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ATLNC # 1014.01-14

Report Date: 11/25/14

Dade Certification # 13-0122.01
FBC Organizational # TST 1555
IAS Certification # TL-423

Test Dates: 10/14/14 – 10/15/14

Test Requested By:

Frank Krech
Madison Industries Inc.
Conyers, GA,
Telephone 770-483-4401 Fax 770-785-7967

Test Standard:

ASTM E 1592-05

Test Conditions: 70-75 degrees F

Specimens A, B, C, 12' purlin spacing

Description of product tested:

Specimens A, B, C 20 gauge (.036") Metal Roof Panels over W8 x 13 purlins as shown in Madison Industries Drawing A-1.3

Configuration: Specimens Mounted in steel test chamber
Specimen A, B, C (2 spans, 4 panels wide)

Description of Units:

Panel Construction- .036" steel roof panels 16" wide x 384" long with 3" interlocking standing seams per Drawing A-1.3

Purlin Construction- W8 x 13 I Beams

Purlin Spacing- 2 spans 144" OC with 48" overhang as shown in drawing A-1.3.

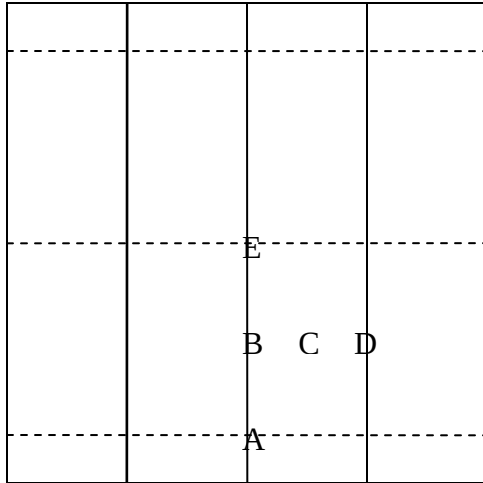
Screws and Method of Attachment-

Purlins- Panels were attached to the purlins with a 1/4" stainless steel bolt and a Deck Clip at each deck rib, alternating the position of the bolt and Deck Clip as shown in Drawing A-1.3

Panel Standing Seams- Overlaps were 16" OC and panels were joined with (2) # 14 x 3/4" Type AB fasteners at equal spacing between purlins per Drawing A-1.

Purlin Attachment- Each purlin was attached to the chamber.

Indicator Locations



STATIC AIR PRESSURE

ASTM E1592-05

Specimen A

Deflections in inches

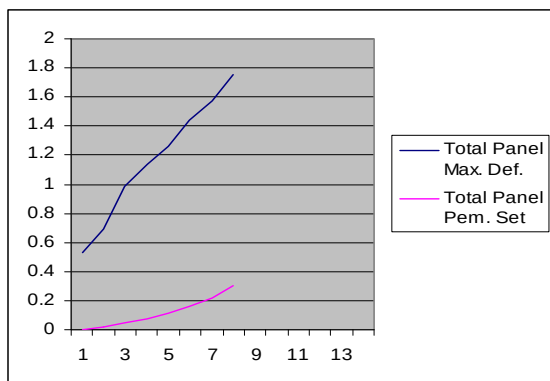
Deflection Locations							
Pressure Increments psf Positive	Time (sec)	End Purlin Rib A	Mid- Span B	Mid-Span C	Mid-span D	Span End Purlin Rib E	Total panel deflection
30	60	.04	.24	.53	.24	.02	.53
40	60	.06	.33	.69	.34	.04	.69
60	60	.09	.52	.99	.54	.08	.99
70	60	.10	.63	1.14	.65	.09	1.14
80	60	.11	.73	1.26	.75	.11	1.26
90	60	.13	.87	1.44	.90	.14	1.44
100	60	.14	.99	1.57	1.04	.17	1.57
110	60	.16	1.14	1.75	1.24	.21	1.75

Perm Set in inches

Deflection Locations

Pressure Increments psf Positive	Time (sec)	End Purlin Rib A	Mid- Span B	Mid-Span C	Mid-span D	Span End Purlin Rib E	Total panel perm set
30	60	0	.01	0	0	0	0
40	60	.01	.02	.02	.01	.03	.02
60	60	.02	.05	.05	.04	.02	.05
70	60	.02	.07	.08	.06	.03	.08
80	60	.03	.10	.11	.09	.04	.11
90	60	.03	.14	.16	.15	.07	.16
100	60	.05	.19	.22	.22	.09	.22
110	60	.05	.25	.30	.31	.12	.30

Positive Side Graph



Note: Specimen failed at 120 psf 10 seconds into test. Failure occurred at center purlin. Deck clips bent and bolt pulled through center rib.

Specimen B

Deflections in inches

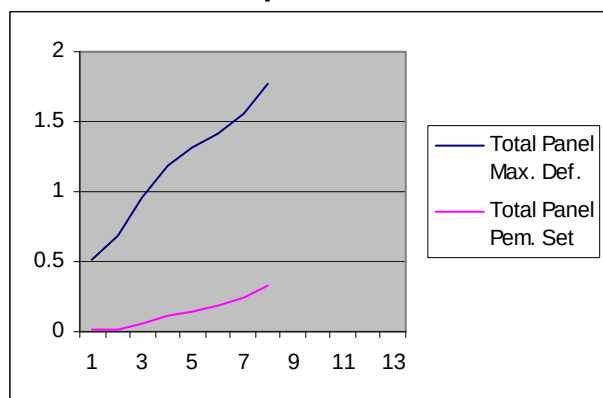
Deflection Locations

Pressure Increments psf Positive	Time (sec)	End Purlin Rib A	Mid- Span B	Mid-Span C	Mid-span D	Span End Purlin Rib E	Total panel deflection
30	60	.04	.24	.51	.23	.01	.51
40	60	.06	.35	.69	.34	.02	.69
60	60	.09	.53	.96	.52	.05	.96
70	60	.11	.69	1.19	.68	.07	1.19
80	60	.12	.80	1.32	.80	.09	1.32
90	60	.13	.88	1.42	.88	.11	1.42
100	60	.14	1.0	1.56	1.01	.14	1.56
110	60	.17	1.18	1.77	1.20	.18	1.77

Perm Set in inches

Deflection Locations							
Pressure Increments psf Positive	Time (sec)	End Purlin Rib A	Mid-Span B	Mid-Span C	Mid-span D	Span End Purlin Rib E	Total panel perm set
30	60	0	.01	.01	.01	0	.01
40	60	.01	.03	.02	.02	0	.02
60	60	.02	.06	.06	.04	0	.06
70	60	.02	.10	.11	.09	.02	.11
80	60	.03	.14	.15	.11	.03	.15
90	60	.04	.17	.19	.16	.05	.19
100	60	.04	.22	.24	.20	.07	.24
110	60	.05	.30	.33	.29	.10	.33

Positive Side Graph



Note: Specimen failed at 117.3 psf. Failed occurred at center purlin. Deck clips bent and bolt pulled through right center rib.

Specimen C

Deflections in inches

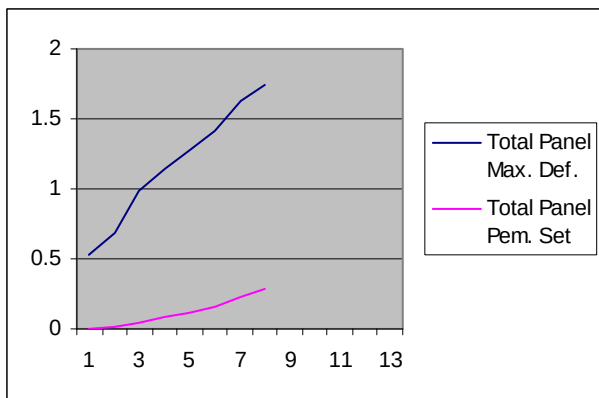
Deflection Locations							
Pressure Increments psf Positive	Time (sec)	End Purlin Rib A	Mid-Span B	Mid-Span C	Mid-span D	Span End Purlin Rib E	Total panel deflection
30	60	.04	.25	.53	.25	.01	.53
40	60	.06	.35	.69	.34	.01	.69
60	60	.09		.99	.54	.04	.99
70	60	.11		1.15	.67	.06	1.15
80	60	.12	.75	1.27	.77	.08	1.27
90	60	.14	.86	1.41	.90	.10	1.41
100	60	.17	1.04	1.63	1.10	.14	1.63
110	60	.19	1.15	1.74	1.24	.17	1.74

Perm Set in inches

Deflection Locations

Pressure Increments psf Positive	Time (sec)	End Purlin Rib A	Mid- Span B	Mid-Span C	Mid-span D	Span End Purlin Rib E	Total panel perm set
30	60	0	.01	0	.01	0	0
40	60	0	.02	.01	.01	0	.01
60	60	.01	.06	.05	.05	.01	.05
70	60	.01	.08	.09	.08	.02	.09
80	60	.02	.09	.11	.10	.03	.11
90	60	.03	.13	.16	.15	.04	.16
100	60	.05	.19	.23	.22	.07	.23
110	60	.06	.24	.29	.30	.10	.29

Positive Side Graph



Note Specimen failed at 113 psf. Failure occurred at center purlin. Deck Clips bent and bolt pulled through left center rib.

Note: Indicator B malfunctioned resulting in no max deflection reading on two test. Indicator was adjusted and function properly remainder of testing.

Tensile Test

ASTM E8

Test Results

Specimen	Dimensions (inches)	Area (sq. inches)	Peak Force (lbs)	Yield Stress (psi)	Ultimate Stress (psi)	Elongation (%)
A	.502 x .032	.016	1298	62,799	80,777	22
B	.502 x .032	.016	1297	63,284	80,727	22
C	.502 x .032	.016	1302	62,718	81,038	23

Note: 2 mil polyethylene film was used for the tests, it is the opinion of the undersigned that it had no influence on the results of the test.

Observers-

Keith Owen / ATL
Keith Owen Jr, Samuel Poplin / ATL
Larry Bauman / Madison Industries
David W. Johnson, P.E.

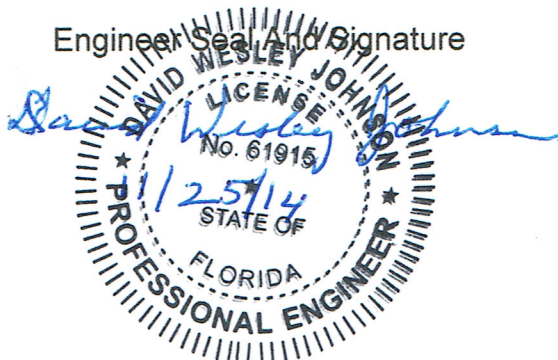
Keith Owen, Lab Director
American Test Lab, Inc.

Keith Owen
11/25/14

All Tests Witnessed and Certified by:

David Johnson P. E.
1656 Calvert Rd.
Brevard, NC 28712
Florida P.E. # 61915

Engineer Seal And Signature



Certificate of Independence: The witnessing engineer has no equity/ownership interest in American Test Lab of North Carolina, Madison Industries or their parts vendors. Witnessing engineer is in complete compliance of Florida Statue 9B-72, Section 72.110.

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