Static Wind Load Test

ASTM E 72-14a
Strength Test of Panels for Building Construction
Transverse Load–Horizontal Specimen

May 5, 2015

REPORT NUMBER: **HETI-15-5013**

MANUFACTURER: PROJECT CLASSIC STRUCTURAL ENGINEERING
7318 Texas Trail, Boca Raton, Florida 33487.

TEST LOCATION: Hurricane Engineering & Testing Inc.
6120 NW 97th Avenue, Doral, Florida, 33178

NOTIFICATION NUMBER: HETI14025 (MIAMI-DADE COUNTY, FLORIDA
LAB. CERTIFICATION No.: 10-1117.07 (MIAMI-DADE COUNTY, FLORIDA)
IAS. CERTIFICATION No.: TL-296 (ISO 17025-05)
FBC ORGANIZATION No: TST1691
FBPE Certificate of Authorization Number: 6905

PRODUCT: Composite Panels
(See Hurricane Engineering & Testing, Inc. marked Drawing).

PRODUCT SIZE: Test #8 and #16: 27" w x 292 ¼" x 8 3/16" deep (23'8" span)
Test #1 and #6: 27" w x 376 ¼" x 8 3/16" deep (30'8" span)

PRODUCT DESCRIPTION: 3500 psi Concrete Covered Steel Panel (Reference Material Tensile Test Report No. HETI-15-T303, HETI-15-T304, HETI-15-T305; Concrete Compression Test Report No. HETI-15-C101)

DRAWING NO.: **Test #8 & 16**: S5 by Project Classic Structural Engineering, dated 2/11/15
Test #1 & 6: S6 by Project Classic Structural Engineering, dated 2/12/15

TEST WITNESSED BY: Syed Waqar Ali, Ph.D. (HETI)
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- Gauge Location

ULTIMATE PRESSURE SUMMARY

Report No.	Test No.	Sample Span	Ultimate Pressure
HETI-15-5013	8	23'-8"	230 psf
HETI-15-5019	16	23'-8"	240 psf
HETI-15-5020	1	23'-8"	240 psf
HETI-15-5021	6	30'-8"	130 psf

23'-8" Product Description

Each sample was constructed by attaching (2) separate panel halves on top of each other to create the hexagon shaped steel frame. The panels were setup to create a 1 7/8" camber at the center. The (2) panels were attached with (4) rows of (39) #10 x ¾" Hex Head Self Drilling Screws (HH SDS) located at 2", 6", 9 ½", 14 ¼", 20 ½", 22 3/8", 26 3/8", 32 ½", 39", 47", 55 ½", 61", 65 ¾", 74 ¼", 84 ¼", 95 ¼", 105 ¾", 114 ¾", 125", 134 ¾", 145 ¼", 155 ½", 165 ¾", 175 ½", 179", 189 ½", 199", 209", 218 ¾", 229", 238", 245 ¾", 252", 258 ¼", 264 ¼", 270", 274", 277 ½", and 282" from the left end. Next, an 18 gauge x 24 1/8" x 284 ¼" flat galvanized steel sheet was placed on the bottom of the panel and was attached using (4) rows of (37) # 10 x ¾" HH SDS located at 1 5/8", 5 ¾", 9 ¼", 12 ¾", 19 1/8", 25", 33", 41", 49 5/8", 59 3/8", 69", 78 ¼", 88 3/8", 99 1/8", 109", 118 5/8", 129", 139", 142 ½", 148 ¾", 157 ½", 167 ½", 179 ¼", 189 ¾", 200", 209", 220", 230 ¾", 239 3/8", 246 7/8", 253", 258 ¾", 265", 269 ¾", 275", 278 ¾", and 282 ½" from the left end. Once the samples were constructed, a layer of 0.142" thick (6" x 6" square) steel lathing the size of the sample was laid on top of the panel. Lastly, an average layer of 2.06" of 3500 psi concrete was poured on top of the finished single panel sample.

Individual Panel Size:	25 ½" w x 284 5/8" long x 3 1/16" deep
Single Finished Panel Size:	27" w x 284 5/8" long x 6 1/8" deep
Composite Finished Panel Size:	27" w x 292 ¼" long x 8 3/16" deep
Corrugated Panel Thickness:	18ga (0.048" with coating)
Reinforcement:	(1) 18ga (0.048"with coating) galv. steel flat sheet (24 1/8" w x 284 ¼")
Concrete:	3500 psi
Test Procedure:	Tested as per ASTM E 72 – 14a, Section 11.3.1.1

30'-8" Product Description

Each sample was constructed by attaching (2) separate panel halves on top of each other to create the hexagon shaped steel frame. The panels were setup to create a 3 ½" camber at the center. The (2) panels were attached with (4) rows of (52) #10 x ¾" Hex Head Self Drilling Screws (HH SDS) located at 2", 6 ½", 10 ½", 15", 21", 26 ¼", 32", 39", 47", 54 ½", 66", 74", 81 ¼", 88 1/8", 94", 100 ½", 106 ¾", 110 ½", 114", 118", 125", 135 ½", 145 ½", 155 ¼", 165 ¼", 174 ¾", 185 ¼", 193 ½", 198 ¼", 202 ¼", 208 ¼", 214 ¼", 220", 227 ½", 235 ¼", 243 ½", 253", 263", 273 ¼", 283 ¾", 293 3/8", 303 3/8", 314 3/8", 322 ¼", 329", 336 3/8", 342 ½", 348 ¼", 354 ¼", 358", 362 3/8", and 366 ¼" from the left end. Next, (2) 18 gauge x 24 1/8" x 368 ¼" flat galvanized steel sheets were placed on top of the panel and were attached using (4) rows of (45)

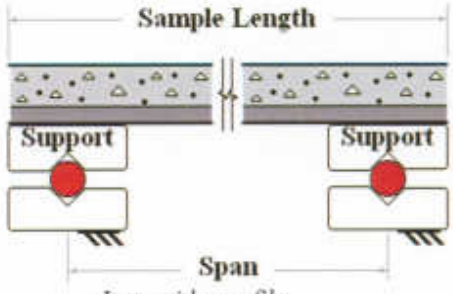
10 x ¾" HH SDS located at 2", 5 ½", 14", 21", 27", 32 ½", 40 ¼", 46 ¾", 55 ¼", 65 ½", 75 ½", 86", 95 ½", 105", 115 ½", 125 ½", 135", 145 ¼", 156", 166 ¼", 175 ½", 184 ¾", 193", 203 5/8", 214 ½", 224 ½", 234 ¼", 243", 254 ¾", 264", 274", 284 ½", 295 ¼", 303 ¼", 315 ½", 323 ½", 330 ½", 336 ½", 342 ¾", 349 ½", 355", 359", 363 ¼", and 366" from the left end. Once the samples were constructed, a layer of 0.142" thick (6" x 6" square) steel lathing the size of the sample was laid on top of the panel. Lastly, an average layer of 2.06" of 3500 concrete was poured on top of the finished single panel sample.

Individual Panel Size:	25 ½" w x 368 ½" long x 3 1/16" deep
Single Finished Panel Size:	27" w x 368 ½" long x 6 1/8" deep
Composite Finished Panel Size:	27" w x 376 ¼" long x 6 1/8" deep
Corrugated Panel Thickness:	16ga (0.048" with coating)
Reinforcement:	(2) 18ga (0.048"with coating) galv. steel flat sheet (24 1/8" w x 368 ¼")
Concrete:	3500 psi
Test Procedure:	Tested as per ASTM E 72 – 14a, Section 11.3.1.1

Note*: All composite panels manufactured with concrete resulted in a partial filling of the hexagonal cavity at each end of the panel. The minimum full hexagon fill is 8" and the maximum full fill of the cavity was 10". After the full fill of the cavity, the concrete tapers off to zero in 10" to 24". See photo below.

Apparatus: Uniformly distributed loading by vacuum pump acting below the specimen, a 2 mil plastic sheathing above the specimen and an airtight chamber as per section 11.3.1.3 of ASTM E 72 – 14a. The pressure was read with a water column manometer and a pressure transducer.

Supports: The samples were supported by rollers as per diagram below:



Long side profile

Deflection Gage: The deflection was measured using linear variable differential transformers (LVDT, HETI-0172).

TEST RESULTS

Test # 8

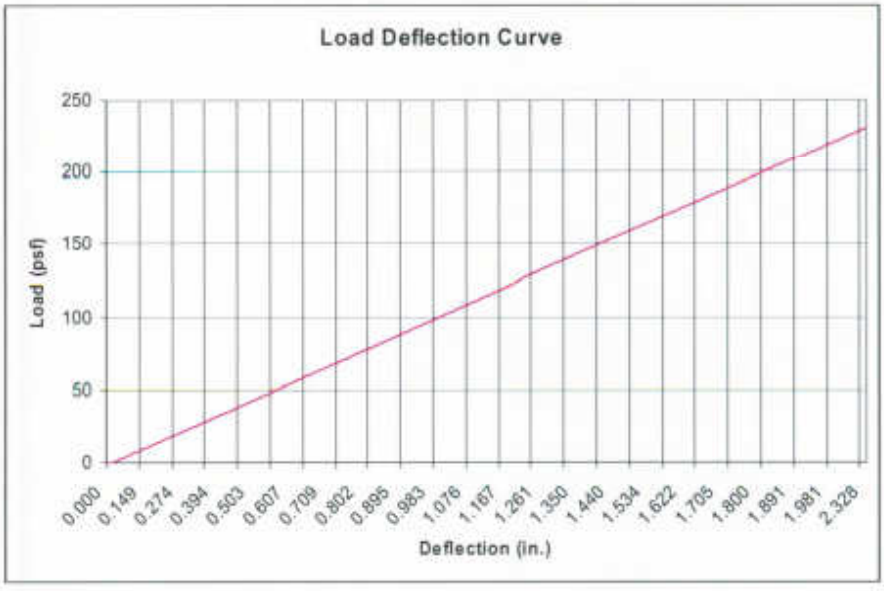
(Test Date: January 29, 2015)

Product Size: 23' 8"

Sample # 1 (Test Reference No. HETI-15-5013)

	Pressure (psf)	Deflection Location Center (inches)	Set	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.00	---	---
Load	40	0.54	0.00	100	300
Load	60	0.70	0.00	100	300
Load	80	0.86	0.00	100	300
Load	100	1.03	0.00	100	300
Load	120	1.22	0.04	97	300
Load	130	1.28	0.02	98	300
Load	140	1.40	0.06	96	300
Load	150	1.41	0.01	99	300
Load	160	1.51	0.05	97	300
Load	170	1.54	0.06	96	300
Load	180	1.62	0.05	97	300
Load	190	1.72	0.06	97	300
Load	200	1.90	0.02	99	300
Load	220	2.16	0.10	95	300
Load	230	2.33	0.17	93	300
Load	240	---	---	---	---
Failure Load	Failed at 240 PSF, Longitudinal End Shear				

Note: An additional 525 lbs weight was placed at the center of the assembly during the testing.



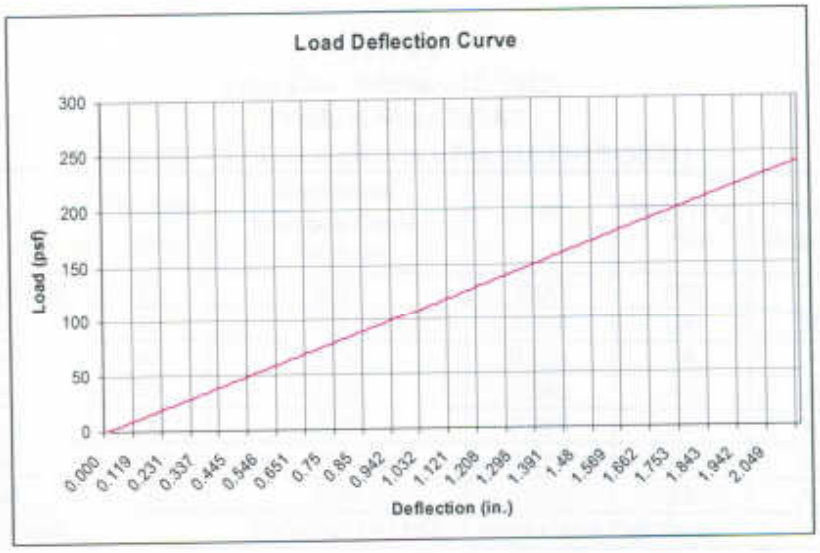
Test # 16

(Test Date: February 6, 2015)

Product Size: 23' 8"

Sample # 2 (Test Reference No. HETI-15-5019)

	Pressure (psf)	Deflection Location Center (inches)	Set	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.00	100	300
Load	110	0.96	0.00	100	300
Load	160	1.54	0.16	90	300
Load	180	1.62	0.03	98	300
Load	200	1.75	0.05	97	300
Load	220	2.07	0.14	93	300
Load	230	2.29	0.18	92	300
Load	240	2.34	0.14	94	300
Failure Load	Failed at 260 PSF, Longitudinal End Shear				



Test # 1

(Test Date: February 11, 2015)

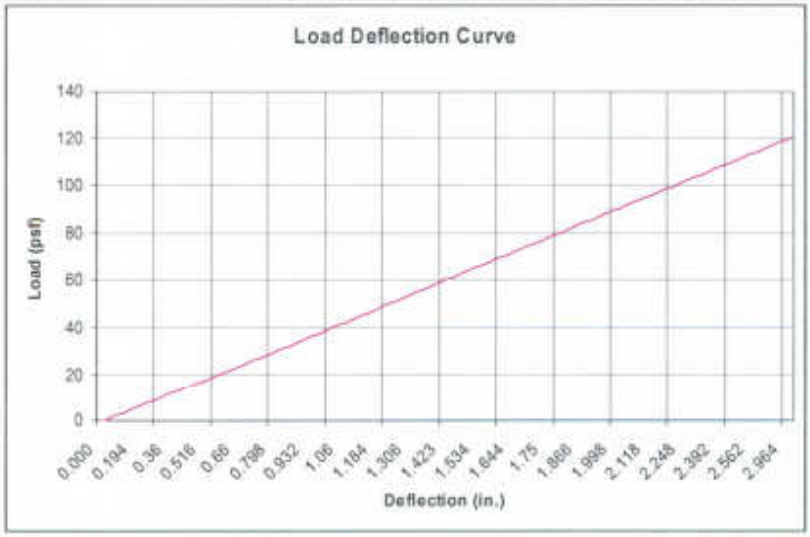
Product Size: 23' 8"

Sample # 3 (Test Reference No. HETI-15-5020)

	Pressure (psf)	Deflection Location Center (inches)	Set	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.00	100	300
Load	80	0.77	0.04	95	300
Load	160	1.64	0.06	96	300
Load	180	1.56	0.07	96	300
Load	200	1.71	0.08	95	300
Load	220	1.87	0.10	95	300
Load	240	2.12	0.19	91	300
Failure Load	Failed at 260 PSF, Longitudinal End Shear				

Test # 6
(Test Date: February 13, 2015)
Product Size: 30' 8"
Sample # 2 (Test Reference No. HETI-15-5022)

	Pressure (psf)	Deflection Location Center (inches)	Set	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.00	100	300
Load	40	1.09	0.00	100	300
Load	60	1.57	0.05	97	300
Load	80	1.99	0.09	95	300
Load	100	2.41	0.16	94	300
Load	120	3.04	0.36	88	300
Failure Load	Failed at 130 PSF, Longitudinal End Shear				



Conclusion

The samples were structurally intact at the conclusion of this test.

NOTE: The above results were obtained using the designated test methods that indicates compliance with the performance requirements of the referenced specifications. This report does not constitute certification of the specimens tested.

STATEMENT OF INDEPENDENCE

The Hurricane Engineering & Testing, Inc., does not have, nor does it intend to acquire or will acquire, a financial interest in any company manufacturing or distributing products tested or labeled by the Hurricane Engineering & Testing, Inc. Hurricane Engineering & Testing, Inc., is not owned, operated or controlled by any company manufacturing or distributing products it test or labels.

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