

Community Development Department
 Building Division
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RESIDENTIAL SLOPE ROOF APPLICATION INFORMATION

Wind-borne Debris Area Retrofits	When a roof on an existing building is replaced that has a value => \$300,000 section 101.2.201.2 will apply. Building valuation will be determined per section 101.2. Does not apply to DeLand	This column is for information and examples only.
Roof-decking attachment and fasteners section 101.1 (a)	When a roof on an existing site-built, single family residential structure is replaced: Section 201.1 will apply. Does apply to DeLand	This requirement applies to all reroofing permits.
Secondary water barrier Section 101(b)	Peel & Stick must comply with section 201.2 <input type="checkbox"/> All sheathing joints <input type="checkbox"/> Entire roof deck <input type="checkbox"/> Nail 6" @lap 12" in field staggered	This requirement applies to all reroofing permits. Example: <input type="checkbox"/> All sheathing joints <input checked="" type="checkbox"/> Entire roof deck
Underlayment: **not required if sheathing is completely covered with peel and stick	Type: _____ Layers: _____ ASTM D 226, Type I or II 15# _____ ASTM D 4869, Type I or II 30# _____ Nailed per 201.2 above	Examples: 15# Felt, 2 Layers <input type="checkbox"/> ASTM D 226, Type I
Slope:	_____ " in 12"	Example: 5" in 12" (inches of rise in 12" of run)
Average roof height:	_____ feet	Example: 15 feet (Single story building)
Deck type:		Example(s): 1/2" plywood, 5/8" OSB
Roof Covering	_____ Manufacturer _____ Product	Example: ABC Roofing Products, Inc. Pinevalley 30 AR
Approval Method:	Florida Approval #: _____ or Miami/Dade N.O.A.: _____	Example: 1675.4 (FL#) – or NOA No 03-0528.06 (Miami/Dade)
Fasteners:	Type:	Example: 1 1/2" Galvanized Roofing Nail

HURRICANE MITIGATION RETROFITS FOR EXISTING SITE-BUILT SINGLE FAMILY RESIDENTIAL STRUCTURES

101 Retrofits Required. Pursuant to Section 553.844, Florida Statutes, strengthening of existing site-built, single family residential structures to resist hurricanes shall be provided.

101.1 When a roof on an existing site-built, single family residential structure is replaced:

- (a) Roof-decking attachment and fasteners shall be strengthened and corrected as required by section 201.1.
- (b) A secondary water barrier shall be provided as required by section 201.2.

201 Roof System Mitigation Techniques. Roof sheathing fastening, secondary water barriers, roof to wall connection and gable end bracing shall be permitted pursuant to this section.

201.1 Roof sheathing fastening for site-built family residential structures. For site-built single family residential structures the fasteners and spacing required in Table 201.1 are deemed to comply with the requirements of Section 507.2.2, of the 2004 Florida Building Code, Existing Building. Board roof decking secured with at least two 8d nails into roof framing members shall be deemed to be sufficiently connected. Board roof decking secured with smaller fasteners than 8d nails or with fewer than two 8d nails per board shall be deemed sufficiently connected if two 8d clipped head, round head, or ring shank nails are in place on each framing member.

Supplemental fasteners as required by Table 201.1 shall be 8d ring shank nails with round heads and the following minimum dimensions:

1. 0.113 inch nominal shank diameter
2. Ring diameter of 0.012 over shank diameter
3. 16 to 20 rings per inch
4. 0.280 inch full round head diameter
5. 2-1/4 inch nail length

Table 201.1
Supplement Fasteners at Panel Edges and Intermediate Framing

Existing fasteners	Existing spacing	Wind speed greater than 110 mph supplemental fastening shall be no greater than
Staples or 6d	Any	6" o.c. (b)
8d clipped head, round head, or ring shank	6" o.c. or less	None necessary
8d clipped head or round head	Greater than 6" o.c.	6" o.c. (b)
8d round head ring shank	Greater than 6" o.c.	6" o.c. (a)

- a. Maximum spacing determined based on existing fasteners and supplemental fasteners.
- b. Maximum spacing determined based on supplemental fasteners only.

201.1 Roof secondary water barrier for site-built single family residential structures. A secondary water barrier shall be installed using one of the following methods when roofing replacement when reroofing.

- a) All joints in roof sheathing or decking shall be covered with a minimum 4 in. wide strip of self-adhering polymer modified bitumen tape applied directly to the sheathing or decking. The deck and self adhering polymer modified bitumen tape shall be covered with one of the underlayment systems approved for the particular roof covering to be applied to the roof.
- b) The entire roof deck shall be covered with an approved self-adhering polymer modified bitumen cap sheet. No additional underlayment shall be required on top of this cap sheet for new installations.

EXCEPTIONS:

1. An asphalt impregnated 30# felt underlayment installed with nails and tin-tabs as required for the HVHZ and covered with either an approved self-adhering polymer modified bitumen cap sheet or an approved cap sheet applied using an approved hot-mop application shall be deemed to meet the requirements for the secondary water barrier.

201.3 Roof-to-wall connections for site-built single family residential structures. Where required by Section 101.2, the intersection of roof framing with the wall below shall be strengthened by adding metal connectors, clips, straps, and fasteners such that the performance level equals or exceeds the uplift capacities as specified in Table 201.3.1 through 201.3.4 shall be accepted as meeting the mandated roof-to-wall retrofit requirements.

201.2.1 Prescriptive method for gable roofs on a wood frame wall. Sufficient eave sheathing shall be removed to expose a minimum of 6-feet of framing members, measured from the corner, along the exterior wall on each side of each gable end. The anchorage of each of the exposed rafters or truss shall be inspected. Wherever a strap is missing or an existing strap has fewer than four fasteners on each end, approved straps, ties or right angle gusset brackets with a minimum uplift capacity of 500 lbs shall be installed that connect each rafter or truss to the top plate below. Adding fasteners to existing straps shall be allowed in lieu of adding a new strap provided the strap is manufactured to accommodate at least 4 fasteners at each end. Wherever access makes it possible (without damage of the wall or soffit finishes), both top plate members shall be connected to the stud below using a stud to plate connector with a minimum uplift capacity of 500 lbs.

Table 201.3
REQUIRED UPLIFT CAPACITIES FOR ROOF-TO WALL CONNECTIONS
(Pounds per linear foot)

		Roof Span (feet)							
Within 6 feet of building Corner	Basic Wind Speed	12	20	24	28	32	36	40	Overhangs
		85	-69.85	-116.42	-139.70	-162.99	-186.27	-209.55	-232.84
	90	-82.67	-137.78	-165.34	-192.90	-220.45	-248.01	-275.57	-30.3
	100	-110.51	-184.18	-221.01	-257.85	-294.68	-331.52	-368.36	-37.4
	110	-141.27	-235.45	-282.55	-329.64	-376.73	-423.82	-470.91	-45.3
	120	-174.97	-291.62	-349.94	-408.26	-466.59	-524.91	-583.23	-53.9
	130	-211.60	-352.66	-423.19	-493.72	-564.26	-634.79	-705.32	-63.2
	140	-251.15	-418.59	-502.31	-586.02	-669.74	-753.46	-837.18	-73.3
	150	-293.64	-489.40	-587.28	-685.16	-783.04	-880.92	-978.80	-84.2
	170	-387.40	-645.67	-774.81	-903.94	-1,033.08	-1,162.21	-1,291.35	-108
Greater than 6ft from building corner	85	-39.10	-65.17	-78.20	-91.24	-104.27	-117.30	-130.34	-27
	90	-48.20	-80.33	-96.39	-112.46	-128.52	-144.59	-160.66	-30.3
	100	-67.95	-113.24	-135.89	-158.54	-181.19	-203.84	-226.49	-37.4
	110	-89.78	-149.63	-179.55	-209.48	-239.40	-269.33	-299.25	-45.3
	120	-113.68	-189.47	-227.37	-265.26	-303.16	-341.05	-378.94	-53.9
	130	-139.67	-232.78	-279.34	-325.90	-372.45	-419.01	-465.57	-63.2
	140	-167.74	-279.56	-335.47	-391.38	-447.29	-503.21	-559.12	-73.3
	150	-197.88	-329.80	-395.76	-461.72	-527.68	-593.68	-659.60	-84.2
170	-264.41	-440.68	-528.81	-616.95	-705.08	-793.22	-881.35	-108	

- Notes:
- The required capacities are pounds per lineal foot of building length. For roof framing spaced at 16 inches on center multiply table values by 2.
 - The required capacities include an allowance for 10 pounds of dead load.
 - The required capacities do not account for the effects of overhangs. The overhang loads given shall be multiplied by the overhang projection and added to the capacities in the table.

201.3.2 Prescriptive method for gable roofs on a masonry wall. Sufficient eave sheathing shall be removed to expose a minimum of 6-feet of framing members, measured from the corner, along the exterior wall on each side of each gable end. The anchorage of each of the exposed rafters or truss shall be inspected. Wherever a strap is missing or an existing strap has fewer than four fasteners on each of the exposed rafters or truss shall be inspected. Wherever a strap is missing or an existing strap has fewer than four fasteners on each end, approved straps, ties or right angle gusset brackets with a minimum uplift capacity of 500 lbs shall be installed that connect each rafter or truss to the top plate below or directly to the masonry wall using approved masonry screws that will provide at least a 2- ½ embedment into the concrete masonry wall below. The anchorage shall be accomplished by installing ¼ inch diameter masonry screws, each with supplementary ¼ inch washer, having sufficient length to develop a 2 ½ inch embedment into the concrete and masonry. These screws shall be installed within 4 inches of the truss or rafter on both sides of each interior rafter or truss and on the accessible wall side of the gable end truss or rafter.

201.3.3 Prescriptive method for hip roofs on a wood frame wall. Sufficient corner eave sheathing shall be removed from the side of the hip ridge parallel to the roof ridge to provide access to a minimum 6-foot length of the exterior wall. The hip ridge board and any exposed rafters that are not anchored with a strap having at least four fasteners on each end, shall be connected to the top plate below using a strap or a right angle gusset bracket having a minimum uplift capacity of 500lbs. Adding fasteners to existing straps shall be allowed in lieu of adding a new strap provided the strap is manufactured to accommodate at least 4 fasteners at each end. Wherever access makes it possible (without damage of the wall or soffit finishes), both top plate members shall be connected to the stud below using a stud to plate connector with a minimum uplift capacity of 500 lbs.

201.3.4 Prescriptive method for hip roofs on a masonry wall. Sufficient corner eave sheathing shall be removed from the side of the hip ridge parallel to the roof ridge to provide access to a minimum 6-foot length of the exterior wall. The hip ridge board and any

exposed rafters that are not anchored with a strap having at least four fasteners on each end, shall be connected to the concrete masonry wall below using approved straps or right angle gusset brackets with a minimum uplift capacity of 500lbs. Adding fasteners to existing straps shall be allowed in lieu of adding a new strap provided the strap is manufactured to accommodate at least 4 fasteners at each end. The straps or right angle gusset brackets shall be installed such that they connect each rafter or truss to the top plate below or directly to the masonry wall using approved masonry screws that will provide at least 2 ½ inch embedment into the concrete or masonry. When the straps or right angle gusset brackets are attached to a wood sill plate, the sill plate shall be anchored to the concrete masonry wall below. This anchorage shall be accomplished by installing ¼ inch diameter masonry screws, each with supplementary ¼ inch washer, with sufficient length to develop a 2 ½ inch embedment into the concrete and masonry. These screws shall be installed within 4 inches of the truss or rafter on both sides of each interior rafter or truss and on the accessible wall side of the gable end truss or rafter.

201.3.5 Priorities for mandated roof-to-wall retrofit expenditures. For houses with both hip and gable roof ends, the priority shall be to retrofit the gable end roof-to-wall connections unless the width of the hip end is more than 1.5 times greater than the width of the gable end. Priority shall be given to connecting the corners of roofs to walls below where the spans of the roofing members are greatest.

R905.2.4 – Asphalt shingles shall have self-seal strips or be interlocking, and comply with ASTM D 225 or D 3462.

R905.2.5 – Fasteners for asphalt shingles shall be galvanized steel, aluminum or copper roofing nails, minimum 12 gage [0.105 inch (2.67 mm)] shank with a minimum 3/8 inch (9.5 mm) diameter head, ASTM F 1667, of a length to penetrate through the roofing materials and a minimum of ¾ inch (19.1 mm) into the roof sheathing. Where the roof sheathing is less than ¾ inch (19.1 mm) thick, the fasteners shall penetrate through the sheathing. Fasteners shall comply with ASTM F 1667.

R905.2.6 – Asphalt shingles shall have the minimum number of fasteners required by the manufacturer. For normal application, asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 20 units vertical in 12 units horizontal (20:12), special methods of fastening are required. For roofs located where the basic wind speed per Figure R301.2(4) is 110 mph (177 km/h) or greater, special methods of fastening are required. Special fastening methods shall be tested in accordance with ASTM D 3161, modified to use a wind speed of 110mph (177 km/h), or TAS107. Shingles classified using ASTM D 3161 are acceptable for use in wind zones less than 110 mph. Shingles classified using ASTM D 3161 or TAS107 modified to use a wind speed of 110 mph or TAS107 are acceptable for use in all cases where special fastening is required.

R905.2.7 – For roof slopes from two units vertical in 12 units horizontal (17-percent slope), up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be two layers applied in the following manner. Apply a 19 inch (483 mm) strip of underlayment felt parallel with and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36 inch wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), and fastened sufficiently to hold in place. For roof slopes of four units vertical in 12 units horizontal (33 percent slope) or greater, underlayment shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened sufficiently to hold in place. End laps shall be offset by 6 feet (1829 mm) §1507.3.9 Flashings. Flashings for asphalt shingles shall comply with §1507.3.9 (R905.2.7.2 – Underlayment applied in areas subject to high winds [greater than 110 mph (177km/h) per figure R301.2(4)] shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.

R905.2.8.1 – Base and counter flashing shall be installed in accordance with manufacturer's installation instructions, or a continuous metal "L" flashing shall be set in approved flashing cement and set flush to base of wall and over the underlayment. Both horizontal and vertical metal flanges shall be fastened 6 inches (152 mm) on center with approved fasteners. All laps shall be a minimum of 4 inches (102 mm) fully sealed in approved flashing cement. Flashing shall start at the lower portion of roof to ensure water-shedding capabilities of all metal laps. The entire edge of the horizontal flange shall be sealed covering all nail penetrations with approved flashing cement and membrane. Shingles shall overlap the horizontal flange and shall be set in approved flashing cement. Base flashing shall be of either corrosion-resistant metal provided in Section R905.2.8.1 or mineral surface roll roofing weighing a minimum of 77 pounds per 100 square feet (3.76 kg/m²). Counter flashing shall be corrosion-resistant metal with a minimum thickness provided in Table R903.1.

R905.2.8.2 –

Valley linings shall be installed in accordance with manufacturer's installation instructions before applying shingles. Valley linings of the following types shall be permitted:

1. For open valley (valley lining exposed) lined with metal, the valley lining shall be at least 24 inches (610 mm) wide and of any of the corrosion-resistant metals in Table R903.1.
2. For open valleys, valley lining of two plies of mineral surface roll roofing, complying with ASTM D 249, shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer a minimum of 36 inches (914mm) wide.
3. For closed valleys (valleys covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D 224 Type II or Type III and at least 36 inches (914 mm) wide or valley lining as described in items 1 and 2 above shall be permitted. Specialty underlayment complying with ASTM D 1970 may be used in lieu of the lining material.