Wind Science & Engineering Research Center
Debris Impact Test Facility
P.O. Box 41023
Lubbock, Texas 79409-1023

Report No. _2009-0727A
Specimen No. ____1____
Test Date: _July 27, 2009_

1.0 MANUFACTURER'S IDENTIFICATION

1.1 NAME OF APPLICANT: **Safe Sheds, Inc.**
7029 Parrill Road
Alma, IL 62807

1.2 CONTACT PERSON: **Mr. Don Guymon**

1.3 TEST LAB CERTIFICATION: Federal Emergency Management Agency (FEMA) and National Storm Shelter Association (NSSA) approved; ISO 17025 certified tests available.

2.0 TEST UNIT IDENTIFICATION

2.0 PRODUCT TYPE: Above Ground Shelter Steel Door
2.1 MODEL NUMBER: Unavailable
2.2 CONFIGURATION: Out swinging door
2.3 SAMPLE SIZE: Door and frame assembly
2.4 DOOR ASSEMBLY: Custom 82 1/4-in. x 36 1/4-in. x ¼-in. plate steel
2.5 DRAWINGS: Unavailable, see photos of door construction on page 3-7

3.0 TEST UNIT DESCRIPTION

3.0 TEST FRAME UNIT CONSTRUCTION: N/A
3.1 ASSEMBLY CONSTRUCTION:

3.1.1 The door was ¼-in. plate with custom rolled edges and stiffened with 3/16" x 2-in. x 2-in. custom rolled angle stiffeners (2 at each lock point and one midway between each lock point).

3.1.2 The door was hinged on three heavy duty 5-knuckle hinges welded to the door and frame.

3.1.2 The locking system consisted of a custom fabricated single throw, 3-point cam that engaged 3/8-in. x 2-in. steel latches pivoted on ¾-in. bolts. Lock engagement was 5/8-in. The locking system included a Safety Bar to restrain operation of the cam lever when impacted.

4.0 TEST RESULTS

4.1 SCOPE: Conduct Missile Impact Test on Door Assembly, see page 3 for impact locations.

4.2 SUMMARY OF RESULTS:

Test Method	Test Conditions	Test Conclusion
Missile Impact Test FEMA 320 & ICC-500 – Tornado Protocol 4, See Appendix A	15-lb. 2 x 4	Door Assembly passed Missile Impact Test

4.3 OUTDOOR WEATHER CONDITIONS:

Temperature	85 degrees
Wind	7 mph
Relative Humidity	55 %

4.4 MISSILE IMPACT TEST RESULTS: (Impact locations shown page 8)
Missile Type: 2 x 4
Missile Weight: 15 lb.
Missile Impact Speed: 100 mph

Impact Tests

Impact No.	Velocity (mph)	Location	Results
1	102	Below upper right lock point	7/8-in. deformation and an affected area of 12-in. x 16-in.; the locks remained engaged; see Impact 1 photo, page 10
2	104	Near center lock point over center pair of stiffeners	3/8-in. indentation over a 12-in. x 12-in affected area; one stitch weld was cracked by the impact; the impacted stiffeners were bowed by the impact; and the door remained locked; see Impact 2 photos, pages 11 & 12
3	105	Near the upper hinge	1-in. indentation over a 12-in. x 12-in. area; door remain locked; see Impact 3 photos, pages 13 - 14