



PO Box 41023 • 10<sup>th</sup> Street & Akron Ave • Lubbock, TX 79409-41023

## ABBREVIATED CHECKLIST STORM SHELTER DESIGN & CONSTRUCTION

Damage associated with high wind events can be devastating to communities. Over the years, traditional construction methods have been shown to provide minimal resistance to these extreme occurrences. Many homeowners and builders, fearful of these types of events, are examining options for building storm shelters. While the number of storm shelters existing in the U.S. is unknown, it is estimated that over 300,000 have been built in the past 4 years. Some are of high quality built by knowledgeable builders or manufacturers to comply with the existing designs in FEMA 320 or are built to a balanced design to provide good protection in the case of extreme winds. Unfortunately, many shelters have been built and installed that may not comply with a high standard of quality. The International Code Council (ICC), along with the National Storm Shelter Association has developed a consensus standard dealing with storm shelter design and construction. The general checklist shown below might be of some assistance as it describes items which should be considered when examining above and below ground shelters:

<b>Above Ground Shelters</b>	<b>Below Ground Shelters</b>
<ul style="list-style-type: none"> <li>○ Have all exposed elements been tested for debris impact resistance?</li> <li>○ Does the shelter have structural integrity?               <ul style="list-style-type: none"> <li>○ Has the structure been designed to handle the anticipated wind forces?</li> <li>○ Is the roof connected securely to the walls?</li> <li>○ Are the walls adequately anchored to the floor?</li> <li>○ Is the shelter anchored to a slab which has reinforcement and is in good condition?</li> </ul> </li> <li>○ Is the shelter separate from the other load resisting elements in the structure?</li> <li>○ Is the door designed to meet the impact and wind requirements?               <ul style="list-style-type: none"> <li>○ Are there three latching mechanisms?</li> <li>○ Is the door frame adequately connected to the structure?</li> <li>○ Do the locking mechanisms engage without undue force?</li> </ul> </li> <li>○ Is the shelter vented?</li> </ul>	<ul style="list-style-type: none"> <li>○ Have all exposed elements been tested for debris impact resistance?</li> <li>○ Does the shelter have structural integrity?               <ul style="list-style-type: none"> <li>○ Has the structure been designed to handle the hydrostatic pressures?</li> <li>○ Is the shelter ballasted to prevent uplift from buoyancy?</li> <li>○ Is the shelter able to resist deterioration from moisture?</li> <li>○ Is the shelter waterproofed to resist water leakage?</li> </ul> </li> <li>○ Is the door designed to meet the impact and wind requirements?               <ul style="list-style-type: none"> <li>○ Are the doors able to withstand uplift wind forces?</li> <li>○ Can the door prevent perforation by falling debris?</li> </ul> </li> <li>○ Is the shelter vented?</li> <li>○ Are the steps or ladders safe for access/egress?</li> </ul>

For further explanation of any of the above listed items, refer to the “ICC/NSSA Standard for the Design & Construction of Storm Shelters”: <http://www.nssa.cc/ICC-NSSA%20FUTURE%20STANDARDS.php>. Or on the ICC website: [www.iccsafe.org](http://www.iccsafe.org).