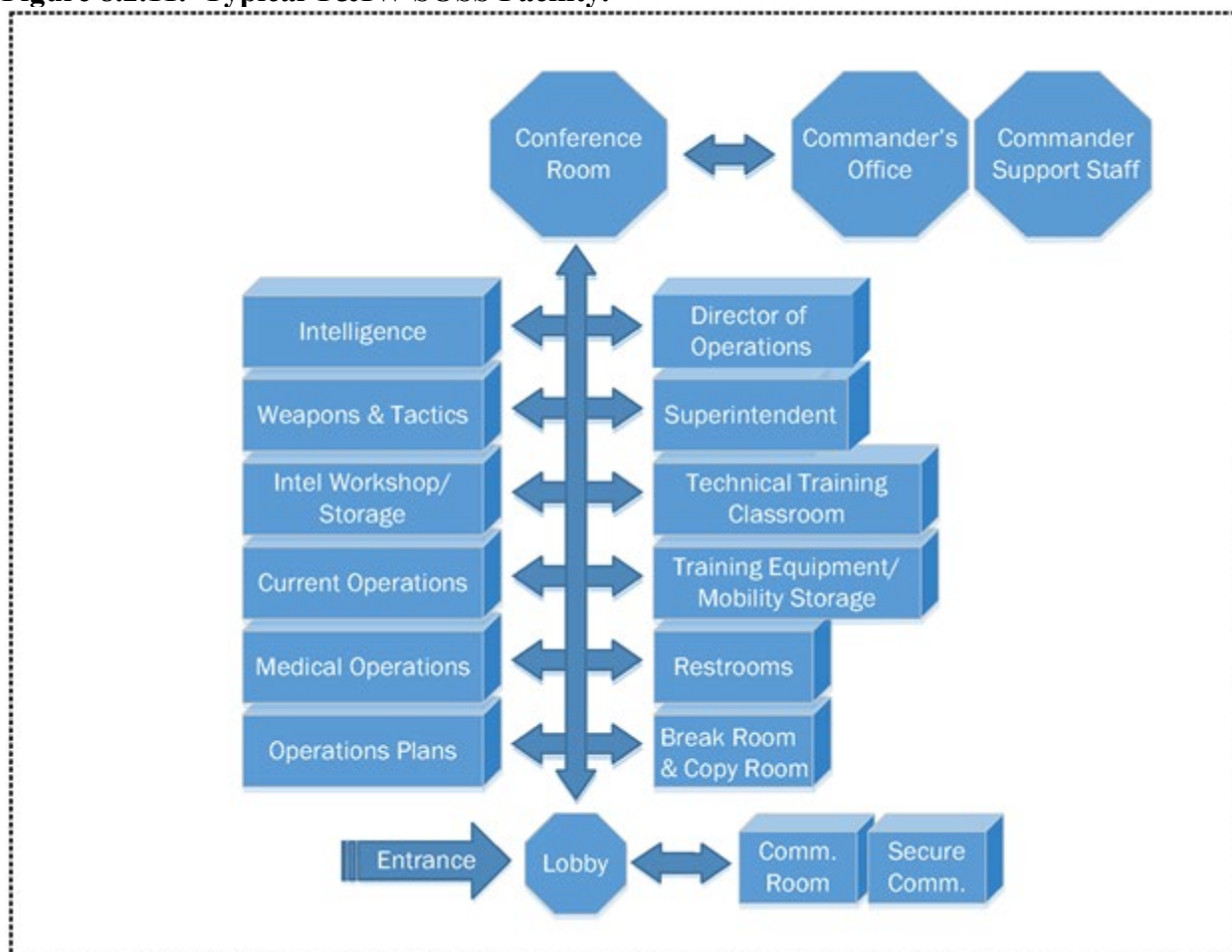


Table 8.2.21. T&IW SOSS Facility Requirements.

Cat Code	Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations
141454	Commander	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
141454	Commander Support Staff	NSF	144	Assume 3 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Director of Operations	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Superintendent	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Intelligence Offices - SCIF	NSF	488	2 Type D, 6 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
141454	Intel Workshop & Storage - SCIF	NSF	500	Provide 200 NSF for a workshop space and 300 NSF for equipment storage.

141454	Weapons & Tactics	NSF	165	1 Type D, 1 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
141454	AFE	NSF	192	4 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Current Operations	NSF	296	2 Type D, 2 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
141454	Medical Operations	NSF	1,285	7 Type D, 9 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
141454	Operations Plans	NSF	292	1 Type D, 4 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
141454	Conference Room	NSF	150	CG 61 Admin Overview Para 1.4.5: 40 PN authorized one 10-person team room. CG 61 Admin Overview Table 1.4: 15 NSF per person.
141454	Technical Training Classroom	NSF	450	Provide one 15-person classroom. CG 61 Admin Overview Table 1.4: 30 NSF per person.
141454	Training Equip./ Mobility Storage	NSF	500	Provide 500 NSF for training equipment and mobility storage.
141454	Break Room	NSF	115	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF.
141454	Communications Rooms	NSF	288	Minimum of 12 ft x 12 ft room per AFSOC/A6. 2 rooms (1 secure).
141454	Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
141454	Mech/Elec. Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
141454	Administrative Support	NSF	580	CG 61 Admin Overview Table 1.1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
141454	Administrative Circulation	NSF	443	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Administrative Space.
141454	Special Purpose Circulation	NSF	165	CG 61 Admin Overview paragraph 1.4.3: Max 10% of Special Purpose Space.
T&IW SOSS Total		NSF	6,818	
T&IW SOSS Total		GSF	8,523	Net to Gross conversion factor of 1.25.

8.2.6.5.22. **T&IW SOMXS Facilities.** Maintenance for the T&IW SOMXS units is based on the weapon system(s) supported. Currently, the 492 SOMXS performs maintenance on the C-146 (for NSAv) and the C-145 (for AvFID). C-146 maintenance requirements are located in Paragraph 7.5.16 for C-146 maintenance hangar requirements, Paragraph 7.5.17 for AMU requirements, and Paragraph 7.5.18 for intermediate maintenance requirements. AvFID aircraft are subject to change based

upon partner nation requirements. For AvFID maintenance requirements or T&IW SOMXS aircraft maintenance requirements not listed in this instruction, consult 492 SOMXS for the latest requirements.

8.3. Group Facility Requirements.

8.3.1. **General.** This section provides the facility requirements to support operations and maintenance group overhead. Subordinate unit facility requirements are not listed in this section.

8.3.2. **Description.** A group is a level of command between wings and squadrons. Groups bring together multiple squadrons or other lower echelon units to provide a broader capability and generally are a tactical echelon without significant staff support. A group has two or more subordinate units and a minimum adjusted population of at least 400 (AFI 38-101 Paragraph 25.2.7). A group may be either a dependent group or an independent group. The two types of groups are described in Table 8.3.1.

Table 8.3.1. Dependent and Independent Group Types.

Group Types	Description
Dependent	A dependent group is a mission, maintenance, mission support, or large functional unit (e.g., communications) that encompasses a number of related squadrons to provide the specified capability to a parent wing. Such groups may possess small supporting staff elements, such as standardization and evaluation or quality control that are organized as sections.
Independent	An independent group has the same functions and responsibilities as a like-type wing but its scope and size do not warrant wing-level designation and associated overhead costs.

8.3.3. **Host and Tenant Installation Requirements.** For planning purposes, this instruction assumes CONUS and OCONUS groups are installation tenants. Requirements for CONUS and OCONUS host groups will usually include additional staff offices such as administrative services, accounting and finance, and the base procurement activity (DAFMAN 32-1084 Category Group 61 — Headquarters Facilities Overview, Paragraph 1.1.2).

8.3.4. **SOG Characteristics.** Notional manpower for a CONUS based SOG is presented on Table 8.3.2, while notional manpower for a OCONUS based SOG is presented on Table 8.3.3.

Table 8.3.2. CONUS SOG Overhead Notional Manpower.

Function	Unit	Title	Personnel			
			Officers	Enlisted	CIV/CME	Total
Command	SOG	Commander	1	0	0	1
Command	SOG	Deputy Commander	1	0	1	2
Command	SOG	Command Chief	0	1	0	1
Command	SOG	Commander's Support Staff	1	0	1	2
Stan/Eval	SOG	Stan/Eval	18	16	0	34
		TOTAL OPERATIONS	21	17	2	40

Notes:

1. Although the size of a group can vary due to its type, mission, and the size of its subordinate units, this table provides a typical operations group notional manpower.
2. The numbers in this table were provided by AFSOC/A1M based on the manpower for the 27 SOG at Cannon AFB.
3. Prior to using any numbers for facility requirements determination, A1M must be contacted to provide the most current numbers.

Table 8.3.3. OCONUS SOG Overhead Notional Manpower.

Function	Unit	Title	Personnel			
			Officers	Enlisted	CIV/CME	Total
Command	SOG	Commander	1	0	0	1
Command	SOG	Deputy Commander	1	0	0	1
Command	SOG	Command Chief	0	1	0	1
Command	SOG	Commander's Support Staff	1	2	0	3
Stan/Eval	SOG	Stan/Eval	4	5	0	9
		TOTAL OPERATIONS	7	8	0	15

Notes:

1. Although the size of a group can vary due to its type, mission, and the size of its subordinate units, this table provides a typical operations group notional manpower.
2. The numbers in this table were provided by AFSOC/A1M based on the manpower for the 352 SOG.
3. Prior to using any numbers for facility requirements determination, A1M must be contacted to provide the most current numbers.

8.3.5. **SOMXG Characteristics.** Notional manpower for a CONUS based SOMXG is presented on Table 8.3.4, while notional manpower for an OCONUS based SOMXG is presented on Table 8.3.5.

Table 8.3.4. CONUS SOMXG Notional Manpower.

Function	Unit	Title	Personnel			
			Officers	Enlisted	CIV/CME	Total
Command	SOMXG	Commander	1	0	0	1
Command	SOMXG	Deputy Commander	1	0	1	2
Command	SOMXG	Command Chief	0	1	0	1
Command	SOMXG	Commander's Support Staff	1	1	1	3
MXA	SOMXG	Aircraft Maintenance	0	0	1	1
MXL	SOMXG	Weapons Standardization	0	10	0	10
MXQ	SOMXG	Quality Assurance	0	34	1	35
MOF	SOMXG	Maintenance Operations Flight	1	2	1	4
MXOP	SOMXG	Programs and Resources Flight	0	4	0	4
MXOT	SOMXG	Maintenance Training Flight	0	28	0	28

MOC	SOMXG	Maintenance Operations Center	0	16	0	16
MDSA	SOMXG	Maintenance Data System Analysis	0	7	2	9
EM	SOMXG	Engine Management	0	4	0	4
PS&D	SOMXG	Plans, Scheduling, and Doc	0	13	0	13
		TOTAL SOMXG	4	120	7	131

Notes:

1. Although the size of a group can vary due to its type, mission, and the size of its subordinate units, this table provides a typical operations group notional manpower.
2. The numbers in this table were provided by AFSOC/A1M based on the manpower for the 27 SOMXG at Cannon AFB.
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide the most current numbers.

Table 8.3.5. OCONUS SOMXG Notional Manpower.

Function	Unit	Title	Personnel			
			Officers	Enlisted	CIV/CME	Total
Command	SOMXG	Commander	1	0	0	1
Command	SOMXG	Deputy Commander	1	0	0	1
Command	SOMXG	Superintendent	0	1	0	1
Command	SOMXG	Commander's Support Staff	1	2	0	3
MXL	SOMXG	Weapons Standardization	0	1	0	1
MXQ	SOMXG	Quality Assurance	1	16	0	17
MOF	SOMXG	Maintenance Operations Flight	0	37	0	37
		TOTAL SOMXG	4	57	0	61

Notes:

1. Although the size of a group can vary due to its type, mission, and the size of its subordinate units, this table provides a typical operations group notional manpower.
2. The numbers in this table were provided by AFSOC/A1M based on the manpower for the 352 SOMXG at RAF Mildenhall.
3. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide the most current numbers.

8.3.6. SOG Facilities.**8.3.6.1. Group Headquarters (CATCODE: 610243).**

8.3.6.1.1. Requirements Determination. Group headquarters facilities accommodate the staff offices of the headquarters.

8.3.6.1.2. Scope Determination. Space must be provided for the commander, deputy commander, group superintendent, commander's support staff, and standardization and evaluation offices and testing rooms. Space must also be provided for conference and break room areas. See **paragraph 1.1.3.6 for more information about the**

unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within group headquarters facilities.

8.3.6.1.3. Typical Operations Group Composition. An Operations Group includes a commander, deputy commander, superintendent, command support staff, standardization and evaluation personnel, and weapons and tactics personnel.

8.3.6.1.4. Dimensions. See [Table 8.3.7](#) for the individual spaces within an operations group headquarters facility.

8.3.6.2. **Remotely Piloted Aircraft (RPA) Operation Center (CATCODE: 610243).**

8.3.6.2.1. Requirements Determination. Where multiple RPA SOC are located at an installation, this facility may consolidate all RPA SOC to provide a single command and control element for RPA activities. This facility requires GCSs and GCS support spaces, operations floor space with consoles for mission directors and personnel from SOG intel, communication systems, and weather sections. Operations floor space is also required for wing plans personnel. Provide restrooms and a break room/kitchen to support 24-hour operations.

8.3.6.2.2. Scope Determination. Space requirements are determined by the number of building occupants and the size and number of special purpose rooms. Space criteria for administrative facilities apply.

8.3.6.2.3. Dimensions. See the remarks in [Table 8.3.7](#) for ROC facility requirements. The requirements shown in this table represent the space required if the facility is authorized. If no ROC is authorized, the SOC will house the requirement. See [Table 7.6.18](#) for MQ-9 SOC requirements.

8.3.6.2.4. Security Considerations. All functions of the ROC are required to be located within a SCIF.

8.3.6.2.5. Design Considerations. An UPS is necessary to maintain operational capability. Semi-hardened, splinter-protected, and hardened construction criteria may apply.

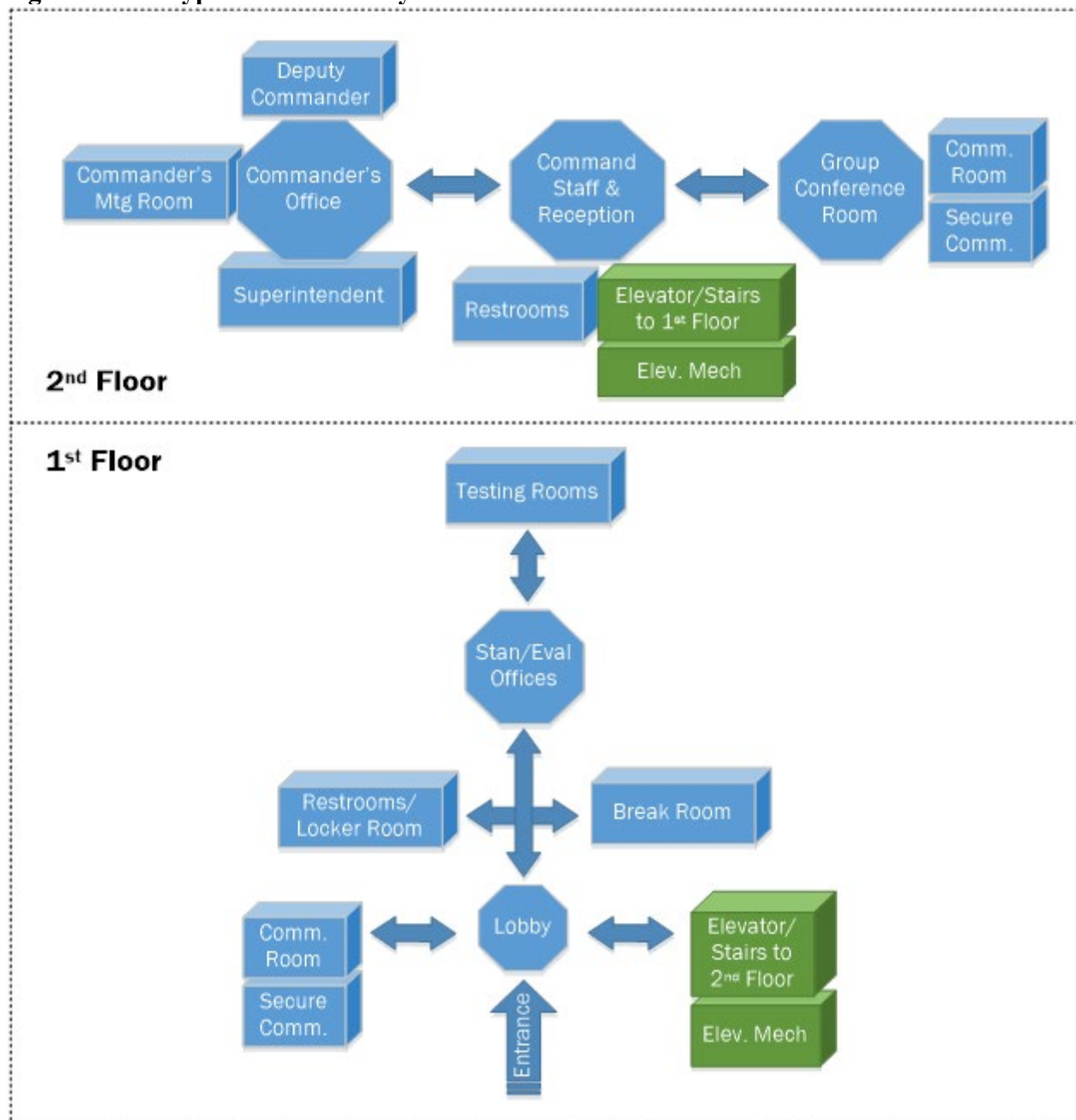
8.3.6.2.6. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

8.3.6.2.7. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other

than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

Table 8.3.6. Building Utility System Requirements for Operations Group Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 8.3.1. Typical SOG Facility.**Table 8.3.7. SOG Facility Space Requirements.**

Cat Code	Facility	UM	CONUS SOG	OCONUS SOG	DAFMAN 32-1084 Reference or Remarks/Calculations
610-243	Cmd Section - Commander	NSF	160	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-243	Cmd Section - Deputy Commander	NSF	320	160	CONUS 2 PN, OCONUS 1 PN. CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.

610-243	Cmd Section - Superintendent	NSF	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-243	Cmd Section - Commander's Meeting Room	NSF	150	150	AFSOC/A4I: Up to 10 people. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-243	Cmd Section - Commander's Support Staff	NSF	200	300	2 PN CONUS and 3 PN OCONUS. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-243	Cmd Section - Reception Area	NSF	140	140	2 PN waiting area plus 1 office. CG 61 Admin Overview Table 1.3: Waiting area is 20 NSF per person. Table 1.2: 100 NSF min for Type D Offices.
610-243	Cmd Section - Group Conf. Room	NSF	400	400	Assume 20 people. CG 61 Admin Overview Table 1.4: 20 NSF per person.
610-243	Stan/Eval OIC	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-243	Stan/Eval NCOIC	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-243	Stan/Eval Open Offices	NSF	1,536	336	32 PN CONUS and 7 PN OCONUS. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
610-243	Stan/Eval Testing Room	NSF	300	150	Assume 10 PN CONUS and 5 PN OCONUS. CG 61 Admin Overview Table 1.4: 30 NSF per person.
610-243	Break Room	NSF	115	100	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF. Minimum of 100 NSF.
610-243	Restrooms and Janitor's Closet	NSF	0	0	CG 61 Admin Overview Paragraph 1.5.2: NSF to GSF conversion.
610-243	Mech/Elec Rooms	NSF	0	0	CG 61 Admin Overview Paragraph 1.5.2: NSF to GSF conversion.
610-243	Comm Room	NSF	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
610-243	Secure Comm Room	NSF	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
610-243	Administrative Support	NSF	820	320	CG 61 Admin Overview Table 1.1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
610-243	Administrative Circulation	NSF	352	176	CG 61 Admin Overview para 1.4.3: Max 10% of Administrative Space.
610-243	Special Purpose Circulation	NSF	951	892	CG 61 Admin Overview para 1.4.3: Max 10% of Special Purpose Space.

610-243	ROC Operations Floor	NSF	1,444	1,348	AFSOC/A5/8/9: Assume ROCs have minimum of 8 GCSs (listed separately in this table) and 6 combat lines/CAPS (assume every 3 combat lines supports 1 AOR). CONUS numbers shown in this table support an 8 CAP ROC. OCONUS numbers in this table support a 6 CAP ROC. Ops floor spaces includes 1 mission director, 2 weather PN, 2 comm PN, 1 intel PN per CAP, 1 intel ops supervisor, 1 advanced tactics, 1 support contractor, and 2 satellite comm contractors. Provide ops floor space using Type F offices to account for circulation. Support offices include 6 wing plans PN and 2 aircraft manufacturer PN. Provide support offices using Type F offices, except for 1 Type D office for wing plans supervisor. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices. 8 CAP CONUS ROC = 29 PN. 6 CAP OCONUS ROC = 27 PN.
610-243	ROC Fixed GCSs	NSF	3,136	3,136	AFSOC/A5/8/9: Assume ROCs have minimum of 8 GCSs or 1 per CAP. CONUS numbers in this table support an 8 CAP ROC. OCONUS numbers in this table support a 6 CAP ROC. Based on Block 50 Inline Layout for GCS: 28 ft x 14 ft or 392 NSF each. Note: a secondary Block 50 configuration is the L-shaped layout that is 25 ft x 14 ft or 350 NSF each.
610-243	ROC GCS Maintenance	NSF	840	840	Based on the number of CAPs being supported. ROC maintenance requires 105 NSF per CAP. CONUS numbers shown in this table support an 8 CAP ROC. OCONUS number in this table support a 6 CAP ROC.

610-243	ROC GCS Parts/Spares Storage	NSF	800	800	Based on the number of CAPs being supported. 100 NSF/CAP. CONUS numbers shown in this table support an 8 CAP ROC. OCONUS number in this table support a 6 CAP ROC.
610-243	ROC Server Room	NSF	1,300	975	27 SOG ROC requires 65 server racks to support 14 CAPs. Rack dimensions are 6.5 ft (rack width with clearance) x 5 ft (rack length with clearance). The calculated configuration is racks on either side of one aisle. Assume 5 racks per CAP supported. CONUS numbers shown in this table support an 8 CAP ROC. OCONUS number in this table support a 6 CAP ROC.
610-243	ROC Mission Planning	NSF	750	750	Provide an area approximately 25' x 30' or 750 sf for mission planning.
610-243	ROC Break Room/Kitchen	NSF	144	144	Provide a kitchen with a refrigerator, microwave, and sink to sustain quality of life for 24-hr operations. The dining area should be size to seat 25% of the staff at one sitting. CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF. Minimum of 100 NSF (Adjusted 16% to 25%).
610-243	ROC Restrooms	NSF	120	120	Provide sufficient restrooms to support maximum PN during peak periods. Provide toilets at 60 NSF per fixture. Assume 2 fixtures.
610-243	ROC Storage	NSF	120	120	Provide storage for housekeeping supplies, controller chemical warfare ensembles, emergency rations, and in-place equipment spares, as applicable. Assume 120 NSF.
Total SOG Headquarters		NSF	6,072	3,912	
Total SOG Headquarters		GSF	7,589	4,890	Net to Gross conversion factor of 1.25.
Total RPA ROC		NSF	8,654	8,233	CONUS numbers support an 8 CAP ROC. OCONUS numbers support a 6 CAP ROC.
Total RPA ROC		GSF	10,818	10,291	Net to Gross conversion factor of 1.25.

8.3.7. ST Operations Group Description. A group is a level of command between wings and squadrons. Groups bring together multiple squadrons or other lower echelon units to provide a broader capability. A group is generally a tactical echelon without significant staff support. A group also has two or more subordinate units.

8.3.7.1. Host and Tenant Installation Requirements. For planning purposes, this instruction assumes ST operational groups are installation tenants. Requirements for host groups will usually include additional staff offices such as administrative services, accounting and finance, and the base procurement activity (DAFMAN 32-1084 Paragraph 6.4.1.2).

8.3.7.2. ST Operations Group Characteristics. Notional staffing for the ST Operations Group is presented on **Table 8.3.8.**

Table 8.3.8. ST Operations Group Notional Manpower.

OSC	Title	Personnel				
		OFF	ENL	CIV	CTR	TOTAL
CC	Commander	1	0	0	0	1
CD	Deputy Commander	1	0	0	0	1
CC	Chief Enlisted Manager	0	1	0	0	1
CSS	Commander's Support Staff	1	0	3	0	4
	Command Section Total	3	1	3	0	7
DOV	Stan/Eval	1	2	0	0	3
FM	Financial Management	0	0	2	0	2
SE	Safety	0	0	1	0	1
SG	Surgeon	1	0	0	0	1
	Group Staff Total	2	2	3	0	7
	ST Special Operations Wing Total	5	3	6	0	14

8.3.8. ST Operations Group Facilities.

8.3.8.1. Group Headquarters (CATCODE: 610243).

8.3.8.1.1. Requirements Determination. An ST group headquarters facility accommodates the staff offices of the headquarters.

8.3.8.1.2. Scope Determination. Space must be provided for the commander, deputy commander, group superintendent, commander's support staff, and standardization and evaluation offices and testing rooms. Space must also be provided for conference and break room areas.

8.3.8.1.2.1. A designated heritage room within a group headquarters is neither authorized by DAFMAN 32-1084 nor an authorized AFSOC-specific requirement.

8.3.8.1.2.2. Where offices are provided, an open office concept using system furniture will be used with the exceptions being the command suite, meeting and conference rooms, or where noise attenuation is needed for security reasons.

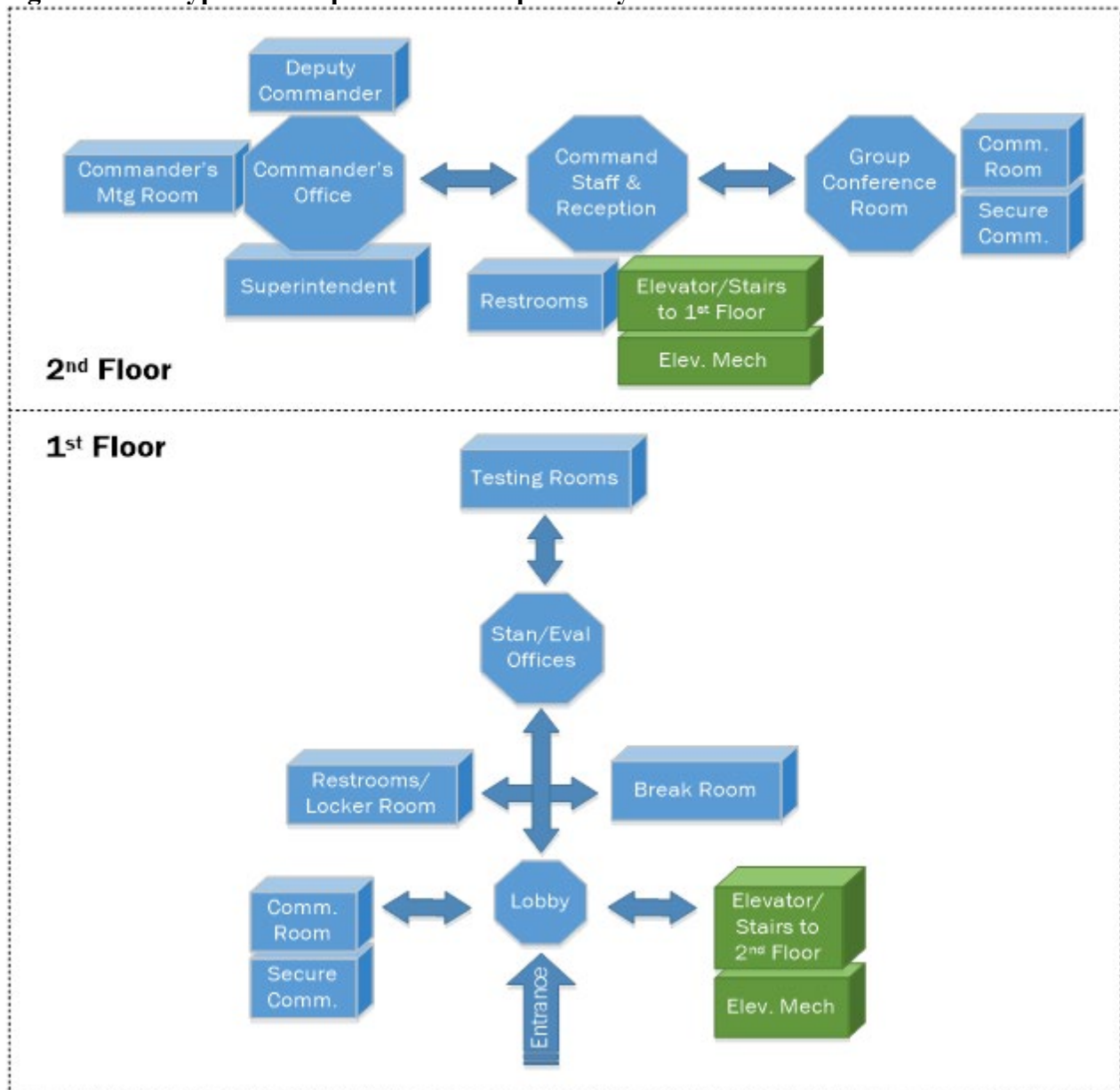
8.3.8.1.3. Typical ST Operations Group Composition. An ST Group includes a commander, deputy commander, chief enlisted manager, and command support staff. Additional group staff include standardization and evaluation, financial management, surgeon and safety personnel.

8.3.8.1.4. Dimensions. See [Table 8.3.10](#) for the individual spaces within an ST operations group headquarters facility.

8.3.8.1.5. Other Considerations. This facility should include space for a “wellness room” that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child’s birth each time such employee has need to express milk; and 2) a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

Table 8.3.9. Building Utility System Requirements for ST Operations Group Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 8.3.2. Typical ST Operations Group Facility.**Table 8.3.10. ST Operations Group Facility Space Requirements.**

Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations
Commander	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
Deputy Commander	NSF	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
Commander Support Staff	NSF	295	1 Type D, 3 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.

Chief Enlisted Manager	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
Stan/Eval	NSF	230	1 Type D, 2 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices
Stan/Eval Testing Room	NSF	300	Assume 10 PN. CG 61 Admin Overview Table 1.4: 30 NSF per person.
Financial Management & Comptroller	NSF	130	2 Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
Safety	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
Surgeon	NSF	140	1 PN. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
Conference Room	NSF	150	Assume 10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person
Break Room	NSF	100	CG 61 Admin Overview Table 1.3: 16% x Number of occupants' x 18 NSF. Minimum of 100 NSF.
Communications Room	NSF	288	2 rooms: 1 secure, 1 standard. Minimum of 12 ft x 12 ft each room per AFSOC/A6.
Restroom	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
Mech/Elec Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
Administrative Support	NSF	280	CG 61 Admin Overview Table 1.1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
Administrative Circulation	NSF	160	CG 61 Admin Overview para 1.4.3: Max 10% of Administrative Space.
Special Purpose Circulation	NSF	84	CG 61 Admin Overview para 1.4.3: Max 10% of Special Purpose Space.
ST SOG Facility Total NSF		2,676	
ST SOG Facility Total GSF		3,345	Net to gross multiplier of 1.25.

8.3.9. SOMXG Facilities.

8.3.9.1. Group Headquarters (CATCODE: 610243).

8.3.9.1.1. Requirements Determination. Group headquarters facilities accommodate the staff offices of the headquarters.

8.3.9.1.2. Scope Determination. Space must be provided for the commander, deputy commander, group superintendent, commander's support staff, weapons standardization, quality assurance, and maintenance operations flight. CONUS maintenance groups also include programs and resources flight, maintenance training flight, maintenance data system analysis, engine management, and plans, scheduling, and documentation. If the MOC (CATCODE 141461) is not collocated in the WOC or ICC, a separate MOC is required. See **paragraph 1.1.3.6 for more information about the unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within group headquarters facilities.**

8.3.9.1.3. Typical Maintenance Group Composition. Includes a commander, deputy commander, commander's support staff, and a command chief. SOMXGs include weapons standardization, quality assurance, and maintenance operations flight. CONUS maintenance groups also include programs and resources flight, maintenance training flight, maintenance data system analysis, engine management, and plans, scheduling, and documentation.

8.3.9.1.4. Dimensions. See [Table 8.3.12](#) for the individual spaces within a maintenance group headquarters facility.

8.3.9.1.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

Table 8.3.11. Building Utility System Requirements for SOMXG Facilities.

System	Requirements
Mechanical	Where "comfort cooling" is authorized, maintain regulated temperature and humidity conditions in all areas via an energy efficient HVAC system. Applicable criteria include UFC 3-401-01 for mechanical & UFC 3-410-01 for HVAC.
Electrical	Use commercial grade convenience receptacles and power outlets. Provide interior and exterior lighting system in accordance with the IES Lighting Handbooks for lighting intensities. Applicable criteria include: UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems, UFC 3-530-01 for interior and exterior lighting and controls, UFC 3-550-01 for exterior power distribution systems, UFC 3-560-01 for electrical safety and electrical O&M, UFC 3-580-01 for building telecommunications, and UFC 4-021-01 for mass notification systems.
Plumbing	Provide a commercial grade domestic water and waste water system. The applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

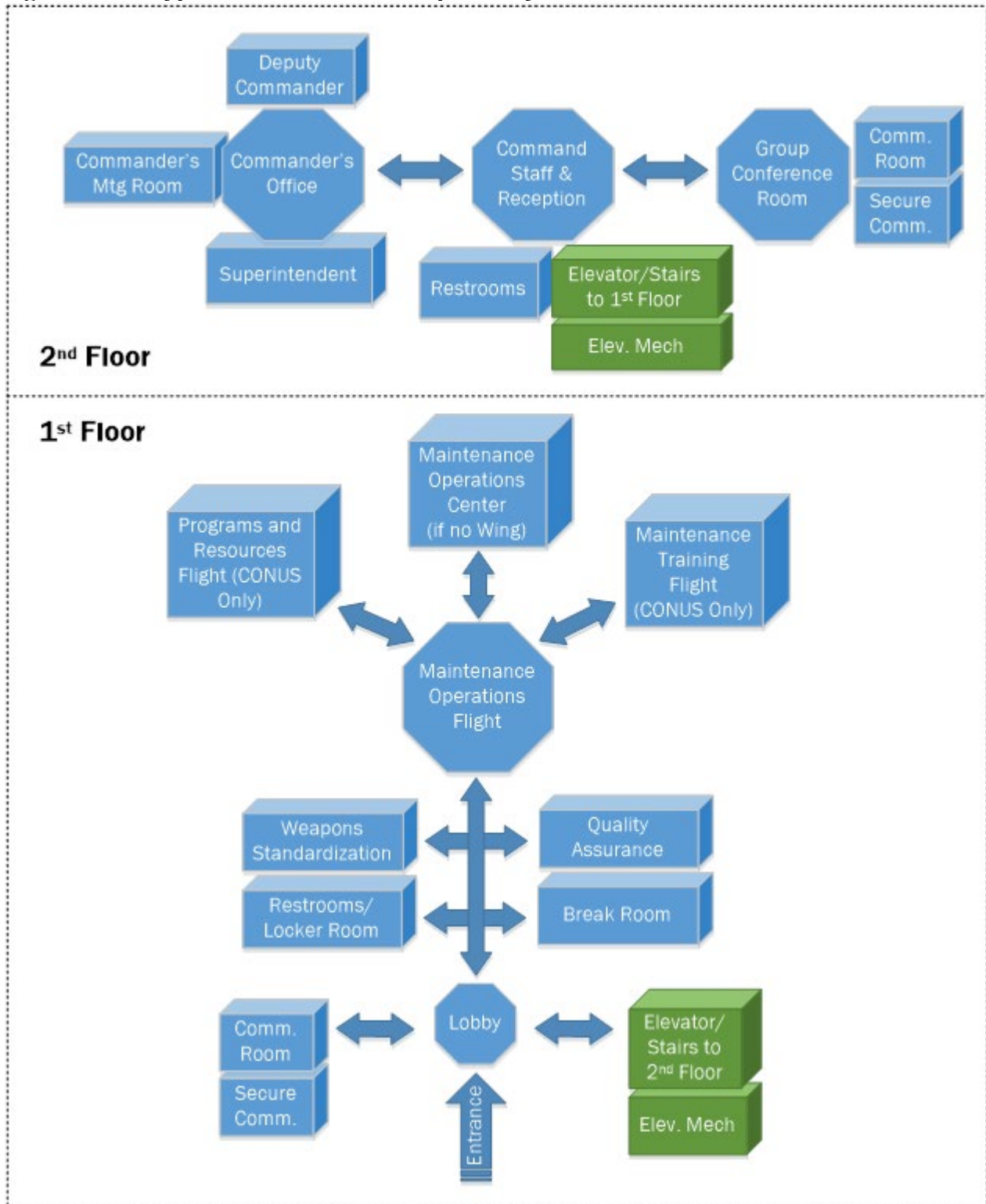
Figure 8.3.3. Typical Maintenance Group Facility.

Table 8.3.12. SOMXG Facility Space Requirements.

Cat Code	Facility	UM	CONUS SOMXG	OCONUS SOMXG	DAFMAN 32-1084 Reference or Remarks/Calculations
610-243	Cmd Section - Commander	NSF	160	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-243	Cmd Section - Deputy CC	NSF	160	160	CG 61 Admin Overview Table 1.2: 160 NSF min for Type B Offices.
610-243	Cmd Section - Superintendent	NSF	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
610-243	Cmd Section - Commander's Meeting Room	NSF	150	150	AFSOC/A4I: Up to 10 people. CG 61 Admin Overview Table 1.4: 15 NSF per person.
610-243	Cmd Section - Commander's Support Staff	NSF	200	200	2 PN (1 admin and 1 knowledge ops). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-243	Cmd Section - Reception Area	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-243	Cmd Section - Group Conf. Room	NSF	400	400	CG 61 Admin Overview Table 1.4: 20 NSF per person. Assume 20 people.
610-243	Weapons Standardization	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-243	Quality Assurance NCOIC	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
610-243	Quality Assurance Open Offices	NSF	1,632	768	34 PN CONUS and 16 PN OCONUS. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-129	Maintenance Operations Offices	NSF	296	1,876	CONUS: 1 OIC and 1 NCOIC; OCONUS: 1 NCOIC (Type D) - CONUS: 2 PN (CONUS); OCONUS: 36 PN (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610-129	Maintenance Operations Center (MOC)	NSF	240	240	With No Wing - 5 PN (Type F). With Wing - This facility can be located in the Installation Control Center (ICC) or located separately. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-129	Plans, Sched. & Documentation (PS&D) Offices	NSF	624	0	CONUS Only: 13 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.

610-129	Maint. Data Sys. Analysis (MDSA) Offices	NSF	432	0	CONUS Only: 9 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-129	Maintenance Training Offices	NSF	724	0	CONUS Only: 1 NCOIC (Type D), 11 instructors, 2 contractors (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
610-129	Maintenance Training Rooms	NSF	3,660	0	CONUS Only: 27 SOMXG/MXOT requires training rooms for a variety of courses. Given the variances of class sizes and course schedules 8 separate rooms dividable by either partition of demountable walls are required (Two 30-person classrooms, Two 20-person, and Four 8-person classrooms). CG 61 Admin Overview Table 1.4 authorizes 25 NSF per person for the 8- and 20-person rooms and 15 NSF per person for the 30-person rooms)
610-129	Maintenance Training Computer Lab and Testing Room	NSF	1,000	0	CONUS Only: 27 SOMXG/MXOT requires a computer lab for up to 25 PN and a testing room for up to 15 PN. CG 61 Admin Overview Table 1.2.1: 25 NSF max per task station (Type H).
610-129	Maintenance Training Conference Room	NSF	300	0	CONUS Only: CG 61 Admin Overview Table 1.4: Conference Room for up to 49 people is authorized 20 NSF per person. Assume 15 people.
610-129	Programs and Resources Flight	NSF	0	0	2 SORTS PN located in the Wing EOC. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
610-243	Restrooms & Janitor's Closet	NSF	0	0	CG 61 Admin Overview Para 1.5.2: NSF to GSF conversion.
610-243	Mech/Elec Rooms	NSF	0	0	CG 61 Admin Overview Para 1.5.2: NSF to GSF conversion.
610-243	Comm Room	NSF	144	144	Minimum of 12 ft x 12 ft each room per AFSOC/A6.
610-243	Secure Comm Room	NSF	144	144	Minimum of 12 ft x 12 ft each room per AFSOC/A6.
610-243	Break Room	NSF	377	176	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF. Minimum of 100 NSF.

610-243	Administrative Support	NSF	1,640	1,240	CG 61 Admin Overview Table 1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
610-243	Administrative Circulation	NSF	631	484	CG 61 Admin Overview para 1.4.3: Max 10% of Administrative Space.
610-243	Special Purp. Circulation	NSF	642	125	CG 61 Admin Overview para 1.4.3: Max 10% of Special Purpose Space.
Total SOMXG Headquarters		NSF	13,996	6,707	
Total SOMXG Headquarters		GSF	17,495	8,384	Net to Gross conversion factor of 1.25.

8.3.9.1.6. **SOMSG Facilities.** SOMSG facilities typically include the standard Air Force allowances found throughout DAFMAN 32-1084; however, AFSOC SOMSGs are responsible for specialized duties to provide space for several unique capabilities that support forward-deployed locations. This section identifies the known unique requirements. As the SOMSG mission changes, it is anticipated that additional unique requirements will be necessary in the future.

8.3.9.1.7. Structure and Reference. The SOMSG structure includes a Special Operations Force Support Squadron (SOFSS), a Special Operations Communications Squadron (SOCS), a Special Operations Contracting Squadron (SOCONS), a Special Operations Civil Engineer Squadron (SOCES), a Special Operations Logistics Readiness Squadron (SOLRS), and a Special Operations Security Forces Squadron (SOSFS). For the purposes of this instruction, the only units with unique capabilities that are not accounted for within DAFMAN 32-1084 are SOCS, SOCES, and SOSFS. Additionally, for SOMSG, manpower will vary based on geographic location and the type and quantity of the units assigned to an installation. Contact AFSOC/A1M for more information about SOMSG manpower.

8.3.10.1. **Base Engineer Covered Storage Facility (CATCODE: 219946).**

8.3.10.1.1. Requirements Determination. This facility provides environmentally controlled storage space and related operating space for Base Civil Engineer supplies. This facility is used for supplies and materials that cannot withstand storage in yards or sheds.

8.3.10.1.2. Scope Determination. SOCES is not flying squadron and, for the purposes of this instruction, only requires storage facilities. For planning purposes, the area for these unique items is additive to the DAFMAN 32-1084, CC 219946 Base Engineer Covered Storage Facility, Table 1.1 requirement and should be in proximity to other SOCES assets.

8.3.10.1.3. Dimensions. See [Table 8.3.16](#) for SOCES unique facility requirements.

8.3.10.2. **Security Forces Operations (CATCODE: 730835).**

8.3.10.2.1. Description. SOF security forces are composed of QFM1C (DAGRE teams) and QFL1D (logistics support packages). DAGRE teams are devoted full-time

to the flyaway security mission. In CONUS, SOF security forces are associated with the SOSFS; OCONUS, SOF security forces are associated with the SOSS. Tables 8.3.13 and 8.3.14 show the personnel for CONUS and OCONUS SOF Security Forces respectively.

Table 8.3.13. CONUS SOF Security Forces UTC Manpower (only includes manpower that drives a space requirement).

Title	Personnel			
	Officers	Enlisted	CIV/CME	Total
DAGRE Program Manager	0	1	0	1
QFM1C Teams (8 teams @ 5 PN per team)	0	40	0	20
TOTAL CONUS SOF Security Forces	0	41	0	41
Notes: 1. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide the most current numbers. 2. CONUS SOF personnel are embedded within SOSFS.				

Table 8.3.14. OCONUS SOF Security Forces UTC Manpower (only includes manpower that drives a space requirement).

Title	Personnel			
	Officers	Enlisted	CIV/CME	Total
OIC	1	0	0	1
NCO	0	3	0	3
QFM1C Teams (4 teams @ 5 PN per team)	0	20	0	20
TOTAL CONUS SOF Security Forces	1	23	0	24
Notes: 1. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide the most current numbers. 2. OCONUS SOF security forces personnel are embedded within SOSS.				

8.3.10.2.2. Requirements Determination. Space requirements are based on total personnel assigned and individual unit tasked equipment and vehicles.

Table 8.3.15. SOF Security Forces Equipment Required.

Team Type	No. of Teams CONUS	No. of Teams OCONUS	Equipment Packages	Area Required Per Equipment Package
QFM1C	8	4	1 per team ¹	50 NSF
QFL1D	2	1	1 per team ²	100 NSF per package. Add 750 NSF for CONUS vehicles and 150 NSF for OCONUS vehicle.
Notes: 1. Requires one ISU 72.5 (108" L x 48" W x 72" H); round to 10' x 5' for storage circulation. 2. Requires one ISU 90 (108" L x 88" W x 91.35" H); round to 10' x 10' for storage circulation. Also, requires space for Polaris MRZR vehicles (140" L x 60" W x 73.8" H); round to 10' x 15' each for storage circulation. Provide space for 5 vehicles plus 1 in maintenance bay CONUS, and 1 vehicle plus 1 in maintenance bay OCONUS.				

8.3.10.2.3. Scope Determination. SOF security forces require space for DAGRE teams and logistics support packages. The unit also requires lockers, showers, individual equipment storage, high value storage, range and mission equipment, and vehicle storage and maintenance facilities. As an embedded element, SOF security forces personnel utilize the armory of the unit they are embedded with; therefore, no dedicated armory is required. For planning purposes, the area for these unique items is additive to the standard security forces requirements found in DAFMAN 32-1084, CC 730835 Security Forces Operations, Paragraph 1.2 and should be in proximity to other unit assets.

8.3.10.2.4. Dimensions. See [Table 8.3.16](#) for SOF security forces unique facility requirements.

8.3.10.3. Squadron Operations (CATCODE: 141753).

8.3.10.3.1. Requirements Determination. Each squadron needs an operational building for administration, scheduling, training, briefing, personal equipment maintenance, and storage.

8.3.10.3.2. Scope Determination. SOCS is not flying squadron and, for the purposes of this instruction, only requires equipment storage facilities. For planning purposes, the area for these unique items is additive to the allowances in DAFMAN 32-1084 and should be in proximity to other SOCS assets.

8.3.10.3.3. Dimensions. See [Table 8.3.16](#) for SOCS unique facility requirements.

Table 8.3.16. SOMSG Facility Space Requirements.

Cat Code	Facility	UM	CONUS SOMSG	OCNUS SOMSG	Remarks/Calculations
219-946	SOCES - Air Rapid Response Kit (ARRK)	NSF	3,960	3,960	100 Person Beddown Kit requires five pallets each sized 9' x 8'. C2 Kit requires three pallets each sized 9' x 8'. HVAC ECU Kit requires three pallets each sized 9' x 8'. Fuel Kit requires five pallets each sized 9' x 8'. Water Purification Kit requires one pallet sized 9' x 8'. Armory Kit requires four pallets each sized 9' x 8'. Cold Weather ECU Kit requires one pallet sized 9' x 8'. Allow 2.5 times pallet size for storage and maneuvering.
	Total SOCES ARRK Storage	NSF	3,960	3,960	
730-835	SOF Security Forces DAGRE Program Mgr	NSF	65	0	1 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.

730-835	SOF Security Forces OIC Office	NSF	0	65	1 PN. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
730-835	SOF Security Forces NCO Office	NSF	0	195	3 PN OCONUS only. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
730-835	SOF Security Forces QFM1C Team Workstations	NSF	960	480	4 teams of 5 PN each CONUS; 2 teams of 5 PN each OCONUS. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
730-835	SOF Security Forces Individual Gear Storage	NSF	189	126	CONUS: 21 PN OCONUS: 14 PN Cages sized 3' x 3'.
730-835	SOF Security Forces Mobility Kit Storage	NSF	110	70	Assume 1 kit per person. Provide 10 NSF per kit, stackable 2 high.
730-835	SOF Security Forces High Value Storage Area	NSF	225	225	Provide a 15' x 15' room. The size of this space may vary based on the size and quantity of the item(s) requiring secure storage.
730-835	SOF Security Forces Armory	NSF	0	0	SOF security forces will utilize the armory of the unit where they are embedded.
730-835	SOF Security Forces Mission Equipment Storage	NSF	1,350	350	CONUS: Eight 10' x 5' pallets, two 10 x 10 pallets, and five 10' x 15' vehicles. OCONUS: Two 10' x 5' pallets, one 10 x 10 pallet, and one 10' x 15' vehicle. One additional vehicle, both CONUS and OCONUS, will be stored in the vehicle maintenance bay.
730-835	SOF Security Forces Vehicle Maint. Bay	NSF	324	324	Per AFIMSC/SFX, provide one, 10' x 10' Bay with 4' clearance on all sides. Total 18' x 18'.
730-835	SOF Security Forces Individual Equip. Storage	NSF	150	100	Per AFIMSC/SFX, provide 150 NSF CONUS and 100 NSF OCONUS.
730-835	SOF Security Forces Range Equip. Storage	NSF	150	100	Per AFIMSC/SFX, provide 150 NSF CONUS and 100 NSF OCONUS.
730-835	SOF Security Forces Conference Room	NSF	150	120	CONUS: Provide one, 10-person room. OCONUS: Provide one, 8-person room. CG 61 Admin Overview Table 1.4: 15 NSF per person. This space can be shared with other units.

730-835	SOF Security Forces Break Room	NSF	100	100	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF. Minimum of 100 NSF.
730-835	SOF Security Forces Comm. Room	NSF	288	288	2 Rooms (1 secure). Minimum of 12 ft x 12 ft each room per AFSOC/A6.
730-835	SOF Security Forces Restroom, JC, Mech, & Electrical Rooms	NSF	0	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
730-835	SOF Security Forces Administrative Support	NSF	420	280	CG 61 Admin Overview Table 1.1: 20 sf/ office. AFSOC/A4I: Default is the min. CONUS: 21 open offices. OCONUS 14 open offices
730-835	SOF Security Forces Admin. Circulation	NSF	145	102	CG 61 Admin Overview para 1.4.3: Max 10% of Administrative Space.
730-835	SOF Security Forces Special Purp. Circulation	NSF	303	180	CG 61 Admin Overview para 1.4.3: Max 10% of Special Purpose Space.
Total Unique SOF Security Forces Facility		NSF	4,924	3,105	CONUS SOF Security Forces embeds with SOSFS. OCONUS SOF Security Forces embeds with SOSS.
141-753	Tactical Communications System (Large)	NSF	1,440	1,440	Requires eight pallets each sized 9' x 8'. Allow 2.5 times pallet size for storage and maneuvering.
141-753	Tactical Communications System (Small)	NSF	120	120	Requires 16 cases each sized 3' x 2' and can be stacked two high. Allow 2.5 times pallet size for storage and maneuvering.
Total SOCS Tactical Comm. Equip. Storage		NSF	1,560	1,560	
Total SOMSG Unique Requirement		NSF	10,444	8,625	
Total SOMSG Unique Requirement		GSF	13,055	10,781	Net to Gross conversion factor of 1.25.

8.3.11. SOMDG Facilities.

8.3.11.1. **Description.** SOMDG facilities typically include the standard Air Force allowances found in DAFMAN 32-1084 AFMAN 32-1084, CG 51 Medical and Medical Support, Research and Training Facilities Overview and DoD Medical Space Planning Criteria.

8.3.11.2. **Structure and Reference.** The SOMDG structure includes a Special Operations Aerospace Medicine Squadron (SOAMDS), a Special Operations Medical Operations Squadron (SOMDOS), and a Special Operations Medical Support Squadron

(SOMDSS). For the purposes of this instruction, there are no unique capabilities that are not accounted for within DAFMAN 32-1084 or DoD Medical Space Planning Criteria. Additionally, for SOMSG, manpower will vary based on geographic location and the type and quantity of the units assigned to an installation. Contact AFSOC/A1M for more information about SOMDG manpower.

8.4. Special Operations Support Squadron (SOSS) Facility Requirements.

8.4.1. **General.** This section provides the facility requirements to support SOSS overhead. Exceptions to this are those category codes that are provided in DAFMAN 32-1084, including Air Traffic Control Tower (DAFMAN 32-1084 CC 149962 Air Traffic Control Tower, Paragraph 1.1 & Table 1.1), RAPCON (DAFMAN 32-1084 CC 134336 Fixed RAPCON) [GCA Fixed] Facility), RAPCON Vault (DAFMAN 32-1084 CC 134338 RAPCON Vault [GCA Vault]), and RAPCON Support Facility (DAFMAN 32-1084 CC 134341 RAPCON Support Building [GCA/RAPCON Support Building]).

8.4.2. **Description.** SOSSs provide direct and backside support for special operations squadrons. Direct support (collocated with each squadron) includes aviation resource management, weapons and tactics, current operations, operational planning, intelligence, mobility, and satellite AFE storage and workshop. Backside support (separated from each squadron) includes aircrew training, medical support and storage, weather forecasting, communications, primary AFE storage and workshop, operational range support (including opposing force (OPFOR), maritime, and assault/drop zone support functions), joint liaison training (JLT), survival, evasion, resistance, and escape (SERE) training, airfield operations, air traffic control and landing systems (ATCALS), and range management. SOSS support for CONUS and OCONUS locations will vary based on whether AFSOC is a host or tenant.

8.4.2.1. **Host and Tenant Installation Requirements.** For planning purposes, this instruction assumes that AFSOC is the installation host at CONUS locations and installation tenants at OCONUS locations. Requirements for CONUS tenant units should follow OCONUS tenant authorizations and OCONUS host units should follow CONUS host authorizations.

8.4.3. **Special Operations Support Squadron Characteristics.** Notional manpower for CONUS and OCONUS SOSS are presented in **Table 8.4.1** and **Table 8.4.2** respectively.

Table 8.4.1. CONUS SOSS Notional Manpower.

Unit	Function	Officer	Enlisted	Civilian	Total
SOSS	Commander	1	0	0	1
SOSS	First Sergeant	0	1	0	1
SOSS	Commander's Support Staff	1	3	1	5
SOSS	Director of Operations	1	0	0	1
SOSS	Airfield Operation	3	4	3	10
SOSS	Airfield Management	0	15	0	15
SOSS	RAPCON	0	33	5	38
SOSS	Control Tower	0	21	1	22
SOSS	Aerospace Medicine	12	20	0	32
SOSS	Aircrew Flight Equipment	0	66	0	66

SOSS	Data Management	0	10	0	10
SOSS	Weather	2	17	1	20
SOSS	Operational Range Support	1	3	7	11
SOSS	Joint Liaison Training	1	6	0	7
SOSS	SERE	0	7	0	7
	SOSS Total	22	206	18	246

Notes:

1. Operations Plans and Current Operations functions for CONUS SOSS units are performed by a SOAOS; however, T&IW SOSS do not have an SOAOS (See section 8.2.6 for T&IW SOSS manpower and requirements).
2. Intelligence function for CONUS SOSS units is performed by a Special Operations Intelligence Squadron (SOIS). If intelligence function is within an SOSS, personnel will be 8 officers, 40 enlisted, and 2 civilians for a total of 50.
3. Communications function for CONUS SOSS units is performed by a Special Operations Communications Squadron (SOCS).
4. These numbers are based on the manpower of the 27 SOSS. Actual requirements may be less than what is presented here.
5. Prior to using any numbers for facility requirements determination, A1M must be contacted to provide most current numbers.

Table 8.4.2. OCONUS SOSS Notional Manpower.

Unit	Function	Officer	Enlisted	Civilian	Total
SOSS	Commander	1	1	0	2
SOSS	First Sergeant	0	1	0	1
SOSS	Commander's Support Staff	1	3	1	5
SOSS	Director of Operations	1	1	0	2
SOSS	Aerospace Medicine	4	9	0	13
SOSS	Weapons & Tactics	5	2	0	7
SOSS	Aircrew Flight Equipment	0	25	0	25
SOSS	Data Management	0	1	0	1
SOSS	Communications	2	70	0	72
SOSS	Intelligence	4	24	1	29
SOSS	Weather	1	9	0	10
SOSS	Training	0	1	0	1
SOSS	Operations Plans	10	26	0	36
SOSS	Current Operations	5	15	0	20
SOSS	SERE	0	2	0	2
SOSS	Aerial Delivery	0	10	0	10
	SOSS Total	34	200	2	236

Notes:

1. These numbers were provided by AFSOC/A1M based on the manpower of the 352 SOSS.
2. Prior to using any numbers for facility requirements determination, A1M must be contacted to provide most current numbers.

8.4.4. SOSS Facilities.

8.4.4.1. Squadron Operations (CATCODE: 141753).

8.4.4.1.1. Requirements Determination. Each squadron needs an operational building for administration, scheduling, training, briefing, personal equipment maintenance, and storage for aircrews.

8.4.4.1.2. Scope Determination. Space must be provided for the commander and staff. Space is required for AFE systems maintenance and the care, storage, and issue of flying clothing and equipment for each crew member. Space is also required for an operations officer to direct flight operations and for intelligence, current operations, operations plans, communications (including base communications, client computer systems, and ground, tactical, and mobile communications systems), weather, aerospace medicine, SERE, and OPFOR. Due to their large storage, maintenance, or training requirements, AFE, SERE, JLT, and operational range support (ORS) are typically located in separate facilities from the SOSS headquarters. At CONUS (host) installations, base operations, ATCALS, and RAPCON also are in separate facilities. See **paragraph 1.1.3.6 for more information about the** unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within squadron operations facilities.

8.4.4.1.3. Typical SOSS Composition. Includes a commander, first sergeant, commander's support staff, and a director of operations. It includes weather, aerospace medicine, intelligence (OCONUS only, CONUS intelligence will be supported by a SOIS), communications (OCONUS only, CONUS communications will be supported by a Special Operations Communications Squadron (SOCS)), current operations (OCONUS only, CONUS current operations will be supported by an SOAOS), and operations plans (OCONUS only, CONUS operations plans will be supported by an SOAOS). Separate facilities include AFE, SERE (CONUS only), ORS (CONUS only), JLT (CONUS only), base operations (CONUS only), RAPCON (CONUS only), and ATCALS (CONUS Only).

8.4.4.1.4. Dimensions. See [Table 8.4.4](#) for the individual spaces within a SOSS operations facility.

8.4.4.1.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

8.4.4.1.6. Other Considerations. This facility should include space for a "wellness room" that is a site regulatory requirement per the Affordable Care Act, Public Law 111-148, which added a new subsection (r) to section 7 of the Fair Labor Standards Act of 1938. This new section requires an employer to provide employees with 1) a reasonable break time to express breast milk for her nursing child for one year after the child's birth each time such employee has need to express milk; and 2) a place, other

than a bathroom, that is shielded from view and free from intrusion from coworkers and the public which may be used by the employee to express breast milk. Note that this space does not need to be a permanent, dedicated space; however, it should meet all the requirements listed above and be readily accessible to the employee should there be a need.

Table 8.4.3. Building Utility System Requirements for SOSS Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	This facility follows standard AFSOC fire protection requirements. See Table 1.1.1 for general fire protection criteria/references.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

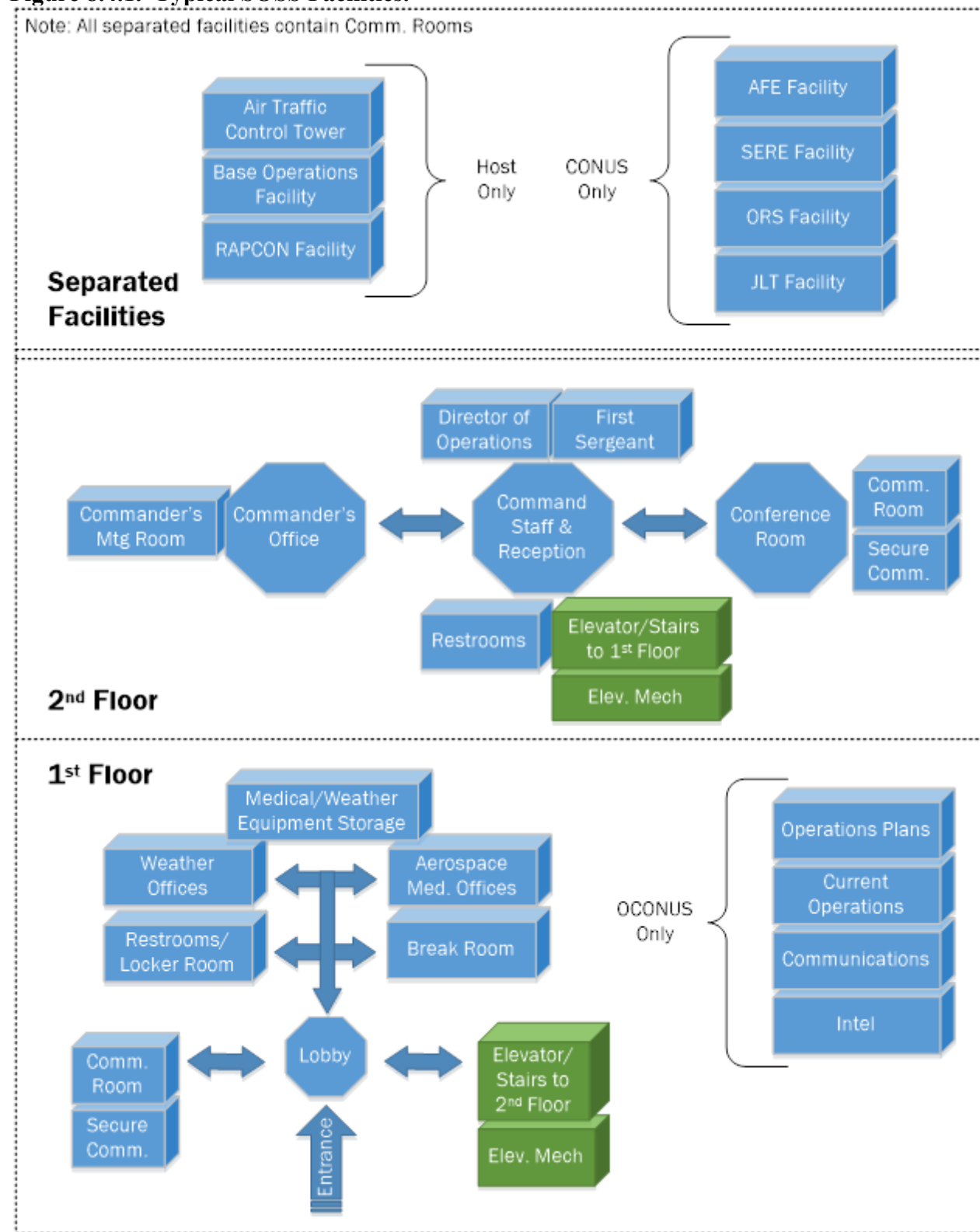
Figure 8.4.1. Typical SOSS Facilities.

Table 8.4.4. SOSS Facility Space Requirements.

Cat Code	Facility	UM	CONUS SOSS	OCONUS SOSS	DAFMAN 32-1084 Reference or Remarks/Calculations
141-753	Command Suite - Commander	NSF	140	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
141-753	Command Suite - First Sergeant	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Command Suite - Commander's Meeting Room	NSF	150	150	AFSOC/A4I: Up to 10 PN. CG 61 Admin Overview Table 1.4: 15 NSF per person.
141-753	Command Suite - Commander's Support Staff	NSF	395	395	1 executive and 1 UDM (Type D), 2 support staff, 1 Knowledge Ops PN (Type E). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141-753	Command Suite - Ops Officer	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Command Suite - Superintendent	NSF	100	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141-753	Intel - Flight Commander	NSF	0	1,300	CONUS - N/A. Operated by a SOIS. OCONUS - 1 Flt CC. (Type D), 25 intel personnel (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Intel - Equipment Storage	NSF	0	800	CONUS - N/A. Operated by a SOIS. OCONUS – Provide 800 NSF of equipment storage.
141-753	Intel - SCIF	NSF	0	360	CONUS - N/A. Operated by a Special Operations Intelligence Squadron. OCONUS – Provide a SCIF of 360 NSF.
141-753	Intel - Workshop	NSF	0	328	CONUS - N/A. Operated by a SOIS. OCONUS – 2 workstations plus a workshop space of 200 NSF. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Weapons & Tactics Offices	NSF	0	536	OCONUS Only - 1 OIC and 1 NCOIC (Type D), 7 Wep/Tac personnel (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.

141-753	Wep & Tactics Mobility Storage	NSF	0	500	OCONUS Only - Mobility Storage of 500 NSF.
141-753	Current Operations	NSF	0	192	CONUS - Operated by AOS. OCONUS - 4 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Scheduling	NSF	0	192	CONUS - Operated by AOS. OCONUS - 4 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Training Office	NSF	196	196	1 OIC (Type D), 2 training instructors (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Training Rooms	NSF	600	600	AFSOC/A4I: 2 rooms at 300 NSF each.
141-753	Operations Data Management	NSF	532	532	1 NCOIC (Type D), 9 staff PN (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Weather Offices	NSF	1,335	685	CONUS - 1 OIC (Type D), 19 staff (Type E) including Weather NCOIC, Staff Weather Element, Mission Services Weather Element, and Airfield Service Element. Manning based on 27 SOSS Weather). OCONUS - 1 OIC (Type D), 9 staff (Type E). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Operations Plans Offices	NSF	0	1,348	CONUS - N/A. Current structure does not have a CONUS Operations Plans flight. OCONUS - 1 OIC/NCOIC (Type D), 26 plans PN (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.

141-753	Logistics Offices	NSF	0	776	CONUS - N/A. Operated by Logistics Readiness Squadron or Aerial Port Squadron. OCONUS – 1 NCOIC and 1 Superintendent (Type D). 12 logistics staff (Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Communications Offices	NSF	0	3,464	CONUS - N/A. Operated by a Communications Squadron. OCONUS - CG 61 Admin Overview Table 1.2: 100 NSF min Type D office for officers. CG 61 Admin Overview Table 1.2.1: 48 NSF min Type F office for enlisted. Includes Operations Support Communications (2 officers), Ground Communications Maintenance (22 enlisted), Ground Communications Operations (27 enlisted), Client Services (10 enlisted), and Ground Comm Plans (9 enlisted).
141-753	Communications Workshop	NSF	0	2,400	CONUS - N/A. Operated by a Communications Squadron. OCONUS – Provide a workspace of 2,400 NSF.
141-753	Communications Equipment Storage	NSF	0	9,200	CONUS - N/A. Operated by a Communications Squadron. OCONUS – Provide 9,200 NSF.
141-753	Aerospace Medicine Offices	NSF	2,160	832	Type D for officers (12 CONUS, 4 OCONUS). Type F for enlisted (20 CONUS, 9 OCONUS). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141-753	Aerospace Medicine Treatment Rooms	NSF	500	200	Provide 100 NSF for each examination room. CONUS 5 rooms, OCONUS 2 rooms.

141-753	Medical/Weather Equipment Storage	NSF	5,000	7,110	Storage of 5,000 NSF for CONUS locations - based on medical storage building Cannon AFB (27 SOSS). Storage of 7,110 NSF for OCONUS - based on Building 3531 at Kadena AB (353 SOSS).
141-753	Conference Room	NSF	700	700	Para 6.1.4.5: The maximum authorizations exceed the practical use for conference rooms sized for squadron operations. Up to 49 PN = 150 NSF (sized for 10 PN); 50-99 PN = 360 NSF (sized for 18 PN); 100-149 PN = 500 NSF (sized for 25 PN); >150 PN = 700 NSF (sized for 35 PN). Sizes based on CG 61 Admin Overview Table 1.4.
141-753	Break Room	NSF	708	680	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF. Minimum of 100 NSF.
141-753	Restrooms & Janitor's Closet	NSF	0	0	CG 61 Admin Overview Para 1.5.2: NSF to GSF conversion.
141-753	Mech/Elec Room	NSF	0	0	CG 61 Admin Overview Para 1.5.2: NSF to GSF conversion.
141-753	Comm Room	NSF	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	Secure Comm Room	NSF	144	144	AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor.
141-753	SOSS Admin. Support	NSF	1,580	4,020	CG 61 Admin Overview Table 1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
141-753	SOSS Admin. Circulation	NSF	647	1,227	CG 61 Admin Overview para 1.4.3: Max 10% of Administrative Space.
141-753	SOSS Special Purp. Circulation	NSF	654	1,954	CG 61 Admin Overview para 1.4.3: Max 10% of Special Purpose Space.
141-753	AFE Offices	NSF	700	460	1 NCOIC (Type D), 10 PN CONUS or 5 PN OCONUS (Type G). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.

141-753	AFE Shop	NSF	14,560	10,420	Includes Flotation Area, Chemical Use Area, Flightline Equipment Area, Gear Storage, Packing Tables, Sewing Area, Drying Tower, and Staging Area. CC 141753 Squadron Operations, Table 1.2: 9,040 NSF for 2 squadrons; 10,420 NSF for 3 squadrons; 11,800 NSF for 4 squadrons; 13,180 NSF for 5 squadrons; and 14,560 NSF for 6 squadrons. Assume 6 squadrons CONUS and 3 squadrons OCONUS. Specific AFE shop requirements are based on guidance from the following: TO 15X-1-1, TO 14D3-11-1, TO 14S1-102, T. 12S10-2AVS9-2, and AFI11-301V1. To determine exact space requirements, reference of these documents is necessary along with the type of aircraft and number of aircrew being supported.
141-753	AFE Training Room	NSF	1,600	1,600	CC 141753 Squadron Operations, Table 1.2: Authorizes 1,600 NSF for 2-6 squadrons. Assume 6 squadrons CONUS and 3 squadrons OCONUS.
141-753	AFE Support Areas	NSF	3,795	2,810	CC 141753 Squadron Operations, Table 1.2: Authorizes 2,480 NSF for 2 squadrons; 2,810 NSF for 3 squadrons; 3,190 NSF for 4 squadrons; 3,505 NSF for 5 squadrons; and 3,795 NSF for 6 squadrons. Assume 6 squadrons CONUS and 3 squadrons OCONUS.
141-753	AFE Admin. Support	NSF	300	200	CG 61 Admin Overview Table 1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
141-753	AFE Admin. Circulation	NSF	100	66	CG 61 Admin Overview para 1.4.3: Max 10% of Administrative Space.
141-753	AFE Special Purp. Circulation	NSF	1,996	1,483	CG 61 Admin Overview para 1.4.3: Max 10% of Special Purpose Space.
141-753	ORS Offices	NSF	780	0	CONUS only: 10 PN (Type F), 10 PN (Type G) CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices. CG 61 Admin Overview Table 1.2.1: 30 NSF min for Type G Offices.

141-753	ORS Conference	NSF	400	0	CONUS only: 20-person conference room. CG 61 Admin Overview Table 1.4: 20 NSF per person.
141-753	ORS Break Room	NSF	100	0	CONUS only: 20-person break room. CG 61 Admin Overview Table 1.4: 16% of PN x 18 sf. Minimum of 100 sf.
141-753	ORS Showers	NSF	60	0	CONUS only: Provide 1 men's and 1 women's shower. FC 4-470-02F: 30 NSF per shower/drying area.
141-753	ORS Lockers and Storage	NSF	916	0	CONUS only: 1 SOSS/OPFOR Building 91047: 916 sf.
141-753	ORS Laundry	NSF	63	0	CONUS only: 1 SOSS/OPFOR Building 91047: 63 sf.
141-753	ORS Workshop & Equip Storage	NSF	1,459	0	CONUS only: 1 SOSS/OPFOR Building 91047: 1,459 sf.
141-753	ORS Weapons Vault	NSF	255	0	CONUS only: 1 SOSS/OPFOR Building 91047: 255 sf.
218-852	ORS Ammunition Vault	NSF	223	0	CONUS only: 1 SOSS/OPFOR Building 91047: 223 sf.
218-852	ORS Communications Room	NSF	288	0	CONUS only: AFSOC/A6: 12 ft x 12 ft (144 NSF) per floor. One secure and one standard room.
218-852	ORS Maritime Facility	NSF	4,496	0	CONUS only: 1 SOSS/OPFOR Building 91045: 4,496 sf.
218-852	ORS Vehicle and Boat Storage	NSF	1,460	0	CONUS only: Vehicles include 7 ATVs, 3 Razors, 4 Rangers (each approx. 9' x 6' with clearance). Watercraft includes 2, 22-foot boats (approx. 28' x 8' with clearance) and 1, 26-foot boat (approx.. 32'x 8'with clearance).
218-852	ORS Admin. Support	NSF	400	0	CG 61 Admin Overview Table 1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
218-852	ORS Admin. Circulation	NSF	168	0	CG 61 Admin Overview para 1.4.3: Max 10% of Administrative Space.
218-852	ORS Special Purp. Circulation	NSF	922	0	CG 61 Admin Overview para 1.4.3: Max 10% of Special Purpose Space.

141-753	SERE Offices and Conference Area	NSF	538	196	CONUS: 1 NCOIC (Type D), 6 SERE PN (Type F) plus a 10-person conference room. OCONUS: 1 NCOIC (Type D, 2 SERE PN (Type F). No conference room required. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices. CG 61 Admin Overview Table 1.4 authorizes 15 NSF each for up to 10 PN.
141-753	SERE Classified Planning Area	NSF	625	360	CONUS: Per 27 SOSS/SERE, classified mission planning requires 25' x 25'. OCONUS: Per 353 SOG, classified mission planning requires 360 sf.
141-753	SERE Applied Instruction Classrooms	NSF	8,875	1,960	CONUS: SERE requires 1 room sized for 30 PN for classroom training plus 100 NSF for training aids, a 35' x 115' A2 training area (Per Modern Army Combatives Program: A2 requires 156 NSF per individual; max 24 students) plus 200 NSF for training aid storage and roll-up floor padding, a 45' x 50' E2 training area (Classified), a 30' x 45' EPT training area, and two 10' x 20' advanced SERE training areas (Classified). For the 27 SOSS, HEED/SWET training is performed at the installation pool or a nearby lake, although a dedicated facility 25' x 30' is preferred. OCONUS: SERE will share classroom space provided for AFE training. SERE requires 100 NSF for training aids, a combat training area (Per Modern Army Combatives Program: A2 requires 156 NSF per individual; max 10 students) plus 100 NSF for training aid storage and roll-up floor padding, and a 10' x 20' EPT training area. CG 61 Admin Overview Table 1.4: Authorizes classrooms with 25-50 PN 25 NSF/person.

141-753	SERE Break Room	NSF	144	100	CONUS: 47-person break room (largest class plus unit PN). OCONUS: 13-person break room (largest class plus unit PN) CG 61 Admin Overview Table 1.4: 16% of PN x 18 sf, minimum of 100 NSF.
141-753	SERE Showers	NSF	180	90	CONUS: Provide 4 men's and 2 women's showers. OCONUS: Provide 2 men's and 1 women's shower. FC 4-470-02F: 30 NSF per shower/drying area.
141-753	SERE Lockers	NSF	200	50	CONUS: Lockers required for 40 PN. OCONUS: Lockers required for 10 PN. Lockers calculated as 5 NSF/person.
141-753	SERE Laundry	NSF	70	70	Provide a 7' x 10' laundry room.
141-753	SERE Workshop and Equipment Storage	NSF	5,270	800	CONUS: Per 27 SOSS/SERE - Equipment Storage and Maintenance Area requires 35' x 55', Combat Survival Training Storage requires 20' x 20', Water Survival Training (WST) Storage requires 20' x 30', Large items (kayaks, climbing gear/ropes, specialized extreme weather gear) requires 20' x 40', Maintenance Table Top Space and Packing Area requires 320 NSF, and WST Raft Operations Check Area requires 35' x 35'. OCONUS: Per 353 SOG, Combat Survival Training Storage requires 20 ft x 20 ft, WST Storage requires 20 ft x 20 ft, which includes space for jet ski storage.
141-753	SERE Individual Equipment Storage	NSF	420	180	CONUS: 7 PN, OCONUS: 3 PN. Requires an area 6' wide x 10' long x 8' high each for 7 PN.
141-753	SERE Comm. Rooms	NSF	288	288	AFSOC/A6: 12 ft x 12 ft (144 NSF) per room. 2 rooms (1 secure).
141-753	SERE Boat Storage and Maintenance Area	NSF	2,400	1,200	CONUS: Per 27 SOSS/SERE - Storage required for personal watercraft, one 26-foot boat (trailer), and two 22-foot boats (trailer) OCONUS: Requires half the space of CONUS facility.

141-753	SERE Vehicle Storage	NSF	1,575	1,125	CONUS only: Per 27 SOSS/SERE - Minimum of 7 vehicles, maximum of 12 vehicles stored. Each vehicle requires 15' x 15'. Calculated as 7 vehicles x 15' x 15'. The clearances provided should be large enough to support the potential for 12 vehicles. OCONUS: 5 vehicles at 15' x 15' each.
141-753	SERE Flotation Shop	NSF	1,225	450	CONUS: Per 27 SOSS/SERE - Area must be large enough to fit two of the largest rafts in the 27 SOW inventory. This area can also be used for cleaning, drying, and repairing personal SERE issued gear when not in use for raft inspections. OCONUS: Per 353 SOG, provide space for two 13.5' diameter rafts that require 15' x 15' each.
141-753	SERE Climbing Tower	NSF	400	0	CONUS only: Existing facility uses an area that is 2 ISUs wide x 2 ISUs long x 4 ISUs high. ISU dimensions are 9' x 7.33'. Assume 20' x 20' area with clearances.
141-753	SERE Admin. Support	NSF	160	60	CG 61 Admin Overview Table 1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
141-753	SERE Admin. Circulation	NSF	147	72	CG 61 Admin Overview para 1.4.3: Max 10% of Administrative Space.
141-753	SERE Special Purp. Circulation	NSF	2,090	621	CG 61 Admin Overview para 1.4.3: Max 10% of Special Purpose Space.
141-753	Joint Liaison Training Office/ Equip Repair	NSF	3,500	0	CONUS only. Offices and equipment repair for 1 SOW are in Building 91059 at Hurlburt Field, FL. Per 1 SOSS, area requires 3,500 NSF.
141-753	Joint Liaison Training Team Room	NSF	3,500	0	CONUS only. Isolation room and sleeping quarters for visiting joint SOF personnel for 1 SOW are in Building 91058 at Hurlburt Field, FL. Per 1 SOSS, area requires 3,500 NSF.
141-753	Joint Liaison Vehicle Storage	NSF	3,000	0	CONUS only. Vehicles require a three-sided building for covered vehicle storage. 1 SOSS: Requires 3,000 NSF.
141-753	JLT Admin. Support	NSF	0	0	CG 61 Admin Overview Table 1.1: 20 sf/ office. AFSOC/A4I: Default is the min.

141-753	JLT Admin. Circulation	NSF	0	0	CG 61 Admin Overview para 1.4.3: Max 10% of Administrative Space.
141-753	JLT Special Purp. Circulation	NSF	1,000	0	CG 61 Admin Overview para 1.4.3: Max 10% of Special Purpose Space.
134-336	RAPCON Facility	NSF	0	0	Host only: CC 134336 Fixed RAPCON Facility Paragraph 1.4 - This facility is a one-story, 2,884 NSF building. NSF to GSF conversion of 1.25.
134-338	RAPCON Vault	NSF	0	0	Host only: CC 134338 RAPCON Vault Paragraph 1.3.1 - A semi-fixed facility is a fiberglass shelter 24' x 31' or 744 NSF, mounted on concrete foundations. NSF to GSF conversion of 1.25.
134-341	RAPCON Support Building	NSF	0	0	Host only: CC 134341 RAPCON Support Building Paragraph 1.3.1: The semi-fixed support facility contains 1,100 NSF. NSF to GSF conversion of 1.25.
141-453	Base Operations Facility	NSF	0	0	Host only: See DAFMAN 32-1084 CC 141453 Base Operations (Airfield Management, Weather, etc.), Table 1.1 for requirements.
141-753	Air Traffic Control Tower	NSF	0	0	Host only: See DAFMAN 32-1084 CC 149962 Air Traffic Control Tower, Table 1.1 for requirements.
SOSS HQ Total		NSF	15,885	41,404	
SOSS HQ Total		GSF	19,856	51,755	Net to Gross convert factor of 1.25.
SOSS AFE Total²		NSF	23,051	17,039	
SOSS AFE Total²		GSF	28,813	21,299	Net to Gross convert factor of 1.25.
SOSS ORS Total		NSF	11,990	0	
SOSS ORS Total		GSF	14,988	0	Net to Gross convert factor of 1.25.
SOSS SERE Total		NSF	24,607	7,622	
SOSS SERE Total		GSF	30,759	9,527	Net to Gross convert factor of 1.25.
SOSS JLT Total		NSF	11,000	0	
SOSS JLT Total		GSF	13,750	0	Net to Gross convert factor of 1.25.
Notes:					
1. The following airfield ancillary facilities are assumed to be available and adequate for existing airfields. The list includes, but is not limited to: Communications - Transmitter/Receiver –VHF/UHF Air Traffic Control & High Frequency, Airport Surveillance Radar, Precision Approach Radar, Instrument Landing System, TACAN, VOR, Wind Direction Indicator, Beacon Light, Approach Lighting, Obstruction Lighting, Runway Lighting, Special Airfield Lighting (Touchdown Zone Lights/Runway Centerline Lights/Glide Slope), and Taxiway Lights.					
2. AFE allowances within squadron operations facilities are not additive to the centralized AFE facility requirements listed in this table.					

8.4.5. ST OSS Description. ST OSSs are non-standard OSS units that provide direct and backside support for special tactics squadrons. Direct support (collocated with each squadron) includes aviation resource management, weapons and tactics, current operations, operational planning, intelligence, and satellite AFE storage and workshop. Backside support (separated from each squadron) includes aircrew training, mobility storage, weapons and tactics storage, supply storage, and medical support and storage.

8.4.5.1. Host and Tenant Installation Requirements. For planning purposes, this instruction assumes that non-standard AFSOC ST OSS units are installation tenants. There are currently no plans for an ST OSS unit to serve as the installation host OSS. See Paragraph **8.4.7** for standard SOSS host requirements.

8.4.6. ST OSS Characteristics. Notional manpower for ST OSS is presented in Table 8.4.5.

Table 8.4.5. ST OSS Notional Manpower.

OSC	Title	Personnel				
		OFF	ENL	CIV	CTR	TOTAL
CC	Commander	1	0	0	0	1
CCF	First Sergeant	0	1	0	0	1
CC	Chief Enlisted Manager	0	1	0	0	1
CCQ	Orderly Room	0	2	1	0	3
	Command Section Total	1	4	1	0	6
DO	Director of Operations	1	0	0	0	1
FM	Financial Management	0	0	1	0	1
IN	Intelligence	4	3	0	0	7
MS	Mission Support	0	7	1	0	8
OSK	Weapons and Tactics	2	12	1	0	15
OSL	Aircrew Flight Equipment	0	2	0	0	2
OSO	Current Operations	5	19	3	0	27
OSZ	Aerospace Medicine	10	4	0	0	14
	ST OSS Staff Total	22	47	6	0	75
	ST OSS Total	23	51	7	0	81

8.4.7. ST OSS Facilities.

8.4.7.1. Special Operations (CATCODE: 141454).

8.4.7.1.1. Requirements Determination. ST OSSs need an operational building for administration, scheduling, training, briefing, personal equipment maintenance, and storage for aircrews.

8.4.7.1.2. Scope Determination. Space must be provided for the commander and staff. Space is required for AFE and mobility storage awaiting disbursement to squadrons. Space is also required for an operations officer to direct flight operations and for financial management, intelligence, mission support, weapons & tactics, and aerospace medicine. See **paragraph 1.1.3.6 for more information about the unauthorized**

spaces and concepts for open offices, secured spaces, and flex-use spaces within special operations facilities.

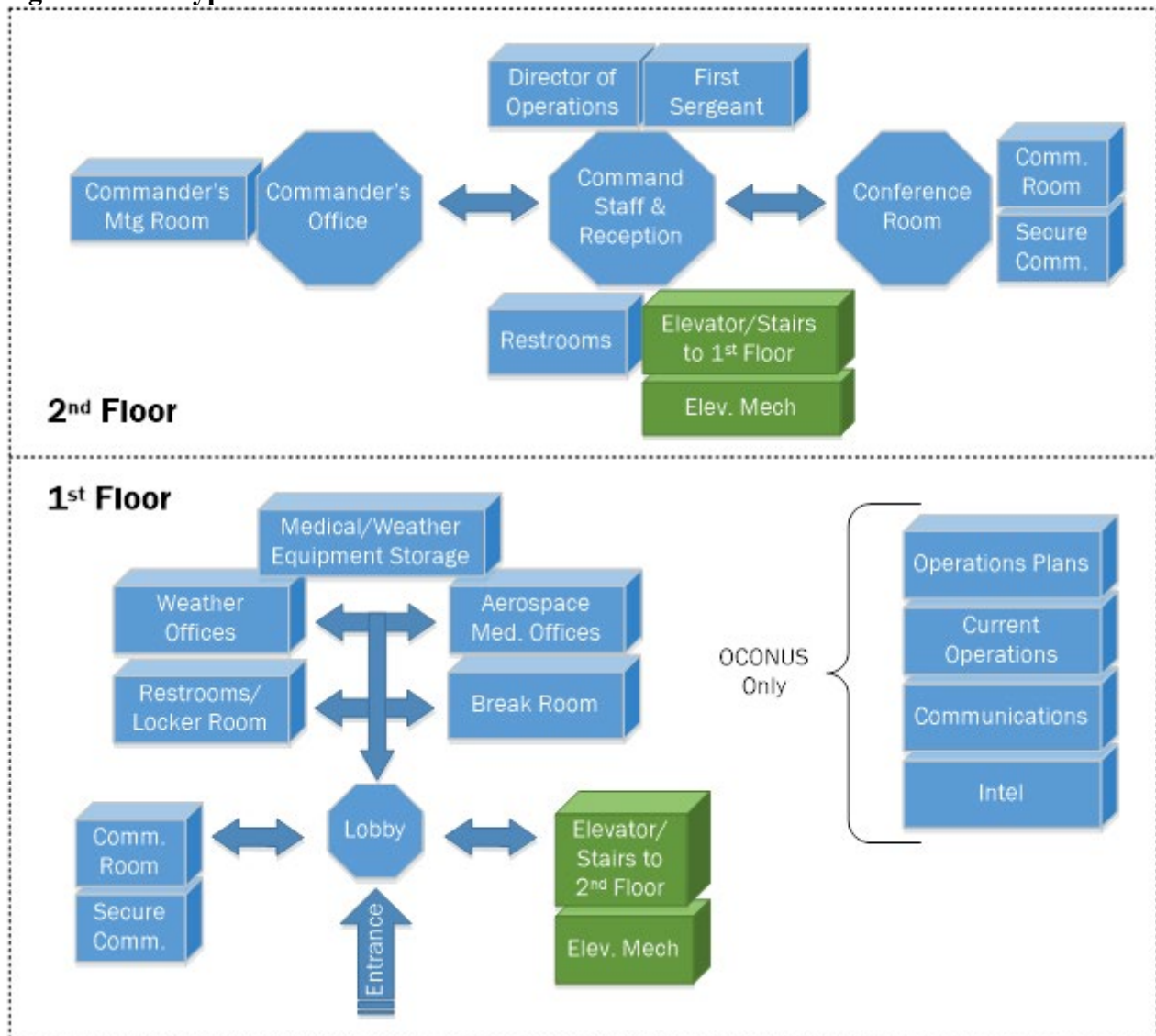
8.4.7.1.3. Typical ST OSS Composition. Includes a commander, first sergeant, chief enlisted manager, commander's support staff, and a director of operations. The squadron also includes financial management, intelligence, mission support, weapons & tactics, and aerospace medicine.

8.4.7.1.4. Dimensions. See [Table 8.4.7](#) for the individual spaces within an ST OSS facility.

8.4.7.1.5. Communications Considerations. Use UFC 3-580-01, UFGS Division 27 - Communications and Division 33 - Utilities, and all applicable local communications specifications. Connectivity to base and commercial communications services are provided via fiber optic and copper infrastructure. To install communications equipment, communications rooms should be provided with racks, power, and HVAC. There should be a different communications room for each classification. NIPR and SIPR equipment must be separate and SIPR communications rooms must meet information protection requirements.

Table 8.4.6. Building Utility System Requirements for ST OSS Facilities.

System	Requirements
Mechanical	This facility follows standard AFSOC mechanical requirements. See Table 1.1.1 for general mechanical criteria/references.
Electrical	This facility follows standard AFSOC electrical requirements. See Table 1.1.1 for general electrical criteria/references.
Plumbing	This facility follows standard AFSOC plumbing requirements. See Table 1.1.1 for general plumbing criteria/references.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Figure 8.4.2. Typical ST OSS Facilities.**Table 8.4.7. ST OSS Facility Space Requirements.**

Cat Code	Facility	UM	Area	DAFMAN 32-1084 Reference or Remarks/Calculations
141454	Commander	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices
141454	Commander Support Staff	NSF	144	3 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices
141454	First Sergeant	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Chief Enlisted Manager	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.

141454	Director of Operations	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
141454	Financial Mgmt & Comptroller	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices.
141454	Intel Vault	NSF	388	1 Type D, 6 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F Offices.
141454	Intel Storage	NSF	150	Provide 150 NSF.
141454	Mission Support	NSF	452	4 Type E, 4 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E Offices. Table 1.2.1: 48 NSF min for Type F Offices.
141454	Weapons & Tactics	NSF	943	2 Type D, 7 Type E, 6 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	AFE	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F Offices.
141454	Current Operations	NSF	813	2 Type D, 5 Type E, 6 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Operations Plans	NSF	1,604	2 Type D, 12 Type E, 13 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices and 48 NSF min for Type F Offices.
141454	Aerospace Medicine	NSF	1,050	4 Type D, 10 Type E. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E Offices.
141454	Mobility Warehouse	NSF	2,500	Provide 50' x 50' or 2,500 NSF. Includes storage for items awaiting disbursement to the squadrons.
141454	AFE Storage	NSF	400	Provide 20' x 20' or 400 NSF.
141454	Individual Gear/ Equip. Storage	NSF	1,600	1 cage per operator. Assume 20 operators. Each lock is 8' x 10'.
141454	Men's Lockers	NSF	245	Provide lockers for all non-operators. Squadron has 81 PN, 20 assume operators, 61 assume non-operators. Assume 80% are male lockers. Lockers are 1.67' W x 3' H or 5 NSF rounded.
141454	Men's Showers	NSF	60	Provide 2 showers. FC 4-470-02F: 30 NSF per shower/drying area.
141454	Women's Lockers	NSF	60	Provide lockers for all non-operators. Squadron has 81 PN, 20 assume operators, 61 assume non-operators. Assume 20% are female lockers. Lockers are 1.67' W x 3' H or 5 NSF rounded.
141454	Women's Showers	NSF	60	Provide 2 showers. FC 4-470-02F: 30 NSF per shower/drying area.

141454	Conference Room	NSF	360	Para 6.1.4.5: The maximum authorizations exceed the practical use for conference rooms sized for squadron operations. Up to 49 PN = 150 NSF (sized for 10 PN); 50-99 PN = 360 NSF (sized for 18 PN); 100-149 PN = 500 NSF (sized for 25 PN); >150 PN = 700 NSF (sized for 35 PN). Sizes based on CG 61 Admin Overview Table 1.4.
141454	Break Room	NSF	233	CG 61 Admin Overview Table 1.3: 16% of occupants' x 18 NSF. Minimum of 100 NSF.
141454	Communications Room	NSF	288	AFSOC/A6: 12 ft x 12 ft (144 NSF) per room. 2 rooms, 1 secure.
141454	Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
141454	Mechanical and Electrical Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
141454	Admin. Support	NSF	1,880	CG 61 Admin Overview Table 1.1: 20 sf/ office. AFSOC/A4I: Default is the min.
141454	Admin. Circulation	NSF	788	CG 61 Admin Overview para 1.4.3: Max 10% of Administrative Space.
141454	Special Purpose Circulation	NSF	596	CG 61 Admin Overview para 1.4.3: Max 10% of Special Purpose Space.
ST OSS Facility Total		NSF	15,214	
ST OSS Facility Total		GSF	19,018	Net to Gross conversion factor of 1.25.

8.5. Special Tactics Training Squadron (STTS) Facility Requirements.

8.5.1. **Description.** STTS, located at Hurlburt Field, FL, recruits, assesses, selects, trains, and develops special tactics operators for the 24 SOW. STTS also provides initial JTAC training to Army, Marine Corps, and Air Force special operations forces. In general, training courses for ST career fields are classified into three separate flights: Flight 1 (Core Skills), Flight 2 (Readiness; split into Employment Readiness (2A) and Operational Readiness (2B), and Flight 3 (Advanced Skills). To become a CCT, students must go through a variety of courses in Flights 1 and 2 to complete their journeyman or 5-level skills training. To become a PJ, SOWT, or TACP operator, craftsman or 7-level training is required and includes AFSC-specific advanced skills courses. Some students are in the pipeline for a two-year period, while others may be in a course for a few days or weeks as they make their way to other locations to complete additional pipeline training such as military free fall or dive training. In general, there are five career fields and one group of selected students that go through training at the STTS. **Table 8.5.1** shows an overview of the training by career field at the STTS.

Table 8.5.1. STTS Training Overview.

Career Field	Training Description
CCT	Combat Controllers have a 1-year pipeline of training at the STTS. This training begins five times per year and has four overlapping blocks of instruction with a maximum of 24 students per class. In FY16, there were 88 CCT students total.
TACP	Tactical Air Control Party have a six-month pipeline of training at the STTS. The training begins twice a year and has a maximum of 8 TACPs per class. In FY16, there were 16 TACP students total.
PJ	Pararescue has a 20-week pipeline of training at the STTS. The training begins twice a year and has a maximum of 8 PJs per class. In FY16, there were 16 PJ students total.
SOWT	Special Operations Weather has a 1-year pipeline of training at the STTS. The training begins five times per year and has a maximum of 3 SOWTs per class. There are 12 overlapping blocks of instruction for this course. In FY16, there were 24 SOWT students total.
SOTAC	Special Operations Terminal Attack Controllers (SOTACs) have a 3-week pipeline of training at the STTS. The training begins 11 times per year and has a maximum of 16 SOTACs per class.
STO	Special Tactics Officers (STO) have a 2-year pipeline of training at the STTS. STOs are recruited, assessed, and selected for training as operators. There are currently 15 STOs authorized at the STTS.

8.5.2. STTS Composition. STTS is organized into four sections: Command, Recruiting, Operations Training, and Mission Support Training. The Human Performance Program (HPP) that serves as the maintenance and support element for ST is also a component of STTS, though they also serve the STSs in the same capacity.

8.5.3. STTS Composition Drivers. As the training school for AFSOC ST, STTS facility requirements are primarily driven by the weapon system-specific training; the type, quantity, and frequency of courses being taught; the student loads for each course, and overall student throughput for the training program. Since these factors can impact significant changes to the facility requirements, prior to the development of STTS facilities, STTS should be consulted for the latest information regarding the current organization and composition of the training unit(s) facilities being developed.

8.5.4. STTS Characteristics. Table 8.5.2 presents the notional manpower for STTS.

Table 8.5.2. STTS Notional Manpower.

OSC	Function	OFF	ENL	CIV	CTR	Total
CC	Commander	1	0	0	0	1
CC	Chief Enlisted Manager	0	1	0	0	1
CCF	First Sergeant	0	1	0	0	1
CCQ	Orderly Room	0	2	1	0	3
CTR	Recruit, Assess, and Select	1	0	1	0	2
CTRA	Battlefield Airmen Recruiting Liaison	0	7	0	0	7
DO	Director of Operations	1	0	0	0	1

DOZ	Advanced Skills Training Flight	2	11	8	0	21
DOZE	Employment Readiness Training	0	10	5	0	15
DOZF	Core Task	0	20	7	0	27
DSM	Mission Support	0	3	1	0	4
DSMC	Communications Systems Maintenance	0	3	0	0	3
DSMI	Information Systems	0	2	0	0	2
DSML	Aircrew Flight Equipment	0	8	1	0	9
DSMN	Intel	0	2	0	0	2
DSMS	Supply	0	2	0	0	2
DSMT	Vehicle Maintenance	0	2	0	0	2
DSMW	Weapons Maintenance and Training	0	2	0	0	2
HPP	Human Performance Program	0	0	0	29	29
Special Tactics Training Squadron Total		5	76	24	29	134

Note:

1. Prior to using any numbers for facility requirements determination, AFSOC/A1M must be contacted to provide most current numbers.

8.5.5. STTS Facilities.**8.5.5.1. Special Operations (CATCODE: 141454).**

8.5.5.1.1. General. **Table 8.5.2** provides the total facility space requirements for a ST training facility. A detailed breakdown of the individual ST facilities is below.

8.5.5.1.2. Average Daily Student Load (ADSL). The composition of STTS is based on the number of students in the training pipeline and the authorized personnel assigned to the STTS. Per AFI 38-101 Paragraph 25.2.15.1.2, the ASDL = (Course Days x Total Students) divided by Training Days per Year. Based on overlapping blocks of instruction, course schedules, and total student throughput, the facility requirements for the STTS assume an ADSL of 98 students at any given time (48 CCTs, 8 TACPs, 8 PJs, 3 SOWTs, 16 SOTACs, and 15 STOs). Facility requirements based on the number of operators, will use the number of students 98, unless otherwise specified.

8.5.5.1.3. Administrative Area. STTS administrative areas include the command suite; recruiting, assessing, and selection; battlefield airmen recruiting liaisons; advanced skills training flight; employ readiness training, core task training, operational readiness training; and mission support offices. Other office spaces will be defined below as the office component represents part of a facility where the primary use is non-administrative. See **paragraph 1.1.3.6 for more information about the unauthorized spaces and concepts for open offices, secured spaces, and flex-use spaces within special operations facilities.**

8.5.5.1.4. **Classrooms**. Classrooms spaces should be provided in a manner that achieves maximum utilization of these spaces to support thoroughly justified training requirements. To determine classroom requirements, consideration should be given to the desired learning environment and achieving the highest rate of occupancy to accomplish all required training. In determining the desired learning environment, a detailed analysis of curricula, student loads, group sizes, training schedules, security

requirements, telecommunications requirements, unique training aids and storage, and desired student proximity should be conducted. Classroom analysis should also determine the ideal combination of rooms and students per room that achieves the highest utilization and occupancy for each classroom.

8.5.5.1.4.1. Classroom Planning and Considerations. Space should also be provided for classrooms in a manner that allows sharing between courses, where possible and that considers the most efficient use of all classrooms spaces. In non-school-related facilities such as squadron operations, training spaces are limited or make use of existing conference or multi-purpose spaces; however, STTS requires dedicated classroom spaces identified in [Table 8.5.12](#). These facility requirements are primarily driven by the weapon system-specific training; the type, quantity, and frequency of courses being taught; the student loads for each course, and overall student throughput for the training program. Since these factors can impact significant changes to the facility requirements, prior to the development of STTS facilities, STTS should be consulted for the latest information regarding the current organization and composition of the training unit(s) facilities being developed.

8.5.5.1.4.2. Technical Training Classroom (CATCODE 171621). Classrooms will be considered Technical Training Classrooms if 1) they are used to conduct lectures and demonstrations with the aid of computers, audiovisual, and portable training equipment suitable for table-top demonstrations and 2) training courses are prescribed in the ETCA database located at <https://etca.randolph.af.mil> or they support SOF-specific training courses directed by AFSOC or USSOCOM. This space may include tables, chairs, storage cabinets for training aids, and projection rooms between classrooms, where required.

8.5.5.1.4.3. Technical Training Laboratory/Shop (CATCODE 171623). Classrooms will be considered Technical Training Laboratory/Shop if 1) they house training which uses various types of large, stationary equipment used to support demonstration and hands-on systems operations and maintenance training and 2) training courses are prescribed in the ETCA database or they support SOF-specific training courses directed by AFSOC or USSOCOM. Space requirements are determined by the size and required operational areas for training equipment and any maintenance that equipment may require.

8.5.5.1.4.4. All other STTS classrooms will be designated as CATCODE 141454.

8.5.5.1.5. **Vehicle Maintenance and Storage Area**. This area contains the vehicle maintenance bays, storage for each type of vehicle, and maintenance personnel (for vehicles and watercraft).

8.5.5.1.5.1. Dimensions. The size of this facility depends on the number of vehicles being supported. Vehicle storage will be directly based on the number and types of vehicles being supported. Workstations will be provided based on the number of teams being supported. See [Table 8.5.7](#) for Special Tactics vehicles/watercraft. See [Table 8.5.12](#) for ST vehicle maintenance and storage space requirements.

8.5.5.1.5.2. Design Considerations. As a minimum, each maintenance facility should have two bays sized to fit a HMMWV with 8 ft clearance front and back and 4 ft clearance on each side. This clearance area should not be overlapped with adjacent bays to allow each bay to operate independently from the maintenance performed in the adjacent bay. See **Table 8.5.3** for vehicle maintenance bays and area requirements by the number of operators supported.

Table 8.5.3. STTS Vehicle Maintenance Bays and Area Requirements by Operators Supported.

Vehicle Maintenance Area			
Number of Operators	Number of Bays ¹	Number of ATV Bays ²	Area (NSF)
1-36	1	0	512
37-72	2	1	1,094
73-108	2	1	1,094
109+	3	1	1,606
Notes: 1. Vehicle maintenance bays should be sized for HMMWVs (16 ft x 8 ft) plus 8 ft front and back and 4 ft on each side. Total 32 ft x 16 ft or 512 NSF. STTS HMMWVs are maintained by LRS, therefore, the number of maintenance bays is assumed to require approximately half the area required for an STS. For planning purposes, size maintenance bays to accommodate HMMWVs. 2. ATV lift bay is 10 ft x 7 ft (allows 2 ft clearance around LT/ATV dimensions: 8 ft x 5 ft). Total 70 NSF.			

8.5.5.1.5.3. Unique Facility Requirements. A roll-up door should be provided that can accommodate the width of a HMMWV (8 ft). The roll-up door minimum height should accommodate a HMMWV at 8 ft, although 10-15 ft is highly desired with a hoist. Ensure there are adequate areas to accommodate battery charging stations (varies by vehicle or tool type and quantity), fuel storage (ventilated shed), tool storage (shed), and painting activities. Painting is limited to corrosion control and does not require paint/spray booths. LRS will perform other painting as necessary. See Table 8.5.4 for building system requirements for a vehicle maintenance facility.

Table 8.5.4. Building Utility System Requirements for STTS Vehicle Maintenance Facility.

System	Requirements
Mechanical	A compressed air source or connection (around 120 psi) should be conveniently located in the maintenance bay area. The facility should have energy efficient climate control and proper exhaust ventilation. Provide a ventilated shed for fuels storage. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connections for equipment and workstations ranging from 120V, 240V, and 480V. Electrical requirements are equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include: UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems, UFC 3-530-01 for interior and exterior lighting and controls, UFC 3-550-01 for exterior power distribution systems, UFC 3-560-01 for electrical safety and electrical O&M, UFC 3-580-01 for building telecommunications, and UFC 4-021-01 for mass notification systems.
Plumbing	Provide an oil/water separator. Provide hose bibs on all exterior walls (frost-free hose bibs if local climate conditions justify use). Provide hot and cold water connections and industrial waste disposal system. Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 and ETL 02-15. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

8.5.5.1.6. **Watercraft Maintenance and Storage Area.** This area contains watercraft maintenance bays and storage for each type of watercraft used. Personnel working in the vehicle maintenance and storage area will also work on watercraft assigned to each team.

8.5.5.1.6.1. Dimensions. The size of this facility depends on the number of watercraft being supported. Watercraft storage will be directly based on the number and types of watercraft being supported. Workstations for the section are accounted for in vehicle maintenance workstations (Paragraph [8.5.5.1.5.1](#)). See [Table 8.5.7](#) for a list of STTS vehicles/watercraft. See [Table 8.5.12](#) for ST watercraft maintenance space requirements.

Table 8.5.5. STTS Watercraft Maintenance Area and Number of Bay Requirements.

Watercraft Maintenance Area				
Number of Operators	Boats ¹ Supported	Number of Bays	Small Engine Repair Area ^{2,3}	Area (NSF)
1-36	2	1	1	720
37-72	2	1	1	720
73-108	4	2	1	1,404
109+	4	2	1	1,404

Notes:

1. The facility is sized for a large boat (30 x 10) plus 4 ft clearance around = 38 ft x 18 ft or 684 NSF.
2. This maintenance is currently being performed outside.
3. Small engine repair area = 6 ft x 6 ft or 36 NSF (allows a Zodiac engine: 2ft x 2 ft plus 2 ft clearance around). One area of this type will support up to 4 teams.

8.5.5.1.6.2. Unique Facility Requirements. A roll-up door should be provided that can accommodate the height and width of a large boat (10 ft W x 15ft H), although a 20-25 ft height is highly desired with a hoist installed. Ensure there are adequate areas to accommodate fuel storage (ventilated shed), tool storage (shed). See Table 8.5.6 for building system requirements for a watercraft maintenance facility.

Table 8.5.6. Building Utility System Requirements for STTS Watercraft Maintenance Facility.

System	Requirements
Mechanical	A compressed air source or connection (around 120 psi) should be conveniently located in the maintenance bay area. The facility should have energy efficient climate control and proper exhaust ventilation. Provide a ventilated shed for fuels storage. Applicable criteria include UFC 3-401-01 for mechanical.
Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connections for equipment and workstations ranging from 120V, 240V, and 480V. Electrical requirements are equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include: UFC 3-501-01 for general electrical requirement, UFC 3-520-01 for interior electrical systems, UFC 3-530-01 for interior and exterior lighting and controls, UFC 3-550-01 for exterior power distribution systems, UFC 3-560-01 for electrical safety and electrical O&M, UFC 3-580-01 for building telecommunications, and UFC 4-021-01 for mass notification systems.
Plumbing	Provide an oil/water separator. Provide hose bibs on all exterior walls (frost-free hose bibs if local climate conditions justify use). Provide hot and cold water connections and industrial waste disposal system. Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 and ETL 02-15. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

Table 8.5.7. STTS Vehicles/Watercraft Space Requirements.

Vehicle Type	Dimensions	Quantity	Area (NSF)
Motorcycle	5 ft x 3 ft	50	750
ATV, LT-ATV, or ITV	8 ft x 5 ft	50	2,000
HMMWV/Gun Truck or GMV ⁴	16 ft x 8 ft	19	2,432
Van - 15pax or Box Truck	15 ft x 6 ft	5	450
Truck - 6pax or NSCV	15 ft x 6 ft	5	450
Boat – 25 ft, Support	31 ft x 8 ft	1	248
Boat – 27 ft, Support	34 ft x 8 ft	1	272
Boat – 35 ft, Support	40 ft x 8 ft	2	640
Boat – Inflatable ⁷	8 ft x 8 ft	22	1,408
ARC (Jet Ski) ^{8,9}	14 ft x 6 ft	8	672
Forklift - Large	16 ft x 6ft	1	96
Forklift - Small	13 ft x 6 ft	1	78
Totals ¹⁰		165	9,496
Notes: 1. While these numbers may vary slight based on geographic conditions, climate, and specific mission criteria, increases in the requirements listed require Wing and AFSOC approval.			

8.5.5.1.7. Bulk Equipment Storage. This facility holds spare equipment for the vehicle and watercraft maintenance, spare parts, and other bulk items that do not require storage in a specific facility.

8.5.5.1.7.1. Dimensions. The size of this facility will depend on the number of teams being supported. Table 8.5.8 shows the ratio to determine bulk equipment storage units to teams. See [Table 8.5.12](#) for STTS bulk equipment space requirements.

Table 8.5.8. STTS Bulk Equipment Storage Unit to Team Ratio.

Bulk Equipment Storage Units ¹	
Number of Operators	Number of Units ¹
1-36	2
37-72	4
73-108	6
109+	8
Note: 1. Each unit is approx. 8 ft x 20 ft	

8.5.5.1.8. Individual Gear/Equipment. This area houses the personal gear and equipment assigned to each operator.

8.5.5.1.8.1. Dimensions. Per 24 SOW, each operator requires a cage that is 8' (W) x 10' (L). Cages also require a 6' aisle for gear prep and transport. To accommodate the 6-foot aisles, provide an additional 3' in front of each cage for a total of 8' (W) x 13' (L) or 104 NSF per cage. This number is based on a cage layout that has two, 10-cage rows with a 6-foot aisle in between each row. Note that increasing the number cages per row will reduce the total area required per

cage, just as decreasing the number of cages per row will increase the total area required per cage. See [Table 8.5.12](#) STTS individual gear/equipment storage space requirements.

8.5.5.1.8.2. Design Considerations. Designs that vary from the typical cage structure are encouraged if they can promote a more efficient working area and layout for operator gear storage.

8.5.5.1.9. **Team Rooms.** A team room combines the functional spaces into an open office concept that provides an area for STTS training flights to conduct briefings, perform office duties, and serves as the general purpose meeting space for a range of activities. The suite includes an office for the flight commander, shared workstations for operators assigned to each flight, and a briefing/conference area.

8.5.5.1.9.1. Since most uses of the shared workstations are for operators where there is 25-50 percent full-time usage, providing 30 percent of the total number of team operators per flight (8 PN = approximately 30 percent of an STTS flight) a shared workstation (DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1: 30 NSF min) creates a planning factor that allows each flight flexibility to provide workstations sized to fit flight needs for limited administrative purposes. For example, a 35-operator team would be assigned 378 NSF (35 PN x 30 percent x 36 NSF) or approximately 10, 36 NSF workstations (not including the offices for flight commander). However, the same 378 NSF could be divided into 15, 25 NSF workstations or roughly a shared space for every two operators.

8.5.5.1.9.2. Dimensions. The area required for the team rooms will vary based on the number of operators being supported. See [Table 8.5.12](#) for the STTS team room space requirements.

8.5.5.1.9.3. Unique Facility Requirements. This facility requires an alarms and security system, noise attenuation between rooms and hallways, and SIPRNet connections.

8.5.5.1.10. **AFE Shop.** This facility manages the packing, storage, and repair of parachutes and life support equipment including NVG and portable oxygen bottles. Room for parachute storage, tables, and open floor space for parachute packing, and a quality control/staging/issuing area - where parachutes waiting for service can be separated from those in need of repair and those ready for use - are required for this facility. A sewing section with multiple sewing stations and a parachute wash tank are also required for repair, deterioration prevention, and cleaning of parachutes. Access to a drying tower is also required and can be provided by the host installation, although an independent drying tower is highly desired. The life support section of the AFE shop includes a maintenance area for NVGs and a separate area for pre-breathing equipment maintenance and oxygen bottle maintenance. Oxygen bottle storage and a safe room for oxygen bottle repairs is typically stored within the dive shop. Administrative workstations should also be provided based on the number of personnel assigned to the facility. The administrative area should incorporate a small break area.

8.5.5.1.10.1. Dimensions. The size of this facility is dependent upon the number

of operators being supported. The parachute quality control area requires 100 NSF in all scenarios. The parachute staging/issuing area requires 2 NSF per operator and the sewing section requires a minimum of 128 NSF plus 1 NSF for each operator. The parachute wash tank is 3 ft (W) x 36 ft (L). DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1 authorizes 64 NSF each for workstations. See [Table 8.5.1](#) STTS AFE shop manpower. Provide two console areas for pre-breathing machines used prior to jumps (1.5 ft W x 3 ft L, each), an oxygen bottle maintenance table for every 36 operators (3 ft x 6 ft, plus 3 ft clearance around), plus an additional table (3 ft x 6 ft, plus 3 ft clearance around) should be provided to perform routine maintenance checks in all scenarios. A 16 ft x 28 ft drying tower is recommended if one is not already present and available at host installation. Table 8.5.9 shows parachute table and floor space requirements. See [Table 8.5.12](#) STTS AFE shop space requirements.

Table 8.5.9. STTS Parachute Table and Floor Space Requirements.

Number of Operators	Number of Packing Tables	Dimensions for Packing Tables (Area - NSF)	Parachutes accommodated on the floor	Approx. Dimensions for Floor Parachutes (Area – NSF) ¹
1-36	2	52 ft x 13 ft (676)	2	32 ft x 38 ft (1,216)
37-72	2	52 ft x 13 ft (676)	2	32 ft x 38 ft (1,216)
73-108	3	52 ft x 19 ft (988)	3	42 ft x 38 ft (1,596)
109+	3	52 ft x 19 ft (988)	3	42 ft x 38 ft (1,596)
Notes: 1. The dimensions and area required for parachute floor space can be reduced depending on configuration. These numbers represent a side by side configuration with the widest sides of the parachute opposite each other.				

8.5.5.1.10.2. Unique Facility Requirements. This facility requires hot and cold water for the parachute wash tank and a compressed air source (2-gallon compressor or source between 100-120 psi). See [Table 8.5.12](#) for AFE shop building utility system requirements.

Table 8.5.10. Building Utility System Requirements for STTS AFE Shop.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions between 40°F and 85°F to prevent parachute deterioration or failure. A compressed air source (2-gal compressor) or connection (around 100-120 psi) should be conveniently located in the maintenance bay area for pneumatic tools and inflatable rafts. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connection for equipment and workstations ranging from 120V, 240V, and 480V. Electrical requirements are equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include: UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems, UFC 3-530-01 for interior and exterior lighting and controls, UFC 3-550-01 for exterior power distribution systems, UFC 3-560-01 for electrical safety and electrical O&M, UFC 3-580-01 for building telecommunications, and UFC 4-021-01 for mass notification systems.
Plumbing	Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 and ETL 02-15. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

8.5.5.1.11. **Dive Shop.** This facility is responsible for the storage and maintenance of dive equipment including SCUBA gear, breathing equipment, portable oxygen bottles, dry suits, and spare parts. A safe room should be provided for oxygen bottle servicing as well as a separate maintenance room for other general repairs. An area for short-term storage and issuing of materials should also be provided along with a covered storage area for ISUs. The Air Force Dive Program (AFI 10-3501, Paragraph 5.10) requires proximity to a hyperbaric facility capable of treating dive casualties; however, a hyperbaric facility does not need to be present at each location.

8.5.5.1.11.1. Dimensions. The dimensions of this facility vary by the number of operators being supported. See [Table 8.5.12](#) STTS dive shop space requirements.

8.5.5.1.11.2. Unique Facility Requirements. See Table 8.5.11.

Table 8.5.11. Building Utility System Requirements for ST Dive Shop.

System	Requirements
Mechanical	Maintain regulated temperature and humidity conditions between 40°F and 85°F to prevent SCUBA equipment, dry suits, and spare parts from deterioration or failure. A compressed air source connection (around 100-120 psi) should be conveniently located in the maintenance bay area. Applicable criteria include UFC 3-401-01 for mechanical.

Electrical	Use industrial grade convenience receptacles and special power outlets. Provide electrical power connection for equipment and workstations ranging from 120V, 240V, and 480V. Electrical requirements are equipment specific. Augment this information with typical electrical and illumination standards. Applicable criteria include: UFC 3-501-01 for general electrical requirements, UFC 3-520-01 for interior electrical systems, UFC 3-530-01 for interior and exterior lighting and controls, UFC 3-550-01 for exterior power distribution systems, UFC 3-560-01 for electrical safety and electrical O&M, UFC 3-580-01 for building telecommunications, and UFC 4-021-01 for mass notification systems.
Plumbing	Provide commercial grade domestic water and waste water systems. Place emergency shower/eye wash stations as per OSHA standards and connect to an alarm system to alert personnel in case of an emergency. Recommend using domestic water plumbed eyewash stations in the maintenance and storage functions. Provide permanent back-up power generation capability capable to handle facility operations. Applicable criteria include UFC 3-420-01 for plumbing.
Fire Protection	Provide fire protection in accordance with UFC 3-600-01 and ETL 02-15. Fire suppression, fire detection, and alarm systems shall be compatible with the base centralized fire detection system.
Communication	This facility follows standard AFSOC communications requirements. See Table 1.1.1 for general communication criteria/references.

8.5.5.1.12. **Radio Equipment and Batteries Storage and Maintenance.** This facility includes workbenches and a maintenance area as well as storage of all radio equipment including tools and batteries.

8.5.5.1.12.1. Dimensions. The size of this facility is based on the number of operators being supported. See [Table 8.5.12](#) STTS radio maintenance and equipment storage space requirements.

8.5.5.1.13. **Computer Shop.** This facility provides maintenance and storage of computers and computer equipment.

8.5.5.1.13.1. Dimensions. Computer shops vary in size based on the number of personnel supported. The facility is assigned 5 NSF per operator plus one person for the computer shop assigned 64 NSF each (DAFMAN 32-1084, CG 61 Admin Overview Table 1.2.1). See [Table 8.5.12](#) ST computer shop space requirements.

8.5.5.1.14. **Intel Offices and Storage.** This secure area includes workstations for intelligence personnel and storage of sensitive materials.

8.5.5.1.14.1. Dimensions. Intel vaults vary in size based on the number of operators being supported. Provide secure storage of 50 NSF. See [Table 8.5.12](#) ST intelligence space requirements.

8.5.5.1.14.2. Unique Facility Requirements. This facility requires air conditioning to cool SIPRNet server racks and computers and an IDS (does not require TEMPEST security measures).

8.5.5.1.15. **Armory.** This facility is the weapons and munitions storage center for the STTS unit.

8.5.5.1.15.1. Dimensions. DAFMAN 32-1084, Table 2.15 provides the armory requirement at 2,084 NSF for 160 PN or 13 NSF per Operator. See [Table 8.5.12](#) STTS armory space requirements.

8.5.5.1.16. **Weapons Cleaning Room.** Ideally adjacent to the armory, the weapons cleaning room contains long workbenches where weapons can be disassembled, cleaned, and reassembled.

8.5.5.1.16.1. Dimensions. The weapons cleaning room varies in size based on the number of operators supported. This facility is assigned 5 NSF per operator given that most periods of use will not involve an entire team at the same time. See [Table 8.5.12](#) STTS weapons cleaning room space requirements.

8.5.5.1.17. **CATM Room.** This training classroom is ideally located near the armory; however, it could also be part of a small arms range facility if one is provided for the squadron. See paragraph [8.5.5.2.2](#) for details about the STTS small arms range facility.

8.5.5.1.17.1. Dimensions. The size of this training classroom varies based on the number of operators being supported. This facility is assigned 4 NSF per operator. See [Table 8.5.12](#) STTS CATM training space requirements.

8.5.5.1.18. **Supply Storage.** This facility stores bulk items, resupply, and initial use gear.

8.5.5.1.18.1. Dimensions. Supply storage area varies based on the number of operators being supported. The facility is assigned 10 NSF per operator. See [Table 8.5.12](#) STTS supply storage space requirements.

8.5.5.1.19. **Covered Storage.** Canopy area adjacent to or separate from another facility.

8.5.5.1.19.1. Dimensions. Covered storage area varies based on the number of personnel supported. This facility is assigned 25 NSF per personnel. See [Table 8.5.12](#) STTS covered storage space requirements.

8.5.5.1.20. **Acute Care Unit (ACU).** This area contains a waiting area for the ACU clinic and 2 exam rooms (approximately 10 ft x 15 ft). This area contains squadron medical supplies. PJs have an additional requirement for a secure medical supply vault.

8.5.5.1.20.1. Dimensions. The dimensions of this facility vary based on the number of operators being supported. The ACU requires two exam rooms (150 NSF each) and the secure medical supply vault requires 60 NSF. See [Table 8.5.12](#) STTS ACU Clinic and Storage space requirements.

8.5.5.1.20.2. Unique Facility Requirements. This facility requires manually operated rolling storage and a secure medical supply vault with an IDS.

8.5.5.1.21. **HPTC.** This area is designated for the physical training requirements of the ST Human Performance Program. The facility will include a performance area,

staff offices, mobility area, hydrotherapy, physical therapy bay and office, screening and measurement area, and a classroom.

8.5.5.1.21.1. Dimensions. The dimension of this facility will vary based on the number of operators the facility will support. See [Table 8.5.12](#) STTS Human Performance Training Center space requirements.

8.5.5.1.22. **ATC and JTAC Simulators.** This area is the simulator facility for ATC and JTAC training.

8.5.5.1.22.1. Dimensions. Per the Tower Simulator System FRD paragraph 4.1, the minimum room size ATC Simulator is 15' (W) x 18' (L). Based on recommendations from ATC instructors, the ideal size would have an additional 3 feet on the back side of the simulator ($15' + 3' = 18'$ wide and $18' + 3' = 21'$ long) for maintenance and a briefing area for 6 people (2 instructors, 3 students). DAFMAN 32-1084 CG 61 Admin Overview Table 1.4, authorizes a 15 NSF per person for briefing area up to 10 people.

8.5.5.1.22.2. Unique Facility Requirements. This facility requires cooling for computer systems and power to support various simulators, computers, and other unique facility components.

8.5.5.1.23. **Climbing Tower.** STTS can use existing facilities located at the host installation though it is highly desired to have this facility located proximate the ST campus.

8.5.5.1.23.1. Dimensions. 15 ft x 15 ft. Height to be determined by AFSOC/A4I.

8.5.5.2. **Required Facilities Typically Provided by Host Installation.** These facilities are required for qualification training, but could potentially be shared using existing facilities provided by the host installation that are available and adequate.

8.5.5.2.1. **Aquatic Training.** This type of facility is to be provided by the host base unless qualification/proficiency requirements demand usage of X percent of "pool days". X percent of "pool days" to be determined by AFSOC/A4I.

8.5.5.2.1.1. Typical "Pool Day" = 1 hr (1,500-meter swim).

8.5.5.2.1.2. Potential "Pool Days" Per Year = 280 (based on 40 swimming weeks per year excluding 4 leave, 1 Thanksgiving, 1 Christmas, 2 shooting school, 2 post-deployment, 2 miscellaneous temporary duty assignments (TDYs))

8.5.5.2.1.3. Minimum Qualification Requirements = 3 "pool days" per year (based on AFI 13-219V2 2.3, AFI 10-3502V1 Table 5.1, AFI 16-1301 4.4.2, AFI 10-3501 .2, and AFI 13-219V1 Attachment 3).

8.5.5.2.1.4. Proficiency Pool Use = 40 "pool days" per year (including minimum qualification requirements).

8.5.5.2.1.5. Dimensions. DAFMAN 32-1084, Table 2.15: Aquatic Simulator is 2,000 NSF (2,500 GSF with 1.25 NSF to GSF multiplier) with a depth of 6 meters

8.5.5.2.2. **Small Arms Range.** This facility will be provided by the host base unless qualification/proficiency requirements demand usage of X percent of "range days". X percent of "range days" to be determined by AFSOC/A4I.

8.5.5.2.2.1. Typical "Range Day" = 6 hours (1.5 hours each on 4 primary weapons).

8.5.5.2.2.2. Potential "Range Days" Per Year = 280 (based on 40 shooting weeks per year excluding 4 leave, 1 Thanksgiving, 1 Christmas, 2 shooting school, 2 post-deployment, 2 miscellaneous TDYs).

8.5.5.2.2.3. Minimum Qualification Requirements = 3 "range days" per year (based on AFI 13-219V1 Attachment 3, AFI 10-3502V1 Table 5.1, and CFETP).

8.5.5.2.2.4. Proficiency Range Use = 40 "range days" per year (including minimum qualification requirements).

8.5.5.2.2.5. Dimensions. Typical 7-lane facility with an office, storage, a control booth, restroom, and classroom is 8,542 NSF or 10,676 GSF (based on 22 STS Firing Range).

Figure 8.5.1. Typical STTS Facility.

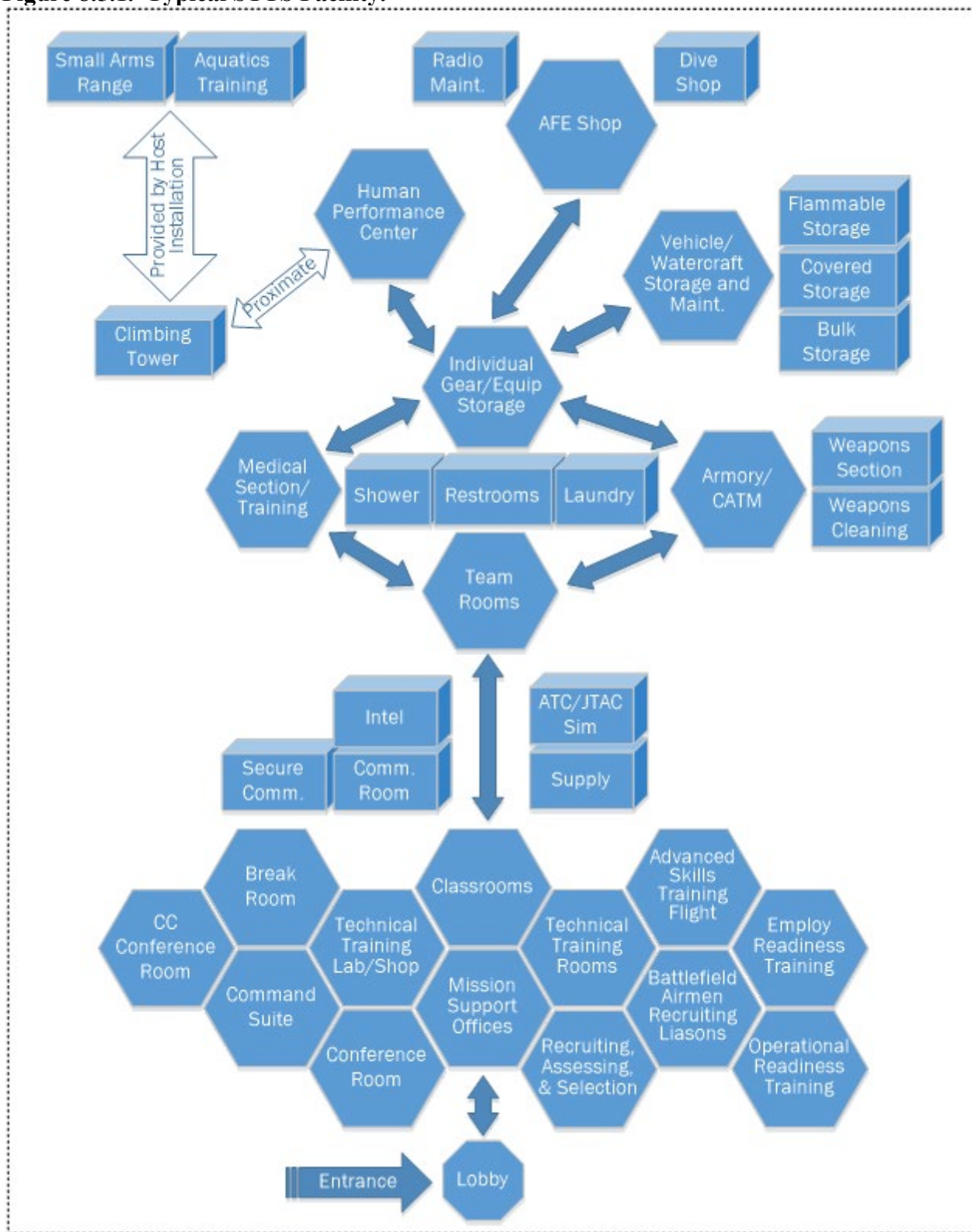


Table 8.5.12. STTS Facility Space Requirements.

Facility	UM	STTS Area	DAFMAN 32-1084 Reference or Remarks/Calculations
Commander	NSF	140	CG 61 Admin Overview Table 1.2: 140 NSF min for Type C Offices.
Chief Enlisted Manager	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
First Sergeant	NSF	100	CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices.
Support Staff	NSF	96	2 PN. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
Director of Operations	NSF	65	CG 61 Admin Overview Table 1.2.1: 65 NSF for Type E offices.
Recruit, Assess and Select Offices	NSF	593	1 Type E, 11 Type F (10 not on UMD). CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices and 48 NSF min for Type F offices.
Battlefield Airmen Recruiting Liaison Offices	NSF	353	1 Type E, 6 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices and 48 NSF min for Type F offices.
Advanced Skills Training Flight Offices	NSF	388	1 Type D, 6 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D offices. Table 1.2.1: 48 NSF min for Type F offices.
ACU Clinic and Storage	NSF	510	5 PN waiting area, 2 exam rooms (10' x 15' each), Narcotics Locker (60 NSF), and medical records closet (50 NSF). CG 61 Admin Overview Table 1.4: 20 NSF per waiting person.
Formal Training Offices	NSF	727	1 Type D, 3 Type E, 9 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E offices and 48 NSF min for Type F offices.
Employ Readiness Training Offices	NSF	772	1 Type D, 14 Type F. CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F offices.
Core Task Offices	NSF	562	2 Type E, 9 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices and 48 NSF min for Type F offices.
Operations Readiness Training Offices	NSF	819	3 Type E, 13 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices and 48 NSF min for Type F offices.
Mission Support Offices	NSF	209	1 Type E, 3 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices and 48 NSF min for Type F offices.
Radio Offices	NSF	144	3 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
Radio Maint. Shop	NSF	490	5 NSF per Operator

Radio Equip. Storage	NSF	1,176	12 NSF per Operator
Information Systems	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
Info. Systems Shop	NSF	196	2 NSF/operator
AFE Offices	NSF	449	1 Type E, 8 Type F. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices and 48 NSF min for Type F offices.
AFE Shop	NSF	3,873	Includes Packing Tables (26' x 52'), Floor Packing Space (42' x 38'); Staging/Issue 100 NSF per flight, Quality Control (100 NSF), Sewing Section (64 NSF per flight), Wash Tank (3' x 36'), Two Breathing Console Tables (1.5' x 3' each), and Oxygen Bottle Maintenance Tables (one, 6' x 9' table per flight plus an additional 6' x 9' table).
AFE Equipment Storage	NSF	840	Approximately 120 NSF is needed to store 100 parachutes. STTS is authorized to store approximately 500 parachutes. Spare Parts Storage = 80 NSF per flight (3).
Intel Offices and Storage	NSF	194	3 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
Supply Offices	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
Supply Storage	NSF	980	10 NSF/operator
Dive Equipment Maintenance	NSF	1,950	300 NSF for the oxygen bottle safe room, 1,200 NSF (30' x 40') for the oxygen servicing area and 450 NSF for general maintenance and repairs.
Dive Equipment Storage	NSF	912	Each flight supported will be provided 150 NSF for short-term storage and issuing equipment, 50 NSF for oxygen storage racks, 40 NSF for dry suits and breathing equipment, and 64 NSF for ISU storage.
NVG Inspection	NSF	100	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
Vehicle/Watercraft Maintenance Offices	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
Vehicle/Watercraft Maintenance Shop	NSF	9,496	Includes space for 131 vehicles and 34 watercraft. See Table 8.5.7 for dimensions and quantities per type.
Weapons Maint. and Training Offices	NSF	96	2 Type F. CG 61 Admin Overview Table 1.2.1: 48 NSF min for Type F offices.
Armory	NSF	1,274	13 NSF/operator
Weapons Cleaning Area	NSF	490	5 NSF/operator
Core Skills Training Classroom #1	NSF	720	24 PN. CG 61 Admin Overview Table 1.4: 30 NSF per person.
Core Skills Training Classroom #2	NSF	720	24 PN. CG 61 Admin Overview Table 1.4: 30 NSF per person.

Employment Readiness Training Classroom	NSF	720	24 PN. CG 61 Admin Overview Table 1.4: 30 NSF per person.
Operational Readiness Training Classroom	NSF	720	24 PN. CG 61 Admin Overview Table 1.4: 30 NSF per person.
SOWT Training Classroom #1	NSF	240	8 PN. CG 61 Admin Overview Table 1.4: 30 NSF per person.
SOWT Training Classroom #2	NSF	240	8 PN. CG 61 Admin Overview Table 1.4: 30 NSF per person.
PJ Training Classroom	NSF	300	10 PN. CG 61 Admin Overview Table 1.4: 30 NSF per person.
JTAC Training Classroom	NSF	300	10 PN. CG 61 Admin Overview Table 1.4: 30 NSF per person.
SOTACC Training Classroom	NSF	480	16 PN. CG 61 Admin Overview Table 1.4: 30 NSF per person.
Classroom Training Aid Storage	NSF	108	Nine 24" x 48" cabinets, plus an additional 50% for circulation.
Computer Lab/Processing	NSF	700	28 student task stations. CG 61 Admin Overview Table 1.2.1: 25 NSF max for Type H offices.
Parachute Rigging/Mission Planning Lab	NSF	3,000	Parachute rigger training and mission planning training. Each of these activities requires the large open floor space and secure communications the auditorium provides. Sized based on current space in Hurlburt Field Bldg. 90535.
Auditorium	NSF	1,520	100 seats. CG 61 Admin Overview Table 1.4: 15 NSF per person plus 20 NSF for instructor area
ATC Simulator	NSF	468	Per the Tower Simulator System FRD paragraph 4.1, the minimum room size ATC Simulator is 15' (W) x 18' (L). Based on ATC instructor recommendations, the ideal size would have an additional 3 feet on the back side of the simulator (15' + 3' = 18' wide and 18' + 3' = 21' long) for maintenance and a briefing area for 6 people (2 instructors, 3 students). Per DAFMAN 32-1084 CG 61 Admin Overview Table 1.4, a 6-person briefing area is authorized 15 NSF per person.
ATC Instructor Office	NSF	130	2 Type E. CG 61 Admin Overview Table 1.2.1: 65 NSF min for Type E offices.
JTAC Simulator	NSF	1,200	Per the JTC TRS Simulator Facility Report Figure 3-6, the minimum size for the JTAC Simulator and its associated components is 25' (W) x 32' (L); however, the report also notes in paragraph 3.1 that the preferred dimensions are 30' (W) x 40' (L).
Combatives Room	NSF	3,744	Per Modern Army Combatives Program: A2 requires 156 NSF per individual; max 24 students

Flight 1A Team Room	NSF	1,444	1 Type D (Flight CC), 12 Type F (Instructors), 8 Type G (Task-Stations), and a 24-person briefing room (480 NSF). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F offices and 30 NSF min for Type G offices. Table 1.4: 20 NSF per person for briefing room.
Flight 2A Team Room	NSF	1,444	1 Type D (Flight CC), 12 Type F (Instructors), 8 Type G (Task-Stations), and a 24-person briefing room (480 NSF). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F offices and 30 NSF min for Type G offices. Table 1.4: 20 NSF per person for briefing room.
Flight 2B Team Room	NSF	1,444	1 Type D (Flight CC), 12 Type F (Instructors), 8 Type G (Task-Stations), and a 24-person briefing room (480 NSF). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 48 NSF min for Type F offices and 30 NSF min for Type G offices. Table 1.4: 20 NSF per person for briefing room.
HPTC Offices	NSF	1,564	2 psychologists (2 Type D), 1 strength coach (Type E), 1 athletic trainer (Type E), 2 physical therapists (Type E), and HPTC contractors (23 Type F). CG 61 Admin Overview Table 1.2: 100 NSF min for Type D Offices. Table 1.2.1: 65 NSF min for Type E offices and 48 NSF min for Type F offices.
HPTC Performance Area	NSF	5,978	61 NSF/operator
HPTC Physical Therapy Bay	NSF	650	650 NSF/facility plus 150 NSF for storage
HPTC Hydrotherapy	NSF	225	225 NSF/facility
HPTC Screening & Measurement	NSF	225	225 NSF/facility
HPTC Classroom	NSF	400	400 NSF/facility
HPTC Storage	NSF	150	150 NSF/facility
HPTC Mobility Area (exterior)	NSF	1,395	15 NSF/operator
HPTC Restroom	NSF	300	300 NSF/facility
Student Break Room	NSF	282	16% of occupants x 18 NSF per person.
Squadron Break Room	NSF	386	16% of occupants x 18 NSF per person.

Individual Gear/Equipment Storage	NSF	7,840	Per 24 SOW, each operator (including staff and team members) requires a cage that is 8' (W) x 10' (L). Cages also require a 6' aisle for gear prep and transport. To accommodate the 6-foot aisles, provide an additional 3' in front of each cage for a total of 8' (W) x 13' (L) or 104 NSF per cage. This number is based on a cage layout that has two, 10-cage rows with a 6-foot aisle in between each row. Note that increasing the number cages per row will reduce the total area required per cage, just as decreasing the number of cages per row will increase the total area required per cage. STTS = 98 operators.
Male Showers	NSF	450	1 shower for every five operators. 80% of showers are male. UFC 3-420-1: 30 NSF per shower/drying area.
Male Locker Room	NSF	160	Provide lockers for approximately 30% of the squadron or 40 PN. Assume 80% are male lockers. Lockers are 1.67' W x 3' H or 5 NSF rounded.
Female Showers	NSF	120	1 shower for every five operators. 20% of showers are female. UFC 3-420-1: 30 NSF per shower/drying area.
Female Locker Room	NSF	40	Provide lockers for approximately 30% of the squadron or 40 PN. Assume 20% are female lockers. Lockers are 1.67' W x 3' H or 5 NSF rounded.
Laundry	NSF	245	2.5 NSF per Operator
Bulk Equipment Storage	NSF	960	Provide two 8' x 20' storage units per 36 operators.
CATM Training	NSF	412	23 STS: CATM should be approximately 4.2 NSF per person
Small Arms Range	NSF	9,200	Facility to be provided by the Host Base unless qualification/proficiency requirements demand usage of X% of "range days". X% to be determined by AFSOC/A4I. If a small arms range is not present and available at the host installation, a 9,200 NSF of 11,500 GSF facility should be provided (Modeled from the 26 STS Firing Range).
Climbing Tower	NSF	225	15 ft x 15 ft.
Aquatic Training Center	NSF	19,000	Per 24 SOW: Provide 19,000 NSF.
Restroom and Janitor's Closet	NSF	0	CG 61 Admin Overview Paragraph 1.5.2: Common Areas (NSF to GSF conv.).
Mechanical and Electrical Rooms	NSF	0	CG 61 Admin Overview, Paragraph 1.5.2: NSF to GSF conv.
Administrative Support	NSF	3,680	CG 61 Admin Overview Table 1.1: 20 sf/ office. AFSOC/A4I: Default is the min.

Administrative Circulation	EA	779	CG 61 Admin Overview para 1.4.3: Max 10% of Administrative Space.
Special Purpose Circulation		9,044	CG 61 Admin Overview para 1.4.3: Max 10% of Special Purpose Space.
STTS Facility Total NSF		111,734	
STTS Facility Total GSF		139,667	Net to gross multiplier of 1.25.

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Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

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Prescribed Forms

None

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

%—Percent

°C—Degrees Celsius

50-cal—.50-Caliber

A&FRC—Airman and Family Readiness Center

A/C—Air Conditioning

A1—Manpower

A2—Intelligence

A3/9—Operations and Lessons Learned

A4—Logistics

A5/8—Requirements, Strategic Plans, and Programs

AB—Air Base

AC—Alternating Current

ACC—Air Combat Command

ACN—Aircraft Classification Number

ACS—Access Control Systems

ACU—Acute Care Unit

AD—Active Duty

ADSL—Average Daily Student Load

AF—Air Force

AFB—Air Force Base

AFCEC—AF Civil Engineer Center

AFCEE—Air Force Center for Environmental Excellence

AFE—Aircrew Flight Equipment

AFETS—AF Engineering and Technical Services

AFFF—Aqueous Film-Forming Foam

AFI—Air Force Instruction

AFIMSC—AF Installation & Mission Support Center

AFJMAN—AF Joint Manual

AFMETCAL—AF Metrology and Calibration

AFOSH—AF Occupation Safety and Health

AFPTEF—AF Packaging Technology and Engineering Facility

AFRC—Air Force Reserve Command

AFRIMS—AF Records Information Management System

AFSC—AF Specialty Code

AFSOC—Air Force Special Operations Command

AFSSI—AF Systems Security Instruction

AGE—Aerospace Ground Equipment
AGL—Above Ground Level
AIM—Air Interface Monitor
AMC—Air Mobility Command
AME—Alternate Mission Equipment
AMU—Aircraft Maintenance Unit
ANG—Air National Guard
AOC—Air Operations Center
AOS—Air Operations Squadron
APOD—Aerial Ports of Debarkation
APOE—Aerial Ports of Embarkation
APU—Auxiliary Power Unit
ARC—Advanced Rescue Craft
ARMS—Aviation Resource Management Section
AS—Allowance Standard
ATC—Air Traffic Control
ATCALs—Air Traffic Control and Landing Systems
ATV—All-Terrain Vehicle
AvFID—Aviation Foreign Internal Defense
AVRS—Audio-Visual Recording Studio
AWG—American Wire Gauge
B/DB—Briefing/Debriefing
BAI—Backup Aircraft Inventory
BOS—Bas Operating Support
BRU—Bomb Rack Units
BTU—British Thermal Units
C2—Command and Control
C2ISR—Command, Control, Intelligence, Surveillance, and Reconnaissance
CAD—Cartridge Actuated Devices
CAD/CAM—Computer-Aided Design/Computer-Aided Manufacturing
CAMEO—Comprehensive Automated Maintenance Environment Optimized
CAMS—Core Automated Maintenance System

CAP—Combat Air Patrol
CAPA—Combat Aircraft Parking Apron
CAT—Crisis Action Team
CATCODE—Category Code
CATM—Combat Arms Training and Maintenance
CBR—California Bearing Ratio
CCT—Combat Control
CCTV—Closed-Circuit Television
CCW—Antiterrorism
CE—Civil Engineer
CEB—Civil Engineering Branch
CFETP—Career Field Education and Training Program
CFL—Critical Field Length
CIO—Chief Information Officer
CLS—Contractor Logistics Support
cm²—Square Centimeter
CNC—Computer Numerical Control
COFT—Cabin Operational Flight Trainer
COMSEC—Communications Security
CONUS—Continental US
COSO—Combat Oriented Supply Operations
CP—Command Post
CPI—Continuous Process Improvement
CR—Crew Ratio
CSAC—Crew Station Air Conditioner
CSF—Computer Systems Flight
CSO—combat systems operator
CSR—Contractor Support Representatives
CTK—Composite Tool Kits
CWA—Clean Water Act
CWR—Clear Water Rinse
DAFMAN—Department of the Air Force Manual

DAGRE—Deployed Aircraft Ground Response Element
DBGS—Database Generation Stations
DC—Direct Current
DESC—Defense Energy Support Center
Det—Detachment
DIFM—Due-In from Maintenance
DIRCM—Directional Infrared Countermeasures
DLA—Defense Logistics Agency
D-level—Depot-Level
DMO—Distributed Mission Operations
DMP—Dormitory Master Plan
DoD—Department of Defense
DoDD—DoD Directive
DoDM—DoD Manual
DOF—Degrees of Freedom
DRRS—Defense Readiness Reporting System
DRU—Direct Reporting Units
DS—Director of Staff
DUSDL&MR—Deputy Under Secretary of Defense for Logistics and Material Readiness
E&E—Electrical and Environmental
EA—Emergency Action
EICST—Enhanced Integrated Cockpit Systems Trainer
ELINT—Electronic Intelligence
EMM—Electro-Mechanical Motion
EMS—Equipment Maintenance Squadron
EOC—Emergency Operations Center
EPA—Environmental Protection Agency
ESC—Education Service Centers
ESD—Electro-Static Discharge
ETCA—Education and Training Course
ETL—Engineering Technical Letter
EW—Electronic Warfare

F—Fahrenheit

FAA—Federal Aviation Administration

FAM—Functional Area Manager

FARP—Forward Area Refueling Point

FFS—Full Flight Simulator

FLIP—Flight Information Publication

FLIR—Forward Looking Infrared Radiometer

FLTS—Flight Test Squadron

FM—Financial Management and Comptroller

FMV—Full Motion Video

FOA—Field Operating Agency

FOM—Follow-On Maintenance

FRI—Facility Requirements Instruction

ft—Feet

ft³—Cubic Feet

FTU—Formal Training Unit

FuT—Fuselage Trainer

GCS—Ground Control Station

GDT—Ground Data Terminal

GMV—Ground Mobility Vehicle

GOX—Gaseous Oxygen

GPM—Gallons Per Minute

GPU—Ground Power Units

GSA—General Services Administration

GSF—Gross Square Feet

GTR—Gun Training Room

GTU—Ground Training Unit

HAF—Headquarters Air Force

HAZMART—Hazardous Material Pharmacy

HC—Chaplain

HEPA—High-Efficiency Particulate Air

Hi-Ex—High-Expansion

HMMWV—High-Mobility Multi-Purpose Wheel Vehicle

HO—Historian

HPP—Human Performance Program

HPTC—Human Performance Training Center

HQ—Headquarters

hr—Hour

HUMINT—Human Intelligence

HVAC—Heating, Ventilation, And Air Conditioning

Hz—Hertz

in accordance with—In Accordance With

ICAO—International Civil Aviation Organization

ICC—Installation Control Center

ICIS—Integrated Consumable Item Support

IDS—Intrusion Detection System

IES—Illuminating Engineering Society

IETM—Interactive Electronic Technical Manual

IFR—Instrument Flight Rules

IG—Inspector General

IMDS—Integrated Management Data System

IN—Intelligence

IOS—Instructor Operator Station

IP—Information Protections

IR—Irregular Warfare

ISC—Isochronal

ISR—Intelligence, Surveillance, and Reconnaissance

ITV—Internally Transportable Vehicle

JA—Judge Advocate

JLT—Joint Liaison Training

JSM—Joint Service Manual

JTAC—Joint Terminal Attack Controller

kg—Kilograms

kPa—Kilopascal

KTS—Knots

kVA—Kilovolt-Ampere

kW—Kilowatt

LAN—Local Area Network

lbs—Pounds

LED—Light-Emitting Diode

LF—Linear Feet

LFT—Loadmaster Fuselage Trainer

LMPTT—Load Master Part Task Trainer

LN2—Liquid Nitrogen

LOS—Line-Of-Sight

LOX—Liquid Oxygen

LPIA—Low Probability of Intercept Altimeter

LR—Launch and Recovery

LRS—Logistics Readiness Squadron

LRU—Line Replaceable Unit

LT—Lightweight

m—Meters

MAJCOM—Major Command

MAT—Mission Auxiliary Tank

MATS—Mission Auxiliary Tank System

MATT—Multi-Mission Advanced Tactical Terminal

MAU—NEEDS DEFINED

MC—Mission Control Element

MFW—Multi-Function Workstations

MILCON—Military Construction

min—Minimum

MIS—Management Information System

mm—Millimeter

MOC—Mission Operations Center

MOC—Maintenance Operations Center

MOP—Mission Operator Pallet

MPa—Megapascals
MTD—Mission Training Device
MXS—Maintenance Squadron
N/A—Not Applicable
NAF—Numbered Air Force
NCO—Non-Commissioned Officer
NCOIC—Non-Commissioned Officer in Charge
NDI—Nondestructive Inspection
NEMA—National Electrical Manufacturers Association
NEW—net explosive weight
NFPA—National Fire Protection Association
Ni-Cad—Nickel Cadmium
NIE—Normally Installed Equipment
NSAv—Non-Standard Aviation
NSCV—Non-Standard Commercial Vehicle
NSF—Net Square Feet
NVG—Night Vision Goggles
Ø—Aught
O&M—Operations and Maintenance
OCONUS—Outside Continental US
OFT—Operational Flight Trainer
O-level—Organizational-Level
OPFOR—Opposing Force
OPLAN—Operations Plan
OPR—Office of Primary Responsibility
OQ—Officers Quarters
OS—Operations Squadron
OSHA—Occupational Safety and Health Administration
OTPS—Operational Test Program Set
P/N—Part Number
PA—Public Affairs
PMAI—Primary Aircraft Assigned

PAD—Propellant Actuated Devices
PCN—Pavement Classification Number
PCS—Permanent Change of Station
PDU—Power Distribution Unit
PED—Processing, Exploitation, and Dissemination
PEMA—Portable Electronic Maintenance Aid
PFPS—Portable Flight Planning System
PJ—Pararescue
PMEL—Precision Measurement Equipment Laboratory
PN—Personnel
POS—Passenger Oxygen System
POTFF—Preservation of the Force & Family
PPE—Personal Protective Equipment
PPSL—Predator Primary Satellite Link
PR—Personnel Recovery
psf—Pounds Per Square Foot
psi—Pounds Per Square Inch
PSP—Precision Strike Package
PT—Physical Training
PTT—Part Task Trainer
PVC—Polyvinyl Chloride
QA—Quality Assurance
Q-D—Quantity-Distance
R&R—Repair and Reclamation
RAF—Royal Air Force
RAPCON—Radar Approach Control
RCR—Runway Condition Reading
RDS—Records Disposition Schedule
ROC—RPA Operations Center
RPA—Remotely Piloted Aircraft
RSC—Runway Surface Condition
RSP—Readiness Spares Packages

RTCASS—Reconfigurable Transportable Consolidated Automated Support System

SA—Staff Activities

SAG—Special Activities Group

SAR—Synthetic Aperture Radar

SBSS—Standard Base Supply System

SCIF—Sensitive Compartmentalized Information Facility

SCONF—Specialized Contracting Flight

SCUBA—Self-Contained Underwater Breathing Apparatus

SDB—Small Diameter Bomb

SDC—Standard Desktop Compliant

SE—Support Equipment

SE—Safety

SEL—Senior Enlisted Leader

SERD—Support Equipment Requirements Document

SERE—Survival, Evasion, Resistance, and Escape

SETSS—Satellite Earth Terminal SubSystem

sf—Square Feet

SFS—Security Forces Squadron

SG—Surgeon General

SIGINT—Signals Intelligence

SIPR—Secure Internet Protocol Router

SIRFC—Suite of Integrated Radio Frequency Countermeasures

SME—Subject Matter Expert

SOACS—Special Operations Advanced Capabilities Squadron

SOAMDS—Special Operations Aerospace Medicine Squadron

SOAOS—Special Operations Air Operations Squadron

SOC—Squadron Operations Center

SOCES—Special Operations Civil Engineer Squadron

SOCONS—Special Operations Contracting Squadron

SOCPTS—Special Operations Comptroller Squadron

SOCS—Special Operations Communications Squadron

SOF—Special Operations Forces

SOFSS—Special Operations Force Support Squadron
SOG—Special Operations Group
SOIS—Special Operations Intelligence Squadron
SOLRS—Special Operations Logistics Readiness Squadron
SOMDG—Special Operations Medical Group
SOMDOS—Special Operations Medical Operations Squadron
SOMDSS—Special Operations Medical Support Squadron
SOMSG—Special Operations Mission Support Group
SOMXG—Special Operations Maintenance Group
SORTS—status of resources and training
SOS—Special Operations Squadron
SOSFS—Special Operations Security Forces Squadron
SOSS—Special Operations Support Squadron
SOTRG—Special Operations Training Group
SOW—Special Operations Wing
SOWT—Special Operations Weather Team
SPA—Spaces Per Aircraft
SPR—Single-Point Receptacle
SRU—Shop Replaceable Unit
ST—Special Tactics
STG—Special Tactics Group
STS—Special Tactics Squadron
SY—Square Yards
T&IW—Training and Irregular Warfare
TACAN—Tactical Air Navigation
TACP—Tactical Air Control Party
TAS—Tool Accountability System
TCAS—Traffic Alert/Collision Avoidance System
TDY—Temporary Duty
TF/TA—Terrain Following/Terrain Avoidance
TMDE—Test Measurement Diagnostic Equipment
TNB—Tail Number Bin

TO—Technical Orders

TODO—Technical Order Distribution Office

TSEC—Tactical Support Element

UAS—Unmanned Aircraft Systems

UFC—United Facilities Criteria

UFGS—Unified Facilities Guide Specification

UHF—Ultra-High Frequency

UPH—Unaccompanied Personnel Housing

UPS—Uninterruptable Power Supply

USAF—United States Air Force

USAFSOS—USAF Special Operations School

USSOCOM—US Special Operations Command

UTC—Unit Type Code

V—Volts

VDC—Volts DC

VFR—Visual Flight Rules

VHF—Very High Frequency

VMC—Vertical Machining Center

VOCs—Volatile Organic Compounds

VOR—VHF Omni-Directional Range

VQ—Visiting Quarters

VTOL—Vertical Take Off and Landing

VTRAT—Visual Threat Recognition and Avoidance Trainer

W—Watt

WLT—Weapons Load Trainer

WRM—War Reserve Material

WST—Weapon Systems Trainer

Attachment 2**V-22 PARKING APRON JOINT SEALANT RECOMMENDATION****Figure A2.1. V-22 Parking Apron Joint Sealant Recommendation Letter.**

Subj.: V-22 Osprey Parking Apron Joint Sealant Compound Requirement.

Ref: (a) 131212Z DEC 05 R NAWCADPAX-MSG-2005-239

(b) V-22 EMD Power Plant Installation Temperature Survey Demonstration Test Report, Bell-Boeing Report No. 901-993-356, 24 January 2000.

(c) MV 22 NATOPS

(d) Heat Resistant Airfield Joint Sealants, by T. Novinson and L.J. Malvar, Transportation Systems 2004, Fort Lauderdale, FL, March 2004.

1. Engine exhaust from the V-22 has been shown to deteriorate standard joint seal material in concrete pavements. References (a) and (b) show ground plane temperatures from V22 flight test data in the order of 380F, in excess of previous temperatures of 150F above ambient from Ref (c).
2. Based on these temperatures and on results from laboratory tests performed by the Naval Facilities Engineering Service Center on joint sealants (Ref. (d)), it is recommended that:
 - a. Silicones joint seals be used for general applications where the V-22 does not take-off vertically or perform ground runs
 - b. Chloroprene (Neoprene) or fluorocarbon adhesive joint seals be used for locations where the V-22 takes-off vertically or performs ground runs for operations or training
3. Silicone joint seals follow ASTM 5893 (such as Dow Corning Silicone 890-SL) and are already generally recommended for use in Navy airfield pavements. Chloroprene (Neoprene) joint seals follow ASTM D 2628 (e.g. DuPont Nordel available from D.S. Brown, 300 E. Cherry St. North Baltimore, OH 45872, 419-257-3561, or equivalent) and are already routinely used in airfield pavements. Neoprene has shown good chemical resistance and heat resistance up to 550°F. Fluorocarbon adhesive (e.g. Viton available from Thermodyn Corp., 3550 Silica Road, Sylvania, OH 43560, 800-654-6518, or equivalent) has shown excellent chemical resistance and heat resistance up to 750°F.
4. These recommendations are based on laboratory tests of the joint seal materials. It is also recommended that further testing be performed under actual normal operations under V-22 exhaust in an actual field application (i.e. over sealants placed between slabs in the field).

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Attachment 3**ACKNOWLEDGEMENTS**

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Figure A3.1. AFSOC CV-22 and Crew Members.

