ICC-ES Evaluation Report

ESR-1472

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DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES **Section: 06 05 23—Wood, Plastic, and Composite Fastenings** **Section: 06 05 23.20—Screws**	**REPORT HOLDER:** **SIMPSON STRONG-TIE COMPANY INC.**	**EVALUATION SUBJECT:** **SIMPSON STRONG-TIE® WSV SCREWS**	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021, 2018, 2015, and 2012 *International Building Code®* (IBC)
- 2024, 2021, 2018, 2015, and 2012 *International Residential Code®* (IRC)

Property evaluated:

- Structural

2.0 USES

The Simpson Strong-Tie® WSV screws are used in engineered horizontal wood structural panel (WSP) diaphragms; in engineered diagonally sheathed lumber diaphragms; for prescriptive attachment of WSP to wood framing; and for prescriptive connections described in this report. WSV screws are also used in wood-to-wood connections that are designed in accordance with the IBC. The WSV screws may be used under the IRC when an engineered design is submitted in accordance with IRC Section R301.1.3.

3.0 DESCRIPTION

3.1 Notation and Symbols:

D	=	Outside thread diameter
D_H	=	Diameter of fastener head or integral washer
D_r	=	Minor thread (root) diameter
D_s	=	Unthreaded shank diameter
$F_{yb,spec}$	=	Minimum specified bending yield strength, determined in accordance with ASTM F1575 using D_r.
L	=	Fastener length measured from top of head to tip

$L_{emb,w}$ = Minimum required embedded thread length in holding member, including tip, applicable to tabulated withdrawal design values
L_m = Dowel bearing length in the main member
L_{thread} = Length of thread including tip
L_{tip} = Length of tip
N_a = Allowable tension strength of the fastener for use in ASD
N_u = Design tension strength of the fastener, for use in LRFD
SG_{eq} = Equivalent specific gravity for structural composite lumber, as reported by ICC-ES
SG_{NDS} = Assigned specific gravity (See Section 3.3.)
$t_{s,w}$ = Thickness of wood side member
V_a = Allowable shear strength of the fastener for use in ASD
V_u = Design shear strength of the fastener, for use in LRFD
W = Reference unit withdrawal design value for fasteners installed perpendicular to face of the wood
W_H = Reference head pull-through design value
Z = Reference lateral design value

3.2 WSV Screws:

The screws are proprietary No. 9 screws. See Table 1A for dimensions and other descriptions of the WSV screws. The screws have a countersunk flat head with four equally spaced nibs and a T25 drive recess and are partially threaded with a hi-low thread pattern of 5.5 and 11.5 threads per inch. The screws have either a yellow zinc coating or a proprietary coating, as shown in Table 1A. See Figure 1 for a depiction of a typical WSV screw.

3.3 Wood Members:

For engineered wood-to-wood connections using WSV screws designed in accordance with Section 4.1.3, wood main members may be either sawn lumber or engineered wood (e.g. LVL, PSL, LSL). Wood side members may be either solid-sawn lumber, wood structural panel (OSB or plywood) or engineered wood. Engineered wood must have a minimum E value of 1.3E for lateral loading and 1.55E for withdrawal loading. The engineered wood must be addressed in an ICC-ES evaluation report and must have $SG_{eq} \geq 0.50$.

For purposes of connection design, sawn lumber, glulam and CLT members must have SG_{NDS} as indicated in the tables in this report and the moisture content must be less than or equal to 19 percent at the time of screw installation and while in service. SG_{NDS} for sawn lumber is the assigned specific gravity for the applicable grade mark, which must be determined in accordance with Table 12.3.3A of the ANSI/AWC National Design Specification for Wood Construction® (NDS) or the latest NDS Supplement (Table 11.3.3A of the 2012 NDS for the 2012 IBC). SG_{NDS} for glulam members is the Specific Gravity for Fastener Design addressed in Tables 5A through 5D of the NDS Supplement. When designing connections with screws installed into CLT panels, all of the laminations must have a minimum SG_{NDS} as indicated in the tables in this report.

Wood structural panels must comply with DOC PS1 or PS2 and the grade shown in this report. For purposes of lateral connection design, wood structural panels have an assigned specific gravity of 0.42 or 0.50 in accordance with Table 12.3.3B of the NDS (Table 11.3.3B of the 2012 NDS for the 2012 IBC).

For engineered wood, the moisture content at the time of screw installation and in service must be in accordance with the applicable ICC-ES evaluation report on the engineered wood product.

For wood-to-wood connections, the tabulated side member thickness is an absolute value (not a minimum or maximum value). The thickness of the wood main member must be equal to or greater than the screw length less the thickness of the side member.

Where the WSV screws are used as substitutes for fasteners prescribed in the code, the wood members must comply with the code. Wood members used in engineered diaphragms must comply with the 2021 AWC Special Design Provisions for Wind and Seismic (SDPWS) for the 2024 and 2021 IBC (SDPWS-15 for the 2018 and 2015 IBC, SDPWS-08 for the 2012 IBC).

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 Diaphragm Design - General: Framing members and wood structural panel sheathing must be selected based on the spacing of the framing and the anticipated loads in accordance with the applicable code. Diaphragms described in this report have been evaluated for use in all Seismic Design Categories.

4.1.1.1 Engineered Horizontal WSP Diaphragms: The WSV screws may be used to attach WSP sheathing to sawn lumber framing to create floor diaphragms as shown in Table 2. WSV screws may also be used to attach WSP sheathing to sawn lumber framing to create high load diaphragms as shown in Table 3. Refer to Table 2 and 3 for the required screw penetration. Allowable shear values for horizontal diaphragms consisting of WSP attached to Douglas fir–larch or Southern pine lumber framing are shown in Table 2 and 3 based on the values for 8d and 10d common nails in Tables 4.2A, 4.2B and 4.2C of SDPWS. Allowable shear values for other wood species must be determined in accordance with the footnotes to each table. The allowable shear capacities shown in Table 2 and are permitted to be increased by 40 percent for wind design. Diaphragm deflections must be calculated in accordance with SDPWS-21 Section 4.2.3 (SDPWS-15 and SDPWS-08 Section 4.2.2), using the applicable G_a value given in Tables 4.2A, 4.2B and 4.2C of SDPWS.

4.1.1.2 Engineered Diaphragms Diagonally Sheathed with One Layer of Lumber: Minimum 2-inch-long WSV screws may be substituted for the 8d common nails prescribed in SDPWS Table 4.2D. Diaphragm deflections must be calculated in accordance with SDPWS-21 Section 4.3.2 (SDPWS-15 Section 4.2.2), using the applicable G_a value given in SDPWS Table 4.2D.

4.1.2 Prescriptive Fastening:

4.1.2.1 Prescriptive Attachment of Sheathing: Minimum 2-inch-long WSV screws may be used as substitutes for the 8d and 10d common nails prescribed in Items 30 through 32 and 35 to 37 of 2024 and 2021 IBC Table 2304.10.2 (Items 30 through 32 and 35 through 37 of 2018 IBC Table 2304.10.1, Items 31 through 33 and 36 through 38 of 2015 IBC Table 2304.10.1; similar in earlier code editions) and in Items 31 through 33 and 38 through 40 of 2024 and 2021 IRC Table R602.3(1) [Items 30 through 32 and 37 through 39 of 2018 and 2015 IRC Table R602.3(1), similar in earlier code editions] for the attachment of subflooring to framing; provided the penetration into the framing members is a minimum of $1^3/_8$ inches (35 mm).

4.1.2.2 Prescriptive Framing Connections: Prescriptive fastening requirements for select framing connections, which are alternatives to what is shown in 2024 and 2021 IBC Table 2304.10.2 (2018 and 2015 IBC Table 2304.10.1, similar for IRC and earlier code editions), are described in Table 4.

4.1.3 Wood-to-wood Connection Design:

4.1.3.1 General: The design values in this report are intended to aid the designer in meeting the requirements of IBC Section 1604.2. For connections not completely described in this report, determination of the suitability of the WSV screws for the specific application is the responsibility of the designer and is outside the scope of this report. The designer is responsible for determining the available strengths for the connection, considering all applicable limit states, and for considering serviceability issues.

4.1.3.2 Screw Strength: Allowable screw shear and tension strengths (ASD), design screw shear and tension strengths (LRFD) and specified bending yield strength for the WSV screws are shown in Table 1B.

4.1.3.3 Reference Withdrawal and Pull-through Design Values: Reference withdrawal (W) design values for screws installed perpendicular to the face of the wood member and reference head pull-through values (W_H) are shown in Table 6.

4.1.3.4 Lateral Connections in Accordance with the NDS: Select reference lateral design values based on calculation in accordance with the NDS are shown in Table 5. For other connection configurations, the reference lateral design strength for connections made with WSV screws may be determined in accordance with the NDS and the following:

1. $F_{yb,spec}$ from Table 1B must be used for design.
2. D_r must be used where 'D' is referenced in Tables 12.3.1A, 12.3.1B and 12.3.3 of the NDS (Tables 11.3.1B, 11.3.3 and 11.3.1 A of the 2012 NDS for the 2012 IBC).
3. Wood must have SG_{NDS} of 0.55 or less, in accordance with Table 12.3.3A of the NDS (Table 11.3.3A of the 2012 NDS for the 2012 IBC).
4. The side member thickness must be a minimum of $^{19}/_{32}$ inch (15.1 mm).
5. The penetration into the main member must be a minimum of 1 inch (25.4 mm).
6. The dowel bearing length must be determined in accordance with Section 12.3.5.3 of the NDS, using L_{tip} shown in Table 1A.

7. Spacing, edge and end distance must be in accordance with Table 7, and as needed to prevent splitting of the wood.

4.1.3.5 Adjustments to Reference Design Values: Reference design values in the report must be adjusted in accordance with the NDS provisions for dowel-type fasteners to determine the allowable strengths for use with ASD and the design strengths for use with LRFD.

4.1.3.6 Connections with Multiple Screws: See Sections 11.1.2, 11.2.2 and 12.6 of the NDS (Sections 10.1.2, 10.2.2 and 11.6 of the NDS for the 2012 IBC) regarding multiple fastener connections and consideration of local stresses in the wood members.

4.1.3.7 Combined Loading: Where the WSV screws are subjected to combined lateral and withdrawal loads, connections shall be designed in accordance with Section 12.4.1 of the NDS (Section 11.4.1 of the NDS for the 2012 IBC), as applicable.

4.2 Installation:

The screws must be installed in accordance with Section 12.1.5 of the NDS (Section 11.1.5 of the NDS for the 2012 IBC), with the exception that no predrilling is required. Predrilled holes up to $0.70D_r$ may be used to reduce the likelihood of splitting.

The WSV screws used in diaphragms must be installed with minimum panel edge and end distances of $^3/_8$ inch (9.5 mm). The use of adhesive between the connected members is not required.

The WSV screws used in wood-to-wood connections must be installed perpendicular to the face of the wood side member. The top of the screw head must be flush with the surface of the wood side member. Screws must not be overdriven. Minimum connection geometries must comply with Table 7, or be as needed to prevent splitting of the wood. The screws must be installed by turning with a power driver, not by driving with a hammer.

4.3 Special Inspection:

When special inspections are required by 2024 and 2021 IBC Section 1705.12 (2018 and 2015 IBC Section 1705.11, 2012 IBC Section 1705.10), periodic special inspection of the installation of WSV screws in diaphragms is required when the screw spacing is 4 inches (102 mm) or less, in accordance with 2024 and 2021 IBC Section 1705.12.1 (2018 and 2015 IBC Section 1705.11.1, 2012 IBC Section 1705.10.2).

When special inspections are required by 2024 and 2021 IBC Section 1705.13 (2018 and 2015 IBC Section 1705.12, 2012 IBC Section 1705.11), periodic special inspection of installation of the WSV screws in diaphragms installed in Seismic Design Category C, D, E or F is required when the screw spacing is 4 inches (102 mm) or less, in accordance with 2024 and 2021 IBC Section 1705.13.2 (2018 and 2015 IBC Section 1705.12.2, 2012 IBC Section 1705.11.2).

Special inspection of the construction of high-load diaphragms is required in accordance with IBC Section 1705.5.1.

5.0 CONDITIONS OF USE

The Simpson Strong-Tie WSV wood screws described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Screws must be installed in accordance with Simpson Strong-Tie's installation instructions and this report. In the case of conflict between this report and the installation instructions, this report governs.

5.2 Shear loads applied to horizontal wood structural panel diaphragms must be less than or equal to the allowable loads shown in Table 2 and 3, as applicable.

5.3 Shear loads applied to diagonally sheathed lumber diaphragms must be less than or equal to the applicable allowable loads indicated in SDPWS.

5.4 Use of the screws is limited to dry-service conditions where the moisture content of the wood members complies with Section 3.3.

5.5 The screws are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Dowel-type Threaded Fasteners Used in Wood (AC233), dated June 2023 (editorially revised June 2024).

6.2 Data in accordance with the ICC-ES Acceptance Criteria for Wood-frame Horizontal Diaphragms, Vertical Shear Walls and Braced Walls with Alternative Fasteners (AC120), dated February 2017 (editorially revised May 2024).

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-1472) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, packages of screws bear a label with the product designation and size, and each screw is identified on the head by "≠" (the "no equal" sign) and a letter designating the screw length.

7.3 The report holder's contact information is the following:

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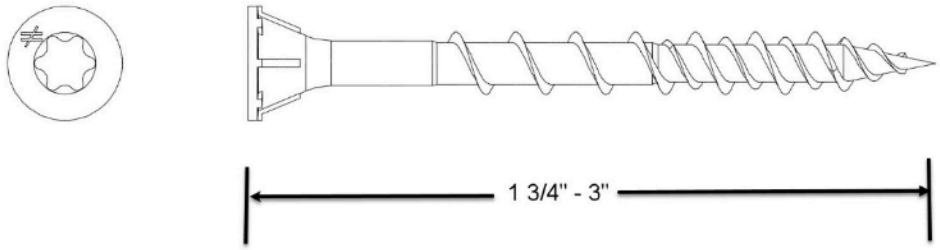


FIGURE 1—WSV SCREW

TABLE 1A—WSV SCREW SPECIFICATIONS

FASTENER DESIGNATION	COATING	SCREW DIMENSIONS (inches)								
		L	L_{thread}[1]	Head Mark	D_r	D_s	Outside Thread Diameters		D_H	L_{tip}
							High Thread, D	Low Thread		
WSV134	Zinc	1.75	1.20	K	0.121 / 0.109[2]	0.132	0.182	0.151	0.333	0.268
WSV200	Zinc	2.00	1.45	M						
WSVF200	Proprietary									
WSV212	Zinc	2.50	1.95	Q						
WSVF212	Proprietary									
WSV300	Zinc	3.00	2.17	U						
WSVF300	Proprietary									

For **SI:** 1 inch = 25.4 mm.

[1] Length of thread includes tip.
[2] This screw has a stepped shank design, as shown in Figure 1. For lateral connection design in accordance with Section 4.1.3.4, use a value of 0.113 inch for 'D' described in Section 4.1.3.4 Item 2.

TABLE 1B—WSV SCREW STRENGTHS

FASTENER DESIGNATION	$F_{yb,spec}$ (psi)[1]	ALLOWABLE SCREW STRENGTH (ASD)		DESIGN SCREW STRENGTH (LRFD)	
		N_a (lbf)	V_a (lbf)	N_u (lbf)	V_u (lbf)
WSV134	200,000	710	460	1,065	690
WSV200					
WSVF200					
WSV212					
WSVF212					
WSV300					
WSVF300					

For **SI:** 1 psi = 6.89 kPa, 1 lbf = 4.45 N.

[1]Bending yield strength determined in accordance with ASTM F1575 using the minor thread (root) diameter, D_r.

TABLE 2—ALLOWABLE SHEAR (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL DIAPHRAGMS UTILIZING WSV SCREWS WITH FRAMING OF DOUGLAS FIR–LARCH OR SOUTHERN PINE FOR WIND OR SEISMIC LOADING[1,2,3,4,5]

PANEL GRADE	MINIMUM WSV SCREW PENETRATION IN FRAMING (inches)	MINIMUM NOMINAL PANEL THICKNESS (inches)	MINIMUM NOMINAL WIDTH OF FRAMING MEMBERS AT ADJOINING PANEL EDGES AND BOUNDARIES (inches)	BLOCKED DIAPHRAGMS				UNBLOCKED DIAPHRAGMS	
				Screw spacing (inches) at diaphragm boundaries (all cases), at continuous panel edges parallel to load (Cases 3 and 4), and at all edges (Cases 5 and 6)				Screws spaced 6 inches maximum, at support edges	
				6	4	2½	2	Case 1 (no unblocked edges or continuous joints parallel to load)	All other configurations (Cases 2, 3, 4, 5, and 6)
				Screw spacing (inches) at other panel edges					
				6	6	4	3		
Structural I	1¼	3/8	2	270	360	530	600	240	180
			3	300	400	600	675	265	200
		15/32	2	320	425	640	730	285	215
			3	360	480	720	820	320	240
Sheathing and single floor		3/8	2	240	320	480	545	215	160
			3	270	360	540	610	240	180
		7/16	2	255	340	505	575	230	170
			3	285	380	570	645	255	190
		15/32	2	290	385	575	655	255	190
			3	325	430	650	735	290	215
		19/32	2	320	425	640	730	285	215
			3	360	480	720	820	320	240

For **SI:** 1 inch = 25.4 mm, 1 pound per foot = 14.6 N/m.

[1]For framing of other species, the allowable diaphragm shear capacity is found by: (1) Determining the specific gravity for the applicable species of lumber in the NDS. (2) Finding the allowable diaphragm shear value from the table above and multiplying this value by the Specific Gravity Adjustment Factor = [1-(0.5-SG)], where SG = Specific Gravity of the framing lumber. This adjustment factor must not be greater than 1.0.
[2]For shear loads of normal or permanent load duration as defined by the NDS, the values in the table above must be multiplied by 0.63 or 0.56, respectively.
[3]Shear loads can be increased 40% for wind loading.
[4]Diaphragm construction must be in accordance with Sections 4.2.7 and 4.2.8 of SDPWS-21 (Sections 4.2.6 and 4.2.7 of SDPWS-15 for the 2018 and 2015 IBC and of SDPWS-08 for the 2012 IBC), as applicable.
[5]See Figure 2 for Case diagrams.

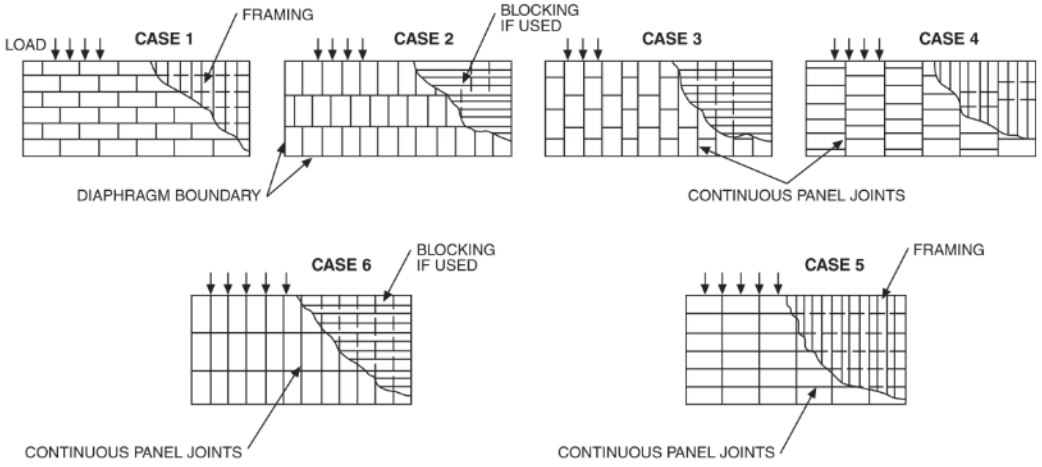


FIGURE 2—DIAPHRAGM CASES

TABLE 3—ALLOWABLE SHEAR (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL BLOCKED DIAPHRAGMS UTILIZING MULTIPLE ROWS OF WSV SCREWS (HIGH LOAD DIAPHRAGMS) WITH FRAMING OF DOUGLAS FIR–LARCH OR SOUTHERN PINE FOR WIND OR SEISMIC LOADING[1,2,3,4]

PANEL GRADE	MINIMUM WSV SCREW PENETRATION IN FRAMING (inches)	MINIMUM NOMINAL PANEL THICKNESS (inches)	MINIMUM NOMINAL WIDTH OF FRAMING MEMBERS AT ADJOINING PANEL EDGES AND BOUNDARIES (inches)	LINES OF SCREWS	BLOCKED DIAPHRAGMS			
					Cases 1 and 2[5,6]			
					Screw Spacing Per Line at Boundaries (inches)			
					4		$2^1/_2$	
					Screw Spacing Per Line at Other Panel Edges (inches)			
					6	4	4	3
Structural I	$1^1/_4$	$^{15}/_{32}$	3	2	605	815	875	1,150
			4	2	700	915	1,005	1,290
			4	3	875	1,220	1,285	1,395
		$^{19}/_{32}$	3	2	670	880	965	1,255
			4	2	780	990	1,110	1,440
			4	3	965	1,320	1,405	1,790
		$^{23}/_{32}$	3	2	730	955	1,050	1,365
			4	2	855	1,070	1,210	1,565
			4	3	1,050	1,430	1,525	1,800
Sheathing and single floor	$1^1/_4$	$^{15}/_{32}$	3	2	525	725	765	1,010
			4	2	605	815	875	1,105
			4	3	765	1,085	1,130	1,195
		$^{19}/_{32}$	3	2	650	860	935	1,225
			4	2	755	965	1,080	1,370
			4	3	935	1,290	1,365	1,485
		$^{23}/_{32}$	3	2	710	935	1,020	1,335
			4	2	825	1,050	1,175	1,445
			4	3	1,020	1,400	1,480	1,565

For **SI:** 1 inch = 25.4 mm, 1 pound per foot = 14.6 N/m.

[1]For framing of other species, the allowable diaphragm shear capacity is found by: (1) Determining the specific gravity for applicable species of lumber in the NDS. (2) Finding the allowable diaphragm shear value from the table above multiplying this value by the Specific Gravity Adjustment Factor = [1-(0.5-SG)], where SG = Specific Gravity of the framing lumber. This adjustment factor must not be greater than 1.0.

[2]For shear loads of normal or permanent load duration as defined by the NDS, the values in the table above must be multiplied by 0.63 or 0.56, respectively.

[3]Shear loads can be increased 40% for wind loading.

[4]Diaphragm construction must be in accordance with Sections 4.2.7 and 4.2.8 of SDPWS-21 (Sections 4.2.6 and 4.2.7 of SDPWS-15 for the 2018 and 2015 IBC and of SDPWS-08 for the 2012 IBC), as applicable.

[5]This table gives shear values for Cases 1 and 2. The values shown are applicable to Cases 3 and 4, provided screws at all continuous panel edges are spaced in accordance with the boundary screw spacing; and are applicable to Cases 5 and 6, provided screws at all panel edges are spaced in accordance with the boundary screw spacing.

[6]See Figure 2 for Case diagrams.

TABLE 4—IBC EQUIVALENT PRESCRIPTIVE FASTENING SCHEDULE FOR WSV SCREWS

CONNECTION	FASTENING[1]	LOCATION
2024 and 2021 IBC Table 2304.10.2 and 2018 IBC Table 2304.10.1		
18. 1" brace to each stud and plate	2 screws	face
20. 1" x 8" and wider sheathing to each bearing	3 screws	face
23. 1" x 6" subfloor or less to each joist	2 screws	face
2015 IBC Table 2304.10.1		
19. 1" brace to each stud and plate	2 screws	face
21. 1" x 8" and wider sheathing to each bearing	3 screws	face
24. 1" x 6" subfloor or less to each joist	2 screws	face
2012 IBC Table 2304.9.1		
3. 1" X 6" subfloor or less to each joist	2 screws	face
4. Wider than 1" x 6" subfloor to each joist	3 screws	face
20. 1" diagonal brace to each stud and plate	2 screws	face
21. 1" x 8" sheathing to each bearing	3 screws	face
22. Wider than 1" x 8" sheathing to each bearing	3 screws	face

For **SI:** 1 inch = 25.4 mm.

[1]WSV screws must be a minimum of 2 inches long.

TABLE 5—REFERENCE LATERAL DESIGN VALUES (Z) FOR SINGLE SHEAR WOOD-TO-WOOD CONNECTIONS WITH WSV SCREWS (lbf)[1,2]

SCREW	$t_{s,w}$ (inches)	Z (lbf)	
		$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}/SG_{eq}$
WSV212, WSVF212	$1^1/_2$	72	92
WSV300, WSVF300		87	102

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N.

[1]Tabulated values are based on attachment of the side member to a minimum 1½-inch-thick main member of the same species.
[2]Tabulated lateral design values (Z) must be multiplied by all applicable adjustment factors, including the load duration factor, C_D, from the NDS as referenced in the IBC or IRC.

TABLE 6—REFERENCE PULL THROUGH AND WITHDRAWAL DESIGN VALUES FOR WSV SCREWS INSTALLED IN THE SIDE GRAIN OF WOOD MEMBERS[1,2,3]

SCREW	L (inch)	$L_{emb,w}$ (inch)	REFERENCE PULL-THROUGH DESIGN VALUES, W_H (lbf)						REFERENCE WITHDRAWAL DESIGN VALUE, W			
			Nominal OSB/Plywood Rated Sheathing Panel Thickness (inch)				Solid Sawn Wood Min. Thickness (inch)		$0.42 \le SG_{NDS} < 0.50$		$0.50 \le SG_{NDS}/SG_{eq}$	
			$^7/_{16}$	$^{15}/_{32}$	$^{19}/_{32}$	$^{23}/_{32}$	$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}/SG_{eq}$	W (lbf/inch)	W_{max} (lbf)	W (lbf/inch)	W_{max} (lbf)
							$1^1/_2$	$1^1/_2$				
WSV134	1.75	1.20	66	66	96	109	141	195	98	117	123	147
WSV200	2.00	1.45							99	144	128	185
WSV212	2.50	1.95							117	233	128	256
WSV300	3.00	2.17							121	266	141	311

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N.

[1]Use the lower of the pull-through or withdrawal values to determine axial design value.
[2]Reference withdrawal values, W, are in pounds per inch of the thread penetration in to the main member. W_{max} is the maximum reference withdrawal value.
[3]Tabulated design values must be multiplied by all applicable adjustment factors, including the load duration factor, C_D, from the NDS as referenced in the IBC or IRC.

TABLE 7—WSV CONNECTION GEOMETRY[1,2,3]

CONDITION	DIRECTION OF LOAD TO GRAIN	ID	MINIMUM DISTANCE OR SPACING (in.)	
			$SG_{NDS} < 0.50$	$SG_{NDS} \geq 0.50$
Edge Distance	Perpendicular	①	1 1/2	1 1/2
	Parallel	①	1	1 1/2
End Distance	Perpendicular	②	2	2 3/4
	Parallel	②	2 3/4	3
Spacing Between Fasteners in a Row	Perpendicular	③	1	1 1/2
	Parallel	④	2 3/4	2 3/4
Spacing Between Rows of Fasteners	Perpendicular	⑤	2	2
	Parallel	⑥	1	1 1/2
Spacing Between Staggered Rows	Perpendicular or Parallel	⑦	1/2	3/4

For **SI:** 1 inch = 25.4 mm.

[1]Edge distances, end distances and spacing of the screws must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Figure 3 for a depiction of the requirements.

[2]Values for spacing between staggered rows apply where screws in adjacent rows are offset by 1/2 inch for SG_{NDS} < 0.50 or 3/4 inch when $SG_{NDS} \geq 0.50$.

[3]For screws which are axially loaded, edge distance, measured in the direction perpendicular to grain, must be a minimum of 3/4 inch; end distance, measured in the direction of grain, must be a minimum of 2 inches; the minimum perpendicular to grain spacing between screws must be 3/4 inch, and the minimum parallel to grain spacing between screws must be 1 1/2 inches.

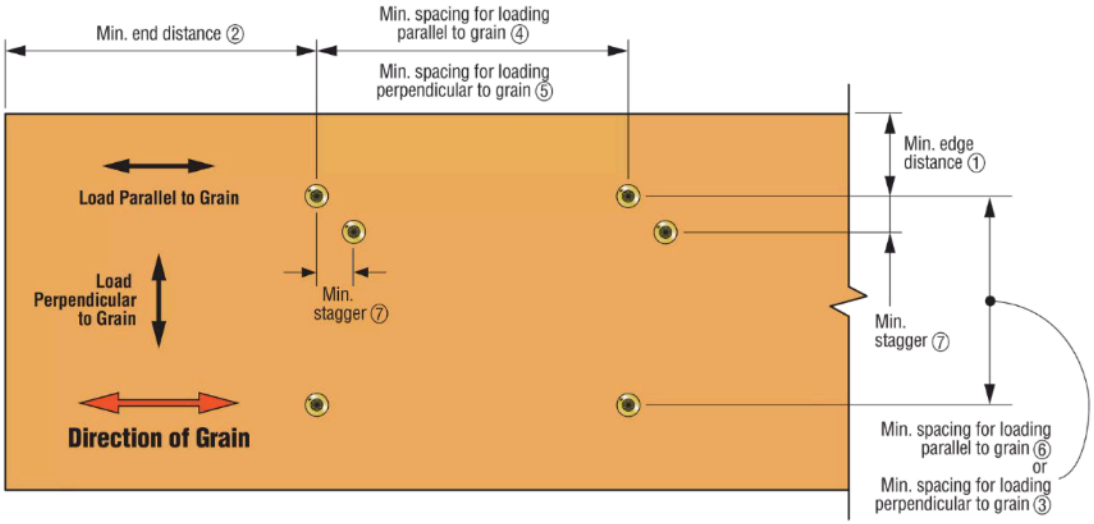


FIGURE 3—WSV CONNECTION GEOMETRY
Circled numbers refer to information in Table 7

ICC-ES Evaluation Report

ESR-1472 City of LA Supplement

Reissued September 2026

This report remains under an active continuous compliance program through the end of September 2028.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings

REPORT HOLDER:

SIMPSON STRONG-TIE COMPANY INC.

EVALUATION SUBJECT:

SIMPSON STRONG-TIE® WSV SCREWS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Simpson Strong-Tie® WSV screws, described in ICC-ES evaluation report ESR-1472, have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2026* *City of Los Angeles Building Code* (LABC)
- 2026* *City of Los Angeles Residential Code* (LARC)

*For evaluation for compliance with the anticipated requirements of the 2026 LABC and LARC.

2.0 CONCLUSIONS

The Simpson Strong-Tie WSV screws, described in Sections 2.0 through 7.0 of the evaluation report ESR-1472, comply with the LABC Chapter 23, and the LARC, and are subjected to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Simpson Strong-Tie WSV screws described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-1472.
- The design, installation, conditions of use and identification of the WSV screws are in accordance with the 2024 *International Building Code®* (2024 IBC) and 2024 *International Residential Code®* (IRC) provisions noted in the evaluation report ESR-1472.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16, 17 and Section 2304.10.2, as applicable.
- Wood diaphragms supporting concrete or masonry walls in Seismic Design Category D, E or F, must comply with the requirements outlined in LABC Section 1613.5.3 items 1 and 2.
- The seismic design provisions for hillside buildings referenced in LABC Section 2301.1 have not been considered and are outside of the scope of this supplement.
- In accordance with LABC Section 2306.2, wood structural panel diaphragms used to resist seismic forces in structures assigned to Seismic Design Category D, E, or F must be applied directly to the framing members. Fastening of wood structural panels over solid lumber planking or laminated decking is permitted when structural panel joints and lumber planking or decking joints are offset.

This supplement expires concurrently with the evaluation report, reissued September 2026.

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