

# Tested Doors and Components

## Wind Science and Engineering Research Center

The Wind Science and Engineering Research Center performs debris impact tests on storm shelters, shelter components, and building materials to evaluate their ability to resist various types of projectiles propelled at different speeds in accordance to accepted and proposed test protocols as follows:

### Protocols for Debris Impact Testing

<b>Protocol 1</b>	Hurricane envelope impact by a 9 lb. wood 2"x4" propelled at 34 mph. In accordance to the Florida Building Code, the International Code Council and the Texas Dept. of Insurance Windstorm Resistant Construction Guide.
<b>Protocol 2</b>	Hurricane shelter low speed impact by a 15 lb. wood 2"x4" propelled at 66 mph. Proposed standard, yet to be adopted.
<b>Protocol 3</b>	Hurricane shelter high speed impact by a 15 lb. wood 2"x4" propelled at 80 mph. Proposed standard, yet to be adopted.
<b>Protocol 4</b>	Tornado impact by a 15 lb. wood 2"x4" propelled at 100 mph. In accordance to The Federal Emergency Management Agency FEMA 320/361 Standard and the National Storm Shelter (NSSA) Standard.
<b>Protocol 5</b>	<i>Reserved</i> : Department of Energy (DOE) impact standards.

Listing does not imply product endorsement or warranty by TTU, FEMA or NSSA. **Unless otherwise noted, the following listings have been tested to Protocol 4, the Tornado Standard Protocol.**

## Shelter Door Manufacturers Completing Debris Impact Tests

### Certification Testing for Product Labeling

#### **Windsor Republic Door, Inc.**

Jason Lisewski  
155 Republic Drive  
McKenzie, TN 38201  
Ph. (731) 352-3383

Listing:  
Intertek ETL-SEMKO – Warnock  
Hersey

Test Date: 05/05  
FEMA 320 Door Assembly 3070 with Securitech Series 4300 lock; 1½ pair 4 ½ “x4 ½ “ Hagar heavy duty ball bearing hinges with ¼” x 20 US screws; mounted in 14-gage HM KD frame.

REM 361 Door Pair Assembly 3070 mounted in 14-gage HM KD frame with removable mullion; approved hardware – Securitech Series 8000 & 5000; 1 ½ apir, 4 ½” x 4 ½” Hagar heavy duty ball bearing hinges with ¼” x 20 US screws on each door.

### Research & Development Testing

#### **Ambico**

Jim Stockwell  
1120 Cummings Ave.  
Ottawa, Ontario K1JU7R8  
Ph. (888) 423-2224

Tested: 11/03  
FEMA 361 door assembly.

#### **American Home Construction**

Bill Stegman  
12640 East N.W. Hwy #409  
Dallas, TX 75228  
Ph. (800) 771 - 8428

Test date: 02/00  
Tested door for underground shelter

#### **Amweld Building Products**

Scot Kelly  
1500 Amweld Drive  
Garrettsville, Ohio 44231  
Ph. (800) 248 - 6116 extn. 3040

Test date: 08/00  
Tested FEMA 320 door assembly

#### **Askew Fabricators**

James Vaughan, Vice-President  
201 Arlington Drive  
Yukon, OK 73099  
Ph. (405) 354 - 7591

Test date: 08/99  
Tested door for underground shelter

#### **Ceco Doors**

Jim Darby  
9159 Telecom Drive  
Milam, TN 38358-3425  
Ph. (731) 686 – 4274

Tested FEMA 361 door assembly  
with removable mullion  
Tested FEMA 320 door assembly  
Tested FEMA 361 door assembly

**Curries Doors**

Tom Rattay  
525 9<sup>th</sup> S.E.  
Mason City, IA 50401-5809  
Ph. (641) 423-1334

Tested FEMA 361 door  
Tested FEMA 320 door assembly

**Dean Steel**

Claus Heide  
111 Merchant  
San Antonio, TX 78204  
Ph. (210) 226-8271

Tested: 6/13/2006  
FEMA 361 Door Assembly

**Domes International**

Jimmy Skinner  
P.O. Box 137  
Golden, Mississippi 38847  
Ph. (662) 454 - 7399

Test date: 05/01  
Tested door for underground shelter

**Fiberglass Creations, "The Refuge"**

Kelly Hall  
P.O. Box 2047  
Henderson, TX 75653  
Ph. (903) 657 - 6616

Test date: 09/00  
Tested door for underground shelter

**Mr. Alan Hausner**

P.O. Box 1307  
Durant, OK 74702  
Ph. (888) 924 - 6988

Test date: 01/02  
Flat top and sloped front below ground shelter doors

**Mesa Fiber Glass**

Eugene Ardelt, Eric Crowe  
6471 E. 49th Drive  
Commerce City, CO 80022

Test date: 04/01  
Tested door of underground shelter

**LA Fire Door/Mesker**

Dave Fielder  
2993 Allesandro  
Los Angeles, CA 90039  
Ph. (323) 662-5335

Test Date: 02/14/05  
FEMA 320 door assembly

**Mesker Door Corporation**

Mr. Steve Frates  
3440 Stanwood Blvd.  
Huntsville, AL 35811  
Ph. (256) 851 - 6670

Test date: 11/19/02  
FEMA 361 Door Assembly

**Oldcastle Precast, Inc.**

4727 North Royal Atlanta Drive, Suite A  
Tucker, GA 30084  
Ph. (770) 270 - 5000

Test date 2/26/02  
Steel 2'x3' above ground shelter door with and without view window

**S.I. Precast**

Gregg Barrett  
10965 Granada Lane  
Overland Park, KS 66211  
Ph. (913) 345-2121

Tested: 9/04  
Steel door for partially below ground shelter.

**ProSteel Door Corporation**

Mr. Rick Stepp

Test date 1/7/03  
FEMA 320 door assembly

1400 South State St.  
Provo, UT 84603  
Ph. (801) 373 – 2385

**Safe-T-Shelter**  
**Applied Solar Technology**  
3275 Highway 55 West  
Danville, AL 35619  
Ph. (800) 462 - 3648

Test date: 06/01  
Tested underground shelter door

**Sargent Manufacturing**  
Leo Milshteyn  
100 Sargent Dr.  
New Haven, CT 06511  
Ph. (203) 498-5641

Test Date: 8/01  
FEMA 361 door assembly.

**SteelCraft Door Assemblies**  
Al Urbaniak  
9017 Blue Ash Road  
Cincinnati, OH 45242  
Ph. (513) 745 – 6682

Test date: 03/02  
Tested door assembly for FEMA 320  
Tested door assembly for FEMA 361.

**Storm Defender, LLC**  
Greg Best  
21421 E. Truman Road  
Independence, MO 64056  
Ph. (866) 251-5874

Tested: 1/04  
Precast concrete steps/above ground shelter with steel door.

**Storm Track Shelters**  
5000 Viewpoint  
Amarillo, TX 79124  
Ph. (806) 373-2640

Tested: 04/10/2006  
24" x 46" Steel below ground shelter door  
33" x 60" Steel below ground shelter door

**Safe-T-Vault Company**  
Hamilton Bartlett  
850 Maury Rd., Unit 29  
Orlando, FL 32804-3651  
Ph. (407) 927-1352

Tested: 8/05  
Nominal 2'-8" X 6'-8" plate steel door for above ground precast concrete shelter

## **Shelter Components Manufacturers Completing Debris Impact Tests**

**American Matrix Technologies**  
James Wiese  
Technology Innovation Center  
Iowa City, Iowa 52242  
Ph. (319) 338 - 4242

Tested: 09/99  
Tested ceramic/fiberglass panel

**APA (Formerly American Plywood Association)**  
Zeno Martin  
P.O. Box 11700  
7011 South 19th Street., West  
Tacoma, WA 98411  
Ph. (253) 620 - 7469

Tested: 11/00  
Tested laminated wood panel

**Arch Technology Corporation**

Tested: 04/00

Victor T. Lee, Andrea Lee-Harshbarger  
11N024 Rippburger Road  
Plato Center, IL 60170  
Ph. (847) 464 - 5656

**Domes International**

Randy Avery  
No. 5 Murphy Street  
Tishomingo, MS 38873  
Ph. (662) 438-7186

**Dukane Precast, Inc.**

Mr. Brian Bock  
1805 High Grove Lane  
Naperville, IL 60540  
Ph. (630) 355 - 8118

**Empresas Hopsa**

August Simons  
Via Transistmica & Calle 64 Oeste  
Urbanizacion Industrial Los Angles  
Panama City, Republica Panama  
Ph. 011-507-279-9854

**GCC of America**

Hank Hearon  
4253 Montgomery Blvd., NE  
Suite 210  
Albuquerque, New Mexico 87109  
Ph. (800) 234-22266

**GE Advanced Materials**

Polymershapes Insulgard  
1291 Rickett Road  
Brighton, Michigan 48116

**IMSI**

Dr. Rudolph Strobel  
7305 Thompson Road  
Cincinnati, OH 45247  
Ph. (513) 385 - 3317

**Protective Structures, Ltd.**

George F. Smith  
9780 Lake Forest Way  
Roswell, GA 30076  
Ph. (770) 518-9414

**RediWall**

Tex-Rite Building Systems  
Erwin Ritter  
6103 Shadowcrest  
Houston, TX 77074  
Ph. (713) 776-3457

**Royal Building Systems, Limited**

John Todd  
1 Royal Gate Boulevard  
Woodbridge, Ontario, Canada L4L8Z7  
Ph. (972) 342 - 9080

**StormBlocker Composite Panels**

Mark Latham  
1155 West Wall St., #102  
Grapevine, TX 76051

Tested shelter wall component

Tested: 5/24/2006

Hurricane Protocol 1 and Protocol 2  
Fiberglas Dome Panels

Tested 5-9-02

Tested precast concrete shelter wall panel

Tested: 01/21/05

EMMEDUE M-2 insulated concrete panels  
Hurricane Protocol 1 – PSME80 Panels  
Hurricane Protocol 2 – PSM80HP Panels  
Tornado Protocol 4 – PDME100 Panels

Test Date: 03/08/05

Hurricane Protocols 1 & 2 – 6” insulated concrete panels  
Hurricane Protocol 3 & Tornado Protocol 4 – 8” insulated concrete panels

Test Date: 10/19/04

TorGard Bal 40 glazing in HP/600T frame.  
Maximum size 8’-4” x 7’-4”

Tested 9-16-02

Tested shelter wall panel. 3 wall, 5 cell, insulated 8” concrete block with #4 rebar at 2’ on center

Tested: 11/03

Tornado Protocol - PL-6 & PL-8 composite panel wall system.

Tested: 10/03

Hurricane Test Protocol (9 lb 2x4 @ 34 mph) – Precast concrete and steel stud wall panels.

Tested: 06/01

Tested wall panel system

Tested: 7/01

Tornado Protocol - Composite wall panel installed on exterior of FEMA 320 wall system.

Tested: 9/04

Ph. (817) 329-6191

Hurricane Shelter Protocol (9 lb 2x4 @ 65 mph) –  
Composite wall panel install on interior of FEMA 320  
wall system.

Test Date: 02/15/05

Hurricane Protocol 3 – Stormblocker material  
mounted on interior side of shelter wall.

**Tri-Point Building Products, Inc.**

2025 Webster

Waco, TX 76706

Ph. (214) 315-9381

Tested: 6/04

Tornado Protocol – Aerated concrete shelter panels.

**Waco Composites, Inc**

Wayne Hampton, Arlen Work

481-A Texas Central Parkway

Waco, TX 76702

Ph. (254) 776 - 8880

Tested: 06/99

Tested composite wall panel

**Word & Boggus Contracting, Inc.**

Larry Boggus

P.O. Box 278

Guntersville, AL 35976

Ph. (800) 239 - 5201

Tested: 10/99

Tested precast concrete wall panels