Building and Retrofitting in Florida

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Course Information

Training Provider:
Florida Home Builders Association
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CILB & BCAIB Provider # 0000916
FBPE Provider # 0008653

Building and Retrofitting in Florida
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BCAIB Approval # 5008785

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Florida Statutes Section 553.73

(1)(a) The (building) commission shall adopt, by rule pursuant to ss. 120.536(1) and 120.54, the Florida Building Code which shall contain or incorporate by reference all laws and rules which pertain to and govern the design, construction, erection, alteration, modification, repair, and demolition of public and private buildings, structures, and facilities and enforcement of such laws and rules, except as otherwise provided in this section.

(b) Florida Accessibility Code

(c) Florida Fire Prevention Code

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Scope and Application

Florida Administrative Code: 61G20-1.001 Florida Building Code Adopted.

The 7th Edition Florida Building Code, (2020), as updated by the Florida Building Commission on June 2, 2020, incorporated herein by reference is hereby adopted as the building code for the State of Florida.

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Scope and Application

Building Section 101.2

The provisions of this code shall apply to the construction, *alteration*, relocation, enlargement, replacement, *repair*, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

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Scope and Application

Building Section 101.2 Exception 1

Detached one- and two-family *dwellings* and multiple single-family *dwellings (townhouses)* not more than *three stories above grade plane* in height with a separate *means of egress*, and their accessory structures not more than *three stories above grade plane* in height, shall comply with the *Florida Building Code, Residential*.

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Scope and Application

Residential Section R101.2 Exception 3

Existing buildings undergoing repair, alteration, additions or changes of occupancy shall comply with the *Florida Building Code, Existing Building*.



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Scope and Application

Existing Building R101.2 Scope

The provisions of the *Florida Building Code*, *Residential* 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* not more than three stories above *grade plane* in height with a separate means of egress and their *accessory structures* not more than three stories above *grade plane* in height.

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Florida Administrative Code 61G20-3.001 Scope

1) Products in the following categories as defined by subcategories of subsection 61G20-3.002(33), F.A.C., shall be available for approval by the Commission pursuant to Rule 61G20-3.007, F.A.C., for use in the state:

1. Panel Walls;
2. Exterior Doors;
3. Roofing Products;
4. Skylights;
5. Windows;
6. Shutters;
7. Structural Components;
8. Impact Protective Systems.

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Florida Product Approval Search Tool

1.) Go to www.floridabuilding.org, and click on the "Product Approval" tab on the sidebar.



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Florida Product Approval Search Tool

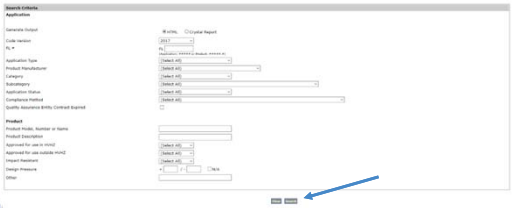
2.) Once on the next page, click on "Find a Product or Application" on the Product Approval Menu.



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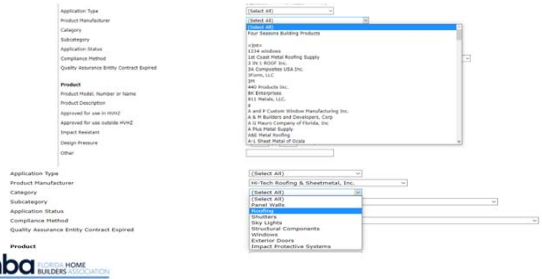
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3.) You are then taken to the Search Criteria Menu. This is where you can search for applications and products using criteria such as manufacturer, or category. Choose or insert the options that fit what you are looking for, and then click “Search”.



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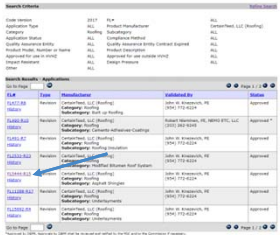
Florida Product Approval Search Tool



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Florida Product Approval Search Tool

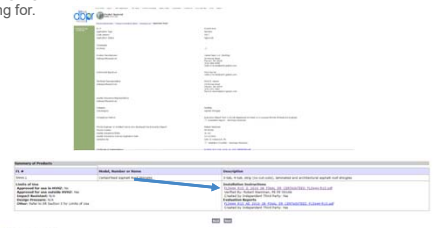
4.) After successfully searching, you are taken to the results screen. Click on the blue highlighted name of the correct product to be taken to the corresponding page.



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Florida Product Approval Search Tool

5.) Once you reach the corresponding application page, scroll to the bottom, and click the blue highlighted .pdf file links to find correct installation instructions for the part you are looking for.



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Local Product Approval

553.8425 Local product approval.—

For local product approval, products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code through one of the following methods:

1. A certification mark, listing, or label from a commission-approved certification agency indicating that the product complies with the code;
2. A test report from a commission-approved testing laboratory indicating that the product tested complies with the code;
3. A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code;
4. A product-evaluation report or certification based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code;
5. A statewide product approval issued by the Florida Building Commission; or
6. Designation of compliance with a prescriptive, material standard adopted by the commission by rule under s. 553.842(15).

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Existing Roofing Provisions of Florida Building Code-Residential

R908.1.1- Not more than 25 percent of the total roof area or roof section of any existing building or structure shall be repaired, replaced or recovered in any 12-month period unless the entire existing roofing system or roof section is replaced to conform to the requirements of this code.

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Existing Roofing Provisions of Florida Building Code-Residential

ROOF SECTION - A separation or division of a roof area by existing expansion joints, parapet walls, flashing (excluding valley), difference of elevation (excluding hips and ridges), roof type or legal description; not including the roof area required for a proper tie-off with an existing system

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Existing Roofing Provisions of Florida Building Code-Residential

R908.7 Wind Mitigation for Roofing - When a roof covering on an existing structure is removed and replaced, the following procedures shall be permitted to be performed by the roofing contractor:

(a) Roof-decking attachment shall be as required by Section R908.7.1.
- 8D Nails
- 0.113" in diameter
- Minimum 2 ¼" long
- Two fasteners in each framing member for plank
- 6" on center for panel sheathing

(b) A secondary water barrier shall be provided as required by Section R908.7.2. (Refers back to R905.1.1)

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Existing Roofing Provisions of Florida Building Code-Residential



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R905 Requirements for Roof Coverings

Underlayment Requirements are Now Consistent with the IBHS Fortified Sealed Roof Deck Provisions

- Does not apply to HVHZ
  - HVHZ
    - 4”-6” Modified bitumen tape
    - 30# Felt or synthetic attached with tin tabs
- Does not apply to structural metal panels

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R905 Requirements for Roof Coverings

R905.1.1 Underlayment Options

- Self-adhering polymer-modified bitumen underlayment installed per manufacturer’s instructions
- 4” strips of self-adhering polymer-modified bitumen underlayment or 3 ¾” flashing tape installed at joints in the roof deck and underlayment installed in accordance with Table R905.1.1.1 or manufacturer’s instructions

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R905 Requirements for Roof Coverings

R905.1.1 Underlayment Options

- Two layers of Type II, III, IV, or synthetic underlayment
  - 19” Starter (half of the width for synthetic)
  - Overlapping joints by 6” offset by 6’
  - Fastened 6” on edge and 12” in the field
  - Specific corrosion-resistant tabbed fasteners with minimum ¾” embedment

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Existing Roofing Provisions of Florida Building Code-Residential

R908.8 - When a roof covering on an existing site-built single family residential structure is removed and replaced on a building that is located in the **wind-borne debris region** as defined in the Florida Building Code, Building **and** that has an insured value of **$300,000** or more or, if the building is uninsured or for which documentation of insured value is not presented, has a just valuation for the structure for purposes of ad valorem taxation of $300,000 or more:(a) Roof to wall connections shall be improved as required by Section R908.8.1(b) Mandated retrofits of the roof-to-wall connection shall not be required beyond a 15 percent increase in the cost of re-roofing.

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Existing Roofing Provisions of Florida Building Code-Residential

R908.3 Recovering versus replacement - New roof coverings shall not be installed without first removing all existing layers of roof coverings where any of the following conditions occur:

1. Water-soaked or deteriorated
2. Where the existing roof covering is wood shingle or shake, slate, clay, cement or asbestos-cement tile.
3. Two or more applications
4. Blisters that are not repaired or removed
5. Where the existing roof is to be used for attachment for a new roof system and compliance with the securement provisions of Section R905 cannot be met.

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Existing Roofing Provisions of Florida Building Code-Residential

R908.5 Reinstallation of Materials - Existing slate, clay or cement tile shall be permitted for re installation, except that damaged, cracked or broken slate or tile shall not be reinstalled. Any existing flashings, edgings, outlets, vents or similar devices that are a part of the assembly shall be replaced where rusted, damaged or deteriorated. Aggregate surfacing materials shall not be reinstalled.

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Existing Roofing Provisions of Florida Building Code-Residential

R908.6 Flashings - Flashings shall be reconstructed in accordance with approved manufacturer's installation instructions or in compliance with RAS 111. Metal flashing to which bituminous materials are to be adhered shall be primed prior to installation.

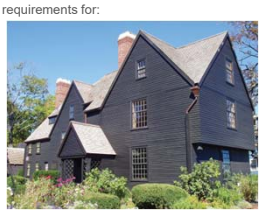
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Retrofitting

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General Requirements, Existing Building 1701

- Application
  - Prescriptive methods to increase the resistance of gable end walls to out-of-plane wind loads during a partial structural retrofit.
  - This section may not satisfy building code requirements for:
    - New construction
    - Alterations
    - Additions
    - Change of occupancy
    - Repairs



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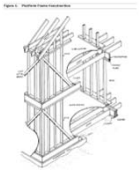
General Requirements, Existing Building 1701

- **701.3 Compliance** - All modifications required for conformance with this chapter shall be designed and constructed in accordance with the *Florida Building Code, Building* or *Florida Building Code, Residential* provisions for new construction except as specifically modified by this chapter.

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General Requirements, Existing Building 1701

- Eligibility and use of Retrofitting
  - Group R-3 occupancy
  - Wood framed gable end walls using platform framing
    - **PLATFORM FRAMING** - A type of wall framing where structural framing members of the gable end wall terminate at or above the top plate on the rectangular wall below the gable end wall.



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General Requirements, Existing Building 1701

- Eligibility and use of Retrofitting
  - Mean roof height of less than 35 ft
    - **MEAN ROOF HEIGHT** - The average of the roof eave height and the height to the highest point on the roof surface, except that eave height shall be used for roof angle of less than or equal to 10 degrees (0.18 rad).

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General Requirements, Existing Building 1701

- Attic framing with conventional lumber
  - Rafters
  - Trusses
- Wall construction
  - Conventional lumber
  - Masonry



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General Requirements, Existing Building 1701

- Maximum 24” on center wall spacing
- Maximum gable height of 16’
- Risk category I or II
  - One- and two-family dwellings typically fall into risk category II
- Solid and complete ceiling and roof diaphragm

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Retrofit Materials 1703

- Existing materials must be in sound condition and suitable for their purpose.
- New materials must comply with *Florida Building Code, Residential*

TABLE 1703.3
MATERIAL SPECIFICATIONS FOR RETROFITS

Component	Minimum Size or Thickness	Minimum Material Grade or Type	Minimum Capacity
All lumber	2-inch nominal thickness minimum depth will vary according to application	#2 Spruce-Pine-Fir (S) or better	Not applicable
Gusset angle bracket	14 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood, wood-to-CMU, or wood-to-concrete.	350 pounds uplift and lateral load
Stud-to-plate connector	14 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood.	500 pounds uplift
Metal connectors	20 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood, wood-to-CMU, or wood-to-concrete.	Not applicable
Nail plates and straps	20 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood.	Not applicable

TABLE 1703.5
NAIL AND SCREW REQUIREMENTS

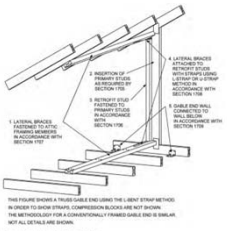
Minimum Fastener Length (inches)	Fastener Type	Shank Diameter (Neglecting Galvanizing) Minimum and Maximum	Minimum Length of Thread (inches)	Minimum Head Diameter (inches)
1½	#9 screws	0.177 inches	1½	0.28
	8d common nails	0.131 inches	Not applicable	0.28
3	#9 screws	0.177 inches	1½	0.28
	10d common nails	0.148 inches	Not applicable	0.28

For SI: 1 inch = 25.4 mm.

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General Requirements 1704

- Designed to supplement existing framing



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TABLE 1704.1
RETROFIT CONFIGURATION AS A FUNCTION OF EXPOSURE CATEGORY, DESIGN WIND SPEED, AND STUD HEIGHT

RETROFIT ELEMENTS				SIZE AND NUMBER OF RETROFIT ELEMENTS: Stud length limitations based on Exposure, Basic Wind Speed, and Configuration			
		Connections of gable end wall to wall below: On center spacing (Section 1708)		Configurations A, B, C, or D			
Exposure Category	Max Ultimate Design Wind Speed, V_{ult} (3-sec gust) (Interpolation is not permitted)	Gusset angle bracket (inches)	Fasteners to secure sill plate to wall (inches)	A	B	C	D
D	≤ 130 mph	39	14	6'-11"	10'-11"	14'-3"	16'-0"
D	>130 – 140 mph	34	12	6'-7"	10'-5"	13'-7"	16'-0"
D	>140 – 150 mph	29	10	6'-2"	9'-9"	12'-10"	16'-0"
D	>150 – 160 mph	26	9	5'-11"	9'-1"	12'-0"	15'-4"
D	>160 – 170 mph	23	8	5'-6"	8'-7"	11'-4"	14'-9"
D	>170 – 180 mph	20	7	5'-2"	8'-1"	10'-8"	14'-2"
C	≤ 130 mph	46	16	7'-4"	11'-6"	15'-1"	16'-0"
C	>130 – 140 mph	39	14	7'-0"	10'-11"	14'-3"	16'-0"
C	>140 – 150 mph	34	12	6'-8"	10'-5"	13'-8"	16'-0"
C	>150 – 160 mph	30	11	6'-4"	9'-10"	13'-0"	16'-0"
C	>160 – 170 mph	27	9	5'-11"	9'-3"	12'-3"	15'-6"
C	>170 – 180 mph	24	8	5'-7"	8'-9"	11'-7"	15'-0"
B	≤ 130 mph	63	22	8'-2"	12'-10"	16'-0"	Note a
B	>130 – 140 mph	54	19	7'-9"	12'-2"	15'-0"	Note a
B	>140 – 150 mph	47	17	7'-5"	11'-8"	15'-3"	16'-0"
B	>150 – 160 mph	42	15	7'-1"	11'-2"	14'-7"	16'-0"
B	>160 – 170 mph	37	13	6'-10"	10'-8"	14'-0"	16'-0"
B	>170 – 180 mph	33	12	6'-7"	10'-4"	13'-6"	16'-0"
Retrofit studs		**Minimum size and number (Section 1708)**					
Lateral brace above and below (top and bottom) Minimum size and number (Section 1707)				2 × 4	2 × 4	2 × 4	2 each 2 × 8
Retrofit Elements for L-bent strap applications (Section 1708.5.1)							
Fasteners at each end for strap connecting retrofit studs to lateral braces using 3½-inch long fasteners complying with Table 1703.5 Minimum number				3	5	6	5 at each end of each strap
Fasteners to connected compression blocks to lateral braces using 3-inch long fasteners complying with Table 1703.5 Minimum number				4	6	7	5
Retrofit Elements for U-bent strap applications (Section 1708.5.2)							
Fasteners to connect straps to each edge of lateral braces using 1½ inch long fasteners complying with Table 1703.5 Minimum number				3	4	4	4 at each end of each strap

For SI: 1 inch =25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s.
a. Configuration C is allowable.

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Added Studs (Primary Studs) 1705

- **ADDED STUD** - Studs installed in a gable end wall to provide the required minimum spacing between existing wall studs prior to adding any retrofit studs needed to brace or stiffen the gable end wall.

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Added Studs (Primary Studs) 1705

- Applies to gable wall assembly, including piggyback truss assemblies.
- Required when distance between studs three feet and longer exceed 22 ½ inches.



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Added Studs (Primary Studs) 1705

- Each section, or stud shall be considered.
- Shall be at least the same dimension as the existing framing.
- Installed at same orientation as existing.

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Added Studs (Primary Studs) 1705

- Attachment
  - Conventional framing attached to top and bottom pieces.
  - Truss assembly - attached to top and bottom chords.
  - Stud to plate connector with uplift capacity of 175 pounds with 1 ½ inch fasteners (Table 1703.5)



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Retrofit Studs 1706

- **RETROFIT STUD**. A vertical lumber member used to supplement the strength or stiffness of an existing or added (primary) stud.
- Installed at each primary stud longer than three feet.
- Studs must be continuous through both sections of piggyback trusses.

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Retrofit Studs 1706

- Methods
  - Face to face/face to edge
  - Butted retrofit
  - Offset retrofit
  - Nailer with retrofit



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Retrofit Studs 1706

- Fasteners
  - Three inch fasteners with minimum 1 ½ inch penetration
  - Between 2 ¾ inches and 6" on center with restrictions close to the edge
  - Nail plate attachments
    - Maximum 20 inches between plates
    - Minimum three 1 ½ inch fasteners per plate in each stud
    - Fasteners between 2 ¾ inches and 6 inches from end of stud
    - Restrictions close to edge

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Retrofit Studs 1706

- Specific requirements if stud must be cut, notched, or modified.
- Up to two ladder assemblies can be used if existing conditions prevent a retrofit stud.



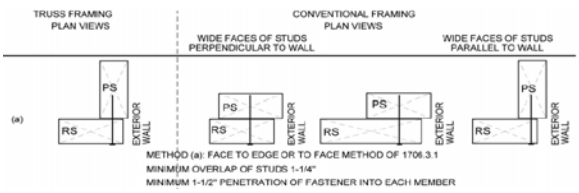
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Retrofit Studs 1706

- A retrofit stud must be added to bridge interrupted primary studs.
- Splicing of retrofit studs is permitted in certain conditions.

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Retrofit Studs 1706-Face to Face/Face to Edge



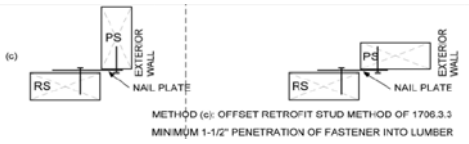
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Retrofit Studs 1706-Butted Retrofit



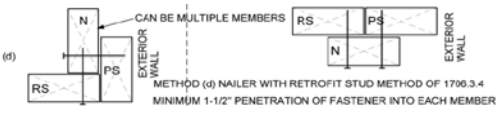
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Retrofit Studs 1706-Offset Retrofit



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Retrofit Studs 1706-Nailer with Retrofit



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Retrofit Studs 1706-Nailplate Fastening

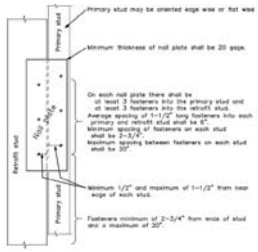


FIGURE 1706.4.2
NAIL PLATE FASTENING

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Lateral Braces 1707

- Installed at the end of each retrofit stud
- Perpendicular and attached to at least three attic framing members
- Extend at least 2 ¾ inches past last framing member

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Lateral Braces 1707

- Three inch fasteners.
- Anchor block required if bottom chord or ceiling joist is greater than six inches.

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Lateral Braces 1707

- Alternatives permitted in certain situations.
  - Short lateral brace
  - Splices
  - Other alternatives

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Attachment of Lateral Braces to Retrofit Studs 1708

- 1 ¼" wide flat or coil strap
- L-bent strap method
- U-bent strap method



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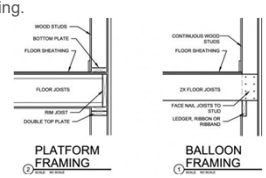
Connections to Wall Below 1709

- Truss gable end walls shall be fastened to the wall below using angle brackets
  - Spaced in accordance with 1704.1
  - Minimum four fasteners per bracket
  - Lumber to lumber
  - Lumber to masonry/concrete

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Connections to Wall Below 1709

- Platform construction
  - Stud to plate connector minimum uplift of 175 pounds at each primary stud
  - Screws from sill to top plate or concrete wall spaced per 1704.1
- Retrofits do not apply to balloon framing.



PLATFORM FRAMING

BALLOON FRAMING

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