



Department of Defense
Conservation Conference 2004
August 22–27, Savannah, Georgia

Sponsored by the Office of the
Deputy Under Secretary of Defense
(Installations & Environment)



Protective Design

Force Protection Standards and Historic Preservation Policy

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**U.S Army Corps
of Engineers®**

Report Documentation Page

Form Approved
OMB No. 0704-0188

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1. REPORT DATE 01 AUG 2004	2. REPORT TYPE N/A	3. DATES COVERED -	
4. TITLE AND SUBTITLE Protective Design Force Protection Standards and Historic Preservation Policy		5a. CONTRACT NUMBER	
		5b. GRANT NUMBER	
		5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)		5d. PROJECT NUMBER	
		5e. TASK NUMBER	
		5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S Army Corps of Engineers; Protective Design Center Omaha, NE		8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)	
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited			
13. SUPPLEMENTARY NOTES See also ADM002111. Department of Defense Conservation Conference. Held in Savannah, Georgia on August 22-27, 2004, The original document contains color images.			
14. ABSTRACT			
15. SUBJECT TERMS			
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	
19a. NAME OF RESPONSIBLE PERSON			

Integrating
Natural and Cultural Resources
with Readiness

Integrating
Historic Structures
with Readiness

Integrating
Historic Structures
with Security

Agenda

- Security as a Priority
- Historical Precedence
- Threat Basis
- Introduction to Criteria: UFC
- Examples of Integration

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Beirut Marine Barracks 1983



Khobar Towers 1996



New York WTC 9-11



Pentagon after 9-11



WHY WE ARE HERE

OCT 1983	MARINE BARRACKS BEIRUT LEBANON	243
DEC 1988	PAN AM FLT 103 LOCKERBIE SCOTLAND	244
FEB 1993	WORLD TRADE CENTER NYC NY	6
JUN 1996	KHOBAR TOWERS DHAHRAN SA	19
AUG 1998	US EMBASSIES KENYA/TANZANIA	224
OCT 2000	USS COLE ADEN YEMEN	17
SEP 11 TH 2001	WORLD TRADE CENTER NYC NY	3000 +
	PENTAGON WASHINGTON DC	
	UNITED AIRLINES FLT 93	

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2003

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WHY WE ARE HERE

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- Security as a Priority
- **Historical Precedence**
- Threat Basis
- Introduction to Criteria: UFC
- Examples of Integration













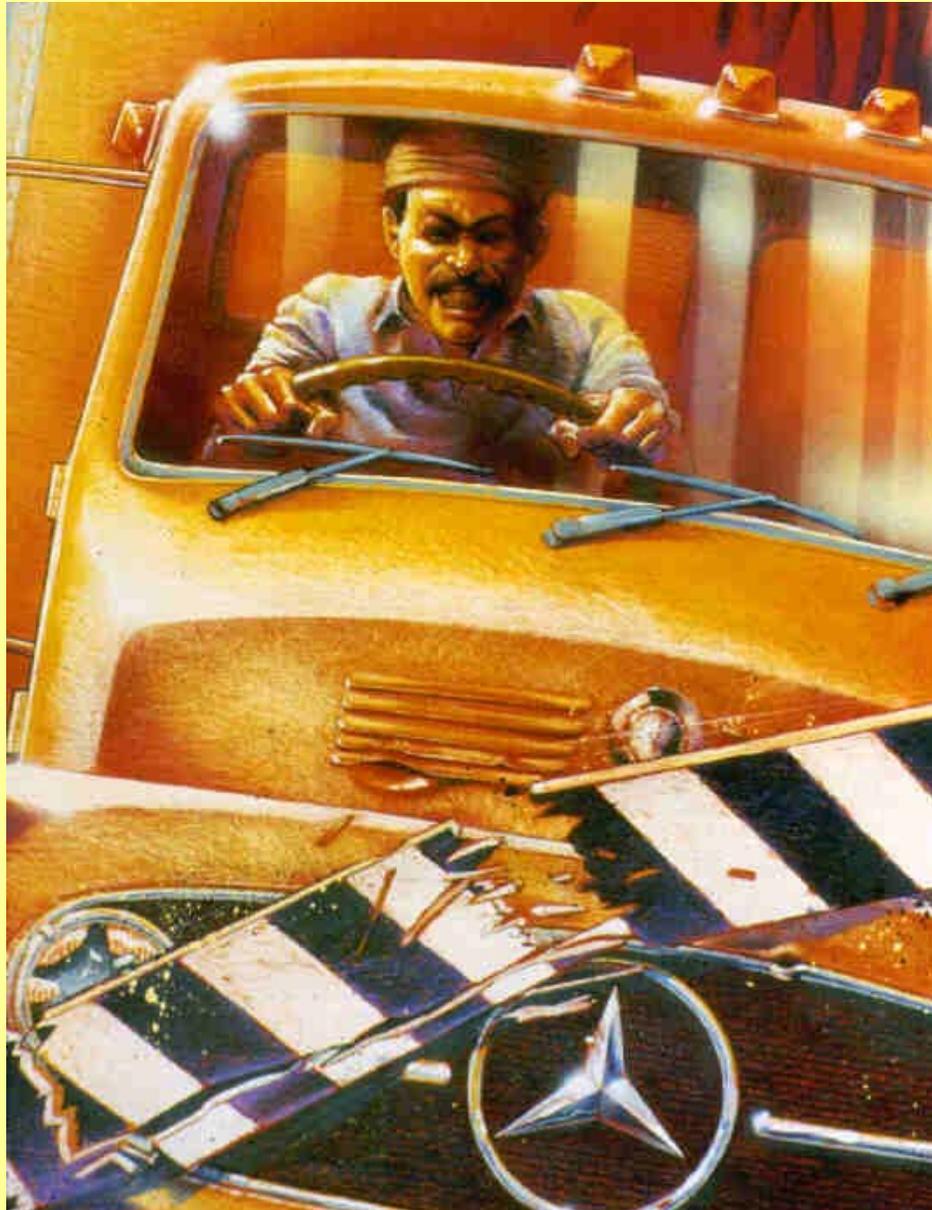
8/16 9 '90

Agenda

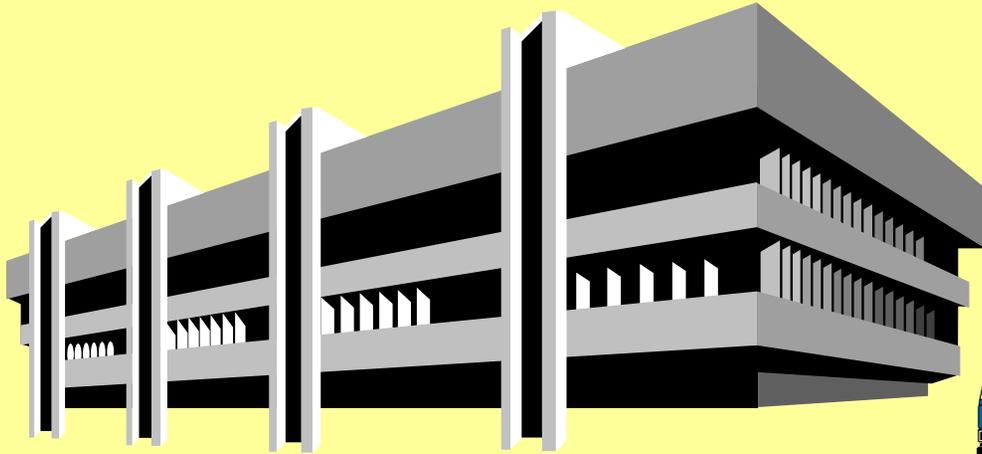
- Security as a Priority
- Historical Precedence
- **Threat Basis**
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Vehicle Bomb

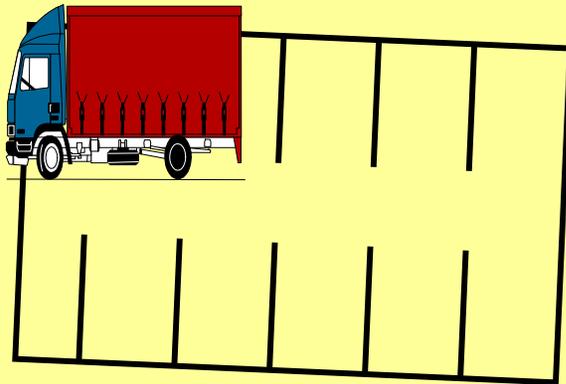


Stationary vs. Moving Vehicle Bombs



Moving vehicle
bomb

Stationary vehicle
bomb



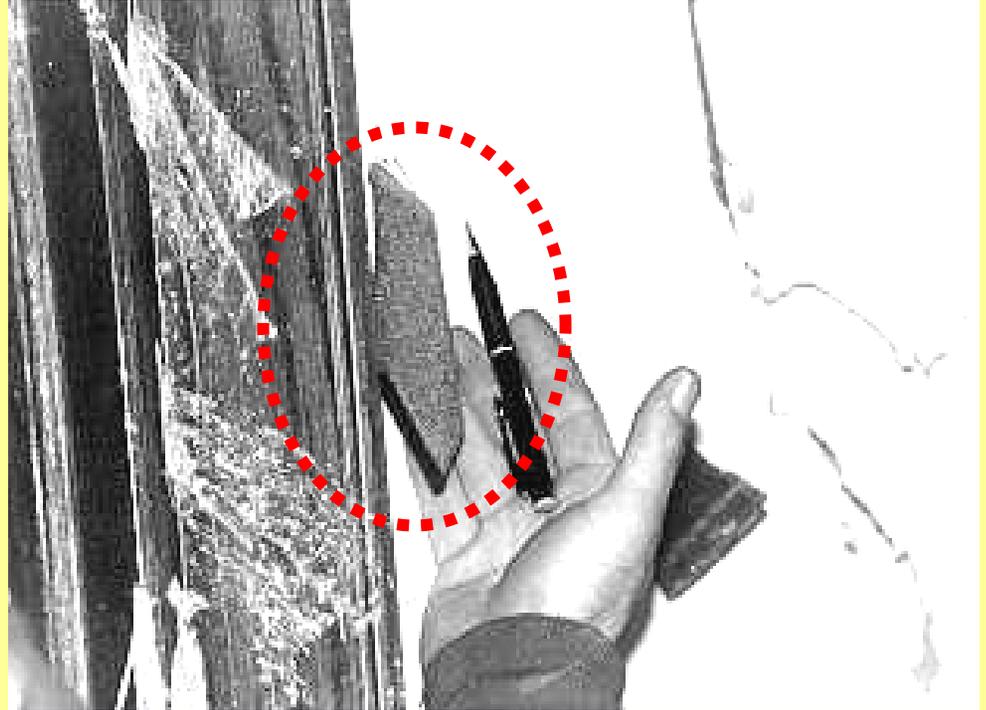
The vast majority of vehicle
bombs have been of the
stationary variety

Glass Fragments in a Blast



Minimize
fragments as
first step in
protection

Glass Fragment Hazards



**Historically speaking, glazing
has caused about 85% of
injuries in blast events**

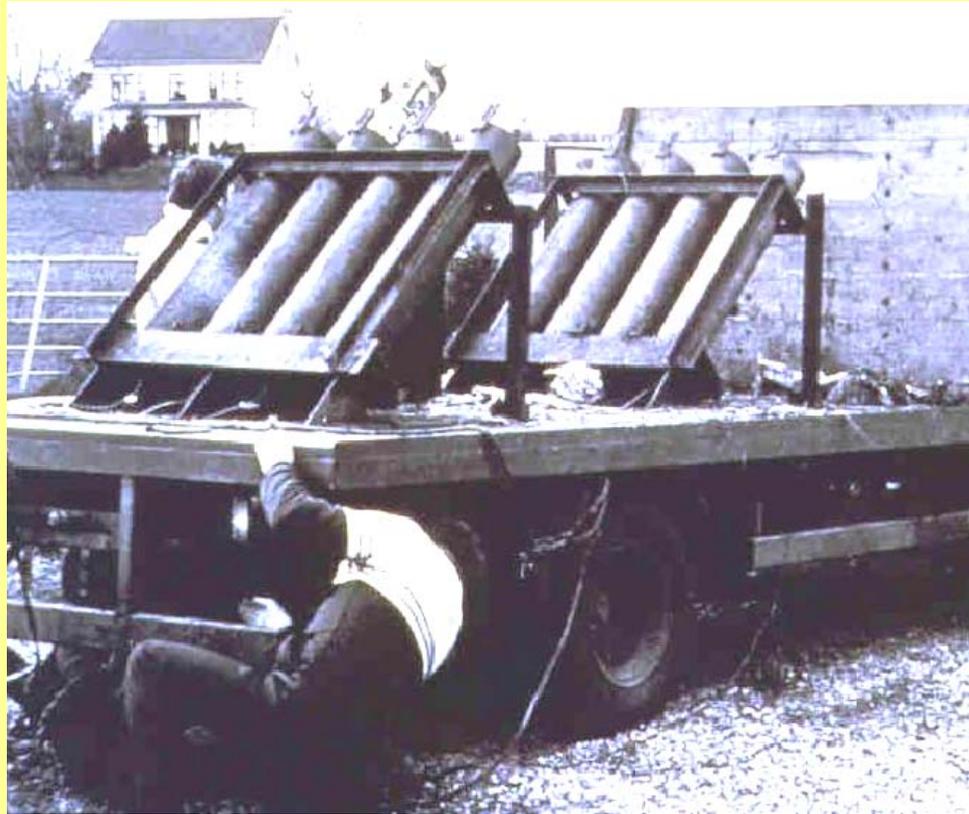
Placed Bombs



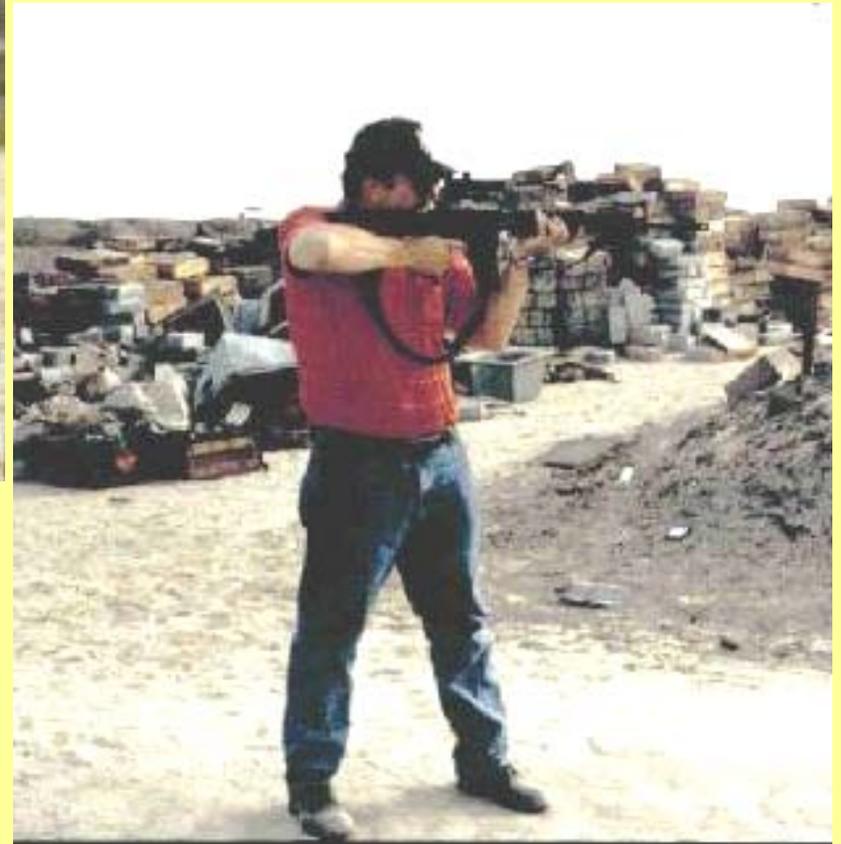
Mail and Supplies Bomb



Indirect Fire Weapons



Direct Fire Weapons



Structural Fire Damage



Chem/Bio Attacks



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DoD Minimum Antiterrorism Standards for Buildings



**U.S. Army Corps of Engineers Protective Design Center
Co-chair, DoD Security Engineering Working Group**

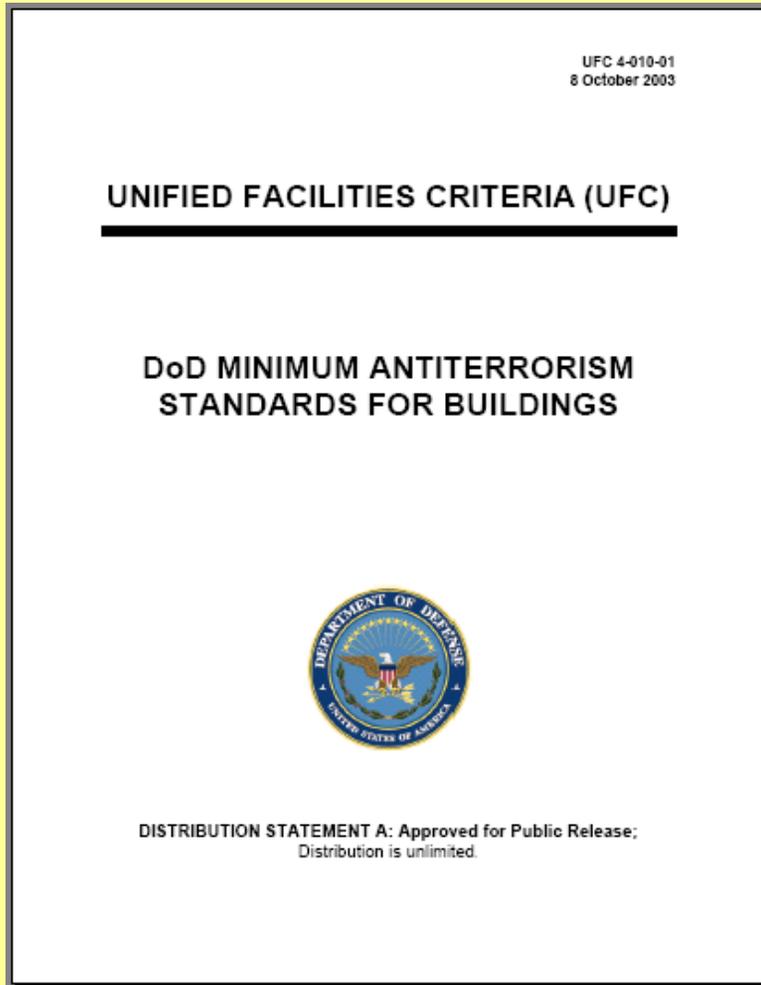


**US Army Corps
of Engineers®**

Intent

- Provide appropriate, implementable, and enforceable protection for all inhabited DoD buildings where there is no known terrorist threat
- Where minimum standoff distances can be met conventional construction is adequate
- Where standoff distance cannot be met, comparable protection must be provided through design adjustment
- Minimum standards will provide:
 - Reduced risk of mass casualties due to explosive event
 - Minimized collateral damage from explosives effects and fragmentation
 - Facilitation of future upgrades and increases in Force Protection Condition

Contents of Standards



- Chapter 1: Introduction
- Chapter 2: Philosophy, Design Strategies, and Assumptions
- Appendix A: Definitions
- Appendix B: DoD Antiterrorism Standards for New and Existing Buildings
- Appendix C: Recommended Additional Antiterrorism Measures for New and Existing Buildings
- Appendix D: DoD Antiterrorism Standards for Expeditionary and Temporary Structures

Applicability

- *All* new inhabited DoD buildings - regardless of appropriation
- *All* existing inhabited DoD buildings when triggered
 - Renovations, modifications, repairs, and restorations where costs exceed 50% of replacement cost
 - Conversions of use
 - Planned glazing replacement projects
 - New portions of building additions and existing building if addition is 50% of gross area
- Leased buildings where DoD personnel occupy at least 25% of net interior useable space
- Expeditionary and temporary buildings

Historic Preservation Impacts

1-9 HISTORIC PRESERVATION COMPLIANCE FOR IMPLEMENTATION OF ANTI-TERRORISM STANDARDS.

1-9.1 **Security and Stewardship.** The Department of Defense remains the lead federal agency in balancing security threats with the protection of historic properties. The Department of Defense abides by federal legislation on protecting cultural resources, and issues its own complementary policies for stewardship. Historic properties and archaeological sites on military land are protected with other facilities from terrorism where there is a perceived threat to people and critical resources.

1-9.2 **Compliance with Laws.** In the wake of terrorist attacks against the armed forces and civilian personnel, the [REDACTED]

[REDACTED] to include the National Historic Preservation Act and the Archaeological Resources Protection Act. Installation personnel need to determine possible adverse effects upon an historic structure and/or archaeological resource prior to anti-terrorism standard undertakings and consult accordingly. Personnel at installations abroad should coordinate with the host nation regarding possible adverse effects to cultural resources.

1-9.3 **Compliance with DoD Standards.** [REDACTED]

[REDACTED] Federal agencies are always the decision-maker in the Section 106 process of the National Historic Preservation Act. [REDACTED]

[REDACTED] Preservation issues need to be quickly and effectively resolved, so as not to obstruct force protection efforts.

Baseline Threats

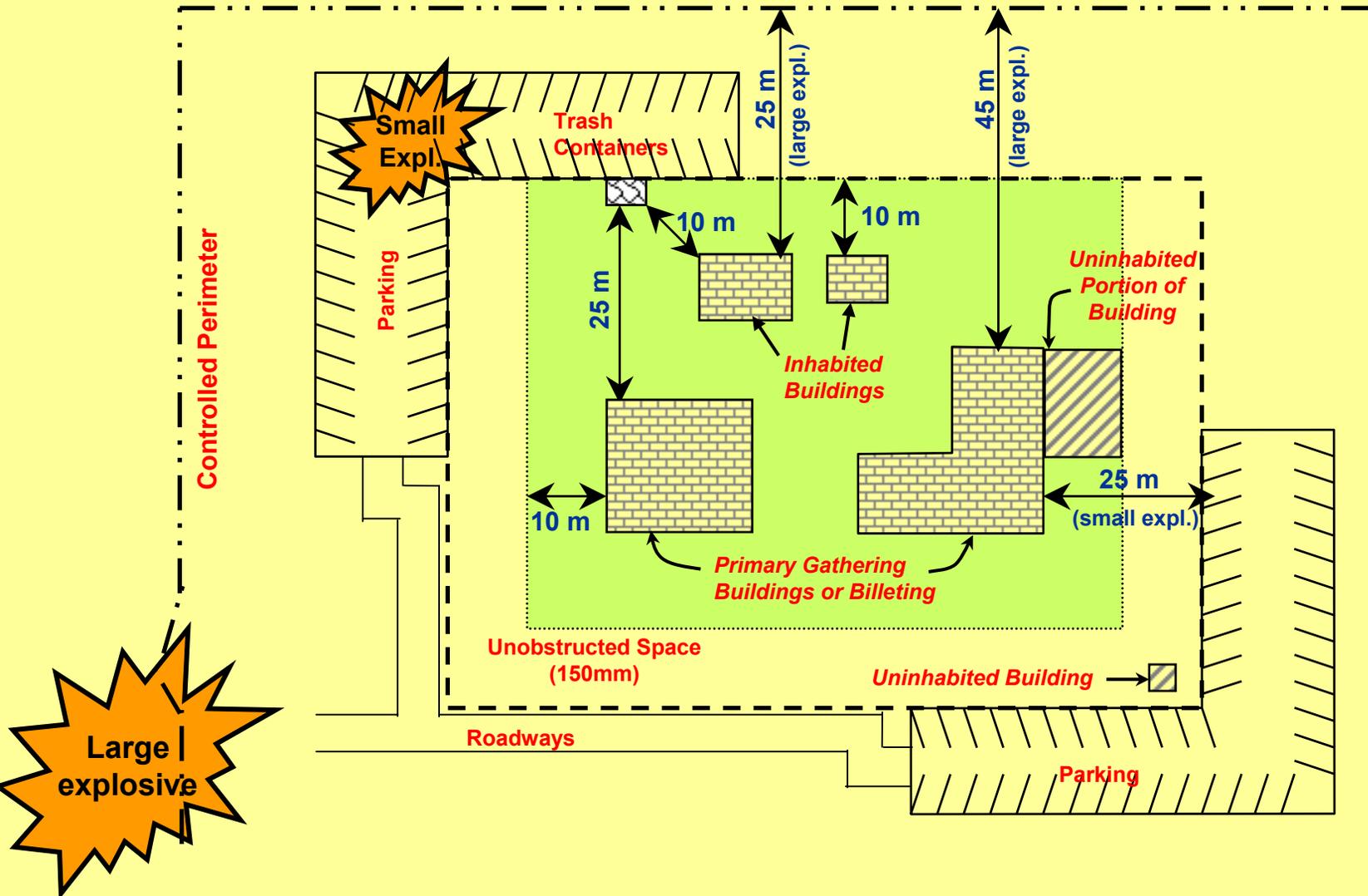
- Vehicle bombs
 - Cars and light trucks
 - Small waterborne vessels
- Placed bombs
- Mail bombs
- Indirect fire weapons
- Direct fire weapons
 - Small arms
 - Shoulder fired rockets
- Fire
- Chemical, biological, and radiological agents

Design Strategies

- Maximize standoff distance
- Prevent building collapse
- Minimize hazardous flying debris
- Provide effective building layout
- Limit airborne contamination
- Provide mass notification
- Facilitate future upgrades

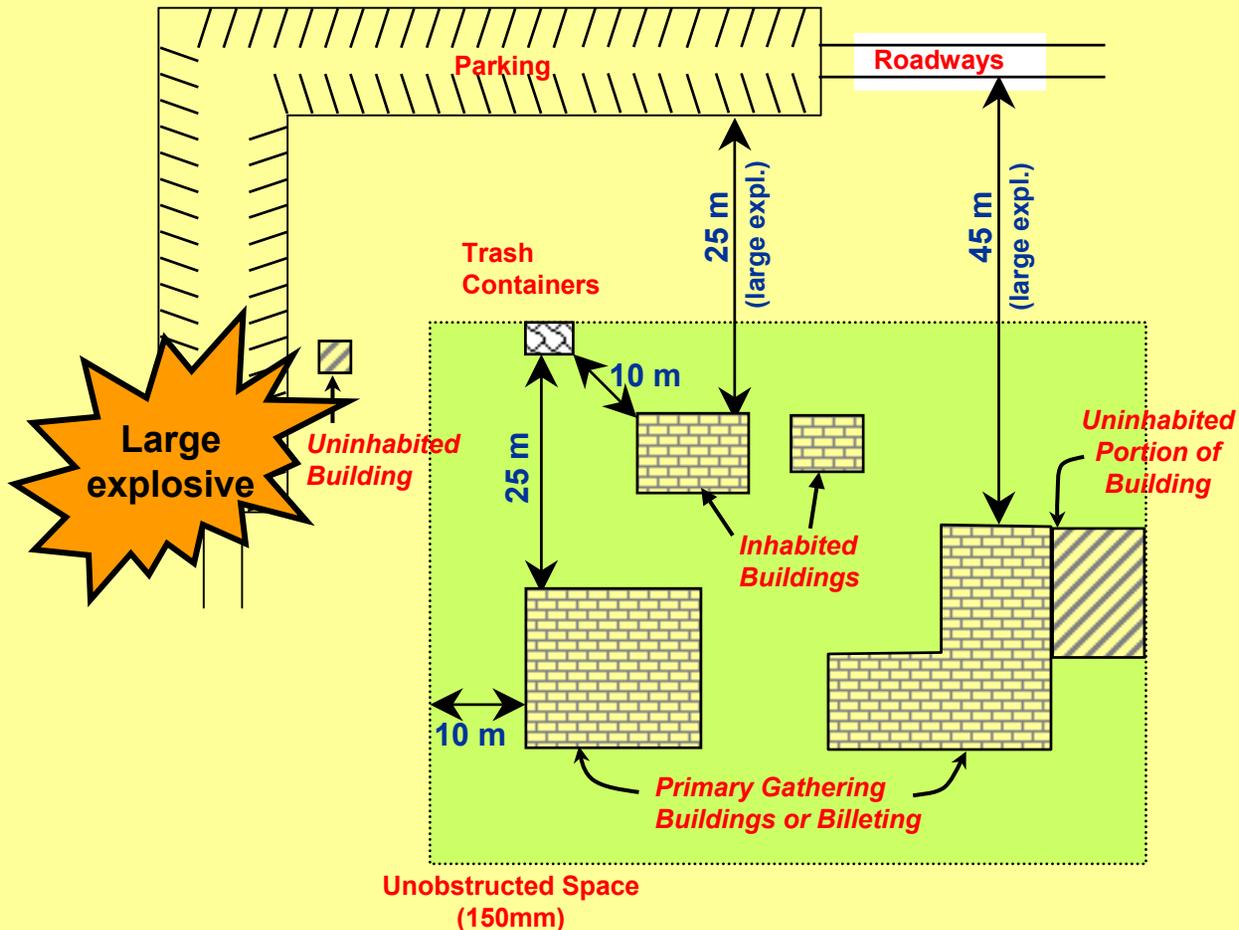
Sitework Standards

(when a controlled perimeter is used)

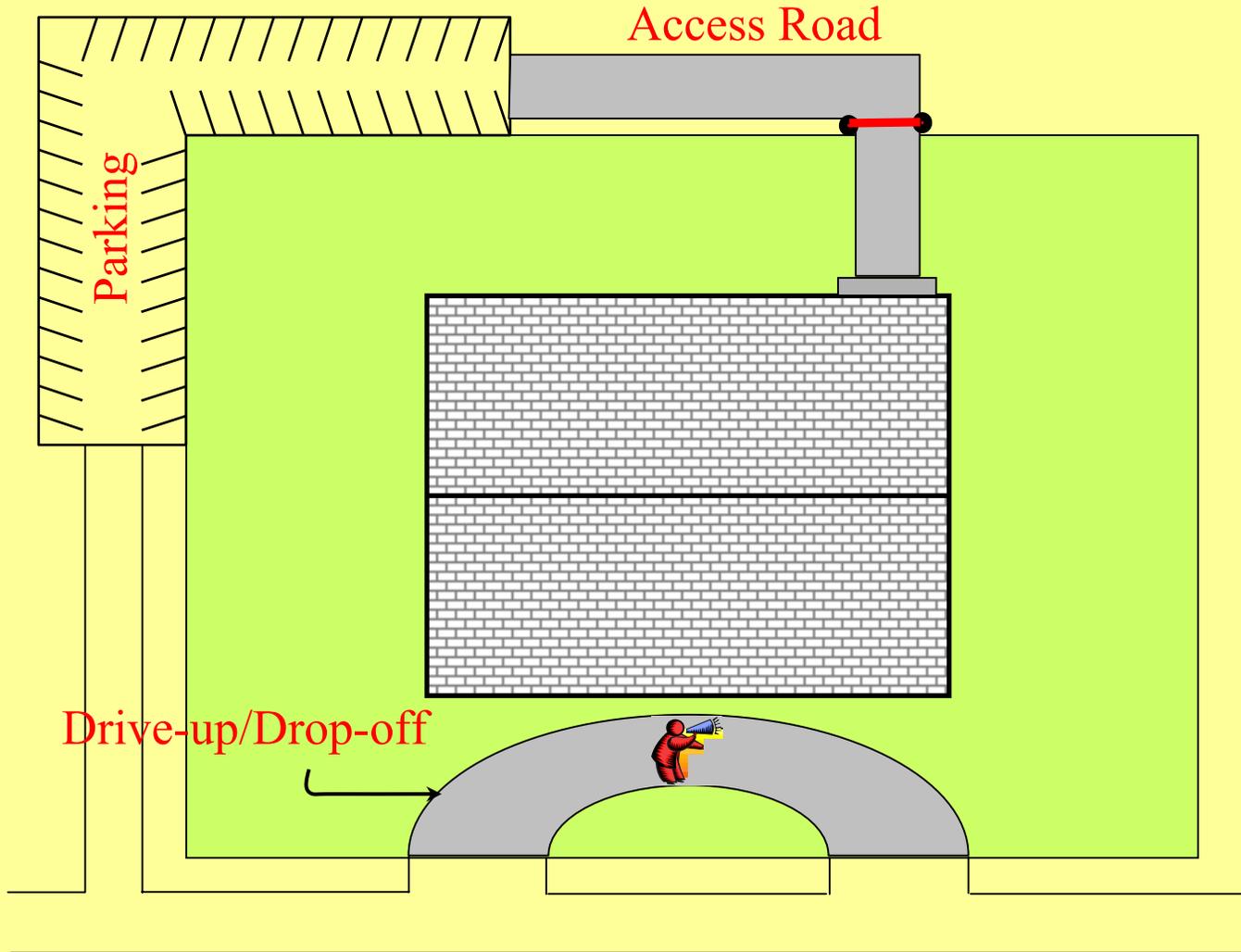


Sitework Standards

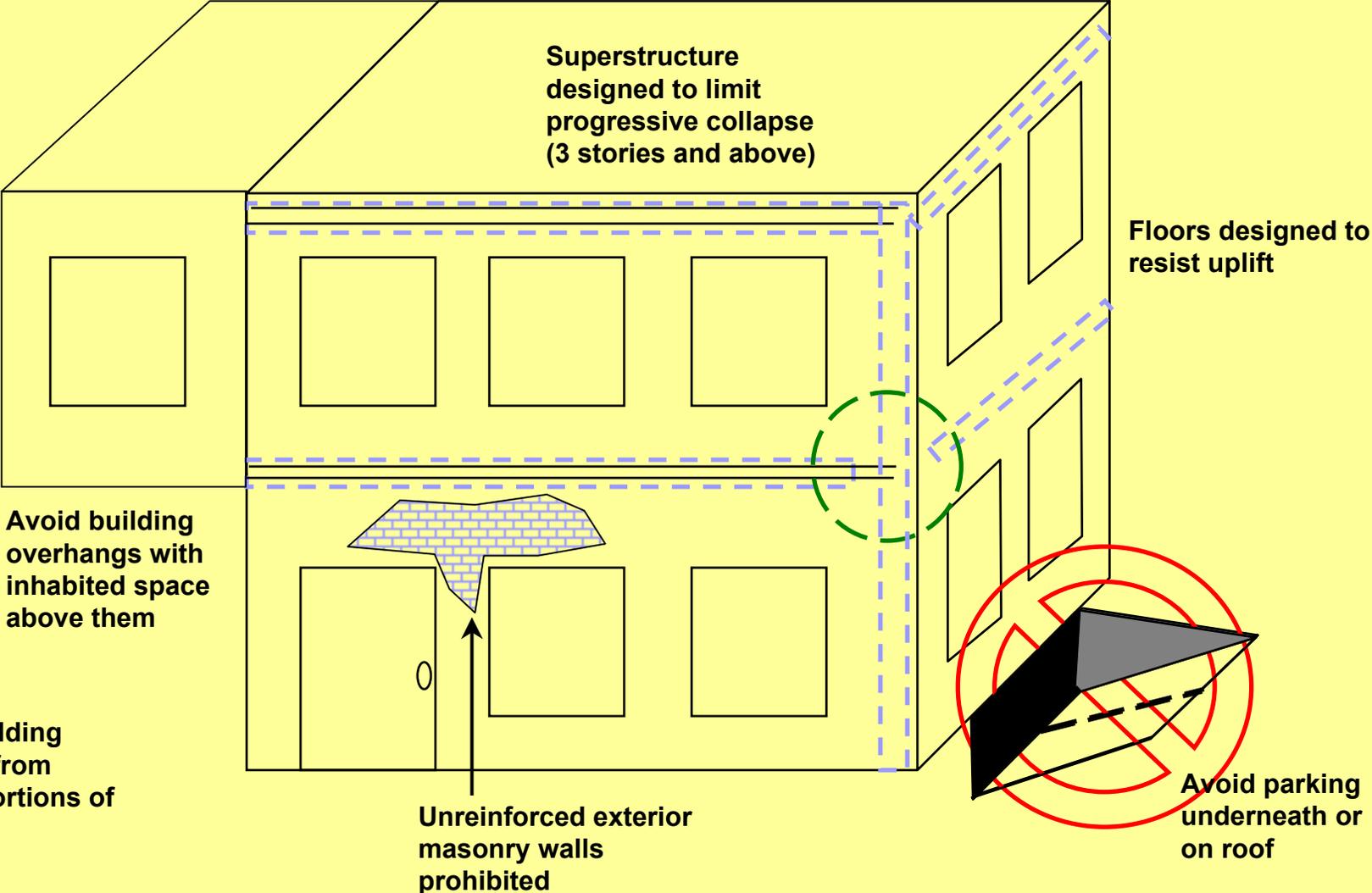
(when a controlled perimeter is not available)



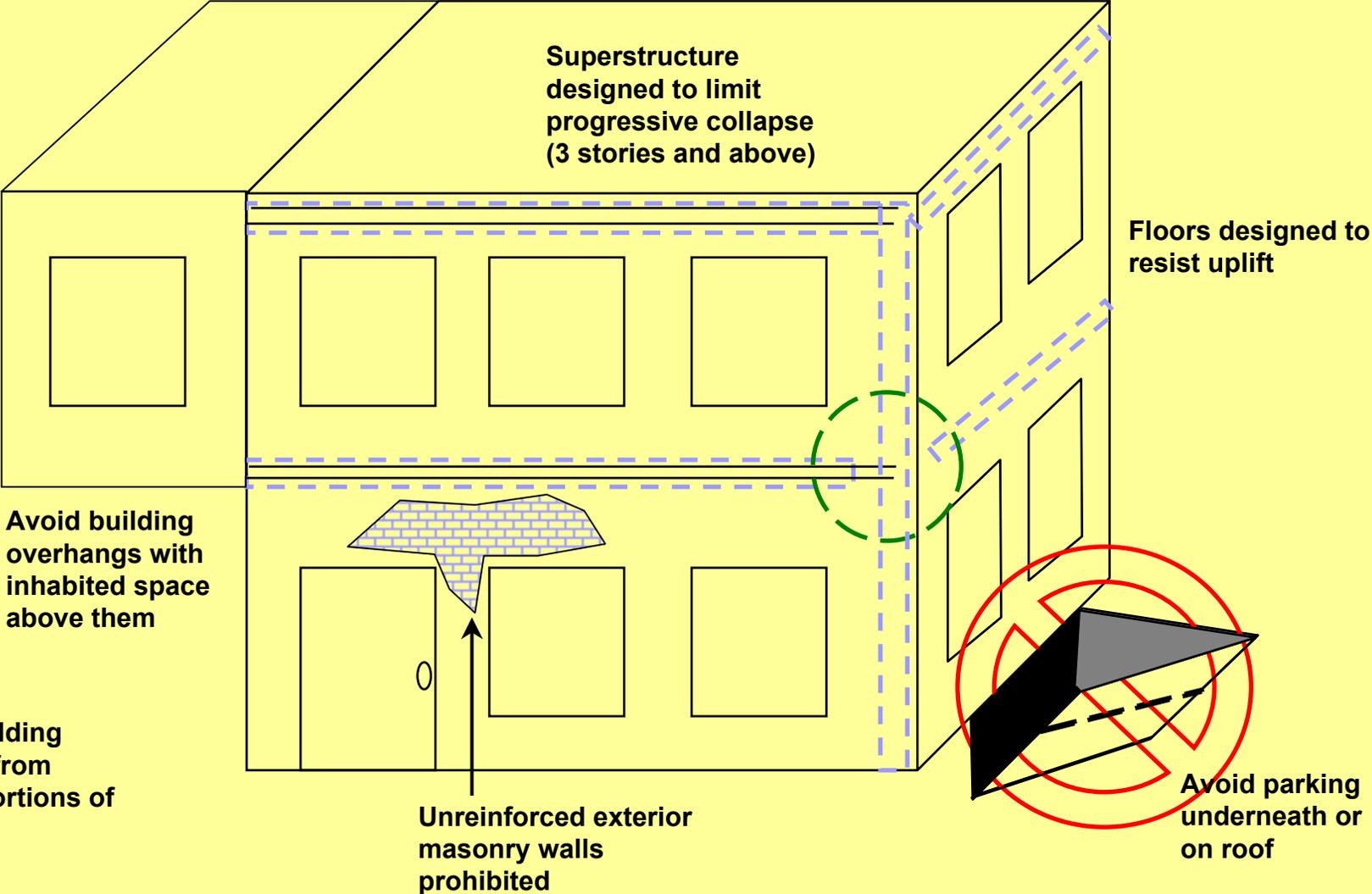
Other Site Planning Issues



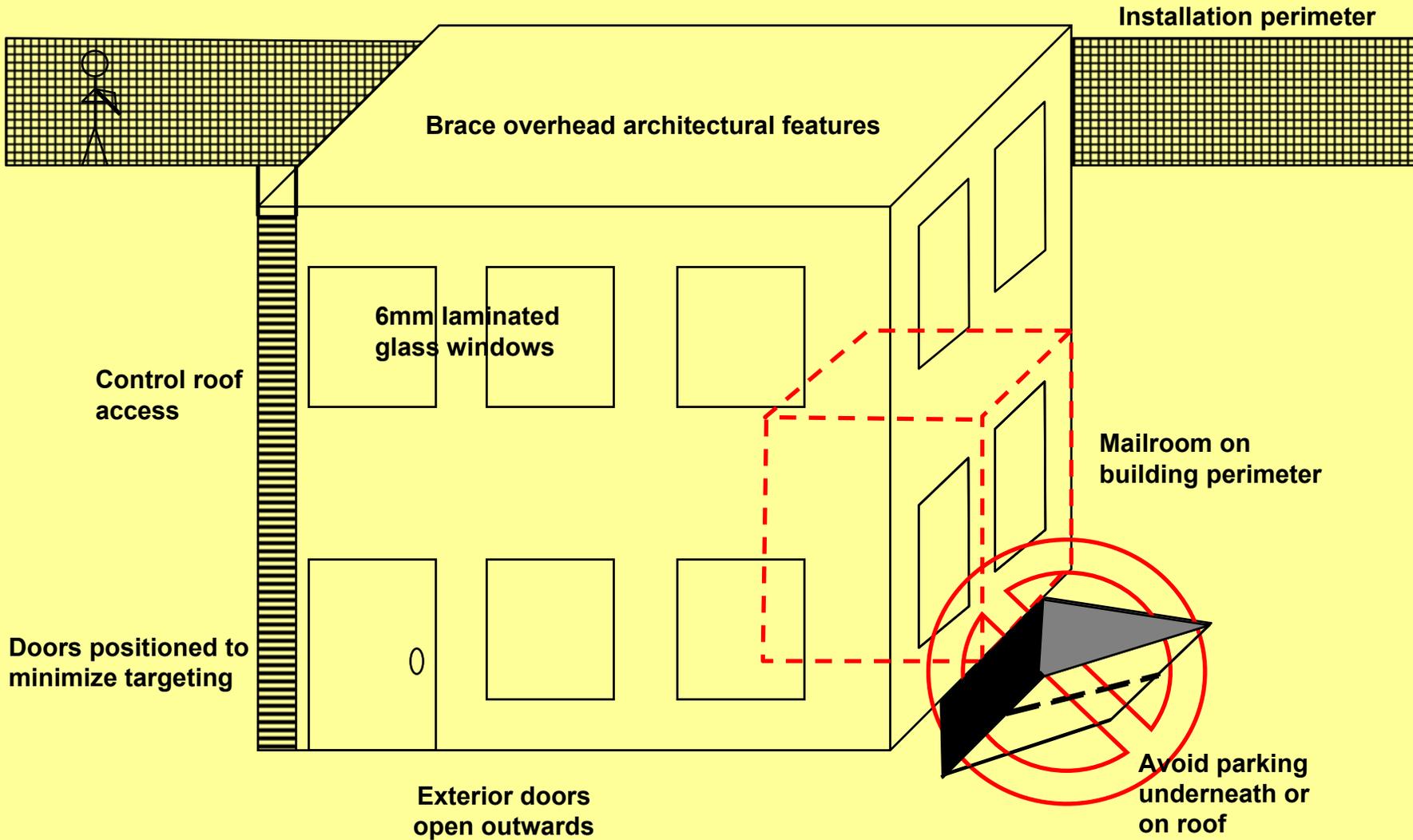
Structural Design



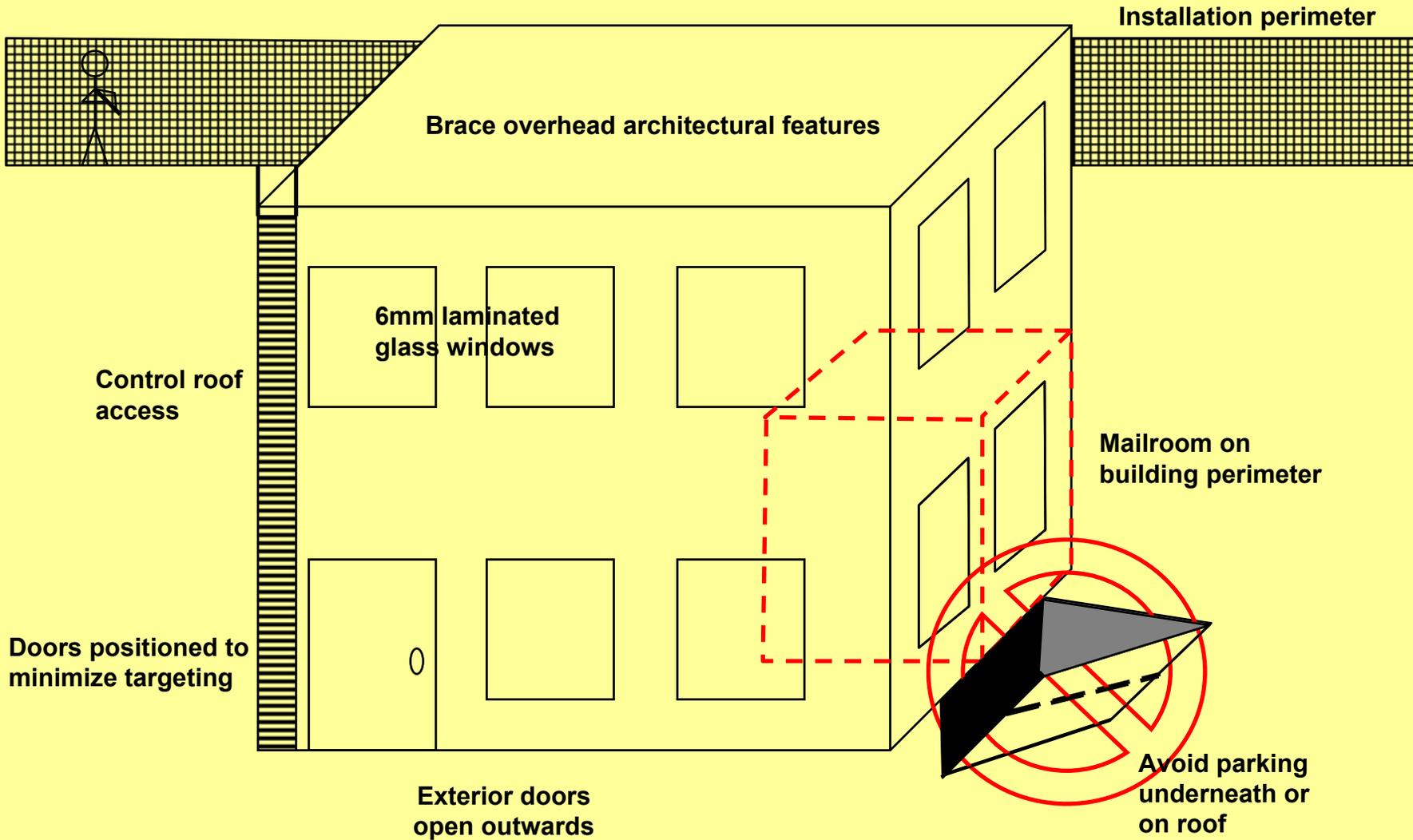
Structural Design



Architectural Design



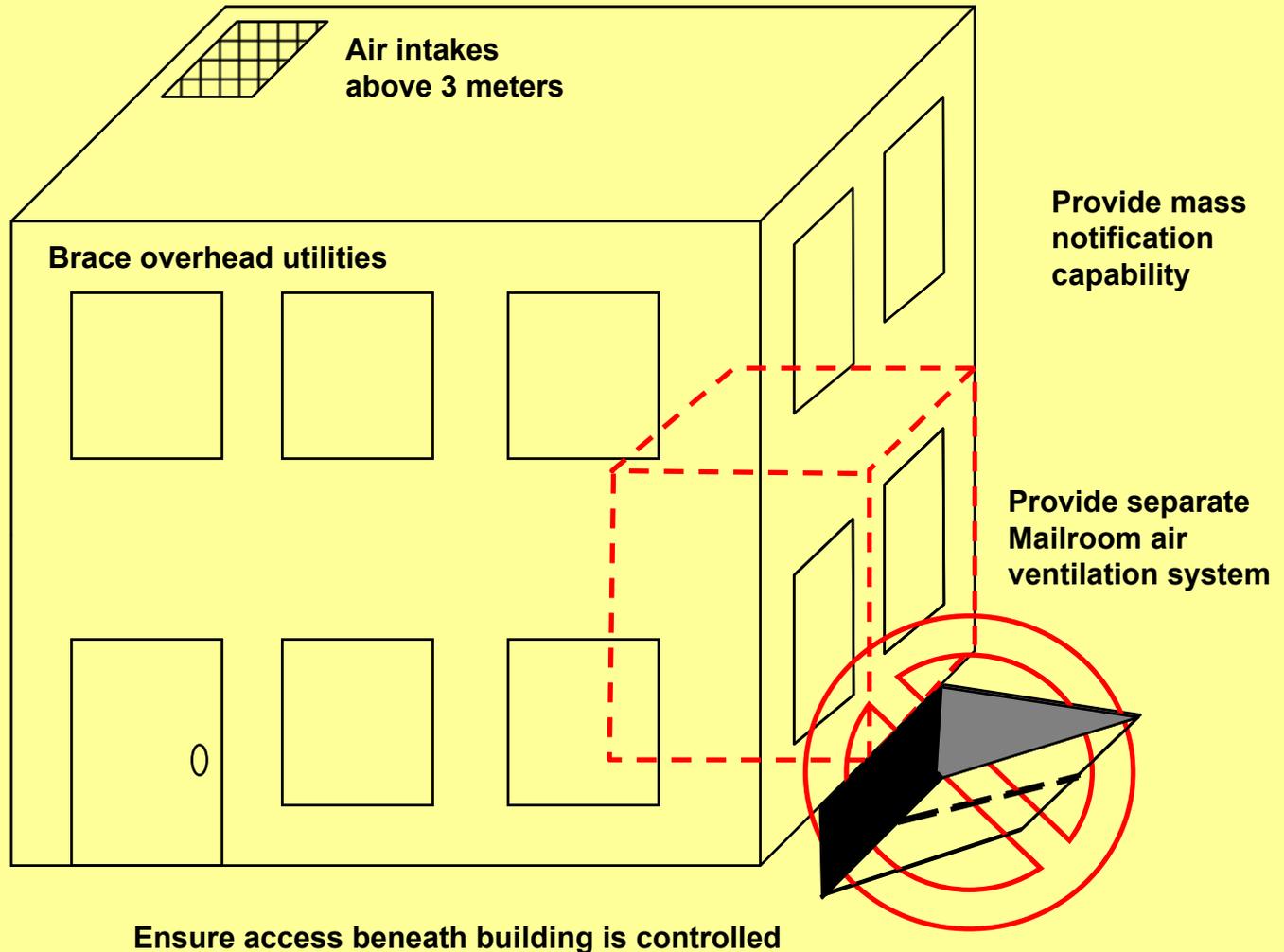
Architectural Design



Electrical and Mechanical Design

- Avoid exterior walls for critical utilities
- Do not collocate redundant utilities
- Locate emergency backups away from backed up systems

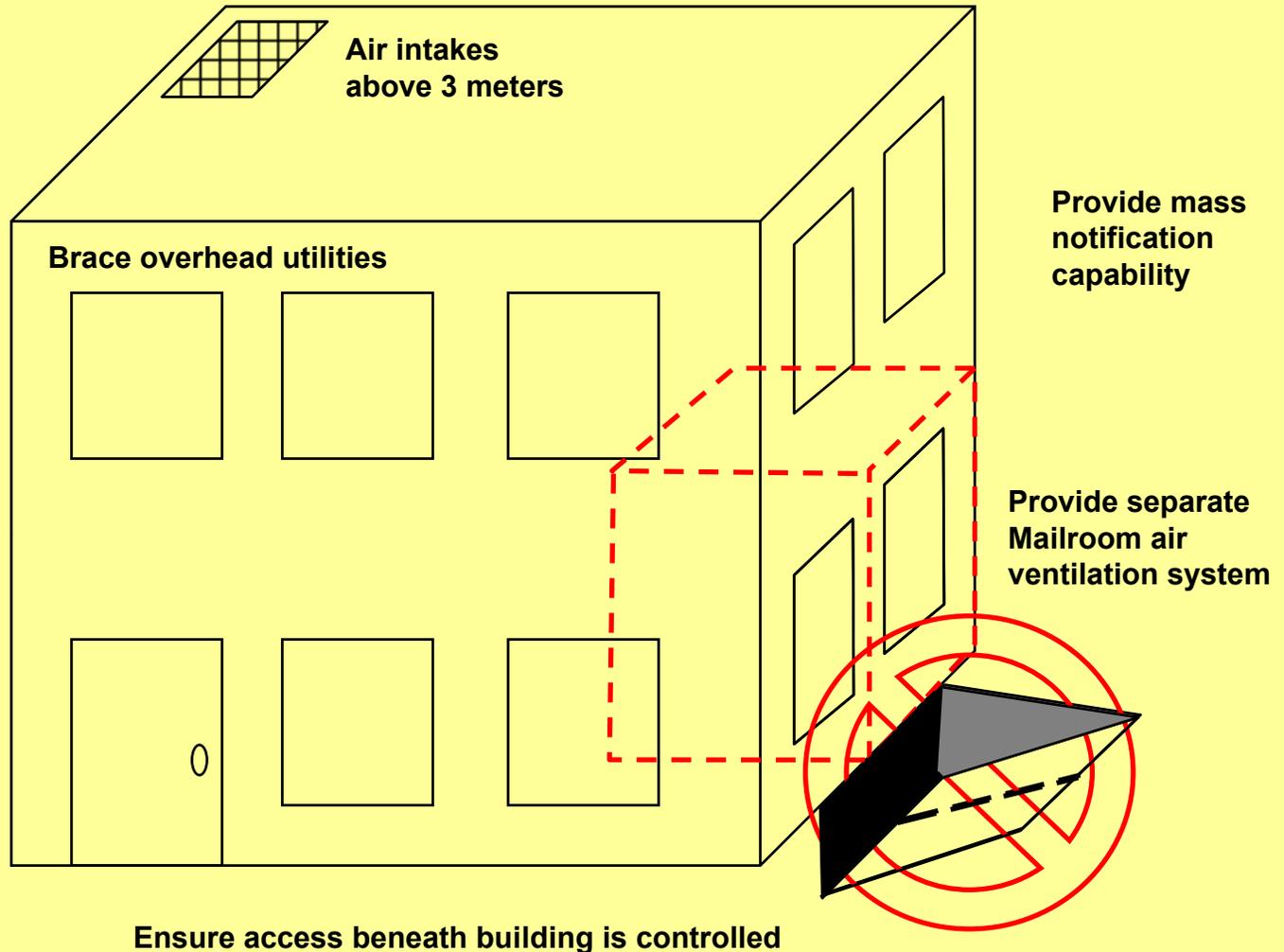
Emergency shutoff of air distribution



Electrical and Mechanical Design

- Avoid exterior walls for critical utilities
- Do not collocate redundant utilities
- Locate emergency backups away from backed up systems

Emergency shutoff of air distribution



Ensure access beneath building is controlled

Recommended Additional AT Measures for New and Existing Buildings

Site Planning

- Recommendation 1: Vehicle access points
- Recommendation 2: High-speed vehicle approaches
- Recommendation 3: Vantage points
- Recommendation 4: Drive-up/drop-off points
- Recommendation 5: Building locations
- Recommendation 6: Railroad location
- Recommendation 7: Access control for family housing
- Recommendation 8: Standoff for family housing
- Recommendation 9: Minimize secondary debris

Recommended Additional AT Measures for New and Existing Buildings

Structural and Architectural Design

- Recommendation 10: Structural redundancy
- Recommendation 11: Internal circulation
- Recommendation 12: Visitor control
- Recommendation 13: Asset location
- Recommendation 14: Room layout
- Recommendation 15: External hallways
- Recommendation 16: Windows

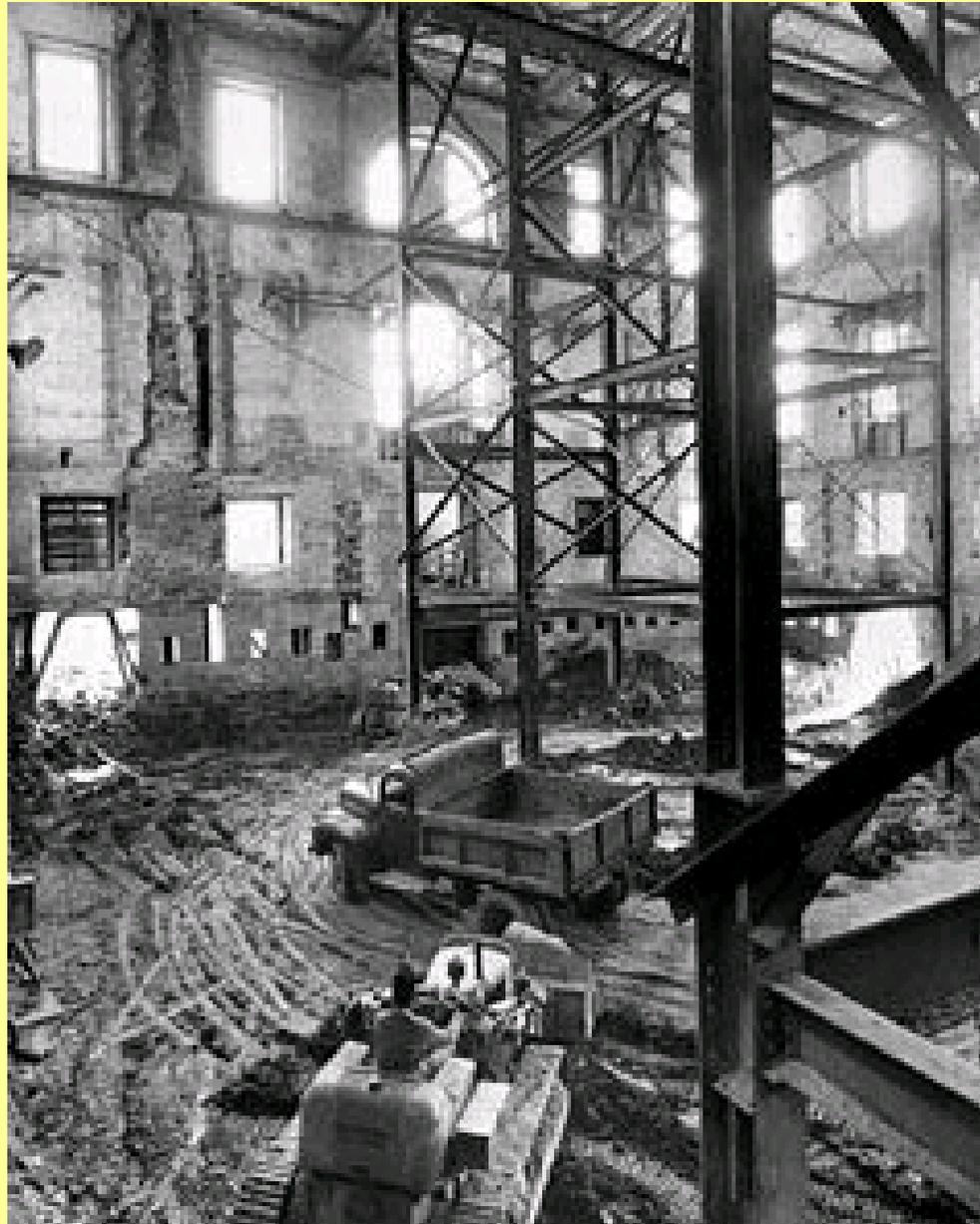
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Examples



Building Frame Retrofit



Murrah Bldg, OK City (95)





COOPERATIVE HOUSE

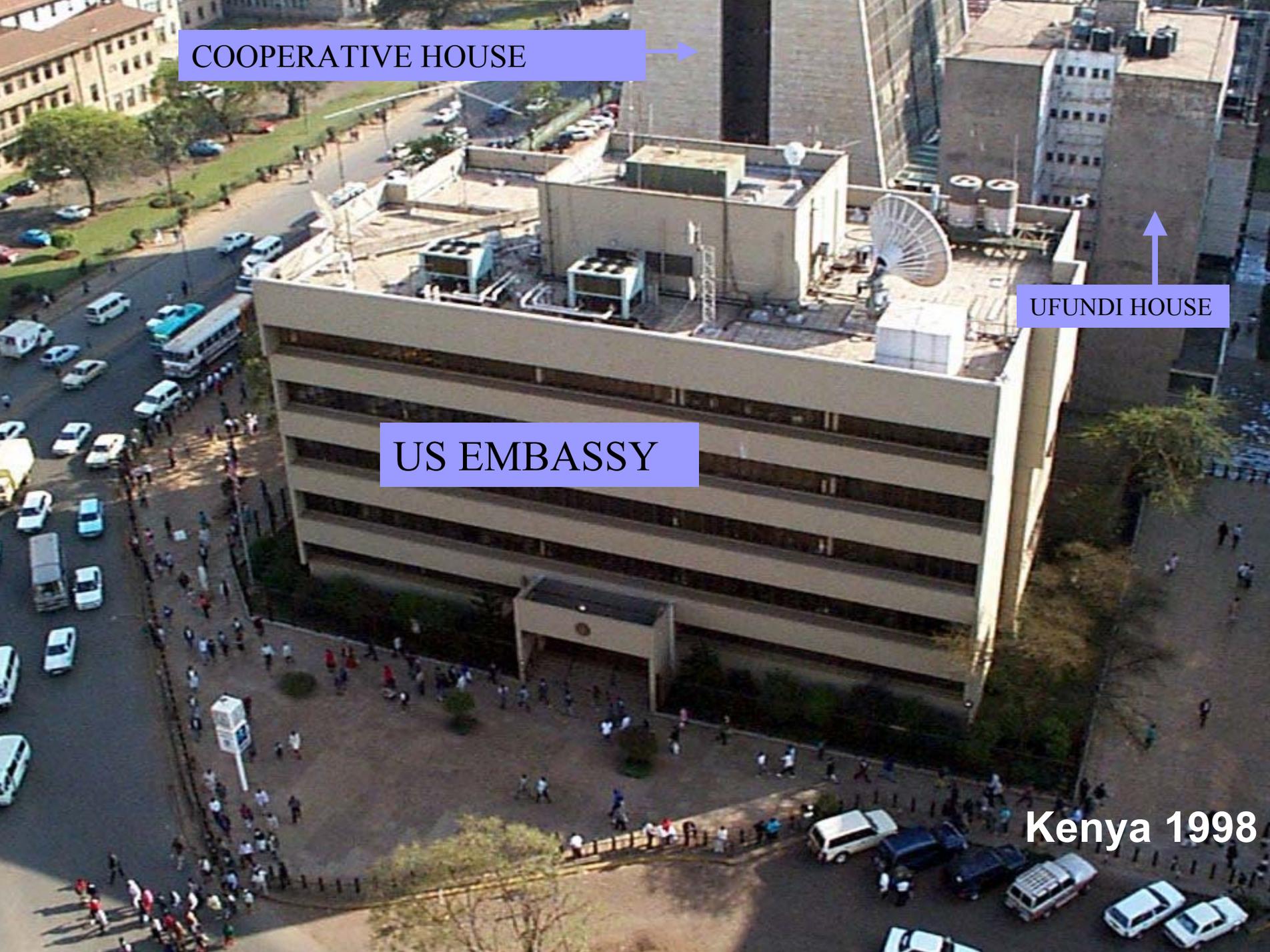


UFUNDI HOUSE



US EMBASSY

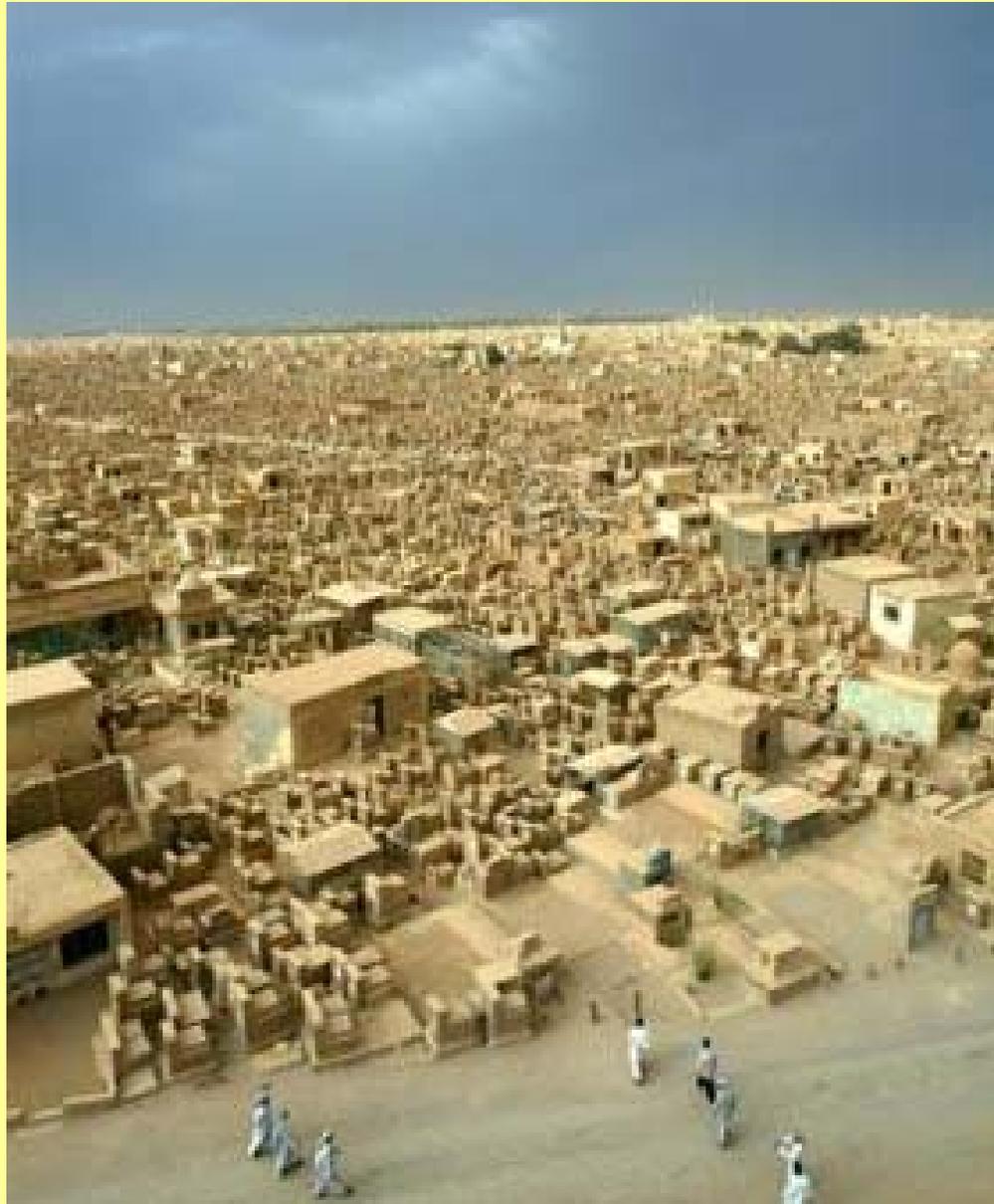
Kenya 1998



UFUNDI HOUSE (8 STORIES)



Option: Move out of Historic Areas



Blast Glazing Retrofit



Ballistic Glazing Retrofit



Change Room Arrangement



STOP
IN THE
NAME OF
HUMANITY



A Final Thought

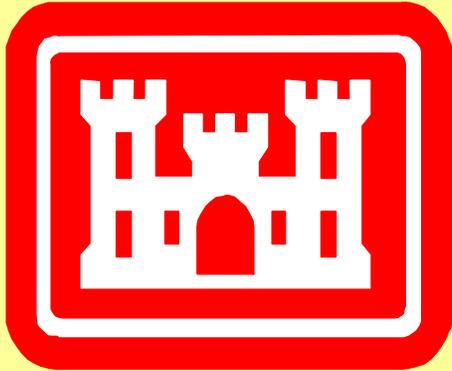
*If we always do
what we have always done,*

*we will always get
what we have
always gotten*

-

anonymous





The U.S. Army
Corps of Engineers
Protective Design Center

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Key Definitions in the UFC:

- **DoD building:** Any building or portion of a building (permanent, temporary, or expeditionary) owned, leased, privatized, or otherwise occupied, managed, or controlled by or for DoD.
- **Inhabited building:** Buildings or portions of buildings routinely occupied by 11 or more DoD personnel with a personnel density of greater than one person per 40 gross square meters. This density generally excludes industrial, maintenance, and storage facilities, except for more densely populated portions of those buildings, such as administrative areas.
- **Primary gathering buildings:** Inhabited buildings routinely occupied by 50 or more DoD personnel and family housing with 13 or more family units per building.
- **Billeting:** Any building or portion of a building in which 11 or more unaccompanied DoD personnel are routinely housed, including Temporary Lodging Facilities and military family housing permanently converted to unaccompanied housing.

Mailroom Design



Progressive Collapse

