

Chapter 6: Wall Construction

General Comments

Chapter 6 contains provisions that regulate the design and construction of walls. The wall construction covered in Chapter 6 consists of five different types: wood framed, cold-formed steel framed, masonry, concrete and structural insulated panel (SIP). The primary concern of this chapter is the structural integrity of wall construction and transfer of all imposed loads to the supporting structure.

Section R601 contains the scope, as well as the performance expectations for walls. Section R602 addresses wood wall framing. Section R603 addresses cold-formed steel wall framing. Section R604 specifies requirements for wood-structural-panel wall sheathing. Section R605 provides requirements for particleboard used as wall sheathing. Section R606 states the general requirements pertaining to masonry wall construction. Section R607 addresses unit masonry walls. Section R608 covers walls of multiple-wythe masonry. Section R609 contains grouted masonry provisions. Section R610 specifies requirements for wall panels of glass unit masonry. Section R611 addresses prescriptive requirements for concrete wall construction with stay-in-place or removable forms. Section R612 contains the criteria for the performance of exterior windows and doors. Section R613 contains the provisions for SIP wall construction.

In certain instances a wall must have a fire-resistance rating. Where this is necessary, the wall system must be

a tested assembly, and any conditions specific to the installation of the assembly must apply as well. Examples of these provisions include:

- Exterior walls based on location on property (see Section R302).
- Walls serving as dwelling unit separations in two-family dwellings (see Section R302.3).
- Common wall between townhouses (see Section R302.2, exception).

Purpose

This chapter provides the requirements for the design and construction of wall systems that are capable of supporting the minimum design vertical loads (dead, live and snow loads) and lateral loads (wind or seismic loads). This chapter contains the prescriptive requirements for wall bracing and/or shear walls to resist the imposed lateral loads due to wind and seismic. Chapter 6 also contains requirements for the use of vapor retarders for moisture control in walls.

Chapter 6 also regulates exterior windows and doors installed in walls. The chapter contains criteria for the performance of exterior windows and doors and includes provisions for window sill height, testing and labeling, vehicular access doors, wind-borne debris protection and anchorage details.

SECTION R601 GENERAL

R601.1 Application. The provisions of this chapter shall control the design and construction of all walls and partitions for all buildings.

❖ This section establishes the scope of the chapter.

R601.2 Requirements. Wall construction shall be capable of accommodating all loads imposed according to Section R301 and of transmitting the resulting loads to the supporting structural elements.

❖ This is a general performance statement, requiring that walls support the required design loads and provide an adequate load path to supporting elements.

R601.2.1 Compressible floor-covering materials. Compressible floor-covering materials that compress more than $\frac{1}{32}$ inch (0.8 mm) when subjected to 50 pounds (23 kg) applied over 1 inch square (645 mm) of material and are greater than $\frac{1}{8}$ inch (3 mm) in thickness in the uncompressed state shall not extend beneath walls, partitions or columns, which are fastened to the floor.

❖ Although it is preferable to fasten walls directly to the supporting structure, this provision allows them to be

installed over finish floor materials that meet the specified criteria.

SECTION R602 WOOD WALL FRAMING

R602.1 Identification. Load-bearing dimension lumber for studs, plates and headers shall be identified by a grade mark of a lumber grading or inspection agency that has been *approved* by an accreditation body that complies with DOC PS 20. In lieu of a grade mark, a certification of inspection issued by a lumber grading or inspection agency meeting the requirements of this section shall be accepted.

❖ Wood materials performing a load-carrying function must conform to a minimum quality control standard. To verify this, load-bearing lumber must be properly identified to indicate that the grades and species meet the minimum requirements specified in this chapter. Commentary Figure R602.1 shows the information contained in a grade mark. For more examples, see Commentary Figure R502.1. For examples of marks for wood structural panels, see Commentary Figure R503.2.1.

WALL CONSTRUCTION

R602.1.1 End-jointed lumber. Approved end-jointed lumber identified by a grade mark conforming to Section R602.1 may be used interchangeably with solid-sawn members of the same species and grade. End-jointed lumber used in an assembly required elsewhere in this code to have a fire-resistance rating shall have the designation "Heat Resistant Adhesive" or "HRA" included in its grade mark.

❖ End-jointed lumber that has been fabricated in accordance with nationally recognized standards can be used interchangeably with solid-sawn members, provided that the species and grade of the wood are comparable. Commentary Figure R602.1.1(1) shows end-jointed lumber, which is also referred to as "finger-jointed" (see commentary, Section R502.1.3).

End-jointed lumber carrying the HRA mark, indicating it has been joined using heat-resistant adhesive, is permitted to be used interchangeably with solid-sawn members of the same species and grade in fire-rated applications. End-jointed lumber manufactured with an adhesive not qualified as a heat-resistant adhesive will be designated as "non-heat resistant adhesive" or "non-HRA" on the grade stamp. Commentary Figure R602.1.1(2) shows the HRA mark included in a grade stamp.

R602.1.2 Structural glued laminated timbers. Glued laminated timbers shall be manufactured and identified as required in ANSI/AITC A190.1 and ASTM D 3737.

❖ Glued laminated (gluelam) timbers are engineered wood elements consisting of layers of plywood plies with varying grades of plywood through the thickness of the member. The strength of the members and the use of the members (beams, studs, etc.) are based on different combinations of plywood veneer grades, called layups. The design, testing and manufacture of different layups for different applications are standardized in the referenced standards. The standards also address the identification of these timbers, which is useful at the construction site during inspection.

R602.1.3 Structural log members. Stress grading of structural log members of nonrectangular shape, as typically used in log buildings, shall be in accordance with ASTM D 3957. Such structural log members shall be identified by the grade mark of an *approved* lumber grading or inspection agency. In lieu of a grade mark on the material, a certificate of inspection as to species and grade, issued by a lumber-grading or inspection agency meeting the requirements of this section, shall be permitted to be accepted.

❖ This section addresses grading requirements for logs used as structural members. This subsection speci-

INTERPRETING GRADE STAMPS

MOST GRADE STAMPS, EXCEPT THOSE FOR ROUGH LUMBER OR HEAVY TIMBERS, CONTAIN FIVE BASIC ELEMENTS:

(B)

A. THE TRADEMARK INDICATES AGENCY QUALITY SUPERVISION.

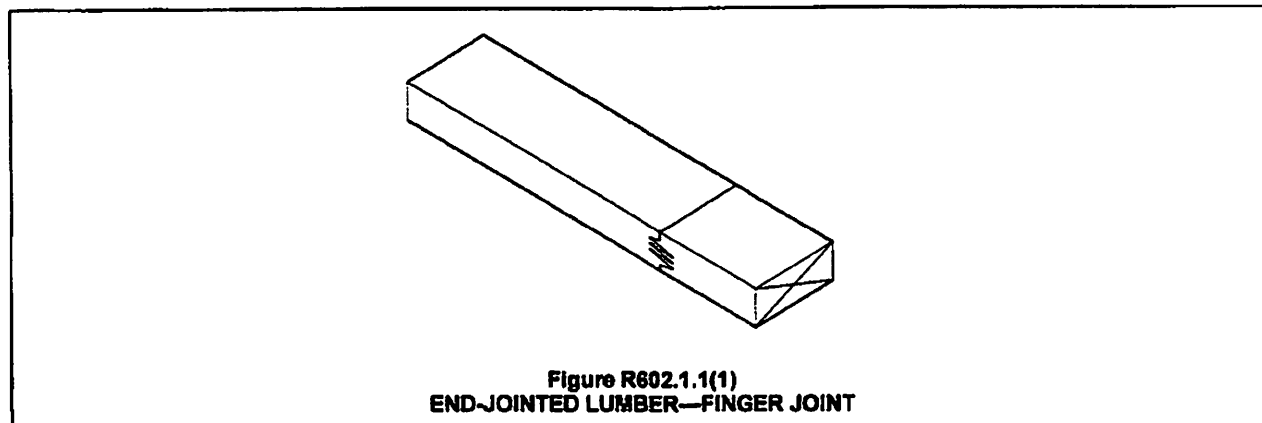
B. MILL IDENTIFICATION – FIRM NAME, BRAND OR ASSIGNED MILL NUMBER.

C. GRADE DESIGNATION – GRADE NAME, NUMBER OR ABBREVIATION.

D. SPECIAL IDENTIFICATION – INDICATES SPECIES INDIVIDUALLY OR IN COMBINATION.

E. CONDITION OF SEASONING AT TIME OF SURFACING:
 S-DRY – 19% MAX MOISTURE CONTENT
 MC 15 – 15% MAX MOISTURE CONTENT
 S-GRN – OVER 19% MOISTURE CONTENT (UNSEASONED)

**Figure R602.1
GRADE STAMP EXAMPLE FOR DIMENSIONAL LUMBER**



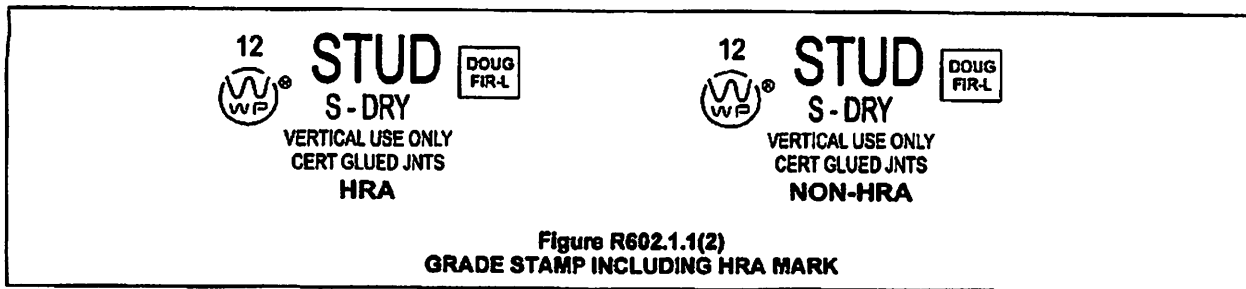


Figure R602.1.1(2)
GRADE STAMP INCLUDING HRA MARK

ties the reference for acceptable methods for establishing structural capacities of logs and specifies the requirement for a grading stamp or alternate certification on structural logs. Structural log members must be graded in accordance with ASTM D 3957, *Standard Practices for Establishing Stress Grades for Structural Members Used in Log Buildings*.

R602.1.4 Structural composite lumber. Structural capacities for structural composite lumber shall be established and monitored in accordance with ASTM D 5456.

❖ Structural composite lumber (SCL) is an engineered wood product using veneer sheets or strands of wood glued together to form structural beams, columns, studs, or sheathing. The strength and use of the members depends upon the size and thickness of the strands, the use of veneer sheets, and the orientation of the strand or veneer. Design, testing and manufacture of the engineered lumber are standardized in ASTM D 5456, the referenced standard for SCL.

R602.2 Grade. Studs shall be a minimum No. 3, standard or stud grade lumber.

Exception: Bearing studs not supporting floors and non-bearing studs may be utility grade lumber, provided the studs are spaced in accordance with Table R602.3(5).

❖ A minimum grade of No. 3, standard, or stud grade lumber is specified for studs in conventional wood-framed walls to maintain minimum load-carrying capabilities. The maximum size of standard grade lumber is limited to 2 to 4 inches (51 to 102 mm) nominal in thickness and 4 inches (102 mm) in width. Thus, a 4-inch by 6-inch (102 mm by 152 mm) piece of dimensional lumber would not be available in the standard grade.

To allow more economical use of lumber for bearing studs not supporting floors and nonbearing studs, the exception permits the use of utility grade lumber, provided that the studs are spaced according to the limits established in Table R602.3(5). Note "a" of the table places a more restrictive limit on utility grade stud spacing where permitted in a load-bearing application.

R602.3 Design and construction. Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF&PA's NDS. Components of exterior walls shall be fastened in accordance with Tables R602.3(1) through R602.3(4). Wall sheathing shall be fastened directly to framing members and, when placed on the exterior side of an exterior wall, shall be capable

of resisting the wind pressures listed in Table R301.2(2) adjusted for height and exposure using Table R301.2(3). Wood structural panel sheathing used for exterior walls shall conform to DOC PS 1, DOC PS 2 or, when manufactured in Canada, CSA O437 or CSA O325. All panels shall be identified for grade, bond classification, and Performance Category by a grade mark or certificate of inspection issued by an approved agency and shall conform to the requirements of Table R602.3(3). Wall sheathing used only for exterior wall covering purposes shall comply with Section R703.

Studs shall be continuous from support at the sole plate to a support at the top plate to resist loads perpendicular to the wall. The support shall be a foundation or floor, ceiling or roof diaphragm or shall be designed in accordance with accepted engineering practice.

Exception: Jack studs, trimmer studs and cripple studs at openings in walls that comply with Tables R502.5(1) and R502.5(2).

❖ Figures R602.3(1) and R602.3(2) in conjunction with the minimum nailing requirements of Tables R602.3(1) and R602.3(2) provide typical wall-framing details for construction of exterior walls. Walls must be in accordance with this section or American Forest & Paper Association's (AF&A) *National Design Specification* (NDS).

All exterior wall coverings must be capable of resisting the wind pressures required by Section R301.2.1.

Wall sheathing used only for exterior wall covering purposes shall comply with Section R703. Wall sheathing used for structural purposes, i.e. wall bracing, must comply with Section R602.10 or R602.12. All wood structural panels used for sheathing on exterior walls must be fastened in accordance with Table R602.3(3)

For wood structural panel sheathing used for interior walls, the fastening is in accordance with Table R602.3(1). The 6d common nail fastening for the wood structural panels in Table R602.3(1) is not adequate for the wind pressures required by Section R301.2.

The studs for exterior walls must be continuous from the support at the bottom to the support at the top, i.e., stacked framing that forms a "hinge" is not permitted. There is no prescriptive design in the code for stacked framing. Exterior wall framing that is stacked and forms a "hinge" must be engineered. The exception for continuity of studs is for jack studs, trimmer studs, and cripple studs at openings.

WALL CONSTRUCTION

TABLE R602.3(1)
FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER ^{a,b,c}	SPACING OF FASTENERS
Roof			
1	Blocking between joists or rafters to top plate, toe nail	3-8d (2½" × 0.113")	—
2	Ceiling joists to plate, toe nail	3-8d (2½" × 0.113")	—
3	Ceiling joists not attached to parallel rafter, laps over partitions, face nail	3-10d	—
4	Collar tie to rafter, face nail or 1½" × 20 gage ridge strap	3-10d (3" × 0.128")	—
5	Rafter or roof truss to plate, toe nail	3-16d box nails (3½" × 0.135") or 3-10d common nails (3" × 0.148")	2 toe nails on one side and 1 toe nail on opposite side of each rafter or truss ^d
6	Roof rafters to ridge, valley or hip rafters: toe nail face nail	4-16d (3½" × 0.135") 3-16d (3½" × 0.135")	—
Wall			
7	Built-up studs-face nail	10d (3" × 0.128")	24" o.c.
8	Abutting studs at intersecting wall corners, face nail	16d (3½" × 0.135")	12" o.c.
9	Built-up header, two pieces with ½" spacer	16d (3½" × 0.135")	16" o.c. along each edge
10	Continued header, two pieces	16d (3½" × 0.135")	16" o.c. along each edge
11	Continuous header to stud, toe nail	4-8d (2½" × 0.113")	—
12	Double studs, face nail	10d (3" × 0.128")	24" o.c.
13	Double top plates, face nail	10d (3" × 0.128")	24" o.c.
14	Double top plates, minimum 24-inch offset of end joints, face nail in lapped area	8-16d (3½" × 0.135")	—
15	Sole plate to joist or blocking, face nail	16d (3½" × 0.135")	16" o.c.
16	Sole plate to joist or blocking at braced wall panels	3-16d (3½" × 0.135")	16" o.c.
17	Stud to sole plate, toe nail	3-8d (2½" × 0.113") or 2-16d (3½" × 0.135")	—
18	Top or sole plate to stud, end nail	2-16d (3½" × 0.135")	—
19	Top plates, laps at corners and intersections, face nail	2-10d (3" × 0.128")	—
20	1" brace to each stud and plate, face nail	2-8d (2½" × 0.113") 2 staples 1½"	—
21	1" × 6" sheathing to each bearing, face nail	2-8d (2½" × 0.113") 2 staples 1½"	—
22	1" × 8" sheathing to each bearing, face nail	2-8d (2½" × 0.113") 3 staples 1½"	—
23	Wider than 1" × 8" sheathing to each bearing, face nail	3-8d (2½" × 0.113") 4 staples 1½"	—
Floor			
24	Joist to sill or girder, toe nail	3-8d (2½" × 0.113")	—
25	Rim joist to top plate, toe nail (roof applications also)	8d (2½" × 0.113")	6" o.c.
26	Rim joist or blocking to sill plate, toe nail	8d (2½" × 0.113")	6" o.c.
27	1" × 6" subfloor or less to each joist, face nail	2-8d (2½" × 0.113") 2 staples 1½"	—
28	2" subfloor to joist or girder, blind and face nail	2-16d (3½" × 0.135")	—
29	2" planks (plank & beam - floor & roof)	2-16d (3½" × 0.135")	at each bearing
30	Built-up girders and beams, 2-inch lumber layers	10d (3" × 0.128")	Nail each layer as follows: 32" o.c. at top and bottom and staggered. Two nails at ends and at each splice.
31	Ledger strip supporting joists or rafters	3-16d (3½" × 0.135")	At each joist or rafter

(continued)

TABLE R602.3(1)—continued
FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

ITEM	DESCRIPTION OF BUILDING MATERIALS	DESCRIPTION OF FASTENER ^{a,c,e}	SPACING OF FASTENERS	
			Edges (Inches) ^f	Intermediate supports ^{a,g} (Inches)
Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing				
32	$\frac{3}{8}$ " - $\frac{1}{2}$ "	6d common (2" x 0.113") nail (subfloor wall) ^j 8d common (2 $\frac{1}{2}$ " x 0.131") nail (roof) ⁱ	6	12 ^h
33	$\frac{10}{32}$ " - 1"	8d common nail (2 $\frac{1}{2}$ " x 0.131")	6	12 ^h
34	$1\frac{1}{8}$ " - $1\frac{1}{4}$ "	10d common (3" x 0.148") nail or 8d (2 $\frac{1}{2}$ " x 0.131") deformed nail	6	12
Other wall sheathing^b				
35	$\frac{1}{2}$ " structural cellulose fiberboard sheathing	1 $\frac{1}{2}$ " galvanized roofing nail, $\frac{7}{16}$ " crown or 1" crown staple 16 ga., 1 $\frac{1}{2}$ " long	3	6
36	$\frac{25}{32}$ " structural cellulose fiberboard sheathing	1 $\frac{1}{4}$ " galvanized roofing nail, $\frac{7}{16}$ " crown or 1" crown staple 16 ga., 1 $\frac{1}{2}$ " long	3	6
37	$\frac{1}{2}$ " gypsum sheathing ^d	1 $\frac{1}{2}$ " galvanized roofing nail; staple galvanized, 1 $\frac{1}{2}$ " long; 1 $\frac{1}{4}$ " screws, Type W or S	7	7
38	$\frac{5}{8}$ " gypsum sheathing ^d	1 $\frac{3}{4}$ " galvanized roofing nail; staple galvanized, 1 $\frac{3}{4}$ " long; 1 $\frac{1}{4}$ " screws, Type W or S	7	7
Wood structural panels, combination subfloor underlayment to framing				
39	$\frac{3}{4}$ " and less	6d deformed (2" x 0.120") nail or 8d common (2 $\frac{1}{2}$ " x 0.131") nail	6	12
40	$\frac{7}{8}$ " - 1"	8d common (2 $\frac{1}{2}$ " x 0.131") nail or 8d deformed (2 $\frac{1}{2}$ " x 0.120") nail	6	12
41	$1\frac{1}{8}$ " - $1\frac{1}{4}$ "	10d common (3" x 0.148") nail or 8d deformed (2 $\frac{1}{2}$ " x 0.120") nail	6	12

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1 Ksi = 6.895 MPa.

- All nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less.
 - Staples are 16 gage wire and have a minimum $\frac{7}{16}$ -inch on diameter crown width.
 - Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.
 - Four-foot by 8-foot or 4-foot by 9-foot panels shall be applied vertically.
 - Spacing of fasteners not included in this table shall be based on Table R602.3(2).
 - For regions having basic wind speed of 110 mph or greater, 8d deformed (2 $\frac{1}{2}$ " x 0.120) nails shall be used for attaching plywood and wood structural panel roof sheathing to framing within minimum 48-inch distance from gable end walls, if mean roof height is more than 25 feet, up to 35 feet maximum.
 - For regions having basic wind speed of 100 mph or less, nails for attaching wood structural panel roof sheathing to gable end wall framing shall be spaced 6 inches on center. When basic wind speed is greater than 100 mph, nails for attaching panel roof sheathing to intermediate supports shall be spaced 6 inches on center for minimum 48-inch distance from ridges, eaves and gable end walls; and 4 inches on center to gable end wall framing.
 - Gypsum sheathing shall conform to ASTM C 1396 and shall be installed in accordance with GA 253. Fiberboard sheathing shall conform to ASTM C 208.
 - Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at all floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.
 - Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule, provide two toe nails on one side of the rafter and toe nails from the ceiling joist to top plate in accordance with this schedule. The toe nail on the opposite side of the rafter shall not be required.
- ❖ The fastener schedule provides minimum nailing requirements (i.e., size, spacing) for connecting building elements used in wood framed construction. For wood structural panels, both edge nailing and intermediate (field) nailing are specified. In addition to the nailing for wood structural panels, fasteners are specified for gypsum wall sheathing, cellulose fiberboard wall sheathing and combination subfloor underlayment.

WALL CONSTRUCTION

TABLE R602.3(2)
ALTERNATE ATTACHMENTS TO TABLE R602.3(1)

NOMINAL MATERIAL THICKNESS (Inches)	DESCRIPTION ^{a,b} OF FASTENER AND LENGTH (Inches)	SPACING ^c OF FASTENERS	
		Edges (Inches)	Intermediate supports (Inches)
Wood structural panels subfloor, roof^f and wall sheathing to framing and particleboard wall sheathing to framing^g			
Up to 1/2	Staple 15 ga. 1 3/4	4	8
	0.097 - 0.099 Nail 2 1/4	3	6
	Staple 16 ga. 1 3/4	3	6
19/32 and 5/8	0.113 Nail 2	3	6
	Staple 15 and 16 ga. 2	4	8
	0.097 - 0.099 Nail 2 1/4	4	8
21/32 and 3/4	Staple 14 ga. 2	4	8
	Staple 15 ga. 1 3/4	3	6
	0.097 - 0.099 Nail 2 1/4	4	8
	Staple 16 ga. 2	4	8
1	Staple 14 ga. 2 1/4	4	8
	0.113 Nail 2 1/4	3	6
	Staple 15 ga. 2 1/4	4	8
	0.097 - 0.099 Nail 2 1/2	4	8
NOMINAL MATERIAL THICKNESS (Inches)	DESCRIPTION ^{a,b} OF FASTENER AND LENGTH (Inches)	SPACING ^c OF FASTENERS	
Floor underlayment; plywood-hardboard-particleboard^f			
Plywood			
1/4 and 3/16	1 1/4 ring or screw shank nail-minimum 12 1/2 ga. (0.099") shank diameter	3	6
	Staple 18 ga., 3/8, 3/16 crown width	2	5
11/32, 3/8, 13/32, and 1/2	1 1/4 ring or screw shank nail-minimum 12 1/2 ga. (0.099") shank diameter	6	8 ^e
19/32, 5/8, 21/32 and 3/4	1 1/2 ring or screw shank nail-minimum 12 1/2 ga. (0.099") shank diameter	6	8
	Staple 16 ga. 1 1/2	6	8
Hardboard^f			
0.200	1 1/2 long ring-grooved underlayment nail	6	6
	4d cement-coated sinker nail	6	6
	Staple 18 ga., 3/8 long (plastic coated)	3	6
Particleboard			
1/4	4d ring-grooved underlayment nail	3	6
	Staple 18 ga., 3/8 long, 3/16 crown	3	6
3/8	6d ring-grooved underlayment nail	6	10
	Staple 16 ga., 1 1/2 long, 3/8 crown	3	6
1/2, 5/8	6d ring-grooved underlayment nail	6	10
	Staple 16 ga., 1 3/8 long, 3/8 crown	3	6

For SI: 1 inch = 25.4 mm.

- a. Nail is a general description and may be T-head, modified round head or round head.
- b. Staples shall have a minimum crown width of 3/16-inch on diameter except as noted.
- c. Nails or staples shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater. Nails or staples shall be spaced at not more than 12 inches on center at intermediate supports for floors.
- d. Fasteners shall be placed in a grid pattern throughout the body of the panel.
- e. For 5-ply panels, intermediate nails shall be spaced not more than 12 inches on center each way.
- f. Hardboard underlayment shall conform to CPA/ANSI A135.4
- g. Specified alternate attachments for roof sheathing shall be permitted for windspeeds less than 100 mph. Fasteners attaching wood structural panel roof sheathing to gable end wall framing shall be installed using the spacing listed for panel edges.

❖ This table offers alternatives to the nailing specified for wood structural panels in Table R602.3(1).

TABLE R602.3(3)
REQUIREMENTS FOR WOOD STRUCTURAL PANEL WALL SHEATHING USED TO RESIST WIND PRESSURES^{a, b}

MINIMUM NAIL		MINIMUM WOOD STRUCTURAL PANEL SPAN RATING	MINIMUM NOMINAL PANEL THICKNESS (Inches)	MAXIMUM WALL STUD SPACING (Inches)	PANEL NAIL SPACING		MAXIMUM WIND SPEED (mph)		
Size	Penetration (Inches)				Edges (Inches o.c.)	Field (Inches o.c.)	Wind exposure category		
							B	C	D
6d Common (2.0" x 0.113")	1.5	24/0	3/8	16	6	12	110	90	85
8d Common (2.5" x 0.131")	1.75	24/16	7/16	16	6	12	130	110	105
				24	6	12	110	90	85

For SI: 1 inch = 25.4 mm, 1 mile per hour = 0.447 m/s.

- Panel strength axis parallel or perpendicular to supports. Three-ply plywood sheathing with studs spaced more than 16 inches on center shall be applied with panel strength axis perpendicular to supports.
- Table is based on wind pressures acting toward and away from building surfaces per Section R301.2. Lateral bracing requirements shall be in accordance with Section R602.10.
- Wood structural panels with span ratings of Wall-16 or Wall-24 shall be permitted as an alternate to panels with a 24/0 span rating. Plywood siding rated 16 o.c. or 24 o.c. shall be permitted as an alternate to panels with a 24/16 span rating. Wall-16 and Plywood siding 16 o.c. shall be used with studs spaced a maximum of 16 inches on center.

❖ In 2009, this table updated the previous wood structural panel wall sheathing table to include requirements for the wind pressures specified in Section R301.2.1. The 5/16-inch (8 mm) wood structural panels have been deleted since they are currently a very small fraction of the panels produced today. While they have been the minimum panel thickness specified for many applications over the years, the building industry has shifted away from them due to manufacturing efficiencies and marketplace demand. The de facto minimum has become 3/8 inch (9.5 mm).

This table provides the minimum thickness, maximum wall stud spacing and fastening for wood structural panels used for sheathing on exterior walls. See Table R602.3(1) for wood structural panel sheathing for interior walls.

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The previous Table R602.2(3) in the code gave recommended minimum panel thicknesses for wall panel sheathing. It was adequate most of the time but in higher wind regions (still within the range of the code) the panel thicknesses and orientations recommended in the table and footnotes may not provide the minimum protection to the home and inhabitants that is currently required in Section R301.2.1. Analysis conducted by the APA The Engineered Wood Association (APA) staff indicates that in the extreme wind regions covered by the code [less than 110 mph (49 m/s)] and with more severe exposures (C and D) the minimum thicknesses recommendations given in the previous Table R602.2(3), Wood Structural Panel Wall Sheathing, were insufficient in thickness and attachment. This new table provides the requirements to ensure that this important part of the structural system is correct. The analysis considered panel bending, stiffness, nail withdrawal and nail head pull through as well as the wind pressure requirements of Section R301.2.1. Note that the impact to most will be minimal because the most commonly used wood structural panel sheathing thickness in the US is 7/16 inch (11 mm). As can be seen in the new table, this sheathing thickness is satisfactory for winds up to 110 mph (49 m/s) in all but Exposure D conditions. Most builders will only see the requirement for 8d nails as a change, and this is already the nail required for roof sheathing applications.