REVEAL Panel System™

TECHNICAL DATA SHEET

Effective April 2018

Reveal® Panel System

All national, state, and local building code requirements must be followed and where they are more stringent than the Reveal® Panel System installation requirements, state and local requirements will take precedence.

Document Scope

This document applies to the Reveal® Panel System. The use of this product is limited to buildings not exceeding 85 feet in height.

General Description

Reveal Panel System is a noncombustible fiber-cement panel siding, manufactured by James Hardie Building Products Inc.

Product Dimensions

Thickness – 7/16 inch Length – 95½ inches Width – 47½ inches

Product Composition

Reveal panels used in the Reveal Panel System are a *Grade II, Type A,* fiber-cement flat sheet as defined by ASTM C 1186. The panels are manufactured by the Hatschek process and cured by high pressure steam autoclaving.

Code Compliance

Reveal Panel System complies with:

- *The 2006, 2009, 2012, and 2015 International Building Code® (IBC) Section 1404.10 and 2006, 2009, 2012, and 2015 International Residential Code® (IRC) Table R703.4 and SectionR703.10.1 as ASTM C 1186 Grade II, Type A (ISO 8336, Category A, Class 2) Fiber Cement.*

Wind Design:

- Design Tables 2 and 3 provide allowable capacity in mph for transverse load conditions for the Reveal Panel System attached to either wood framing, wood furring, metal framing, metal hat channel, metal or z-girt, tested in accordance to ASTM E 330.
- Wood framing and furring shall have a specific gravity of 0.42 or greater unless otherwise stated.
- Metal framing and furring shall be a minimum of 20 gauge (33 mil) structural to a maximum of 16 gauge (54 mil).

Fire Characteristics:

- Reveal Panel System is classified as noncombustible when tested in accordance with ASTM E136.
- Reveal Panel System may be used in ASTM E119 fire resistance rated assemblies as listed by Warnock Hersey (for more information, contact James Hardie at 1-888 J-HARDIE (1-888 542-7343) or info@JamesHardie.com): 60 minute designs JH/FCS 60-01, JH/FCS 60-02, and JH/FCS 60-03. 120 minute designs JH/FCS 120-01 and JH/FCS 120-02.
- Reveal Panel System are Class A material according to 2006, 2009, 2012, and 2015 IBC Section 803.1.1. Surface burning characteristics in accordance with ASTM E 84: Flame Spread Index = 0 and Smoke Developed Index ≤ 5.
- The building official reserves the right to approve alternate materials, design and methods of construction based on research reports and/or tests based on 2006, 2009, 2012, and 2015 IBC Section 104.11, 2006, 2009, 2012, and 2015 IRC Section R104.11.
- Test reports can be furnished to the building official upon request, contact your local James Hardie sales representative.

Installation Requirements

- Reveal Panel System shall be installed on exterior walls braced in accordance with the applicable building code.
- A water-resistive barrier complying with Section 1403.2 of the IBC or Section R703.2 of the IRC is required to be installed.
- Install the Reveal Panel System in accordance with this report and the James Hardie published installation requirements. For a copy contact your local James Hardie sales representative or visit www.JamesHardiePros.com.

Table 1, Reveal Panel System ASTM C 1186 Physical Properties and Supplementary Requirements

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Intertek LISTED

Client # 8518, 17832

Intertek

	ASTM Test Method	General Property	Unit or Characteristic	Requirement	Result
Physical Attributes	ASTM C1185	Dimensional Tolerances	Length Width Thickness Squareness Edge Straightness	± 0.5% or ±1/4 in ± 0.5% or ±1/4 in ± 0.04 in <1/32 in/ft of length <1/32 in/ft of length	Pass
	ASTM C1185	Density, lb/ft^3		As reported	<75
	ASTM C1185	Water Tightness	Physical Observations	No drop formation	Pass
	ASTM C1185	Flexural Strength	Wet conditioned, psi Equilibrium conditioned, psi	>1015 psi >1450 psi	Pass
Durability	ASTM C1185	Warm Water Resistance, Observations	Physical Observations	No visible cracks or structural alteration	Pass
	ASTM C1185	Heat/Rain Resistance	Physical Observations	No visible cracks or structural alteration	Pass
	ASTM C1185	Freeze/Thaw Resistance	Physical Observations Mass Loss, % Freeze/Thaw, % strength retention	No visible cracks or structural alteration ≤ 3.0% ≥ 80%	Pass
	ASTM G23	UV Accelerated Weathering Test	Physical Observations	No cracking, checking, or crazing	Pass
Fire Characteristics	ASTM E84	Surface Burning Characteristics	Flame Spread Index (FSI) Smoke Developed Index (SDI) Fuel Contributed		0 ≤ 5 0
			NFPA Class Uniform Building Code Class International Building Code® class	As reported	A 1 A
	ASTM E136	Noncombustibility	Noncombustible		Pass

Reveal® Panel System

All national, state, and local building code requirements must be followed and where they are more stringent than the Reveal® Panel System installation requirements, state and local requirements will take precedence.

Table 2, Wind Design Table, Exposed Fastening

Allowable Wind Speed (mph) for Reveal Panel System (Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 and Part 3)6

Product	Product Thickness (in.)	Width (in.)	Fastener Type	Fastener Spacing	Frame Type	Stud Spacing (in.)	Allowable Design Load (psf)	Building Height[2,5] (ft.)	2015 IBC & IRC 2012 IBC (Ultimate Design Wind Speed, V_{ult}[3]) Wind exposure			2012 IRC 2009, 2006 IBC & IRC[7] (Basic Wind Speed, V_{asd}[4]) Wind exposure		
									B	C	D	B	C	D
Reveal Panel System	7/16	47.5	No. 10-12 x 1.5 in long x 0.472 in head diameter button head screw	Configuration 1 (Exposed) [2 screws measuring 12" from panel edge]	2x4 wood (SPF) + wood furring (3/4" thick x min 1-1/2" wide)[8,9]	16	42.5	0-15	172	156	141	133	121	110
								20	172	151	138	133	117	107
								25	172	148	136	133	115	105
								30	172	145	133	133	112	103
								35	168	143	132	130	111	102
								40	165	141	130	128	109	101
								45	162	139	129	125	108	100
								50	159	137	127	124	106	99
								55	158	136	126	122	106	98
								60	156	135	125	121	105	97
								65	137	120	111	106	93	86
								70	136	119	111	105	92	86
								75	134	118	110	104	91	85
								80	133	117	109	103	90	85
								85	132	116	109	102	90	84
Reveal Panel System	7/16	47.5	No. 10-12 x 1.5 in long x 0.472 in head diameter button head screw	Configuration 2 (Exposed) [3 screws measuring 8" from panel edge and one screw equidistant in center]	2x4 wood (SPF) + wood furring (3/4" thick x min 1-1/2" wide)[8,9]	16	68.7	0-15	218	198	180	169	153	139
								20	218	192	176	169	149	136
								25	218	188	172	169	146	134
								30	218	184	169	169	143	131
								35	214	182	167	165	141	130
								40	209	179	165	162	139	128
								45	206	177	164	160	137	127
								50	203	175	162	157	135	125
								55	200	173	161	155	134	124
								60	198	172	159	153	133	124
								65	175	152	141	135	118	109
								70	173	151	141	134	117	109
								75	171	149	140	132	116	108
								80	169	148	139	131	115	107
								85	168	147	138	130	114	107
Reveal Panel System	7/16	47.5	No. 10-12 x 1.5 in long x 0.472 in head diameter button head screw [1]	Configuration 3 (Exposed) [3 screws measuring 8" from panel edge and one screw equidistant in center]	Minimum 20 gauge Steel (studs, z-girts or hat channel)	16	56.3	0-15	197	179	163	153	139	126
								20	197	174	159	153	135	123
								25	197	170	156	153	132	121
								30	197	167	153	153	129	119
								35	193	164	151	150	127	117
								40	190	162	150	147	125	116
								45	186	160	148	144	124	115
								50	184	158	147	142	123	114
								55	181	157	145	140	121	113
								60	179	155	144	139	120	112
								65	158	138	128	123	107	99
								70	156	136	127	121	106	99
								75	155	135	127	120	105	98
								80	153	134	126	119	104	97
								85	152	133	125	118	103	97

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All national, state, and local building code requirements must be followed and where they are more stringent than the Reveal® Panel System installation requirements, state and local requirements will take precedence.

Table 2, Wind Design Table, Exposed Fastening (continued)

Allowable Wind Speed (mph) for Reveal Panel System (Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 and Part 3)6

								2015 IBC & IRC 2012 IBC (Ultimate Design Wind Speed, V_{ult}[3])			2012 IRC 2009, 2006 IBC & IRC[7] (Basic Wind Speed, V_{asd}[4])		
								Wind exposure			Wind exposure		
Product	Product Thickness (in.)	Width (in.)	Fastener Type	Fastener Spacing	Frame Type	Stud Spacing (in.)	Allowable Design Load (psf)	Building Height[2,5] (ft.)	B	C	D	B	C	D
Reveal Panel System	7/16	47.5	No. 10-12 x 1.5 in long x 0.472 in head diameter button head screw[1]	Configuration 4 (Exposed) [4 screws measuring 6" from panel edge and two screws spaced equidistant in center]	Minimum 20 gauge Steel (studs, z-girts or hat channel)	16	69.2	0-15	219	199	180	170	154	140
								20	219	193	176	170	150	137
								25	219	189	173	170	146	134
								30	219	185	170	170	143	132
								35	214	182	168	166	141	130
								40	210	180	166	163	139	128
								45	207	177	164	160	137	127
								50	204	175	163	158	136	126
								55	201	174	161	156	135	125
								60	199	172	160	154	133	124
								65	175	153	142	136	118	110
								70	173	151	141	134	117	109
								75	172	150	140	133	116	109
								80	170	149	139	131	115	108
								85	168	148	139	130	115	107
Reveal Panel System	7/16	47.5	No. 10-12 x 1.5 in long x 0.472 in head diameter button head screw	Configuration 5 (Exposed) [4 screws measuring 6" from panel edge and two screws spaced equidistant in center]	2x4 wood (SPF) + wood furring (3/4" thick x min 1-1/2" wide)[8,9]	24	57.4	0-15	199	181	164	154	140	127
								20	199	176	161	154	136	124
								25	199	172	158	154	133	122
								30	199	169	155	154	131	120
								35	195	166	153	151	129	118
								40	191	164	151	148	127	117
								45	188	162	149	146	125	116
								50	185	160	148	144	124	115
								55	183	158	147	142	123	114
								60	181	157	146	140	122	113
								65	160	139	129	124	108	100
								70	158	138	129	122	107	100
								75	156	137	128	121	106	99
								80	155	135	127	120	105	98
								85	153	135	126	119	104	98
Reveal Panel System	7/16	47.5	No. 10-12 x 1.5 in long x 0.472 in head diameter button head screw[1]	Configuration 6 (Exposed) [4 screws measuring 6" from panel edge and two screws spaced equidistant in center]	Minimum 20 gauge Steel (studs, z-girts or hat channel)	24	50	0-15	186	169	153	144	131	119
								20	186	164	150	144	127	116
								25	186	161	147	144	124	114
								30	186	157	145	144	122	112
								35	182	155	143	141	120	111
								40	179	153	141	138	118	109
								45	176	151	140	136	117	108
								50	173	149	138	134	116	107
								55	171	148	137	132	114	106
								60	169	146	136	131	113	105
								65	149	130	121	115	100	93
								70	147	129	120	114	100	93
								75	146	127	119	113	99	92
								80	144	126	118	112	98	92
								85	143	126	118	111	97	91

1. Screws shall penetrate the metal framing at least three full threads.
2. Building height = mean roof height (in feet) of a building, except that eave height shall be used for roof angle Θ less than or equal to 10° (2-12 roof slope).
3. V_{ult} = ultimate design wind speed.
4. V_{asd} = nominal design wind speed.
5. Linear interpolation of building height and wind speed is permitted.
6. Wind speed design assumptions per Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 and Part 3: K_{zt}=1, K_d=0.85, GC_p=-1.4 (h≤60), GC_p=-1.8 (h>60),
7. 2009 IBC/IRC, 2006 IBC/IRC calculated using Importance Factor, I = 1.
8. Wood furring is preservative treated per AWPA.
9. Wood furring is specific gravity of 0.42 or greater per AFPA/NDS; or wood structural panel, conforming to DOC PS-1 or DOC PS-2 or APA PRP-108.

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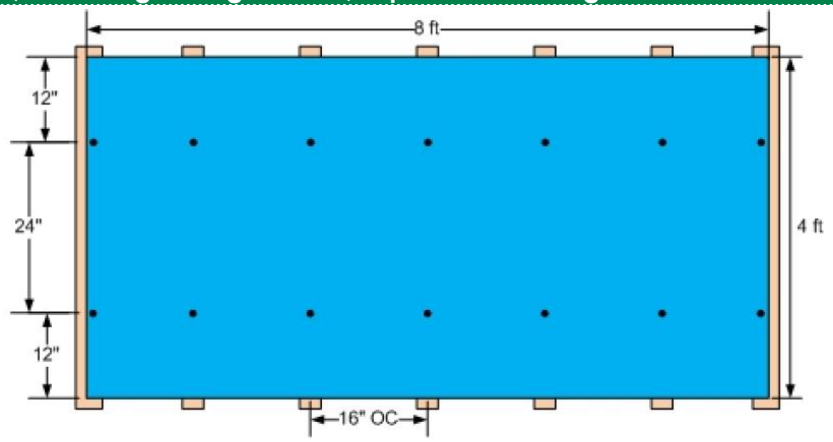
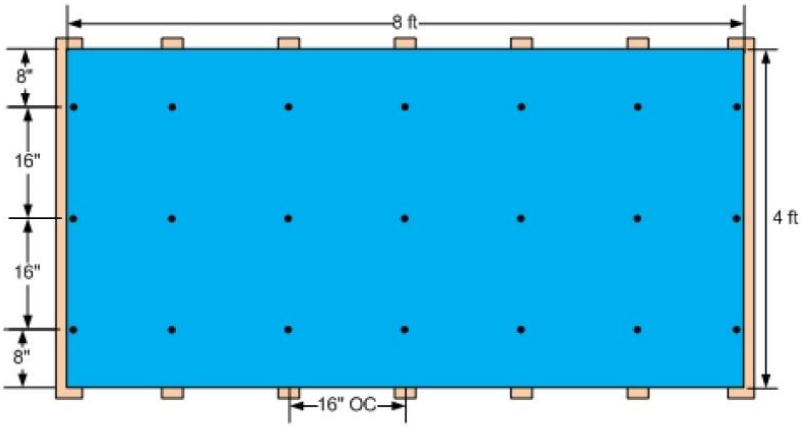
All national, state, and local building code requirements must be followed and where they are more stringent than the Reveal® Panel System installation requirements, state and local requirements will take precedence.

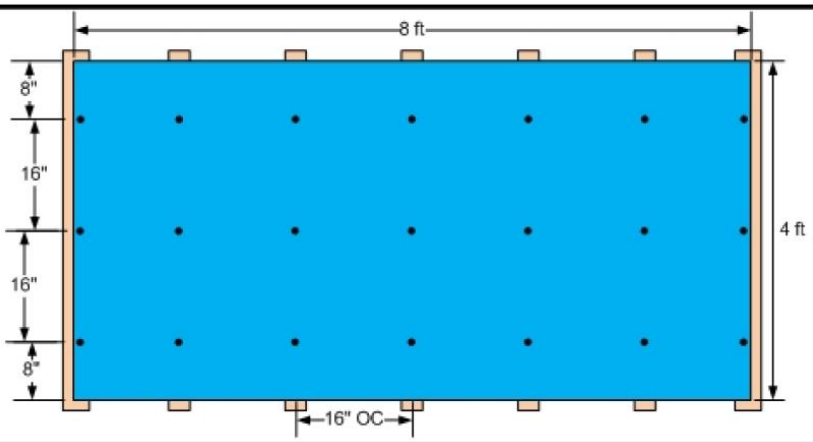
Figure 1, Fastening Configurations, Exposed Fastening



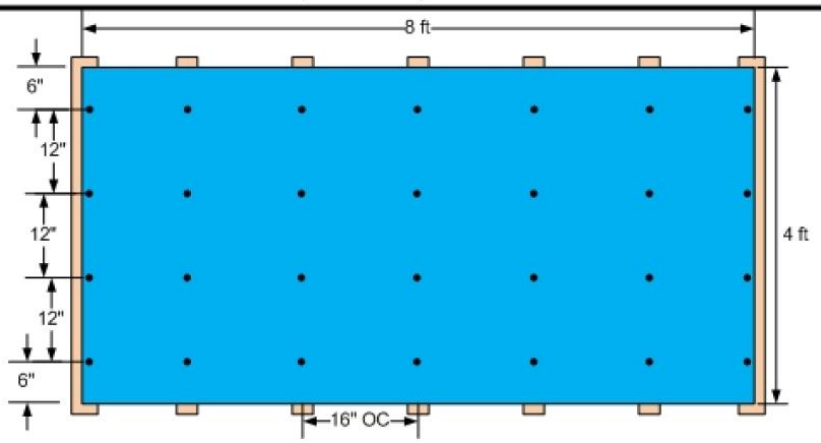
Configuration 1 (Exposed): 16" OC Wood Stud Frame – Low Wind Load Design



Configuration 2 (Exposed): 16" OC Wood Stud Frame – High Wind Load Design

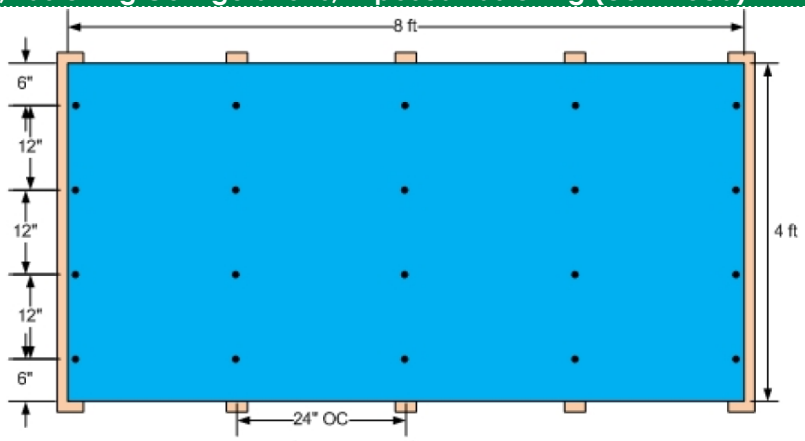


Configuration 3 (Exposed): 16" OC Steel Stud Frame– Low Wind Load Design

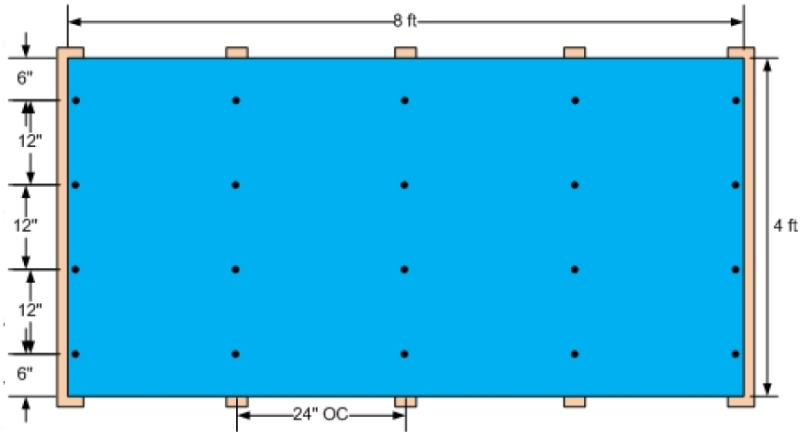


Configuration 4 (Exposed): 16" OC Steel Stud Frame – High Wind Load Design

Figure 1, Fastening Configurations, Exposed Fastening (continued)



Configuration 5 (Exposed): 24" OC Wood Stud Frame



Configuration 6 (Exposed): 24" OC Steel Stud Frame

Reveal® Panel System

All national, state, and local building code requirements must be followed and where they are more stringent than the Reveal® Panel System installation requirements, state and local requirements will take precedence.

Table 3, Wind Design Table, Countersunk Fastening

Allowable Wind Speed (mph) for Reveal Panel System (Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 and Part 3)6

									2015 IBC & IRC 2012 IBC (Ultimate Design Wind Speed, V_{ult}[3])			2012 IRC 2009, 2006 IBC & IRC[7] (Basic Wind Speed, V_{asd}[4])		
									Wind exposure			Wind exposure		
Product	Product Thickness (in.)	Width (in.)	Fastener Type	Fastener Spacing	Frame Type	Stud Spacing (in.)	Allowable Design Load (psf)	Building Height[2,5] (ft.)	B	C	D	B	C	D
Reveal Panel System	7/16	47.5	#8 x 1-5/8" long buglehead screw, 0.390" HD, countersunk with head of screw to be 1-1.5mm below panel's surface	Configuration 7 (Countersunk) [3 screws per stud starting 8" from the edge]	2x4 wood (SPF) + wood furring (3/4" thick x min 4" wide)[8,9]	16	37.1	0-15	160	145	132	124	113	102
								20	160	141	129	124	109	100
								25	160	138	127	124	107	98
								30	160	135	125	124	105	96
								35	157	133	123	122	103	95
								40	154	132	121	119	102	94
								45	151	130	120	117	101	93
								50	149	128	119	115	99	92
								55	147	127	118	114	99	91
								60	145	126	117	113	98	91
								65	128	112	104	99	87	80
								70	127	111	103	98	86	80
								75	126	110	103	97	85	80
								80	124	109	102	96	84	79
								85	123	108	102	95	84	79
Reveal Panel System	7/16	47.5	#8 x 1-5/8" long buglehead screw, 0.390" HD, countersunk with head of screw to be 1-1.5mm below panel's surface	Configuration 8 (Countersunk) [4 screws per stud starting 6" from the edge]	2x4 wood (SPF) + wood furring (3/4" thick x min 4" wide)[8,9]	16	44.8	0-15	176	160	145	136	124	112
								20	176	155	142	136	120	110
								25	176	152	139	136	118	108
								30	176	149	137	136	115	106
								35	172	147	135	134	114	105
								40	169	145	133	131	112	103
								45	166	143	132	129	111	102
								50	164	141	131	127	109	101
								55	162	140	130	125	108	101
								60	160	139	129	124	107	100
								65	141	123	114	109	95	88
								70	140	122	114	108	94	88
								75	138	121	113	107	93	87
								80	137	120	112	106	93	87
								85	135	119	112	105	92	86
Reveal Panel System	7/16	47.5	#8 x 1-5/8" long buglehead screw, 0.390" HD, countersunk with head of screw to be 1-1.5mm below panel's surface	Configuration 9 (Countersunk) [3 screws per stud starting 8" from the edge]	2x4 wood (SPF) + wood furring (3/4" thick x min 4" wide)[8,9]	24	36.7	0-15	159	145	131	123	112	102
								20	159	141	128	123	109	99
								25	159	138	126	123	107	98
								30	159	135	124	123	104	96
								35	156	133	122	121	103	95
								40	153	131	121	119	101	94
								45	151	129	120	117	100	93
								50	148	128	118	115	99	92
								55	146	127	117	113	98	91
								60	145	125	117	112	97	90
								65	128	111	103	99	86	80
								70	126	110	103	98	85	80
								75	125	109	102	97	85	79
								80	124	108	101	96	84	79
								85	123	108	101	95	83	78

Reveal® Panel System

All national, state, and local building code requirements must be followed and where they are more stringent than the Reveal® Panel System installation requirements, state and local requirements will take precedence.

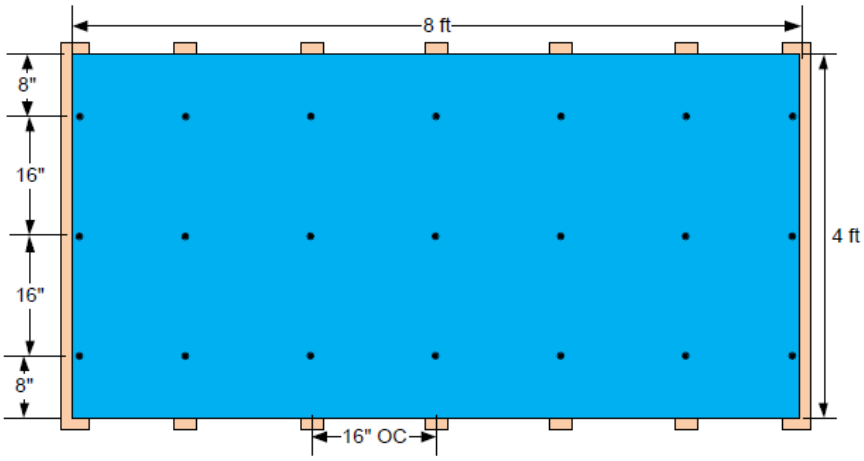
Table 3, Wind Design Table, Countersunk Fastening (continued)

Allowable Wind Speed (mph) for Reveal Panel System (Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 and Part 3)6

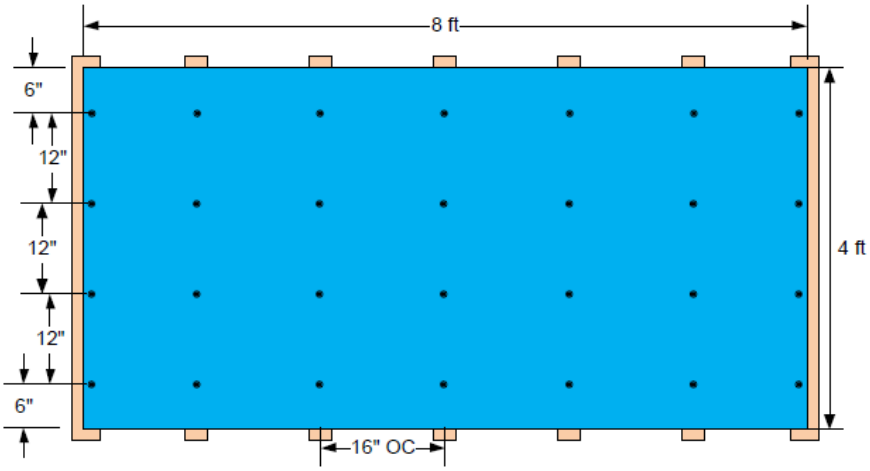
Product	Product Thickness (in.)	Width (in.)	Fastener Type	Fastener Spacing	Frame Type	Stud Spacing (in.)	Allowable Design Load (psf)	Building Height[2,5] (ft.)	2015 IBC & IRC 2012 IBC (Ultimate Design Wind Speed, V_{ult}[3]) Wind exposure			2012 IRC 2009, 2006 IBC & IRC[7] (Basic Wind Speed, V_{asd}[4]) Wind exposure		
									B	C	D	B	C	D
Reveal Panel System	7/16	47.5	#8 x 1-5/8" long buglehead self-tapping screw, 0.390" HD[1], countersunk with head of screw to be 1-1.5mm below panel's surface	Configuration 10 (Countersunk) [3 screws per stud starting 8" from the edge]	Minimum 20 gauge Steel (studs, z-girts or hat channel)	16	42.5	0-15	172	156	141	133	121	110
								20	172	151	138	133	117	107
								25	172	148	136	133	115	105
								30	172	145	133	133	112	103
								35	168	143	132	130	111	102
								40	165	141	130	128	109	101
								45	162	139	129	125	108	100
								50	159	137	127	124	106	99
								55	158	136	126	122	106	98
								60	156	135	125	121	105	97
								65	137	120	111	106	93	86
								70	136	119	111	105	92	86
								75	134	118	110	104	91	85
								80	133	117	109	103	90	85
								85	132	116	109	102	90	84
Reveal Panel System	7/16	47.5	#8 x 1-5/8" long buglehead self-tapping screw, 0.390" HD[1], countersunk with head of screw to be 1-1.5mm below panel's surface	Configuration 11 (Countersunk) [3 screws per stud starting 8" from the edge]	Minimum 20 gauge Steel (studs, z-girts or hat channel)	24	33.2	0-15	152	138	125	117	107	97
								20	152	134	122	117	104	95
								25	152	131	120	117	101	93
								30	152	128	118	117	99	91
								35	148	126	116	115	98	90
								40	146	124	115	113	96	89
								45	143	123	114	111	95	88
								50	141	122	113	109	94	87
								55	139	120	112	108	93	87
								60	138	119	111	107	92	86
								65	121	106	-	94	82	-
								70	120	105	-	93	81	-
								75	119	104	-	92	80	-
								80	118	103	-	91	80	-
								85	117	102	-	90	79	-

1. Screws shall penetrate the metal framing at least three full threads.
2. Building height = mean roof height (in feet) of a building, except that eave height shall be used for roof angle Θ less than or equal to 10° (2-12 roof slope).
3. V_{ult} = ultimate design wind speed.
4. V_{asd} = nominal design wind speed.
5. Linear interpolation of building height and wind speed is permitted.
6. Wind speed design assumptions per Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 and Part 3: K_{zt}=1, K_d=0.85, GC_p=-1.4 (h≤60), GC_p=-1.8 (h>60), GC_{pi}=0.18.
7. 2009 IBC/IRC, 2006 IBC/IRC calculated using Importance Factor, I = 1.
8. Wood furring is preservative treated per AWPA.
9. Wood furring is specific gravity of 0.42 or greater per AFPA/NDS; or wood structural panel, conforming to DOC PS-1 or DOC PS-2 or APA PRP-108.

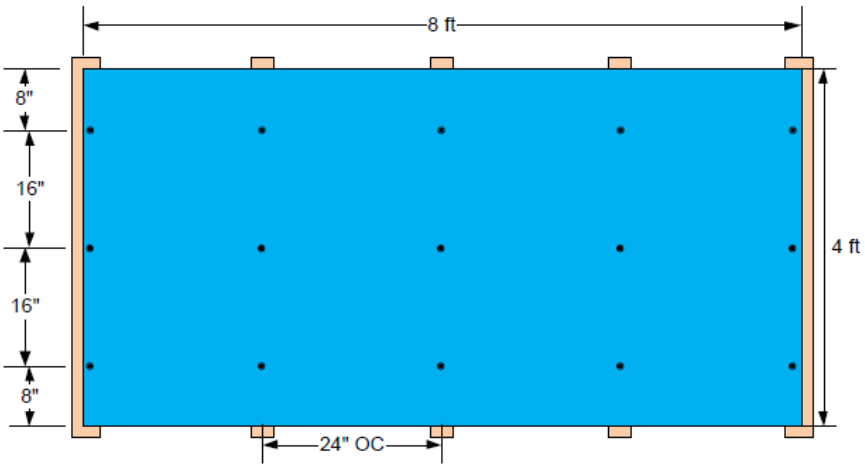
Figure 2, Fastening Configurations, Countersunk Fastening



Configuration 7 (Countersunk): 16" OC Wood Stud Frame – Low Wind Load Design

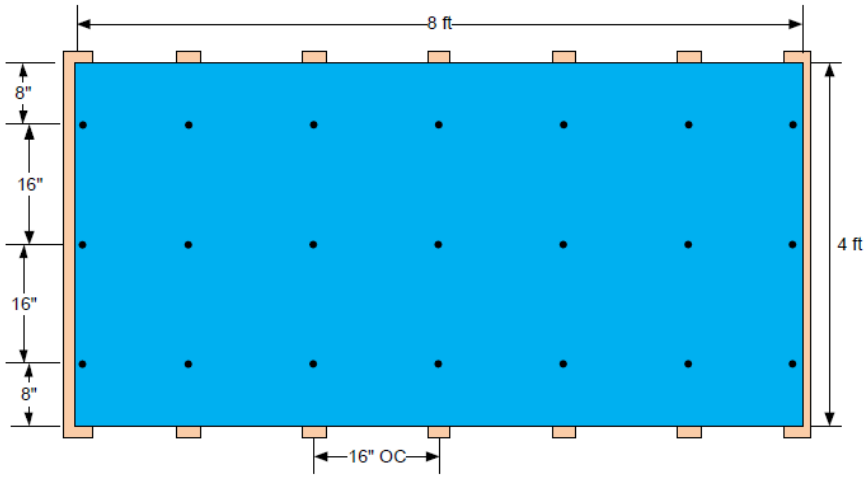


Configuration 8 (Countersunk): 16" OC Wood Stud Frame – High Wind Load Design

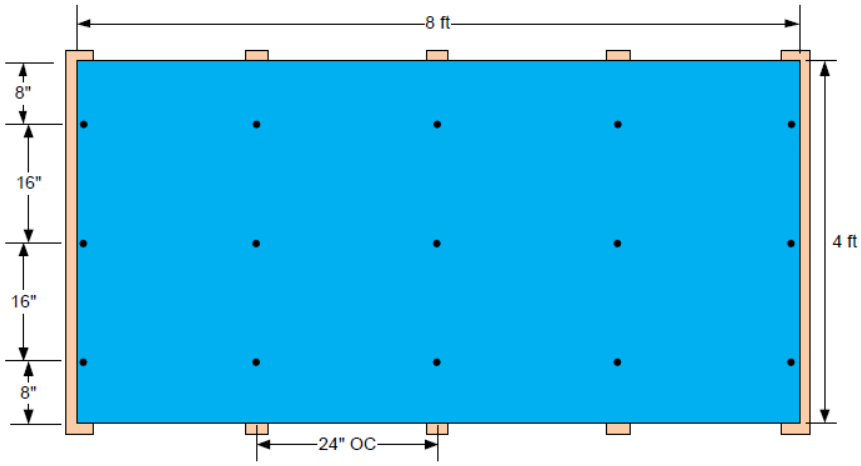


Configuration 9 (Countersunk): 24" OC Wood Stud Frame

Figure 2, Fastening Configurations, Countersunk Fastening (continued)



Configuration 10 (Countersunk): 16" OC Steel Stud Frame



Configuration 11 (Countersunk): 24" OC Steel Stud Frame