



RoyOMartin TuffStrand<sup>®</sup> and Windbrace<sup>®</sup>

PR-N129

7/16 Performance Category OSB

Revised November 6, 2024

RoyOMartin

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Product: TuffStrand<sup>®</sup> and Windbrace<sup>®</sup> 7/16 Performance Category OSB

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1. Basis of the product report:

- 2024 International Building Code (IBC): Sections 104.2.3 Alternative materials, design and methods of construction and equipment, 2303.1.5 Wood Structural Panels, and 2305 General Design Requirements for Lateral Force-Resisting Systems
- 2021, 2018, and 2015 IBC: Sections 104.11 Alternative materials, 2303.1.5 Wood structural panels, and 2305 General Design Requirements for Lateral-Force-Resisting Systems
- DOC PS 2-18 Performance Standard for Wood Structural Panels
- 2024, 2018, and 2015 ANSI/AWC National Design Specification for Wood Construction (NDS) recognized in the 2024, 2021 and 2018, and 2015 IBC respectively.
- 2021 and 2015, and 2008 ANSI/AWC Special Design Provisions for Wind and Seismic (SDPWS) recognized in the 2024 and 2021, and 2018 and 2015 IBC, respectively
- APA Reports T2009P-71 and T2019P-71, and other qualification data

2. Product description:

RoyOMartin TuffStrand<sup>®</sup> and Windbrace<sup>®</sup> 7/16 Performance Category OSB is an enhanced APA Rated Sheathing meeting a Span Rating of 24/16 in accordance with PS 2 and is made with strands of southern pine in accordance with the in-plant manufacturing standard approved by APA. The scope of this report covers 7/16 Performance Category RoyOMartin TuffStrand and Windbrace OSB manufactured in typical 4-ft wide by 8, 9, and 10-ft long. Other panel lengths, such as 97-1/2, 109-1/2, and 121-1/2 inches, shall be permitted. Example trademarks are shown in Figure 1.

3. Design properties:

Nominal unit shear capacities for blocked shear walls using RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB sheathing, based on the 2021 SDPWS, and 2015 and 2008 SDPWS are listed in Tables 1 and 2, respectively. The unit shear capacities for blocked shear walls using RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB sheathing applied over 1/2-inch or 5/8-inch gypsum wallboard or gypsum sheathing board, based on 2021 SDPWS, and 2015 and 2008 SDPWS are listed in Tables 3 and 4, respectively. The tabulated values in Tables 1 through 4 are the higher of 3/8 Performance Category APA Rated Sheathing Structural I and 7/16 Performance Category APA Rated Sheathing. For unblocked shear walls, the blocked shear wall capacities listed in Tables 1 and 2 shall be multiplied by the adjustment factors listed in Table 5.

4. Product installation:

RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB shall be installed in accordance with recommendations provided by the manufacturer and APA Design & Construction Guide: *Engineered Wood Construction Guide*, Form E30 ([www.apawood.org/resource-library](http://www.apawood.org/resource-library)). The maximum span shall be in accordance with the Span Rating shown in the trademark.

5. Fire-resistant construction:  
Wood structural panels that are not fire-treated have been shown to meet a Class III (or C) category for flame spread. Where otherwise specified, fire-resistant construction shall be in accordance with the recommendations for 7/16 Performance Category wood structural panels in APA Product Guide: *Fire-Rated Systems*, Form W305 ([www.apawood.org/resource-library](http://www.apawood.org/resource-library)).
6. Limitations:
  - a) RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB sheathing recognized in this report is limited to dry service conditions where the average equilibrium moisture content of sawn lumber is less than 16%.
  - b) RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB sheathing shall be permitted for use as wall sheathing when designed in accordance with the 2021 SDPWS, and the 2015 and 2008 SDPWS, respectively, and the capacities listed in Tables 1 and 2. RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB sheathing shall be permitted for use as OSB panels applied over 1/2 or 5/8 gypsum wallboard or gypsum sheathing board in accordance with the 2021 SDPWS, and the 2015 and 2008 SDPWS, respectively, and the capacities listed in Tables 3 and 4. For unblocked shear walls, the design capacities listed in Tables 1 and 2 shall be multiplied by the adjustment factor listed in Table 5.
  - c) RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB sheathing shall be permitted for design with the capacities for 7/16 Performance Category Rated Sheathing and 3/8 Performance Category Rated Sheathing Structural I, whichever is higher.
  - d) RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB is produced at RoyOMartin facility at Oakdale, LA and Corrigan, TX under a quality assurance program audited by APA.
  - e) This report is subject to re-examination in one year.
7. Identification:  
RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB described in this report is identified by a label bearing the manufacturer's name (RoyOMartin/Martco) and/or trademark, the APA assigned plant number (511 for the Oakdale plant and 551 for the Corrigan plant), the product thickness, the Span Rating, the Exposure Rating, the APA logo, the report number PR-N129, and a means of identifying the date of manufacture.

Table 1. Nominal Unit Shear Capacities for RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB Sheathing Used for Wood-Framed Shear Walls Based on the **2021 SDPWS** (a, b, c, d, e, f, g, h)

Minimum Performance Category or Nominal Panel Thickness (in.)	Minimum Fastener Penetration in Framing Member or Blocking (in.)	Fastener Type & Size Length (in.) x Shank diameter (in.) x Head diameter (in.)	Panel Edge Fastener Spacing (in.)							
			6		4		3		2 <sup>(i)</sup>	
			$v_n$ (plf)	$G_a$ (kips/in.)	$v_n$ (plf)	$G_a$ (kips/in.)	$v_n$ (plf)	$G_a$ (kips/in.)	$v_n$ (plf)	$G_a$ (kips/in.)
7/16 <sup>(i)</sup>	1-3/8	8d <sup>(j)</sup> (2-1/2 x 0.131 x 0.281)	670	15	1010	24	1290	30	1710	43
15/32			785	14	1205	18	1540	24	2045	37

For **SI**: 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 kip/in. = 0.175 kN/mm

- (a) Nominal unit shear values shall be adjusted in accordance with the 2021 SDPWS. For seismic design, the ASD allowable unit shear capacity shall be determined by dividing the tabulated nominal unit shear capacity by the ASD reduction factor of 2.8. For wind design, the ASD allowable unit shear capacity shall be determined by dividing the tabulated nominal unit shear capacity by the ASD reduction factor of 2.0.
- (b) For species and grades of framing other than Douglas-Fir-Larch or Southern Pine, reduced nominal unit shear capacities shall be determined by multiplying the tabulated nominal unit shear capacity by the Specific Gravity Adjustment Factor =  $[1 - (0.5 - SG)]$ , where SG = Specific Gravity of the framing lumber from the NDS. The Specific Gravity Adjustment Factor shall not be greater than 1.
- (c) Apparent shear stiffness values,  $G_a$ , are based on nail slip in framing with moisture content less than or equal to 19% at time of fabrication and panel stiffness values for shear walls constructed with OSB. Where moisture content of the framing is greater than 19% at time of fabrication,  $G_a$  values shall be multiplied by 0.5.
- (d) Where panels applied on both faces of a wall and nail spacing is less than 6 inches o.c. on either side, panel joints shall be offset to fall on different framing members, or framing shall be 3 inches nominal or thicker at adjoining panel edges and nails on each side shall be staggered.
- (e) Panel edges backed with 2 inches nominal or wider framing. Install panels either horizontally or vertically. Space fasteners maximum 6 inches o.c. along intermediate framing members for panels installed on studs spaced 24 inches o.c. For other stud spacings, space nails 12 inches o.c. on intermediate supports.
- (f) In Seismic Design Category D, E or F, where nominal unit shear capacity,  $v_n$ , exceeds 980 plf, all framing members receiving edge nailing from abutting panels shall not be less than a single 3-inch nominal member, or two 2-inch nominal members fastened together to transfer the design shear value between framing members. Wood structural panel joint and sill plate nailing shall be staggered in all cases. See IBC or SDPWS for sill plate size and anchorage requirements.
- (g) For shear loads of normal or permanent load duration as defined by the NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.
- (h) Framing at adjoining panel edges shall be 3-inch nominal or wider, and nails shall be staggered where nails are spaced 2 inches on center.
- (i) Shears are permitted to be increased to values shown in 15/32-inch sheathing with the same nailing provided (a) studs are spaced a maximum of 16 inches on center, or (b) panels are applied with long dimensions across supports.
- (j) 8d (2-1/2 in. x 0.113 in. x 0.297 in.) galvanized box nails shall be permitted to be substituted for the specified 8d common nail (2-1/2 in. x 0.131 in. x 0.281 in.). Galvanized nails shall be hot dipped or tumbled mechanically deposited.

Table 2. Nominal Unit Shear Capacities for RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB Sheathing Used for Wood-Framed Shear Walls Based on the **2015 and 2008 SDPWS** (a, b, c, d, e, f, g, h)

Minimum Performance Category or Nominal Panel Thickness (in.)	Minimum Fastener Penetration in Framing Member or Blocking (in.)	Fastener Type & Size  Nail (common or galvanized box)	A SEISMIC								B WIND			
			Panel Edge Fastener Spacing (in.)								Panel Edge Fastener Spacing (in.)			
			6		4		3		2 <sup>(i)</sup>		6	4	3	2 <sup>(i)</sup>
			v <sub>s</sub> (plf)	G <sub>a</sub> (kips/in.)	v <sub>s</sub> (plf)	G <sub>a</sub> (kips/in.)	v <sub>s</sub> (plf)	G <sub>a</sub> (kips/in.)	v <sub>s</sub> (plf)	G <sub>a</sub> (kips/in.)	v <sub>w</sub> (plf)	v <sub>w</sub> (plf)	v <sub>w</sub> (plf)	v <sub>w</sub> (plf)
7/16 <sup>(j)</sup>	1-3/8	8d (2-1/2" x 0.131")	480	15	720	24	920	30	1220	43	670	1010	1290	1710
15/32			560	14	860	18	1100	24	1460	37	785	1205	1540	2045

For **SI**: 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 kip/in. = 0.175 kN/mm

- (a) Nominal unit shear values shall be adjusted in accordance with the 2015 or 2008 SDPWS. The ASD allowable unit shear capacity shall be determined by dividing the tabulated nominal unit shear capacity by the ASD reduction factor of 2.0.
- (b) For species and grades of framing other than Douglas-Fir-Larch or Southern Pine, reduced nominal unit shear capacities shall be determined by multiplying the tabulated nominal unit shear capacity by the Specific Gravity Adjustment Factor =  $[1 - (0.5 - SG)]$ , where SG = Specific Gravity of the framing lumber from the NDS. The Specific Gravity Adjustment Factor shall not be greater than 1.
- (c) Apparent shear stiffness values, G<sub>a</sub>, are based on nail slip in framing with moisture content less than or equal to 19% at time of fabrication and panel stiffness values for shear walls constructed with OSB. Where moisture content of the framing is greater than 19% at time of fabrication, G<sub>a</sub> values shall be multiplied by 0.5.
- (d) Where panels applied on both faces of a wall and nail spacing is less than 6 inches o.c. on either side, panel joints shall be offset to fall on different framing members, or framing shall be 3 inches nominal or thicker at adjoining panel edges and nails on each side shall be staggered.
- (e) Panel edges backed with 2 inches nominal or wider framing. Install panels either horizontally or vertically. Space fasteners maximum 6 inches o.c. along intermediate framing members for panels installed on studs spaced 24 inches o.c. For other stud spacings, space nails 12 inches o.c. on intermediate supports.
- (f) Galvanized nails shall be hot dipped or tumbled.
- (g) In Seismic Design Category D, E or F, where nominal unit shear capacity, v<sub>s</sub>, exceeds 700 plf, all framing members receiving edge nailing from abutting panels shall not be less than a single 3-inch nominal member, or two 2-inch nominal members fastened together to transfer the design shear value between framing members. Wood structural panel joint and sill plate nailing shall be staggered in all cases. See IBC or SDPWS for sill plate size and anchorage requirements.
- (h) For shear loads of normal or permanent load duration as defined by the NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.
- (i) Framing at adjoining panel edges shall be 3 inches nominal or wider, and nails shall be staggered where nails are spaced 2 inches on center.
- (j) Shears are permitted to be increased to values shown in 15/32-inch sheathing with the same nailing provided (a) studs are spaced a maximum of 16 inches on center, or (b) panels are applied with long dimensions across supports.

Table 3. Nominal Unit Shear Capacities for RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB Sheathing Used for Wood-Framed Shear Walls <sup>(a, b, c, d, e, f, g)</sup>.  
Panels Applied over 1/2-inch or 5/8-inch Gypsum Wallboard or Gypsum Sheathing Board Based on the **2021 SDPWS**

Minimum Performance Category or Nominal Panel Thickness (in.)	Minimum Fastener Penetration in Framing Member or Blocking (in.)	Fastener Type & Size  Length (in.) x Shank diameter (in.) x Head diameter (in.)	Panel Edge Fastener Spacing (in.)							
			6		4		3 <sup>(h)</sup>		2 <sup>(i)</sup>	
			$v_n$ (plf)	$G_a$ (kips/in.)	$v_n$ (plf)	$G_a$ (kips/in.)	$v_n$ (plf)	$G_a$ (kips/in.)	$v_n$ (plf)	$G_a$ (kips/in.)
7/16	1-3/8	10d <sup>(j)</sup> (3 x 0.148 x 0.312)	785	14	1205	18	1540	24	2045	37

For **SI**: 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 kip/in. = 0.175 kN/mm

- (a) Nominal unit shear values shall be adjusted in accordance with the 2021 SDPWS. For seismic design, the ASD allowable unit shear capacity shall be determined by dividing the tabulated nominal unit shear capacity by the ASD reduction factor of 2.8. For wind design, the ASD allowable unit shear capacity shall be determined by dividing the tabulated nominal unit shear capacity by the ASD reduction factor of 2.0.
- (b) For species and grades of framing other than Douglas-Fir-Larch or Southern Pine, reduced nominal unit shear capacities shall be determined by multiplying the tabulated nominal unit shear capacity by the Specific Gravity Adjustment Factor =  $[1 - (0.5 - SG)]$ , where SG = Specific Gravity of the framing lumber from the NDS. The Specific Gravity Adjustment Factor shall not be greater than 1.
- (c) Apparent shear stiffness values,  $G_a$ , are based on nail slip in framing with moisture content less than or equal to 19% at time of fabrication and panel stiffness values for shear walls constructed with OSB. Where moisture content of the framing is greater than 19% at time of fabrication,  $G_a$  values shall be multiplied by 0.5.
- (d) Where panels applied on both faces of a wall and nail spacing is less than 6 inches o.c. on either side, panel joints shall be offset to fall on different framing members, or framing shall be 3 inches nominal or thicker at adjoining panel edges and nails on each side shall be staggered.
- (e) Panel edges backed with 2 inches nominal or wider framing. Install panels either horizontally or vertically. Space fasteners maximum 6 inches o.c. along intermediate framing members for panels installed on studs spaced 24 inches o.c. For other stud spacings, space nails 12 inches o.c. on intermediate supports.
- (f) In Seismic Design Category D, E or F, where nominal unit shear capacity,  $v_n$ , exceeds 980 plf, all framing members receiving edge nailing from abutting panels shall not be less than a single 3-inch nominal member, or two 2-inch nominal members fastened together to transfer the design shear value between framing members. Wood structural panel joint and sill plate nailing shall be staggered in all cases. See IBC or SDPWS for sill plate size and anchorage requirements.
- (g) For shear loads of normal or permanent load duration as defined by the NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.
- (h) Nails having penetration into framing members and blocking of more than 1-1/2 inches, framing at adjoining panel edges shall be 3-inch nominal or wider, and nails shall be staggered where nails are spaced 3 inches on center.
- (i) Framing at adjoining panel edges shall be 3 inches nominal or wider, and nails shall be staggered where nails are spaced 2 inches on center.
- (j) 10d (3 in. x 0.128 in. x 0.312 in.) galvanized box nails shall be permitted to be substituted for the specified 8d common nail (3 in. x 0.148 in. x 0.312 in.). Galvanized nails shall be hot dipped or tumbled mechanically deposited.

Table 4. Nominal Unit Shear Capacities for RoyOMartin TuffStrand and Windbrace 7/16 Performance Category OSB Sheathing Used for Wood-Framed Shear Walls (a, b, c, d, e, f, g, h).  
Panels Applied over 1/2-inch or 5/8-inch Gypsum Wallboard or Gypsum Sheathing Board Based on **2015 and 2008 SDPWS**

Minimum Performance Category or Nominal Panel Thickness (in.)	Minimum Fastener Penetration in Framing Member or Blocking (in.)	Fastener Type & Size  Nail (common or galvanized box)	A SEISMIC								B WIND			
			Panel Edge Fastener Spacing (in.)								Panel Edge Fastener Spacing (in.)			
			6		4		3 <sup>(i)</sup>		2 <sup>(i)</sup>		6	4	3 <sup>(i)</sup>	2 <sup>(i)</sup>
			v <sub>s</sub> (plf)	G <sub>a</sub> (kips/in.)	v <sub>s</sub> (plf)	G <sub>a</sub> (kips/in.)	v <sub>s</sub> (plf)	G <sub>a</sub> (kips/in.)	v <sub>s</sub> (plf)	G <sub>a</sub> (kips/in.)	v <sub>w</sub> (plf)	v <sub>w</sub> (plf)	v <sub>w</sub> (plf)	v <sub>w</sub> (plf)
7/16	1-3/8	10d (3" x 0.148")	560	14	860	18	1100	24	1460	37	785	1205	1540	2045

For **SI**: 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 kip/in. = 0.175 kN/mm

- (a) Nominal unit shear values shall be adjusted in accordance with the 2015 or 2008 SDPWS. The ASD allowable unit shear capacity shall be determined by dividing the tabulated nominal unit shear capacity by the ASD reduction factor of 2.0.
- (b) For species and grades of framing other than Douglas-Fir-Larch or Southern Pine, reduced nominal unit shear capacities shall be determined by multiplying the tabulated nominal unit shear capacity by the Specific Gravity Adjustment Factor =  $[1 - (0.5 - SG)]$ , where SG = Specific Gravity of the framing lumber from the NDS. The Specific Gravity Adjustment Factor shall not be greater than 1.
- (c) Apparent shear stiffness values,  $G_a$ , are based on nail slip in framing with moisture content less than or equal to 19% at time of fabrication and panel stiffness values for shear walls constructed with OSB. Where moisture content of the framing is greater than 19% at time of fabrication,  $G_a$  values shall be multiplied by 0.5.
- (d) Where panels applied on both faces of a wall and nail spacing is less than 6 inches o.c. on either side, panel joints shall be offset to fall on different framing members, or framing shall be 3 inches nominal or thicker at adjoining panel edges and nails on each side shall be staggered.
- (e) Panel edges backed with 2 inches nominal or wider framing. Install panels either horizontally or vertically. Space fasteners maximum 6 inches o.c. along intermediate framing members for panels installed on studs spaced 24 inches o.c. For other stud spacings, space nails 12 inches o.c. on intermediate supports.
- (f) Galvanized nails shall be hot dipped or tumbled.
- (g) In Seismic Design Category D, E or F, where nominal unit shear capacity,  $v_s$ , exceeds 700 plf, all framing members receiving edge nailing from abutting panels shall not be less than a single 3-inch nominal member, or two 2-inch nominal members fastened together to transfer the design shear value between framing members. Wood structural panel joint and sill plate nailing shall be staggered in all cases. See IBC or SDPWS for sill plate size and anchorage requirements.
- (h) For shear loads of normal or permanent load duration as defined by the NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.
- (i) Nails having penetration into framing members and blocking of more than 1-1/2 inches, framing at adjoining panel edges shall be 3-inch nominal or wider, and nails shall be staggered where nails are spaced 3 inches on center.
- (j) Framing at adjoining panel edges shall be 3 inches nominal or wider, and nails shall be staggered where nails are spaced 2 inches on center.

Table 5. Unblocked Shear Wall Adjustment Factors, C<sub>ub</sub>

Nail Spacing (in.)		Stud Spacing (in.)			
Supported Edges	Intermediate Framing	12	16	20	24
6	6	1.0	0.8	0.6	0.5
6	12	0.8	0.6	0.5	0.4

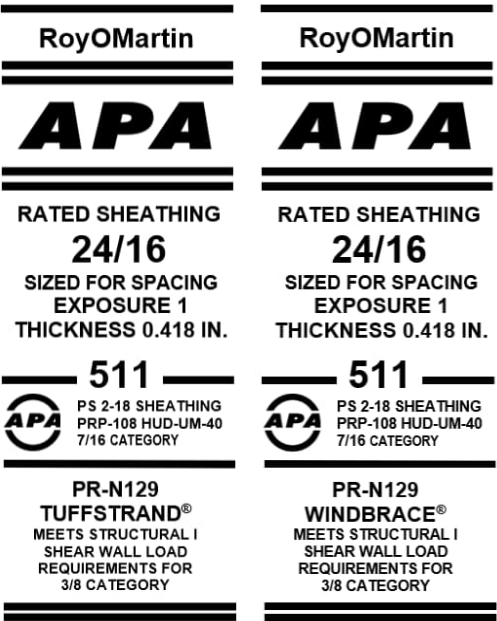


Figure 1. Typical trademarks

APA – *The Engineered Wood Association* is an approved national standards developer accredited by American National Standards Institute (ANSI). APA publishes ANSI standards and Voluntary Product Standards for wood structural panels and engineered wood products. APA is an accredited certification body under ISO/IEC 17065 by Standards Council of Canada (SCC), an accredited inspection agency under ISO/IEC 17020 by ANSI National Accreditation Board (ANAB), and an accredited testing organization under ISO/IEC 17025 by ANAB. APA is also an approved Product Certification Agency, Testing Laboratory, Quality Assurance Entity, Validation Entity, and Product Evaluation Entity by the State of Florida, and an approved testing laboratory by City of Los Angeles.

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