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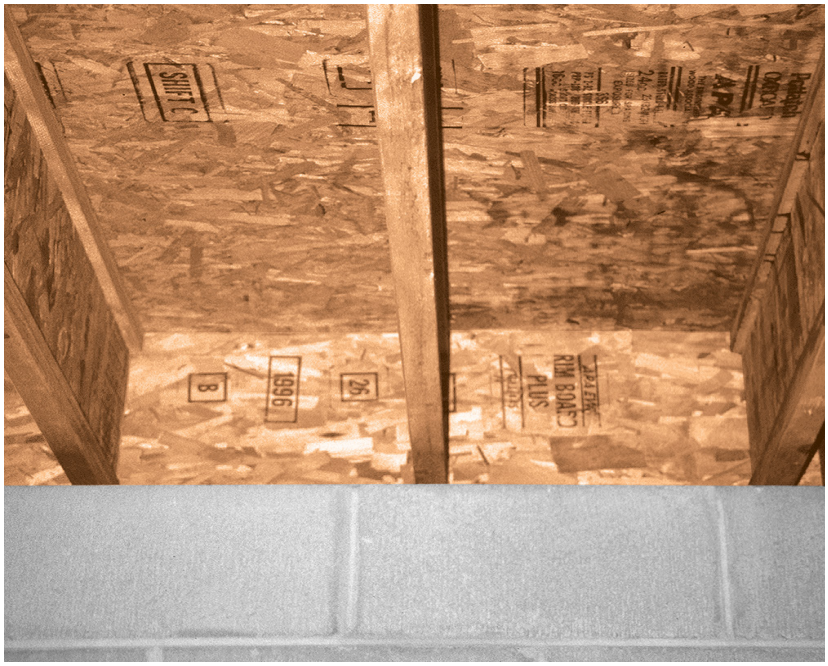
CANADIAN EDITION

APA Performance-Rated Rim Board® Canadian Limit States Design

APA – The Engineered Wood Association is a Certification Body recognized by the Standards Council of Canada, Registration No. 10012, to provide certification services in the field of building products.

A Rim Board® is the wood component that fills the space between the sill plate and bottom plate of a wall or, in second floor construction, between the top plate and bottom plate of two wall sections. The Rim Board must match the depth of the framing members between floors or between the floor and foundation to function properly. In addition to supporting the wall loads, the Rim Board ties the floor joists together. It is an integral component in an engineered wood system because it transfers both lateral and vertical bearing forces.



In this application, an engineered wood Rim Board is installed between the foundation sill plate and the floor under a wall section. The Rim Board matches the depth of the I-joists used in the floor framing.

While lumber has been the traditional product used for Rim Boards, it is not compatible with engineered wood I-joists used in floor construction. With the increasing use of wood I-joists, a demand for compatible engineered wood Rim Boards has resulted.

APA Performance-Rated Rim Boards can be manufactured using plywood, oriented strand board (OSB), glued laminated timber (glulam), or structural composite lumber (SCL), which is composed of laminated veneer lumber (LVL), laminated strand lumber (LSL) or oriented strand lumber (OSL). These engineered wood Rim Boards have less shrinkage than lumber and match the depth of wood I-joists and other engineered wood framing products. They are available in lengths up to 7.3 m (24 feet), depending on the product used. See Table 1.

TABLE 1

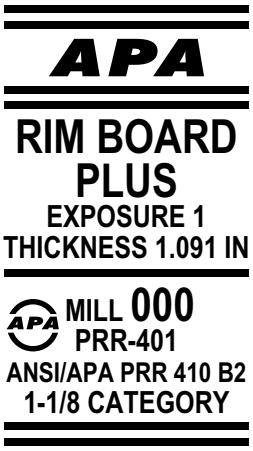
STANDARD SIZES FOR APA PERFORMANCE-RATED RIM BOARDS

Dimension	Standard Sizes[a]
Thickness	25 mm (1 inch)[b], 29 mm (1-1/8 inches)[b], 32 mm (1-1/4 inches) and 38 mm (1-1/2 inches)
Depth	241 mm (9-1/2 inches), 302 mm (11-7/8 inches), 356 mm (14 inches), 406 mm (16 inches), 457 mm (18 inches), 508 mm (20 inches), 559 mm (22 inches) and 610 mm (24 inches)
Length	2.4 m (8 feet) to 7.3 m (24 feet)

a. All sizes may not be available. Check supplier for availability.

b. Predominant Performance Categories for Rim Boards made of wood structural panels.

Most APA Performance-Rated Rim Boards are wood structural panels manufactured in accordance with *ANSI/APA PRR 410, Standard for Performance-Rated Engineered Wood Rim Boards*; *APA PRR-401, Performance Standard for APA Rim Boards*; *Voluntary Product Standard PS 1* or *PS 2*; APA Standard PRP-108; or *CSA O325, Construction Sheathing.* Glulam rim boards are a resawn grade of glued laminated timber manufactured in accordance with ANSI/APA PRR 410; APA PRR-401; ANSI A190.1, *Structural Glued Laminated Timber*; or *CSA O122*, *Structural Glued Laminated Timber.* A typical trademark for APA Rim Boards is shown at right.



As glued engineered wood products, APA Rim Boards have greater dimensional stability, higher strength, increased structural reliability, more consistent quality and a lower tendency to check or split than sawn lumber. In addition, APA Rim Boards are readily available in most markets in North America.

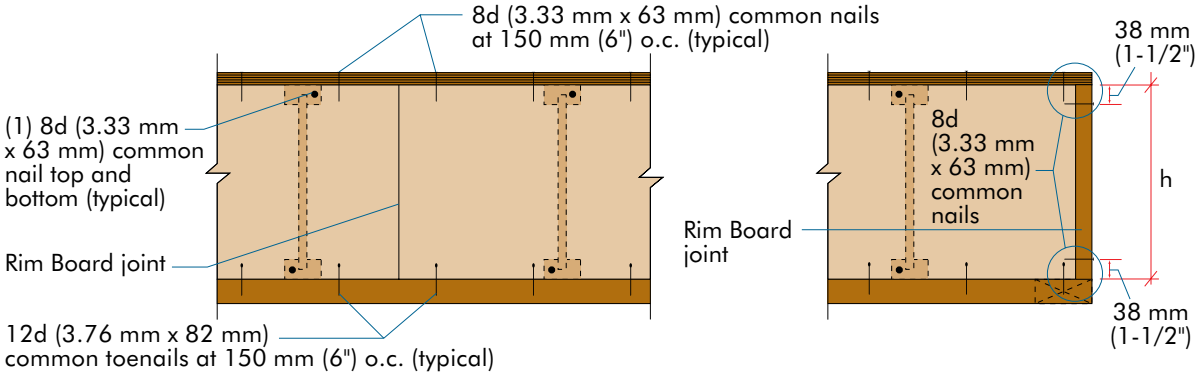
Connection Requirements

1. **Floor sheathing to APA Performance-Rated Rim Board (see Figure 1)—**Use 8d common nails (3.33 mm or 0.131 in. dia. x 63 mm or 2-1/2 in. in length) at 150 mm (6 inches) o.c. ***Caution:*** *The horizontal load capacity is not necessarily increased with a decreased nail spacing. Under no circumstances should the nail spacing be less than 75 mm (3 inches).* The 12d common nails (3.76 mm or 0.148 in. dia. x 82 mm or 3-1/4 in. in length) used to connect the bottom plate of a wall to the Rim Boards through the sheathing do not reduce the horizontal load capacity of the Rim Board, provided that the 8d common nail spacing (sheathing-Rim Board) is 150 mm (6 inches) o.c. and the 12d common nail spacing (bottom plate-sheathing-Rim Board) is in accordance with the prescriptive requirements of the applicable code.

   APA recommends a minimum 9.5-mm (3/8-inch) panel edge distance be maintained when nailing. Calculations show that the tongue does not need to be removed for floor sheathing 22-mm (7/8-inch) thick or less when used in conjunction with Rim Boards of 28.5 mm (1-1/8 inches) or thicker. Some local jurisdictions, however, may require removal of the tongue at the edge of floor framing when nailing into Rim Board.

FIGURE 1

ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



2. **APA Performance-Rated Rim Board to I-Joist (see Figure 1)—**Use two 8d common nails (3.33 mm x 63 mm), one each into the top and bottom flanges. This is typical for Rim Board having a thickness up to 28.5 mm (1-1/8 inches). A larger nail size may be required by the I-joist manufacturer or for thicker Rim Board products.

3. **APA Performance-Rated Rim Board to Sill Plate (see Figure 2)—**Toenail using 12d common nails (3.76 mm x 82 mm) at 150 mm (6 inches) o.c.

4. **Attachment of 2x lumber ledgers to APA Performance-Rated Rim Board (see Figures 3 and 4 and Table 2)—** Use 12.7-mm (1/2-inch) diameter lag screws with a minimum nominal length of 100 mm (4 inches) or 12.7-mm (1/2-inch) diameter through-bolts with washers and nuts. In both cases, use a factored resistance value of 2.6 kN (584 lbf) per fastener if the Rim Board thickness is 28.5 mm (1-1/8 inches) or 2.2 kN (500 lbf) per fastener if the Rim Board thickness is 25 mm (1 inch). ***Caution:*** *The lag screw should be inserted in a lead hole by turning with a wrench, not by driving with a hammer. Over-torquing can significantly reduce the lateral resistance of the lag screw and should therefore be avoided. See the Wood Design Manual published by the Canadian Wood Council (CWC) for the appropriate size of clearance and lead holes.*

FIGURE 2

TOENAIL CONNECTION AT RIM BOARD

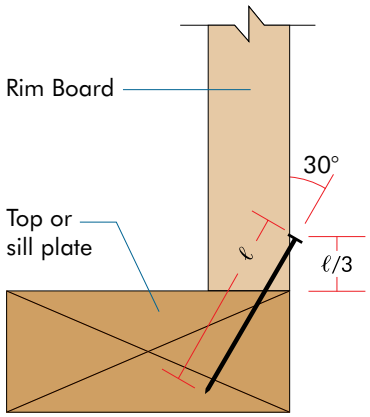


FIGURE 3

2X LEDGER TO RIM BOARD ATTACHMENT DETAIL

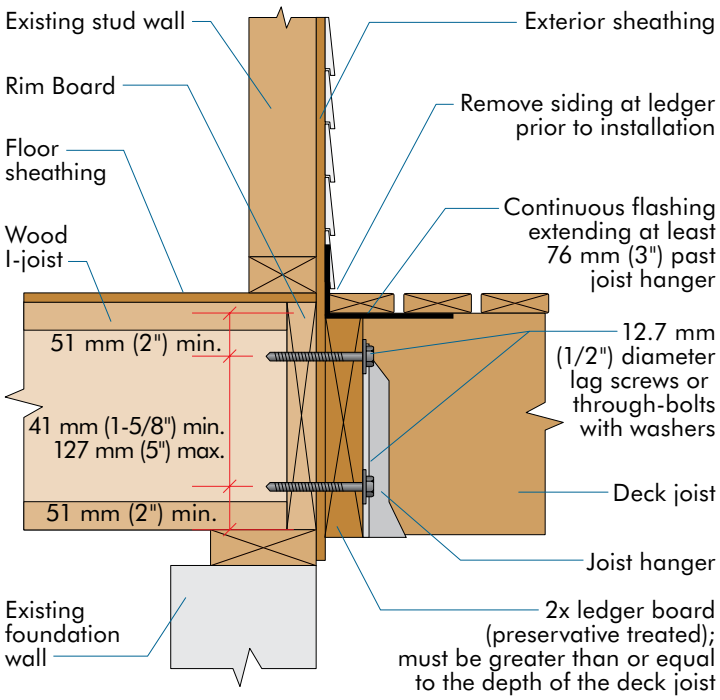


FIGURE 4

FASTENER SPACING FOR DECK LEDGER

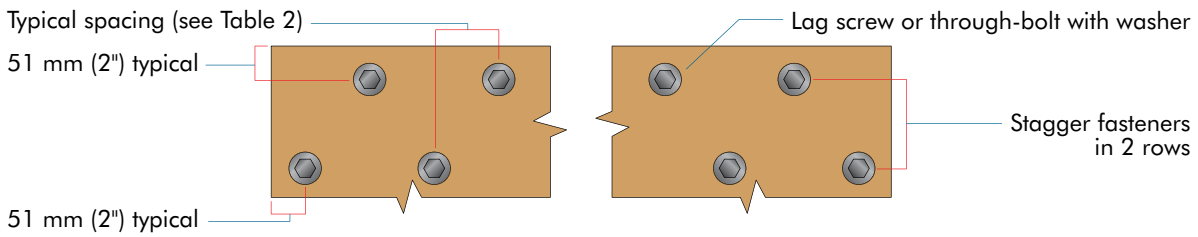


TABLE 2

FASTENER SPACING FOR DECK LEDGER AND APA PERFORMANCE-RATED RIM BOARDS USING 12.7-mm (1/2-INCH)-DIAMETER LAG SCREWS OR THROUGH-BOLTS WITH 12-mm (15/32-INCH) MAXIMUM SHEATHING[a] (Deck Live Load = 1.9.5 kPa (40 psf), Deck Dead Load = 0.479 kPa (10 psf))

APA Rim Boards	Joist Span (L)						
	L ≤ 1.83 m (L ≤ 6')	1.83 m < L L ≤ 2.44 m (6' < L ≤ 8')	2.44 m < L L ≤ 3.05 m (8' < L ≤ 10')	3.05 m < L L ≤ 3.66 m (10' < L ≤ 12')	3.66 m < L L ≤ 4.27 m (12' < L ≤ 14')	4.27 m < L L ≤ 4.88 m (14' < L ≤ 16')	4.88 m < L L ≤ 5.49 m (16' < L ≤ 18')
	On-Center Spacing of Fasteners[b]						
29 mm (1-1/8") or thicker	813 mm (32")	610 mm (24")	483 mm (19")	406 mm (16")	330 mm (13")	305 mm (12")	254 mm (10")
25 mm (1")	686 mm (27")	508 mm (20")	406 mm (16")	330 mm (13")	279 mm (11")	254 mm (10")	229 mm (9")

a. See Figure 3 for attachment details. Ledger shall be spruce-pine-fir or other wood species with a specific gravity of 0.42 or greater.

b. Lag screws and thru-bolts shall be staggered in accordance with Figure 4.

5. Factored lateral resistance of nails applied to the faces of APA Performance-Rated Rim Board—Calculate the factored lateral nail resistance based on the procedures given in *CSA O86-19 Engineering Design in Wood* and the following guidelines:

a. If the APA Performance-Rated Rim Board is made of OSB, use the basic factored lateral resistance for Douglas fir-Larch.

b. If the APA Performance-Rated Rim Board is made of plywood, use the basic factored lateral resistance for Douglas fir-Larch. The basic factored lateral resistance should then be adjusted by an additional modification factor of 0.9.

c. If the APA Performance-Rated Rim Board is made of glulam, use the basic factored lateral resistance for the wood species of the specific beam.

d. If the APA Performance-Rated Rim Board is made of SCL, use the basic factored lateral resistance for the equivalent relative density published in manufacturer's literature for the SCL.

e. If the product information is unavailable, refer to the CWC Wood Design Manual's basic factored lateral resistance for values of Spruce-Pine-Fir, North.

Application Notes

Standard sizes for APA Performance-Rated Rim Boards are given in Table 1, and design strengths are given in Tables 3, 4 and 5.

1. **APA Performance-Rated Rim Boards spanning over openings—**Rim Board may be used as headers to span openings up to 1.2 m (4 feet) in length, depending on the applied loads over the opening. Table 5A shows the maximum LSD factored uniform load for APA Rim Board used to span an opening up to 4 feet. For APA OSB Rim Board, the maximum LSD factored uniform load is shown in Table 5B. If other loads outside of the scope of Table 5A or 5B are to be considered, the specified edgewise-bending values of Table 4 or 4A may be used for design. When spanning openings, Rim Board end (butt) joints shall not occur over the opening nor within 300 mm (12 inches) of the opening. Requirements for holes in Rim Board are detailed in APA *Performance-Rated I-Joists,* Form Z725.

2. **APA Performance-Rated Rim Boards used as fire blocking panels—**The minimum thickness of 25 mm (1 in.) for APA Performance-Rated Rim Boards exceeds the minimum requirement of 12.7 mm (1/2 in.) published in Clause 3.1.11.7(4)(b) of the National Building Code of Canada for combustible construction as long as the joints are supported. For fire-rated assemblies, refer to APA Data File D350, *APA Rim Board in Fire-Rated Assemblies.*

TABLE 3

FACTORED RESISTANCES FOR USE IN CANADA[a] (METRIC UNITS)

Grade	ANSI/APA PRR-410	Performance Category or Nominal Thickness[c] (mm)	ϕH[d] (kN/m)	ϕV[e] (kN/m)								ϕZ[f] (kN/m)	ϕP[g] (kN/m)
			Maximum Depth (mm)										
			610	241	302	356	406	457	508	559	610	610	610
Rim Board Plus[b]	B2[b]	29	3.5	102.6	102.6	102.6	102.6	98.4	87.8	77.2	67.7	2.6	22.6
Rim Board	C1	29	3.2	102.6	102.6	102.6	102.6	98.4	87.8	77.2	67.7	2.6	22.6
	C2	25	3.2	91.0	91.0	82.5	69.8	58.2	48.7	41.3	34.9	2.2	22.6

TABLE 3A

FACTORED RESISTANCES FOR USE IN CANADA[a] (IMPERIAL UNITS)

Grade	ANSI/APA PRR 410	Performance Category or Nominal Thickness[c] (in.)	ϕH[d] (lbf/ft)	ϕV[e] (lbf/ft)								ϕZ[f] (lbf)	ϕP[g] (lbf)
			Maximum Depth (in.)										
			24	9-1/2	11-7/8	14	16	18	20	22	24	24	24
Rim Board Plus[b]	B2[b]	1-1/8	243	7,033	7,033	7,033	7,033	6,743	6,018	5,293	4,640	584	5,075
Rim Board	C1	1-1/8	219	7,033	7,033	7,033	7,033	6,743	6,018	5,293	4,640	584	5,075
	C2	1	219	6,235	6,235	5,655	4,785	3,988	3,335	2,828	2,393	500	5,075

Notes for Tables 3 and 3A:

a. All design values are applicable to standard-term load duration and permitted to be adjusted for other load durations in accordance with the applicable building code except that the uniform vertical (compression) load capacity (ϕV) and concentrated vertical load capacity (ϕP) are not permitted to be increased for any load durations shorter than the standard-term load duration.
b. Grades A and B1 of ANSI/APA PRR 410 are also qualified for Rim Board Plus. Design values for Grades A and B1 are specified in ANSI/APA PRR 410 Table A1A.
c. Performance Categories for wood structural panel Rim Boards or nominal thickness for SCL and glulam Rim Boards.
d. Factored horizontal (shear) load transfer resistance is applicable to seismic or wind loads and is based on the attachment schedule specified in Figure 1. This capacity represents the total of the lateral loads transferred through the rim board by both the floor sheathing and wall plate above the floor sheathing.
e. Factored uniform bearing (vertical) load capacity shall be simultaneously satisfied with the concentrated vertical load capacity.
f. Factored resistance of a 12.7-mm (1/2-inch)-diameter lag screw shall be in compliance with the connection requirements specified in Figure 3.
g. Factored concentrated vertical load capacity is based on a 114-mm (4-1/2-inch) bearing length. See Application Note 4 for additional information.

TABLE 4

SPECIFIED EDGEWISE STRENGTHS AND MODULUS OF ELASTICITY FOR USE IN CALCULATING FOR HEADERS NOT TO EXCEED 1.2 m (4 feet) IN LENGTH[a] (Metric Units)

Grade	f_{be}[b] (MPa)	E_e[c] (MPa)	f_{ve}[d] (MPa)	$f_{c\perp e}$[e] (MPa)
Rim Board and Rim Board Plus	7.6	3,793	1.8	6.3

TABLE 4A

SPECIFIED EDGEWISE STRENGTHS AND MODULUS OF ELASTICITY FOR USE IN CANADA FOR HEADERS NOT TO EXCEED 1.2 m (4 feet) IN LENGTH[a] (Imperial Units)

Grade	f_{be}[b] (psi)	E_e[c] (psi)	f_{ve}[d] (psi)	$f_{c\perp e}$[e] (psi)
Rim Board and Rim Board Plus	1,110	550,000	260	910

Notes for Tables 4 and 4A:

a. All tabulated values are applicable to the standard-term load duration and permitted to be adjusted for other load durations in accordance with the applicable code except for edgewise modulus of elasticity and compressive strength perpendicular to grain.

b. Specified edgewise bending strength shall be permitted for engineered design of spans of 1.2 m (4 ft) or less. For longer spans over openings, use glulam, I-joists or SCL headers.

c. Edgewise apparent modulus of elasticity.

d. Specified edgewise shear strength is permitted to be increased to 3.5 MPa (502 psi) for mat-formed panels such as OSB.

e. Specified edgewise compressive strength perpendicular to grain at 1-mm (0.04-in.) deformation, which is permitted to be increased to 6.9 MPa (1,000 psi) for mat-formed panels such as OSB.

TABLE 5A

MAXIMUM LIMIT STATES FACTORED LOADS FOR APA RIM BOARDS TO SPAN AN OPENING[a,b,c,d,e,f,g] (STANDARD-TERM LOAD DURATION K_D = 1.0)

Load Condition	Size	Span (L)					Size	Span (L)				
		L ≤ 610 mm	610 mm < L ≤ 762 mm	762 mm < L ≤ 914 mm	914 mm < L ≤ 1067 mm	1067 mm < L ≤ 1220 mm		L ≤ 610 mm	610 mm < L ≤ 762 mm	762 mm < L ≤ 914 mm	914 mm < L ≤ 1067 mm	1067 mm < L ≤ 1220 mm
Total Load (kN/m)	25 x 241 mm	19.0	15.6	13.2	10.4	8.1	29 x 241 mm	21.4	17.5	14.8	11.7	9.1
Min. End Bearing (mm)		76	76	76	76	76		76	76	76	76	76
Total Load (kN/m)	2 plies 25 x 241 mm	38.0	31.1	26.3	20.7	16.1	2 plies 29 x 241 mm	42.8	35.0	29.6	23.3	18.1
Min. End Bearing (mm)		76	76	76	76	76		76	76	76	76	76
Total Load (kN/m)	25 x 302 mm	22.5	18.6	15.8	13.8	11.9	29 x 302 mm	25.3	20.9	17.8	15.5	13.4
Min. End Bearing (mm)		114	114	114	114	114		114	114	114	114	114
Total Load (kN/m)	2 plies 25 x 302 mm	45.0	37.2	31.7	27.6	23.8	2 plies 29 x 302 mm	50.7	41.8	35.6	31.0	26.8
Min. End Bearing (mm)		114	114	114	114	114		114	114	114	114	114
Total Load (kN/m)	2 plies 25 x 356 mm	53.1	43.8	37.3	32.5	28.8	2 plies 29 x 356 mm	59.7	49.3	42.0	36.6	32.4
Min. End Bearing (mm)		114	114	114	114	114		114	114	114	114	114
Total Load (kN/m)	2 plies 25 x 406 mm	60.7	50.1	42.7	37.1	32.9	2 plies 29 x 406 mm	68.3	56.4	48.0	41.8	37.0
Min. End Bearing (mm)		114	114	114	114	114		114	114	114	114	114
Total Load (kN/m)	2 plies 25 x 457 mm	68.3	56.4	48.0	41.8	37.0	2 plies 29 x 457 mm	76.8	63.4	54.0	47.0	41.6
Min. End Bearing (mm)		114	114	114	114	114		114	114	114	114	114
Total Load (kN/m)	2 plies 25 x 508 mm	75.9	62.6	53.3	46.4	41.1	2 plies 29 x 508 mm	85.4	70.5	60.0	52.2	46.2
Min. End Bearing (mm)		114	114	114	114	114		114	114	114	114	114
Total Load (kN/m)	2 plies 25 x 559 mm	79.3	66.0	56.6	49.5	44.0	2 plies 29 x 559 mm	89.2	74.3	63.6	55.7	49.4
Min. End Bearing (mm)		152	152	152	152	152		152	152	152	152	152
Total Load (kN/m)	2 plies 25 x 610 mm	69.8	69.8	61.7	54.0	47.9	2 plies 29 x 610 mm	97.3	81.0	69.4	60.7	53.9
Min. End Bearing (mm)		114	152	152	152	152		152	152	152	152	152

For English Units: 1 kN/m = 68.5 lbf/ft, 1 mm = 0.0394 in.

a. This table is for preliminary design use only. Final design shall include a complete analysis.

b. For dry service conditions where the average equilibrium moisture content of solid-sawn lumber over a year is 15 percent or less, and does not exceed 19 percent.

c. The table is developed based on design properties tabulated in Table 4 subject to the maximum factored uniform vertical load capacity (ϕV) of Table 3, a maximum depth-to-width ratio of 12, and an assumed uniform load. The shear load includes the load within a distance from supports equal to the Rim Board depth.

d. Simply supported beam subjected to uniform loads only. Span is distance measured between inside faces of opening. Connect the 2-ply Rim Boards with a minimum of 3 rows of 8d box nails (0.113 inch x 2-1/2 inches) at 152 mm (6 inches) on center for 302 mm (11-7/8 inches) or less in depth, 4 rows of 8d box nails at 152 mm (6 inches) on center for 406 mm (16 inches) and 457 mm (18 inches) in depth, 5 rows of 8d box nails at 152 mm (6 inches) on center for 508 mm (20 inches) and 559 mm (22 inches) in depth, and 6 rows of 8d box nails at 152 mm (6 inches) on center for 610 mm (24 inches) in depth. Clinch the nails whenever possible.

e. Tabulated values represent total loads permitted in addition to the dead weight of the Rim Board (assumed 0.72 g/cm^3 or 45 pcf).

f. Joints in Rim Board shall not be located within opening.

g. For openings greater than 1.2 m (4 feet) in length, use glulam, SCL or other engineered wood products.

TABLE 5B

MAXIMUM LIMIT STATES FACTORED LOADS FOR APA OSB RIM BOARDS WHEN USED TO SPAN AN OPENING[a,b,c,d,e,f,g] (STANDARD-TERM LOAD DURATION K_D = 1.0)

Load Condition	Size	Span (L)					Size	Span (L)				
		L ≤ 610 mm	610 mm < L ≤ 762 mm	762 mm < L ≤ 914 mm	914 mm < L ≤ 1067 mm	1067 mm < L ≤ 1220 mm		L ≤ 610 mm	610 mm < L ≤ 762 mm	762 mm < L ≤ 914 mm	914 mm < L ≤ 1067 mm	1067 mm < L ≤ 1220 mm
Total Load (kN/m)	25 x 241 mm	25.9	19.3	13.8	10.4	8.1	29 x 241 mm	29.2	21.7	15.6	11.7	9.1
Min. End Bearing (mm)		114	76	76	76	76		114	76	76	76	76
Total Load (kN/m)	2 plies 25 x 241 mm	51.8	38.6	27.6	20.7	16.1	2 plies 29 x 241 mm	58.3	43.5	31.1	23.3	18.1
Min. End Bearing (mm)		114	76	76	76	76		114	76	76	76	76
Total Load (kN/m)	25 x 302 mm	40.5	27.6	20.0	15.2	12.6	29 x 302 mm	45.6	31.1	22.5	17.1	14.2
Min. End Bearing (mm)		114	114	114	114	76		114	114	114	114	76
Total Load (kN/m)	2 plies 25 x 302 mm	81.0	55.3	40.1	30.4	25.2	2 plies 29 x 302 mm	91.2	62.2	45.1	34.2	28.4
Min. End Bearing (mm)		114	114	114	114	76		114	114	114	114	76
Total Load (kN/m)	2 plies 25 x 356 mm	97.9	70.6	55.7	42.2	33.1	2 plies 29 x 356 mm	103.7	73.1	62.7	47.5	37.2
Min. End Bearing (mm)		152	152	114	114	114		191	191	114	114	114
Total Load (kN/m)	2 plies 25 x 406 mm	106.5	84.9	67.7	51.8	43.3	2 plies 29 x 406 mm	119.8	95.6	76.1	58.3	48.7
Min. End Bearing (mm)		191	191	152	152	114		191	191	152	152	114
Total Load (kN/m)	2 plies 25 x 457 mm	116.4	100.6	79.9	61.6	51.8	2 plies 29 x 457 mm	134.8	113.2	89.8	69.3	55.1
Min. End Bearing (mm)		191	191	191	191	152		191	191	191	191	191
Total Load (kN/m)	2 plies 25 x 508 mm	97.3	97.3	92.1	76.1	60.5	2 plies 29 x 508 mm	143.0	120.9	103.7	85.6	68.1
Min. End Bearing (mm)		152	191	229	191	191		229	229	229	191	191
Total Load (kN/m)	2 plies 25 x 559 mm	82.5	82.5	82.5	82.5	73.2	2 plies 29 x 559 mm	154.5	133.0	115.3	97.6	82.4
Min. End Bearing (mm)		152	152	191	191	191		229	229	229	229	191
Total Load (kN/m)	2 plies 25 x 610 mm	69.8	69.8	69.8	69.8	69.8	2 plies 29 x 610 mm	135.4	135.4	121.7	107.7	93.0
Min. End Bearing (mm)		152	152	152	191	191		191	229	267	267	229

For English Units: 1 kN/m = 68.5 lbf/ft, 1 mm = 0.0394 in.

a. This table is for preliminary design use only. Final design shall include a complete analysis.

b. For dry service conditions where the average equilibrium moisture content of solid-sawn lumber over a year is 15 percent or less, and does not exceed 19 percent.

c. The table is developed based on design properties tabulated in Table 4 subject to the maximum factored uniform vertical load capacity (ϕV) of Table 3, a maximum depth-to-width ratio of 12, and an assumed uniform load. The shear load includes the load within a distance from supports equal to the Rim Board depth.

d. Simply supported beam subjected to uniform loads only. Span is distance measured between inside faces of opening. Connect the 2-ply Rim Boards with a minimum of 3 rows of 8d box nails (0.113 inch x 2-1/2 inches) at 152 mm (6 inches) on center for 302 mm (11-7/8 inches) or less in depth, 4 rows of 8d box nails at 152 mm (6 inches) on center for 406 mm (16 inches) and 457 mm (18 inches) in depth, 5 rows of 8d box nails at 152 mm (6 inches) on center for 508 mm (20 inches) and 559 mm (22 inches) in depth, and 6 rows of 8d box nails at 152 mm (6 inches) on center for 610 mm (24 inches) in depth. Clinch the nails whenever possible.

e. Tabulated values represent total loads permitted in addition to the dead weight of the Rim Board (assumed 0.72 g/cm^3 or 45 pcf).

f. Joints in Rim Board shall not be located within opening.

g. For openings greater than 1.2 m (4 feet) in length, use glulam, SCL or other engineered wood products.

3. **APA Performance-Rated Rim Boards used in applications where a high lateral load transfer capacity is required—**When the factored lateral loads exceed the published factored horizontal load resistance of APA Rim Boards, add a commercially available specialty connector, made by connector manufacturers, between the Rim Board and framing or sill plate. This type of connector is installed using face nailing into the Rim Board and has a typical factored lateral load resistance of 3.0 to 3.7 kN (665 to 835 lbf) per connector.

4. **APA Performance-Rated Rim Boards subjected to a combination of uniform and concentrated vertical loads—**First, the factored concentrated load capacity (ϕP) of the Rim Board (Table 3 or Table 3A), which is based on a 114-mm (4-1/2-in.) bearing length over the roof sheathing attached to the top of the Rim Board, shall not be exceeded. Second, the factored concentrated load shall be calculated as an equivalent factored uniform load based on the applied loading length increased by a 45° load distribution through decking and plate on both sides of the concentrated load, as applicable. The equivalent uniform load shall be added to the applied uniform load to determine the total factored uniform load, which shall not exceed the bearing load capacity (ϕV) of the Rim Board. If the total factored uniform load exceeds the bearing load capacity (ϕV), use appropriate squash blocks, double Rim Boards or a higher grade of APA Performance-Rated Rim Board to carry the concentrated vertical load.

   Example: A standard-term (K_D = 1.0) concentrated dead load of 13.3 kN (3,000 lbf) is applied through a bearing plate of 305 mm (12 inches) in length along the top of a 29-mm x 406-mm (1-1/8-in. x 16-in.) APA Rim Board through 18-mm (23/32-in.) floor sheathing. In addition to the concentrated load, the Rim Board carries a uniform live load of 29.2 kN/m (2,000 lbf/ft). Assuming the seismic or wind load effect is less than the live load effect in the load combination.

   a. Factored concentrated vertical dead load
      α_D x 13.3 kN = 1.25 x 13.3 kN = 16.67 kN
   b. Check factored vertical load carrying capacity (ϕP)
      16.67 kN < K_D x (ϕP)
      16.67 kN < 1.0 x 22.6 kN. OK.
   c. Calculate total factored uniform bearing load
      Equivalent uniform bearing load from concentrated vertical dead load
      16.67 / (0.305 + 2 x 0.018) = 48.9 kN/m
      Factored uniform live load
      α_L x 29.2 kN/m = 1.50 x 29.2 kN/m = 43.8 kN/m
      Total factored uniform bearing load
      48.9 kN/m + 43.8 kN/m= 92.7 kN/m
   d. Check factored uniform bearing load capacity (ϕV) for d = 406 mm (16 in.)
      From Table 3, ϕV = 102.6 kN/m
      Duration of load adjustment K_D = 1.0
      K_D x (ϕV) = 1.0 x 102.6 = 102.6 kN/m
      92.7 kN/m < 102.6 kN/m; OK.

APA Performance-Rated Rim Board® Canadian Limit States Design

We have field representatives in many major U.S. cities and in Canada
who can help answer questions involving APA trademarked products.
For additional assistance in specifying engineered wood products, contact us:

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