



Standard Test Methods for Detention Hollow Metal Vision Systems¹

This standard is issued under the fixed designation F 1592; 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 These test methods cover fixed detention hollow metal vision systems of various materials and types of construction. These fixed hollow metal vision systems are used in wall openings in detention and correctional institutions designed to incarcerate inmates.

1.2 Frame assemblies investigated under these test methods include individual components including detention security hollow metal frames, frame anchoring, security glazing, panels, and removable glazing stops.

1.3 These test methods are designed to test the capability of a fixed detention hollow metal vision system to prevent, delay, and frustrate escape; to limit or control access to unauthorized or secured areas; and prevent passage of contraband.

1.4 These test methods apply primarily to detention hollow metal vision systems between secure areas generally found inside a detention/correctional facility such as: day rooms, control rooms, cells, and sally ports. Vision systems other than hollow metal may be tested in accordance with these test methods provided testing and reporting procedures are followed.

1.5 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

E 152 Methods for Fire Tests of Door Assemblies²

2.2 NAAMM/HMMA Standard:³

ANSI/HMMA 863-90 Guide Specifications for Detention Security Hollow Metal Doors and Frames

2.3 NFPA Standard:⁴

252 Methods of Fire Tests of Door Assemblies

2.4 UL Standards:⁵

UL-10 (B) Fire Tests of Door Assemblies

UL-752 Bullet Resisting Equipment

3. Terminology

3.1 Definitions:

3.1.1 *borrowed light*—a fixed window frame for use in an interior partition.

3.1.1.1 *Discussion*—This term is derived from the concept of borrowing light from one room or space to help illuminate another.

3.1.2 *butt joint*—the corner or mullion joint of a frame in which the stop of either member is notched to fit the other, resulting in a perpendicular joint.

3.1.3 *component*—a subassembly, as distinguished from a part, that combines with other components to make up a total frame assembly.

3.1.3.1 *Discussion*—The prime components of a fixed vision system assembly are: frame, wall, glazing, and panels.

3.1.4 *contraband breach*—any through opening created such that a 0.060-in. diameter wire can be passed completely through the assembly at any location constitutes a contraband breach.

3.1.5 *detention security*—ensurance of the restriction of mobility of inmates to designated areas within a correctional or detention facility.

3.1.6 *forcible egress*—the ability to pass a 5 by 8 by 8-in. rigid rectangular box through an opening in the test sample created by destructive testing procedures.

3.1.7 *glazing stop*—a formed metal section used to secure glazing or panel in a frame, which may be applied to, or may be an integral part of the frame.

3.1.8 *head or header*—the horizontal member that forms the top of a frame.

3.1.9 *hollow metal*—a term used in reference to such items as doors, frames, partitions, enclosures, and other items that are fabricated from metal sheet, usually carbon steel.

¹ These test methods are under the jurisdiction of ASTM Committee F-33 on Detention and Correctional Facilities and are the direct responsibility of Subcommittee F33.02 on Physical Barriers.

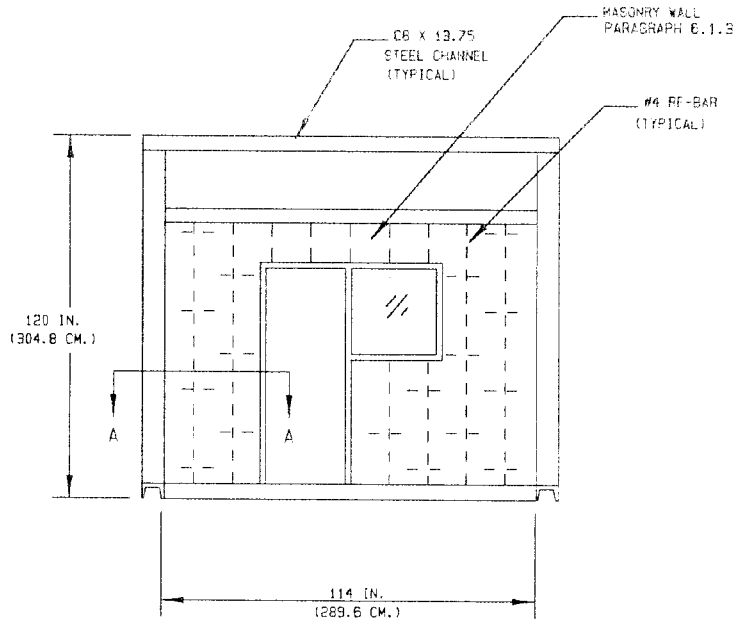
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² Discontinued; see 1994 Annual Book of ASTM Standards, Vol 04.07.

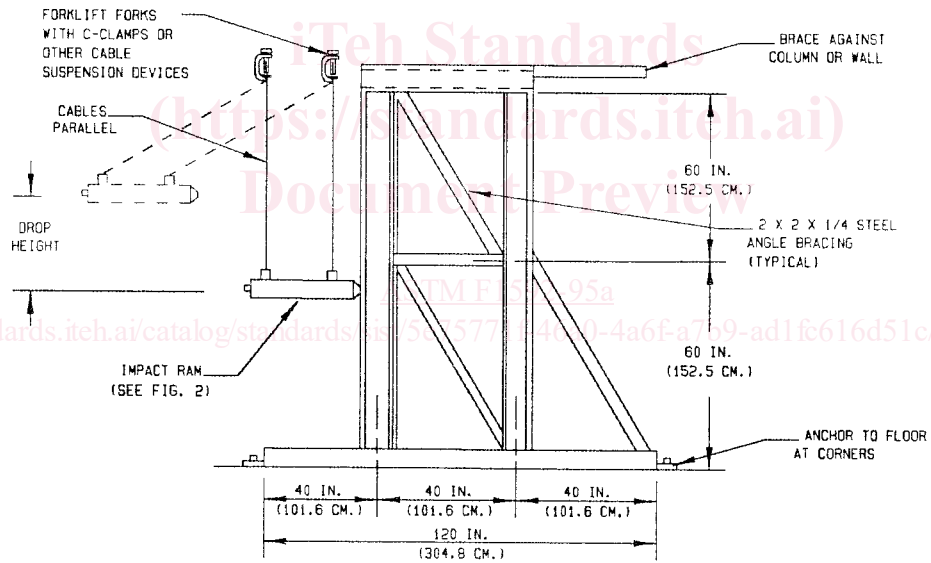
³ Available from Hollow Metal Manufacturer's Association, A Division of NAAMM, 600 S. Federal St., Chicago, IL 60605.

⁴ Available from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

⁵ Available from Underwriters Laboratories, 333 Pfingsten Road, Northbrook, IL 60062.



FRONT ELEVATION OF TEST WALL



SIDE VIEW OF TEST WALL

FIG. 1a Test Wall Detention Hollow Metal Vision Systems

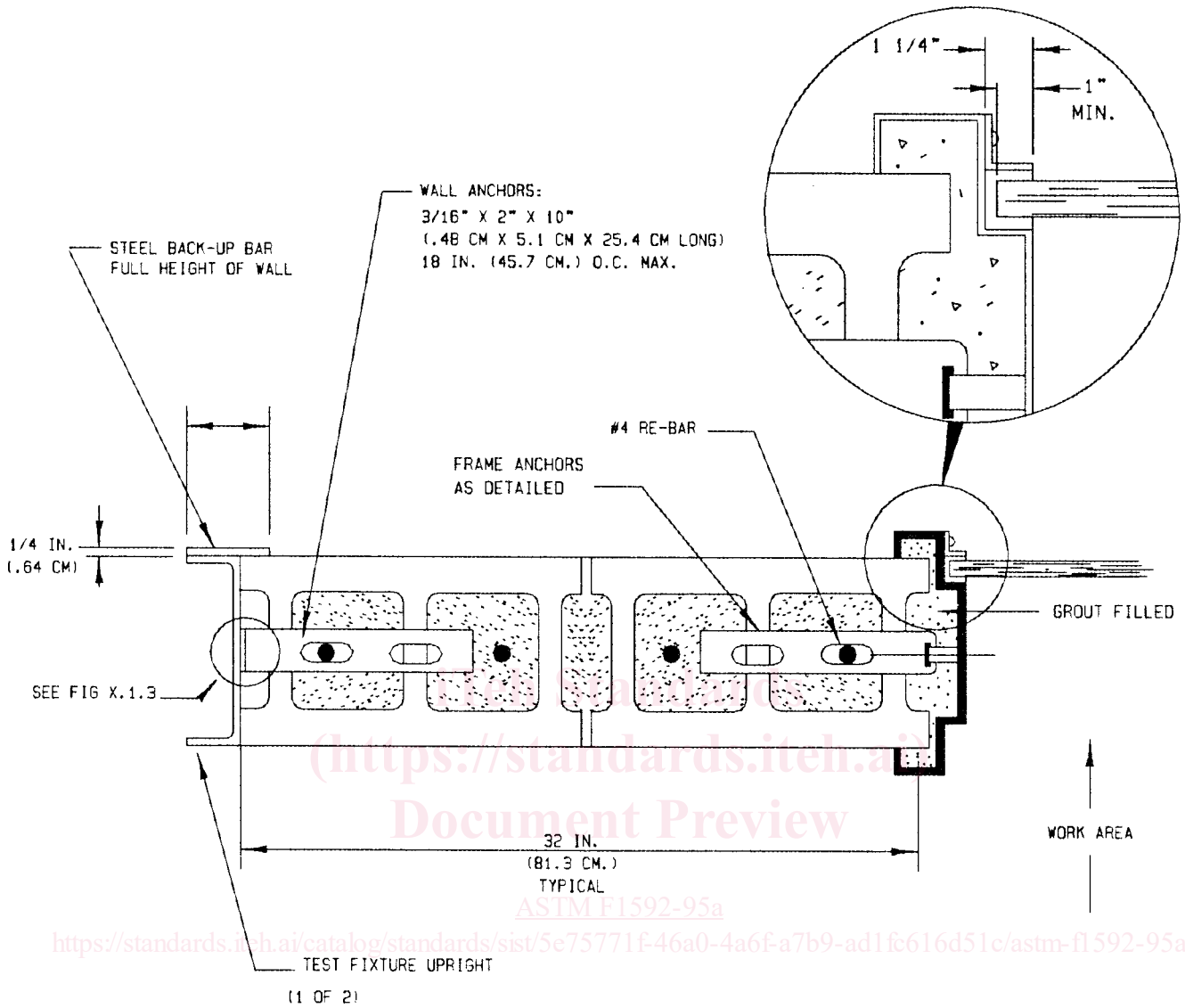


FIG. 1b Section A-A from Fig. 1a

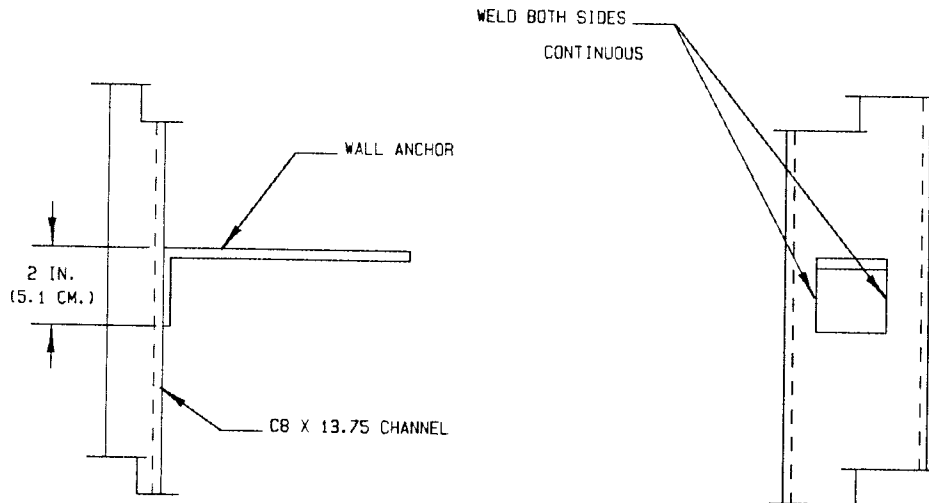


FIG. 1c Wall Anchor Welding Detention Hollow Metal Vision Systems

3.1.9.1 *Discussion*—These products are usually internally reinforced but hollow, hence the term hollow metal. In doors and partitions, the voids are normally filled with insulation. In frames, the jambs, and sometimes heads, are grouted where installed in masonry walls, or of such construction that they may be left hollow⁶ (see ANSI/HMMA 863).

3.1.10 *jamb*—the vertical member forming the side of a frame.

3.1.11 *miter joint*—the corner joint of a head and jamb in which the trim faces, and sometimes the stops, meet at an angle (usually 45°).

3.1.11.1 *Discussion*—The miter joint can be either punched in the flat form or sawed after the members are formed.

3.1.12 *mullion*—a vertical or horizontal member within a frame, separating either doors, a door and a sidelight, glazed areas, or panels.

3.1.13 *multi-light*—two or more fixed lights of glazing adjacent to each other, horizontally or vertically, or both, within the same frame, which may be located in an interior partition or exterior wall.

3.1.14 *panel*—for the purposes of these test methods, the *panel* is a steel plate at least 0.375 in. thick, installed to transfer impact energy to the glazing stops and the assembly.

3.1.15 *performance characteristic*—the response of the assembly or its components to any one of the tests described herein.

3.1.16 *sidelight*—a fixed light of glazing located adjacent to a door or doors within the same frame.

3.1.17 *sill*—the bottom horizontal member of a frame.

3.1.18 *tamper-resistant security screw*—a screw that is designed to be removed only by special tools kept by detention/correctional facility maintenance personnel.

3.1.18.1 *Discussion*—The screws should be resistant to removal by means other than use of the appropriate special tool. In some cases, tamper-resistant security screws are furnished with twist-off heads such that a means of removal

after final installation is not provided. Regarding impact resistance, the frame manufacturer may choose various grades (strengths) and sizes of tamper-resistant screws, and may install them at various spacings to obtain satisfactory test results. All information regarding the tamper-resistant security screws used by the manufacturer shall be provided as part of test reports.

3.1.19 *test completion*—conduct of one test sequence for each of the frame assemblies.

3.1.20 *testing laboratory*—an independent materials testing laboratory not associated with the manufacturer.

3.1.21 *vision system*—hollow metal frame with glazing, glazing stops, and panels in place ready for service.

3.1.21.1 *Discussion*—A *vision system* may be a borrowed light or sidelight.

3.1.22 *vision system frame*—an assembly of members surrounding and supporting glazing panels, steel panels, or combinations thereof, that may be located in an interior partition or exterior wall.

4. Significance and Use

4.1 A major concern for corrections administration officials is the resistance of security barriers used in detention/correctional facilities to certain types of physical attack that can normally be expected to occur in the field. These test methods are designed to aid in identifying a level of physical security for fixed detention hollow metal vision systems.

4.2 These test methods are not intended to provide a measure of resistance for a vision system subjected to attack by corrosive agents, high-powered rifles, explosives, sawing, or other such methods. These test methods are intended to evaluate the resistance of a vision system to violent attacks using battering devices, such as benches, bunks, fire extinguishers, or tables; by hand guns up to and including the .44 magnum; and by fires started by using mattresses, books, and similar flammable materials.

4.3 The primary purpose or result of this standard is to provide detailed test methods that approximate the levels of abuse to which vision systems may be subjected in the field.

⁶ See The Hollow Metal Manual-87, available from the Hollow Metal Manufacturer's Association, A Division of NAAMM, 600 S. Federal St., Chicago, IL 60605.