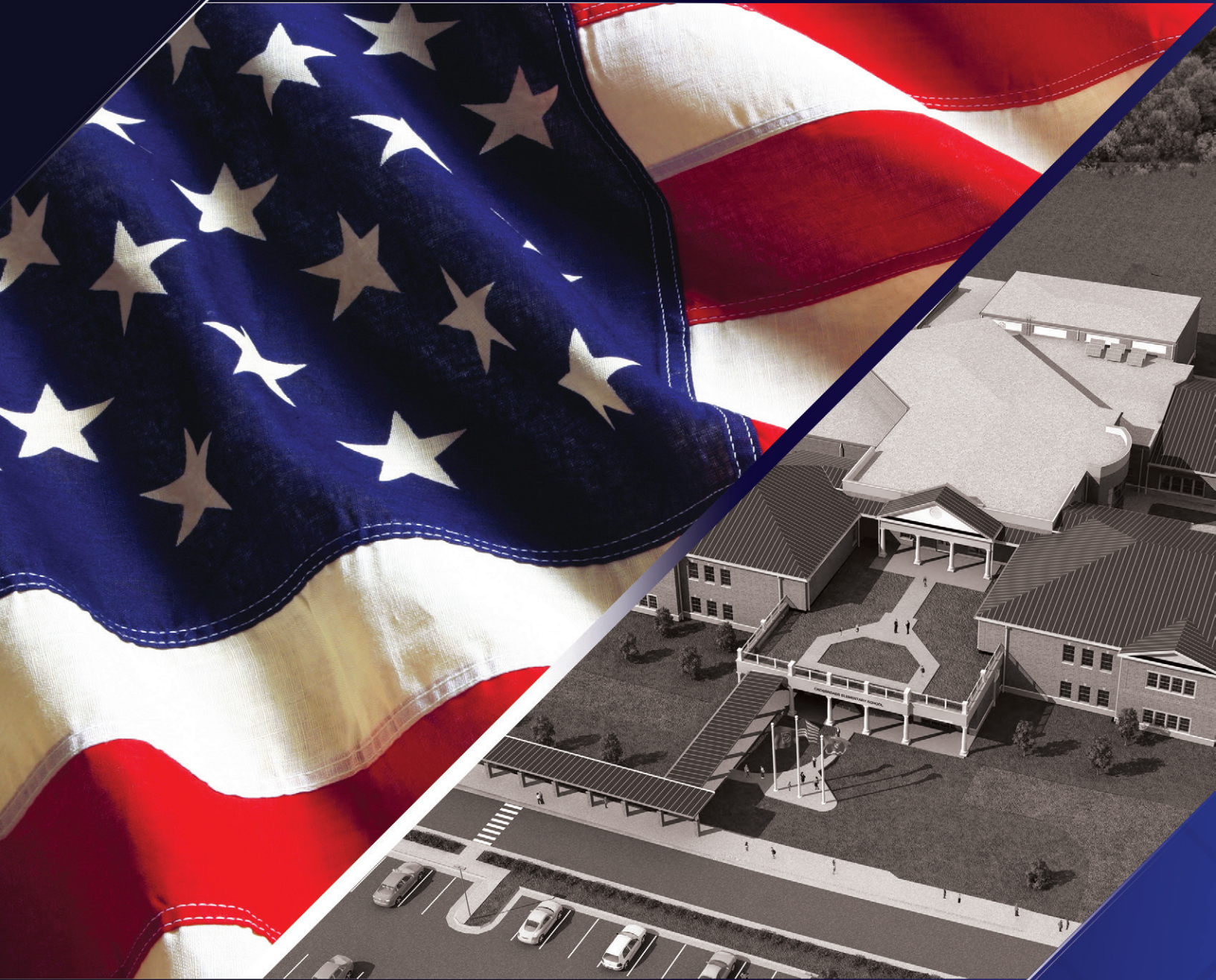


# Physical Security & Antiterrorism Design Guide

For DoDEA Educational Facilities



HQ Department of Defense Education Activity (DoDEA)  
4800 Mark Center Drive  
Alexandria, VA 22311

**(Version 2, December 2015)**

# Physical Security and Antiterrorism Design Guide For DoDEA Educational Facilities

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## ACRONYMS

ABA	Architectural Barriers Act
ACU	Autonomous Control Unit
ADA	Americans with Disabilities Act
AFCEC	Air Force Civil Engineer Center
AHJ	Authority Having Jurisdiction
ASTM	American Society for Testing and Materials
AT	Antiterrorism
ATO	Antiterrorism Officer
CAC	Common Access Card
CAPM	Construction Agent Project Manager
CBR	Chemical, Biological, or Radiological
CCTV	Closed Circuit Television
COCOM	Combatant Command
DBT	Design Basis Threat
DoDEA	Department of Defense Education Activity
DTM	Directive-Type Memorandum
ESS	Electronic Security System
FIPS	Federal Information Processing Standard
FPCON	Force Protection Conditions
HQ	Headquarters
HSPD	Homeland Security Presidential Directive
HVAC	Heating, Ventilating, and Air Conditioning
IBC	International Building Code
IDS	Intrusion Detection Systems
IP	Internet Protocol
ISSA	Interagency Service Support Agreement
LOP	Level of Protection

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LAN	Local Area Network
LOC	Local Operating Consoles
MILCON	Military Construction
MNS	Mass Notification System
MOA	Memorandum of Agreement
NAVFAC	Naval Facilities Command
NFPA	National Fire Protection Association
NICET	National Institute for Certification in Engineering Technology
OSS	Office of Safety and Security
PACS	Physical Access Control System
PDC	Protective Design Center
PDCR	Parametric Design Charrette Report
PDT	Project Delivery Team
PHYSEC	Physical Security
PIN	Personal Identification Number
PM	Program Manager
REX	Request to Exit
TM	Technical Manager
UFC	Unified Facilities Criteria
UFGS	Unified Facilities Guide Specifications
UPS	Uninterruptible Power Supply
USACE	US Army Corps of Engineers
USCENTCOM	United States Central Command
USEUCOM	United States European Command

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## REFERENCES

DoD Directive 1342.6-M, "Administrative and Logistics Responsibilities for DoD Dependents Schools," August 1995

DoD Directive 4270.5, "Military Construction," February 15, 2005

Title 10 U.S.C. Sec. 2807(b), Architectural and Engineering Services and Construction Design. Defense Federal Acquisition Regulation Supplement 236.601, September 20, 2011

Administrative Instruction, Planning, Designing, and Constructing 21st Century School Facilities, 4300.01, 24 February 2015

DoDEA 21st Century Education Facilities Specifications

Unified Facilities Criteria (UFC) 4-010-01, "DoD Minimum Antiterrorism Standards for Buildings," dated 9 February 2012, Change 1, 1 October 2013

Unified Facilities Criteria (UFC) 4-020-01, "DoD Security Engineering Facilities Planning Manual," September 2008

Unified Facilities Criteria (UFC) 4-020-03FA, "Security Engineering: Final Design," March 2005

Unified Facilities Criteria (UFC) 4-021-01, "Mass Notification Systems," April 2008 w/ Change 1, January 2010

Unified Facilities Criteria (UFC) 4-021-02, "Electronic Security Systems," October 2013

Unified Facilities Criteria (UFC) 4-022-02, "Selection and Application of Vehicle Barriers," June 2009, w/ Change 1, August 2010

Unified Facilities Criteria (UFC) 4-022-03, "Security Fences and Gates," October 2013

Unified Facilities Criteria (UFC) 3-530-01, "Design: Interior, Exterior, Lighting and Controls," August 2006, w/ Change 3, September 2013

**Note:** These references are a small sampling of what directives, policies, instructions, and manuals that are used as it relates to the construction of Department of Defense (DoD) facilities. For the purposes of this guidance, the listed references pertain to the baseline Antiterrorism (AT) Standards. The (Project Delivery Team) PDT will ensure that these references, this guidance, and all applicable guidance and requirements are applied, as appropriate to DoDEA construction projects.



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## 1.0 PURPOSE

This Guide establishes Physical Security (PHYSEC) and AT policies for planning, design, construction, sustainment, restoration, and modernization of educational facilities under the purview of the Department of Defense Education Activity (DoDEA). This includes the assignment of responsibilities, scope of involvement, establishment of minimum PHYSEC and AT standards for DoDEA educational facilities, and provides the overarching implementation policy needed to supplement established DoD, Combatant Command (COCOM), DoDEA, and Host Installation policies or instructions.

## 2.0 GENERAL

This Guide supersedes the Safety and Security Design Specifications for New Educational Facilities, Version 04-13 (March 2013). This Guide should be reviewed in its entirety as it is a complete rewrite from the previous version.

This Guide is a living document and will be periodically reviewed by the Headquarters (HQ) DoDEA Office of Safety and Security (OSS) and updated as needed. Suggested changes, additions, or corrections to this document can be forwarded to the HQ DoDEA AT Program Manager (PM) for consideration.

## 3.0 POLICY

The standards established in UFC 4-010-01 and in this Guide pertain to new educational facilities and to existing educational facilities when triggered. Refer to UFC 4-010-01, section 1-8 for additional information related to construction standards and triggering events.

Construction projects on new and existing educational facilities (when triggered) will meet the PHYSEC and AT requirements established by this Guide and all applicable DoD, COCOM, DoDEA, and Host Installation established instructions, guidance, and policies. Refer to the "Reference" section of this Guide for additional source documentation.

DoD components and COCOMs are allowed to supplement the DoD Minimum Antiterrorism Standards for Buildings, but those supplemental requirements may not be less stringent. Examples of such supplemental requirements include the United States European Command (USEUCOM) Operations Order 08-01 and the United States Central Command (USCENTCOM) Operations Order 05-01. Those operations orders establish additional construction standards for their areas of operations.

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**Note:** Where DoD Component standards such as COCOM standards address unique requirements, those standards will be incorporated in accordance with their implementing directives, but not to the exclusion of other DoD, DoDEA, or Host Installation standards.

## 3.1. Conflicting Policy

Nothing in this Guide will detract from, nor be construed to conflict with, the authorities and responsibilities of applicable U.S. Combatant Commanders or the inherent responsibility of DoDEA management to protect personnel and assets under their control in accordance with DoD, COCOM, and DoDEA directives and policies.

**Note:** Should DoD, COCOM, DoDEA, and Host Installation requirements conflict, every effort must be made to resolve the situation locally. Conflicts that cannot be resolved at the local level are forwarded, in writing, to the HQ DoDEA AT PM for resolution.

## 3.2. Exceptions to Standards

This Guide, in concert with applicable DoD policies (see References), establishes baseline PHYSEC and AT requirements for DoDEA facility design and construction. It is understood that DoDEA operations occur worldwide in various threat environments. With the variances that each location can offer, it is not practical to provide a single PHYSEC and AT solution that will meet the security needs of each project.

### 3.2.1. Additions to Minimum Design Standards

DoDEA (Area/District) Security Officials are an integral part of the PDT and are advisors for the proper implementation of established PHYSEC and AT requirements within their respective region.

DoDEA (Area/District) Security Officials will ensure, through coordination with Host Installations and COCOMs, that facility designs incorporate the risk management process into each project. At a minimum, the risk management process will include a Threat Assessment, Criticality Assessment, Vulnerability Assessment, and Risk Assessment.

Situations based on sound risk management principles may require the application of additional PHYSEC and AT countermeasures. If localized conditions, through the application of the risk management process or a comprehensive justification, identify the need for enhanced PHYSEC or AT countermeasures above the established baseline, the PDT will forward a written justification of proposed additions to minimum design standards to the HQ DoDEA AT PM.

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Justifications of proposed additions to minimum design standards will be evaluated by the HQ DoDEA AT PM, HQ DoDEA Chief of Safety and Security, HQ Chief Facilities Branch, and other Senior Leadership as applicable. Once evaluated, the HQ DoDEA AT PM will provide a written response to the PDT that will endorse, amend, or deny the requested additions.

**Note:** Example risk management processes can be found in UFC 4-020-01 and in the DoD Antiterrorism Officers Guide. The PDT should also work with and leverage Host Installation assessments for additional information and supporting risk management documentation.

## 4.0 APPLICABILITY

This Guide applies to DoDEA, the US Army Corps of Engineers (USACE) Norfolk DoDEA Design Center, and construction agents having DoDEA Military Construction (MILCON) responsibilities to include USACE, Naval Facilities Command (NAVFAC), and the Air Force Civil Engineer Center (AFCEC). This guidance applies from 1391 initiation through final building acceptance and is used in conjunction with all DoD instructions.

## 5.0 RESPONSIBILITIES

### 5.1. Department of Defense Education Activity, Headquarters (DoDEA, HQ)

Oversees, develops, and implements DoDEA specific guidance for PHYSEC and AT as it relates to DoDEA educational facilities. Provides advice and assistance to the PDT during the design and construction phases as required.

Design and construction concerns related to AT/PHYSEC not addressed by DoD, COCOMs, and/or DoDEA guidance will be vetted through the HQ DoDEA AT PM.

### 5.2. DoDEA Area Offices (DDESS, DoDDS-Europe, DoDDS-Pacific)

DoDEA Area/District Offices through the Office of Safety and Security will provide a Security Specialist to be assigned to the PDT who will coordinate with the School Superintendent and local logistical staff to discuss their involvement in the Parametric Design Charrette Report (PDCR). The Area/District designated Security Specialist is responsible for reviewing all PDCR design documents for technical, Education Specifications, and criteria compliance as it relates to AT/PHYSEC.

### 5.3. User

The User is defined as a representative(s) from the intended occupant of the facility included in this project. This may consist of an individual, or team of individuals, that are integral in

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conveying and determining the requirements of the group. The PDT can assist the User in determining the required representatives by describing the types of information and inputs required. This group should include school faculty and administration, District Superintendents Office, Information Technology, Safety/Security, and Logistics/Facilities.

## 5.4. Geographic District Team

The Construction Agent Project Manager (CAPM), for USACE, NAVFAC, or AFCEC is responsible for the development and completion of the planning and design documentation in accordance with directives and instructions. The CAPM will ensure DoD, COCOM, DoDEA and Host Installation safety and security standards are implemented throughout the design and construction phases of all DoDEA construction projects.

## 5.5. Host Installation

The Host Installation is responsible for working with the DoDEA Area Office to identify a project site. The Host Installation is responsible for preconstruction environmental surveys, AT, environmental, National Environmental Policy Act, Unexploded Ordinance cultural issues, real estate utilities, economic analysis, and other critical issues that need to be addressed. Team participants may include a representative from the staff elements/offices listed below:

- 1) Master Planning, or assigned Installation Project Manager
- 2) Environmental
- 3) Information Management/Communications
- 4) Public Safety, Fire Department, Law Enforcement
- 5) Utilities and/or Maintenance
- 6) Real Property
- 7) Antiterrorism Officer
- 8) Historic Preservation
- 9) Resource Management
- 10) Housing Office
- 11) Installation Security

## 5.6. DoDEA Design Center – Norfolk District Technical Manager (TM)

The Norfolk District TM supports both the Geographic PM and DoDEA Area Office PM as a technical subject matter expert. The Norfolk District TM shall provide design reviews on both functional and programmatic levels to verify compliance with DoDEA 21<sup>st</sup> Century Education Facilities Specifications, DoDEA policy, and DoDEA energy and sustainability goals. The Design Center shall participate as a member of the PDTs.

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## 6.0 KEY TERMINOLOGY

### 6.1. Building Category (Primary Gathering Building)

In accordance with (IAW) UFC 4-010-01, a Primary Gathering Building is defined as, "Inhabited buildings or portions of buildings routinely occupied by 50 or more DoD personnel and with a population density of greater than one person per 430 gross square feet (40 gross square meters). This designation will be applied to the entire portion of a building that meets the population density requirements for an inhabited building. Buildings will not be divided into inhabited and primary gathering areas. Only low occupancy portions of buildings may be treated separately from the remainder of the building."

DoDEA educational facilities shall be categorized as Primary Gathering Buildings. DoDEA non-educational facilities categories will be based upon the definitions established in UFC 4-010-01. DoDEA assets, resources, and personnel located in General Services Administration (GSA) owned facilities off DoD installations will comply with the Interagency Security Committee Risk Management Process and Physical Security Standards.

### 6.2. Construction Type (Conventional Construction)

IAW UFC 4-010-01, Conventional Construction is defined as, "building construction that is not specifically designed to resist weapons or explosives effects. Conventional construction is designed only to resist common loadings and environmental effects such as wind, seismic, and snow loads. For the purposes of these standards, conventional construction may still require special windows, structural reinforcement around windows, and progressive collapse resistant construction."

Where the standoff distances in the "Conventional Construction Standoff Distance" columns of Tables B-1 and B-2 of UFC 4-010-01 can be met, conventional construction for the applicable building walls may be used for the buildings without a specific analysis of blast effects, except as otherwise required in the UFCs.

**Note:** Refer to UFC 4-010-01, Table 2-3 for Conventional Construction Parameters as they relate to wall or roof types. Other types of construction other than that shown in table 2-3 may be permissible subject to validation by the designer of record. See PDC Technical Report 10-01 for details on the analysis assumptions and material properties.

### 6.3. Design Basis Threat

The Design Basis Threat (DBT) per UFC 4-010-01, is "the threat (aggressors, tactics, and associated weapons, tools, or explosives) against which assets within a building must be

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protected and upon which the security engineering design of the building is based."

Determining the DBT is a Host Installation function. Host Installation Security and Antiterrorism Officers (ATO), and members of threat working groups determine the DBT. Determining the DBT is the first step in planning AT requirements. The DBT is unique for each DoDEA educational and non-educational facility and is based on the threat likelihoods and the values of the assets in the building. The DBT development process will determine if the minimum AT standards identified in UFC 4-010-01 are adequate or if additional protective measures are required per UFC 4-020-01. Collaborate with Host Installation ATOs to gain a better understanding of the threats, risks, and vulnerabilities.

### 6.4. Levels of Protection

Level of Protection (LOP) as defined in UFC 4-020-01 is, "the degree to which an asset (e.g., a person, a piece of equipment, or an object, etc.) is protected against injury or damage from an attack." Specific processes for determining an initial LOP can be found in UFC 4-020-01. Detailed, quantitative descriptions of the levels of protection are included in PDC Technical Report 06-08.

The UFC standards provide a Low LOP for billeting, high occupancy family housing, and primary gathering buildings and Very Low LOP for other inhabited buildings. Greater protection is provided for primary gathering buildings, billeting, and high occupancy family housing because of the higher concentration of personnel and the more attractive nature of the targets.

**Note:** As DoDEA educational facilities will be designated as Primary Gathering Buildings the applicable LOP will be categorized at the Low LOP. The LOP takes into account the proper use of conventional construction and the applicable standoff distances. Refer to UFC 4-010-01, Tables B-1 and B-2 for additional information.

### 6.5. Controlled Perimeter

Installations vary on their determination of having a controlled or uncontrolled perimeter. Per UFC 4-010-01 a controlled perimeter is a "physical boundary at which vehicle access is controlled with sufficient means to channel vehicles to the access control points. At a minimum, access control at a controlled perimeter requires the demonstrated capability to search for and detect explosives."

This determination, in concert with the established DBT directly affects the associated explosive weight for the installation and thus the ultimate structural design requirements of a facility. Coordination with Host Installation ATO through the PDT, as it relates to the installations DBT will need to take place prior to the initial design of a new or remodeled

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facility. This coordination is vital to ensuring that proper funding and design parameters are properly addressed.

### 6.6. Explosive Weights

The applicable explosive weights to be used in designing buildings required to comply with UFC standards are commonly established based on potential bomb locations with the larger explosive weight (explosive weight I) required to be applied at controlled perimeters or in parking areas and on roadways where there are no controlled perimeters. The smaller explosive weight (explosive weight II) applies in parking areas and on roadways within controlled perimeters, in trash containers, and around buildings outside unobstructed spaces.

Where buildings within controlled perimeters are distant from the perimeters (beyond 200 feet [60 meters]) the effects of an explosive the size of explosive weight I placed at the controlled perimeter will be less than those of an explosive the size of explosive weight II located near the buildings. In those cases, only explosive weight II is used in the design of the windows and doors. Where buildings are closer than 200 feet (60 meters) to the controlled perimeter, both explosive weights I and II need to be analyzed at their actual standoff distances to determine which controls the window and door designs.

Where buildings within controlled perimeters are located closer than the conventional construction standoff distances for both explosive weights I and II, building walls, windows, and doors will have to be evaluated for both explosive weights because the blast effects of the two explosive weights will have differing effects on the various wall types.

For design, development, and construction of new facilities, it is important to remember that standoff distances between installation perimeters, roadways/parking, and trash containers have a substantial bearing on the construction material and or standoff.

**Note:** Applicable explosive weight levels (I or II) that structural design requirements will be based on are determined by the Host Installation. This determination, as identified through the designated installation perimeter type (controlled or uncontrolled) and the established DBT will help guide the PDT in the planning and construction of DoDEA facilities.

Refer to UFC 4-010-01, Tables B-1 and B-2 for standoff/construction requirements as they relate to Primary Gathering Buildings based on the designated, installation specific DBT and applicable explosive weight.

### 6.7. Unobstructed Space

Unobstructed space as defined in UFC 4-010-01, is "Space around inhabited buildings in which

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there are no opportunities for concealment from observation of explosive devices 6 inches (150 mm) or greater in height or width."

## 6.8. Active Barrier Systems

IAW UFC 4-022-02, "an active barrier requires some action, either by personnel, equipment, or both, to permit or deny entry of a vehicle. The system has some form of moving parts. Active barrier systems may include barricades, bollards, beams, gates, and active tire shredders."

## 7.0. DoD MINIMUM ANTITERRORISM STANDARDS

The location, size, and nature of terrorist threats are unpredictable. UFC standards are based on a specific range of assumed threats that provides a reasonable baseline for the design of all inhabited DoD buildings. Designing to resist baseline threats will provide general protection today and will establish a foundation to build additional measures where justified by higher threats or where the threat environment increases in the future.

While baseline threats are less than some of the terrorist attacks that have been directed against U.S. personnel in the past, they represent more severe threats than a majority of historical attacks. It would be cost prohibitive to provide protection against the worst-case scenario in every building.

### 7.1. Standoff Distances

UFC 4-010-01, Standard 1, applies to standoff distances for applicable, new and existing (when triggered) DoD buildings required to comply with UFC established standards. This includes standoff distances to controlled perimeters, parking areas, roadways, and trash containers. Standoff distances are identified in UFC 4-010-01 under Tables B-1 and B-2, illustrated in Figures B-1 and B-2 for new buildings, and Figures B-3 and B-4 for existing buildings.

Where conventional construction standoff distances detailed in UFC 4-010-01 cannot be achieved because land is unavailable, standards allow for building hardening, to mitigate blast effects. Planning level costs and requirements for building hardening are addressed in UFC 4-020-01.

**Note:** Per UFC 4-010-01, Paragraph B-1, "None of these standards require physical barriers that are capable of stopping moving vehicles to prevent vehicles from accessing areas within the standoff distances required below. Measures using landscaping features, curbing, or pavement marking will meet the requirements of these standards for establishing standoff."



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## 7.1.1. Parking and Roadways

Standoff for parking and roadways is determined by measuring the closest edge of parking areas, driving lanes within parking areas, and roadways to the closest point on the building exterior, inhabited portion of the building, or to specific building components. The Host Installations will determine the perimeter type (controlled or uncontrolled) for their installation. The PDT will coordinate with Host Installation ATOs to obtain information related to the identified perimeter type.

**Note:** Per UFC 4-010-01, Paragraph 2-4.1.1.1., “This instruction makes the assumption that all explosive weighted vehicles are stationary and the aggressors want to park the vehicles covertly without being noticed as doing anything unusual; therefore, it is assumed that they will park in legal parking spaces or areas.”

## 7.1.2. Standoff Distances Within a Controlled Perimeter

For a controlled perimeter, the standoff distances and explosive weight associated with parking and roadways within a controlled perimeter are identified in UFC 4-010-01, Table B-1 (explosive weight II). This is based on the assumption that a controlled perimeter will allow for the detection of larger vehicle bombs and prevent them from entering the installation.

## 7.1.3. Standoff Distances Without a Controlled Perimeter

Where there is no controlled perimeter, the standoff distances and explosive weight associated with parking and roadways without a controlled perimeter are identified in UFC 4-010-01, Table B-1 apply (explosive weight I).

**Note:** Per UFC 4-010-01, Paragraph 2-4.3.2, parking areas and roadways do not require physical barriers. They only require means to ensure the boundaries are clearly identified such that driving past that boundary would draw attention.

## 7.1.4. Location of Trash Containers (Dumpsters and Recycling Receptacles)

Provide standoff distances from the nearest points of trash containers or trash container enclosures to the closest points on the building exteriors or inhabited portions of the buildings or to specific building components in accordance with the conventional construction standoff distance from trash containers as identified in UFC 4-010-01, Tables B-1 and B-2. Where the applicable conventional construction standoff distance is not available, analyze the building and apply building hardening as necessary to mitigate the effects of the explosives.

Alternatively, harden trash enclosures to mitigate the direct blast effects and secondary

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fragment effects of the explosive on the building if the applicable level of protection can be proven by analysis or testing.

**Note:** As an additional alternative, if trash containers or enclosures are secured to preclude introduction of objects 6 inches (150 mm) or greater in height or width into them by unauthorized personnel, they may be located closer to the building as long as they do not violate the unobstructed space provisions of UFC 4-010-01, Standard 2. Openings in screening materials and gaps between the ground and screens or walls making up an enclosure must not be greater than 6 inches (150 mm).

### 7.2. Unobstructed Space Requirements

UFC 4-010-01, Standard 2, applies to unobstructed space. It is assumed that aggressors will not attempt to place explosive devices in areas near buildings where those explosive devices could be visually detected by building occupants. This does not preclude the placement of site furnishings or plantings around buildings. It only requires conditions such that any explosive devices placed in the unobstructed spaces would be observable by building occupants either from within the buildings or as they walk into or around it.

When placing features (vegetation, equipment enclosures, trash containers, etc.) within unobstructed spaces, determining whether or not a person could hide an explosive equivalent to Explosive Weight II is key. It is assumed that explosive devices will have dimensions of at least 6 inches (150 mm) in height, which is consistent with a brief case or satchel sized object. Although such an object could potentially be hidden near large trees and playground equipment, these site features are still permissible if a hidden object would still be visible from at least one direction.

**Note:** Ensure there are unobstructed spaces (extended out to the applicable conventional construction standoff distances) in which there are no obstructions or building features that might allow for concealment from observation of explosive devices 6 inches (150 mm) or greater in height or width around buildings and underneath building overhangs or breezeways.

#### 7.2.1. Electrical and Mechanical Equipment

The preferred location for electrical and mechanical equipment such as transformers, air-cooled condensers, and packaged chillers is outside the unobstructed space or on the roof. This standard, however, does not preclude placement within the unobstructed space as long as the equipment provides no opportunity for concealment of explosive devices with heights of 6 inches (150 mm) or greater or the equipment is secured to prevent concealment of the devices.

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## 7.2.2. Trees and Shrubs

For trees or shrubs within the unobstructed space, ensure that no foliage extends lower than 3 feet (1 meter) above the ground to improve observation of objects underneath them. Foliage should be kept to a minimum within the unobstructed space. Minimum introduction of foliage will prevent overgrowth and limit future maintenance requirements.

## 7.2.3. School and Playground Structures

It is understood that playground equipment will be located within the unobstructed space footprint. This reality does not preclude unobstructed space requirements. Ensure that playground equipment provides no opportunity for concealment of explosive devices with heights of 6 inches (150 mm) or greater.

## 7.2.4. Equipment and Trash Container Enclosures

If walls with more than two sides are placed around trash containers, electrical, mechanical, or other equipment within the unobstructed space, enclose those areas on all four sides and the top. Openings in screening materials and gaps between the ground and screens or walls making up an enclosure will not be greater than 6 inches (150 mm).

Secure any surfaces of the enclosures that can be opened so that unauthorized personnel cannot gain access through them. Where opaque top enclosures are provided, they will have a pitch of at least 1 vertical to 2 horizontal to increase visibility of objects thrown onto them and to increase the likelihood that the objects will slide off. Alternatively, if the vertical surfaces of the enclosures are transparent and at least 7 feet (2.1 meters) high, a top enclosure is not required.

## 7.3. Drive-Up/Drop-Off Areas

UFC 4-010-01, Standard 3 applies to drive-up/drop-off requirements. DoDEA facilities require access to areas within the required standoff distances for dropping off or picking up students or loading/unloading packages and other items. For DoDEA schools, these areas include bus loops and parent drive-up or drop-off lanes. In these cases, standoff distances will be measured to the nearest legal parking spaces, not the drive-up or drop-off areas. No building hardening or installation of vehicle barriers will be required to compensate for the closer standoff distances associated with the drive-ups or drop-offs and bus loops.

All bus loops and drive-up/drop-off areas or lanes must be clearly identifiable and marked in accordance with the *Manual on Uniform Traffic Control Devices (ANSI D 6.1e)*; allowing for drivers to understand the intent of the area. No parking signage and/or pavement markings is

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required within the drive-ups/drop-offs and bus loops.

Unattended vehicles may never be allowed closer than the minimum standoff distance. If problems occur with unattended vehicles in drive-up/drop-off areas, every effort should be made to address the issue at the local level if possible. If issues cannot be resolved at the local level, contact the HQ DoDEA AT PM for assistance.

**UFC 4-010-01 Recommendation:** Drive-up/drop-off areas should be located away from large glazed areas of buildings to minimize the potential for hazardous flying glass fragments in the event of an explosion. Consider locating the lanes at outside corners of buildings or otherwise away from main entrances or minimizing glazing in the proximity of drive-up/drop-off areas. Building geometries in the vicinity of drive-up/drop-off areas should be laid out to minimize the possibility that explosive blast forces could be increased due to being trapped or otherwise concentrated.

**Note:** In consideration of possible changes to Force Protection Conditions (FPCON), DoDEA Security and local school officials will ensure that barrier plans address measures to secure drive-up/drop-off areas based on FPCON changes as applicable.

## 7.3.1. Drive-Up/Drop-Off Areas (Active Barrier Requirements)

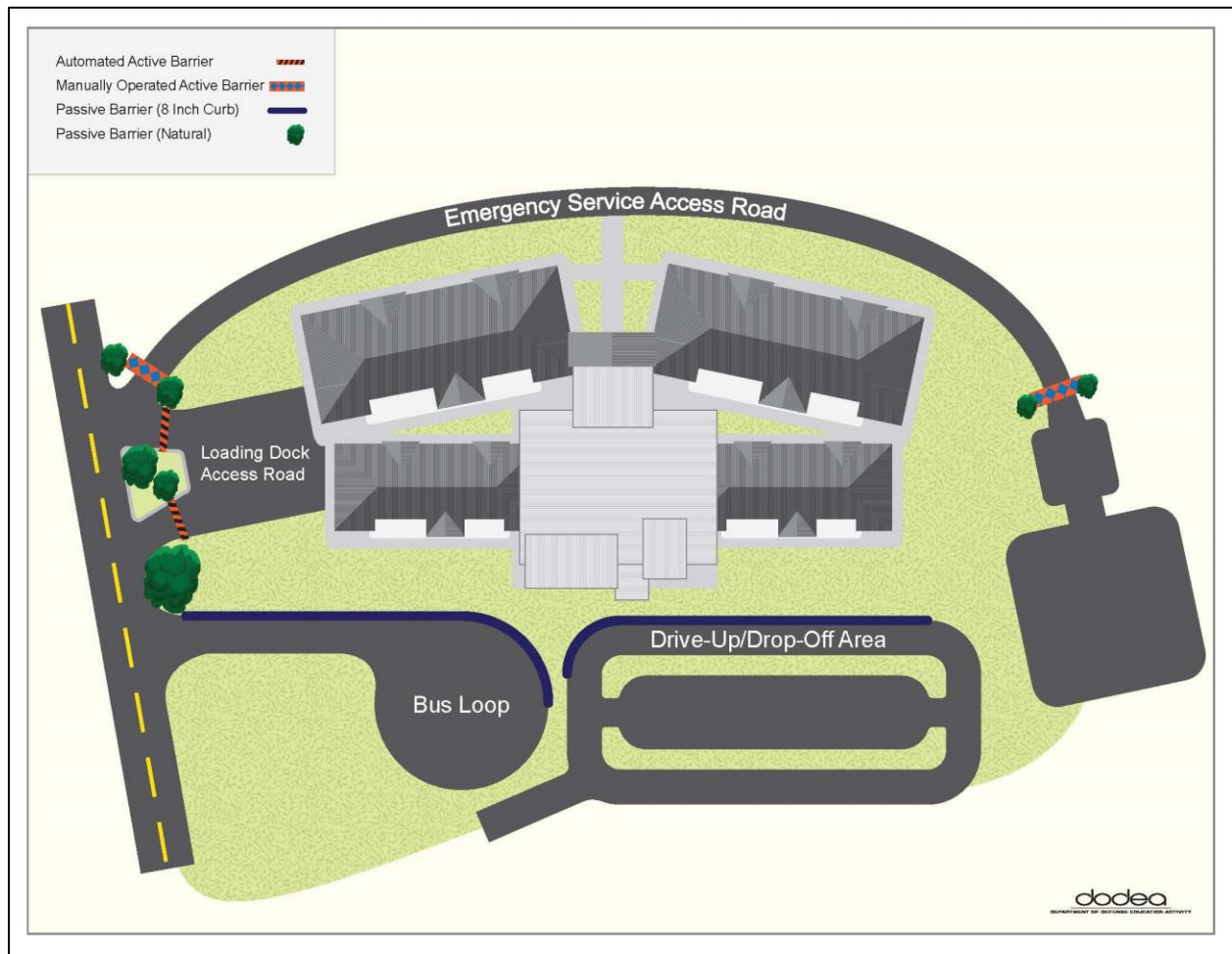
Active barriers will not be used to control access to drive-up/drop-off lanes, bus loops, bus drive-ups, or any other area where vehicles will need to drive within set standoff distances. Should local security conditions require threat mitigation for these areas, the PDT through coordination with the HQ DoDEA AT PM will develop appropriate countermeasures based on identified threats. Refer to Paragraph 3.2.1. and 7.4.1 of this document for further guidance.

## 7.3.2. Drive-Up/Drop-Off Areas (Passive Barrier Requirements)

**Passive Barriers:** Passive barriers will be employed on the facility side of bus loops and drive-up/drop-off areas (Figure 1). Passive barriers for this purpose are recognized as 8 inch vertical wall curbs. The use of 8 inch curbs clearly defines boundaries and aids in identification of an overt act to drive past an established point of travel.

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**Figure 1. Active/Passive Barrier Placement (Illustrative Example)**



## 7.4. Access Roads

UFC 4-010-01, Standard 4 applies to access road requirements. Where access roads are necessary for the operation of buildings required to comply with UFC 4-010-01 (including those required for emergency access and/or security operations), ensure that access control measures are implemented to prohibit unauthorized vehicles from using access roads within the applicable standoff distances.

DoDEA recognizes two types of access roads as it relates to facility design, Dual Purpose and Standalone Emergency Service.

**Note:** Because the assumptions in these standards are predicated on the stationary vehicle bomb threat, vehicle barriers provided to meet these standards are not required to stop

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moving vehicles. To this point, access road vehicle barriers will incorporate passive barriers to the immediate sides of the active barrier(s) in order to aid in identification of vehicle breaches to the designated boundaries. Passive barriers for this purpose will extend 10 feet out from each side of the active barrier(s) as land availability allows. Utilizing landscaping and site planning in developing and placement of passive barriers, i.e., berms, gullies, boulders, or trees is recommended as this will aid in the esthetics of the facility. Unobstructed space requirements (Paragraph 7.2) will need to be considered when determining the types and locations of passive barriers.

### 7.4.1. Dual Purpose Access Roads (Barrier Requirements)

Dual Purpose Access Roads are roads that provide both entry/egress to loading docks and to emergency services (Figure 1). These roads shall have automated active barriers installed (Figure 2) that meet the following minimum requirements:

- Entry/egress barrier operations (at the barriers) facilitated through PACS.
  - Refer to Paragraph 8.1. of this Guide for further information.
- Entry/egress remote barrier operations via voice and video identification system.
  - Remote access capabilities shall be provided in the Administration Suite and loading dock/service entry areas.
  - Refer to Paragraph 8.1.3. and 8.1.4. of this Guide for further information.
- Entry/egress remote barrier operations via up/down switch located inside the loading dock door.
- Buried detection loop to close barrier once cleared entry vehicle passes through.
- Buried detection loop to open barrier upon egress.
- Battery backup based on manufacturers recommendations and anticipated throughput.
- Manual barrier override capability via manufacture designated tools.

**Note:** Active barrier(s) shall be equipped with a high security key safe (Knox box or equal) mounted to the barrier's structural support. This will ensure the responding fire department will be able to activate/open the barriers. Active barrier(s) may also be incorporated into the fire alarm system so that they automatically open during a fire alarm.

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**Figure 2. Automated Active Barriers (Illustrative Examples)**



## 7.4.2. Standalone Emergency Service Access Roads (Barrier Requirements)

**Standalone Emergency Service Access Roads (Fire Lanes):** Facilities designed with standalone emergency service access roads separate from loading dock access roads do not require the installation of automated active barrier systems. Securing access/egress points to standalone emergency service access roads will be accomplished through the installation of manually operated active barriers (Figure 3).

**Note:** Manually operated active barrier(s) shall be equipped with a high security key safe (Knox box or equal) mounted to the barrier's structural support. This will allow the responding fire department to open/secure the barriers. Some barriers allow entry to be obtained by use of hydrant wrenches. The correct application will be determined by the PDT in concert with Host Installation Fire Departments.

**Figure 3. Manually Operated Active Barriers (Illustrative Examples)**



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## 7.5. Parking Beneath Buildings or on Rooftops

UFC 4-010-01, Standard 5 will apply to only future DoDEA facilities with underground or rooftop parking.

## 7.6. Progressive Collapse Resistance

UFC 4-010-01, Standard 6 will be applied to only future DoDEA facilities with three or more stories.

## 7.7. Structural Isolation

UFC 4-010-01, Standard 7 applies to structural isolation. Furthermore, this standard will only apply to separations between inhabited portions of buildings (including primary gathering) and low occupancy portions of buildings. It will not be applied to separate inhabited areas of buildings that do not meet the definition of primary gathering from those that do meet the primary gathering definition. Where buildings have inhabited and primary gathering occupancies, the entire inhabited portion of the building will be considered to be primary gathering.

Design all building additions that are required to comply with these standards to be structurally independent from the adjacent existing buildings. This will minimize the possibility that collapse of one part of a building will affect the stability of the remainder of the building. Alternatively, verify through analysis that collapse of either the addition or the existing building will not result in collapse of the remainder of the building.

## 7.8. Building Overhangs and Breezeways

UFC 4-010-01, Standard 8 will be applied to only future DoDEA facilities with overhangs or breezeways.

## 7.9. Exterior Masonry Walls

UFC 4-010-01, Standard 9 applies to wall types and applicable explosive weight (based on the established DBT) to determine the applicable standoff distances. Unreinforced masonry walls are prohibited for the exterior walls of new buildings required to comply with the UFCs. Refer to UFC 4-010-01, Standard 9, Table 2-3 and, Table B-2 for additional information.

**Note:** Local code, regulatory requirements, and established DBTs dictate how facilities will be constructed. The construction means and methods differ by location as code requirements and



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DBTs are not uniform. The PDT will make the final determination of structural requirements for each location.

## **7.10. Windows (Exterior) and Skylights**

UFC 4-010-01, Standard 10 applies to window systems at all standoff distances, even those that meet or exceed the wall conventional construction standoff distances. The provisions only address minimum standards (very low and low levels of protection). For higher levels of protection, refer to Protective Design Center (PDC) Technical Report 10-02.

To minimize hazards from flying debris from windows and skylights, apply the provisions (as identified in UFC 4-010-01, Standard 10) for glazing, framing, connections, and supporting structural elements for all new and existing buildings.

Window design requirements will be determined by analysis based on applicable explosive weights and associated standoff distances. If the facility is more than 200 feet from the controlled perimeter, windows and skylights will not need to defend against Explosive Weight I. Explosive weights are determined by the Host Installation.

## **7.11. Building Entrance Layout**

UFC 4-010-01, Standard 11 applies to the building entrance. The areas outside of controlled perimeters are commonly not under the direct control of installations. When the main entrances to DoDEA facilities face controlled perimeters, people entering and exiting the buildings are vulnerable to being fired upon from vantage points, outside those perimeters. To mitigate those vulnerabilities, apply the measures as identified in UFC 4-010-01, Standard 11.

### **7.11.1. Vestibules or Foyers**

In vestibules, foyers, or similar entry configurations into inhabited areas where there are inner and outer doors, the vestibules, foyers, or similar entries are considered not to be routinely occupied spaces. The inner doors must meet the provisions of these standards and any other glazing associated with inner door entries such as sidelights and transoms must meet the requirements of UFC 4-010-01, Standard 10. The inner doors and glazing must be capable of mitigating any hazards resulting from the enclosed vestibule or foyer outer doors and glazing failure in response to the design blast event. This is to account for the fact that at the levels of protection required in these standards, the outer doors and glazing may fail, which would subject the inner doors and glazing to significant blast loads. To provide that debris resistance, the inner doors, sidelights, and transoms must meet the windborne debris resistance requirements of the American Society for Testing and Materials (ASTM) E1996 (missiles A and D in Table 2).

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## 7.11.2. Visitor Access Points (Main Entrance)

Main entrances will be designed in a manner that dissuades visitors from entering the facility prior to being vetted by school officials. Main entrances will be designed to control the flow of visitors into a facility by physically directing them to the main office for vetting. A vestibule or sally port located at the main entrance, channeling visitors into the main office or Administration Suite will be required (Figure 4). These entrances must take Americans with Disabilities (ADA) and Architectural Barriers Act (ABA) compliancy requirements into account.

All exterior doors, to include the main entrance will be secured at all times and will only be accessible via the designated physical access control system (PACS). Additionally, exterior main entrance doors will be outfitted with a PACS Intercom system that has both audio and visual capabilities. Refer to Paragraph 8.1. for PACS requirements.

Interior doors leading from the main office or Administration Suite shall have electronic locks, controlled by the main office staff and the designated PACS in order to provide single point school access for visitors and non-staff members. These doors will be equipped to allow egress per Life/Safety Codes.

**Figure 4. Vestibule/Sally Port (Illustrative Examples)**



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### 7.12. Exterior Doors

UFC 4-010-01, Standard 12 applies to exterior doors entering into inhabited areas. This standard identifies the use and application of unglazed, glazed, and alternative designs for doors on new and existing buildings.

**Note:** To provide debris resistance, inner doors, sidelights, and transoms located in vestibules or foyers must meet the windborne debris resistance requirements of ASTM E1996 (missiles A and D in Table 2). Inner doors located in vestibules or foyers must also meet the provisions of UFC 4-010-01, Standards 10 and 12.

#### 7.12.1. Overhead Doors

It is impractical to design conventional overhead doors to meet the required performance in UFC 4-010-01, Table 2-1. Ensure overhead doors do not open into inhabited spaces. However, if they are in place, ensure the doors are intercepted by walls or tether systems designed with sufficient strength to keep the doors from translating into other areas, to include inhabited space.

**Note:** All exterior facility doors will be secured/locked at all times to prevent unauthorized access. Securing the doors will not interfere with life safety and fire code standards. Daily use exterior doors (main facility entrances, bus loading/unloading entrances, and mail room/loading dock entrances) will be accessible via applicable PACS. Refer to Paragraph 8.1. for PACS requirements.

### 7.13. Mail Rooms and Loading Docks

UFC 4-010-01, Standard 13 applies to the location of mail rooms to which mail or supplies are delivered or in which mail or supplies are handled in new and existing buildings. These standards do not apply to mail rooms or loading docks where mail or supplies are delivered after being processed at a central mail or supplies handling facility.

Standard 13 does not require the hardening of mail rooms or loading docks because the mail and supplies bomb threats are beyond the scope of UFC 4-010-01. Refer to UFC 4-020-01 for an identified mail or supplies bomb threat.

Locate mail rooms and loading docks on the perimeter and as far from heavily populated areas of the facility as possible.

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**Note:** Host Installation delivery procedures will need to be verified to determine if deliveries are properly vetted at installation perimeter access control points or at a central mail or supply handling facilities. Verification will need to be accomplished through coordinated with Host Installation ATOs through the PDT.

### 7.14. Roof Access

UFC 4-010-01, Standard 14 requires the elimination of all external roof access points by providing access from internal stairways or ladders, such as in mechanical rooms, to minimize the possibility of aggressors placing explosives or Chemical, Biological, or Radiological (CBR) agents there or otherwise threatening building occupants or critical infrastructure.

**Note:** For existing buildings, eliminate external access where possible or secure external ladders or stairways with locked cages or similar mechanisms. Roof access points shall be locked at all times (refer to Paragraph 8.1. for PACS requirements).

### 7.15. Overhead Mounted Architectural Features

UFC 4-010-01, Standard 15 applies to all new and existing buildings. Overhead mounted features weighing 31 pounds (14 kilograms ) or more (excluding distributed systems such as suspended ceilings that collectively exceed that weight) are mounted using either rigid or flexible systems to minimize the likelihood that they will fall and injure building occupants. Mount all such systems so that they resist forces of 0.5 times the component weight in any horizontal direction and 1.5 times the component weight in the downward direction. Standard 15 does not preclude the need to design architectural feature mountings for forces required by other criteria such as seismic standards.

### 7.16. Air Intakes

UFC 4-010-01, Standard 16, applies to air intakes for Heating, Ventilating, and Air Conditioning (HVAC) systems that are designed to move air throughout a building that are at ground level and provide an opportunity for aggressors to easily place contaminants where they could be drawn into buildings. The following measures will be applied to minimize those opportunities. The requirements of this standard do not have to be applied when air intakes are located within an enclosed mechanical equipment yard or similar area with access control such as an enclosed courtyard.

**New Buildings:** For all new buildings required to comply with these standards, locate all air intakes at least 10 feet (3 meters) above the ground.

**Existing Buildings:** Add means such as exterior chimneys to extend the elevations of air intakes

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to at least 10 feet (3 meters) above the ground for all buildings that must comply with these standards.

## 7.17. Mail Room and Loading Dock Ventilation

UFC 4-010-01, Standard 17 ensures airborne CBR agents introduced into mail rooms and loading docks do not migrate into other areas of the buildings. Provide separate, dedicated air ventilation systems for mail rooms and loading docks in buildings required to comply with these standards. Refer to UFC 4-010-01, Standard 17 for additional information and requirements pertaining to mail room and loading dock ventilation. For facilities with a standalone HVAC; install air duct shutoff switches within the space. Refer to UFC 4-010-01, Standard 18 for additional shutoff requirements.

**Note:** The PDT will coordinate with Host Installation ATOs to verify the use of local handling facilities and apply UFC 4-010-01, Standard 17 Measures as applicable.

## 7.18. Emergency Air Distribution Shutoff

UFC 4-010-01, Standard 18 is established for all new and existing DoDEA facilities; provide an emergency shutoff switch in the HVAC control system that can immediately shut down the air distribution and exhaust systems throughout the building and close all dampers leading to the outside except where interior pressure and airflow control would more efficiently prevent the spread of airborne contaminants and/or ensure the safety of egress pathways. For facilities with a standalone HVAC; install air duct shut off switches at that location, e.g., mailroom, loading dock.

The switch must be capable of shutting down all required systems and closing all required dampers, even if the local hand/off/auto switch is in the hand position, within 30 seconds of switch activation. Locate the shutoff switch (or switches) to be easily accessible by building occupants by locating them similarly to Mass Notification System (MNS) Local Operating Consoles (LOC) (see UFC 4-021-01 for additional information on MNS LOCS) so that the travel distance to the nearest shutoff switch will not be in excess of 200 feet (61 meters). When co-located with fire alarm pull stations, ensure the shutoff switches are well labeled, and a different color than fire alarm pull stations.

Refer to UFC 4-010-01, Standard 18 for additional information and requirements pertaining to Emergency Air Distribution Shutoffs. Requirements from UFC 4-010-01, Standard 18 also pertain to Mail Room and Loading Dock Ventilation systems (Standard 17) when such systems are installed.

Shutdown procedure shall be controlled and orderly so that airflow shutoff will not harm the air

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handling system if activated for practice drills, operational inspection, or accidental activation. This allows for testing at initial building acceptance.

**Note:** To prevent accidental or malicious activation of air distribution shut-downs, switches accessible to students will be secured with a tamperproof housing (Figure 5). At a minimum, shut-down switches, to include those for standalone HVAC systems used in mailrooms and loading dock (as applicable) will be located in the Administration Suites and the respective mail room and loading dock areas. Additional shut-down switch placement will be determined by the PDT in adherence with Standard 18 spacing requirements

**Figure 5. HVAC Emergency Shut-Down Switch Cover (Illustrative Examples)**



### 7.19. Equipment Bracing

UFC 4-010-01, Standard 19 instructs that all mounted, overhead utilities and other fixtures weighing 31 pounds (14 kilograms) or more (excluding distributed systems such as piping networks that collectively exceed that weight) use either rigid or flexible systems to minimize the likelihood that they will fall and injure building occupants. Design all equipment mountings to resist forces of 0.5 times the equipment weight in any horizontal direction and 1.5 times the equipment weight in the downward direction. This standard does not preclude the need to design equipment mountings for forces required by other criteria such as seismic standards.

### 7.20. Under Building Access

UFC 4-010-01, Standard 20 limits opportunities for aggressors placing explosives underneath buildings. Ensure that access to crawl spaces, utility tunnels, and other means of under building access are controlled.

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## 7.21. Mass Notification

UFC 4-010-01, Standard 20 pertains to the MNS. Provide real-time information and instructions to people in a building, area, site, or DoD installation using intelligible voice communications along with visible signals, text, and graphics, and possibly including tactile or other communication methods. MNS are intended to protect life by indicating the existence of an emergency situation and instructing people of the necessary and appropriate response and action.

MNS integration is an extensive process and requires a high degree of technical expertise. To this point, the PDT will ensure all MNS projects for DoDEA Educational facilities are under the supervision of a registered fire protection engineer or by a registered professional engineer having at least four years of current experience in the design of fire protection and detection systems, or by an engineering technologist qualified by the National Institute for Certification in Engineering Technology (NICET) Level IV in fire alarm systems. The individual's name, signature, and professional engineer number or NICET certification number shall be included on all final design documents.

**Note:** UFC 4-021-01 provides the design, operation, and maintenance requirements of MNS for DoD facilities. This document is intended to assist in the design of systems that meet the requirement established by UFC 04-010-01 and to give guidance to commanders, architects, engineers, and end users on design, operation, and maintenance of MNS.

### 7.21.1. Facility MNS Interface with Installation Wide Area MNS

If a wide area MNS is provided on the DoD installation, the individual building MNS communicates with the central control units of the wide area MNS to provide status information, receive commands, activate pre-recorded messages, and originate live voice messages. If no wide area MNS is provided on the DoD installation, at a minimum, the individual building MNS shall be able to receive an audio line-level input.

The individual building MNS shall be capable of being interoperable with an existing wide area MNS. If a wide area MNS is not presently provided on the DoD installation, the individual building MNS shall be designed to allow future interface with a wide area MNS procured from another manufacturer. MNS system engineers via the PDT will ensure electrical requirements, computer codes, or other protocols that are needed to interface the wide area and facility MNS systems are provided to the Host Installation.

**Note:** When the facilities MNS is combined with that of the Host Installation, the PDT may request that notifications initially terminate within the Administration Suite. This request will need to be formally presented to and approved by the Host Installation.

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If approved, the facility level MNS shall be designed and constructed in a manner that allows designated facility officials to either allow or prevent installation level communications from being broadcasted throughout the entire facility. This capability will provide the designated officials with an opportunity to determine if incoming communications (exercise/training announcements, etc.) are suitable for the student population.

## 7.21.2. Combined MNS and Fire Alarm Systems

Combined MNS and fire alarm systems are required by the Navy and highly recommended by the Army and Air Force. The combined system design may be used by the Marine Corps when specifically approved by the Authority Having Jurisdiction (AHJ) based on the class and size of the building requiring the MNS. Otherwise, Marine Corps projects will use the technical criteria of UFC 4-021-01, Chapter 5. If an Army or Air Force installation approves use of a separate MNS and separate building fire alarm system in a new construction project, use the technical criteria of Chapter 5 as well.

## 7.21.3. Mass Notification Subsystems

An individual building MNS for new construction projects includes several subsystems: Autonomous Control Unit (ACU); LOC; notification appliance network; and interface with the Wide Area MNS on the DoD installation (UFC 4-021-01, Chapter 3). System design and wiring is designed to meet National Fire Protection Association (NFPA) 72 requirements for MNS and fire alarm systems.

**Note:** Provide a LOC to allow emergency response forces and building occupants to access the MNS and originate messages in emergency situations from locations in the building other than from the ACU. Specific locations for installation of LOCs are service directed (Army, Air Force, etc.) and outlined in detail in UFC 4-021-01, Chapter 4, Paragraph 4-5.1. Along with the Service directed requirements, DoDEA educational facilities will have additional LOCs installed in the Administration Suites and loading dock/service entry areas.

**Note:** Refer to UFC 4-021-01 for detailed MNS component and subsystem requirements (Speakers (internal/external), strobes, ACU, LOC, etc.).

## 8.0 DoDEA SPECIFIC AT/PHYSEC STANDARDS

### 8.1. Physical Access Control Systems (PACS)

The primary function of PACS, also known as an Access Control System is to ensure that only authorized personnel are permitted ingress to a specified area or facility. In general, PACS compares an individual's entry authorization identifier against a verified database. If an



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individual's identity is verified, the PACS sends output signals to allow authorized individual entry through controlled portals such as gates or doors.

A PACS can have many elements, including electric locks, card readers, biometric readers, door contacts, and request-to-exit (REX) devices, all monitored and controlled by a distributed processing system (master station) and one or more workstations. PACS workstations allow security personnel to enroll authorized users in the system, set user access permissions, monitor events and alarms, and run reports on past system activity. Refer to UFC 4-021-02, Figure 3-1 for an example PACS configuration.

**Note:** As DoDEA facilities operate in many locations around the world, it is not practical to identify a specific type of PACS for use at each facility. To ensure installed systems meet minimum DoD requirements, the PDT will use UFC 4-021-02 and Directive-Type Memorandum (DTM) 09-012 as the source documents for the design, construction, and implementation of PACS. All systems must allow for compliance with ADA standards. Additionally, The National Institute of Standards and Technology Special Publication 800-116 provides additional details as it relates to PACS implementation.

### 8.1.1. PACS Coordination

Prior to determining PACS requirements at a specific location, the PDT will coordinate with Host Installation Security Officials to determine what PACS are currently in use. Information gathered from this coordination will help planners determine local support, local maintenance, and local vendor capabilities. When possible, PACS installed at DoDEA facilities should mirror Host Installation PACS.

**Note:** Coordination with Host Installation fire departments prior to the selection of PACS is required. The fire department will ensure PACS meets applicable fire and safety standards. All systems must allow for compliance with the ADA standards.

### 8.1.2. PACS Requirements

All exterior facility doors and interior doors leading to or from regularly occupied and staffed areas shall have the infrastructure for PACS implementation installed. Interior doors include but are not limited to, communications rooms, storage rooms, utility rooms, computer rooms, and other rooms determined by the PDT. Infrastructure installation includes, but is not limited to, cable paths/conduit run from its location to the access control termination panel (telecommunications room) in order to facilitate present and future PACS capabilities. Cable paths include cable trays, cable raceways (enclosed duct), cable conduits, surface raceway, pull boxes, cable consolidation point, cable transition point, outlet boxes and installed cable pull

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cords along with ancillary hardware and fittings extending from the termination panel to the associated outlet boxes.

Additional requirements for PACS are as follows:

- PACS infrastructure shall be provided with an individual Uninterruptible Power Supply (UPS) which shall provide backup power to all systems for a minimum of eight hours.
- Provides the capability to rapidly and electronically authenticate credentials and individuals authorization to enter the facility or area.
- Integrate with other facility PHYSEC systems and equipment (as applicable).
- Will provide capability to maintain local logging and reporting of persons enrolled in PACS, entering the facility, and denied access.
- Will provide capability to store an updated access control lists every 12 hours, which can be accessed offline by authorized personnel during losses of communication to PACS databases.
- A private/standalone Local Area Network (LAN) independent from DoDEAs network will be provided for all security equipment.
- Access control panels will be located in a secure and environmentally controlled room, preferably the telecommunications room.
- Badging equipment (camera, badging software, printer, etc.).
- External PACS components shall be protected from inclement weather.
- System cabling shall be plenum rated.
- Cables penetrating floors and firewalls must be properly fire stopped to meet local fire codes.
- All walls and floors shall maintain their existing fire rating.
- Special Needs Personnel Door Operation
  - Exterior buttons will be disabled when the school is locked.
  - Exterior buttons will become enabled after a valid badge read.
  - Exterior buttons will not require a valid badge read when the school is unlocked.
- Utilize Electric Strikes or Electric Locks (Electric strikes shall be protected with a cover guard).
- Electrified exit devices (crash bars)
  - Request to Exit (REX) should be included in the electrified hardware when possible, if not possible REX shall be mounted directly above the door (not recommended).
  - Shall have the capability to fail-secure (locked).
- Electrified Handsets (mortise and cylindrical)
  - Door status monitor should be recessed, not surface mounted.
  - Door and door frame should be prepped for a power transfer hinge.

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- REX should be included in the electrified hardware.
- Shall have the capability to fail-secure.
- Card Reader Capabilities
  - Will read contact and contactless technology in accordance with Federal Information Processing Standard (FIPS) 201-1. Contactless technology will be the primary technology used, as it provides for more rapid throughput and supports less wear and tear on the reader and the card. Existing card readers will be upgraded to dual mode readers through the process of attrition.
  - Will provide keypad for personal identification number (PIN) usage or for additional levels of security as the security posture requires. The PIN code would be used as an additional factor to allow access. The use of a PIN by itself to allow access is prohibited in DoDEA facilities.
  - Outdoor readers should have an outdoor hood installed to protect against inclement weather.
  - Reader shall be capable of normal operation indoors, outdoors, and between the temperatures of  $-40^{\circ}\text{C}$  and  $+75^{\circ}\text{C}$ .
- Components will be configured to protect against and detect tampering.
- Will meet requirements outlined in DoDI 5200.8, DTM 09-012, and UFC 4-021-02.

### 8.1.2.1. PACS Card Types

Card readers use a number of different card types. Common card types are, Magnetic Stripe Cards, Proximity Cards, Wiegand Cards, Smart Cards, and the Common Access Card (CAC). Homeland Security Presidential Directive 12 (HSPD) requires the establishment of a mandatory Government-wide standard for secure and reliable forms of identification issued by the Federal Government to its employees and contractors. The DoD established the CAC as the authorized credential and mandated its use for access control.

To meet the requirement, all PACS installed at DoDEA facilities will use the CAC as the primary credential for allowing access. Deviations from this requirement based on conflicting Host Installation policies will require HQ DoDEA approval.

**Note:** Temporary badges may be used to allow access for non-CAC holders who are authorized unescorted entry. Never issue temporary PACS badges to visitors who do not meet requirements for unescorted entry (locally vetted).

### 8.1.3. Door Locations Requiring Full PACS Implementation

As stated in Paragraph 8.1.2., all exterior doors shall have the infrastructure for PACS implementation installed to facilitate current and future planning. The following sections detail

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specific locations/doors at DoDEA facilities where full PACS implementation will take place prior to completion of new construction. The listed doors/gates provide the minimum required locations for the installation of PACS. The PDT, based on local requirements, may choose to add to the minimum list.

- **Perimeter Door PACS Locations:** Main Facility Entrances, Visitor Entrances, Designated Student Entrances (Bus Loading/Unloading Zones), and Loading Dock/Service Entrances.

**Note:** In addition to established PACS components, the identified perimeter doors will be outfitted with electronic locks, card readers, audio/video, and remote access capabilities. Remote access for these doors will be provided by designated facility officials through the use of electronic door releases. At a minimum, remote access (master stations) locations shall include the Administration Suite and loading dock/service entry areas. Mechanical cylinder overrides shall be provided for all identified perimeter doors.

- **Interior Door PACS Locations:** Administration Suites, Exterior/interior doors accessing neighborhoods, Utility/Communications Closet Doors (exterior/interior), Chemical Storage Rooms, and Roof Access Doors.

**Note:** In addition to established PACS components, interior doors require the use of electronic locks and card readers, but they do not require the use of audio/video, and remote access capabilities. Mechanical cylinder overrides shall be provided for all identified PACS enabled interior doors.

- **Alternate PACS Locations:** Active Vehicle Barriers as identified in Paragraph 7.4.1. of this guidance.

**Note:** In addition to established PACS components, automated active vehicle barriers will be outfitted with audio/video and remote access capabilities. Remote access for these barriers will be provided by designated facility officials. At a minimum, remote access (master stations) shall be located within the front office and loading dock/service entry areas.

## 8.1.4. PACS Intercom Requirements

Security intercom with remote door/gate release capability (Figure 6) shall be used for designated access points that require PACS (Paragraph 8.1.3.). The security intercom system shall be integrated with electronic or magnetic remote door/gate release allowing for remote communication and unlocking of doors/gates from the master stations. The security intercoms for these designated areas shall have both audio and built-in video capability.

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**Figure 6. Audio/Video PACS (Illustrative Example)**



## 8.2. Closed Circuit Television (CCTV) Systems

CCTV is a key component of force protection and when used effectively can significantly enhance the detection and assessment capabilities at a facility. The CCTV system is a collection of cameras, recorders, switches, keyboards, and monitors that allow viewing and recording of security events. At a minimum, CCTV systems will be installed at the following locations: Perimeter Doors as identified in Paragraph 8.1.3., Bus Loops, and Drive-Up/Drop-Off Areas. CCTV systems shall enable remote monitoring of live and recorded images by authorized personnel (DoDEA Security and Local School Officials) over an Internal Internet Protocol (IP) network. Surveillance footage will be recorded in digital format, and be retained for a minimum of thirty (30) days. Facility administrators may invest in additional interior and/or exterior CCTV as determined locally.

Video Management System recording devices shall be provided with an individual UPS which shall provide backup power to all systems for a minimum of 90 minutes. Cameras will communicate to the recording devices over an Internal IP network and viewable by designated facility administrators (e.g., Administration Suite). CCTV systems may be integrated with the electronic access control system to enable automatic triggering of live video alerts and/or alarm notifications within the electronic access control system.

**Note:** As DoDEA facilities operate in many locations around the world it is not practical to identify a specific type of CCTV for use at each facility. Prior to determining CCTV requirements at a specific location DoDEA Security Officials will coordinate with Host Installation Security Officials to determine what CCTV systems are currently in use. Information gathered from this coordination will help planners determine local support, local maintenance, and local vendor capabilities. When possible, CCTV installed at DoDEA facilities should mirror the Host

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Installation CCTV. Refer to UFC 4-021-02, Chapter 4 and Unified Facilities Guide Specifications (UFGS) 28 23 23.00 10 as the source documents for the design, construction, and implementation of CCTV systems.

### 8.3. Intrusion Detection Systems (IDS)

Facility administrators may invest in IDS as supplementary security devices. If installed, IDS coverage may include two types of sensors, volumetric and balanced magnetic switch. To monitor the interior areas of facilities, volumetric sensors may be used. The number and type of volumetric sensors will be determined by the location, size, layout, and other characteristics of the area/room being protected. A balanced magnetic switch should be mounted on all exterior doors, some interior doors, and other openings that could be used to gain access into a facility or other designated areas (server rooms, computer rooms, and Administration Suites are a few example interior locations).

**Note:** As DoDEA facilities operate in many locations around the world, it is not practical to identify a specific type of IDS for use at each facility. Prior to determining IDS requirements at a specific location, DoDEA Security Officials will coordinate with Host Installation Security Officials to determine what IDS systems are currently in use. Information gathered from this coordination will help planners determine local support, local maintenance, and local vendor capabilities. When possible, IDS installed at DoDEA facilities should mirror Host Installation IDS. It is recommended that Host Installation Security provide monitoring services for installed IDS. Coordination and formalized agreement from the Host Installation will need to take place to ensure monitoring of IDS.

Refer to UFC 4-021-02, UFGS-28 16 00.00 20, and UFGS-28 20 00.00 20 as the source documents for the design, construction, and implementation of IDS systems.

### 8.4. Duress/Panic Alarm Requirements

Duress alarms, also known as panic alarms shall be installed at newly designed DoDEA facilities. Duress alarm systems shall be connected to Host Installation emergency or security monitoring centers. Upon activation, a silent alarm signal shall be sent to the monitoring location that shall be capable of continuous operations. Monitoring centers shall have the capability to immediately dispatch security to the designated facility. Hardware shall be mounted in such a manner as not to be observable and shall prevent unintentional operation and false alarms.

**Note:** Pre coordination with Host Installation Security is required as duress connectivity to installation level monitoring centers may require Memorandums of Agreement (MOA) or Interagency Service Support Agreements (ISSA).

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## 8.4.1. Duress/Panic Alarm Options for Consideration

Various options exist for installation and implementation of duress alarm systems. Hardwire, radio frequency (wireless), and keypad activated are a few examples of how duress alarm systems can be installed and implemented. When designing duress alarm systems, apply the guidance contained in UFGS 28 16 00.00 20, Paragraph 2.4.12.3.

## 8.4.2. Duress/Panic Alarm Minimum Required Locations of Installation

Duress alarm call stations will be installed, at a minimum, in the following locations: Main Entrance Reception Desk, Principals Office, Guidance Office, Nurses Office, Administration Officers Office (as applicable), and one per neighborhood. The PDT in coordination with local school officials may determine the need for additional placement of duress call stations.

**Note:** As DoDEA facilities operate in many locations around the world, it is not practical to identify a specific type of duress alarm for use at each facility. Prior to determining duress alarm requirements at a specific location, the PDT will coordinate with Host Installation Security and Engineering Officials to determine what duress alarm systems are currently in use. Information gathered from this coordination will help planners determine local support, local maintenance, and local vendor capabilities. When possible, duress alarm systems installed at DoDEA facilities should mirror the Host Installation.

## 8.5. Electronic Security System (ESS) Integration

ESS includes IDS, CCTV, PACS, and duress alarm systems. These systems will be contained within a standalone security network. All networks must meet the applicable DoD and service component information assurance policies and procedures.

**Exception:** The HQ DoDEA, Information Technology Branch Chief is the approval authority in the rare instance where an ESS connection to a DoDEA network is necessary. Approval must be granted prior to the procurement and installation of ESS components, hardware, and software that will require connection to a DoDEA network. This exception pertains only to existing facilities.

## 8.6. Security Lighting

The psychological effect of lighting can be an invaluable aid in protecting assets. Specific requirements for types of protective lighting must be determined locally through a lighting survey. Interior and exterior lighting systems, including fixtures, lamps, and associated primary and backup power, control components, and wiring must be carefully designed to ensure

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effectiveness. As such, the PDT will ensure security lighting requirements (illumination levels, uniformity, color rendering, and energy conservation) are adequately identified and addressed.

When designing new security lighting systems, apply the guidance contained in UFC 4-020-03FA, Chapter 2. UFC 3-530-01 outlines lighting level standards for all types of lighting applications including security lighting.

**Note:** Lighting shall be sufficient to allow security or individuals responsible for maintaining surveillance to see illegal acts such as forced entry. Lighting levels around a facilities perimeter and at entry areas will be 0.5 foot-candles (fc) [5.1 lux] .

### 8.6.1. Lighting to Support CCTV Equipment

In addition to the guidelines provided in UFC 4-020-03FA, follow the manufacturer's foot-candle requirements and other aspects needed for proper application of security lighting to support CCTV or other visual surveillance equipment.

### 8.6.2. Special Lighting Design Considerations

Security lighting systems, switches, power lines, and supporting equipment must be designed and fielded to ensure that an intruder cannot defeat the lighting system by simply turning it off or interrupting the power supply. In situations where it is determined that uninterrupted security lighting is required, redundant power supplies should be considered.

### 8.6.3. Exterior Lighting Requirements (Entrances, Exits, and Loading Docks)

Increasing the light level at facility entrances guides visitors and other personnel to the appropriate building entry. It also serves as exit lighting to guide individuals out of a building for life safety in case of an emergency. Lighting at these locations should protect against forced-entry and provide enough light for threat assessments. Facility entrances, exits, and loading docks must be lighted for all levels of protection. Use concealed, fully shielded or low brightness sources to limit glare while still increasing brightness.

**Note:** Entrances, exits, and loading docks exterior lighting shall be automatically controlled by a photosensor, astronomical time switch, or a combination of both. Controls must be configured to automatically turn on exterior lighting at dusk and turn off the exterior lighting when sufficient daylight is available or the lighting is not required. Manual override for exterior lighting shall be provided. Locations of manual override switches will need to be carefully considered as to not allow access to unauthorized personnel.



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## 8.6.4. Exterior Lighting Requirements (Building Perimeter)

Building perimeter lighting shall be designed to deter criminal or malicious behavior. Fixed lighting along facility perimeters shall provide overlapping cones of light when activated. Perimeter lighting, depending on local requirements, may call for the installation of continuous lighting. When continuous perimeter lighting is not required, the application of motion sensor activated perimeter lighting may be applied.

**Note:** As DoDEA facilities operate in many locations around the world, it is not practical to identify a specific type of security lighting for use at each facility. Prior to determining lighting requirements at a specific location, the PDT will coordinate with Host Installation Security and Engineering Officials to determine what security lighting systems are currently in use. Information gathered from this coordination will help planners determine local support, local maintenance, and local vendor capabilities. When possible, security lighting installed at DoDEA facilities should mirror the Host Installation.

## 8.7. Interior Windows

To facilitate lockdown procedures and to decrease costs, the introduction of interior windows that would allow an intruder access to interior portions of neighborhoods and primary gathering locations should be kept to a minimum. Interior window glazing, framing, connections, and supporting structural elements at the neighborhoods and primary gathering locations shall provide a one (1) minute time of delay against blunt tool and sharp tool impacts. The standards for interior window glazing as outlined in *ASTM F1233-08, Standard Test Method for Security Glazing Materials and Systems* will be applied.

## 8.8. Window Coverings

There is no intention to provide window coverings such as shades or blinds on every window in a facility. The use of window coverings is a cost effective measure as it relates to the protection of building occupants from the Direct Fire Weapons Tactic. As applicable, the following measures will be applied:

- Install window coverings on windows (to include windows on doors and doorways) of Neighborhoods and Learning Studios that provide line-of-sight into these inhabited spaces from both the interior (hallways or circulation corridors) and exterior portions of the facility. The placement of additional window coverings will be determined by the PDT in coordination with the local security posture for the purposes of facilitating lockdown procedures. Window coverings will not be installed on moveable partitions.
- Window coverings shall cover the window fully obscuring vision from outside the inhabited space when properly operated.

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- Window coverings shall be capable of being operated by a single person.
- If window coverings are automated and/or tied into a control system, provide a single point of activation in each regularly occupied and staffed areas for emergency situations (lockdown) capable of shutting all window shades or blinds within those spaces.

## 8.9. Interior Door/Lock Requirements

To facilitate isolated lockdowns, all interior, regularly occupied and staffed area doors shall have locking systems installed on hardware capable of single-handed locking and unlocking from the inside without the use of keys or tools (thumb latch). Doors shall be capable of being closed and locked quickly from inside by one person. Locks shall not require the use of a key, tool, or special knowledge or effort for operation from the inside IAW the NFPA 101, Life Safety Code, Locks, Latches, and Alarm Device section. Interior doors (to include narrow view glass panels) shall provide a one (1) minute time of delay against forced entry.

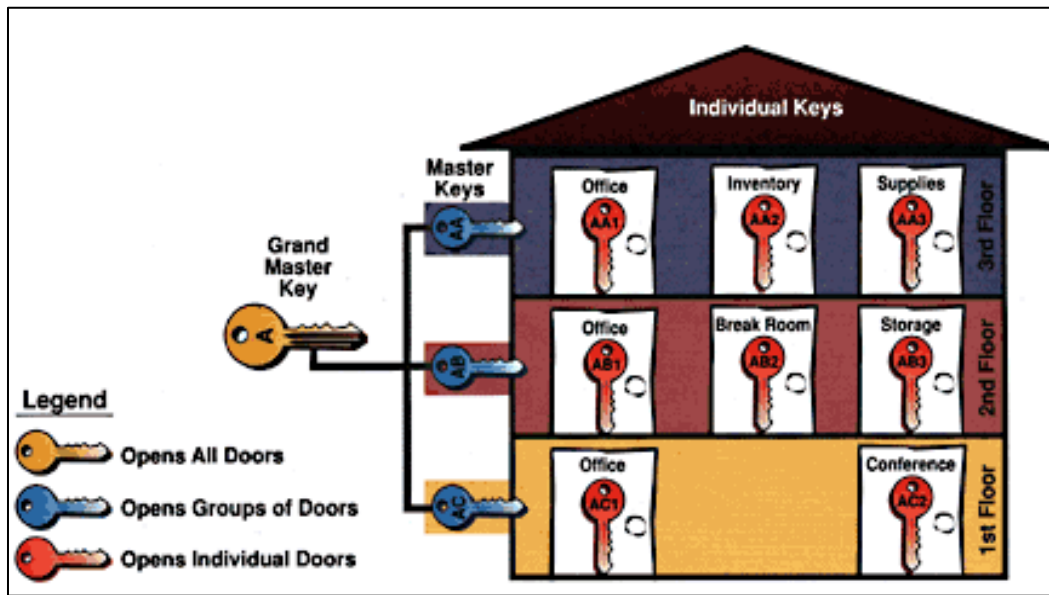
## 8.10. Key and Lock Requirements

Mechanical Card-Operated Door Locks are no longer authorized for installation at DoDEA facilities. At a minimum, master key systems will be used as to allow all door locks at a facility to be opened with a single key even though the locks are keyed differently. The use of the grand master key within DoDEA facilities will be limited to administrators (Principal or designee) and emergency services only (Main Facility Knox Box). Master keys will not be signed out or used for routine purposes or to allow access to areas for maintenance or contractor personnel. This does not prohibit facility personnel from having a key that will open all office doors within his/her section, as long as that key will not open other offices within the facility. Refer to Figures 7 and 8 for example master key systems layouts.

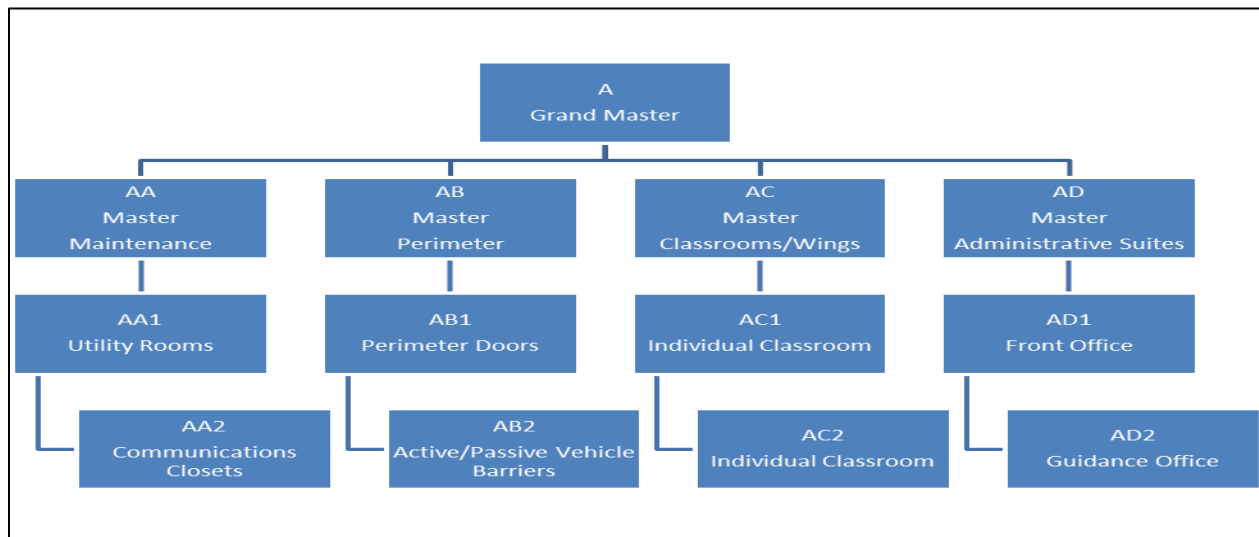
**Note:** Doors as identified in Paragraph 8.1.3. will have electronic locks installed and upon loss of power will fail in the locked position. Mechanical cylinder overrides shall be provided for all PACS enabled doors.

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**Figure 7. Generic Master Key System Layout (Illustrative Example)**



**Figure 8. DoDEA Master Key System Layout (Illustrative Example)**



### 8.10.1. Key Storage

- Interior Key Storage:** Furnish a key cabinet, located within a lockable Administrative Office, with capacity to receive keys for 150% of the cylinders for the project. Coordinate with Principal for installation location. Cabinet shall be heavy duty steel construction with full length, hinged door and built-in, slotted key racks, and lockable with a key retaining lock so that key cannot be removed until cabinet is locked.

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- **Exterior Key Storage:** Install an exterior mounted high security key safe or (Knox box or equal (Figure 9)) that holds building keys for firefighters to retrieve in emergency situations. A key safe will be installed at vehicle barrier locations and designated facility entrance(s), as determined by Host Installation emergency response personnel.

**Figure 9. Exterior Key Safe (Illustrative Example)**



### 8.11. Signage (Security Related)

Applied exterior building signage shall comply with Host Installation standards in size, material/finish, typestyle and placement and shall meet all ADA/ABA requirements. Smaller scale signage shall be located adjacent to the vestibule entry door identifying it as "Main Office".

All doors providing direct access to the school (except the vestibule door), shall have a plaque with wording "Student Entry Only: During school hours, visitors must enter through Administration. These doors are locked during school hours" or similar as required by facility users. The intent is to require all visitors to enter through the Administration Lobby prior to gaining access to the remainder of the school. Signage at the loading dock shall identify the delivery entry door and instructions for drop off. Fire evacuation maps, similar to the maps on the back of hotel doors, shall be provided to meet NFPA and International Building Code (IBC) standards. Maps shall be at least 8.5" X 11" size. They shall be delivered as preprinted and framed with a durable shatter proof cover. Each map shall include "YOU ARE HERE" with primary/alternate exit routes. Maps shall be installed in the neighborhoods at the exit from each Learning Studio, and each exit from the neighborhood, and other large occupancy space as required by code.

### 8.12. Security Fencing

The use of security fencing can serve as both a physical and psychological deterrent to unauthorized personnel. Security fencing at DoDEA Educational Facilities is not required.

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However, the PDT may, based on the application of the risk management process, or security concerns determine that local threat conditions require the application of additional PHYSEC measures such as security fencing. Refer to Paragraph 3.2.1. of this guidance for additions to minimum standards.

**Note:** Security fencing application requirements as identified in this section will not conflict with safety related fencing requirements installed around age specific outdoor play areas. Refer to the DoDEA 21<sup>st</sup> Century Education Facilities Specifications for additional information related to requirements for outdoor play areas.

### 8.12.1. Security Fencing Application

If the PDT (with coordination/approval from HQ DoDEA) determines that security fencing is required the following minimum measures will apply:

- Fencing if installed shall be ornamental (also known as tubular) fencing as defined in UFC 4-022-03. Ornamental fencing provides a greater resistance to climbing as well as providing aesthetic qualities in comparison to chain link fencing. Ornamental fencing systems are constructed of either steel or aluminum components. Install ornamental fence pickets plumb and provide a minimum of 2 inches (51 mm) or maximum of 6 inches (152 mm) between the fence and the ground.
- Provide lockable gates within the fence that allow for emergency egress. To facilitate emergency egress panic hardware will be installed. Any openings in the fencing and gates that could allow exterior manipulation of panic hardware will be secured with permanent construction material.

**Note:** Refer to UFC 4-022-03 and ASTM F2408 for additional fencing requirements.