Uplift Load Test

May 5, 2015

REPORT NUMBER: **HETI-15-5028**

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 # 13: 27" wide x 301 ½" long x 8 3/16" deep x 14 ½" high (23'-8" Span)
Test # 14: 27" wide x 264 ¼" long x 8 3/16" deep x 14 ½" high (20'-8" Span)
Test # 15: 27" wide x 384 ¼" long x 8 3/16" deep x 14 ½" high (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 # 13: S21 by Project Classic Structural Engineering, dated 2/24/15
Test # 14: S20 by Project Classic Structural Engineering, dated 2/23/15
Test # 15: S22 by Project Classic Structural Engineering, dated 2/23/15

TEST WITNESSED BY:
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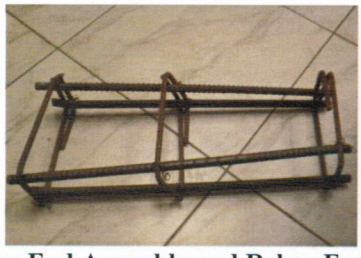
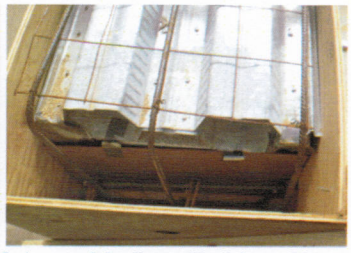
Eugenio Rivera (HETI)
Mr. Rafael E. Droz-Seda, P.E. (HETI)

ULTIMATE PRESSURE SUMMARY

Report No.	Test No.	Sample Span	Ultimate Pressure
HETI-15-5028	13	23'-8"	240 psf
HETI-15-5027	14	20'-8"	160 psf
HETI-15-5030	15	30'-8"	180 psf

20'-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 ½" camber at the center. The (2) panels were attached with (4) rows of (31) #10 x ¾" Hex Head Self Drilling Screws (HH SDS) located at 1 ½", 6 5/8", 12 ¾", 19 ½", 24 1/8", 30 5/8", 37", 44 ¾", 52 ¼", 64 5/8", 75 5/8", 85", 96 1/8", 104 ½", 111 ½", 124", 132 ½", 142 ¼", 151 5/8", 162 ½", 172 ¼", 182 ¾", 193 ¼", 201 3/8", 209 ½", 216 3/8", 222 ½", 228 ¾", 235 1/8", 240 ½", and 245 5/8" 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 as well as (3) #4 rebars the length of the panel which connected to a rebar end assembly using rebar tie wires. The rebar end assembly was comprised of (4) 24" long # 5 rebar and (3) #3 5" x 9" stirrups. The 24" rebar was tied to the inside of the (3) stirrups using rebar tie wire, which were located at the ends and center of the 24" rebar (See photo below). The rebar end assembly was laid into the bottom of a 27" wide x 14 ½" high x 8" deep form on each end. Once the sample was completely constructed, an average layer of 2.06" of 3500 psi concrete was poured on top of the finished single panel sample.

Rebar End Assembly and Rebar End Assembly Installed into Form

Individual Panel Size:	25 ½" w x 248 ½" long x 3 1/16" deep
Single Finished Panel Size:	27" w x 248 ½" long x 6 1/8" deep
Composite Finished Panel Size:	27" w x 264 ¼" long x 8 3/16" deep x 14 ½" high
Corrugated Panel Thickness:	16ga (0.060" with coating)
Concrete:	3500 psi

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 top 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

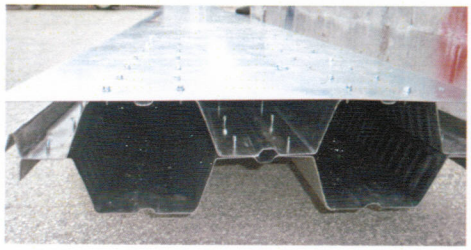
282 ½" from the left end. Once the samples were constructed, a layer of 0.142" thick (6" x 6" square) steel lathing the size of the sample was laid on top as well as (3) #4 rebars the length of the panel which connected to a rebar end assembly using rebar tie wires. The rebar end assembly was comprised of (4) 24" long # 5 rebar and (3) #3 5" x 9" stirrups. The 24" rebar was tied to the inside of the (3) stirrups using rebar tie wire, which were located at the ends and center of the 24" rebar (as in previous sample). The rebar end assembly was laid into the bottom of a 27" wide x 14 ½" high x 8" deep form on each end. Once the sample was completely constructed, 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 ½" long x 3 1/16" deep
Single Finished Panel Size:	27" w x 284 ½" long x 6 1/8" deep
Composite Finished Panel Size:	27" w x 301 ½" long x 6 1/8" 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

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 as well as (6) #4 rebars the length of the panel which connected to a rebar end assembly using rebar tie wires. The rebar end assembly was comprised of (4) 24" long # 5 rebar and (3) #3 5" x 9" stirrups. The 24" rebar was tied to the inside of the (3) stirrups using rebar tie wire, which were located at the ends and center of the 24" rebar (as in previous sample). The rebar end assembly was laid into the bottom of a 27" wide x 14 ½" high x 8" deep form on each end. Once the sample was completely constructed, 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 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 384 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



Sample showing connection of (1) or (2) galv. flat steel sheets to the finished single panel for 23'-8" and 30'-8" samples. (Sample was flipped over to show connection. Flat sheet is installed on bottom of sample.)

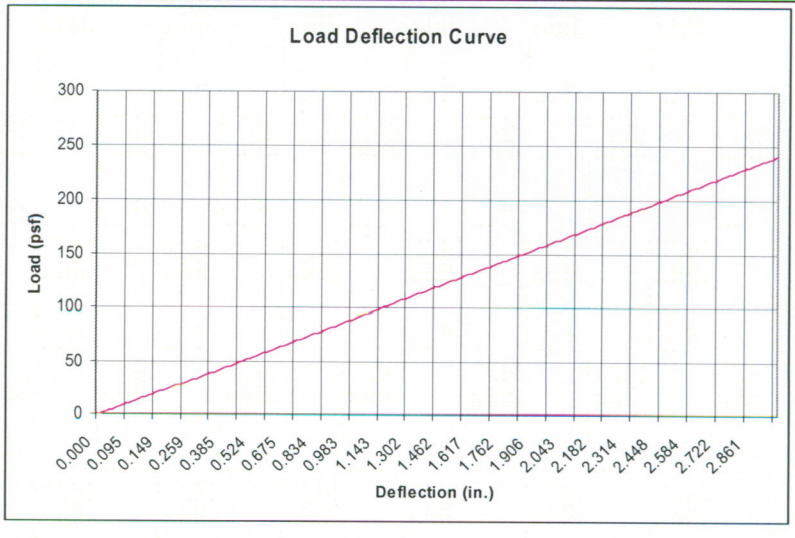
Note*: All composite panels manufactured with concrete resulted in a partial filling of the hexagonal cavity at each end of the panel. The minimum full hexagon fill is 8" and the maximum full fill of the cavity was 10". After the full fill of the cavity, the concrete tapers off to zero in 10" to 24".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

TEST RESULTS

(Test Reference No. HETI-15-5028) (20'8")

(Test Date: February 24, 2015)

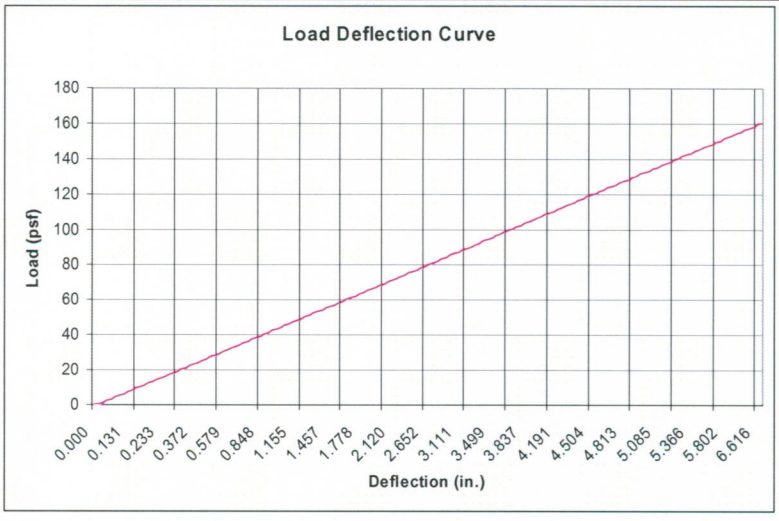
Pressure (psf)	Deflection Center (inches)	Set (inches)	Recovery Loc. 1 (%)	Duration (hours)
+60	0.39	0.000	100	30
+80	0.50	0.000	100	30
+100	0.67	0.000	100	30
+120	0.91	0.021	98	30
+140	1.14	0.020	98	30
+160	1.38	0.021	98	30
+180	2.04	0.043	98	30
+200	2.32	0.050	98	30
+220	2.87	0.070	98	30
+240	3.21	0.060	98	30
+260	Support connection to the floor failed.			



(Test Reference No. HETI-15-5027) (30'8")

(Test Date: February 23, 2015)

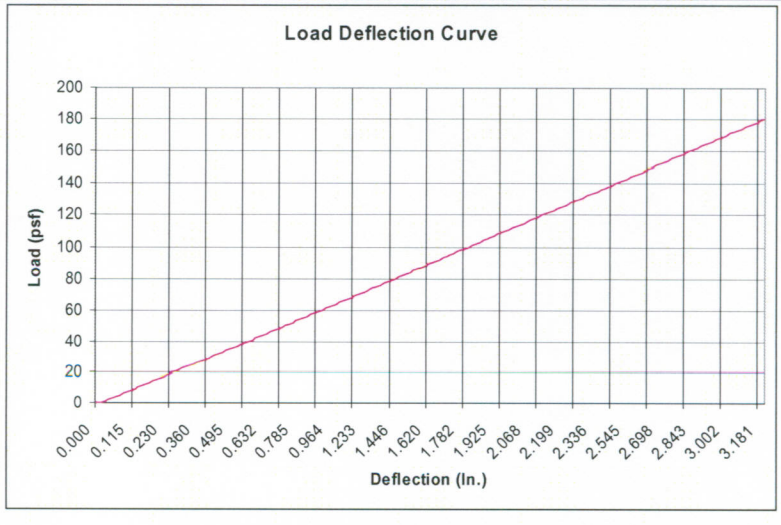
Pressure (psf)	Deflection Center (inches)	Set (inches)	Recovery Loc. 1 (%)	Duration (hours)
+40	0.62	0.00	100	30
+60	1.04	0.01	99	30
+80	1.51	0.01	99	30
+100	2.10	0.01	99	30
+120	3.03	0.02	99	30
+140	5.35	0.07	99	30
+160	6.72	0.08	99	30
+180	Support connection to the floor failed.			



(Test Reference No. HETI-15-5030) (23'8")

(Test Date: February 23, 2015)

Pressure (psf)	Deflection Center (inches)	Set (inches)	Recovery Loc. 1 (%)	Duration (hours)
+80	1.32	0.00	100	30
+160	2.88	0.02	99	30
+180	3.33	0.00	100	30
+200	Support connection to the floor failed.			



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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