US DoD Antiterrorism Design Standards in Europe

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

Information Brief
25 August 2023
Agenda

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

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Method</th>
<th>Killed</th>
<th>Injured</th>
<th>Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>Beirut Barracks</td>
<td>VBEIDs 7k kg/15k lb</td>
<td>307</td>
<td>75</td>
<td>Standoff &amp; barriers</td>
</tr>
<tr>
<td>1993</td>
<td>WTC</td>
<td>VBIED 606 kg/1,336 lb</td>
<td>6</td>
<td>1042</td>
<td>Underground parking</td>
</tr>
<tr>
<td>1995</td>
<td>Murrah Federal Building, OKC</td>
<td>VBIED at 15 ft. 2,000 kg/4,800 lb</td>
<td>168</td>
<td>258</td>
<td>Progressive collapse</td>
</tr>
<tr>
<td>1996</td>
<td>Khobar Towers, Saudi Arabia</td>
<td>VBIED at 72 ft. 11,000 kg/25,000 lb</td>
<td>20</td>
<td>498</td>
<td>AT Design Codes and MWN</td>
</tr>
<tr>
<td>2001</td>
<td>WTC</td>
<td>Aircraft</td>
<td>2,996</td>
<td>6,000+</td>
<td>Emergency management</td>
</tr>
<tr>
<td>2008</td>
<td>Mumbai (12)</td>
<td>Firearms and IEDs</td>
<td>166</td>
<td>308</td>
<td>Coordinated attacks</td>
</tr>
<tr>
<td>2014</td>
<td>Peshawar Army Public School</td>
<td>Firearms</td>
<td>141</td>
<td>114</td>
<td>Children (132)</td>
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<tr>
<td>2017</td>
<td>OKC, BancFirst</td>
<td>VBIED 453 kg/1000 lb</td>
<td>0</td>
<td>0</td>
<td>Persistent tactics</td>
</tr>
</tbody>
</table>
• 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
Minimum AT Standards for Buildings
UFC 4-010-01
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…

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
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
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
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.
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
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) Mitigation of Stationary and Moving VBIEDs tactics required 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
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
- 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
Example Standoff Table from Appendix C of UFC 4-010-01

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

![Diagram of glazing components and standards](image)

**Glass Types:**
- Annealed Glass
- Heat Strengthened Glass
- Thermally Tempered Glass
- Polycarbonate
- PVB Interlayer

**Sliding Window Diagram:**
- Sliding window
- Qty: 40
- RO=1200
- Frame W=1156

**Anchors Disposition Diagram:**
- 2EAUx2 Set=22
- Scale 1:10

**Inside View:**
- Anchors disposition
- 120, 120, 120, 120, 120, 286

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**As of: 23 Aug 23**

Scott Turygan, P.E. / USAREUR-AF G34 AT
314-537-3131 / scott.d.turygan.civ@army.mil
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
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
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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
    • 18: Emergency Air Distribution Shutoff
    • 19: Equipment Bracing
    • 20: Under Building Access
    • 21: Mass Notification
• 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
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
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
Facility Design Basis Threat
UFC 4-020-01
• **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
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
## Facility DBT, Asset Value

### Asset Value/Aggressor Likelihood Worksheet

<table>
<thead>
<tr>
<th>Project or Building</th>
<th>Asset Category</th>
<th>Analyst</th>
<th>Date</th>
<th>Value Rating Factors</th>
<th>Aggressor</th>
<th>Likelihood Rating Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Motor Pool</td>
<td></td>
<td>Jane Q, Planner</td>
<td>4 August 2008</td>
<td>General Population</td>
<td>Unaffiliated Organizations</td>
<td>94.52</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Critical Infrastructure and Operations and Activities</td>
<td>Unaffiliated Organizations</td>
<td>97.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Other Credit</td>
<td>Unaffiliated Organizations</td>
<td>90.76</td>
</tr>
</tbody>
</table>

### Value Rating Factors

<table>
<thead>
<tr>
<th>Criticality to User</th>
<th>Population Type 1</th>
<th>Impact on National Defense</th>
<th>Replaceability</th>
<th>Relative Value to User</th>
<th>Total Value Rating</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>19</td>
</tr>
</tbody>
</table>

### Notes

- Population Type applies to General Population only.
- Sum of Value Rating = 10 for General Population, 5 for Critical Infrastructure and Operations and Activities, 3 for all other assets.
- All values are integer.
- Number of Aggressor groups = 150.
### Facility DBT, Levels of Protection

Table 3-28. Applicable Levels of Protection

<table>
<thead>
<tr>
<th>Tactic</th>
<th>Threat Severity Level</th>
<th>Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≤ 0.5</td>
<td>0.51 – 0.74</td>
</tr>
<tr>
<td>Moving Vehicle Bomb</td>
<td>Very Low¹</td>
<td>Low²</td>
</tr>
<tr>
<td>Stationary Vehicle Bomb</td>
<td>Very Low¹</td>
<td>Low²</td>
</tr>
<tr>
<td>Hand Delivered Devices</td>
<td>All</td>
<td>Very Low¹</td>
</tr>
<tr>
<td>indirect Fire Weapons</td>
<td>All</td>
<td>Very Low¹</td>
</tr>
<tr>
<td>Direct Fire Weapons</td>
<td>VH</td>
<td>Very Low¹</td>
</tr>
<tr>
<td>L, M, H</td>
<td>All</td>
<td>Very Low¹</td>
</tr>
<tr>
<td>Forced Entry</td>
<td>Very Low¹</td>
<td>Low²</td>
</tr>
<tr>
<td>Covert Entry</td>
<td>Visual Surveillance</td>
<td>Low²</td>
</tr>
<tr>
<td></td>
<td>Acoustic Eavesdropping</td>
<td>Low²</td>
</tr>
<tr>
<td></td>
<td>Electronic Emanations</td>
<td>Low²</td>
</tr>
<tr>
<td></td>
<td>Eavesdropping</td>
<td>Low²</td>
</tr>
<tr>
<td>Airborne Contaminants</td>
<td>Very Low¹</td>
<td>Low²</td>
</tr>
<tr>
<td>Waterborne Contaminants</td>
<td>Very Low¹</td>
<td>Low²</td>
</tr>
<tr>
<td>Waterfront Attack</td>
<td>Very Low¹</td>
<td>Low²</td>
</tr>
</tbody>
</table>
## Facility DBT, Protection Performance

<table>
<thead>
<tr>
<th>Level of Protection</th>
<th>Potential Building Damage/Performance</th>
<th>Potential Door and Glazing Hazards</th>
<th>Potential Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below AT standards</td>
<td>Sever damage. Progressive collapse likely. Space in and around damaged area will be unusable.</td>
<td>Windows will fail catastrophically and result in lethal hazards. (High hazard rating) Doors will be thrown into rooms. (Category V)</td>
<td>Majority of personnel in collapse region suffer fatalities. Potential fatalities in areas outside of collapsed area likely.</td>
</tr>
<tr>
<td>Very Low</td>
<td>Heavy damage - Onset of structural collapse, but progressive collapse is unlikely. Space in and around damaged area will be unusable.</td>
<td>* 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)</td>
<td>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.</td>
</tr>
<tr>
<td>Low</td>
<td>Moderate damage – Building damage will not be economically repairable. Progressive collapse will not occur. Space in and around damaged area will be unusable.</td>
<td>* 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)</td>
<td>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.</td>
</tr>
<tr>
<td>Medium</td>
<td>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.</td>
<td>* Glazing will fracture, remain in the frame and results in a minimal hazard consisting of glass dust and shivers. (Minimal hazard and No Hazard ratings) * Doors will be operable but will have permanent deformation. (Category II)</td>
<td>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.</td>
</tr>
<tr>
<td>High</td>
<td>Minimal damage. No permanent detorations. The facility will be immediately operable.</td>
<td>* Innermost surface of glazing will not break.(No Break hazard rating) * Doors will be substantially unchanged and fully operable. (Category I)</td>
<td>Only superficial injuries are likely.</td>
</tr>
</tbody>
</table>

### Medium LOP to blast event
- **Building**: minor damage, repairable
- **Glazing**: fracture, but remain in frame
- **Human**: injuries, but fatalities unlikely
Facility DBT, Aggressor Likelihood

**ASSET VALUE/AGGRESSOR LIKELIHOOD WORKSHEET**

<table>
<thead>
<tr>
<th>Project or Building</th>
<th>Asset Category</th>
<th>Analyst</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Motor Pool</td>
<td>Tactical vehicles</td>
<td>Jane Q. Planner</td>
<td>4 August 2008</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value Rating Factors</th>
<th>Likelihood Rating Factors</th>
<th>Sum of Likelihood Factors</th>
<th>Likelihood Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical Infrastructure and Operations and Activities</td>
<td>Unsophisticated Criminals</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Sophisticated Criminals</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Organized Criminal Groups</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Sensitive Information</td>
<td>Vandalism</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>All Other Assets</td>
<td>Extremist Protectors</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Domestic Terrorists</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

**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 global, 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

Facility DBT Aggressor Likelihood: 0.64
<table>
<thead>
<tr>
<th>TACTIC, THREAT SEVERITY, AND LEVEL OF PROTECTION WORKSHEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project or Building</td>
</tr>
<tr>
<td>A Motor Pool</td>
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<tr>
<td>Asset Category: D</td>
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<tr>
<td>Tactical Vehicles</td>
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<tr>
<td>Asset Value: 0.76</td>
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<tr>
<td>Date: 4 August 2008</td>
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<tr>
<td>Analyst: Jane Q. Planner</td>
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<tr>
<td>Date: 4 August 2008</td>
</tr>
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<table>
<thead>
<tr>
<th>Aggressor Likelihood</th>
<th>Tactic</th>
<th>Explosives and Incendiary Devices</th>
<th>Standoff Weapons</th>
<th>Entry</th>
<th>Surveillance and Eavesdropping</th>
<th>Contamination</th>
</tr>
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<tbody>
<tr>
<td>Criminals</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Unsophisticated</td>
<td>.52</td>
<td>□</td>
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<td>L</td>
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<tr>
<td>Sophisticated</td>
<td>.51</td>
<td>□</td>
<td></td>
<td></td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Organized Criminals</td>
<td>.54</td>
<td>□</td>
<td></td>
<td></td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Vandal</td>
<td>&lt; .5</td>
<td>□</td>
<td></td>
<td></td>
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<tr>
<td>Extremist Protesters</td>
<td>&lt; .5</td>
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</tr>
<tr>
<td>Domestic Terrorists</td>
<td>.57</td>
<td>□</td>
<td></td>
<td></td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>International Terrorists</td>
<td>.64</td>
<td>□ □</td>
<td></td>
<td></td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>State Sponsored Terrorists</td>
<td>.72</td>
<td>□ □</td>
<td></td>
<td></td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Saboteur</td>
<td>.51</td>
<td>□</td>
<td></td>
<td></td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Foreign Intelligence Services</td>
<td>□</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Initial Design Basis Threat (highest Threat Severity Level for each tactic):

- L
- M
- L
- L

Initial Level of Protection for Applicable Tactic (Table 3-28):

- L
- M
- M
- L
- M
- M
- L
## Facility DBT, Threat Parameters

### Table 3-27  Threat Parameters

<table>
<thead>
<tr>
<th>Aggressor Tactic</th>
<th>Design Basis Threat</th>
<th>Weapons</th>
<th>Tools Or Delivery Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moving and Stationary Vehicle Devices</td>
<td>Special Case ¹</td>
<td>9000 kg (19,800 lbs) TNT</td>
<td>18,000 kg / ~ 40,000 lbs truck</td>
</tr>
<tr>
<td></td>
<td>Very High</td>
<td>2000 kg (4400 lbs) TNT, Fuel</td>
<td>7000 kg / ~ 15,000 lbs truck</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>500 kg (100 lbs) TNT, Fuel</td>
<td>2500 kg / ~ 5500 lbs truck</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>250 kg (550 lbs) TNT, Fuel</td>
<td>1800 kg / ~ 4000 lbs car</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>100 kg (220 lbs) TNT</td>
<td>1800 kg / ~ 4000 lbs car</td>
</tr>
<tr>
<td></td>
<td>Very Low</td>
<td>25 kg (55 lbs) TNT</td>
<td>1800 kg / ~ 4000 lbs car</td>
</tr>
<tr>
<td>Hand Delivered Devices</td>
<td>High</td>
<td>IID, IED (up to 25 kg/55 lbs TNT) &amp; hand grenades (Mail bomb limited to 1 kg/2.2 lbs TNT)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>IID, IED (up to 1 kg/2.2 lbs TNT) &amp; hand grenades</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>IID</td>
<td>None</td>
</tr>
<tr>
<td>Indirect Fire Weapons Attack</td>
<td>Very High</td>
<td>Improvised mortar (up to 20 kg/44 lbs TNT)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>122 mm rocket</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>82 mm mortar</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>Incendiary devices</td>
<td>None</td>
</tr>
<tr>
<td>Direct Fire Weapons Attack</td>
<td>Very High</td>
<td>Light antitank weapons, and UL 752 Level 10 (12.7 mm (0.50 caliber), 1 shot)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>UL 752 Level 19 (7.62mm NATO AP, 1 shot)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>UL 752 Level 5 (7.62mm NATO ball)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>UL 752 Level 13 (.44 magnum)</td>
<td>None</td>
</tr>
</tbody>
</table>
Facility DBT, Threat Parameters

- Custom threat tactics and protection thresholds also possible e.g. sUAV surveillance/IEDs
Facility DBT, Threat Parameters
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

<table>
<thead>
<tr>
<th>Planning</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Determine <strong>Design Basis Threats</strong> and <strong>Levels of Protection</strong> using UFC 4-020-01 Chapter 3.</td>
<td>• List all required features in <strong>planning</strong> documents (e.g. SOW, PWS, DD1391 for MILCON).</td>
<td>• Stay engaged with <strong>design</strong> progression and participate in design reviews (35%, 65%, 95%) to ensure AT features are incorporated as required in prev. planning documents and governing standards.</td>
</tr>
<tr>
<td>• Stay engaged with <strong>construction</strong> progression and perform <strong>site inspections</strong> to ensure constructed AT features match design.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Also, AT in Area Development Plans


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
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
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
Questions & Discussion

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Europe District

ATFP Compliance USACE NAU SAME Conference

ACHIM KNACKSTERDT
CHIEF, TECHNICAL ENGINEERING
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

II. REFERENCES:
1. UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings, dated 12 December 2010, Change 2, 30 July 2012
3. HQU/CECOM AT ORGF 20-12, dated 11 December 2020, ANNEX A Antiterrorism Construction Standards
5. ASTM E293-17 Standard Specification for Glazing and Glazing Systems Subject to Safety Loading

II. AT CONSTRUCTION REQUIREMENTS

A. Specification preparation requirements
1. Blast resistant window assemblies must not be a specific manufacturer or model number unless all pertinent salient characteristics of equivalent products are listed and accompanied by an “of equal statement”.
2. All blast resistant exterior glazing components must be certified to comply with all current load notation 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 blank text shall be deleted.

I. APPLICABILITY

This requirement outlined below apply to all exterior glazing components within the project to include windows, doors, curtain walls, skylights, roof top windows,

APPLICABLE LEVEL(S) OF PROTECTION, HAZARD RATING(S) DETERMINED AS PER ATFP ASSESSMENT.

APPLICABLE LEVEL(S) OF PROTECTION, HAZARD RATING(S) AS DETERMINED AS PER ATFP ASSESSMENT.

APPLICABLE LEVEL(S) OF PROTECTION, HAZARD RATING(S) AS DETERMINED AS PER ATFP ASSESSMENT.
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 minimum level of protection (U-F-EC-EC) in accordance with UFC 4-016-01. The hazard rating for the proposed exterior glazing components must be no less than the minimum resistance rating for windows, curtain walls and doors and Minimum Hazard Rating for skylights & roof top glazing in accordance with ASTM F1642 and ASTM F2202-17.

The classification is defined as follows:

Medium IOP: Resistance to Ballistic
The glazing is required to fracture and the total length of tear in the glazing plus the total length of tearing below the fracture is less than 50% of the glazing height perimeter. Also, there are no less penetrations or indentations anywhere in a vertical window panel located 3 in (76 mm) from the interior face of the specimen and there are fragments with a total mass of 15 g (0.03 lb.) or less on the floor of the window area between 0 to 1 in (0 to 25.4 mm) from the interior face of the specimen.

Low IOP: Borina Line Hazard Rating
The glazing in an element to fracture, and fragments are located 1 in (64 mm) or less than the original interior surface of the specimen. Also, there are no less penetrations or indentations anywhere in a vertical window panel located 1 in (25 mm) from the interior face of the specimen and there are fragments with a total mass of 15 g (0.03 lb.) or less on the floor of the window area between 1 and 3 in (64 mm) and 50% of the interior face of the specimen.

Very Low IOP: Borina Line Hazard Rating
The glazing in an element to fracture, and fragments are located 1 in (64 mm) or less than the original interior surface of the specimen. Also, there are no less penetrations or indentations anywhere in a vertical window panel located 1 in (25 mm) from the interior face of the specimen and there are fragments with a total mass of 15 g (0.03 lb.) or less on the floor of the window area between 1 and 3 in (64 mm) and 50% of the interior face of the specimen.

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

Medium Hazard Rating: GSA I
Very Low Hazard Rating: GSA II
Low Hazard Rating: GSA III

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 elevations applicable for the"
IV. TECHNICAL REQUIREMENTS

1. All frames must be constructed of metal (steel or aluminum). Frames constructed of wood or PVC or framing frames with facing/coverings 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 J/T performance requirements as specified in the paragraphs above for the closed, lift, and rolling positions (as applicable to the operation). For all exterior exterior glazing components, both inner and outer glazing planes shall be laminated to prevent glazing fragments being thrown into the building in the lift or swing open position during a blast event. Conformance to the performance requirements and the required glazing and laminate 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 UPC 4.0.01.01, 8.3.1.2. Each exterior glazing component must be tested for evaluation of hazards generated from airblast loading in accordance with ASTM F1664 by an independent testing agency regularly engaged in blast testing.

2. Testing may be by shock tube or gaseous air test. The test must be performed on the entire proposed exterior glazing components, which shall include, but not be limited, the glazing, its framing system, operable device, and all anchorage devices. Anchorage of the frame or slot 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 of 50 percent smaller to 10 percent larger in area, than the tested component. Proposed exterior glazing components of a size outside this range must undergo testing or a dynamic analysis to evaluate their hazard rating.

4. Blast tube tests in accordance with DIN EN 13323–1:2001 and DIN EN 13324–1:2001 are permitted if they are capable of simulating the actual properties of the exterior glazing components (dimensions, composition, frame type, 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 frame detail and stamp of the testing laboratory. The drawing must provide the following information:
   a. Component dimensions
   b. Glazing composition
   c. Minimum interior plane for X-glassed windows is a 6.75-mm laminated glass with a minimum interlayer thickness of 0.75-mm PVF
   d. Glazing frame type
   e. Frame profile cross section
   f. Type and spacing of anchoring system (dowel manufacturer and type)
   g. Viable 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 ATF-P technical staff of US Army Corps of Engineers Europe District (CEAU-EC-E) and is only acceptable if the dynamic analysis...
USACE NAU ATFP POCS

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