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SUMMARY OF CHANGES

This document has been substantially revised and must be reviewed thoroughly. Preventive Maintenance (PM) for United States Space Force (USSF) critical support infrastructure, known as Critical Preventive Maintenance (CPM), has been incorporated. Established clear guidance to update Next Generation Information Technology (NexGen IT) system requirements for government purchase card transactions for real property support and notified civil engineering personnel of the requirement to utilize the playbooks and process guides. Emergency response time and associated oversight processes are expanded. Introduced formal maintenance management execution, data analysis, and data quality review requirements. Snow and ice control was substantially re-written. Added category management guidance. Implements procedures and guidance to civil engineer control Systems Cybersecurity. Provides detailed operational characteristics of control systems, implements guidance for securing and mitigating cybersecurity risk to control systems, and outlines roles and responsibilities for managing risk under the Risk Management Framework (RMF) pertaining to control systems.

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Chapter 1

ROLES AND RESPONSIBILITIES

1.1. The Assistant Secretary of the Air Force for Energy, Installations, and Environment (SAF/IE).

1.1.1. Establishes and issues civil engineer (CE) operations policies that translate the ideas, goals, or principles contained in the DAF mission, vision, and strategic plans.

1.1.2. Has overall responsibility for built and natural infrastructure, facility and operational energy, safety, and occupational health, and ensures the resilience, sustainability, and operational readiness of the DAF including, but not limited to, resource optimization.

1.1.3. Is accountable for congressional or interdepartmental engagement with respect to operations and maintenance of built infrastructure. May delegate responsibility to the Air Force Deputy Chief of Staff for Logistics, Engineering and Force Protection, Directorate of Civil Engineers (AF/A4C) or the Space Force Chief Operations Officer (SF/COO) for built infrastructure, facility and operational energy, and occupational safety.

1.1.4. Provides guidance, direction, and oversight for all matters pertaining to the formulation, review, and execution of plans, policies, programs, and budgets to ensure the long-term resilience, sustainment, and protection from mission degradation related to built infrastructure.

1.1.5. Serves as the Department of the AF's Designated Agency Safety and Health Official and be responsible for all such duties within the scope of Title 29 of the Code of Federal Regulations.

1.2. Deputy Assistant Secretary of the Air Force for Infrastructure, Energy and Environment (SAF/IEE). SAF/IEE is the delegated authority for all matters relating to the management of facilities and infrastructure on behalf of the Secretary of the Air Force as codified in HAF Mission Directive 1-18, *Assistant Secretary of the Air Force (Installations, Environment, and Energy)*. SAF/IEE reports to and serves as an agent of the Secretary of the Air Force to provide policy, strategic direction, priorities, guidance, and oversight on the management and execution of programs within this area of responsibility.

1.3. Air Force Deputy Chief of Staff for Logistics, Engineering and Force Protection, Directorate of Civil Engineers (AF/A4C) will:

1.3.1. Oversee the civil engineer (CE) Operations Management Program to ensure compliance with applicable U.S. Codes, Federal Regulations, higher directives, and authorities and develop Management Internal Control Toolset self-assessment communicators.

1.3.2. Develop, maintain, clarify, and publish strategy, doctrine, and Department of the Air Force instructions and manuals (DAFIs and DAFMANs) for the operations and asset management programs.

1.3.3. Be accountable for congressional or interdepartmental engagement with respect to operations and maintenance of built infrastructure as delegated by SAF/IE.

1.3.4. Approve the Air Force Real Property Asset Management Framework.

1.4. Space Force Chief Operations Officer (SF/COO) will:

1.4.1. Coordinate with AF/A4 to ensure compliance with applicable U.S. Codes, Federal Regulations, higher directives, and authorities at USSF installations.

1.4.2. Coordinate with AF/A4 when necessary to ensure Space equity during the development, maintenance, editing, and publishing of strategy, doctrine, and policy, for operations and asset management programs.

1.4.3. Be accountable for congressional or interdepartmental engagement with respect to operations and maintenance of built infrastructure as delegated by SAF/IE.

1.4.4. Approve and provide guidance to the Air Force Installation and Mission Support Center regarding DAF-directed special interest items.

1.4.5. Approve Air Force Installation and Mission Support Center's Air Force Real Property Asset Management Framework.

1.4.6. Provide resource advocacy to the Space Force corporate structure through Space Force Mission Sustainment (SF/S4O) and the Space Panel (SF/S8P) for Military Construction (MILCON) and Facilities Sustainment, Restoration and Modernization (FSRM). Coordinate with SF/S4O prior to submission of Program Objective Memorandum (POM) requirements.

1.5. Air Force Materiel Command (AFMC) through the Air Force Installation and Mission Support Center (AFIMSC) will:

1.5.1. Participate and make recommendations through the CE enterprise governance process in the development of civil engineer operations strategy, policy and guidance.

1.5.2. Develop, publish, and maintain currency of the Air Force Civil Engineer Real Property Strategic Asset Management Plan with input from SAF/IE, AF/A4C, SF/S4O, Air Force Institute of Technology, and any other critical stakeholders. Once published, provide a process for continual review and implementation. The plan will incorporate requirements of Executive Order 13327, *Federal Real Property Asset Management*, and align with International Organization for Standardization (ISO) 55000 *Asset Management – Overview, Principles and Terminology*, series standards. It will comply with **Chapter 4** of this publication and include processes, procedures, support systems, organizational roles and responsibilities, and best practices from GAO-19-57, *Federal Real Property Asset Management*.

1.5.3. Provide enterprise-level asset portfolio managers to oversee the management of Activity Management Plans (AMPs) listed in **Chapter 4** as well as any additional activities as directed by DAF.

1.5.4. Allocate resources supporting the operations and maintenance of built infrastructure in accordance with (IAW) Air Force corporate structure decisions. Distribute installation and mission support funds for unit requirements and for tenant units on non-Air Force installations with AFIMSC wing activity funding targets.

1.5.5. Provide resource advocacy to the Air Force and Space Force corporate structures through the Agile Combat Support Core Function Lead and Installation Support Panel (AF/A4PR). Support program development and budgeting for the operations management program. Coordinate with AF/A4C and SF/S4O prior to submission of Program Objective Memorandum requirements IAW CE enterprise governance.

1.5.6. Develop recurring updates to major command (MAJCOM), USSF FLDCOMs, SF/S4O, or Direct Reporting Unit leadership on performance, report findings, high-risk areas, funds distribution and execution, and other applicable trends.

1.5.7. Provide timely, AFIMSC-appropriate information to support HAF engagement and responses to the Office of the Secretary of Defense (OSD), Congress, and external organizations.

1.6. Air Force Materiel Command (AFMC) through AFIMSC and the Air Force Civil Engineer Center (AFCEC) in turn, will:

1.6.1. Provide technical oversight of programs covered under this DAFI and collaborate with AF/A4C, SF/S4O, and AFIMSC for overall program compliance.

1.6.2. Provide technical and functional expertise to support policy development, standardization and improvement of business processes, collection and dissemination of best practices, and playbook development and maintenance.

1.6.3. Serve as designated subject matter experts for CE base maintenance, construction, fire protection, emergency management, RED HORSE, explosive ordnance disposal, rapid airfield damage repair, and built infrastructure, CE vehicles, and establish standards and criteria for design, maintenance, repair, and management of programs covered by this instruction.

1.6.3.1. Establish and approve authority for all changes to CE vehicle minimum configuration standards. Changes to these standards require AFCEC notification and approval.

1.6.3.2. Coordinate corrections and changes to standards with the 441st Vehicle Support Chain Operations Squadron and the Air Force Life Cycle Management Center Vehicle Division at Robins AFB.

1.6.3.3. Provide a chairperson for the DAF CE Vehicle Management Working Group annually in-person and host a teleconference every two months.

1.6.3.4. AFCEC will fund and prioritize all DAF Fire Fighting/Crash Rescue Vehicles (BPAC 824010) using PEC 91279F (Facilities Operation - Administrative).

1.6.4. Oversee processes and procedures for the collection and maintenance of built infrastructure condition data.

1.6.5. In coordination with the AF/A4C career field manager and the Air Force Institute of Technology Civil Engineer School, support and facilitate training and education of DAF personnel related to the operations and maintenance of built infrastructure.

1.6.6. Approve corrosion control methods and equipment not specified in DAF publications.

1.6.7. Provide oversight and support of environmental programs and activities, including facility asbestos management.

1.6.8. Develop and maintain a preventive maintenance task List (PMTL) on a website that is accessible to all necessary users and reviewers.

1.6.9. Develop and maintain properly reviewed and coordinated service contract templates on a website that is accessible to all necessary users and reviewers.

1.6.10. Establish a category management working group for category 4 facilities & construction (4.3 Facility Related Materials & 4.3 Facility Related Services) to:

1.6.10.1. Develop, standardize, and monitors sustainable category management processes.

1.6.10.2. Develop business rules and guidance to implement and maintain category management.

1.6.10.3. Promote category management throughout the CE enterprise.

1.6.11. Appoint a Department of the Air Force Dam Safety Officer to oversee the DAF Dam Safety Management Program. In this role, the DAF Dam Safety Officer will coordinate formal inspections, provide technical reviews of studies and reports, assist installations with identifying a prioritized list of dam safety work projects, and coordinate National Inventory of Dams database updates with the United States Army Corps of Engineers and the Federal Emergency Management Agency (FEMA).

1.7. The Base Civil Engineer (BCE) will:

1.7.1. Develop a base asbestos management plan, maintain an inventory of all facilities with known asbestos-containing materials, and ensure real property records are properly annotated. **Note:** Asbestos-containing material is any material containing more than one percent asbestos. Refer to **Chapter 16** for additional information.

1.7.2. Develop and implement a comprehensive, asbestos operating plan. Refer to **Chapter 16** for additional information.

1.7.3. Decide whether asbestos-related work will be accomplished with in-service resources or by contract.

1.7.4. Assign asset managers to each of the Activity Management Plans (AMPs) and sub-Activity Management Plans (sub-AMP) listed in **Chapter 4**.

1.7.5. Ensure operations flight work complies with applicable laws, codes, permits, published business processes, and standards to include Unified Facility Criteria (UFC). This includes overseeing operations flight work task timeliness, preventive maintenance completeness, work management business process compliance, and data quality.

1.7.6. Ensure all Base Operations Support (BOS) contracts and Base Maintenance Contracts (BMC) follow all service delivery output requirements in this DAFI and use the NexGen IT system.

1.7.6.1. Ensure that AFIMSC-funded BOS/BMC services are executed using the standard DAF Performance Work Statement (PWS) and cost accounting information to standardize levels of service and align funding across the enterprise. Installations will consider using this same PWS for services funded by other bill-payers outside of AFIMSC to ensure the Air Force is receiving DAF-consistent levels of services. Installations deviating from the standardized PWS for non-AFIMSC-funded services will include these unique services as an appendix to the standardized PWS and coordinate with AFIMSC/A58G prior to any award.

1.7.6.2. BOS/BMC contracts must include utilization of the Sustainment Management System (SMS) to support initial recurring inventory collections and condition

determinations for, but not limited to, vertical and linear infrastructure if not performed by government personnel.

1.7.6.3. If DAF mandated IT systems, example but not limited to NexGen IT, SMS, Air Program Information Management System, etc. are not currently included in the contract language, the contract will be either modified or the requirements added during the next solicitation.

1.7.7. For cybersecurity of control systems owned, operated, and maintained by the CE unit (hereinafter referred to as "CE control systems"), to include Space Force-owned stations/Geographically Separated Units, defined in and in alignment with the latest guidance memorandum, instruction, or manual for CE control Systems Cybersecurity, ensure:

1.7.7.1. Assignment of an Information System Owner (ISO) and an Information System Security Manager(s) (ISSM) per AFI17-101, *Risk Management Framework (RMF) for Air Force Information Technology*, and the most current CE guidance.

1.7.7.2. Mitigation and remediation activities of identified cyber vulnerabilities for CE control systems are completed through regular patching of systems and during maintenance, sustainment, modernization, or replacement activities and projects.

1.7.7.3. Coordination activities to provide physical and IT administrative access to the necessary facilities and systems required to support sanctioned CE control systems cybersecurity activities (e.g., assessments, mitigation, data collection, inventory, etc.).

1.7.7.4. Inventory activities of installation-level CE control systems is current, accurate, and collected no less than annually.

1.7.7.5. CE control systems approved by the authorizing official are swiftly migrated into the CE network community.

1.7.8. Preserve the safety and structural integrity of facilities during periods of heavy snowfall by monitoring ground snow loads when and where applicable, compare ground loads to roof load capacities, and plan for remediating/removing snow loads at risk of exceeding design capacities.

1.7.9. NexGen IT Personnel Management. Personnel records in NexGen IT are relied upon for shop rate calculations, assignment of work tasks, and for accurate labor accounting. The BCE must appoint a primary and alternate personnel records manager to ensure the organization's personnel are properly managed in NexGen IT. The personnel records manager must manage both active user or non-user accounts. The personnel record manager must ensure proper assignment of the organization's employees to the correct workgroup according to established CE Enterprise Standardized Business Processes. Adjust the organization's in and out-processing checklist to require coordination with the personnel records manager. Additional information can be found in the work management playbook as well as on the operations flight Business Process Library (BPL) (see **Attachment 1**, *References*).

1.7.10. Establish procedures to regularly review the timeliness of non-recurring work tasks, ensure scheduled Preventive Maintenance (PM) tasks are completed with accurate data quality, and verify that non-accomplished PM tasks include proper documentation. Conduct comprehensive inspections during building occupancy changes to assess facility conditions and address any maintenance needs.

1.7.11. Ensure shop rates are calculated and updated annually. See **paragraph 2.2.5**.

1.7.12. Establish procedures to regularly review the completion of work tasks identified during Inspection, Testing, and Maintenance (ITM) tasks to ensure compliance with UFC 3-601-02, *Fire Protection Systems Inspection, Testing, and Maintenance.* These reviews must confirm that all ITM tasks are completed as required, properly documented, and meet the established standards for fire protection systems. Any deficiencies identified during the reviews must be addressed promptly to maintain the operational readiness and safety of facilities.

1.8. The Operations Flight. The operations flight, or BOS/BMC equivalent, role is to effectively and efficiently operate, maintain, and repair Air Force and Space Force Real Property (RP) and Real Property Installed Equipment (RPIE) through employment of asset management principles. The operations flight must:

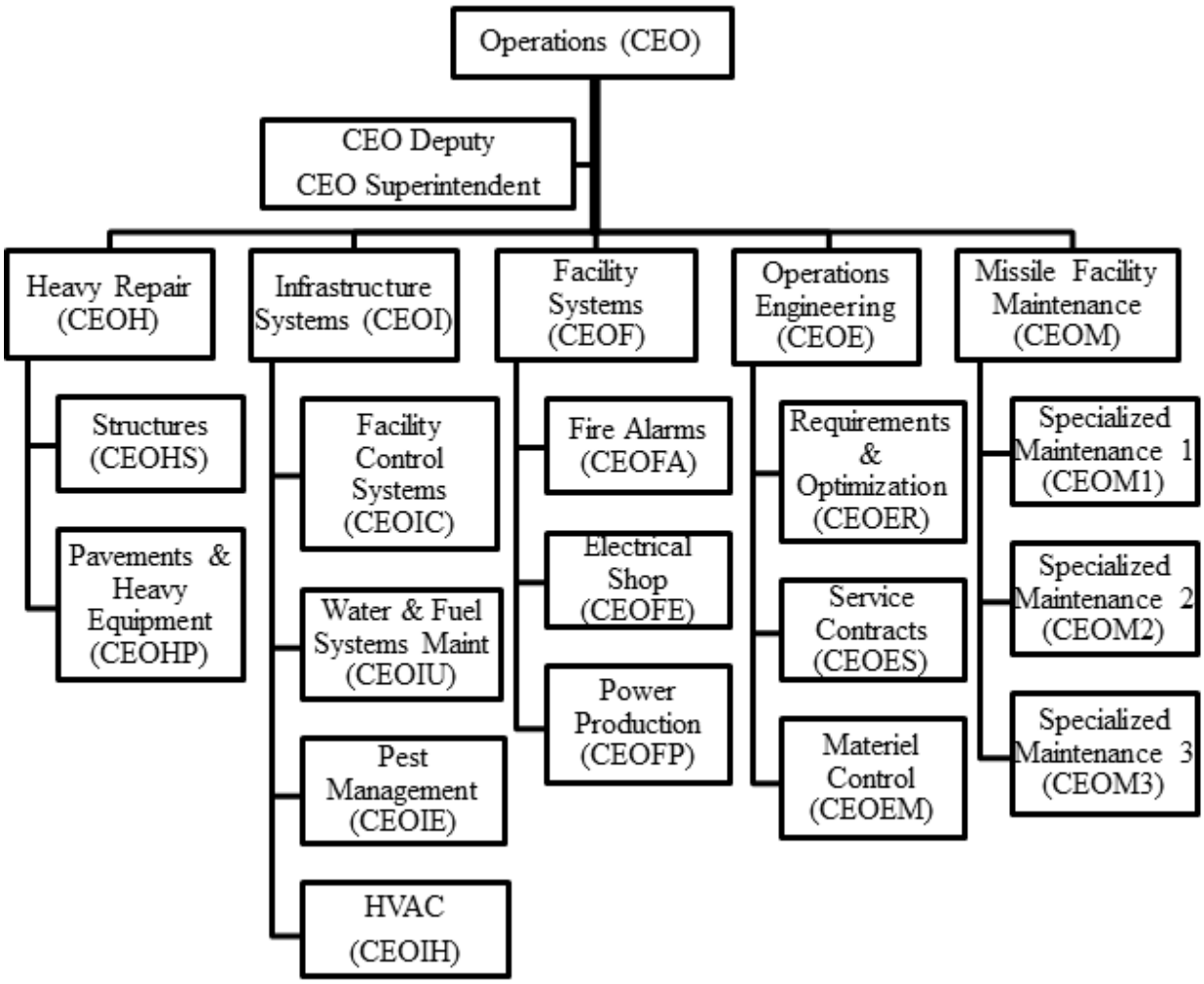
1.8.1. Employ asset management principles in their work efforts. Asset management is required by Executive Order 13327. To accomplish this, the operations flight must:

1.8.1.1. Provide execution, management, and oversight of facility and infrastructure operations, maintenance and repair, materiel control, work planning, customer service, service contract management, and operations engineering.

1.8.1.2. Maintain capability to respond to and mitigate, any RP/RPIE infrastructure-related emergency condition at any time.

1.8.2. Be organized IAW **Figure 1.1** and include the following elements: Heavy Repair, Infrastructure Systems, Facility Systems, and Operations Engineering. The operations flight will not deviate from this construct unless approved by AF/A4C (AFI38-101, *Manpower and Organization*). **Note:** Missile Facility Maintenance Element is an approved variance for Air Force Global Strike Command units. BOS/BMC contract organizations are not required to follow this organization. However, all published guidance and requirements, e.g., AFIs, playbooks, referenced web sites, and other training refer to this structure for business process explanation and assignment of responsibility. BOS/BMC contractors will apply guidance and requirements in alignment with their Performance Work Statement and organizational and staffing structure.

Figure 1.1. Operations Flight Structure.



1.8.3. Utilize CE playbooks for guidance on how to satisfy the requirements mandated by this DAFI. CE playbooks are tools that document standardized CE business processes, operating procedures, and resources needed for each of the operations flight maintenance management business processes. They explain the intent behind and how to meet the statements in this DAFI. AFCEC routinely updates CE playbooks to reflect lessons learned, current and new policies, and best practices. The CE playbook library is located on the CE Portal and commercial site provided in **Attachment 1**, *References*.

1.8.4. Staff the operations engineering element (CEOE) with inherently governmental positions to include a civil, mechanical, and electrical engineer. Additionally, the element will include inherently governmental position technicians from CEOHS, CEOHP, CEOIU, CEOIH, and CEOF.

Chapter 2

REQUIREMENT PROCESSING

2.1. Overview. The operations flight must prioritize, execute, and track work IAW this DAFI. The work management playbook contains additional information on work prioritization.

2.2. DAF-mandated NexGen IT or Integrated Engineering Management System (iEMS). NexGen IT must be used to manage work, collect labor hours, document annual operating costs (labor, materiel, contracted services, etc.), input and manage whole building and asset warranties, validate inventories, and record condition assessments in SMS IAW 10 USC Section 2721, *Property Records: Maintenance on Quantitative and Monetary Basis*. ANG units may use iEMS. Deployed locations may use alternative tracking systems until they become an enduring location with real property reporting.

2.2.1. Maintain a plan and train annually for continuity of record keeping operations in the event of an IT outage to: document the receipt of new work, manage existing work, schedule the execution of work, collect labor hours, document cost (labor, materiel, contracted services, GPC, etc.), process materiel procurement, document materiel transactions and inventory issue to work, and conduct post-outage data entry into the NexGen IT system, iEMS, or waiver approved IT system.

2.2.2. When performing a discrete maintenance activity, cost record keeping must be accomplished at the work activity level, e.g., the cost of all labor, materiel, and other items must be specific to that task's record.

2.2.2.1. Record keeping for continuous activity managed under a single record, e.g., runway sweeping, will follow published business process guidance.

2.2.2.2. Provide consistent data quality management to ensure accuracy and completeness IAW CE standard business processes. Ensure data entry standards, formats, and naming conventions follow CE standardized business process guidance published by AFIMSC and AFCEC to provide the tools that installation will need to make asset management decisions. The secondary purpose is to facilitate MAJCOM, USSF FLDCOM, and higher headquarters reporting and data analysis.

2.2.3. United States Air Forces Central Command enduring installations with real property reportable assets are prohibited from use of alternative maintenance management IT platforms such as iEMS and will use NexGen IT to manage work, collect labor hours, document annual operating costs (labor, materiel, contracted services, etc.).

2.2.4. The Requirements and Optimization (CEOER) Chief/contractor equivalent will ensure cost (labor, materiel, etc.) maintenance resolution data is logged in NexGen IT no later than two business days from time of activity. **(T-3)** The CEOER section will establish recurring internal processes to ensure maintenance management data collection compliance and accurate reporting in the mandated IT systems of record. Utilize the CE playbooks and CE enterprise standardized business processes to validate accurate reporting standards, and to identify deficiencies to the Operations Engineer (CEOE) for corrective actions.

2.2.5. The BCE or person designated by the BCE, must ensure shop rates are calculated and updated annually to correctly document labor costs, including any labor costs collected from

reimbursable tenants, organizations, or units. **(T-1)** Coordinate with the CE and Wing financial manager and refer to DoD Financial Management Regulation (FMR) 7000.14 Vol 11A Ch.1 and 31 U.S.C. § 1535, *Economy Act*, to calculate reimbursements. For specific procedures for calculating shop rates, contact AFCEC/COOM, **AFCEC.COOM.Workflow@us.af.mil**.

2.3. Work Priorities. The general work priorities and types are summarized in **Table 2.1**. A link to the work management playbook along with definitions is in **Attachment 1**, *References*.

Table 2.1. Work Priorities and Types.

Work Priority	Work Type
1	Emergency Work
2A - PM*	Preventive Maintenance (PM)
2A – Plant Operations*	Physical Plant Operations
2B	Contingency Training Projects
3A (High)	Scheduled Sustainment Work (Corrective Maintenance (CM))
3B (Medium)	Scheduled Sustainment Work (CM)
3C (Low)	Scheduled Sustainment Work (CM)
4A	Scheduled Enhancement Work
4B	All other Enhancement Work
* 2A is treated as two distinct codes in NexGen IT	

2.3.1. Emergency work, priority 1, is unscheduled corrective maintenance work requiring immediate response to sustain or ensure continued mission operations, prevent significant additional damage to facilities and infrastructure, or protect the safety and security of the installation, mission, or personnel. Only those actions necessary to mitigate the emergency are accomplished on the initial work task. Stated differently, emergency work is the least amount of immediate repair to damaged infrastructure necessary for the infrastructure to support the mission. The following specific guidelines apply:

2.3.1.1. Provide 24 hours a day, seven days a week emergency response capability ensuring response to all emergency work takes precedence over all other preventive maintenance, corrective maintenance, and enhancement work.

2.3.1.2. Eliminate the emergency condition with labor and/or materiel as required within 24 hours of notification. The 24 hours is measured based on the emergency notification date and time and the recorded final labor date and time in the IT system.

2.3.1.2.1. Emergency Work Notification Date and time – Normal Duty Hours. When the emergency notification is received during a normal duty day and within normal duty hours, the emergency work task should be established. The created date and time stamped on the work task by the IT system is the emergency work notification date and time. The emergency work completion date and time is based on the final labor date and time recorded on the emergency work task.

2.3.1.2.2. Emergency Work Notification Date and time – Outside Normal Duty Hours. When the emergency notification is received outside normal duty day (i.e. afterhours, weekend, holiday, down day), the emergency work task should be established at the next normal duty day. The created date and time stamped on the work task by the IT system cannot be backdated. The first labor entries should reflect the date and time of the initial emergency response and will be considered the notification date and time for the emergency work. The emergency work completion date and time is based on the final labor date and time recorded on the emergency work task.

2.3.1.3. Upon elimination of the emergency situation, process the emergency work task for completion and close-out review. If additional non-emergency work is needed to restore complete functionality and is within scope of the operations flight or contract equivalent, create a follow-on priority 3A corrective maintenance work task, and inform the impacted facility manager(s) of follow-on work task ID and projected start date.

2.3.1.4. Capture all emergency work activities in the NexGen IT/iEMS system for maintenance management focusing on maintenance response first and record keeping second to include use of explanatory comments and maintenance resolution notes.

2.3.1.5. Operations flights or contract equivalent will develop processes to monitor all active emergency work requirements to elimination. The monitoring process will include tracking of any follow-on priority 3A corrective maintenance work task. Any emergency work requirements not meeting the 24-hour requirement for emergency elimination require CEOER customer service function to brief the respective facility manager within 1 duty day. If the emergency is still unresolved by three duty days, the CEOER Section Chief or higher must brief the facility manager's unit leadership and the BCE weekly. **(T-2)** Document emergency work task status briefings in the respective emergency work task's maintenance resolution notes field. Review overall operations flight or contract equivalent emergency work 24-hour elimination compliance, by shop, no less than quarterly (BOS/BMC equivalents will follow their contract requirements).

2.3.1.6. Follow-on non-emergency work requirements beyond the operations flight or contract equivalent inhouse capabilities will be monitored by the appropriate BCE responsible office, be tracked/briefed to completion, and have costs and close out activities recorded against the record as appropriate for the execution method.

2.3.1.7. Base-wide incidents, e.g., hurricane/typhoon, creating multiple emergency requirements are exempt from the 24-hour elimination requirement but do require compliance with all other guidelines.

2.3.2. Contingency training projects, priority 2B, are governed by AFI10-210, *Force Readiness Reporting*, regarding both scope and intent. Priority 2B work must exclusively be performed by military and cannot include US civilians, local nationals, or contractors as indicated in AFI10-210. Open priority 2B work task records will be updated no less that every three months.

2.3.3. PM is the care and service of equipment, facilities, and other assets in satisfactory operating condition by systematic inspection, detection, and correction of incipient failures before they occur or develop major defects. The operations flight must prioritize PM ahead of all other forms of scheduled work. To achieve a 95% completion rate of scheduled PM Work

Tasks, CEOER must have a sustainable and maintainable PM program, and the attributes that comprise the program need to be reviewed on a continuous basis. PM is crucial to providing a proactive approach to identify assets before they fail. The BCE and operations flight commander or assigned government contracting officer's representative (COR) will ensure the PM program is reviewed annually to ensure that assets identified as requiring PM are scheduled and the PM program workload is balanced. **(T-3)**

2.3.4. The BCE and operations flight commander or assigned government COR will establish oversight and enforcement procedures to ensure the proper implementation and management of a Preventive Maintenance (PM) program. **(T-3)** This includes updating MICT checklist, monitoring compliance, and elevating results through the appropriate chain of command. Additionally, the BCE and operations flight commander or assigned government COR will ensure all preventive maintenance and corrective maintenance are accurately completed and recorded in NexGen IT. **(T-3)**

2.4. The Work Request Working Group (WRWG). The WRWG will review all requirements above the Requirements and Optimization section (CEOER) approval authority level to determine a recommendation to manage as a facility project or submit as a candidate for an opportunity leading to a capital project. Facility projects should only be used when the work to be performed is within the approval authority of the installation commander and uses available resources (personnel, materiel and funding) only. Facility projects could encompass contingency projects, sustainment, or enhancement depending on the complexity, cost, and labor required. All other work should be programmed and managed as a capital project. See DAFI32-1020, *Planning and Programming Built Infrastructure Projects*, for policy and guidance on planning and programming capital projects.

2.5. The Work Request Review Board (WRRB). The WRRB is the BCE approval body to determine execution courses of action for maintenance and construction type requirements. For additional guidance on backlog management, reference the operations engineering playbooks. The WRRB will:

2.5.1. Ensure the decision to approve and execute a facility project is made in the shortest possible timeframe within available resources. Stakeholders will be notified of the outcome of their request.

2.5.2. Ensure the operations flight completes formal planning to determine projected cost, materiel requirements, and labor. The operations flight commander or contract equivalent should ensure that WRRB-approved work is scheduled and executed based on the availability of resources and mission impacts.

2.6. Fire Safety Deficiencies (FSD). Fire safety deficiencies identified during fire prevention inspections will be submitted by the facility manager into NexGen IT (or iEMS). FSDs identified during recurring maintenance and repair will be submitted by the technician discovering the deficiency into NexGen IT (or iEMS). **(T-3)** All work tasks to correct FSDs or safety risk assessment code (RAC) violations will be initially considered for correction through in-house execution. Assign FSD/RAC non-emergency work tasks priority 3A and prioritize execution scheduling. Regardless of final execution and identification method, record keeping will be entered in the NexGen IT/iEMS system IAW published guidance.

2.6.1. Reference DAFI32-2001, *Fire and Emergency Services (F&ES) Program,* Chapter 7 for details of the fire safety deficiency process.

2.6.2. Approved work tasks or opportunities represent the installation's resource commitment to correct FSDs and will be considered the corrective action plan required by DAFI32-2001.

2.6.3. Facility projects or opportunities containing FSD or RAC corrective actions combined with other maintenance and repair tasks will be coded as a FSD or RAC correction effort only if more than 50 percent of the combined effort's cost is directly related to the FSD/RAC correction work.

2.6.4. Operations Flights or their contract equivalents will ensure that all Inspection, Testing, and Maintenance (ITM) tasks for fire protection systems, as identified in UFC 3-601-02, *Fire Protection Systems Inspection, Testing, and Maintenance*, are accurately entered and scheduled in NexGen IT or iEMS. **(T-1)** Personnel must verify that task entries are complete, correctly reflect the required inspection and maintenance intervals, and are updated as necessary to address changes in facility requirements or system configurations. **(T-1)** This ensures compliance with applicable standards and enables effective tracking and management of fire protection system ITM tasks.

2.7. The BCE. The BCE must document in writing, any delegated funding approval levels for work accomplished in the operations flight. **(T-3)** The BCE must also ensure approval levels are based on work classification and dollar value. **(T-3)**

2.8. Contract by Requestor. All operations, maintenance, repair, and construction of Air Force RP must be funded with the appropriate color/type of funding. If the WRRB authorizes users to contract work in a facility, the funding must be migrated into the proper funding code as dictated by the local comptroller organization. Maintenance and repair of all real property is the responsibility of the BCE unless covered by host-tenant relationships outlined in DAFI32-9005, *Real Property Accountability*. Contract by requestor work must comply with all civil engineer planning and programming instructions and must:

2.8.1. Be approved by the WRRB prior to execution and tracked IAW this instruction.

2.8.2. Be under contract within 120 days of BCE approval otherwise the approval is withdrawn. Customers are required to notify the BCE two weeks prior to the project's projected completion to schedule a CE project completion inspection.

2.8.3. Have contracts inspected by the appropriate CE personnel before final acceptance.

2.8.4. Close contracts out IAW **paragraph 2.11** of this instruction.

2.9. Work Coordination. The operations flight must document coordination as part of the WRWG process for new requirements such as Restoration and Modernization, Repair, Minor Construction, or MILCON with safety, fire, bioenvironmental, and environmental functions as well as other applicable agencies when deemed required, such as airfield management for airfield work.

2.9.1. Accomplish work coordination IAW published guidance prescribed by the coordination agency in NexGen IT system before CE approval of the requirement and work execution. ANG organizations using iEMS will develop their own work coordination process.

2.9.2. Work Clearance Coordination. Work clearance coordination is required to communicate intended actions that could involve immediate safety or disruption of services. Procedures should mitigate accidents, unplanned service disruptions, and liability issues resulting from any incident and meets local, state, and DoD laws, codes, and governance.

2.9.3. Establish local procedure for a BCE work clearance request that ensures appropriate stakeholders, for example, but not limited to, contracting, security forces, communications, and utilities (e.g., gas, cable), are both notified, and their responses tracked. Refer to the AFCEC/COOM Business Process Library for guidance.

2.9.4. CEN will manage and execute all coordination for requirements assigned to the engineering flight, or contractor equivalent, to include mandatory functional coordinating agencies above, as well as any other functional communities CEN deems necessary.

2.9.5. Coordinate with AFCEC/CZ (Active/Reserve), ANG/A4V environmental restoration project manager, or AFCEC/CIB (BRAC) environmental manager, as appropriate, for work clearance and coordination.

2.10. Scope Changes. The operations flight must monitor ongoing work within the flight and revalidate work plans, records, and approval documentation when a significant change in cost, scope or labor requirements occurs. Examples of significant changes can include:

2.10.1. Costs estimated to exceed the authority of the individual who approved the work.

2.10.2. Scope changed to deviate from repair versus replace decisions.

2.10.3. Scope increased to include work on real property not identified in the originally approved service request. Facility projects and work tasks requiring WRRB approval must be re-evaluated when scope exceeds 25% of originally approved cost. Refer to the work management playbook for additional information on work task approval. (see **Attachment 1**, *References*).

2.11. Work Closeout. The operations flight must ensure closeout is accomplished in a complete and accurate manner IAW this DAFI. Additional information can be found in the work management, preventive maintenance, and materiel control playbooks as well as on the operations flight BPL (see **Attachment 1**, *References*).

2.12. Maintenance Management Business Process Oversight. Maintenance management business processes enable problem identification, responsibility and urgency vetting, execution, and final resolution and accounting closeout. These processes directly impact mission, asset performance, customer satisfaction, Real Property Investment Metric annual operating cost accumulation to RP assets, reimbursable billing, and capture vital work history applicable to lifecycle resourcing decision-making. More details are on the operations flight BPL. The operations flight commander or assigned government COR will as a minimum, perform business process data analysis review semi-annually based on operations flight Playbooks and BPL. **(T-3)** (see **Attachment 1**, ***References)***. Based on analysis, the operations flight commander or assigned government COR will develop courses of action and establish corrective action plans with timelines as appropriate. **(T-3)** As a minimum the business process data analysis review will include:

2.12.1. Annual Strategic Maintenance Scheduling. Includes examination of work capacity, known schedule impacts (deployments, exercises, etc.), PM level of effort, historical maintenance trends, and inclusion of SMS work items. Track progress towards set goals.

2.12.2. Work Execution Timelines. Review all open work that is in a pending state, e.g., is tracked to a pending status such as awaiting parts or has no record keeping activity indicating the cause of the delay. All priority 1 and priority 3 non-recurring (exclude recurring tasks such as plant operations or runway sweeping), work task records will as a minimum have a monthly annotation indicating either progress toward final execution or validation that the pending status is still correct. Priority 2B and priority 4 open work task records will be updated no less than every three months. Inform customers as appropriate.

2.12.3. Data Quality. Review of data quality representative of both business process execution as well as cost accounting, asset records, and other program specific requirements, e.g., utility system operational report tracker (USORT) and category management. Refer to DAFMAN32-1061, *Providing Utilities to Department of the Air Force Installations*, published work management, PM, materiel control, and SMS playbooks and operations flight BPL for additional guidance on data quality (see **Attachment 1**, *References*). Data quality will be examined across these key tenants:

2.12.3.1. Completeness: Do data records contain all required data elements?

2.12.3.2. Consistency: Are there conflicts between the same data values/records in different systems, e.g., NexGen IT versus SMS?

2.12.3.3. Uniqueness: Are there duplicate data records, e.g., duplicate work task or people records?

2.12.3.4. Timeliness or currency: Is record data updated to keep it current, particularly for status conditions and notes?

2.12.3.5. Validity: Does the data contain the values it should and is structured properly?

2.12.3.6. Conformity: Does data and record keeping adhere to the standard data formats and business process conventions?

2.12.4. Lifecycle maintenance effectiveness analysis including aggregate investment of resources by work priority, PM to corrective maintenance trends, specific facility/customer/shop trends, and AMP/sub-AMP portfolio concerns.

2.12.5. Business process training and orientation. CEOE will establish and maintain a documented process to ensure all operations flight/contractor equivalent business process stakeholders have the requisite core knowledge and associated IT application skills to effectively perform their role. Additionally, ensure newcomers and/or position transfers are provided training for local practices and all stakeholders receive recurring or as needed training for updated IT application configuration and updated or new business practices released by AFCEC/COOM.

Chapter 3

STANDARDIZED PREVENTIVE MAINTENANCE (PM)

3.1. Overview. The operations flight must develop a sustainable PM program that is directly tied to the installation's lifecycle management and infrastructure as well as informing SMS processes. Establish, manage, and document the execution of the organization's PM program in NexGen IT. The BCE and operations flight commander or assigned government COR must provide oversight of the PM program to ensure it is aligned with asset management principles and work prioritization. **(T-3)** CEOE, in concert with CEOH, CEOF, CEOI and CEOM (where applicable) (or BOS/BMC contract equivalents), must ensure PM tasks are balanced, scheduled, executed, monitored, and measured. For additional guidance on the PM program, reference the PM playbook and operations flight BPL (see **Attachment 1**, *References*).

3.1.1. The operations flight commander, or BOS/BMC government equivalent, must conduct a review of the PM program annually to:

3.1.1.1. Determine if all assets requiring PM based on life-cycle management and return on investment are included in the PM schedule. **(T-3)**

3.1.1.2. Make adjustments for assets no longer part of the real property (RP) or real property installed equipment (RPIE) inventory or that require a revised level of PM. **(T-3)**

3.1.1.3. Balance PM schedules for optimization of PM execution based on resource availability. **(T-3)**

3.1.1.4. Determine the effectiveness and completion rates of scheduled PM activities. **(T-3)**

3.1.2. Installations will use, as a minimum, AFCEC/COOM data analytic and visualization tools available on the operations flight BPL (see **Attachment 1**, *References*).

3.2. Preventive Maintenance Task List (PMTL). The operations flight commander or chief, or BOS/BMC government equivalent must ensure scheduled PM incorporates PMTLs that are vetted, approved, and published by AFCEC Operations Directorate (AFCEC/CO). **(T-1)** Operations flights may add local supplemental steps to the PMTL but must not reduce or ignore steps. The current PMTL library accessible through the operations flight BPL (see **Attachment 1**, *References*).

3.2.1. Submit request for development of new PMTLs against assets, specific to that asset, not found in the PMTL library through the PM program manager at AFCEC/CO.

3.2.2. Where this guidance conflicts with higher level guidance, the higher-level guidance prevails. Prescribing more restrictive requirements does not, in and of itself, cause a conflict with higher level guidance.

3.3. Scheduling and Execution. The operations flight commander, or BOS/BMC government equivalent must ensure execution of not less than 95% of scheduled PM. **(T-3)** PM is scheduled in accordance with associated PM frequencies (e.g., daily, monthly, quarterly, annually, etc.). Bases are authorized to deviate from PM frequencies (e.g., elect to complete quarterly PM instead of monthly PM) when frequencies do not produce an optimal return on investment. See **paragraph 3.2.2** regarding conflicts. Deviation from standard PM frequencies is authorized (e.g., elect to

complete quarterly PM instead of monthly PM) when frequencies do not produce an optimal return on investment. Deviation is not authorized when PM is directed by higher-level policy, see **paragraph 3.2.2** regarding conflicts.

3.4. Preventive Maintenance (PM) for USSF weapon system infrastructure, known as Critical Preventive Maintenance (CPM). (United States Space Force (USSF) Only). CPM is performed on critical support infrastructure and RP/RPIE on installations and Geographically Separated Units (GSUs) that directly support USSF identified critical missions. The goal is to reduce unexpected mission downtime, lessen the likelihood of mission failure, communicate elevated risk to mission success due to supporting infrastructure, and prolong useful life of the infrastructure. CPM activities are the top priority PM tasks (work priority 2A-PM), prioritized ahead of all other PM, work priorities, and preempted only by Emergency Work (work priority 1).

3.5. Critical Preventive Maintenance (CPM). (This section applies to USSF only). USSF critical facilities and support infrastructure identified as defense infrastructure in DoDI 3020.45 *Mission Assurance Construct*, AFI10-2402, *Critical Asset Risk Management Program*, and associated USSF guiding policy, will be maintained at a fully operational level of service. (For USSF, SMS BUILDER™ Component Section Condition Index (CSCI) score ≥ 85; Direct Condition Rating - Green is considered fully operational.) Inability to execute CPM in accordance with this policy must be reported in accordance with AFI10-201, *Force Readiness Reporting*, and documented in the Defense Readiness Reporting System (DRRS-S) monthly. Every operations flight or BOS/BMC contractor must be prepared to demonstrate valid CPM programs in compliance with mission requirements and mission assurance goals as part of Inspector General Combined Unit Inspections. Field Command Civil Engineer Divisions will provide oversight and provide technical assistance as requested to support development of comprehensive CPM plans.

3.5.1. Initial comprehensive CPM plans must be submitted by operations flight or BOS/BMC contractor to the respective Field Command CE Divisions for each critical support infrastructure system.

3.5.2. Validate CPM plans annually for accuracy and completeness in accordance with resilience and readiness requirements. operations flights or BOS/BMC functions will demonstrate their validated CPM in compliance with mission requirements and mission assurance goals as part of Inspector General Combined Unit Inspections.

3.5.3. Complete 100% of the scheduled CPM tasks on time.

3.5.4. CPM completion rate reporting requirements. Readiness reports must reflect CPM completion rates below 100% for all major facility component maintenance or sustainment activities. Report changes in readiness to the responsible engineer commander and mission or site commanders monthly as appropriate.

Chapter 4

ASSET MANAGEMENT

4.1. Overview. Asset Management translates DAF objectives into asset-related decisions by understanding assets' physical attributes, condition, usage, and performance as well as the realized and potential value to the mission. When applied correctly, asset management balances risk, current and future Air Force and Space Force objectives, resource limitations, and lifecycle management. Real property asset management should:

4.1.1. Provide an understanding of how each asset contributes to mission accomplishment.

4.1.2. Manage and invest in assets to optimize mission accomplishment.

4.1.3. Focus on cost effective infrastructure management across the entire life cycle of assets.

4.1.4. Develop and grow a culture of effective, risk-based, mission-focused decision making through training, professional development, education, and leadership support at all levels.

4.1.5. Review plans and designs with construction management offices and project managers for system maintainability, repairability, and sustainability.

4.2. Data Collection. Standard asset data collection and analysis supports effective asset management. The operations flight must collect, capture, and analyze asset data to optimize, align, and de-conflict current and future resource allocation against RP and RPIE in coordination with the installation management (CEI) and engineering (CEN) flights.

4.2.1. The operations flight must collect, input, maintain, and update data utilizing AF-mandated IT systems. Data must be maintained for:

4.2.1.1. Operations Maintenance Management business processes. For additional guidance on Work Management, Facility Management, Preventive Maintenance, Materiel Control, Operations Engineering, or Service Contracts, reference the corresponding playbook and BPL. (see **Attachment 1**, *References*).

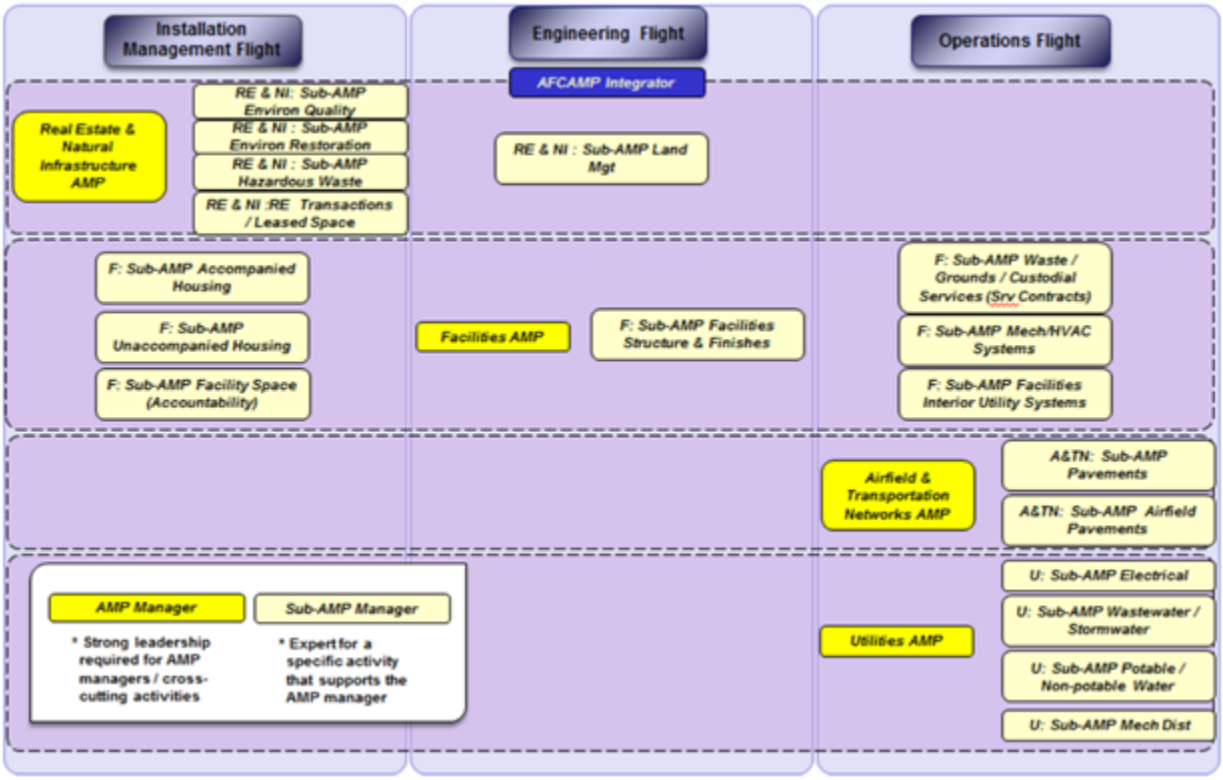
4.2.1.2. Sustainment Management System (SMS) (e.g., BUILDER™, PAVER™, enterprise Market Housing (eMH), future designated sustainment management products, etc.). For additional guidance on the SMS, reference the SMS playbook. (see **Attachment 1**, *References*). **Note:** eMH is the authorized sustainment management suite for all military family housing and unaccompanied housing assets.

4.2.1.3. Control Systems Inventory. Contact AFCEC/COOI (**AFCEC.COOI.Workflow@us.af.mil**) to obtain guidance and current mandates for civil engineer control System inventory procedures and timelines.

4.3. Activity Management Plans and sub-Activity Management Plans. An Activity Management Plan (AMP) specifies activities, resources, and timescales required for an individual asset or grouping of assets to achieve the organization's asset management objectives. A sub-AMP is a subset of an AMP with assets grouped by type, kind, or common characteristics. There will typically be minor asset overlap in multiple AMPs or sub-AMPs. Communication and coordination between affected AMP and sub-AMP managers is essential. The operations flight commander, or BOS/BMC government equivalent will establish and be responsible for three AMPs and nine sub-

AMPs, as shown in **Figure 4.1**. **(T-3)** AMP and sub-AMP Managers (SAMs) will be assigned to the following plans:

Figure 4.1. Installation AMP and sub-AMP Alignment.



4.3.1. Transportation Network and Airfield Pavement AMP. The transportation network and airfield pavement (TNAP) AMP encompasses the provision and management of airfield pavements and transportation infrastructure networks to enable the safe and efficient movement of people, equipment, aircraft, and materiel across the installation and airfield. The airfield manager plays a key role in working with CE, specifically the TNAP AMP and SAMs, for scheduling airfield maintenance and repair as well as identifying potential corrective maintenance and replacement project requirements. The airfield manager is responsible for inspecting the airfield daily and is well suited to coordinate required maintenance.

4.3.1.1. Pavements sub-AMP. The pavements SAM is responsible for an asset lifecycle management portfolio containing all Air Force-owned roads, bridges, parking lots, curbs and gutters, traffic signals, signage, marking, sidewalks, walkways, rail systems, active vehicle barriers (AVB), AVB control systems, AVB supporting safety systems, and docks including traffic management and planning. The pavements SAM works with the facilities AMP manager regarding loading docks that are part of buildings. If the dock is a separate structure, the pavements AMP manager has primacy. If the dock is part of a building, the facility AMP manager has primacy. The pavements SAM will jointly assist with the development of the Future Years Defense Program +3 (FYDP+3) infrastructure pavements as well as traffic and traffic controls plans. **(T-3)**

4.3.1.2. Airfield pavements sub-AMP. The airfield pavements SAM is responsible for an asset lifecycle management portfolio containing all Air Force-owned airfield pavements including runways, taxiways, aprons, and other airfield pavements. This includes signage, pavement markings, and aircraft arresting systems. The airfield pavements SAM will jointly develop the FYDP+3 for airfield pavements. **(T-3)**

4.3.2. Utilities AMP. The utilities AMP manager is responsible for an asset lifecycle management portfolio containing all the provision and management of water supply, wastewater, storm water, electrical, mechanical, and fuels services and associated CE control systems.

4.3.2.1. Electrical sub-AMP**.** The electrical SAM is responsible for an asset lifecycle management portfolio containing all AF-owned electrical power production and electrical systems within the base boundary up to points of demarcation or five feet, or up to and including the secondary tap of distribution transformers. This includes overhead and underground distribution lines (electrical manholes, ducts, transformers, switches, junctions, etc.), substations, switching stations, generation plants, most backup generators, utility poles, area lighting (roads, parking lots, security, apron, and recreational), and grounding, bonding, and cathodic protection systems for utilities. An exception to the five-foot line rule is where electrical service entrances exceed 600 volts. Responsibilities also include arc flash, relay coordination, and electrical system modeling programs. The electrical SAM provides facility industrial control systems inputs to the Facilities AMP manager. Generator fuel supplies to meet emergency electrical requirements are SAM responsibilities only in the sense of ensuring enough tankage, not day-to-day operational fueling. The electrical SAM will develop the FYDP+3 infrastructure plans. **(T-3)** Airfield and roadway lighting, lightning protection systems, and aircraft arresting systems are also covered in the transportation network and airfield pavement AMP, so it is necessary to work closely with airfield and transportation airfield pavements SAM for requirements.

4.3.2.2. Wastewater and storm water sub-AMP. The wastewater and storm water SAM is responsible for an asset lifecycle management portfolio containing all Air Force-owned industrial and domestic wastewater systems up to the five-foot line of serviced facilities and to the edge of paved surfaces for storm water, including lift stations, collection lines, manholes, wastewater treatment plants, oil-water separators, other wastewater pre-treatment units, storm water pipes, swales, detention and retention areas, and outfalls. The wastewater and storm water SAM also works closely with the Land SAM to provide watershed-level storm water planning. The wastewater and storm water SAM has primacy for all related manmade structures and the Land SAM consults regarding the effects those structures (or the lack thereof) have on the watershed. Coordination between affected SAMs is essential. The dividing line is the five-foot line for facilities under the Facilities AMP manager and paved surfaces for transportation network and airfield pavement SAMs. The wastewater and storm water SAM will develop the FYDP+3 infrastructure wastewater and storm drainage plans. **(T-3)**

4.3.2.3. Potable and non-potable water sub-AMP. The potable and non-potable water SAM is responsible for an asset lifecycle management portfolio containing all Air Force-owned potable water, non-potable water, and Fire Emergency Services systems up to the five-foot line of serviced facilities. This includes wells, distribution lines, potable water

treatment plants, pumps, valves, hydrants, and storage. The water SAM will develop the FYDP+3 infrastructure water plan. **(T-3)**

4.3.2.4. Mechanical Distribution sub-AMP. The Mechanical Distribution SAM is responsible for an asset lifecycle management portfolio containing all facilities that are for the sole purpose of providing transmission, monitoring, and maintenance support to the distribution system. This includes all Air Force-owned non-electric energy transmission systems (natural gas, hot water, steam) within the base boundary up to the five-foot line of structures The Mechanical Distribution SAM is responsible for FYDP+3 infrastructure plans to include natural gas.

4.3.3. Facilities AMP (Executed by the engineering flight). The Facilities AMP manager is responsible for an asset lifecycle management portfolio containing all planning, design, construction, operation, maintenance, repair, sustainment, restoration, modernization (SRM), and demolition of facility assets and associated CE control systems. This includes housing (e.g., unaccompanied housing, accompanied housing) as well as facility space accountability, space planning and high-altitude electromagnetic pulse shielding. There are several sub-AMPs that support the Facilities AMP; additionally, there are also Facilities sub-AMPs (e.g., Unaccompanied Housing sub-AMP) that are more service related and are aligned to provide support for all facilities. Any facility asset support not specifically assigned to a separate sub-AMP is the responsibility of the Facilities AMP.

4.3.3.1. Mechanical and Heating, Ventilation, and Air Conditioning (HVAC) Systems sub-AMP. The Mechanical and HVAC Systems SAM is responsible for an asset lifecycle management portfolio containing all systems consistent with the National Institute of Standards and Technology (NIST) NISTIR 6389, *UNIFORMAT II Elemental Classification for Building Specifications, Cost Estimating, and Cost Analysis* for mechanical systems and conveying systems including cooling, heating, ventilating, and elevators. The Mechanical and HVAC SAM is also responsible for all facility-specific heating, ventilation, and air conditioning (HVAC) systems and facility mechanical rooms. The Mechanical and HVAC SAM will develop the overall operation, maintenance, repair, compliance, sustainment, and recapitalization of facility-related mechanical and HVAC assets and associated FYDP+3 requirements identification. **(T-3)**

4.3.3.2. Facilities Interior Utility Systems sub-AMP. The Facilities Interior Utility Systems SAM is responsible for the asset lifecycle management portfolio containing all systems consistent with NISTIR 6389 plumbing systems, electrical systems, and fire emergency services. This includes interior water, wastewater, fire suppression, lighting, alarms, and interior electrical. The Facilities Interior Utility Systems SAM will develop the overall operation, maintenance, repair, compliance, sustainment, and recapitalization of facility-related assets and associated FYDP+3 requirements identification plans. **(T-3)** The Facilities Interior Utility Systems SAM works closely with technical staff most familiar with the systems. BCEs may choose to further assign SAMs to work specific portions of this sub-AMP.

4.3.4. Other sub-AMPS. In addition to the above mandatory sub-AMPs, installations may find it helpful to incorporate additional sub-AMPs into their asset management practices. CE organizations should consider additional sub-AMPS if a particular type of asset is prevalent on the installation. A few sub-AMPs that may prove beneficial include energy assurance, bridges, ports and wharfs, railways, fuels, fire protection, and associated CE control systems, etc.

4.3.5. SAMs will complete, as a minimum, AFIT course WMGT 301, Introduction to Asset Management and WMGT 417, Activity Management. **(T-3)**

4.4. AMP Manager Inclusion in Project Prioritization. AMP and SAMs will coordinate on, and be involved with development of, the installation's integrated priority list (IPL) and participate in the facilities board. **(T-3)** Unaccompanied housing projects for utilities, electrical, mechanical, and roofing must be planned IAW DAFI32-1020 during the AMP process.

4.5. Category Management. Category management (CM) is a structured, data-driven business practice whereby an organization strategically analyzes & manages common categories of spending to eliminate redundancies, increase efficiencies and enhance mission effectiveness. CM directly supports the Office of the Under Secretary of Defense for Acquisition & Sustainment (OUSD A&S) Memorandum "Achieving Small Business Goals through Category Management Practices" which highlights specific actions DoD needs to take to implement Office of Management and Budget (OMB) M-19-13, *Category Management: Making Smarter Use of Common Contract Solutions and Practices* (Mar 2019), M-22-03, *Advancing Equity in Federal Procurement,* and the DoD Small Business Strategy. Installations will:

4.5.1. Participate, unless exempted by the category 4 manager (AFCEC/CC) or the category 4 leads for the affected subcategory (AFCEC/CF, CO, CI, CX or CB) in construction asset initiatives supporting initial or renewal justification and approval documents and adoption of an asset manufacturer standard.

4.5.2. Use published business process guidance, for example NexGen IT category management specific data fields, to capture program required data.

4.5.3. Document procurement deviation from their approved asset manufacturer standard in appropriate SMS, e.g., bought alternative chiller brand with explanation captured in BUILDER™ section detail notes.

Chapter 5

CAPITALIZING FACILITY IMPROVEMENTS

5.1. Capital Improvement. A capital improvement is defined in DAFI32-9005, *Real Property Accountability*, as "Any improvement that increases the useful life, capacity, or size of an existing asset, regardless of the source of funding or capitalization threshold."

5.1.1. Replacing a facility or facility component of the same size or capacity that has failed or is no longer performing the function for which it was designated is not a capital improvement.

5.1.2. Capitalization costs include total project costs (both funded and unfunded).

5.2. Capitalization Process. Any capital improvements (e.g., extending useful life, increasing efficiency, capacity, or size, changing functionality, etc.) to a facility or any other improvements must be capitalized by the installation real property officer or BCE's designee in accordance with DAFI32-9005. **(T-2)** Refer to UFC 1-300-08, *Criteria for Transfer and Acceptance of DoD Real Property*, and consult with the installation Real Property Officer for additional facility capitalization guidance.

5.2.1. The project manager must report all capital improvements via the AF-mandated IT system, complete a DD Form 1354, *Transfer and Acceptance of DoD Real Property*, and forward the DD Form 1354 to the real property office. **(T-1)**

5.2.2. See DAFI32-9005 *Real Property Accountability* and UFC 1-300-08 *Criteria for Transfer and Acceptance of DoD Real Property* for further details.

Chapter 6

ORGANIZATIONAL EQUIPMENT

6.1. Overview. Organizational equipment includes assets which do not meet the criteria to be capitalized as RP or RPIE. RP or RPIE determinations are governed in DAFI32-9005.

6.1.1. The accountability, operation, purchase and maintenance (to include emergency repairs) of organizational equipment is the owning organization's responsibility.

6.1.2. A master list of RP determinations is maintained on CE DASH. (see **Attachment 1**, *References*)

6.2. Unit Responsibility. Operations and maintenance of organizational equipment, which includes recurring maintenance, repair, replacement, inspections, or service requirements must be addressed through organic or contractual support of the owning organization. Organizational equipment must be managed and funded by the owning organization unless responsibility for the equipment item is accepted, in writing, by the BCE.

6.2.1. If responsibility is accepted by the BCE, civil engineer support for organizational equipment must be documented with a memorandum of understanding with the owning organization, on a fully reimbursable basis, and is subject to labor-hour availability of CE personnel performing work prioritized in **Table 2.1**.

6.2.2. Emergency work (work priority 1 per **Table 2.1**) may be performed on organizational equipment when approved by the BCE, operations flight commander or deputy, or appropriate COR authority for BOS/BMC. If this work is completed, the BCE, operations flight commander or deputy will ensure the owning organization reimburses materiel and labor costs to the maximum extent permitted by Vol 11A of DoD 7000.14-R, *Department of Defense Financial Management Regulation: Reimbursable Operations Policy*. **(T-0)** Performing approved emergency work does not make the organization equipment item RP, RPIE or a civil engineer asset and does not ensure future work by the civil engineer.

6.2.3. The utilities that supply organizational equipment (e.g., water, gas or electric) are typically real property and should be maintained through CE functions. CE functions are typically responsible only for the utility up to the appropriate point of demarcation, such as a panel, branch circuit or meter if the installation meets building codes.

6.2.4. Installation organizations must consult with the BCE before purchasing any equipment that may have an impact on base infrastructure (e.g., large size, weight, large power draw, etc.) or require infrastructure support (e.g., siting, earth work, concrete pad, utility connections, etc.).

Chapter 7

FACILITY MANAGER PROGRAM

7.1. Facility Manager (FM) Program. The BCE or BCE-designee will ensure all installation organizations, including DAF-led joint bases, with assigned real property facilities or portions of facilities, assigns a primary and alternate FM, in writing by their commander. **(T-3)** FM responsibilities may not be further delegated. **(T-3)** FM should be at least an E-5 or civilian equivalent to an E-5. FMs are generally required only for real property asset types of buildings and structures. Linear structures and land will typically not have an assigned FM and the CE organization or contract equivalent has ownership.

7.1.1. The FM will ensure basic facility upkeep is conducted, though they do not have to personally complete all tasks. **(T-3)** Basic facility maintenance includes, but is not limited to, tasks such as picking up trash outside the facility, changing light bulbs lower than 10 feet above the floor, and keeping mechanical rooms clear of debris and combustible material.

7.1.2. Disseminating information or facilitating FM duties may be augmented by contracted personnel but cannot replace a government FM unless covered in an approved outsourcing decision and specified in an appropriate Performance Work Statement. For DAF controlled facilities on a joint base led by a service component other the DAF, the FMs will adhere to the supporting service component's department of public works policies and procedures. FM requirements of supporting service components may deviate from the DAF requirements listed above.

7.1.3. The BCE will ensure the operations flight executes and manages the base FM program. **(T-3)** This includes documentation of FM assignment, training, and communications. The operations flight commander or designee and the FM must ensure all FM records, training documents, and guidance are kept current. **(T-3)** The operations flight commander or designee must ensure an FM handbook is developed and maintained. **(T-3)** The BCE is the waiver authority for this requirement and waivers must be documented in writing. **(T-3)** Refer to the FM playbook and BPL for more information on properly managing a FM (see **Attachment 1**, *References*).

7.1.4. No FM, or any other facility occupant, will make or facilitate alterations to real property without coordination and approval documentation from the BCE. **(T-2)** FMs who submit facility project requests (defined in **paragraph 2.2.3**) and equipment requirements (defined in **paragraph 6.2.4**), must include unit commander's coordination via a signed one-line memo or e-mail correspondence in through NexGen IT/iEMS equivalent, a DAF Form 332 is only authorized if no approved IT system is available. **(T-3)** If an operations flight priority program, e.g., Top 10, exists for group liaisons to coordinate their organizations priorities with CEOER, then no unit commander coordination is required.

7.1.5. The FM will conduct a semi-annual review of all submitted service requests, ensuring all open requests are valid and still required. **(T-3)** Results from these reviews will be sent to the CEOER section (or equivalent).

7.1.6. Contractors and non-government organizations must provide a comparable FM when provided government furnished facilities. Example: A base maintenance contractor or boy scout organization is provided a government facility. The owning unit commander, or civilian equivalent, must provide written designation of a contractor FM to the operations flight. **(T-3)** Contracted FM are expected to utilize the installation's U-Fix-It program and the BCE may deny use of CE resources to accomplish work within the scope of this program. Installation organizations owning contracted FM should take appropriate steps to ensure FM responsibilities are in the scope of the contract.

7.1.7. The operations flight should create and maintain a repository of FM program information, related materials, and any other FM information prescribed locally and advertise the location of this information to FM. The operations flight commander or assigned government COR will develop a customer outreach program on a minimum of an annual basis, that provides each installation's organizations and tenants, as a minimum, a review of accomplished work history trends, open maintenance requirements, condition assessment summaries, lifecycle planning, and potential execution resourcing constraint factors (e.g., upcoming deployments or funding limits). **(T-3)**

7.1.8. Private or non-DoD organizations on DAF installations are expected to follow local support agreements or procedures when submitting service requests on facilities they are managing.

7.1.9. All FMs (to include other government organizations and tenants such as Army and Air Force Exchange Service, Defense Commissary Agency, Department of Defense Dependents Schools, Missile Defense Agency, Federal Aviation Agency, etc.) will submit service requests using the NexGen IT system. ANG locations using iEMS will use locally developed process. **(T-3).** See Work Management BPL for NexGen IT system access guidance for non-Air Force users (see **Attachment 1**, *References*).

7.1.10. FMs will prepare a DAF Form 1219, *BCE Multi-Craft Job Order*, or equivalent documentation from NexGen IT, noting deficiencies prior to scheduled facility inspection walkthroughs with operations flight maintenance personnel (typically dorms and high-use facilities). **(T-3)**

7.2. Facility Abuse. Facility abuse is considered damage caused by willful or negligent acts, improper use and care, or unauthorized alteration to RP or RPIE. The BCE will direct an investigation for all loss, damage, destruction or theft of government-owned RP in accordance with DoD 7000.14-R, Volume 12 Chapter 7, *Department of Defense Financial Management Regulation: Special Accounts, Funds and Program*. **(T-0)**

7.2.1. When facility abuse causes damage to facilities, work priority 1 emergency repairs will be completed to mitigate any potential emergencies in accordance with **paragraph 2.3.1** of this instruction. All remaining work will not be conducted until an investigation is completed or the property is released by the accountable officer.

7.2.2. When responsibility cannot be determined, the using organizations will fund repair or replacement costs associated with RP and RPIE abuse and/or accidental damage.

7.2.3. Coordinate with the local legal and finance offices when suspected facility abuse has occurred. Bases should incorporate facility abuse guidance into local *FM Handbook* and training.

7.3. The Base Civil Engineer (BCE) or BCE-Designee will ensure the facility manager program managers establishes a sample continuity book to provide to Facility Managers. The facility manager continuity book may be digital or a physical copy and will include the following items fire safety requirements, and Emergency Action Plan (EAP) requirements as outlined in *DAFI 10-2501, Emergency Management Program* and AFMAN 91-203 *Air Force Occupational Safety, Fire and Health Standard*s. **(T-1)** It is also recommended the Facility Manager Continuity book includes all recommended documentation included in the *Facility Manager Playbook.*

7.3.1. The BCE or BCE-designee will conduct an annual review of the sample Facility Manager continuity books to ensure compliance with facility management, safety requirements, fire safety requirements, and Emergency Action Plan (EAP) requirements as outlined in *DAFI10-2501, Emergency Management Program* and AFMAN91-203 *Air Force Occupational Safety, Fire and Health Standard*s. **(T-1)** This review is a critical component of maintaining safety, readiness, and functionality across Department of the Air Force (DAF) facilities.

7.3.2. The Facility Manager's Commander will conduct an annual review of their Facility Manager's continuity books to ensure compliance with facility management, fire safety requirements, and Emergency Action Plan (EAP) requirements as outlined in *DAFI10-2501, Emergency Management Program.* **(T-1)** This review is a critical component of maintaining safety, readiness, and functionality across Department of the Air Force (DAF) facilities.

7.3.2.1. The review must verify that monthly facility and fire extinguisher inspections are being performed and properly documented to confirm necessary maintenance and services are obtained in a timely manner and that all corrective actions identified on AF Form 1487, *Fire Prevention Visit Report*, are addressed and resolved. **(T-1)**

7.3.2.2. Emergency Action Plans (EAPs) must be comprehensive and include, at a minimum, procedures for Mass Warning Notification (MWN), evacuation, and personnel accountability. Additionally, EAPs must identify Shelter-in-Place (SIP) locations and requirements, designate primary and alternate Unit Emergency Preparedness Coordinators (UEPCs), and outline immediate emergency response actions to ensure preparedness for a range of emergency scenarios. **(T-1)**

Chapter 8

SERVICE CONTRACTS

8.1. Service Contracts. The operations flight commander or deputy must ensure that integrated solid waste management, custodial services, grounds maintenance, and maintenance contracts, repair, and inspection services of vertical transportation equipment are executed using the standard Air Force Performance Work Statement templates. **(T-2)** Bases are highly encouraged to contact AFCEC/COOM (**AFCEC.COOM.Workflow@us.af.mil**) for assistance with their requirement review and contract negotiations. **Note:** Service contract templates are provided on Service Contracts BPL. See the Service Contract playbook for additional guidance (see **Attachment 1**, *References*).

8.1.1. The operations flight commander or deputy must work with the local manpower office to ensure its service contract program minimizes contracts awarded for work that earns positions within the flight according to the manpower standard. **(T-1)**

8.1.2. Refer to AFI38-101, *Manpower and Organization,* and the local personnel office for additional information.

Chapter 9

MATERIEL CONTROL

9.1. Overview. Materiel control ensures appropriate acquisition, storage and inventory, and item issue and cost accounting to operations flight RP work activity. Additional information on materiel control can be found within the materiel control playbook and BPL (see **Attachment 1**, *References*).

9.2. Materiel Inventory. All locations that store government owned supply assets (to include government operated civil engineer supply store (GOCESS), contractor operated civil engineer supply store (COCESS) and BOS/BMC) will annually complete a full inventory of government owned and stocked supply assets. The inventory for each supply asset will be conducted within 365 days from the prior inventory in accordance with published guidance and no less than 20% of the supply assets inventoried each quarter. Semi-annually, perform a 100% inventory of on-hand materiel purchased for work tasks with a create date of 6-months or greater. All hazardous material contained in the inventory must be managed IAW DAFMAN32-7002, *Environmental Compliance and Pollution Prevention, Hazardous Material Management*. The BCE must ensure that civil engineering functions establish a Hazardous Material Tracking Activity to ensure all compliance with these requirements. **(T-2)**

9.3. Materiel Costing. Materiel costs are a critical component of work activity total cost and thus directly impact the value of real property annual operating costs and reimbursable customer billing. Every effort must be taken to ensure materiel issued is accurately associated to the purpose for which the issue occurred.

9.3.1. GOCESS and COCESS locations will follow CE standardized business processes to issue materiel against direct work (e.g., work task against RP/RPIE), U-Fix-It directly to facility, or as indirect materiel to a workgroup. At least annually, the chief of materiel control will present an analysis, by workgroup, of the materiel cost for direct and indirect issues, average materiel cost per labor hour, U-Fix-It issue cost, and other materiel management indicators to the operations flight commander or similar position. **(T-3)**

9.3.2. BOS/BMC contracted locations using NexGen IT are prohibited from use of the materiel inventory management capability of the NexGen IT system and will instead use the direct entry cost (DEC) method to attach materiel cost to the work task as a lump sum figure with supporting documentation in accordance with published business process guidance.

9.3.3. Government Purchase Card (GPC). Whenever materiel is procured with a GPC, a post-procurement DEC entry must be entered in NexGen IT against the respective work task to document consumption of the materiel. Any hazardous material purchased with a GPC (or State Purchase Cards by ANG units) must be managed IAW AFMAN32-7002, *Environmental Compliance and Pollution Prevention*. At least annually, the Chief of Materiel Control will present an analysis, by workgroup, of the GPC materiel procurement spending outside of normal materiel control procurement methods to the operations flight commander or similar position to identify and resolve reasons non-utilization of materiel control procurement capabilities. **(T-3)**

9.3.4. NexGen IT Materiel Costs. Logged costs must differentiate between services rendered and consumable costs (Inventory Items). NexGen IT Inventory item records will:

9.3.4.1. Be created for specific individual parts procured and utilized to support work tasks.

9.3.4.2. Be created for each consumable specification that is managed and stored in an inventory location storage area.

9.3.4.3. Remain unique and not be created to consolidate multiple parts into one individual inventory item.

9.4. Category Management. Category management (CM) is a structured, data-driven business practice whereby an organization strategically analyzes & manages common categories of spend to eliminate redundancies, increase efficiencies and enhance mission effectiveness. Installations will:

9.4.1. Participate, unless exempted by AFCEC/CO, in all enterprise category 4 facility & construction asset initiatives supporting initial or renewal justification and approval documents and adoption of an asset manufacturer standard.

9.4.2. Use published business process guidance, for example NexGen IT category management specific data fields, to capture program required data.

9.4.3. Document procurement deviation from their approved asset manufacturer standard in appropriate SMS, e.g., bought alternative chiller brand with explanation captured in BUILDER™ section detail notes.

9.5. COCESS Contracts . Bases utilizing COCESS will utilize the statement of work template developed and approved by AFICA and AFCEC/COO. Template available on the AFCEC/COOM BPL (see **Attachment 1**, *References*).

Chapter 10

U-FIX-IT PROGRAM

10.1. Overview. The U-Fix-It program employs a "do-it-yourself" concept for 'on-the-fly' tasks that the facility manager can accomplish and does not require any special tools, materiel, or training. Do-it-yourself is defined as requiring no comprehensive planning to include any detailed calculations to determine size and resulting materiel quantities or producing a detailed parts list.

10.1.1. The operations flight commander or deputy will define its local U-Fix-It Program in detail within their local facility manager guidance. **(T-3)** For more information reference the materiel control playbook. (see **Attachment 1**, *References*).

10.1.2. The BCE must establish local guidance incorporating applicable laws, regulations, and directive publications, including AFMAN32-7002 *Environmental Compliance and Pollution Prevention*, when items classified as hazardous materiel (HAZMAT) are made available for U-Fix-It use (e.g., paints, pesticides, etc.). **(T-3)**

10.1.3. CE support to force support squadron (or equivalent) lodging maintenance teams will not use the U-Fix-It program to rely on CE to source and procure corrective maintenance materiel. The operations flight commander or deputy will ensure lodging maintenance teams use the traditional service request and work task process through NexGen IT to capture requirements and ensure that the total cost of the requirement follows the reimbursement billing process. **(T-1)**

10.1.4. U-Fix-It painting intent is specifically intended for and restricted to minor touch-up of nicks, rub-marks, and other small blemishes. Approval for entire walls or rooms must consider collateral paint damage risk to ceilings, molding, flooring, outlets, etc. Painting of entire facility interior is prohibited.

Chapter 11

FORMAL INSPECTION PROGRAMS

11.1. Bridge Maintenance, Inspection, and Reporting. The BCE must ensure bridges on DAF installations are inventoried, inspected, and maintained according to UFC 3-310-08, *Non-Expeditionary Bridge Inspection, Maintenance, and Repair*. **(T-1)** The TNAP AMP manager will provide an update to AFCEC/CO annually. **(T-2)** This meets the requirements of the Federal Highway Administration National Bridge Inventory.

11.2. Dam Maintenance Inspections and Reporting.

11.2.1. AFCEC will establish a rolling, 5-year dam safety inspection program for all Air Force and Space Force dams classified as a significant hazard included in the National Inventory of Dams database. This inspection program will meet all formal dam inspection requirements as defined in 33 USC Section 467, *Dam Inspection Program*, and FEMA P-93, *Federal Guidelines for Dam Safety*.

11.2.2. The BCE must ensure dams on DAF installations, are inventoried, inspected, and maintained according to FEMA 93. **(T-1)** AFCEC will only be responsible for coordinating the formal 5-year inspection for reportable dams.

11.2.3. BCEs will provide the necessary support and coordination required to allow the AFCEC designated inspectors to complete formal dam safety inspections. **(T-3)** Each installation will use inspection findings to develop a comprehensive 5-year dam safety plan that captures requirements, schedules actions, and documents dam safety and maintenance activities, as well as budgeting and prioritization required to correct deficiencies across multiple fiscal years. This plan must be sent to AFCEC/CO within 3 months of receiving the final report.

11.2.4. BCEs on all installations with dams will appoint an Installation Dam Safety Officer (IDSO) to oversee intermediate and informal inspections of visible appurtenant features and develop a 5-year dam safety plan. **(T-2)** Intermediate and informal inspections will be performed by personnel who are most familiar with the dam facility and any operations and maintenance requirements, according to FEMA 93. The IDSO will annually review and update the condition assessments and report annual updates as well as unusual conditions immediately to the Air Force Dam Safety Officer via the dam safety management tool on CE DASH. **(T-1)** (see **Attachment 1**, prescribed tasks and intervals) The inspection, testing and maintenance will also include the controls and supporting safety systems. **(T-3)** The operations flight commander or deputy must ensure records of the maintenance, inspections, and testing are documented in DAF-mandated information technology systems. **(T-3)**

11.3. AVB maintenance, sustainment, and inspection services. Installations will use the mandatory AFCEC/CO standardized PWS for all contracts in support of AVB maintenance, sustainment, and inspection services. (see **Attachment 1**, References) **Note:** When an AVB maintenance contract is in place, the operations flight provides guidance and oversight of the contract in conjunction with their local contracting office.

11.3.1. AFIMSC Requirements Development, Program Management, and Policy Division (AFIMSC/A58) will assign an enterprise AMP manager to manage the AVB program. **(T-1)** The enterprise AMP manager will develop a report on the operational status of the inventory, and compliance with inspection, maintenance, and testing requirements. **(T-2)** Submit the report to AF/A4C as directed.

11.3.2. AFCEC/COA will maintain an installation access control point (IACP) tracker database for Security Forces and CE organizations to report quarterly information which includes AVB inspections, condition, SRM requirements, equipment inventory, and breach incidents. (see **Attachment 1**, *References*)

11.3.2.1. The operations flight must report quarterly status of AVBs using the IACP tracker. At a minimum, the following fields require quarterly reporting: gate name, MAJCOM, base or installation, barrier type, barrier brand and model, number of barriers, inspection date, operational status.

11.3.2.2. Operations flights will work with the SF organization to report barrier accidents, mishaps, or inadvertent activations. Reports will be made within 48 hours within the IACP tracker and via email notice to MAJCOM A4Cs and AFIMSC Det/CC.

11.3.2.3. The Air Force Civil Engineering Commodity Council has established a mandatory use PWS to standardize AVB program management, inspection, and repair on active-duty DAF installations where the DAF is the lead agency. Use of this PWS is optional for Air National Guard (ANG) and Air Force Reserve. The standardized PWS will be initiated and administered by each local contracting office. The PWS may be used to develop a stand-alone service contract or the PWS scope may be incorporated into a comprehensive BMC contract.

11.3.2.4. Active-duty installations performing organic maintenance and inspection must immediately convert to performing AVB maintenance and inspection by contract. For those already performing this responsibility by contract, compare your existing contract PWS to the AFCEC/CO standardized PWS and make any required modifications to your existing contract once the existing barrier maintenance contracts expire.

11.4. Heating Systems and Unfired Pressure Vessels. All boilers and fired/unfired pressure vessels will be inspected IAW the requirements of AFMAN32-1068**.**

Chapter 12

SET-POINT STANDARDS FOR HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)

12.1. Overview. The DAF is committed to design and operate safe, effective & efficient HVAC systems. These systems shall promote & protect the life, health and safety of facility occupants while fulfilling the goals and objectives of Executive Order 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*.

12.2. Set-Point Standards. Installations must establish local policies ensuring HVAC control systems are set at points within 5 °F of the design requirements found in UFC 3-410-01, Heating, Ventilating and Air Conditioning Systems. HVAC systems will be adjusted based on occupancy rates in all facilities, or portions of facilities without a 24-hour mission. Installations will not operate outside this defined set-point range unless specified in a facility-specific UFC or a waiver is issued for each individual facility.

12.3. Temporary Adjustments. The BCE is authorized to allow temporary deviations from the set-points for spaces with broken systems, exterior envelope issues, temporary changes in occupancy, and large temperature variations (as determined by the BCE). BCEs must not delegate this authority lower than the operations flight commander or deputy. **(T-3)** Spaces with these issues should have a plan to correct the issue prior to granting the deviation.

12.4. Civil Engineer Maintenance Inspection and Repair Team (CEMIRT). CEMIRT will provide a quarterly data call for field support articulating CEMIRT capabilities and instructions to request support. At an installation's request, CEMIRT will provide troubleshooting and recommendations to improve complex systems. CEMIRT will provide a formal report and out-brief to BCEs upon conclusion of installation visits. Installations will develop formal processes to ensure CEMIRT recommendations are evaluated, implemented, and tracked to completion.

12.5. Design Criteria. Installations must design HVAC & associated control systems that maintain temperatures in accordance with UFC 3-410-01, *HVAC Design*, and UFC 3-410-02, *Direct Digital Control For HVAC And Other Building Control Systems*, design criteria. **(T-1)** HVAC control systems will be connected to an energy management control system (EMCS) or utility monitoring control system (UMCS) in accordance with UFC 4-010-06, *Cybersecurity of Facility-Related Control Systems*, and DAFGM2023-32-01. When EMCS or UMCS connection is not feasible, local programmable thermostats must be installed.

12.6. Ventilation Systems. Properly functioning ventilation systems are critical for the safety and health of the facility and occupants and are considered a "life, safety, & health" mission system. Therefore, ventilation systems, including both the supply and exhaust sub-systems, will be inspected annually for proper flow rate and operation. Similarly, 'emergency' ventilation systems shall be inspected semi-annually for proper flow and operation. Ventilation system parameters (e.g., flow rates, dry-bulb/dew-point supply temperatures, etc.) will not be modified strictly for energy conservation purposes.

12.7. Facilities with Sleeping Quarters . Due to the risk of catastrophic refrigerant release and the resulting risk of asphyxiation, variable refrigerant flow (VRF) HVAC systems are prohibited in all facilities with sleeping quarters. The following is a partial (not all inclusive) list of excluded facility analysis categories (FACs):

12.7.1. FAC 7312: PRISON/CONFINEMEMT FACILITY.

12.7.2. FAC 7210: ENLISTED UNACCOMPANIED PERSONNEL HOUSING.

12.7.3. FAC 7212: ENLISTED UNACCOMPANIED PERSONNEL HOUSING, TRANSIENT.

12.7.4. FAC 7213: STUDENT BARRACKS.

12.7.5. FAC 7214: ANNUAL TRAINING/MOBILIZATION BARRACKS.

12.7.6. FAC 7215: UNACCOMPANIED HOUSING FOR WOUNDED WARRIORS.

12.7.7. FAC 7218: RECRUIT/TRAINEE BARRACKS.

12.7.8. FAC 7240: OFFICER UNACCOMPANIED PERSONNEL HOUSING.

12.7.9. FAC 7241: OFFICER UNACCOMPANIED PERSONNEL HOUSING (UPH), TRANSIENT.

12.7.10. FAC 7242: SERVICE ACADEMY UNACCOMPANIED PERSONNEL HOUSING.

12.7.11. FAC 7250: EMERGENCY UNACCOMPANIED PERSONNEL HOUSING.

12.7.12. FAC 7311: FIRE STATION FACILITY.

12.7.13. FAC 7381: FORESTRY GUARD STATION.

12.7.14. FAC 7353: DEPENDENT SCHOOL SUPPORT FACILITY.

12.7.15. FAC 7371: NURSERY AND CHILD CARE FACILITY.

12.7.16. FAC 7441: TRANSIENT LODGING.

12.7.17. FAC 1411: AIRFIELD FIRE AND RESCUE STATION.

12.7.18. FAC 1412: AVIATION OPERATIONS BUILDING – READINESS CREW.

12.7.19. FAC 1457: BALLISTIC MISSILE CONTROL FACILITY.

12.7.20. FAC 2111: AIRCRAFT MX HANGAR – ALERT HANGAR / RESCUE & RECOVERY.

Chapter 13

CYBERSECURITY PRACTICES (ALIGNED TO OPERATIONS FLIGHT OR EQUIVALENT) FOR CE CONTROL SYSTEMS

13.1. Overview. The DAF is required to ensure proactive cybersecurity and resilience measures are being taken for the control systems the DAF acquires and commissions into the DAF portfolio. The following policies must be implemented to ensure those measures are instilled into the day-to-day responsibilities of the operations flight. **Note:** Other cybersecurity and defense measures for control systems will also be instilled into the engineering flight and other organizations across the wing. These measures are aligned to the existing operations flight responsibilities.

13.2. On-site Maintenance.

13.2.1. The Operations (CEO) flight chief will ensure government personnel or contractor equivalent are qualified and/or vendors' credentials are verified before conducting on-site maintenance of control systems (to include patching or upgrading software). **(T-3)** Vendors performing on-site maintenance will sign in/out using AF Form 1109, *Visitor Register Log*, and will leave a copy of their maintenance service record detailing the work done on the control system and any repairs.

13.2.2. The Operations (CEO) flight chief will ensure a government person escorts and oversees on-site maintenance activities by vendors to ensure there is no operational impact or interruption to the control system. **(T-3)**

13.2.3. The Operations (CEO) flight chief will provide and enforce the use of only government-owned equipment (GFE) (e.g., computer, tablet, handheld devices) to connect to control systems and control systems network enclaves for maintenance or other authorized uses. **(T-3)** The BCE may authorize temporary use of contractor-owned assets for emergency repairs through the duration of the emergency, where GFEs are not readily available or no other reasonable alternative exists.

13.2.4. The Operations (CEO) flight chief will ensure government-owned maintenance assets are maintained by the CE organization or contractor equivalent. **(T-3)** Uninstall programs, applications, and services not strictly necessary and disable Wi-Fi, cameras, or microphones, preferably at the hardware or physical level.

13.2.5. For existing contracts that do not allow maintenance using government-owned assets and until contract language is updated (see the latest guidance memorandum, instruction, or manual for CE control systems cybersecurity), the operations (CEO) flight chief will ensure assets used by vendors and service personnel are thoroughly scanned for viruses, malware, and mitigatable common vulnerabilities and exposures in coordination with the local communications squadron procedures before the asset is allowed to connect to a control system or related infrastructure, as stated in NIST SP 800-46r2 (paragraphs **2.1 and 5.4**.), Guide to Enterprise Telework, Remote Access, and Bring Your Own Device Security. **(T-0)**

13.3. Remote Maintenance. Remote maintenance increases cyber risk to CE-owned control systems because off-site access is exploitable. When on-site maintenance and additional support requiring connectivity (cannot be accommodated, remote maintenance access is allowed as an option of last resort only. Before utilizing remote connectivity, it will first (1) be justified and approved in writing by the operations flight commander or deputy and (2) recorded as part of the system's Risk Management Framework (RMF) package's artifacts by the unit's control systems information security officer (ISO). If remote maintenance is employed, the section chief must ensure that:

13.3.1. Remote maintenance events will also be logged, monitored, and reviewed in order to verify legitimacy, necessity, and timing of access.

13.3.2. Remote maintenance of the control system will be of limited duration – allowed only for the time necessary to accomplish the established maintenance task. Remote maintenance activities that involve patching or upgrading software will follow additional guidelines outlined in DAFGM2023-32-01 *Civil Engineer Control Systems Cybersecurity*.

13.3.3. Follow security measures recommended in NIST SP 800-46r2, *Guide to Enterprise Telework, Remote Access, and Bring Your Own Device (BYOD) Security*, NIST SP 800-82r3, *Guide to Operational Technology (OT) Security*, and DHS's *Configuring and Managing Remote Access for Industrial Control Systems*, (see **Attachment 1**, *References*) such as requiring encryption and token-based, multi-factor authentication.

13.3.4. Other remote maintenance of the control system not meeting these specifications is prohibited.

13.4. CE Policy. Pertaining to the following, contact AFCEC/COOI (**AFCEC.COOI.Workflow@us.af.mil**) to obtain guidance and current mandates for civil engineer control system inventory procedures and timelines:

13.4.1. RMF requirements & associated CE unit roles for CE control systems.

13.4.2. Forms of connectivity allowed for CE control systems at the installation-level.

13.4.3. Resilience requirements for control system hardware.

13.4.4. Resilience requirements for control system software, ports, protocols, services.

13.4.5. Patch management of CE control systems.

13.4.6. Removable media/solid-state devices.

13.4.7. Control systems cyber hygiene practices needing to be employed by the operations flight and other members of the CE organization.

13.4.8. Cyber incident detection & corresponding response between the operations flight and cyber defenders (e.g., local Cyber Squadrons, 16 AF, 33 COS - Tier 2 Cybersecurity Service Provider for CE Control Systems, or other responding entity).

Chapter 14

SNOW AND ICE CONTROL PROGRAM

14.1. Snow and Ice Control Plan (S&ICP). The BCE at installations which receive six inches or more average annual snowfall will develop and maintain a S&ICP and establish a snow and ice control committee (S&ICC). **(T-3)** A pre-season S&ICC meeting will be conducted no later than 30 September each year; a post-season S&ICC meeting no later than 31 May each year. Installations that receive less than six inches annual snowfall may elect to conduct the pre-season and post season meetings electronically. Installation commanders may direct the development of committees and plans, as required, to meet their specific needs. If the S&ICP does not include facility snow accumulation, BCEs must efficiently monitor snow accumulations for specific facilities, considering their geographic location and expected snowfall patterns. **(T-3)** Engineers are not trained to remove snow accumulations from facilities; however, they should consult and follow local procedures if they believe snow loads are approaching the facility's designed load specifications. Proper coordination with local experts is essential to ensure safety and structural integrity.

14.2. Snow Control Priorities. The S&ICC will establish tiered priority areas to execute snow and ice control operations in order of relative mission importance. Priorities will be designated as priority 1 (RED), priority 2 (YELLOW), and priority 3 (GREEN). It is difficult to perform snow and ice control operation simultaneously on all paved surfaces. Leadership will determine which areas of the installation should be aligned under each priority. Priorities will be publicized to inform base populace of snow control operations priorities and to avoid confusion.

14.2.1. The operations group commander in conjunction with airfield management, will establish snow control priorities for flying operations and minimum runway condition readings (RCR) for the aircraft staged at their installation. **(T-3)** Installations that do not have active runways/airfields can adjust their priority areas accordingly to the benefit of their installation.

14.2.2. The maintenance group commander will review and ensure aircraft parking plans are coordinated with the airfield manager for implementation during ongoing snow control operations. **(T-3)** Snow control vehicles/equipment will get no closer than 25 feet of any aircraft; no closer than 10 feet to any building. Additionally, the maintenance group personnel will remove aircraft maintenance items (aerospace ground equipment, fire bottles, tools, etc.) prior to the onset of snow control operations allowing snow control teams unabridged access to the areas.

14.2.3. The BCE will establish annual snow control priorities for the installation's thoroughfares, emergency routes, parking lots, all other paved areas in coordination with installation leadership. **(T-3)**

14.3. Snow and Ice Control Operations (SNIC).

14.3.1. SNIC should begin prior to or at the onset of snow, icing, freezing fog, frost, or as winter weather conditions deteriorate. The goal is to maintain runways, high-speed turnoffs, and taxiways in a "no worse than wet" (i.e., no contaminants accumulation) conditions. Contaminants are considered snow, ice, slush, etc.

14.3.2. SNIC personnel should follow guidelines outlined in the current versions of the Federal Aviation Administration (FAA) Advisory Circular 150/5200-30D, *Airport Field*

Condition Assessments and Winter Operations Safety, and FAA Advisory Circular 150/5220-20A, *Airport Snow and Ice Control Equipment*, the International Aviation Snow Symposium (IASS), as well as best management practices lessons learned for their specific installations.

14.3.3. SNIC vehicles should be mechanically sound and operational no later than 31 Aug each year. SNIC fleet status will be reviewed during the pre-season S&ICC meeting. CE organizations will incorporate the use of the DAF Snow Fleet Business Rules Questionnaire, available from AFCEC/COOM, to determine their snow fleet requirements.

14.3.4. SNIC anti-icing/deicing products should be minimized to protect aircraft coating, sub-structures, weapons systems, airfield infrastructure, and the surrounding wetlands and environment. The BCE or operations flight commander will ensure only airfield anti-icing/deicing products vetted and approved by AFCEC Subject Matter Experts will be used on DAF controlled airfields. **(T-2)** SNIC leadership is the local product approving authority as to which anti-icing/deicing products work best at their specific location. Procurements of these products will be evaluated and approved by these leads.

14.3.4.1. Airfield anti-icing/deicing products must meet the performance requirements as determined by the current editions of the Society of Automotive Engineer (SAE) Aerospace Material Specifications (AMS) and SAE AMS 1431, Solid Runway Deicing/Anti-icing Product and SAE AMS 1435, Liquid Runway Deicing/Anti-Icing Product.

14.3.4.2. AFCEC reviews and evaluates airfield anti-icing/deicing products on a regular basis. AFCEC has determined that the following product formulations: potassium acetate, potassium formate, sodium acetate, and sodium formate to be suitable for use around all airframes and weapon systems. Compatibility studies show that none of the product formulations listed are completely risk free of airframe corrosion; however, no product possesses an increased risk more than another. Consult AFCEC/COOM for additional questions on airfield anti-icing/deicing products.

14.3.4.3. SNIC teams should advise the aircraft managers as to the type of airfield anti-icing/deicing products being used on the airfield so that aircraft managers can take additional actions to clean/wash these products off the aircraft sub-structures before parking/housing the aircraft.

14.3.4.4. All products will be used as recommended by the manufacturer. Mixing different brand airfield anti-icing/deicing products can be done since these products must meet stringent SAE/AMS guidelines for product development. End users should request airfield anti-icing/deicing by product formulation, not by brand specific.

14.3.4.5. The BCE or operations flight commander will ensure abrasives (sand) used for snow and ice control are FAA-approved and meet the current version of FAA A/C150/5200-30D, *Airport Field Condition Assessments and Winter Operations Safety*. **(T-1)** Sand should only be used to improve traction. Sand has no melting properties and should be used only in extreme emergencies.

14.3.4.6. The BCE or operations flight commander must ensure road salts are not used on any DAF-controlled airfield. **(T-3)** Salts will not be used within 300 feet of any airfield entry control point (ECP). Street-side solid product distributors will not be co-utilized as airfield solid product distributors.

14.3.4.7. Glycol-based products and urea are not approved for use as airfield anti-icing/deicing products and will not be used on any DAF controlled airfields.

14.4. Training.

14.4.1. At installations with a S&ICP, the BCE or operations flight commander will ensure an operator's training plan is developed, maintained, and included in this document. **(T-3)** This training may include any combination of the following:

14.4.1.1. Tabletop exercises using airfield/installation layout/maps and miniature equipment to simulate snow control operations emphasizing the different priority areas.

14.4.1.2. Demonstration of moving and removing contaminants off the airfield, situational awareness, hauling procedures and snow dump locations, wind directions/white-out conditions, limited access or restricted areas, etc.

14.4.1.3. Daytime and nighttime airfield and base familiarization tours, identifying potential problem areas such obstructions as airfield lighting systems, aircraft arresting systems and cables, aircraft fuel pits and hydrants, fire hydrants, railroad crossings, utility manholes, curb, gutters, and storm drain systems, base entry security pop-up barriers, speed bumps, and any other obstructions that will be difficult to see during snow control operations. Large red traffic cones can be used to identify aircraft fuel pits on aircraft mass parking aprons.

14.4.1.4. Operator's responsibilities, including operator and equipment safety, vehicle preventive maintenance checks and service, refueling procedures, repair procedures and vehicle maintenance reporting procedures, shift change procedures, and other areas of concern.

14.4.1.5. Communication procedures, right-of-way information, loss of two-way communication procedures, and radio etiquette should be incorporated into this training.

14.4.1.6. Airfield anti-icing/deicing product usage, application rates, personal protective equipment and safety, Pollution Prevention and Best Management Practices (P2/BMPs), product environmental impact, aircraft and weapon systems impact, and airfield infrastructure should be discussed. Water can be substituted as liquid deicer products to simulate realistic operations.

14.4.2. The BCE or operations flight commander will ensure each SNIC member receives hands-on operation training for all snow and ice control vehicles. **(T-3)** Training should consist of practice runs using typical situation scenarios of normal snow control operations to include conga lines, practice runs up and down the runway, emergency exiting of the runway, loss of communications, and day/nighttime operations. Maximum practice runs should be performed by all SNIC operators.

14.4.3. Each SNIC member will review the "Snow and Ice Control Techniques" training course prior to the beginning of the winter season. The training is available on myLearning Learning Management System (see **Attachment 1**, *References*) by searching the word "snow."

14.4.4. BCEs or operations flight commanders at installations meeting **Paragraph 14.1** above will send at least two (2) snow and ice control members to the educational and training opportunities offered prior to the International Aviation Snow Symposium (IASS). **(T-3)** Large sections are encouraged to send as many as financially possible. The logistic readiness squadron is encouraged to send at least two (2) snow control vehicle maintainers to the mechanic's training course to the IASS. BMC/BOS contractors are also encouraged to send individuals to the IASS. (see **Attachment 1**, *References*)

14.4.4.1. Educational opportunities held prior to the Northeast Chapter/American Association of Airport Executive (NEC/AAAE) IASS include the Air Force Snow and Ice Control Management Course, Snow Academy, Basic and Advanced Airport Safety Operations (BSOS/ASOS), and Snow Equipment Mechanic's Training. Education topics cover FAA airport/airfield snow control and ice control operations, runway condition reporting, aircraft and airfield deicing, communications, snow control equipment and design, human resources, winter weather forecasting, situation awareness, prevention and mitigation of corrosion commercial and military aircraft, equipment, and infrastructure.

14.4.4.2. Personnel attending the Air Force Snow and Ice Control Course at the IASS will cover topics specific to Air Force (military airfield) snow control operations. Discussion topics include requirements and development of a Snow and Ice Control Plan, Snow and Ice Control Committee, weather, airfield anti-icing/deicing, corrosion prevention and mitigations in accordance with Department of Defense Instruction (DoDI) 5000.67, *Prevention and Mitigation of Corrosion on DoD Military Equipment and Infrastructure,* snow control vehicles/equipment and operators, capabilities, situational awareness/fatigue management, post-season reconstitution of vehicles and materiel, and FAA Advisory Circulars to include but limited to current versions of AC 150/5200-30, Airport Winter Safety and Operations, AC 150/5220-20, Airport Snow and Ice Control Equipment, and AC120—103, Fatigue Risk Management Systems for Aviation Safety.

Chapter 15

INFRASTRUCTURE CORROSION CONTROL PROGRAM

15.1. Overview. The primary goals of the corrosion control program are to develop and maintain reliable and long-lived structures, equipment, plants, and systems, conserve energy, reduce costs due to corrosion, scale, and microbiological fouling, and ensure compliance with all federal, state and local environmental requirements, Department of Transportation, and Occupational Safety and Health Administration regulations. Basic guidelines, including testing methods and frequency, criteria, maintenance, recordkeeping requirements, and more can be found in UFC 3-570-06, *Operation and Maintenance: Cathodic Protection Systems*.

15.2. Local Operating Instruction. BCEs must ensure CE organizations/contractor equivalents develop and publish an operating instruction for the corrosion control program to ensure compliance with all corrosion control requirements in this instruction and UFC 3-570-06. **(T-0)** A sample operating instruction can be found in UFC 3-570-06, Appendix A, Part 1. **Note:** Details of use and waiver authorities are found in UFC 3-570-06. This section also contains information on the use of the following forms:

15.2.1. DAF Form 491, *Cathodic Protection Operating Log for Impressed Current Systems*.

15.2.2. DAF Form 1686, *Cathodic Protection Operating Log for Sacrificial Anode System*.

15.2.3. DAF Form 1687, *Leak/Failure Data Record Resource Advocacy/Corrosion Control Metric*.

15.2.4. DAF Form 1688, *Annual Cathodic Protection Performance Survey*.

15.2.5. DAF Form 1689, *Water Tank Calibration*.

15.3. Scope. The infrastructure corrosion control program includes:

15.3.1. Cathodic protection to control electrochemical reactions (corrosion).

15.3.2. Protective coatings to reduce atmospheric corrosion or cathodic protection requirements.

15.3.3. Industrial water treatment to reduce corrosion, scale-forming deposits, and biological growths in heating and cooling systems.

15.3.4. Appropriate design and materials selection to help limit and mitigate corrosion of facilities and infrastructure.

15.4. Training. The BCE must ensure CE organizations or contractor equivalents assign cathodic protection personnel and they receive initial, annual, and refresher training or required certifications to properly manage the corrosion control program. **(T-1)** Key aspects of cathodic protection training include the ability to apply National Association of Corrosion Engineer® criteria to determine if the structure is protected and the ability to troubleshoot the system if inoperative at least at the National Association of Corrosion Engineers CP2 Technician level. Special training may be required on protective coatings, industrial waste treatment, or design and material selection for construction projects. For more information on available courses, see the Association for Materials Protection and Performance (AMPP) (see **Attachment 1**, *References*) and UFC 3-570-06.

15.5. Cathodic Protection Requirements. Provide both cathodic protection and protective coatings as follows: (references: AFMAN32-1067, *Water and Fuel Systems*, requirements under **paragraph 9.6**l, "Operating, Maintaining and Inspecting Tanks" and 40 CFR Part 280, *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks*

15.5.1. All metallic fuel storage tanks or tanks containing flammable, combustible, or regulated products in contact with the soil, including underground storage tanks, bottoms of above-ground storage tanks, and associated buried or submerged metallic piping.

15.5.2. Metallic USTs that are coated with a heavy cladding for corrosion protection may omit installation of cathodic protection if this cladding without cathodic protection is acceptable to the governing environmental regulating authority. Document the use of cladding in lieu of cathodic protection in the applicable underground storage tank record.

15.5.3. All metallic fuel piping or piping containing flammable, combustible, or regulated products in contact with the soil. Piping will also be coated.

15.5.4. Interiors of water storage tanks and bottoms of water storage tanks in contact with the soil. Construction contracts that include coating of water storage and interior cathodic protection will include provisions for the contractor to provide cathodic protection testing and maintenance for the duration of the construction project warranty period.

15.5.5. For other buried utilities, provide cathodic protection and protective coatings if the soil resistivity is below 10,000 ohm-centimeters. For soils at or above 10,000 ohm-centimeters, contact the AFIMSC Detachment or AFCEC SME for direction.

15.5.6. For ductile or cast-iron water piping in soils greater than 10,000 ohm-centimeters, use of polyethylene encasement is permitted in lieu of cathodic protection with approval by AFCEC/COS. Polyethylene encasement will be conducted in accordance with American Water Works Association® (AWWA) C105-10, *Polyethylene Encasement for Ductile-Iron Pipe Systems*.

15.5.7. To properly document cathodic protection performance, calibration, and operations, reference UFC 3-570-06, *Operation and Maintenance: Cathodic Protection Systems*.

15.6. Industrial Water Treatment.

15.6.1. Basic guidelines for industrial water treatment programs can be found in UFC 3-240-01, *Wastewater Collection and Treatment*. This UFC provides guidance for testing procedures and frequency, backflow prevention devices, and non-chemical industrial water treatment. Consult AFMAN32-1067, *Water and Fuel Systems*, for additional information on proper use and handling of treatment chemicals and consult with the local base environment office prior to selecting and industrial water treatment chemicals.

15.6.2. Chemicals added to protect condensate lines from corrosion make the steam and condensate unfit for consumption or other uses normally reserved for potable water. Do not use treated steam in direct contact with food or for any direct steam humidification, such as in a gymnasium steam room or humidity control for electronic equipment.

15.6.3. Conduct acceptance testing of new heating and cooling systems to ensure the industrial water treatment system meets design and operation parameters. Construction contracts that include heating, ventilation, and air-conditioning systems will include provisions for the

contractor to provide water treatment testing and maintenance for the duration of the construction project warranty period.

15.6.4. Industrial water treatment records should reflect the minimum entries needed to effectively manage the control of the program and indicate the need for additional testing. At a minimum, CE organizations must:

15.6.4.1. Maintain one industrial water treatment operating log for each individually treated system (each boiler, each cooling tower bank, and each closed system).

15.6.4.2. Utilize DAF Form 1457, *Water Treatment Operating Log for Cooling Tower Systems*, for all cooling towers.

15.6.4.3. Utilize AF Form 1459, *Water Treatment Operating Log for Steam and Hot Water Boilers*, for all steam systems and hot water boilers.

15.7. Design and Material Selection.

15.7.1. Design, construction, and application of cathodic protection, industrial water treatment, and protective coatings are functional requirements for almost all projects. Designs should achieve the minimum life cycle cost for the overall facility. Base personnel must be able to operate and maintain the final facility design, including the corrosion control systems, without extensive training or equipment investment, unless this is the best approach to achieve minimum life cycle cost.

15.7.2. Corrosion resistance is not the only criterion for material selection. When selecting a material, investigate all aspects of its physical properties in the application environment, during both normal operation and typical system failure.

15.7.3. Construct new pipelines to enable the use of in-line inspection tools such as video cameras, acoustic devices, and smart pigs.

Chapter 16

FACILITY ASBESTOS MANAGEMENT

16.1. Background. Asbestos is regulated by 15 USC §§ 2601-2697, *Toxic Substances Control Act*, 42 USC Chapter 85, *Clean Air Act* (CAA), and 29 U.S.C. §§ 651-678, *Occupational Safety and Health Act* (OSH Act). This instruction focuses on each base's development and implementation of asbestos management programs to reduce possible exposure to airborne asbestos fibers and satisfy regulatory requirements of 29 CFR Part 1910.1001, *Asbestos (Standard for General Industry)*, 29 CFR Part 1926.1101, *Asbestos (Standard for the Construction Industry)*, 40 CFR Part 763 subpart E, *Asbestos-Containing Materials in Schools*, 15 USC §§ 2641-2656, *Asbestos Hazard Emergency Response Act (AHERA)*, and 40 CFR Part 61 subpart M, *National Emission Standard for Hazardous Air Pollutants, Asbestos*. Past and current records addressed in this instruction must be permanently maintained. For more details on referenced regulations and specific Air Force environmental and occupational health program requirements, installation Environmental Management Offices may contact AFCEC's Environmental Directorate (AFCEC/CZ), NGB/A4V for ANG units, AFCEC/CIM for privatized housing, or the Air Force Environmental Law and Litigation Division's Environmental Law Field Support Center (AF/JAOE-FSC). Environmental Management Offices at ANG units should contact the Air National Guard Readiness Center who will engage with AFCEC as needed.

16.2. Asbestos Management and Operating Plans. BCEs must ensure CE organizations/contractor equivalents with maintenance responsibility involving asbestos have a written management plan and operating plan to carry out the objectives of facility asbestos management in accordance with the regulation listed in **paragraph 16.1**. **(T-1)** These plans serve two purposes: to detail how tasks are done and to document the installation's commitment to protect the health of personnel. They may be combined into one document if each section clearly defines associated requirements. Current and past records created pursuant to this instruction must be permanently maintained. **Note:** Privatized housing maintains their own Asbestos Management Plan and records which are available for BCE and Real Property review.

16.2.1. Asbestos Management Plan. The objective of the asbestos management plan is to maintain a permanent record of the status and condition of all asbestos-containing materials (ACM) in an installation's facility inventory. The management plan will include the documentation for all asbestos management efforts, and procedures for overseeing the entire facility asbestos management program, including procedures to ensure bases comply with applicable Occupational Safety and Health Administration and all federal, state and local environmental requirements and regulations.

16.2.2. Asbestos Operating Plan. The asbestos operating plan dictates how the base will carry out asbestos-related projects. The plan will assign responsibilities, establish inspection and repair capabilities, and provide repair procedures and personnel protection instructions. The plan will refer to and incorporate information from applicable Occupational Safety and Health Administration and environmental rules, AFPD 32-70, *Environmental Considerations in Air Force Programs and Activities*, and AFI91-202, *The US Air Force Mishap Prevention Program*, with provisions for enforcement. The operating plan should include:

16.2.2.1. Organizational structure for carrying out asbestos-related work.

16.2.2.2. Project coordination and communication necessary for construction and renovation work involving facilities containing asbestos.

16.2.2.3. Personnel training programs.

16.2.2.4. Equipment and supply requirements.

16.2.2.5. Identification of worker manuals or other written procedures.

16.2.2.6. Yearly budget estimates.

16.2.2.7. Procedures for interim control measures and extraordinary precautions.

16.2.2.8. Procedures for asbestos certification and asbestos disposition statements on programming documents.

16.2.2.9. Requirements for a special response team and in-house inspection.

16.2.2.10. Requirements for contractor asbestos analysis and abatement.

16.3. Applicable Regulations. 29 CFR Part 1910.1001, 29 CFR Part 1926.1101, 40 CFR Part 763, subpart E, 15 USC Chapter 53, and 40 CFR Part 61, subpart M, prescribe requirements for identifying ACM, notifying building occupants of potential asbestos-related hazards, and acquiring specialized asbestos-related training. In addition, they provide specific guidance for asbestos identification, labeling, control, and abatement in schools, government, public, and commercial buildings. Planned asbestos abatement efforts must comply with these and other applicable federal, state, and local regulations prior to commencing work.

16.4. Asbestos Abatement.

16.4.1. All damaged ACM, either friable or not intact, is presumed hazardous due to its potential to release asbestos fibers into the air. Damaged ACM must be repaired or removed to eliminate this potential hazard. Bases will abate hazardous ACM through inventory management, isolation, containment, and removal.

16.4.2. Any asbestos abatement operations will be performed with adherence to good housekeeping procedures and adequate control measures to minimize the release of asbestos fibers to the environment.

16.4.3. The unit must work directly with the bioenvironmental engineer (BE) to determine which actions are necessary to protect human health as well as to evaluate facilities containing ACM that cannot be dependably maintained, repaired, or isolated or is likely to become friable.

16.4.4. A facility asbestos survey will be conducted prior to any renovation, alteration, repair, or demolition project that could disturb building materials to ensure compliance with 40 CFR Part 61, subpart M.

16.5. Asbestos Removal.

16.5.1. Installations must remove ACM that cannot be dependably maintained, repaired, or isolated and that is likely to become friable or not remain intact. "Must remove" mandates will be issued by the installation commander with advice from BE and the BCE based on their direct evaluation of the material and the facility. **(T-3)** If asbestos is present at any detectable level (determined by bulk sampling in accordance with 40 CFR Part 763, paragraphs 763.85–

87) and is disturbed during maintenance, repair, or removal actions, then the regulatory requirements of 29 CFR Part 1910.1001 and 29 CFR Part 1926.1101 apply.

16.5.2. Where there is no mandate to remove asbestos, the BCE will consult with BE to determine the health risk to facility occupants and will evaluate the material's condition, use of the facility, the feasibility or frequency of repair, and cost-effectiveness when deciding whether to remove or repair non-friable, intact ACM. **(T-3)** The BCE, in consultation with the BE will determine what actions, if any, are required for ACM that cannot be dependably maintained, repaired, or isolated and is likely to become friable or not remain intact. **(T-3)**

16.5.3. When safety and budgetary plans permit (e.g., if asbestos is non-friable and intact, encased, properly treated, or cost of asbestos removal is less than 10 percent of project cost), include complete removal of ACM when planning built infrastructure projects.

16.5.4. CE organizations should attempt to remove existing ACM at opportune times during minor construction or repairs (e.g., if wall sections are opened and ACM is exposed, or carpeting is replaced over vinyl asbestos flooring).

16.5.5. Refer to AFMAN32-7002, *Environmental Compliance and Pollution Prevention*, and coordinate with the installation environmental management office for environmental requirements and standards related to asbestos removal, renovation, and demolition including thresholds for pre-work notification, permitting, licensing, site preparation, removal and emission control procedures, and transportation and disposal requirements and limitations.

16.6. Facility Asbestos Management. To ensure ACM does not become airborne, the BCE will closely monitor all facilities. **(T-3)**

16.6.1. Conduct asbestos surveys to identify all installed ACM. Pre-construction surveys will be performed by appropriately credentialed inspectors when a baseline survey has not been conducted and there is no information, or insufficient information, as to the existence of ACM within the planned limits of construction. In accordance with 29 CFR Part 1910.1001, all installed thermal system insulation and sprayed- or troweled-on surfacing materials will be classified as presumed ACM in buildings constructed prior to 1980. Asphalt and vinyl flooring material installed prior 1980 must also be treated as asbestos-containing. To verify whether presumed ACM and flooring material contain asbestos, complete an asbestos survey in accordance with 40 CFR Part 763, subpart E (sampling methods are specified in paragraphs **763.85**–**87**.). CE organizations may use commercially available non-regulatory survey method. CE organizations may use American Society for Testing and Materials (ASTM) E2356-18, *Standard Practice for Comprehensive Building Asbestos Surveys*, as a commercially available non-regulatory survey method.

16.6.2. CE organizations will determine if visibly damaged thermal system insulation, existing spray- or trowel-applied surfacing or fireproofing, or miscellaneous ACM is in immediate danger of becoming friable or non-intact and releasing airborne asbestos fibers. Ensure such material is quickly repaired by personnel trained in accordance with 40 CFR Part 763, subpart E, Appendix C.

16.6.3. CE organizations will regularly inspect identified ACM and presumed ACM to verify that the material's condition has not changed. Approved methods are specified in 40 CFR Part 763, paragraphs 763.85–87. Incorporate recurring inspection of identified and presumed ACM into the installation's PM program per **Chapter 3** of this instruction.

Chapter 17

ROOFING MANAGEMENT PROGRAM

17.1. Background. The objective of a roof management program is to optimally manage roof systems over their life cycles to meet the required levels of service for DAF real property. Roof management involves an asset management approach, taking into account performance measures, periodic inspections, routine maintenance and repair, and correct application of quality roofing products.

17.2. Design, Maintenance, and Management.

17.2.1. CE organizations must design and maintain roofs in accordance with mandatory requirements of UFC 3-110-03, *Roofing*.

17.2.2. BUILDER™ Sustainment Management System (SMS) is the enterprise approved Air Force SMS for roof system assets management and must be utilized, updated, and maintained by the installation.

17.2.3. Accomplish condition assessments in accordance with criteria in SMS.

17.2.4. Privatized housing maintains their own roof management program for the privatized real property and maintains their own records which are available for BCE and Real Property review. For details and guidance on maintaining family housing, see AFI32-6000, *Housing Management*.

Chapter 18

PAVEMENT MANAGEMENT PROGRAM

18.1. Background . The primary goals of the pavement management program are to sustain and preserve reliable and long-lived pavement structures and networks (including drainage), reduce greenhouse gas emissions, and reduce cost through proper and timely maintenance, and life extension efforts. Further guidance can be found in UFC 3-270-08, *Pavement Management*, and Tri-Service Pavement Working Group Manual (TSPWG M) 3-270-08.14-03, *Pavement Management Plan.*

18.2. Pavement Management Plan (PMP). CE organizations/contractor equivalent will publish a PMP to ensure compliance with all requirements in this instruction and the aforementioned guidance for airfield and roads and parking networks. Plans will be updated not less than annually. The plan will include, but is not limited to:

18.2.1. All roads (paved/unpaved), parking, and sidewalk networked pavements with associated drainage inlet/outlets, safety devices (barrier rails, etc.) striping, markings, and signage.

18.2.2. All airfield pavements (runway, overruns, taxiways, aprons, shoulders), non-aircraft pavement not captured in the roads and parking network(s), and associated drainage inlet/outlets, striping, markings, and signage.

18.2.3. Coordination with the water and stormwater SAM to ensure pavement subsurface and edge drainage systems are included in planning, preventive and corrective maintenance, and reconstruction.

18.2.4. The PMP will prioritize proactive maintenance and repair activities to sustain and extend pavement life through the execution of preventive maintenance, corrective maintenance, and significant repairs or replacement.

18.2.5. Appropriate design, materials selection, and timing will sustain and extend assets life and ensure safe air and land operations.

18.3. Pavement Maintenance Requirements . Maintenance requirements will be generated from various data sources including, but not limited to, climate, age, material, and loading. The following key distresses and work actions will be captured in installation’s PMP:

18.3.1. Asphalt pavement distresses requiring preventive/preservation activities to include longitudinal and transverse cracking, block cracking, weathering, and raveling. Consider preventive maintenance actions such as crack sealing and global surface treatments (fog, slurry, rejuvenation) to sustain and extend pavement life. The PMP will emphasize remediating these distresses to prevent incompressible materials and moisture from entering the cracks and weakening the pavement and soil layers. Additionally examine global surface treatments prior to the occurrence of defects to reduce oxidation of the material, as well as to reduce the frequency and severity of surface distress development.

18.3.2. Concrete pavement distresses requiring preventive/preservation activities to include joint sealant damage and linear cracking. Consider replacement of seals and routing and sealing of unsealed cracks in pavements which do not have functioning pavements subdrainage systems. Failure to maintain these in a timely manner as such locations will cause premature

failure of the pavement and will increase the need frequency, extent and cost of maintenance and repair activities.

18.3.3. Maintenance activities remediating asphalt and concrete distresses will be managed as PMP proactive and preventive maintenance activities and execution maybe in-house or contracted out. For specific guidance on Preventive Maintenance, see **Chapter 3**.

18.4. Assessments, Design, Maintenance, and Management.

18.4.1. PAVER™ Sustainment Management System (SMS) is the enterprise approved Air Force SMS for pavement inspections and asset management and must be utilized, updated, and maintained by the airfield pavement evaluation team, pavement condition inspector contractors and the installation IAW DAFI32-1041 *Pavement Evaluation Program*, UFC 3-260-16, *Standard Practice for Pavement Condition Surveys*, and UFC 3-260-03, *Airfield Pavement Evaluation*.

18.4.1.1. AFCEC is responsible for centralized reoccurring pavement condition inspections (PCI) and updates to PAVER™ databases. Installations must review centralized work for accuracy.

18.4.1.2. Installations can perform inspections in PAVER™ in the interim following the standards contained in UFC 3-260-16, *Standard Practice for Pavement Condition Surveys*, and UFC 3-260-03, *Airfield Pavement Evaluation*. Additionally, installations will update PAVER™ after work is performed in-house or by contractors.

18.4.2. CE organizations must design and maintain pavements in accordance with UFC 3-260-01, *Airfield and Heliport Planning and Design*, UFC 3-260-02, *Pavement Design for Airfields*, and UFC 3-270-01, *O&M Manual: Asphalt and Concrete Pavement Maintenance and Repair*. **(T-1)** Select materials IAW the aforementioned UFCs and Unified Facilities Guide Specifications. A list of current packaged, cementitious, and polymeric material for concrete airfield repair is maintained at: https://transportation.erdc.dren.mil/cacsites/TriService/pavement_repair.aspx. Any questions regarding materials specification and selection should be directed to the MAJCOM staff or the AFCEC Reachback Center.

18.5. Education and Training . CE organizations will ensure assigned TNAP and civil engineers attend pavement management specific courses offered the Air Force Institute of Technology (AFIT) to include: WENG 550 Airfield Pavement Design and Maintenance, WENG 555 Airfield Pavement Construction Inspection, WMGT 141 SMS PAVER Level 1, WMGT 241 SMS PAVER Level 2, and WMGT 341 SMS PAVER Level 3 (Data Manager Rights).

TOM D. MILLER, Lieutenant General, USAF
DCS/Logistics, Engineering & Force Protection

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

10 USC § 2721, *Property Records: Maintenance on Quantitative and Monetary Basis*, 1 January 2024

15 USC §§ 2601-2697, *Toxic Substance Control Act* (TSCA), 22 June 2016

15 USC §§ 2641-2656 *Asbestos Hazard Emergency Response Act (AHERA)*, 7 January 2011

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Snow & Ice Control Business Process Library:

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Work Management Business Process Library:

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Prescribed Forms

DAF Form 103, *Base Civil Engineer Work Clearance Request*

DAF Form 332, *Base Civil Engineer Work Request*

DAF Form 491, *Cathodic Protection Operating Log for Impressed Current Systems*

DAF Form 1219, *Multi Craft Job Order Register*

DAF Form 1457, *Water Treatment Operating Log for Cooling Tower Systems*

DAF Form 1686, *Cathodic Protection Operating Log for Sacrificial Anode System*

DAF Form 1687, *Leak/Failure Data Record Resource Advocacy/Corrosion Control Metric*

DAF Form 1688, *Annual Cathodic Protection Performance Survey*

DAF Form 1689, *Water Tank Calibration*

Adopted Forms

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

DAF Form 847, *Recommendation for Change of Publication*

AF Form 1109, *Visitor Register Log*

AF Form 1459, *Water Treatment Operating Log for Steam and Hot Water Boilers*

Abbreviations and Acronyms

AFCEC—Air Force Civil Engineer Center

AFI—Air Force Instruction

AFIMSC—Air Force Installation and Mission Support Center

AFMAN—Air Force Manual

AFPD—Air Force Policy Directive

AMP—Activity Management Plan

ASTM—American Society for Testing and Materials

AVB—Active Vehicle Barrier

BCE—Base Civil Engineer

BOS—Base Operations Support

BMC—Base Maintenance Contract

BPL—Business Process Library

CE—Civil Engineer

CEN—Engineering Flight Chief

CEO—Operations Flight Chief

CEOE—Operations Engineering Element

CEOEM—Materiel Control Section

CEOER—Requirements and Optimization Section

CEOES—Service Element Section

CEOFA—Fire Alarms Section

CEOFE—Electrical Shop Section

CEOF—Facility Systems Element

CEOFP—Power Production Section

CEOH—Heavy Repair Element

CEOHP—Pavements and Equipment Section

CEOHS—Structures Section

CEOI—Infrastructure Systems Element

CEOIC—Environmental Control Systems Section

CEOIE—Pest Management Section

CEOIH—Heating, Ventilation, and Air Conditioning Section

CEOIU—Water and Fuel Systems Maintenance Section

CEOM—Missile Facility Maintenance Element

CM—Corrective Maintenance

COCESS—Contractor Operated Civil Engineer Supply Store

COR—Contracting Officer’s Representative

DAFI—Department of the Air Force Instruction

DAFMAN—Department of the Air Force Manual

EMCS—Energy Management Control System

eMH—enterprise Market Housing

ECP—Entry Control Point

FAA—Federal Aviation Administration

FAC—Facility Analysis Category

FEMA—Federal Emergency Management Agency

FM—Facility Manager

FSD—Fire Safety Deficiency

GOCESS—Government Operated Civil Engineer Supply Store

HAF—Headquarters Air Force

HAZMAT—Hazardous Material

HVAC—Heating, Ventilation, and Air Conditioning

IASS—International Aviation Snow Symposium

IAW—In Accordance With

iEMS—integrated Engineering Management System

IACP—Installation Access Control Point

MAJCOM—Major Command

NexGen IT—Next Generation Information Technology

NIST—National Institute of Standards and Technology

PM—Preventive Maintenance

PMP—Pavement Management Plan

PMTL—Preventive Maintenance Task List

RAC—Risk Assessment Code

RP—Real Property

RPIE—Real Property Installed Equipment

S&ICP—Snow & Ice Control Plan

SAM—sub-AMP Manager

SMS—Sustainment Management System

sub-AMP—sub-Activity Management Plan

S&ICC—Snow and Ice Control Committee

S&ICP—Snow and Ice Control Plan

SNIC—Snow and Ice Control Operations

TNAP—Transportation Network and Airfield Pavement

UFC—Unified Facilities Criteria

UMCS—Utility Monitoring and Control System

USORT—Utility System Operational Report Tracker

WRRB—Work Request Review Board

WRWG—Work Request Working Group

Office Symbols

AFCEC/CIB—BRAC Program Management Division

AFCEC/CIM—Air Force Housing Division

AFCEC/CO—Air Force Civil Engineer Center Operations Directorate

AFCEC/COO—Operations Maintenance Division

AFCEC/COOM—Operations Maintenance Branch

AFCEC/CIM—Air Force Civil Engineer Center Housing Division

AFCEC/CZ—Air Force Civil Engineer Center Environmental Operations Division

AF/A4C—Air Force Deputy Chief of Staff for Logistics, Engineering and Force Protection, Directorate of Civil Engineers

AF/A4CF—Air Force Deputy Chief of Staff for Logistics, Engineering and Force Protection, Directorate of Civil Engineers Facilities Division

SAF/IE—Assistant Secretary of the Air Force for Energy, Installations, and Environment

SAF/IEE—Deputy Assistant Secretary of the Air Force for Environment, Safety and Infrastructure

SF/COO—Space Force Chief Operations Officer

SF/S4O—Space Force Mission Sustainment

SF/S8P—Space Force Space Panel

Terms

Activity Management Plan—documented information that specifies the activities, resources, and timescales for an individual asset, or a grouping of assets, to achieve the organization's asset management objectives. See ISO 55000, *Asset Management - Overview, Principles, and Terminology*.

Asset Management—A way to translate the Air Force's objectives into asset-related decisions and plans. Effective asset management requires understanding assets' physical attributes, condition, usage, and performance as well as the realized and potential value to the mission. When applied correctly, asset management balances risk, current and future Air Force objectives, resource limitations, and lifecycle management.

BUILDER ™—is an acronym for the BUILDER™ Sustainment Management System, a web-based software tool that helps managers, technicians, and civil engineers maintain building infrastructure.

Built Infrastructure—Installations, facilities and other fixed (i.e., permanent) and man-made assets essential to project, support, and sustain military forces and operations worldwide. These include buildings, airfields, roads/bridges, utility systems, stores of military equipment, and maintenance stations necessary for the support of military forces, whether they are stationed in bases, being deployed or engaged in operations (JP 3-27).

Cathodic Protection—A technique to prevent the corrosion of a metal surface by making that surface the cathode of an electrochemical cell (UFC 3-570-01).

Civil Engineer Maintenance Inspection and Repair Team—CEMIRT provides Air Force-wide specialized maintenance, installation and repair support on electrical distribution and power generation systems; aircraft arresting systems; industrial control systems; and heating, ventilating and air conditioning systems during peacetime and emergency response operations.

Core Function Lead—SecAF/CSAF-appointed senior leader responsible for specific Core Functions providing AF-level, long-term views. Core Function Leads integrate Total Force concepts, capabilities, modernization, and resourcing to ensure future assigned core capabilities across the range of military operations as directed by Air Force Strategy and Strategic Planning Guidance. Core Function Leads are responsible for the Core Function Support Plan and recommendations for the development of the POM for the assigned Core Functions. Core Function Leads have tasking authority regarding Core Functions issues to identify enabling capabilities and integration requirements/opportunities.

Corrosion—The deterioration of a material or its properties due to a reaction of that material with its chemical environment (10 U.S.C. § 2228).

Emergency Repair—The least amount of immediate repair to damaged facilities (or infrastructure) necessary for the facility (or infrastructure) to support the mission (Joint Publication 3-34).

Emergency Work—Unscheduled work that requires immediate response to sustain or ensure continued mission operations, prevent significant additional damage to facilities and infrastructure or protect the safety and security of the installation, mission, or personnel.

Energy Management—The process of developing, executing, and overseeing plans, programs, and initiatives to achieve energy and water goals and objectives across all functional areas (AFPD 90-17).

Fire Safety Deficiency—A condition which reduces fire safety below the acceptable level, including noncompliance with standards, but by itself cannot cause a fire to occur. A clear distinction between hazards and deficiencies may not always be possible; therefore, the judgment and experience of a qualified fire official must be relied upon. Fire safety deficiencies will not be assigned a RAC. See DAFI32-2001 and AFI91-202 for additional information.

Joint Base—A locality from which operations of two or more of the Military Departments are projected or supported and which is manned by significant elements of two or more Military Departments on in which significant elements of two or more Military Departments are located (Joint Publication 3-10).

Life Cycle—The total phases through which an item passes from the time it is initially developed until the time it is either consumed in use or disposed of as being excess to all known material requirements (JP 4-02).

Playbook—A publication, developed and maintained by AFCEC, that provides additional guidance and how-to information for a variety of civil engineer functions and sections.

Preventive Maintenance—PM is a schedule of planned recurring maintenance actions aimed at the reduction of system or component failure, with the primary goal of achieving sustained asset performance over its desired operational lifespan. Effective PM lengthens the effective use life cycle of assets, reduces the need for major repair or replacement, and decreases unplanned system downtime from unexpected equipment failure to minimize mission impact.

Real Property—Lands, buildings, structures, utilities systems, improvements, and appurtenances thereto. Includes equipment attached to and made part of buildings and structures (such as heating systems) but not movable equipment (26 CFR Part 1.856-10).

Set-Point—The temperature at which a thermostat or other HVAC control has been set.

Storage Tank—A stationary, aboveground or below ground device that contains an accumulation of regulated substances.

Strategic Asset Management Plan—Documented information that specifies how organizational objectives are to be converted into asset management objectives, the approach for developing asset management plans, and the role of the asset management system in supporting achievement of the asset management objectives. See ISO 55000, *Asset Management - Overview, Principles, and Terminology*.

Work Request Review Board—The WRRB is a meeting where approval and execution decisions are made based on inputs from the WRWG. Not all requirements reviewed by the WRWG will be reviewed by the WRRB, but all WRRB decisions require WRWG input. The WRRB typically meets bi-weekly or monthly and is chaired by the operations flight commander, or equivalent.

Work Request Working Group—The WRWG is a group whose primary purpose is to evaluate and prepare CE work request requirements. The WRWG uses locally established processes to determine details and required actions for a work requirement. The WRWG can be a formal meeting or informal and is held on an as-needed bases. The WRWG is typically chaired by the chief of the requirements and optimization section.