US DoD Antiterrorism Design Standards in Europe

Information Brief

25 August 2023

Task
For information to SAME Rhein Main Post members

Purpose
• Improve quality of AE incorporation of ATFP requirements in project deliverables by clarifying US DoD and EUCOM requirements, explaining USG expectations for AEs, and providing resources to AEs

End State
• Familiarity with applicable AT design criteria and methodologies in order to correctly reference, apply, and develop building design packages for US DoD projects throughout Europe

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Agenda

- Antiterrorism (AT) Requirement Sources
- Minimum AT Standards
- Additional Requirement Sources
- Facility Design Basis Threat
- AT Responsibilities and Roles

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AT Requirement Sources

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AT Requirement Sources, History

Date	Event	Method	Killed	Injured	Lesson
1983	Beirut Barracks	VBEIDs 7k kg/15k lb	307	75	Standoff & barriers
1993	WTC	VBIED 606 kg/1,336 lb	6	1042	Underground parking
1995	Murrah Federal Building, OKC	VBIED at 15 ft. 2,000 kg/4,800 lb	168	258	Progressive collapse
1996	Khobar Towers, Saudi Arabia	VBIED at 72 ft. 11,000 kg/25,000 lb	20	498	AT Design Codes and MWN
1998	US Emb. Kenya & Tanzania	VBIEDs 900 kg/2000 lb	224	4000+	FDB & secondary fragmentation
2001	WTC	Aircraft	2,996	6,000+	Emergency management
2008	Mumbai (12)	Firearms and IEDs	166	308	Coordinated attacks
2014	Peshawar Army Public School	Firearms	141	114	Children (132)
2017	OKC, BancFirst	VBIED 453 kg/1000 lb	0	0	Persistent tactics

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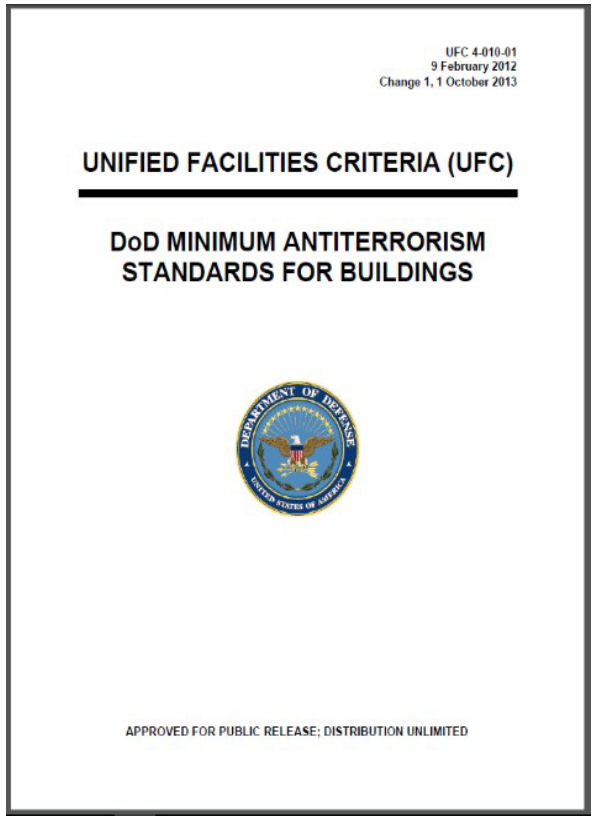
AT Requirement Sources, History

- **Intent**
  - **Minimize mass casualties**
  - Standardization across DoD to reduce **subjectivity** for reasonable and **justifiable** levels of threat and protection



- **Evolution of DoD AT Requirements**
  - 1999: **Interim** after Khobar findings
  - 2002: First version of UFC 4-010-01
  - 2003: Standoff per **25 m & 45 m**
  - 2007: Minor changes
  - 2012: Standoff **per bldg. materials**
  - 2013: Minor changes
  - 2018: **VBIED threat tactic eliminated as minimum standard (But not in EUCOM)**

AT Requirement Sources

- **DoD Facilities**
  - **Unified Facilities Criteria (UFC)**
    - **UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings**
    - UFC 4-010-03 Security Measures for High-Risk Personnel
    - **UFC 4-020-01 DoD Security Engineering Facilities Planning Manual**
    - UFC 4-020-02 DoD Security Engineering Facilities Design Manual
    - UFC 4-021-01 Mass Notification Systems
    - UFC 4-022-01 Access Control Points
    - **UFC 4-022-02 Selection of Vehicle Barriers**
  - Theater and Agency Supplements
    - **U.S. European Command AT Operations Order 23-01**
    - **Army Europe Regulation 525-13 Antiterrorism**
    - IMCOM-Europe Guidelines for Offices
    - DoDEA Protection Criteria 4-010-01
    - Army Standard for Access Control Points, 2020
    - NATO ACO Directive 80-25 Force Protection


CUI

HEADQUARTERS
UNITED STATES
EUROPEAN COMMAND

ANTITERRORISM
OPERATIONS ORDER
23-01

CUI

Minimum AT Standards for Buildings
UFC 4-010-01

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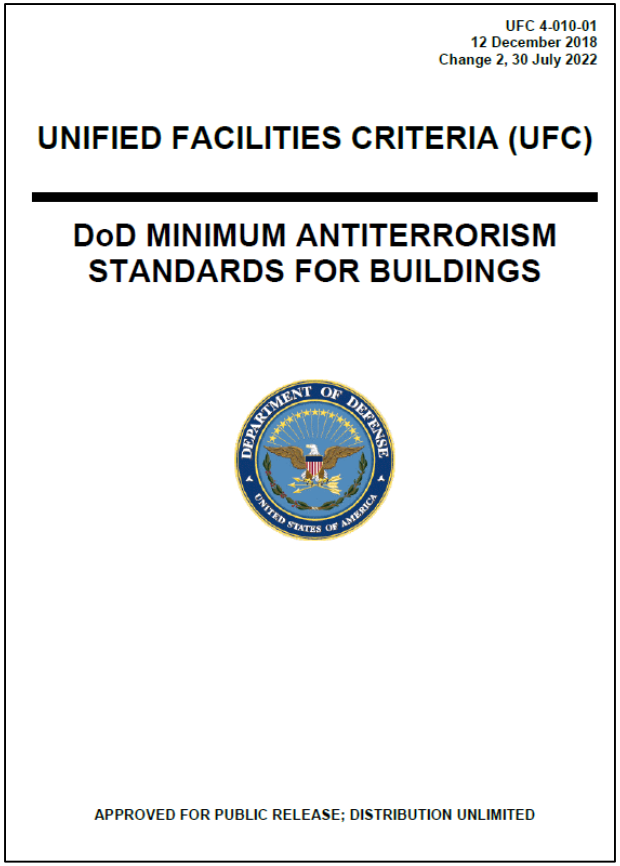
Minimum AT Standards, Introduction

- **Applicability:**
  - New Construction
  - Changes to Existing Buildings
  - Change of Occupancy
  - Window Replacement Projects
  - HVAC Replacement Projects
  - Leased Buildings
  - See UFC for more…
- **Exemptions:**
  - "Low Occupancy" Buildings (<11 people)
  - "Temporary" and Relocatable Buildings, Transitional Spaces
  - Not Routinely Occupied
  - See UFC for more…


UFC 4-010-01
12 December 2018
Change 2, 30 July 2022

UNIFIED FACILITIES CRITERIA (UFC)

DoD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

Minimum AT Standards, Introduction

- **UFC 4-020-01 must be used to determine the Design Basis Threat (DBT) and Level Of Protection (LOP) for each project**

- **Use minimum standards of UFC 4-010-01 and EUCOM only when UFC 4-020-01 results in no identified threat or level of protection**

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Minimum AT Standards, 2018 Changes

Not Applicable in USEUCOM AOR

- **Summary of 2018 UFC changes**
  - Eliminated VBIED as minimum threat scenario (But not in EUCOM)
    - Only protects occupants from collateral damage of VBIEDs targeting other buildings (But not in EUCOM)
  - Progressive collapse considerations no longer required for existing buildings
  - Appendix B and C (extensive and includes windows)

- **Impact**
  - Less forgiving for omissions and errors of AT topics in project development
  - Increased importance of AT stakeholder involvement in planning
  - Increased importance of performance and accuracy of facility DBT Analysis
  - Increased importance of blast design

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Minimum AT Standards, Overview

Revised by USEUCOM AT OPORD

- UFC 4-010-01 Standards
  - Site Planning
    - **1: Standoff Distances**
    - **2: Unobstructed Space**
    - **3: Drive-Up/Drop-Off Areas**
    - **4: Access Roads**
    - 5: Parking Beneath Buildings or on Rooftops
  - Structural Design
    - 6: Progressive Collapse Resistance
    - 7: Structural Isolation
    - 8: Building Overhangs and Breezeways
    - 9: Exterior Masonry Walls
  - Architectural Design
    - **10: Glazing**
    - 11: Building Entrance Layout
    - **12: Exterior Doors**
    - 13: Mail Rooms and Loading Docks
    - 14: Roof Access
    - 15: Overhead Mounted Architectural Features
  - Electrical & Mechanical Design
    - 16: Air Intakes
    - 17: Mail Room and Loading Dock Ventilation
    - 18: Emergency Air Distribution Shutoff
    - 19: Equipment Bracing
    - 20: Under Building Access
    - 21: Mass Notification

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Minimum AT Standards, Stds. 1-4

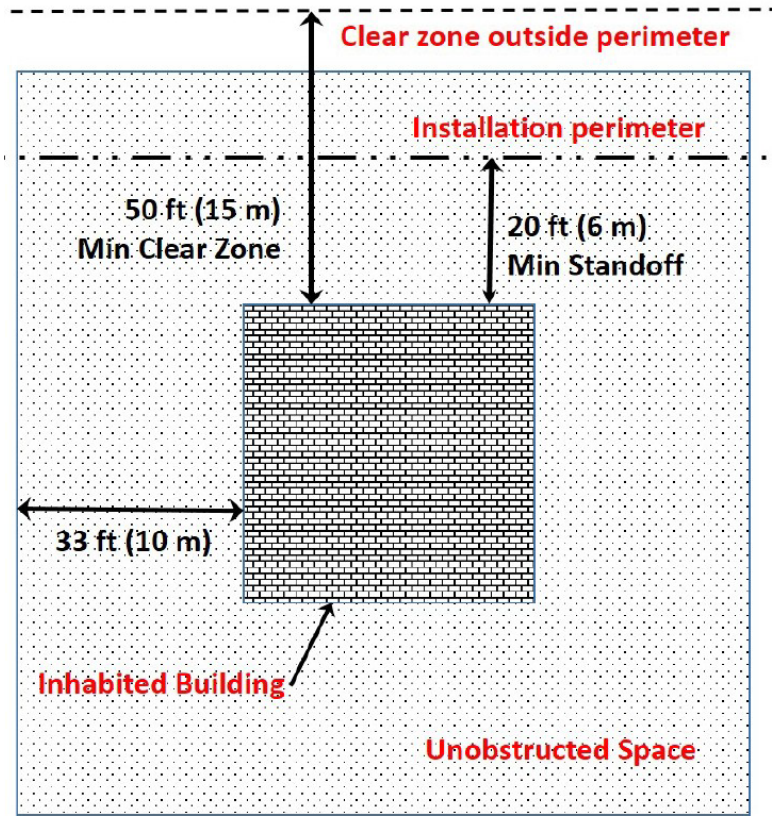
Not Applicable in USEUCOM AOR

- **Std. 1: Standoff Distances**
  - No standoff requirements from roadways and parking within controlled perimeter
  - Required standoff to perimeter is 6-15 m
  - Perimeter standoff not required for existing buildings

- **Std. 2: Unobstructed Space**
  - Unobstructed space set to 10 m, parking allowed

- ~~**Std. 3: Drive-Up/Drop-Off Areas**~~
- ~~**Std. 4: Access Roads**~~
  - Eliminated restrictions for access roads, etc.

Figure 3-1 Installation Perimeter with Outer Clear Zone



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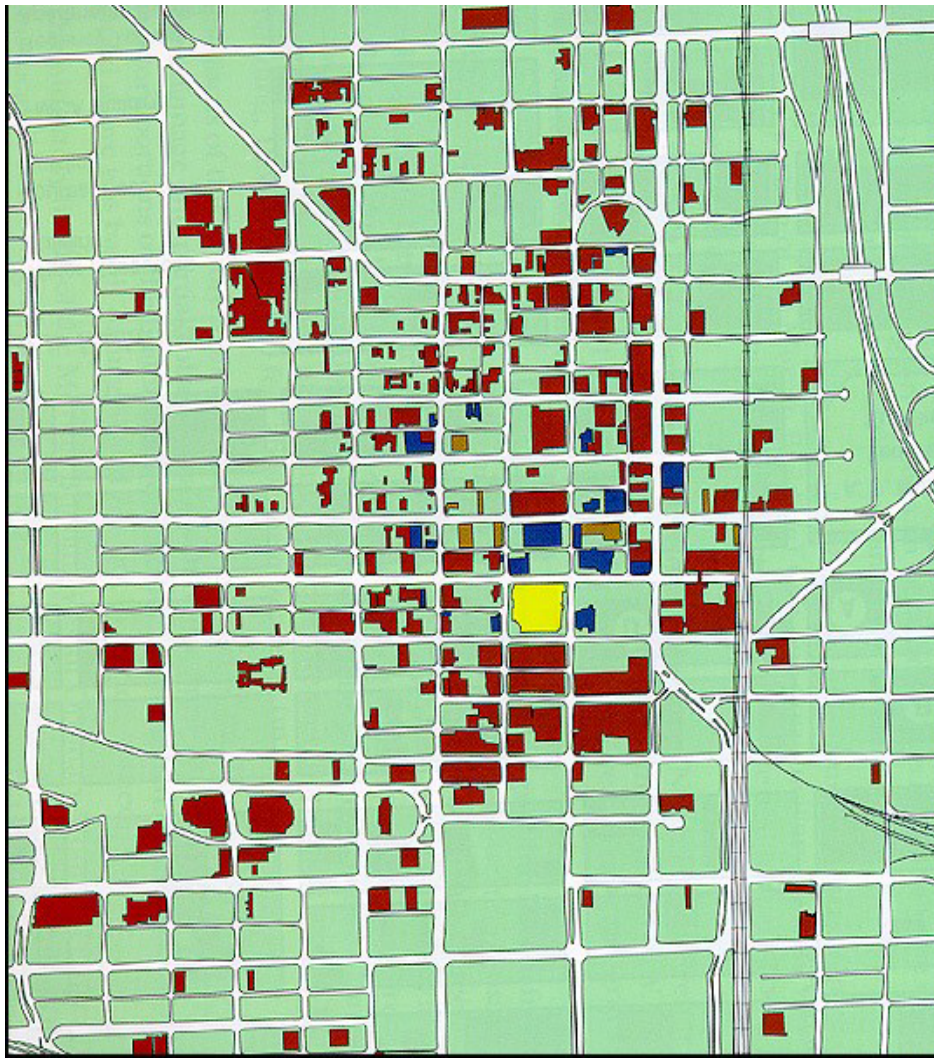
Minimum AT Standards, Std. 10&12 Glazing & Doors

Not Applicable in USEUCOM AOR

- **Std. 10: Glazing**
  - Windows prescribed minimum of 6 mm laminated glass for collateral damage

- **Std. 12: Exterior Doors**
  - Doors not designed for blast, need only to open outwards



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Minimum EUCOM AT Standards, Stds. 1-4

- **EUCOM required VBIED DBTs and LOPs**
- **(Refer to EUCOM AT OPORD for values, omitted here for public release)**
  - **Large Passenger Car of X kilograms**
  - **VBIED DBT sizes are dependent on actual ACP operations, but NO LESS THAN X kilograms inside and X kilograms outside an access controlled installation**
    - **(CUI) Mitigation of only Stationary VBIED tactic required for:**
      - **Buildings with DBT Analysis LOP result of "Very Low"**
    - **(CUI) <u>Mitigation of Stationary and Moving VBIEDs tactics required</u> for:**
      - **Buildings with DBT Analysis LOP result of "Low" and higher, or**
      - **Buildings with 50+ occupants**
  - **(CUI) Inhabited buildings must provide at least a "Very Low" LOP against VBIED threats**
  - **(CUI) Inhabited buildings with 50+ occupants must provide at least a "Low" LOP against VBIED threats**

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Minimum EUCOM AT Standards, Stds. 1-4

- **EUCOM design guidance for VBIED DBTs**
  - **Impact: requires standoff, barriers, window designs, wall materials**
  - **Standoff and Barriers**
    - **Building standoff and wall materials to protect from VBIED**
      - **Use Appendix B of UFC 4-010-01 for VBIED design guidance**
      - **Use Appendix C of UFC 4-010-01 for standoff distances**
    - **If moving VBIED threat, building standoff must be enforced with continuous perimeter of passive and active barriers**
      - **Active barriers shall be rated, but not required to be within the DoD Anti-Ram Vehicle Barrier List**
      - **Passive barriers not required to be rated if LOP is Medium or less, but must comply with specifications within Annex D e.g. height, embedment, spacing, weight**

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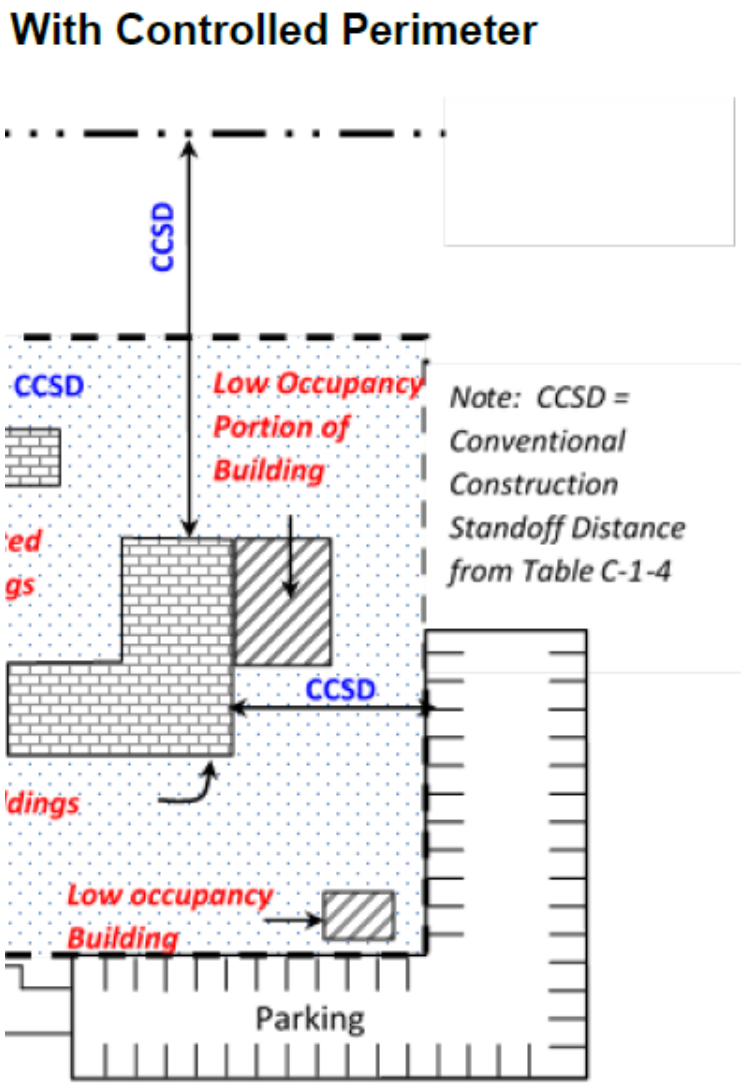
Minimum EUCOM AT Standards, Stds. 1-4

- EUCOM design standards for VBIED DBTs

- Std. 1: Standoff Distances
  - Required from parking, roadways, and perimeter, etc.
  - Use tables of UFC's Appendix C
  - If moving VBIED tactic applicable, standoff shall be enforced with barriers

- Std. 2: Unobstructed Space
  - Unobstructed space extends to end of standoff distance; parking not allowed within

- Std. 3: Drive-Up/Drop-Off Areas
- Std. 4: Access Roads
  - If moving VBIED tactic applicable, access shall be enforced with rated barrier



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Minimum EUCOM AT Standards, Stds. 1-4

Example Standoff Table from Appendix C of UFC 4-010-01

Table C-2 Representative Standoff Distances for Low Level of Protection [7]

Construction [1]	Explosive Weight (TNT)									
	55 lbs (25 kg)		220 lbs (100 kg)		550 lbs (250 kg)		1,100 lbs (500 kg)		4,400 lbs (2,000 kg)	
	LB [2]	NLB [3]	LB [2]	NLB [3]	LB [2]	NLB [3]	LB [2]	NLB [3]	LB [2]	NLB [3]
Unreinforced European Clay Masonry [4]	38 ft (11 m)	22 ft (7 m)	163 ft (50 m)	59 ft (18 m)	398 ft (121 m)	148 ft (45 m)	748 ft (228 m)	314 ft (96 m)	1614 ft (492 m)	1146 ft (349 m)
Reinforced Masonry [4]	28 ft (9 m)	13 ft (4 m)	85 ft (26 m)	30 ft (9 m)	166 ft (51 m)	72 ft (22 m)	273 ft (83 m)	120 ft (37 m)	736 ft (224 m)	326 ft (99 m)
Reinforced Concrete [4]	22 ft (7 m)	14 ft (4 m)	104 ft (32 m)	35 ft (11 m)	234 ft (71 m)	105 ft (32 m)	424 ft (129 m)	200 ft (61 m)	1255 ft (383 m)	663 ft (202 m)
Concrete roofs and Metal Roofs w/ concrete topping[5]	13 ft (4 m)		23 ft (7 m)		50 ft (15 m)		92 ft (28 m)		270 ft (82 m)	
Windows [6]	51 ft (15 m)		123 ft (37 m)		197 ft (60 m)		269 ft (82 m)		545 ft (166 m)	
Minimum Standoff Distance [8]	13 ft (4 m)		20 ft (6 m)		26 ft (8 m)		33 ft (10 m)		50 ft (15 m)	

Standoff distance for windows and doors must be individually analyzed, and typically control (typically no less than 16 m)

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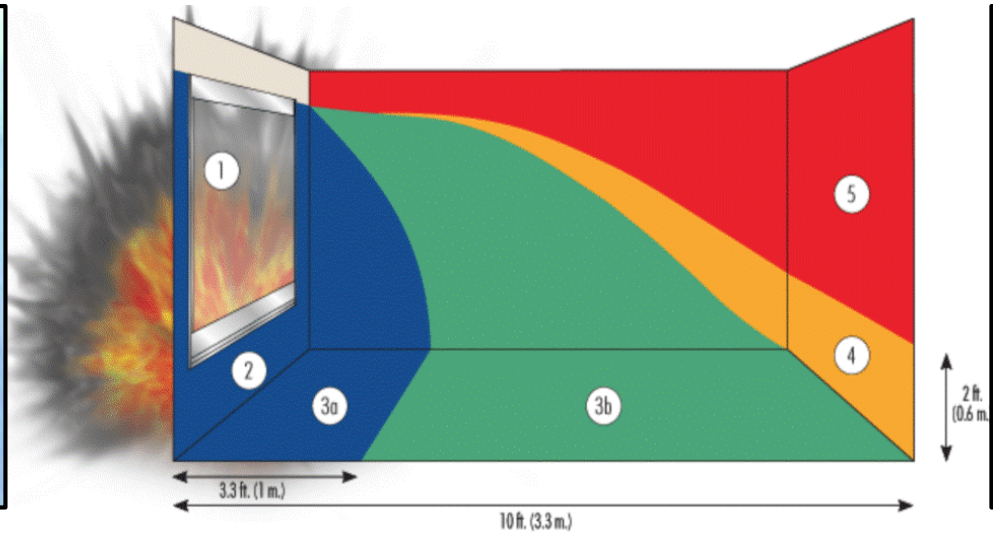
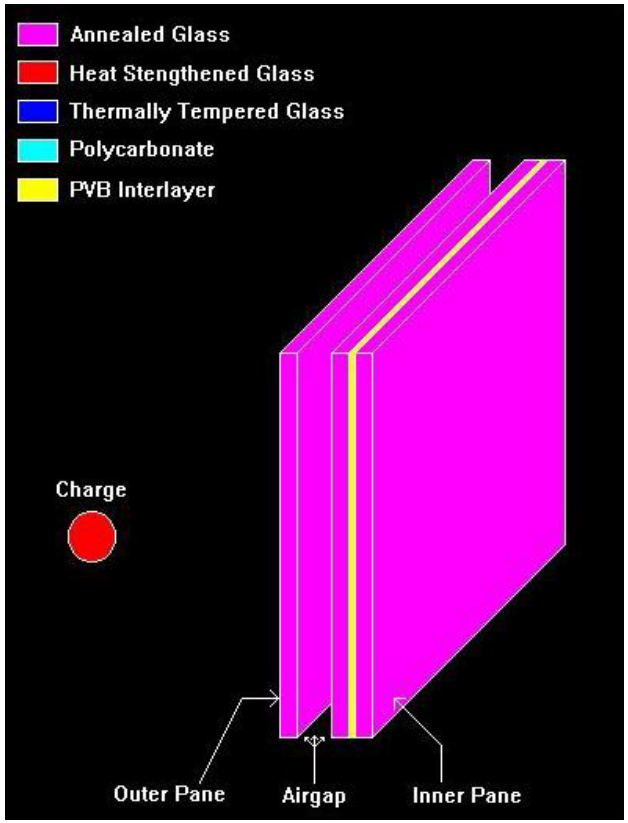
Minimum EUCOM AT Standards, Std. 10&12 Glazing & Doors

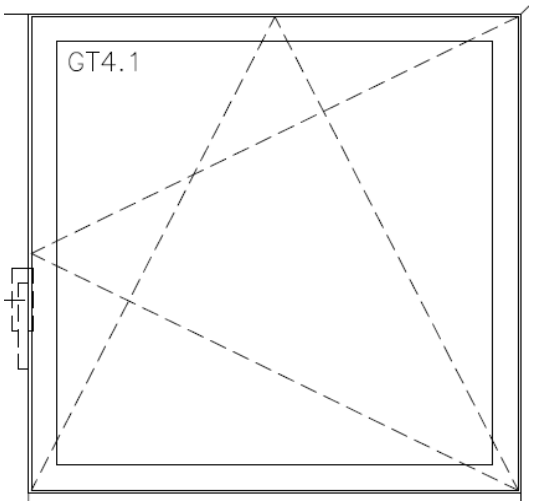
- **EUCOM design standards for VBIED DBTs**
  - **Impact: requires standoff, barriers, window designs, wall materials**
  - **Windows and Doors**
    - **Do not use the UFC prescribed window makeup of Standard 10**
    - **Windows and doors must be individually designed based on DBT, LOP, and standoff using Appendix B**

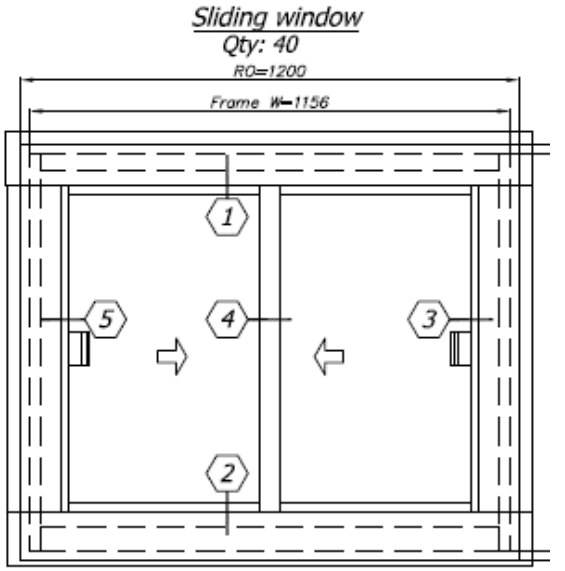


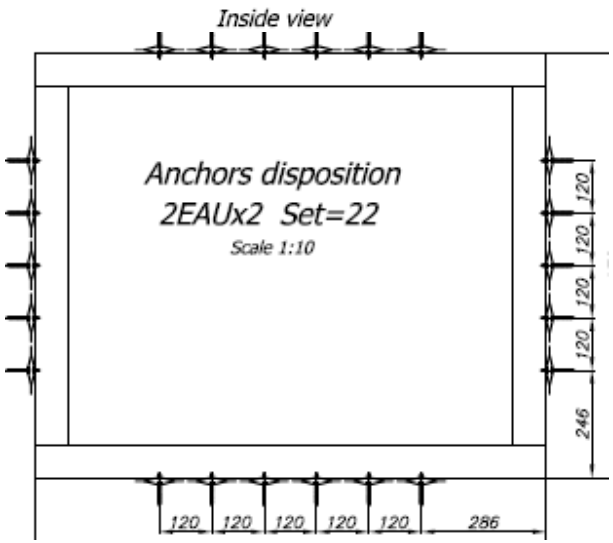
Minimum EUCOM AT Standards, Std. 10 Glazing

- **Windows often govern required standoff distance**
- **For operable windows, both inner and outer glazing panes shall be laminated**









Minimum AT Standards in EUCOM AOR

Summary of USEUCOM AT OPORD 23-01 effects in application

- Std. 1: Standoff Distances
- Std. 2: Unobstructed Space
- Std. 3: Drive-Up/Drop-Off Areas
- Std. 4: Access Roads
- Std. 10: Glazing
- Std. 12: Exterior Doors

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    - 14: Roof Access
    - 15: Overhead Mounted Architectural Features
  - Electrical & Mechanical Design
    - 16: Air Intakes
    - 17: Mail Room and Loading Dock Ventilation
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    - 19: Equipment Bracing
    - 20: Under Building Access
    - 21: Mass Notification

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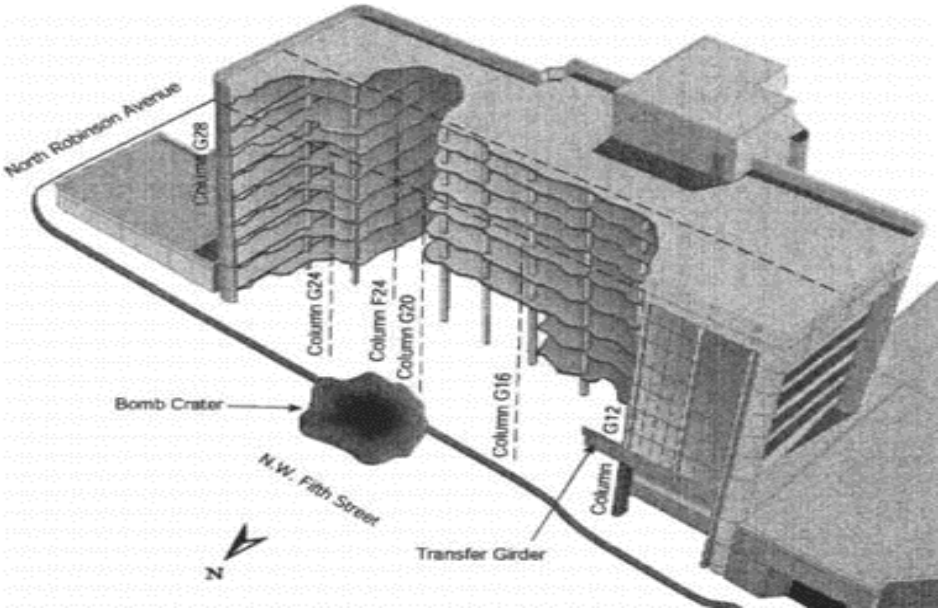
Minimum AT Standards, Std. 6 Prog. Collapse

- **Std. 6: Progressive Collapse**
  - **Localized failure => overloading and failure of adjoining members**
  - **Disproportionate damage**
  - **Required for new buildings ≥ 3 stories**



Minimum AT Standards, Stds. 15 & 19

- **Std. 15: Overhead Mounted Architectural Features**

- **Std. 19: Equipment Bracing**

If > 14 kg, special mounting and design requirements

Brussels Airport Bombing 2016

Additional Requirement Sources

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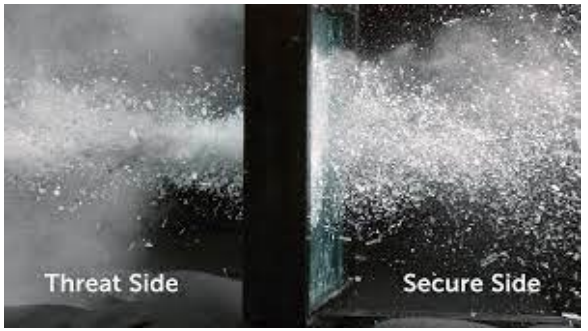
Theater Specific Requirements

- **USEUCOM AT OPORD 23-1, Annex D (v2023), key contents:**
  - **Each installation shall have at least one engineer with SET**
  - **Reinforces requirements for Local DBT (installation-wide) and Facility DBT (asset based); distinction, when, who**
  - **Additional minimum tactics e.g. standoff for stationary and moving VBIEDS**
  - **Guidance for implementation and technical design specifications**
  - **Required AT documentation submissions from planning through construction**
  - **Process to request relief from AT Construction Standards**

Theater Specific Requirements

- Other EUCOM design guidance
  - Additional applicability considerations:
    - Mitigation of Moving VBIED with existing building projects
    - Building additions, 50% threshold
    - Building renovations, can require elimination of existing parking but not roadways
  - Guidance for fragment retention film and blast curtains e.g. labeled design life
  - Ballistic protection requirements for permanent guard booths at control points
    - Minimum UL 752 Level 5 for all frontal components
    - Minimum UL 752 Level 3 for all non-threatened sides
    - Glazing will be no spall rated



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Other Specific Requirements

- **Army Europe Regulation 525-13 Antiterrorism**, Appendix E, Antiterrorism Construction Standards
  - Perimeter countermobility
  - Access Control Point (ACP) search procedures
  - Centralized parking & cantonment areas
  - Active shooter (UFC 4-023-10 Safe Havens)
  - Facility operation and response plan

- **The Army Standard for Access Control Points:**
  - Definitive design requirements e.g. back-up generator and UPS

- **DoDEA Protection Criteria 4-010-01:**
  - 36 Standards of physical security and antiterrorism criteria following similar structure and intent of UFC 4-010-01; additional school-specific considerations e.g. lockdown interior doors

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Facility Design Basis Threat
UFC 4-020-01

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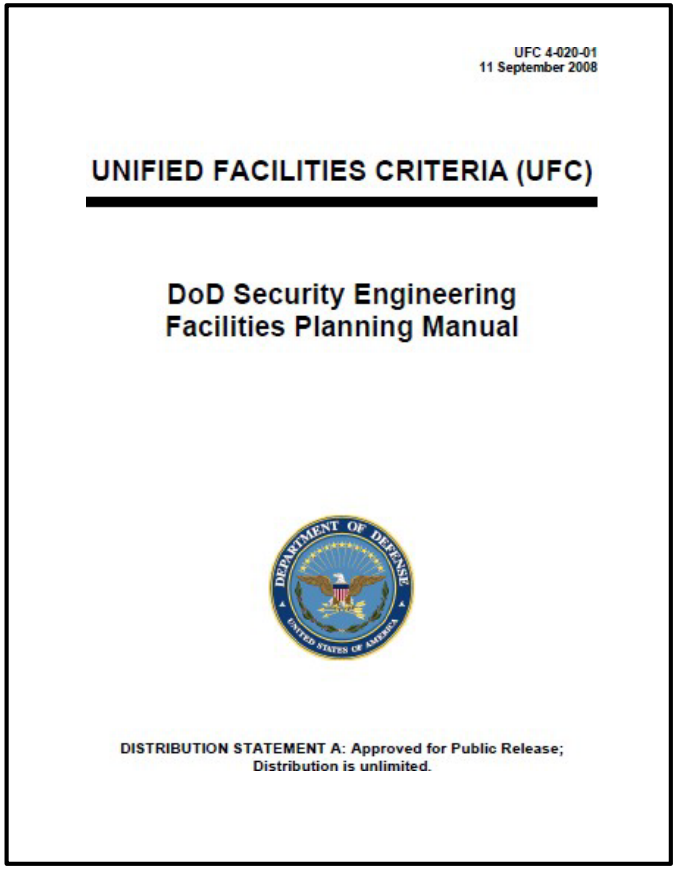
Facility DBT

- UFC 4-020-01 **DoD Security Engineering Facilities Planning Manual**
  - Chapter 3 describes steps to **perform facility design basis threat (DBT)**
  - **Risk-asset management** to establish protection thresholds
  - Chapter 4 describes **design strategies**
  - Appendixes list **cost impacts**


UFC 4-020-01
11 September 2008

UNIFIED FACILITIES CRITERIA (UFC)

DoD Security Engineering
Facilities Planning Manual

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Facility DBT

- UFC 4-020-01 Chapter 3, Design Criteria Development
  - **Risk** is function of **criticality, threat, and vulnerability**
  - Step 1: Convene the planning team
  - Step 2: Identify assets
  - Step 3: Determine **asset value**
  - Step 4: Identify **aggressor likelihoods**
  - Step 5: Identify **tactics** and threat **severity** levels
  - Step 6: Consolidate into initial **design basis threat (DBT)**
  - Step 7: Determine initial **level of protection (LOP)**
  - Step 8: Determine planning risk levels
  - Step 9: Assess acceptability of risk levels
  - Step 10: Identify user constraints

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Facility DBT, Asset Value

ASSET VALUE/AGGRESSOR LIKELIHOOD WORKSHEET

Project or Building	Asset	Analyst
A Motor Pool	*Tactical vehicles*	*Jane Q. Planner*
	Asset Category: *D*	Date: *4 August 2008*

Value Rating Factors: Criticality to User / Population Type [1]	Impact on National Defense	Replaceability	Political Sensitivity	Relative Value to User	Sum of Value Factors	Value Rating [2]
General Population						
Critical Infrastructure and Operations and Activities						
Sensitive Information						
All Other Assets						
4	*4*	*4*	*3*	*4*	*19*	*.76*

Notes:

Potential Aggressors	Aggressor Goal [3]	Aggressors	Likelihood Rating Factors: Installation Location [4]	Publicity Profile [4]	Accessibility [4]	Availability [4]	Dynamics [4]	Recognizability	Relative Value to Aggressor	Law Enforcement [4]	Aggressor Perception of Success	Threat Level	History [5] / Intentions [6]	Operational Capability [5]	Operating Environment [6]	Activity [5]	Sum of Likelihood Factors	Likelihood Rating [7]
✓	M	Unsophisticated Criminals	2	4	2	2	3	12	15	18	24	6	6				94	.52
✓	M	Sophisticated Criminals	2	4	2	2	3	12	12	18	24	6	6				91	.51
✓	M	Organized Crime Groups	2	4	2	2	3	15	9	18	30	6	6				97	.54
✓	G	Vand...	2	4	2	2	3	12	6	18	24	6	6				85	.47
✓	G	Extremist Protesters	2	4	2	2	3	15	6	18	24	6	6				88	.49
✓	G	Domestic Terrorists	2	4	2	2	3	15	9	18	24	5	4	4	6	4	102	.57
✓	G	International Terrorists	2	4	2	2	3	15	9	18	30	5	4	6	10	2	116	.64
✓	G	State Sponsored Terrorists	2	4	2	2	3	15	9	18	30	5	10	10	10	10	130	.72
✓	G	Saboteurs	2	4	2	2	3	15	3	18	30	6	6				91	.51
		Foreign Intelligence Services																

1. Population Type applies to General Population only
2. Sum of Value Ratings ÷ 10 for Sensitive Information 15 for General Population; 20 for Critical Infrastructure and Operations and Activities, 25 for all other assets
3. G for mission related goal, P for publicity related goal, M for monetary related goal
4. Factors that should be same for all aggressors for given asset
5. Applies to all aggressors other than terrorists
6. Applies to Terrorists only
7. Sum of Likelihood Ratings = 180

Value Rating Factors: Criticality to User / Population Type [1]	Impact on National Defense	Replaceability	Political Sensitivity	Relative Value to User	Sum of Value Factors	Value Rating [2]
4	*4*	*4*	*3*	*4*	*19*	*.76*

Facility DBT, Levels of Protection

Table 3-28. Applicable Levels of Protection

Tactic	Threat Severity Level	Asset Value				
		≤ 0.5	0.51 – 0.74	0.75 – 0.85	0.86 – 0.95	0.96 - 1
Moving Vehicle Bomb	All	Very Low[1]	Low[2]	Medium	High	
Stationary Vehicle Bomb		Very Low[1]	Low[2]	Medium	High	
Hand Delivered Devices		Very Low[1]	Low[2]	Medium	High	
Indirect Fire Weapons		Very Low[1]	Low	Medium	High	
Direct Fire Weapons	VH	Very Low[1]	Low	Medium[3]	High	
	L, M, H	Very Low[1]	Low		High	
Forced Entry	All	Very Low[1]	Low	Medium	High	Very High
Covert Entry			Low	Medium	High	Very High
Visual Surveillance			High			
Acoustic Eavesdropping			Low	Medium	High	Very High
Electronic Emanations Eavesdropping			High			
Airborne Contaminants		Very Low[1]	Low	Medium	High	
Waterborne Contaminants		Very Low[1]	Low	Medium	High	
Waterfront Attack		Very Low[1]	Low	Medium[3]	High	Very High

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Facility DBT, Protection Performance

Level of Protection	Potential Building Damage/Performance [2]	Potential Door and Glazing Hazards[3,4]	Potential Injury
Below AT standards[1]	Severe damage. Progressive collapse likely. Space in and around damaged area will be unusable.	Windows will fail catastrophically and result in lethal hazards. *(High hazard rating)* Doors will be thrown into rooms. *(Category V)*	Majority of personnel in collapse region suffer fatalities. Potential fatalities in areas outside of collapsed area likely.
Very Low	Heavy damage - Onset of structural collapse, but progressive collapse is unlikely. Space in and around damaged area will be unusable.	* Glazing will fracture, come out of the frame, and is likely to be propelled into the building, with potential to cause serious injuries. *(Low hazard rating)* * Doors will become dislodged from the structure but will not create a flying debris hazard. *(Category IV)*	Majority of personnel in damaged area suffer serious injuries with a potential for fatalities. Personnel in areas outside damaged area will experience minor to moderate injuries.
Low	Moderate damage – Building damage will not be economically repairable. Progressive collapse will not occur. Space in and around damaged area will be unusable.	* Glazing will fracture, potentially come out of the frame, but at reduced velocity, does not present a significant injury hazard. *(Very low hazard rating)* * Doors will experience non-catastrophic failure, but will have permanent deformation and may be inoperable. *(Category III)*	Majority of personnel in damaged area suffer minor to moderate injuries with the potential for a few serious injuries, but fatalities are unlikely. Personnel in areas outside damaged areas will potentially experience minor to moderate injuries.
Medium[5]	Minor damage – Building damage will be economically repairable. Space in and around damaged area can be used and will be fully functional after cleanup and repairs.	* Glazing will fracture, remain in the frame and results in a minimal hazard consisting of glass dust and slivers. *(Minimal hazard and No Hazard ratings)* * Doors will be openable but will have permanent deformation. *(Category II)*	Personnel in damaged area potentially suffer minor to moderate injuries, but fatalities are unlikely. Personnel in areas outside damaged areas will potentially experience superficial injuries.
High[5]	Minimal damage. No permanent deformations. The facility will be immediately operable.	* Innermost surface of glazing will not break.(No Break hazard rating) * Doors will be substantially unchanged and fully operable. *(Category I)*	Only superficial injuries are likely.

Medium LOP to blast event

- **Building:** minor damage, repairable
- **Glazing:** fracture, but remain in frame
- **Human:** injuries, but fatalities unlikely

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Facility DBT, Aggressor Likelihood

ASSET VALUE/AGGRESSOR LIKELIHOOD WORKSHEET

Project or Building	Asset	Analyst
A Motor Pool	*Tactical vehicles*	*Jane Q. Planner*
	Asset Category: *D*	Date: *4 August 2008*

Value Rating Factors

Criticality to User / Population Type[1]	Impact on National Defense	Replaceability	Political Sensitivity	Relative Value to User	Sum of Value Factors	Value Rating[2]
General Population						
Critical Infrastructure and Operations and Activities						
Sensitive Information						
All Other Assets						
4	*4*	*4*	*3*	*4*	*19*	*.76*

Potential Aggressors	Aggressor Goal[3]	Aggressors	Installation Location[4]	Publicity Profile[4]	Accessibility[4]	Availability[4]	Dynamics[4]	Recognizability	Relative Value to Aggressor	Law Enforcement[4]	Aggressors' Perception of Success	Threat Level	History[5] / Intentions[6]	Operational Capability[6]	Operating Environment[6]	Activity[6]	Sum of Likelihood Factors	Likelihood Ratings[7]
✓	*M*	Unsophisticated Criminals	*2*	*4*	*2*	*2*	*3*	*12*	*15*	*18*	*24*	*6*	*6*				*94*	*.52*
✓	*M*	Sophisticated Criminals	*2*	*4*	*2*	*2*	*3*	*12*	*12*	*18*	*24*	*6*	*6*				*91*	*.51*
✓	*M*	Organized Criminal Groups	*2*	*4*	*2*	*2*	*3*	*15*	*9*	*18*	*30*	*6*	*6*				*97*	*.54*
✓	G	Vandals	*2*	*4*	*2*	*2*	*3*	*12*	*6*	*18*	*24*	*6*	*6*				*85*	*.47*
✓	G	Extremist Protesters	*2*	*4*	*2*	*2*	*3*	*15*	*6*	*18*	*24*	*6*	*6*				*88*	*.49*
✓	G	Domestic Terrorists	*2*	*4*	*2*	*2*	*3*	*15*	*9*	*18*	*24*	*5*	*4*	*4*	*6*	*4*	*102*	*.57*
✓	G	International Terrorists	*2*	*4*	*2*	*2*	*3*	*15*	*9*	*18*	*30*	*5*	*8*	*6*	*10*	*2*	*116*	*.64*
✓	G	State Sponsored Terrorists	*2*	*4*	*2*	*2*	*3*	*15*	*9*	*18*	*30*	*5*	*10*	*10*	*10*	*10*	*130*	*.72*
✓	G	Saboteurs	*2*	*4*	*2*	*2*	*3*	*15*	*3*	*18*	*30*	*6*	*6*				*91*	*.51*
		Foreign Intelligence Services																

Notes:

1. Population Type applies to General Population only
2. Sum of Value Ratings ÷ 10 for Sensitive Information 15 for General Population; 20 for Critical Infrastructure and Operations and Activities, 25 for all other assets
3. G for mission related goal, P for publicity related goal, M for monetary related goal.
4. Factors that should be same for all aggressors for given asset
5. Applies to all aggressors other than terrorists
6. Applies to Terrorists only
7. Sum of Likelihood Ratings ÷ 180

0.64

Facility DBT, Example Worksheet

TACTIC, THREAT SEVERITY, AND LEVEL OF PROTECTION WORKSHEET

Project or Building	Asset		Analyst
A Motor Pool	*Tactical Vehicles*		*Jane Q. Planner*
	Asset Category: *D*	Asset Value: *0.76*	Date: *4 August 2008*

Tactics / Aggressors	Aggressor Likelihood	Explosives and Incendiary Devices			Standoff Weapons		Entry		Surveillance and Eavesdropping			Contamination		Waterfront Attack
		Moving Vehicle Devices	Stationary Vehicle Devices	Hand Delivered Devices	Indirect Fire Weapons	Direct fire weapons	Forced Entry	Covert Entry	Visual Surveillance	Acoustic Eavesdropping	Electronic Emanations Eavesdropping	Airborne Contamination	Waterborne Contamination	
Applicable Tactics			✓	✓	✓	✓	✓	✓						
Unsophisticated Criminals	*.52*						*L*	*L*						
Sophisticated Criminals	*.51*						*L*	*L*						
Organized Criminal Groups	*.54*			*L*		*L*	*L*	*L*						
Vandals	*< .5*													
Extremist Protesters	*< .5*													
Domestic Terrorists	*.57*		*L*	*M*	*L*	*L*	*L*	*L*						
International Terrorists	*.64*		*L*	*M*	*L*	*L*	*L*	*L*						
State Sponsored Terrorists	*.72*		*L*	*M*	*L*	*L*	*M*	*L*						
Saboteurs	*.51*			*M*	*L*	*L*	*M*	*L*						
Foreign Intelligence Services														
Initial Design Basis Threat (highest Threat Severity Level for each tactic)			*L*	*M*	*L*	*L*	*M*	*L*						
Initial Level of Protection for Applicable Tactic (Table 3-28)			*M*	*M*	*M*	*L*	*M*	*M*						

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Facility DBT, Threat Parameters

Table 3-27 Threat Parameters

Aggressor Tactic	Design Basis Threat	Weapons	Tools Or Delivery Method
Moving and Stationary Vehicle Devices	Special Case [1]	9000 kg (19,800 lbs) TNT	18,000 kg / ~ 40,000 lbs truck
	Very High	2000 kg (4400 lbs) TNT, Fuel	7000 kg / ~ 15,000 lbs truck
	High	500 kg (100 lbs) TNT, Fuel	2500 kg / ~ 5500 lbs truck
	Medium	250 kg (550 lbs) TNT, Fuel	1800 kg / ~ 4000 lbs car
	Low	100 kg (220 lbs) TNT	1800 kg /~ 4000 lbs car
	Very Low	25 kg (55 lbs) TNT	1800 kg / ~ 4000 lbs car
Hand Delivered Devices	High	IID, IED (up to 25 kg/55 lbs TNT) &hand grenades (Mail bomb limited to 1 kg/2.2 lbs TNT)	None
	Medium	IID, IED (up to 1 kg/2.2 lbs TNT) & hand grenades	
	Low	IID	
Indirect Fire Weapons Attack	Very High	Improvised mortar (up to 20 kg/44 lbs TNT)	None
	High	122 mm rocket	
	Medium	82 mm mortar	
	Low	Incendiary devices	
Direct Fire Weapons Attack	Very High	Light antitank weapons, and UL 752 Level 10 (12.7 mm (0.50 caliber), 1 shot)	None
	High	UL 752 Level 9 (7.62mm NATO AP, 1 shot)	
	Medium	UL 752 Level 5 (7.62mm NATO ball)	
	Low	UL 752 Level 3 (.44 magnum)	

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Facility DBT, Threat Parameters

- **Custom threat tactics and protection thresholds also possible e.g. sUAV surveillance/IEDs**

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Facility DBT, Threat Parameters

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Facility DBT, Protection Parameters

- UFC 4-020-01 **Chapter 4, Protection Design Strategies**
  - **Vehicle bomb tactics (stationary & moving)**
  - Hand delivered devices
  - Indirect fire weapons
  - **Direct fire weapons**
    - **Low LOP: block sightlines**
    - **High LOP: harden building elements (e.g. 4” RC for 7.62mm)**
  - Airborne contamination tactic
  - Waterborne contamination tactic
  - Waterfront attack tactic
  - **Forced entry tactic**
    - **Low LOP: 1 min. delay**
    - **High LOP: 15 min. delay**
  - Covert entry tactic
  - Visual surveillance tactic

AT in Project Lifecycle

- **Individual Buildings**

Planning → **Design** → **Construction**

- Determine Design Basis Threats and Levels of Protection using UFC 4-020-01 Chapter 3.
- List all required features in **planning** documents (e.g. SOW, PWS, DD1391 for MILCON).

- Stay engaged with **design** progression and participate in design reviews (35%, 65%, 95%) to ensure AT features are incorporated as required in prev. planning documents and governing standards.

- Stay engaged with **construction** progression and perform site inspections to ensure constructed AT features match design.

- **Also, AT in Area Development Plans**

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AT Roles in the DoD Structure

- **IMCOM-E, US Army Garrison Staff**
  - Antiterrorism Officer
  - Physical Security Officer
  - Chief of Protection
  - DPW Engineer with Security Engineering Training
- **Higher Headquarters**
  - GOFP e.g. V Corps
  - USAREUR-AF
- **USACE Europe District**
- **AEs**

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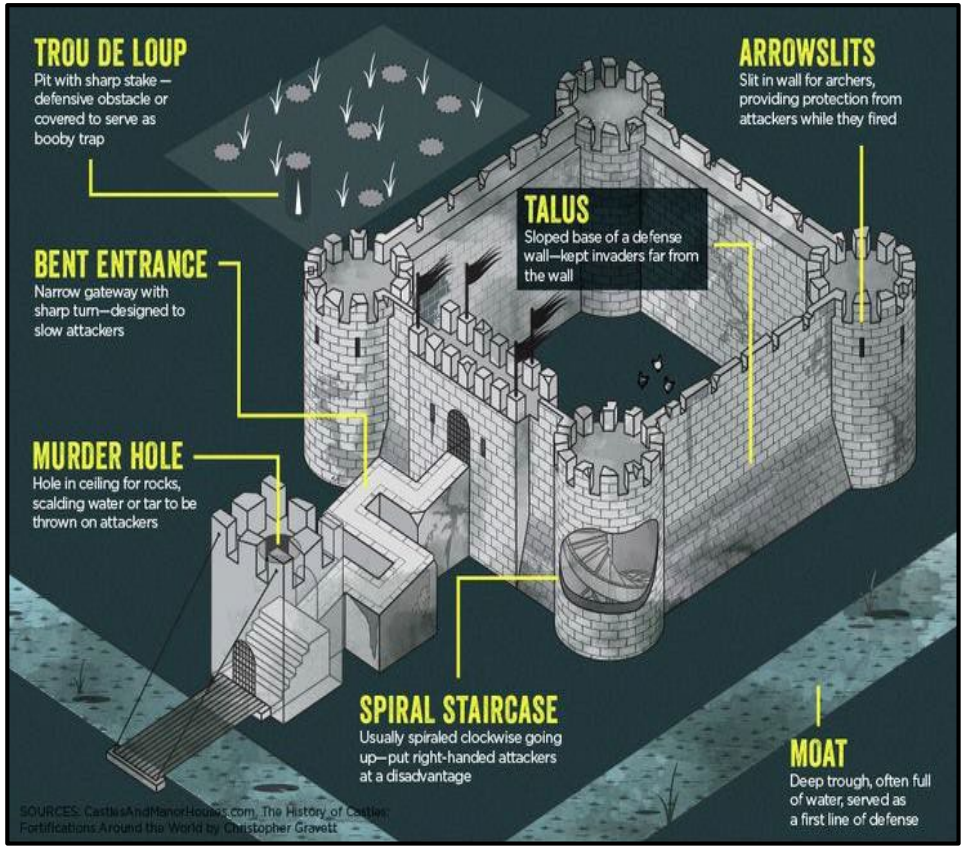
Holistic Approach

- Defense in depth
  - Deter
  - Detect
  - Deny
  - Delay
  - Defend
- Sitework, building, equipment, operations
- Multiple disciplines
- Regular assessments



References and AT Engineer Resources

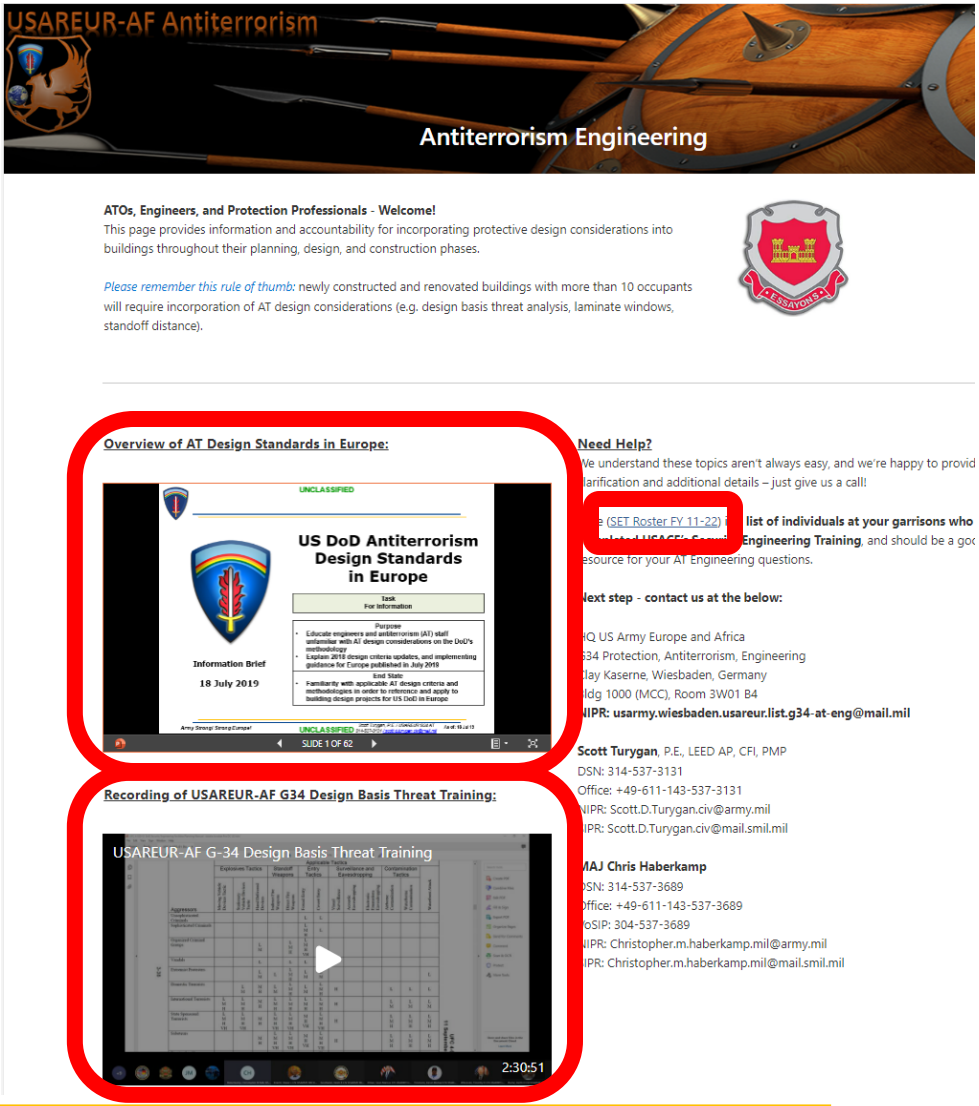
- **Engineering References**
  - USAREUR-AF Antiterrorism Engineering SharePoint page: https://armyeitaas.sharepoint-mil.us/sites/USAREUR-AF_G34-AT/SitePages/Engineering.aspx
  - Whole Building Design Guide, Unified Facilities Criteria Library
  - U.S. Army Corps of Engineers, Protective Design Center
    - Software (facility DBT, blast analysis, structural member and windows analysis), Engineering Technical Letters & Reports, UFCs, Std. Drawings, DoD Anti-Ram Vehicle Barrier List
  - FEMA 426, Ref. Manual to Mitigate Potential Terrorist Attacks Against Buildings
  - USEUCOM Antiterrorism Operations Order 23-01
  - US Army Europe Regulation 525-13 Antiterrorism
  - Joint Forward Operations Base, Protection Handbook (GTA 90-01-011)
  - Department of Homeland Security, Interagency Security Committee Standards
  - U.S. Department of State, Foreign Affairs Manuals and Handbooks
- **Threat Information**
  - West Point, Combatting Terrorism Center
  - University of Maryland, Global Terrorism Database
  - Terrorism Research Initiative, Perspectives on Terrorism
  - Department of Homeland Security, National Terrorism Advisory System

USAREUR-AF AT Eng. SharePoint

https://armyeitaas.sharepoint-mil.us/sites/USAREUR-AF_G34-AT/SitePages/Engineering.aspx

Page Contents:

- Eng. References
  - EUCOM AT OPORD
- Software
  - DBT Analysis Spreadsheets
- Instructions
  - ATO roles for AT Eng.
- Templates
  - DD1391 Tab G
  - Design Review Memo
- News
  - Upcoming trainings
- Contact Info
  - SET staff at each installation
  - G34 AT Engineers
- AT Construction Tracker



Summary

- AT Requirement Sources
- Minimum AT Standards
- Additional Requirement Sources
- Facility Design Basis Threat
- AT Responsibilities and Roles

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Questions & Discussion

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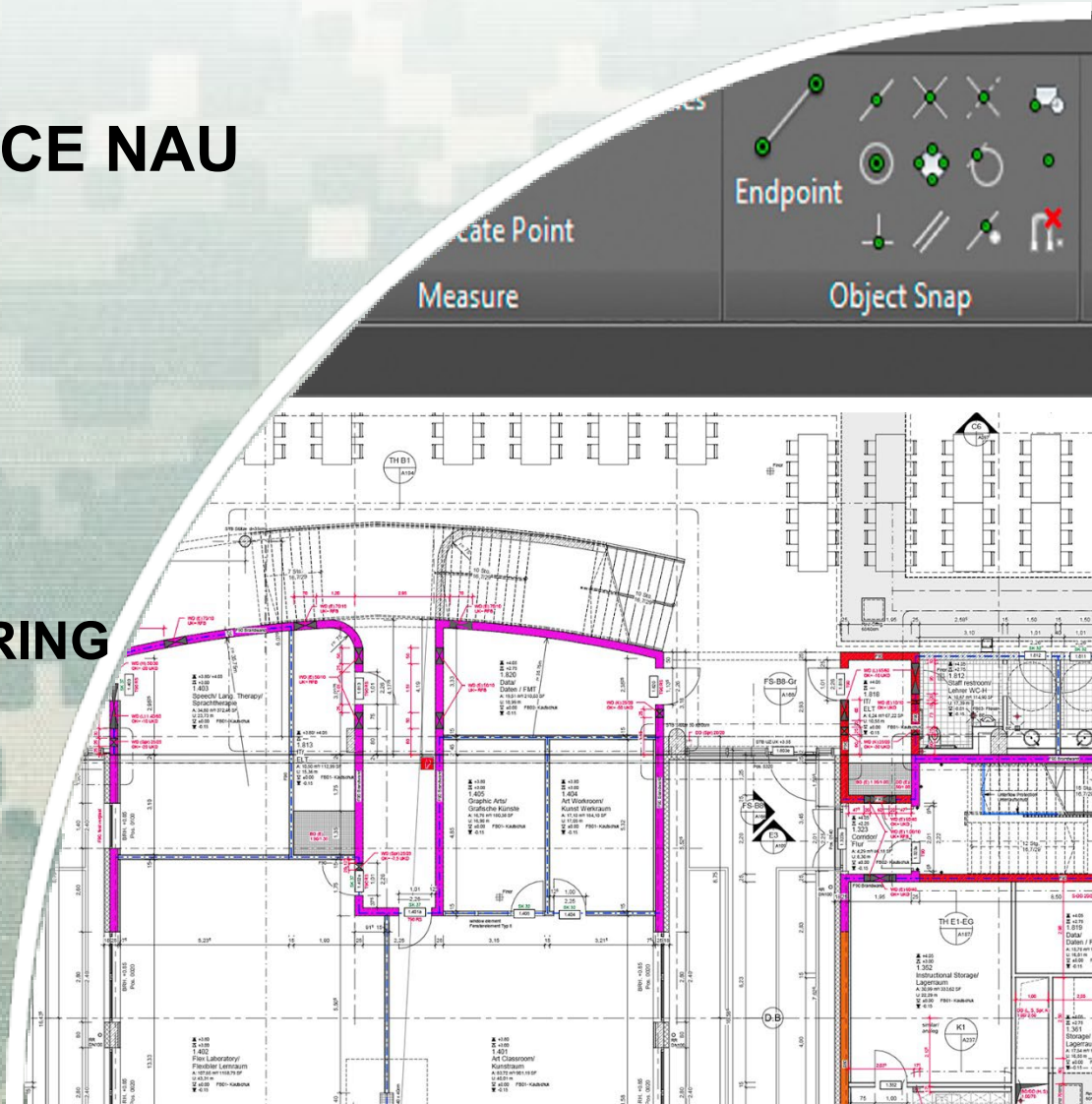
U.S. Army Corps of Engineers
Europe District

ATFP Compliance USACE NAU
SAME Conference



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US Army Corps of Engineers
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ATFP Application on Direct Contracts

USACE Goals and Expectations for AEs:

- Provide designs that comply with the applicable ATFP criteria
- AE knowledgeable in all applicable ATFP standards
- AE capable in running blast design calculations on new and existing buildings (SBEDS)
- AE knowledgeable in how to specify ATFP compliant components such as windows

ATFP Application on Direct Contracts

USACE Roles and responsibilities

Indirect Contracts (Bauamt projects):

- *Per ABG 75: Provide detailed applicable US Code requirements:*
- *For ATFP:*
  - *Interpret DBT*
  - *Provide ATFP assessment:*

  Lays out detailed requirements on ATFP applicable standards, standoff requirements, etc, addresses EUCOM OPORD
- *Review design documents against code requirements/assessment*

Different for direct AE contracts

ATFP Application on Direct Contracts

USACE Roles and responsibilities

Direct Contracts:

- Prepare AE SOW, identify project scope requirements
- Review design documents against AE SOW and Code requirements
- Support Code interpretation
- Support Garrison on DBT assessments upon request from Garrison ATO
- **Note:** No USACE ATFP Assessment on direct projects

NOTE: DBT ≠ ATFP Assessment

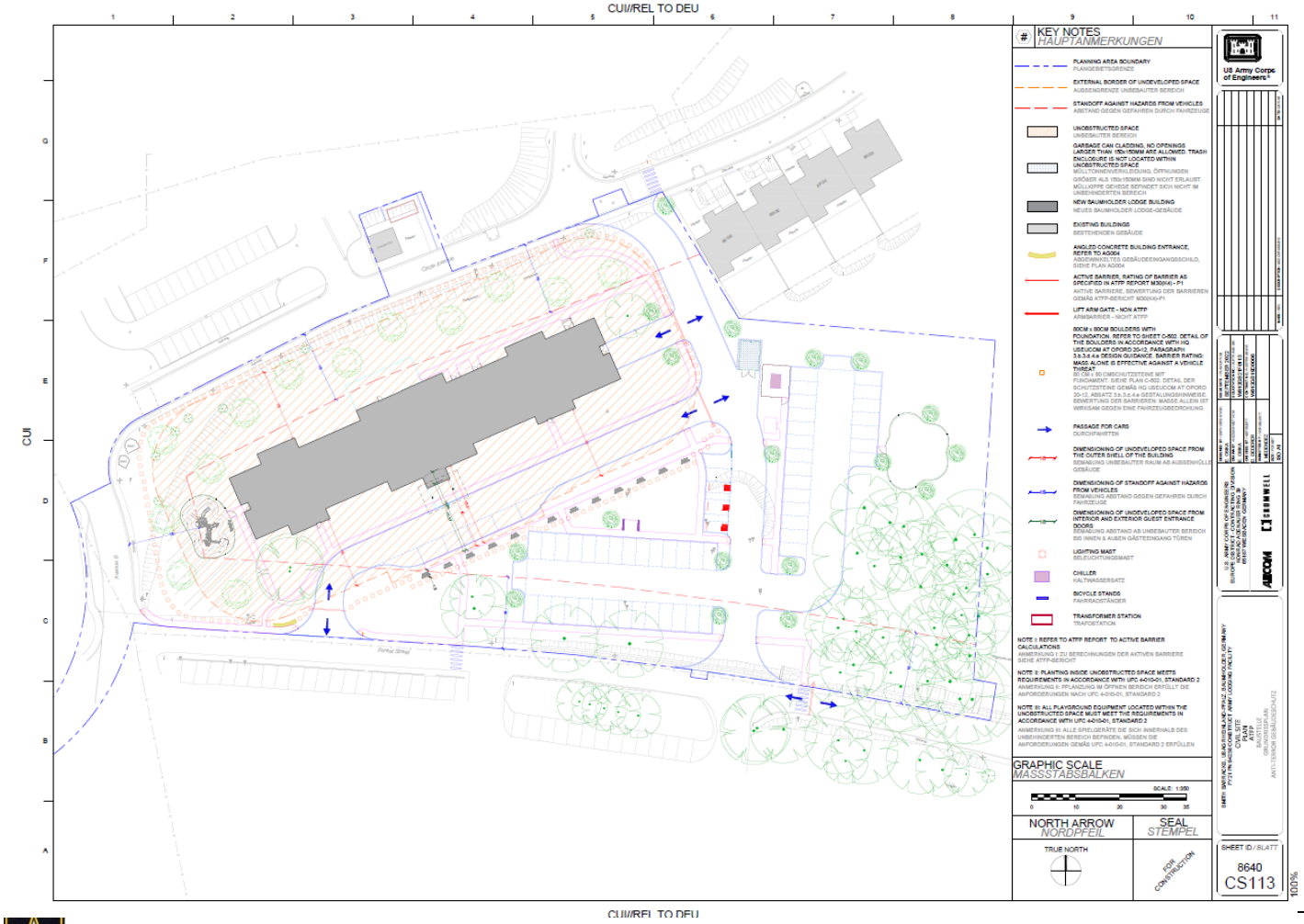
ATFP Application on Direct Contracts

AE SOW Requirements

- (j) ATFP Site Plan – Provide a site plan clearly showing standoff distances, unobstructed space, active and passive barriers in accordance with antiterrorism requirements. (NOTE => This is an individual drawing)
- (4) ATFP compliance narrative;
  - (a) All documents required to demonstrate compliance with UFC 4-010-01 and HQ USEUCOM AT OPORD 23-01;
  - (b) Narratives of how each applicable standard is met;
  - (c) Applicable explosive weights and levels of protection;
  - (d) Standoff distances provided, the unobstructed space, to include active and passive barriers systems, must be clearly shown on an ATFP Site Plan;
  - (e) Blast resistant window system and supporting structure calculations or test results;
  - (f) Building element dynamic analysis and design calculations for exterior wall and roof construction per UFC 4-010-01 and HQ USEUCOM AT OPORD 23-01.
  - (g) Progressive collapse calculations (where applicable)

ATFP Application on Direct Contracts

Example ATFP SITE PLAN:



ATFP Application on Direct Contracts

Typical issues:

- No or inadequate ATFP Compliance Narrative in Design Analysis Report
- No or inadequate ATFP site plan in Design Package
- ATFP Charrette decisions and agreements not transferred into concept design => Unclarity, documentation, misunderstanding?
- No or inadequate consideration of EUCOM AT OPORD
- No consideration of DBT as it relates to UFC 4-010-01 => App. B
- Incomplete Windows specs
  (Performance, Load, Technical requirements)
- New window support at walls specified without support calculations of existing systems.

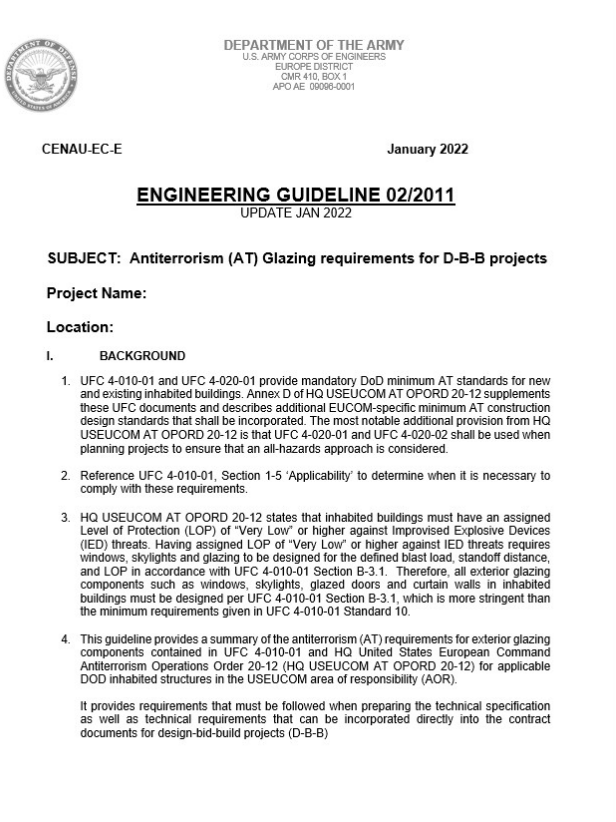
ATFP Application on Direct Contracts

USACE NAU Support

- Consult on ATFP code interpretation
- Facilitate reach back support to USACE PDC
- Provide ATFP window specification template
- Provide SBEDS software (through UDACE PDC)
- Provide Codes and Standards

USACE EUROPE DISTRICT- ATFP ENGINEERING GUIDELINE

02-2011 AT Glazing Requirements for D-B-B projects - JAN 2022



DEPARTMENT OF THE ARMY
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CENAU-EC-E January 2022

ENGINEERING GUIDELINE 02/2011
UPDATE JAN 2022

SUBJECT: Antiterrorism (AT) Glazing requirements for D-B-B projects

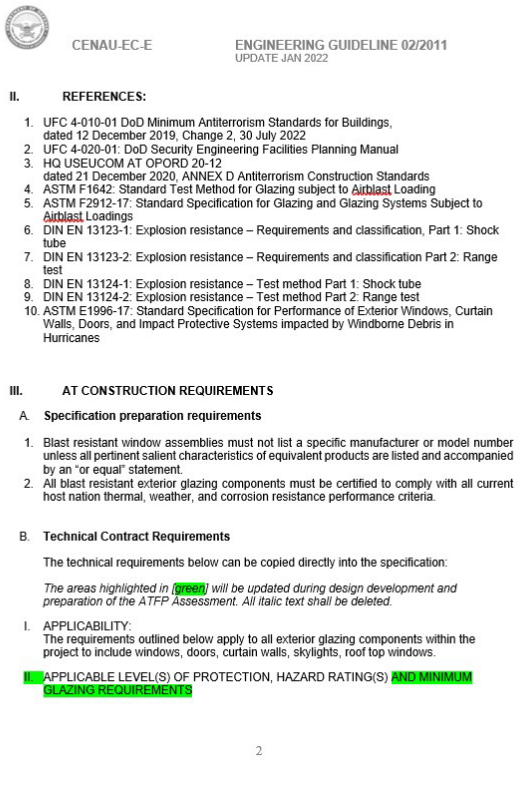
Project Name:

Location:

I. BACKGROUND

1. UFC 4-010-01 and UFC 4-020-01 provide mandatory DoD minimum AT standards for new and existing inhabited buildings. Annex D of HQ USEUCOM AT OPORD 20-12 supplements these UFC documents and describes additional EUCOM-specific minimum AT construction design standards that shall be incorporated. The most notable additional provision from HQ USEUCOM AT OPORD 20-12 is that UFC 4-020-01 and UFC 4-020-02 shall be used when planning projects to ensure that an all-hazards approach is considered.
2. Reference UFC 4-010-01, Section 1-5 'Applicability' to determine when it is necessary to comply with these requirements.
3. HQ USEUCOM AT OPORD 20-12 states that inhabited buildings must have an assigned Level of Protection (LOP) of "Very Low" or higher against Improvised Explosive Devices (IED) threats. Having assigned LOP of "Very Low" or higher against IED threats requires windows, skylights and glazing to be designed for the defined blast load, standoff distance, and LOP in accordance with UFC 4-010-01 Section B-3.1. Therefore, all exterior glazing components such as windows, skylights, glazed doors and curtain walls in inhabited buildings must be designed per UFC 4-010-01 Section B-3.1, which is more stringent than the minimum requirements given in UFC 4-010-01 Standard 10.
4. This guideline provides a summary of the antiterrorism (AT) requirements for exterior glazing components contained in UFC 4-010-01 and HQ United States European Command Antiterrorism Operations Order 20-12 (HQ USEUCOM AT OPORD 20-12) for applicable DOD inhabited structures in the USEUCOM area of responsibility (AOR).

   It provides requirements that must be followed when preparing the technical specification as well as technical requirements that can be incorporated directly into the contract documents for design-bid-build projects (D-B-B)



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UPDATE JAN 2022

II. REFERENCES:

1. UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings, dated 12 December 2019, Change 2, 30 July 2022
2. UFC 4-020-01: DoD Security Engineering Facilities Planning Manual
3. HQ USEUCOM AT OPORD 20-12 dated 21 December 2020, ANNEX D Antiterrorism Construction Standards
4. ASTM F1642: Standard Test Method for Glazing subject to Airblast Loading
5. ASTM F2912-17: Standard Specification for Glazing and Glazing Systems Subject to Airblast Loadings
6. DIN EN 13123-1: Explosion resistance – Requirements and classification, Part 1: Shock tube
7. DIN EN 13123-2: Explosion resistance – Requirements and classification Part 2: Range test
8. DIN EN 13124-1: Explosion resistance – Test method Part 1: Shock tube
9. DIN EN 13124-2: Explosion resistance – Test method Part 2: Range test
10. ASTM E1996-17: Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems impacted by Windborne Debris in Hurricanes

III. AT CONSTRUCTION REQUIREMENTS

A. **Specification preparation requirements**

1. Blast resistant window assemblies must not list a specific manufacturer or model number unless all pertinent salient characteristics of equivalent products are listed and accompanied by an "or equal" statement.
2. All blast resistant exterior glazing components must be certified to comply with all current host nation thermal, weather, and corrosion resistance performance criteria.

B. **Technical Contract Requirements**

The technical requirements below can be copied directly into the specification:

The areas highlighted in [green] will be updated during design development and preparation of the ATFP Assessment. All italic text shall be deleted.

I. APPLICABILITY:
The requirements outlined below apply to all exterior glazing components within the project to include windows, doors, curtain walls, skylights, roof top windows.

II. APPLICABLE LEVEL(S) OF PROTECTION, HAZARD RATING(S) AND MINIMUM GLAZING REQUIREMENTS

2

USACE EUROPE DISTRICT- ATFP ENGINEERING GUIDELINE

02-2011 AT Glazing Requirements for D-B-B projects - JAN 2022

1. Exterior glazing components that are installed in occupied areas must provide a [medium/low/very low] level of protection (M/L/VL-LoP) in accordance with UFC 4-010-01. The hazard rating for the proposed exterior glazing components must be no less than [minimal/very low/low hazard rating] for windows, curtain walls and doors and Minimal Hazard Rating for skylights & roof top glazing in accordance with ASTM F1642 and ASTM F2912-17.

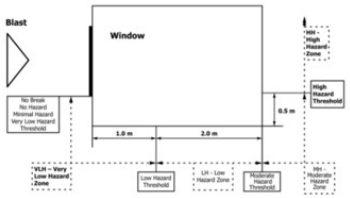
The classification is defined as follows:
Medium LOP: [Minimal Hazard Rating
The glazing is observed to fracture and the total length of tears in the glazing plus the total length of glazing pullout from the frame is less than 50 % of the glazing sight perimeter. Also, there are three or less perforations or indents anywhere in a vertical witness panel located 3 m (120 in.) from the interior face of the specimen and there are fragments with a total mass of 15 g (0.033 lbm) or less on the floor of the witness area between 0 to 1 m (0 to 40 in.) from the interior face of the specimen and no fragments in the witness area greater than 1 m (40 in.) from the interior face of the specimen.]

Low LOP: [Very Low Hazard Rating
The glazing is observed to fracture and fragments are located 1 m (40 in.) or less from the original interior surface of the specimen. Also, there are six or less perforations anywhere in a vertical witness panel located 3 m (120 in.) from the interior face of the specimen and there are fragments with a total mass of 15 g (0.033 lbm) or less on the floor of the witness area between 1 and 3 m (40 and 120 in.) from the interior face of the specimen.]

Very low LOP: [Low Hazard Rating
The glazing is observed to fracture, and fragments generally fall between 1 and 3 m (40 and 120 in.) of the interior face of the specimen. Also there are 25 or less perforations 50 cm (20 in.) or less above the floor of a vertical witness panel located 3 m (120 in.) from the interior face of the specimen and 10 or less perforation high than 50 cm (20 in.) in a vertical witness panel located 3 m (120 in.) from the interior face of the specimen. For perforations in the vertical witness panel, up to 5 of the perforations may penetrate through the full thickness of the foil backed insulation board layer of the witness panel as defined in Test Method F1642.]

Note: Following General Service Administration (GSA) ratings are accepted as equivalent:

[Minimal Hazard Rating:	GSA 2
Very Low Hazard Rating:	GSA 3a
Low Hazard Rating:	GSA 3b&4]



2. *Optional: Vestibules (delete if no vestibules in the project)*
Vestibule Doors:
UFC 4-010-01, B-3.2.4 provides 2 alternatives for the design of exterior and interior vestibule doors.

Alternative 1
Exterior Door: Medium Level of Protection = Minimal Hazard Rating (ASTM F2912-17)
Interior Door: Non-rated, Minimal Glazing in accordance with paragraph II.3

Alternative 2:
Exterior Door: No ATFP Requirements
Interior Door: [Medium/Low/Very low] level of protection (M/L/VL-LoP), hazard rating no less than [minimal/very low/low hazard rating].
The inner doors, sidelights, and transoms shall meet the windborne debris resistance requirements of ASTM E 1996 (missiles A and D in Table 2).

3. Minimum Glazing Requirements for non-rated glazing in the following area(s): [Vestibule/low occupancy areas/storage area/stairwells/enclosed walkways]
   a. Metal frame
   b. Minimum interior pane 6.75 mm laminated glass with a minimum interlayer thickness of 0.75mm PVB
   c. For operable windows inner and outer pane laminated
   d. Frame bite
      >= 10 mm for structurally silicone glazing
      or
      Two times the thickness of the interior laminated glass for taped glazing

III. AIR-BLAST LOADING
The air-blast dynamic loading values may vary from facade to facade as a result of the building's orientation on the site and the applicable charge weight and standoff distance. The air-blast loading parameters for the different building elevation applicable for the exterior

USACE EUROPE DISTRICT- ATFP ENGINEERING GUIDELINE

02-2011 AT Glazing Requirements for D-B-B projects - JAN 2022

glazing components for the dynamic testing or dynamic analysis are shown below and on the AT/FP site plan.

Air-blast loading parameters				
Explosive Weight	Standoff [m]	Location at building	Peak positive Pressure [kPa]	Peak positive Impulse [kPa-msec]
II	10		235.8	253.6
II	16		84.5	332.3
II	16	incident	37	160
II	28		33.6	10.8
I	25		87.1	536.9
I	45		33	284.6
		Vestibule exterior/interior door		

IV. TECHNICAL REQUIREMENTS

1. All frames must be constructed of metal (steel or aluminum). Frames constructed of wood or PVC or having frames with facing/coatings of these materials are not allowed unless the frames have successfully passed an open area blast effects test and were determined to meet the required level of protection.

2. Exterior glazing components must meet the minimum AT performance requirements as specified in the paragraphs above for the **closed, tilt, and swing positions** (as applicable to the operation). **For all operable exterior glazing components, both inner and outer glazing panes shall be laminated to prevent glazing fragments being thrown into the building in the tilt open or swing open position during a blast event.** Conformance to the performance requirements and the required glazing and lamination thickness must be validated by dynamic testing (Chapter V) or dynamic analysis (Chapter VI).

V. DYNAMIC TESTING REQUIREMENTS

1. Dynamic Testing certification. Testing guidance is presented in UFC 4-010-01, B-3.1.2. Each exterior glazing component must be tested for evaluation of hazards generated from

CENAU-EC-E ENGINEERING GUIDELINE 02/2011
UPDATE JAN 2022

air-blast loading in accordance with ASTM F1642 by an independent testing agency regularly engaged in blast testing.

2. Testing may be by shock tube or open air test. The test must be performed on the entire proposed exterior glazing components, which shall include, but not be limited to, the glazing, its framing system, operating devices, and all anchorage devices. Anchorage of the frame or sub frame must replicate the method of installation to be used for the project.

3. For proposed exterior glazing components that are of the same type as the tested system but of different size, the test results may be accepted provided the proposed component size is within the range from 25 percent smaller to 10 percent larger in area, than the tested component. Proposed exterior glazing components of a size outside this range must require testing or a dynamic analysis to evaluate their hazard rating.

4. Blast tube tests in accordance with DIN EN 13123-1 2001 and DIN EN 13124-1 2001 are permitted if they are capable of simulating the actual properties of the exterior glazing components (dimensions, composition, frame bite, anchoring system, and material properties).

5. Test results included in the dynamic testing certification must be submitted in both English and German languages.

6. The test certificate must also include a drawing of the tested exterior glazing components with remarks and stamp of the testing laboratory. The drawing must provide the following information:
   a) Component dimensions
   b) Glazing composition
      Minimum interior pane for the multi-paned windows is a 6.75 mm laminated glass with a minimum interlayer thickness of 0.75mm PVB
   c) Glazing frame bite
   d) Frame profile cross section
   e) Type and spacing of anchoring system (dowel manufacturer and type)
   f) Wall material properties (concrete or masonry compressive strength)

VI. DYNAMIC ANALYSIS REQUIREMENTS

1. For exterior glazing components that have not undergone dynamic testing and unusually large and complex component assemblies, like large curtain walls, a dynamic load analysis method can be used for the design.
   The dynamic load analysis must be approved by the ATFP technical staff of US Army Corps of Engineers Europe District (CENAU-EC-ET) and is only acceptable if the dynamic analysis

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QUESTIONS?