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

Report No. _2011-1103A
Specimen No. ____1____
Test Date: Nov. 11, 2011

1.0 MANUFACTURER'S IDENTIFICATION

1.1 NAME OF APPLICANT: **Storm Safe Shelters**
7800 S. Western
Oklahoma City, OK 73139

1.2 CONTACT PERSON: **Mr. Jeff Thompson**

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: In-ground Garage Shelter Steel Doors
2.1 MODEL NUMBER: N/A
2.2 CONFIGURATION: In-ground garage shelter
2.3 SAMPLE SIZE: see Drawings, Appendix B
2.4 DOOR ASSEMBLY: Custom sliding door
2.5 DRAWINGS: See Appendix B, see construction photographs pages 3-8.

3.0 TEST UNIT DESCRIPTION

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

3.1.1 Nominal 39-in. wide x 87-in . long x 53-in. deep, 12-gauge steel in-ground garage shelter with a slide-under operable door, with solid steel wheels and multiple lock points. Refer to Appendix B for shelter drawings.

4.0 TEST RESULTS

4.1 SCOPE: Conduct Missile Impact Test on Door Assembly, see page 4 for impact locations.

4.2 SUMMARY OF RESULTS:

Test Method	Test Conditions	Test Conclusion
Missile Impact Test (NSSA Standard for the Design Construction, and Performance of Storm Shelters; FEMA 320/361 & ICC-500 – Tornado Protocol 4, See Appendix A	15-lb. 2 x 4	Shelter assembly passed the Missile Impact Test

4.3 OUTDOOR WEATHER CONDITIONS:

Temperature	55 degrees
Wind	7 mph
Relative Humidity	94 %

4.4 MISSILE IMPACT TEST RESULTS: (Impact locations shown page 4)
Missile Type: 2 x 4
Missile Weight: 15 lb.
Missile Impact Speed: 67 mph (for the missile to be dropped by a 250 mph tornado)

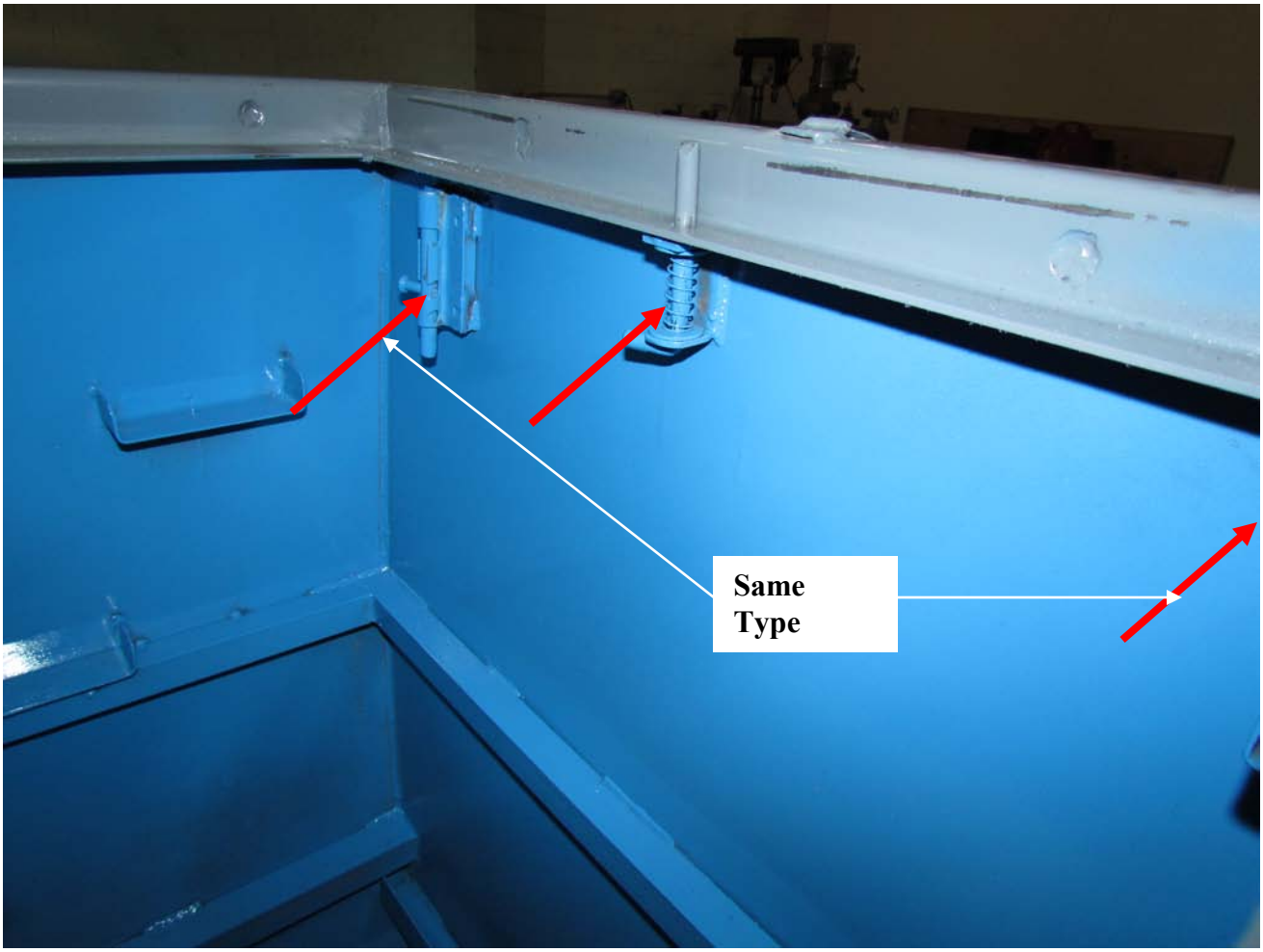
Impact Tests - Series 1

Impact No.	Velocity (mph)	Location	Results
1	67	Impact over upper lock	1 indentation at point of impact; door remained locked; see Impact 1 photos, pages 11-13.
2	67	Impact below center lock	1-in. indentation at point of impact; door remained locked; see Impact 2 photos, pages 14 & 15
3	67	Near top door track	1 3/4-in. indentation at point of impact; no remarkable interior damage; door remained locked; see Impact 3 photos, pages 16-18.

Storm Safe Shelter Body

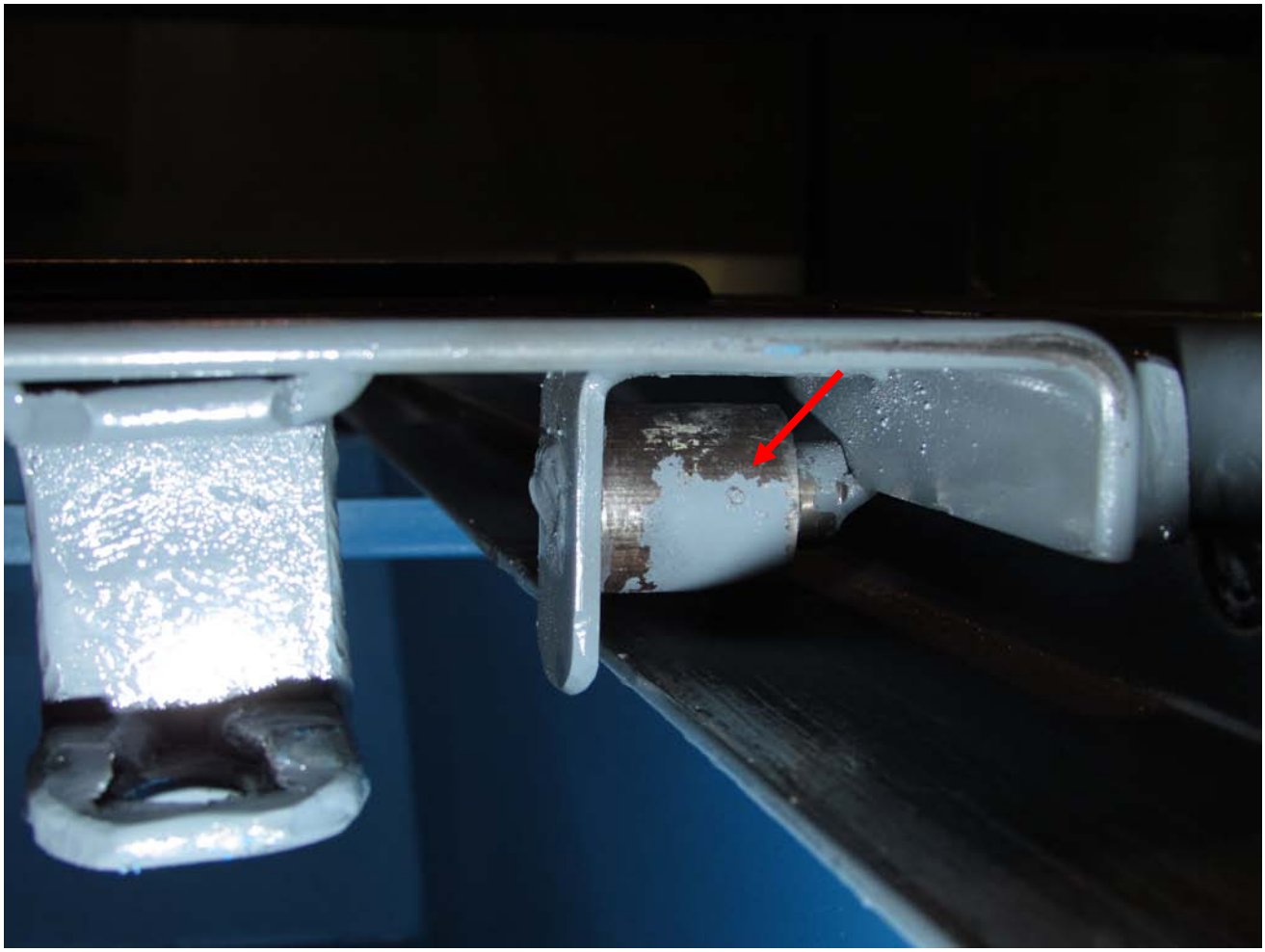
Top

Locking Mechanism

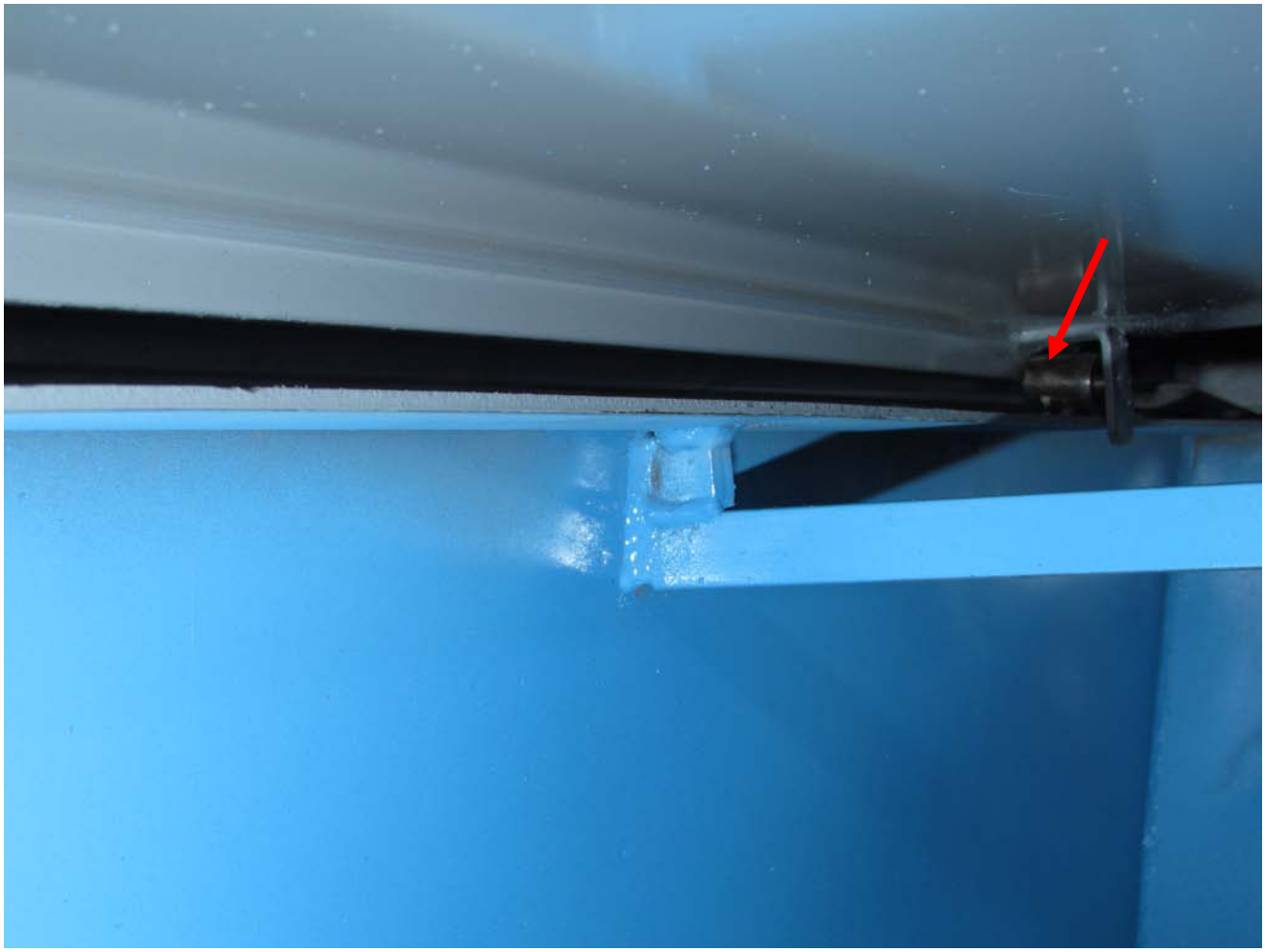


Internal Construction

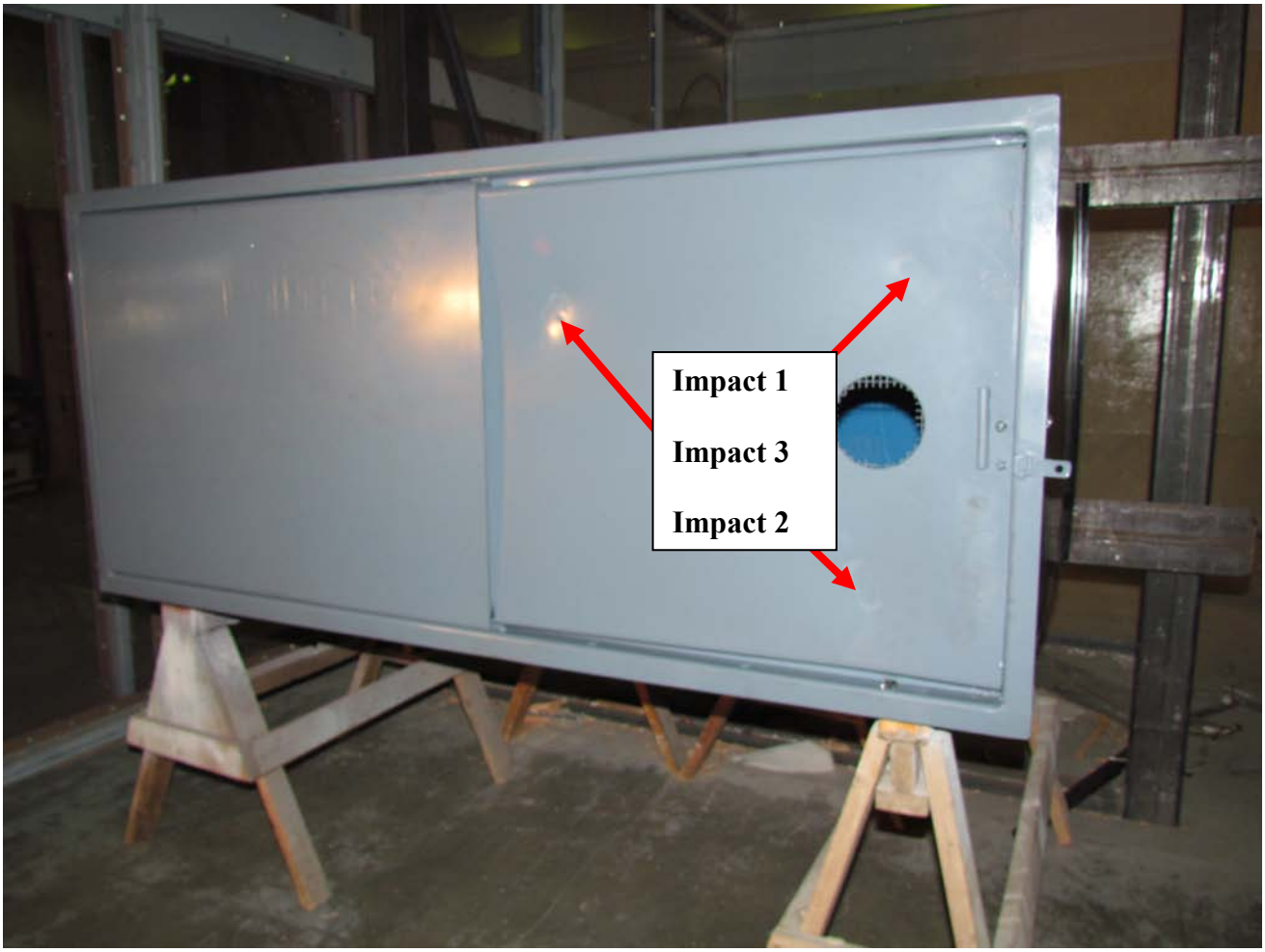
Solid Steel Rollers



Rear Rollers



Impact Locations

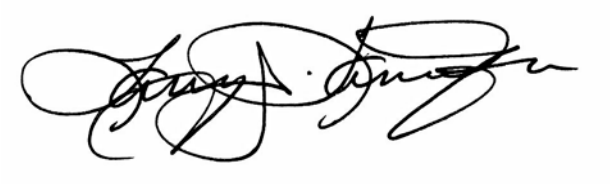


5.0 CONCLUSIONS

Within the bounds of reasonable engineering and technical certainty, and subject to change if additional information becomes available, the following is my professional opinion:

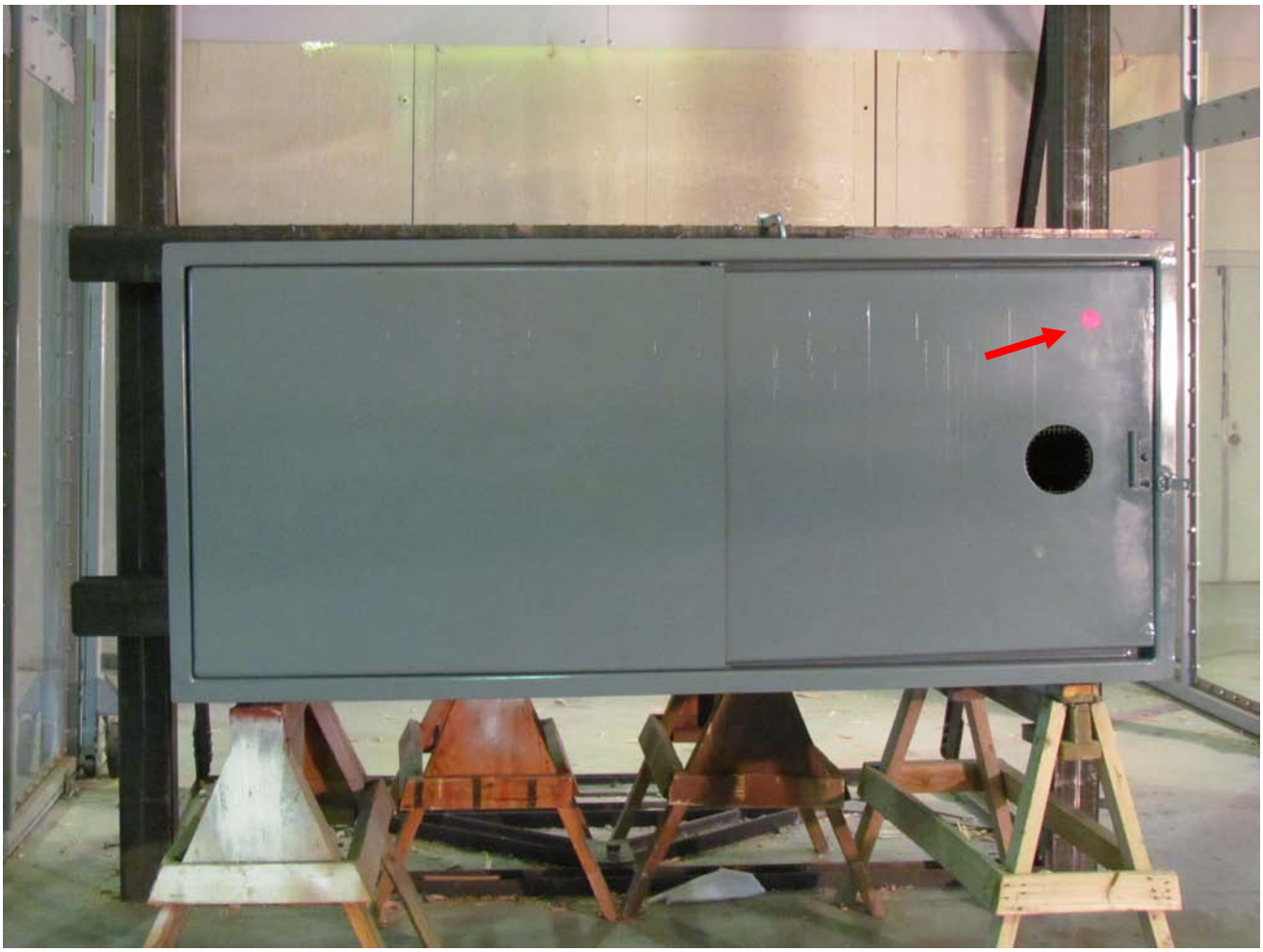
FEMA 320/ICC-500 shelter door testing was performed on the Storm Safe in-ground garage shelter on November 3, 2011 by the Debris Impact Test Facility at Texas Tech University Wind Engineering Research Center. A previous test on the door with ball-bearing wheels was unsuccessful. The tested shelter with the solid steel wheels meet the guidelines of FEMA 320, "Taking Shelter from the Storm" and ICC-500, which relates to the missile being dropped vertically at 67 mph by a 250 mph tornado. All testing was conducted in accordance to FEMA 320/ICC-500 test guidelines.

Any alterations made to the door assembly must be approved or retested by WISE at Texas Tech University.



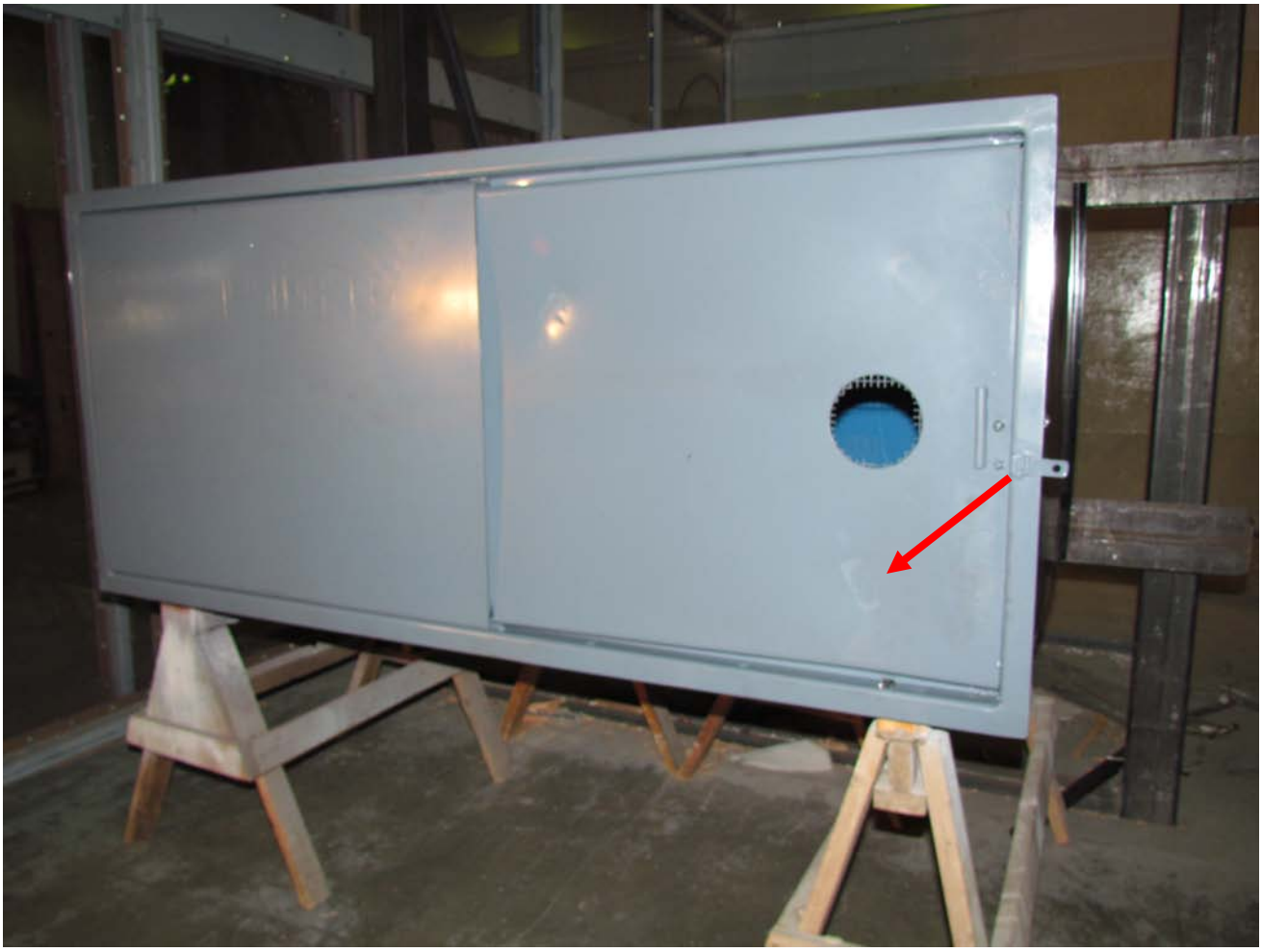
Engineer of Record
Larry J. Tanner, P.E.

Impact 1

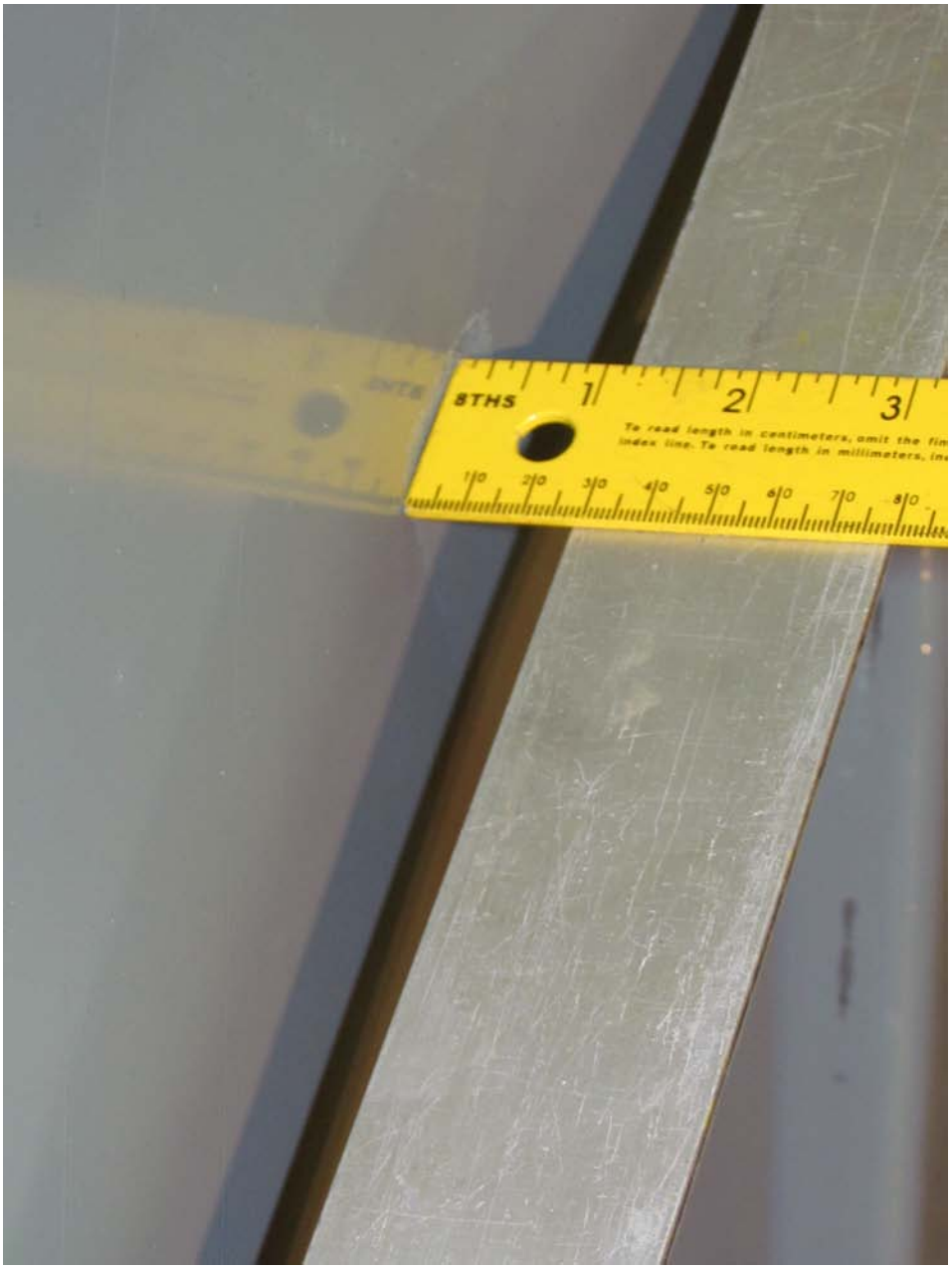


Deformation

Impact 2



Deformation



Impact 3

Deformation

Deformation

APPENDIX A – TEST PROTOCOLS

The Wind Science and Engineering research Center performs debris impact tests on storms 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

Protocol 1	Hurricane envelope impact by a 9 lb. wood 2"x4" propelled at 34 mph, in accordance with the Florida building Code, the International Code Council and the Texas Dept. of Insurance windstorm Resistant Construction Guide.
Protocol 2	Hurricane shelter speed impact by a 9 lb. wood 2"x4" propelled at 0.40 x the design wind speed (mph) for horizontal impacts and 0.10 x the design wind speed (mph) for vertical impacts, in accordance to the proposed ICC 500[1] – ICC/NSSA Standard for the Design and Construction of Storm Shelters.
Protocol 3	Hurricane shelter speed impact by a 9 lb. wood 2"x4" propelled at 0.50 x the design wind speed (mph) for horizontal impacts and 0.33 x the design wind speed (mph) for vertical impacts, in accordance with FEMA 320, "Taking Shelter from the Storm," 2008 Edition and FEMA 361, "Design and Construction Guidance for Community Safe Rooms," 2008 Edition.
Protocol 4	Tornado shelter speed impact by a 15 lb. wood 2"x4" propelled at 100 mph for horizontal impacts and 67 mph for vertical impacts, in accordance with FEMA 320, "Taking Shelter from the Storm," 2008 Edition and FEMA 361, "Design and Construction Guidance for Community Safe Rooms," 2008 Edition.
Protocol 5	Department of Energy (DOE) Impact Standards

[1]The ICC 500 – ICC/NSSA Standard for the Design and Construction of Storm Shelters is a referenced standard in the 2009 editions of the International Residential Code and the International Business Code. This is a Life Safety Standard which uses an Extreme Wind Map for Hurricanes with wind speeds starting at 225 mph and with contours along the Atlantic and Gulf Coast stepping inland in 10 mph increments to 160 mph.

Introduction

The primary objective in debris impact testing of storm shelters and shelter components is to assure compliance with a high standard of performance in protecting shelter occupants from wind-borne debris. Performance criteria include preventing perforation of the shelter or component by the design missile and preventing deformations which could cause injuries to the occupants.

Test Criteria

The testing described is for simulated windborne debris. The primary simulations are impacts of a 2x4-in. wood board traveling along the board's longitudinal axis, striking the test subject perpendicular to the test subject face. Standards that use this type of simulated debris include ASTM E 1886-04 "Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protection Systems Impacted by Missiles and Exposed to Cyclic Pressure Differentials," SSTD 12-99 "SBCII Test Standard for Determining Impact Resistance From Windborne Debris," ANSI A250.13-2003, "Testing and Rating of Severe Windstorm Resistant Components for Swing Door Assemblies," the National Storm Shelter Association (NSSA), "Standard for the Design, Construction, and Performance of Storm Shelters," and Texas Tech University, Wind Science and Engineering's Tornado Test Criterion adopted by the Federal Emergency Management Agency in publication FEMA 320, "Taking Shelter from the Storm," and FEMA 361, " Design and Construction Guidance for Community Shelters." The hurricane test criterion uses a 9-lb. 2x4-in. wood board called a missile, traveling horizontally at 34-mph (50 feet/second), which corresponds to a 110-150-mph wind, and is the criterion used for property protection. The tornado test criterion uses a 15-lb. 2x4-in. wood board traveling horizontally at 100-mph, which corresponds to a 250-mph wind, and is the criterion used in designing vertical surfaces for occupant protection. The criterion for falling debris from a tornado is a 15-lb. 2x4-in. board traveling at 67-mph striking perpendicular to the surface. The 67-mph criterion is used for surfaces horizontal to the ground and inclined less than 30-degrees. Additional factors of safety are inherent in the criterion since there is a very small probability that a missile will be traveling along its axis and will strike perpendicular to the surface.

Test Procedure

The first test on a system is to determine if the basic concept or structural element is capable of resisting the impact. This done by impacting the target in a general field or the area deemed most vulnerable. If the system resists the impact then the testing is concentrated on connections and material support conditions. Shelter walls or test panels are impacted with three test missiles in different and vulnerable locations. Shelter roofs/ceilings constructed differently from the walls are impacted with three test missiles in different and vulnerable locations. Shelter appurtenances, vents, louvers, windows, electrical boxes, shelves, seats, etc., are impacted by a single missile.

Laboratory pressure tests are not conducted on shelters and shelter panels. Numerical analysis of wind pressures is outlined in the above listed standards in the **Test Criteria**. Pressure tests are required for swinging door assemblies. In accordance to FEMA 320, the residential shelter guideline, swinging door assemblies should resist a static pressure of 1.37-psi for a 5-second period. In accordance to FEMA 361, the community shelter guideline, swinging door assemblies should resist a static pressure of 1.75-psi for a 5-second period.

Pass/Fail Criteria

The criterion for the shelter/shell/panel test pass/fail is as follows:

1) The test subject must be impacted by a minimum three missiles in areas of perceived vulnerability;
2) The missile may penetrate that test subject, but may not perforate the safe side (back face) of the subject;
3) The test subject permanent deflection after impact must be less than 3-in.;
4) Segments, spallings or otherwise de-laminated portions of the test subject, though still attached to the subject, may not extend into the safe compartment 3-in. or more; and
5) Segments of the test subject or appurtenances attached to the test subject must not be ejected or otherwise released into the safe compartment by the impact force.

Passage of the shelter door tests requires:

1) The door assembly must hold the required test pressures,
2) Resist perforation by the missiles,
3) Exhibit permanent deflection less than 3-inches,
4) Prevent disassociation of door components or shelter wall materials into the safe compartment,
5) Maintain two door locking points engaged and locked. FEMA 320/361 recognizes that one test missile can destroy or otherwise disengage one locking point. The guideline therefore requires that at least two locking points remained engaged and doors with only two points of locking must have both locks remain engaged and locked at the conclusion of the impact tests.
6) Pass/fail rating of the door relates to the full door assembly, including door, locking hardware, hinge, hinge screws and door frame.

Test Equipment

Debris Impact Air Cannon:

1) Air Tank – 30 gallon, Manchester Model Number 301853.
2) Electric Over Air Valve – Matryx Model Number MX200 – 600501.
3) 4-in. aluminum quick coupler to connect barrel to valve.
4) 4-in. x 20-ft. long schedule 40 PVC barrel.
5) Pair Optical Timing Sensors – Keyence Model Number PZ251R and PZ125T 12/24-volt.
6) Signal Conditioner.
7) Pair Precision Timers – BK Precision Timer Model Number 1823 Universal Counter.
8) Control panel with pressure controls, laser sighting and a three stage firing system to eliminate unintentional missile shots.
9) Horizontal articulating cannon carriage with DC motor drive and variable speed controller.
10) Cannon carriage mounted to a hydraulic scissor lift on wheels - Autoquip Model Number 84B16F20.
11) Steel reaction frame made of vertical and horizontal steel beams anchored to the floor to provide simple support at the top and bottom of the test specimen.

Use of Testing Report, TTU and WISE Logos

The written report and supplemental photos and/or videos may be referenced or distributed by your company. But, Texas Tech University cannot endorse products nor can the name of the University or any of its units or personnel be used in advertising without first securing written permission from the University. Any misuse or misrepresentation of the report and/or pictures will result in action being taken by the University against the responsible parties.

Storm shelter manufacturers or producers who have had products tested at Texas Tech University can use the Texas Tech University Wind Engineering logo provided they conform to the following:

I. The Texas Tech University Wind Engineering logo may not be so prominent as to mislead the public or unduly play upon the Texas Tech University Wind Engineering name.

II. Whenever the logo is used one of the two alternative statements below is to be employed in the text:

Alternate 1 – whole shelter
The use of the Texas Tech University Wind Engineering logo signifies that the complete shelter structure was tested and successfully passed missile impact resistance tests at Texas Tech University.

Alternate 2 - shelter component
The use of the Texas Tech University Wind Engineering logo does not signify that the entire shelter structure was tested at Texas Tech, but rather only [shelter component – name explicitly] was tested and successfully passed missile impact resistance tests at Texas Tech University.

III. All advertising and promotional texts containing the use of the Texas Tech University Wind Engineering logo are to be presented to the Texas Tech University Office of Technology Transfer and Intellectual Property for review and approval before distribution.

Texas Tech University will challenge any use of the Texas Tech University Wind Engineering logo that does not conform to the above standards.

APPENDIX B

Manufacturer's Drawings

GENERAL NOTES:

1. THE STEEL ELEMENTS NOTED IN THIS SET OF DRAWINGS HAVE BEEN DESIGNED FOR THE BELOW GRADE FORCES REQUIRED BY IBC 2009. TESTING AND/OR DESIGN ASSOCIATED WITH THE LID OF THE STORM SHELTER WERE EXCLUDED FROM ZAHL-FORD, INC.
2. WITH A MIN OF 7" OF CONCRETE (MIN F'c=3000 PSI) AROUND THE OUTSIDE OF THE CONTAINER WITH APPROPRIATE SHEAR ATTACHMENT TO THE REINFORCING ANGLES, THE BUOYANCY REQUIREMENTS OF ICC 500, FEMA 360 AND FEMA 320 HAVE BEEN MET WITH APPROPRIATE FACTORS OF SAFETY. (REFER DRAWINGS FOR SHEAR ATTACHMENT.)
3. VENTILATION SHALL BE SIZED AND LOCATED AS REQUIRED PER FEMA 320, ICC 500-2008 AND FEMA 361.
4. ALL STRUCTURAL STEEL ANGLES SHALL BE ASTM A36.
5. ALL STRUCTURAL SHEET METAL SHALL BE 10 GAUGE (MIN THICKNESS OF 0.127") AND BE ASTM A1011 CS TYPE B (MIN Fy=36KSI).
6. ALL WELDING SHALL CONFORM TO STANDARDS OF THE AMERICAN WELDING SOCIETY. ELECTRODES FOR ALL SHOP WELDS AND FIELD WELDS SHALL BE E70XX.
7. ALL JOINTS BELOW GRADE SHALL BE SEAL WELDED WITH A MIN OF 3/16 FILLET WELD TO CREATE A NON-POROUS JOINT TO PREVENT WATER FROM SEEPING INTO THE STORM SHELTER. AT SOME LOCATIONS, MULTIPLE PASSES OR A LARGER WELD WILL BE REQUIRED.
8. THIS DOCUMENT IS INTENDED TO BE USED FOR THE CONSTRUCTION OF SHELTERS AT LOCATIONS THROUGHOUT THE STATE OKLAHOMA. SOIL CONDITIONS VARY THROUGHOUT THE STATE. THE ASSUMED SOIL PROPERTIES ARE INTENDED TO BE CONSERVATIVE AND ACCEPTABLE AT MOST LOCATIONS. HOWEVER, IT MAY NOT BE ADEQUATE FOR SOME LOCATIONS SUCH AS THOSE WITH A HIGH WATER TABLE OR LOCATIONS WHERE THE IN-SITU SOILS HAVE A POTENTIAL FOR VOLUMETRIC CHANGES IN MOISTURE CONTENT. THE BELOW GRADE FORCES USED TO DETERMINE THE STRESSES IN THE STORM SHELTER WALLS WERE BASED ON TYPICAL SOIL PARAMETERS FROM REPRESENTATIVE SOIL REPORTS ACROSS THE STATE OF OKLAHOMA. THE EQUIVALENT FLUID PRESSURE USED WAS 70 PCF (REPRESENTATIVE OF LEAN CLAY) AND WAS BASED ON AN AT REST PRESSURE CONDITION (NO ROTATION OF THE WALLS). THE SURCHARGE PRESSURE USED WAS 0.58*S (REPRESENTATIVE OF LEAN CLAY) AND WAS ALSO BASED ON AN AT REST PRESSURE CONDITION. S IS DEFINED AS THE VERTICAL LOAD ADJACENT TO THE TOP OF THE STRUCTURE AND WAS ASSUMED TO BE 40 PSF (PASSENGER VEHICLE GARAGE LOADING FROM TABLE 1607.1, IBC 2009).
9. USE OF THESE DOCUMENTS INDICATES THAT THE OWNER AND CONTRACTOR ACKNOWLEDGE ZAHL-FORD, INC. HAS NO CONTROL OVER THE SITE PREPARATION WHERE THESE SHELTERS MAY BE CONSTRUCTED/INSTALLED, AND ZAHL-FORD, INC. PROVIDES NO GUARANTEES OR WARRANTIES, AND SHALL NOT ACCEPT OR INCUR ANY LIABILITY ASSOCIATED WITH THE SOIL RELATED ASPECTS OF THIS DESIGN THAT DIFFER FROM THE DESIGN CRITERIA NOTED IN GENERAL NOTE 8..
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11. LID TESTING PREFORMED BY THE WIND SCIENCE & ENGINEERING RESEARCH CENTER DEBRIS IMPACT TEST FACILITY IN LUBBOCK, TX, TEST REPORT 2011-1103A, DATED NOV 11, 2011. ZAHL-FORD'S SCOPE EXCLUDED THE DESIGN AND TESTING OF THE LID AND LID ATTACHMENT AND ZAHL-FORD, INC. SHALL NOT BE HELD LIABLE FOR LID FAILURES.
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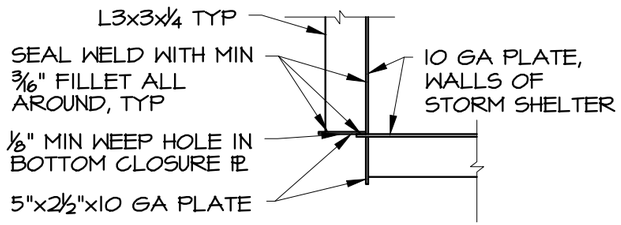

DETAIL B

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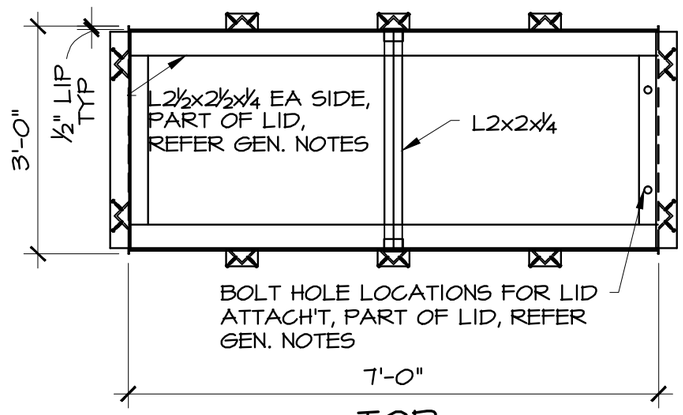

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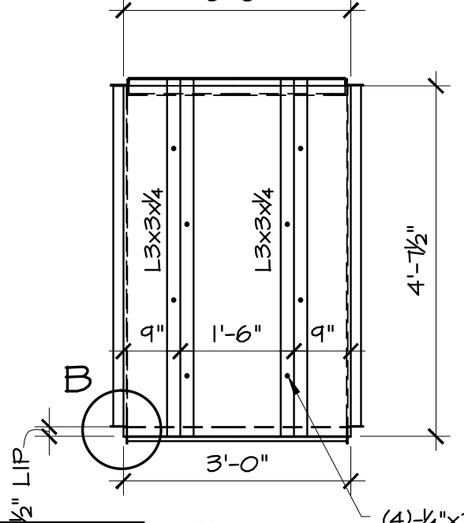

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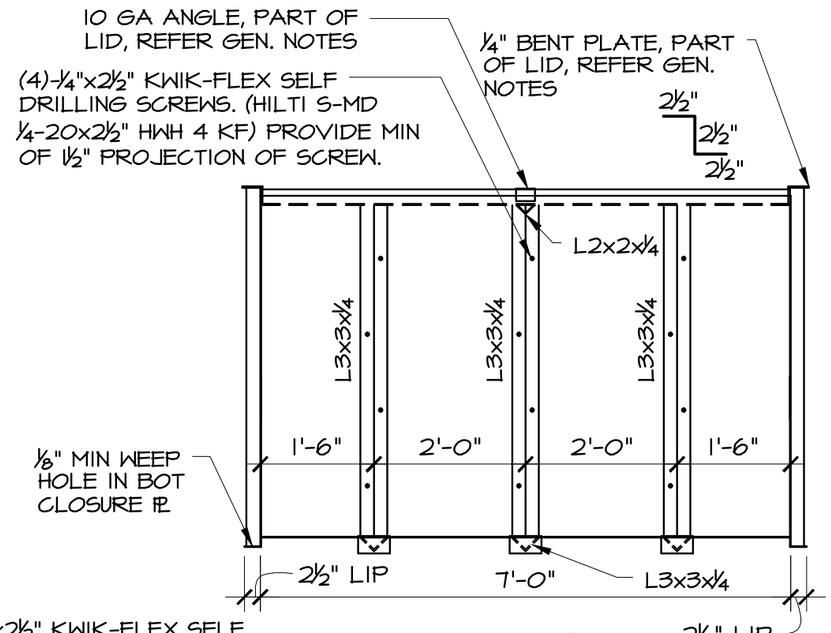

SIDE

SCALE: 1/2" = 1'-0"

ORIGINAL SHEET SIZE: 11X17

DATE: JUN 1, 2012	REFERENCE FROM: -
DRAWN BY: CJS	SHEET NUMBER: S1 REVISION NUMBER:
APPROVED BY: JCB	SEQUENCE: 1 OF 1
NOTES: ZFI PROJECT # 12093-01	

PROJECT
STORM SAFE SHELTERS-SMALL-10 PERSONS
LOCATIONS IN THE STATE OF OKLAHOMA
HIT STEEL, LLC
515 S. SUNNYLANE RD.
MOORE, OK 73160

ZAHL - FORD, inc.
Structural Investigators & Consultants
zahlford.com
Cert. Of Auth. #CA994 – Exp. 06/30/12
8411 S. Walker • Oklahoma City, OK 73139 • Ph: 405.634.3393

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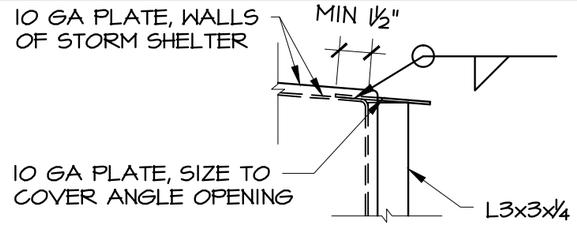

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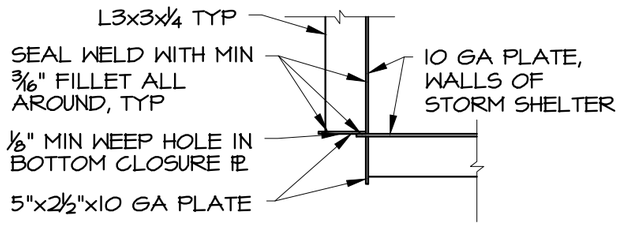

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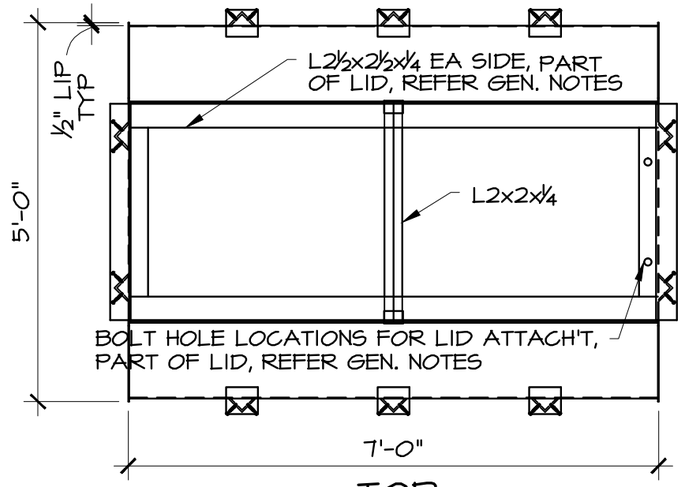

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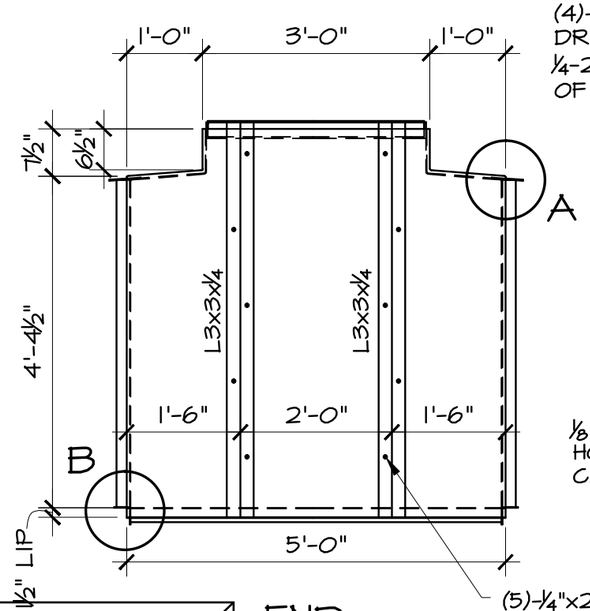

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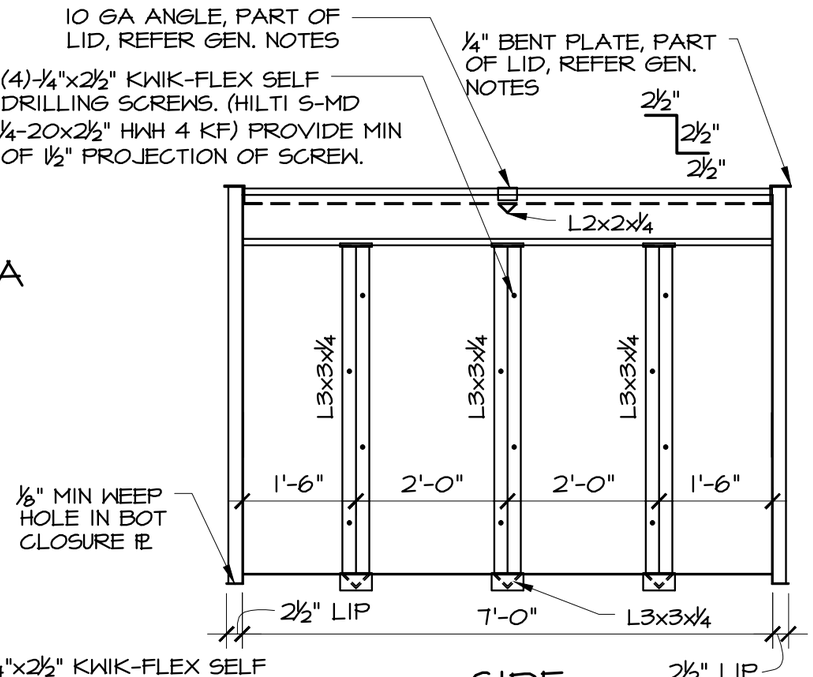

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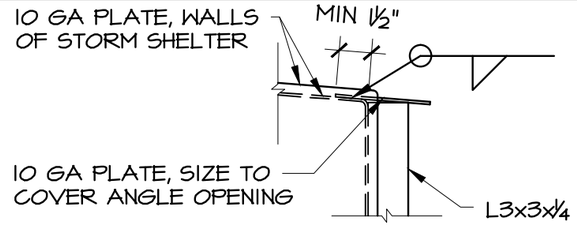
NOTES: ZFI PROJECT # 12093-01	

PROJECT
STORM SAFE SHELTERS-MEDIUM-12 PERSONS
LOCATIONS IN THE STATE OF OKLAHOMA
HIT STEEL, LLC
515 S. SUNNYLANE RD.
MOORE, OK 73160

ZAHL - FORD, inc.
Structural Investigators & Consultants
zahlford.com
Cert. Of Auth. #CA994 – Exp. 06/30/12
8411 S. Walker • Oklahoma City, OK 73139 • Ph: 405.634.3393

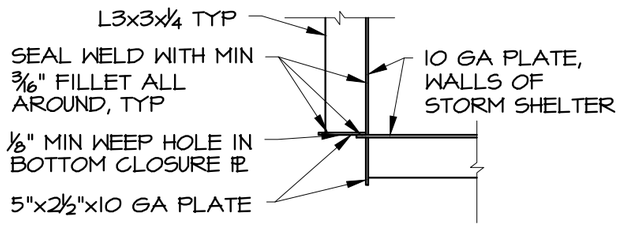
GENERAL NOTES:

1. THE STEEL ELEMENTS NOTED IN THIS SET OF DRAWINGS HAVE BEEN DESIGNED FOR THE BELOW GRADE FORCES REQUIRED BY IBC 2009. TESTING AND/OR DESIGN ASSOCIATED WITH THE LID OF THE STORM SHELTER WERE EXCLUDED FROM ZAHL-FORD, INC.
2. WITH A MIN OF 7" OF CONCRETE (MIN F'c=3000 PSI) AROUND THE OUTSIDE OF THE CONTAINER WITH APPROPRIATE SHEAR ATTACHMENT TO THE REINFORCING ANGLES, THE BUOYANCY REQUIREMENTS OF ICC 500, FEMA 360 AND FEMA 320 HAVE BEEN MET WITH APPROPRIATE FACTORS OF SAFETY. (REFER DRAWINGS FOR SHEAR ATTACHMENT.)
3. VENTILATION SHALL BE SIZED AND LOCATED AS REQUIRED PER FEMA 320, ICC 500-2008 AND FEMA 361.
4. ALL STRUCTURAL STEEL ANGLES SHALL BE ASTM A36.
5. ALL STRUCTURAL SHEET METAL SHALL BE 10 GAUGE (MIN THICKNESS OF 0.127") AND BE ASTM A1011 CS TYPE B (MIN Fy=36KSI).
6. ALL WELDING SHALL CONFORM TO STANDARDS OF THE AMERICAN WELDING SOCIETY. ELECTRODES FOR ALL SHOP WELDS AND FIELD WELDS SHALL BE E70XX.
7. ALL JOINTS BELOW GRADE SHALL BE SEAL WELDED WITH A MIN OF 3/16 FILLET WELD TO CREATE A NON-POROUS JOINT TO PREVENT WATER FROM SEEPING INTO THE STORM SHELTER. AT SOME LOCATIONS, MULTIPLE PASSES OR A LARGER WELD WILL BE REQUIRED.
8. THIS DOCUMENT IS INTENDED TO BE USED FOR THE CONSTRUCTION OF SHELTERS AT LOCATIONS THROUGHOUT THE STATE OKLAHOMA. SOIL CONDITIONS VARY THROUGHOUT THE STATE. THE ASSUMED SOIL PROPERTIES ARE INTENDED TO BE CONSERVATIVE AND ACCEPTABLE AT MOST LOCATIONS. HOWEVER, IT MAY NOT BE ADEQUATE FOR SOME LOCATIONS SUCH AS THOSE WITH A HIGH WATER TABLE OR LOCATIONS WHERE THE IN-SITU SOILS HAVE A POTENTIAL FOR VOLUMETRIC CHANGES IN MOISTURE CONTENT. THE BELOW GRADE FORCES USED TO DETERMINE THE STRESSES IN THE STORM SHELTER WALLS WERE BASED ON TYPICAL SOIL PARAMETERS FROM REPRESENTATIVE SOIL REPORTS ACROSS THE STATE OF OKLAHOMA. THE EQUIVALENT FLUID PRESSURE USED WAS 70 PCF (REPRESENTATIVE OF LEAN CLAY) AND WAS BASED ON AN AT REST PRESSURE CONDITION (NO ROTATION OF THE WALLS). THE SURCHARGE PRESSURE USED WAS 0.58*S (REPRESENTATIVE OF LEAN CLAY) AND WAS ALSO BASED ON AN AT REST PRESSURE CONDITION. S IS DEFINED AS THE VERTICAL LOAD ADJACENT TO THE TOP OF THE STRUCTURE AND WAS ASSUMED TO BE 40 PSF (PASSENGER VEHICLE GARAGE LOADING FROM TABLE 1607.1, IBC 2009).
9. USE OF THESE DOCUMENTS INDICATES THAT THE OWNER AND CONTRACTOR ACKNOWLEDGE ZAHL-FORD, INC. HAS NO CONTROL OVER THE SITE PREPARATION WHERE THESE SHELTERS MAY BE CONSTRUCTED/INSTALLED, AND ZAHL-FORD, INC. PROVIDES NO GUARANTEES OR WARRANTIES, AND SHALL NOT ACCEPT OR INCUR ANY LIABILITY ASSOCIATED WITH THE SOIL RELATED ASPECTS OF THIS DESIGN THAT DIFFER FROM THE DESIGN CRITERIA NOTED IN GENERAL NOTE 8..
10. STRUCTURE SHALL BE COATED WITH COATING DESIGN AND INSTALLED TO PROTECT THE STEEL FROM CORROSION.
11. LID TESTING PREFORMED BY THE WIND SCIENCE & ENGINEERING RESEARCH CENTER DEBRIS IMPACT TEST FACILITY IN LUBBOCK, TX, TEST REPORT 2011-1103A, DATED NOV 11, 2011. ZAHL-FORD'S SCOPE EXCLUDED THE DESIGN AND TESTING OF THE LID AND LID ATTACHMENT AND ZAHL-FORD, INC. SHALL NOT BE HELD LIABLE FOR LID FAILURES.
12. INSTALLATION PROCEDURES (i.e. CONCRETE REMOVAL, LIFTING, BACKFILL, ETC.) ARE BY INSTALLER AND HAVE NOT BEEN REVIEWED BY ZAHL-FORD, INC. ZAHL-FORD, INC. PROVIDES NO GUARANTEES OR WARRANTIES, AND SHALL NOT ACCEPT OR INCUR ANY LIABILITY ASSOCIATED WITH THE INSTALLATION OF THE STORM SHELTERS.



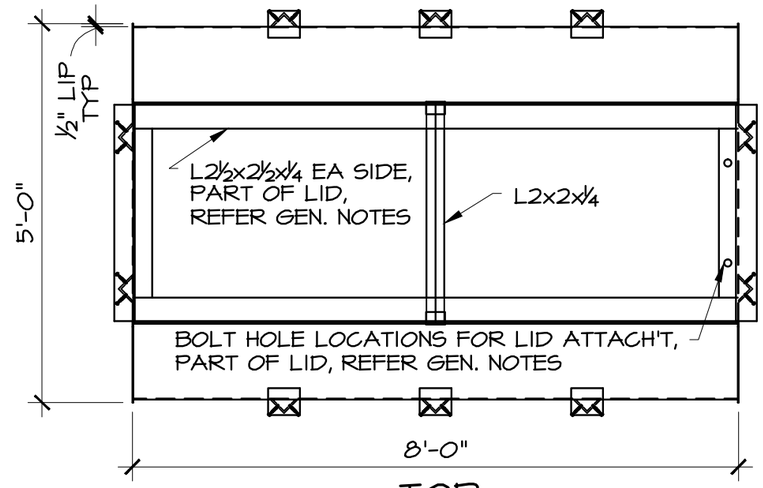
DETAIL A

SCALE: 1 1/2" = 1'-0"



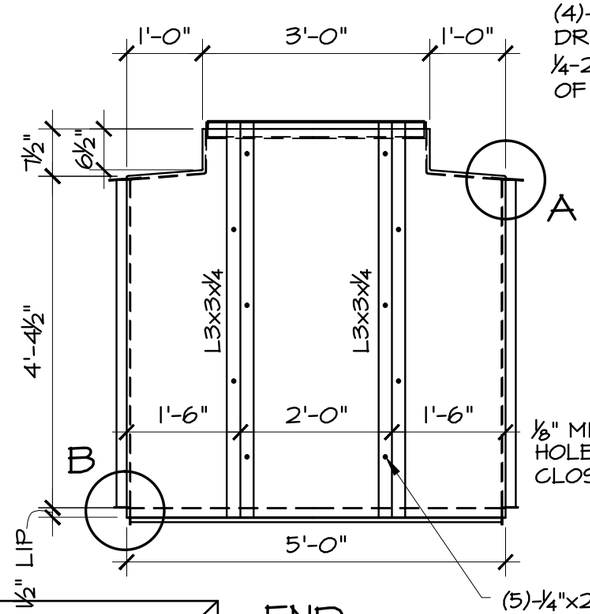
DETAIL B

SCALE: 1 1/2" = 1'-0"



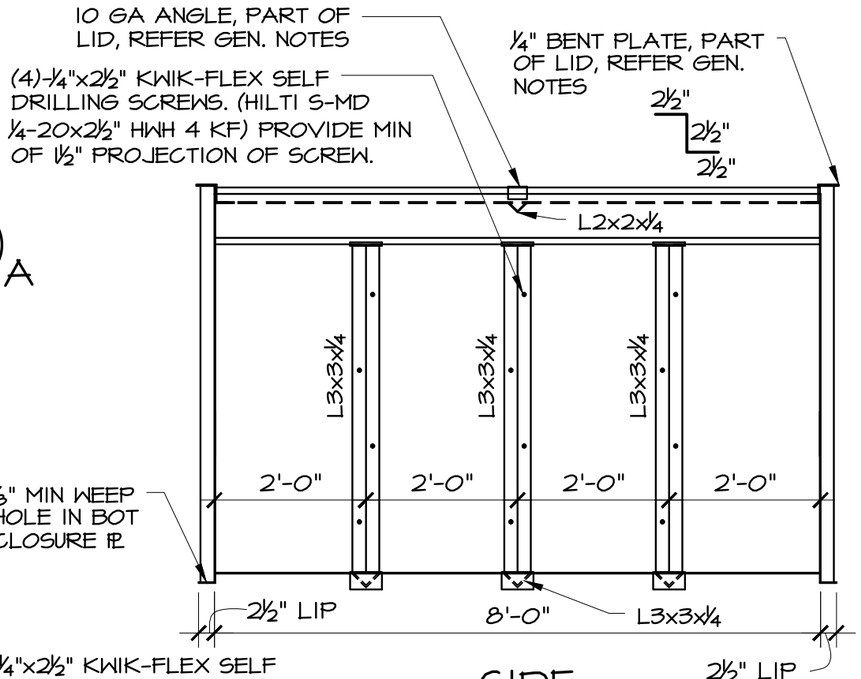
TOP

SCALE: 1/2" = 1'-0"



END

SCALE: 1/2" = 1'-0"



SIDE

SCALE: 1/2" = 1'-0"

ORIGINAL SHEET SIZE: 11X17

DATE: JUN 1, 2012	REFERENCE FROM: -
DRAWN BY: CJS	SHEET NUMBER: S1 REVISION NUMBER:
APPROVED BY: JCB	SEQUENCE: 1 OF 1
NOTES: ZFI PROJECT # 12093-01	

PROJECT
STORM SAFE SHELTERS-LARGE-16 PERSONS
LOCATIONS IN THE STATE OF OKLAHOMA
HIT STEEL, LLC
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