



STATE OF ALABAMA
DEPARTMENT OF FINANCE
REAL PROPERTY MANAGEMENT
Division of Construction Management



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February 18, 2021

TO: PUBLIC K-12 SCHOOL SUPERINTENDENTS, FACILITY MANAGERS, ARCHITECTS AND ENGINEERS

FROM: MICKEY ALLEN, ASSISTANT FINANCE DIRECTOR *MAllen*
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ALABAMA DIVISION OF CONSTRUCTION MANAGEMENT (DCM)

SUBJECT: UPDATED GUIDANCE ON TORNADO STORM SHELTER REQUIREMENTS FOR PUBLIC K-12 SCHOOLS SUBJECT TO ACT 2010-746

DCM's July 29, 2010 memorandum *Additional Guidance on Safe Space Requirements* is superseded by this February 18, 2021 bulletin which includes updated references, terms, and details. Per the intent of the original memo, this bulletin is being issued to provide public K-12 school architects, engineers and owners additional guidance on the requirements and interpretation of the ICC 500 for public school projects subject to Act 2010-746. (Guidance on storm shelters for private K-12 school projects subject to the requirements of ICC 500 are addressed in DCM's bulletin dated 10/21/20 available on www.dcm.alabama.gov.)

1. **Occupant Load (Para. 501.1.1).** Each new public school shall include a tornado storm shelter of sufficient size to accommodate the student occupant load plus an additional 10% increase for faculty and administration. The student occupant load shall be calculated at 1 student per 30 SF of gross classroom area. Fractions or portions shall be rounded up to whole numbers. Classroom area must include all rooms designated for general classroom instruction (for example: special education, art, computer lab, science lab, etc.). Auxiliary support areas such as cafeterias, band practice rooms, gymnasiums, etc. do not have to be included as general classroom instruction area.
2. **Tornado Storm Shelter Design Information (Para. 107.2.1 and 107.2.6).** The plan submittal shall include a Tornado Storm Shelter Plan (similar to the Life Safety Plan) with the design information required per these ICC 500 sections. In addition, the tornado storm shelter plan shall include the maximum number of occupants (seating/standing and wheelchair bound), the number and location of required toilet and handwashing facilities (if applicable), the maximum travel distance to the shelter and accessible route, location of emergency escape openings, locations of all required signage, location of fire extinguishers and first aid kits (if applicable), and indicate the 2-hour firewalls.
3. **Tornado Wind Speed Determination (Para. 304.2).** A state map with counties is attached that approximates the shelter design wind speeds as illustrated in Figure 304.2(1). The map is provided as a guide, but the design professional must use their professional judgment when determining the appropriate design criteria. The design wind speed must be indicated on the Tornado Storm Shelter Plan and on the required tornado storm shelter signage.

4. **Labeling of Shelter Openings (Para. 108.2).** The glazing or glazing systems, and opening protectives used for the storm shelter area shall have been successfully tested for the identified hazard criteria for tornados. Verify that the testing method complies with ICC-500. Label required. ICC 500 Section 804.9.4. The labels or stamps applied to frames, etc., must be provided by a manufacturer that has had their products tested in accordance with ICC 500 Chapter 8. Product specimens shall have passed the testing requirements of ICC 500 Chapter 8 as conducted by a third party, nationally recognized, accredited and approved testing laboratory. The testing laboratory shall maintain ongoing periodic inspections of the products it has tested to confirm continued compliance.
5. **Labeling of Fire Barriers (Para. 601.1).** All 2-hour fire barriers shall be permanently identified with signs or stenciling in accordance with the applicable building code. Refer to Chapter 2 of the Division of Construction Manual of Procedures.
6. **Shelter Signage (Para. 108.1).** In addition to the type of shelter, name of builder or manufacturer and the design wind speed, the shelter sign shall also include the maximum occupant load capacity.
7. **Peer Review (Para. 106.1.1).** Third party peer reviews are required with the final construction document submittal and for final approval. See ICC 500-2014 Section 106.1.1. Peer reviews are required for the requirements listed in chapters 3, 5, 6 and 7. Note that issues which may be raised by the peer reviews must be addressed prior to submittal of final documents. Peer reviews must be sealed, (signed and dated as may be required) by design professionals (architects, mechanical, electrical and structural engineers) licensed to practice in the State of Alabama.
8. **Mandatory Design Professional's Statement (Para. 106.4).** The attached DCM Form B-14: Certification of Structural Observations must be completed by the architect or structural engineer of record and submitted to the Division of Construction Management Inspector at the Final Inspection. The completed form must also be submitted as an attachment to the Certificate of Substantial Completion.
9. **Mandatory Contractor's Statement (Para. 107.3.3).** The attached DCM Form C-17: Contractor's Statement of Responsibility for Construction of Tornado Storm Shelter (Hurricane Shelter Where Applicable) must be completed by the contractor and submitted to the Division of Construction Management Inspector prior to the start of construction. A copy of the Quality Assurance Plan as prepared by the Design Professional must be attached to the Contractor's Statement.
10. **Special Inspections (Para. 107.2.4).** A list of Special Inspections required for the project must be submitted to the Division of Construction Management Inspector at the Pre-Construction Conference.
11. **Location of Tornado Storm Shelter.** It is highly recommended that the tornado storm shelters be adequately dispersed to minimize travel times and located within the same structure when possible to avoid travel outside the building during inclement weather. The ideal travel time is 5-10 minutes and the maximum recommended travel time should be no more than 15 minutes. The travel time should consider the time required to organize the students, gather belongings, and proceed in an orderly fashion to the tornado storm shelter. In addition, tornado storm shelters should be located or dispersed so that they are accessible from areas that are likely to be used outside of school hours, such as band practice rooms, field houses, gymnasiums and similar areas.
12. **Emergency Communication.** It is recommended that tornado storm shelters include some form of reliable emergency communication. Cellular phone communication is not considered reliable since cell towers may be affected by a storm and/or the volume of calls.

If you have any questions, please contact DCM's Plan Review Division at 334-242-4082 or planreview@realproperty.alabama.gov.

Cc: Perry Taylor, State School Architect, State Department of Education

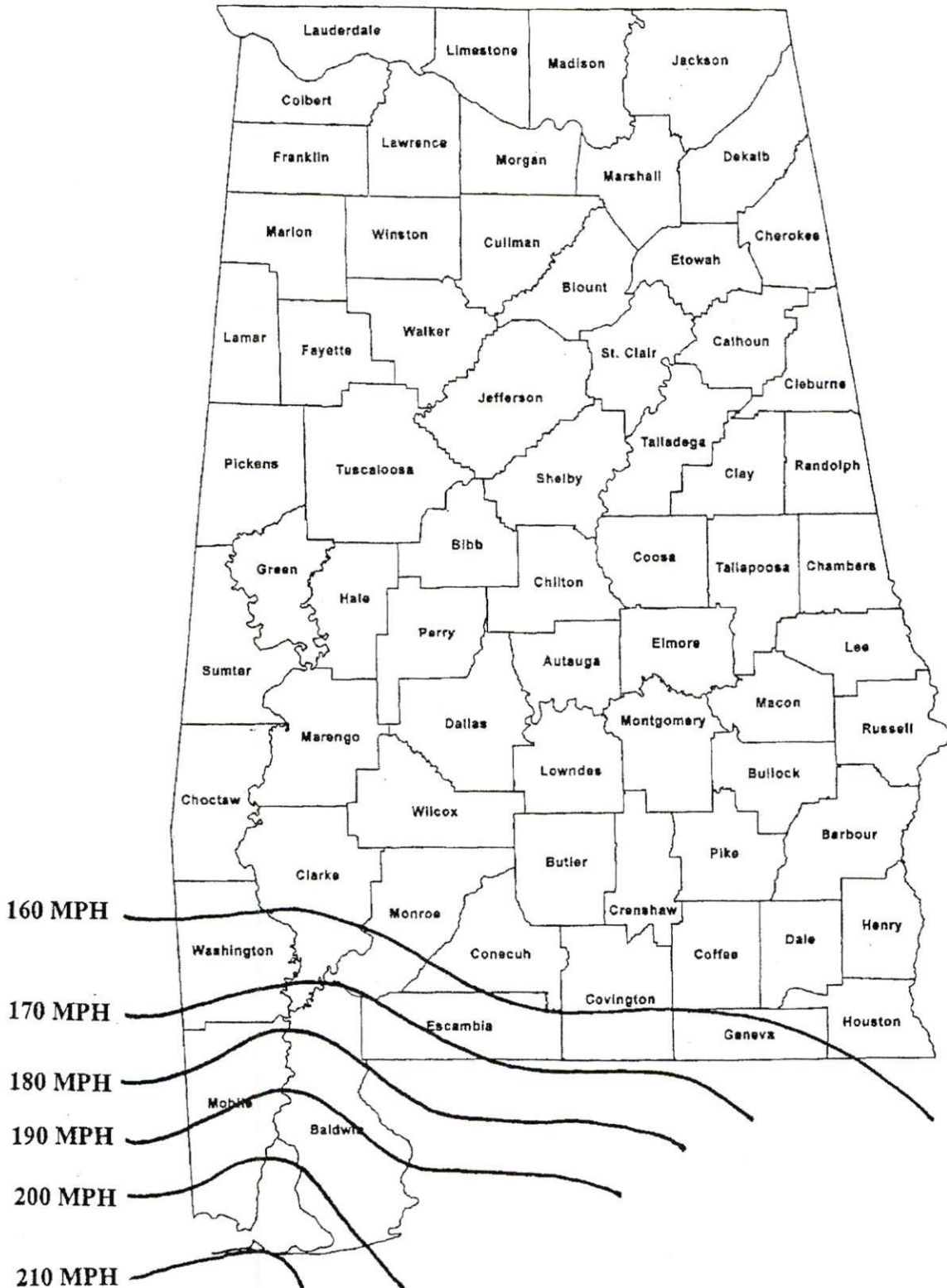
ATTACHMENT A

STATE MAP WITH COUNTIES SHOWING APPROXIMATE TORNADO WIND SPEED ZONES (Refer to ICC 500, Figure 304.2(1) for official map)

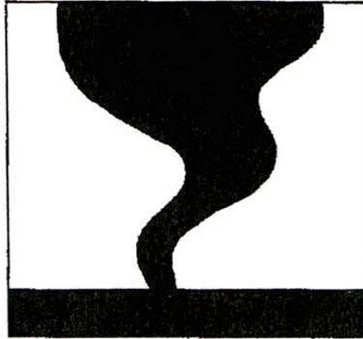


ATTACHMENT B

STATE MAP WITH COUNTIES SHOWING APPROXIMATE HURRICANE WIND SPEED ZONES (Refer to ICC 500, Figure 304.2(2) for official map)



**ATTACHMENT C
DESIGN INFORMATION SHELTER SIGNAGE**



TORNADO STORM SHELTER

___ MPH STORM SHELTER DESIGN WIND SPEED (3-SECOND GUST)

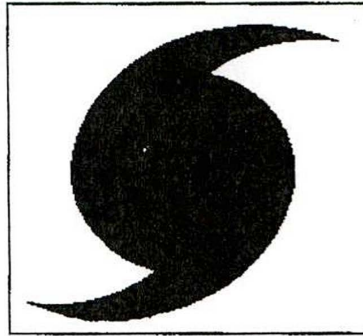
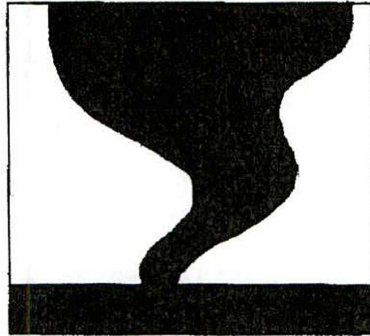
MISSILE IMPACT RESISTANCE:

___ LBS. 2 X 4 @ ___ MPH (HORIZONTAL)

___ LBS. 2 X 4 @ ___ MPH (VERTICAL)

STORM SHELTER MANUFACTURER/BUILDER _____

MAXIMUM OCCUPANT LOAD _____



COMBINATION STORM SHELTER

___ MPH STORM SHELTER DESIGN WIND SPEED (3-SECOND GUST)

MISSILE IMPACT RESISTANCE:

___ LBS. 2 X 4 @ ___ MPH (HORIZONTAL)

___ LBS. 2 X 4 @ ___ MPH (VERTICAL)

STORM SHELTER MANUFACTURER/BUILDER _____

MAXIMUM OCCUPANT LOAD _____

DCM (BC) No. _____

CERTIFICATION OF STRUCTURAL OBSERVATIONS

for

Project Name: _____

Owner Entity: _____

Contractor Company: _____

I _____, do hereby verify that I have personally conducted the visual
Design Professional
observations of the construction of the structural system for conformance to the approved construction documents for the referenced project. The visual observations of the structural systems were personally conducted by me at all significant construction stages and at the completion of the construction of the structural system. To the best of my knowledge, all structural deficiencies have been resolved except as noted below:

Signed and sealed on this date, _____, 20 ____.

Design Professional's Seal:

Architectural / Engineering Firm

Signature of Architect or Structural Engineer of Record

Printed Name

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- Specifications:** This form must be included in the project manual submitted to DCM for Final Plan Review for:
- All new public K-12 schools, awarded after July 1, 2010, with tornado storm shelters as required by Act 2010-746.
 - All public K-12 additions and renovations which are required to contain tornado storm shelters by the International Building Code, Section 423.
 - All private K-12 new schools, additions and renovations as required by the International Building Code, Section 423.
 - All new buildings containing classrooms or dorm rooms on the grounds of all public 2-year or 4-year institutions of higher education, statewide, awarded on or after August 1, 2012, as required by Act 2012-554.

- Submittal of Form:** Provide a copy of the completed form to the DCM Inspector at Final Inspection. The original completed form, signed and sealed by the architect or structural engineer of record, must be submitted as an attachment to the Certificate of Substantial Completion for:
- All new buildings constructed on the grounds of new public K-12 schools awarded after July 1, 2010.
 - All new buildings containing classrooms or dorm rooms constructed on the grounds of all public 2-year or 4-year institutions of higher education awarded on or after August 1, 2012.

DCM (BC) No. _____

**CONTRACTOR'S STATEMENT OF RESPONSIBILITY FOR
CONSTRUCTION OF TORNADO STORM SHELTER
(HURRICANE SHELTER WHERE APPLICABLE)**

Project Name: _____

Owner Entity: _____

Architectural/Engineering Firm: _____

Contractor Company: _____

I _____, acknowledge that I am responsible to the Owner, the Alabama
General Contractor
Division of Construction Management, the Alabama Community College System or the State Department
of Education as applicable, and the Architect/Engineer for the construction of the main wind-force
resisting system and any other components listed in the **attached Quality Assurance Plan (QAP)**.

I acknowledge that I am aware of the special requirements contained in the QAP.

I certify that control will be exercised to obtain compliance with the construction documents. The
procedures for exercising control shall be as listed below:

Control Procedure	How Reported	Distributed To	Distribution Frequency

(Attach additional pages if needed)

Furthermore, the following persons will be responsible for exercising control in accordance with the QAP. Any changes to the persons listed below will be coordinated with the Owner a minimum of 3 calendar days in advance of the change. The Owner shall provide written objections to the changes within 10 calendar days. No response shall be deemed acceptance.

Name of Person	Responsibility for QAP

Signed on this date, _____, 20____.

Contractor Company

By: _____
Signature of Contractor

Name and Title: _____

-
- Specifications:** This form must be included in the project manual submitted to DCM for Final Plan Review for:
- All new public K-12 schools, awarded after July 1, 2010, with tornado storm shelters as required by Act 2010-746.
 - All public K-12 additions and renovations which are required to contain tornado storm shelters by the International Building Code, Section 423.
 - All private K-12 new schools, additions and renovations as required by the International Building Code, Section 423.
 - All new buildings containing classrooms or dorm rooms on the grounds of all public 2-year or 4-year institutions of higher education, statewide, awarded on or after August 1, 2012, as required by Act 2012-554.
- Submittal of Executed Form:** The completed and signed form must be submitted to the DCM Inspector at the pre-construction conference for:
- All new buildings to be constructed on the grounds of new public K-12 schools awarded after July 1, 2010.
 - All new buildings containing classrooms or dorm rooms to be constructed on the grounds of all public 2-year or 4-year institutions of higher education awarded on or after August 1, 2012.