



# Electrical Military Workshop

Infrastructure Systems  
Conference  
August 05

# Electrical- Military Workshop



## Professional Development Hours

**Monday Through Thursday**

**19 PDHs**

# Electrical - Military Workshop



## Today (Wednesday)

**8:00-9:30**

**Tri-Service Criteria Overview**

**10:30-12:00**

**Lighting Criteria  
Information Technology Criteria**

**2:00-3:30**

**Mass Notification System  
Electronic Card Access Locks**

**4:00-5:30**

**Lightning Protection**

# Electrical - Military Workshop



## Thursday

**8:00-9:30**

**Electronic Security**

**Airfield Lightning Protection,  
Grounding & Lighting**

**10:30-12:00**

**Electrical Safety and Arc Flash  
Electrical Infrastructure in Iraq**

# Electrical - Military Workshop



Thursday

Training Session

**1:00-5:00 2005 NEC Code Changes**



# Tri - Service Electrical Criteria

Infrastructure Systems  
Conference  
August 05

# Tri-Service Electrical Criteria



- **Origin of Tri-Service Criteria Mandate**
- **Introduction of Electrical Working Group**
- **Review of UFC and UFGS Initiatives**
- **Whole Building Design Guide**
- **Non-Government Standards Contract**
- **Questions**

# DOD Unified Facilities Criteria



- **Implemented by 29 May 2002 letter from USD E.C. Aldridge**
- **MIL-STD-3007B, 1 April 2002, Standard Practice for Unified Facilities Criteria and Unified Facilities Guide Specifications**



# Tri-Service Electrical Working Group



- **Corps of Engineers**
  - Bob Billmyre
  - Bob Fite
- **Navy**
  - John Peltz
  - Richard Cofer
- **Air Force**
  - Larry Strother
  - Daryl Hammond

# Unified Facilities Criteria (UFC)



- **Design Criteria to replace TMs, AFMANs, MIL-HDBKs, etc.**
- **Updates - true Tri-Service documents**
- **Some existing Documents have been renumbered**
- **See UFCs on WBDG**  
**([http://65.204.17.188/report/doc\\_ufc.html](http://65.204.17.188/report/doc_ufc.html))**

# UFC - Progress Overview



<b>Series 3-500 Elect *</b>	<b>5 / 03</b>	<b>7 / 05</b>	<b>200X</b>
<b>Total Scheduled</b>	<b>57</b>	<b>37</b>	<b>22</b>
<b>- Unified</b>	<b>43</b>	<b>22</b>	<b>22</b>
<b>- Air Force Only</b>	<b>5</b>	<b>2</b>	<b>0</b>
<b>- Army Only</b>	<b>4</b>	<b>3</b>	<b>0</b>
<b>- Navy Only</b>	<b>3</b>	<b>10</b>	<b>0</b>
<b>Total Published</b>	<b>2</b>	<b>13</b>	<b>22</b>
<b>- Unified</b>	<b>2</b>	<b>6</b>	<b>22</b>
<b>- Air Force Only</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>- Army Only</b>	<b>0</b>	<b>2</b>	<b>0</b>
<b>- Navy Only</b>	<b>0</b>	<b>5</b>	<b>0</b>

\* (incl 2 in 4-020 Sec )

# UFC - Progress Overview (Cont'd)



<b>Series 3-500 Elect</b>	<b>5 / 03</b>	<b>7 / 05</b>	<b>200X</b>
<b>Total In Progress</b>	<b>15</b>	<b>19</b>	<b>0</b>
<b>- Unified</b>	<b>3</b>	<b>11</b>	<b>0</b>
<b>- Air Force Only</b>	<b>5</b>	<b>2</b>	<b>0</b>
<b>- Army Only</b>	<b>4</b>	<b>1</b>	<b>0</b>
<b>- Navy Only</b>	<b>3</b>	<b>5</b>	<b>0</b>
<b>Total In Planning</b>	<b>38</b>	<b>5</b>	<b>0</b>

# Unified Facilities Criteria (UFC)



## Published, Tri-Service:

<b>3-510-01</b>	<b>Foreign Voltages</b>
<b>3-520-01</b>	<b>Interior Electrical Systems</b>
<b>3-570-06</b>	<b>Cathodic Protection O&amp;M</b>
<b>3-580-10</b>	<b>NMCI Std Constr Practices</b>
<b>4-021-01</b>	<b>Mass Notification Systems</b>

# Unified Facilities Criteria (UFC)



## Published, Not Tri-Service:

<b>3-501-03 N</b>	<b>Elect Eng Prelim Des Consid</b>
<b>3-540-04 N</b>	<b>Diesel Elect Gen Plants</b>
<b>3-550-03</b>	<b>Exterior Elect Distrib - 2 vers.</b>
<b>3-560-10 N</b>	<b>Electrical Safety</b>
<b>3-570-02</b>	<b>Cathodic Prot Des- 2 vers.</b>
<b>4-020-04 FA</b>	<b>Electronic Security Systems</b>
<b>4-021-02N</b>	<b>Electronic Security Systems</b>

# Unified Facilities Criteria (UFC)



**Completed, in approval process:**

**3-530-01**

**Lighting**

**3-535-01**

**Airfield Lighting ( Vol I)**

**3-580-01**

**Telecom, Inside Plant**

# Unified Facilities Criteria (UFC)



## Final Draft in Review:

<b>3-500-10N</b>	<b>Elect Design (incl design-build)</b>
<b>3-500-05</b>	<b>RF Shielded Enclosures</b>
<b>3-560-01</b>	<b>Electrical Safety</b>
<b>3-575-01</b>	<b>Lightning Protection</b>
<b>4-021-02N</b>	<b>Electronic Security Systems</b>



# Unified Facilities Criteria (UFC)



## In Progress:

<b>3-500-04</b>	<b>Battery Rooms</b>
<b>3-500-10</b>	<b>Electrical Design</b>
<b>3-535-02</b>	<b>Airfield Lighting, (Vol II)</b>
<b>3-550-01</b>	<b>Exterior Electrical Distribution</b>
<b>3-570-07</b>	<b>Cathodic Protection Design</b>
<b>3-580-02</b>	<b>Telecom, Outside Plant</b>
<b>4-021-XX</b>	<b>Electronic Security PV</b>
<b>4-021-XX</b>	<b>Electronic Security Testing</b>
<b>4-021-02 A</b>	<b>Electronic Security System</b>

# Unified Facilities Guide Specs (UFGS)



## Simple Concept

- Existing: UFGS 16xxxN  
UFGS 16xxxA
- Updated to: UFGS 16xxx
- Master Format – upcoming
- Current Listings on WBDG

[http://www.wbdg.org/design/ufg\\_specs.php](http://www.wbdg.org/design/ufg_specs.php)

# Unified Facilities Guide Specs (UFGS)



## Master Format Overview

- Current #'s per 1995 Const Specs Institutes (CSI)
- CSI rev and exp #'s in 2004, see ([http://www.csinet.org/s\\_csi/docs/9400/9361.pdf](http://www.csinet.org/s_csi/docs/9400/9361.pdf)).
- Previous 16 Divs exp to 49 Divs for rapid dev areas
- Div 13 Sec - to Div 28
- Div 16 Pwr – Most to Div 26, Some to 33
- Div 16 Telcom & Spec Syst – Most Div 27, Some 33
- Div 16 Fiber and VFDs - to Div 40

# Unified Facilities Guide Specs (UFGS)



## Master Format Overview (Cont'd)

- Navy, Army, Air Force and NASA to MasterFormat 2004
- UFGS sect #'s use new syst to level 4 (XX XX XX.XX)
- Additional level 5 planned to replace the "A" and "N"
  - Instead of "A" use XX XX XX.XX 10
  - Instead of "N" use XX XX XX.XX 20
- Other agencies (NASA, VA, EPA, GSA) joining UFGS would carry extensions (30, 40, 50, etc)
- Goal - Revised #'s early as Oct 2005

# UFGS - Progress Overview



	2003	2005	200X
<b>Div 13 Spec Syst</b>			
- Total	20	21	14
- Unified	2	5	14
- Army Only	9	7	0
- Navy Only	9	9	0
<b>Div 16 Electrical</b>			
- Total	77	64	49
- Unified	2	19	39
- Army Only	36	29	0 (10cw)
- Navy Only	39	16	0

# Unified Facilities Guide Specs (UFGS)



## Highlights

- **16050N, Basic Elect Materials & Methods – will be eliminated and content incorp in individual specs**
- **16081, Apparatus Inspection & Testing - adopted by all services**

# Unified Facilities Guide Specs (UFGS)



## Interior Electrical

- 16402 incorp / replaced 16415A & 16402N
- Separate lighting specs & plates –
  - Interior 16510 & Exterior 16520
- Separate sw board & sw gear spec - 16442
- Separate VFD spec 16261 - in progress
- Unified UPS spec 16262 – in progress

# Unified Facilities Guide Specs (UFGS)



## Exterior Electrical

- UG - 16302 in progress incorp 16375A
- Aerial – 16301 in progress incorp 16370A

With separate supporting specs for:

- 3 ph transformers 16272
- 1 ph transformers 16273
- SF6 padmount switchgear 16341N
- Secondary unit substations 16360
- Primary unit substations 16361N



# Unified Facilities Guide Specs (UFGS)



## Engine Generators

- **Upcoming - Merge 16237N with 16263A & 16264A to create one or two UFGS**
- **16230N, 16231N, 16232N, 16233N, 16234N have been eliminated**
- **16236N MG sets used by waiver only**

# Unified Facilities Guide Specs (UFGS)



## Electronic Systems

- **Electronic Security - Merge 13720A & 13721A with 13702N & 13703N ( in final new draft)**
- **CCTV – new 16751 in progress**
- **Telecom – Interior 16710 & Exterior 16711 replaced previous Army and Navy versions**

# Unified Facilities Guide Specs (UFGS)



## Miscellaneous Merges

- Airfields - 16522N, 16525A, 16526 A - Planned
- LP- 13100N & 13100A - Final draft in prog
- Cath Prot - 13110-12N, 13110-12A - Planned
- ATS - 16410N, 16410A - In progress
- Intercom - 16721A, 16822N - Final draft in rev
- Shielding - 13092N, 13090A - Planned

# Tri-Service Electrical Criteria



## Whole Building Design Guide

[“http://www.wbdg.org/”](http://www.wbdg.org/)

- Links to UFC, UFGS, and Non-Government Standards Contract (IHS)
- IHS has most standards referenced in UFGS and UFCs
- Link to IHS via Army:  
[“http://www.wbdg.org/pdfs/army\\_ihs\\_brochure.pdf”](http://www.wbdg.org/pdfs/army_ihs_brochure.pdf)
- Link to IHS via Navy:  
[“https://login.ihserc.com/cgi-bin/ihslogin?”](https://login.ihserc.com/cgi-bin/ihslogin?)

# Whole Building Des Guide (wbdg.org)



WBDG - Whole Building Design Guide - Microsoft Internet Explorer provided by Navy Marine Corps Intranet

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**BUILDING ENVELOPE DESIGN GUIDE**  
(Washington, DC - June 22, 2005) The National Institute of Building Sciences (NIBS) under contract from the Army Corps of Engineers, Naval Facilities Engineering Command, US Air Force, General Services Administration, Department of Energy, and Federal Emergency Management Agency has developed a [comprehensive guideline](#) for exterior envelope design and construction for institutional/office buildings. [Read more](#)

**ProductGuide™ Launched May 19, 2005 at the AIA Show**  
(Las Vegas, NV - May 19, 2005) National Institute of Building Sciences (NIBS), in alliance with McGraw-Hill Construction and Tectonic Network, Inc., launched ProductGuide, the first online database of building products that complies with Unified Facilities Guide Specifications (UFGS) requirements for products used in building construction projects funded by Department of Defense (DoD), military agencies, and

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- [Reliability-Centered Maintenance \(RCM\)](#)
- [Assessment Tools for Accessibility](#)
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- [Low Impact Development Technologies](#)
- [Distributed Energy Resources \(DER\)](#)
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- Space Types
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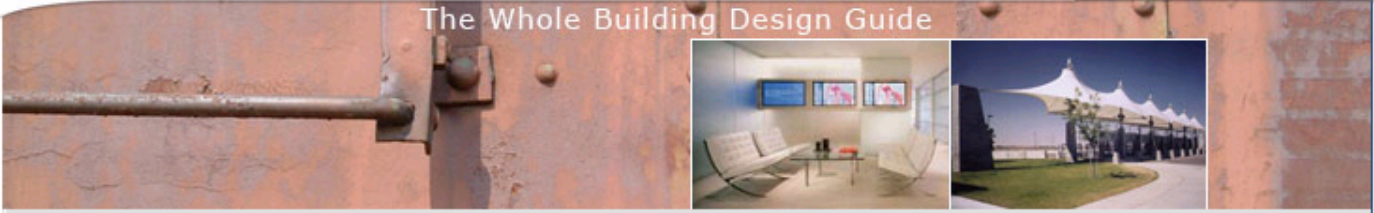
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Participating Agencies:



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## Department of Defense (DOD)

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### Unified Facilities Criteria Program

- [Unified Facilities Guide Specifications \(UFGS\)](#)
- [Unified Facilities Criteria \(UFC\) Technical Publications](#)
- [Criteria Change Request \(CCR\)](#)
- [Unified Facilities Space Program Spreadsheets](#)

The Department of Defense (DoD) and the military services have initiated a program to unify all technical criteria and standards pertaining to planning, design, construction, and operation and maintenance of real property facilities. The objective of the Unified Facilities Criteria (UFC) program is to streamline the military criteria system by eliminating duplication of information, increasing reliance on private-sector standards, and creating a more efficient criteria development and publishing process. Both technical publications and guide specifications are part of the UFC program. Previously, each service had its own publishing system resulting in criteria being disseminated in different formats. [UFC documents](#) have a uniform format and are identified by a number such as UFC 1-300-1.

Though unification of all DOD criteria is the ultimate goal, there are instances when a particular document may not apply to all services, or some documents may have not been fully revised to reflect all service requirements before being issued in the UFC system. In these instances, the UFC or UFGS document number will be followed by an alpha-designator, such as UFC 1-300-09N or UFGS 01320A. Alpha-designators are as follows:

A USACE



IHS Technical Solutions



Non-Government Standards-IHS



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### Accessing IHS Products

Go to the Whole Building Design Guide Website:

<http://www.wbdg.org>

Choose the DoD Seal from the right. This will open the DoD Unified Criteria Program web page. A link to Information Handling Services is contained in the drop-down menu beneath the USACE seal - "Non-Government Standards - IHS". Click on this link. The web site will automatically log you in to the IHS subscription via your email address.

**U.S. Army Corps of Engineers  
Point of Contact**

**Robert Billmyre**  
[robert.b.billmyre@hq02.usace.army.mil](mailto:robert.b.billmyre@hq02.usace.army.mil)


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# Tri-Service Electrical Working Group



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**“Daryl.Hammond at Tyndall.af.mil”**

**“John.Peltz@navy.mil”**

**“Richard.Cofer@navy.mil”**

# Tri-Service Electrical Working Group



**Any Questions ? ?**

**Thank - You !!**