



ICBO Evaluation Service, Inc.

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EVALUATION REPORT

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ER-5268

Reissued August 1, 1999

Filing Category: FASTENERS—Wood (066)

SIMPSON STRONG-DRIVE S-SERIES WOOD SCREW

SIMPSON STRONG-TIE COMPANY, INC.
4637 CHABOT DRIVE, SUITE 200
PLEASANTON, CALIFORNIA 94588

1.0 SUBJECT

Simpson Strong-Drive S-series Wood Screw

2.0 DESCRIPTION

2.1 General:

The Strong-Drive S-series wood screw described in this report is an alternative to the wood screws used in lateral load applications specified in the code. Details of the wood screw are in Figure 1.

2.2 Materials:

The screw is manufactured from 1022 steel (SAE Grade 5) with a finish coat of zinc and dichromate. The hex washer head is 0.375 inch (9.5 mm).

2.3 Allowable Wood Screw Capacities:

Design values for wood-to-metal and wood-to-wood connections are specified in Tables 1 and 2. Allowable capacities are based on a bending yield strength of 217,000 psi (1.5 MPa).

2.4 Installation:

Space screws in accordance with Section 2339.4 of the code. The screw's Type-17 self-drilling tip and built-in reamer allow for driving without lead holes. However, lead holes may be required by the local building official, depending on wood type and moisture content, in accordance with Section 2339.1.2 of the code.

2.5 Identification:

The fasteners are identified by the designation "Strong-Drive S-Series Wood Screws" and ICBO ES ER-5268 on the packaging. Additionally, the head of each fastener is stamped as noted in Figure 1.

3.0 EVIDENCE SUBMITTED

Calculations and test report in accordance with the ICBO ES Acceptance Criteria for Test Method to Determine Bending Yield Moment for Nails (AC95), dated January 1996, and the ICBO ES Acceptance Criteria for Wood Screws (AC120), dated July 1997.

4.0 FINDINGS

That the use of Strong-Drive S-Series wood screws described in this report complies with of the 1997 *Uniform Building Code*™.

This report is subject to re-examination in two years.

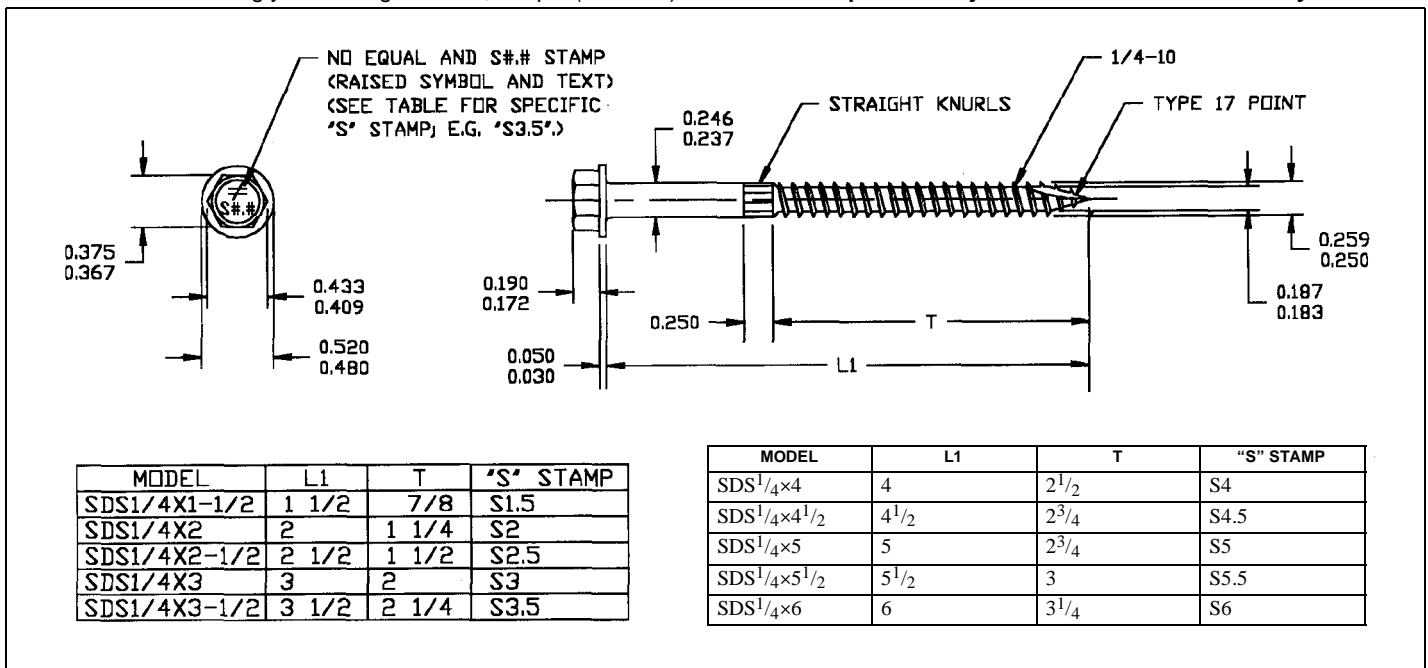


FIGURE 1—SIMPSON STRONG-DRIVE S-SERIES SCREW

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TABLE 1—CUT THREAD WOOD SCREW DESIGN VALUES (Z)^{1,2} FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS WITH STEEL SIDE PLATES OF VARIOUS TENSILE STRENGTHS

ASTM GRADE STEEL PLATE $F_{tu} = 36$ ksi (248 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	338	315	295	274	248
7 gage (0.179 inch)	0.242	328	305	286	265	238
10 gage (0.134 inch)	0.242	325	301	282	260	234
11 gage (0.120 inch)	0.242	324	300	281	259	233
12 gage (0.105 inch)	0.242	324	300	280	259	233
14 gage (0.075 inch)	0.242	325	300	281	259	232
16 gage (0.060 inch)	0.242	326	301	281	259	232
18 gage (0.048 inch)	0.242	327	302	282	260	233
20 gage (0.036 inch)	0.242	329	303	283	261	233
22 gage (0.030 inch)	0.242	330	304	284	261	234
ASTM GRADE STEEL PLATE $F_{tu} = 38$ ksi (262 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	341	317	298	276	250
7 gage (0.179 inch)	0.242	330	307	287	266	240
10 gage (0.134 inch)	0.242	326	302	283	261	235
11 gage (0.120 inch)	0.242	325	301	282	260	234
12 gage (0.105 inch)	0.242	325	301	281	260	233
14 gage (0.075 inch)	0.242	326	301	281	259	233
16 gage (0.060 inch)	0.242	327	302	282	260	233
18 gage (0.048 inch)	0.242	328	303	282	260	233
20 gage (0.036 inch)	0.242	330	304	283	261	234
22 gage (0.030 inch)	0.242	330	305	284	261	234
ASTM GRADE STEEL PLATE $F_{tu} = 40$ ksi (276 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	344	320	301	279	252
7 gage (0.179 inch)	0.242	332	308	289	268	241
10 gage (0.134 inch)	0.242	327	303	284	262	236
11 gage (0.120 inch)	0.242	327	302	283	261	235
12 gage (0.105 inch)	0.242	326	302	282	260	234
14 gage (0.075 inch)	0.242	327	302	282	260	233
16 gage (0.060 inch)	0.242	328	302	282	260	233
18 gage (0.048 inch)	0.242	329	303	283	260	233
20 gage (0.036 inch)	0.242	330	304	284	261	234
22 gage (0.030 inch)	0.242	331	305	284	262	234
ASTM GRADE STEEL PLATE $F_{tu} = 44$ ksi (303 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	350	326	306	283	256
7 gage (0.179 inch)	0.242	336	312	292	270	244
10 gage (0.134 inch)	0.242	330	306	286	264	237
11 gage (0.120 inch)	0.242	329	304	285	263	236
12 gage (0.105 inch)	0.242	328	303	284	262	235
14 gage (0.075 inch)	0.242	328	303	283	261	234
16 gage (0.060 inch)	0.242	329	304	283	261	234
18 gage (0.048 inch)	0.242	330	304	284	261	234
20 gage (0.036 inch)	0.242	331	305	285	262	234
22 gage (0.030 inch)	0.242	332	306	285	262	234

(Continued)

TABLE 1—CUT THREAD WOOD SCREW DESIGN VALUES (Z)^{1,2} FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS WITH STEEL SIDE PLATES OF VARIOUS TENSILE STRENGTHS—(Continued)

ASTM GRADE STEEL PLATE $F_{tu} = 45$ ksi (310 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	352	327	307	284	257
7 gage (0.179 inch)	0.242	337	313	293	271	244
10 gage (0.134 inch)	0.242	331	306	286	264	238
11 gage (0.120 inch)	0.242	330	305	285	263	236
12 gage (0.105 inch)	0.242	329	304	284	262	235
14 gage (0.075 inch)	0.242	329	303	283	261	234
16 gage (0.060 inch)	0.242	329	304	283	261	234
18 gage (0.048 inch)	0.242	330	304	284	261	234
20 gage (0.036 inch)	0.242	332	306	285	262	234
22 gage (0.030 inch)	0.242	332	306	285	262	235
ASTM GRADE STEEL PLATE $F_{tu} = 46$ ksi (317 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	353	328	308	285	258
7 gage (0.179 inch)	0.242	338	314	294	272	245
10 gage (0.134 inch)	0.242	331	307	287	265	238
11 gage (0.120 inch)	0.242	330	305	285	263	237
12 gage (0.105 inch)	0.242	329	304	284	262	235
14 gage (0.075 inch)	0.242	329	304	283	261	234
16 gage (0.060 inch)	0.242	330	304	284	261	234
18 gage (0.048 inch)	0.242	331	305	284	261	234
20 gage (0.036 inch)	0.242	332	306	285	262	234
22 gage (0.030 inch)	0.242	333	306	285	262	235
ASTM GRADE STEEL PLATE $F_{tu} = 47$ ksi (324 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	355	330	309	286	258
7 gage (0.179 inch)	0.242	339	315	295	272	245
10 gage (0.134 inch)	0.242	332	307	287	265	239
11 gage (0.120 inch)	0.242	331	306	286	264	237
12 gage (0.105 inch)	0.242	330	305	285	263	236
14 gage (0.075 inch)	0.242	329	304	284	261	234
16 gage (0.060 inch)	0.242	330	304	284	261	234
18 gage (0.048 inch)	0.242	331	305	284	262	234
20 gage (0.036 inch)	0.242	332	306	285	262	234
22 gage (0.030 inch)	0.242	333	307	286	263	235
ASTM GRADE STEEL PLATE $F_{tu} = 48$ ksi (331 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	356	331	310	288	259
7 gage (0.179 inch)	0.242	340	315	295	273	246
10 gage (0.134 inch)	0.242	333	308	288	266	239
11 gage (0.120 inch)	0.242	331	306	286	264	237
12 gage (0.105 inch)	0.242	330	305	285	263	236
14 gage (0.075 inch)	0.242	330	304	284	261	234
16 gage (0.060 inch)	0.242	330	304	284	261	234
18 gage (0.048 inch)	0.242	331	305	284	262	234
20 gage (0.036 inch)	0.242	332	306	285	262	235
22 gage (0.030 inch)	0.242	333	307	286	263	235

(Continued)

TABLE 1—CUT THREAD WOOD SCREW DESIGN VALUES (Z)^{1,2} FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS WITH STEEL SIDE PLATES OF VARIOUS TENSILE STRENGTHS—(Continued)

ASTM GRADE STEEL PLATE $F_{tu} = 52$ ksi (358 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	362	336	315	292	263
7 gage (0.179 inch)	0.242	344	319	298	276	248
10 gage (0.134 inch)	0.242	335	310	290	268	240
11 gage (0.120 inch)	0.242	333	308	288	266	239
12 gage (0.105 inch)	0.242	332	307	286	264	237
14 gage (0.075 inch)	0.242	331	305	285	262	235
16 gage (0.060 inch)	0.242	331	305	285	262	235
18 gage (0.048 inch)	0.242	332	306	285	262	235
20 gage (0.036 inch)	0.242	333	307	286	263	235
22 gage (0.030 inch)	0.242	334	307	286	263	235
ASTM GRADE STEEL PLATE $F_{tu} = 53$ ksi (365 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	363	337	316	293	264
7 gage (0.179 inch)	0.242	345	319	299	277	247
10 gage (0.134 inch)	0.242	336	310	290	268	241
11 gage (0.120 inch)	0.242	334	309	288	266	239
12 gage (0.105 inch)	0.242	332	307	287	264	237
14 gage (0.075 inch)	0.242	331	305	285	262	235
16 gage (0.060 inch)	0.242	331	306	285	262	235
18 gage (0.048 inch)	0.242	332	306	285	262	235
20 gage (0.036 inch)	0.242	333	307	286	263	235
22 gage (0.030 inch)	0.242	334	307	286	263	235
ASTM GRADE STEEL PLATE $F_{tu} = 55$ ksi (379 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	366	340	319	295	266
7 gage (0.179 inch)	0.242	347	321	301	278	250
10 gage (0.134 inch)	0.242	337	312	291	269	241
11 gage (0.120 inch)	0.242	335	309	289	267	239
12 gage (0.105 inch)	0.242	333	308	287	265	238
14 gage (0.075 inch)	0.242	332	306	285	263	235
16 gage (0.060 inch)	0.242	332	306	285	263	235
18 gage (0.048 inch)	0.242	333	306	286	263	235
20 gage (0.036 inch)	0.242	334	307	286	263	235
22 gage (0.030 inch)	0.242	334	308	287	263	235
ASTM GRADE STEEL PLATE $F_{tu} = 56$ ksi (386 MPa)						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	367	341	320	296	267
7 gage (0.179 inch)	0.242	347	322	301	279	251
10 gage (0.134 inch)	0.242	337	312	292	269	242
11 gage (0.120 inch)	0.242	335	310	290	267	240
12 gage (0.105 inch)	0.242	334	308	288	265	238
14 gage (0.075 inch)	0.242	332	306	286	263	236
16 gage (0.060 inch)	0.242	332	306	285	263	235
18 gage (0.048 inch)	0.242	333	307	286	263	235
20 gage (0.036 inch)	0.242	334	307	286	263	235
22 gage (0.030 inch)	0.242	335	308	287	263	235

(Continued)

TABLE 1—CUT THREAD WOOD SCREW DESIGN VALUES (Z)^{1,2} FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS WITH STEEL SIDE PLATES OF VARIOUS TENSILE STRENGTHS—(Continued)

ASTM GRADE STEEL PLATE $F_{tu} = 58 \text{ ksi (400 MPa)}$						
STEEL SIDE PLATE t_s	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
3 gage (0.239 inch)	0.242	370	344	322	298	269
7 gage (0.179 inch)	0.242	349	323	303	280	252
10 gage (0.134 inch)	0.242	339	313	293	270	243
11 gage (0.120 inch)	0.242	336	311	290	268	240
12 gage (0.105 inch)	0.242	334	309	288	266	238
14 gage (0.075 inch)	0.242	333	307	286	263	236
16 gage (0.060 inch)	0.242	333	307	286	263	235
18 gage (0.048 inch)	0.242	333	307	286	263	235
20 gage (0.036 inch)	0.242	334	308	286	263	235
22 gage (0.030 inch)	0.242	335	308	287	264	236

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

¹These values are for a load duration factor of 100% ($CD = 1.0$).

²Lateral design values must be adjusted for screw penetration in accordance with Section 2339.3.3 of the code.

TABLE 2—CUT THREAD WOOD SCREW DESIGN VALUES (Z)^{1,2} FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS WITH WOOD-TO-WOOD SPECIES CONNECTIONS

$F_e = 5550 \text{ psi/38 MPa (Southern Pine or Mixed Maple side member)}$						
SIDE MEMBER t_s [inches, in fraction (decimal)]	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
1/2 (0.50)	0.242	230	230	225	214	198
5/8 (0.625)	0.242	247	236	227	216	201
3/4 (0.75)	0.242	251	240	231	220	206
1 (1.00)	0.242	265	255	246	235	220
1 1/4 (1.25)	0.242	285	275	266	255	239
1 1/2 (1.50)	0.242	311	300	290	278	262
$F_e = 4650 \text{ psi/32 MPa (Douglas Fir—Larch side member)}$						
SIDE MEMBER t_s [inches, in fraction (decimal)]	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
1/2 (0.5)	0.242	193	193	193	193	192
5/8 (0.625)	0.242	235	225	217	207	193
3/4 (0.75)	0.242	237	227	219	209	196
1 (1)	0.242	246	237	229	220	207
1 1/4 (1.25)	0.242	262	253	245	235	222
1 1/2 (1.5)	0.242	281	272	264	254	240
$F_e = 4000 \text{ psi/ 28 MPa (Douglas Fir [S] or Hem-Fir [N] side member)}$						
SIDE MEMBER t_s [inches, in fraction (decimal)]	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
1/2 (0.5)	0.242	166	166	166	166	166
5/8 (0.625)	0.242	207	207	207	199	187
3/4 (0.75)	0.242	226	217	210	201	188
1 (1)	0.242	232	224	217	208	196
1 1/4 (1.25)	0.242	243	236	229	220	208
1 1/2 (1.5)	0.242	259	251	244	235	223
$F_e = 3350 \text{ psi/23 MPa (Spruce-pine-fir side member)}$						
SIDE MEMBER t_s [inches, in fraction (decimal)]	WOOD SCREW DIAMETER D (inch)	G = 0.55 SOUTHERN PINE MIXED MAPLE	G = 0.50 DOUGLAS FIR-LARCH (N)	G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)	G = 0.42 SPRUCE-PINE-FIR	G = 0.37 REDWOOD OPEN GRAIN
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
1/2 (0.5)	0.242	139	139	139	139	139
5/8 (0.625)	0.242	174	174	174	174	174
3/4 (0.75)	0.242	208	206	200	191	180
1 (1)	0.242	216	209	203	196	185
1 1/4 (1.25)	0.242	224	218	212	204	194
1 1/2 (1.5)	0.242	236	229	223	216	205

(Continued)

TABLE 2—CUT THREAD WOOD SCREW DESIGN VALUES (Z)^{1,2} FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS WITH WOOD-TO-WOOD SPECIES CONNECTIONS—(Continued)

<i>Fe = 2650 psi/18 MPa (Redwood [open grain] side member)</i>						
SIDE MEMBER t_s [inches, in fraction (decimal)]	WOOD SCREW DIAMETER D (inch)	<i>G = 0.55 SOUTHERN PINE MIXED MAPLE</i>	<i>G = 0.50 DOUGLAS FIR-LARCH (N)</i>	<i>G = 0.46 DOUGLAS FIR (S) HEM-FIR (N)</i>	<i>G = 0.42 SPRUCE-PINE-FIR</i>	<i>G = 0.37 REDWOOD OPEN GRAIN</i>
		Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)	Z (pounds)
$1/2$ (0.5)	0.242	110	110	110	110	110
$5/8$ (0.625)	0.242	137	137	137	137	137
$3/4$ (0.75)	0.242	165	165	165	165	165
1 (1)	0.242	198	193	187	181	172
$1 1/4$ (1.25)	0.242	202	197	192	186	177
$1 1/2$ (1.5)	0.242	210	204	200	194	185

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

¹These values are for a load duration factor of 100% ($CD = 1.0$).

²Lateral design values must be adjusted for screw penetration in accordance with Section 2339.3.3 of the code.