

# UNIFIED FACILITIES CRITERIA (UFC)

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## DOD BUILDING CODE



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## UNIFIED FACILITIES CRITERIA (UFC)

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U.S. ARMY CORPS OF ENGINEERS

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND (Preparing Activity)

AIR FORCE CIVIL ENGINEER CENTER

Record of Changes (changes are indicated by \1\ ... /1/)

<b>Change No.</b>	<b>Date</b>	<b>Location</b>
1	24 FEB 2023	1-3.3.3 replaced entire paragraph; removed UFC 1-202-01 reference from Appendix C
2	12 JUN 2023	1-4.4 Add paragraph; Chapter 3 and Appendix C: removed references to OUSD Memorandum, Floodplain Management on DoD Installations;
3	26 FEB 2024	1-4.5, Inclusion of NDAA PL 117-263 Sec. 2810 Consideration of Installation of Integrated Solar Roofing. US Army Base name changes, and minor admin.

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**This UFC supersedes UFC 1-200-01, dated 01 Oct 2020.**

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## FOREWORD

The Unified Facilities Criteria (UFC) system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, the Defense Agencies, and the DoD Field Activities in accordance with [USD \(AT&L\) Memorandum](#) dated 29 May 2002. UFC will be used for all DoD projects and work for other customers where appropriate. All construction outside of the United States, its territories, and possessions is also governed by Status of Forces Agreements (SOFA), Host Nation Funded Construction Agreements (HNFA), and in some instances, Bilateral Infrastructure Agreements (BIA). Therefore, the acquisition team must ensure compliance with the most stringent of the UFC, the SOFA, the HNFA, and the BIA, as applicable.

UFC are living documents and will be periodically reviewed, updated, and made available to users as part of the Military Department's responsibility for providing technical criteria for military construction. Headquarters, U.S. Army Corps of Engineers (HQUSACE), Naval Facilities Engineering Systems Command (NAVFAC), and Air Force Civil Engineer Center (AFCEC) are responsible for administration of the UFC system. Technical content of UFC is the responsibility of the cognizant DoD working group. Defense Agencies should contact the respective DoD Working Group for document interpretation and improvements. Recommended changes with supporting rationale may be sent to the respective DoD working group by submitting a Criteria Change Request (CCR) via the Internet site listed below.

UFC are effective upon issuance and are distributed only in electronic media from the following source:

- Whole Building Design Guide website <https://www.wbdg.org/ffc/dod>.

Refer to UFC 1-200-01, *DoD Building Code*, for implementation of new issuances on projects.

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## **CHAPTER 1 INTRODUCTION**

### **1-1 BACKGROUND.**

Unified Facilities Criteria (UFC) provide common requirements across DoD for safety, sustainability, durability, and functionality for DoD facilities. UFC incorporate a combination of consensus building codes, DoD-defined technical and user requirements, and applicable statutory and regulatory requirements.

### **1-2 PURPOSE AND SCOPE.**

UFC 1-200-01 represents the foundational document of the UFC program in providing general building requirements and overarching criteria, establishing the use of consensus building codes and standards, establishing criteria implementation rules and protocols (including core UFC), and identifying unique military criteria. In accordance with the authority in MIL-STD-3007G, UFC are prepared by DoD committees called Discipline Working Group (DWG), and are published by the Military Services under the authority of the Engineering Senior Executive Panel (ESEP), comprised of the following:

- Deputy Assistant Secretary of Defense (Construction) Office of the Secretary of Defense
- Chief, Engineering and Construction, Headquarters United States Army Corps of Engineers (HQ USACE)
- Chief Engineer, Naval Facilities Engineering Systems Command (NAVFAC)
- Headquarters US Air Force, Deputy Director of Civil Engineers DCS/Logistics, Engineering & Force Protection (HAF/A4C)

### **1-3 APPLICABILITY.**

This UFC applies to the planning, design, construction, sustainment, restoration, and modernization of DoD-owned facilities. It is applicable to all methods of project delivery and levels of construction as defined below. For facilities supporting military operations see Paragraph 1-3.3.

#### **1-3.1 Implementation, Administration, and Enforcement.**

UFC and their referenced codes and Criteria are effective upon issuance for projects as follows:

- Design-Bid-Build projects that have not proceeded beyond 35% design completion.
- Design-Build projects that have not proceeded beyond date of Request for Proposal (RFP) issuance. When an RFP is issued in multiple phases or steps use the date of the last phase of the RFP issuance.

- Projects that have a delay, either planned or unintentional, of more than 18 months between design completion and the solicitation of offers for construction must be re-evaluated to determine if any design revision is necessary due to changes in criteria (including codes and standards) or site infrastructure (for example, water supply for fixed fire suppression systems, water for hose stream allowances, or fire department vehicle access). Note: The evaluation must also include retroactive requirements that have been included in the new editions of the criteria.

### **1-3.2 Levels of Construction.**

#### **1-3.2.1 Permanent Construction.**

Permanent facilities must follow Chapter 2 of this UFC, which contains modifications to the IBC. Buildings and facilities are considered permanent construction unless meeting other definitions herein. Permanent construction is intended to address a level of quality and durability to achieve a life expectancy of more than 25 years.

#### **1-3.2.2 Temporary Construction.**

In accordance with the IBC Section 3103, temporary construction includes structures erected for a period less than 180 days. Temporary structures must conform to the structural strength, fire safety, means of egress, accessibility, light, ventilation and sanitary requirements of the IBC, as modified in Chapter 2 of this UFC. Extension of temporary construction occupancy or usage 180 days or beyond requires a written justification request and approval from the BO/ AHJ. Extension approvals may be renewed at the discretion of the BO/AHJ; however, occupancy or facility usage cannot occur beyond 5 years from date of initial occupancy.

### **1-3.3 Facilities in Support of Military Operations.**

Use the following UFC for facilities used in support of military operations. These UFC are self-contained documents and contain all design requirements for the respective subjects. The UFC hierarchy stated in paragraph 1-3.5, and subparagraphs does not apply to these UFC. These UFC apply to all DoD components involved with planning, design, construction and renovation of non-permanent facilities, both new construction and renovations to non-permanent facilities (where renovation does not convert the facility to permanent), used by US military and DoD civilian personnel in support of Military Operations, actions with written Operation Orders (OPORDS); examples include Kinetic actions, Disaster Recovery, Humanitarian Assistance, and Defense Support to Civil Authorities.

#### **1-3.3.1 UFC 1-201-01.**

Use UFC 1-201-01 for planning, design, construction and renovation of non-permanent facilities used by US military and DoD civilian personnel in support of military operations.



**1-3.3.2      UFC 1-201-02.**

Use UFC 1-201-02 to assess existing facilities for life safety and habitability for potential occupancy by DoD personnel in support of military operations. Requirements for preliminary evaluations do not apply when forces occupying the facility are engaged in actual combat operations.

**1-3.3.3      1\ Host Nation Facilities.**

Use the International Building Code® (IBC) for planning, design and construction of all facilities built for Host Nation personnel use outside of the United States and its territories and possessions. Use the IBC in conjunction with Status of Forces agreements (SOFA), bilateral agreements or other Host Nation (HN) agreements. /1/

**1-3.4          Waivers and Exemptions.**

A waiver provides authority to deviate from a criteria requirement for a specific period, typically 12 months. An exemption provides authority to deviate from a requirement indefinitely. Refer to MIL-STD-3007 for the waiver and exemption request and approval process.

**1-3.5          UFC Hierarchy.**

UFC 1-200-01 is the overarching document for buildings and facilities owned by DoD. UFC 1-200-01 directs the use of the International Building Code® (IBC), the International Existing Building Code® (IEBC), International Green Construction Code® (IgCC), Core UFC, other UFC as applicable to the building, facility, structure, or system, and Facility Criteria (FC) as they pertain to the applicable DoD Component.

**1-3.5.1      UFC 3- Series.**

The UFC 3- Series and FC 3- Series (simply referred to as UFC 3- Series) provide discipline specific criteria requirements for the various engineering disciplines.

- If conflict occurs between two UFC within the UFC 3- Series, the requirements of the UFC that is more detailed pertaining to that specific building, facility, structure, or system take precedence.

**1-3.5.2      UFC 4- Series.**

The UFC 4- Series and FC 4- Series (simply referred to as UFC 4- Series) provide requirements for multi-disciplinary and facility-specific design.

- If conflict occurs between two UFC within the UFC 4- Series, the requirements of the UFC that is more detailed pertaining to that specific building, facility, structure, or system take precedence.
- If conflict occurs between a UFC 4- Series and a UFC 3- Series, the requirements of the UFC 4- Series take precedence.

## **1-4 OVERARCHING CRITERIA OR REGULATORY REQUIREMENTS.**

Design and Construction must comply with Public Laws (P.L.), Executive Orders (E.O.), Code of Federal Regulations (CFR), Department of Defense Instructions (DoDI), Department of Defense Manuals (DoDM), and Department of Defense Directives (DoDD) or other higher authority documents as applicable.

### **1-4.1 Vending Facilities for the Blind.**

Verify with the using activity the requirement to provide blind-operated vending facilities in compliance with the Randolph-Sheppard Act and DoDI 1125.03. This requirement generally applies in buildings that are over 15,000 square feet (1,400 square meters) that will contain over 100 employees, but may also apply in other situations at the discretion of the using activity.

### **1-4.2 Nursing and Lactation Rooms.**

Provide a private space for nursing mothers as required by the Office of the Undersecretary of Defense (OUSD) Memorandum, Department-Wide Policy for Nursing and Lactation Rooms at military installations and DoD facilities. Use the Office of Personnel Management (OPM) Guide for Establishing a Federal Nursing Mother's Program to implement best practices for creating a successful nursing mother's program, consistent with the demand of the workplace and the needs of the mission. This space must not be a bathroom, and must be shielded from view and free from intrusion of others. A nursing mother's space must be functional, with a private space with a place to sit and a flat surface, other than the floor, to place the breast pump and other supplies. Although there are no size or permanency requirements, this space must provide access to electricity for the use of a breast pump, as well as good lighting, a comfortable temperature, and proper ventilation; and be near a source of hot and cold running water. In addition, comply with any command-specific policy applicable to this requirement or applicable to the establishment of a working mothers program within the facility.

### **1-4.3 Investigation of Microgrid Feasibility.**

Planning and design for military construction projects inside the United States must include consideration of the feasibility and cost-effectiveness of installing an energy microgrid as part of the project, including intentional islanding capability of at least seven consecutive days. \2\

### **1-4.4 Government Fleet Electric Vehicle Charging Capability.**

Provide adequate electric charging capability, concurrently, for not less than 15 percent of Government motor vehicles planned to be parked at the facility. /2/ \3\

**1-4.5 Photovoltaic Roofs.**

Consider the Installation of Integrated Solar Roofing in planning, design, and construction of DoD projects. /3/

**1-5 UFC AUTHORITIES.**

**1-5.1 ESEP.**

The ESEP represents the senior technical facilities engineering leadership within each Military Department as identified in paragraph 1-2 and exercises exclusive authority to issue UFC and FC, and to approve waivers and exemptions thereof.

**1-5.2 Building Official / Authority Having Jurisdiction (BO/AHJ).**

The terms “Building Official” (BO), “Code Official” and “Authority Having Jurisdiction” (AHJ) used in the UFC or FC criteria, reference codes, and standards are synonymous. The BO/AHJ represents the DoD design and construction agent responsible for accomplishing the project, and exercises authority to interpret and apply criteria to work in progress, evaluate compliance with criteria, and accept finished work that is in compliance. Chapter 2, Section 104, Duties and Powers of the Building Official, defines the authorities of the BO/AHJ. This authority does not include approval of waivers or exemptions to criteria.

**1-5.3 Component Technical Representative (CTR).**

The CTR represents the project sponsor or customers and exercises authority to establish project requirements on behalf of the user or facility owner in the following cases:

- When the Building Official / Authority Having Jurisdiction (BO/AHJ) has identified more than one option satisfies criteria and allows user preference, such as for different system choices that offer varying levels of performance, durability, compatibility, compatibility with other systems, esthetics, or the like. This authority would not apply where in conflict with requirements for installation-wide networks, architectural standards, or similar standards established by the installation or Component with jurisdiction of the installation.
- When the BO/AHJ has identified an approved equivalent standard that satisfies the intent of criteria (see Chapter 2, paragraph 104.11), such as a material or component meeting a host-nation standard in a foreign location.
- When the BO/AHJ has identified a design option is not specifically addressed in criteria.

## **1-6 GENERAL BUILDING REQUIREMENTS.**

### **1-6.1 Building Codes.**

Use 2021 IBC and 2021 IEBC as follows:

- Use IBC, including all published errata, as the building code for DoD, except as modified by this UFC, other UFC, and FC. Where a paragraph in any chapter of IBC references a paragraph in a different chapter, modify the referenced chapter as described in CHAPTER 2.
- Use IEBC, including published errata, except as modified by this UFC, other UFC, and FC. Where a paragraph in any chapter of IEBC references a paragraph in a different chapter, modify the referenced chapter as described in CHAPTER 3.

### **1-6.2 Referenced Codes and Substitutions.**

Treat references in the DoD Building Code (see Paragraph 2-1.1) and the DoD Existing Building Code (see Paragraph 3-1.1) to other codes as follows:

- Dismiss references to the International Fuel Gas Code® (IFGC), as IFGC is not adopted. UFC 3-430-05 is used for gaseous fuel distribution, UFC 3-460-01 is used for liquid fuel storage and distribution and specific NFPA codes are directly referenced by appropriate application in UFCs.
- References to the International Mechanical Code® (IMC) are references to UFC 3-410-01, which cites IMC.
- References to the International Plumbing Code® (IPC) are references to UFC 3-420-01, which cites IPC.
- Dismiss references to the International Property Maintenance Code® (IPMC), as IPMC is not adopted.
- References to the International Fire Code® (IFC) are references to UFC 3-600-01, which cites NFPA 1.
- References to the International Energy Conservation Code® (IECC) are references to UFC 1-200-02, which cites IECC.
- References to the International Green Construction Code® (IgCC) are references to UFC 1-200-02, which cites IgCC.
- References to NFPA 70, National Electrical Code® (NEC) are references to UFC 3-501-01, which cites NFPA 70.
- References to the International Residential Code® (IRC) are references to the IRC. See also UFC 3-600-01. The DoD adopts the 2021 edition of the International Code Council (ICC) International Building Code® (IBC) and International Residential Code® (IRC) as the primary voluntary consensus standard for DoD Family Housing. Except as augmented or modified in

this UFC, design, construct new, and improve Family Housing in accordance with the following:

- Detached one- and two-family dwellings and multiple attached single-family dwellings (townhouses) not more than three stories above grade plane in height with a separate means of egress and their accessory structures must comply with all sections of the International Residential Code (IRC) and referenced codes and standards (IBC Article 101.2).
- Other housing types must comply with this UFC, which augments the International Building Code® (IBC). This includes primarily multifamily (i.e. apartment style) housing.

### **1-6.3 Other Criteria.**

In addition to IBC as modified in CHAPTER 2, and IEBC as modified in CHAPTER 3, comply with the following criteria.

#### **1-6.3.1 UFC.**

Comply with the UFC (latest version, refer to Paragraph 1-3.1) as noted herein.

##### **1-6.3.1.1 Core UFC.**

Core UFC are criteria that provide requirements for the majority of traditional building systems that are prevalent on DoD facility construction projects. Core UFC also identify additional criteria such as Antiterrorism, High Performance, and Sustainable Building requirements mandated by law and policy. Comply with the Core UFC listed here.

- 1-200-02, High Performance and Sustainable Building Requirements
- 3-101-01, Architecture
- 3-110-03, Roofing
- 3-120-10, Interior Design
- 3-190-06, Protective Coatings and Paint
- 3-201-01, Civil Engineering
- 3-201-02, Landscape Architecture
- 3-210-10, Low Impact Development
- 3-220-01, Geotechnical Engineering
- 3-230-01, Water Storage and Distribution
- 3-240-01, Wastewater Collection and Treatment
- 3-301-01, Structural Engineering
- 3-401-01, Mechanical Engineering

- 3-410-01, Heating, Ventilating and Air Conditioning
- 3-420-01, Plumbing Systems
- 3-490-06, Elevators
- 3-501-01, Electrical Engineering
- 3-520-01, Interior Electrical Systems
- 3-530-01, Interior and Exterior Lighting Systems and Controls
- 3-550-01, Exterior Electrical Power Distribution
- 3-560-01, Operation and Maintenance: Electrical Safety
- 3-580-01, Telecommunications Interior Infrastructure Planning and Design
- 3-600-01, Fire Protection Engineering for Facilities
- 4-010-01, DoD Minimum Antiterrorism Standards for Buildings
- 4-010-06, Cybersecurity of Facility-Related Control Systems
- 4-021-01, Design and O&M: Mass Notification Systems

#### **1-6.3.1.2 Other UFC.**

In addition to the “Core UFC”, comply with other UFC as applicable to the system, structure, or facility type defined in the scope of the construction project.

#### **1-6.3.2 FC.**

The designation "FC" is for criteria that are not applicable to all DoD Components.

For example: FC 4-721-10N "Navy and Marine Corps Unaccompanied Housing" has a final "N" designation because it is used by the Navy, including its Component, the U.S. Marine Corps. FC are applicable only to the DOD Component in the title and are intended for use with unified technical requirements published in UFC. Comply with the FC for the designated facility type and the DoD Component.

#### **1-6.3.3 Specification Requirements.**

Use Unified Facilities Guide Specifications (UFGS) for projects, including Design-Build submittals, and in accordance with UFC 1-300-02 no later than 35% design completion for Design-Bid-Build projects or draft Request for Proposals (RFP) completion for Design-Build projects. Download, use, and edit the most current UFGS database available from the Whole Building Design Guide website at <https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs>. Modify and edit the UFGS as necessary to suit the work required by the specific project, including editing for metric or inch-pound and to reflect the latest proven technology, materials, and methods for the project. Follow Order of Precedence requirements for each Government Design Agent on use of Regional, Agency, Unified, and Other guide specifications. Other guide specifications may be used as a basis for information when

not available in the UFGS. Provide these specifications in UFGS format and modified to meet the requirements of UFC 1-300-02.

#### **1-6.3.4 Other Military Criteria.**

Military criteria other than those listed in this UFC may be applicable to specific types of structures, building systems, or building occupancies. Such structures, systems, or buildings must meet the additional requirements of applicable military criteria.

##### **1-6.3.4.1 Explosive Safety.**

Facilities that involve DoD Ammunition and Explosives (AE) storage, handling, maintenance, manufacture or disposal, as well as facilities within the explosives safety quantity distance (ESQD) arcs of AE facilities, must comply with the requirements found in DoDM 6055.09, as well as implementing Service criteria found in DA PAM 385-64 (Army), NAVSEA OP 5 (Navy and Marine Corps), and DESR6055.09\_AFMAN91-201 (Air Force). DoD facilities exposed to potential explosion effects from AE belonging to other nations are also required to meet DoD and Service explosives safety criteria.

Closely coordinate the planning and design of new facilities, and occupation, repair, alteration, and restoration of existing AE-related facilities, or other facilities within ESQD arcs with knowledgeable explosives safety professionals in theater, or with the Services' Explosives Safety Centers. Coordinate as early as possible in the planning and design process to avoid issues or problems and to ensure compliance. Facility construction or use within ESQD arcs requires review for compliance with explosives safety criteria, and must have either an approved explosives safety site plan or an approved explosives safety deviation. Refer to the DoD Service documents mentioned above for further applicable guidance.

##### **1-6.3.4.2 Facility Systems Safety.**

Safety is an important component of maintaining and operating DoD facilities. Consider safety during design. Incorporate a hazards review into the regular design review process to ensure systems safety has been considered at the earliest phases of project development to reduce and mitigate unintentional maintenance and operational hazards. For Army projects, incorporate the safety engineering practices delineated under the Facilities Systems Safety (FASS) program as prescribed under DA PAM 385-16, to the extent practicable and feasible. For Air Force projects, incorporate the safety engineering practices delineated in DAFMAN 91-203, to the extent practicable and feasible. For Navy, the Designer of Record must follow the concepts from the most current ANSI/ASSP Z590.3. DoD facilities must comply with DoDI 6055.01 and applicable Occupational Safety and Health Administration (OSHA) safety and health standards.

##### **1-6.3.4.3 Antiterrorism.**

Antiterrorism is defined as defensive measures used to reduce the vulnerability of individuals and property to terrorist acts. UFC 4-010-01 sets the minimum requirements

for DoD buildings, and the Geographic Combatant Commander Antiterrorism Construction Standards address unique requirements specific to their area of responsibility. Refer to UFC 4-010-01 and the Geographic Combatant Commander Antiterrorism Construction Standards for the minimum antiterrorism requirements.

#### 1-6.3.4.4 Physical Security.

Physical security is defined as that part of security concerned with physical measures designed and placed to safeguard personnel; to prevent unauthorized access to installations, equipment, material and documents, and to safeguard them against espionage, sabotage, damage, and theft. Many buildings require some level of physical security. When required, integrate physical measures into the site, building, room, or area as applicable. DoD requirements for physical security related to specific assets are documented in DoD publications, directives, manuals, and instructions. The Services have related documents that implement the DoD policy for the Services. The main DoD documents that contain the physical security requirements for the protection of specific DoD assets are shown in Table 1-1. This does not include the policy documents associated with the protection of nuclear and chemical assets.

**Table 1-1 Policy Related to Physical Security**

Asset	Policy and Documents
Classified Information	DoDM 5200.01, Volume 3, <i>DoD Information Security Program: Protection of Classified Information</i> ; <a href="https://www.esd.whs.mil/DD/DoD-Issuances/">https://www.esd.whs.mil/DD/DoD-Issuances/</a>
Sensitive Compartmented Information (SCI)	DoDM 5105.21-Volume 1, <i>Sensitive Compartmented Information (SCI) Administrative Security Manual: Administration of Information and Information Systems Security</i> ; <a href="https://www.esd.whs.mil/DD/DoD-Issuances/">https://www.esd.whs.mil/DD/DoD-Issuances/</a>  DoDM 5105.21-Volume 2, <i>Sensitive Compartmented Information (SCI) Administrative Security Manual: Administration of Physical Security, Visitor Control, and Technical Security</i> ; <a href="https://www.esd.whs.mil/DD/DoD-Issuances/">https://www.esd.whs.mil/DD/DoD-Issuances/</a>  UFC 4-010-05, <i>SCIF/SAPF Planning, Design, and Construction</i> ; <a href="https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-4-010-05/">https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-4-010-05/</a>
Special Access Program (SAP) Information	DoDM 5205.07, Volume 3, <i>DoD Special Access Program (SAP) Security Manual: Physical Security</i> ; <a href="https://www.esd.whs.mil/DD/DoD-Issuances/">https://www.esd.whs.mil/DD/DoD-Issuances/</a>
Arms, Ammunition, and Explosives	DoDM 5100.76, <i>Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives (AA&amp;E)</i> ; <a href="https://www.esd.whs.mil/DD/DoD-Issuances/">https://www.esd.whs.mil/DD/DoD-Issuances/</a>



Asset	Policy and Documents
Weapons Systems and Platforms	DoD 5200.08-R, <i>Physical Security Program</i> ; <a href="https://www.esd.whs.mil/DD/DoD-Issuances/">https://www.esd.whs.mil/DD/DoD-Issuances/</a>
Bulk Petroleum Products	
Communications Systems	
Controlled Inventory Items	

**1-6.3.4.5 Corrosion Prevention and Control Requirements.**

Use the requirements in CHAPTER 4 in conjunction with other UFC requirements to design for durability and provide for a comprehensive corrosion prevention and control strategy.

**1-7 CYBERSECURITY.**

Plan, design, acquire, execute, and maintain control systems (including systems separate from a utility monitoring and control system) in accordance with UFC 4-010-06, and as required by individual Service Implementation Policy.

**1-8 NON-GOVERNMENT STANDARD MODIFICATIONS.**

CHAPTER 2 modifies IBC and is organized by the chapter of IBC that each section modifies. CHAPTER 3 modifies IEBC and is organized by the chapter of IEBC that each section modifies. The modifications are one of four actions, according to the following legend:

- [Addition] – Add new section, including new section number, not shown in IBC or IEBC.
- [Deletion] – Delete referenced IBC or IEBC section.
- [Replacement] – Delete referenced IBC or IEBC section or noted portion and replace it with the narrative shown.
- [Supplement] – Add narrative shown as a supplement to the narrative shown in the referenced section of IBC or IEBC.

The section modifiers are identified at the end of the paragraph title. Limited commentary has been added in the chapters. Section designations for such commentary are preceded by a “[C]”, and the commentary narrative is shaded.

**1-9 GLOSSARY.**

APPENDIX B contains a list of acronyms, abbreviations, and definitions.

**1-10 REFERENCES.**

APPENDIX C contains a list of references used in this document. The publication date of the code or standard is not included in this document. Unless otherwise specified, the most recent edition of the referenced publication applies.

## CHAPTER 2 MODIFICATIONS TO IBC

### **2-1            CHAPTER 1 – SCOPE AND ADMINISTRATION [SUPPLEMENT].**

Use IBC Chapter 1 except as modified below and by UFC 3-301-01.

#### **2-1.1           Section 101 – SCOPE AND GENERAL REQUIREMENTS.**

##### **101.1 Title [Replacement]**

These regulations are to be known as the DoD Building Code, hereinafter referred to as “this code”.

##### **101.4 Referenced codes [Supplement]**

Refer to Paragraph 1-6.2 for referenced codes.

##### **101.4.7 Existing buildings [Replacement]**

The provisions of the International Existing Building Code® (IEBC), including the amendments in Chapter 3 of this UFC, apply to the repair, alteration, change of occupancy, addition to and relocation of existing buildings.

#### **2-1.2           Section 102 – APPLICABILITY.**

##### **102.1 General [Replacement]**

Where there is a conflict between a general requirement and a specific requirement, the specific requirement is applicable. Where, in a specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive govern. Refer to Paragraph 1-3.5 for hierarchy of UFC.

##### **102.2 Other Laws [Replacement]**

The provisions of this code does not intend to nullify applicable provisions of local, state, or federal law. In overseas locations the SOFA, HNFA, and in some instances, BIA may govern requirements.

##### **102.4 Referenced codes and standards [Supplement]**

Refer to Paragraph 1-6.2 and Paragraph 1-6.3 for referenced codes and criteria.

#### **2-1.3           Section 103 – CODE COMPLIANCE AGENCY [Deletion].**

## **2-1.4 Section 104 – DUTIES AND POWERS OF BUILDING OFFICIAL.**

### **104.1 General [Replacement]**

The Building Official/AHJ is a person authorized and directed to enforce the provisions of this code, UFC, or FC. They have the authority to render interpretations of this code, UFC, or FC and to clarify the application of the provisions. Such interpretations will be in compliance with the intent and purpose of this code, UFC, or FC and will not have the effect of waiving or exempting requirements specifically provided for in this code, UFC, or FC. For waiver and exemption process and authority refer to Section 104.10 Waivers and exemptions.

### **104.10 Waivers and exemptions [Replacement]**

Where there are practical difficulties involved in carrying out the provisions of this code, UFC, or FC; the Building Official/AHJ must first find that special individual case or reason that makes the strict letter of this code, UFC, or FC impractical resulting in noncompliance with requirements or an increased risk to: health, accessibility, life and fire safety, structural requirements, or operational requirements. Such cases will be treated as a waiver or exemption. Waivers and exemptions to specific UFC or FC requirements are approved by the Service's Chief Engineer, Engineering Senior Executive Panel signature authority for the Service. Refer to MIL-STD 3007 for waivers and exemption definitions and for specific requirements for approval.

#### **[C] 104.10 Waivers and exemptions [Supplement]**

Avoid requests for waivers and exemptions if possible. The objective is a criteria- or code-compliant engineering solution for the facility versus a waiver or exemption request. UFC and FC requirements are intended to address code-compliant facility requirements; life, health and safety requirements; property loss prevention; lowest lifecycle cost; and facility operational requirements. For issues dealing with life, health, and safety, cost is not a valid reason to grant a waiver or exemption. Waiving or exempting requirements typically results in increased risk to safety or property loss, increased operational risk, or poor return on investment.

### **104.11 Alternative materials, design and methods of construction and equipment [Replacement]**

The provisions of this code, UFC, or FC are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design, or method of construction may be approved where the Building Official/AHJ finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, UFC, or FC, and that the material, method, or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code, UFC, or FC in quality, strength, effectiveness, fire resistance, durability, and safety. When the alternative material, design, or method of construction is not

approved, the Building Official/AHJ will respond in writing, stating the reasons why the alternative was not approved.

#### **104.11.1 Research reports [Replacement]**

Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, UFC, or FC, must consist of valid research reports from approved sources.

#### **104.11.2 Tests [Replacement]**

Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the Building Official/AHJ has the authority to require tests as evidence of compliance to be made without expense to the government. Test methods are as specified in this code, UFC, or FC or by other recognized test standards. In the absence of recognized and accepted test methods, the Building Official/AHJ must approve the testing procedures. Perform tests by an approved agency. Building Official/AHJ retains reports of such tests.

#### **104.11.3 Overseas locations [Addition]**

In overseas locations where the SOFA, HNFA, OEBGD, or BIA may govern requirements, the Building Official/AHJ will review the situation and determine what, if any, measures are appropriate to take to compensate for measures not allowed by the host nation or that present practical difficulties involved in carrying out the provisions. Measures taken must not lessen quality, strength, effectiveness, fire resistance, durability, and safety. In these instances, formal exemptions are not required. The details of action granting alternative materials, design and methods of construction and equipment will be recorded and entered in the project document files by the Building Official/AHJ. Note that alternative materials, design and methods of construction and equipment must not be misconstrued as a waiver or exemption. Waivers and exemptions are addressed in 104.10.

- 2-1.5           Section 105 – PERMITS [Deletion].**
- 2-1.6           Section 106 – FLOOR AND ROOF DESIGN LOADS [Deletion].**
- 2-1.7           Section 107 – CONSTRUCTION DOCUMENTS [Deletion].**
- 2-1.8           Section 108 – TEMPORARY STRUCTURES AND USES [Deletion].**
- 2-1.9           Section 109 – FEES [Deletion].**
- 2-1.10          Section 111 – CERTIFICATE OF OCCUPANCY [Deletion].**
- 2-1.11          Section 113 – MEANS OF APPEALS [Deletion].**

**2-1.12 Section 114 – VIOLATIONS [Deletion].**

**2-1.13 Section 115 – STOP WORK ORDER [Deletion].**

**2-1.14 Section 116 – UNSAFE STRUCTURES AND EQUIPMENT [Deletion].**

**2-2 CHAPTER 2 – DEFINITIONS [SUPPLEMENT].**

Use IBC Chapter 2 except as modified by APPENDIX B and by UFC 3-301-01.

**[C] CHAPTER 2 – DEFINITIONS [SUPPLEMENT]**

Definitions in IBC Chapter 2 apply to terms used in the model code and are not intended to replace definitions and terms in military and other referenced documents. It is essential that the code defined meaning be known to understand the intent and correctly interpret the code.

**2-3 CHAPTER 3 – OCCUPANCY CLASSIFICATION AND USE [SUPPLEMENT].**

Use IBC Chapter 3.

**[C] CHAPTER 3 – OCCUPANCY CLASSIFICATION AND USE [SUPPLEMENT]**

IBC occupancy classifications are used as they relate to allowable construction type, building height, building area, building separation distance, occupancy separation and associated requirements. NFPA 101 occupancy classifications are used as they relate to fire/smoke resistance rating of interior non-load bearing partitions (other than occupancy separation), means of egress, interior finish, features of fire protection (including vertical openings) and associated requirements.

**2-4 CHAPTER 4 – SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE [SUPPLEMENT].**

Use IBC Chapter 4 only as specifically referenced by UFC 3-600-01 and UFC 3-301-01.

**2-5 CHAPTER 5 – GENERAL BUILDING HEIGHTS AND AREAS [SUPPLEMENT].**

Use IBC Chapter 5 except as modified below and by UFC 3-600-01.

**[C] CHAPTER 5 – GENERAL BUILDING HEIGHTS AND AREAS [SUPPLEMENT]**

UFC 3-600-01 gives direction concerning the requirements for fire-rated partitions. Note that the building area for funding and planning purposes is calculated differently than the method defined in IBC Chapter 5 for code compliance calculation.

**2-5.1 Section 506 – BUILDING AREA.**

**2-5.1.1 Table 506.2 – Allowable Area Factor in Square Feet.**

**Table 506.2: Cell at I-4, S1, Type IA [Replacement]**

242,000.

**2-6 CHAPTER 6 – TYPES OF CONSTRUCTION [SUPPLEMENT].**

Use IBC Chapter 6 except as modified by UFC 3-600-01.

**2-7 CHAPTER 7 – FIRE AND SMOKE PROTECTION FEATURES [SUPPLEMENT].**

Use IBC Chapter 7 only where specifically referenced by IBC Chapter 5 or 6, otherwise use UFC 3-600-01 and modifications in UFC 3-101-01.

[C] CHAPTER 7 – FIRE AND SMOKE PROTECTION FEATURES [SUPPLEMENT]  
UFC 3-600-01 gives direction concerning the requirements for fire-rated partitions.

**2-8 CHAPTER 8 – INTERIOR FINISHES [REPLACEMENT].**

Use UFC 3-600-01, UFC 3-120-10 and UFC 3-101-01.

**2-9 CHAPTER 9 – FIRE PROTECTION AND LIFE SAFETY SYSTEMS [REPLACEMENT].**

Use UFC 3-600-01.

**2-10 CHAPTER 10 – MEANS OF EGRESS [REPLACEMENT].**

Use UFC 3-600-01. Use IBC Chapter 10 when specifically referenced by US Access Board, Architectural Barriers Act (ABA) Standards and as referenced by UFC 3-600-01.

[C] CHAPTER 10 – MEANS OF EGRESS [REPLACEMENT]  
UFC 3-600-01 references IBC Chapter 10 for requirements for stair to roof access. Where the ABA Standards reference the previous versions of IBC, the applicable requirements of the 2021 IBC are acceptable.

**2-11 CHAPTER 11 – ACCESSIBILITY [REPLACEMENT].**

Use the ABA Standards and the special provisions of the DoD Deputy Secretary of Defense Memorandum, Subject: Access for People with Disabilities, October 31, 2008. Use the additional requirements listed in the subparagraphs below, in addition to the ABA Standards and Defense Memorandum.

[C] CHAPTER 11 – ACCESSIBILITY [REPLACEMENT]

Refer to APPENDIX C for a link to the ABA Standards and the DoD policy memorandum.

**2-11.1 Electrical vehicle charging stations.**

Electrical vehicle charging stations provided to serve Group R-2, R-3 and R-4 occupancies are not required to comply with the following sub-sections.

**2-11.1.1 Number of accessible vehicle spaces.**

Not less than 5 percent of vehicle spaces on the site served by electrical vehicle charging systems, but not fewer than one for each type of electric vehicle charging system, must be accessible.

**2-11.1.2 Accessible electric vehicle space size.**

Accessible vehicle spaces at electrical vehicle charging stations must include an accessible parking space that is 132 inches (3350 mm) minimum in width with an access aisle on each side of the space that is 60 inches (1525 mm) minimum in width to allow for a pathway around the vehicle to variable locations of charging ports. Two parking spaces are permitted to share a common access aisle.

**2-11.2 Water bottle-filling stations.**

Where bottle-filling stations are provided, they must be accessible.

Exception: Bottle-filling stations over drinking fountains for standing persons are not required to be accessible, provided that bottle-filling stations are also located over the drinking fountains for persons using wheelchairs.

**2-12 CHAPTER 12 – INTERIOR ENVIRONMENT [SUPPLEMENT].**

Use IBC Chapter 12 except as modified below and by UFC 3-101-01.

[C] CHAPTER 12 – INTERIOR ENVIRONMENT [SUPPLEMENT]

Refer to other Federal guidance and UFC for additional interior space requirements for ventilation, lighting, acoustics, and other environmental characteristics.

**2-12.1 Section 1203 – TEMPERATURE CONTROL.**

**1203.1 Equipment and systems [Replacement]**

Use UFC 3-410-01.

**1203.1 Equipment and systems, Exceptions [Deletion]**



**2-12.2 Section 1206 – SOUND TRANSMISSION.**

**1206.2 Airborne sound [Replacement]**

Use UFC 3-101-01 and UFC 3-120-10. For Navy and Marine Corps Unaccompanied Housing facilities, only use FC 4-721-10N.

**1206.3 Structure-borne sound [Replacement]**

Use UFC 3-101-01 and UFC 3-120-10. For Navy and Marine Corps Unaccompanied Housing facilities, only use FC 4-721-10N.

**2-12.3 Section 1207 – ENHANCED CLASSROOM ACOUSTICS [REPLACEMENT].**

Use UFC 3-101-01.

**2-12.4 Section 1208 – INTERIOR SPACE DIMENSIONS.**

**1208.3 Room area [Replacement]**

Use UFC 3-101-01 and UFC 3-120-10. For Navy and Marine Corps Unaccompanied Housing facilities, only use FC 4-721-10N.

**1208.4 Efficiency dwelling units [Replacement]**

Use UFC 3-101-01 and UFC 3-120-10. For Navy and Marine Corps Unaccompanied Housing facilities, only use FC 4-721-10N.

**2-13 CHAPTER 13 – ENERGY EFFICIENCY [REPLACEMENT].**

Use UFC 1-200-02.

*13/* As per Public Law 117-263 Sec. 2810, consider the installation of integrated solar roofing to improve energy resiliency of military installation inside of the United States. Consideration includes feasibility and cost-effectiveness of installing the system. *13/*

**2-14 CHAPTER 14 – EXTERIOR WALLS [SUPPLEMENT].**

Use IBC Chapter 14 except as modified by UFC 3-101-01.

**2-15 CHAPTER 15 – ROOF ASSEMBLIES AND ROOFTOP STRUCTURES [SUPPLEMENT].**

Use IBC Chapter 15 except as modified by UFC 3-110-03 and UFC 3-600-01.

**2-16 CHAPTER 16 – STRUCTURAL DESIGN [SUPPLEMENT].**

Use IBC Chapter 16 except as modified below and by UFC 3-301-01 and 3-301-02.

**2-16.1 Section 1604 – GENERAL DESIGN REQUIREMENTS.**

**1604.11 Fall prevention and protection [Addition]**

Provide fall protection features such as fixed ladders, roof hatches, handrails, guardrails and other building fall arrest systems in compliance with section titled “Hazard Prevention” in UFC 3-101-01. For fall protection features specific to roofing systems, provide in compliance with UFC 3-110-03. The anchorages and the structural elements that support these anchorages must meet the requirements of Section 1607.10.4, as modified by UFC 3-301-01. Where fall protection is required in the vicinity of weight-handling equipment, prevent conflicts between the weight-handling equipment and the fall protection measure.

**2-16.2 Section 1612 – FLOOD LOADS [Supplement].**

Use Section 1612 except as modified by UFC 3-201-01.

**1612.3 Establishment of flood hazard areas [Supplement]**

Comply with UFC 3-201-01.

**2-17 CHAPTER 17 – SPECIAL INSPECTIONS AND TESTS [SUPPLEMENT].**

Use IBC Chapter 17 except as modified below and by UFC 3-220-01, UFC 3-301-01, and UFC 3-600-01.

**2-17.1 Section 1701 – GENERAL.**

**1701.1 - Scope [Supplement]**

Contractual relationships and the composition of the architect / engineer / construction (AEC) team differ from that contemplated by the language of 2021 IBC, when doing DoD construction. When performing design or construction using typical methods for in-house design, architect-engineer design, and contracting for construction, 2021 IBC/ASCE 7-16 terms of Authority Having Jurisdiction and Building Official are to be as defined in UFC 1-200-01.

**[C] 1701.1 - Scope [Supplement]**

The context of the IBC terms “permit”, “permit application”, “permit applicant”, and “owner” must be modified for DoD projects. Refer to Paragraph 1-5. DoD functions as the building department/jurisdiction and the AHJ functions as the building official. When DoD advertises a project, the building permit is effectively implied/granted. However, the overall project may still require other permits related to site storm water, air quality, demolition disposal, etc.

**2-17.2 Section 1704 – SPECIAL INSPECTIONS AND TESTS, CONTRACTOR RESPONSIBILITY AND STRUCTURAL OBSERVATION.**

**1704.2 Special inspections and tests [Replacement]**

The contractor must employ one or more approved agencies to perform inspections during construction on the types of work listed under Section 1705. These inspections are in addition to the inspections defined in Section 110. The inspecting agency must provide reports of the special inspections directly to the government.

**2-18 CHAPTER 18 – SOILS AND FOUNDATIONS [SUPPLEMENT].**

Use IBC Chapter 18 except as modified below and by UFC 3-101-01, UFC 3-201-01, UFC 3-220-01, and UFC 3-301-01.

**2-18.1 Section 1804 – EXCAVATION, GRADING, AND FILL.**

**1804.4 Site grading [Supplement]**

Ensure that the grading and associated storm water runoff do not adversely affect surrounding sites. Establish finished floor elevations a minimum of 6 inches (150 mm) above finished grade at the perimeter of the building and provide site grading in accordance with UFC 3-201-01. Comply with UFC 3-600-01 for design of entrances and exits from buildings.

**1804.4 Site grading, Exception 1 [Deletion]**

**1804.4 Site grading, Exception 2 [Replacement]**

Impervious surfaces are permitted to be sloped less than 2 percent where the surface is a door landing or ramp that is required to comply with UFC 3-600-01.

**2-19 CHAPTER 19 – CONCRETE [SUPPLEMENT].**

Use IBC Chapter 19 except as modified by UFC 1-200-02 and UFC 3-301-01.

**2-20 CHAPTER 20 – ALUMINUM [SUPPLEMENT].**

Use IBC Chapter 20 except as modified by UFC 3-101-01 and except for aluminum use in Heating, Ventilation, and Air Conditioning (HVAC) systems. For aluminum use in HVAC systems, use UFC 3-410-01.

**2-21 CHAPTER 21 – MASONRY [SUPPLEMENT].**

Use IBC Chapter 21 except as modified by UFC 3-101-01 and UFC 3-301-01.

**2-22 CHAPTER 22 – STEEL [SUPPLEMENT].**

Use IBC Chapter 22 except as modified by UFC 3-101-01 and UFC 3-301-01.

**2-23            CHAPTER 23 – WOOD [SUPPLEMENT].**

Use IBC Chapter 23 except as modified below and UFC 3-101-01 and UFC 3-301-01.

**2-23.1           Section 2301 – GENERAL.**

**2301.3 Composite Wood [Addition]**

Composite wood containing materials (e.g. Plywood, Particle Board, MDF) must be specified to be moisture resistant or exterior glue grade.

**2-23.2           Section 2303 – MINIMUM STANDARDS AND QUALITY.**

**2-23.2.1        2303.2 Fire-retardant-treated wood.**

**2303.2.10 Roof construction [Addition]**

Do not use fire-retardant-treated plywood in any part of the roof or roofing system.

**2-24            CHAPTER 24 – GLASS AND GLAZING [SUPPLEMENT].**

Use IBC Chapter 24 except as modified by UFC 4-010-01.

**2-25            CHAPTER 25 – GYPSUM BOARD, GYPSUM PANEL PRODUCTS AND PLASTER.**

Use IBC Chapter 25 except as modified by UFC 3-101-01.

**2-26            CHAPTER 26 – PLASTIC [SUPPLEMENT].**

Use IBC Chapter 26 except as modified by UFC 3-600-01.

**2-27            CHAPTER 27 – ELECTRICAL [SUPPLEMENT].**

Use IBC Chapter 27 except as modified below and by UFC 3-501-01.

- Use UFC 3-520-01 for interior electrical systems criteria.
- Use UFC 3-530-01 for interior and exterior lighting and controls criteria.
- Use UFC 3-540-01 for engine-driven generator criteria.
- Use UFC 3-550-01 for exterior power distribution systems criteria.
- Use UFC 3-560-01 for electrical safety and electrical Operations and Maintenance (O&M) criteria.
- Use UFC 3-580-01 for building telecommunications criteria.
- Use UFC 3-600-01 for fire protection criteria.
- Use UFC 4-021-01 for mass notification systems criteria.

**[C] CHAPTER 27 – ELECTRICAL [SUPPLEMENT].**

IBC references NFPA 70, NEC. In addition, IBC Chapter 27, Section 2702 EMERGENCY AND STANDBY POWER SYSTEMS, which addresses emergency and standby power requirements, references IFC. Per Paragraph 1-6.2, this must be considered a reference to UFC 3-600-01, which cites NFPA 1.

**2-28 CHAPTER 28 – MECHANICAL SYSTEMS [SUPPLEMENT].**

Use IBC Chapter 28 except as modified by UFC 3-401-01. Use UFC 3-600-01 for fire protection features for mechanical systems.

**[C] CHAPTER 28 – MECHANICAL SYSTEMS [SUPPLEMENT].**

IBC Chapter 28 provides references to IMC which has been modified by UFC 3-410-01. However, IFGC has not been adopted. The DoD uses NFPA 54 (ANSI Z223.1), National Fuel Gas Code, for the design and installation of fuel gas piping systems.

**2-29 CHAPTER 29 – PLUMBING SYSTEMS [SUPPLEMENT].**

Use IBC Chapter 29 except as modified by UFC 3-420-01.

**2-30 CHAPTER 30 – ELEVATORS AND CONVEYING SYSTEMS [REPLACEMENT].**

Use UFC 3-490-06.

**2-31 CHAPTER 31 – SPECIAL CONSTRUCTION.**

Use IBC Chapter 31.

**2-32 CHAPTER 32 – ENCROACHMENTS INTO THE PUBLIC RIGHT-OF-WAY.**

Use IBC Chapter 32.

**2-33 CHAPTER 33 – SAFEGUARDS DURING CONSTRUCTION [SUPPLEMENT].**

Use IBC Chapter 33.

**2-34 CHAPTER 34 – RESERVED [DELETION].**

**2-35 CHAPTER 35 – REFERENCED STANDARDS [SUPPLEMENT].**

Use IBC Chapter 35 except as modified by Paragraph 1-6.2.

**2-36 APPENDICES [DELETION]**

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## CHAPTER 3 MODIFICATIONS TO IEBC

This Chapter covers project requirements for existing facilities. In many cases, there are project parameters that trigger discipline-specific or facility-type requirements for renovation projects.

### **3-1 CHAPTER 1 – SCOPE AND ADMINISTRATION.**

Use IEBC Chapter 1 except as modified below. The terms “Code Official”, “Building Official” (BO), and “Authority Having Jurisdiction” (AHJ) used in the UFC or FC criteria, reference codes, and standards are synonymous. The terms “Owner” and “Owner’s Authorized Agent” are synonymous with “Component Technical Representative” for the DoD. See Section 1-5 of this UFC for additional information on these terms.

#### **3-1.1 Section 101 – SCOPE AND GENERAL REQUIREMENTS.**

##### **101.1 Title [Replacement]**

These regulations are to be known as the DoD Existing Building Code, hereinafter referred to as “this code.”

#### **3-1.2 Section 102 – APPLICABILITY.**

##### **102.1 General [Replacement]**

Where there is a conflict between a general requirement and a specific requirement, the specific requirement is applicable. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive govern. Refer to Paragraph 1-3.5 for hierarchy of UFC.

##### **102.4 Referenced codes and standards [Supplement]**

Refer to Paragraph 1-6.2 and Paragraph 1-6.3 for referenced codes and criteria.

#### **3-1.3 Section 103 – CODE COMPLIANCE AGENCY [Deletion].**

#### **3-1.4 Section 104 – DUTIES AND POWERS OF CODE OFFICIAL [Deletion].**

#### **3-1.5 Section 105 – PERMITS [Deletion].**

#### **3-1.6 Section 106 – CONSTRUCTION DOCUMENTS [Deletion].**

#### **3-1.7 Section 108 – FEES [Deletion].**

#### **3-1.8 Section 110 – CERTIFICATE OF OCCUPANCY [Deletion].**

#### **3-1.9 Section 112 – MEANS OF APPEALS [Deletion].**

#### **3-1.10 Section 113 – VIOLATIONS [Deletion].**

**3-1.11 Section 114 – STOP WORK ORDER [Deletion].**

**3-1.12 Section 115 – UNSAFE STRUCTURES AND EQUIPMENT [Supplement].**

Use Section 115 except as modified below.

**115.4 Method of service [Deletion]**

**3-1.13 Section 116 – EMERGENCY MEASURES [Deletion].**

Use Section 115 except as modified below.

**116.2 Temporary Safeguards [Replacement]**

Notwithstanding other provisions of this code, whenever, in the opinion of the BO/AHJ, there is imminent danger due to an unsafe condition, the BO/AHJ must order the necessary work to be done, including the boarding up of openings, to render such structure temporarily safe; and as the code official requires other actions as deemed necessary to meet such emergency.

**116.4 Emergency repairs [Deletion]**

**116.5 Costs of emergency repairs [Deletion]**

**116.6 Hearing [Deletion]**

**3-1.14 Section 117 – DEMOLITION [Deletion].**

**3-2 CHAPTER 2 – DEFINITIONS [SUPPLEMENT].**

Use IEBC Chapter 2 except as modified by APPENDIX B.

**[C] CHAPTER 2 – DEFINITIONS [SUPPLEMENT]**

Definitions in IEBC Chapter 2 apply to terms used in the model code and are not intended to replace definitions and terms in military documents. It is essential that the code defined meaning be known to understand the intent and correctly interpret the code.

**3-3 CHAPTER 3 – PROVISIONS FOR ALL COMPLIANCE METHODS [SUPPLEMENT].**

Use IEBC Chapter 3 except as modified below.



### **3-3.1 Section 302 – GENERAL PROVISIONS.**

#### **302.1.1 Existing Building Minimum Requirements [Addition]**

Facilities, as they exist, must meet the requirements within the applicable occupancy chapter of NFPA 101. Facilities that do not meet the requirements of NFPA 101 for existing occupancies must conform to one of the following:

- a. Upgrade the deficiency to meet the existing occupancy requirements, or
- b. Establish management protocols to provide a level of life safety equivalent to that required by NFPA 101 for existing occupancies, until an upgrade project can be completed. Management protocols must be in writing and approved by the BO/AHJ.

#### **[C] 302.1.1 Existing Building Minimum Requirements [Addition]**

The areas of the facility where no work is being performed must meet the applicable existing occupancy chapter of NFPA 101. Thus, if the work involves 5,000 ft<sup>2</sup> of an existing 15,000 ft<sup>2</sup> office building, then the remaining 10,000 ft<sup>2</sup> not involved in the project must be brought up to meet the applicable existing occupancy chapter of NFPA 101 before beginning the project or be included as part of the project.

#### **302.2.2 Requirements for High Performance and Sustainable Building Features and Systems [Addition]**

For existing buildings undergoing renovations, the systems and components included in the scope of the project must meet the requirements of UFC 1-200-02. Refer to UFC 1-200-02 Table 1-1 and Chapter 2 paragraph titled “Work in Existing Buildings” for project requirements.

#### **302.2.3 Antiterrorism Upgrades for Inhabited Buildings [Addition]**

Incorporate antiterrorism upgrades as required to bring entire existing inhabited buildings into compliance with UFC 4-010-01 for all building renovations, modifications, repairs, revitalizations, and restorations where project costs exceed 50% of the replacement cost of the existing building in accordance with UFC 3-701-01 except as stated otherwise in UFC 4-010-01. The project costs used to compare against the 50% threshold are exclusive of the additional costs identified to meet these antiterrorism standards. Where project costs do not exceed the 50% threshold, compliance with the antiterrorism standards is recommended, but not required.

Incorporate antiterrorism upgrades as required in UFC 4-010-01 whenever any building, or portion of a building, is converted from low occupancy to inhabited occupancy.

#### **302.2.4 Requirements for New Fire Protection and Life Safety Systems [Addition]**

Where the Building Rehabilitation chapter of NFPA 101 requires newly constructed elements, components, and systems to comply with new construction requirements in NFPA 101, then it must also comply with new construction requirements in UFC 3-600-01.

#### **302.2.5 Fire Protection and Life Safety Upgrades [Addition]**

Where project costs exceed 50 percent of the replacement cost of the existing building in accordance with UFC 3-701-01, then the entire building must be brought up to the fire protection and life safety system requirements for new construction in UFC 3-600-01. Project costs to bring the building more into compliance with NFPA 101 do not count towards the 50 percent threshold.

#### **[C] 302.2.5 Fire Protection and Life Safety Upgrades [Addition]**

The intent of meeting requirements for new construction in this UFC is that this also applies to any requirements in applicable UFC 4-series, unless the UFC 4-series states otherwise.

#### **302.2.6 Re-Use of Vacant Buildings [Addition]**

When a vacant building is considered for reuse, the building must be evaluated for the occupancy that is planned to be in the building and all deficiencies must be corrected prior to occupancy. This includes a building to be reused for the same occupancy; for example, the last use was a warehouse and the new use will be a warehouse.

The vacant building must be evaluated to the requirements for new construction.

#### **302.2.7 Phased Projects [Addition]**

Projects or programs involving floor plan reconfiguration that will encompass more than 50 percent of the area of a floor, or project or program costs exceeding 50 percent of the replacement cost of the existing building in accordance with UFC 3-701-01, that are planned in a phased approach or have separate projects to improve various parts of the facility must conform to the requirements for new construction.

These requirements are not applicable if the time from the start of design of the first phase to the start of design of the phase involving floor plan reconfiguration that exceeds 50 percent of the area, or project cost exceeds 50 percent of the replacement cost of the existing building in accordance with UFC 3-701-01, is greater than five years.

#### **302.2.8 Low Impact Development Requirements [Addition]**

For projects in the United States, United States Territories and Possessions of the United States involving the expansion of one or more buildings as part of its primary scope (i.e., primary facilities vice supporting facilities) with a “footprint” greater than

5,000 gross square feet (464.5 square meters), incorporate the low impact development (LID) requirements in UFC 3-210-10. "Footprint" does not include existing building area to be renovated or existing impervious surfaces.

For Navy only: Use UFC 1-300-09N for renovation projects exceeding \$5 million with a stormwater component.

**3-3.2 Section 304 – STRUCTURAL DESIGN LOADS AND EVALUATION AND DESIGN PROCEDURES.**

**304.3 Seismic evaluation and design procedures [Replacement]**

Use UFC 3-301-01 Chapter titled "Seismic Evaluation and Retrofit of Existing Buildings" for seismic retrofit scope requirements.

**3-3.3 Section 306 – ACCESSIBILITY FOR EXISTING BUILDINGS [Replacement].**

Use the ABA Standards and the special provisions of the DoD Deputy Secretary of Defense Memorandum, Subject: Access for People with Disabilities, October 31, 2008.

[C] SECTION 306 – ACCESSIBILITY FOR EXISTING BUILDINGS  
[REPLACEMENT]

Refer to APPENDIX C for a link to the ABA Standards and the DoD policy memorandum.

**3-3.4 Section 307 – SMOKE ALARMS [Replacement].**

Use UFC 3-600-01.

**3-3.5 Section 308 – CARBON MONOXIDE DETECTION [Replacement].**

Use UFC 3-600-01.

**3-4 CHAPTER 4 – REPAIRS [SUPPLEMENT].**

Use IEBC Chapter 4 except as modified below.

**3-4.1 Section 401 – GENERAL.**

**401.3 Flood hazard areas [Supplement]**

Use IEBC except as modified in UFC 3-201-01. /2/

**3-4.2 Section 403 – FIRE PROTECTION [Replacement].**

Use UFC 3-600-01.

**3-4.3 Section 404 – MEANS OF EGRESS [Replacement].**

Use UFC 3-600-01.

**3-5 CHAPTER 5 – PRESCRIPTIVE COMPLIANCE METHOD [SUPPLEMENT].**

Use IEBC Chapter 5 except as modified below and by UFC 3-301-01 and UFC 3-600-01.

**3-5.1 Section 501 – GENERAL.**

**503.12 Roof Diaphragms Resisting Wind Loads in High-wind Regions [Replacement]**

Use UFC 3-301-01.

**3-5.2 Section 502 – ADDITIONS.**

**502.3 Flood hazard areas [Supplement]**

Use IEBC except as modified in UFC 3-201-01. /2/

**502.6 Enhanced Classroom Acoustics [Replacement]**

Use UFC 3-101-01.

**3-5.3 Section 503 – ALTERATIONS.**

**503.2 Flood hazard areas [Supplement]**

Use IEBC except as modified in UFC 3-201-01. /2/

**3-5.4 Section 506 – CHANGE OF OCCUPANCY.**

**506.6 Enhanced Classroom Acoustics [Replacement]**

Use UFC 3-101-01.

**3-5.5 Section 507 – HISTORIC BUILDINGS.**

**507.3 Flood hazard areas [Supplement]**

Use IEBC except as modified in UFC 3-201-01. /2/

**3-6 CHAPTER 6 – CLASSIFICATION OF WORK.**

Use IEBC Chapter 6.

**3-7 CHAPTER 7 – ALTERATIONS – LEVEL 1 [SUPPLEMENT].**

Use IEBC Chapter 7 except as modified below.

**3-7.1 Section 701 – GENERAL.**

**701.3 Flood hazard areas [Supplement]**

Use IEBC except as modified in UFC 3-201-01. /2/

**3-7.2 Section 702 – BUILDING ELEMENTS AND MATERIALS [Supplement].**

Use IEBC Section 702 except as modified below and by UFC 3-600-01.

**702.4 Window Opening Control Devices on Replacement Windows [Supplement]**

For family housing facilities, operable windows must comply with UFC 4-711-01.

**702.8 Window, Skylight, Glazing and Door Replacements [Addition]**

Use products/materials meeting antiterrorism requirements when projects include replacement of windows, skylights, glazing or doors in existing inhabited buildings. This applies to installation of supplemental windows behind existing windows (inside face) and to installation of windows in new openings. Refer to UFC 4-010-01 for requirements.

**702.9 HVAC Systems and Associated Controls [Addition]**

Incorporate antiterrorism upgrades as required in UFC 4-010-01 whenever HVAC systems including outside air intakes are being replaced or modified. Modifications include, but are not limited to, modifications such as complete air handling unit replacement, outside air control damper replacement, major ductwork reconfiguration, control system replacement, and control system reprogramming.

**3-7.3 Section 703 – FIRE PROTECTION [Replacement].**

Use UFC 3-600-01.

**3-7.4 Section 704 – MEANS OF EGRESS [Replacement].**

Use UFC 3-600-01.

**3-7.5 Section 706 – STRUCTURAL.**

**706.3.2 Roof Diaphragms Resisting Wind Loads in High-wind Regions [Replacement]**

Use UFC 3-301-01.

### **3-8 CHAPTER 8 – ALTERATIONS – LEVEL 2 [SUPPLEMENT].**

Use IEBC Chapter 8 except as modified below.

#### **3-8.1 Section 802 – BUILDING ELEMENTS AND MATERIALS [Supplement].**

Use IEBC Section 802 except as modified by UFC 3-600-01.

#### **3-8.2 Section 803 – FIRE PROTECTION [Replacement].**

Use UFC 3-600-01.

##### **3-8.2.1 Upgrades Required When Reconfigurations Exceed 50 Percent of the Area of a Floor.**

Floor plan reconfigurations that exceed 50 percent of the area of a floor require that the entire floor be brought up to the requirements for new construction in UFC 3-600-01. The notification appliances for the fire alarm and mass notification system must be upgraded throughout the remainder of the building as required to provide a uniform notification strategy.

Floor plan reconfigurations that bring the building more into compliance with UFC 3-600-01 does not count towards the 50 percent floor area threshold.

##### **[C] 3-8.1.1 Upgrades Required When Reconfigurations Exceed 50 Percent of the Area of a Floor.**

The intent of upgrading fire alarm and mass notification devices throughout the remainder of the building is to provide a uniform notification strategy. For example, a facility has existing clear and amber strobes throughout with no textural signs. The new requirement may be only clear strobes with textural signs. The floor being brought up to UFC 3-600-01 new construction requirements, and means of egress serving this floor, will require clear strobes and textural signs installed per the new criteria. The remainder of the floors will be modified so there are only clear strobes and textural signs, and the work must not make these other floors less conforming to UFC 3-600-01 requirements.

#### **3-8.3 Section 804 – MEANS OF EGRESS [Replacement].**

Use UFC 3-600-01.

##### **3-8.3.1 Upgrades Required When Reconfigurations Exceed 50 Percent of the Area of a Floor.**

Floor plan reconfigurations that exceed 50 percent of the area of a floor require that the entire floor be brought up to the requirements for new construction in UFC 3-600-01. The means of egress serving this floor, including portions not located on this floor, must conform to the requirements for new construction in UFC 3-600-01.

Floor plan reconfigurations that bring the building more into compliance with NFPA 101 does not count towards the 50 percent floor area threshold.

**3-9 CHAPTER 9 – ALTERATIONS – LEVEL 3 [SUPPLEMENT].**

Use IEBC Chapter 9 except as modified below.

**3-9.1 Section 903 – BUILDING ELEMENTS AND MATERIALS.**

Use IEBC Section 903 except as modified below and by UFC 3-600-01.

**903.4 Enhanced Classroom Acoustics [Replacement]**

Use UFC 3-101-01.

**3-9.2 Section 904 – FIRE PROTECTION [Replacement].**

Use UFC 3-600-01.

**3-9.3 Section 905 – MEANS OF EGRESS [Replacement].**

Use UFC 3-600-01.

**3-10 CHAPTER 10 – CHANGE OF OCCUPANCY [SUPPLEMENT].**

Use IEBC Chapter 10 except as modified below. UFC 3-600-01 replaces all references to Chapter 9 of the IBC.

**3-10.1 Section 1001 – GENERAL.**

**1001.2.1 – Change of use [Supplement].**

When a change in use occurs for the building, correct any deficiencies prior to the new occupants occupying the space. When any building with an occupant load of less than 11, is changed to a building with an occupant load greater than 10, for one year or more, the building must meet the requirements for new construction in UFC 3-600-01.

**1001.2.2 – Change of Occupancy classification or group [Supplement].**

When a change in occupancy occurs for the building **to support a mission that will exist for one year or more**, the building and its means of egress, must comply with the requirements for new construction in UFC 3-600-01. When any building with an occupant load of less than 11, is changed to a building with an occupant load greater than 10, for one year or more, the building must meet the requirements for new construction in UFC 3-600-01.

**1001.2.2.1– Partial change of occupancy [Supplement].**

When a partial change in occupancy occurs **to support a mission that will exist for one year or more**, the area of the change, and its associated means of egress, must comply with the requirements for new construction in UFC 3-600-01.

**3-10.2 Section 1002 – SPECIAL USE AND OCCUPANCY [Replacement].**

When a change in occupancy occurs **to support a mission that will exist for one year or more**, the area of change and its means of egress, must comply with the requirements for new construction in UFC 3-600-01.

**3-10.3 Section 1007 – ELECTRICAL.**

**1007.1 Special Occupancies [Supplement]**

Follow UFC 4-510-01 for design of health care facilities.

**3-10.4 Section 1009 – PLUMBING.**

**1009.1 Increased Demand, Exception [Replacement]**

Follow UFC 3-420-01 for determination of plumbing fixture quantities.

**1009.5 Group I-2 [Replacement]**

If the occupancy group is changed to Group I-2, follow UFC 3-420-01 for design of the plumbing systems and UFC 4-510-01 for design of medical gas systems.

**3-10.5 Section 1011 – CHANGE OF OCCUPANCY CLASSIFICATION [Replacement].**

Use UFC 3-600-01 except as modified below.

**1011.4 Enhanced Classroom Acoustics [Replacement]**

Use UFC 3-101-01.

**3-11 CHAPTER 11 – ADDITIONS [SUPPLEMENT].**

Use IEBC Chapter 11 except as modified below.

**3-11.1 Section 1101 – GENERAL.**

**1101.4 Enhanced Classroom Acoustics [Replacement]**

Use UFC 3-101-01.



**3-11.2 Section 1102 – HEIGHTS AND AREAS.**

**1102.3 Fire Protection Systems [Replacement]**

Use UFC 3-600-01.

**3-12 CHAPTER 12 – HISTORIC BUILDINGS [SUPPLEMENT].**

Use IEBC Chapter 12 except as modified below.

**3-12.1 Section 1201 – GENERAL.**

**1201.4 Flood hazard areas [Supplement]**

Use IEBC except as modified in UFC 3-201-01. /2/

**3-12.2 Section 1203 – FIRE SAFETY [Replacement].**

Use UFC 3-600-01.

**3-12.3 Section 1204 – CHANGE OF OCCUPANCY [Supplement].**

Use IEBC Section 1204 except as modified by UFC 3-600-01.

**3-13 CHAPTER 13 – PERFORMANCE COMPLIANCE METHODS [SUPPLEMENT].**

Use IEBC Chapter 13 except as modified below and by UFC 3-600-01.

**3-13.1 Section 1301 – GENERAL.**

**1301.3 Acceptance.**

**1301.3.3 Compliance with flood hazard provisions [Supplement]**

Use IEBC except as modified in UFC 3-201-01. /2/

**3-14 CHAPTER 14 – RELOCATED OR MOVED BUILDINGS.**

Use IEBC Chapter 14.

**3-15 CHAPTER 15 – CONSTRUCTION SAFEGUARDS.**

Use IEBC Chapter 15.

**3-16 CHAPTER 16 – REFERENCED STANDARDS [SUPPLEMENT].**

Use IEBC Chapter 16 except as modified by Paragraph 1-6.2.

**3-17 APPENDICES [DELETION].**

**3-18 RESOURCES [DELETION].**

## CHAPTER 4 CORROSION PREVENTION AND CONTROL

### 4-1 GENERAL.

Provide design detailing, and use materials, systems, components, and coatings that are durable and minimize the need for preventative and corrective maintenance over the life-cycle of a facility. Refer to Paragraph 1-6.3.4.5.

Many UFGS specifications include materials, coatings, or protective measures that are more durable for use in corrosive environments. However, even in benign environments, where options are stated in UFC and UFGS, use the more corrosion-resistant option whenever possible. Considerations include life-cycle maintenance costs and potential for corrosive microenvironments (for example, deicing salt effect on steel doors). General guidance and training on corrosion prevention and control issues is available at the Corrosion Prevention & Control (CPC) Source webpage at <https://www.wbdg.org/ffc/dod/cpc-source>.

#### 4-1.1 Definition of Corrosion.

Corrosion is defined in 10 USC §2228(f) (1) as, “The deterioration of a material or its properties due to a reaction of that material with its chemical environment.” While traditionally thought of only as deterioration of metal (for example, rusting of steel), some nontraditional examples include rotting of wood, degradation of concrete (for example, carbonation and alkali-silica reaction phenomena), and degradation of composite materials due to reaction with the environment.

#### 4-1.2 Identification of Project Environmental Severity Classification.

Identify and use the Environmental Severity Classification (ESC) in APPENDIX A, Table A-1 ESC for United States, Its Territories and Possessions or Table A-2 ESC for Outside United States, Its Territories and Possessions, as the basis for project design requirements. The ESC for each military location is based on ISO 9223. Also, use the ESC factor and descriptions provided in ISO 9223 to classify and design for interior, environmentally severe conditions.

Categories C1 and C2 are mildly corrosive while categories C3, C4, and C5 require added corrosion protection. Note that a project site may have a different ESC than the installation (especially in locations near the coast). Any project site within 1 mile (1.61 km) of seawater is ESC C5. Any project site within 1 to 6 miles (1.61 to 9.66 km) of seawater is ESC C4, unless the installation ESC as stated in APPENDIX A is higher. If the calculated ESC of the project site is different from the ESC of the installation, use and design to the higher of the two ESC values. A resource to determine the ESC on a site-specific basis is the ISO Corrosivity Category Estimation Tool (ICCET); it can be found at the following location: <https://www.wbdg.org/additional-resources/tools/corrosion-toolbox>.

#### **4-1.3 Corrosion Prone Locations.**

Corrosion prone locations are locations with one or more of the following characteristics:

- Exterior exposed metallic elements at a location with an ESC of C3, C4, or C5. Includes areas open to the exterior (for example, mechanical rooms and hangars), and spaces that are not conditioned by design or may not be conditioned during prolonged periods due to deployment or occupancy.
- Exterior exposed nonmetallic elements at a location with an ESC of C4 or C5.
- Locations where micro-environmental factors (for example, prevailing winds, ventilation, waterfront environments, industrial emissions, deicing salt application, possible chemical splash/spillage, adverse weather events such as flooding or wind-driven rain, and penetrations of the building envelope) create a locally corrosive environment regardless of ESC.
- Humid locations identified in ANSI/ASHRAE/IES 90.1 as climate zones 0A, 1A, 2A, 3A, 3C, 4C, and 5C.
- High humidity interior areas (for example, bathrooms, locker rooms, laundry rooms, pools, natatoriums, and aquatic training facilities).

#### **4-1.4 Requirements for Corrosion Prone Locations.**

For corrosion prone locations defined in Paragraph 4-1.3, provide added corrosion protection to the design such as, but not limited to, the following:

- Where material options are provided in a UFGS, use the most durable options.
- Provide higher level of corrosion protection as defined in the appropriate corresponding UFGS.
- Do not use unprotected ferrous metal unless there are no alternatives.
- Coat galvanized steel with an industrial coating.
- Where stainless steels are used, select ones which will resist pitting and surface rusting in the intended application, and include the associated ASTM standard and stainless steel type in the contract documents. For process systems or specialized applications, refer to industry sources for recommended stainless steels to provide corrosion protection.
- Coat aluminum with an industrial protective coating or a heavy-duty anodized coating.
- Isolate dissimilar metals (for example, aluminum and steel, stainless steel and carbon steel, and zinc-coated steel and uncoated steel) by

appropriate means to avoid the creation of galvanic cells which occur when dissimilar metals come in contact.

#### **4-1.5 Design Geometries.**

Detail designs to prevent accelerated deterioration of facility components. Design geometries that prevent collection of debris, allow water to readily drain in all situations, incorporate sealed joints between components, are protected from mechanical coating damage, and avoid dissimilar materials in direct contact with each other. Follow best engineering and design practices to prevent galvanic corrosion. Slope surfaces such as windows and pavements to drain away from the structure.

Avoid designs that tend to direct corrosive elements to any specific area of a structure. Minimize the flow of water, airborne contaminants (for example, salts and pollutants), and humid air over susceptible materials when designing facility components, systems, and assemblies.

#### **4-1.6 Environmental Severity Factors.**

Design based on the Environmental Severity Factors present in the project location and application, including the following.

##### **4-1.6.1 Elevated Temperatures.**

Design projects to prevent corrosion in applications where elevated temperatures are present. Elevated temperatures have adverse effects on building materials such as paints, woods, and many asphalt-based products. High temperatures combined with high humidity cause severe deterioration.

##### **4-1.6.2 Ultraviolet Radiation.**

Use materials that are resistant to, or protected from, ultraviolet radiation. High ultraviolet exposure results in rapid deterioration of most nonmetallic roofing materials, paints, sealants, elastomeric coatings, and wood.

##### **4-1.6.3 Humidity Resistance.**

Use materials that withstand high humidity or incorporate efforts to eliminate humidity in humid locations.

Ensure vapor barrier locations prevent moisture buildup. Do not use building materials that exhibit hygroscopic properties and potentially lose their structural and functional properties when exposed to sustained humidity.

##### **4-1.6.4 Biological Corrosivity.**

When selecting materials (for example, wood), design for the presence of insects, fungi, and marine borers as applicable to the location.

#### **4-1.7 System, Component, and Material Design Requirements.**

##### **4-1.7.1 Piping and System Corrosion.**

Protect water and wastewater systems, fire water systems, and other piping from internal and external corrosion. Design factors include water quality and composition (for example, pH, alkalinity, and dissolved oxygen), ferric scale, flow conditions, biological activity, and the presence of disinfectants and corrosion inhibitors. Provide corrosion control treatment in accordance with UFC 3-230-01, UFC 3-230-03, and UFC 3-240-01.

##### **4-1.7.2 Structural Members.**

Use galvanized steel or stainless steel for structural members embedded in concrete, exterior railings, handrails, fences, guardrails, and anchor bolts.

Design systems that can be maintained over the life of the facility. Avoid concealed and inaccessible members.

##### **4-1.7.3 Hardware and Fasteners.**

Specify galvanized ferrous metals, stainless steel, brass, bronze, copper, aluminum, or other corrosion resistant metals for hardware and fasteners. Do not use ferrous metal as finishing strips or as components of other securement systems, even if a protective coating is provided.

##### **4-1.7.4 Dissimilar Metals in Close Contact.**

Protect against galvanic corrosion when dissimilar metals are in close contact. Metals such as magnesium, steel, zinc, and aluminum (anodes) tend to corrode when in contact with copper, stainless steel, and nickel (cathodes). When relatively incompatible metals must be assembled in the design, apply the following methods to minimize or prevent galvanic corrosion.

- Design metal couples where the surface area of the cathode is smaller than the surface area of the anode metal and only when the anode metal can afford loss due to local corrosion. For example, only use stainless steel bolts to fasten carbon steel parts when bolt removal is frequent and necessary, and when the loss of carbon steel at the bolt hole is acceptable. Interpose a non-absorbing, inert gasket or washer between the dissimilar materials prior to connecting them. This is applicable to couples that are not to serve as electrical conductors.
- Seal faying edges to preclude the entrance of liquids.
- Apply corrosion-inhibiting pastes or compounds under the heads of screws or bolts inserted into dissimilar metal surfaces, whether or not the fasteners had been previously plated or otherwise treated, in addition to applying an organic coating to the faying surfaces prior to assembly. In

situations where large faying surfaces are involved it may be feasible to insert a thicker barrier such as dried adhesive or sealant material. This applies to joints that are not required to be electrically conductive.

- Where practicable or where it will not interfere with the proposed use of the assembly, coat the joint externally with an effective paint system or sealant.
- Coat welded or brazed dissimilar metal assemblies with a paint system or other suitable protective coatings to at least 0.4 inch (1 cm) beyond the heat-affected zone.

#### **4-1.7.5 Protective Coatings.**

Use UFC 3-190-06 for protective coatings and paints requirements. Factory applied coatings are more life-cycle cost effective than field painting procedures most of the time. The cost to maintain protective coating systems often includes significant fixed costs (for example, scaffolding and rigging, environmental protection, and disposal of debris). This usually means that the system with the highest attainable life is the best choice. Avoid concealed and inaccessible members.

Provide coating systems durable enough to withstand mechanical damage in service. This includes gouging or chipping during normal activities in a facility. In environments such as desert climates, blowing sand can accelerate deterioration of surface coatings and lead to corrosion of materials earlier in the life cycle process.

#### **4-1.7.6 Buried or Submerged Structures and Systems.**

Include a combination of cathodic protection (CP) systems, protective coatings, proper material selection, encasement, or other methods for overall corrosion protection of buried or submerged structures or systems. For buried structures or systems, design for the corrosivity of the soil, including soil pH, resistivity, moisture content, and presence of chlorides, sulfides, and bacteria. Design for differences in soil composition, stray electrical currents, and effects of connections of new to existing structures. Use UFC 3-570-01 to determine where CP is required.

For immersed structures, consider the corrosivity of the water (primarily influenced by salinity, but also affected by pH, dissolved oxygen, temperature, current, and microbiological activity). Tidal and splash zones will experience higher corrosion than continuously immersed or atmospherically exposed zones. For submerged or partially submerged structures, account for differences in corrosion potential associated with each zone (for example, atmospheric, splash, tidal, submerged, and subsoil).

#### **4-1.7.7 Waterfront and Coastal Structures and Systems.**

For structures proximate or at the waterfront, in addition to atmospheric corrosion, design for the presence of hydrostatic forces, wind, salt spray, currents, tides, waves, ice, marine borers, insects, and pollution from waterfront operations. Some common

grades of stainless alloy such as Type 304 or 316 are susceptible to corrosion when immersed in salt or brackish water.



**APPENDIX A ESC FOR DOD LOCATIONS**

**Table A-1 ESC for United States, Its Territories and Possessions**

United States, Its Territories and Possessions		
State/Territory/Possession	Installation Master Name	ESC*
Alabama	Alabama National Guard	C3 <sup>1</sup>
	Alabama Reserves	C3 <sup>1</sup>
	Anniston AR Depot	C3 <sup>1</sup>
	Fort McClellan	C3 <sup>1</sup>
	Fort Novosel	C3 <sup>1</sup>
	Maxwell AFB	C3 <sup>1</sup>
	Redstone Arsenal	C3 <sup>1</sup>
Alaska	Alaska National Guard	C4 <sup>3</sup>
	Alaska Reserves	C4 <sup>3</sup>
	Clear AF Station	C2 <sup>1</sup>
	Eareckson Air Station	C4 <sup>3</sup>
	Eielson AFB	C2 <sup>1</sup>
	Fort Greely	C2 <sup>1</sup>
	Fort Wainwright	C2 <sup>1</sup>
	Joint Base Elmendorf-Richardson	C3 <sup>3</sup>
	NAF Adak	C5 <sup>3</sup>
	Arizona	AF Plant 44 Armed Force Plant
Arizona National Guard		C2 <sup>1</sup>
Arizona Reserves		C2 <sup>1</sup>
Davis-Monthan AFB		C2 <sup>1</sup>
Fort Huachuca		C2 <sup>1</sup>
Luke AF Base		C2 <sup>1</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Arizona (continued)	MCAS Yuma	C2 <sup>1</sup>
	Yuma Proving Ground	C2 <sup>1</sup>
Arkansas	Arkansas National Guard	C3 <sup>1</sup>
	Arkansas Reserves	C3 <sup>1</sup>
	Little Rock AFB	C3 <sup>1</sup>
	Pine Bluff Arsenal	C3 <sup>1</sup>
California	AF Plant 42 Armed Forces Plant	C2 <sup>1</sup>
	Beale AFB	C2 <sup>1</sup>
	California National Guard	C3 <sup>2</sup>
	California Reserves	C3 <sup>2</sup>
	Defense Distribution Depot San Joaquin	C2 <sup>1</sup>
	Edwards AFB	C2 <sup>1</sup>
	Fort Hunter Liggett	C2 <sup>1</sup>
	Fort Ord	C5 <sup>3</sup>
	FRC North Island	C4 <sup>3</sup>
	Hunters Point Annex	C5 <sup>3</sup>
	Los Angeles AFB	C4 <sup>2</sup>
	MCAGCC Twenty-nine Palms	C2 <sup>1</sup>
	MCAS El Toro Santa Ana	C3 <sup>1</sup>
	MCAS Miramar	C4 <sup>3</sup>
	MCAS Tustin	C3 <sup>1</sup>
	MCB Camp Pendleton	C4 <sup>3</sup>
MCLB Barstow	C2 <sup>1</sup>	
MCRD San Diego	C4 <sup>3</sup>	

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
California (continued)	Military Ocean Terminal Concord	C3 <sup>2</sup>
	NAF El Centro	C2 <sup>1</sup>
	NAS Alameda	C5 <sup>3</sup>
	NAS Lemoore	C2 <sup>1</sup>
	National Training Center And Fort Irwin	C2 <sup>1</sup>
	Naval Base Point Loma	C4 <sup>3</sup>
	Naval Base Ventura City Pt Mugu	C5 <sup>3</sup>
	Naval Weapons Station Seal Beach	C4 <sup>3</sup>
	NAVSTA San Diego	C4 <sup>3</sup>
	NAWS China Lake	C2 <sup>1</sup>
	NRC Stockton	C2 <sup>1</sup>
	NS Treasure Island	C5 <sup>3</sup>
	NSA Monterey	C5 <sup>3</sup>
	NSY Mare Island	C4 <sup>3</sup>
	Presidio Of Monterey	C5 <sup>3</sup>
	PWC San Francisco	C5 <sup>3</sup>
	Sacramento AR Depot	C3 <sup>1</sup>
	Sierra AR Depot	C2 <sup>1</sup>
	Travis AFB	C3 <sup>1</sup>
	Vandenberg AFB	C4 <sup>2</sup>
Colorado	Buckley AFB	C2 <sup>1</sup>
	Cheyenne Mountain AF Station	C2 <sup>1</sup>
	Colorado National Guard	C2 <sup>1</sup>
	Colorado Reserves	C2 <sup>1</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Colorado (continued)	Fort Carson	C2 <sup>1</sup>
	Peterson AFB	C2 <sup>1</sup>
	Pueblo Chemical Depot	C2 <sup>1</sup>
	Rocky Mountain Arsenal	C2 <sup>1</sup>
	Schriever AFB	C2 <sup>1</sup>
	USAF Academy	C2 <sup>1</sup>
Connecticut	Connecticut National Guard	C3 <sup>1</sup>
	Connecticut Reserves	C3 <sup>1</sup>
	NWIRP Bloomfield	C3 <sup>1</sup>
	Stratford AR Engine Plant	C3 <sup>2</sup>
	Subase New London	C4 <sup>3</sup>
Cuba	NAVSTA Guantanamo Bay	C5 <sup>3</sup>
Delaware	Delaware National Guard	C3 <sup>1</sup>
	Delaware Reserves	C3 <sup>2</sup>
	Dover AFB	C3 <sup>2</sup>
District of Columbia	District Of Columbia National Guard	C3 <sup>1</sup>
	Joint Base Anacostia-Bolling	C3 <sup>1</sup>
	MARBKS Washington DC	C3 <sup>1</sup>
	Naval Station Washington Navy Yard	C3 <sup>3</sup>
	Washington DC Reserves	C3 <sup>1</sup>
Florida	Blount Island Command	C4 <sup>3</sup>
	Cecil Field FL NAS	C3 <sup>1</sup>
	Eglin AFB	C5 <sup>3</sup>
	Florida National Guard	C5 <sup>3</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Florida (continued)	Florida Reserves	C5 <sup>3</sup>
	FRC Jacksonville	C4 <sup>2</sup>
	Hurlburt Field	C5 <sup>3</sup>
	Macdill AFB	C5 <sup>3</sup>
	NAS Key West	C5 <sup>3</sup>
	NAS Pensacola	C5 <sup>3</sup>
	NAS Whiting Field Milton	C3 <sup>1</sup>
	NAVSTA Mayport	C4 <sup>3</sup>
	NOMI Pensacola	C5 <sup>3</sup>
	NSA Orlando	C3 <sup>1</sup>
	NSA Panama City	C5 <sup>3</sup>
	Orlando Ntc	C3 <sup>1</sup>
	Patrick AFB	C5 <sup>3</sup>
	Tyndall AFB	C5 <sup>3</sup>
USAG Miami	C4 <sup>2</sup>	
Georgia	Fort Eisenhower	C3 <sup>1</sup>
	Fort Mcpherson	C3 <sup>1</sup>
	Fort Moore	C3 <sup>1</sup>
	Fort Stewart	C3 <sup>1</sup>
	Ft Mcpherson Brac/Excess Sites	C3 <sup>1</sup>
	Georgia National Guard	C3 <sup>1</sup>
	Georgia Reserves	C3 <sup>1</sup>
	MCLB Albany	C3 <sup>1</sup>
	Moody AFB	C3 <sup>1</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Georgia (continued)	NAS Athens	C3 <sup>1</sup>
	NSA Atlanta	C3 <sup>1</sup>
	Robins AFB	C3 <sup>1</sup>
	Subase Kings Bay	C4 <sup>3</sup>
Hawaii	Fort Shafter	C4 <sup>3</sup>
	Hawaii National Guard	C4 <sup>3</sup>
	Hawaii Reserves	C4 <sup>2</sup>
	Joint Base Pearl Harbor-Hickam	C4 <sup>3</sup>
	Kaena Point Satellite Tracking Station	C5 <sup>3</sup>
	MCB Hawaii Kaneohe	C5 <sup>3</sup>
	NAS Barbers Pt	C4 <sup>3</sup>
	Pacific Missile Range Facility	C4 <sup>3</sup>
	Schofield Barracks	C4 <sup>2</sup>
	Wheeler AR Airfield	C4 <sup>2</sup>
Idaho	Idaho National Guard	C2 <sup>1</sup>
	Idaho Reserves	C2 <sup>1</sup>
	Mountain Home AFB	C2 <sup>1</sup>
Illinois	Illinois National Guard	C3 <sup>1</sup>
	Illinois Reserves	C3 <sup>1</sup>
	NAVSTA Great Lakes II	C3 <sup>1</sup>
	Rock Island Arsenal	C3 <sup>1</sup>
	Scott AFB	C3 <sup>1</sup>
Indiana	Crane AR Ammunition Activity	C3 <sup>1</sup>
	Fort Benjamin Harrison	C3 <sup>1</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Indiana (continued)	Indiana National Guard	C3 <sup>1</sup>
	Indiana Reserves	C3 <sup>1</sup>
	Newport Chemical Depot	C3 <sup>1</sup>
	NSA Crane	C3 <sup>1</sup>
Iowa	Iowa AR Ammunition Plant	C3 <sup>1</sup>
	Iowa National Guard	C3 <sup>1</sup>
	Iowa Reserves	C3 <sup>1</sup>
Kansas	Fort Riley	C2 <sup>1</sup>
	Fort Leavenworth	C3 <sup>1</sup>
	McConnell AFB	C3 <sup>1</sup>
	Kansas National Guard	C2 <sup>1</sup>
	Kansas Reserves	C3 <sup>1</sup>
Kentucky	Blue Grass AR Depot	C3 <sup>1</sup>
	Fort Campbell	C3 <sup>1</sup>
	Fort Knox	C3 <sup>1</sup>
	Kentucky National Guard	C3 <sup>1</sup>
	Kentucky Reserves	C3 <sup>1</sup>
	Louisville NSWC	C3 <sup>1</sup>
Louisiana	Barksdale AFB	C3 <sup>1</sup>
	Fort Johnson	C3 <sup>1</sup>
	HQ 4Th MAW New Orleans	C4 <sup>2</sup>
	Louisiana AR Ammunition Plant	C3 <sup>1</sup>
	Louisiana National Guard	C4 <sup>3</sup>
	Louisiana Reserves	C4 <sup>3</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Louisiana (continued)	New Orleans NAS Annex	C3 <sup>1</sup>
	NSA New Orleans	C4 <sup>2</sup>
Maine	Maine National Guard	C3 <sup>3</sup>
	Maine Reserves	C3 <sup>3</sup>
	NAS Brunswick	C3 <sup>2</sup>
Mariana Islands	Agana Guam NAS	C5 <sup>3</sup>
	Guam National Guard	C4 <sup>2</sup>
	Guam Reserves	C4 <sup>2</sup>
	Joint Region Marianas	C5 <sup>3</sup>
Maryland	Aberdeen Proving Ground	C2 <sup>1</sup>
	Fort Detrick	C3 <sup>1</sup>
	Fort George G Meade	C3 <sup>1</sup>
	Joint Base Andrews	C3 <sup>1</sup>
	Maryland National Guard	C3 <sup>1</sup>
	Maryland Reserves	C3 <sup>1</sup>
	NAS Patuxent River	C3 <sup>1</sup>
	NSA Annapolis	C3 <sup>1</sup>
	NSA South Potomac	C3 <sup>1</sup>
	NSA Thurmont	C3 <sup>1</sup>
	NSWC Carderock	C3 <sup>1</sup>
	US AR Research Laboratory Adelphi	C3 <sup>1</sup>
	Walter Reed National Military Medical Center	C3 <sup>1</sup>
Washington DC National Guard	C3 <sup>1</sup>	
Washington Headquarters	C3 <sup>1</sup>	



<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Massachusetts	Cape Cod AF Station	C3 <sup>3</sup>
	Fort Devens	C2 <sup>1</sup>
	Hanscom AFB	C3 <sup>1</sup>
	Massachusetts National Guard	C3 <sup>1</sup>
	Massachusetts Reserves	C3 <sup>1</sup>
	NWIRP Bedford	C3 <sup>1</sup>
	Soldier Systems Center	C3 <sup>1</sup>
	South Weymouth NAS	C3 <sup>1</sup>
Michigan	Detroit Arsenal	C2 <sup>1</sup>
	Michigan National Guard	C2 <sup>1</sup>
	Michigan Reserves	C2 <sup>1</sup>
	USAG Selfridge	C2 <sup>1</sup>
Minnesota	Minnesota National Guard	C2 <sup>1</sup>
	Minnesota Reserves	C2 <sup>1</sup>
Mississippi	CBC Gulfport	C5 <sup>3</sup>
	Columbus AFB	C3 <sup>1</sup>
	Keesler AFB	C5 <sup>3</sup>
	Mississippi National Guard	C3 <sup>1</sup>
	Mississippi Reserves	C3 <sup>1</sup>
	NS Pascagoula	C4 <sup>3</sup>
Missouri	Fort Leonard Wood	C3 <sup>1</sup>
	Lake City AR Ammunition Plant	C3 <sup>1</sup>
	MCSPTACT Kansas City	C2 <sup>1</sup>
	Missouri National Guard	C3 <sup>1</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Missouri (continued)	Missouri Reserves	C3 <sup>1</sup>
	NAS Meridian	C3 <sup>1</sup>
	Whiteman AFB	C3 <sup>1</sup>
Montana	Ellsworth AFB	C2 <sup>1</sup>
	Malmstrom AFB	C2 <sup>1</sup>
	Montana National Guard	C2 <sup>1</sup>
	Montana Reserves	C2 <sup>1</sup>
Nebraska	Cornhusker AR Ammunition Plant	C2 <sup>1</sup>
	Nebraska National Guard	C2 <sup>1</sup>
	Nebraska Reserves	C2 <sup>1</sup>
	Offutt AF Base	C3 <sup>1</sup>
Nevada	Hawthorne AR Depot	C4 <sup>2</sup>
	NAS Fallon	C2 <sup>1</sup>
	Nellis AFB	C2 <sup>1</sup>
	Nevada National Guard	C2 <sup>1</sup>
	Nevada Reserves	C2 <sup>1</sup>
New Hampshire	New Boston AF Station	C2 <sup>1</sup>
	New Hampshire National Guard	C2 <sup>1</sup>
	New Hampshire Reserves	C2 <sup>1</sup>
	NSY Portsmouth	C3 <sup>3</sup>
New Jersey	Fort Monmouth	C3 <sup>2</sup>
	Joint Base Mcguire-Dix-Lakehurst	C3 <sup>1</sup>
	Naval Weapons Station Earle	C3 <sup>2</sup>
	New Jersey National Guard	C3 <sup>1</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
New Jersey (continued)	New Jersey Reserves	C3 <sup>1</sup>
	Picatinny Arsenal	C3 <sup>1</sup>
New Mexico	Cannon AFB	C2 <sup>1</sup>
	Holloman AFB	C2 <sup>1</sup>
	Kirtland AFB	C2 <sup>1</sup>
	New Mexico National Guard	C2 <sup>1</sup>
	New Mexico Reserves	C2 <sup>1</sup>
	White Sands Missile Range	C2 <sup>1</sup>
New York	Fort Drum	C3 <sup>1</sup>
	Fort Hamilton	C3 <sup>3</sup>
	MARCORPS Dist 1 Garden City	C3 <sup>2</sup>
	NAVSUPPU Saratoga Springs	C2 <sup>1</sup>
	New York National Guard	C2 <sup>1</sup>
	New York Reserves	C2 <sup>1</sup>
	NWIRP Bethpage	C3 <sup>2</sup>
	NWIRP Calverton	C3 <sup>2</sup>
	Rome Laboratory	C3 <sup>1</sup>
	Seneca AR Depot Activity	C3 <sup>1</sup>
	USMA	C3 <sup>1</sup>
	Watervliet Arsenal	C2 <sup>1</sup>
	North Carolina	Fort Liberty
FRC/MCAS Cherry Point		C4 <sup>3</sup>
MCB Camp Lejeune		C4 <sup>3</sup>
Military Ocean Terminal Sunny Point		C5 <sup>3</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
North Carolina (continued)	North Carolina National Guard	C3 <sup>1</sup>
	North Carolina Reserves	C3 <sup>1</sup>
	Pope AFB	C3 <sup>1</sup>
	Seymour Johnson AFB	C3 <sup>1</sup>
North Dakota	Cavalier AF Station	C2 <sup>1</sup>
	Grand Forks AFB	C2 <sup>1</sup>
	Minot AF Base	C2 <sup>1</sup>
	North Dakota National Guard	C2 <sup>1</sup>
	North Dakota Reserves	C2 <sup>1</sup>
Ohio	Defense Supply Center Columbus	C3 <sup>1</sup>
	Joint System Manufacturing Center Lima	C3 <sup>1</sup>
	Ohio National Guard	C3 <sup>1</sup>
	Ohio Reserves	C3 <sup>1</sup>
	Wright-Patterson AFB	C3 <sup>1</sup>
Oklahoma	Altus AFB	C2 <sup>1</sup>
	Fort Sill	C2 <sup>1</sup>
	Oklahoma National Guard	C3 <sup>1</sup>
	Oklahoma Reserves	C3 <sup>1</sup>
	Tinker AFB	C3 <sup>1</sup>
	Vance AFB	C3 <sup>1</sup>
Oregon	Oregon National Guard	C3 <sup>1</sup>
	Oregon Reserves	C3 <sup>2</sup>
	Umatilla Chemical Depot	C2 <sup>1</sup>
Pennsylvania	Carlisle Barracks	C3 <sup>1</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Pennsylvania (continued)	Defense Distribution Depot Susquehanna	C2 <sup>1</sup>
	Defense Supply Center Philadelphia	C3 <sup>1</sup>
	Fort Indiantown Gap	C3 <sup>1</sup>
	Letterkenny AR Depot	C3 <sup>1</sup>
	NSA Mechanicsburg	C3 <sup>1</sup>
	Ord Research Lab University Park	C3 <sup>1</sup>
	Pennsylvania National Guard	C3 <sup>1</sup>
	Pennsylvania Reserves	C3 <sup>1</sup>
	Philadelphia NS	C3 <sup>1</sup>
	Scranton AR Ammunition Plant	C2 <sup>1</sup>
	Tobyhanna AR Depot	C2 <sup>1</sup>
	Warminster NAWC-AD	C3 <sup>1</sup>
Puerto Rico	Fort Buchanan	C5 <sup>2</sup>
	Naval Activity Puerto Rico	C5 <sup>3</sup>
	Puerto Rico National Guard	C5 <sup>2</sup>
	Puerto Rico Reserves	C5 <sup>3</sup>
	Roosevelt Roads	C5 <sup>3</sup>
Rhode Island	Davisville CBC	C3 <sup>2</sup>
	NAVSTA Newport	C3 <sup>3</sup>
	Rhode Island National Guard	C3 <sup>2</sup>
	Rhode Island Reserves	C3 <sup>2</sup>
South Carolina	Fort Jackson	C2 <sup>1</sup>
	Joint Base Charleston	C4 <sup>3</sup>
	MCAS Beaufort	C4 <sup>3</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
South Carolina (continued)	MCRD Beaufort Parris Island	C4 <sup>3</sup>
	Shaw AF Base	C3 <sup>1</sup>
	South Carolina National Guard	C3 <sup>1</sup>
	South Carolina Reserves	C3 <sup>1</sup>
South Dakota	South Dakota National Guard	C2 <sup>1</sup>
	South Dakota Reserves	C2 <sup>1</sup>
Tennessee	Arnold AFB	C3 <sup>1</sup>
	Defense Depot Memphis	C3 <sup>1</sup>
	Holston AR Ammunition Plant	C3 <sup>1</sup>
	Milan AR Ammunition Plant	C3 <sup>1</sup>
	NSA Midsouth Memphis	C3 <sup>1</sup>
	Tennessee National Guard	C3 <sup>1</sup>
	Tennessee Reserves	C3 <sup>1</sup>
Texas	Applied Research Lab Austin	C3 <sup>1</sup>
	Brooks City Base	C3 <sup>1</sup>
	Corpus Christi AR Depot	C5 <sup>3</sup>
	Dyess AFB	C2 <sup>1</sup>
	Fort Bliss	C2 <sup>1</sup>
	Fort Cavazos	C3 <sup>1</sup>
	Goodfellow AFB	C2 <sup>1</sup>
	Joint Base San Antonio	C3 <sup>1</sup>
	Laughlin AFB	C3 <sup>1</sup>
	Longhorn AR Ammunition Plant	C3 <sup>2</sup>
	McAlester AR Ammunition Plant	C3 <sup>1</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Texas (continued)	NAS Corpus Christi	C5 <sup>3</sup>
	NAS Kingsville	C3 <sup>1</sup>
	NAVSTA Ingleside	C5 <sup>3</sup>
	NWIRP Dallas	C3 <sup>1</sup>
	NWIRP Mcgregor	C3 <sup>1</sup>
	Red River AR Depot	C3 <sup>1</sup>
	Sheppard AFB	C2 <sup>1</sup>
	Texas National Guard	C3 <sup>1</sup>
	Texas Reserves	C3 <sup>1</sup>
United States Virgin Islands	Virgin Islands National Guard	C5 <sup>3</sup>
	Virgin Islands Reserves	C5 <sup>2</sup>
Utah	Deseret Chemical Depot	C2 <sup>1</sup>
	Dugway Proving Ground	C2 <sup>1</sup>
	Hill AFB	C2 <sup>2</sup>
	Tooele AR Depot	C2 <sup>1</sup>
	Utah National Guard	C2 <sup>2</sup>
	Utah Reserves	C2 <sup>2</sup>
Vermont	Vermont National Guard	C2 <sup>1</sup>
	Vermont Reserves	C2 <sup>1</sup>
Virginia	Arlington National Cemetery	C3 <sup>1</sup>
	Dam Neck Naval Station	C4 <sup>3</sup>
	Defense Supply Center Richmond	C3 <sup>1</sup>
	Fort Belvoir	C3 <sup>1</sup>
	Fort Gregg-Adams	C3 <sup>1</sup>

<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Virginia (continued)	Fort Myer	C3 <sup>1</sup>
	Fort Moore	C3 <sup>1</sup>
	Fort Pickett	C3 <sup>1</sup>
	Fort Walker	C3 <sup>1</sup>
	HQBN HQMC Arlington	C3 <sup>1</sup>
	Joint Base Langley–Eustis	C3 <sup>3</sup>
	Joint Base Myer-Henderson Hall	C3 <sup>1</sup>
	Joint Expeditionary Base Little Creek-Fort Story	C4 <sup>3</sup>
	MCB Quantico	C3 <sup>1</sup>
	NAS Oceana	C3 <sup>2</sup>
	Naval Weapons Station Yorktown	C3 <sup>3</sup>
	NAVMEDCEN Portsmouth	C4 <sup>3</sup>
	NAVSTA Norfolk	C4 <sup>3</sup>
	Norfolk NSY Portsmouth	C4 <sup>3</sup>
	NOSTRA Yorktown	C3 <sup>3</sup>
	NSA Northwest	C3 <sup>1</sup>
	Radford AR Ammunition Plant	C3 <sup>1</sup>
	Virginia National Guard	C3 <sup>1</sup>
Virginia Reserves	C3 <sup>1</sup>	
Washington	Applied Physics Lab Seattle	C4 <sup>3</sup>
	Fairchild AF Base	C2 <sup>1</sup>
	Joint Base Lewis-McChord	C3 <sup>2</sup>
	MCRC Yakima	C2
	NAS Whidbey Island	C5 <sup>3</sup>



<b>United States, Its Territories and Possessions</b>		
<b>State/Territory/Possession</b>	<b>Installation Master Name</b>	<b>ESC*</b>
	Naval Base Kitsap	C4 <sup>3</sup>
	NAVMAG Indian Island	C5 <sup>3</sup>
	NAVSTA Everett	C5 <sup>3</sup>
	NS Puget Sound	C4 <sup>3</sup>
	Washington National Guard	C3 <sup>2</sup>
	Washington Reserves	C3 <sup>2</sup>
West Virginia	Allegany Ballistics Lab	C3 <sup>1</sup>
	NSA Sugar Grove	C3 <sup>1</sup>
	West Virginia National Guard	C3 <sup>1</sup>
	West Virginia Reserves	C3 <sup>1</sup>
Wisconsin	Badger AR Ammunition Plant	C2 <sup>1</sup>
	Fort McCoy	C2 <sup>1</sup>
	Wisconsin National Guard	C2 <sup>1</sup>
	Wisconsin Reserves	C2 <sup>1</sup>
Wyoming	Wyoming National Guard	C2 <sup>1</sup>
	Wyoming Reserves	C2 <sup>1</sup>
<p><b>*ESC Value Notes:</b></p> <p>1. ESC value is based on installation location greater than 6 miles (9.66 km) from a saltwater source. If the project site is less than 6 miles (9.66 km) from a saltwater source, use next highest ESC or verify category with ICCET. If the project site is proximate to a pollution source, use the next highest ESC.</p> <p>2. ESC value is based on installation location greater than 1 mile (1.61 km) from a saltwater source and less than 6 miles (9.66 km). If the project site is less than 1 mile (1.61 km) from a saltwater source, use the next highest ESC. If the project site is proximate to a pollution source, use the next highest ESC.</p> <p>3. ESC value is based on installation location less than 1 mile (1.61 km) from a saltwater source. If the project site is proximate to a pollution source, use the next highest ESC if available.</p>		

**Table A-2 ESC for Outside United States, Its Territories and Possessions**

Outside United States, Its Territories and Possessions			
Continent/Region	Country/Territory	Installation Master Name	ESC*
Africa	Djibouti	Camp Lemonnier	C4 <sup>2</sup>
	Egypt	NAMRU Three Cairo Egypt	C3 <sup>2</sup>
Asia	Afghanistan	Bagram AF Base	C3 <sup>1</sup>
		Camp Eggers	C2 <sup>1</sup>
		Camp Marmal	C2 <sup>1</sup>
	Bahrain	NSA Bahrain	C3 <sup>1</sup>
	Iraq	Al Taqaddum Army Base	C2 <sup>1</sup>
		Camp Fallujah	C2 <sup>1</sup>
		Camp Taji	C2 <sup>1</sup>
	Israel	Attache Israel	C3 <sup>2</sup>
	Japan	Camp Zama	C3 <sup>2</sup>
		COMFLEACT Kadena Okinawa Ja	C5 <sup>1</sup>
		COMFLEACT Sasebo Ja	C3 <sup>1</sup>
		COMFLEACT Yokosuka Ja	C3 <sup>1</sup>
		Fort Buckner	C5 <sup>1</sup>
		Kadena Air Base	C5 <sup>1</sup>
		MCAS Iwakuni Ja	C4 <sup>3</sup>
MCB Camp S D Butler Okinawa Ja		C5 <sup>3</sup>	
Misawa Air Base		C3 <sup>1</sup>	
NAF Atsugi Ja		C3 <sup>1</sup>	
NAF Misawa Ja		C3 <sup>1</sup>	
Sagami Depot		C3 <sup>1</sup>	
Shariki Communication Site	C3 <sup>1</sup>		

<b>Outside United States, Its Territories and Possessions</b>				
<b>Continent/Region</b>	<b>Country/Territory</b>	<b>Installation Master Name</b>	<b>ESC*</b>	
Asia (continued)	Japan (continued)	Yokota Air Base	C3 <sup>1</sup>	
	Kuwait	Ahmed Al Jaber Air Base	C2 <sup>1</sup>	
	Kyrgyzstan	Manas International Airport	C2	
	Qatar	Al Udeid Air Base	C3 <sup>1</sup>	
		As Sayliyah Army Base	C2 <sup>1</sup>	
	Singapore	NAVREGCONTRCTR Singapore	C5 <sup>3</sup>	
	South Korea	Area 1, Korea	C3 <sup>1</sup>	
		Area 2, Korea	C3 <sup>1</sup>	
		Area 3, Korea	C5 <sup>1</sup>	
		Area 4, Korea	C3 <sup>1</sup>	
		Taegu Air Base	C3 <sup>1</sup>	
	Turkey	Incirlik Air Base	C3 <sup>2</sup>	
		Izmir Air Station	C3 <sup>3</sup>	
		Kurecik AF Base	C2 <sup>1</sup>	
	United Arab Emirates	Al Dhafra AF Base	C3 <sup>1</sup>	
	Europe	Belgium	USAG Benelux	C3 <sup>1</sup>
		Bosnia	Camp Bedrock	C2 <sup>1</sup>
Germany		Germersheim AR Depot	C3 <sup>1</sup>	
		Landstuhl	C3 <sup>1</sup>	
		Ramstein Air Base	C3 <sup>1</sup>	
		Spangdahlem Air Base	C3 <sup>1</sup>	
		Taylor Barracks	C3 <sup>1</sup>	
		USAG Ansbach	C2 <sup>1</sup>	
USAG Bamberg	C3 <sup>1</sup>			

<b>Outside United States, Its Territories and Possessions</b>				
<b>Continent/Region</b>	<b>Country/Territory</b>	<b>Installation Master Name</b>	<b>ESC*</b>	
Europe (continued)	Germany (continued)	USAG Baumholder	C3 <sup>1</sup>	
		USAG Darmstadt	C3 <sup>1</sup>	
		USAG Franconia	C2 <sup>1</sup>	
		USAG Giessen	C3 <sup>2</sup>	
		USAG Grafenwoehr	C2 <sup>1</sup>	
		USAG Heidelberg	C3 <sup>1</sup>	
		USAG Hessen	C3 <sup>1</sup>	
		USAG Hohenfels	C2	
		USAG Kaiserslautern	C3 <sup>1</sup>	
		USAG Mannheim	C3 <sup>1</sup>	
		USAG Schinnen	C3 <sup>1</sup>	
		USAG Schweinfurt	C3 <sup>1</sup>	
		USAG Stuttgart	C3 <sup>1</sup>	
		USAG Wiesbaden	C3 <sup>1</sup>	
	Wuerzburg Tng Areas	C3 <sup>1</sup>		
		Greece	NSA Souda Bay Gr	C3 <sup>1</sup>
		Iceland	NAS Keflavik	C4
		Italy	Aviano Air Base	C3 <sup>1</sup>
			NAS Sigonella It	C3 <sup>1</sup>
			NSA Naples It	C3 <sup>1</sup>
	USAG Livorno		C3	
	USAG Vicenza		C3	
	Kosovo	Camp Bondsteel	C2 <sup>1</sup>	
		Camp Monteith	C2 <sup>1</sup>	

<b>Outside United States, Its Territories and Possessions</b>			
<b>Continent/Region</b>	<b>Country/Territory</b>	<b>Installation Master Name</b>	<b>ESC*</b>
Europe (continued)	Netherlands	JFC North	C3 <sup>1</sup>
	Portugal	Lajes Field	C5
	Spain	Moron Air Base	C3 <sup>1</sup>
		NAVSTA Rota Sp	C4 <sup>3</sup>
	United Kingdom	Alconbury Royal AF Station	C3 <sup>1</sup>
		Croughton Royal AF Station	C3 <sup>1</sup>
		Fairford Royal AF Station	C3 <sup>1</sup>
		Lakenheath Royal AF Station	C3 <sup>1</sup>
		Mildenhall Royal AF Station	C3 <sup>1</sup>
Indian Ocean	British Indian Ocean Territory	Navsuppfac Diego Garcia Io	C5
North America	Greenland	Thule Air Base	C2 <sup>1</sup>
	Honduras	Enrique Soto Cano AF Base	C3 <sup>1</sup>
Oceania	Australia	Navcommsta H E Holt Exmouth As	C3 <sup>1</sup>
	Marshall Islands	US AR Kwajalein Atoll	C5 <sup>3</sup>
South America	Peru	Navmedrschcen Det Lima Peru	C5 <sup>3</sup>
<p>*ESC Value Notes:</p> <p>1. ESC value is based on installation location greater than 6 miles (9.66 km) from a saltwater source. If the project site is less than 6 miles (9.66 km) from a saltwater source, use next highest ESC or verify category with ICCET. If the project site is proximate to a pollution source, use the next highest ESC.</p> <p>2. ESC value is based on installation location greater than 1 mile (1.61 km) from a saltwater source and less than 6 miles (9.66 km). If the project site is less than 1 mile (1.61 km) from a saltwater source, use the next highest ESC. If the project site is proximate to a pollution source, use the next highest ESC.</p> <p>3. ESC value is based on installation location less than 1 mile (1.61 km) from a saltwater source. If the project site is proximate to a pollution source, use the next highest ESC if available.</p>			

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## APPENDIX B GLOSSARY

### B-1

### ACRONYMS

AA&E	Arms, Ammunition, and Explosives
ABA	Architectural Barriers Act
AE	Ammunition and Explosives
AEC	Architect / Engineer / Construction
AFCEC	Air Force Civil Engineer Center
AFMAN	Air Force Manual
AHJ	Authority Having Jurisdiction
BO	Building Official
BIA	Bilateral Infrastructure Agreement
CCR	Criteria Change Request
CECW-EC	Corps of Engineers Civil Works, Chief of Engineering and Construction Division
CP	Cathodic Protection
CPC	Corrosion Prevention & Control
CFR	Code of Federal Regulations
CTR	Component Technical Representative
DAFMAN	Department of the Air Force Manual
DCS	Deputy Chief of Staff
DoDD	DoD Directive
DoDI	DoD Instruction
DoDM	DoD Manual
DUSD (I&E)	Deputy Under Secretary of Defense for Installations and Environment
DWG	Discipline Working Group

EI&E	Energy, Installations, and Environment
ESC	Environmental Severity Classification
ESEP	Engineering Senior Executive Panel
ESQD	Explosives Safety Quantity Distance
E.O.	Executive Order
FASS	Facilities Systems Safety
FC	Facilities Criteria
HQ	Headquarters
HQMC	Headquarters, U.S. Marine Corps
HQUSACE	Headquarters, U.S. Army Corps of Engineers
HNFA	Host Nation Funded Construction Agreements
HVAC	Heating, Ventilation, and Air Conditioning
IBC	International Building Code®
ICC	International Code Council
ICCET	ISO Corrosivity Category Estimation Tool
IEBC	International Existing Building Code®
IECC	International Energy Conservation Code®
IE&E	Installations, Energy, and Environment
IE&L	Installations, Environment, and Logistics
IFC	International Fire Code®
IFGC	International Fuel Gas Code®
IgCC	International Green Construction Code®
IMC	International Mechanical Code®
IPC	International Plumbing Code®
IPMC	International Property Maintenance Code®



IRC	International Residential Code®
LPG	Liquified Petroleum Gas
MCM	Metal Composite Materials
MDF	Medium Density Fiberboard
NAF	Naval Air Facility
NAVFAC	Naval Facilities Engineering Systems Command
NEC	National Electrical Code®
O&M	Operations and Maintenance
OEBDG	Overseas Environmental Baseline Guidance Document (DoDM 4715.05)
OSHA	Occupational Safety and Health Administration
OASD	Office of the Assistant Secretary of Defense
OUSD	Office of the Under Secretary of Defense
P.L.	Public Law
RFP	Request for Proposal
RMF	Risk Management Framework
SAP	Special Access Program
SCI	Sensitive Compartmented Information
SOFA	Status of Forces Agreements
SOH	Safety and Occupational Health
TOC	Total Ownership Costs
USACE	U.S. Army Corps of Engineers
USC	United States Code
UFC	Unified Facilities Criteria
UFGS	Unified Facilities Guide Specifications

USD (AT&L) Under Secretary of Defense for Acquisition, Technology, and Logistics

## **B-2 DEFINITION OF TERMS**

**Discipline Working Group:** Representatives from the DoD components responsible for the unification and maintenance of criteria documents. (MIL-STD-3007)

**Engineering Senior Executive Panel:** Panel established by the DoD Installations Policy Board to implement the UFC and UFGS system for DoD. The ESEP consists of a representative from the Office of the Secretary of Defense and the three Service Chiefs of Engineering. (MIL-STD-3007)

**Facilities Criteria:** A criteria document that is not adopted by all services and will be used only by services indicated in the document

**Technical Representative:** Author of a particular criteria document or the working-level representative from another participating organization for a particular document. (MIL-STD-3007)

## APPENDIX C REFERENCES

### AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS

<https://www.ashrae.org>

ANSI/ASHRAE/IESNA Standard 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings* (Refer to chapter 2 of UFC 1-200-02, for applicable publication date)

### AMERICAN SOCIETY OF MECHANICAL ENGINEERS

<https://www.asme.org>

### AMERICAN SOCIETY OF SAFETY PROFESSIONALS

<https://www.assp.org>

ANSI/ASSP Z590.3, *Prevention through Design: Guidelines for Addressing Occupational Hazards and Risks in Design and Redesign Processes*

### CODE OF FEDERAL REGULATIONS

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910>

29 CFR 1910, *Occupational Safety and Health Standards*

### INTERNATIONAL CODE COUNCIL

<https://www.iccsafe.org>

IBC, *International Building Code*<sup>®</sup>, 2021

IEBC, *International Existing Building Code*<sup>®</sup>, 2021

IECC, *International Energy Conservation Code*<sup>®</sup> (Refer to Chapter 2 of UFC 1-200-02 for applicable edition)

IgCC, *International Green Construction Code*<sup>®</sup>, 2018

IMC, *International Mechanical Code*<sup>®</sup>, 2021

IPC, *International Plumbing Code*<sup>®</sup>, 2021

IRC, *International Residential Code*<sup>®</sup>, 2021

### INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

<https://www.iso.org/>

ISO 9223, *Corrosion of Metals and Alloys – Corrosivity of Atmospheres – Classification, Determination and Estimation*

## **NATIONAL FIRE PROTECTION ASSOCIATION**

<https://www.nfpa.org>

NFPA 1, *Fire Code*

NFPA 54 (ANSI Z223.1), *National Fuel Gas Code*

NFPA 58, *Liquefied Petroleum Gas Code*

NFPA 70, *National Electrical Code*®

NFPA 101, *Life Safety Code*®

NFPA 285, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components*

## **UNIFIED FACILITIES CRITERIA**

<https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc>

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

UFC 1-201-01, *Non-Permanent DoD Facilities in Support of Military Operations*

UFC 1-201-02, *Assessment of Existing Facilities for Use in Military Operations*

**V\ /2/**

UFC 1-300-02, *Unified Facilities Guide Specifications (UFGS) Format Standard*

FC 1-300-09N, *Navy and Marine Corps Design Procedures*

UFC 3-101-01, *Architecture*

UFC 3-110-03, *Roofing*

UFC 3-120-10, *Interior Design*

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

UFC 3-201-01, *Civil Engineering*

UFC 3-201-02, *Landscape Architecture*

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

UFC 3-220-01, *Geotechnical Engineering*

UFC 3-230-01, *Water Storage and Distribution*

UFC 3-230-03, *Water Treatment*

UFC 3-240-01, *Wastewater Collection and Treatment*

UFC 3-301-01, *Structural Engineering*

UFC 3-301-02, *Design of Risk Category V Structures, National Strategic Military Assets*

UFC 3-401-01, *Mechanical Engineering*

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

UFC 3-420-01, *Plumbing Systems*  
UFC 3-430-05, *Natural Gas and Liquefied Petroleum Gas (LPG) Distribution Pipelines*  
UFC 3-460-01, *Design: Petroleum Fuel Facilities*  
UFC 3-490-06, *Elevators*  
UFC 3-501-01, *Electrical Engineering*  
UFC 3-520-01, *Interior Electrical Systems*  
UFC 3-530-01, *Interior and Exterior Lighting Systems and Controls*  
UFC 3-540-01, *Engine-Driven Generator Systems for Prime and Standby Power Applications*  
UFC 3-550-01, *Exterior Electrical Power Distribution*  
UFC 3-560-01, *Operation and Maintenance: Electrical Safety*  
UFC 3-570-01, *Cathodic Protection*  
UFC 3-580-01, *Telecommunications Interior Infrastructure Planning and Design*  
UFC 3-600-01, *Fire Protection Engineering for Facilities*  
UFC 3-701-01, *DoD Facilities Pricing Guide*  
UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings* \3\  
UFC 4-010-05, *SCIF/SAPF Planning, Design, and Construction* \3\  
UFC 4-010-06, *Cybersecurity of Facility-Related Control Systems*  
UFC 4-021-01, *Design and O&M: Mass Notification Systems*  
UFC 4-510-01, *Design: Military Medical Facilities*  
UFC 4-711-01, *Family Housing*  
FC 4-721-10N, *Navy and Marine Corps Unaccompanied Housing*

#### **UNITED STATES ACCESS BOARD**

\2\ Architectural Barriers Act \2/ (ABA) Standards  
<https://www.access-board.gov/files/aba/ABAstandards.pdf>

#### **UNITED STATES AIR FORCE**

<https://www.e-publishing.af.mil>

DESR6055.09\_AFMAN91-201, *Explosives Safety Standards*

DAFMAN 91-203, *Air Force Occupational Safety, Fire and Health Standards*

#### **UNITED STATES ARMY**

<https://armypubs.army.mil/>

DA PAM 385-64, *Ammunition and Explosives Safety Standards*

DA PAM 385-16, *System Safety Management Guide*

## UNITED STATES DEPARTMENT OF DEFENSE

*Deputy Secretary of Defense Memorandum for Secretaries of the Military Departments, et al. Subject: Access for People with Disabilities, October 31, 2008*  
<https://www.access-board.gov/aba/background/dod-policy-memo.html>

DoDM 4715.05, *Overseas Environmental Baseline Guidance Document*  
<https://www.esd.whs.mil/Directives/issuances/dodm/>

DoD 5200.08-R, *Physical Security Program*  
<https://www.esd.whs.mil/DD/DoD-issuances/OUSD>

DoDI 6055.01, *DoD Safety and Occupational Health (SOH) Program*  
<https://www.esd.whs.mil/DD/DoD-issuances/>

DoDM 6055.09, *DoD Ammunition and Explosives Safety Standards*  
<https://www.esd.whs.mil/DD/DoD-issuances/>

DoDI 1125.03, *Vending Facility Program for the Blind on DoD-Controlled Federal Property*  
<https://www.esd.whs.mil/DD/DoD-issuances/>

DoDM 5100.76, *Physical Security of Sensitive Conventional Arms, Ammunition and Explosives (AA&E)*  
<https://www.esd.whs.mil/DD/DoD-issuances/>

DoDM 5200.01, *DoD Information Security Program*  
<https://www.esd.whs.mil/DD/DoD-issuances/>

DoDM 5205.07 Volume 3, *DoD Special Access Program (SAP) Security Manual: Physical Security*  
<https://www.esd.whs.mil/DD/DoD-issuances>

MIL-STD-3007G, *Standard Practice for Unified Facilities Criteria, Facilities Criteria and Unified Facilities Guide Specifications*, 1 November 2019  
<https://www.wbdg.org/FFC/FEDMIL/milstd3007g.pdf>

*OUSD Memorandum. Subject: Department-Wide Policy for Nursing and Lactation Rooms*, 1 November 2016  
[https://www.wbdg.org/FFC/DOD/DOD\\_NursingMothersMemo\\_110116.pdf](https://www.wbdg.org/FFC/DOD/DOD_NursingMothersMemo_110116.pdf)

*OUSD Memorandum for Assistant Secretary(s) of the Army (IE&E), Navy (EI&E), Air Force (IE&L), Directors of Defense Agencies, Directors of Defense Activities, Director, Washington Headquarters Service. Subject: Floodplain Management on Department of Defense Installations*, 11 February 2014  
[https://www.wbdg.org/FFC/DOD/DUSDIE\\_Memo\\_FloodplainMgmt.pdf](https://www.wbdg.org/FFC/DOD/DUSDIE_Memo_FloodplainMgmt.pdf)

**UNITED STATES NAVY**

NAVSEA OP 5, *Ammunition and Explosives Safety Ashore*  
<https://nossa.dc3n.navy.mil/nrws3/> (must be registered user)

**UNITED STATES OFFICE OF PERSONNEL MANAGEMENT**

*OPM Guide for Establishing a Federal Nursing Mother's Program*  
<https://www.opm.gov/policy-data-oversight/worklife/reference-materials/nursing-mother-guide.pdf>