Designation: F3038 – 14

Standard Test Method for Timed Evaluation of Forced-Entry-Resistant Systems[1]

This standard is issued under the fixed designation F3038; 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 test method sets forth the requirements and testing procedures to test forced-entry-resistant building components, construction components, and specialty security equipment. This test method is intended primarily for manufacturers to test and rate their windows, doors, modular panels, glazings, louvers, walls, seismic joints, roofs, roof hatches, grilles, and similar products to ensure that all manufactured products meet the necessary requirements for forced-entry protection.

1.2 This test method is currently designed to simulate a spontaneous mob using readily available hand tools as the primary threat for forced entry.

1.3 In order to receive a rating, all portions of the tested specimen must meet or exceed the test level.

1.4 Systems are required to be tested as complete units in a test frame or fielded conditions. Mulled systems must be tested in the mulled condition. Test results only apply to the component or system as tested. Once a system is tested and deemed to satisfy the requirements of this test method, no design change can be made without a retest.

1.5 *Units*—The values stated in this standard are SI units with the exception of the nominal descriptors for tools.

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:*[2]

E631 Terminology of Building Constructions

E2771 Terminology for Homeland Security Applications

F1915 Test Methods for Glazing for Detention Facilities

2.2 *Other Standards:*

SD-STD-01.01 Forced-Entry and Ballistic-Resistance of Structural Systems, Rev. G (Amended)[3]

ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories[4]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *component*—integral part of a forced entry test specimen such as: panels, frame, glazing, glazing bite, flanges, hinges, locks, jamb/wall, jamb/strike mullions, and mounting devices of different shape, size, and material.

3.1.2 *door, double*—two-door assembly with an opening twice as wide as a single door with a common latch and lock edge.

3.1.3 *independent test facility*—testing laboratory accredited to perform the referenced testing procedures by a nationally recognized accrediting agency in accordance with ISO/IEC 17025.

3.1.4 *individual systems*—individual doors, windows, louvers, hatches, grilles, or wall panels. The doors, windows, and panels may have one transparency or two or more transparencies separated with a mullion.

3.1.5 *louvers*—angled and gapped slats which permit the passage of air through an otherwise impassable barrier. While louvers usually are rigidly constructed, the slats may be moveable to seal off air passage.

3.1.5.1 *manufacturer-delivered systems*—includes both individual and mulled systems.

3.1.6 *mullion*—a component used to divide two parts of the same system and it can be vertical or horizontal, movable or fixed. For purposes of this test method, a mullion does not include steel or concrete structural members (including seismic joints) which are present in the building.

3.1.7 *mulled*—the physical connection together of two parts of the same system. The two systems may be anchored directly to each other or have a mullion between them.

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[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.

[3] Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, http://www.access.gpo.gov.

[4] Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, http://www.iso.org.

3.1.8 *ready-to-install*—fabricated, with an appropriate final finish such as galvanizing, paint, or anodizing. The test specimen shall consist of the entire fenestration assembly and contain all devices used to resist forced entry. All parts of the test specimen shall be full size, as specified for actual use, using the identical materials, details, and methods of construction.

3.1.9 *system*—the assembly of structural elements and devices which comprise the forced-entry-resistant barrier.

3.1.10 *shop assembly drawing*—a drawing which shows how a system is assembled including the locations, dimensions, and arrangements of all assembly elements such as bolts, glazing stops, and glazing spacers.

3.1.11 *Test:*

3.1.11.1 *concentrated assault*—test of forced entry attack using test tools on one dissimilar component in an attempt to create an opening and permit passage of the test shape.

3.1.11.2 *failure criteria*—any failure of the manufacturer's recommended mounting hardware or penetration of any portion of the system sufficient to permit passage of the test shape within the times of the FE concentrated assault test.

3.1.11.3 *test director*—the individual identified by the independent testing laboratory as being responsible to complete the specified tests as required and to document the results, in accordance with this test method.

3.1.11.4 *test facility*—laboratory or other area where forced-entry testing is conducted.

3.1.11.5 *test fixture*—the structural assembly which holds the test specimen.

3.1.11.6 *test levels*—the increments to which systems are tested through manual attack with a specific set of tools and weapons.

3.1.11.7 *test personnel/test team*—those personnel actively engaged in the Concentrated Assault Test but not including the Test Director, data recorders, or other supervisory personnel.

3.1.11.8 *test plane*—a plane parallel and contiguous to the face of the attack side of the test sample.

3.1.11.9 *testing report*—a report provided by the test facility that includes configuration documentation, any applicable abnormality, forced-entry testing data and photographs, a certification of testing, a narrative summary of testing, time-stamped drawings that have been validated to match the test specimen, and all video recording(s) of testing.

3.1.11.10 *test shape*—a non-compressible, rigid, elliptical cylinder made of solidly bonded particle board or medium-density fiberboard (MDF) layers measuring 400 mm major axis by 225 mm minor axis and 300 mm in height.

3.1.11.11 *test tools*—the devices used by the test team during the concentrated assault tests.

3.1.12 *Window:*

3.1.12.1 *view window*—a window system which permits visual contact through an otherwise opaque host assembly.

3.1.12.2 *window frame*—the opaque portion of a transparent assembly into which the transparent element is mounted.

3.1.12.3 *window grille*—spaced, rigid bars which are mounted over exterior windows of the host structure to provide delay in access.

4. Summary of Test Method

4.1 This test method establishes incremented timed levels of forced-entry protection via evaluation of a manual attack of a single or mulled system by using a specific set of tools and weapons. The weapons and tools used in the attack are selected from a prescribed list provided in Annex A1.

5. Significance and Use

5.1 Within a given period of time, the success or failure of any attempt to forcibly enter a structure intended to resist that entry is dependent upon three primary factors that collectively define the threat: (*1*) the tools and devices employed, (*2*) the number of aggressors, and (*3*) the level of sophistication of the attack.

5.2 The procedures presented herein are based on field experience and are not intended to be used to establish or confirm the absolute prevention of forced entries.

5.3 The test requirements specified herein have been established for use in evaluating the forced-entry resistance characteristics of structures and assemblies to be used in commercial, government, and military installations.

5.4 The procedures of this test method are intended to evaluate the time necessary for personnel to create an opening of sufficient size to permit passage of a test shape through it.

6. Apparatus

6.1 Apparatus to conduct these tests include test personnel, test fixture, test tools, and the test shape.

6.2 *Test Personnel:*

6.2.1 Test personnel in good health, and capable of executing the required rigorous tests.

6.2.2 The number of personnel shall be six.

6.3 *Test Fixture:*

6.3.1 The test fixture shall be in accordance with Test Methods F1915 or as specified by the authority having jurisdiction provided it does not enhance or degrade the specimen.

6.4 The test fixture shall simulate installation in a permanent steel or concrete structure which neither enhances nor degrades the forced-entry protection of the system.

6.5 *Forced Entry Test Tools:*

6.5.1 The tools for forced-entry testing are listed in Annex A1.

6.6 *Test Shape:*

6.6.1 The test shape is defined in 3.1.11.10.

7. Test Specimens

7.1 Systems submitted for testing shall be full-size systems complete with all required anchor bolt system hardware and representative of production systems.

7.2 Systems that move or operate (for example, doors, hatches, operable windows) shall, at minimum, include all devices required for operation.

7.3 The test specimen shall be ready-to-install.

7.4 Test specimen size shall be selected by the end user.

8. Preparation of Apparatus

8.1 Forced-entry test specimens shall be mounted in accordance with all the requirements of this section.

8.1.1 The mounting of the test specimen must give no leverage advantages over the expected mounting conditions in the field.

8.1.2 The test specimen shall be mounted in accordance with the manufacturer's instructions with particular attention paid to the threat and protected side orientation during mounting.

8.1.3 If the test specimen cannot be mounted according to the installation instructions submitted by manufacturer, then the test shall not be conducted.

8.1.4 The test specimen shall be mounted in a test fixture, and the test fixture shall not influence the performance of the test specimen.

8.1.5 If the tested product type is typically installed in an opening larger than the tested product size (for example, in a "rough opening"), the test specimen shall be mounted in a rough opening of 5 ± 2 mm larger on all sides than the test specimen.

8.1.6 For specimens that require footers, the test specimens shall be erected (including those cast in place) on footings and either back-braced or capped with a simulated roof or ceiling panel to ensure that the bracing or capping reflect standard fielded conditions.

9. Calibration and Standardization

9.1 Tools shall be inspected for defects prior to testing and be in good working condition and not defective.

10. Conditioning

10.1 Samples shall be conditioned prior to testing to a time agreed upon by the end user to ensure all components have reached temperature equilibrium.

10.2 Testing shall be performed at an ambient temperature of 22 ± 7°C.

11. Test Director Role

11.1 The Test Director is responsible for safety and will ensure that all reasonable safety precautions are employed.

11.2 The Test Director's goal is to identify the most vulnerable areas of the test specimen and determine the tools and attack methods that have the greatest chance of resulting in system failure prior to the specified test duration. The Test Director shall direct assaults to exploit any dissimilar components or discontinuities of the test specimen. The Test Director shall be provided a full set of plans prior to the test.

11.2.1 Attack methodology is provided in Appendix X3.

11.3 The Test Director shall, at a minimum, ensure the following:

11.3.1 Test times are met per 14.1;

11.3.2 Shall impress test personnel with a sense of urgency;

11.3.3 Tools are used safely and appropriately, as per the guidance of Appendix X3;

11.3.4 That test personnel neither discuss the progress of the concentrated assault nor inspect the test specimen prior to the test or during any period of non-activity;

11.3.5 That test personnel do not step behind the test fixture or behind a plane parallel and contiguous to the face of the attack side of the test specimen at any time before or during the tests;

11.3.6 All test data is collected and recorded, and any modifications made or tests not performed are documented in the test report;

11.3.7 Tool and sequencing modifications necessary for nonstandard systems are consistent with the intent of the testing criteria.

12. Test Tools, Personnel, and Interruptions

12.1 *Test Tools:*

12.1.1 Only those resources (tools) specified in Annex A1 may be applied to the test specimen once forced-entry testing has commenced.

12.1.2 All tools in Annex A1 will be available for use by the forced-entry testing team during a test.

12.1.3 Each team member may select tools to use in order to maximize the chance that the test specimen will fail.

12.1.4 Test resources may not be applied during any interruption, inspection, or other period of non-activity.

12.1.5 Tools damaged as a result of the resilience of the test specimen may not be replaced during testing regardless of the determination of the Test Director.

12.2 *Test Personnel:*

12.2.1 At the manufacturer's request, only personnel who did not assist in the installation of the test specimen or in the construction of test specimens manufactured at the test facility may participate in the performance testing.

12.2.2 During the test, test personnel may alternate attacking the test specimen in order to minimize fatigue.

12.2.3 The Test Director shall assign a team of test personnel in good health and able to carry out the rigorous tests. The number of personnel shall be six.

12.3 *Interruptions:*

12.3.1 Once initiated, the test shall be conducted without interruption except for reasons of rest or safety as defined below.

12.3.2 *Rests*—Rests are allowed only when tests exceed 15 min. For every 15 min of continuous activity, 5 min respite is allowed. The test team will not use rest time for planning purposes, discussion of attack techniques or test progress with the Test Director, cleanup of the test area, or inspection of the test specimen.

12.3.3 *Safety*—The test may be interrupted for reasons of safety (imminent danger to or injury of test personnel). This time will not be used for clearing away debris, such as glass fragments produced during testing, from the test specimen. *Any modifications to the test specimen made for safety reasons must be agreed to by all parties* and must not in any way enhance or detract from the sample's forced-entry resistance.

13. Procedure for Panel Operability

13.1 Prior to forced-entry testing of the system, the panel shall have its operability measured and recorded. No assembly shall be modified or enhanced once operability has been recorded.

13.2 Additional attachments that increase the strength of the connection between the operable locking devices and the system are not permitted. Operation of the locking devices shall be done in a manner that will not cause collateral damage to the specimen.

13.3 *Panel Operability Test:*

13.3.1 Close and lock the panel of the test specimen. Submit each operable unit to five cycles of opening, closing, and locking prior to testing.

13.3.2 While attempting to open the assembly, lift, push, pull, or otherwise manipulate with a concentrated load applied separately to each member incorporating a locking device, at a point on the panel within 100 mm of the locking device, in a direction parallel to the plane that would tend to open the panel.

13.3.3 After both panel operation test sequences, the test specimen shall be considered operable per the manufacturer's written installation instructions.

14. Procedure for Forced-Entry Testing

14.1 Forced-entry testing, regardless of the type of assembly being tested, shall consist of concentrated assault tests of edges and other critical locations, for a product resistance time selected from the levels below:

14.1.1 Five (5) minutes;

14.1.2 Fifteen (15) minutes;

14.1.3 Thirty (30) minutes;

14.1.4 Sixty (60) minutes; or

14.1.5 User-specific time not shown in the levels above.

14.2 The concentrated assault will begin with one of the areas or dissimilar components predetermined by the Test Director to be most vulnerable to forced-entry. Guidance on test locations and test procedures is provided in Appendix X3.

14.3 Perform this concentrated assault testing for the selected resistance time on each dissimilar component.

14.4 Guidance regarding the sequencing of the testing is provided in Appendix X3.

14.5 Only the test personnel defined in 6.3 and the tools shown in Annex A1 are allowed for use during the forced-entry tests.

14.6 Periods of non-activity (photography, safety inspection, etc.) are not to be charged to the required test times.

14.7 No part of any tool may be located or positioned behind the fixture or the plane parallel and contiguous to the face of the attack side of the test specimen, nor can any tool that drops behind the fixture or plane be retrieved.

14.8 No repairs or replacement of damaged components are permissible during or between any forced-entry tests. However, after the completion of a test with respect to one dissimilar component, the Test Director may direct limited repairs to features that have been completely evaluated if he judges the repairs necessary to fairly evaluate the yet another dissimilar component. Any such repair must not enhance or detract from the forced-entry resistance of the untested dissimilar component. All of these repairs shall be documented.

15. Forced-Entry Test Times

15.1 Testing times shall be in accordance with Section 14.1.

15.2 Conduct forced-entry testing at each component until one of the following conditions is met:

15.2.1 The system fails due to any of the criteria in Section 16, or

15.2.2 The previously-selected forced-entry resistance protection level (time) is met without failure.

15.3 If the end user and manufacturer agree to perform additional testing after one of the above conditions is met, the test tools, test personnel, test time, and results shall be documented in accordance with the provisions in Section 18.

16. Forced-Entry Failure Criteria

16.1 The goal of the testing is to create an opening that allows passage of the Test Shape behind the test specimen. The testing is considered a failure if the following criteria is met:

16.1.1 The entire Test Shape is passed behind a plane parallel and contiguous to the face of the attack side of the test specimen by a single attack team member, using only their hands.

16.2 *Panel Operability Criteria:*

16.2.1 Applicable to operable units only. The panel must be capable of passing the test procedures in Section 13. Panels that do not meet the requirements of Section 13 are considered to have failed the test.

17. Interpretation of Results

17.1 After all of the test sequences have been completed, the system will be assigned a "Fail" rating or a "Pass" rating with an associated Rating Time.

17.2 System is assigned a Fail rating if it meets any of the criteria in Section 16.

17.3 Otherwise, the system is assigned a Pass rating with a system Rating Time that is equal to the lowest "pass" time of all of the individual test sequences.

17.3.1 The "pass" time of each individual test sequence, if not equal to one of the test levels in 15.1 is equal the next-lowest test level.

17.4 Test results shall only be applicable to the system size, construction, and mounting techniques as tested.

18. Report

18.1 *General Test Data Reporting Procedure:*

18.1.1 Once a system is tested according to this test method, a final report of all testing results shall be submitted to the end user regardless of testing outcome. All test reports as well as any information concerning the results of each test are considered proprietary and shall not be discussed or released without prior approval of the end user and the manufacturer.

18.2 *Test Report Requirements:*

18.2.1 The testing laboratory will provide the end user with a Testing Report that shall be an all-inclusive document with the data and results of all testing as well as all other documentation required by this section. This includes the Configuration Documentation, any applicable abnormalities, panel operability results, forced-entry data, testing photographs, the Certification of Testing, the Narrative Summary of Testing, and all video recording(s) of testing. Sample report forms are included in Appendix X1 and Appendix X2.

18.2.2 *Report Title:*

18.2.2.1 The title of the report shall contain:

18.2.2.2 Indicate the type of report, that is "Test Report" or "Report in Lieu of Testing;" and

18.2.2.3 The model number, category, and type, time, and level of forced-entry testing as defined by Forced-Entry Resistance Testing Levels.

18.2.3 *Configuration Documentation:*

18.2.3.1 The report shall contain complete configuration documentation suitable for binding in a 215 by 280 mm or A4 format including drawings that have been validated to match the test specimen and a list of materials not otherwise described by the drawings. Comments concerning inconsistencies between the assembly and its documentation shall be expressed in the Testing Report.

18.2.4 *Panel Operability Data:*

18.2.4.1 Include detailed results and discussion of the panel operability test (where applicable).

18.2.5 *Forced-Entry Test Data:*

18.2.5.1 Include detailed data records of forced-entry testing including tools, times, model number(s) of other mulled assemblies (if any), and the results of forced-entry testing.

18.2.5.2 Photographic Record of Testing submitted as A4 or 5 megapixel resolution (minimum) digital photographs (see Note 1) of the test specimen:

(1) Before testing,

(2) After each phase of forced-entry testing, and

(3) If applicable, the point at which entry is forced.

NOTE 1—Black-and-white or color photographs are acceptable.

18.2.5.3 Each photo should specify: (*1*) a description of the view, (*2*) the time, (*3*) the test, (*4*) a description of the procedure, and (*5*) the manufacturer.

18.2.6 *Narrative Summary of Testing:*

18.2.6.1 A narrative summary shall be provided which includes:

(1) The identity of the test facility,

(2) A list of test witnesses,

(3) A description of the sample,

(4) A description of the testing,

(5) A description of the results, and

(6) A detailed explanation of any conditions (for example, test temperature, test personnel) that do not meet the requirements of this test method.

18.2.7 *Video Recording of Testing:*

18.2.7.1 *All forced-entry testing shall be recorded in its entirety.* Video recording(s) shall be provided to the end user in the form of physical or electronic media. The recording(s) shall include appropriate audio narrative description and comments. Acceptable file formats for these videos are: Audio Video Interleave (.avi file extension), Windows Media Format (.wmv file extension) and Moving Pictures Expert Group (.mpg or .mpeg file extensions). Include the date, location, and description of testing as the title of the video files.

19. Precision and Bias

19.1 Forced-entry system testing shall be thorough, and each dissimilar component of a system should be tested separately. The precise scientific identification and reproduction of a forced entry threat in the field is not possible. However, forced entry testing provides a valuable baseline for evaluating systems and this method offers a way to standardize resistance testing for forced-entry-resistant systems. No statement is made about either the precision or bias of this test method for measuring actual resistance to forced entry.

20. Keywords

20.1 doors; forced-entry (FE); façade; glass; glazing; impact; louvers; penetration resistance; security; systems; walls; windows

ANNEX

(Mandatory Information)

A1. TOOL RESOURCE TABLE

A1.1 See Table A1.1.

TABLE A1.1 Tool Resource Table

Resource Name and Nominal Description Note—Sharp-edged tools shall not be re-sharpened once testing has begun.	Quantity
Bolt Cutters—1200 mm (48 in.)	1
Broom, Push—Wooden	1
Pliers, Tongue and Groove—Channel lock style, straight jaw, 250 mm (10 in.)	1
Chisel, Cold—25 mm (1 in.) wide blade	2
Chisel, Cold—20 mm (¾ in.) wide blade	2
Chisel, Masonry—55 mm (2¼ in.) wide blade	2
Bar, Pinch Point—1500 mm (60 in.)	2
Bar, Ripping or Crowbar—1200 mm (48 in.)	2
Bar, Ripping or Crowbar—600 mm (24 in.)	2
End Nippers—350 mm (14 in.)	1
Hammer, Club or Drilling—1.36 kg (3 lb)	2
Hammer, Claw—450 g (16 oz)	2
Hammer, Sledge—5.4 kg (12 lb) head, 760 mm (30 in.) long	2
Hammer, Sledge—4.5 kg (10 lb) head, 760 mm (30 in.) long	2
Hatchet—460 mm (18 in.), 0.68 kg (1.5 lb)	1
Punch, Center—10 mm (⅜ in.) diameter	1
Punch, Center—6.4 mm (¼ in.) diameter	1
Ram—54.4 kg (120 lb), 2 man, Impact area = 100 by 100 ± 6 mm (4 by 4 ± 0.25 in.)	1
Saw, Hack—300 mm (12 in.) hacksaw, all-purpose blade	2
Screwdriver, Flat—250 mm (10 in.) shank, 10 mm (⅜ in.) wide flat blade	2
Screwdriver, Flat—6 mm (¼ in.) flat blade	2
Screwdriver, Phillips—250 mm (10 in.) shank, #2 drive	2
Screwdriver, Phillips—100 mm (4 in.) shank, #1 drive	2
Pliers, Locking, Vise Grip—300 mm (12 in.), large jaw	1
Wedge, Wood Splitting—235 mm (9¼ in.) long, 63 mm (2½ in.) wide blade, square head, 2.3 kg (5 lb)	3
Wrench, Adjustable—380 mm (15 in.)	1
Wrench, Adjustable—250 mm (10 in.)	2

APPENDIXES

(Nonmandatory Information)

X1. SUPPORT DOCUMENTATION (FORMS)—FOR MANUFACTURER

X1.1 Pre-Test Check-Off List

X1.1.1 See Table X1.1.

TABLE X1.1 Pre-Test Check-Off List

Test Specimen Description	
Product Name _____ Manufacturer _____ Product Type (be specific) _____ Date Sample Received ___ / ___ / _____	Model Number Requested _____ Rating Sought _____ minutes of Forced Entry (FE)
Manufacturer's Internal Model # _____ Version (original or modification) _____ Products this is based on (if applicable) _____	

Documentation Checklist	
Documents (write "yes" if submitted and give date):	
Letter of Intent to Request Certification	(y / n) ___ / ___ / _____
Forced Entry Testing Level Spec	(y / n) ___ / ___ / _____
Disclosure Documentation (engineering drawings)	(y / n) ___ / ___ / _____

Exceptions (if applicable)

The above documents have been reviewed and compared to the test specimen and comply with it with the following exceptions (Please list here)

X2. SUPPORT DOCUMENTATION (FORMS)—FOR TEST LABORATORY

X2.1 Test Facility Data

X2.1.1 See Table X2.1 and Table X2.2.

X2.2 Test Facility's Report of Testing

X2.2.1 See Table X2.3.

TABLE X2.1 Test and Facility (please fill this out):

Test Report #: _____
Testing Date: ___ / ___ / _____
Testing Facility: _____
Test Location: _____

TABLE X2.2 Test Personnel (please fill this out):

Name of Test Director: _____

Name of Test Team Member	Age	Weight (lb)

TABLE X2.3 Manufacturer Name, FE Rating, and Product Name
Forced-Entry Report of Testing

Insert photo 1 Insert caption / description 1		Insert photo 2 or a technical drawing Insert caption / description 2
Product Information		
Product Name _____ Manufacturer _____ Product Type (be specific) _____		Model Number Requested _____
Manufacturer's Internal Model # _____ Version (original or modification) _____ Products this is based on (if applicable) _____	Max approved size is _____ in. and _____ lb Material is _____ Mounting is _____ Stacked System (y / n) Door pull is _____ lb (12 lb max)	Forced Entry Rating Achieved _____ min
Mulled System (y / n) Approved for mulling with _____		Optional Notes (that is, custom options or exceptions):
Document Submissions Test Report # _____ Test Date ___ / ___ / _____ Testing Facility (report preparer) _____ Report Prepared Date ___ / ___ / _____ Approval Date ___ / ___ / _____	Documents (write "yes" if submitted and give date): Letter of intent to Request (y / n) ___ / ___ / _____ Forced Entry Testing Level Spec (y / n) ___ / ___ / _____ Disclosure Documentation (engineering drawings) (y / n) ___ / ___ / _____ Installation Instructions (y / n) ___ / ___ / _____	
POC(s) Name, Title, Email, and Tel. # _____ (__) ___ – _____ Laboratory Accreditation and Identification:		

X3. TEST EXECUTION METHOD

X3.1 Foreword

X3.1.1 This method provides guidance on tool utilization during forced-entry testing. Forced-entry system testing should be thorough, and each dissimilar component of a system should be tested separately. The precise scientific identification and reproduction of a forced entry threat in the field is not possible. However, forced entry testing provides a valuable baseline for evaluating systems. This method offers a way to standardize resistance testing among forced entry systems. However, no statement is made about either the precision or bias of this method for measuring actual resistance to forced entry.

X3.1.2 At all times during testing, the Test Director has discretion to select the most efficient tools to try to fail the test specimen. Historically, the most efficient method to fail a sample involves driving wedges into the sample's frame using a sledgehammer and exploiting the separation with a pry bar. The Test Director always has the option to exploit an opening or weakness in the sample, or to direct efforts toward a portion of the sample which, in his or her judgment, is most likely to force entry.

X3.2 Attack Types

X3.2.1 A test specimen shall be tested at all dissimilar components via a separate concentrated assault. Every dissimilar portion (section) is tested for at least as long as the intended rating of the system as a whole. To achieve the intended system rating, every dissimilar component must deny forced entry for that time period.

X3.2.2 *Door Attack Type:*

X3.2.2.1 Perform a minimum of three separate concentrated assaults on a door. each assault should be the same length of time as the desired forced entry resistance level. Perform at least one assault on the door panel (Fig. X3.1 No. 1), one on the latch side (Fig. X3.1 No. 2), and one on the hinge side (Fig. X3.1 No. 3). For example, a 15-min single door with no additional dissimilar locations will need to pass 15 min of panel testing, 15 min of latch testing, and 15 min of hinge testing, for a total of 45 min of testing.

X3.2.2.2 A double-door must be tested in its double-door configuration. Additional concentrated attacks should be conducted at the mid-span of the center mullion (Fig. X3.2 No. 4) and at the point where the mullion intersects the threshold (Fig. X3.2 No. 5). If doors contain glazing, they must additionally be attacked per the window attack type that follows. Symmetrical construction features does not need to be tested more than once.

X3.2.3 *Window Attack Type:*

X3.2.3.1 Perform a minimum of three separate concentrated forced-entry assaults on a window. Perform at least one assault at the center of the glazing (Fig. X3.3 No. 1), one assault at the corner of the glazing (Fig. X3.3 No. 2), and one assault at the glass frame pocket (Fig. X3.3 No. 3).

X3.2.4 *Louver Attack Type:*

X3.2.4.1 Perform at least two separate concentrated forced entry assaults on a louver. Perform at least one assault on the center of the louver (Fig. X3.4 No. 1) and one assault on the louver at the point where the fins intersect the frame (Fig. X3.4 No. 2).

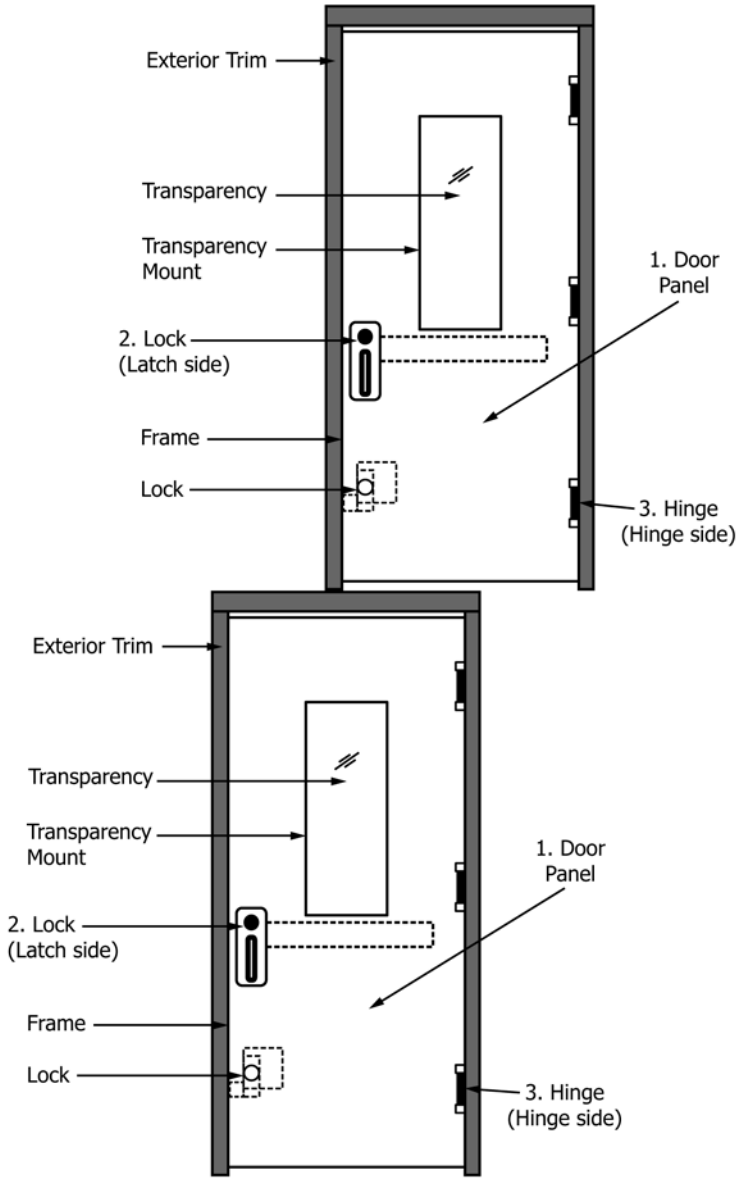

FIG. X3.1 Descriptors for Single Door Attack Sequence

X3.2.5 *Panel Attack Type:*

X3.2.5.1 Perform a minimum of three separate concentrated forced-entry assaults on a panel. Perform at least one assault at the corner of the panel (Fig. X3.5 No. 2) and one assault at the panel frame pocket (Fig. X3.5 No. 3).

X3.2.6 *Hatch Attack Type:*

X3.2.6.1 Perform a minimum of three separate concentrated forced-entry assaults on a hatch. Perform at least one assault at the lid of the hatch (Fig. X3.6 No. 1), one assault at the latch side (Fig. X3.6 No. 2), and one assault at the hinge side (Fig. X3.6 No. 3).

X3.3 Tool Usage

X3.3.1 *Exploitation:*

X3.3.1.1 During any period of forced entry testing, the Test Director may direct exploitation of a weakness in the sample, such as a seam, crack, or opening. Alternatively, the Test Director may direct attack efforts towards an area which, in his or her judgment, is most likely to result in a forced entry. An area of the sample that will accept the edge of a pry, sharp, cutting, or hand tool may be attacked with such at the Test Director's discretion in order to gain forced entry, or the Test Director may revert to direct blows (such as with a sledgehammer) if, in his or her judgment, it is more likely to result in forced entry. Additionally, if during a forced entry assault an attack space becomes available that does not infringe upon the main assault, then the Test Director may direct additional test personnel to carry out a simultaneous attack within the concentrated attack location.

X3.3.1.2 Any combination of the tools in Annex A1 may be utilized.

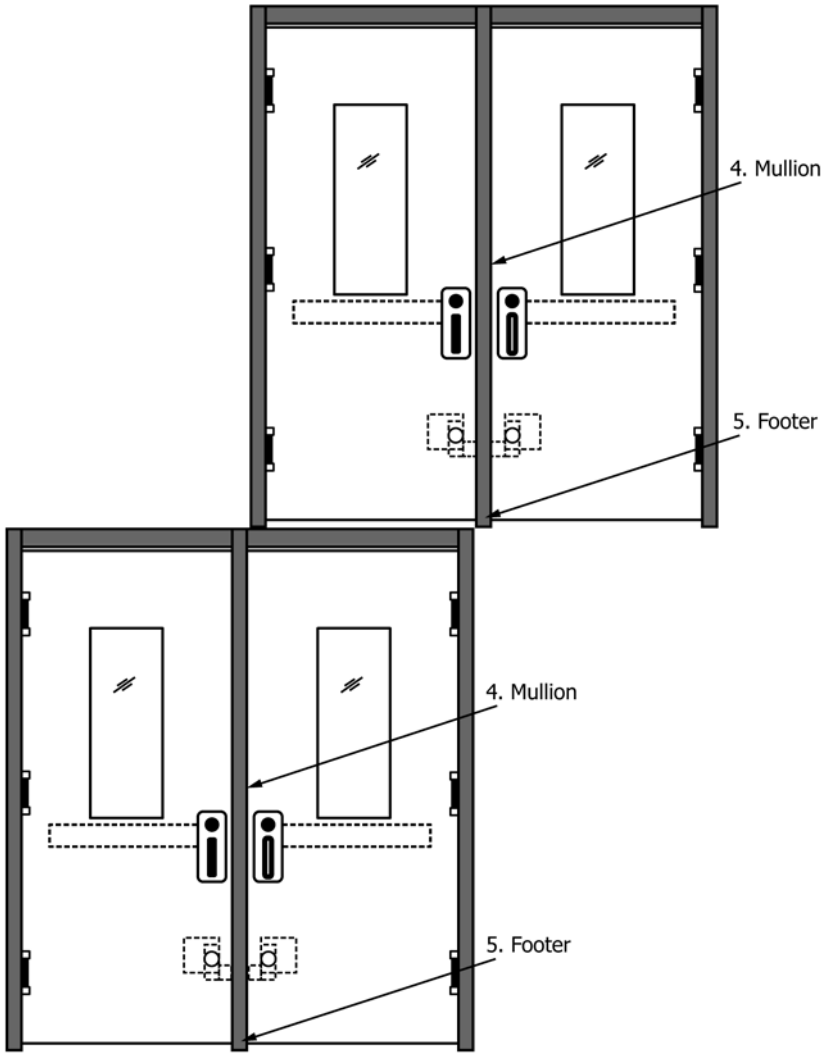

FIG. X3.2 Descriptors for Double Door Attack Sequence

X3.3.1.3 The test methods below are in alphabetical order and may be performed in any sequence.

X3.3.1.4 The following are examples of how the tools may be used.

X3.3.2 *Blunt Tool Testing:*

X3.3.2.1 *Sledgehammer*—Two personnel, facing each other and equipped with sledgehammers, shall deliver impacts to the portion of the sample that, in the Test Director's judgment, is most likely to result in a forced entry.

X3.3.2.2 *Ram*—Two test personnel equipped with a ram shall deliver impacts to the assault side of the sample, unless the Test Director specifies a different location.

X3.3.3 *Cut Tool Testing:*

X3.3.3.1 *Saw Test*—At any time during testing when a hole of sufficient size to accept the saw is forced, the Test Director may direct test personnel to exploit this breach with the saw.

X3.3.3.2 *Bolt-Cutters/End-Nippers*—Up to two test personnel equipped with bolt-cutters or end-nippers may cut a portion of the sample if, in the Test Director's judgment, it is likely to result in a forced entry.

X3.3.4 *Hand Tool Testing:*

X3.3.4.1 Two of each of the following tools may be used in combination with any other tools used during forced entry testing: push brooms, channel locks, screwdrivers, vices, and wrenches.

X3.3.5 *Pry Tool Testing:*

X3.3.5.1 *Wedge/Sledgehammer/Pry Bar*—This requires four test personnel. One person secures the pry bar or wedge into the assault side of the sample by positioning it with the hammer or a sledge. A second person equipped with a sledgehammer impacts the other end of the pry bar or wedge. Two more personnel pull the pry bar or wedge to exploit the system and create a gap. This wedge/sledge/pry sequence is typically repeated at an immediately adjacent location.

X3.3.6 *Sharp Tool Testing:*

X3.3.6.1 *Chisel/Punch/Hammer*—One person uses a hammer to impact a chisel or a punch and drive it into the sample.

X3.3.6.2 *Hatchet*—One person, equipped with a hatchet, strikes the sample at location that was pre-weakened during previous testing and which will accept the edge of the hatchet.

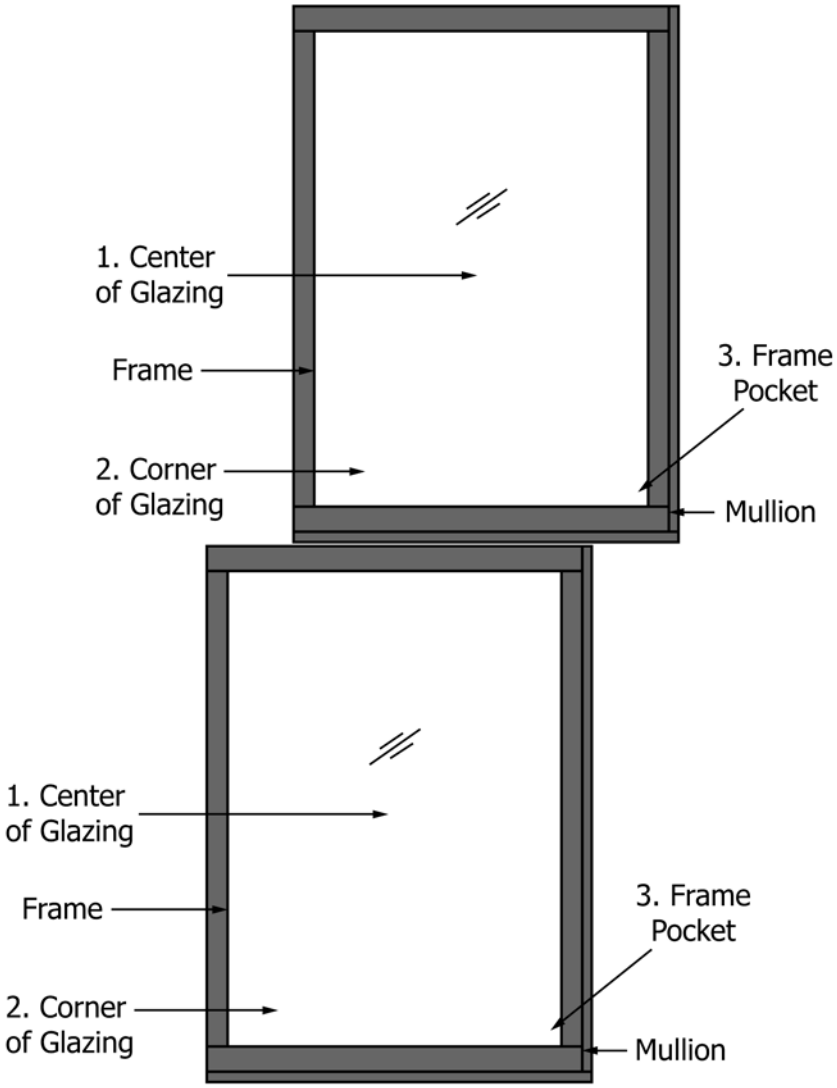

FIG. X3.3 Descriptors for Window Attack Sequence

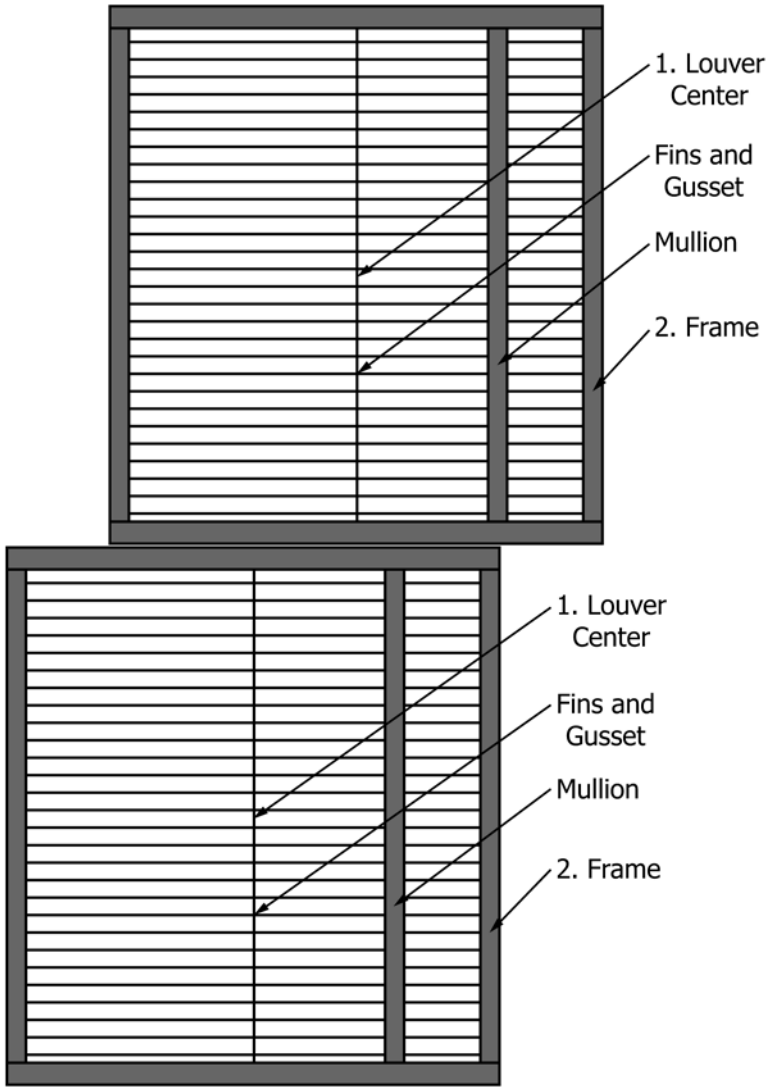

FIG. X3.4 Descriptors for Louver Attack Sequence

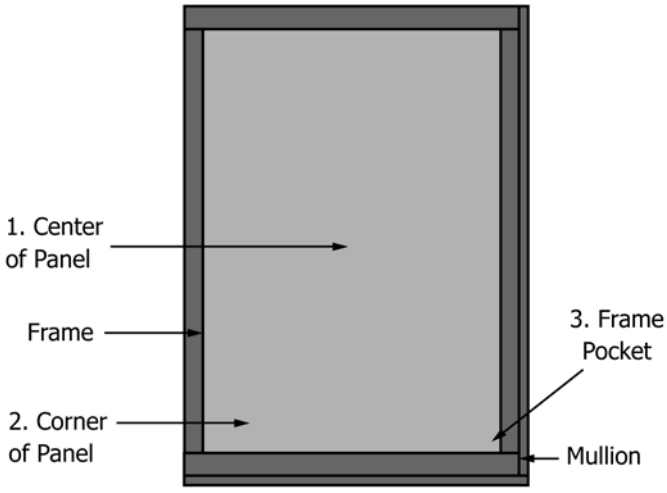

FIG. X3.5 Descriptors for Panel Attack Sequence

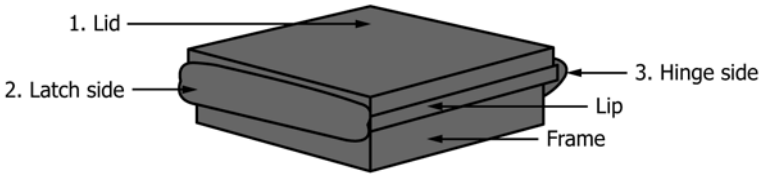

FIG. X3.6 Descriptors for Hatch Attack Sequence

X4. HISTORY OF STANDARD

X4.1 The U.S. Department of State (DOS) began its program to test and certify forced entry and ballistic resistant products in the 1980s as an outgrowth of a number of attacks on U.S. diplomatic facilities. International agreements governing diplomatic relations established that the physical integrity and security of any diplomatic facility is the responsibility of the host government. The DOS defensive philosophy is predicted on the ability and willingness of the host country to protect the embassy and its employees.

X4.2 The foundation of the DOS operational security philosophy against forced entry relies on a system of layered defense. Successive layers of defense will sufficiently delay potential attackers to either allow for the host country to respond or for the destruction of classified materials. These precepts led to the attack scenario embodied in the U.S. Department of State Certification Standard for Forced Entry and Ballistic Resistance of Structural Systems, SD-STD – 01.01, Revision G (Amended), which notionally describes the threat as a spontaneous mob utilizing readily available hand tools.

X4.3 However, there are differences between the US DoS test standard and this document, such as the tool set.

X5. EQUIVALENCY OF STANDARD

X5.1 Systems that have certifications, either through testing or technical reviews, for Forced Entry (FE) or Forced Entry and Ballistic Resistance (FE/BR), or both, by the U.S. Department of State are to be considered equivalent and acceptable to products tested under this test method.

X5.2 *Example*—A door successfully tested or certified, or both, to 15 min of forced-entry attack using ST-STD-01.01 Rev G (Amended) is to be considered as having equivalent protection to a door successfully tested to 15 min of forced-entry attack using this test method. Specifications referencing products tested to this test method should also reference products tested or certified to the equivalent protection level as per SD-STD-01.01 Rev G (Amended).