

Building Entrances and Exits

4.0 SCOPE

This section provides requirements for public entrances, entrance lobbies, patient drop-offs, and staff entrances. Reduce the number of public entrances to the minimum number required. Entrance requirements for specific functional areas, such as loading dock and other service entrances for life-safety protected facilities, are covered in Chapter 5. Specific requirements for security devices and their locations can be found in Appendix A, Security Door Openings, and Appendix B, Security System Application Matrix.

4.1 PUBLIC ENTRANCES AND LOBBIES

Public access to the facility should be restricted to a single or limited number of entrances.

4.1.1 Entrances

4.1.1.1 Public public entrances: The public entrance is to the main lobby of the facility.

4.1.1.2 Staff entrances: Staff entrances shall be located independently of main entrance lobbies and be convenient to staff parking.

4.1.2 Screening Vestibules

The screening vestibule shall have sufficient space and be provided with power, telecommunications, and data connections for installation of access control and screening equipment that may be used should the need arise. Prevent access from drop-off to lobby in a straight line of travel and provide sufficient size to accommodate several people with mobility aids.

4.1.3 Lobbies

4.1.3.1 Location: Vehicles may not approach within 25 feet (7.6m) of the entrance.

4.1.3.2 Doors: Entrance doors to the lobby shall be visible to or monitored by security personnel.

4.1.3.3 Access within the facility: Access from the lobby to elevators, stairways, and corridors shall be controlled through the use of electronic access control or mechanical locking devices, limiting access to specific floors and areas that house functions requiring restricted access.

- Install elevator call buttons requiring use of key cards or other electronic access control when they are located in restricted areas.

4.1.4 Access for Emergency Responders

The Fire Command Center (FCC) and secure house key box for emergency responders shall be located near an entrance door at a location approved by the Project Manager. The door associated with the FCC shall be controlled and monitored by CCTV.

4.1.5 Planning, Construction Details, and Materials

4.1.5.1 Structure: The entrance itself shall be constructed to fail in a way that subjects persons inside or nearby to as little hazard as possible. (See Chapter 6, Building Envelope and Chapter 7, Structural System.)

- Protection of entrances and lobbies from vehicle ramming must be accomplished outside and in front of the entrance. (See Chapter 3, section 3.4 Vehicle Barriers.)
- If a covered drop-off area is provided, its supporting structure shall be independent of the main building and protected from intentional and unintentional damage by vehicles.
- Separate the public lobby from adjacent areas with partitions that extend to the underside of the floor above.

4.1.5.2 Façade: Glazing in the lobby area shall be laminated glass.

4.1.5.3 Doors and hardware: Exterior doors shall be in size, operation, and other characteristics in compliance with applicable regulatory requirements. If doors are lockable, they shall comply with emergency egress requirements. Refer to Program Guide PG-18-14, *Room Finishes, Door and Hardware Schedule*, and Appendix A, Security Door Openings, for additional requirements.

- Glass for entrance doors shall be laminated.
- Public doors shall be capable of being remotely locked and unlocked from the reception desk in the main lobby.
- Staff entrance doors may be manually or power operated and may be swinging doors, horizontal sliding doors (power operated only), or revolving doors.
- Secondary public entrance doors shall prevent unauthorized access.
- Staff entrance door hardware shall include either mechanical or electronic locks.
- Means of egress doors that do not also function as entrances shall be provided with delayed action and alarmed emergency egress hardware.

4.1.5.4 Receptacles: Letter boxes and receptacles for trash and smoking paraphernalia shall not be located within 5 feet (1524 mm) of load-bearing elements. Those within 25 feet (7.6 m) of the building shall be designed to prevent depositing of explosive charges or to contain explosions with a charge weight (defined in the *Physical Security Design Standards Data Definitions*) as directed by the Project Manager and coordinated with the structural engineer.

4.1.6 Security Monitoring

All public entrances require security monitoring. At public entrances provide the means to restrict public access to those areas where screening is available when screening is required.

4.1.6.1 Security guard stations: No additional physical security requirements.

4.1.6.2 Screening devices: At all public entrances, provide the required connections for temporary installation of metal detectors and package screening equipment and sufficient space for their installation without restricting emergency egress.

- Locate screening equipment in a manner that will prevent passage into the building or facility without passing through the devices.
- When screening devices are not permanently installed, provide secure storage in close proximity to their installation location.

4.1.6.3 Security devices: CCTV cameras shall be provided to monitor activities in the lobbies of new and existing life-safety protected facilities and shall be located to provide views of approaching pedestrian and vehicular traffic, drop-off areas, building entrances, and departing pedestrian and vehicular traffic.

4.1.7 Existing Facility – Entrances and Lobbies

4.1.7.1 Covered drop-off: Protect columns with anti-ram barriers such as bollards and from explosive devices by installation of barriers that prevent detonation within 18 inches (457 mm).

4.1.7.2 Vestibules: Where space permits, provide an entrance vestibule of sufficient size to accommodate several people with mobility aids. Where possible arrange entrance vestibule to prevent access from drop-off to lobby in a straight line of travel.

4.1.7.3 Glazing: Glazing in the lobby area shall be laminated glass or fitted with anti-fragmentation film.

4.1.7.4 Access within the facility: Modify existing elevator call buttons to require electronic access control to register calls when elevators open directly into restricted areas.

4.2 DROP-OFFS

Drop-offs shall be located at primary building entrances or other locations that will provide convenient access to services without hindering the flow of traffic. Patient drop-off areas shall not be located near staff-only entrances.

4.2.1 Vehicular Access

Drop-offs and waiting areas for unscreened vehicles, including public transportation vehicles, shall be separated from the main building structure by at least 25 feet (7.6 m).

4.2.2 Parking

Parking shall not be permitted in patient drop-off areas.

4.2.3 Existing Facility – Patient Drop-offs

Patient drop-offs for existing facilities shall meet the requirements of 4.2.1 and 4.2.2.

4.3 BUILDING EXITS AND LIFE SAFETY CONSIDERATIONS

Means of egress shall not be obstructed by installation of security devices such as guard stations, screening equipment, or other security devices.

Delayed egress and alarmed exits shall comply with applicable codes and regulations.

4.3.1 Site Requirements

Provide an unobstructed and adequately lighted path from each means of egress to a safe location outside the building.

- Where the means of egress is accessible to persons with disabilities, provide an accessible route to a safe location outside the building.
- Where means of egress lead to loading docks or other service areas, direct users away from hazardous and pathological waste storage, mailrooms, and other areas that may be the source of injury or contamination.
- Plan and locate egress paths so that they are not obstructed by with anti-ramming barriers or other similar devices.

4.3.2 Planning, Construction Details, and Materials

Construction of building exits shall be consistent with the requirements for adjacent building envelope elements.

- Where laminated glass is required in nearby window openings, glazing for exit doors shall also be laminated.
- Where adjacent portions of the building require blast resistant construction, construct the means of egress with a similar level of protection.
- Means of egress doors shall be of construction that makes unauthorized entry from the exterior difficult. Provide hardware that minimizes the opportunity for unauthorized entry by using components such as continuous hinges and astragals.

4.3.3 Security Monitoring

Where means of egress do not also function as access points for the building, provide card reader for authorized users and delayed action, alarmed egress hardware to indicate unauthorized use.

- Provide CCTV cameras at locations with alarmed exits, at loading docks, and other areas subject to pilferage.
- Install door status monitors at doors intended to be used only for emergency egress.

4.3.4 Existing Facility – Building Exits and Life Safety Considerations

Existing facilities shall meet the requirements of section 4.3.

Functional Areas

5.0 SCOPE

Refer to the Physical Security Design Manual for Mission Critical Facilities for design for the following functional areas that require enhanced protection in Life-Safety Protected buildings.

- 5.1 Agent Cashier
- 5.2 Cache
- 5.3 Childcare/Development Center
- 5.4 Computer Room
- 5.5 COOP Site
- 5.6 Emergency Department
- 5.7 Emergency and/or Stand-by Generator Room
- 5.8 Energy Center/Boiler Plant
- 5.9 Loading Dock and Service Entrances
- 5.10 Mailroom
- 5.11 Pharmacy
- 5.12 Police Operations Room and Holding Room
- 5.13 Records Storage and Archives
- 5.14 Research Laboratory and Vivarium
- 5.15 Security Control Center

Building Envelope

6.0 SCOPE

This section provides requirements for exterior walls other than load bearing walls; glazed façade fenestration and glazed atria; for roof structures, including skylights; and air intakes and exhausts servicing mission critical equipment but does not pertain to stacks and wall openings for non-critical equipment. These requirements are in addition to the requirements for conventional façade design, including the provisions for hurricane, earthquake, and any other extreme loading condition required by code. The magnitude of GP1, GP2, W1, and W2 are defined in the *Physical Security Design Standards Data Definitions* that shall be stored separate from this document.

Connecting corridor concourse and bridges and freestanding greenhouses shall be exempt from the requirements of Chapters 6 and 7. Physical security requirements for temporary buildings shall be determined on a case by case basis by the security staff having cognizance.

6.1 WALLS

6.1.1 Non-load Bearing Walls

Walls shall be designed to withstand the design level vehicle threat (W1) located at the stand-off distance to a maximum peak pressure and corresponding impulse of GP1 while sustaining a deformation no greater than $L/30$.

6.1.1.2 Supporting structure: Walls shall span from slab to slab and shall not be attached directly to gravity load bearing elements (such as columns and shear walls) unless an advanced analysis of the load bearing element demonstrates it can accept the maximum forces of the members framing into it without compromising its capacity.

6.1.1.3 Loads: Walls shall be able to accept the tributary loads transferred from glazed fenestration in addition to the design level pressures applied directly to their surface.

6.1.2 Existing Facility – Walls

No additional physical security requirements.

6.2 FENESTRATION

6.2.1 Façade Fenestration

All façade fenestration shall be designed to crack but fragments shall enter the occupied space and land on the floor no further than 10 feet (3 m) from the façade in response to the calculated peak pressures and impulses resulting from the design level threat (W1) located at the stand-off distance, but no greater than GP1.

6.2.1.1 Glass: Fenestration shall be constructed using debris mitigating materials such as laminated glass.

6.2.1.2 Glazing: The glass shall be restrained within the mullions with a sufficient bite or structural silicone adhesive to allow it to develop its post-damage capacity.

6.2.1.3 Mullions: The mullions shall be designed to accept the design level pressures while sustaining deformations no greater than $L/30$.

6.2.1.4 Curtainwall: Curtainwall framing members shall span from slab to slab and shall not be attached directly to gravity load bearing elements (such as columns and shear walls) unless an advanced analysis of the load bearing element demonstrates it can accept the maximum forces of the members framing into it without compromising its load bearing capacity.

6.2.2 Existing Facility – Fenestration

No additional physical security requirements.

6.3 ATRIA

6.3.1 Atria

Vertical glass surfaces shall be designed to crack but fragments shall enter the occupied space and land on the floor no further than 10 feet (3 m) from the façade in response to the calculated peak pressures and impulses resulting from the design level vehicle threat (W1) located at the stand-off distance, but no greater than GP1.

6.3.1.1 Skylights: Skylights shall be designed to crack but remain in its frame in response to the calculated peak pressures and impulses resulting from the design level vehicle threat (W1) located at the stand-off distance, but no greater than GP1.

6.3.1.2 Glass: Atria shall be constructed using debris mitigating materials such as laminated glass.

6.3.1.3 Glazing: The glass shall be restrained within the mullions with a sufficient bite or structural silicone adhesive to allow it to develop its post-damage capacity.

6.3.1.4 Mullions: The mullions shall be designed to accept the design level pressures while sustaining deformations no greater than L/30.

6.3.1.5 Framing: Atria framing members shall be designed to continue carrying gravity loads while sustaining maximum allowable deformations.

6.3.2 Existing Facility – Atria

No additional physical security requirements.

6.4 ROOFS

6.4.1 Roof Structure

Roof structure shall be designed to withstand the design level vehicle threat (W1) located at the stand-off distance, but no greater than GP1, while sustaining a deformation no greater than L/30. The blast loading shall take into account the presence of parapets, the diffusion of blast waves, and the spatial extent of the roof surface.

6.4.2 Skylights

Skylights shall be designed to crack but remain in its frame in response to the calculated peak pressures and impulses resulting from the design level vehicle threat (W1) located at the stand-off distance, but no greater than GP1.

6.4.2.1 Glazing: Skylight glass shall be restrained within the mullions with a sufficient bite or structural silicone adhesive to allow it to develop its post-damage capacity.

6.4.2.2 Mullions: The mullions shall be designed to accept the design level pressures while sustaining deformations no greater than $L/30$.

6.4.3 Penthouses Enclosing Mission Critical Equipment

Penthouse façade shall be designed to withstand the effects of hurricane wind loads and debris impact. Penthouse enclosures shall also be designed to resist the design level vehicle threat (W1) located at the stand-off distance, but no greater than GP1, to be consistent with the hardened intakes and exhausts, as described in section 6.5.1.

6.4.4 Existing Facility – Roofs

No additional physical security requirements.

6.5 AIR INTAKES AND EXHAUSTS SERVICING CRITICAL EQUIPMENT

6.5.1 Intakes and Exhausts

Air intakes and exhausts shall be designed to minimize debris in response to the design level vehicle threat (W1) located at the stand-off distance up to a maximum peak pressure and corresponding impulse of GP1. Louvered openings shall be designed and detailed to restrain debris.

6.5.1.1 Entrances and lobbies: Maintain positive pressure in lobbies and entrance areas.

- Locate all outdoor air intakes a minimum of 100 feet (31 m) from areas where vehicles may be stopped with their engines running.
- Locate all outdoor air intakes a minimum of 30 feet (9 meters) above finish grade or on roof away from the roof line.

6.5.1.2 Hurricane areas: Louvers in areas prone to hurricanes or wind-debris hazards shall be certified by the manufacturer to meet the following Florida Building Code tests: Uniform Static Air Pressure Test, Cyclic Wind Pressure Test, Large Missile Impact Test, and Wind Driven Rain Resistance Test.

6.5.2 Existing Facility – Air Intakes and Exhausts Servicing Critical Equipment

Air intakes and exhausts shall meet the requirements of section 6.5.1.

6.6 CALCULATION METHODS

All blast design and analysis, whether for new or existing construction, shall be performed in accordance with accepted methods of structural dynamics.

6.6.1 Design and Detailing

The performance of façade in response to blast loading is highly dynamic and often inelastic. Design and detailing of protected façade shall therefore be based on analytical methods that accurately represent the loads and response. Explosive test data, developed by an experienced testing facility approved by the U.S. Government (USG), may be used to supplement the analytical methods where a direct analytical representation is not feasible.

6.6.2 Blast Loads

Blast loads shall typically be developed using the semi-empirical relations of TM5-855 (CONWEP).

6.6.3 Dynamic Response

Dynamic structural response analyses shall be performed using either empirical data developed by an approved U.S. Government testing laboratory, simplified Single-Degree-of-Freedom (SDOF) analytical methods or advanced Finite Element Methods (FEM). Where simplified SDOF methods are used, the performance criteria shall be in accordance with established standards of practice developed by the USG. Where advanced FEM methods are used, the performance shall be demonstrated through interpretation of the calculated results.

