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DESIGNING AND CONSTRUCTING MILITARY CONSTRUCTION PROJECTS

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OPR: HQ USAF/A4CFC
(Mr. Satish Abrol)

Certified by: HQ USAF/A4CF
(Mr. Robert Gill, GS-15)

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This instruction implements AFPD 32-10, *Installations and Facilities*, and Military Standard 3007F (MIL-STD 3007F), *Standard Practice for Unified Facilities Criteria (UFC) and Unified Facilities Guide Specifications*. It provides general design criteria and standards, guidance on selecting architect-engineering (A-E) firms, and information on design and construction management. This document provides guidance governing Air Force military construction (MILCON) projects. The Chiefs of the National Guard Bureau (NGB) and Air Force Reserve are responsible for developing instructions/guidance unique to the Air National Guard (ANG) and AFRC construction programs, and oversee management of those programs respectively. Refer to the *United States Air Force Project Managers' Guide for Design and Construction* for detailed information regarding criteria and design management, procedures, and practices. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through the appropriate functional' chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, and T-3") number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, Table 1.1 for a description of the authorities associated with the Tier numbers. 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. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at **https://www.my.af.mil/gcss-af61a/afrims/afrims/**. The use of the name or mark of any specific

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SUMMARY OF CHANGES

This change updates roles and responsibilities resulting from realignment and consolidation. Solidify Air Force precedence in case of conflict with model building codes, and clarifies policy regarding compliance with *Title10 United States Code* Section 2807(b) Architectural and Engineering Services and Construction Design. References and terminology were also updated and clarified throughout the document. Due to Air Force restructuring, Air Force Center for Engineering and the Environment (AFCEE) and Air Force Civil Engineer Support Agency (AFCESA) were changed to Air Force Civil Engineer Center (AFCEC) throughout the document and their responsibilities revised in paragraph 1.4.4; revised and updated 2.2.2.2. Value Engineering (VE) requirements; deleted Chapter 4 Medical Facilities entirely; references used for Medical Facilities added to paragraph 1.2. Revised d Headquarters Air Force (HAF)-AFCEC MILCON Program Management Plan or Air Force MILCON Execution (HAF-AFCEC PgMP). OPR changed from AFCEE/TDB to USAF/A4CF.

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Chapter 1

OVERVIEW

1.1. Scope: This chapter: (i) defines the types of facilities to which this AFI applies, (ii) outlines deviation procedures from the HAF (A4CF)-AFCEC Program Management Plan for Air Force MILCON Execution (HAF-AFCEC PgMP), and (iii) identifies the roles and responsibilities of the primary stakeholders in the design and construction of Air Force MILCON projects located on Air Force installations and Joint Bases. The roles and delegation of authorities in the HAF-AFCEC PgMP are consistently updated and should be reviewed from time to time. A copy of the HAF-AFCEC PgMP is available at the Whole Building Design Guide (WBDG) website (:**http//www.wbdg.org**) can also be obtained by contacting AFCEC/CF Workflow.

1.2. Applicability: This instruction contains criteria for design and construction of Air Force facilities. The criteria in this AFI apply to all MILCON, Medical MILCON, Nonappropriated Fund (NAF), Defense Logistics Agency (DLA), Air Force Military Family Housing (MFH), Defense Commissary Agency (DeCA), Army and Air Force Exchange Service (AAFES), Air Force Special Operations Forces (SOF), and Unspecified Minor Military Construction (UMMC) projects regardless of funding and apply to:

1.2.1. All Air Force installations in the 50 states, the District of Columbia, United States territories and possessions, and at Air Force installations in foreign countries.

1.2.2. Properties listed or eligible for listing on the National Register of Historic Places.

1.2.3. Medical facilities. Planning, programming, design and construction procedures for medical facility projects are covered in DoDI 6015.17, *Planning and Acquisition of Military Health Facilities;* AFI 32-1021, *Planning and Programming Military Construction (MILCON) Projects;* Unified Facilities Criteria *(*UFC) 1-200-01, *General Building Requirements*; UFC 1-200-02, *High Performance and Sustainable Building Requirements;* and UFC 4-510-01, *Design: Medical Military Facilities.*

1.2.4. **Defense Commissary Agency (DeCA) Facilities:** Refer to DoDI, 7700.20, *Commissary Surcharge, Nonappropriated Fund (NAF), and Privately Financed Construction Policy* and DoDI 7700.18, Commissary Surcharge, Non-Appropriated Fund (NAF) and Privately Financed Construction Reporting Procedures, for additional guidance.

1.2.5. **Nonappropriated Funds (NAF) facilities:** Refer to AFI 34-205, *Services Nonappropriated Fund Facility Projects*, and AFI 32-1022, *Planning and Programming Nonappropriated Fund Facility Construction Projects*, for additional guidance. Coordinate all actions related to AF NAF funded facilities with AFMC/SVXF.

1.2.6. **Army and Air Force Exchange Service (AAFES) Facilities.** These facilities are now known as the "Exchange". Refer to AFI 32-1022 for additional guidance.

1.2.7. **Other Tenant Organization Facilities**: including military departments and agencies (e.g., Department of Defense Education Activity (DoDEA) and DLA) and private organizations (e.g., Fisher House, museums, banks, credit unions, thrift shops). Refer to AFI 32-1022 for additional guidance.

1.2.8. **Air Force Military Family Housing (MFH).** Refer to AFI 32-6002, *Family Housing Planning, Programming, Design, and Construction* for additional design and construction guidance.

1.2.9. **Reserve Components**. The Chiefs of the National Guard Bureau (NGB) and Air Force Reserve are responsible for developing policies/instructions/guidance unique to their respective construction programs and oversees management of those programs. The office of the Air National Guard Civil Engineer (NGB/A7) is responsible for Air National Guard construction under *Title 10 United States Code (USC)* **Chapter 1803**, "Facilities For Reserve Components" and includes sections 10 USC 18231 thru 10 USC 18240. The Chief of the Air Force Reserve (HAF/RE) is responsible for Air Force Reserve construction under Title 10 United States Code section 8038. Refer to ANGI 32-1023, *Criteria and Standards for Air National Guard Design and Construction, and AFRCH 32-1001, Standard Facility Requirements,* for applicable guidance.

1.3. Deviations to Criteria: For AF installations within the United States, deviations from UFC, and model building codes may be authorized by submitting a deviation request to the appropriate authority as defined herein. Deviations from life safety, occupational safety, security, antiterrorism, or other criteria required by federal law or Department of Defense direction are not permitted unless specifically authorized in legislation or Defense direction. **(T-0)** Approved deviations to criteria apply to a specific facility project and remain in effect indefinitely or until reevaluation/reconfirmation is required by other guidance (AFI, UFC, etc.). AF installations outside the United States, shall comply with applicable international agreements, if any. If construction criteria are not addressed in applicable international agreements, follow the more stringent of United States and host-nation criteria. When the host-nation and AF disagree on which is more stringent, solutions will be determined by collaboration between the AF Subject Matter Expert (SME), host-nation liaison, and other applicable stake holders (Combatant Command, Department of State, etc.).. For conflicts not resolved seek additional assistance from AFCEC/COS.

1.3.1. **UFCs.** Technical design requirements for DoD facilities are given in UFC publications. Designers are required to comply with all mandatory requirements unless the appropriate authority approves deviation from a requirement. The AFCEC Director or Deputy Director is the approval authority for deviation from UFC's requirements for a given project. Refer to MIL-STD-3007F, DoD Standard Practices for Unified Facilities Criteria and Unified Facilities guide Specifications, for further guidance. Requests for deviation shall be sent to AFCEC/CF Workflow for processing to the appropriate directorate.

1.4. Roles and Responsibilities (refer to HAF-AFCEC PgMP for additional information):

1.4.1. **Office of the Secretary of the Air Force (SAF).** The SAF provides guidance for the Air Force construction program through the Deputy Assistant Secretary for Environment, Safety, and Infrastructure (SAF/IEE).

1.4.2. **Deputy Assistant Secretary of the Air Force for Environment, Safety, and Infrastructure (SAF/IEE).** SAF/IEE is responsible for Air Force facility design and construction policy and oversight.

1.4.3. **The Director of Air Force Civil Engineers (AF/A4C).** The AF/A4C is responsible for policy development, distribution, interpretation, and oversight to ensure compliance and

progress toward goals. The Facility Management Division (AF/A4CF) is the lead in AF/A4C for MILCON program development and execution, and provides oversight of the Air Force MILCON process.

1.4.4. **Air Force Civil Engineer Center Director (AFCEC/CL) or Deputy Director (AFCEC/DD).** The AFCEC Director or Deputy Director is responsible for managing the UFC program for AF/A4C. The AFCEC Director, or Deputy Director as delegated, is the Air Force member of the Engineering Senior Executive Panel (ESEP). The AFCEC Director or Deputy Director is the approval authority for deviations from the UFC.

1.4.5. **Air Force Civil Engineer Center Facility Engineering Directorate (AFCEC/CF).** AFCEC/CF performs project Design Manager/Construction Manager (DM/CM) functions for MILCON; MILCON-funding levels, Non-Appropriated Fund (NAF), Base Realignment and Closure (BRAC), Housing, Combatant Command (COCOM), and AF Medical MILCON, SOF, and Energy Conservation Investment Program (ECIP). As the program manager and DM/CM, AFCEC/CF manages execution of design and construction in coordination with the Project Delivery Team (PDT). The DM/CM determines the execution strategy in concert with USAF policies and goals along with MAJCOM and installation engineer PDT members. AFCEC provides technical assistance and support to installations, MAJCOM, Field Operating Agencies (FOAs) and AF/A4C. AFCEC/CF develops, coordinates and interprets certain UFCs and industry standards, ensuring compliance with applicable SAF/IE and DoD policies and directives. AFCEC/CF is the technical subject matter expert and the technical authority for architecture and construction criteria. An AFCEC/CF representative is the Air Force member on the UFC Coordinating Panel and interfaces with the other Services to resolve issues and process UFCs. AFSVA/SVXF is the technical subject matter expert and technical authority for functional and operational design and construction criteria for Category B and Category C NAF activity construction

1.4.6. **Air Force Civil Engineer Center Operations Directorate (AFCEC/CO).** AFCEC/CO develops, coordinates and interprets applicable UFCs and industry standards, ensuring compliance with SAF/IE, and other applicable DoD policies and directives. AFCEC/CO is the technical subject matter expert and the technical authority in the following subject areas: electrical, mechanical, petroleum, oils and lubricants (POL), corrosion, civil, roofing, antiterrorism, nuclear, structural, airfield geometrics, energy security, fire protection, life safety and life-cycle cost engineering. AFCEC/CO is responsible for managing the ETL system for AF/A4C.

1.4.7. **Air Force Civil Engineer Center (AFCEC) Environmental Directorate (AFCEC/CZ**). AFCEC/CZ shall staff natural resources Subject Matter Expert (SME) that serves as a natural resources program manager and provides technical assistance and guidance to AF on natural resources issues. **(T-2).** Advocate for resources required to implement approved installation Integrated Natural Resources Management Plans (INRMP). The Deputy Director, Air National Guard (ANG), programs for resources required to implement INRMP at ANG installation. (T-2). Provide and manage contracts, interagency agreements, and cooperative agreements on behalf of, and for use by AF organizations for natural resources program management assistance and implementation of natural resources management projects, with the exception of installation Bird/Wildlife Aircraft Strike Hazard (BASH) program, which will be managed by Wing Flight Safety Office. AFCEC Director is

delegated authority to sign cooperative agreements and interagency agreements entered into pursuant to the Sikes Act, 16 U.S.C., § 670c-1. (T-1). Administer the reimbursable forestry, agricultural and grazing, and fish and wildlife account programs as well as dispersed outdoor recreation programs on AF installations. (T-2). Manage the Department of Defense Forest Reserve Account program for AF and distributed funds for approved projects. (T-2). Operate the AF Wild land Fire Center at Eglin Air Force Base, administers National Wildfire Coordinating Group (NWCG) training and certification records for personnel involved in wild-land fire management activities, and maintains records of wildfires and prescribed fires on AF property. (T-1). Administer training and certification records for AF conservation law enforcement officers. (T-2). Develop and promotes the natural resources program requirements to support the AF Environmental Management System (EMS). (T-2).

1.4.8. **Design Agent/Construction Agent (DA/CA), Design Manager/Construction Manager (DM/CM).** Refer to the HAF-AFCEC PgMP, Management Controls, for additional information regarding Design, Authorities to Advertise, Funding and/or Award.

1.4.8.1. **DA/CA:** The DA/CA is the DoD component that is responsible for performing the contracting function and overseeing the technical execution of construction projects. For Air Force MILCON projects, the DA/CA is either U.S. Army Corps of Engineers (USACE), Naval Facilities Engineering Command (NAVFAC), or, for approved projects, AFCEC or the Installation – See DoDD 4270.5 for details on alternate construction agent for NAF projects. Per DoDD 4270.5, for the UK and British Isles, AFCEC is the DA/CA. Additionally, the HAF-AFCEC PgMP requires that the DoD construction agent for a MILCON project must certify to AFCEC/CF DM/CM, prior to final design approval, that the final facility design is within the scope of work authorized by Congress and that it provides a complete and useable facility.

1.4.8.2. **DM/CM**, AFCEC serves as DM/CM for all MILCON projects funded under appropriations listed in paragraph 1.2 above. AFCEC is the DM/CM for projects within the United States and Europe with the exception of the UK/British Isles per DoDD 4270.5.

1.4.9. **Major Command (MAJCOM).** The Requiring/Using MAJCOM has the overall responsibility for requirements identification. MILCON requirements and siting for projects programmed or planned by other organizations must be coordinated by the host base MAJCOM (refer to AFI 32-1021, *Planning and Programming Military Construction (MILCON) Projects*). The following are definitions/roles and responsibilities for execution of MILCON projects:

1.4.9.1. **Requiring/Using MAJCOM.** The Requiring/Using MAJCOM is either a host or tenant unit on an installation. A tenant unit is commonly referred to as the ‘receiver’ in host-tenant support agreements and receives base support from the Host MAJCOM. The Requiring/Using MAJCOM is the command responsible for executing the specific mission being supported by a MILCON requirement. Requiring/Using MAJCOMs are responsible d for pre-coordinating with Host MAJCOMs during the Program Objective Memorandum (POM) process. Requiring/Using MAJCOMs are responsible for validating the functional requirements during MILCON project planning and programming and Economic Analyses or EA waivers.

1.4.9.2. **Host MAJCOM.** The Host MAJCOM is the command that provides base operating support on an installation and is commonly referred to as the 'supplier' in host-tenant support agreements. The Host MAJCOM oversees the installation where the Requiring/Using MAJCOM mission and MILCON are being executed. Host MAJCOMs are responsible for ensuring appropriate siting, architectural, environmental, and master plan integration are completed as necessary during project programming and execution.

1.4.10. **Reserve Components**. The Chiefs of the National Guard Bureau (NGB) and Air Force Reserve are responsible for developing policies/instructions/guidance unique to their respective construction programs and oversee management of those programs. The office of the Air National Guard Civil Engineer (NGB/A7) is responsible for Air National Guard construction under *Title 10 United States Code (USC)* **Chapter 1803**, "Facilities For Reserve Components" and includes sections 10 USC 18231 thru 10 USC 18240.The Chief of the Air Force Reserve (HAF/RE) is responsible for Air Force Reserve construction under Title 10 United States Code section 8038. Refer to ANGI 32-1023, *Criteria and Standards for Air National Guard Design and Construction, and AFRCH 32-1001, Standard Facility Requirements,* for applicable guidance.

1.4.11. **Base Civil Engineer (BCE).** BCEs are responsible for initiating planning and programming (draft DD Form 1391) and oversee and coordinate base activities for MILCON projects at their installations. **(T-1)** BCEs shall direct concerns or failures to meet specifications to the DM/CM for resolution. Installations are responsible for Planning Charrette Report-Level I (PCR-I) in support of draft DD Form 1391 development and National Environmental Policy Act (NEPA) documentation. The primary responsibility for draft programming of MILCON projects lies with the installation commanders, who identify, plan, and program facilities to support their assigned missions in accordance with their Installation Development Plan (IDP). MAJCOMs will accomplish the BCE role in overseas environments where no AF installation exists.

1.4.12. **Host-Tenant.** Manage situations per AFI 25-201, *Intra-Service, Intra-Agency, and Inter-Agency Support Agreements Procedures*. By agreement of host and tenant, the tenant organization may fund design and construction.

1.4.12.1. **DoD Components or Federal Agencies:** Refer to AFI 65-601 V1, *Budget Guidance and Procedures,* for situations involving other DoD components or federal agencies.

1.4.12.2. **Joint Basing.** Joint basing exists where two or more Service Component installations have merged into one installation and one Component has been appointed as the lead (i.e. supporting Component). The supporting Component is responsible for providing Installation Support (IS) to the Joint Base (JB). The supported Component(s) transfers installation management to the supporting Component.

1.4.12.2.1. Except as provided below, the supporting Component's policies, procedures, and guidance shall govern facilities planning, design, acquisition, construction, sustainment, modernization, and disposal actions at Joint Bases.

1.4.12.2.1.1. To the extent required and only when providing unique ***mission related*** capabilities, the supported Component's unique planning, architectural and/or design and construction criteria shall be used, even when those unique

mission related capabilities and/or criteria may conflict with the supporting Component's criteria.

1.4.12.2.1.2. Where the AF is the supported component on a JB, the installation shall ensure that the relevant MOA or other support agreement with the supporting component requires Wing Commander approval of design and construction of facilities' impacting the airfield/airspace and airfield operations.

1.4.12.2.1.3. In accordance with the Joint Base Implementation Guide (JBIG) published by the Office of the Deputy Secretary of Defense, Air National Guard and Army National Guard facilities and land are tenant property and do not constitute a supported component.

1.4.12.2.2. Except as provided below, the supporting Component's DA/CA shall be used for all MILCON at Joint Bases.

1.4.12.2.2.1. For supported Component projects actively in design, under construction, or pending final acceptance when JB formed, the supported Component's assigned design/construction agent shall maintain responsibility for the construction project through financial completion, at which point the DA/CA of the supporting Component shall ensure that the preparation and submittal of final DD Form 1354, *Transfer and Acceptance of Military Real Property* is completed by the installation Public Works organization or installation Real Property Office – whether that be BCE, Department of Public Works (DPW) or NAVFAC. **(T-1)**

1.4.12.2.3. **New Construction.** The Component generating a new construction requirement is responsible for programming the necessary planning, design, construction and sustainment funding. The Component generating an increase to the Joint Base population is responsible for any new programming, planning, design and construction needed to expand installation support facilities to accommodate the population increase. In all cases, reuse of existing facilities is the preferred approach over new construction whenever feasible.

1.4.12.2.4. **Demolition and Disposal.** The organization requiring the new construction is responsible for demolition of their vacated buildings. If another Component occupies the vacated buildings, follow-on demolition responsibility is relinquished. In all cases, demolition of facilities no longer needed as a result of new construction shall be accomplished at the earliest opportunity after funds are available.

1.5. Requirements Development:

1.5.1. The DM/CM shall ensure that design and construction of a proposed construction project for which they are responsible is in conformance with the following documents: **(T-1)**

1.5.1.1. **Installation Development Plan (IDP).** Installation Development Plans (IDP) includes specific Area Development Plans (ADP) and are required at all Air Force installations. The IDP is a summary document that provides information at an appropriate level of detail for the installation, the command, and other decision-makers to

understand the character and structure of the installation, and its development potential. Refer to AFI 32-7062, *Air Force Comprehensive Planning* which provides responsibilities and requirements for comprehensive planning and describes procedures for developing, implementing, and maintaining the IDP. The DM/CM and DA/CA shall ensure that the Designer of Record (DOR) provides designs for infrastructure systems and facility construction that conform to requirements of the IDP and ADP.

1.5.1.2. **Area Development Plan (ADP).** An ADP is developed by the base for a specific area and/or functional use. The ADP provides the notional vision necessary to assess the site requirements for a project and outline mitigation for future use with a special focus on the installation area where the project is located and its mission capacity. Refer to the IDP for the ADP requirements of a specific project.

1.5.1.3. **Planning Charrette Reports (Level I and Level II).** Planning Charrette Reports-Levels I and II (PCR-I and PCR-II) document and provide a basis for understanding, describing and quantifying project requirements (refer to Attachment 1, Terms for additional definition). PCR-I and PCR-II also provide the basis for cost and scope development and refinement of the draft DD Form 1391. The DOR shall use the PCR-II obtained from AFCEC, COE/NAVFAC, or Installation Contracting Office as the principle basis of project design or Request for Proposal (RFP) development.

1.5.1.3.1. **PCR-I.** The BCE initiates the PCR-I as early as possible involving as many stakeholders of the Project Delivery Team (PDT) as practical. Refer to attachment 1 for additional clarification. Inclusion of environmental planning / environmental impact analysis process (EIAP) staff is critical to ensure the approach for environmental impact analysis can be shaped and environmental issues can be avoided, through siting, if possible.

1.5.1.3.2. **PCR-II.** The DM/CM initiates a PCR-II. It further defines/validates the need and provides a refined draft DD Form 1391and seek opportunities to optimize cost and scope with updates to the scope and cost to the 1391. Cost, scope optimization and economic analysis are required throughout the life of Air Force construction projects and shall be included in both the PCR-I and PCR-II, see paragraph 2.2.1.3., Cost Management below.

1.5.1.3.3. **PCR Funding.** The PCR-I and PCR-II are considered advanced planning activities; therefore Operations and Maintenance (O&M) funds are used for its preparation. Centralized sustainment will be provided as outlined in the AFCEC FSRM Business Rules. See the WBDG website for a PCR document template. Ensure that development of the PCR-I and PCR-II requirements follow those in the HAF-AFCEC PgMP, Attachment 1, Planning Activities, found at WBDG website.

1.5.1.4. **Project Management Plan (PMP).** The PMP presents the strategic decisions on the project schedule, design, acquisition, and construction that are agreed upon by the project stakeholders. The DM/CM will take the lead in preparing the PMP. The PMP should be attached to any planning or design instruction issued for a particular MILCON project. Additionally, the PMP shall be compared to the HAF-AFCEC Program Management Plan for Air Force MILCON Execution to ensure both documents are in alignment. A PMP template can be found at the WBDG website, Construction Criteria Base section.

1.5.1.5. **Project Siting.** Refer to AFI 32-7062, *Comprehensive Planning*, and AFI 32-1021, *Planning and Programming Military Construction (MILCON) Projects.* The designer shall coordinate significant variations from the ADP with the PDT stakeholders before design progresses. (T-1). Re-siting projects during design shall be avoided unless life-cycle cost effective or mission failure would occur.

1.5.1.6. **National Environmental Policy Act (NEPA).** Project re-siting will occur in coordination with the environmental planning functions designated representative, to ensure project siting in a manner consistent with the National Environmental Policy Act (NEPA) process. **(T-0)** This representative also needs to be present to record which alternative sites were considered but not carried forward, to document alternatives consideration as part of the Environmental Impact Analysis Process (EIAP). Assessment of alternatives is not required for environmental studies or reviews in foreign nations in accordance with DoDD 6050.7 Environmental Effects Abroad of Major Department of Defense Actions (codified at 32 CFR part 187). Once the project and its alternatives have been sufficiently developed, NEPA may proceed; refer to paragraph 2.2.4.2 for guidance on the EIAP.

1.5.1.6.1. Key roles of NEPA execution are the responsibility of the NGB on behalf of the Air National Guard.

1.6. Air Force Program Oversight:

1.6.1. **Goals and Metrics.** The management tool for performance measurement of the Air Force design and construction program is a set of cradle-to-grave metrics called the USAF MILCON Ribbon Cutter. The *Ribbon Cutter Implementation Guide* can be found on the WBDG website. Its purpose is to provide accountability and program management expectations and capability from planning through financial closeout. It is intended to measure performance of all members of the PDT, especially DM/CMs, DA/CAs, and project programmers. The goals and metrics are codified in the Air Force Military Construction Program Management Plans. HQ AFCEC has overall responsibility for managing the AF MILCON program and is responsible for documenting project data in Automated Civil Engineering System-Project Management (ACES-PM) throughout contract execution, (design and construction phases through financial closeout). Installations and MAJCOMs are responsible for data in ACES-PM during the Planning and Programming phases. **(T-1)** Additionally errors and/or omissions that occurred during the planning and/or programming phases shall be resolved by the installation and MAJCOM planners and/or programmers regardless of project phase.

1.6.2. **Automated Civil Engineering System-Project Management (ACES-PM).** ACES-PM is the Air Force management information system used by Air Force Civil Engineers to manage planning, design, and construction programs. It is used to provide management assessments of project cost, major milestones, and to provide an indicator to position construction funds with the Construction Agent (CA). Timely, accurate ACES-PM data entry is essential through the course of the project life. The DM/CM will be the primary person that updates ACES-PM during contract execution, design and construction through financial completion. (T-1) The DM/CM will also update and track NAF projects in ACES-PM. When constructing NAF projects, AFPC/SVXF will provide the DM/CM information needed to keep the ACES-PM current.

Chapter 2

DESIGN PROCEDURES

2.1. Scope: This chapter addresses design procedures and directives for Air Force MILCON projects. For ANG & AFR see section 1.2.9 & 1.4.10. It also describes the design management process, Design Instructions (DIs), Unified Facilities Criteria (UFC), guidance for Unspecified Minor Military Construction (P-341) projects, authorities for funding, cost controls, reprogramming and change orders. In addition to the general design requirements below, refer to HAF-AFCEC PgMP for additional design activities, design/construction codes and management controls.

2.2. Applicable Directives:

2.2.1. **General Design Requirements.** The objective for all Air Force facilities is to enable mission execution, and enhance occupant safety and quality of life by providing sustainable facilities. The application of asset management principles to include space optimization, energy efficiency and similar efforts to optimize initial costs while reducing facility life-cycle costs is critical to long term value for the Air Force. Excellence in function, design, construction and cost optimization are goals for all MILCON projects. In addition to the cost management guidance below, designers must also comply with installation planning criteria, architectural compatibility and facilities excellence standards.

2.2.1.1. **Air Force Corporate Facilities Standards (AFCFS).** All AF designs shall conform to the standards outlined and specified in the AFCFS, an electronic document available at the WBDG website. The AFCFS shall also be used to formulate individual Installation Facilities Standards (IFS). The AFCFS and IFS shall work together to clearly define the acceptable range of quality for all AF design and construction. (T-2)

2.2.1.2. **Standard Facilities Designs (Dynamic Prototypes).** Design teams shall utilize AF standard facilities designs, also called Dynamic Prototypes, when available for a specific facility type. These designs are most often available as building modules developed using Building Information Model (BIM) software and are available at the WBDG website. **(T-2)**

2.2.1.3. **Functional and Flexible Design.** Air Force facilities shall be designed to meet mission requirements with the flexibility to accommodate changes in use with a minimum expenditure of resources. Functional and flexible aspects shall be as defined in the AFCFS, PCR-II and UFC 3-101-01, Architecture. **(T-2)**

2.2.1.4. **Design for Accessibility.** Design shall **c**omply with the most recent DoD and Air Force accessibility policy when providing for people with disabilities. **(T-0)**

2.2.1.5. **Commercial and DoD Facility and Infrastructure Design and Construction Standards and Criteria.**

2.2.1.5.1. **Unified Facilities Criteria (UFC) Program.** The UFC program is implemented by MIL-STD-3007F, *Standard Practice for Unified Facilities Criteria and Unified Facilities Guide Specifications*, and for the Air Force by this AFI. AFCEC is responsible for managing the UFC program for AF/A4C.

2.2.1.5.2. **Commercial Standards.** It is Congressional and DoD direction to use commercial criteria and technical standards based on their suitability for military use. The UFC unification process maximizes the use of commercial standards.

2.2.1.5.3. **Engineering Technical Letters (ETL).** This AFI de-authorizes the use of Engineer Technical Letters (ETLs) as directive publications. Future content normally found in previous ETLs will be published in Air Force publication types listed in AFI 33-360 chapter four and follow the formal publications process outlined in chapter seven. A4C will be the OPR for all directive publications and AFCEC will be the OPR for non-directive and technical publications. Legacy ETLs will completely rescind or incorporated into either a UFC or Air Force Publication by 1 October 2016.

2.2.1.5.4. **Whole Building Design Guide (WBDG).** The WBDG website, with its Construction Criteria Base (CCB) electronic library, is the official distribution medium for all non-sensitive technical DoD facility-related documents and contains the latest UFCs, Unified Facilities Guide Specifications (UFGS), AF Design Guides and Standard Facilities designs. All UFC, UFGS and Design Guide/Standard Design documents can be viewed at: **http://www.wbdg.org**.

2.2.1.6. **Space Criteria.** Facility sizes shall be based on functional analyses while minimizing overall designed space. AFI 32-1024, *Standard Facility Requirements* and AFMAN 32-1084, *Facility Requirements*, provides general planning and programming guidance. For facilities in the National Capital Region, refer to AFI 32-9010, *Management and Reporting of Air Force Space and Building Services in OSD Assigned Facilities and in the Washington DC Area*. For Air Force Reserve facilities, refer to AFRCH 32-1001, *Facility Space Standards*. For Air National Guard facilities, refer to ANGH 32-1084, Facility Space *Standards*. Medical Facilities use DoD and Service-specific medical space planning criteria that is maintained and applied by the Office of the Assistant Secretary of Defense (Health Affairs), Defense Health Agency (DHA) and the AF Health Facilities Division.

2.2.1.7. **Working within the Airfield Imaginary Surfaces.** Refer to AFI 32-7063, *Air Installation Compatible Use Zone Program*; Title 14, Code of Federal Regulations Part 77, *Objects Affecting the Navigable Airspace*; and UFC 3-260-01, *Airfield and Heliport Planning and Design*. For joint Military/Civilian Use Airfields, particularly those under Federal aviation administration (FAA) oversight are also subject to FAA circulars.

2.2.1.8. **Preservation of Historic Resources.** DoDI 4715.16, *Cultural Resources Management*, provides policy, prescribes procedures, and assigns responsibilities for managing archaeological and historic resources in and on properties and lands under DoD control. Refer to AFPD 32-70, *Environmental Quality*, AFI 32-7064, *Integrated Natural Resources Management*, and AFI 32-7065, *Cultural Resources Management Program* for guidance and compliance requirements.

2.2.1.9. **Antiterrorism (AT).** All DoD facilities must comply with the latest UFCs and directives governing AT standards for facilities. **(T-0)** Refer to UFC 4-020-01, DoD Security Engineering Facilities Planning Manual, to establish AT requirements and to UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings, for minimum AT criteria for inhabited facilities. Refer to UFC 4-022-01, *Security Engineering: Entry*

Control Facilities/Access Control Points, for further guidance on Entry Control Facilities (ECFs).

2.2.1.10. **Model Building Codes.** Refer to UFC 1-200-01, *General Building Requirements*, and the *United States Air Force Project Managers' Guide for Design and Construction* for specific guidance. In the case of conflicts between the model codes and Air Force and/or DoD criteria, the Air Force/DoD criteria shall take precedence. **(T-0)**

2.2.1.11. **Sustainable Design and Development.** Sustainable design and development principles shall be incorporated into all AF design and construction projects. Refer to UFC 1-200-02, *High Performance and Sustainable Building Requirements*, and the most current AF Sustainable Design and Development Policy or Implementing Guidance (WBDG website) for specific direction, compliance tracking and reporting requirements, located at the WBDG website. **(T-1)**

2.2.1.12. **Fire Protection.** Fire protection features shall be in accordance with UFC 3-600-01, *Fire Protection Engineering for Facilities*. Follow AFI 32-10141 *Planning and Programming Fire Safety Deficiency Correction Projects*, and use Attachment 7 for requesting Criteria Alternative/Equivalency. AFCEC /CO shall review all requirements and designs associated with Hangar Fire Protection systems prior to construction. **(T-1)** Additional information and specific Fire Protection technical guidance is published on the WBDG website.

2.2.1.13. **Occupational Safety and Health Administration.** Air Force facilities will conform to all applicable standards published under OSHA. **(T-0)** Standards issued that affect facilities are found primarily in Title 29 Code of Federal Regulations, Part 1910, *General Industry Standards* and Title 29 Code of Federal Regulations, Part 1926, *Safety and Health Regulations for Construction*. Refer to AFI 91-203; *Air Force Consolidated Occupational Safety Instruction.*

2.2.1.14. **Explosive Safety Standards.** Designs for construction or modification of ammunition and explosives facilities or any planned facilities near ammunition and explosives facilities will be reviewed by the DoD Explosive Safety Board in accordance with DoD 6055.09-STD, *Department of Defense Ammunition and Explosives Safety Standards;* DoD Directive 6055.9E, *Explosives Safety Management and the DoD Explosives Safety Board*, and AFMAN 91-201, *Explosives Safety Standards*. **(T-0)**

2.2.1.15. **Others not listed.** Other standards and criteria listed in Unified Facilities Guide Specifications shall be adopted for inclusion(e.g.). Construction Operations Building Information Exchange (COBie) may be adopted by UFGS after publication of this AFI.

2.2.2. **Cost Management.** Use life-cycle cost analysis and value engineering (VE) to manage and optimize project costs. Cost optimization takes into account upfront capital cost savings and long-term life-cycle savings (lower maintenance cost/better durability). Cost control requires continual systematic cost management beginning with PCR-I development, programming, PCR-II development, design, construction and continuing throughout the life of the facility. The cost-benefit analysis, and life-cycle cost analysis are methods for evaluating project cost effectiveness.

2.2.2.1. **Life Cycle Cost.** Programming and design decisions for all types of construction will be based on life-cycle cost of the facility. **(T-1)** Use the present value discounting approach described in AFI 65-501, *Economic Analysis*, and AFMAN 65-506, *Economic Analysis*, unless otherwise specified. Because NAF funded projects may use a different decision-making process, contact the funding organization for further information. All life-cycle cost analyses are as defined by Title 10 Code of Federal Regulations Part 436, *Federal Energy Management and Planning Programs.* To prepare a life-cycle analysis, use the *National Institute of Standards and Technology (NIST) Handbook 135, Life-Cycle Costing Manual for the Federal Energy Management Program*, and the Annual Supplement to Handbook 135, *Energy Price Indices and Discount Factors for Life- Cycle Cost Analysis.*

2.2.2.2. **Value Engineering (VE).** Value engineering is used to analyze and improve design and construction projects by achieving an optimum balance between function, performance, quality, safety, and cost. Conduct VE studies early in the design process as soon as adequate information is available. Office of Management and Budget (OMB) Circular No: A-131, dated December 26, 2013, is the Federal Directive that requires federal agencies to consider and use Value Engineering (VE) as a management tool to ensure realistic budgets and maintain acceptable quality in program and acquisition functions. The OMB Circular currently requires VE for new projects and programs when the project cost estimate is at least $5 million or such lower dollars threshold as determined by the Senior Accountable Official (SAO) and identified in the agency's VE guidelines. Component shall comply with DoD Instruction 4245.14, "DoD Value Engineering (VE) Program.

2.2.2.2.1. **VE Requirements.** A formal third-party VE study shall be performed on Air Force Military Construction (MILCON) projects with a Programmed Amount (PA) over $5 million. The Air Force DA/CA will determine which MILCON will receive formal VE. Informal (in-house, Agent) VE analysis, incorporating VE principles/guidelines, will be prepared for projects between $2 and $5 million. **(T-1)** A VE study shall not eliminate features required to comply with Occupational Safety and Health Act (OSHA) standards and other laws. **(T-0)** See paragraph 2.2.1.14.

2.2.3. Architect-Engineer (A-E) Selection and Services. A-E services are described below:

2.2.3.1. Design Phase (**Title I):** These services are related to preparing a specific construction project design prior to construction contract award and consist of conducting field surveys, site investigations and studies to obtain design data, and preparing design analyses, technical calculations, contract plans, specifications, and cost estimates. Title 10, United States Code 9540 limits that portion of A-E's fee for direct design services to 6% of the estimated cost of construction for producing and delivering the design, plans, drawings, and specifications needed for a construction project.

2.2.3.2. **Construction Phase (Title II) and Supervision, Inspection and Overhead (SIOH).** Title II services are defined as services provided by A-E, in-house personnel, construction management firms, or other services during the construction project. Title II services are related to specific or proposed construction project and consist of observation, inspection, and documentation of construction progress. SIOH is a funded cost and must be included in the project estimate for purposes of determining approval

thresholds. SIOH pays for contract administration, project management, and general overhead costs of the Agent organization. SIOH can be used to fund Title II services which may include construction inspections performed by A-E firms, and technical interpretation of proposed contract changes (such as change orders or value engineering change proposals).

2.2.3.3. **Other A-E Services.** These services are design and construction-related services, but are not connected with a specific construction project. The services consist of developing Installation Development Plans (IDP) with associated Area Development Plans (ADP), (per FAR Subpart 36.6 Architect-Engineer Services; 36.601-4 Implementation), design criteria, fact finding studies, surveys, investigations, and the performance of environmental projects involving prevention, compliance, and restoration when the services of registered architects or engineers are required. Excluded are services that need not be performed by a registered engineer or architect such as providing design and construction equipment or computer programs.

2.2.3.4. **Authorities.** *Title 10 United States Code* Sections 2807(a), *Architectural and Engineering Services and Design, Title 10 United States Code* Section 9540(a), *Architectural and Engineering Services,* and the Defense Federal Acquisition Regulation Supplement (DFARS) 236.606-70 authorize contracting for and administration of A-E services for project design. *Title 10 United States Code*, Sections 4540, 7212 and 9540 limit the portion of the A-E's fee for producing contract plans and specifications to six percent of the estimated cost of the construction project. **(T-0)** The six percent (6%) limit also applies to construction contract modifications (see DFARS Subpart 236.6.). This limitation does not include site investigations, studies and surveys or other services that are not an integral part of the production and delivery of plans, designs, and specifications. *Title 40 United States Code*, Sections 1101 – 1104, commonly called the *Brooks Act*, provides the authority, definitions, and basic procedures for the Federal Government's selection of A-E firms for professional services on facility projects. *Title 10 United States Code*, Section 2855(a) applies the *Brooks Act* to military construction (however, the *Brooks Act* is not applicable to NAF contracting). For additional guidance, refer to Defense Federal Acquisition Regulation Supplement (DFARS) Subpart 236.6, *Architect-Engineer Services* and Air Force Federal Acquisition Regulation Supplement (AFFARS), Part 5336, Construction and Architect-Engineer Contracts. Procedures for the execution of reserve component funds issued under Title 10 USC, Section18233(e are described in ANGRC ETL 1.

2.2.3.5. **The Federal Business Opportunities (FedBizOpps or FBO) Synopsis Review.** The FBO announcement is a key document in the A-E selection process. It identifies proposed, specific contract actions. Public announcements for A-E services will reflect the minimum needs of the government, not arbitrarily restrict eligible firms, and described the work required and selection criteria in sufficient detail to facilitate a meaningful selection of the most highly qualified firm. In the case of indefinite delivery/indefinite quantity (IDIQ) contracts, the FBO synopsis identifies contract requirements based on projected, yet uncertain requirements.

2.2.3.5.1. **A-E Contracts on Specific Projects.** On projects where the AF is the DA, the BCE in the case of installation contracts, or the respective directors of AFCEC in the case of AFCEC contracts, shall approve the technical data to be included in the

FBO synopsis, prior to submitting this information to the CO, to ensure it properly describes the requirement. **(T-1)**

2.2.3.5.2. **IDIQ Contracts.** Pursuant to FAR 36.602-2 (a), pre-selection boards are authorized. Additionally, boards shall be chaired by registered professional engineers or architects. The BCE in the case of installation contracts, or the AFCEC Director in the case of AFCEC contracts, shall approve the technical data to be included in the FBO synopsis, prior to submitting this information to the CO, to ensure it properly describes the requirements, the geographical coverage, and provides an appropriate capacity relative to projected requirements. NAF contracting offices may have their own NAF IDIQ A-E contracts. **(T-1)** Contact the funding organization for guidance.

2.2.3.6. A-**E Slate Selection Approval.** Approval authority for A-E selection is outlined in DFARS 236.6.

2.2.3.6.1. **Approval Authority.** For all A-E services, (Title I, Title II, IDPs, Other Services, and IDIQs), the BCE will provide slate selection approval authority for services exceeding $1,000,000 per contract. **(T-1)** Similarly, for contracts at MAJCOM Civil Engineer or AFCEC, slate selection approval authority for services exceeding $1,000,000 per contract, will be obtained from their respective directors. Note: slate selection approval authorizes the BCE to select A-Es to provide the required services; approval is not for the selected 'slate' of A-E service providers.

2.2.3.6.2. **Notification Action (A-E Fees Greater than $1,000,000).** When the cost of A-E design services for a project, or a group of related projects, is estimated to exceed $1,000,000, Congress must be notified in accordance with 10 USC § 2807(b), *Architectural & Engineering Services and Construction Design*, before award or obligation of funds. **(T-0)** Notification action is also required for project design undertaken by government personnel, as well as for A-E services and construction design planned for projects that are Congressional inserts or directed designs. AF/A4CF will initiate this Congressional notification, notify AFCEC when it has been sent to SAF/IEE, and notify the MAJCOM and AFCEC when SAF/IEE (through SAF/LL and SAF/FMBL) submits the notification package to Congress. (See DFARS Subpart 236.601 for the content of the Congressional notification and timeline requirements). Notification must be completed (including the wait period) prior to start of any design, including that performed by government personnel. Staffing actions for 10 USC § 2807 notification typically take 30–45 days. During the notification waiting period, public announcement of the plan to initiate design on a particular military construction project may be made and administrative actions leading to award of the A-E contract may be started, but no actions that obligate government funds may be undertaken.

2.2.3.6.2.1. When a large project or several projects for the same functional purpose with total A-E costs of $1,000,000 or more are undertaken, Congressional notification is required prior to the start of design for any portion of the undertaking, even though the project design may be subdivided into several A-E contracts or a combination of A-E contracts and design performed in-house by government personnel. Notification is required even though the design costs for such portion may be less than the reporting threshold specified by law.

2.2.3.6.2.2. Planning and design (P&D) funds expended to AFCEC, USACE and NAVFAC to award and administer A-E contracts are separate from the services themselves and do not apply to the 10 USC § 2807 threshold. All other costs funded with P&D funds apply to the threshold. For a design-build contract, the design effort after construction contract award accomplished by the construction contractor is funded with construction dollars and is not applicable to the threshold. However, preparation of a Request for Proposal (RFP) for a design-build contract is considered A-E services and is subject to the 10 USC § 2807 notification requirements.

2.2.3.6.2.3. For projects executed as design-build, a project-specific design cost estimate will normally be made and used as the basis for determining the notification requirements. In the absence of a design cost estimate, six percent of the programmed amount will be used by AF/A4CF as the estimated design cost for the purpose of determining notification requirements.

2.2.3.6.2.4. The level of effort authorized by a design instruction (3%, 15%, 35%, 100%, etc.) has no bearing on the Congressional notification requirement, as notification must be completed prior to start of any design.

2.2.3.6.2.5. If there is any perceived potential for reaching the Congressional notification threshold, prior notification should be made. In the case where no notification has been made and the threshold is approached after start of design, project managers must notify AF/A4CF and request further guidance.

2.2.3.6.2.6. Notwithstanding 10 USC § 2807 requirements, procurement/financial management regulations may, in some cases, also require Congressional notification. The guidance provided here does not relieve the requirement to comply with procurement/financial management regulations governing notification.

2.2.3.7. **Cost-Plus-Fixed-Fee Contracts.** Advance approval by the Secretary of Defense or designee is required for the use of cost-plus-fixed-fee contracts that are funded by a military construction appropriations act that are estimated to exceed $25,000 and will be performed within the U.S., except Alaska. Refer to DFARS, Subpart 216.306, *Cost-Plus-Fixed-Fee Contracts* for further guidance. **(T-0)**

2.2.4. **Environmental Criteria:**

2.2.4.1. **Environmental Quality Standards.** All projects must meet applicable federal, state, and local environmental standards and regulations in the U.S., its trust territories and possessions. **(T-0)** All projects in foreign countries must comply with an applicable international agreement, country-specific final governing standards or the Oversees Baseline Environmental Guidance Document (whichever applies) and geographic combatant command, and DoDI 4715.05, Environmental Compliance at Installations outside the United States, November 1, 2013 and DoDI 4715.08, Remediation of Environmental Contamination outside the United States, November 1, 2013.

2.2.4.2. **Environmental Impact Analysis Process (EIAP).** EIAP is the Air Force procedure for complying with NEPA. Ensure all construction projects comply with Title 32 Code of Federal Regulations, Part 989, *Environmental Impact Analysis Process,* and

that all design and construction decisions are consistent with the results of the process. **(T-0)** The process, including permits, should be complete prior to concept design completion to facilitate incorporation of mitigation and/or required actions into the design; in all cases this must be done prior to advertising for construction. In order to properly conduct EIAP, the appropriate environmental planning functional (EPF) representative must be notified and invited to participate in the MILCON planning charrettes to ensure that proper consideration of alternatives is conducted, and to ensure a plan is developed for the completion of EIAP. The EPF may be a base-level POC or a POC from the AFCEC/CZ, depending on the scale of the MILCON project. The EIAP should address all environmental constraints within and surrounding the projects' limits of construction. Follow the requirements and work practices in Title 40 Code of Federal Regulations, Parts 1500-1508, *National Environmental Policy Act of 1969, as Amended*; EO 12114, *Environmental Effects Abroad of Major Federal Actions;* DoD Directive 6050.7, *Environmental Effects Abroad of Major Department of Defense Actions*; and AFI 32-7061, *The Environmental Impact Analysis Process which has been codified within 32 CFR Part 989, AFI 32-7001, Environmental Management for overall Environmental Quality standards, and AFI 90-2002, Air Force Interactions with Federally Recognized Tribes.* Also, for real estate issues comply with requirements of AFI 32-7066, *Environmental Baseline Surveys (EBS) in Real Estate Transactions*. The AF Form 813, *Request for Environmental Impact Analysis*, is used for documenting the need to conduct environmental analysis or the application of certain Categorical Exclusions (CATEXs). CATEXs are not appropriate at overseas locations. AFI 32-1021, "Planning and Programming Military Construction (MILCON) projects" requires a Certificate of Compliance addressing the status on compliance with various environmental regulations including EIAP. The Certificate of Compliance is summarized in the DD Form 1391. Complete the certificate at the time the project is presented to the Air Staff for review and approval to be included in the AF budget request.

2.2.4.3. **Floodplains and Wetlands Regulations.** All Air Force construction projects in the U.S., its trust territories and possessions must conform to Executive Order (EO) 11988, *Floodplains Management;* EO 11990, *Protection of Wetlands*; and AFI 32-7064, *Integrated Natural Resources Management*. **(T-0)** If Floodplains and Wetlands cannot be avoided then a Finding of No Practicable Alternative shall be included within EIAP and the EPF will coordinate with the MAJCOM NEPA Liaison.

2.2.4.4. **Environmentally Preferable Products and Materials.** Comply with the DoD Green Procurement Program (GPP) by using products and materials that are environmentally preferable. **(T-0)** Refer to *Title 42 United States Code*, Section 6901, *Solid Waste Disposal/Resource Conservation and Recovery Act and Major Amendments*; *Title 42 United States Code*, Section 8262, *National Energy Conservation Policy Act; Title 42 United States Code*, **Chapter 133**, *Pollution Prevention*; EO 13423; EO 13514; and ETL 00-1, *EPA Guideline Items in Construction and Other Civil Engineering Specification.*

2.2.4.5. **Toxic and Hazardous Materials.** All Air Force Construction projects in the U.S., its trusterritories and possession must comply with requirements, and work practices provided in *Title* 29 *United States Code*, Section 651, *Occupational Safety and Health Act of 1970*; Title 29 Code of Federal Regulations, Part 1926.62, *Lead Exposure*

In Construction; Interim Final Rule--Inspection and Compliance Procedures; Title 29 Code of Federal Regulations, Part 1910.134, *Respiratory Protection*; UFC 1-900-01, *Selection of Methods for the Reduction, Reuse, and Recycling of Dmolition Waste*; and AFI 32- 7042, *Waste Management.* **(T-0),** Air Force installations in foreign countries must comply with an applicable international agreements, country-specific final governing standards or Overseas Baseline Environmental Guidance (Whichever applies), and geographic combatant command policy.

2.2.4.6. **Asbestos.** All Air Force Construction projects in the U.S., its trust territories and possession must comply with requirements and work practices in Title 29, Part 1926.1101, *Asbestos*; Title 40, Part 61, Subpart M, *Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP) Regulations*; and Title 40, Part 763, *Asbestos*. **(T-0)** Demolition and construction projects that involve asbestos survey, removal, abatement, and disposal actions must separately track the cost associated with each of these actions along with a per unit cost basis. Reference to AFI 32-1052, Facility Asbestos management, for AF guidance on asbestos procedures for demolition and construction projects that involves asbestos. Air Force installations in foreign countries must comply with an applicable international agreements, country-specific final governing standards or Overseas Baseline Environmental Guidance (Whichever applies), and geographic combatant command policy.

2.2.4.7. **Lead-Based Paint.** All Air Force Construction projects in the U.S., its trust territories and possession must comply with requirements. Follow the requirements and work practices in Title 42 United States Code, Section 4831, *The Lead-Based Paint Poisoning Prevention Act of 1971*; Title 40 Code of Federal Regulations, Part 745, *Lead-Based Paint Poisoning Prevention in Certain Residential Structures*; Title 40 Code of Federal Regulations, Part 260 - 282, Hazardous Waste; Public Law 102-550, *The Residential Lead- Based Paint Hazard Reduction Act of 1992*; Title 15 United States Code, Section 2601, *Control of Toxic Substances, Findings, Policy, a*final governing standards or Overseas Baseline Environmental Guidance (Whichever applies), and geographic combatant command policy.

2.2.4.8. **Solid Waste Management.** AFI 32-7042, requires Air Force installations to track and report the amount of construction and demolition debris that is recycled and disposed of in landfills. **(T-1)** Refer to UFC 3-250-07, *Standard Practice for Pavement Recycling;* UFC 1-900-01 and UFGS-02 41 00, *Demolition and Deconstruction Guide*, for additional guidance.

2.2.4.9. **Ozone Depleting Substances (ODSs).** The regulations in Title 40 Code of Federal Regulations, Part 82, *and Protection of Stratosphere Ozone* establish requirements regarding the service, maintenance, repair, and/or disposal of a wide array of equipment containing ODSs, and apply to all Air Force installations. **(T-0)** For further detail on the ODS program, refer to AFI 32-7001, *Environmental Management*; AFI 32-7086, *Hazardous Materials Management; and* AFI 32-7040, *Air Quality Compliance and Resource Management.* Air Force installations in foreign countries must comply with an applicable international agreements, country-specific final governing standards or Overseas Baseline Environmental Guidance (Whichever applies), and geographic combatant command policy.

2.2.4.10. **Storm Water Management During Construction.** Refer to AFI 32-7041, *Water Quality Compliance.*

2.2.4.11. **Site Contamination.** Each installation is responsible for identifying existing contamination at proposed MILCON sites to avoid unknowingly locating MILCON projects in areas with contamination. **(T-0).** New facilities should be sited and designed to minimize life-cycle costs to include those associated with impacts from existing contaminated sites. The installation is responsible for performing necessary environmental baseline surveys, accomplishing environmental impact analysis process requirements, and for otherwise informing itself about existing site conditions and their associated cost impacts in preparation for a MILCON project. The costs for anticipated removal and disposal of contamination within the MILCON footprint shall be included as part of the MILCON project and identified on the DD Form1391. If contamination is unexpectedly encountered during project execution, costs for removing and disposing of contamination within the project footprint can be paid by the MILCON project. Refer to AFI 32-1021, Planning and Programming Military Construction (MILCON) Projects and AFI 32-7020, The Environmental Restoration Program for more information. Refer to country-to-country agreements on non-US installations for environmental contamination scenarios. For installations in foreign countries, refer to DoDI 4715.08 for more information

2.3. Design Management:

2.3.1. **Design Funds (MILCON).** Use Planning and Design (P&D) funds to fund design services for MILCON. Refer to AFI 65-601 V1, paragraph 9.12 and the HAF-AFCEC PgMP, Management Controls, for further clarification on use of design funds. **(T-1)** In addition, refer to AFI 65-601 V1, paragraph 9.15 that governs, "Financing Efforts by Other than Military Construction Appropriations". For NAF funded projects, contact the organization funding the project for guidance.

2.3.2. **Design Reviews.** The DA is responsible for the technical adequacy of the project and will provide technical reviews. The DM, BCE, MAJCOM and customers are responsible for the functional adequacy of the project and will provide functional reviews.

2.3.2.1. **Bidability and Constructability.** Design reviews will include consideration of these issues to ensure clarity and accuracy of contract documents so the project can be successfully awarded and constructed with minimal modifications and duration and within budget. **(T-1)**

2.3.2.2. **Operability and Maintainability.** Design reviews will include consideration of these issues to ensure the completed facility can be run economically and reliably over its lifetime. **(T-1)**.

2.3.2.3. Sustainable Design. Design reviews will include ensure sustainable design elements are life cycle cost effective IAW UFC 1-200-03, High Performance and Sustainable Building Requirements.

2.3.3. **Interior Design.** Refer to UFC 3-120-10, *Interior Design*, with Change 1.

2.3.4. **Landscape Architecture.** Refer to the *Master Landscape Construction Specifications*, UFC 3-201-02, *Landscape Architecture*, both available digitally at the WBDG website, and the applicable installation's Architectural Compatibility Plan.

2.4. MILCON Design Instructions:

2.4.1. **Planning and Design Instructions.** See HAF-AFCEC PgMP, Management Controls, for information regarding issuance of planning and design instructions.

2.4.2. **AFRC Program Managers (PM).** AFRC PMs issue the DI using the Air Force approved financial tracking database system.

2.5. Guidance Unique to the Unspecified Minor Military Construction (UMMC) Program (P-341):

2.5.1. **AF/A4C Roles and Responsibilities:**

2.5.1.1. The Facility Management Division (AF/A4CF) is the lead in AF/A4C for UMMC program development and execution.

2.5.1.2. AF/A4C validates and prioritizes candidate projects. AF/A4CF then:

2.5.1.2.1. Issues the Planning Instruction (PI) for the project to the DM/CM through ACES-PM authorizing the start of project design (the "PI" is annotated in ACES as "DI #1").

2.5.1.2.2. Sends the P-341 construction program authorization to the DM/CM.

2.5.1.2.3. Authorizes construction advertising via a DI through the ACES-PM system.

2.5.1.2.4. Evaluates cost variations and submits them to HAF/A4C for SAF/IEE approval.

2.5.1.2.5. Approves transfer of P-341 funds between projects.

2.5.2. DM **Roles and Responsibilities:**

2.5.2.1. Monitors design progress, manages and updates project data using the ACES-PM database system. **(T-2)**

2.5.2.2. Sends the final design cost estimates, bid opening, contract award reports and funds requests, due to construction changes to AF/A4CF through ACES-PM. **(T-2)**

2.5.2.3. After construction contract award, uses P-341 funds to support DA or A-E, Title II construction and inspection services, and any required A-E design services (engineering and design or post contract award services). **(T-2)**

2.6. Congressional Authorization and Appropriations of MILCON Program:

2.6.1. **Expiration of Authorizations and Appropriations.** Refer to AFI 65-601 V1, *Budget Guidance and Procedure.*

2.6.1.1. Authorizations for Air Force MILCON projects expire after 30 September of the second year after the FY of the original authorization (e.g., a project authorized in FY14 expires at the end of FY16), or on the date the President signs the new National Defense

Authorization Act in the third FY (FY17 from the previous example), whichever date is later.

2.6.1.2. Air Force should Congress to enact an extension of the authorization in the third year of the act or the authorization will expire. The DM/CM should submit requests for extension of authorization to AF/A4CF no later than 30 November each year. **(T-0)**

2.6.1.3. Partial awards (intended to keep an authorization from expiring) must involve construction placement rather than the purchase of government-furnished material or equipment and must include a significant portion (greater than 50%) of the product work. **T-1).**

2.6.1.4. Funds appropriated in an FY for a MILCON project may remain available for obligations beyond that FY to the extent provided in appropriation acts. MILCON appropriations generally are available for obligation for five FYs. Refer to AFI 65-601 V1 for use of expired funds.

2.6.2. **Cost and Scope Control:**

2.6.2.1. **MILCON** Congress approves each MILCON project at a specific authorized and appropriated cost and scope. **(T-0)** Title 10 United States Code, Section 2853, authorizes a cost increase or decrease of not more than 25 percent of the amount appropriated or 200 percent of the minor construction project ceiling, whichever is less. The project scope may be reduced by not more than 25 percent of that specified to Congress; however, there is no provision for an increase in the project scope identified on the DD Form 1391. It is imperative that managers understand that a cost variation shall not be used to increase project scope. The HAF-AFCEC PgMP, Management Controls, summarizes and updates the controls in place to manage the MILCON execution program. A copy of the HAF-AFCEC PgMP can be obtained from the WBDG website. MILCON program managers at all levels must be familiar with these controls to ensure proper authority and/or notification is sougin the appropriate situation. Use the tables in the HAF-AFCEC PgMP as an initial source for taking appropriate MILCON execution actions.

2.6.2.2. **Reprogramming and Notification**. Reprogramming and notification actions will be performed in accordance with all applicable requirements as outlined in the HAF-AFCEC PgMP; Management Controls. **(T-1).** AFCEC will prepare all documentation, coordinate with the MAJCOMs for project reprogramming, and submit requests to AF/A4CF for further action.

2.6.2.3. **Funding Changes.** Funding changes with expired funds involve special rules. Refer to AFI 65-601 V1 for further clarification on use of funds. Refer to HAF-AFCEC PgMP and the *AFCEC MILCON Change Order Management* Plan, available at the WBDG website for procedures regarding construction changes for additional guidance.

2.6.2.4. **Scope Changes.** Refer to AFI 65-601 V1 for further clarification on use of funds. Refer to the HAF-AFCEC PgMP, Management Controls, for additional guidance.

2.6.3. **Facility Acquisition Strategy.** As early as possible in the planning and programming stages of MILCON project development, the DM/CM is required to determine and document the key factors leading to the selection of the most cost effective and appropriate design

delivery acquisition strategy for each MILCON project. **(T-1)** The acquisition strategy selected should be documented no later than during development of the PCR-II. Per AFI 32-1021, *Planning and Programming Military Construction (MILCON) Projects,* for Design-Build (D-B) projects, inclusion of a 4% design after award cost shall be included on the DD Form 1391. This amount is funded with project construction funds.

2.6.4. **Funding and Project Management Guidance for Air Force Services Nonappropriated Fund Projects.** AFCEC/CF has technical authority for design and construction of NAF projects and administers the AFCEC Change Order Management Plan. The Air Force Services Agency (AFPC/AFSVA) is the office of primary responsibility for administering and managing AF central non-appropriated funds and approves funding for all change order requests prior to award contract modification. Refer to AFI 32-1022 and AFI 34-205 for additional guidance.

2.6.5. **Expedited Construction Project.** The use of MILCON funds (excludes Planning and Design funds) to absorb extra cost of expediting a project is authorized under certain conditions described in *Title 10 United States Code,* Section 2858, *Limitation on the Use of Funds for Expediting a Construction Project*.

Chapter 3

CONSTRUCTION MANAGEMENT

3.1. Scope: This chapter applies to construction management as it applies to the Air Force MILCON construction process (For ANG & AFR, see 1.2.09. and 1.4.109.). It defines the roles and responsibilities of the construction management team and typical construction phases.

3.2. Roles and Responsibilities:

3.2.1. AF/**A4C:**

3.2.1.1. Processes MILCON construction funds requests from the Construction Manager (CM) and works with the requiring MAJCOM or AFCEC to identify and verify sources of funds.

3.2.1.2. Authorizes contract awards and cost and scope changes in accordance with the HAF-AFCEC PgMP.

3.2.1.3. Submits reports, cost variations, re-programming, scope changes and other congressional notifications to Congress through the SAF based on justifications from the requiring MAJCOM or AFCEC.

3.2.2. **AFCEC Construction Manager (CM): (T-2),** applies to all subparagraphs 3.2.2.1 to 3.2.2.24

3.2.2.1. Evaluates construction progress.

3.2.2.2. Reports progress and manages the SF-30 construction change request process. Keeps ACES-PM database system up-to-date or ensures others enter data in a timely manner.

3.2.2.3. Ensures the Construction Agent (CA) provides a government cost estimate with change request and secures approval prior to CA issuance to contractor. The CM verifies all construction changes are within the scope of work and is responsible for obtaining finalized SF30 construction change requests from the CA. The CM tracks and reports cost growth in ACES-PM.

3.2.2.4. Monitors construction progress in relation to the schedule approved and administered by the CA.

3.2.2.5. Reviews all changes for compliance with HAF-AFCEC PgMP that impact cost, schedule, functionality, appearance and maintainability, and coordinates changes with the BCE and Requiring/Using MAJCOM. Approves or disapproves changes affecting the functionality, and exterior appearance or maintainability. Ensures changes do not compromise fire, safety, environmental, and health levels established in original design compliance requirements, and ensures appropriate SMEs evaluate any questionable changes.

3.2.2.6. Reviews and approves or disapproves non-mandatory change requests, within funds available, in accordance with the HAF-AFCEC PgMP. Reviews change request promptly and restricts approval consideration to those requests necessary to meet the mission.

3.2.2.7. Directs the CA to implement approved non – mandatory changes.

3.2.2.8. Makes a request (based on the CA's cost estimate) to AF/A4C through ACES-PM when the CA requires additional funds above the established current working estimate (CWE). On Air Force Services NAF projects, the CM must make the request to AFMC/SVXF.

3.2.2.9. Ensures construction meets Air Force standards and user needs.

3.2.2.10. Works with the CA to assist in correcting design errors and omissions.

3.2.2.11. Participates in Red Zone meetings with all participants to discuss, define, and achieve consensus on remaining construction activities, physical completion, and financial closeout of the project. Pulls excess funds at Red Zone

3.2.2.12. Makes site visits as appropriate.

3.2.2.13. Participates in pre-final and final inspections as required. Ensures the user to participate in the pre-final and final inspections, to help the BCE identify deficiencies to the CM.

3.2.2.14. Submits justification packages for cost and scope variations and reprogramming.

3.2.2.15. Ensures the CA delivers warranty and guarantee information to the BCE in transferring facility ownership responsibility.

3.2.2.16. Ensures CA delivers as-built drawings in requested media and format to the BCE within specified contract requirements.

3.2.2.17. Ensures the CA has the contractor conduct operations and maintenance training, any required Commissioning and delivers operations and maintenance manuals to the BCE at the Beneficial Occupancy Date (BOD), or as determined in MILCON Red Zone meeting.

3.2.2.18. Ensures CA conducts post-occupancy inspections.

3.2.2.19. Ensures CA prepares and submits interim and final DD Form 1354, *Transfer and Acceptance of Military Real Property*, which must be prepared in accordance with criteria and processes outlined in UFC 1-300-08, *Criteria for Transfer and Acceptance of DoD Real Property, with Change 2*. Initial DD Form 1354 is required within 10 days of acceptance of the date placed in service per reference AFI 32-9005, *Real Property Accountability and Reporting*.

3.2.2.20. Ensures the CA conducts end-of-warranty inspection with the user and BCE.

3.2.2.21. Coordinates and disseminates all lessons learned reports.

3.2.2.22. Monitors financial completion of a project to enable withdrawal of unused funds in a timely manner.

3.2.2.23. Requests withdrawal of funds at project completion when all outstanding claims have been paid or found to have no merit by the CA.

3.2.2.24. During settlement of an appeals proceeding, submits the request and justification for additional funds to AF/A4C.

3.2.2.25. Ensures coordination of the project with the Environmental Planning Functional (EPF, that is, the installation EIAP POC or AFCEC EIAP POC), ensuring that the EPF is invited and notified of the planning charrette for the MILCON project. The CM will notify the EPF of any changes in design or any other issues that may impact environmental analysis.

3.2.3. **Requiring/Using MAJCOM:**

3.2.3.1. Works with the BCE to ensure timely delivery of government-furnished property/equipment.

3.2.3.2. Attends final and post-occupancy inspection, as required.

3.2.3.3. Reviews scope variations and reprogramming packages.

3.2.4. **BCE:** BCE shall ensure appropriate staff representation to accomplish the following activities:

3.2.4.1. Participates in the pre-bid and site visits, and the pre-construction conference.

3.2.4.2. Reviews and approves material submittals for exterior/interior finishes, including systems furniture. Reviews equipment submittals for maintainability and compatibility with other base systems in compliance with the installation's Architectural Compatibility Plan. Sends recommendations to the CM and MAJCOM. Other than systems furniture, government-furnished property/equipment is a user responsibility. **(T-1)**

3.2.4.3. Ensures base agencies facilitate timely start of construction. **(T-1)**

3.2.4.4. Coordinates all environmental permits and certifications with environmental flight and governing bodies. Sends all required documentation to the CM. **(T-1)**

3.2.4.5. Reports any observed construction quality problems through the CM. Verifies facility systems meet requirements before the BOD. Advises the CM of design and construction deficiencies. Verifies deficiencies are corrected and promptly elevates unresolved issues to the CM for resolution. **(T-1)**

3.2.4.6. Reports any observed potential hazards and dangerous conditions to the CA, and notifies the CM of schedule slippages or phasing deviations that impact the need date. Refer to the *AFCEC MILCON Change Order Management Plan*, available digitally at the WBDG website and HAF-AFCEC PgMP for procedures regarding construction changes. **(T-1)**

3.2.4.7. Invites the user to accompany BCE personnel on site visits to ensure construction meets user needs. **(T-1)**

3.2.4.8. Serves as the CA's point of contact for government-furnished property/equipment. **(T-1)**

3.2.4.9. Promptly sends user's change requests to the appropriate office for approval and monitors status. **(T-1)**

3.2.4.10. Participates in the pre-final and final inspections, and receives from the CA operations and maintenance manuals, training on equipment, warranty and guarantee information, and as-built drawings. **(T-1)**

3.2.4.11. Ensures that newly constructed facilities are not modified within 12 months of the BOD unless the modification meets the requirements outlined in AFI 32-1032, *Planning and Programming Appropriated Funded Maintenance, Repair, and Construction Projects*. **(T-1)**

3.3. Construction Phases:

3.3.1. **Construction Management Plan (CMP).** As determined by the CM, a CMP will be developed to identify and prescribe organizational responsibilities, management procedures, and approval processes in detail. **(T-1)**

3.3.2. **Red Zone Meeting:** Red Zone Meetings are required for all MILCON projects. **(T-1)** The Red Zone approach begins with a meeting held at 80 percent of construction completion. As a minimum, participants will include the contractor, CM, CA, BCE, facility user, and other stakeholders including the communications squadron. At the meeting, participants will discuss, define and achieve consensus on actions necessary to complete construction, support user occupancy, perform financial closeout and document the fiscal closeout of the project in the Real Property Records. Drafting of the final DD Form 1354 should be initiated during the Red Zone meeting.

3.3.3. **Construction Acceptance.** Acceptance occurs after resolving punch list items, delivery of As-Built drawings, and providing required O&M training.

3.3.3.1. **Applicable Programs.** Additional information can be found in UFC 1-300-08, *Criteria for Transfer and Acceptance of Military Real Property*.

3.3.3.2. **Commissioning.** All new facilities and major renovation projects will include commissioning to the extent practicable. Refer to UFC 3-410-01, *Heating, Ventilating, and Air Conditioning Systems,* for additional guidance.

3.3.4. **Joint Occupancy:**

3.3.4.1. **Approval.** The CM may recommend approval of joint occupancy to the CA when it is advantageous to the government.

3.3.4.2. **Joint Occupancy Date.** The CM, working with the using MAJCOM and the CA, jointly determine the joint occupancy date.

3.3.4.3. **Facility Maintenance Responsibility.** When agreeing to joint occupancy, the Air Force assumes responsibility for maintenance and repair of items not under warranty and for operations of portions of the facility occupied by the Air Force during joint occupancy.

3.3.4.4. **Contractor Occupancy after Joint Occupancy.** When the Air Force agrees to let a contractor continue to occupy or use a facility after it has accepted the facility, for any purpose other than to finish correcting deficiencies, the Air Force treats the contractor as a tenant and receives payment in accordance with AFI 65-601 V1, for logistical support that the Air Force provides to the contractor. **(T-1)**

3.3.5. **Construction Quality:**

3.3.5.1. **Responsibilities.** The CM and the CA share the primary responsibility for delivering the user a quality facility. **(T-1)** If CM responsibilities have been delegated to the BCE, then that office shares the responsibility with the CA. The CM ensures

installation level specialists in fire, safety, environment and health are provided access to the project site during the construction and quality evaluation processes. The CM ensures appropriate SMEs are involved in approving criteria equivalencies and alternatives. The contractor is responsible for inspecting, testing, and documenting those tests and inspections that are required by the contract to control material quality and workmanship. CA has primary responsibility to assure and verify the quality.

3.3.5.2. **Quality Assurance (QA).** The contractor is required by the terms of the contract to employ a Quality Control (QC) representative adhering to UFGS Division 1. The CA, through the QA program, oversees the Contractor Quality Control (CQC) program. **(T-1)** Government personnel (from the CA for MILCON and from the BCE otherwise) perform QA performance assessment. Government Agencies contracting for design and construction services are required by Federal Acquisition Regulations (FAR) to perform quality assurance prior to acceptance and payment for the work, either through use of Government personnel directly performing inspection or contract support under the direction of Government personnel. Refer to DoD Contracting Officer's Representative (COR) Handbook dated March 22, 2012 for additional information and requirements for QA and QA Surveillance Plan (QASP). A QASP is mandatory for contracts, task orders, or delivery orders over the simplified acquisition threshold, including services contracts and construction contracts.

3.3.6. **Post-Occupancy Inspections:**

3.3.6.1. **Requirement.** The post-occupancy evaluation team conducts post-occupancy inspections 9 to 11 months after the contractor completes construction. **(T-1)**

3.3.6.2. **Responsibilities.** The CM will schedule post-occupancy inspections with all stake holders. **(T-1)** The CM sends items of interest concerning criteria to AF/A4CF. BCE personnel check one-year warranty items even when a post-occupancy evaluation team inspection does not take place. BCE personnel will coordinate with the DA any corrective action for discrepancies discovered during the one-year warranty check.

JOHN B. COOPER, Lieutenant General, USAF
DCS/Logistics, Engineering & Force Protection

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

10 CFR Part 433, *Energy Efficiency Standards for the Design and Construction of New Federal Commercial and Multi-Family High-Rise Residential Buildings*, current edition

10 CFR Part 434, *Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings*, current edition

10 CFR Part 435, *Energy Efficiency Standards for New Federal Low-Rise Residential Buildings*, current edition

10 CFR Part 436, *Federal Energy Management and Planning Programs*, current edition

10 USC Chapter 1803, *Facilities for Reserve Components*, §§'s 18231 through 18240

10 USC § 2807, *Architectural and Engineering Services and Construction Design*

10 USC § 2853, *Authorized Cost and Scope of Work Variations*

10 USC § 2858, *Limitation on the Use of Funds for Expediting a Construction Project*

10 USC § 2860, *Availability of Appropriations*

10 USC § 2685, *Adjustment of or Surcharge on Selling Prices in Commissary Stores to Provide Funds for Construction and Improvement of Commissary Store Facilities*

10 USC § 2855, *Law Applicable to Contracts for Architectural and Engineering Services and Construction Design*

10 USC § 2915, *New Construction: Use of Renewable Forms of Energy and Energy Efficient Products*

10 USC § 9540, *Architectural and Engineering Services*

14 CFR Part 77, *Objects Affecting the Navigable Airspace*, current edition

15 USC § 2601, *Control of Toxic Substances, Findings, Policy, and Intent*

15 USC § 272 *Utilization of Consensus Technical Standards by Federal Agencies*

29 CFR Part 1910, *Occupational Safety and Health Standards*, current edition

29 CFR Part 1910.134, *Respiratory Protection*, current edition

29 CFR Part 1926, *Safety and Health Regulations for Construction*, current edition

29 CFR Part 1926.62, *Lead Exposure In Construction; Interim Final Rule--Inspection and Compliance Procedures*, current edition

29 USC § 651, *Occupational Safety and Health Act of 1970*

32 CFR Part 989, *Environmental Impact Analysis Process*, current edition

40 CFR Part 1500-1508, *National Enronmental Policy Act*, current edition

40 CFR Part 302, *Designation, Reportable Quantities, and Notification*, current edition

40 CFR Part 745, *Lead-Based Paint Poisoning Prevention in Certain Residential Structures*, current edition

40 USC §§ 1101 - 1104, *Selection of Architects and Engineers*

40 CFR Part 82, *Protection of Stratosphere Ozone*, current edition

42 USC Chapter 133, *Pollution Prevention*

42 USC § 6901, *Solid Waste Disposal/Resource Conservation and Recovery Act and Major Amendments*

42 USC § 6911, *Office of Solid Waste; Authorities of the Administrator*

42 USC § 8252 et seq, *National Energy Conservation Policy Act*

42 USC § 4831, *Lead-Based Paint Poisoning Prevention Act of 1971*

42 USC § 9601, *The Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA)

42 USC § 4151 *Architectural Barriers Act*

AFFARS, Part 5336, *Construction and Architect-Engineer Contracts*, current edition

AFMAN 32-1084, *Facility Requirements*

AFI 25-201, *Support Agreements Procedures*

AFI 32-1012, Reserve Component Facility Programs

AFI 32-1021, *Planning and Programming Military Construction (MILCON) Projects*

AFI 32-1022, *Planning and Programming Non-appropriated Fund Facility Construction Projects*

AFI 32-1024, *Standard Facility Requirements*

AFI 32-1032, *Planning and Programming Appropriated Funded Maintenance, Repair, and Construction Projects*

AFI 32-6002, *Family Housing Planning, Programming, Design, and Construction*

AFI 32-7006, *Environmental Program in Foreign Countries*

AFI 32-7040, *Air Quality Compliance and Resource Management*

AFI 32-7041, *Water Quality Compliance*

AFI 32-7042, *Waste Management*

AFI 32-7061, *The Environmental Impact Analysis Process*

AFI 32-7062, *Air Force Comprehensive Planning*

AFI 32-7063, *Air Installation Compatible Use Zone Program*

AFI 32-7064, *Integrated Natural Resources Management*

AFI 32-7065, *Cultural Resources Management Program*

AFI 32-7066, *Environmental Baseline Surveys (EBS) in Real Estate Transactions*

AFI 32-7080, *Pollution Prevention Program*

AFI 32-7086, *Hazardous Materials Management*

AFI 33-360, Publications and Forms Management

AFI 34-205, *Services Non-appropriated Fund Facility Projects*

AFI 65-501, *Economic Analysis*

AFI 65-601 V1, *Budget Guidance and Procedures*

AFI 90-1701, *Energy Management*

AFI 32-10141 *Planning and Programming Fire Safety Deficiency Correction Projects*

AFMAN 32-1084, *Facility Requirements*

AFMAN 33-363, *Management of Records*

AFMAN 65-506, *Economic Analysis*

AFMAN 91-201, *Explosives Safety Standards*

AFPAM 32-1010, *Land Use Planning*

AFPD 32-10, *Installations and Facilities*

AFPD 32-70, *Environmental Quality*

AFPD 33-3, *Information Management*

AFPD 90-17, *Energy Management*

AFRCH 32-1001, Facility Space *Standard*

ANGI 32-1023, *Criteria and Standards for Air National Guard Design and Construction*

ANGH 32-1084, *Facility Space Standards*

Air Force Corporate Facilities Standards

US Army Corps of Engineers (USACE) Engineering and Construction Bulletin ECB No. 2003-19, *Directory of Expertise on Design Construction Commissioning*

DFARS, Subpart 216.306, *Cost-Plus-Fixed-Fee Contracts*

DFARS, Subpart 236.6, *Architect-Engineer Services*

DoD Directive 4270.5, *Military Construction*

DoD Directive 6050.7, *Environmental Effects Abroad of Major Department of Defense Actions*, 31 March 1979

DoD Directive 6055.09-STD, *DoD Ammunition and Explosives Safety Standards*

DoD Directive 6055.9E, *Explosives Safety Management and the DoD Explosives Safety Board*

DoD Instruction 4170.11, *Installation Energy Management*

DoD Instruction 4715.03, *Natural Resources Conservation Program*

DoD Instruction 4715.05-G, Overseas Environmental Baseline Guidance Document, 1 May 07

DoD Instruction 4715.08, Remediation of Environmental Contamination Outside the United States, I Nov 13

DoD Instruction 6015.17, *Planning and Acquisition of Military Health Facilities*

DoD Instruction 7700.20, *Commissary Surcharge, Nonappropriated Fund (NAF), and Privately Financed Construction Policy*

EO 11988, *Floodplains Management, Feb 2011*

EO 11990, *Protection of Wetlands, May 1977*

EO 12114, *Environmental Effects Abroad of Major Federal Actions, Jan 1979*

EO 13327, *Federal Real Property Asset Management, Feb 2004*

EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management, May 2007*

EO 13514 *Federal Leadership in Environmental, Energy, and Economic Performance Energy Independence and Security Act (EISA) of 2007Energy Policy Act of 2005 (EPAct05), July 2013*

MIL-STD-3007F, *Standard Practice for Unified Facilities Criteria and Unified Facilities Guide Specifications*

NIST Handbook 135, *Life-Cycle Costing Manual for the Federal Energy Management Program*

PL 102-550, *The Residential Lead-Based Paint Hazard Reduction Act of 1992*

Generic Project Management Plan (PMP)

HAF (A7CF) - AFCEC Program Management Plan for Air Force MILCON Execution, (HAF-AFCEC PgMP)

AFCEC, MILCON Change Order Management Plan

UFC 1-200-01, *General Building Requirement, with Change 1*

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

UFC 1-300-08, *Criteria for Transfer and Acceptance of Military Real Property, with Change 2*

UFC 1-900-01, *Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Waste*

UFC 3-120-10, *Interior Design, with Change 1*

UFC 3-190-06, *Protective Coatings and Paints*

UFC 3-201-02, *Landscape Architecture, with Change 1*

UFC 3-210-10, *Low Impact Development*

UFC 3-250-07, *Standard Practice for Pavement Recycling*

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

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

UFC 3-440-01, *Active Solar Preheat Systems, with Change 1*

UFC 3-600-01, *Fire Protection Engineering for Facilities, with Change 3*

UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings, with Change 1*

UFC 4-022-01, *Security Engineering: Entry Control Facilities/Access Control Points*

UFC 4-510-01, *Design: Medical Military Facilities, with Change 1*

UFGS 26 27 13.10 30, *Electric Meters*

UFGS 33 12 33.00 30, *Water Meters*

UFGS 33 51 13.00 30, *Natural-Gas Metering*

UFGS-02 41 00, *Demolition and Deconstruction*

United States Air Force Project Managers Guide for Design and Construction

Prescribed Forms

There are no forms prescribed by this directive.

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

AF Form 332, *Base Civil Engineer Work Request*

AF Form 1477, *Construction Inspection Record*

DD Form 1354, *Transfer and Acceptance of DoD Real Property*

DD Form 1391, FY *Military Construction Project Data*

Abbreviations and Acronyms

AAFES—Army and Air Force Exchange Service; now known as the "Exchange"

ACES-PM–Automated Civil Engineering System—Project Management (or the Current Air Force Civil Engineering Information Management System)

ADP—Area Development Plan

A-E—Architect-Engineer

AFFARS—Air Force Federal Acquisition Regulation Supplement

AFRC—Air Force Reserve Command

ANG—Air National Guard

NGB—National Guard Bureau

USPEO—United States Property and Fiscal Officer

AFSVA—Air Force Services Agency

AMRS—Advanced Meter Reading System

ASTM—American Society for Testing and Materials

AT—Antiterrorism

BCE—Base Civil Engineer

BCP—Base Comprehensive Plan

BOD—Beneficial Occupancy Date

BRAC—Base Realignment and Closure

CA—Construction Agent

CCB—Construction Criteria Base

CCD—Customer Concept Document

CERCLA—Comprehensive Environmental Response, Compensation, and Liability Act

CFR—Code of Federal Regulations

CONUS—Continental United States

CQC—Contractor Quality Control

CWE—current working estimate

DA/CA—Design Agent/Construction Agent

D-B—Design-Build

DeCA—Defense Commissary Agency

DFARS—Defense FAR Supplement

DI—Design Instruction

DLA —Defense Logistics Agency

DM/CM—Design Manager/Construction Manager

DoD—Department of Defense

DoDEA—Department of Defense Education Activity

EA—Environmental Assessment

EBS—Environmental Baseline Surveys

EIAP—Environmental Impact Analysis Process

EISA—Energy Independence and Security Act of 2007

EO—Executive Order

EPA—Environmental Protection Agency

EPF—Environmental Planning Function

ETL—Engineering Technical Letter

ESEP—Engineering Senior Executive Panel

FAR—Federal Acquisition Regulation

FBO—Federal Business Opportunities

FEMP—Federal Energy Management Program

FOA—Field Operating Agency

FONSI—Finding of No Significant Impact

FY—Fiscal Year

GPP—Green Procurement Program

HFD—Health Facilities Division

IDIQ—Indefinite Delivery/Indefinite Quantity

LBP—Lead-Based Paint

MAJCOM—Major Command

MFH—Military Family Housing

MILCON—Military Construction

MTF—Medical Treatment Facility

NAF—Nonappropriated Funds

NAVFAC—Naval Facilities Engineering Command

NEPA—National Environmental Policy Act

NIST—National Institute of Standards and Technology

OASD/TMA—Office of the Assistant Secretary of Defense (Health Affairs)/TRICARE Management Activity

ODS—Ozone Depleting Substances

OPR—Office of Primary Responsibility

OSHA—Occupational Safety and Health Administration

P&D—Planning and Design

P-341 Funds—Construction Funds for Minor Construction Projects

PA—Programmed Amount

PB—Project Book

PCR-I & PCR-II—Planning Charrette Report Levels I & II

PDT—Project Delivery Team

PI—Planning Instruction

PgMP HAF (A7CF)—AFCEC Program Management Plan for Air Force MILCON Execution

PMP—Project Management Plan

POM—Program Objective Memorandum

QC—Quality Control

RD—Requirements Document

SME—Subject Matter Expert

SECAF—Secretary of the Air Force

UFC—Unified Facilities Criteria

UFGS—Unified Facilities Guide Specifications

UMMC—Unspecified Minor Military Construction

USACE——U.S. Army Corps of Engineers

USGBC—United States Green Building Council

VE—Value Engineering

WBDG—Whole Building Design Guide

Terms

A—E Slate – A ranked list of A-E finalists under consideration for contract.

ACES—PM–Automated Civil Engineering System-Project Management (or the Current Air Force Civil Engineering Information Management System): ACES-PM is the current acronym for the data management system currently used by the Air Force. However, ACES-PM will eventually be replaced by NextGen IT/Tririga (or a similar replacement system).

Construction Agent (CA)—The DoD component responsible for the technical execution of project construction. For Air Force MILCON projects, the CA is either U.S. Army Corps of Engineers (USACE), Naval Facilities Engineering Command (NAVFAC), or, for approved projects, AFCEC. The AFCEC/CFEK office is the CA for the United Kingdom.

Construction Manager (CM)—The Air Force organization designated to manage construction, provide Air Force interface with the CA, and provide updates on construction milestones to the Air Staff and major commands for specific projects.

Construction Management Plan (CMP)—Plan developed to identify and prescribe organizational responsibilities, management procedures, and approval processes in detail.

Contracting Officer (CO): —"Contracting Officer" means a person with authority to enter into, administrative, and/or terminate contracts and make related determinations and findings. The term includes certain authorized representatives of the contracting officer acting within the limits of their authority as delegated by the contracting officer. "Administrative Contracting Officer (ACO)" refers to a contracting officer who is administering contracts. "Termination contracting officer (TCO)" refers to a contracting officer who is setting terminated contracts. A single contracting officer may be responsible for duties of any or all of these areas.

Design Agent (DA)—The DoD component responsible for technical execution of project design. For Air Force MILCON projects, the DA is either U.S. Army Corps of Engineers (USACE), Naval Facilities Engineering Command (NAVFAC), or, for approved projects, AFCEC. The AFCEC/CFEK office is the DA for the United Kingdom.

Design Manager (DM)—The Air Force organization designated to manage the design, provide Air Force interface with the Design Agent, and provide updates on design milestones to the Air Staff and MAJCOMs for specific projects.

Deviation—A deviation provides authority to deviate from a specific technical criteria requirement in a Unified Facility Criteria (UFC), model building code, or other facility

engineering criteria document for an indefinite period of time. Deviations are valid for a specific project in a specific facility and are not generic approvals to deviate from criteria. Deviations are often described as long term, or permanent criteria deviations. Refer to most recent version of MIL-STD-3007F, *Standard Practice for Unified Facilities Criteria and Unified Facilities Guide Specification.*

HAF(A4CF) - AFCEC Program Management Plan for Air Force MILCON Execution (HAF-AFCEC PgMP)—The purpose of this plan is to provide the contextual framework for the working relationship between Headquarters Air Force (HAF) Civil Engineer, Facilities Management Division (A4CF) and the Air Force Civil Engineer Center (AFCEC) for Military Construction (MILCON). This plan applies to all Air Force MILCON where AFCEC is designated as the Design Manager/Construction Manager (DM/CM) or Design Agent/Construction Agent (DA/CA).

Inspection—The CA and contractors' inspection duties include, but are not limited to, such items as checking layout of the construction in the field and safety compliance; inspecting workmanship and materials to determine conformity with contract documents. They also include reviewing laboratory tests and analyses of materials; completing and submitting field and progress reports; and checking monthly and final estimates as a basis for payment.

Military Construction Program (MILCON)—The program approved annually by the Congress in the DoD Authorization and Military Construction Acts, plus individual projects authorized pursuant to standing project authority provided by Congress in Title 10 of the United States Code.

Planning Charrette Reports Levels I and II (PCR-I and PCR-II)—These documents serve the same purpose as those formerly designated as Requirements Documents Levels I and II (RD-I and RD-II). The final version of the HAF-AFCEC PgMP eliminated the terms RD-I and RD-II. The purpose of the PCR-I is to document the methodology used by the initial planning charrette team to establish the cost and scope of the preliminary draft DD Form 1391. The PCR-II is the result of a follow-on planning charrette which uses the PCR-I and draft Form 1391 as a basis to produce a more comprehensive document to validate the requirements in the PCR-I and to develop the intermediate draft Form 1391. The PCR-II provides the follow-on designer a basis for understanding and further developing the project requirements through the phases of design. **Note:** See HAF-AFCEC PgMP; Appendix B for design and construction codes, planning and design activities.

Project Delivery Team (PDT)—The project delivery team consists of all project stakeholders and contributing participants through each stage of the MILCON delivery process. The PDT produces optimum project results from an integrated approach over the entire delivery process. All team members provide an essential perspective and role throughout the process as their contributions are leveraged from conceptual requirement planning through construction completion. A PDT should include the primary stakeholders (facility user/customer, installation engineers, and operators), project architects/engineers, interior designers, planners, value engineers, environmental engineers, energy managers, contracting officers, constructors, and DA/CA-agents. For NAF projects, the funding organization is also part of the team determining the execution strategy.

Quality Assurance—The Construction Agent's review of all phases of the construction work to ascertain quality or state of work and to determine compliance with plans and specifications and contract provisions.

Red Zone Meeting—A meeting held at the 80 percent construction completion date where participants discuss, define, and achieve consensus on actions necessary to complete construction, support user occupancy, perform financial closeout and document the fiscal closeout of the project in the Real Property Records.

Ribbon Cutter—Ribbon Cutter is an Air Force Military Construction (MILCON) Program project execution evaluation tool. The AFCEC/CF Integration Cell developed this product to evaluate how well the AF and its partners are achieving their goals to provide the Air Force with the best possible facilities on time and within budget. Ribbon Cutter is not a comprehensive metric at this time nor does it collect details or reasons for missed goals to aid additional evaluation. However, the AF expects our project execution teams to use results from Ribbon Cutter as a basis for further review and process improvement.

Value Engineering—The systematic review by a multi-disciplined team to identify/analyze the most life-cycle cost effective options to reliably accomplish the programmed project intent at the lowest life-cycle cost without sacrificing safety, quality, operations, maintenance, and the environment. The experienced, multi-disciplinary team improves value and economy through the study of alternate design concepts, materials, and methods without compromising the project's functional requirements.