Code Compliance Research Report CCRR-0258

Issued: 10-31-2016
Renewal Due: 10-31-2018
Revised: 11-21-2017

DIVISION: 07 00 00 -THERMAL AND MOISTURE PROTECTION
Section: 07 45 00 – Fiber-reinforced Cementitious Panels

REPORT HOLDER:
Nichiha USA Inc.
6465 E. Johns Crossing, Suite 250
Johns Creek, Georgia 30097
www.nichiha.com

REPORT SUBJECT:
NichiProducts™ Fiber-Cement Siding Products

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2018, 2015, and 2012 *International Building Code®* (IBC)
- 2018, 2015, and 2012 *International Residential Code®* (IRC)
- 2017 and 2014 *Florida Building Code* – Building (FBC) and Residential (FRC) (see Section 9)
- 2016 and 2013 *California Building Code* – Building (CBC) and Residential (CRC) (see Section 9)

NOTE: This report references 2018 Code sections with [2015] Code sections shown in brackets where they differ.

1.2 The NichiProducts™ siding products described in this report have been evaluated for the following properties (see Table 1):

- Physical properties
- Wind resistance
- Surface burning characteristics
- Noncombustibility
- Weather protection
- Fire-resistance-rated construction

1.3 The NichiProducts™ siding products have been evaluated for the following uses (see Table 1):

- Use as an exterior wall covering in accordance with IBC Section 1405.16 and IRC Section R703.10.
- Use on exterior walls in Types I, II, III, and IV construction
- Use on exterior walls permitted to be of Type V construction.
- Use on walls required to be of fire-resistance-rated construction.

2.0 STATEMENT OF COMPLIANCE

The NichiProducts™ siding products recognized in this report comply with the Codes listed in Section 1.1, for the properties stated in Section 1.2, and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.

3.0 DESCRIPTION

3.1 NichiProducts™ Fiber Cement Siding Products:

The siding products are used for lap and panel siding. A description of the siding products, their dimensions and their intended application is in Table 2.

4.0 PERFORMANCE CHARACTERISTICS

4.1 Physical Properties: The siding products comply with ASTM C1186, Type A, Grade II, in accordance with IBC Section 1403.10 [1404.10] and IRC Section R703.10.

4.2 Wind Resistance: The maximum allowable wind pressure for each of the siding products is described in Tables 3, 4, 5 and 6.

4.3 Surface Burning Characteristics: The siding products have a flame spread index of 0 and a smoke-developed index of 0, when tested in accordance with ASTM E84.

4.4 Noncombustibility: The siding products are noncombustible building construction materials complying with IBC Section 703.5 as determined by testing in accordance with ASTM E136.

4.5 Weather Protection: Siding products are installed in accordance with Section 5.2 of this report.

4.6 Fire-resistance-rated Construction: Fire-resistance-rated construction is outside the scope of this report.

5.0 INSTALLATION

5.1 General:

The siding must be installed in accordance with the Nichiha USA Inc., published installation instructions, the applicable Code, and this Research Report. A copy of the manufacturer's instructions must be available on the jobsite during installation.

5.2 Application:

Under the IBC, the siding products must be installed over a water-resistive barrier complying with Sections 1403.2 [1404.2] and 1402.5 [1403.5], and must be attached as described for the specific assembly in Tables 3, 4, 5, and 6.

Under the IRC, the siding products must be installed over a water-resistive barrier complying with Section R703.2. Lap siding and panel siding may be installed as described in Table R703.3(1) [R703.4], for areas in which the design pressure does not exceed 30 psf and the mean roof height does not exceed the limits in Table R703.3.1, or as described in Tables 3 through 6. For conditions that exceed these limits, the panels must be installed as described in Table 7.

6.0 CONDITIONS OF USE

6.1 Installation must comply with this Research Report, the manufacturer's published installation instructions, and the applicable Code. In the event of a conflict, this report governs.

6.2 When allowable wind speed is determined in accordance with Table 3, the allowable wind speed must be equal to or greater than the design wind speed calculated in accordance with the applicable Code.

6.3 When the wall construction includes a combustible water-resistive barrier and is required to be of Type I, II, III, or IV construction, use of the siding products is limited to a maximum 40 feet in height above grade plane except under the 2018 [2015] IBC where data has been presented to the building official demonstrating compliance with the Exception to Section 1402.5 [1403.5].

6.4 The NichiProducts™ siding products are produced under a quality control program with inspections by Intertek Testing Services NA, Inc.

7.0 SUPPORTING EVIDENCE

7.1 Reports of tests in accordance with ASTM C1186, ASTM E84, ASTM E136, and ASTM E330.

7.2 Data in accordance with the ICC-ES Acceptance Criteria for Fiber Cement Siding Used as Exterior Wall Siding (AC90), dated June 2012 (editorially revised September 2015).

7.3 Intertek Listing Report "Nichiha NichiProducts™ Fiber Cement Siding Products" on the Intertek Directory of Building Products.

7.4 Documentation of an Intertek approved quality control system for the manufacturing of products recognized in this report.

8.0 IDENTIFICATION

The NichiProducts™ siding products are identified with the Nichiha USA Inc., name, and address, the product name, the Intertek Mark as shown below, and the Code Compliance Research Report number (CCRR-0258).

CODE COMPLIANCE
Intertek
CCRR-0258

9.0 OTHER CODES

9.1 California Building Code

9.1.1 Scope of Evaluation:

The NichiProducts™ siding products were evaluated for compliance with the 2016 and 2013 California Building Code, including Chapter 7A. The siding products are noncombustible materials as defined in CBC Section 202 and as permitted for use on exterior walls in CBC Section 707A.3.

9.1.2 Conclusion:

The siding products, described in Sections 2.0 through 7.0 of this report, comply with the 2016 and 2013 California Building Code, subject to the conditions noted in Section 6.0 of this report. Section numbers for the CBC – Building and Residential correspond to the 2015 IBC and IRC section numbers.

9.2 Florida Building Code

9.2.1 Scope of Evaluation:

The NichiProducts™ siding products were evaluated for compliance with the 2017 and 2014 *Florida Building Code – Building, Florida Building Code – Residential* and *Florida Building Code – Energy Conservation.*

9.2.2 Conclusion:

The siding products described in Sections 2.0 through 7.0 of this report, comply with the 2017 and 2014 *Florida Building Code – Building, Florida Building Code – Residential* and *Florida Building Code – Energy*, subject to the following conditions:

- Use of the siding product for compliance with the High-Velocity Hurricane Zone provisions of the 2017 and 2014 *Florida Building Code – Building* and the *Florida Building Code – Residential* has not been evaluated, and is outside the scope of this Research Report.
- Section numbers for the FBC – Building and Residential correspond to the 2015 IBC and IRC section numbers.
- Intertek is a quality assurance entity approved by the Florida Building Commission.

10.0 CODE COMPLIANCE RESEARCH REPORT USE

10.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

10.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

10.3 Reference to the https://bpdirectory.intertek.com is recommended to ascertain the current version and status of this report.

TABLE 1 – PROPERTIES EVALUATED

PROPERTY	2018 and 2015 IBC SECTION[1]	2018 and 2015 IRC SECTION[1]	2017 and 2014 FBC - Building	2017 and 2014 FBC – Residential	2016 and 2013 CBC
Physical properties	1403.10 [1404.10]	R703.10	1404.10	R703.10	1404.10
Surface burning characteristics	1403.10 [1404.10]	R703.10	1404.10	R703.10	1404.10
Noncombustibility	703.5	NA	703.5	NA	202, 703.5
Wind resistance	1404.16 [1405.16]	R703.16	1405.16	703.1.2	1405.16
Weather resistance	1403.2 [1404.2]	R703.2	1404.2	R703.2	1404.2

[1] Section numbers may be different for earlier versions of the International and Florida Codes.

TABLE 2 – NICHIHA SIDING DESCRIPTION

Product Name	Nominal Thickness (in.)	Siding Dimensions	Intended Use	Description
NichiBoard™ plank	5/16	Width: 5.25, 6.25, 7.25, 8.25, 9.25 and 12 inches Length: 12 feet	Lap siding	Smooth or Cedar finish
NichiPanel™ sheets	5/16	4 feet by 8 feet 4 feet by 10 feet 4 feet by 12 feet	Panel siding	Cedar, Smooth, Stucco and Grooved- 8-in.- oc- Cedar finish
NichiStraight™ and NichiStaggered™ lap panels	5/16	16 inches wide by 4 foot long	Lap panel siding	Designed to look like individual cedar shakes
NichiShake™ cladding	5/16	Width: 6.25, 8.25 and 12 inches Length: 18 inches	Lap shingle siding	Designed to look like individual cedar shakes

Table 3 - Design Loads for Negative Transverse Wind Load (NichiBoard™ Plank)[1,4,7]

Siding Type	Siding Fastener[5]	Face/Blind	Effective Fastener Frame/ Horizontal (in)	Effective Fastener Field (in)	Framing Type	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed Exp B	ASCE 7-05 Basic Wind Speed Exp C	ASCE 7-05 Basic Wind Speed Exp D	ASCE 7-10 Ultimate Exp B	ASCE 7-10 Ultimate Exp C	ASCE 7-10 Ultimate Exp D
5.25" / 6.25" NichiBoard™	6d Double HD MAZE Coil Nail	Face	16	5.25/6.25	SPF	-49.5	15	143	130	118	185	168	153
							20	143	126	115	185	163	149
							25	143	124	113	185	160	146
							30	143	121	111	185	156	144
							40	138	118	109	178	152	140
							50	133	115	106	172	148	137
							60	130	113	105	168	146	135
					DF	-76.5	15	170	162	147	210	209	190
							20	170	157	144	210	203	185
							25	170	154	141	210	199	182
							30	170	151	139	210	195	179
							40	170	146	135	210	189	174
							50	166	143	132	210	184	171
							60	162	140	130	209	181	168
			24	5.25/6.25	SPF	-33.0	15	117	106	97	151	137	125
							20	117	103	94	151	133	122
							25	117	101	93	151	130	119
							30	117	99	91	151	128	117
							40	112	96	89	145	124	114
							50	109	94	87	141	121	112
							60	106	92	86	137	119	110
					DF	-51.0	15	146	132	120	188	171	155
							20	146	128	117	188	166	151
							25	146	126	115	188	162	149
							30	146	123	113	188	159	146
							40	140	119	110	180	154	142
							50	135	117	108	175	151	140
							60	132	115	106	171	148	137
5.25" / 6.25" NichiBoard™	6d Double HD MAZE Coil Nail	Blind	16	5.25/6.25	SPF	-35.1	15	121	110	100	156	142	129
							20	121	107	97	156	138	126
							25	121	104	96	156	135	123
							30	121	102	94	156	132	121
							40	116	99	92	150	128	118
							50	112	97	90	145	125	116
							60	110	95	88	142	123	114
			24	5.25/6.25	SPF	-23.4	15	99	90	--	127	116	--
							20	99	87	--	127	112	--
							25	99	85	--	127	110	--
							30	99	--	--	127	108	--
							40	95	--	--	122	--	--
							50	92	--	--	118	--	--
							60	90	--	--	116	--	--

Table 3 - Continued (NichiBoard™ Plank)[1,4,7]

Siding Type	Siding Fastener[5]	Face/Blind	Effective Fastener Spacing		Framing Type	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
			Frame/Horizontal (in)	Field (in)				Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
5.25" / 6.25" NichiBoard™	Double HD MAZE Asphalt & Fiberglass Shingle Nail	Blind	12	5.25/6.25	7/16" OSB	-41.0	15	130	118	108	168	153	139
							20	130	115	105	168	149	136
							25	130	113	103	168	145	133
							30	130	110	101	168	142	131
							40	125	107	99	162	138	128
							50	121	105	97	157	135	125
							60	118	103	95	153	133	123
			16	5.25/6.25	7/16" OSB	-30.7	15	113	103	93	146	132	120
							20	113	100	91	146	129	117
							25	113	98	89	146	126	115
							30	113	96	88	146	123	113
							40	108	93	86	140	120	111
							50	105	91	--	136	117	108
							60	103	89	--	132	115	107
					SPF	-56.1	15	153	139	126	197	179	163
							20	153	135	123	197	174	159
							25	153	132	121	197	170	156
							30	153	129	119	197	167	153
							40	147	125	116	189	162	149
							50	142	122	113	183	158	146
							60	139	120	112	179	155	144
			24	5.25/6.25	7/16" OSB	-20.5	15	92	--	--	119	108	--
							20	92	--	--	119	105	--
							25	92	--	--	119	--	--
							30	92	--	--	119	--	--
							40	89	--	--	114	--	--
							50	86	--	--	111	--	--
							60	--	--	--	108	--	--
					SPF	-37.4	15	125	113	103	161	146	133
							20	125	110	100	161	142	130
							25	125	108	99	161	139	127
							30	125	105	97	161	136	125
							40	120	102	94	154	132	122
							50	116	100	93	150	129	119
							60	113	98	91	146	127	118
5.25" / 6.25" NichiBoard™	Aerosmith Fastening Systems, VersaPin	Face	16	5.256.25	20 GA Steel	-136.3	15	170	170	170	210	210	210
							20	170	170	170	210	210	210
							25	170	170	170	210	210	210
							30	170	170	170	210	210	210
							40	170	170	170	210	210	210
							50	170	170	170	210	210	210
							60	170	170	170	210	210	210
			24	5.25/6.25	20 GA Steel	-90.9	15	170	170	160	210	210	207
							20	170	170	156	210	210	202
							25	170	168	154	210	210	198
							30	170	164	151	210	210	195
							40	170	159	147	210	206	190
							50	170	156	144	210	201	186
							60	170	153	142	210	197	183
		Blind	16	5.25/6.25	20 GA Steel	-27.5	15	107	97	88	138	125	114
							20	107	94	86	138	122	111
							25	107	92	--	138	119	109
							30	107	90	--	138	117	107
							40	103	88	--	132	113	--
							50	99	86	--	128	111	--
							60	97	--	--	125	109	--

Table 3 - Continued (NichiBoard™ Plank)[1,4,7]

Siding Type	Siding Fastener[5]	Face/Blind	Effective Fastener Spacing		Framing Type	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
			Frame/Horizontal (in)	Field (in)				Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
7.25" NichiBoard™	6d Double HD MAZE Coil Nail	Face	16	7.25	SPF	-42.7	15	133	121	110	172	156	142
							20	133	117	107	172	152	138
							25	133	115	105	172	148	136
							30	133	113	103	172	145	134
							40	128	109	101	165	141	130
							50	124	107	99	160	138	128
							60	121	105	97	156	135	126
					DF	-66.0	15	166	150	136	210	194	176
							20	166	146	133	210	188	172
							25	166	143	131	210	184	169
							30	166	140	129	210	181	166
							40	159	136	125	205	175	162
							50	154	133	123	199	171	159
							60	150	130	121	194	168	156
			24	7.25	SPF	-28.4	15	109	99	90	140	127	116
							20	109	96	88	140	124	113
							25	109	94	86	140	121	111
							30	109	92	--	140	119	109
							40	104	89	--	135	115	106
							50	101	87	--	130	112	--
							60	99	86	--	127	110	--
					DF	-44.0	15	135	123	111	175	158	144
							20	135	119	109	175	154	140
							25	135	117	107	175	151	138
							30	135	114	105	175	147	136
							40	130	111	102	167	143	132
							50	126	108	100	162	140	130
							60	123	106	99	158	137	128
		Blind	16	7.25	SPF	-26.1	15	104	95	86	135	122	111
							20	104	92	--	135	119	108
							25	104	90	--	135	116	106
							30	104	88	--	135	114	--
							40	100	85	--	129	110	--
							50	97	--	--	125	108	--
							60	95	--	--	122	106	--

Table 3 - Continued (NichiBoard™ Plank)[1,4,7]

Siding Type	Siding Fastener[5]	Face/Blind	Effective Fastener Spacing Frame/Horizontal (in)	Effective Fastener Spacing Field (in)	Framing Type	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2] Exp B	Exp C	Exp D	ASCE 7-10 Ultimate Wind Speed (MPH)[3] Exp B	Exp C	Exp D
7.25" NichiBoard™	Double HD MAZE Asphalt & Fiberglass Shingle Nail	Blind	12	7.25	7/16" OSB	-35.3	15	121	110	100	156	142	129
							20	121	107	98	156	138	126
							25	121	105	96	156	135	124
							30	121	102	94	156	132	122
							40	116	99	92	150	128	118
							50	113	97	90	145	125	116
							60	110	95	89	142	123	114
			16	7.25	SPF	-32.8	15	117	106	96	151	137	124
							20	117	103	94	151	133	121
							25	117	101	92	151	130	119
							30	117	99	91	151	127	117
							40	112	96	88	145	124	114
							50	109	94	87	140	121	112
							60	106	92	85	137	119	110
			24	7.25	SPF	-25.2	15	102	93	--	132	120	109
							20	102	90	--	132	117	106
							25	102	88	--	132	114	--
							30	102	87	--	132	112	--
							40	98	--	--	127	108	--
							50	95	--	--	123	106	--
							60	93	--	--	120	--	--
	*Double HD MAZE Asphalt & Fiberglass Shingle Nail	Blind	16	7.25	SYP	-54.7	15	151	137	124	195	177	160
							20	151	133	121	195	172	157
							25	151	130	119	195	168	154
							30	151	127	117	195	164	151
							40	145	124	114	187	160	147
							50	140	121	112	181	156	144
							60	137	119	110	177	153	142

***Fasteners shall be located a minimum distance of 3/4" from the vertical siding edges at corners and splices.**

Table 3 - Continued (NichiBoard™ Plank)[1,4,7]

Siding Type	Siding Fastener[5]	Face/Blind	Effective Fastener Spacing		Framing Type	Allowable Des	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
			Frame/Horizontal (in)	Field (in)				Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
7.25" NichiBoard™	Aerosmith Fastening Systems, VersaPin	Face	16	7.25	20 GA Steel	-117.5	15	170	170	170	210	210	210
							20	170	170	170	210	210	210
							25	170	170	170	210	210	210
							30	170	170	170	210	210	210
							40	170	170	167	210	210	210
							50	170	170	164	210	210	210
							60	170	170	162	210	210	209
			24	7.25	20 GA Steel	-78.3	15	170	164	149	210	210	192
							20	170	159	145	210	205	188
							25	170	156	143	210	201	184
							30	170	152	140	210	197	181
							40	170	148	137	210	191	176
							50	168	145	134	210	187	173
							60	164	142	132	210	183	170
8.25" NichiBoard™	6d Double HD MAZE Coil Nail	Face	16	8.25	SPF	-37.5	15	125	113	103	161	146	133
							20	125	110	100	161	142	130
							25	125	108	99	161	139	127
							30	125	105	97	161	136	125
							40	120	102	95	155	132	122
							50	116	100	93	150	129	120
							60	113	98	91	146	127	118
					DF	-58.0	15	155	141	128	200	182	165
							20	155	137	125	200	177	161
							25	155	134	123	200	173	158
							30	155	131	121	200	169	156
							40	149	127	118	192	164	152
							50	144	124	115	186	161	149
							60	141	122	113	182	158	146
			24	8.25	SPF	-25.0	15	102	92	--	132	119	108
							20	102	90	--	132	116	106
							25	102	88	--	132	114	--
							30	102	86	--	132	111	--
							40	98	--	--	126	108	--
							50	95	--	--	122	105	--
							60	92	--	--	119	--	--
					DF	-38.6	15	127	115	104	164	148	135
							20	127	112	102	164	144	132
							25	127	109	100	164	141	129
							30	127	107	98	164	138	127
							40	122	104	96	157	134	124
							50	118	102	94	152	131	121
							60	115	100	93	148	129	120

Table 3 - Continued (NichiBoard™ Plank)[1,4,7]

Siding Type	Siding Fastener[5]	Face/Blind	Effective Fastener Spacing Frame/Horizontal (in)	Effective Fastener Spacing Field (in)	Framing Type	Allowable Des	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2] Exp B	Exp C	Exp D	ASCE 7-10 Ultimate Wind Speed (MPH)[3] Exp B	Exp C	Exp D
8.25" NichiBoard™	Double HD MAZE Asphalt & Fiberglass Shingle Nail	Blind	12	8.25	7/16" OSB	-29.5	15	111	100	91	143	130	118
							20	111	98	89	143	126	115
							25	111	96	87	143	123	113
							30	111	94	86	143	121	111
							40	106	91	--	137	117	108
							50	103	89	--	133	114	106
							60	100	87	--	130	112	--
			16	8.25	SPF	-23.7	15	99	90	--	128	116	106
							20	99	87	--	128	113	--
							25	99	86	--	128	110	--
							30	99	--	--	128	108	--
							40	95	--	--	123	105	--
							50	92	--	--	119	--	--
							60	90	--	--	116	--	--
	*Double HD MAZE Asphalt & Fiberglass Shingle Nail	Blind	16	8.25	SYP	-43.0	15	134	121	110	173	157	142
							20	134	118	108	173	152	139
							25	134	115	106	173	149	136
							30	134	113	104	173	146	134
							40	128	110	101	166	142	131
							50	124	107	99	160	138	128
							60	121	105	98	157	136	126

***Fasteners shall be located a minimum distance of 3/4" from the vertical siding edges at corners and splices.**

Table 3 - Continued (NichiBoard™ Plank)[1,4,7]

Siding Type	Siding Fastener[5]	Face/Blind	Effective Fastener Spacing Frame/Horizontal (in)	Effective Fastener Spacing Field (in)	Framing Type	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2] Exp B	Exp C	Exp D	ASCE 7-10 Ultimate Wind Speed (MPH)[3] Exp B	Exp C	Exp D
8.25" NichiBoard™	Aerosmith Fastening Systems, VersaPin	Face	16	8.25	20 GA Steel	-103.3	15	170	170	170	210	210	210
							20	170	170	167	210	210	210
							25	170	170	164	210	210	210
							30	170	170	161	210	210	208
							40	170	170	157	210	210	203
							50	170	166	154	210	210	199
							60	170	163	151	210	210	195
			24	8.25	20 GA Steel	-68.8	15	169	153	139	210	198	180
							20	169	149	136	210	193	176
							25	169	146	134	210	188	173
							30	169	143	131	210	185	170
							40	162	139	128	210	179	165
							50	157	136	126	203	175	162
							60	153	133	124	198	172	160
9.25" NichiBoard™	6d Double HD MAZE Coil Nail	Face	16	9.25	SPF	-33.4	15	118	107	97	152	138	125
							20	118	104	95	152	134	122
							25	118	102	93	152	131	120
							30	118	100	92	152	129	118
							40	113	97	89	146	125	115
							50	110	94	88	141	122	113
							60	107	93	86	138	120	111
					DF	-51.7	15	147	133	121	189	172	156
							20	147	129	118	189	167	152
							25	147	126	116	189	163	150
							30	147	124	114	189	160	147
							40	141	120	111	182	155	143
							50	136	117	109	176	152	140
							60	133	115	107	172	149	138
			24	9.25	SPF	-22.3	15	96	87	--	124	113	--
							20	96	--	--	124	110	--
							25	96	--	--	124	107	--
							30	96	--	--	124	--	--
							40	92	--	--	119	--	--
							50	89	--	--	115	--	--
							60	87	--	--	113	--	--
					DF	-34.5	15	120	109	99	154	140	127
							20	120	106	96	154	136	124
							25	120	103	95	154	133	122
							30	120	101	93	154	131	120
							40	115	98	91	148	127	117
							50	111	96	89	144	124	115
							60	109	94	87	140	122	113
9.25" NichiBoard™	Double HD MAZE Asphalt & Fiberglass Shingle Nail	Blind	12	9.25	7/16" OSB	-23.5	15	99	90	--	127	116	105
							20	99	87	--	127	112	--
							25	99	85	--	127	110	--
							30	99	--	--	127	108	--
							40	95	--	--	122	--	--
							50	92	--	--	118	--	--
							60	90	--	--	116	--	--

Table 3 - Continued (NichiBoard™ Plank)[1,4,7]

Siding Type	Siding Fastener[5]	Face/Blind	Effective Fastener Spacing		Framing Type	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
			Frame/Horizontal (in)	Field (in)				Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
9.25" NichiBoard™	Aerosmith Fastening Systems, VersaPin	Face	16	9.25	20 GA Steel	-92.1	15	170	170	161	210	210	208
							20	170	170	157	210	210	203
							25	170	169	155	210	210	200
							30	170	165	152	210	210	196
							40	170	160	148	210	207	191
							50	170	157	145	210	202	188
							60	170	154	143	210	199	185
			24	9.25	20 GA Steel	-61.4	15	160	145	132	206	187	170
							20	160	141	129	206	182	166
							25	160	138	126	206	178	163
							30	160	135	124	206	174	160
							40	153	131	121	198	169	156
							50	148	128	119	192	165	153
							60	145	126	117	187	162	151

Table 3 - Continued (NichiBoard™ Plank)[1,4,7]

Siding Type	Siding Fastener[5]	Face/Blind	Effective Fastener Spacing Frame/Horizontal (in)	Effective Fastener Spacing Field (in)	Framing Type	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2] Exp B	Exp C	Exp D	ASCE 7-10 Ultimate Wind Speed (MPH)[3] Exp B	Exp C	Exp D
12" NichiBoard™	6d Double HD MAZE Coil Nail	Face	16	12	SPF	-25.8	15	103	94	85	134	121	110
							20	103	91	--	134	118	108
							25	103	89	--	134	115	106
							30	103	87	--	134	113	--
							40	99	--	--	128	110	--
							50	96	--	--	124	107	--
							60	94	--	--	121	105	--
					DF	-39.8	15	129	117	106	166	151	137
							20	129	113	104	166	147	134
							25	129	111	102	166	143	131
							30	129	109	100	166	140	129
							40	123	106	97	159	136	126
							50	120	103	96	154	133	123
							60	117	101	94	151	131	121
			24	12	SPF	-17.2	15	--	--	--	109	--	--
							20	--	--	--	109	--	--
							25	--	--	--	109	--	--
							30	--	--	--	109	--	--
							40	--	--	--	--	--	--
							50	--	--	--	--	--	--
							60	--	--	--	--	--	--
					DF	-26.6	15	105	95	87	136	123	112
							20	105	93	--	136	120	109
							25	105	91	--	136	117	107
							30	105	89	--	136	115	105
							40	101	86	--	130	111	--
							50	98	--	--	126	109	--
							60	95	--	--	123	107	--
12" NichiBoard™	Aerosmith Fastening Systems, VersaPin	Face	16	12	20 GA Steel	-71.0	15	170	156	142	210	201	183
							20	170	151	138	210	196	179
							25	170	148	136	210	191	175
							30	170	145	133	210	187	172
							40	165	141	130	210	182	168
							50	160	138	128	206	178	165
							60	156	135	126	201	175	162
			24	12	20 GA Steel	-47.3	15	140	127	116	181	164	149
							20	140	124	113	181	160	146
							25	140	121	111	181	156	143
							30	140	119	109	181	153	141
							40	135	115	106	174	149	137
							50	130	112	104	168	145	134
							60	127	110	103	164	142	132

Notes:

1. **NichiBoard™** fiber cement lap siding may only be installed on vertical walls. Fasteners must be installed in a way that does not damage the board during installation. Where necessary, pre-drilled holes may be used in combination with hand-nailed fasteners to avoid damage to the fiber cement product.
2. ASCE 7-05 Basic Wind Speeds are based upon occupancy category II, a wind directionality factor (Kd) equal to 0.85, an internal pressure coefficient (GCpi) equal to +/-0.18, and an external pressure coefficient (GCp) equal to -1.4. The effects of topographic features have not been considered and the wind speed has been limited to 170mph.
3. ASCE 7-10 Ultimate Wind Speeds are based upon a wind directionality factor (Kd) equal to 0.85, an internal pressure coefficient (GCpi) equal to +/-0.18, and an external pressure coefficient (GCp) equal to -1.4. The effects of topographic features have not been considered and the wind speed has been limited to 210mph.
4. The values in this table are based on testing per ASTM E330 and represent the allowable capacity of the siding to resist the wind pressures associated with the corresponding wind speed.
5. Fastener specifications for those used in testing are outlined in Table 7 of this Intertek CCRR. These specifications may be used by the designer of record to determine the acceptability of alternative fasteners.
6. Allowable design pressures in highlighted cells have been adjusted based on the listed allowable withdrawal capacity of the tested fastener.
7. Framing and bracing are beyond the scope of this evaluation report.
8. Allowable design pressures for assemblies described in this table are applicable to the NichiBoard Plank attached to ASTM C90 fully-grouted CMU block wall using ITW Ramset TE Series power actuated fasteners (ICC-ES ESR-1799). Minimum fastener embedment is 1 inch; fasteners must be placed a minimum of 5.1 inches from the edge of the wall.

Table 4 - Design Loads for Negative Transverse Wind Load (NichiPanel™ Sheet)[1,4,7]

Panel Fastener[5]	Fastener Spacing		Framing Type	Framing Spacing	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
	Perimeter (in)	Field (in)					Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
6d Double HD MAZE Coil Nail	6	12	SPF Lumber	16"o.c.	-28.7	15	109	99	90	141	128	116
						20	109	96	88	141	124	113
						25	109	94	86	141	122	111
						30	109	92	--	141	119	109
						40	105	90	--	135	116	107
						50	101	87	--	131	113	--
						60	99	86	--	128	111	--
6d Double HD MAZE Coil Nail	8	8	SPF Lumber	16"o.c.	-43.0	15	134	121	110	173	157	142
						20	134	118	108	173	152	139
						25	134	115	106	173	149	136
						30	134	113	104	173	146	134
						40	128	110	101	166	142	131
						50	124	107	99	160	138	128
						60	121	105	98	157	136	126
				24"o.c.	-30.4	15	112	102	93	145	132	120
						20	112	99	91	145	128	117
						25	112	97	89	145	125	115
						30	112	95	87	145	123	113
						40	108	92	85	139	119	110
						50	105	90	--	135	116	108
						60	102	88	--	132	114	106
6d Double HD MAZE Coil Nail	6	6	SPF Lumber	16"o.c.	-57.3	15	154	140	127	199	181	164
						20	154	136	124	199	176	160
						25	154	133	122	199	172	157
						30	154	130	120	199	168	155
						40	148	127	117	191	163	151
						50	143	124	115	185	160	148
						60	140	121	113	181	157	146
				24"o.c.	-40.6	15	130	118	107	168	152	138
						20	130	115	105	168	148	135
						25	130	112	103	168	145	133
						30	130	110	101	168	142	130
						40	125	107	98	161	138	127
						50	121	104	96	156	134	125
						60	118	102	95	152	132	123
6d Double HD MAZE Coil Nail	4	4	SPF Lumber	16"o.c.	-85.9	15	170	170	156	210	210	201
						20	170	167	152	210	210	196
						25	170	163	149	210	210	193
						30	170	160	147	210	206	189
						40	170	155	143	210	200	185
						50	170	151	140	210	195	181
						60	170	149	138	210	192	178
				24"o.c.	-60.9	15	159	144	131	205	186	169
						20	159	140	128	205	181	165
						25	159	137	126	205	177	162
						30	159	134	124	205	174	159
						40	153	130	120	197	168	156
						50	148	127	118	191	165	152
						60	144	125	116	186	162	150

Table 4 - Continued (NichiPanel™ Sheet)[1,4,7]

Panel Fastener[5]	Fastener Spacing		Framing Type	Framing Spacing	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
	Perimeter (in)	Field (in)					Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
8d Masonite Siding Nails	6	12	SPF Lumber	16"o.c.	-39.9	15	129	117	106	166	151	137
						20	129	114	104	166	147	134
						25	129	111	102	166	143	131
						30	129	109	100	166	141	129
						40	124	106	98	160	136	126
						50	120	103	96	155	133	123
						60	117	101	94	151	131	122
				24"o.c.	-26.6	15	105	95	87	136	123	112
						20	105	93	--	136	120	109
						25	105	91	--	136	117	107
						30	105	89	--	136	115	105
						40	101	86	--	130	111	--
						50	98	--	--	126	109	--
						60	95	--	--	123	107	--
8d Masonite Siding Nails	8	8	SPF Lumber	16"o.c.	-59.9	15	158	143	130	204	185	168
						20	158	139	127	204	180	164
						25	158	136	125	204	176	161
						30	158	133	123	204	172	158
						40	151	129	119	195	167	154
						50	147	126	117	189	163	151
						60	143	124	115	185	160	149
				24"o.c.	-39.9	15	129	117	106	166	151	137
						20	129	114	104	166	147	134
						25	129	111	102	166	143	131
						30	129	109	100	166	141	129
						40	124	106	98	160	136	126
						50	120	103	96	155	133	123
						60	117	101	94	151	131	122
8d Masonite Siding Nails	6	6	SPF Lumber	16"o.c.	-79.9	15	170	165	150	210	210	194
						20	170	161	147	210	207	189
						25	170	157	144	210	203	186
						30	170	154	142	210	199	183
						40	170	149	138	210	193	178
						50	169	146	135	210	188	175
						60	165	143	133	210	185	172
				24"o.c.	-53.3	15	149	135	123	192	174	158
						20	149	131	120	192	169	155
						25	149	128	118	192	166	152
						30	149	126	116	192	162	149
						40	143	122	113	184	158	145
						50	138	119	110	179	154	143
						60	135	117	109	174	151	140

Table 4 - Continued (NichiPanel™ Sheet)[1,4,7]

Panel Fastener[5]	Fastener Spacing		Framing Type	Framing Spacing	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
	Perimeter (in)	Field (in)					Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
8d Masonite Siding Nails	4	4	SPF Lumber	16"o.c.	-119.8	15	170	170	170	210	210	210
						20	170	170	170	210	210	210
						25	170	170	170	210	210	210
						30	170	170	170	210	210	210
						40	170	170	169	210	210	210
						50	170	170	166	210	210	210
						60	170	170	163	210	210	210
				24"o.c.	-79.9	15	170	165	150	210	210	194
						20	170	161	147	210	207	189
						25	170	157	144	210	203	186
						30	170	154	142	210	199	183
						40	170	149	138	210	193	178
						50	169	146	135	210	188	175
						60	165	143	133	210	185	172

Table 4 - Continued (NichiPanel™ Sheet)[1,4,7]

Panel Fastener[5]	Fastener Spacing		Framing Type	Framing Spacing	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
	Perimeter (in)	Field (in)					Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
Grabber #8 Flat Wafer Head Screws	6	12	SPF Lumber	16"o.c.	-55.9	15	152	138	126	197	179	162
						20	152	134	123	197	173	158
						25	152	131	120	197	170	156
						30	152	129	118	197	166	153
						40	146	125	115	189	161	149
						50	142	122	113	183	158	146
						60	138	120	111	179	155	144
				24"o.c.	-37.3	15	124	113	103	161	146	132
						20	124	110	100	161	142	129
						25	124	107	98	161	139	127
						30	124	105	97	161	136	125
						40	119	102	94	154	132	122
						50	116	100	92	149	129	119
						60	113	98	91	146	126	117
			20 GA Steel	16"o.c.	-48.5	15	142	129	117	183	166	151
						20	142	125	114	183	162	148
						25	142	123	112	183	158	145
						30	142	120	110	183	155	142
						40	136	116	108	176	150	139
						50	132	114	105	170	147	136
						60	129	112	104	166	144	134
				24"o.c.	-32.4	15	116	105	96	150	136	123
						20	116	102	93	150	132	121
						25	116	100	92	150	129	118
						30	116	98	90	150	127	116
						40	111	95	88	144	123	113
						50	108	93	86	139	120	111
						60	105	91	--	136	118	109
Grabber #8 Flat Wafer Head Screws	8	8	SPF Lumber	16"o.c.	-83.8	15	170	169	154	210	210	199
						20	170	165	150	210	210	194
						25	170	161	147	210	208	190
						30	170	158	145	210	204	187
						40	170	153	141	210	198	182
						50	170	149	138	210	193	179
						60	169	147	136	210	190	176
				24"o.c.	-55.9	15	152	138	126	197	179	162
						20	152	134	123	197	173	158
						25	152	131	120	197	170	156
						30	152	129	118	197	166	153
						40	146	125	115	189	161	149
						50	142	122	113	183	158	146
						60	138	120	111	179	155	144
			20 GA Steel	16"o.c.	-72.8	15	170	158	143	210	204	185
						20	170	153	140	210	198	181
						25	170	150	137	210	194	177
						30	170	147	135	210	190	174
						40	167	143	132	210	184	170
						50	162	139	129	209	180	167
						60	158	137	127	204	177	164
				24"o.c.	-48.5	15	142	129	117	183	166	151
						20	142	125	114	183	162	148
						25	142	123	112	183	158	145
						30	142	120	110	183	155	142
						40	136	116	108	176	150	139
						50	132	114	105	170	147	136
						60	129	112	104	166	144	134

Table 4 - Continued (NichiPanel™ Sheet)[1,4,7]

Panel Fastener[5]	Fastener Spacing		Framing Type	Framing Spacing	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
	Perimeter (in)	Field (in)					Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
Grabber #8 Flat Wafer Head Screws	6	6	SPF Lumber	16"o.c.	-111.8	15	170	170	170	210	210	210
						20	170	170	170	210	210	210
						25	170	170	170	210	210	210
						30	170	170	167	210	210	210
						40	170	170	163	210	210	210
						50	170	170	160	210	210	207
						60	170	170	158	210	210	203
				24"o.c.	-74.5	15	170	160	145	210	206	187
						20	170	155	142	210	200	183
						25	170	152	139	210	196	180
						30	170	149	137	210	192	176
						40	169	144	133	210	186	172
						50	164	141	131	210	182	169
						60	160	138	129	206	179	166
			20 GA Steel	16"o.c.	-97.0	15	170	170	166	210	210	210
						20	170	170	162	210	210	209
						25	170	170	159	210	210	205
						30	170	170	156	210	210	201
						40	170	165	152	210	210	196
						50	170	161	149	210	208	192
						60	170	158	147	210	204	189
				24"o.c.	-64.6	15	164	149	135	210	192	174
						20	164	145	132	210	187	170
						25	164	141	130	210	183	167
						30	164	138	127	210	179	164
						40	157	134	124	203	174	160
						50	152	131	122	197	170	157
						60	149	129	12	192	167	155
Grabber #8 Flat Wafer Head Screws	4	4	SPF Lumber	16"o.c.	-136.0	15	170	170	170	210	210	210
						20	170	170	170	210	210	210
						25	170	170	170	210	210	210
						30	170	170	170	210	210	210
						40	170	170	170	210	210	210
						50	170	170	170	210	210	210
						60	170	170	170	210	210	210
				24"o.c.	-90.6	15	170	170	160	210	210	207
						20	170	170	156	210	210	202
						25	170	167	153	210	210	198
						30	170	164	151	210	210	195
						40	170	159	147	210	206	190
						50	170	156	144	210	201	186
						60	170	153	142	210	197	183
			20 GA Steel	16"o.c.	-136.0	15	170	170	170	210	210	210
						20	170	170	170	210	210	210
						25	170	170	170	210	210	210
						30	170	170	170	210	210	210
						40	170	170	170	210	210	210
						50	170	170	170	210	210	210
						60	170	170	170	210	210	210
				24"o.c.	-90.6	15	170	170	160	210	210	207
						20	170	170	156	210	210	202
						25	170	167	153	210	210	198
						30	170	164	151	210	210	195
						40	170	159	147	210	206	190
						50	170	156	144	210	201	186
						60	170	153	142	210	197	183

Table 4 - Continued (NichiPanel™ Sheet)[1,4,7]

Panel Fastener[5]	Fastener Spacing		Framing Type	Framing Spacing	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
	Perimeter (in)	Field (in)					Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
Aerosmith Fastening Systems, VersaPin	6	12	20 GA Steel	16"o.c.	-29.3	15	110	100	91	142	129	117
						20	110	97	89	142	126	115
						25	110	95	87	142	123	113
						30	110	93	86	142	120	111
						40	106	90	--	137	117	108
						50	102	88	--	132	114	106
						60	100	87	--	129	112	--
Aerosmith Fastening Systems, VersaPin	8	8	20 GA Steel	16"o.c.	-43.9	15	135	123	111	174	158	144
						20	135	119	109	174	154	140
						25	135	117	107	174	150	138
						30	135	114	105	174	147	135
						40	130	111	102	167	143	132
						50	126	108	100	162	140	129
						60	123	106	99	158	137	127
Aerosmith Fastening Systems, VersaPin	6	6	20 GA Steel	16"o.c.	-58.5	15	156	141	129	201	183	166
						20	156	137	126	201	178	162
						25	156	135	123	201	174	159
						30	156	132	121	201	170	156
						40	150	128	118	193	165	152
						50	145	125	116	187	161	149
						60	141	123	114	183	158	147
Aerosmith Fastening Systems, VersaPin	4	4	20 GA Steel	16"o.c.	-87.9	15	170	170	158	210	210	203
						20	170	169	154	210	210	199
						25	170	165	151	210	210	195
						30	170	161	148	210	208	192
						40	170	157	145	210	202	187
						50	170	153	142	210	198	183
						60	170	150	140	210	194	180
				24"o.c.	-35.6	15	122	110	100	157	143	129
						20	122	107	98	157	139	126
						25	122	105	96	157	136	124
						30	122	103	95	157	133	122
						40	117	100	92	151	129	119
						50	113	98	90	146	126	117
						60	110	96	89	143	124	115

Notes:

1. **NichiPanel™** fiber cement flat sheet siding may only be installed on vertical walls. Fasteners must be installed in a way that does not damage the board during installation. Where necessary, pre-drilled holes may be used in combination with hand-nailed fasteners to avoid damage to the fiber cement product.
2. ASCE 7-05 Basic Wind Speeds are based upon occupancy category II, a wind directionality factor (Kd) equal to 0.85, an internal pressure coefficient (Gcpi) equal to +/-0.18, and an external pressure coefficient (GCp) equal to -1.4. The effects of topographic features have not been considered and the wind speed has been limited to 170mph.
3. ASCE 7-10 Ultimate Wind Speeds are based upon a wind directionality factor (Kd) equal to 0.85, an internal pressure coefficient (Gcpi) equal to +/-0.18, and an external pressure coefficient (GCp) equal to -1.4. The effects of topographic features have not been considered and the wind speed has been limited to 210mph.
4. The values in this table are based on testing per ASTM E330 and represent the allowable capacity of the siding to resist the wind pressures associated with the corresponding wind speed.
5. Fastener specifications for those used in testing are outlined in Table 7 of this Intertek CCRR. These specifications may be used by the designer of record to determine the acceptability of alternative fasteners.
6. Allowable design pressures in highlighted cells have been adjusted based on the listed allowable withdrawal capacity of the tested fastener.
7. Framing and bracing are beyond the scope of this evaluation report.
8. Allowable design pressures for assemblies described in this table are applicable to the NichiPanel attached to ASTM C90 fully-grouted CMU block wall using ITW Ramset TE Series power actuated fasteners (ICC-ES ESR-1799). Minimum fastener embedment is 1 inch; fasteners must be placed a minimum of 5.1 inches from the edge of the wall.

Table 5 - Design Loads for Negative Transverse Wind Load (NichiStraight™/NichiStaggered™ Lap Panel)[1,4,7]

Siding Type	Siding Fastener[5]	Face/Blind	Effective Fastener Spacing		Framing Type	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
			Frame/Horizontal (in)	Field (in)				Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
NichiStraight™/ NichiStaggered™	6d Double HD MAZE Coil Nail	Blind	12	8.625	7/16" OSB	-23.5	15	99	90	--	128	116	105
							20	99	87	--	128	113	--
							25	99	85	--	128	110	--
							30	99	--	--	128	108	--
							40	95	--	--	122	--	--
							50	92	--	--	119	--	--
							60	90	--	--	116	--	--
			16	8.625	SPF	-35.9	15	122	111	101	158	143	130
							20	122	108	98	158	139	127
							25	122	105	96	158	136	125
							30	122	103	95	158	133	122
							40	117	100	92	151	129	119
							50	113	98	91	146	126	117
							60	111	96	89	143	124	115
			24	8.625	SPF	-23.9	15	100	90	--	129	117	106
							20	100	88	--	129	113	--
							25	100	86	--	129	111	--
							30	100	--	--	129	109	--
							40	96	--	--	123	106	--
							50	93	--	--	120	--	--
							60	90	--	--	117	--	--
NichiStraight™/ NichiStaggered™	6d Ring Shank Double HD MAZE Coil Nail	Blind	12	8.625	7/16" OSB	-24.9	15	102	92	--	131	119	108
							20	102	90	--	131	116	106
							25	102	88	--	131	113	--
							30	102	86	--	131	111	--
							40	98	--	--	126	108	--
							50	95	--	--	122	105	--
							60	92	--	--	119	--	--
NichiStraight™/ NichiStaggered™	#8-18 Wafer Head ROCK-ON™ Screws	Blind	24	8.625	20 GA Steel	-49.6	15	144	130	118	185	168	153
							20	144	127	116	185	163	149
							25	144	124	114	185	160	147
							30	144	121	112	185	157	144
							40	138	118	109	178	152	140
							50	133	115	107	172	149	138
							60	130	113	105	168	146	136

Notes:

1. **NichiStraight™/NichiStaggered™ Lap Panel** fiber cement siding may only be installed on vertical walls. Fasteners must be installed in a way that does not damage the board during installation. Where necessary, pre-drilled holes may be used in combination with hand-nailed fasteners to avoid damage to the fiber cement product.
2. ASCE 7-05 Basic Wind Speeds are based upon occupancy category II, a wind directionality factor (Kd) equal to 0.85, an internal pressure coefficient (Gcpi) equal to +/-0.18, and an external pressure coefficient (GCp) equal to -1.4. The effects of topographic features have not been considered and the wind speed has been limited to 170mph.
3. ASCE 7-10 Ultimate Wind Speeds are based upon a wind directionality factor (Kd) equal to 0.85, an internal pressure coefficient (Gcpi) equal to +/-0.18, and an external pressure coefficient (GCp) equal to -1.4. The effects of topographic features have not been considered and the wind speed has been limited to 210mph.
4. The values in this table are based on testing per ASTM E330 and represent the allowable capacity of the siding to resist the wind pressures associated with the corresponding wind speed.
5. Fastener specifications for those used in testing are outlined in Table 7 of this Intertek CCRR. These specifications may be used by the designer of record to determine the acceptability of alternative fasteners.
6. Allowable design pressures in highlighted cells have been adjusted based on the listed allowable withdrawal capacity of the tested fastener.
7. Framing and bracing are beyond the scope of this evaluation report.
8. Allowable design pressures for assemblies described in this table are applicable to the NichiStraight/NichiStaggered lap panels attached to ASTM C90 fully-grouted CMU block wall using ITW Ramset TE Series power actuated fasteners (ICC-ES ESR-1799). Minimum fastener embedment is 1 inch; fasteners must be placed a minimum of 5.1 inches from the edge of the wall.

Table 6 - Design Loads for Negative Transverse Wind Load (NichiShake™ Shingles)[1,4,7]

Siding Fastener[5]	Fasteners per Shake			Sheathing Type	Allowable Design Pressure (psf)[6]	Building Height (ft)	ASCE 7-05 Basic Wind Speed (MPH)[2]			ASCE 7-10 Ultimate Wind Speed (MPH)[3]		
	6-1/4" Width	8-1/4" Width	12" Width				Exp B	Exp C	Exp D	Exp B	Exp C	Exp D
6d Double HD MAZE Coil Nail	2	2	3	7/16" OSB	-30.6	15	113	102	93	146	132	120
						20	113	99	91	146	128	117
						25	113	97	89	146	126	115
						30	113	95	88	146	123	113
						40	108	93	85	140	119	110
						50	105	90	--	135	117	108
						60	102	89	--	132	115	106

Notes:

1. **NichiShake™** fiber-cement shingle siding may only be installed on vertical walls. Fasteners must be installed in a way that does not damage the board during installation. Where necessary, pre-drilled holes may be used in combination with hand-nailed fasteners to avoid damage to the fiber cement product.
2. ASCE 7-05 Basic Wind Speeds are based upon occupancy category II, a wind directionality factor (Kd) equal to 0.85, an internal pressure coefficient (GCpi) equal to +/- 0.18, and an external pressure coefficient (GCp) equal to -1.4. The effects of topographic features have not been considered and the wind speed has been limited to 170mph.
3. ASCE 7-10 Ultimate Wind Speeds are based upon a wind directionality factor (Kd) equal to 0.85, an internal pressure coefficient (GCpi) equal to +/-0.18, and an external pressure coefficient (GCp) equal to -1.4. The effects of topographic features have not been considered and the wind speed has been limited to 210mph.
4. The values in this table are based on testing per ASTM E330 and represent the allowable capacity of the siding to resist the wind pressures associated with the corresponding wind speed.
5. Fastener specifications for those used in testing are outlined in Table 7 of this Intertek CCRR. These specifications may be used by the designer of record to determine the acceptability of alternative fasteners.
6. Allowable design pressures in highlighted cells have been adjusted based on the listed allowable withdrawal capacity of the tested fastener.
7. Framing and bracing are beyond the scope of this evaluation report.

Table 7 -Specifications of Tested Fasteners

Siding Fastener	Length (in)	Head Diameter (in)	Shank Diameter (in)	Material[1,2,3]	Siding Type[5]	Minimum Fastener Penetration into Material (in)	Fastener Withdrawal Value (lbs)
6d Double HD MAZE Coil Nail	2	0.237	0.099	SPF	NichiPanel™	1 11/16	42.2
					NichiBoard™ (Face)	1 3/8	34.4
					NichiBoard™ (Blind)	1 11/16	42.2
					NichiStraight™/ NichiStaggered™	1 3/8	34.4
				DF	NichiBoard™ (Face)	1 3/8	53.1
					NichiBoard™ (Blind)	1 11/16	65.2
				7/16" OSB	NichiStraight™/ NichiStaggered™	7/16	16.9
				7/16" OSB	NichiShake™	7/16	16.9
	2.5	0.236	0.097	SPF	NichiBoard™ (Face)	1 7/8	45.9
					NichiBoard™ (Blind)	2 3/16	53.6
6d Ring Shank Double HD MAZE Coil Nail	2	0.233	0.105	SPF	NichiFrontier™ (Face)	1 1/8	29.8
					NichiFrontier™ (Blind)	1 9/16	41.4
				7/16" OSB	NichiStraight™/ NichiStaggered™	7/16	17.9
				SYP	NichiFrontier™ (Face)	1 1/8	46.1
					NichiFrontier™ (Blind)	1 9/16	64.0
8d Masonite Siding Nails	2.5	0.313	0.118	SPF	NichiPanel™	2 3/16	65.2
Double HD MAZE Asphalt & Fiberglass Shingle Nail	1.75	0.365	0.125	SPF	NichiBoard™ (Face)	1 1/8	35.5
					NichiBoard™ (Blind)	1 7/16	45.4
				SYP	NichiBoard™ (Blind)	1 7/16	70.1
				7/16" OSB	NichiBoard™ (Face)	7/16	21.3
					NichiBoard™ (Blind)	7/16	21.3
Double HD Grip Rite Roofing Nail	2.5	0.383	0.125	SPF w/ 7/16" OSB	NichiFrontier™ (Face)	1 5/8	51.3
					NichiFrontier™ (Blind)	2 1/16	65.1
	1.75	0.362	0.125	7/16" OSB	NichiFrontier™ (Face)	7/16	21.3
					NichiFrontier™ (Blind)	7/16	21.3
Grabber #8 Flat Wafer Head Screws[6]	1.625	0.406	0.166	SPF	NichiPanel™	1 5/16	85.0
				20 GA Steel	NichiPanel™	--	88.3
Aerosmith Fastening Systems, VersaPin[7]	1.5	0.301	0.106	20 GA Steel	NichiPanel™	--	94.7
					NichiBoard™ (Face)	--	94.7
					NichiBoard™ (Blind)	--	94.7
	1.375	0.251	0.107	20 GA Steel	NichiPanel™	--	94.7
#8-18 Wafer Head ROCK-ON™ Screws[8]	1.625	0.395	0.162	20 GA Steel	NichiFrontier™ (Face)	--	95.0
					NichiFrontier™ (Blind)	--	95.0
					NichiStraight™/ NichiStaggered™	--	95.0
Aerosmith Fastening Systems, SurePin[9]	1.25	0.300	0.145	Concrete Block	NichiBoard™ (Face)	3/4	233.1
	2	0.300	0.145	Concrete Block	NichiBoard™ (Blind)	1 1/8	233.8
					NichiStraight™/ NichiStaggered™	1 1/8	233.8

Notes:

1. SPF (Spruce-Pine-Fir) framing material is assumed to have a Specific Gravity of 0.42 or greater.
2. DF (Douglas Fir) framing material is assumed to have a Specific Gravity of 0.5 or greater.
3. OSB sheathing material is assumed to have a Specific Gravity of 0.5 or greater. Where fasteners are installed through OSB sheathing into SPF studs, a Specific Gravity of 0.42 shall be assumed for the entire fastener penetration depth.
4. SYP (Southern Yellow Pine) framing material is assumed to have a Specific Gravity of 0.5 or greater.
5. Alternative fasteners must meet the minimum head and shank diameters listed in Table 8. The required length and withdrawal capacity shall be determined by the design professional of record in accordance with the requirements of Table 3. 4. 5. 6, and 7 of this Intertek CCRR.
6. Fastener pull-out capacity based on manufacturer (Grabber Construction Products, Inc.) technical data sheet and a safety factor of 3.
7. Fastener pull-out capacity based on PEI Product Report PER-06014 and a safety factor of 3.
8. Fastener pull-out capacity based on ITW Buildex and Illinois Tool Works, Inc. Product Report No. 02722 and a safety factor of 3.
9. Fastener pull-out capacity based on PEI Product Report PER-07021 and a safety factor of 5.