



**BREAK and ENTRY PERFORMANCE TEST REPORT**

**Report No.:** D5857.01-201-42

**Rendered to:**

3M COMPANY  
St. Paul, Minnesota

**PRODUCT TYPE:** Safety and Security Window Film

**Test Date:** 02/26/14  
**And:** 03/06/14  
**Report Date:** 09/04/14

**1.0 Report Issued To:** 3M Company  
Renewable Energy Division  
St. Paul, Minnesota 55114

**2.0 Test Laboratory:** Architectural Testing, Inc.  
849 Western Avenue North  
St. Paul, Minnesota 55114  
651-636-3835

### 3.0 Project Summary:

#### 3.1 Product Type: Safety and Security Window Film

3.1.1 3M™ Scotchshield™ Safety and Security Film Ultra 600 (6 mil Microlayered)

3.1.2 3M™ Scotchshield™ Safety and Security Film Ultra 800 (8 mil Microlayered)

3.1.3 3M™ Safety and Security Film, Safety S80 (8 mil)

3.1.4 3M™ Safety and Security Film, Safety S70 Exterior (7 mil)

3.1.5 Competitive 8 mil safety and security film (undisclosed)

**3.2 Scope:** Testing involved methodical attacks by an adult male to an entry door system including sidelites. Objective of the testing was to simulate an attack by an intruder with a firearm as the primary device to gain access through a door entryway. Testing was performed per the direction of 3M personnel.

**3.3 Test Dates:** 02/26/2014 and 03/06/2014

**3.4 Test Record Retention End Date:** All test records for this report will be retained until March 6, 2018.

**3.5 Test Location:** Architectural Testing, Inc. test facility in St. Paul, Minnesota.

**3.6 Test Sample Source:** The test specimens were provided by the client.

#### 3.7 List of Official Observers:

<u>Name</u>	<u>Company</u>
Paul Neumann	3M Company
Eric J. Schoenthaler	Architectural Testing, Inc.

### 4.0 Test Specimen Description:

**4.1 Test Specimen Description:** The glazing that was tested was installed within a storefront entry system including two sidelites. The mockup consisted of a fully glazed outswing aluminum entry door with deadbolt and two fully glazed sidelites. The door size was 36" x 84" and the sidelites were 18" x 84". The glass remains consistent with 1/4" tempered glass with applied film as noted in the testing section.

## 5.0 Test #1: Baseball bat attack

**5.1 Product Type:** Safety and Security Window Film

**5.2 Series/Model:** 3M Ultra 800 (interior); 3M Safety S70 Exterior (exterior)

**5.3 Film Attachment:** 3M Impact Protection Profile flexible-mechanical attachment

**5.4 Area of Attack:** Sidelite

**5.5 Conditioning Temperature:** 21°C (70°F)

**5.6 Result:** A total of 30 seconds elapsed before the attacker was able to gain access through door entryway system

<b><u>Method of Attack</u></b>	<b><u>Number of Impacts/Shots</u></b>	<b><u>Time Elapsed (Seconds)</u></b>	<b><u>Note</u></b>
Baseball bat	37	0:00:30	
<b>Total:</b>	<b>37</b>	<b>0:00:30</b>	

**6.0 Test #2: Semi-automatic rifle attack**

**6.1 Product Type:** Safety and Security Window Film

**6.2 Series/Model:** 3M Ultra 800

**6.3 Film Attachment:** Flexible-mechanical attachment

**6.4 Area of Attack:** Door

**6.5 Conditioning Temperature:** 21°C (70°F)

**6.6 Result:** A total of 35 seconds elapsed before the attacker was able to gain access through door entryway system

<u>Method of Attack</u>	<u>Number of Impacts/Shots</u>	<u>Time Elapsed (Seconds)</u>	<u>Note</u>
Gunshots	4	0:00:05	1, 2
Upper Body Attack	9	0:00:06	3
Kicking	16	0:00:24	
Upper Body Attack	4	0:00:06	4
<b><u>Totals from above:</u></b>			
Gunshots	4	0:00:05	
Upper Body Attack	13	0:00:12	
Kicking	16	0:00:24	
<b>Total:</b>	<b>24</b>	<b>0:00:35</b>	
<u>Method of Attack</u>	<u>Number of Impacts/Shots</u>	<u>Time Elapsed (Seconds)</u>	<u>Note</u>
Gunshots	1	<b>0:00:03</b>	1

*Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.*

*Note 2: Attempted pushing glazing after first shot.*

*Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.*

*Note 4: Attachment system failed before film penetration. Not enough time allowed for attachment system adhesive bond to cure.*

## 7.0 Test #3: Semi-automatic rifle attack

**7.1 Product Type:** Safety and Security Window Film

**7.2 Series/Model:** 3M Safety S80

**7.3 Film Attachment:** 3M Impact Protection Profile flexible-mechanical attachment

**7.4 Area of Attack:** Sidelite

**7.5 Conditioning Temperature:** 21°C (70°F)

**7.6 Result:** A total of 27 seconds elapsed before the attacker was able to gain access through door entryway system

<u>Method of Attack</u>	<u>Number of Impacts/Shots</u>	<u>Time Elapsed (Seconds)</u>	<u>Note</u>
AR-15	4	0:00:06	1, 2
Upper Body Attack	16	0:00:10	3
Kicking	1	0:00:11	4
<b><u>Totals from above:</u></b>			
Gunshots	4	0:00:06	
Upper Body Attack	16	0:00:10	
Kicking	1	0:00:11	
<b>Total:</b>	<b>21</b>	<b>0:00:27</b>	

*Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.*

*Note 2: Attempted pushing glazing after first shot.*

*Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.*

*Note 4: Attachment system failed before film penetration. Failure of attachment system adhesion to film. Not enough time allowed for attachment system adhesive bond to cure.*

## 8.0 Test #4: Semi-automatic rifle attack

**8.1 Product Type:** Safety and Security Window Film

**8.2 Series/Model:** Undisclosed competitive 8 mil security film

**8.3 Film Attachment:** 3M Impact Protection Profile flexible-mechanical attachment

**8.4 Area of Attack:** Sidelite

**8.5 Conditioning Temperature:** 21°C (70°F)

**8.6 Result:** A total of 43 seconds elapsed before the attacker was able to gain access through door entryway system

<u>Method of Attack</u>	<u>Number of Impacts/Shots</u>	<u>Time Elapsed (Seconds)</u>	<u>Note</u>
AR-15	4	0:00:05	1, 2
Upper Body Attack	12	0:00:08	3
Kicking	23	0:00:24	
Upper Body Attack	2	0:00:06	
<b><u>Totals from above:</u></b>			
Gunshots	4	0:00:05	
Upper Body Attacks	14	0:00:14	
Kicking	23	0:00:24	
<b>Total:</b>	<b>38</b>	<b>0:00:43</b>	

*Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.*

*Note 2: Attempted pushing glazing after first shot.*

*Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.*

## 9.0 Test #5: Semi-automatic rifle attack

**9.1 Product Type:** Safety and Security Film

**9.2 Series/Model:** 3M Ultra 600 (interior); 3M Safety S70 Exterior (exterior)

**9.3 Film Attachment:** Flexible-mechanical attachment

**9.4 Area of Attack:** Door

**9.5 Conditioning Temperature:** 21°C (70°F)

**9.6 Result:** A total of 1 minute, 21 seconds elapsed before the attacker was able to gain access through door entryway system

<b><u>Method of Attack</u></b>	<b><u>Number of Impacts/Shots</u></b>	<b><u>Time Elapsed (Seconds)</u></b>	<b><u>Note</u></b>
AR-15	4	0:00:07	1, 2
Upper Body Attack	19	0:00:13	3
Kicking / Lower Body Attack	19	0:00:27	
Upper Body Attack	3	0:00:05	
Kicking / Lower Body Attack	9	0:00:16	
Simulated rifle attack with 9-lb pipe	10	0:00:13	4
<b><u>Totals from above:</u></b>			
Gunshots	4	0:00:07	
Upper Body Attack	22	0:00:18	
Kicking / Lower Body Attack	28	0:00:43	
Simulated rifle attack	10	0:00:13	
<b>Total:</b>	<b>64</b>	<b>0:01:21</b>	

*Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.*

*Note 2: Attempted pushing glazing after first shot.*

*Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.*

*Note 4: Simulated rifle attack consisted of direct impact with a nine pound galvanized steel pipe in the shape of a rifle.*

## 10.0 Test #6: Semi-automatic rifle attack

**10.1 Product Type:** Safety and Security Film

**10.2 Series/Model:** 3M Ultra 800

**10.3 Film Attachment:** 3M Impact Protection Profile flexible-mechanical attachment

**10.4 Area of Attack:** Sidelite

**10.5 Conditioning Temperature:** 21°C (70°F)

**10.6 Result:** A total of 60 seconds elapsed before the attacker was able to gain access through door entryway system.

<b><u>Method of Attack</u></b>	<b><u>Number of Impacts/Shots</u></b>	<b><u>Time Elapsed (Seconds)</u></b>	<b><u>Note</u></b>
AR-15	2	0:00:22	1, 2
Upper Body Attack	15	0:00:10	3
Kicking	11	0:00:14	
Upper Body Attack	1	0:00:02	
Kicking	2	0:00:03	
Upper Body Attack	7	0:00:09	4
<b><u>Totals from above:</u></b>			
Gunshots	4	0:00:09	
Upper Body Attack	12	0:00:11	
Kicking	14	0:00:24	
<b>Total:</b>	<b>38</b>	<b>0:01:00</b>	

*Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.*

*Note 2: Includes 3 upper body attacks between shots, and addressing a jammed ammunition cartridge (16 sec).*

*Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.*

*Note 4: Attachment system failed (adhesion to frame) before film was able to be penetrated.*

## 11.0 Test #7: Semi-automatic rifle attack

**11.1 Product Type:** Safety and Security Film

**11.2 Series/Model:** 3M Ultra 800 (interior); 3M Safety S70 Exterior (exterior)

**11.3 Film Attachment:** 3M Impact Protection Profile flexible-mechanical attachment

**11.4 Area of Attack:** Sidelite

**11.5 Conditioning Temperature:** 21°C (70°F)

**11.6 Result:** A total of 38 seconds elapsed before the attacker was able to gain access through door entryway system

<u>Method of Attack</u>	<u>Number of Impacts/Shots</u>	<u>Time Elapsed (Seconds)</u>	<u>Note</u>
AR-15	4	0:00:07	1, 2
Upper body impacts	13	0:00:10	3
Kicking	8	0:00:10	
Upper body impacts	2	0:00:05	
Kicking	1	0:00:01	
Upper body impacts	2	0:00:05	4
<b><u>Totals from above:</u></b>			
Gunshots	4	0:00:07	
Upper Body Attack	17	0:00:20	
Kicking	9	0:00:11	
<b>Total:</b>	<b>30</b>	<b>0:00:38</b>	

*Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.*

*Note 2: Includes 3 upper body attacks between shots.*

*Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.*

*Note 4: Attachment system failed (adhesion to film) before film was able to be penetrated.*

## 12.0 Test #8: Semi-automatic rifle attack

**12.1 Product Type:** Safety and Security Film

**12.2 Series/Model:** 3M Ultra 800

**12.3 Film Attachment:** 3M Impact Protection Profile

**12.4 Area of Attack:** Sidelite

**12.5 Conditioning Temperature:** 21°C (70°F)

**12.6 Result:** A total of 50 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts/Shots	Time Elapsed (Seconds)	Note
AR-15	4	0:00:07	1, 2
Upper body impacts	14	0:00:11	3
Kicking	11	0:00:14	
Upper body impacts	11	0:00:09	
Kicking	5	0:00:09	4
<b>Totals from above:</b>			
Gunshots	4	0:00:07	
Upper Body Attack	25	0:00:20	
Kicking	16	0:00:23	
<b>Total:</b>	<b>45</b>	<b>0:00:50</b>	

*Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.*

*Note 2: Includes 3 upper body attacks between shots.*

*Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.*

*Note 4: Film was torn and ripped open to allow complete body passage.*

### 13.0 Test #9: Semi-automatic rifle attack

**13.1 Product Type:** Safety and Security Film

**13.2 Series/Model:** 3M Ultra 800

**13.3 Film Attachment:** 3M Impact Protection Profile

**13.4 Area of Attack:** Sidelite

**13.5 Conditioning Temperature:** 21°C (70°F)

**13.6 Result:** A total of 48 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts/Shots	Time Elapsed (Seconds)	Note
AR-15	4	0:00:07	1, 2
Upper body impacts	13	0:00:08	3
Kicking	12	0:00:14	
Upper body impacts	7	0:00:07	
Kicking	1	0:00:03	
Upper body impacts	6	0:00:09	
<b><u>Totals from above:</u></b>			
Gunshots	4	0:00:07	
Upper Body Attack	26	0:00:24	
Kicking	13	0:00:17	
<b>Total:</b>	<b>43</b>	<b>0:00:48</b>	

*Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.*

*Note 2: Includes 3 upper body attacks between shots.*

*Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.*

## 14.0 Test #10: Semi-automatic rifle attack

**14.1 Product Type:** Safety and Security Film

**14.2 Series/Model:** 3M Ultra 800 (interior); 3M Safety S70 Exterior (exterior)

**14.3 Film Attachment:** Flexible-mechanical attachment

**14.4 Area of Attack:** Door

**14.5 Conditioning Temperature:** 21°C (70°F)

**14.6 Result:** A total of 91 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts/Shots	Time Elapsed (Seconds)	Note
AR-15	4	0:00:05	1, 2
Upper body impacts	12	0:00:08	3
Kicking	14	0:00:17	
Upper body impacts	1	0:00:02	
Kicking	7	0:00:09	
Upper body impacts	5	0:00:05	
Kicking	13	0:00:24	
Simulated rifle attack	14	0:00:21	4
<b><u>Totals from above:</u></b>			
Gunshots	4	0:00:05	
Upper Body Attack	18	0:00:15	
Kicking	34	0:00:50	
Simulated rifle attack	14	0:00:21	
<b>Total:</b>	<b>43</b>	<b>0:01:31</b>	

*Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.*

*Note 2: Includes 4 upper body attacks between shots.*

*Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.*

*Note 4: Simulated rifle attack consisted of direct impact with a nine pound galvanized steel pipe in the shape of a rifle.*

## 15.0 Test #11: Semi-automatic rifle attack

**15.1 Product Type:** Safety and Security Film

**15.2 Series/Model:** Undisclosed competitive 8 mil security film

**15.3 Film Attachment:** Flexible-mechanical attachment

**15.4 Area of Attack:** Sidelite

**15.5 Conditioning Temperature:** 21°C (70°F)

**15.6 Result:** A total of 29 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts/Shots	Time Elapsed (Seconds)	Note
AR-15	4	0:00:06	1, 2
Upper body impacts	11	0:00:10	3
Kicking	6	0:00:06	
Upper body impacts	4	0:00:07	
<b>Totals from above:</b>			
Gunshots	4	0:00:06	
Upper Body Attack	15	0:00:17	
Kicking	6	0:00:06	
<b>Total:</b>	<b>25</b>	<b>0:00:29</b>	

*Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.*

*Note 2: Includes 3 upper body attacks between shots.*

*Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.*

*Note 4: Simulated rifle attack consisted of direct impact with a nine pound galvanized steel pipe in the shape of a rifle.*

**16.0 Test #12: Baseball bat attack****16.1 Product Type:** Safety and Security Film**16.2 Series/Model:** 3M Ultra 600**16.3 Film Attachment:** 3M Impact Protection Profile**16.4 Area of Attack:** Sidelite**16.5 Conditioning Temperature:** 21°C (70°F)**16.6 Result:** A total of 12 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts	Time Elapsed (Seconds)	Note
Baseball bat	15	0:00:12	

## 17.0 Test #13: Semi-automatic rifle attack

17.1 **Product Type:** Safety and Security Film

17.2 **Series/Model:** 3M Ultra 600

17.3 **Film Attachment:** Flexible-mechanical attachment

17.4 **Area of Attack:** Door

17.5 **Conditioning Temperature:** 21°C (70°F)

17.6 **Result:** A total of 18 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts/Shots	Time Elapsed (Seconds)	Note
AR-15	4	0:00:06	1, 2
Upper body impacts	12	0:00:10	3
Kicking	3	0:00:06	4
<b>Totals from above:</b>			
Gunshots	4	0:00:06	
Upper Body Attack	12	0:00:10	
Kicking	3	0:00:06	
<b>Total:</b>	<b>19</b>	<b>0:00:18</b>	

*Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.*

*Note 2: Includes 3 upper body attacks between shots.*

*Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.*

*Note 4: Attachment system failure (adhesion to film). Not enough time allowed for attachment to cure prior to testing.*

**18.0 Test #14: Baseball bat attack, NO FILM**

**18.1 Product Type:** none

**18.2 Series/Model:** none (no film)

**18.3 Film Attachment:** none

**18.4 Area of Attack:** Sidelite

**18.5 Conditioning Temperature:** 21°C (70°F)

**18.6 Result:** A total of 5 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts	Time Elapsed (Seconds)	Note
Baseball bat	4	0:00:05	1
<b>Total:</b>	<b>4</b>	<b>0:00:05</b>	

*Note 1: First 2 strikes with bat did not break glass*

**19.0 Test #15: Baseball bat attack****19.1 Product Type:** Safety and Security Window Film**19.2 Series/Model:** 3M Safety S80**19.3 Film Attachment:** 3M Impact Protection Profile**19.4 Area of Attack:** Sidelite**19.5 Conditioning Temperature:** 21°C (70°F)**19.6 Result:** A total of 16 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts	Time Elapsed (Seconds)	Note
Baseball bat	17	0:00:16	1
<b>Total:</b>	<b>17</b>	<b>0:00:16</b>	

*Note 1: First 5 strikes with bat did not break glass*

Architectural Testing will service this report for the entire test record retention period. Test records that are retained such as datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period.

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For ARCHITECTURAL TESTING, Inc.

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Eric J. Schoenthaler  
Project Manager

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EJS/jb

Attachments (pages): This report is complete only when all attachments listed are included.  
Appendix-A: Photographs (18 pages)



Test Report No.: D5857.01-201-42  
Report Date: 09/04/14

## **Appendix A**

### **Photographs**

**Photo No. 1**



**Test #1: Bat attack, 3M Scotchshield Ultra 800 (interior) with Safety S70 Exterior (exterior).**

**Photo No. 2**



**Test #1: Bat attack, after several impacts.**

**Photo No. 3**



**Test #1: Bat attack, accessed gained after 37 impacts and 30 seconds.**

**Photo No. 4**



**Test #2: 3M Scotchshield 800, Semi-automatic rifle attack, after 4 shots.**

**Photo No. 5**



**Test #2: Semi-automatic rifle attack, accessed gained after 33 impacts and 35 seconds.**

**Photo No. 6**



**Test #3: 3M Safety S80, Semi-automatic rifle attack, after 4 shots.**

**Photo No. 7**



**Test #3: Semi-automatic rifle attack, accessed gained after 27 impacts and 27 seconds.**

**Photo No. 8**



**Test #4: Competitive 8 mil security film, Semi-automatic rifle attack, after 4 shots.**

Photo No. 9



Test #4: Semi-automatic rifle attack, accessed gained after 41 impacts and 43 seconds.

Photo No. 10



Test #5: Semi-automatic rifle attack, 3M Scotchshield Ultra 600 (interior) with Safety S70 Exterior (exterior).

**Photo No. 11**



**Test #5: Semi-automatic rifle attack, after 45 seconds.**

**Photo No. 12**



**Test #5: Semi-automatic rifle attack, access gained 64 impacts and after 81 seconds.**

**Photo No. 13**



**Test #6: 3M Scotchshield Ultra 800, Semi-automatic rifle attack, after 2 shots and jammed gun.**

**Photo No. 14**



**Test #6: Semi-automatic rifle attack, access gained after 38 impacts and 60 seconds.**

**Photo No. 15**



**Test #7: Semi-automatic rifle attack, 3M Scotchshield Ultra 600 (interior) with Safety S70 Exterior (exterior).**

**Photo No. 16**



**Test #7: Semi-automatic rifle attack, access gained after 30 impacts and 38 seconds.**

**Photo No. 17**



**Test #8: 3M Scotchshield Ultra 800, Semi-automatic rifle attack, after 4 shots.**

**Photo No. 18**



**Test #8: Semi-automatic rifle attack, access gained after 45 impacts and 50 seconds.**

**Photo No. 19**



**Test #9: 3M Scotchshield Ultra 800, Semi-automatic rifle attack, after 4 shots.**

**Photo No. 20**



**Test #9: Semi-automatic rifle attack, after 38 seconds.**

**Photo No. 21**



**Test #9: Semi-automatic rifle attack, access gained after 43 impact and 48 seconds.**

**Photo No. 22**



**Test #10: Semi-automatic rifle attack, 3M Scotchshield Ultra 800 (interior) with Safety S70 Exterior (exterior).**

**Photo No. 23**



**Test #10: Semi-automatic rifle attack, after 70 seconds.**

**Photo No. 24**



**Test #10: Semi-automatic rifle attack, access gained after 70 impacts and 91 seconds.**

**Photo No. 25**



**Test #11: Competitive 8 mil security film, Semi-automatic rifle attack, after 4 shots.**

**Photo No. 26**



**Test #11: Semi-automatic rifle attack, access gained after 25 impacts and 29 seconds.**

**Photo No. 27**



**Test #12: Bat attack, 3M Scotchshield Ultra 600.**

**Photo No. 28**



**Test #12: Bat attack, 3M Scotchshield Ultra 600, after several impacts.**

**Photo No. 29**



**Test #12: Bat attack, 3M Scotchshield Ultra 600, access gained after 15 impacts and 12 seconds.**

**Photo No. 30**



**Test #13: 3M Scotchshield Ultra 600, Semi-automatic rifle attack, after 4 shots.**

**Photo No. 31**



**Test #13: Semi-automatic rifle attack, access gained after 19 impacts and 18 seconds (film attachment failed – adhesion to film).**

**Photo No. 32**



**Test #14: Bat attack, NO FILM.**

**Photo No. 33**



**Test #14: Bat attack, NO FILM, access gained in 6 seconds.**

**Photo No. 34**



**Test #15: Bat attack, 3M Safety S80.**

**Photo No. 35**



**Test #15: Bat attack, 3M Safety S80, access gained after 17 impacts and 16 seconds.**