



# **Georgia State Amendments to the International Residential Code for One- and Two- Family Dwellings**

**(2018 Edition)**



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**Revised January 1, 2020**

**GEORGIA STATE MINIMUM STANDARD  
ONE AND TWO FAMILY DWELLING CODE  
(INTERNATIONAL RESIDENTIAL CODE FOR  
ONE- AND TWO-FAMILY DWELLINGS  
WITH GEORGIA STATE AMENDMENTS)**

The **INTERNATIONAL RESIDENTIAL CODE FOR ONE- AND TWO-FAMILY DWELLINGS, 2018 Edition**, published by the International Code Council, when used in conjunction with these and any other Georgia State Amendments to the **INTERNATIONAL RESIDENTIAL CODE FOR ONE- AND TWO-FAMILY DWELLINGS, 2018 Edition**, shall constitute the official *Georgia State Minimum Standard One- and Two-Family Dwelling Code*.

Part IV, Energy Conservation (Chapter 11), is deleted from the **INTERNATIONAL RESIDENTIAL CODE FOR ONE- AND TWO-FAMILY DWELLINGS**. Substitute all references to Chapter 11 **ENERGY EFFICIENCY** with references to the *Georgia State Minimum Standard Energy Code (International Energy Conservation Code with Georgia State Supplements and Amendments)*.

Part VII, Plumbing (Chapters 25 through 33), is deleted from the **INTERNATIONAL RESIDENTIAL CODE FOR ONE- AND TWO-FAMILY DWELLINGS**. Substitute for plumbing requirements the *Georgia State Minimum Standard Plumbing Code (International Plumbing Code with Georgia State Amendments)*.

Part VIII, Electrical (Chapters 34 through 43), is deleted from the **INTERNATIONAL RESIDENTIAL CODE FOR ONE- AND TWO-FAMILY DWELLINGS**. Substitute for electrical requirements the *Georgia State Minimum Standard Electrical Code (National Electrical Code with any Georgia State Amendments)*.

**GEORGIA STATE AMENDMENTS**

**CODE REFERENCES:**

- (a) Replace all references to the ICC *Electrical Code* with references to the *Georgia State Minimum Standard Electrical Code (National Electrical Code with any Georgia State Amendments)*.
- (b) Replace all references to the *International Energy Conservation Code (IECC)* with references to the *Georgia State Minimum Standard Energy Code (IECC with Georgia State Supplements and Amendments)*. The *Georgia State Minimum Standard Energy Code* shall be used for heating and air conditioning equipment.

## **SCOPE:**

The provisions of the *International Residential Code for One- and Two-family Dwellings* shall apply to the construction, *alteration*, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one- and two-family dwellings and townhouses separated by a 2-hour fire-resistance-rated wall assembly, not more than three stories above *grade plane* in height with a separate means of egress and their *accessory structures*.

### **Exceptions:**

1. Live/work units complying with the requirements of Section 419 of the *International Building Code* shall be permitted to be built as one- and two-family *dwellings* or townhouses. Fire suppression required by Section 419.5 of the *International Building Code* when constructed under the *International Residential Code for One- and Two-family Dwellings* shall conform to NFPA 13D.
2. Owner-occupied lodging houses with five or fewer guestrooms shall be permitted to be constructed in accordance with the *International Residential Code for One- and Two-family Dwellings* when equipped with a fire sprinkler system in accordance with NFPA 13D.

## **IMPORTANT NOTE:**

The intent of the GA amendments is that fire sprinklers shall not be mandatory in one- and two-family dwellings. However, the provisions of the 2018 Edition of the *International Residential Code for One- and Two-Family Dwellings* regarding automatic fire sprinklers are to remain in the Code for use when the builder/developer or owner chooses to install fire sprinklers as an option.

{Ref. O.C.G.A. §8-2-4. Neither the state residential and fire building code nor any residential and fire building code adopted by a political subdivision of the state adopted after May 24, 2010, shall include a requirement that fire sprinklers be installed in a single-family dwelling or a residential building that contains no more than two dwelling units. }

## **APPENDICES:**

Appendices are not enforceable unless they are specifically referenced in the body of the code or adopted by the Department of Community Affairs or the Authority Having Jurisdiction.

***\*Revise the International Residential Code for One- and Two-Family Dwellings, 2018 Edition, as follows:***

### **CHAPTER 1 SCOPE AND ADMINISTRATION**

***\*Delete Chapter 1 ‘Scope and Administration’ without substitution. Chapter 1 to remain in the Code as a reference and guide for local governments to use in development of their own Administrative Procedures.  
(Effective January 1, 2020)***

## CHAPTER 2 DEFINITIONS

### SECTION R202 DEFINITIONS

\*Revise Section R202 ‘Definitions’ for “[RB] Lodging House” to read as follows:

**[RB] LODGING HOUSE.** A one-family dwelling with 5 or fewer guestrooms, where one or more occupants are primarily permanent in nature, and rent is paid for guestrooms.  
(Effective January 1, 2020)

\*Revise Section R202 ‘Definitions’ for “[RB] Townhouse” to read as follows:

**[RB] TOWNHOUSE (ROW HOUSE).** A single-family *dwelling unit* constructed in a group of three or more attached units. Each unit extends from foundation to roof, not more than three stories in height, with a separate means of egress, and with an open space/*yard* or public way on at least two sides. Each townhouse shall be considered a separate building with independent exterior walls and shall be separated by a 2-hour fire-resistance-rated wall assembly.  
(Effective January 1, 2020)

## CHAPTER 3 BUILDING PLANNING

### SECTION R302 FIRE-RESISTANT CONSTRUCTION

\*Revise Section R302.1 ‘Exterior walls’ to read as follows:

**R302.1 Exterior walls.** Construction, projections, openings and penetrations of *exterior walls* of *dwellings* and accessory buildings shall comply with Table R302.1(1); or *dwellings* equipped throughout with an *automatic sprinkler system* installed in accordance with NFPA 13D shall comply with Table R302.1(2).  
(Existing exceptions to remain as written).  
(Effective January 1, 2020)

\*Revise Section R302.2 ‘Townhouses’ to read as follows:

**R302.2 Townhouses.** Each *townhouse* shall be considered a separate building and shall be separated by fire-resistance-rated wall assemblies meeting the requirements of Section R302.1 for exterior walls.

**Exception:** A common 2-hour fire-resistance-rated wall assembly tested in accordance with ASTM E 119 or UL 263 is permitted for townhouses, if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be installed in accordance with the National Electrical Code (NEC). Penetrations of electrical outlet boxes shall be in accordance with Section R302.4.  
(Effective January 1, 2020)

\* Delete Section R302.2.1 ‘Double walls’ without substitution.  
(Effective January 1, 2020)

\* Delete Section R302.2.2 ‘Common walls’ without substitution.  
(Effective January 1, 2020)

\*Revise Section R302.2.6 ‘Structural independence’ to delete exception #5 without substitution.  
(Effective January 1, 2020)

\*Revise Section R302.5.1 ‘Opening protection’ to read as follows:

**R302.5.1 Opening protection.** Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honey-comb-core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire rated doors.  
(Effective January 1, 2020)

\*Revise Table R302.6 ‘DWELLING-GARAGE SEPARATION’ to add a new footnote “a” to read as follows:

**TABLE R302.6  
DWELLING-GARAGE SEPARATION**

SEPARATION	MATERIAL
From the residence and attics	Not less than 1/2-inch gypsum board or equivalent applied to the garage side
From all habitable rooms above the garage	Not less than 5/8-inch Type X gypsum board or equivalent
Structure(s) supporting floor/ceiling assemblies used for separation required by this section <sup>a</sup>	Not less than 1/2-inch gypsum board or equivalent
Garages located less than 3 feet from a dwelling unit on the same lot	Not less than 1/2-inch gypsum board or equivalent applied to the interior side of exterior walls that are within this area

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Separation of floor/ceiling assemblies is not required in garages protected by an automatic sprinkler system that meets the following criteria:

1. The sprinkler system shall be connected to a reliable water supply system with or without an automatic operated pump.
2. A piping system serving both sprinkler and domestic needs shall be acceptable.
3. Ordinary-temperature-rated residential or quick response sprinklers (135°F to 170°F [57°C to 77°C]) with a 1/2-inch (13 mm) orifice shall be installed.
4. The minimum operating pressure of any residential or quick response sprinkler shall be 7 psi (0.5 bar).
5. Walls that resist the passage of smoke shall separate the sprinklered compartment from any other space(s). Openings in this wall shall be regulated by Section R302.5.
6. The maximum area protected by a single sprinkler head shall not exceed 144 ft<sup>2</sup> (13.4 m<sup>2</sup>).
7. The maximum distance between sprinklers shall not exceed 12 feet (3.7 m).
8. The maximum distance to a wall or partition shall not exceed 6 feet (1.8 m).
9. The minimum distance between sprinklers within a compartment shall be 8 feet (2.4 m).
10. Pendent and upright sprinkler heads shall be positioned so that the deflectors are within 1 to 4 inches (25.4 to 102 mm) below framing.
11. Sprinkler heads shall be located on a looped piping configuration.
12. Minimum pipe size, including that for copper, listed chlorinated polyvinyl chloride (CPVC), and polybutylene (PB) piping shall be 3/4-inch (19 mm).
13. Garage doors in the open position shall not interfere with the operation of a sprinkler head.
14. A smoke alarm detector shall be installed in accordance with Section R314.

(Effective January 1, 2020)

\*Delete Section R302.13 ‘Fire protection of floors’ without substitution.  
(Effective January 1, 2020)

**SECTION R303  
LIGHT, VENTILATION AND HEATING**

\*Revise Section R303.4 ‘Mechanical ventilation’ to read as follows:

**R303.4 Mechanical ventilation.** Where the air infiltration rate of a *dwelling unit* is 3 air changes per hour or less where tested with a blower door at a pressure of 0.2 inch w.c (50 Pa) in accordance with Section N1102.4.1.2, the *dwelling unit* shall be provided with whole-house mechanical ventilation in accordance with Section M1505.4.  
(Effective January 1, 2020)

**SECTION R306  
SANITATION**

\*Add new Section R306.5 ‘Exterior hose bibs, sill cocks or outside hydrants’ to read as follows:

**R306.5 Exterior hose bibs, sill cocks or outside hydrants.** One and two-family dwellings shall have not less than two exterior hose bibs, sill cocks or outside hydrants with one being located on the side or rear of the structure.  
(Effective January 1, 2020)

\*Add new Section R306.6 ‘Construction worker toilet facilities’ to read as follows:

**R306.6 Construction worker toilet facilities.** Toilet facilities shall be provided for construction workers and such facilities shall be maintained in a sanitary condition. Construction worker toilet facilities of the non-sewer type shall conform to ANSI Z4.3.  
(Effective January 1, 2020)

**SECTION R309  
GARAGES AND CARPORTS**

\*Delete Section R309.5 ‘Fire sprinklers’ without substitution.  
(Effective January 1, 2020)

**SECTION R311  
MEANS OF EGRESS**

\*Delete Exception to Section R311.7.11 ‘Alternating tread devices’ without substitution.  
(Effective January 1, 2020)

**SECTION R312  
GUARDS AND WINDOW FALL PROTECTION**

\*Revise the heading of Section R312 ‘Guards and Window Fall Protection’ to read as follows:

**SECTION R312  
GUARDS  
(Effective January 1, 2020)**

\*Delete Section R312.2 ‘Window fall protection’ without substitution.  
(Effective January 1, 2020)

**SECTION R313  
AUTOMATIC FIRE SPRINKLER SYSTEMS**

\*Delete Section R313 ‘AUTOMATIC FIRE SPRINKLER SYSTEMS’ and substitute to read as follows:

**SECTION R313  
AUTOMATIC FIRE SPRINKLER SYSTEMS  
(Optional)**

**R313.1 Automatic fire sprinkler systems (Optional).** Installation of an automatic residential fire sprinkler system shall be optional and not mandatory in one- and two-family *dwelling*s and *townhouses*.  
(Effective January 1, 2020)

**R313.2 Design and installation.** When installed, automatic residential fire sprinkler systems for one- and two-family *dwelling*s and *townhouses* shall be designed and installed in accordance with NFPA 13D.  
(Effective January 1, 2020)

\*Delete any other code references to Section P2904 ‘Dwelling unit fire sprinkler systems’ and substitute NFPA 13D.  
(Effective January 1, 2020)

**SECTION R315  
CARBON MONOXIDE ALARMS**

\* Revise Section R315.2.1 ‘New Construction’ to read as follows:

**R315.2.1 New construction.** For new construction, carbon monoxide alarms shall be provided in dwelling units.  
(Effective January 1, 2020)

**SECTION R321  
ELEVATORS AND PLATFORM LIFTS**

\*Revise Section R321.1 ‘Elevators’ and add a new Section R321.1.1 ‘Hoistway opening framing’ to read as follows:

**R321.1 Elevators.** Where provided, limited-use and limited-application elevators or private residence elevators shall comply with ASME A17.1/CSA B44.  
(Effective January 1, 2020)

**R321.1.1 Hoistway opening framing.** Limited-use/limited-application elevators or private residence elevators shall have hoistway landing openings that meet the Georgia amended requirements of ASME A17.1/CSA B44 Sections 5.3.1.1 and 5.3.1.7.2. The clearance between the hoistway doors or gates and the hoistway edge of the landing sill shall not exceed 3/4 inch (19 mm). The distance between the hoistway face of the landing door or gate and the car door or gate shall not exceed 3 inches (75 mm).  
(Effective January 1, 2020)

**SECTION R322  
FLOOD-RESISTANT CONSTRUCTION**

\*Delete Section R322.1.9 ‘Manufactured homes’ without substitution.  
(Effective January 1, 2020)

**CHAPTER 5  
FLOORS**

**SECTION R502  
WOOD FLOOR FRAMING**

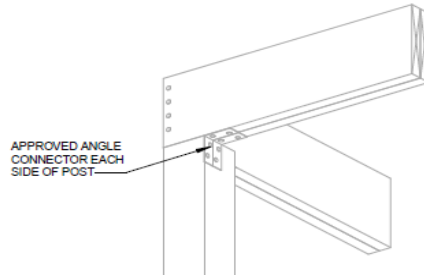
\* Revise Section R502.6 ‘Bearing’ to read as follows:

**R502.6 Bearing.** The ends of each joist, beam or girder shall have not less than 1 1/2 inches (38 mm) of bearing on wood or metal, have not less than 3 inches of bearing (76 mm) on masonry or concrete or be supported by *approved* joist hangers. Alternatively, the ends of joists shall be supported on a 1-inch by 4-inch (25 mm by 102 mm) ribbon strip and shall be nailed to the adjacent stud. The bearing on masonry or concrete shall be direct, or a sill plate of 2-inch minimum (51mm) nominal thickness shall be provided under the joist, beam or girder.  
(Effective January 1, 2020)



## SECTION R507 EXTERIOR DECKS

\* Revise Figure R507.5.1(1) ‘DECK BEAM TO DECK POST’ to include a new illustration for “Corner Beam Over Post” as follows:



**CORNER BEAM OVER POST**

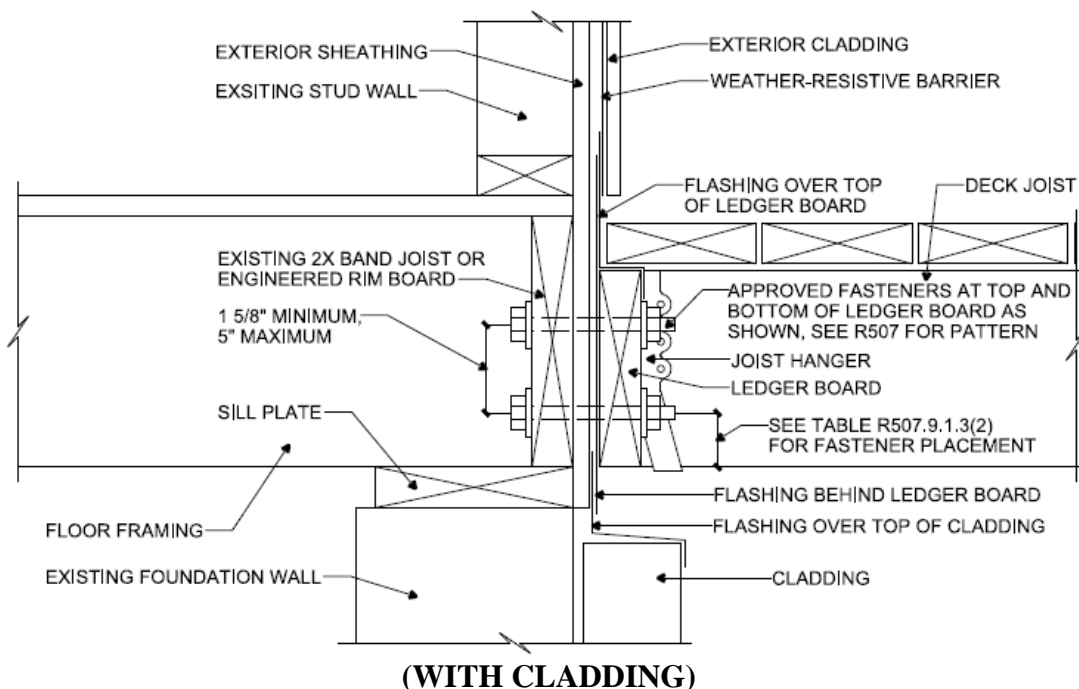
(Effective January 1, 2020)

\*Revise R507.9.1.3 ‘Ledger to band joist details’ to read as follows:

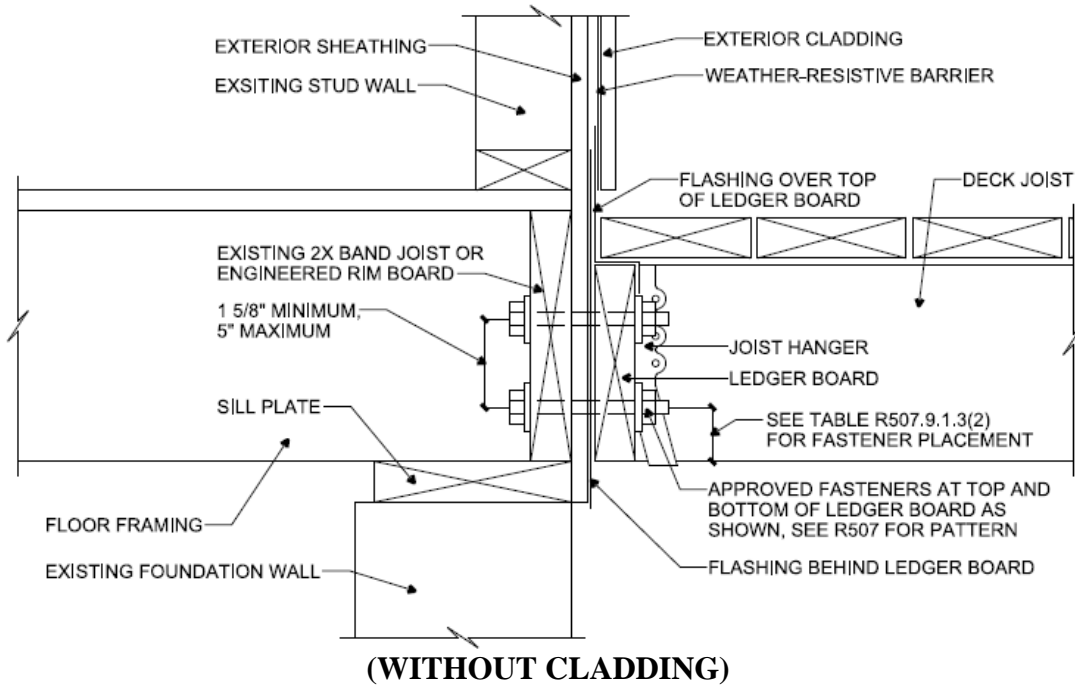
**R507.9.1.3 Ledger to band joist details.** Fasteners used in deck ledger connections in accordance with Table R507.9.1.3(1) shall be hot-dipped galvanized, stainless steel, or other approved fasteners and shall be installed in accordance with Table R507.9.1.3(2) and Figures R507.9.1.3(1) and R507.9.1.3(2).

(Effective January 1, 2020)

\*Revise Figure R507.9.1.3 (2) ‘Placement of Lag Screws and Bolts in Band Joists’ as follows:

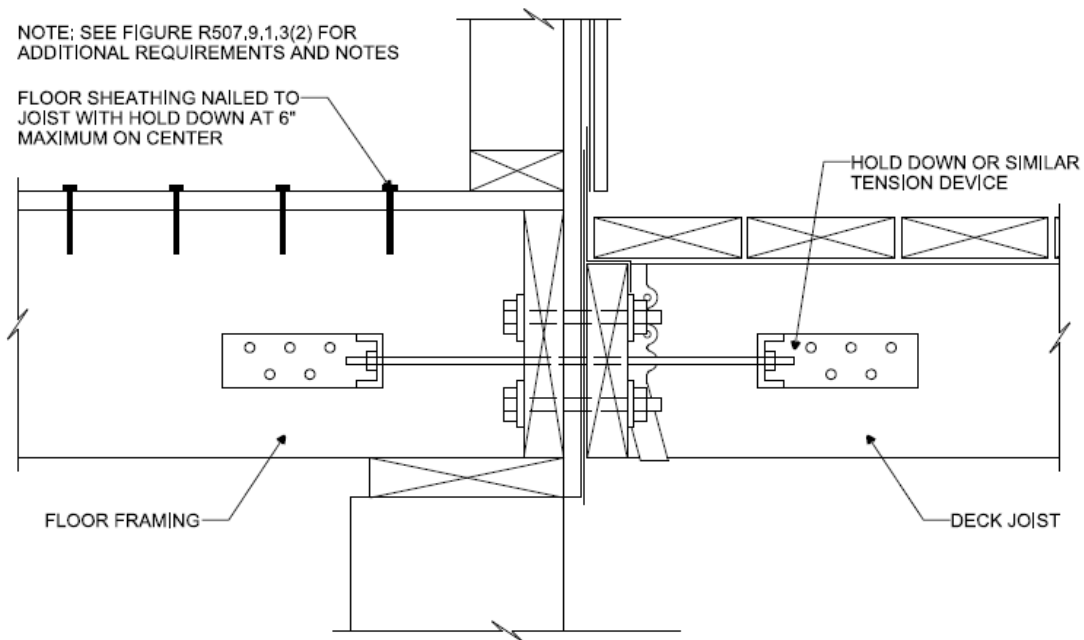


**(WITH CLADDING)**



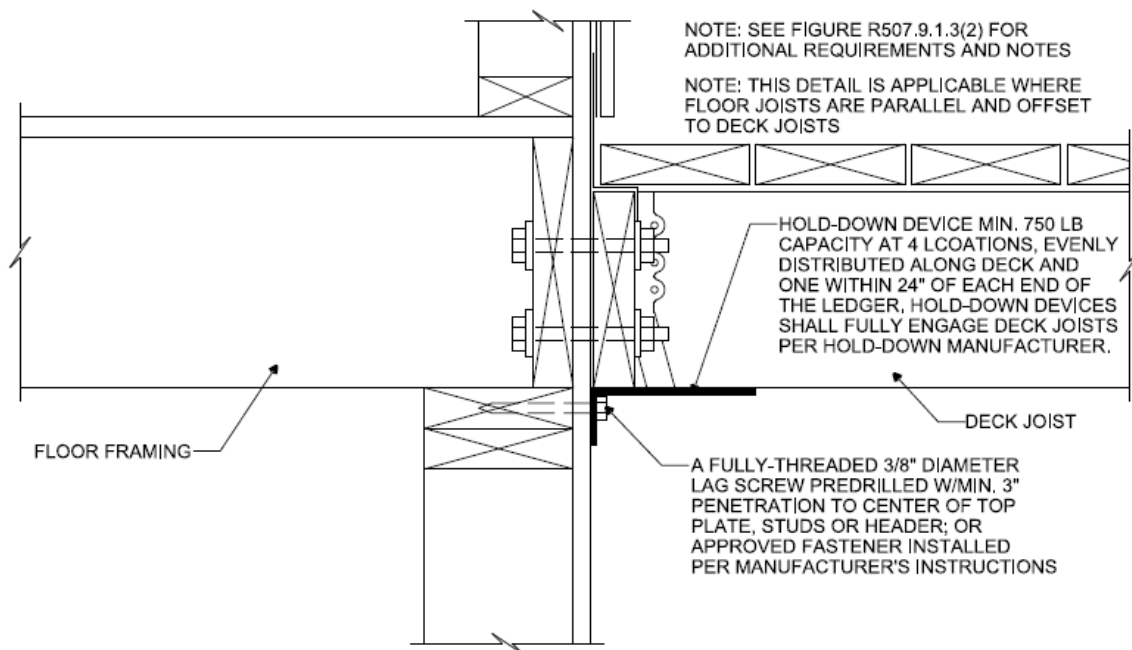
**(WITHOUT CLADDING)**  
**FIGURE R507.9.1.3(2)**  
**PLACEMENT LAG SCREWS AND BOLTS IN BAND JOISTS**  
 (Effective January 1, 2020)

\* Revise Figure R507.9.2(1) 'Deck Attachment for Lateral Loads' as follows:



**FIGURE R507.9.2(1)**  
**DECK ATTACHMENT FOR LATERAL LOADS**  
 (Effective January 1, 2020)

\*Revise Figure R507.9.2(2) 'Deck Attachment for Lateral Loads' and as follows:



**FIGURE R507.9.2(2)**  
**DECK ATTACHMENT FOR LATERAL LOADS**  
(Effective January 1, 2020)

## **CHAPTER 6** **WALL CONSTRUCTION**

### **SECTION R602** **WOOD WALL FRAMING**

\*Add new exception to R602.10 'Wall bracing' to read as follows:

**R602.10 Wall bracing.** Buildings shall be braced in accordance with this section or, when applicable, Section R602.12. Where a building, or portion thereof, does not comply with one or more of the bracing requirements in this section, those portions shall be designed and constructed in accordance with Section R301.1.

**Exception:** APA Simplified Wall Bracing Method, SR-102 may be used as an alternate method of wall bracing subject to limitations in document.  
(Effective January 1, 2020)

**CHAPTER 8  
ROOF-CEILING CONSTRUCTION**

**SECTION R806  
ROOF VENTILATION**

\*Delete R806.5 ‘Unvented attic and unvented enclosed rafter assemblies’ Item 5.2 without substitution.

(Effective January 1, 2020)

**SECTION R807  
ATTIC ACCESS**

Add new Section R807.1.1 ‘Attic service access’ to read as follows:

**R807.1.1 Attic service access.** Attics containing appliances or mechanical equipment service shall be accessible by pull down stairs or other permanent steps and at a minimum be sized to allow the removal of the largest appliance.

(Effective January 1, 2020)

**CHAPTER 13  
GENERAL MECHANICAL SYSTEM REQUIREMENTS**

**SECTION M1301  
GENERAL**

\*Revise Section M1301.2 ‘Identification’ to read as follows:

**M1301.2 Identification.** Each length of pipe and tubing and each pipe fitting utilized in a mechanical system shall bear the identification of the manufacturer. If not provided on the packaging or crating or by other approved documentation, each pipe fitting, utilized in a gas fuel system, shall bear the identification of the manufacturer.

(Effective January 1, 2020)

**CHAPTER 16  
DUCT SYSTEMS**

**SECTION M1601  
DUCT CONSTRUCTION**

\*Delete Section M1601.1.1 ‘Above-ground duct systems’, Item 5 without substitution.

(Effective January 1, 2020)

\*Revise Section M1601.1.1 ‘Above ground duct systems’, Item 7.1 as follows:

**M1601.1.1 Above-ground duct systems.** Above-ground *duct systems* shall conform to the following:

7. Stud wall cavities and the spaces between solid floor joists to be used as air plenums shall comply with the following conditions:

7.1 These cavities or spaces shall not be used as a plenum for supply or return air unless all such supply and return ducts are lined with metal, flex duct, duct board or other material that is approved in this section.

(Remainder of section unchanged.)

(Effective January 1, 2020)

## **CHAPTER 19 SPECIAL APPLIANCES, EQUIPMENT AND SYSTEMS**

### **SECTION M1901 RANGES AND OVENS**

\*Revise Section M1901.2 ‘Cooking appliances’ to add a new exception to read as follows:

**M1901.2 Cooking appliances.** Cooking *appliances* shall be *listed* and *labeled* for household use and shall be installed in accordance with the manufacturer’s instructions. The installation shall not interfere with *combustion air* or access for operation and servicing. Electric cooking appliances shall comply with UL 1026 or UL 858. Solid-fuel-fired fireplace stoves shall comply with UL 737. Microwave ovens shall comply with UL 923.

Exception: Listed and labeled commercial cooking appliances may be installed in dwelling units and domestic kitchens when designed and accepted by a Georgia licensed Professional Engineer.

(Effective January 1, 2020)

## **CHAPTER 24 FUEL GAS**

### **SECTION G2415 (404) PIPING SYSTEM INSTALLATION**

\*Delete Section G2415.6 (404.6) ‘Underground penetrations prohibited’ and substitute to read as follows:

**G2415.6 (404.6) Piping through foundation wall.** Underground piping where installed below grade through the foundation or basement wall of a building, shall be encased in a protective pipe sleeve. The annular space between the gas piping and the sleeve shall be sealed.

(Effective January 1, 2020)

\*Revise Section G2415.7.1 (404.7.1) ‘Piping through bored holes or notches’ to read as follows:

**G2415.7.1 (404.7.1) Piping through bored holes or notches.** Where *piping* is installed through holes or notches in framing members and the *piping* is located less than 11/2 inches (38 mm) from the framing member face to which wall, ceiling or floor membranes will be attached, the pipe shall be protected by shield plates that cover the width of the pipe and the framing member. Where the framing member that the *piping* passes through is a bottom plate, bottom track, top plate or top track, the shield plates shall cover the framing member and extend not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) below the top framing member.

(Effective January 1, 2020)

\*Delete Section G2415.7.2 (404.7.2) ‘Piping installed in other locations’ without substitution.

(Effective January 1, 2020)

\*Delete Section G2415.11.1 (404.11.1) ‘Galvanizing’ without substitution:

(Effective January 1, 2020)

\*Revise Section G2415.18 (404.18) ‘Pipe Cleaning’ to read as follows:

**G2415.18 (404.18) Pipe debris removal.** The interior of piping shall be clear of debris. The use of a flammable or combustible gas to clean or remove debris from a *piping system* shall be prohibited.

(Effective January 1, 2020)

## **SECTION G2420 (409) SHUTOFF VALVES**

\*Add new Section G2420.2.1 (409.2.1) ‘System shutoff valve’ to read as follows:

**G2420.2.1 (409.2.1) System Shutoff Valve.** Where the point of delivery is the outlet of the service meter assembly, or the outlet of the service regulator, a system shutoff valve shall be installed. Such valve is considered to be part of the customer piping system.

(Effective January 1, 2020)

## **SECTION G2423 (413) COMPRESSED NATURAL GAS MOTOR VEHICLE FUEL-DISPENSING FACILITIES**

\*Delete Section G2423.1 (413.1) ‘General’ and substitute to read as follows:

**G2423.1 (413.1) General.** Under Georgia law, the Rules and Regulations of the Georgia Safety Fire Commissioner govern the storage, delivery and dispensing of compressed natural gas. Refer to the Rules and Regulations of the Georgia Safety Fire Commissioner and NFPA 52 for all requirements concerning compressed natural gas motor vehicle fuel-dispensing stations.

(Effective January 1, 2020)

\*Add new APPENDIX Q ‘TINY HOUSES’ to read as follows:

## APPENDIX Q

### TINY HOUSES

*(The provisions contained in this appendix are not mandatory unless specifically referenced in the adopted ordinance.)*

#### SECTION AS101 GENERAL

**AQ101.1 Scope.** This appendix shall be applicable to *tiny houses* used as single dwelling units. *Tiny houses* shall comply with this code except as otherwise stated in this appendix.

#### APPENDIX AS102 DEFINITIONS

**AQ102.1 General.** The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.

**EGRESS ROOF ACCESS WINDOW.** A *skylight* or roof window designed and installed to satisfy the emergency escape and rescue opening requirements in Section R310.2.

**LANDING PLATFORM.** A landing provided as the top step of a stairway accessing a *loft*.

**LOFT.** A floor level located more than 30 inches (762 mm) above the main floor, open to the main floor on one or more sides with a ceiling height of less than 6 feet 8 inches (2032 mm) and used as a living or sleeping space.

**LOFT.** A floor level located more than 30 inches (762 mm) above the main floor, and open to it on at least one side with a ceiling height of a maximum of 5 feet, used as a living or sleeping space.

**TINY HOUSE.** A dwelling that is 400 square feet (37 m<sup>2</sup>) or less in floor area excluding *lofts*.

#### SECTION AS103 CEILING HEIGHT

**AQ103.1 Minimum ceiling height.** *Habitable space* and hallways in *tiny houses* shall have a finished ceiling height of not less than 6 feet 8 inches (2032 mm). Bathrooms, toilet rooms and kitchens shall have a ceiling height of not less than 6 feet 4 inches (1930 mm). Obstructions including, but not limited to, beams, girders, ducts and lighting, shall not extend below these minimum ceiling heights including beams, girders, ducts, lighting and other obstructions.

**Exception:** Ceiling heights in *lofts* are permitted to be less than 6 feet 8 inches (2032 mm) a maximum of 5 feet (1524 mm).

## SECTION AS104 LOFTS

**AQ104.1 Minimum loft area and dimensions.** *Lofts* used as a sleeping or living space shall meet the minimum area and dimension requirements of Sections AS104.1.1 through AS104.1.3.

**AQ104.1.1 Minimum area.** *Lofts* shall have a floor area of not less than 35 square feet (3.25 m<sup>2</sup>).

**AQ104.1.2 Minimum dimensions.** *Lofts* shall be not less than 5 feet (1524 mm) in any horizontal dimension.

**AQ104.1.3 Height effect on loft area.** Portions of a *loft* with a sloped ceiling measuring less than 3 feet (914 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required area for the loft.

**Exception:** Under gable roofs with a minimum slope of 6:12, portions of a *loft* with a sloped ceiling measuring less than 16 inches (406 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required area for the *loft*.

**AQ104.2 Loft access.** The access to and primary egress from *lofts* shall be any type described in Sections AQ104.2.1 through AQ104.2.4.

**AQ104.2.1 Stairways.** Stairways accessing *lofts* shall comply with this code or with Sections AQ104.2.1.1 through AQ104.2.1.6.

**AQ104.2.1.1 Width.** Stairways accessing a *loft* shall not be less than 17 inches (432 mm) in clear width at or above the handrail. The minimum width below the handrail shall be not less than 20 inches (508 mm).

**AQ104.2.1.2 Headroom.** The headroom in stairways accessing a *loft* shall be not less than 6 feet 2 inches (1880 mm), as measured vertically, from a sloped line connecting the tread or landing platform nosings in the middle of their width.

**AQ104.2.1.3 Treads and risers.** Risers for stairs accessing a *loft* shall be not less than 7 inches (178 mm) and not more than 12 inches (305 mm) in height. Tread depth and riser height shall be calculated in accordance with one of the following formulas:

1. The tread depth shall be 20 inches (508 mm) minus  $\frac{4}{3}$  of the riser height, or
2. The riser height shall be 15 inches (381 mm) minus  $\frac{3}{4}$  of the tread depth.

**AQ104.2.1.4 Landing platforms.** The top tread and riser of stairways accessing *lofts* shall be constructed as a *landing platform* where the *loft* ceiling height is less than 6 feet 2 inches (1880 mm) where the stairway meets the *loft*. The *landing platform* shall be 18 inches to 22 inches (457 to 559 mm) in depth measured from the nosing of the landing platform to the edge of the *loft*, and 16 to 18 inches (406 to 457 mm) in height measured from the *landing platform* to the *loft* floor.



**AQ104.2.1.4.1 Landing platform guards.** Guards at the open side of landing platforms shall comply with Section R312.1 or shall be at least as high as the loft guard; whichever is greater.

**AQ104.2.1.5 Handrails.** Handrails shall comply with Section R311.7.8.

**AQ104.2.1.6 Stairway guards.** Guards at open sides of stairways shall comply with Section R312.1.

**AQ104.2.2 Ladders.** Ladders accessing *lofts* shall comply with Sections AS104.2.2.1 and AS104.2.2.2.

**AQ104.2.2.1 Size and capacity.** Ladders accessing *lofts* shall have a rung width of not less than 12 inches (305 mm), and 10 inches (254 mm) to 14 inches (356 mm) spacing between rungs. Ladders shall be capable of supporting a 300-pound (75 kg) load on any rung. Rung spacing shall be uniform within 3/8 inch (9.5 mm).

**AQ104.2.2.2 Incline.** Ladders shall be installed at 70 to 80 degrees from horizontal.

**AQ104.2.3 Ships ladders.** Ships ladders accessing *lofts* shall have a minimum tread depth of 5 inches (127 mm). The tread shall be projected such that the total of the tread depth plus the nosing projection is no less than 8 1/2 inches (216 mm). The maximum riser height shall be 9 1/2 inches (241 mm). Handrails shall be provided on both sides of ship ladders and shall comply with Section R311.7.8. Handrail height shall be uniform, not less than 30 inches (762 mm) and not more than 34 inches (864). The clear width at and below handrails shall be not less than 20 inches (508 mm). Compliant ship ladders may also access additional stories of a tiny house.

**AQ104.2.4 Loft guards.** *Loft* guards shall be located along the open side of *lofts*. *Loft* guards shall not be less than 36 inches (914 mm) in height or one-half of the clear height to the ceiling, whichever is less, but no less than 18 inches.

## **SECTION AQ105 EMERGENCY ESCAPE AND RESCUE OPENINGS**

**AQ105.1 General.** *Tiny houses* shall meet the requirements of Section R310 for emergency escape and rescue openings.

**Exception:** *Egress roof access windows* in *lofts* used as sleeping rooms shall be deemed to meet the requirements of Section R310 where installed such that the bottom of the opening is not more than 44 inches (1118 mm) above the *loft* floor, provided the *egress roof access window* complies with the minimum opening area requirements of Section R310.2.1.

**SECTION AQ106  
SMOKE AND CARBON MONOXIDE DETECTORS**

**AQ106.1 SMOKE AND CARBON MONOXIDE DETECTORS.** Smoke and carbon monoxide detectors shall be installed as required in Sections R314 and R315 and on the ceiling directly underneath any loft and just below the highest point of any loft.  
(Effective January 1, 2020)

**APPENDIX U  
DISASTER RESILIENT CONSTRUCTION**

\*The Department of Community Affairs hereby adopts Appendix U ‘Disaster Resilient Construction’ as optional. This document is available to download free from DCA’s webpage at:  
[https://dca.ga.gov/sites/default/files/appendix\\_u\\_-\\_irc\\_-\\_final\\_5-21-2018rev1.pdf](https://dca.ga.gov/sites/default/files/appendix_u_-_irc_-_final_5-21-2018rev1.pdf)  
(Effective January 1, 2020)



Georgia State  
International Residential Code  
  
Appendix U  
Disaster Resilient Construction  
(2020 Edition)



Georgia Department of Community Affairs  
Community Development Division  
60 Executive Park South, N.E.  
Atlanta, Georgia 30329-2231  
(404) 679-3118  
[www.dca.ga.gov](http://www.dca.ga.gov)

# January 1, 2020

## GEORGIA STATE INTERNATIONAL RESIDENTIAL CODE APPENDIX U DISASTER RESILIENT CONSTRUCTION

**The INTERNATIONAL RESIDENTIAL CODE, 2018 Edition, published by the International Code Council, when used in conjunction with the Georgia State Amendments to the INTERNATIONAL RESIDENTIAL CODE, 2018 Edition and Appendix U Disaster Resilient Construction, shall constitute the official *Georgia State Minimum Standard Residential Code*.**

### FORWARD

#### Introduction

The Department of Community Affairs (DCA) was awarded a grant through the U.S. Department of Housing and Urban Development (HUD) to develop Disaster Resilient Building Code (DRBC) Appendices for the International Building Code (IBC) and the International Residential Code (IRC). The DRBC Appendices are optional regulations that local jurisdictions may adopt, in whole or in part, through local ordinance. A task force of stakeholders was appointed to look for opportunities to improve any code provisions relating to damage from hurricane, flood, and tornado disasters. In addition to the approved recommendations from the task force, the state has developed and will conduct a comprehensive training program for code enforcement officials on the importance, implementation and enforcement of the Disaster Resilient Construction Appendices.

The meetings for the Disaster Resilient Building Code Appendices Task Force were open to the public, interested individuals and organizations that desired participation. The technical content of currently published documents on flooding, high-wind construction, and storm shelters, were used and referenced. Those publications included documents of the International Code Council (ICC), American Society of Civil Engineers (ASCE), the Federal Emergency Management Agency (FEMA), Mitigation Assessment Team (MAT) Program, Georgia Emergency Management Agency/Homeland Security (GEMA), APA – The Engineered Wood Association, National Institute of Standards and Technology (NIST), National Oceanic and Atmospheric Administration (NOAA), National Science Foundation (NSF), The State of Florida, American Forest & Paper Association’s American Wood Council, Southern Forest Products Association, NAHB Research Center, Insurance Institute for Business & Home Safety, and the Federal Alliance for Safe Homes.

#### Adoption

Local jurisdictions may adopt this entire appendix with chosen options or specific sections that apply to their communities through a local ordinance. The adopting ordinance must also be filed on record with DCA. A sample ordinance has been included in this document to assist the local jurisdictions with the adoption process. Recommended training is being offered to assist code enforcement officials in the implementation and enforcement of the appendices documents. Contact DCA at (404) 679-3118 or [www.dca.ga.gov](http://www.dca.ga.gov) for more information.

Neither The Disaster Resilient Building Code Appendices Task Force, its members nor those participating in the development of Appendix U Disaster Resilient Construction accept any liability resulting from compliance or noncompliance with the provisions of Appendix U Disaster Resilient Construction.

**The 2012 Disaster Resilient Building Code (DRBC) Appendices Task Force** was charged with the development of two appendices. One appendix is for the International Residential Code and the other appendix is for the International Building Code. These two appendices look for opportunities to improve any provisions relating to hurricane, flood, and tornado disasters. In addition to improving existing provisions in the codes, the task force also developed new provisions to be included in the appendices that address these issues. These appendices contain increased construction requirements for disaster resilience and are intended to be made available for adoption by local jurisdictions in the State of Georgia.

These appendices have reasonable and substantial connection with the public health, safety, and general welfare. In addition, the financial impact and costs associated with these appendices have been taken into consideration.

***Members:***

**Mr. Gregori Anderson, Chairman**, States Codes Advisory Committee (SCAC)  
**Mr. David L. Adams, Vice Chairman**, States Codes Advisory Committee (SCAC)  
**Mr. Bill Abballe, AIA**, American Institute of Architects (AIA) – Georgia Chapter  
**Mr. John Hutton, P.E., S.E.**, American Council of Engineering Companies of Georgia (ACEC/G)  
**Mr. Ron Anderson**, Code Consultant  
**Mr. Lamar Smith**, Home Builders Association of Georgia (HBAG)  
**Mr. Thomas Harper**, Georgia State Inspectors Association (GSIA)  
**Mr. Tom Buttram**, Building Officials Association of Georgia (BOAG)  
**Capt. Zane Newman**, Georgia State Fire Marshal’s Office (Local Fire Official)  
**Mr. Terry Lunn**, Georgia Emergency Management Agency (GEMA)  
**Mr. Alan Giles, CFM**, Georgia Department of Natural Resources (EPD / Floodplain Management Unit)  
**Mr. Tony Hebert**, HUD Georgia State Representative (Region IV Office)  
**Mr. Jim C. Beck, Sr.**, Georgia Underwriting Association  
**Mr. Tim Thornton**, Georgia Association of Realtors (GAR)  
**Mr. Steve Harrison**, Building Owners and Managers Association – Georgia (BOMA)  
**Mr. Tom Aderhold**, Georgia Apartment Association (GAA)  
**Mr. Tim Bromley**, Accessibility Consultant – Georgia State ADA Coordinator’s Office  
**Mayor Mark Mathews**, Georgia Municipal Association (GMA)  
**Commissioner Jeff Long**, Association of County Commissioners of Georgia (ACCG)

***Ad Hoc Subcommittee:***

**Mr. Tom Buttram, Chairman**, DRBC Task Force Liaison (BOAG)  
**Mr. Ron Anderson, Vice Chairman**, Code Consultant  
**Mr. Stephen V. Skalko, P.E.** Concrete Industry  
**Mr. Jeffrey B. Stone, PhD.**, Wood Industry (AWC)  
**Mr. Robert Wills**, Steel Industry (AISC)  
**Mr. Tom Cunningham, PhD.**, Residential Building Design  
**Mr. Duncan J. Hastie, P.E.**, Disaster Mitigation

***DCA Staff:***

**Mr. Ted Miltiades**, Director of Construction Codes & Industrialized Buildings  
**Mrs. Deirdre “Dee” Leclair**, DRBC Grant Project Manager  
**Mr. Max Rietschier**, Lead Codes Consultant  
**Mr. Bill Towson**, 2012 International Residential Code Task Force Liaison, Code Consultant  
**Mr. Calvin Jordan**, 2012 International Building Code Task Force Liaison, Code Consultant

***How to Use Appendix U Disaster Resilient Construction***

The appendix may be adopted in whole or in part by Local Jurisdictions to fit the needs of their community. The following sample ordinance has been provided to aid in the process of identifying Chapters and Sections of the appendix that may be adopted. The format easily allows for choosing to adopt, revise or delete individual Chapters and Sections. Download the MS Word (.doc) version from the DCA website to take advantage of the dropdown menu choices and edit ability features of the document. Note that in Chapter 3, choose one of three options for flood elevation. Only one option may be chosen and that option must be higher than what has been previously adopted and enforced by your jurisdiction. Also note that in Chapter 4, choose one of four options for increased wind speed. Only one option may be chosen and that option must be higher than the mapped wind speed shown in the International Residential Code. The Sample Ordinance document takes into account the flood elevation option in Chapter 3 and the wind speed option in Chapter 4 of this appendix.

**SAMPLE ORDINANCE FOR ADOPTION OF  
GEORGIA STATE INTERNATIONAL RESIDENTIAL CODE  
APPENDIX U  
DISASTER RESILIENT CONSTRUCTION**

**ORDINANCE NO. \_\_\_\_\_**

An ordinance of the [JURISDICTION] adopting the latest edition as adopted and amended by the Georgia Department of Community Affairs of *Appendix U Disaster Resilient Construction* regulating and governing the mitigation of hazard to life and property from natural weather related disasters, high-wind damages, flooding, and establishing construction standards for storm shelters in the [JURISDICTION]; providing for the issuance of permits and collection of fees therefore; repealing Ordinance No. \_\_\_\_ of the [JURISDICTION] and all other ordinances or parts of the laws in conflict therewith.

The [GOVERNING BODY] of the [JURISDICTION] does ordain as follows:

**Section 1.** That a certain document, three (3) copies of which are on file in the office of the [TITLE OF JURISDICTION'S KEEPER OF RECORDS] of [NAME OF JURISDICTION], being marked and designated as *Appendix U Disaster Resilient Construction* to the International Residential Code, the latest edition as adopted and amended by the Georgia Department of Community Affairs, be and is adopted as the *Appendix U Disaster Resilient Construction* of the [JURISDICTION], in the State of Georgia for regulating and governing the mitigation of hazard to life and property from natural weather related disasters, high-wind damages, flooding, and establishing construction standards for storm shelters; providing for the issuance of permits and collection of fees therefore; and each and all of the regulations, provisions, penalties, conditions and terms of said *Appendix U Disaster Resilient Construction* on file in the office of the [JURISDICTION] are hereby referred to, adopted, and made a part hereof, as if fully set out in this ordinance, with the additions, insertions, deletions and changes, if any prescribed in Section 2 of this ordinance.

**Section 2.** [NAME OF JURISDICTION] hereby:

Choose an item. CHAPTER AU1 SCOPE AND ADMINISTRATION Choose an item.

Choose an item. SECTION AU101 ADMINISTRATION Choose an item.

Choose an item. AU101.1 Purpose Choose an item.

Choose an item. AU101.2 Objectives Choose an item.

Choose an item. AU101.3 Scope Choose an item.

AU101.3.1 Insert [Name Of Jurisdiction] for [NAME OF JURISDICTION].

Choose an item. AU101.4 Violations Choose an item.

Insert [Name Of Jurisdiction] for [NAME OF JURISDICTION].

Choose an item. SECTION AU102 APPLICABILITY Choose an item.

Choose an item. AU102.1 General Choose an item.

Choose an item. AU102.2 Other laws Choose an item.

Choose an item. AU102.3 Referenced codes and standards Choose an item.

Choose an item. SECTION AU103 POST DISASTER EVENT INSPECTIONS GUIDLINES Choose an item.

Choose an item. AU103.1 Inspections Choose an item.

Choose an item. AU103.1.1 Right of entry Choose an item.

Choose an item. AU103.2 Types of inspections Choose an item.

Choose an item. AU103.3 Post disaster building safety evaluation chart Choose an item.

Choose an item. Figure AU103.3 Post Disaster Building Safety Evaluation Chart Choose an item.

Choose an item. AU103.4 Evaluation forms Choose an item.

Insert [Name Of Jurisdiction] for [NAME OF JURISDICTION].

Choose an item. AU103.5 Placement and remove of placards Choose an item.

Choose an item. CHAPTER AU2 DEFINITIONS Choose an item.

Choose an item. SECTION AU201 GENERAL Choose an item.

Choose an item. AU201.1 Scope Choose an item.

Choose an item. AU201.2 Terms defined in other codes Choose an item.

Choose an item. AU201.3 Terms not defined Choose an item.

Choose an item. SECTION AU202 DEFINITIONS Choose an item.

Choose an item. CHAPTER AU3 FLOOD-RESISTANT CONSTRUCTION Choose an item.

Choose an item. SECTION AU301 HAZARD IDENTIFICATION Choose an item.

Choose an item. AU301.1 Identification of flood hazard areas Choose an item.

Insert [Name Of Jurisdiction] for [NAME OF JURISDICTION].  
 Insert [Date] for [INSERT DATE ISSUANCE].

Choose an item. SECTION AU302 SCOPE Choose an item.  
 Choose an item. AU302.1 Flood loads Choose an item.  
 Choose an item. FLOOD ELEVATION OPTION Choose an item. Choose an item.

Choose an item. SECTION AU303 FLOOD DAMAGE-RESISTANT MATERIALS Choose an item.  
 Choose an item. AU303.1 Flood damage-resistant materials Choose an item.  
 Choose an item. AU303.2 Location of flood damage-resistant materials Choose an item.  
 Choose an item. AU303.3 Fasteners and connectors used for flood-resistant materials Choose an item.

Choose an item. CHAPTER AU4 HIGH-WIND RESISTIVE CONSTRUCTION Choose an item.  
 Choose an item. SECTION AU401 GENERAL Choose an item.  
 Choose an item. AU401.1 Scope Choose an item.  
 Choose an item. AU401.2 Continuous load path Choose an item.  
 Choose an item. AU401.3 Adoption of wind speed Choose an item.  
 [Name Of Jurisdiction] adopts Option Choose an item.

Choose an item. SECTION Choose an item. Choose an item.

Choose an item. SECTION AU406 FASTENERS AND CONNECTIONS FOR CLADDING Choose an item.  
 Choose an item. AU406.1 Fasteners and connectors for cladding Choose an item.

Choose an item. SECTION AU407 FENESTRATION Choose an item.  
 Choose an item. AU407.1 Design pressure Choose an item.  
 Choose an item. AU407.2 Anchorage methods Choose an item.

Choose an item. SECTION AU408 ROOFING Choose an item.  
 Choose an item. AU408.1 Secondary water barrier Choose an item.  
 Choose an item. AU408.2 Fasteners Choose an item.  
 Choose an item. AU408.3 Attachment Choose an item.

Choose an item. CHAPTER AU5 RESIDENTIAL STORM SHELTERS AND SAFE ROOMS Choose an item.  
 Choose an item. SECTION AU501 GENERAL Choose an item.  
 Choose an item. AU501.1 General Choose an item.

Choose an item. SECTION AU502 RESIDENTIAL STORM SHELTERS AND SAFE ROOMS Choose an item.  
 Choose an item. AU502.1 Residential storm shelters Choose an item.  
 Choose an item. AU502.2 Residential safe rooms Choose an item.

**Section 3.** That Ordinance No. \_\_\_\_ of [JURISDICTION] entitled [FILL IN HERE THE COMPLETE TITLE OF THE LEGISLATION OR LAWS IN EFFECT AT THE PRESENT TIME SO THAT THEY WILL BE REPEALED BY DEFINITE MENTION] and all other ordinances or parts of laws in conflict herewith are hereby repealed.

**Section 4.** That if any section, subsection, sentence, clause or phrase of this ordinance is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ordinance. The [GOVERNING BODY] hereby declares that it would have passed this law, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

**Section 5.** That nothing in this ordinance or in *Appendix U Disaster Resilient Construction* hereby adopted shall be construed to affect any suit or proceeding impending in any court, or any rights acquired, or liability incurred, or any cause or causes of action acquired or existing under any act or ordinance hereby repealed as cited in Section 3 of this ordinance; nor shall any just or legal right or remedy of any character be lost, impaired or affected by this ordinance.

**Section 6.** That the [JURISDICTION'S KEEPER OF RECORDS] is hereby ordered and directed to cause this ordinance to be published. (An additional provision may be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.)

**Section 7.** That this ordinance and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full force and effect [TIME PERIOD] from and after the date of its final passage and adoption.

**Section 8.** Chapter AU6 Resources of this document is intended to be used by the building officials as a resource guide.

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# APPENDIX U DISASTER RESILIENT CONSTRUCTION

## CHAPTER AU1 SCOPE AND ADMINISTRATION

### SECTION AU101 ADMINISTRATION

**AU101.1 Purpose.** The scope of this appendix is to promote enhanced public health, safety and general welfare and to reduce public and private property losses due to hazards and natural disasters associated with flooding, high-winds, and windborne debris above that which is provided in the general provisions of this appendix.

**AU101.2 Objectives.** The objectives of this appendix are to:

1. Protect human life, to minimize property loss and to minimize the expenditures of public money associated with natural weather related disasters, including flooding, tornadoes and other high-wind events.
2. Establish enhanced design and construction regulations consistent with nationally recognized good practices for the safeguarding of life and property.

#### **AU101.3 Scope.**

**AU101.3.1** The provisions of this appendix are not mandatory unless specifically referenced in an adopting ordinance of [NAME OF JURISDICTION]. If adopted, the provisions shall apply to all new development and to substantial improvements to existing development.

**AU101.3.2** The provisions of this appendix supplement the jurisdiction's building codes to provide for enhanced provisions to mitigate the hazard to life and property from natural weather related disasters, including flooding, tornadoes and other high-wind events.

**AU101.3.3** The provisions of this appendix establish design and construction standards for storm shelters.

**AU101.4 Violations.** Any violation of a provision of this appendix or failure to comply with a permit of variance issued pursuant to this appendix or any requirement of this appendix shall be handled in accordance with the ordinances of [NAME OF JURISDICTION].

### SECTION AU102 APPLICABILITY

**AU102.1 General.** This appendix provides enhanced minimum requirements for development of new

construction and substantial improvement of existing development above that contained in the *International Residential Code* (IRC).

**AU102.1.1** Regardless of the category of work being performed, the work shall not cause the structure to become unsafe or adversely affect the performance of the building; shall not cause an existing mechanical or plumbing system to become unsafe, hazardous, insanitary or overloaded; and unless expressly permitted by these provisions, shall not make the building any less compliant with this appendix or to any previously approved alternative arrangements than it was before the work was undertaken.

**AU102.1.2** Where there is a conflict between a requirement of the *International Residential Code* and a requirement of this appendix, the requirement of this appendix shall govern. Where there is a conflict between a general requirement of this appendix and a specific requirement of this appendix, the specific requirement shall govern. Where, in any specific case, different sections of this appendix specify different materials, methods of construction or other requirements, the most restrictive shall govern.

**AU102.2 Other laws.** The provisions of this appendix shall not be deemed to nullify any provisions of local, state or federal law.

**AU102.3 Referenced codes and standards.** The codes and standards referenced in this appendix shall be those that are listed in Chapter AR7 and such codes and standards shall be considered as part of the requirements of this appendix to the prescribed extent of each such reference. Where differences occur between provisions this appendix and references and standards, the provisions of this appendix shall apply.

### SECTION AU103 POST DISASTER EVENT INSPECTIONS GUIDELINES

**AU103.1 Inspections.** The building official or agents shall inspect residential buildings and structures to determine the habitability of each with the goal of getting the community back into their residences quickly and safely. Inspections shall always be performed by teams of at least two individuals, also known as disaster assessment teams.

**AU103.1.1 Right of entry.** Unless permitted under the exigent circumstances provisions or from an order from State or Federal Authorities, disaster assessment teams shall confirm the right of entry requirements with the incident commander. Upon approval, the assessment teams shall be authorized to enter the structure or premises at reasonable times to inspect or perform duties as provided by this code, provided that the structure or premises be occupied, that credentials are presented, that entry is requested, and that entry is granted by the owner or person having charge over the structure or premises.

### **AU103.2 Types of inspections.**

**AU103.2.1 Rapid evaluation.** Rapid evaluation is performed after a disaster event to determine if a building is apparently safe or obviously unsafe. The evaluation should last 10 to 30 minutes per building and shall be performed by the building official and/or their designated responders. Evaluation shall determine if a detailed evaluation is necessary. Placards are posted on buildings indicating status as one of the following:

1. INSPECTED
2. RESTRICTED USE
3. UNSAFE

See Section AU605 for Placards that may be reproduced for use in the field during evaluations. The jurisdiction shall alter placards to meet the jurisdiction and building department's requirements.

**AU103.2.2 Detailed evaluation.** Detailed evaluation is a thorough visual examination of a damaged building performed by a team of two, including an inspector and a design professional. Evaluation should last 30 minutes to 4 hours per building. Evaluation shall determine necessary restrictions on a damaged building's use, the

need for an engineering evaluation or to evaluate postings.

**AU103.2.3 Engineering evaluation.** When indicated by the building official as necessary, engineering evaluations shall be completed by a registered design professional hired by the building owner.

**AU103.3 Post disaster building safety evaluation Chart.** See Figure AU103.3 for Post Disaster Building Safety Evaluation Chart.

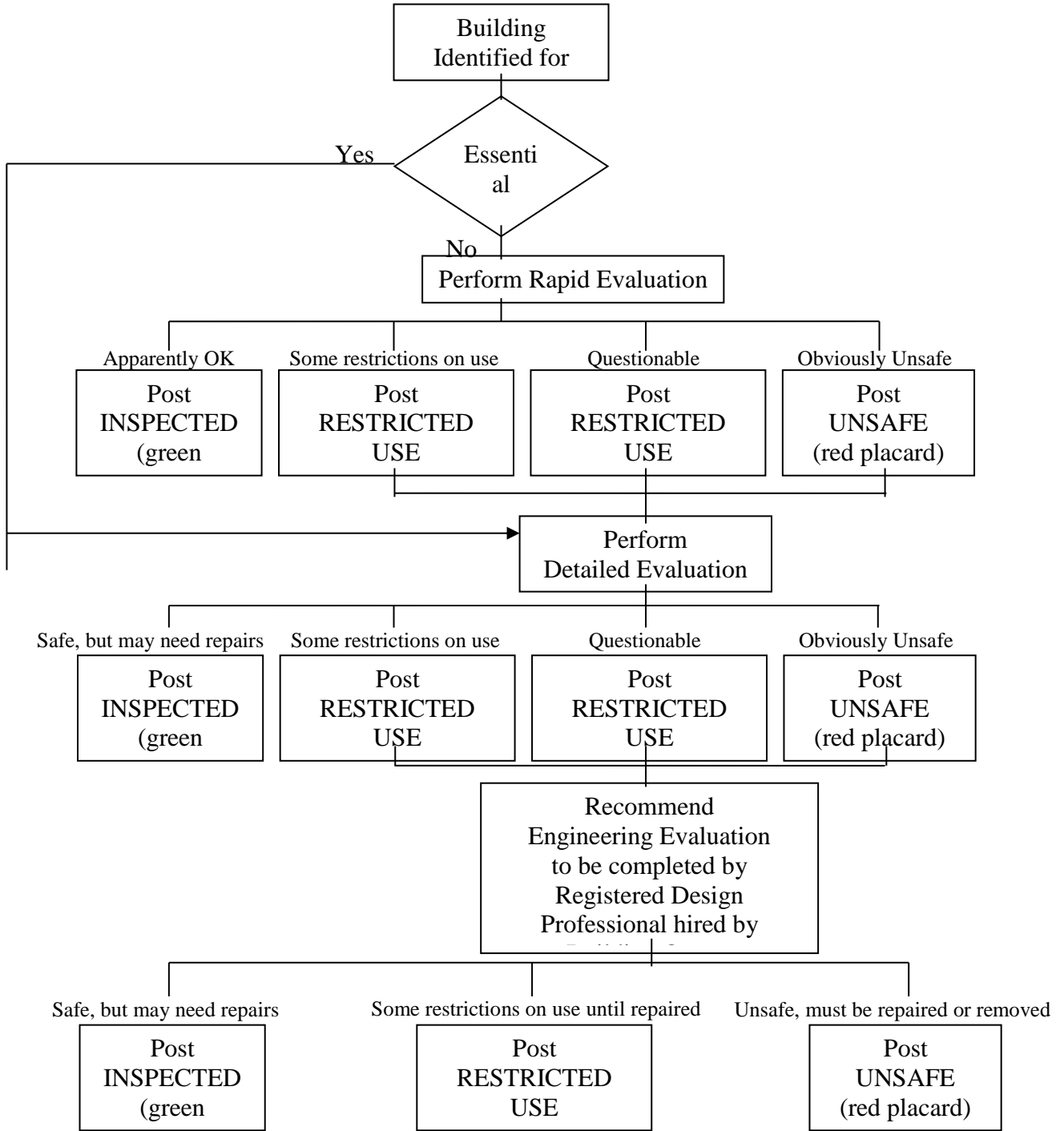
**AU103.4 Evaluation forms.** *ATC-45 Rapid Evaluation Safety Assessment Form* and *ATC-45 Detailed Evaluation Safety Assessment Form* shall be used by [NAME OF JURISDICTION]'s Building Official for post disaster inspections. See Section AU605 for copies of the Safety Assessment Forms.

### **AU103.5 Placement and removal of placards.**

**AU103.5.1 Placement.** Placards are to be posted in a clearly visible location near the main entrance and shall be visible from the public right-of-way. In addition RESTRICTED USE or UNSAFE placards shall be placed at all entrances.

**AU103.5.2 Removal.** Placards shall not be removed or replaced, except by the authorized representatives of the local jurisdiction.

Figure AU103.3 Post Disaster Building Safety Evaluation Chart <sup>a</sup>



<sup>(a)</sup> *When Disaster Strikes* by the International Code Council, Inc., Seventh Printing: November 2011, copyright 2007

**CHAPTER AU2  
DEFINITIONS**

**SECTION AU201  
GENERAL**

**AU201.1 Scope.** Unless otherwise expressly stated the following words and terms shall, for the purposes of this appendix, have the meanings shown in this chapter.

**AU201.2 Terms defined in other codes.** Where terms are not defined in this appendix and are defined in other *International Codes*, such terms shall have the meanings ascribed to them as in those codes.

**AU201.3 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have their ordinarily accepted meanings such as the context implies.

## SECTION AU202 DEFINITIONS

**500-YEAR FLOOD.** Flood having a 0.2% annual probability of being equaled or exceeded.

**ADVISORY BASE FLOOD ELEVATION (ABFE).** An advisory base flood elevation (BFE) issued by the Federal Emergency Management Agency (FEMA) that reflects post-storm conditions and vulnerability to damages from future flooding.

**BASE FLOOD.** Flood having a 1% chance of being equaled or exceeded in any given year, also referred to as the 100-year flood.

**BASE FLOOD ELEVATION (BFE).** The elevation of flooding, including wave height, having a 1% chance of being equaled or exceeded in any given year established relative to the National Geodetic Vertical Datum (NGVD), North American Vertical Datum (NAVD) or other datum specified on the *Flood Insurance Rate Map* (FIRM).

**BUILDING OFFICIAL.** The officer or other designated authority charged with the administration and enforcement of the *International Residential Code*, or the building official's duly authorized representative.

**DESIGN FLOOD.** The greater of the following two flood events:

- (1) The *base flood*, affecting those areas identified as *special flood hazard areas* on the community's FIRM;

- (2) The flood corresponding to the area designated as a *flood hazard area* on a community's *flood hazard map* or otherwise legally designated.

**DESIGN FLOOD ELEVATION (DFE).** The elevation of the *design flood*, including wave height, relative to the datum specified on the community's legally designated flood hazard map. In areas designated as Zone AO, the *design flood elevation* shall be the elevation of the highest existing grade of the building's perimeter plus the depth number (in feet) specified on the flood hazard map.

**FLOOD [DAMAGE]-RESISTANT MATERIAL.** Any building product [material, component or system] capable of withstanding direct and prolonged contact with floodwaters without sustaining significant damage.

**FLOOD HAZARD AREA.** The area subject to flooding during the *design flood*.

**FLOOD HAZARD MAP.** Map delineating *flood hazard areas* adopted by the authority having jurisdiction.

**FLOOD INSURANCE RATE MAP (FIRM).** An official map of a community on which the Federal Emergency Management Agency (FEMA) has delineated both the *special flood hazard areas* and the risk premium zones applicable to the community.

**FREEBOARD.** A factor of safety expressed in feet above a flood level for purposes of floodplain management.

**FUTURE-CONDITIONS FLOOD.** The flood having a 1% chance of being equaled or exceeded in any given year based on future-conditions hydrology. Also known as the 100-year future-conditions flood.

**FUTURE-CONDITIONS FLOOD ELEVATION.** The flood standard equal to or higher than the Base Flood Elevation. The future-conditions flood elevation is defined as the highest water surface anticipated at any given point during the future-conditions flood.

## CHAPTER AU3 FLOOD-RESISTANT CONSTRUCTION

*Forward: This appendix provides three different options for increased freeboard. The jurisdiction may pick only one option that is higher than previously adopted and enforced by the jurisdiction. The National Flood Insurance Program (NFIP) minimum standards reference Base Flood Elevation without any freeboard in high risk flood hazard areas. Due to the flood damage prevention updates performed during the Map Modernization initiative that led to flood risks being digitally identified in all 159 Georgia counties, all Georgia NFIP participating communities have freeboard standards that meet or exceed the 1 foot standard used in the State model ordinances for areas where BFEs have been established.*

### SECTION AU301 HAZARD IDENTIFICATION

**AU301.1 Identification of flood hazard areas.** To establish flood hazard areas:

- (a) flood hazard map adopted by jurisdiction based on areas of special flood hazard as identified by the Federal Emergency Management Agency in an engineering report entitled “The Flood Insurance Study of [INSERT NAME OF JURISDICTION],” dated [INSERT DATE ISSUANCE], and amended or revised with the accompanying Flood Insurance Rate Map (FIRM) and Flood Boundary and Floodway Map (FBFM) and related supporting data along with any revisions thereto.
- (b) FIRM maps provided by the Federal Emergency Management Agency.

### SECTION AU302 SCOPE

**AU302.1 Flood loads.** Buildings designed and constructed in flood hazard areas defined in Table R301.2(1) of the *International Residential Code* shall comply with the following:

**AU302.1.1 Flood hazard areas without base flood elevations.** In flood hazard areas without base flood or future-conditions flood elevation data, new construction and substantial improvements of existing structures shall have the lowest floor of the lowest enclosed area (including basement) elevated no less than three (3) feet above the highest adjacent grade to the building foundation.

#### OPTION A – FLOOD ELEVATION

**AU302.1.2 Increase to base flood elevation requirements.** Floors required by ASCE 24 to be built above base flood elevations as follows:

The higher of:

- (a) Design flood elevation plus one (1) foot, or
- (b) Base flood elevation plus one (1) foot, or
- (c) Advisory base flood elevation, or
- (d) Future-conditions plus one (1) foot, if known or

- (e) 500-year flood, if known

#### OPTION B– FLOOD ELEVATION

**AU302.1.3 Increase to base flood elevation requirements.** Floors required by ASCE 24 to be built above base flood elevations as follows:

The higher of:

- (a) Design flood elevation plus two (2) feet, or
- (b) Base flood elevation plus two (2) feet, or
- (c) Advisory base flood elevation, or
- (d) Future-conditions plus one (1) foot, if known or
- (e) 500-year flood, if known

#### OPTION C – FLOOD ELEVATION

**AU302.1.4 Increase to base flood elevation requirements.** Floors required by ASCE 24 to be built above base flood elevations as follows:

The higher of:

- (a) Design flood elevation plus three (3) feet, or
- (b) Base flood elevation plus three (3) feet, or
- (c) Advisory base flood elevation, or
- (d) Future-conditions plus one (1) foot, if known or
- (e) 500-year flood, if known

### SECTION AU303 FLOOD DAMAGE-RESISTANT MATERIALS

**AU303.1 Flood damage-resistant materials.** Flood damage-resistant materials comply with FEMA Technical Bulletin 2, Table 2. Types, Uses, and Classifications of Materials.

**AU303.2 Location of flood damage-resistant materials.** Building components and materials located below the increase to base flood elevation as determined by the local jurisdiction in accordance with AU302.1 shall be flood damage-resistant as defined by Section AU303.1.

**AU303.3 Fasteners and connectors used for flood damage-resistant materials.** Fasteners and connectors used for flood damage-resistant materials to be made of stainless steel, hot-dipped zinc-coated galvanized steel, mechanically deposited-zinc coated, silicon bronze or copper. Copper fasteners shall not be permitted for use in conjunction with steel.

## CHAPTER AU4 HIGH-WIND RESISTIVE CONSTRUCTION

*Forward: This appendix provides four different options for increased wind speed. The jurisdiction may pick only one option that is higher than the mapped wind speed shown in the International Residential Code.*

### SECTION AU401 GENERAL

**AU401.1 Scope.** The provisions of this appendix shall govern the structural design of one- and two-family dwellings (townhouses) not more than three stories in height with separate means of egress and their accessory structures. The building or structure shall comply with all aspects of the International Residential Code in addition to the requirements of this appendix.

**AU401.2 Continuous load path.** A continuous load path shall be provided to transmit the applicable forces from the roof assembly to the foundation.

**AU401.3 Adoption of wind speed.** [INSERT NAME OF JURISDICTION] adopts Option [PICK A, B, C, or D] MINIMUM WIND SPEED [INSERT WIND SPEED].

**AU401.4 Alternative materials, design and methods of construction and equipment.** The provisions of this appendix are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this appendix, provided such material is listed and tested for such application intended. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this appendix, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this appendix. Compliance with the specific performance-based provisions of the International Codes in lieu of specific requirements of this appendix shall also be permitted as an alternate.

**AU401.4.1 Tests.** Whenever there is insufficient evidence of compliance with the provisions of this appendix, or evidence that a material or method does not conform to the requirements of this appendix, or in order to substantiate claims for alternative materials or methods, the *building official* shall have the authority to require tests as evidence of compliance to be made at no expense to the *jurisdiction*. Test methods shall be as specified in this appendix or by other recognized test standards. In the absence of recognized and accepted test methods, the *building official* shall approve the testing procedures. Tests shall be performed by an *approved* agency. Reports of such tests shall be retained by the *building official* for the period required for retention of public records.

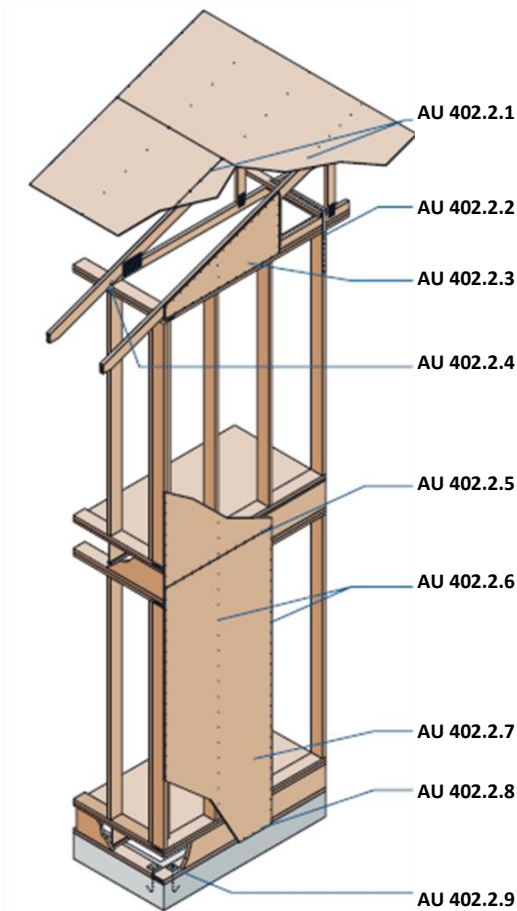
### SECTION AU402 OPTION A – MINIMUM WIND SPEED 100 MPH

**AU402.1 Wind speed.** Buildings shall be designed and constructed to comply with minimum wind speed of 100 mph Exposure B in accordance with AU402.1.1 or in accordance with Prescriptive Method AU402.2. Buildings with minimum wind speed of 100 mph Exposure C shall be in accordance with AU402.1.1.

**AU402.1.1 Design methods.** The design of buildings for wind loads shall be in accordance with one or more of the following methods:

1. *AF&PA Wood Frame Construction Manual (WFCM)*, or
2. *AF&PA Wood Frame Construction Manual Guide to Wood Construction in High Wind Areas for One- and Two-Family Dwellings: 100 MPH Exposure B (WFCM)*; or
3. *ICC Standard for Residential Construction in High-Wind Regions (ICC 600)*; or
4. *ASCE Minimum Design Loads for Buildings and Other Structures (ASCE 7)*; or
5. *AISI Standard for Cold-Formed Steel Framing – Prescriptive Method For One- and Two-Family Dwellings (AISI S230)*; or
6. *International Building Code*; or
7. *Concrete walls in accordance with R404 and R608 of the International Residential Code*; or
8. *Walls of structural insulated panels in accordance with R610 of the International Residential Code*.

**AU402.2 Prescriptive wood frame construction method deemed to comply with 100 MPH Exposure B.** Prescriptive construction method for wood frame structures shall be in accordance with IRC requirements for 100 mph Exposure B construction as modified in this section. A continuous load path shall be provided to transmit uplift forces from the roof assembly to the ground as follows:



**Figure U402.2<sup>b</sup>**

(b) Form No. M310B © 2011 APA – The Engineered Wood Association.

**AU402.2.1 Roof sheathing attachment.** Nail roof sheathing with 8d ring shank (or deformed shank) (0.131" x 2-1/2") nails at 4 inches on center along the ends of the sheathing and gable end framing 6 inches on center along intermediate framing. See Figure AU402.2.1.

**AU402.2.2 Gable end wall connection.** Tie gable end walls back to the structure. See Figure AU402.2.2.

**AU402.2.3 Gable end wall sheathing.** Continuously sheath gable end walls with wood structural panels or equivalent approved material meeting loading requirements. See Figure AU402.2.3.

**AU402.2.4 Roof framing to wall connection.** Connect roof framing to wall using an approved connector or connectors having allowable loads when attached to

Southern Pine or Douglas Fir lumber of 585 pounds in the upward direction, 485 pounds in the direction parallel to the wall and 165 pounds in the direction perpendicular to the wall. Attachment to be on exterior face of the exterior walls. See Figure AU402.2.4.

**AU402.2.5 Sheathing attachment at elevated floor level.** Nail upper story sheathing and lower story sheathing into common wood structural panel or engineered rim board. See Figure AU402.2.5.

**AU402.2.6 Wall sheathing attachment.** Attach wall sheathing with 8d common (0.131" x 2-1/2") nails at 4 inches on center at end and edges of wood structural panels and 6 inches on center in the intermediate framing. See Figure AU402.2.6a. Adjacent edges in wood structural panel wall sheathing that do not occur over common framing members shall be attached to flat wise blocking as illustrated in Figure AU402.2.6b.

**AU402.2.7 Continuous wall sheathing.** Continuously sheath all walls with wood structural panels or equivalent approved material meeting loading requirements. Continuously sheath areas around openings for windows and doors. Minimum wall bracing requirements shall be in accordance with IRC Section R602.10 or R602.12 continuous sheathing methods as modified in Section AU402.2.

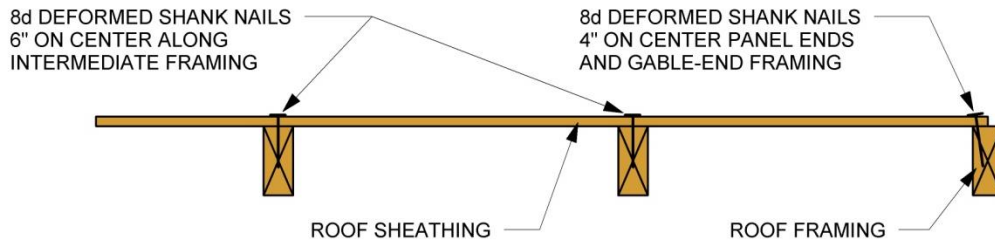
**AU402.2.8 Wall sheathing to sill plate connection.** Extend sheathing material to lap the sill plate. See Figure AU402.2.8.

**AU402.2.9 Anchor bolt connection.** Space 1/2" anchor bolts with 7 inches of embedment 48 inches on center with 0.229" x 3" x 3" square plate washers with slotted holes. See Figure AU402.2.9. There shall be a minimum of 2 bolts per plate section with one bolt located not more than 12" or less than 3.5" from each end of the plate section.

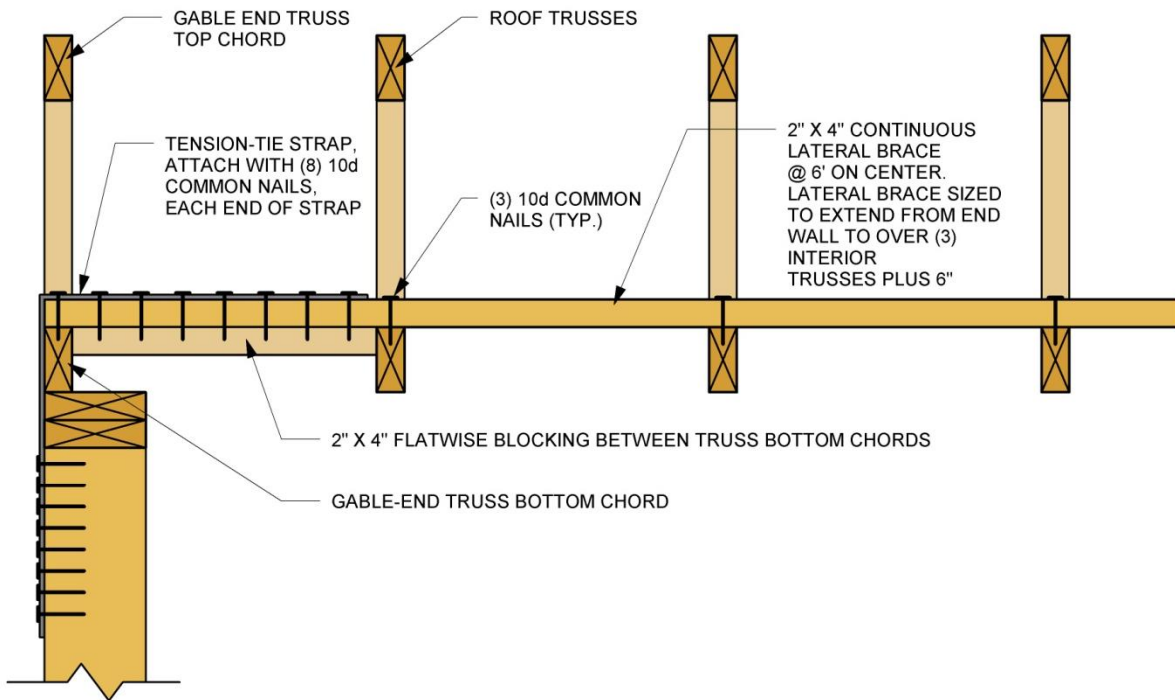
**AU402.2.10 Top plate intersection detail.** Double top plates shall be provided at the top of all exterior stud walls. The double plates shall overlap at corners and at intersections with other exterior or interior load bearing walls. Double top plates shall be lap-spliced with end joints offset in accordance with the minimum requirements given in the *WFCM Guides to Wood Construction in High Wind Areas for One- and Two-Family Dwellings: 100 MPH Exposure B*. See Figure AU402.2.10.

**AU402.3 Wall openings.** Uplift load path connections at wall openings shall be in accordance with IRC Section R602.3.5.

NAIL ROOF SHEATHING WITH 8d RING SHANK (0.131" X 2-1/2") OR DEFORMED SHANK NAILS AT 4" ON CENTER ALONG THE ENDS OF THE SHEATHING AND GABLE END FRAMING 6 INCHES ON CENTER ALONG INTERMEDIATE FRAMING



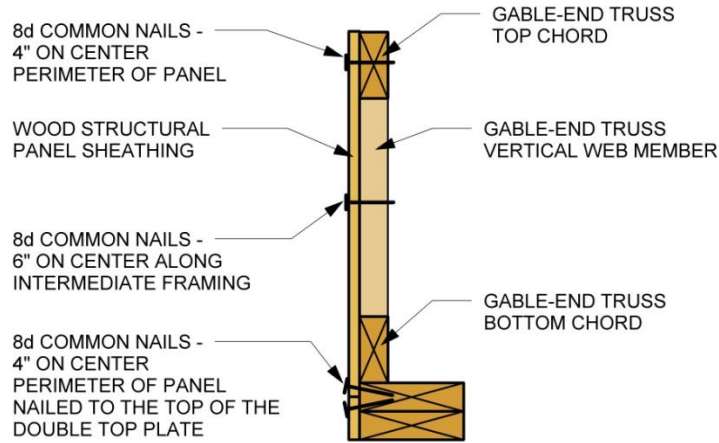
**Figure AU402.2.1<sup>b</sup>**  
**Roof Sheathing Attachment Detail**



**Figure AU402.2.2<sup>b</sup>**  
**Gable End Wall Connection Detail**

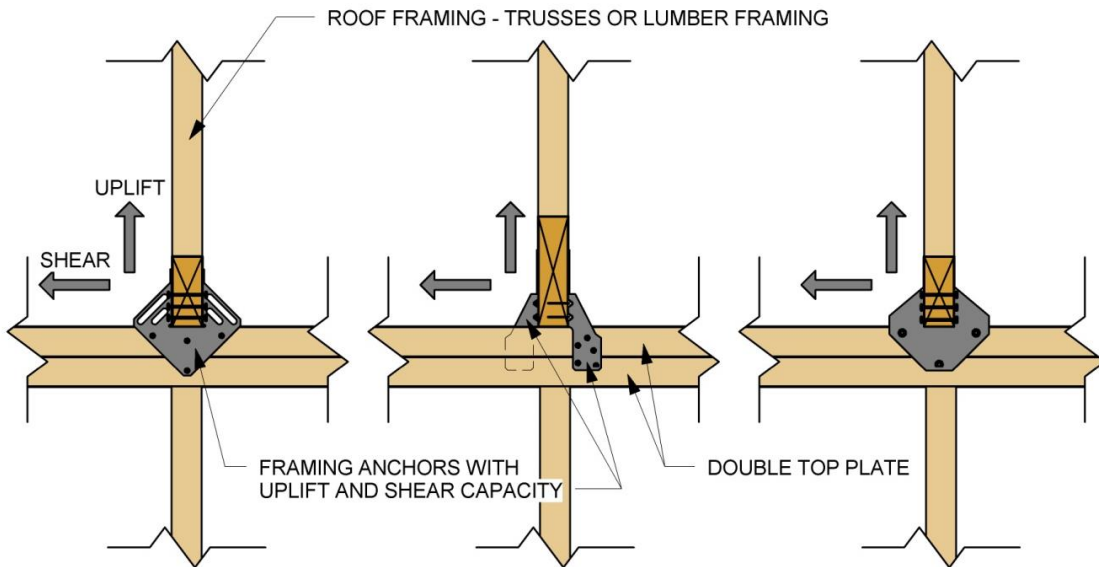


**SHEATH GABLE END WALLS WITH WOOD STRUCTURAL PANELS OR EQUIVALENT APPROVED MATERIAL MEETING LOADING REQUIREMENTS**



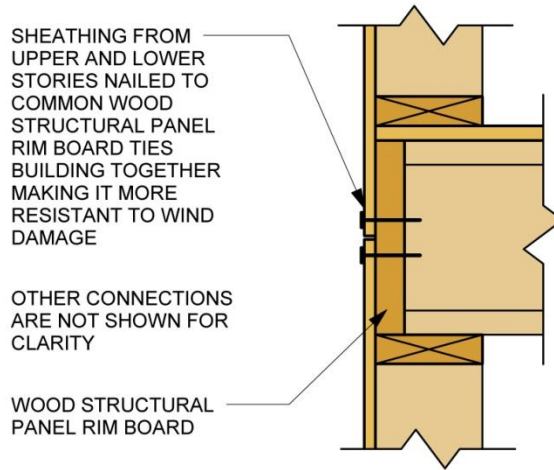
**Figure AU402.2.3<sup>b</sup>**  
**Gable End Wall Sheathing Detail**

**ROOF FRAMING TO WALL CONNECTION WITH FRAMING ANCHOR TO MEET UPLIFT AND SHEAR CAPACITY ATTACHED ON SHEATHING SIDE OF THE EXTERIOR WALLS**



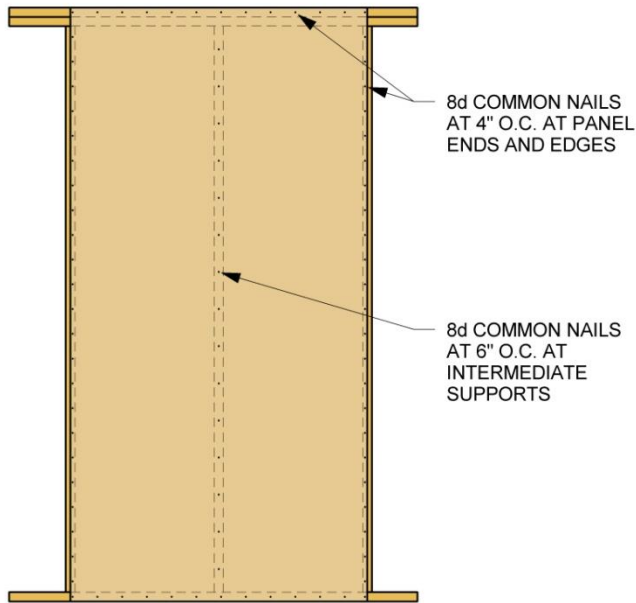
**Figure AU402.2.4<sup>b</sup>**  
**Roof Framing to Wall Connection Detail**

**NAIL OFF UPPER STORY AND LOWER STORY SHEATHING INTO COMMON WOOD STRUCTURAL PANEL RIM BOARD**



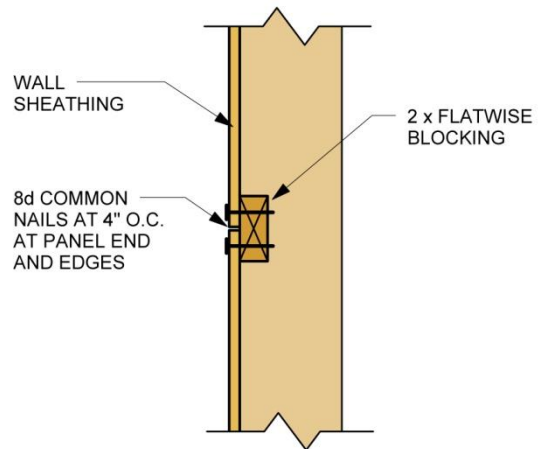
**Figure AU402.2.5<sup>b</sup>**  
**Sheathing Attachment at Elevated Floor Level Detail**

**NAIL WALL SHEATHING WITH 8d COMMON (0.131" X 2-1/2") NAILS AT 4" ON CENTER IN THE BOUNDARY OF WOOD STRUCTURAL PANEL WALLSHEATHING AND 6" ON CENTER IN THE INTERMEDIATE STUDS**



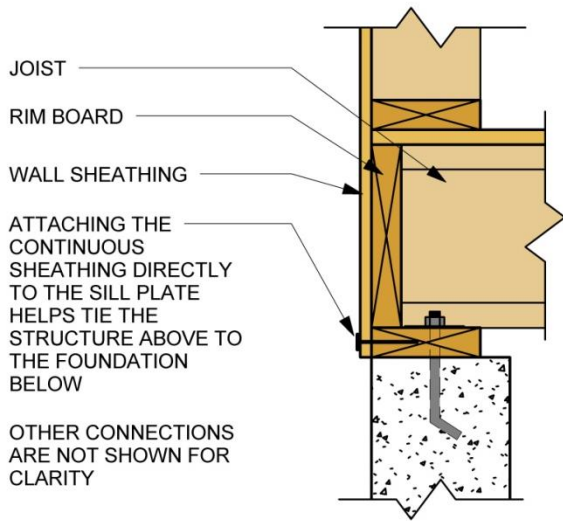
**Figure AU402.2.6a<sup>b</sup>**  
**Wall Sheathing Attachment Detail**

**WOOD STRUCTURAL PANEL FLAT-WISE BLOCKING DETAIL**



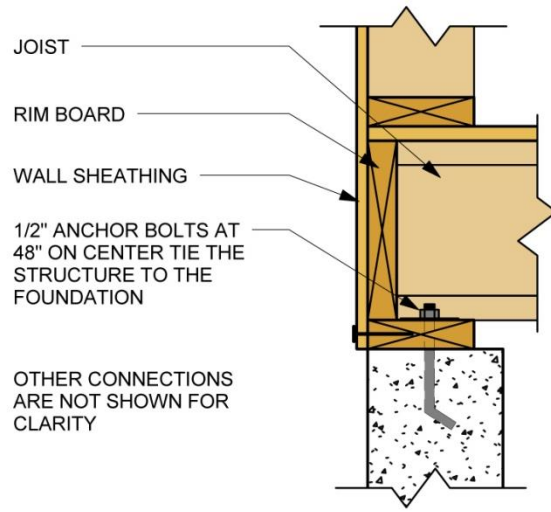
**Figure AU402.2.6b**  
**Panel Splice Detail**

**EXTEND WOOD STRUCTURAL PANEL SHEATHING AT BOTTOM WALL TO SILL PLATE INTERSECTION**

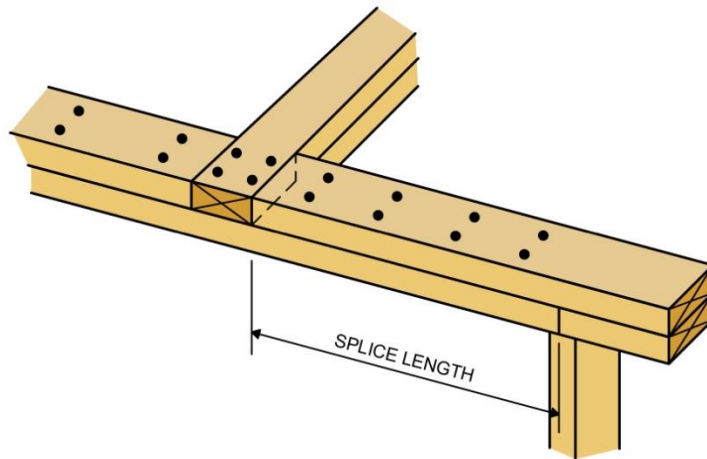


**Figure AU402.2.8<sup>b</sup>**  
**Wall Sheathing to Sill Plate Connection Detail**

**SPACE 1/2" ANCHOR BOLTS 48" ON CENTER WITH 0.229" X 3" X 3" SLOTTED SQUARE PLATE WASHERS AT THE WALL TO SILL PLATE INTERSECTION**



**Figure AU402.2.9<sup>b</sup>**  
**Anchor Bolt Connection Detail**



**Figure AU402.2.10<sup>c</sup>**  
**Top Plate Intersection Detail**

(b) *Form No. M310B August 2011 APA – The Engineered Wood Association*

(c) *WFCM Guide to Wood Construction in High Wind Areas for One- and Two-Family Dwellings – American Forest & Paper Association and the American Wood Council*

## SECTION AU403

### OPTION B –MINIMUM WIND SPEED 110 MPH

**AU403.1 Wind speed.** *Buildings* shall be designed and constructed to comply with minimum wind speed of 110 mph Exposure B.

**AU403.1.1 Design methods.** The design of buildings for wind loads shall be in accordance with one or more of the following methods:

1. AF&PA *Wood Frame Construction Manual* (WFCM); or
2. ICC *Standard for Residential Construction in High-Wind Regions* (ICC 600); or
3. ASCE *Minimum Design Loads for Buildings and Other Structures* (ASCE 7); or
4. AISI *Standard for Cold-Formed Steel Framing – Prescriptive Method For One- and Two-Family Dwellings* (AISI S230); or
5. *International Building Code*; or
6. *Concrete walls in accordance with R404 and R608 of the International Residential Code*; or
7. *Walls of structural insulated panels in accordance with R610 of the International Residential Code*.

## SECTION AU404

### OPTION C –MINIMUM WIND SPEED 120 MPH

**AU404.1 Wind speed.** *Buildings* shall be designed and constructed to comply with minimum wind speed of 120 mph Exposure B.

**AU404.1.1 Design methods.** The design of buildings for wind loads shall be in accordance with one or more of the following methods:

1. AF&PA *Wood Frame Construction Manual* (WFCM); or
2. ICC *Standard for Residential Construction in High-Wind Regions* (ICC 600); or
3. ASCE *Minimum Design Loads for Buildings and Other Structures* (ASCE 7); or
4. AISI *Standard for Cold-Formed Steel Framing – Prescriptive Method For One- and Two-Family Dwellings* (AISI S230); or
5. *International Building Code*; or
6. *Concrete walls in accordance with R404 and R608 of the International Residential Code*; or
7. *Walls of structural insulated panels in accordance with R610 of the International Residential Code*.

## SECTION AU405

### OPTION D – MINIMUM WIND SPEED 130 MPH

**AU405.1 Wind speed.** *Buildings* shall be designed and constructed to comply with minimum wind speed of 130 mph Exposure B.

**AU405.1.1 Design methods.** The design of buildings for wind loads shall be in accordance with one or more of the following methods:

1. AF&PA *Wood Frame Construction Manual* (WFCM); or
2. ICC *Standard for Residential Construction in High-Wind Regions* (ICC 600); or
3. ASCE *Minimum Design Loads for Buildings and Other Structures* (ASCE 7); or
4. AISI *Standard for Cold-Formed Steel Framing – Prescriptive Method For One- and Two-Family Dwellings* (AISI S230); or
5. *International Building Code*; or
6. *Concrete walls in accordance with R404 and R608 of the International Residential Code*.

## SECTION AU406

### FASTENERS AND CONNECTORS FOR CLADDING

**AU406.1 Fasteners and connectors for cladding.** Fasteners and connectors to be made of stainless steel, hot-dipped zinc-coated galvanized steel, mechanically deposited-zinc coated, silicon bronze or copper. Copper fasteners shall not be permitted for use in conjunction with steel.

## SECTION AU407 FENESTRATION

**AU407.1 Design pressure.** Exterior windows and doors shall be designed to resist the design wind loads specified in *International Residential Code* Table R301.2(2) adjusted for height and exposure per *International Residential Code* Table R301.2(3) based on the minimum wind speed specified in this appendix by the local jurisdiction.

**AU407.2 Anchorage methods.** Window and door assembly anchoring systems shall be in accordance with the manufacturer's published recommendations to achieve the design pressure specified per Section AU407.1. Substitute anchoring systems shall provide equal or greater anchoring performance as demonstrated by accepted engineering practice. Anchorage shall not exceed the spacing for the tested rated performance.

## SECTION AU408 ROOFING

**AU408.1 Secondary water barrier.** Underlayment shall be two layers applied in the following manner:

- (a) **Self-adhering tape as first layer.** Install minimum 4 inch wide self-adhering modified bitumen tape

over sheathing joints. Seal deck penetrations with self-adhering modified bitumen tape. **ASTM D 226 Type I, ASTM D 4869 Type I or ASTM D 6757** as second layer. Apply a 19-inch strip of underlayment felt parallel to and starting at eaves, secure with low-profile, capped-head nails or thin metal disks attached with roofing nails. Fasten at approximately 6 inches on center along the laps and at approximately 12 inches on center along a row in the field of the sheet between the side laps. All laps shall be a minimum of 4 inches. Starting at the eave, apply 36-inch-wide sheets of underlayment, overlapping successive sheets 19 inches, fasten as before. Distortions in the underlayment shall not interfere with the ability of the shingles to seal.

- (b) **Two layers of ASTM D 226 Type I, ASTM D 4869 Type I or ASTM D 6757.** For each layer, apply a 19-inch strip of underlayment felt parallel to and starting at eaves, secure with low-profile, capped-head nails or thin metal disks attached with roofing nails. Fasten at approximately 6 inches on center along the laps and at approximately 12 inches on center along a row in the field of the sheet between the side laps. All laps shall be a minimum of 4 inches. Starting at the eave, apply 36-inch-wide sheets of underlayment, overlapping successive sheets 19 inches, fasten as before. Distortions in the underlayment shall not interfere with the ability of the shingles to seal.

**Exception:** As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

#### AU408.2 Fasteners.

**AU408.2.1 Underlayment fasteners.** Underlayment shall be attached using metal or plastic cap corrosion-

resistant nails with a head diameter of not less than 1 inch with a thickness of at least 32-gauge sheet metal. The cap-nail shank shall be a minimum of 12 gauge with a sufficient length to penetrate through the roof sheathing or a minimum of 3/4 inch into the roof sheathing.

**AU408.2.2 Asphalt shingles fasteners.** Where asphalt shingles shall be applied with corrosion-resistant nails with shanks made of minimum 12 gauge wire and a minimum head diameter of 3/8 inch. Nails shall be long enough to penetrate 3/4 inch into the roof deck. Where the deck is less than 3/4 inch thick, the nails shall be long enough to penetrate completely through plywood decking and extend at least 1/8 inch through the roof deck.

**AU408.3 Attachment.** Where asphalt shingles shall have a minimum number of fasteners required by the manufacturer, but not less than six fasteners per strip shingle or three fasteners per individual shingle. Drive nail head flush with the shingle surface per figure AU408.2.

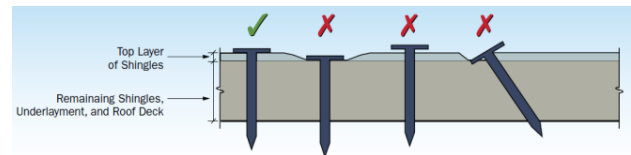


Figure AU408.2<sup>d</sup>

(d) FEMA Home Builder's Guide to Coastal Construction Technical Fact Sheet No. 7.3 Asphalt Shingle Roofing for High Wind Regions.

## CHAPTER AU5

### RESIDENTIAL STORM SHELTERS AND SAFE ROOMS

#### SECTION AU501

##### GENERAL

**AU501.1 General.** This section applies to the construction of residential storm shelters and safe rooms when constructed as separate detached buildings or as internal areas within buildings for the purpose of providing safe refuge for storms that produce high winds, such as tornados and hurricanes. Residential storm shelters or safe rooms shall be offered as an optional package.

#### SECTION AU502

### RESIDENTIAL STORM SHELTERS AND SAFE ROOMS

**AU502.1 Residential storm shelters.** Residential storm shelters when constructed shall be in compliance with the following:

1. ICC/NSSA-500 per IRC Section R323.

**AU502.2 Residential safe rooms.** Residential safe rooms when constructed shall be in compliance with the following:

1. FEMA 361 Design and Construction Guidance for Community Safe Rooms; or

2. *FEMA 320 Taking Shelter from the Storm:  
Building a Safe Room For Your Home and  
Small Business*

## CHAPTER AU6 RESOURCES

### SECTION AU601 CONTACTS

#### Georgia Department of Community Affairs (DCA) Construction Codes

Georgia State Amendments to the State Minimum  
Standard Codes

<https://dca.ga.gov/local-government-assistance/construction-codes-industrialized-buildings/construction-codes>

Phone: 404-679-3118

#### Georgia Department of Natural Resources (DNR) Floodplain Management

4220 International Parkway, Ste. 101  
Atlanta, GA 30354-3902

[www.georgiadfirm.com](http://www.georgiadfirm.com)

Phone: 404-675-1757

#### Federal Emergency Management Agency (FEMA)

[www.fema.gov](http://www.fema.gov); [www.floodsmart.gov](http://www.floodsmart.gov)  
[www.fema.gov/rebuild/buildingscience/](http://www.fema.gov/rebuild/buildingscience/)

FEMA Publications and Technical Bulletins:

[www.fema.gov/library/index.jsp](http://www.fema.gov/library/index.jsp)

[www.fema.gov/plan/prevent/floodplain/techbul.shtm](http://www.fema.gov/plan/prevent/floodplain/techbul.shtm)

#### Georgia Emergency Management Agency (GEMA)

Georgia Office of Homeland Security

P.O. Box 18055

Atlanta, GA 30316-0055

[www.gema.ga.gov](http://www.gema.ga.gov)

[www.ready.ga.gov](http://www.ready.ga.gov)

Phone: 404-635-7000

#### Georgia Association of Regional Commissions (GARC)

[www.garc.ga.gov](http://www.garc.ga.gov)

<http://garc.ga.gov/main.php?Regional-Commissions-2>

(for assistance in identifying Flood Hazard Areas)

#### International Code Council (ICC)

[www.iccsafe.org](http://www.iccsafe.org)

#### National Weather Service

[www.srh.weather.gov](http://www.srh.weather.gov)

#### State Fire Marshal's Office

2 Martin Luther King Jr. Drive

Suite 920 / West Tower

Atlanta, Georgia 30334

[www.oci.ga.gov](http://www.oci.ga.gov)

Phone: 404-656-7087

### SECTION AU602

#### EMERGENCY INSPECTION KIT<sup>e</sup>

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Staff's disaster response management plan | <input type="checkbox"/> Work gloves  | <input type="checkbox"/> Insect repellent ( w/ Deet or Picaridin) |
| <input type="checkbox"/> Team contact list                         | <input type="checkbox"/> Steel toe and waterproof boots                           | <input type="checkbox"/> Sunscreen (SPF 15 or greater)            |
| <input type="checkbox"/> Area maps                                 | <input type="checkbox"/> Whistle  | <input type="checkbox"/> Camera                                   |
| <input type="checkbox"/> Official identification                   | <input type="checkbox"/> First aid kit  | <input type="checkbox"/> Black markers                            |
| <input type="checkbox"/> Personal identification                   | <input type="checkbox"/> Latex gloves   | <input type="checkbox"/> Pens & pencils                           |
| <input type="checkbox"/> Inspection forms and placards             | <input type="checkbox"/> Safety glasses   | <input type="checkbox"/> Envelope for expense receipts            |
| <input type="checkbox"/> Communication equipment                   | <input type="checkbox"/> Sunglasses   | <input type="checkbox"/> Compass, GPS unit                        |
| <input type="checkbox"/> Clipboard                                 | <input type="checkbox"/> Pocket knife   | <input type="checkbox"/> Backpack, waistpack                      |
| <input type="checkbox"/> Hard hat                                  | <input type="checkbox"/> Matches  | <input type="checkbox"/> Flashlight and extra batteries           |
| <input type="checkbox"/> Orange safety vest                        | <input type="checkbox"/> Antibacterial hand wipes or alcohol-based hand sanitizer | <input type="checkbox"/> Battery-operated radio                   |
| <input type="checkbox"/> Dust mask                                 |   | <input type="checkbox"/> Duct tape                                |

- Staples & stapler
- Staple gun
- Calculator
- Tire repair kit

**Remember to grab:**

- Personal identification
- Rain gear, extra clothing
- Water bottle
- Prescription medication

- Cell phone and charger
- Cash for personal expenses
- Toiletries

(e) *Disaster Mitigation: A Guide for Building Departments* by the International Code Council, Inc., copyright 2009

**SECTION AU603**

**SAFETY TIPS <sup>a</sup>**

1. Always travel in teams of at least two people.
2. Always wear a hard hat, gloves, goggles, safety vest, and dust masks.
3. Always wear safety shoes capable of protecting the toes and bottom of the foot.
4. Survey the building exterior completely before entering.
5. Enter building only if authorized and if deemed safe to do so.
6. Be alert for falling objects.
7. In case of fire, injuries or victims, evacuate the area and alert the fire department immediately.
8. Avoid downed power lines and buildings under them or water surrounding them.
9. In case of gas leaks, shut off the gas (if possible) and report the leak.
10. In a flood situation, have a “walking stick.”

(a) *When Disaster Strikes* by the International Code Council, Inc., Seventh Printing: November 2011, copyright 2007

**SECTION AU604**

**MAJOR DISASTER PROCESS**

(from link <http://www.fema.gov/hazard/dproc.shtm>)

A Major Disaster Declaration usually follows these steps:

- **Incident occurs and local government responds**, supplemented by neighboring communities and volunteer agencies. If overwhelmed, turn to the state for assistance;

Generally the local government will issue a local state of emergency

- **The State responds** with state resources, such as the National Guard and state agencies;

Prior to committing state resources, the Governor will declare a state of emergency in the counties impacted by the event for which assistance is needed.

- **Damage assessment** by local, state, federal, and volunteer organizations determine losses and recovery needs;

Generally the locals will submit a preliminary damage assessment to the State and the State will review and determine if state and/or federal assistance is needed. If federal assistance is needed, the state will request FEMA perform a preliminary joint damage assessment. If the Governor determines that the incident is of such severity and magnitude that effective response is beyond the capabilities of the State and the affected local governments then supplementary Federal assistance is requested (next step).

- **A Major Disaster Declaration** is requested by the Governor, based on the damage assessment, and agreement to commit state funds and resources to the long-term recovery;
- **FEMA evaluates** the request and recommends action to the White House based on the disaster, the local community and the state’s ability to recover;
- **The President approves** the request or FEMA informs the Governor it has been denied. This decision process could take a few hours or several weeks depending on the nature of the disaster.

**SECTION AU605**

**SAMPLE EVALUATION FORMS AND INSPECTION PLACARDS <sup>e</sup>** (following pages)

Figure AU605.1 e

# ATC-45 Rapid Evaluation Safety Assessment Form

## Inspection

Inspector ID: \_\_\_\_\_ Inspection date: \_\_\_\_\_  
 Affiliation: \_\_\_\_\_ Inspection time: \_\_\_\_\_  AM  PM  
 Areas inspected:  Exterior only  Exterior and interior

## Building Description

Building name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Building contact/phone: \_\_\_\_\_  
 Number of stories: \_\_\_\_\_  
 "Footprint area" (square feet): \_\_\_\_\_  
 Number of residential units: \_\_\_\_\_

**Type of Building**

Mid-rise or high-rise  Pre-fabricated  
 Low-rise multi-family  One- or two-family dwelling  
 Low-rise commercial

**Primary Occupancy**

Dwelling  Commercial  Government  
 Other residential  Offices  Historic  
 Public assembly  Industrial  School  
 Emergency services  Other: \_\_\_\_\_

## Evaluation

Investigate the building for the conditions below and check the appropriate column. **Estimated Building Damage (excluding contents)**

Observed Conditions:	Minor/None	Moderate	Severe	Estimated Building Damage (excluding contents)
Collapse, partial collapse, or building off foundation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> None
Building significantly out of plumb or in danger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> > 0 to < 1%
Damage to primary structural members, racking of walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 to < 10%
Falling hazard due to nonstructural damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 10 to < 30%
Geotechnical hazard, scour, erosion, slope failure, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 30 to < 70%
Electrical lines / fixtures submerged / leaning trees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 70 to < 100%
Other (specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 100%

See back of form for further comments.

## Posting

Choose a posting based on the evaluation and team judgment. Severe conditions endangering the overall building are grounds for an Unsafe posting. Localized Severe and overall Moderate conditions may allow a Restricted Use posting.

**INSPECTED** (Green placard)  **RESTRICTED USE** (Yellow placard)  **UNSAFE** (Red placard)

Record any use and entry restrictions exactly as written on placard: \_\_\_\_\_

Number of residential units vacated: \_\_\_\_\_

## Further Actions Check the boxes below only if further actions are needed.

Barricades needed in the following areas: \_\_\_\_\_

Detailed Evaluation recommended:  Structural  Geotechnical  Other: \_\_\_\_\_

Substantial Damage determination recommended

Other recommendations: \_\_\_\_\_

See back of form for further comments.

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Figure AU605.2 °

# ATC-45 Detailed Evaluation Safety Assessment Form

## Inspection

Inspector ID: \_\_\_\_\_ Inspection date: \_\_\_\_\_  
 Affiliation: \_\_\_\_\_ Inspection time: \_\_\_\_\_  AM  PM

## Final Posting from page 2

- Inspected  
 Restricted Use  
 Unsafe

## Building Description

Building name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Building contact/phone: \_\_\_\_\_  
 Number of stories: \_\_\_\_\_  
 "Footprint area" (square feet): \_\_\_\_\_  
 Number of residential units: \_\_\_\_\_

### Type of Building

- Mid-rise or High-rise  
 Low-rise multi-family  
 Low-rise commercial

- Pre-fabricated  
 One- or two-family dwelling  
 Other: \_\_\_\_\_

### Primary Occupancy

- Dwelling  
 Other residential  
 Public assembly  
 Emergency services

- Commercial  Government  
 Offices  Historic  
 Industrial  School  
 Other: \_\_\_\_\_

## Evaluation

Investigate the building for the conditions below and check the appropriate column. There is room on the second page for a sketch.

	Minor/None	Moderate	Severe	Comments
<b>Overall hazards:</b>				
Collapse or partial collapse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Building or story lean or drift	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Fractured or displaced foundation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<b>Structural hazards:</b>				
Failure of significant element/connection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Column, pier, or bearing wall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Roof/floor framing or connection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Superstructure/foundation connection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Moment frame	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Diaphragm/horizontal bracing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Vertical bracing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Shear wall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<b>Nonstructural hazards:</b>				
Parapets, ornamentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Canopy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Cladding, glazing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Ceilings, light fixtures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Stairs, exits, access walkways, gratings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Interior walls, partitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Mechanical & electrical equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Elevators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Building contents, other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<b>Geotechnical hazards:</b>				
Slope failure, debris impact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Ground movement, erosion, sedimentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Differential settlement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Continue on page 2

Figure AU605.2 <sup>e</sup> (Continued)

ATC-45 Detailed Evaluation Safety Assessment Form

Building name: \_\_\_\_\_ Inspector ID: \_\_\_\_\_

Sketch

Make a sketch of the damaged building in the space provided. Indicate damage points.

Large grid area for sketching the damaged building and indicating damage points.

Estimated Building Damage (excluding contents)

- None
- > 0 to < 1%
- 1 to < 10%
- 10 to < 30%
- 30 to < 70%
- 70 to < 100%
- 100%

Posting

If there is an existing posting from a previous evaluation, check the appropriate box.

Previous posting:  INSPECTED  RESTRICTED USE  UNSAFE Inspector ID: \_\_\_\_\_ Date: \_\_\_\_\_

If necessary, revise the posting based on the new evaluation and team judgment. Severe conditions endangering the overall building are grounds for an Unsafe posting. Local Severe and overall Moderate conditions may allow a Restricted Use posting. Indicate the current posting below and at the top of page one, whether the posting has been revised or not.

INSPECTED (Green placard)  RESTRICTED USE (Yellow placard)  UNSAFE (Red placard)

Record any use and entry restrictions exactly as written on placard: \_\_\_\_\_

Number of residential units vacated: \_\_\_\_\_

Further Actions Check the boxes below only if further actions are needed.

Barricades needed in the following areas: \_\_\_\_\_

Engineering Evaluation recommended:  Structural  Geotechnical  Other \_\_\_\_\_

Substantial Damage determination recommended

Other recommendations: \_\_\_\_\_

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# INSPECTED

## LAWFUL OCCUPANCY PERMITTED

This structure has been inspected (as indicated below) and no apparent structural hazard has been found.

Date \_\_\_\_\_  
Time \_\_\_\_\_

Inspected Exterior Only

Inspected Exterior and Interior

Report any unsafe condition to local authorities; reinspection may be required.

This facility was inspected under emergency conditions for:

Inspector Comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
(Jurisdiction)

Inspector ID / Agency  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Facility Name and Address:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Do Not Remove, Alter, or Cover this Placard  
until Authorized by Governing Authority**

# RESTRICTED USE

**Caution:** This structure has been inspected and found to be damaged as described below:

Date \_\_\_\_\_  
Time \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Entry, occupancy, and lawful use are restricted as indicated below:**

- Do not enter the following areas: \_\_\_\_\_
- Brief entry allowed for access to contents: \_\_\_\_\_
- Other restrictions: \_\_\_\_\_

Facility name and address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

This facility was inspected under emergency conditions for:

\_\_\_\_\_ (Jurisdiction)

Inspector ID / Agency

\_\_\_\_\_  
\_\_\_\_\_

**Do Not Remove, Alter, or Cover this Placard until Authorized by Governing Authority**

Figure AU605.5 e

# UNSAFE

**DO NOT ENTER OR OCCUPY  
(THIS PLACARD IS NOT A DEMOLITION ORDER)**

This structure has been inspected, found to be seriously damaged and is unsafe to occupy, as described below:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date \_\_\_\_\_  
Time \_\_\_\_\_

This facility was inspected under emergency conditions for:

\_\_\_\_\_  
(Jurisdiction)

**Do not enter, except as specifically authorized in writing by jurisdiction. Entry may result in death or injury.**

Facility Name and Address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Inspector ID / Agency

\_\_\_\_\_  
\_\_\_\_\_

**Do Not Remove, Alter, or Cover this Placard  
until Authorized by Governing Authority**

## CHAPTER AU7 REFERENCES

### REFERENCED STANDARDS

ASCE Standards ASCE/SEI 24-05 Flood Resistant Design and Construction  
FEMA P-320, Third Edition / August 2008 Taking Shelter From the Storm: Building a Safe Room For Your Home or Small Business, Includes Construction Plans and Cost Estimates  
FEMA 361, Second Edition / August 2008 Design and Construction Guidance for Community Safe Rooms  
FEMA Technical Bulletin 2, Table 2. Types, Uses, and Classifications of Materials

### REFERENCED RESOURCES

- (a) *When Disaster Strikes* by the International Code Council, Inc., Seventh Printing: November 2011, copyright 2007
- (b) *Form No. M310B* August 2011 APA – The Engineered Wood Association; [www.apawood.org](http://www.apawood.org)
- (c) *WFCM Guide to Wood Construction in High Wind Areas for One- and Two-Family Dwellings* – American Forest & Paper Association and the American Wood Council; [www.awc.org](http://www.awc.org)
- (d) *FEMA Home Builder's Guide to Coastal Construction Technical Fact Sheet No. 7.3 Asphalt Shingle Roofing for High Wind Regions*.
- (e) *Disaster Mitigation: A Guide for Building Departments* by the International Code Council, Inc., copyright 2009

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End of Amendments.

Authority: O.C.G.A. § **8-2-20** et seq.