



Standard Guide for Design and Construction of Expanded Metal Security Fences and Barriers¹

This standard is issued under the fixed designation F2780; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide provides assistance for the site security designer to select the proper components required to design a site specific expanded metal physical security perimeter barrier.

1.2 This standard does not purport to address all of the physical protection security concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish the appropriate design for the level of physical protection required and determine the applicability of regulatory requirements or limitations prior to use.

1.3 It is recommended that Specification F2548 to be used in conjunction with this guide.

1.4 The values stated in inch-pound units are to be regarded as standard.

2. Referenced Documents

2.1 ASTM Standards:²

- A121 Specification for Metallic-Coated Carbon Steel Barbed Wire
- A123/A123M Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- A307 Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
- F626 Specification for Fence Fittings
- F1043 Specification for Strength and Protective Coatings on Steel Industrial Fence Framework
- F1083 Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
- F1910 Specification for Long Barbed Tape Obstacles
- F2200 Specification for Automated Vehicular Gate Construction

¹ This guide is under the jurisdiction of ASTM Committee F14 on Fences and is the direct responsibility of Subcommittee F14.50 on High Security Fences and Perimeter Barriers.

Current edition approved May 1, 2014. Published May 2014. Originally approved in 2009. Last previous edition approved in 2009 as F2780– 09. DOI: 10.1520/F2780-09R14.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

F2548 Specification for Expanded Metal Fence Systems for Security Purposes

F2656 Test Method for Vehicle Crash Testing of Perimeter Barriers

2.2 US Dept. of Defense:

UFC 4-010-01 United Facilities Criteria, DoD Minimum Antiterrorism Standards for Buildings

UFC 4-020-01 United Facilities Criteria, DoD Security Engineering Facilities Planning Manual

2.3 US Dept. of State:

SD-STD-02.01 Revision A, March 2003 Test Method for Vehicle Crash Gate Testing of Perimeter Barriers and Gates

2.4 General Services Administration:

The Site Security Design Guide, U.S. General Services Administration (GSA)

2.5 American Society of Civil Engineers (ASCE):

ASCE/SEI 7-05 Minimum Design Loads for Buildings and Other Structures (Manufacturer shall demonstrate framework design for wind load criteria for the selection of line posts and line post spacing)

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *access control*—for the purposes of these standards, any combination of barriers, gates, electronic security equipment, or guards, or a combination thereof, that can deny entry to unauthorized personnel or vehicles.

3.1.2 *active barrier*—a barrier that requires manual or motorized action to operate. Active barriers may be command or sensor activated to prevent or impede unauthorized passage.

3.1.3 *anti-ram vehicle barrier*—a device or barrier that prevents vehicle access to provide pedestrian protection and/or building security. Anti-Ram vehicle barriers may be either active or passive barriers. A rated anti-ram barrier is a Department of State-approved perimeter barrier that does not exceed the defined penetration level for a 15,000-lb gross weight vehicle traveling perpendicular to the barrier at nominal speeds of 50, 40, or 30 mph. Reference Test Method F2656 for performance criteria.