

REPRESENTATIVE TEST METHODS - FORCED ENTRY RESISTANCE



	Dept. of State (DoS) SD-STD.01.01 Rev G (Amended) Certification Standard for Forced Entry and Ballistic Resistance of Structural Systems	ASTM F3038 Standard Test Method for Timed Evaluation of Forced-Entry-Resistant Systems	ASTM F1233 Standard Test Method for <u>Security Glazing</u> Materials and Systems	ASTM F588 Standard Test Methods for Measuring the Forced Entry Resistance of <u>Window Assemblies</u> , Excluding Glazing Impact	ASTM F476 Standard Test Method for Security of <u>Swinging Door Assemblies</u>
Intended Market	Government, Commercial	Government, Commercial	Government, Commercial	Commercial, Residential	Commercial, Residential
Scope (Product)	Full systems. Windows, Doors, Louvers, Hatches, etc.	Full systems. Windows, Doors, Louvers, Hatches, etc.	Glazing only	Window assembly - no glazing impact. Operable, fixed or louvered.	Door assemblies - including glazing impact- and door hardware
Threat Type	Forced Entry, Ballistic	Forced Entry	Forced Entry, Ballistic	Forced Entry	Forced Entry
Threat Basis	Simulated spontaneous, violent mob attack	Simulated spontaneous, violent mob attack	Attack or passage of contraband.	Unskilled or opportunistic burglars. "Low crime areas"	"Restrain or delay and frustrate the commission of "break-in" crimes"
Test Tools	Ballistic: ballistic test apparatus to rifle level. Forced Entry: Extended hand tools, used by a team of 2 (5 minute test) or 6 (15 and 60 minute tests) personnel. Tools are types readily available to consumer and simulate those available by mob. Axe, sledge, crowbar, hatchet, hand tools	Similar tools to SD-STD-01.01 Rev. G. Extended hand tools, used by a team of 6 personnel. Tools are types readily available to consumer and simulate those available by mob. Axe, sledge, crowbar, hatchet, hand tools	Ballistic: ballistic test apparatus to rifle level. Forced Entry: Extended hand tools, torch, chemicals.	Disassembly: putty knife, screwdriver, pliers. Load: devices to apply load. Manipulation: putty knife, length of 16 ga wire.	Load: Ram (pendulum), vertical impactor (pendulum), torque applicator, compression & tension applying devices, jamb spreader
Test Style	Ballistic: Specific locations (glazing) & all vulnerable areas (systems). Forced Entry: Free-form attack; tools and test methods changes as vulnerabilities are exposed.	Free-form attack; tools and test methods changes as vulnerabilities are exposed.	Ballistic: Specific locations Forced Entry: Sequenced attack. Repeating sequences of tools, torch, chemicals.	Defined locations and test styles.	Defined locations and test styles. Lots of different tests; results dependent on hardware/mounting or on door construction
Test Levels	Ballistic: DoS Rifle Level threat (5.56 M193, 5.56 M855, 7.62 M80) and shotgun for some components. Forced Entry: 5, 15 or 60 minutes. Separate test at every vulnerable location.	5, 15, 30 or 60 minutes. Separate test at every vulnerable location.	Ballistic: 10 levels varying from Handgun to AP Rifle & 2 shotgun levels. Forced Entry: Select FE level ("Passage of Contraband" or "Body Passage"). Complete testing till failure and record sequence / class achieved. Based on minutes of testing.	Grade 10, 20, 30, 40 (increasing test times and loads). Disassembly test, then load tests, then lock hardware/ sash/louver manipulation tests.	Grade 10, 20, 30, 40 (increasing blows, loads). Forced Entry (Hardware): Static bolt load, jamb stiffness, knob impact, cylinder core tension, cylinder body tension, knob torque, cylinder torque, cylinder impact. (Door Construction): Door impact including glazing, hinge impact, hinge pin tensile, bolt impact
Test Location	All vulnerable, distinct locations as determined by test director.	All vulnerable, distinct locations as determined by test director.	Ballistic: Specific pattern. Forced Entry: Anywhere on glass	Disassembly done at all screws, glazing beads, mechanical fasteners from exterior. Then loads in specific locations. Manipulation at specific hardware locations.	Loads, impacts at specific locations.
Failure Criteria	Ballistic: Spall/fragments that perforate aluminum foil panel. Forced Entry: Creation of opening to allow passage of rectangular test shape.	Forced Entry: Creation of opening to allow passage of test shape.	Ballistic: Spall/fragments that perforate aluminum foil panel. Forced Entry: "Passage of Contraband" = creation of small hole to allow passage of 1/8" dia. shape. "Body Passage" = creation of larger hole to allow passage of rectangular test shape.	Window unlocked or entry gained by manipulation. Acceptance as per local authorities. Grades 10-40 are suggested.	Depends on test; either failure of hardware or hardware mounts and/or ability to open door
Notes	Ballistic testing done first, then forced entry testing on same sample. FE testing is aggressive and ensures every unique feature of test unit can withstand total duration of test. Certification portion of ST-STD-01.01 only for State Dept. projects.	FE testing is aggressive and ensures every unique feature of test unit can withstand total duration of test. Very similar to ST-STD-01.01 Rev. G (Amended) with addition of 30 minute test and use of 6 man team for all tests.	FE and Ballistic testing may be combined. Ballistic testing done first. Ballistic test verbiage suggests it can be applied to more than just glazing.	Glass is to be undisturbed. Glass breakage may be specified as additional requirement (for noise, not creation of opening).	Glazing panels subject to impact load. Individual hardware can be tested and rated to this spec.

REPRESENTATIVE TEST METHODS - FORCED ENTRY RESISTANCE



	ASTM F842 Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact	CAWM 301-90 Forced Entry Resistance Tests for Windows	CAWM-300-96 Forced Entry Resistance Tests for Sliding Glass Doors	ANSI/UL 608 Burglary Resistant Vault Doors and Modular Panels	Federal Specification AA-D-600D Door, Vault, Security
Intended Market	Commercial, Residential	Commercial, Residential	Commercial, Residential	Government, Commercial	Government
Scope (Product)	Sliding door assemblies, not including glazing impact.	Window assembly - no glazing impact. Operable or fixed.	Sliding door assemblies, not including glazing impact.	Vault doors (not surrounding construction) and panels	Vault doors, primarily used to safeguard sensitive government information.
Threat Type	Forced Entry	Forced Entry	Forced Entry	Forced Entry	Forced Entry, Covert Entry, Ballistic
Threat Basis	Unskilled or opportunistic "casual" burglars.	Unskilled or opportunistic "casual" burglars.	Unskilled or opportunistic "casual" burglars.	Sophisticated burglars	Sophisticated burglars
Test Tools	Disassembly: putty knife, screwdriver, pliers. Hardware and panel manipulation: putty knife, length of 16 ga wire. Load: devices to apply load.	Disassembly: putty knife, screwdriver. Load: devices to apply load. Manipulation: putty knife, length of 16 ga wire.	Disassembly: putty knife, screwdriver. Load: devices to apply load. Manipulation: putty knife, length of 16 ga wire.	Team of two personnel with virtually unlimited tools, with exception of burning bar or explosives. Includes common hand tools, picking tools, mechanical or portable electric tools, grinding points carbide drills, pressure applying devices or mechanisms, abrasive cutting wheels, power saws, coring tools, impact tools, fluxing rods, and oxy-fuel gas cutting torches.	Team of two. Surreptitious entry tools include any tool possible, with total weight <70 kg. Covert entry tools include any commercially available power tools plus propane/butane torches, with total weight <70 kg and carried in two cases/bags. Forced entry tools are any non-powered tools.
Test Style	Defined locations and test styles.	Defined locations and test styles.	Defined locations and test styles.	Free-form attack, in defined test areas, with operators selecting any or all of the attack methods.	Free-form test, with no limit to quantity and style of tests.
Test Levels	Grade 10, 20, 25, 30, 40 (increasing manipulation times and loads)	Disassembly: 5 minutes. Load: 1 minute. Manipulation: 5 minutes.	Disassembly: 5 minutes. Load: 1 minute. Manipulation: 5 minutes.	Class M (15 min), Class 1 (30 mins), Class 2 (1 hour) and Class 3 (2 hours)	Class 5-V - Vault door resistant to 20 man-hours surreptitious entry, 30 man-minutes covert entry and 10 man-minutes forced entry. Class 5-A - Armory door shall be resistant to 30 man-minutes covert entry and 10 man-minutes forced entry. Class 5-B - Ballistic door shall be resistant to 20 man-hours surreptitious entry, 30 man-minutes covert entry, 10 man-minutes forced entry, ballistic resistant (to Rifle level of SD-STD-01.01 Rev G Amended).
Test Location	Disassembly: any exterior fasteners. Manipulation: at locking devices and on panels. Loads at specific locations.	Disassembly done at all screws, glazing beads, mechanical fasteners from exterior. Then loads in specific locations. Manipulation at specific hardware locations.	Disassembly: any exterior fasteners. Manipulation: at locking devices and on panels. Loads at specific locations.	At minimum three tests / locations - attack lock mechanism, cutting an opening (through door, door frame, modular panel or seam joining panels), and cutting locking bolts.	Anywhere on door.
Failure Criteria	If locking devices do not remain engaged or if entry is gained during the test or upon removal of loads.	Window unlocked or entry gained by manipulation.	Window unlocked or entry gained by manipulation.	Bolts released during lock attack, 96 square inch opening created when cutting an opening, or door opened during bolt cutting.	Entry of personnel through the door (via door opening or hole).
Notes	Glass is to be undisturbed.	Similar to / superseded by ASTM F588. Only one test level (approx. F588 Gr. 20)	Similar to/superseded by ASTM F842		Specific size requirements, one for single and one for double leaf doors. Some versions require locks that meet other federal specifications.

REPRESENTATIVE TEST METHODS - FORCED ENTRY RESISTANCE



	ASTM F1915 Standard Test Methods for <u>Glazing</u> for Detention Facilities	ASTM F1592 Standard Test Methods for Detention <u>Hollow Metal Vision</u> Systems	ASTM F1450 Standard Test Methods for <u>Hollow Metal Swinging Door</u> Assemblies for Detention and Correctional Facilities
Intended Market	Detention	Detention	Detention
Scope (Product)	Glazing only	Doors, windows or panels with vision systems. Testing includes glazing, frame, anchoring, etc.	Door systems.
Threat Type	Forced Entry	Forced Entry, Ballistic	Forced Entry, Ballistic, Structural
Threat Basis	Simulated inmate "riot-like" attack using tools available to inmates.	Simulated inmate "riot-like" attack using tools available to inmates.	Simulated inmate "riot-like" attack using tools available to inmates.
Test Tools	Limited tools. Simulated impactors to represent tools typically available to inmates. Small & large blunt impactors, sharp impactors, torch.	Ballistic: ballistic test apparatus to handgun level. Forced Entry: Steel impact ram	Ballistic: ballistic test apparatus to handgun level. Forced Entry: Steel impact ram Load: Test fixture to apply static load. Rack: Test fixture to apply twisting force. Edge Crush: Test fixture to apply load to edge.
Test Style	Defined location and quantity of impacts	Ballistic: Follow UL 752 level 3 (.44 Mag handgun) Forced Entry: Sequence of locations. Number of blows dependent on security grade selected.	Ballistic: Follow UL 752 level 3 (.44 Mag handgun) Forced Entry: Sequence of locations. Number of blows dependent on security grade selected. Load, Rack, Edge Crush: Defined location and loads
Test Levels	Grade 1, 2, 3, 4 (total times 60, 40, 20, 10 min). All tools. Grade 1 requires highest number of impacts	Grade 1, 2, 3, 4. Grade 1 requires highest number of blows	Grade 1, 2, 3, 4. Grade 1 requires highest number of blows, higher loads for load, rack, edge crush tests
Test Location	Center of specimen	Specific locations on frame, glazing and frame-glazing interface	Specific locations on door
Failure Criteria	Creation of hole to allow passage of rectangular test shape	Ballistic: As per UL 752 level 3. Forced Entry: Creation of hole to allow passage of rectangular test shape	Ballistic: As per UL 752 level 3. Forced Entry: Creation of hole to allow passage of rectangular test shape Load, Rack, Edge Crush: Ability to meet load requirements and meet maximum deflection requirements at the load.
Notes	Additional and more severe glazing tests than required with F1592.	Minimal glazing attack. Can combine with F1915 for superior glazing performance	Minimal glazing attack. Can combine with F1915 for superior glazing performance Separate tests for hinges, locks.

Rev A 0415
ROSS ARCHITECTURAL SECURITY