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APPROVAL REPORT

Project No: PR451493
Class: 4451
Product Name: 3NI-32, 3NIA-32, 3NL-32, 3NLA-32, 3PLN-32, 3PLNA-32
Name of Listing Company: Nucor Vulcraft Group
Address of Listing Company: 1601 W Omaha Ave
PO Box 59
Norfolk, NE 68702-0729
United States
Customer ID: 1000000591-1
Customer website: www.nucor.com

Prepared by

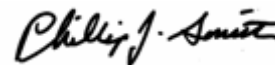


Dena Eidipour
Engineer
Materials

Reviewed by



Joanna Blaney
AVP, Technical Team Manager
Materials



Phillip Smith
AVP, Manager, Materials

12/21/18

Date of Approval

INTRODUCTION

1.1 Nucor Vulcraft Group requested Approval of their 3NI-32, 3NIA-32, 3NL-32, 3NLA-32, 3PLN-32, 3PLNA-32 Steel Roof Decks to determine if they meet the Approval requirements of the standard listed in Section 1.3.

1.2 This report may be freely reproduced only in its entirety and without modification.

1.3 Standard

Title	Number	Issue Date
Approval Standard for Profiled Steel Panels for Use as Decking in Class 1 Insulated Roof Construction	4451	06/2012

1.4 Listing

The products and assemblies will be listed in RoofNav, an on-line resource of FM Approvals. Drawings and specifications are on file at FM Approvals.

2 DESCRIPTION

The 3NI-32, 3NIA-32, 3NL-32, 3NLA-32, 3PLN-32 and 3PLNA-32 Steel Roof Decks are described as follows:

2.1 3NI-32

Trade Name	3NI-32
Acoustical	No
Rib Type	Proprietary (Trapezoidal)
Min Depth	3 in. [76.2 mm]
Max Depth	3 1/8 in. [79.4 mm]
Min Width	31 5/8 in. [803.3 mm]
Max Width	32 3/4 in. [831.8 mm]
Design Thicknesses	0.75, 0.83, 0.91, 1.06, 1.20, and 1.51 mm [0.0295, 0.0329, 0.0358, 0.0418, 0.0474, 0.0598 in.]
Max Span	244 in. [6198 mm]
Yield	50 ksi [344.73 N/mm ²]
Ultimate	65 ksi [448.16 N/mm ²]

2.2 3NIA-32

Trade Name	3NIA-32
Acoustical	Yes
Rib Type	Proprietary (Trapezoidal)
Min Depth	3 in. [76.2 mm]
Max Depth	3 1/8 in. [79.4 mm]
Min Width	31 5/8 in. [803.3 mm]
Max Width	32 3/4 in. [831.8 mm]
Design Thicknesses	0.75, 0.83, 0.91, 1.06, 1.20, and 1.51 mm [0.0295, 0.0329, 0.0358, 0.0418, 0.0474, 0.0598 in.]
Max Span	238 in. [6045 mm]
Yield	50 ksi [344.73 N/mm ²]

Ultimate	65 ksi [448.16 N/mm ²]
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2.3 3NL-32

Trade Name	3NL-32
Acoustical	No
Rib Type	Proprietary (Trapezoidal)
Min Depth	3 in. [76.2 mm]
Max Depth	3 1/8 in. [79.4 mm]
Min Width	31 5/8 in. [803.3 mm]
Max Width	32 3/4 in. [831.8 mm]
Design Thicknesses	0.75, 0.83, 0.91, 1.06, 1.20, and 1.51 mm [0.0295, 0.0329, 0.0358, 0.0418, 0.0474, 0.0598 in.]
Max Span	244 in. [6198 mm]
Yield	50 ksi [344.73 N/mm ²]
Ultimate	65 ksi [448.16 N/mm ²]

2.4 3NLA-32

Trade Name	3NLA-32
Acoustical	Yes
Rib Type	Proprietary (Trapezoidal)
Min Depth	3 in. [76.2 mm]
Max Depth	3 1/8 in. [79.4 mm]
Min Width	31 5/8 in. [803.3 mm]
Max Width	32 3/4 in. [831.8 mm]
Design Thicknesses	0.75, 0.83, 0.91, 1.06, 1.20, and 1.51 mm [0.0295, 0.0329, 0.0358, 0.0418, 0.0474, 0.0598 in.]
Max Span	238 in. [6045 mm]
Yield	50 ksi [344.73 N/mm ²]
Ultimate	65 ksi [448.16 N/mm ²]

2.5 3PLN-32

Trade Name	3PLN-32
Acoustical	No
Rib Type	Proprietary (Trapezoidal)
Min Depth	3 in. [76.2 mm]
Max Depth	3 1/8 in. [79.4 mm]
Min Width	31 5/8 in. [803.3 mm]
Max Width	32 3/4 in. [831.8 mm]
Design Thicknesses	0.75, 0.83, 0.91, 1.06, 1.20, and 1.51 mm [0.0295, 0.0329, 0.0358, 0.0418, 0.0474, 0.0598 in.]
Max Span	244 in. [6198 mm]
Yield	50 ksi [344.73 N/mm ²]
Ultimate	65 ksi [448.16 N/mm ²]

2.6 3PLNA-32

Trade Name	3PLNA-32
Acoustical	Yes
Rib Type	Proprietary (Trapezoidal)
Min Depth	3 in. [76.2 mm]
Max Depth	3 1/8 in. [79.4 mm]
Min Width	31 5/8 in. [803.3 mm]
Max Width	32 3/4 in. [831.8 mm]

Design Thicknesses	0.75, 0.83, 0.91, 1.06, 1.20, and 1.51 mm [0.0295, 0.0329, 0.0358, 0.0418, 0.0474, 0.0598 in.]
Max Span	238 in. [6045 mm]
Yield	50 ksi [344.73 N/mm ²]
Ultimate	65 ksi [448.16 N/mm ²]

2.7 All other products are as described in RoofNav.

3 EXAMINATIONS AND TESTS

3.1 All components except those in 2.1-2.1 were produced under the FM Approvals Surveillance Audit program as indicated by FM Approvals labels. All samples were considered to be representative of standard production and were examined and tested as indicated below. Test samples were prepared by, or under the supervision of, FM Approvals personnel. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

3.2 Several performance requirements and tests required by the Standard have been waived due to previous successful testing. See Table 1 below for details.

Table 1

FM Standard 4451 Performance Requirement	FM Standard 4451 Section	Justification/Comments
Allowable Live Load Deflection	4.1	Included, calculations have been provided with request for Approval
Combustibility From Below the Roof Deck	4.2	Waived based on project 3035661, previous testing with higher % of open area
Combination pull out / pull over resistance of fasteners (Testing)	4.3.1.1	Waived, steel deck installed in combination with FM Approved steel deck fasteners
Pull over resistance of fasteners (Calculation)	4.3.1.2	Waived, steel deck installed in combination with FM Approved steel deck fasteners
Combination pull off / pull over resistance of arc spot welds	4.3.1.3	Included
Side lap fastener and side lap crimping and interlocking resistance	4.3.1.4	Included for Button Punch & PunchLok II Waived for Screws
Fastener pull out resistance for above deck components	4.3.1.5	Not required, No stiffening rib
Steel Deck Bending Stresses Under Service Wind Loads	4.3.1.6	Calculations included
Wind Uplift Ratings Greater Than Class 1-90 and all assemblies that utilize steel deck with a design thickness less than 0.0295 in. (0.75 mm)	4.3.2	Waived, maximum Class of 1-90 requested

Foot Traffic Resistance of Insulation	4.4	Included, greater than 2.5 in.
Bearing Capacity of Insulation	4.5	Waived, greater than 2 in.
Corrosion Resistance Test (Optional Test)	4.6	Not requested
Drivability Evaluation of Fasteners	4.7	Waived, FM Approved products will be used.

3.3 Side lap fastener and side lap crimping and interlocking resistance

3.3.1 Two (2) sets of samples were tested for side lap crimping and interlocking resistance. The components and sequence of installation were as follows:

Sample 1:	Two sections of 22 ga (0.0295 in. [0.75 mm]) Type 3NI-32 deck were seamed together. The Button Punch tool was used to punch the flat section to the interlocking lap.
Result:	The test sample set met the average of 67.4 lbf (300 N)

Sample 2:	Two sections of 22 ga (0.0295 in. [0.75 mm]) Type 3PLN-32 deck were seamed together. The Punchlock II tool was used to lock the flat section to the interlocking lap.
Result	The test sample set met the average of 206 lbf (915 N)

3.4 Foot Traffic Resistance of Insulation

3.4.2 Four (4) samples were prepared. The components and sequence of installation were as follows:

Sample construction 1:

Trade Name	Insulation Type
3NI-32 (0.0295 in. [0.75 mm]) 22 ga	1.5 in. (38.1 mm) thick FM Approved polyiso board

Sample construction 2:

Trade Name	Insulation Type
3NI-32 (0.0295 in. [0.75 mm]) 22 ga	0.5 in. (12.7 mm) thick FM Approved gypsum board

Sample construction 3:

Trade Name	Insulation Type
3NI-32 (0.0295 in. [0.75 mm]) 22 ga	1.5 in. (38.1 mm) thick FM Approved polyiso board

Sample construction 4:

Trade Name	Insulation Type
3NI-32 (0.0295 in. [0.75 mm]) 22 ga	1.5 in. (38.1 mm) thick FM Approved polyiso board

3.4.2 The insulation samples did not break under the simulated foot traffic load.

4 MARKING

4.1 The manufacturer shall mark each product and/or packaging with the manufacturer's name and product trade name. In addition, product and/or packaging must be marked with the Approval Mark of FM Approvals.

4.2 Markings denoting Approval by FM Approvals shall be applied by the manufacturer only within and on the premises of manufacturing locations that are under the FM Approvals Surveillance Audit program.

4.3 The manufacturer agrees that use of the FM Approvals name or Approval Mark is subject to the conditions and limitations of the Approval by FM Approvals. Such conditions and limitations must be included in all references to Approval by FM Approvals.

5 REMARKS

5.1 The securement of the roof system must be enhanced at the building corners and perimeter as outlined in FM Global Property Loss Prevention Data Sheet 1-29.

5.2 The roof cover must be installed using a roof perimeter flashing system Approved by FM Approvals. See RoofNav.

6 SURVEILLANCE AUDIT

The manufacturing facilities at the following locations shall be visited on a routine basis. The facility processes and quality control procedures in place have been determined to be satisfactory to manufacture products identical to that tested and Approved. An FM Approved Products/Specification-Tested Revision Request Form shall be submitted to FM Approvals for requesting to manufacture products at any additional or alternate manufacturing facilities which are not listed below.

Audit Locations

Nucor Vulcraft Group
1601 W Omaha Ave
PO Box 59
Norfolk, NE 68702-0729
United States

Nucor Vulcraft Group,
6610 County Road 60,
St. Joe, IN 46785
United States

Nucor Vulcraft Group,
175 CR 2345,
Grapeland, TX 75844
United States

Nucor Vulcraft Group,
1501 W. Darlington Street,
Florence, SC 29501
United States

Nucor Vulcraft Group,
7205 Gault Avenue North,
Ft. Payne, AL 35968
United States

Nucor Vulcraft Group,
5362 Railroad Street,
Chemung, NY 14825
United States

7 MANUFACTURER'S RESPONSIBILITIES

- 7.1** The manufacturer shall notify FM Approvals of any planned change in the Approved products, prior to general sale or distribution, using the FM Approved Products/Specification-Tested Revision Request Form. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FM Approvals.
- 7.2** To ensure compliance with his procedures in the field, the manufacturer shall supply to the installer such necessary instruction or assistance required to produce the desired performance achieved in the tests.
- 7.3** In accordance with the Master Agreement, the manufacturer shall make full and immediate disclosure to FM Approvals of all information concerning any defect in, or potential hazard of, the product or service manufactured or provided by the Customer which is Approved by, or being examined by, FM Approvals. The manufacturer shall make all necessary arrangements for the investigation of complaints / anomalies applicable to this approval and shall keep records of all complaints / anomalies including actions taken.

8 DOCUMENTATION

Document Title	Issue Date
Surveillance Audit Manual	December 2018

9 CONCLUSIONS

- 9.1** Evaluation from this program indicates that Nucor Vulcraft Group Type 3NI-32, 3NIA-32, 3NL-32, 3NLA-32, 3PLN-32 and 3PLNA-32 steel roof decks meet the requirements of FM Approvals for use as a component in Class 1-60, Class 1-75, and Class 1-90 wind uplift rated insulated steel deck roof constructions as described below and used as described in RoofNav, an on-line resource of FM Approvals.
- 9.2** The steel roof deck side laps of Type 3NI-32 and 3NIA-32 Steel Roof Decks are secured using a Button Punch Tool, spaced at maximum 8.1 in. (205 mm) on center.

9.3 The Nucor Vulcraft Group side laps of Type 3PLN-32 and 3PLNA-32 Steel Roof Decks are secured using the Nucor Vulcraft Punchlock II Side Lap Crimping Tool, spaced at maximum 24.7 in. (627 mm) on center.

9.4 The Nucor Vulcraft Group Type 3NI-32, 3NIA-32, 3NL-32, 3NLA-32, 3PLN-32 and 3PLNA-32 steel roof decks are secured to the building structural supports spaced at the maximum center to center spans shown below for Class 1-60, Class 1-75, and Class 1-90. A minimum 1.5 in. (38 mm) thick FM Approved polyisocyanurate board or minimum 0.5 in. (13 mm) thick FM Approved gypsum board is installed with edges along the centerline of the top flange and covered with an FM Approved fully or partially adhered roof covering assembly or with a mechanically attached roof covering assembly when the in-row fastener spacing is less than or equal to one-half of the deck span, per proprietary listings. Meets wind rating per securement of the deck and securement of the above deck components.

Nucor Vulcraft Group 3NI-32, 3NL-32, 3PLN-32						
Deck Design Thickness	Wind Rating - One Span					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	146	3708	146	3708	146	3708
21 (0.0329 [0.84])	154	3912	154	3912	154	3912
20 (0.0358 [0.91])	161	4089	161	4089	161	4089
19 (0.0418 [1.06])	174	4420	174	4420	174	4420
18 (0.0474 [1.2])	185	4699	185	4699	185	4699
16 (0.0598 [1.52])	207	5258	207	5258	207	5258
Nucor Vulcraft Group 3NI-32, 3NL-32, 3PLN-32						
Deck Design Thickness	Wind Rating - Two Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	173	4394	165	4191	150	3810
21 (0.0329 [0.84])	182	4623	177	4496	161	4089
20 (0.0358 [0.91])	190	4826	188	4775	171	4343
19 (0.0418 [1.06])	205	5207	205	5207	190	4826
18 (0.0474 [1.2])	218	5537	218	5537	207	5258
16 (0.0598 [1.52])	244	6198	244	6198	237	6020
Nucor Vulcraft Group 3NI-32, 3NL-32, 3PLN-32						
Deck Design Thickness	Wind Rating - Three or More Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	173	4394	173	4394	167	4242
21 (0.0329 [0.84])	182	4623	182	4623	180	4572
20 (0.0358 [0.91])	190	4826	190	4826	190	4826
19 (0.0418 [1.06])	205	5207	205	5207	205	5207
18 (0.0474 [1.2])	218	5537	218	5537	218	5537
16 (0.0598 [1.52])	244	6198	244	6198	244	6198

Nucor Vulcraft Group 3NIA-32, 3NLA-32, 3PLNA-32						
Deck Design Thickness	Wind Rating - One Span					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	143	3632	143	3632	143	3632
21 (0.0329 [0.84])	151	3835	151	3835	151	3835
20 (0.0358 [0.91])	157	3988	157	3988	157	3988
19 (0.0418 [1.06])	169	4293	169	4293	169	4293
18 (0.0474 [1.2])	180	4572	180	4572	180	4572
16 (0.0598 [1.52])	202	5131	202	5131	202	5131
Nucor Vulcraft Group 3NLA-32, 3PLNA-32						
Deck Design Thickness	Wind Rating - Two Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	168	4267	165	4191	150	3810
21 (0.0329 [0.84])	177	4496	177	4496	161	4089
20 (0.0358 [0.91])	185	4699	185	4699	171	4343
19 (0.0418 [1.06])	200	5080	200	5080	190	4826
18 (0.0474 [1.2])	213	5410	213	5410	207	5258
16 (0.0598 [1.52])	238	6045	238	6045	237	6020
Nucor Vulcraft Group 3NLA-32, 3PLNA-32						
Deck Design Thickness	Wind Rating - Three or More Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	168	4267	168	4267	167	4242
21 (0.0329 [0.84])	177	4496	177	4496	177	4496
20 (0.0358 [0.91])	185	4699	185	4699	185	4699
19 (0.0418 [1.06])	200	5080	200	5080	200	5080
18 (0.0474 [1.2])	213	5410	213	5410	213	5410
16 (0.0598 [1.52])	238	6045	238	6045	238	6045

9.5 Nucor Vulcraft Group Type 3NI-32, 3NIA-32, 3NL-32, 3NLA-32, 3PLN-32, 3PLNA-32 steel roof decks are secured to the building structural supports with puddle welds spaced at the maximum center to center span shown in the tables as follows. Puddle welds, sized and spaced as noted in the following tables, are fabricated using a minimum weld electrode of strength of 60 ksi (413.68 N/mm²) located at bottom ribs and at supports where deck sides lap.

0.5 in. (13 mm) Diameter Puddle Welds, 8 in. (203 mm) Spacing

Nucor Vulcraft Group 3NI-32, 3NL-32, 3PLN-32						
Deck Design Thickness	Wind Rating - One Span					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	146	3708	-	-	-	-
21 (0.0329 [0.84])	154	3912	-	-	-	-
20 (0.0358 [0.91])	161	4089	-	-	-	-

19 (0.0418 [1.06])	174	4420	-	-	-	-
18 (0.0474 [1.2])	185	4699	-	-	-	-
16 (0.0598 [1.52])	207	5258	-	-	-	-
Deck Design Thickness	Wind Rating - Two Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	125	3175	-	-	-	-
21 (0.0329 [0.84])	138	3505	-	-	-	-
20 (0.0358 [0.91])	150	3810	-	-	-	-
19 (0.0418 [1.06])	173	4394	-	-	-	-
18 (0.0474 [1.2])	193	4902	-	-	-	-
16 (0.0598 [1.52])	141	3581				
Deck Design Thickness	Wind Rating - Three or More Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	156	3962	-	-	-	-
21 (0.0329 [0.84])	173	4394	-	-	-	-
20 (0.0358 [0.91])	187	4750	-	-	-	-
19 (0.0418 [1.06])	205	5207	-	-	-	-
18 (0.0474 [1.2])	218	5537	-	-	-	-
16 (0.0598 [1.52])	176	4470	-	-	-	-

0.5 in. (13 mm) Diameter Puddle Welds, 8 in. (203 mm) Spacing

Nucor Vulcraft Group 3NIA-32, 3NLA-32, 3PLNA-32						
Deck Design Thickness	Wind Rating - One Span					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	143	3632	-	-	-	-
21 (0.0329 [0.84])	151	3835	-	-	-	-
20 (0.0358 [0.91])	157	3988	-	-	-	-
19 (0.0418 [1.06])	169	4293	-	-	-	-
18 (0.0474 [1.2])	180	4572	-	-	-	-
16 (0.0598 [1.52])	202	5131	-	-	-	-
Deck Design Thickness	Wind Rating - Two Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	125	3175	-	-	-	-
21 (0.0329 [0.84])	138	3505	-	-	-	-
20 (0.0358 [0.91])	150	3810	-	-	-	-
19 (0.0418 [1.06])	193	4902	-	-	-	-
18 (0.0474 [1.2])	141	3581	-	-	-	-

16 (0.0598 [1.52])	141	3581				
Deck Design Thickness	Wind Rating - Three or More Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	156	3962	-	-	-	-
21 (0.0329 [0.84])	173	4394	-	-	-	-
20 (0.0358 [0.91])	185	4699	-	-	-	-
19 (0.0418 [1.06])	200	5080	-	-	-	-
18 (0.0474 [1.2])	213	5410	-	-	-	-
16 (0.0598 [1.52])	176	4470	-	-	-	-

0.625 in. (16 mm) Diameter Puddle Welds, 8 in. (203 mm) Spacing

Nucor Vulcraft Group 3NI-32, 3NL-32, 3PLN-32						
Deck Design Thickness	Wind Rating - One Span					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	146	3708	146	3708	146	3708
21 (0.0329 [0.84])	154	3912	154	3912	154	3912
20 (0.0358 [0.91])	161	4089	161	4089	161	4089
19 (0.0418 [1.06])	174	4420	174	4420	174	4420
18 (0.0474 [1.2])	185	4699	185	4699	185	4699
16 (0.0598 [1.52])	207	5258	207	5258	207	5258
Deck Design Thickness	Wind Rating - Two Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	158	4013	125	3175	103	2616
21 (0.0329 [0.84])	176	4470	138	3505	114	2896
20 (0.0358 [0.91])	190	4826	150	3810	124	3150
19 (0.0418 [1.06])	205	5207	173	4394	143	3632
18 (0.0474 [1.2])	218	5537	195	4953	161	4089
16 (0.0598 [1.52])	244	6198	240	6096	198	5029
Deck Design Thickness	Wind Rating - Three or More Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	173	4394	156	3962	129	3277
21 (0.0329 [0.84])	182	4623	173	4394	143	3632
20 (0.0358 [0.91])	190	4826	187	4750	155	3937
19 (0.0418 [1.06])	205	5207	205	5207	179	4547
18 (0.0474 [1.2])	218	5537	218	5537	201	5105
16 (0.0598 [1.52])	244	6198	244	6198	244	6198

0.625 in. (16 mm) Diameter Puddle Welds, 8 in. (203 mm) Spacing

Nucor Vulcraft Group 3NIA-32, 3NLA-32, 3PLNA-32						
Deck Design Thickness	Wind Rating - One Span					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	143	3632	143	3632	143	3632
21 (0.0329 [0.84])	151	3835	151	3835	151	3835
20 (0.0358 [0.91])	157	3988	157	3988	157	3988
19 (0.0418 [1.06])	169	4293	169	4293	169	4293
18 (0.0474 [1.2])	180	4572	180	4572	180	4572
16 (0.0598 [1.52])	202	5131	202	5131	202	5131
Deck Design Thickness	Wind Rating - Two Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	158	4013	125	3175	103	2616
21 (0.0329 [0.84])	176	4470	138	3505	114	2896
20 (0.0358 [0.91])	185	4699	150	3810	124	3150
19 (0.0418 [1.06])	200	5080	173	4394	143	3632
18 (0.0474 [1.2])	213	5410	213	5410	207	5258
16 (0.0598 [1.52])	238	6045	238	6045	237	6020
Deck Design Thickness	Wind Rating - Three or More Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	168	4267	156	3962	129	3277
21 (0.0329 [0.84])	177	4496	173	4394	143	3632
20 (0.0358 [0.91])	185	4699	185	4699	155	3937
19 (0.0418 [1.06])	200	5080	200	5080	179	4547
18 (0.0474 [1.2])	213	5410	213	5410	213	5410
16 (0.0598 [1.52])	238	6045	238	6045	238	6045

0.75 in. (19 mm) Diameter Puddle Welds, 8 in. (203 mm) Spacing

Nucor Vulcraft Group 3NI-32, 3NL-32, 3PLN-32						
Deck Design Thickness	Wind Rating - One Span					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	146	3708	146	3708	146	3708
21 (0.0329 [0.84])	154	3912	154	3912	154	3912
20 (0.0358 [0.91])	161	4089	161	4089	161	4089
19 (0.0418 [1.06])	174	4420	174	4420	174	4420
18 (0.0474 [1.2])	185	4699	185	4699	185	4699
16 (0.0598 [1.52])	207	5258	207	5258	207	5258
Deck Design Thickness	Wind Rating - Two Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm

22 (0.0295 [0.75])	173	4394	151	3835	125	3175
21 (0.0329 [0.84])	182	4623	168	4267	138	3505
20 (0.0358 [0.91])	188	4775	182	4623	150	3810
19 (0.0418 [1.06])	205	5207	205	5207	174	4420
18 (0.0474 [1.2])	218	5537	218	5537	196	4978
16 (0.0598 [1.52])	244	6198	244	6198	237	6020
Deck Design Thickness						
	Wind Rating - Three or More Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	173	4394	173	4394	156	3962
21 (0.0329 [0.84])	182	4623	182	4623	173	4394
20 (0.0358 [0.91])	188	4775	188	4775	188	4775
19 (0.0418 [1.06])	205	5207	205	5207	205	5207
18 (0.0474 [1.2])	218	5537	218	5537	218	5537
16 (0.0598 [1.52])	244	6198	244	6198	244	6198

0.75 in. (19 mm) Diameter Puddle Welds, 8 in. (203.2 mm) Spacing

Nucor Vulcraft Group 3NIA-32, 3NLA-32, 3PLNA-32						
Deck Design Thickness	Wind Rating - One Span					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	143	3632	143	3632	143	3632
21 (0.0329 [0.84])	151	3835	151	3835	151	3835
20 (0.0358 [0.91])	157	3988	157	3988	157	3988
19 (0.0418 [1.06])	169	4293	169	4293	169	4293
18 (0.0474 [1.2])	180	4572	180	4572	180	4572
16 (0.0598 [1.52])	202	5131	202	5131	202	5131
Deck Design Thickness						
	Wind Rating - Two Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	168	4267	151	3835	125	3175
21 (0.0329 [0.84])	177	4496	168	4267	138	3505
20 (0.0358 [0.91])	185	4699	182	4623	150	3810
19 (0.0418 [1.06])	200	5080	200	5080	174	4420
18 (0.0474 [1.2])	213	5410	213	5410	196	4978
16 (0.0598 [1.52])	238	6045	238	6045	237	6020
Deck Design Thickness						
	Wind Rating - Three or More Spans					
	1-60		1-75		1-90	
MSG (in. [mm])	in.	mm	in.	mm	in.	mm
22 (0.0295 [0.75])	168	4267	168	4267	156	3962
21 (0.0329 [0.84])	177	4496	177	4496	173	4394
20 (0.0358 [0.91])	185	4699	185	4699	185	4699
19 (0.0418 [1.06])	200	5080	200	5080	200	5080

18 (0.0474 [1.2])	213	5410	213	5410	213	5410
16 (0.0598 [1.52])	238	6045	238	6045	238	6045

- 9.6 Tests show that the tested roof constructions in and of themselves would not create a need for automatic sprinklers.
- 9.7 Since a duly signed Master Agreement is on file for this customer, Approval is effective as of the date of this report.
- 9.8 Continued Approval will depend upon satisfactory field experience and periodic Surveillance Audits

PROJECT DATA RECORD: PR451493

ORIGINAL TEST DATA See PDRs for Projects in Table 1