

Compliance with Unified Facilities Criteria (UFC 4-010-01) "DoD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS" is required on all commissary facilities. The following is a summary of this document as it relates to commissary facilities, and includes a checklist that the design A/E shall complete as part of the design process. Any deviations from UFC 4-010-01 shall be identified during the design charrette process and documented in the Design Charrette Final Project Definition Package.

UFC 4-010-01 INTRODUCTION

Implementation of these standards to bring an entire building into compliance is mandatory for all DoD building renovations, modifications, repairs, and restorations where those costs exceed 50% of the replacement cost of the building except as otherwise stated in these standards. The 50% cost is exclusive of the costs identified to meet these standards. Where the 50% threshold is not met, compliance with these standards is recommended.

Implementation of these standards is mandatory when any portion of a building is modified from its current use to that of an inhabited building, billeting, or a primary gathering building for one year or more. Examples would include a warehouse (uninhabited) being converted to administrative (inhabited) use and an inhabited administrative building being converted to a primary gathering building or billeting.

The glazing provisions of these standards are mandatory for existing inhabited buildings within any planned window or door glazing replacement project. Such replacements may require window frame modification or replacement.

Additions to existing inhabited buildings shall comply with the minimum standards for new buildings. If the addition is 50% or more of the gross area of the existing building, the existing building shall comply with the minimum standards for existing buildings.

Implementation of these standards is mandatory for all facilities leased for DoD use and for those buildings in which DoD receives a space assignment from another government agency except as established below. This requirement is intended to cover all situations, including General Services Administration space, privatized buildings, and host-nation and other foreign government buildings. This requirement is applicable for all new leases executed on or after 1 October 2005 and to renewal or extension of any existing lease on or after 1 October 2009. Leases executed prior to the above fiscal years will comply with these standards where possible.

Partial Occupancy. These standards only apply where DoD personnel occupy leased or assigned space constituting at least 25% of the net interior useable area or the area as defined in the lease, and they only apply to that portion of the building that is occupied by DoD personnel.

New Buildings. Buildings that are built to lease to DoD as of the effective date established above shall comply with the standards for new construction.

INFORMATION SENSITIVITY

Some information in the standards is exempt from mandatory disclosure under the Freedom of Information Act. The sensitive information that is exempt is the explosive weights upon which the minimum standoff distances are based, which is included in UFC 4-010-02. Allowing potential aggressors to know the minimum explosive weights that all DoD inhabited buildings are designed to resist could constitute a vulnerability. To minimize the possibility of that information being used against DoD personnel, the following provisions apply:

Distribution. Follow governing DoD and Component guidance for specific requirements for handling and distribution of For Official Use Only information. In general, distribution of this document is unlimited. Distribution of the tables (Tables 1 and 2) in UFC 4-010-02 is authorized only to U.S. Government agencies and their contractors. In addition, where it is within Status of Forces Agreements (SOFA) or other similar information exchange agreements, the information in these standards may be distributed to host-nation elements for the purposes of their administration and design of host-nation funded or designed construction.

Posting To The Internet. This document may be posted freely to the Internet; however, because the tables (Tables 1 and 2) in UFC 4-010-02 are For Official Use Only they cannot be posted to any web site that is accessible to the general public. In addition, other documents that include information from these standards that are identified as For Official Use Only cannot be posted to web sites accessible to the general public. For Official Use Only information may be posted to protected, non-publicly accessible web sites that comply with standards established by DoD for administration of web sites.

Plans and Specifications. The explosive weights from UFC 4-010-02 upon which these standards are based shall not be entered into the plans and specifications unless the plans and specifications are properly safeguarded. Plans and specifications may be posted to the Internet in accordance with existing DoD Component guidance, but such documents will not include For Official Use Only information. All plans and specifications for inhabited buildings shall include an annotation that cites the version of these standards that was used for design.

Design – Build Contracts. Where design – build contracts are employed, prospective contractors will be responsible for developing a design proposal for that project that may be impacted by provisions of these standards. Where that is the case, consider alternate means to provide sufficient information to support their proposals. Consider for example, either specifying specific design loads or specifying the required standoff distance and providing candidate structural systems that would allow for mitigation of the applicable explosive if that standoff was less than the minimum. Once the design – build contract is awarded the contractor will be eligible to receive this complete document for use in the development of the final design package, but that contractor will be responsible for protecting the integrity of the information throughout the contract and through any subcontracts into which that contractor might enter.

DEFINITIONS

Access control. For the purposes of these standards, any combination of barriers, gates, electronic security equipment, and/or guards that can deny entry to unauthorized personnel or vehicles.

Access road. Any roadway such as a maintenance, delivery, service, emergency, or other special limited use road that is necessary for the operation of a building or structure.

Controlled perimeter. For the purposes of these standards, a physical boundary at which vehicle access is controlled at the perimeter of an installation, an area within an installation, or another area with restricted access. A physical boundary will be considered as a 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. Where the controlled perimeter includes a shoreline and there is no defined perimeter beyond the shoreline, the boundary will be at the mean high water mark.

Conventional construction. 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.

Conventional Construction Standoff Distance. The standoff distance at which conventional construction may be used for buildings without a specific analysis of blast effects, except as otherwise required in these standards.

Effective Standoff Distance. A standoff distance less than the Conventional Construction Standoff Distance at which the required level of protection can be shown to be achieved through analysis or can be achieved through building hardening or other mitigating construction or retrofit.

Glazing. The part of a window, skylight, or door assembly that is transparent and transmits light, but not air.

Inhabited building. Buildings or portions of buildings routinely occupied by 11 or more DoD personnel and with a population density of greater than one person per 40 gross square meters (430 gross square feet). This density generally excludes industrial, maintenance, and storage facilities, except for more densely populated portions of those buildings such as administrative areas. The inhabited building designation also applies to expeditionary and temporary structures with similar population densities. In a building that meets the criterion of having 11 or more personnel, with portions that do not have sufficient population densities to qualify as inhabited buildings, those portions that have sufficient population densities will be considered inhabited buildings while the remainder of the building may be considered uninhabited, subject to provisions of these standards. An example would be a hangar with an administrative area within it. The administrative area would be treated as an inhabited building while

the remainder of the hangar could be treated as uninhabited. (Note: This definition differs significantly from the definition for inhabited building used by DoD 6055.9-STD and is not construed to be authorization to deviate from criteria of DoD 6055.9-STD.)

Laminated glass. Multiple sheets of glass bonded together by a bonding interlayer.

Mass notification. Capability to provide real-time information to all building occupants or personnel in the immediate vicinity of a building during emergency situations.

Primary gathering building. Inhabited buildings routinely occupied by 50 or more DoD personnel. This designation applies to the entire portion of a building that meets the population density requirements for an inhabited building. For example, an inhabited portion of the building that has an area within it with 50 or more personnel is a primary gathering building for the entire inhabited portion of the building. The primary gathering building designation also applies to expeditionary and temporary structures with similar populations and population densities and to family housing with 13 or more family units per building, regardless of population or population density.

Routinely occupied. For the purposes of these standards, an established or predictable pattern of activity within a building that terrorists could recognize and exploit.

Structural glazed window systems. Window systems in which glazing is bonded to both sides of the window frame using an adhesive such as a high-strength, high-performance silicone sealant.

Unobstructed space. Space within 10 meters (33 feet) of an inhabited building that does not allow for concealment from observation of explosive devices 150 mm (6 inches) or greater in height.

DEFINITION OF COMMISSARY SPACES

The application of the standards are based on the premise that the warehouse, staging, storage, and processing areas do not meet the definition of inhabited space defined as occupied by 11 or more DoD personnel and with a population density of greater than one person per 40 gross square meters (430 gross square feet) and that the sales area (i. e. all spaces forward of the storage/processing rooms including front offices, cashier's office, bagger's break room, and other administrative spaces at the front of the commissary), and break room/employees restrooms is primary gathering space since it is routinely occupied by 50 or more DoD personnel. (The break room/employees restrooms meet the number and population densities of inhabited space. Thus must be included in the primary gathering space.)

STANDARDS CHECKLIST

REQUIREMENT	UFC 4-010-01 REFERENCE
<p>1. Is the standoff distance, from the sales area and the breakroom /employee restrooms to the controlled perimeter, at least 45 m (148 ft)</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-1.1.1, Table B-1, Figure B-1</p>
<p>2. Is the standoff distance, from the sales area and the break room/employee restrooms to any parking or roadway, at least 25 m (82 ft)? No controlled perimeter at least 45m (148 feet)?</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-1.1.2, Table B-1, Figure B-1</p>
<p>3. Is the building a new building and is the standoff distance, from the sales area and the break room/employee restrooms to any parking or roadway, at least 10 m (82 ft) even if building hardening is employed to achieve the effective standoff distance or other mitigating construction or retrofit?</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-1.1.2.1, Table B-1, Figure B-1</p>
<p>4. Is the building an existing building and if moving parking areas and roadways or applying structural retrofits are impractical, is the standoff distance, from the sales area and the break room/employee restrooms to any parking or roadway, at least 10 m (33 ft) and is access control to the parking area established at least 25 m (82 ft) from the sales area and the break room/employee restrooms? No controlled perimeter at least 45m (148 feet)?</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-1.1.2.2.1, Table B-1, Figure B-1</p>
<p>5. Is the building an existing building and are there conditions that necessitate that controlled parking be within 10 m (33 ft) of the sales area and the break room/employee restrooms and has it been determined through analysis that the required level of protection can be provided at the lesser standoff distance or that it can be provided through building hardening or other mitigating measures or retrofits?</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-1.1.2.2.1.3, Table B-1, Figure B-1</p>
<p>6. Is the building an existing building and is parking along existing roads at least 25 m (82 ft) from the sales area and the break room /employee restrooms? No controlled perimeter at least 45m (148 ft)?</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-1.1.2.2.2, Table B-1, Figure B-1</p>
<p>7. Is the building an existing building or new building and if this project includes parking and roadways are the new parking and roadways at least 25 m (82 ft) from existing Primary Gathering Buildings and at least 10 m (33 ft) from existing Inhabited Buildings? No controlled</p>	<p>B-1.1.5, Table B-1, Figure B-1</p>

<p>perimeter at least 45m (148 ft) and 25 m (82 ft) respectively? YES _____ NO _____ If no, provide justification.</p>	
<p>8. Are trash containers located at least 25 m (82 ft) from the sales area and the break room/employees restrooms, or has analysis been done to provide hardening of the trash enclosure to mitigate the direct blast effects and secondary fragment effects of the explosive on the sales area and the break room/employee restrooms to obtain the same level of protection as providing the standoff distance of 25 m (82 ft), or is the trash container secured to preclude introduction of objects into the enclosures by unauthorized personnel and are openings in screening materials and gaps between the ground and screens or walls making up an enclosure not greater than 150 mm (6 inches), and does the location of the trash container not allow concealment of explosive devices, 150 mm (6 inches) or greater in height, within 10 m (33 ft) of the sales area and the break room/employee restrooms? YES _____ NO _____ If no, provide justification.</p>	<p>B-1.1.6, Table B-1, Figure B-1</p>
<p>9. Have measures been taken to ensure that exterior obstructions within 10 meters (33 ft) of the sales area and the break room/employee restrooms do not allow for concealment from observation of explosive devices 150 mm (6 inches) or greater in height? (This does not preclude the placement of site furnishings or plantings around buildings. It only requires conditions such that any explosive devices placed in that space would be observable by building occupants. For existing buildings where the standoff distances for parking and roadways have been established at less than 10 meters (33 ft) in accordance with paragraph B-1.1.2.2, the unobstructed space may be reduced to be equivalent to that distance.) YES _____ NO _____ If no, provide justification.</p>	<p>B-1.2, Table B-1, Figure B-1</p>
<p>10. Are electrical and mechanical equipment such as transformers, air-cooled condensers, and packaged chillers outside the unobstructed space, i. e. the exterior space within 10 m (33 ft) of the sales area and the break room/employee restrooms, or on the roof, or if they are placed within the unobstructed space, are they placed so the equipment does not provide an opportunity for concealment of explosive devices? YES _____ NO _____ If no, provide justification.</p>	<p>B-1.2.1, Table B-1, Figure B-1</p>
<p>11. Are there any walls or other screening devices, with more than two sides, placed around electrical or mechanical equipment within the unobstructed space, i. e. the exterior space within 10 m (33 ft) of the sales area and the break room/employee restrooms, and if so has the enclosure been upgraded to four sides and a top with openings in screening materials and gaps between the ground and screens or walls making up an enclosure not greater than 150 mm (6 inches) and</p>	<p>B-1.2.2</p>

<p>have all surfaces of the enclosure been secured to deny access by unauthorized personnel?</p> <p>YES _____ NO _____ If no, provide justification.</p>	
<p>12. If there is a Drive-Up/Drop-Off area or lane within 25 m (82 ft) of the sales area or the break room/employee restrooms, is the area or lane clearly defined and marked that their intended use is clear to prevent parking of unattended vehicles in the area or lane?</p> <p>YES _____ NO _____ If no, provide justification.</p>	B-1.3.3
<p>13. Is the service vehicle access area (loading dock area) at least 25 m (82 ft) [No controlled perimeter at least 45m (148 ft)] from the sales area and the break room/employee restrooms and if not are there access control measures implemented to prohibit unauthorized vehicles from using the service vehicle access area?</p> <p>YES _____ NO _____ If no, provide justification.</p>	B-1.4
<p>14. Have measures been taken to eliminate parking beneath or on rooftops of the sales area and the break room/employees restrooms, or if limited real estate makes such parking unavoidable have the following measures been incorporated to achieve an equivalent level of protection:</p> <p>a) Control measures to prohibit unauthorized personnel and vehicles from entering parking area,</p> <p>b) Structure the floors beneath or roofs above the sales area and the break room/employee restrooms, and all other adjacent supporting structural elements will not fail from the detonation in the parking area of an explosive equivalent to explosive weight II [No controlled perimeter explosive weight I] in Table B-1,</p> <p>c) All structural elements within and adjacent to the parking area will be subject to all progressive collapse provisions of Standard 6 except that the exterior member removal provision will also apply to interior vertical or horizontal load carrying elements. Apply those provisions based on an explosive equivalent to explosive weight II [No controlled perimeter explosive weight I] in Table B-1. [Standard 6 applies to all new and existing inhabited buildings of three stories or more. (Basements will be considered stories if they have one or more exposed walls.) Again only the sales area, areas/offices at the front of the store, and the employee breakroom/restrooms meet the definition of inhabited space and meet the population requirements of primary gathering space. Since none of these areas are typically more than one story, standard 6 typically will not apply.]</p> <p>YES _____ NO _____ If no, provide justification.</p>	B-1.5.3
<p>15. If minimum standoff distances are achieved and conventional construction used, as a minimum has the exterior masonry walls, of the sales area and the break room/employee restrooms, been</p>	B-2.4

<p>reinforced with at least 0.05 percent vertical reinforcement with a maximum spacing of 1200 mm (48 in), or for existing buildings have mitigating measures been implemented to provide an equivalent level of protection?</p> <p>YES _____ NO _____ If no, provide justification.</p>	
<p>16. If minimum standoff distances from the sales area and the break room/employees restrooms are achieved, has the glazing requirements for standard windows in the sales area and the break room/employee restrooms, provided their visual glazing openings do not exceed 3 square meters (32 SF), (For larger windows, refer to the DoD Security Engineering Design Manual.) been achieved to include:</p> <p>a) Use of a minimum of 6-mm (1/4-in) nominal laminated glass for all exterior windows, skylights, and glazed doors. The 6-mm (1/4-in) laminated glass consists of two nominal 3-mm (1/8-in) glass panes bonded together with a minimum of a 0.75-mm (0.030-inch) polyvinyl-butylral (PVB) interlayer. For insulating glass units, use 6 mm (1/4 inch) laminated glass inner pane as a minimum. (For glazing alternatives to the 6-mm (1/4-in) laminated glass that provide equivalent levels of protection, refer to the DoD Security Engineering Design Manual.)</p> <p>b) Window and skylight frames, mullions, and sashes and door rails and stiles of aluminum or steel as detailed below. (Alternatively, use frames that provide performance to the required level of protection shown in Tables 2.1 and 2.2). Steel members may be designed using ultimate yield stresses and aluminum members may be designed based on a 0.2% offset yield strength. Equivalent static design loads for the window, skylight, and door members shall be 7 kilopascals (1 lb per square in) applied to the surface of the glazing and frame. Deformations shall not exceed 1/60 of the unsupported member lengths. The glazing shall have a minimum frame bite of 9.5 mm (3/8-in) for structurally glazed systems and 25-mm (1-in) for window systems that are not structurally glazed. Equivalent static design loads for connections of the window, skylight, or doorframe to the surrounding walls or roof, hardware and associated connections, and glazing stop connections shall be 75 kilopascals (10.8 PSI) for glazing panels with a vision area less than or equal to 1.0 square meters (10.8 SF) and 30 kilopascals (4.4 PSI) for glazing panels with a vision area greater than 1.0 square meters (10.8 SF) but less than or equal to 3.0 square meters (32 SF). Loads shall be applied to the surface of the glazing and frame. Connections and hardware may be designed based on ultimate strength for steel and 0.2% offset yield strength for aluminum. Design supporting wall and roof elements and their connections based on their ultimate capacities. In addition, because the resulting dynamic loads are likely to be dissipated through multiple mechanisms, it is not necessary to account for reactions from the supporting wall or roof elements in design of remainder of structure.</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-3.1</p>

<p>17. If the minimum standoff distances cannot be met, has glazing and frames been provided, for the sales areas and employee breakroom/restrooms, that will provide an equivalent level of protection to that provided by the glazing and frames as described above and in Tables 2-1 and 2-2 for the applicable explosive weight in Table B-1?</p> <p>YES _____ NO _____ If no, provide justification.</p>	B-3.1.3
<p>18. For new buildings, is the main entrance to the sales area positioned so it does not face an installation perimeter or other uncontrolled vantage points with direct lines of sight to the entrance or are there means provided to block the lines of sight?</p> <p>YES _____ NO _____ If no, provide justification.</p>	B-3.2.1
<p>19. For existing buildings where the main entrance to the sales area faces an installation perimeter, are provisions being taken to employ a different entrance as the main entrance or is screening being provided to limit the ability of potential aggressors to target people entering and leaving the sales area?</p> <p>YES _____ NO _____ If no, provide justification.</p>	B-3.2.2
<p>20. For new and existing buildings are all exterior doors to the sales area or employee breakroom/restrooms designed so they open outwards, or if they fail in response to a blast is there other means provided to ensure that the doors do not become hazards to building occupants?</p> <p>YES _____ NO _____ If no, provide justification.</p>	B-3.3
<p>21. For a new building has all external roof access been eliminated by providing access from internal stairways or ladders, such as in mechanical rooms?</p> <p>YES _____ NO _____ If no, provide justification.</p>	B-3.5.1
<p>22. For an existing building has external access been eliminated where possible or has external ladders or stairways been secured with locked cages or similar mechanisms?</p> <p>YES _____ NO _____ If no, provide justification.</p>	B-3.5.2
<p>23. For new and existing buildings, have all overhead mounted architectural features in the sales area and employee breakroom/restrooms weighing 14 kilograms (31 pounds) or more been mounted so that they resist forces of 0.5 times the component weight in any direction and 1.5 times the component weight in the downward direction? (This standard does not preclude the need to design architectural feature mountings for forces required by other criteria such as seismic standards.)</p> <p>YES _____ NO _____ If no, provide justification.</p>	B-3.6

<p>24. For new buildings have all air intakes, serving the sales area and employees breakroom/restrooms, been located at least 3 meters (10 ft) above the ground?</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-4.1.1</p>
<p>25. For existing buildings, have all air intakes, serving the sales area and employee breakroom/restrooms, been located at least 3 meters (10 ft) above the ground? (This requirement is recommended, but not mandatory, for existing inhabited buildings.)</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-4.1.2</p>
<p>26. For new and existing inhabited buildings, is there an emergency shutoff switch provided in the HVAC control system, serving the sales area and employee breakroom/restrooms, that can immediately shut down air distribution throughout the area and is this switch easily accessible at the front of the sales area?</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-4.3</p>
<p>27. For new buildings is the generator and associated exterior conduit and wiring or other backup power source for emergency lighting separated from the normal power source and power entrance equipment? (This requirement is recommended, but not mandatory, for existing buildings).</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-4.4.3</p>
<p>28. For new and existing buildings, have all overhead utilities and other fixtures, located in the sales area and employee breakroom/restrooms weighing 14 kilograms (31 pounds) or more been mounted so that they resist forces of 0.5 times the component weight in any 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.)</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-4.5</p>
<p>29. Is access to crawl spaces, utility tunnels, and other means of under building access controlled?</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-4.6</p>
<p>30. Is the public address system operational and in good repair and is it connected to the emergency power generator so that it can serve as the mass notification means?</p> <p>YES _____ NO _____ If no, provide justification.</p>	<p>B-4.7</p>

**Table B-1 Minimum Standoff Distances and Separation
for New and Existing Buildings**

Location	Building Category	Standoff Distance or Separation Requirements			
		Applicable Level of Protection	Conventional Construction Standoff Distance	Effective Standoff Distance ⁽¹⁾	Applicable Explosive Weight ⁽²⁾
Controlled Perimeter or Parking and Roadways without a Controlled Perimeter	Billeting	Low	45 m ⁽⁴⁾ (148 ft.)	25 m ⁽⁴⁾ (82 ft.)	I
	Primary Gathering Building	Low	45 m ⁽⁴⁾⁽⁵⁾ (148 ft.)	25 m ⁽⁴⁾⁽⁵⁾ (82 ft.)	I
	Inhabited Building	Very Low	25 m ⁽⁴⁾ (82 ft.)	10 m ⁽⁴⁾ (33 ft.)	I
Parking and Roadways within a Controlled Perimeter	Billeting	Low	25 m ⁽⁴⁾ (82 ft.)	10 m ⁽⁴⁾ (33 ft.)	II
	Primary Gathering Building	Low	25 m ⁽⁴⁾⁽⁵⁾ (82 ft.)	10 m ⁽⁴⁾⁽⁵⁾ (33 ft.)	II
	Inhabited Building	Very Low	10 m ⁽⁴⁾ (33 ft.)	10 m ⁽⁴⁾ (33 ft.)	II
Trash Containers	Billeting	Low	25 m (82 ft.)	10 m (33 ft.)	II
	Primary Gathering Building	Low	25 m (82 ft.)	10 m (33 ft.)	II
	Inhabited Building	Very Low	10 m (33 ft.)	10 m (33 ft.)	II
Building Separation (for new buildings only)	Billeting	Low	10 m (33 ft.)	No antiterrorism minimum	III ⁽³⁾
	Primary Gathering Building	Low	10 m (33 ft.)	No antiterrorism minimum	III ⁽³⁾
	Inhabited Building	Very Low	No antiterrorism minimum	No antiterrorism minimum	Not applicable

(1) Even with analysis, standoff distances less than those in this column are not allowed for new buildings, but are allowed for existing buildings if constructed/retrofitted to provide the required level of protection at the reduced standoff distance.

(2) See UFC 4-010-2, for the specific explosive weights (kg/pounds of TNT) associated with designations – I, II, III. UFC 4-010-2 is For Official Use Only (FOUO)

(3) Explosive for building separation is an indirect fire (mortar) round at a standoff distance of half the separation distance.

(4) For existing buildings, see paragraph B-1.1.2.2.

(5) For existing family housing, see paragraph B-1.1.2.2.3.

Figure B-1 Standoff Distances and Building Separation – Controlled Perimeter

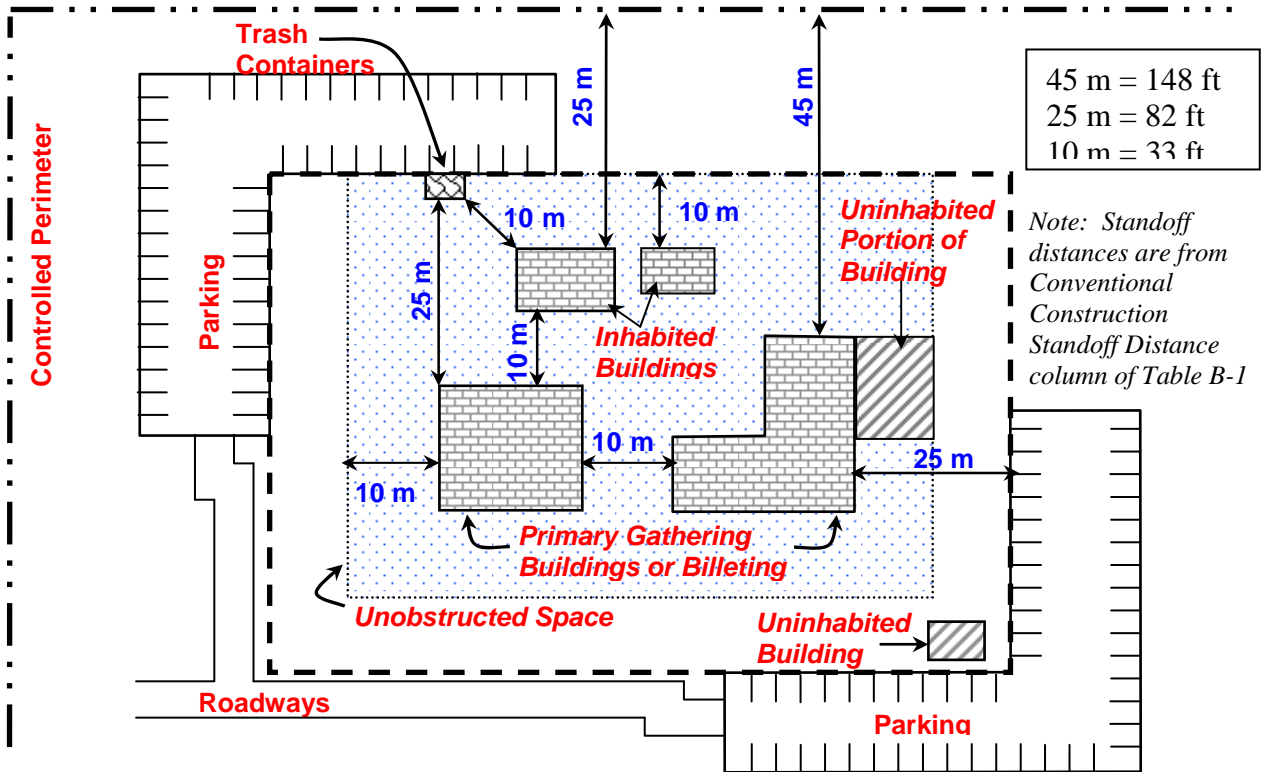


Figure B-2 Standoff Distances and Building Separation – No Controlled Perimeter

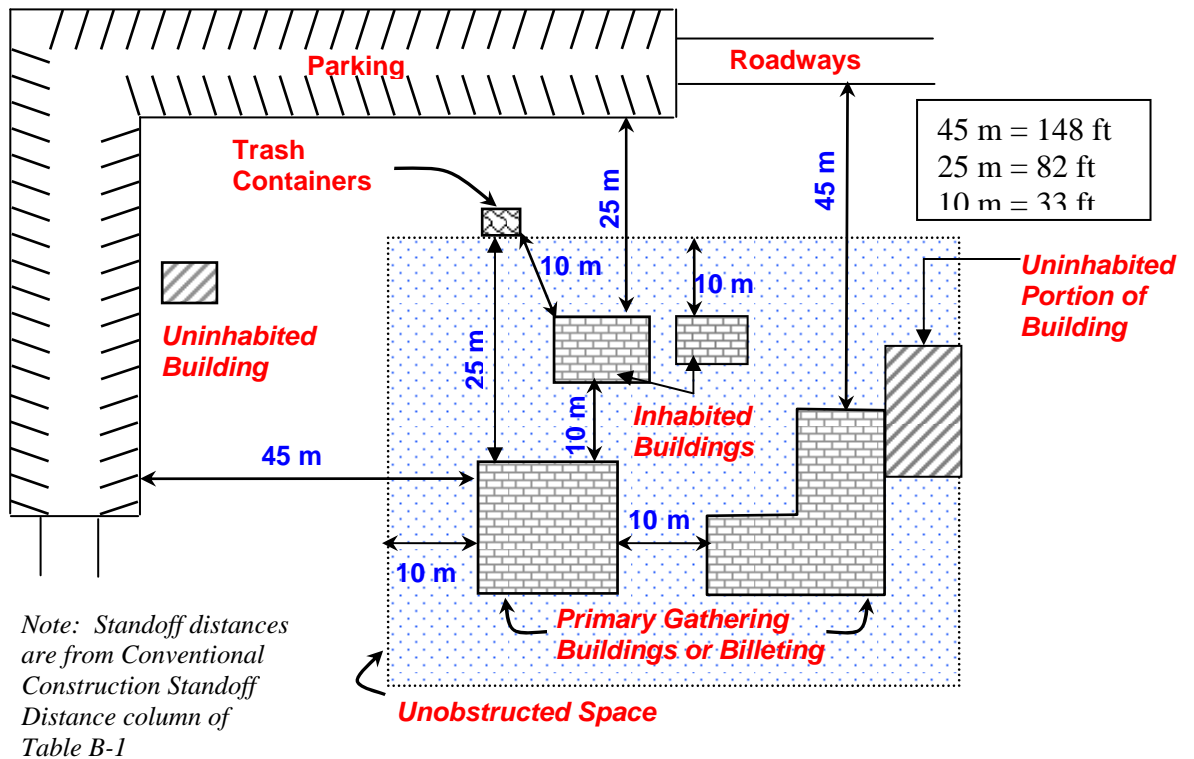


Table 2-1 Levels of Protection – New Buildings

Level of Protection	Potential Structural Damage	Potential Door and Glazing Hazards	Potential Injury
Below AT standards	Severely damaged. Frame collapse/massive destruction. Little left standing.	Doors and windows fail and result in lethal hazards	Majority of personnel suffer fatalities.
Very Low	Heavily damaged - onset of structural collapse: Major deformation of primary and secondary structural members, but progressive collapse is unlikely. Collapse of non-structural elements.	Glazing will break and is likely to be propelled into the building, resulting in serious glazing fragment injuries, but fragments will be reduced. Doors may be propelled into rooms, presenting serious hazards.	Majority of personnel suffer serious injuries. There are likely to be a limited number (10% to 25%) of fatalities.
Low	Damaged – unrepairable. Major deformation of non-structural elements and secondary structural members and minor deformation of primary structural members, but progressive collapse is unlikely.	Glazing will break, but fall within 1 meter of the wall or otherwise not present a significant fragment hazard. Doors may fail, but they will rebound out of their frames, presenting minimal hazards.	Majority of personnel suffer significant injuries. There may be a few (<10%) fatalities.
Medium	Damaged – repairable. Minor deformations of non-structural elements and secondary structural members and no permanent deformation in primary structural members.	Glazing will break, but will remain in the window frame. Doors will stay in frames, but will not be reusable.	Some minor injuries, but fatalities are unlikely.
High	Superficially damaged. No permanent deformation of primary and secondary structural members or non-structural elements.	Glazing will not break. Doors will be reusable.	Only superficial injuries are likely.

Table 2-2 Levels of Protection – Existing Buildings

Level of Protection	Potential Structural Damage	Potential Door and Glazing Hazards	Potential Injury
Below AT standards	Severely damaged. Frame collapse/massive destruction. Little left standing.	Doors and windows fail and result in lethal hazards	Majority of personnel suffer fatalities.
Very Low	Heavily damaged - onset of structural collapse: Major deformation of primary structural members, but progressive collapse is unlikely. Collapse of secondary structural members and non-structural elements.	Glazing will break and is likely to be propelled into the building, resulting in serious glazing fragment injuries, but fragments will be reduced. Doors may be propelled into rooms, presenting serious hazards.	Majority of personnel suffer serious injuries. There are likely to be a limited number (10% to 25%) of fatalities.
Low	Damaged – unrepairable. Major deformation of secondary structural members and minor deformation of primary structural members, but progressive collapse is unlikely. Collapse of non-structural elements.	Glazing will break and is likely to be propelled into the building, but should result in survivable glazing fragment injuries. Doors may fail, but they will rebound out of their frames, presenting minimal hazards.	Majority of personnel suffer significant injuries. There may be a few (<10%) fatalities.
Medium	Damaged – repairable. Minor deformations of secondary structural members and no permanent deformation in primary structural members. Major deformation of non-structural elements.	Glazing will break, but will remain in the window frame. Doors will stay in frames, but will not be reusable.	Some minor injuries, but fatalities are unlikely.
High	Superficially damaged. No permanent deformation of primary and secondary structural members or non-structural elements.	Glazing will not break. Doors will be reusable.	Only superficial injuries are likely.

