

# COASTAL CONSTRUCTION CODE SUPPLEMENT

For Adoption by Communities Affected By Hurricanes



A supplemental code to the  
2018 International Residential Code®





The Coastal Construction Code Supplement was created and adopted by community leaders and Building Code Officials in Coastal Alabama, in partnership with Smart Home America, after being impacted by both Hurricanes Ivan and Katrina in back to back years.

The purpose of the Code Supplement is to increase community resilience and reduce future damage from hurricanes, high winds and wind-driven rain. Adoption has many benefits including; reduction of losses during severe weather events, significantly reduced damage, and lowered insurance costs. A recent study shows that a FORTIFIED Home™ designation increasing the resale value of a property. Additional benefits from using and enforcing this supplemental code are increased numbers of FORTIFIED Home™ designations and reduced storm debris cleanup costs.

Adoption of the Code Supplement closes the gap between existing “I Codes®”<sup>1</sup> and the Insurance Institute for Business and Home Safety’s (IBHS) FORTIFIED Home™ Technical Standards. The Code Supplement is meant to be adopted and enforced in addition to local building codes. IBHS provides technical input to keep the Code Supplement current. The Supplement is based on the latest research and testing conducted at the IBHS Research Center and in the field. To connect with communities enforcing this supplemental code, please contact us 1.855.742.7233 or [info@smarthomeamerica.org](mailto:info@smarthomeamerica.org).

Additionally, Smart Home America strongly advises the adoption of the 2018 IRC/IBC flood-resistant construction standards. Flooding is one of the most devastating and shared hazards facing communities today. By incorporating added steps to mitigate against wind and flood hazards, the durability and strength of homes can be increased while bolstering the safety of residents.

**NOTE:** By adopting this Supplemental Code, municipalities and jurisdictions recognize that individual homes built, re-roofed or otherwise permitted under this code will be constructed to code-plus standards but will not be designated as a FORTIFIED Home™. To be identified as a FORTIFIED Home and issued a Designation Certificate, a homeowner, or the builder, must voluntarily contract the services of a Certified FORTIFIED Evaluator. They are the only professional able to inspect and collect relevant documentation confirming that a home meets all the requirements of the IBHS FORTIFIED Home™ Hurricane program

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**This public resource is maintained by Smart Home America and is available at:**  
**[SmartHomeAmerica.org/resources/details/code-supplement](https://SmartHomeAmerica.org/resources/details/code-supplement)**

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<sup>1</sup> The International Code Council (ICC) develops and maintains the International Codes®, or I-Codes®. They provide minimum safeguards for people at home, at school and in the workplace. The I-Codes are a complete set of comprehensive, coordinated building safety and fire prevention codes. [www.ICCsafe.org](http://www.ICCsafe.org)

# COASTAL CONSTRUCTION SUPPLEMENT

## **S1 Roof Coverings**

Roof coverings and their attachment shall be rated for the ASCE 7 design wind speed or corresponding wind and uplift pressures for the site location of the building and shall be installed in accordance with the manufacturer's recommendations for high-wind regions.

### **S1.1 Asphalt Shingles:**

Asphalt shingles shall be tested in accordance with ASTM D7158 and meet Class H requirements. Their packaging shall be labeled to indicate compliance with ASTM D7158 Class H or ASTM D3161 Class F.

#### ***S1.1.1 Shingle attachment:***

Shingles shall be installed using the number of fasteners required by the manufacturer for high-wind fastening. In areas where the local building code requires more fasteners than required by the manufacturer, fasteners shall comply with the local building code.

#### ***S1.1.2 Edge Metal:***

Provide code-compliant, minimum 26 gauge metal drip edge at eaves and gables. Overlap drip edge metal a minimum of 3-inch at joints. Eave drip edges shall extend ½ in. below sheathing and extend back on the roof a minimum of 2-inches. The drip edge shall be mechanically fastened to the roof deck. Fasteners shall be fabricated from similar or compatible material and spacing shall be a maximum of 4-inch o.c. Mechanical fasteners shall be applied in an alternating (staggered) pattern along the length of the drip edge. Drip edge at eaves shall be installed over the underlayment.

#### ***S1.1.3 Installation of starter strips at eaves:***

Starter strips at eaves shall be set in a minimum 8-inch-wide strip of flashing cement. Maximum thickness of flashing cement shall be 1/8 inch or a shingle manufacturer-approved ASTM D1970 fully adhered (peel-and-stick) starter strip with asphaltic adhesive strip at eave.

#### ***S1.1.4 Attachment of shingles at intersections, valleys, rakes and gable ends:***

##### ***S1.1.4.1 Attachment of Shingles at Intersections and Valleys:***

Shingles installed at all intersections and both sides of open valleys shall be set in a minimum 8-in.-wide strip of flashing cement. Maximum thickness of flashing cement shall be ⅛ in. Cut side of closed valleys shall be set in a minimum 2-in.-wide, ⅛-in.-thick strip of flashing cement. Woven valleys to be according to the manufacturer's specifications.

##### ***S1.1.4.2 Attachment of Shingles at Rakes:***

Manufacturer-approved starter strips at rakes shall be set in a minimum 8-in.-wide strip of compatible flashing cement. Maximum thickness of flashing cement shall be ⅛ in or install a shingle manufacturer-approved ASTM D1970 fully adhered (peel-and-stick) starter strip with asphaltic adhesive strip at rake. Fasten starter strips parallel to the rakes according to the manufacturer's specifications. Position fasteners to ensure they will not be exposed. Starter strips and shingles must not extend more than ¼ in. beyond the drip edge.

## **S1.2 Metal Panels:**

Metal panel roofing systems and their attachment shall be installed in accordance with the manufacturer's installation instructions and shall provide uplift resistance equal to or greater than the most critical design uplift pressure for the roof based on the site design wind speed, mean roof height, slope and exposure category. Products shall be tested and approved per UL 1897, UL 580 or TAS 125, incorporating a 2.0 safety factor. The metal panels shall be installed over continuous decking and one of the acceptable sealed roof deck underlayment options (See Section S2).

## **S1.3 Clay and Concrete Roof Tiles:**

Clay and concrete roof tile systems shall be installed over continuous 19/32" thick plywood roof decking and one of the acceptable sealed roof deck underlayment options (See Section S2). Clay and concrete roof tile systems and their attachment shall meet the requirements of the site design wind speed and exposure category. For design wind speeds based on 2012 IRC (ASCE 7-05), clay and concrete roof tiles shall be installed in accordance with FRSA/ Tile Roofing Institute installation guidelines, "Concrete and Clay Roof Tile Installation Manual Fourth Edition, FRSA/TRI 07320/08-05" for the site design wind speed and exposure category. For design wind speeds based on 2015 IRC (ASCE 7-10) or 2018 IRC (ASCE 7-16), clay and concrete roof tiles shall be installed in accordance with FRSA/ Tile Roofing Institute installation guidelines, "Florida High Wind Concrete and Clay Roof Tile Installation Manual" Fifth Edition, FRSA/TRI April 2012 (04-12) for ASCE 7-10 or Sixth Edition for ASCE 7-16 for the site design wind speed and exposure category. Mortar set tile or mortar set hip and ridge tiles (Systems Three and Four B, as listed in FRSA/TRI Manual) are not permitted. Hip and ridge boards shall be attached to the roof framing to resist the uplift pressure for the site design wind speed and exposure or in accordance with Table 11 of the FRSA/Manual. Hip and ridge tiles shall be secured to the hip and ridge boards with mechanical fasteners and/or an approved roof tile adhesive.

## **S1.4 Other Roof Coverings:**

For all other roof coverings, the designer must provide documentation showing the roof covering and the attachments were designed for the component and cladding wind pressures corresponding to the site design wind speed. All roof coverings, regardless of type, shall be installed in accordance with the manufacturer's installation guidelines for the appropriate design wind speed. When applicable (e.g., wood shakes, slate roofs), the roof deck shall be sealed using one of the options provided in Section S2 that is compatible with the manufacturers installation requirements for the roof covering selected.

## **S1.5 Residential Reroofing:**

Reroofing of residential structures shall meet the requirements of this section for roof sheathing replacement, roof sheathing attachment, and roof covering; and, Section S2 for Sealed Roof Deck. Existing roof coverings shall be removed to expose the roof deck. An inspection shall be conducted at this point to determine the condition of roof decking in accordance with section S1.5.1. The inspection shall also determine the adequacy of the roof deck attachment and the existing decking as well as any replaced decking shall be fastened in accordance with Section S1.5.2 or Section S1.5.3 as appropriate for the type and thickness of the roof decking.

### ***S1.5.1 Deteriorated or damaged roof deck:***

Damaged or deteriorated decking will generally be marked by one or more of the following characteristics: soft or spongy wood, wood swelling or buckling, delamination (plywood), or crumbling and flaking wood. If deteriorated or damaged roof decking is identified, the decking shall be replaced.

### ***S1.5.2 Sawn lumber or wood board roof decking:***

#### ***S1.5.2.1 For sawn lumber or wood boards from 5/8" thick and up to 1-inch-thick:***

Add fasteners to ensure boards are secured with at least two nails, having a minimum diameter of 0.131 inches and a minimum length of 2-1/2 inches, (three nails if the board is wider than 8 inches) to each roof framing member it crosses. Framing members shall be spaced no more than 24 inches apart. Clipped-head, D-head or round-head nails shall be acceptable provided they have the required minimum diameter and length.

#### ***S1.5.2.2 For wood boards greater than 1-inch-thick and up to 2 inches thick:***

Add fasteners as required to ensure that the decking is secured with at least two nails, having a minimum diameter of 0.131 inches and sufficient length to penetrate a minimum of 1-5/8 inches into the roof framing, (three nails if the board is wider than 8 inches) to each framing member it crosses. Framing members shall be spaced no more than 24 inches apart. Clipped-head, D-head or round-head nails shall be acceptable provided they have the required minimum diameter and length.

### ***S1.5.3 Structural wood panel (plywood or oriented strand board-OSB) Roof Sheathing:***

Re-nailing requirements are based on using ring-shank nails with the following characteristics and dimensions.

- ASTM F1667 Roof Sheathing Ring Shank Nails
- full round head diameter (no clipped head nails allowed)
- 2-3/8-inch minimum nail length
- 0.113-inch minimum shank diameter

Additional fasteners meeting the minimum requirements listed above shall be installed at 4" O.C. over the entire roof deck. To avoid wood splitting, spacing between new and existing nails shall not be less than 2", and new nails shall be installed staggered from existing nails when nails are 3" apart or closer.

Exception: If it can be documented that existing fasteners meeting the minimum requirements listed above are installed at 4" O.C. over the entire roof deck, then additional nailing is not required.

## **S2 Sealed Roof Deck**

For all new construction and re-roofing applications, a sealed roof deck shall be constructed using one of the methods specified in Sections S2.1, S2.2, or S2.3 for roofs with 2:12 pitch or greater. For roof slopes less than 2:12, low-slope roof cover system that meets required site design uplift pressures shall be installed per manufacturer instructions.

### **S2.1 Self-adhering Polymer Modified Bitumen Membrane:**

The entire roof deck shall be covered with a full layer of self-adhering polymer modified bitumen membrane ("peel and stick") conforming to ASTM D1970 requirements. In applications where membrane adhesion to OSB is marginal, apply a primer to the OSB panels to ensure the proper attachment of the self-adhering membrane to the sheathing.

### **S2.2 Tape Seams Between Roof Deck Wood Structural Panels:**

Apply a 4-inch wide ASTM D1970 compliant self-adhering polymer-modified bitumen flashing tape or a 3-3/4-inch wide AAMA 711-13, Level 3 (for exposure up to 80°C/176°F) compliant self-adhering flexible

flashing tape to seal all horizontal and vertical joints in the roof deck. In applications where flashing tape adhesion to OSB is marginal, apply a manufacturer-specified compatible primer to the OSB panels where the tape will be applied to ensure the proper attachment of the self-adhering tape to the sheathing.

Cover the entire deck with a code-compliant #30 ASTM D226 Type II or ASTM D4869 Type III or IV underlayment over the self-adhering tape. As an alternative, cover the entire deck with a reinforced synthetic roof underlayment which has an ICC evaluation report as an alternate to ASTM D226 Type II felt paper and has passed ASTM D4869 Section 8.6 liquid water transmission test. The synthetic underlayment shall have a minimum tear strength of 15 lb per ASTM D4533 and a minimum tensile strength of 20 psf per ASTM D5035.

These underlayment's shall be attached using annular ring or deformed shank roofing fasteners with minimum 1-in.-diameter caps (button cap nails) at 6 in. o.c. spacing along all laps and at 12 in. o.c. vertically and horizontally in the field or a more stringent fastener schedule if required by the manufacturer for high-wind and prolonged exposure installations. Horizontal laps shall be a minimum of 4 in. and end laps shall be a minimum of 6 in. Weave underlayment across valleys. Double-lap underlayment across ridges (unless there is a continuous ridge vent). Lap underlayment with minimum 6-in. leg "turned up" at wall intersections; lap wall weather barrier over turned-up roof underlayment.

### **S2.3 Two Layers of Underlayment:**

Install two (2) layers of ASTM D226 Type II (#30) or ASTM D4869 Type III or IV (#30) underlayment in a shingle-fashion, lapped 19 in. on horizontal seams (36-in. roll), and 6 in. on vertical seams. Create a starter course of felt by cutting 17 in. off one side of the roll and install the remaining 19-in.-wide strip of underlayment along the eave, safely tacked in place. Install a 36-in.-wide roll of underlayment over the 19-in.-wide course of underlayment along the eave. The same procedure shall be followed for each course, overlapping the sheets 19-in. (leaving a 17-in. exposure). The underlayment shall be fastened with annular ring or deformed shank nails with 1-in.-diameter caps at 6-in. o.c. along the laps and at approximately 12-in. o.c. in the field of the top sheet between the side laps. For sites with ultimate design wind speeds less than 160 mph (ASCE 7-10 or 7-16), annular ring or deformed shank nails with 1-in.-diameter caps (button cap nails) shall be allowed. For sites with ultimate design wind speeds greater than or equal to 160 mph (ASCE 7-10 or 7-16), annular ring or deformed shank nails with 1-in.-diameter thin metal disks ("tincaps") shall be used.

#### **Note:**

- Weave underlayment across valleys.
- Double-lap underlayment across ridges (unless there is a continuous ridge vent).
- Lap underlayment with minimum 6-in. leg "turned up" at wall intersections; lap wall weather barrier over turned-up roof underlayment.

## **S3 Aluminum/Vinyl Soffit**

All Aluminum/Vinyl Soffit covering shall be attached to minimum 7/16-inch-thick OSB or plywood or minimum nominal 2-inch x 2-inch wood supports 8-inches o.c. maximum.

## **S4 Roof Deck Attachment**

Roof decks shall be nailed in accordance with the engineered drawings but no less than 4 inches o.c. maximum spacing over the entire roof deck along intermediate and edge framing. Fasteners shall be minimum 8d (0.113" x 2-3/8") ASTM F1667 roof sheathing ring shank nails with full round heads. Staples are not permitted for fastening of the roof decking.

## **S5 Roof Vents**

Roof Vents shall be designed for the applicable wind load; ridge and off ridge vents shall be tested in accordance with the Florida Building Code Testing Application Standard TAS 100(A) for high wind and be labeled for verification of compliance. All roof vents shall be installed in accordance with the manufacturer's installation instructions for the appropriate wind load.

Gable vents shall be provided with a removable cover that can be attached from the outside made of plywood or a nonporous type of shutter that will prevent water from entering through the gable end vent. Wood structural panels with a minimum thickness of 7/16 inch and a maximum span of 4 feet are permitted as a gable end cover. Panels must be pre-cut so that they can be attached to the framing surrounding the gable vent. Panels shall be pre-drilled as required for the anchorage method and all required hardware shall be provided. Permanent corrosion-resistant attachment hardware with anchors permanently installed on the building shall be provided. Attachment schedule shall be, at a minimum, in accordance with Table S3.

**TABLE S3. GABLE END COVERING FASTENER SCHEDULE**

<b>Fastener Type</b>	<b>Fastener Spacing (inches)<sup>1</sup></b>
¼-inch Lag Screw based anchor with 2-inch embedment length <sup>2</sup> and 1" diameter washer	16

**Notes for Table S3:**

1. Fasteners shall be installed at opposing ends of the wood structural panel and have a 2-inch minimum penetration into the building framing through veneers. Attachment to veneers is not acceptable.
2. Where screws are attached to masonry or masonry/stucco, they shall be attached using vibration-resistant anchors having a minimum withdrawal capacity of 1500 lb.

## **S6 Gable End Bracing**

Unless balloon framed, gable ends over 3-ft high shall be braced using the method specified in S6.1 or S6.2 or per 2018 IEBC, Appendix C, Chapter C1 "Gable End Retrofit for High Wind Areas".

### **S6.1 Gable End Bracing Option 1:**

A minimum 2-inch x 6-inch horizontal strong-back shall be installed at midpoint of the vertical height of the gable end wall. Strong-back shall be attached to each framing member it crosses using metal straps with 3-8d x 1-1/2-inch long nails at each end of the strap. Minimum 2 x 4 diagonal bracing not to exceed 45 degrees or 4 feet o.c. shall be installed on top of strong back and face nailed with 4-10d nails into side of

gable wall framing studs. The other ends of diagonal braces shall be toenailed to roof rafters or top chords or trusses and connected with a metal strap with 4-8d x 1-1/2-inch long nails at each end of strap or face nailed with 4-10d nails into sides of ceiling joists when they run perpendicular to the gable wall or into the sides of 2-inch x 4-inch x 8-foot lateral braces connected to tops of ceiling joists or truss bottom chords when ceiling joists run parallel to the gable wall.

In addition, when ceiling joists run parallel to the gable end wall, a minimum 2-inch x 4-inch x 8-foot lateral brace shall be installed at maximum 6 feet o.c. on top of ceiling joists or truss bottom chord and gable top plate, aligned with a wall stud below, and nailed with 2-10d nails at each support. Metal 20 gauge straps shall be installed on top of 2-inch x 4-inch lateral brace and over gable top plate into stud below using 10-8d nails top and bottom (into the lateral brace and into the wall stud below). Install minimum 2 x 4 blocking under lateral braces in the bay between the gable wall framing and the first ceiling joist or truss with four (4) 10d nails.

### **S6.2 Gable End Bracing Option 2:**

When ceiling joists or trusses run parallel to the gable end wall, continuous 2-by-4 lateral braces shall be installed on the top edges of ceiling joists or the top edges of truss bottom chords from the gable end truss/framing at maximum 6-feet o.c., and aligned with a wall stud below. The lateral braces shall be attached to each truss bottom chord/ceiling joist with 2-10d nails. The braces shall extend back from the gable truss/framing a distance equal to 90% of the building width. Each lateral brace shall have a minimum 20-gauge metal strap connected to the lateral brace that wraps over the bottom chord of the gable end wall plate/truss, over the top plate of the wall below and connected to a stud in the wall below. Straps shall be connected with ten (10) 8d nails at each end. Install minimum 2 x 4 blocking under lateral braces in the bay between the gable wall framing and the first ceiling joist or truss with four (4) 10d nails.

## **S7 Continuous Load Path**

A continuous load path shall be provided to transfer all lateral and vertical loads from the roof, wall and floor systems to the foundation. All residential structures proposed for locations with an ultimate wind speed of greater than 115 mph shall have the structural design depicting the load path and all connections signed and sealed by a State-based, registered licensed professional engineer.

## **S8 Glazed Openings**

Glazed openings shall be designed and protected in relation to the applicable wind loads and impact resistance requirements specified in Sections S8.1 and S8.2.

### **S8.1 Design Pressure Requirements:**

Windows, all exterior doors (including the glazing in exterior doors), and all impact protection systems shall be rated for the design pressures appropriate for the exposure category, design wind speed, opening size, and opening location on the building. The required pressure ratings shall be depicted on the building plans. Products shall be tested, at a minimum, in accordance with IRC accepted standards and installed in accordance with the manufacturer's instructions. Acceptable IRC design pressure test standards for windows and glass doors include AAMA/WDMA/CSA 101/I.S.2/A440, ASTM E330 (products shall be tested to 1.5 times design pressure). Installation of products with adequate ratings achieved using the Florida Building Code Testing Application Standard, TAS 202 shall also be permitted.

## **S8.2 Opening Protection Impact Requirements:**

All glazing in exterior windows and doors (including sliding glass doors, garage doors and entry doors, etc.) shall be impact rated or protected by a system that is impact rated as defined in this section.

Where the ultimate design wind speed is 130 mph or greater, accepted test standards for impact resistance include the Large Missile D Test of ASTM E 1886 **and** ASTM E 1996 or AAMA 506. Installation of products with Florida Building Code Testing Application Standards, TAS 201, 202, and 203 shall also be permitted. Plans shall indicate the applicable test standard for impact resistance and labeling for verification of compliance consistent with plan submittal is required at time of inspection.

Where ultimate design wind speeds are less than 130 mph, wood structural panels with a minimum thickness of 7/16 inch and a maximum span of 8 feet are permitted to be used for opening protection. Panels shall be pre-cut and pre-drilled as required for the anchorage method and all required hardware shall be provided. Wood structural panels shall extend a minimum of 1-inch beyond the center-line of fasteners. Permanent corrosion-resistant attachment hardware with anchors permanently installed on the building must be provided. The attachment schedule must be, at a minimum, in accordance with Table S3.

Garage doors with glazed openings (windows) must be impact rated or covered by an impact rated system.

## **S9 Garage Doors**

Garage doors and their attachment system shall conform to the design wind pressure for the door size, exposure category and design wind speed at the site. Products shall be tested and approved per ANSI/DASMA 108 or ASTM E 330 for the required design wind pressure. Garage doors and their attachment systems with adequate ratings achieved using the Florida Building Code Testing Application Standard, TAS 202 shall also be permitted. Labeling for verification of compliance is required.

## **S10 Chimney Chases**

Wood frame chimney chases shall be structurally connected to rafters and ceiling joists. The attachment shall be detailed in the engineered plans or shall meet the minimum requirements of Sections S10.1, S10.2 and S10.3 as illustrated in Figure S2.

### **S10.1 Connection of Chimney structure to Roof Structure:**

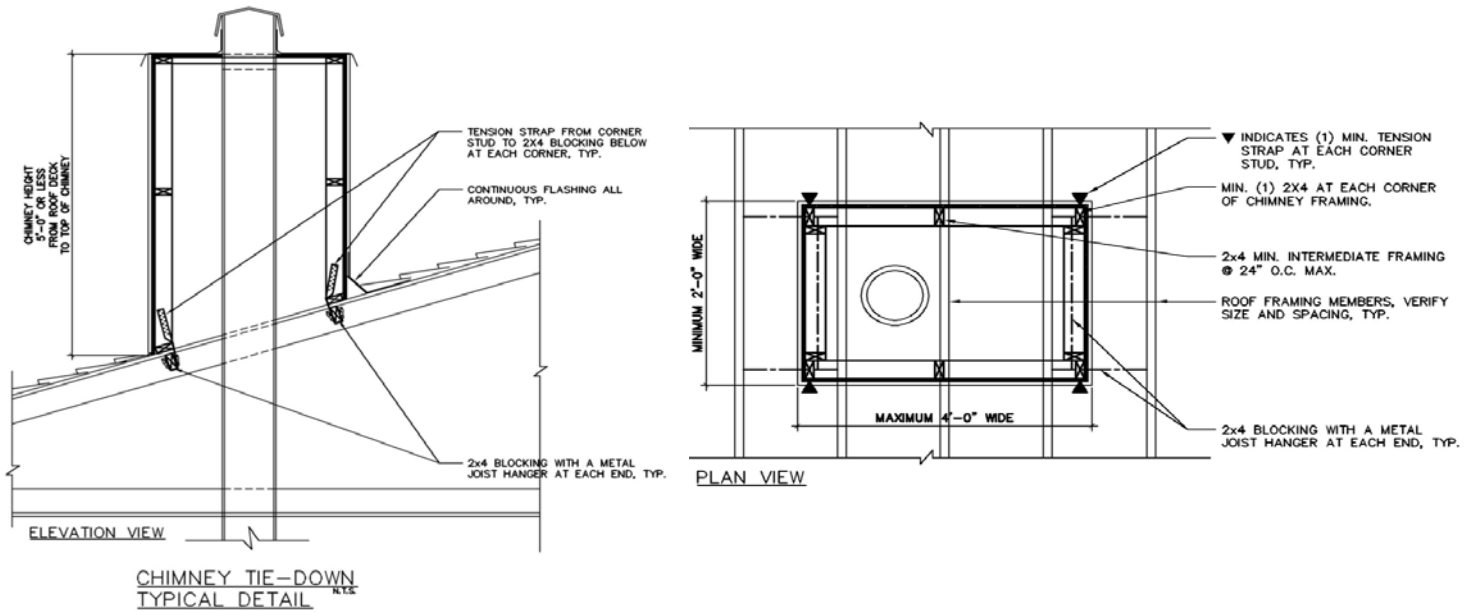
Each corner of the chimney structure shall have a tension strap fastened to the corner stud that continues downward to the roof support members below. The tension strap shall have a minimum tension capacity of 700 pounds and shall be connected per manufacturer installation instructions.

### **S10.2 Sheathing of Chimney:**

Chimney framing shall be sheathed with minimum 7/16-inch-thick wood structural panels on all four exterior sides.

### S10.3 Support of Chimney Perimeter:

The base perimeters of chimney framing shall be continuously supported by minimum 2x4 blocking fastened to roof framing members with joist hangers.



**FIGURE S2. TYPICAL CHIMNEY TIE-DOWN DETAILS**

### S11 Braced Wall Lines / Shear Walls

Exterior and Interior shear wall and/or braced wall panel locations shall be indicated on the plans and shall be nailed in accordance with the engineered drawings but no less than 6 inches o.c. maximum spacing along all intermediate and edge framing using 8d (0.113-inch diameter x 2-3/8-inch-long) irregular shank (i.e., ring shank or spiral) nails with full round heads. Shear wall designs shall meet the engineered design requirements specified in Section S7.





# SMART HOME AMERICA™

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