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DEPARTMENT OF FINANCE
REAL PROPERTY MANAGEMENT
Division of Construction Management

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

FROM: MICKEY ALLEN, ASSISTANT FINANCE DIRECTOR *MMA*
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SUBJECT: BULLETIN #23-02: UPDATED GUIDANCE ON TORNADO STORM SHELTER REQUIREMENTS FOR PUBLIC K-12 SCHOOLS SUBJECT TO ACT 2010-746

DCM’s February 18, 2021 bulletin concerning Act 2010-746 is superseded by this November 22, 2022 bulletin which includes updated references, terms, and details.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 #23-01 dated 11/21/22 available on www.dcm.alabama.gov.)

1. **Occupant Load (ICC 500, Chapter 5).** Each new public school shall include a tornado storm shelter or tornado storm shelters of sufficient size to accommodate the student occupant load plus an additional 10% for faculty and administration. The student occupant load shall be calculated at 1 student per 30 square feet of gross classroom area. Note that the threshold occupant load for tornado storm shelter requirements shall be determined as 30 square feet per occupant plus 10%. 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, etc. are not required to be included as general classroom instruction area. Vocational space that is complimentary to classroom space is not required to be included as general classroom instruction area. Otherwise, the occupant load for vocational spaces shall be calculated at 50 square feet per occupant, as prescribed by IBC table “Maximum Floor Area Allowances Per Occupant”, plus 10%.*
2. **Tornado Storm Shelter Design Information (ICC 500, Chapter 1).** 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 (ICC 500, Chapter 3).** A state map with counties is attached that approximates the shelter design wind speeds as illustrated. 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 (ICC 500, Chapter 1).** All storm shelter-rated assemblies, including but not limited to door opening assemblies, shall include the applicable rating label on each component. The labels shall be factory applied and clearly visible. Labels shall be raised or embossed on metal labels or stamped into metal frames. Plastic or paper labels are not acceptable. Verify the opening protective, glazing or glazing systems used for the storm shelter area have been successfully tested for the identified hazard criteria for tornado. Verify that the testing method complies with ICC 500. Label required: 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. See Chapter 2 of DCM's Manual of Procedures for detailed requirements.
5. **Labeling of Fire Barriers (ICC 500, Chapter 6).** 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. **Required Signage:**
 - A. **Design Information Shelter Signage (ICC 500, Chapter 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. An example of the required design information signage is attached (Attachment C).
 - B. **Community Shelter Location Signage (ICC 500, Chapter 5).** Every entrance must include a tactile and visual sign mounted on or adjacent to the door indicating "Tornado Storm Shelter", "Hurricane Storm Shelter" or "Tornado/Hurricane Storm Shelter" (or "Combination Storm Shelter"). The appropriate symbol(s) may be substituted for the wording. An example of the required location shelter signage is attached (Attachment D).
 - C. **Community Shelter Identification Signage (ICC 500, Chapter 5).** A sign depicting the general location of the storm shelter(s) and access ways must be provided adjacent to the access doors on the inside of each storm shelter, in the office of the building facility's manager (if provided) and in the designated storm shelter manager's area in the storm shelter (if provided). Where no building facility manager's office is provided, the sign shall be located in the central administration area for the building. The sign should be located in a clearly visible location.
7. **Peer Review (ICC 500, Chapter 1).** Third party peer reviews are required with the final construction document submittal and for final approval. 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 (ICC 500, Chapter 1).** See attached DCM Form B-14: Certification of Structural Observations for instructions concerning its inclusion in specifications for the Final Plan Review submittal to DCM. Provide a completed copy of the 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.

9. **Mandatory Contractor's Statement (ICC 500, Chapter 1).** See attached DCM Form C-17: Contractor's Statement of Responsibility for Construction of Tornado Storm Shelter (Hurricane Shelter Where Applicable) for instructions concerning its inclusion in specifications for the Final Plan Review submittal to DCM. The form must be completed by the contractor and submitted to the DCM Inspector at the pre-construction conference. A copy of the Quality Assurance Plan prepared by the design professional must be attached to the Contractor's Statement of Responsibility.
10. **Owner's Statement of Responsibility for Tornado Storm Shelter (ICC 500, Chapter 1).** See attached DCM Form B-15 Owner's Statement of Responsibility for Tornado Storm Shelter. The Division of Construction Management and the State Department of Education (SDE) recognize that the safety of all occupants of both new and existing buildings is highly important. School administrators are strongly encouraged to develop plans that provide for the best possible refuge in the event of a tornado or high wind event, including the incorporation of new storm shelters where feasible.
11. **Special Inspections (ICC 500, Chapter 1).** A list of Special Inspections required for the project must be submitted to the Division of Construction Management Inspector at the Pre-Construction Conference.
12. **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.
13. **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: State School Architect, State Department of Education

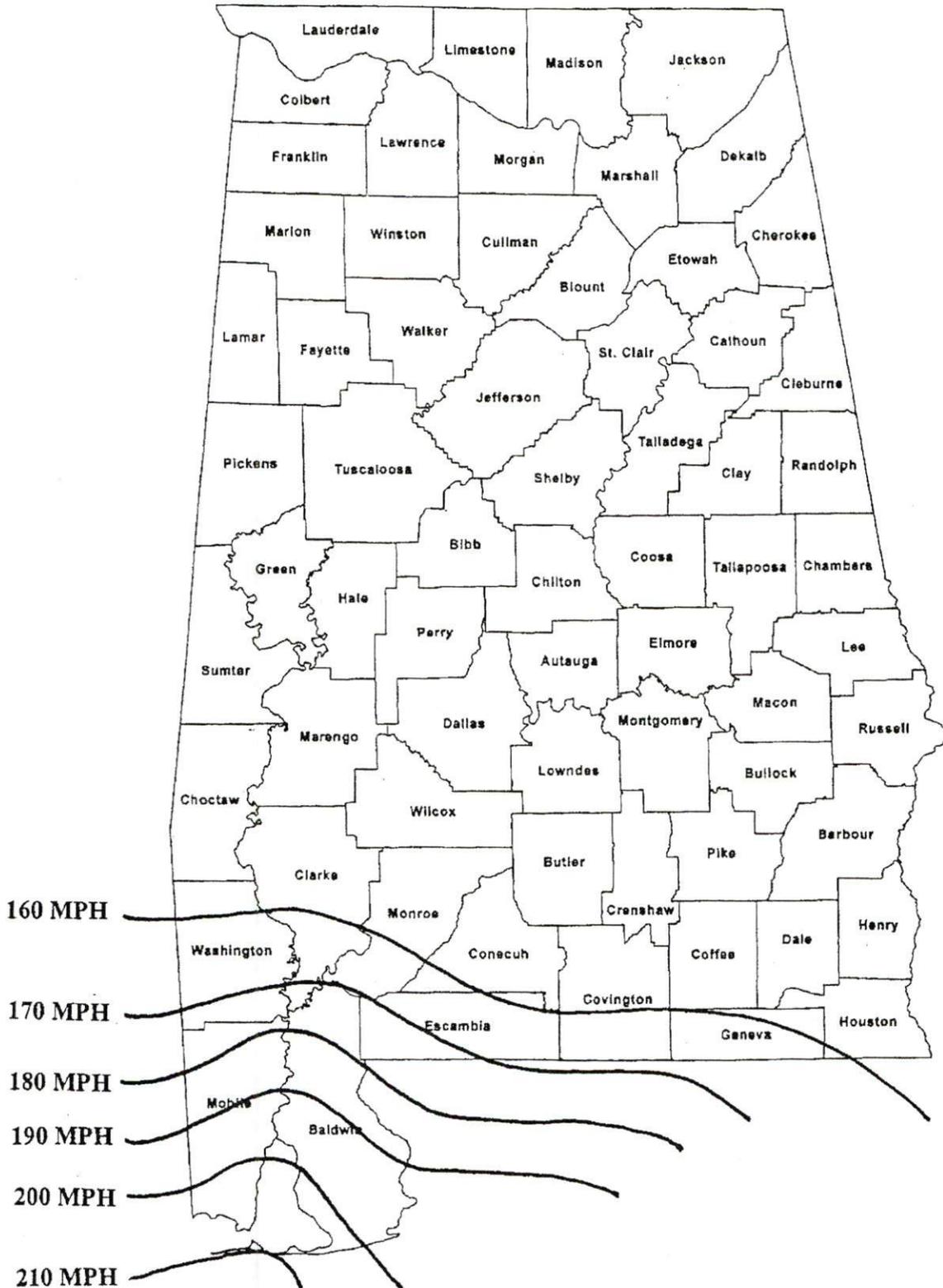
ATTACHMENT A

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)

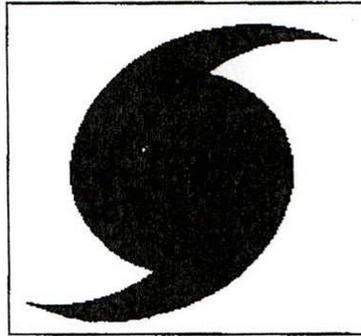
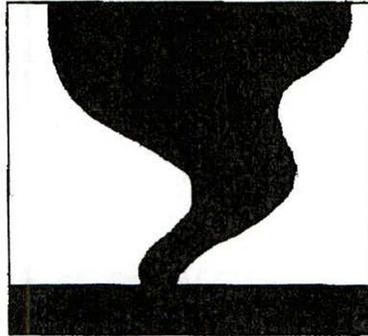
MISSILE IMPACT RESISTANCE:

___ 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

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. Exception: Alabama Community College System (ACCS) projects with Notice-To-Proceeds issued after July 31, 2021 are not submitted to DCM.

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 included as an attachment to the Certificate of Substantial Completion submitted to DCM 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 public 2-year or 4-year institutions of higher education awarded on or after August 1, 2012. Exception: Alabama Community College System (ACCS) projects with Notice-To-Proceeds issued after July 31, 2021 are not submitted to DCM.

DCM (BC) No. _____

OWNER'S STATEMENT OF RESPONSIBILITY FOR TORNADO STORM SHELTER (HURRICANE SHELTER WHERE APPLICABLE)

Project Name: _____

Owner Entity: _____

Architectural/Engineering Firm: _____

Contractor Company: _____

I _____, acknowledge that I am responsible as the Owner, to the
Owner

Alabama Department of Finance - Division of Construction Management, the State Department of Education, or the State Fire Marshal, as applicable. I certify that control shall be exercised to maintain compliance with the requirements of ICC 500. The procedures for exercising post occupancy control shall be as listed below:

- The provision of a written statement outlining shelter preparedness, normal and emergency operation, and maintenance, prior to the issuance of a certificate of occupancy
- The provision of a written plan to be followed by the owner or the owner's authorized agent for annual evaluation of the storm shelter envelope to assess the integrity of the walls and roof systems.
- The provision of a written plan to be followed by the owner or the owner's authorized agent for annual evaluation of the storm shelter envelope to assess the integrity of the openings impact-protective systems to assure that doors, windows, or other protective devices are in compliance with the respective manufacturer's operational and maintenance requirements.

Note the following:

- Storm shelters shall be maintained in an operable condition at all times, all structural, protective, and environmental systems shall be repaired or replaced when found to be damaged or inoperable.
- Should it become necessary to replace certified or listed impact-resistant systems, replacements shall comply with the listed ICC 500 requirements, and shall have been tested and shall be installed as is required for new construction.

Record Keeping:

A complete dated record of the storm shelter evaluations, changes, or replacements shall be maintained by the owner or the owner's authorized agent. Signed records of evaluations, tests, repairs, replacements or other operations and maintenance shall be kept on the premises or other approved location

Signed on this date, _____, 20_____.

Owner Entity

By _____
Signature

Name & Title _____

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. Exception: Alabama Community College System (ACCS) projects with Notice-To-Proceeds issued after July 31, 2021 are not submitted to DCM.

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. Exception: Alabama Community College System (ACCS) projects with Notice-To-Proceeds issued after July 31, 2021 are not submitted to DCM.