Naval Facilities Engineering Systems Command

Introduction to Antiterrorism & Security Engineering Criteria Program

Presented to
NAVFAC FAR EAST

John Lynch, P.E. and Julie Heup, P.E.
Planning, Design and Construction Criteria (PDCC)
Engineering Criteria and Programs

October 2024

Agenda

- Program Authority
- Criteria Program Organizational Structure
- Document Use
- Criteria Purpose and Strategy
- Criteria Integration
- Program Execution
- UFC 1-200-01 DoD Building Code
- Core Documents and Other Criteria Resources
- NAVFAC Engineering Criteria & Program
- DoD Security Engineering Working Group
- NAVFAC Antiterrorism and Security Engineering

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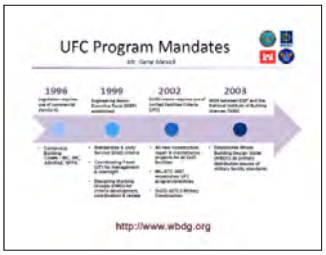
UFC Program Authority

- DoD Defense Standardization Program (DSP) – DoDI 4120.24
  - Established to promote standardization of material, facilities, and engineering practices
  - Maximize use of non-Government standards, commercial technologies, products, and practices
- Use commercial standards (1996)
  - IBC, IMC, ASHRAE, ASTM etc.
- Engineering Senior Executive Panel (ESEP) (est. 1999)
  - Standardize and Unify Service Criteria - Fullest extent practical
  - Coordinating Panel (CP) - Management & oversight
  - Discipline Working Groups (DWG) - Criteria development, coordination & review
- DUSD Memo: Department of Defense Unified Facilities Criteria (2002)
  - "..are to be used by the Military Departments, the Defense Agencies, and DoD Field Activities.."
  - MIL-STD-3007 STANDARD PRACTICE FOR UFC and UFGS
    - UFC program/practices
- MOA between ESEP and the National Institute of Building Sciences (NIBS)
  - Whole Building Design Guide (WBDG) as primary distribution source of military facility standards
- MIL-STD-3007 STANDARD PRACTICE FOR UFC, FC and UFGS
  - MIL-STD-3007 follows the requirements of the DSP program and establishes procedures for the development and maintenance of UFC, FC, and UFGS.
  - UFC/FC - Unified Facilities Criteria/Facilities Criteria
    - Planning, design, construction, operation and maintenance
  - UFGS - Unified Facilities Guide Specifications
    - Performance and prescriptive facility material and construction requirements



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UFC Program Organization

Engineering Senior Executive Panel (ESEP)	Michael McAndrew Deputy Assistant Secretary of Defense (Con) OASD (EI&E)	Pete Perez, PE, Chief, Engineering & Construction USACE	S. Keith Hamilton, PE Chief Engineer NAVFAC	Thomas Brown, PE Deputy Director of Civil Engineers / Engineering – Force Protection HQ USAF
	PROGRAM GUIDANCE, RESOURCING, AND CRITERIA APPROVAL			
Coordinating Panel (CP)	Jonathan Petry, RA ODASD (Con) OASD(EI&E)	Scott Wick, PE USACE	Cynthia De Jong, RA (Acting) NAVFAC	Renee Ayala, PE AFCEC
	PROGRAM MANAGEMENT			
Criteria Working Groups	Architecture Aviation Civil Comprehensive Plng Contingency Eng.	Cost Engineering Construction Electrical Facility Space Plng Fire Protection	Geotechnical Mechanical Medical Pavements/Airfields Renew. Energy Gen. Fuels	Security Specifications Structural Sustainability Utility Control Waterfront
	DOCUMENT PRODUCTION			

UNIFIED FACILITIES CRITERIA AND GUIDE SPECIFICATIONS

UFC, FC and UFGS Document Use

- DoD Military Construction Program
  - DoD MILCON ~ $10B to $20B annually
  - Facility Sustainment, Restoration and Modernization (FSRM) program
- Project Types
  - Worldwide
  - Installation Facilities and Infrastructure
    - Buildings: administrative, operational, industrial, medical, schools, housing, aviation, waterfront, above/underground, weapons system facilities, etc.
    - Infrastructure: utilities, energy, roads, bridges, airfields, waterfront, etc.
- Delivery Method – Design-Build (DB) & Design-Bid Build (DBB)
  - In-house AE and contracted AE services
    - ~65% contracted AE services
  - DB methodology ~40% of the overall program
  - DBB ~60% (in recent years)

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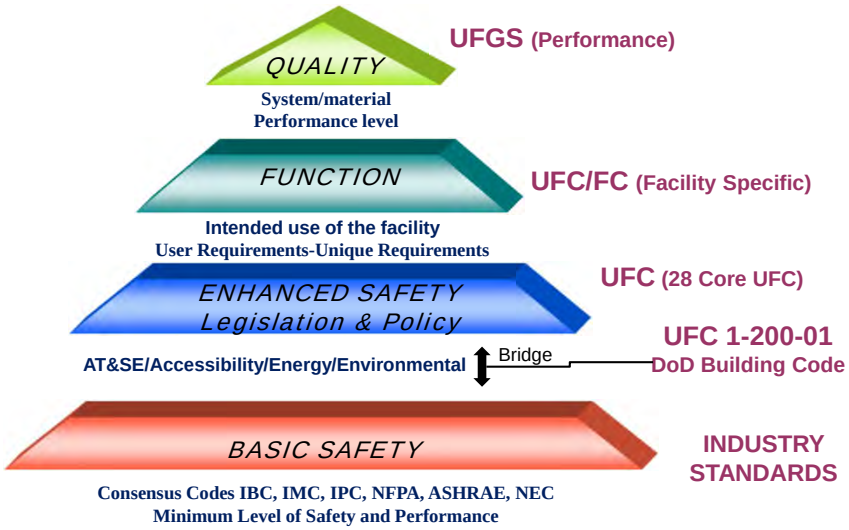
Criteria Purpose & Strategy



Criteria Integration

UFC
(Unified Facility Criteria)-(200)
Planning, Design, Construction and Maintenance,

UFGS
(Unified Facility Guide Specifications) (776)
"Prescriptive Specifications"

Industry Codes & Standards

DB RFP
(Design Build Request for Proposal)
PTS "Performance Specifications"

Program Execution

FOUNDATION DOCUMENTS:

- MIL-STD-3007G *Standard Practice Unified Facilities Criteria, Facilities Criteria And Unified Facilities Guide Specifications*
  - *History, terminology, procedure (some), waivers and exemptions*
- UFC 1-300-01 *Criteria Format Standard*
  - MS Word Template
- UFC 1-300-02 *Unified Facilities Guide Specifications (UFGS) Format Standard*

CRITERIA MANAGEMENT SYSTEMS:

- National Institute of Building Sciences - Whole Building Design Guide - WBDG
  - All current and historical UFC and UFGS
- National Institute of Building Sciences – Criteria Management System – CMS
  - UFC, FC, UFGS + Other document management system
  - Manage the development, revisions and changes to various documents
    - Source documents, comments/responses
    - Document statistics
    - Program metrics/statistics

UFC AND UFGS MANAGEMENT & POSTINGS:

- UFC New releases, Revisions or Changes
  - Anytime – Posting date typically 1st of the month
    - Changes – Can/may occur at any time.
    - New releases and Revisions require ESEP signature approval
- UFGS New releases, Revisions or Changes
  - Quarterly – NOV, FEB, MAY, AUG (3rd week of the month)
    - UFGS updates submitted minimum 1 month and 3 weeks prior to month of release
      - 1st of OCT, JAN, APR, JUL
    - Require DWG coordination and concurrence/awareness

WBDG Whole Building Design Guide

WBDG a program of the National Institute of Building Sciences

Criteria Management System

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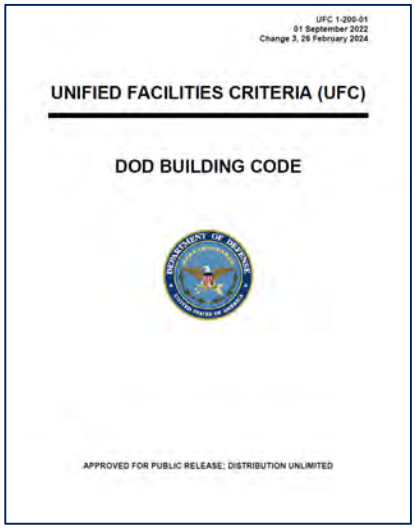
UFC 1-200-01 DoD Building Code

- **Purpose:**
  - **Provides general building requirements, establishes the use of consensus building codes and standards, identifies key core UFC, and identifies unique military criteria.**
- **Applicability**
  - **This UFC applies to the design and construction of new and renovated Government-owned facilities for the Department of Defense (DoD).**
- **Lead Agency: Navy**
  - **Point of contact: Steven Cofer**
- **Current Document Status:**
  - **Published September 2022 w/Change 2 February 2024 (www.wbdg.org)**



Core UFCs

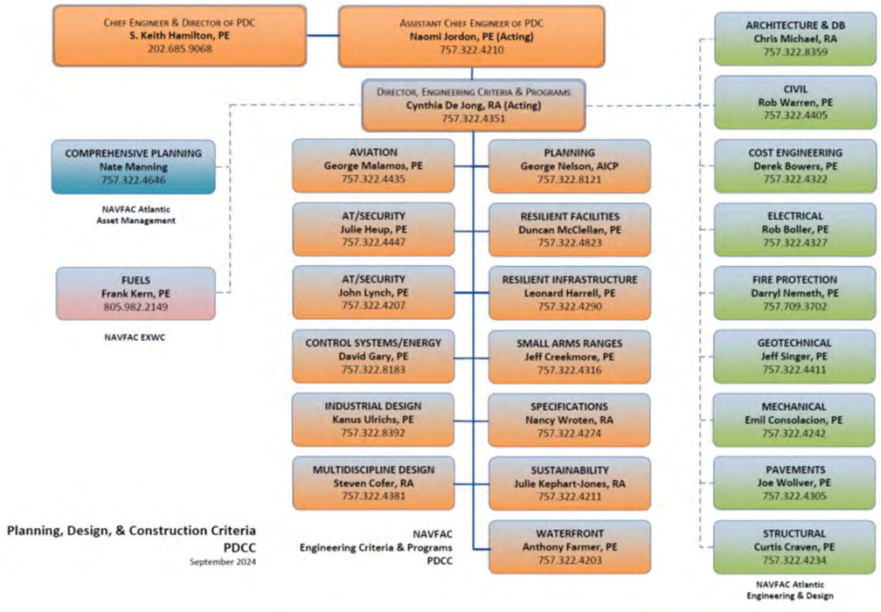
1-200-01 DoD Building Code (General Building Requirements)
1-200-02 High Performance and Sustainable Building Requirements

3-101-01 Architecture
3-110-03 Roofing
3-120-10 Interior Design
3-201-01 Civil Engineering
3-210-10 Low Impact Development
3-220-01 Geotechnical Engineering
3-230-01 Water Storage, Distribution, & Transmission
3-230-03 Water Treatment
3-240-01 Wastewater Collection
3-301-01 Structural Engineering
3-310-04 Seismic Design for Buildings
3-401-01 Mechanical Engineering
3-410-01 Heating Ventilation and Air Conditioning
3-420-01 Plumbing Systems
3-400-02 Engineering Weather Data
3-501-01 Electrical Engineering
3-520-01 Interior Electrical Systems
3-530-01 Interior & Exterior Lighting & Controls
3-540-01, Engine-Driven Generator Systems for Backup Power Applications
3-550-01 Exterior Power Distribution
3-560-01 Electrical Safety
3-580-01 Telecommunications Building Cabling Systems Planning and Design
3-600-01 Fire Protection Engineering
4-010-01 DoD Minimum AT Standards
4-021-01 Mass Notification Systems

Criteria – UFC & UFGS

26	**Core UFCs**	Consists of general building requirements, high performance mandates, and discipline specific systems found in most all buildings. Focus on building code compliance, life safety, legislation compliance, & performance
29 4	Facility Type UFC **Facility Type FC**	(Fitness Centers ,CDCs, Fire Stations, etc.): Tri-Service and Navy Only. Focus on mission, function, space, amenities, and QOL.
148	Specialty UFCs	Less frequent usage but contains important unique requirements (Piers, mooring, dockside utilities, ranges, master planning, airfield pavements & drainage, petroleum fuel facilities, boiler control systems, security engineering, cathodic protection, & etc.)
698	UFGS	Quality intended for 40-55 year service life. TOC and lessons learned based.

NAVFAC Engineering Criteria and Program - PDCC



DoD Security Engineering Working Group (SEWG)

Primary Group Members

- **Air Force Civil Engineer Center (AFCEC) (Chair)**
- **Naval Facilities Engineering System Command (NAVFAC)**
- **U.S. Army Corps of Engineers (USACE) Protective Design Center (PDC)**

Other Participants

- **Members of the "Joint" services & other DoD agencies**
  - **OSD, Navy, Marine Corp, Air Force, Army, Defense Threat Reduction Agency, Medical/DHA, various others…**
- **DoD Engineers, Architects, & Security Professionals involved in Security Engineering**
  - **Achieve a balance between operational requirements, security operations and facility requirements.**

US Army Corps of Engineers

NAVFAC AT & SE Criteria Program Key Personnel

Julie M. Heup, PE (GS-14)

- **Registration:** Professional Engineer – Colorado and Wisconsin
- **Education**
  - BS Architectural Engineering/ minor Structural Engineering, Milwaukee School of Engineering, 1992
  - Certified Site Security Manager for Secure Facilities, 2023
- **Experience Summary**
  - Naval Facilities Engineering Systems Command
    - NAVFAC Criteria: Special Assistant Antiterrorism and Security Engineering – 2023
      - Technical Warrant Holder (TWH) Secure Facilities
    - MIDLANT: Antiterrorism Force Protection Program Manager – 2010-2023
    - PWD Norfolk: Structural Engineer – 2009-2010
  - Private Sector Consulting Engineering Firms – 1992-2009

John J. Lynch, PE (GS-13)

- **Registration:** Professional Engineer – Pennsylvania
- **Education**
  - BCE, Villanova University, 1982
  - MCE, Villanova University, 1989
- **Experience Summary**
  - Naval Facilities Engineering Systems Command
    - NAVFAC Criteria: Antiterrorism and Security Engineering Criteria Manager – 2000-Present
    - NAVFAC Criteria: Structural Engineering, Waterfront and Harbors Criteria Manager – 1995-2000
    - NAVY CRANE CENTER: Structural Engineer – 1992-1995
    - NORTHDIV: Structural Engineer/Waterfront and Foundations – 1983-1992

NAVFAC AT & Security Engineering Community of Practice

NAVFAC Planning, Design, and Construction
Antiterrorism and Security Engineering Points of Contact
May 13, 2024

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- DoD Security Engineering Working Group (SEWG) Representatives
- DoN Secure Facilities Working Group Representatives
- Develop, Publish, and Maintain Technical Criteria and Standards
- Provide Planning, Design, and Construction and Support to all NAVFAC Echelons
- Conduct AT & SE Criteria Awareness Training throughout the Navy Enterprise
- Develop and maintain AT & SE community of practice with representatives from all NAVFAC Echelon, II, III, IV Commands, and other members of the DoD SEWG

NAVFAC AT&SE CoP Contacts

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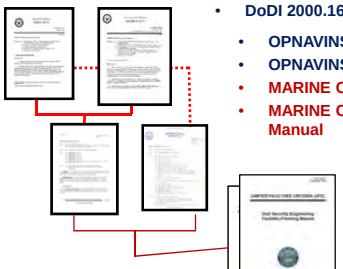
DoD SEWG Focus

- **SEWG New Projects for FY 25**
  - UFC 4-022-02: Selection and Application of Vehicle Barriers (Complete Revision)
  - UFC 4-026-03: Design of Shielding to Reduce Electronic Emanations (New)
  - UFGS 34 75 13.15: Passive Vehicle Barriers
- **SEWG Top Priority for FY24**
  - Working with the Architectural Working Group on updating several UFGS such as shielding for TEMPEST/HEMP/RF Countermeasures in support of and as part of the ongoing SCIF/SAPF programs.
  - Published Change 3 to UFC 4-010-01, DoD Minimum AT Standards for Buildings
- **SEWG Work In Progress**
  - UFC 4-020-01: DoD Security Engineering Facilities Planning Manual (Complete Revision)
  - UFC 4-021-02: Electronic Security Systems (Complete Revision)
  - UFC 4-022-01: Entry Control Facilities/Access Control Points (Complete Revision)
  - UFC 4-023-04: Design of Windows to Resist Explosives Effects (New)
    - Will publish as a Tri-Service Technical Security Engineering Working Group (TTSEWG) Manual
  - UFC 4-025-01: Waterfront Security (Complete Revision)
  - UFC 4-027-01: Design of Deployed Operational Bases to Mitigate Terrorist Attacks (New)
- **SEWG Successes in FY23**
  - UFC 4-010-05, SCIF/SAPF Planning, Design, and Construction (Complete Revision – now includes guidance for SAPFs)
  - Continue to provide the Navy/NAVFAC enterprise training in the area of AT and SE related criteria. Updated training webpage on the WBDG.
- **SEWG Greatest Challenge**
  - In house resources for criteria projects.
  - Most of our criteria is DoD centric with not a lot of expertise in the industry.
  - We have attempted to contract criteria efforts where we can but have had issues getting those efforts completed.

DoD Policy and Security Engineering Criteria

- DoDI 2000.12 DoD Antiterrorism (AT) Program
- DoDI 2000.16 DoD Antiterrorism (AT) Program Implementation (2 Vols)
  - OPNAVINST 3300.53D, Navy Antiterrorism Program
  - OPNAVINST 5530.14E, Navy Physical Security and Law Enforcement
  - MARINE CORPS ORDER (MCO) 3302.1F: Marine Antiterrorism Program
  - MARINE CORPS ORDER (MCO) 5530.14A: USMC Physical Security Program Manual



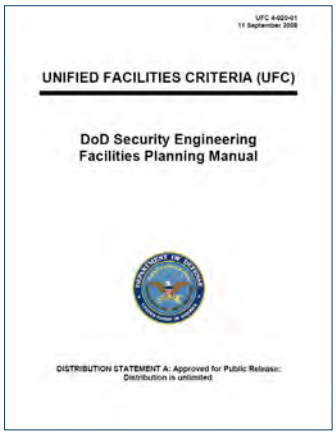
- UFC 4-020-01 Security Engineering Facilities Planning Manual
- UFC 4-020-02 Security Engineering Facilities Design Manual (IN DRAFT)

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

- Security Engineering Unified Facilities Criteria

UFC 4-020-01, SECURITY ENGINEERING FACILITIES PLANNING MANUAL

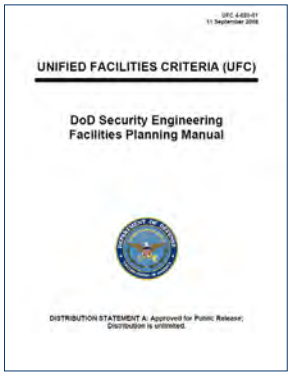
- **PURPOSE: To provide a unified risk based approach to support planning of projects that include requirements for security and antiterrorism protective measures**
- **APPLICABILITY: New construction, existing construction or expeditionary and temporary construction.**
- **INTENDED USERS: Engineering planners responsible for project development and planning teams responsible for developing design criteria for projects.**
- **GOAL: Develop appropriate, effective, unobtrusive, and economical protective designs to a level appropriate for project programming and to provide commanders with the information they need to allocate resources.**



UFC 4-020-01, SECURITY ENGINEERING FACILITIES PLANNING MANUAL

- **Chap 1 INTRODUCTION**
- **Chap 2 AGGRESSOR THREAT AND TACTICS**
- **Chap 3 DESIGN CRITERIA DEVELOPMENT**
- **Chap 4 DESIGN STRATEGIES**
- **Chap 5 MASTER PLANNING CONSIDERATIONS**
- **Chap 6 PROJECT COST DEVELOPMENT**

- **GLOSSARY**
- **APPENDIX A NEW CONSTRUCTION COST TABLES**
- **APPENDIX B RETROFIT CONSTRUCTION COST TABLES**
- **APPENDIX C CONSOLIDATED CONSTRCUTION COMPONENT TABLES**
- **APPENDIX D EXPEDITIONARY CONSTRUCTION COSTS**
- **APPENDIX E BLANK WORKSHEETS**



Security Engineering Unified Facility Criteria

MULTIDISCIPLINE	
4-020-01	Security Engineering Facilities Planning Manual
4-020-02	Security Engineering Facilities Design Manual
4-010-01	DoD Minimum Antiterrorism Standards for Buildings
4-010-03	Security Engineering: Physical Security Measures for High Risk Personnel
4-010-04	Security Engineering: Vaults, Arms Rooms, Secure Rooms, and Magazines
4-010-05	SCIF/SAPF Planning, Design and Construction
4-010-06	Cybersecurity of Facility-Related Control Systems

SITE DEVELOPMENT/BUILDING LAYOUT	
4-022-01	Entry Control Facilities Access Control Points
4-022-02	Selection and Application of Vehicle Barriers
4-022-03	Security Fences and Gates
4-025-01	Security Engineering: Waterfront Security
4-026-01	Security Engineering Design to Resist Forced Entry
4-026-02	Design for Mitigating Acoustic Emanations
4-027-01	Design of Deployed Operational Bases to Mitigate Terrorist Attacks
4-028-01	Critical Infrastructure Planning Manual

Published Documents Available On the Whole Building Design Guide Website at:

https://www.wbdg.org/ffd/dod/unified-facilities-criteria-ufc

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Security Engineering Unified Facility Criteria

STRUCTURAL/WEAPONS EFFECTS	
4-023-01	Structural Design to Resist Explosives Effects for New Buildings
4-023-02	Retrofit of Existing Buildings to Resist Explosive Effects
4-023-03	Design of Buildings to Resist Progressive Collapse
4-023-04	Design of Windows to Resist Blast, Ballistic, and Forced Entry
4-023-06	Design of Mail Rooms, Delivery Points, and Building Entrances to Resist Explosive Effects
4-023-07	Design to Resist Direct Fire Weapons Effects
4-023-08	Design to Resist Indirect Fire Weapons Effects
4-023-10	Design for Safe Havens

ELECTRICAL	
4-021-01	Mass Notification Systems, Design and O&M
4-021-02	Electronic Security Systems
4-026-03	Design of Shielding for Reducing Electronic Emanations

CHEMICAL/BIOLOGICAL	
4-024-01	Procedures for Designing Airborne Chemical, Biological, and Radiological Collective Protection for Buildings
4-024-05	Design to Protect Against Waterborne Chemical, Biological, and Radiological Contaminants

Published Documents Available On the Whole Building Design Guide Website at:

https://www.wbdg.org/ffd/dod/unified-facilities-criteria-ufc

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Security Engineering Unified Facility Guide Specifications

OPENINGS	
08 34 01	Forced Entry Components
08 34 02	Bullet-Resistant Components
08 56 63	Detention and Security Windows
08 87 23.13	Window Retrofit Systems

Transportation	
34 75 13.13	Crash Rated Active Vehicle Barriers and Controls
34 75 13.15	Crash Rated Passive Vehicle Barriers

Exterior Improvements (Civil Working Group)	
32 31 13	Chain Link Fences and Gates
32 31 13.53	High Security Chain Link and Ornamental Fences and Gates

OPENINGS (Architecture Working Group)	
08 11 13	Steel Doors and Frames
08 11 16	Aluminum Doors and Frames
08 39 54	Blast Resistant Doors
08 44 00	Curtain Walls and Glazed Assemblies
08 51 13	Aluminum Windows
08 51 23	Steel Windows
08 56 53	Blast Resistant Tempered Glass Windows
08 81 00	Glazing
13 49 20	Radio Frequency (RF) Shielding
13 49 30	High-Altitude Electromagnetic Pulse (HEMP) Shielding

Published Documents Available On the Whole Building Design Guide Website at:

https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs

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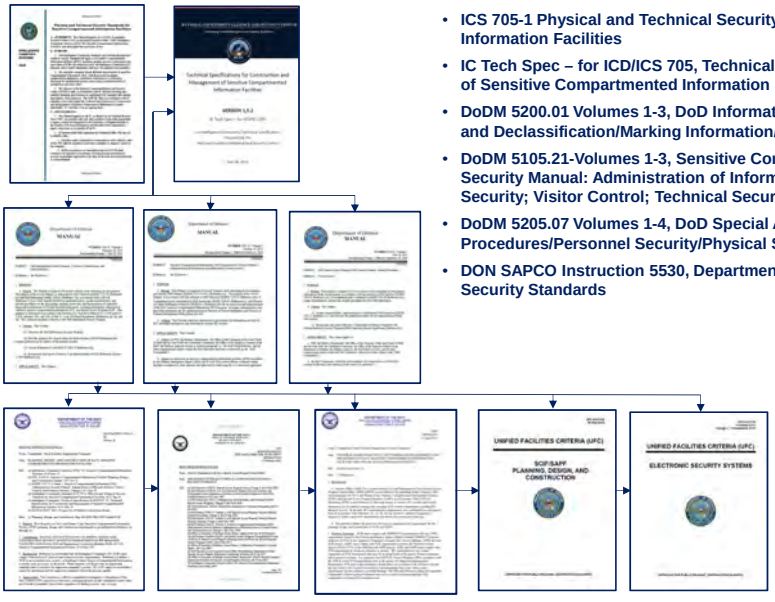
HOT TOPIC - Policy for SCIF and SAPF



- ICS 705-1 Physical and Technical Security Standards for Sensitive Compartmented Information Facilities
- IC Tech Spec – for ICD/ICS 705, Technical Specifications for Construction and Management of Sensitive Compartmented Information Facilities
- DoDM 5200.01 Volumes 1-3, DoD Information Security Program: Overview, Classification, and Declassification/Marking Information/Protection of Classified Information
- DoDM 5105.21-Volumes 1-3, Sensitive Compartmented Information (SCI) Administrative Security Manual: Administration of Information and Information Systems Security/Physical Security; Visitor Control; Technical Security/Industrial Security; Special Activities
- DoDM 5205.07 Volumes 1-4, DoD Special Access Program (SAP) Security Manual: General Procedures/Personnel Security/Physical Security/Marking
- DON SAPCO Instruction 5530, Department of the Navy Special Access Program Physical Security Standards

- UFC 4-010-05 SCIF/SAPF Planning, Design and Construction
- NAVFACINST 4700.1A Planning, Design and Construction SCIF
- NAVFACENGSYSCOM Serial Letter 11000, CHENG/056, Technical Radio Frequency Countermeasure Requirements for DON Sensitive Compartmented Information Facilities and Special Access Program Facilities (SCIF/SAPF)
- UFC 4-021-02 Electronic Security Systems

Criteria Hot Topics

- Facility Space Planning
  - Better alignment of facility space planning with design criteria
- Architecture
  - Paints and coatings (corrosion protection)
  - Radio Frequency Countermeasures (Shielding)
- Aviation
  - New Platform Requirements (P8A, F-35, MQ-25, V-22)
  - Challenges between Planning and Design Criteria
  - TRAINING – Aviation Training
  - Tension Fabric Structures (Hangars)
- Civil
  - Sea-level Rise/DFE (NDAA 2019 and NDAA 2020 requirements)
  - Water (stateside and overseas) and Waste Water
- Construction
  - Front-end UFGS sections
- Contingency Engineering
  - Major revision underway to 3 of the contingency UFC
  - UFC allow for risk based on duration
- Cost Engineering
  - Study to evaluate cybersecurity project costs
  - Continual updates to costs UFC and cost guidance (2 times per year?)

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Criteria Hot Topics

- Electrical
  - Lighting criteria and lighting controls (open protocol)
  - Li-Ion Battery storage
- Fire Protection
  - Challenges between IBC and NFPA requirements
  - AFFF going away OCT 2024/2025
  - Inclusion of Mass Notification Systems in UFC 3-600-01
- Fuels
  - Leverages Federal Fuel Facilities Panel efforts
- Geotechnical
  - Major effort underway to rewrite DM7.1 and DM7.02
- Mechanical
  - DOE Energy mandates, LCCA
  - Open Protocol
- Medical
  - Next revision to UFC underway
- Pavements/Airfields
  - Major effort to update documents
  - Numerous UFGS very specific to unique requirements
  - Contingency airfield requirements
- Facility and Installation Resiliency
  - Resilience – Climate, Cyber, Energy
  - DoD and Service Resilience Policy Evolving

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Criteria Hot Topics

- Security
  - Antiterrorism Minimum Standards
  - UFC Security Engineering Planning Manual
  - Planning, Design, Construction of SCIF/SAPF
  - Electronic Security Systems (ESS)
- Specifications
  - UFGS Format Standards
  - Front end UFGS sections
- Structural
  - Alignment with industry standards – Progressive Collapse
  - Seismic Safety Program? Extra High Risk Buildings?
- Sustainability
  - DOE Energy mandates, 30% baseline ASHRAE 90.1
  - Guiding Principle Compliance
- Control Systems
  - Open protocol (suite of control system UFGS)
  - Cybersecurity
- Waterfront
  - Composite materials (CVN and Sub Camels)
  - New Platforms (CVN, Columbia Class, etc.)
  - Drydocks (SIOP)

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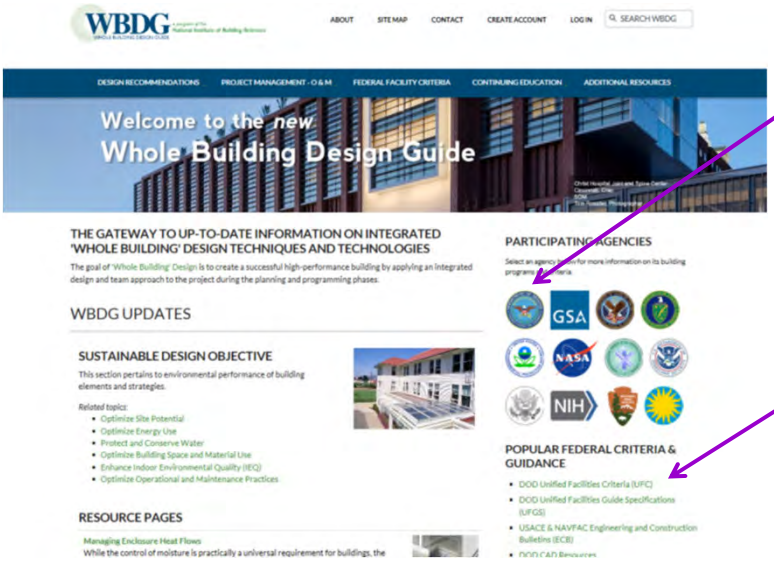
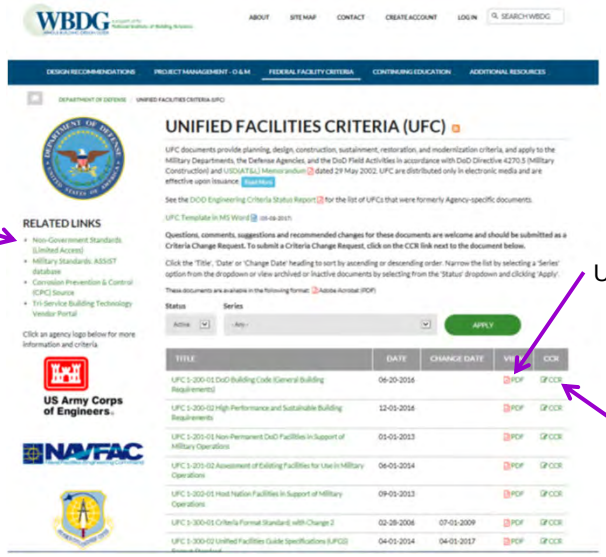
WBDG – DoD Criteria



WBDG – DoD Criteria



Industry Standards

UFC Download

Submit a CCR Criteria Change Request

WBDG – NAVFAC Training & Seminars

- **Available AT&SE UFC Seminars**
  - **UFC Program and Security Engineering Criteria**
  - **Introduction to Physical Security and Protective Measures**
  - **Introduction to Secure Facilities**
  - **Introduction to Perimeter Security – ECF/Barriers/Fences-Gates**
  - **UFC 4-010-01 DoD Minimum Antiterrorism Standards**
  - **SCIF and SAPF Criteria for The Design and Planning Communities of Practice**
  - **UFC 4-020-01 Security Engineering Facility Planning Manual**
  - **UFC 4-021-02 Electronic Security Systems**
  - **UFC 4-025-01 Security Engineering: Waterfront Security**
- **Budget & Cost Tools**
  - **ESS Cost Estimator**
  - **ESS Budget Estimator**
  - **Gate Automation Budget Estimator**
- **Navigate to content from WBDG DoD page https://www.wbdg.org/dod**
  - **Click on the NAVFAC icon**
  - **Click on "Training & Seminars"**
  - **Click on "Antiterrorism and Security Engineering Unified Facilities Criteria Seminars"**
  - **https://www.wbdg.org/ffc/navy-navfac/training-seminars/antiterrorism-security-engineering-ufc-seminars**

Thanks!

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