

HURRICANE ENGINEERING & TESTING, INC.

Computer Controlled Product Testing & Design,
.....Wind Load Analysis

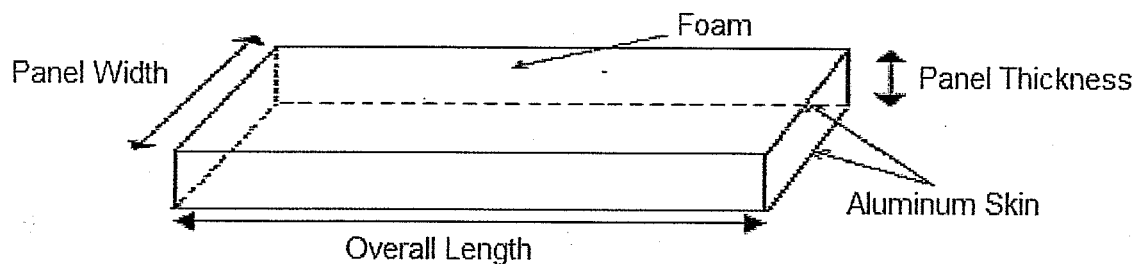
ASTM E 72-05 Strength Test of Panels for Building Construction Transverse Load Test – Horizontal Specimen

December 15, 2005

REPORT NUMBER: **HETI-05-2032**
MANUFACTURER: Elite Aluminum Corporation.
4650 Lyons Technology Parkway, Coconut Creek, FL. 33073.
TEST LOCATION: Hurricane Engineering & Testing, Inc.
6120 NW 97th Avenue, Miami, Florida 33178

FBPE Certificate of Authorization Number: 6905
LAB. CERTIFICATION No.: 04-0816.01 (MIAMI-DADE COUNTY, FLORIDA)
FBC ORGANIZATION No: TST1691

PRODUCT: **6" Thick Sandwich Aluminum-Foam Panel**
PRODUCT SIZE: 48" wide x 80" long x 6" deep, and ½" OSB TOP and **0.024"** thick Aluminum bottom skin.
DRAWING TITLE: PT-OSB/FM-003 by Elite Aluminum Corporation , dated 1/17/06.
PRODUCT DESCRIPTION: Insulated Foam panel with **0.024"** aluminum skin on both sides (Reference Material Tensile Test Report No. HETI-06-T502)
TEST WITNESSED BY: Syed Waqar Ali, Ph. D. (HETI)
Dr. Nasreen K. Ali, E.I. (HETI)
WITNESSING ENGINEER: Mrs. Ivonne Ghia, P.E. (HETI)

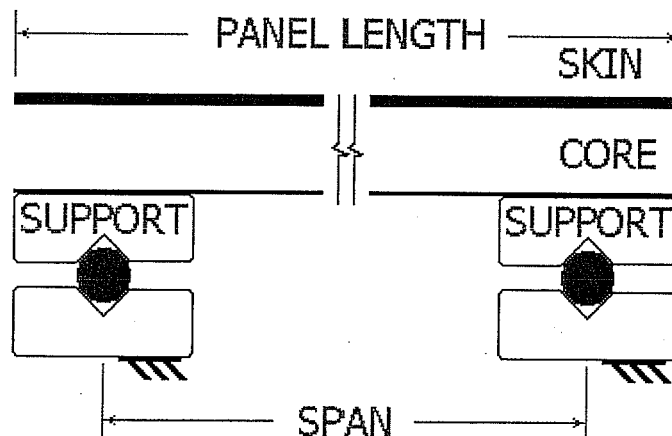


Product Description

- Each sample consisted of an upper layer of $\frac{1}{2}$ " **Oriented Strand Board (OSB)** and lower **aluminum facing** and a **core**. The aluminum weight was 0.3125 lbs per squared foot. The measurement was performed with a 0.0125 lbs accuracy scale on a 1 squared foot sheet paint was removed. The paint thickness was 0.75 MIL.
- Actual panel width: 48"
- Nominal panel width 48"
- Span: 76"
- Panel length 80"
- Panel depth 6"
- Top or Upper Facing: $\frac{1}{2}$ " ADVANTECH OSB by HUBER
- Bottom or Lower Facing: 0.024" nominal (0.0214" actual without paint and embossed) baked enamel finish 3105H154 Aluminum
- Core density: 0.91 lbs/ft³
- Core composition Expanded Polystyrene (EPS).
- Core thickness: 5.50" (prior to fabrication)
- Edge construction: roll formed
- Additional reinforcement: none.
- Adhesive ISOGRIP SP 2020 by Ashland Specialty

Test Procedure

- Symmetrical Assembly.
- Apparatus: Tested as per ASTM E 72 - 05 Section 11.3.1.1 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 - 05. 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).

Test Results

Sample I

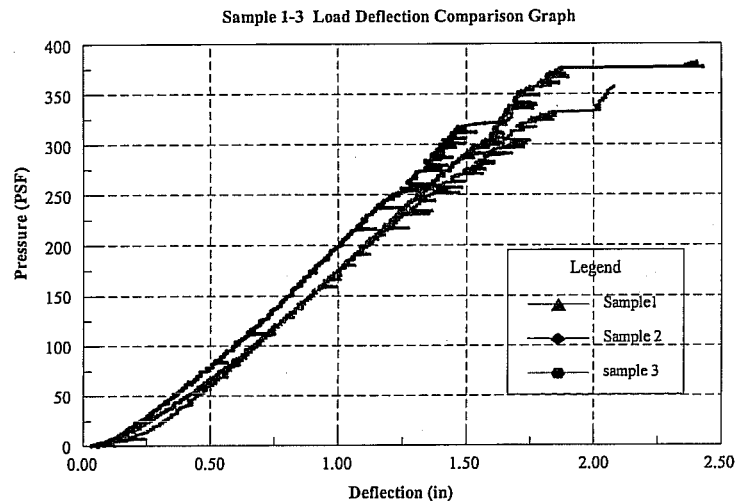
	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	100	0.45	0.00	100	300
Load	125	0.51	0.00	100	300
Load	150	0.58	0.00	100	300
Load	175	0.67	0.00	100	300
Load	200	0.80	0.046	94	300
Load	225	0.91	0.035	96	300
Load	250	1.05	0.069	93	300
Load	275	1.28	0.150	88	300
Load	300	1.54	0.281	85	300
Load	325	1.78	0.335	81	300
Load	350	2.08	0.428	79	300
Load	375	2.37	0.578	76	300
Failure Load	Test stopped after recovery reached less than 80%.				

Sample II

	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	100	0.42	0.00	100	300
Load	125	0.49	0.00	100	300
Load	150	0.56	0.00	100	300
Load	175	0.64	0.00	100	300
Load	200	0.76	0.023	97	300
Load	225	0.90	0.058	94	300
Load	250	1.11	0.116	90	300
Load	275	1.36	0.185	86	300
Load	300	1.70	0.312	82	300
Load	325	1.95	0.416	79	300
Failure Load	Test stopped after recovery reached less than 80%.				

Sample III

	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	100	0.42	0.000	100	300
Load	125	0.50	0.000	100	300
Load	150	0.60	0.000	100	300
Load	175	0.70	0.000	100	300
Load	200	0.81	0.035	96	300
Load	225	0.99	0.104	89	300
Load	250	1.18	0.150	87	300
Load	275	1.40	0.231	84	300
Load	300	1.66	0.301	82	300
Load	325	1.90	0.324	83	300
Load	350	2.52	0.798	68	300
Failure Load	Test stopped after recovery reached less than 80%.				



Conclusion

The samples were tested as in accordance with ASTM E 72-05. The Comparison Graph reflects the last test run where failure occurred for each sample.

NOTE: The above results were obtained using the designated test methods, which 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 tests or labels.

Dr. Nasreen K. Ali
Vice President

Ivonne Ghia, P.E.
Resident Engineer

HURRICANE ENGINEERING & TESTING, INC.

Computer Controlled Product Testing & Design,
.....Wind Load Analysis

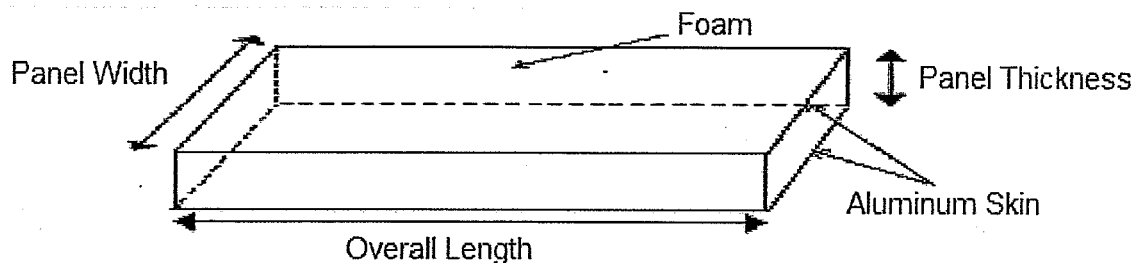
ASTM E 72-05 Strength Test of Panels for Building Construction Transverse Load-Horizontal Specimen & Concentrated Load Test

December 15, 2005

REPORT NUMBER: **HETI-05-2026**
MANUFACTURER: Elite Aluminum Corporation.
4650 Lyons Technology Parkway, Coconut Creek, FL. 33073.
TEST LOCATION: Hurricane Engineering & Testing, Inc.
6120 NW 97th Avenue, Miami, Florida 33178

FBPE Certificate of Authorization Number: 6905
LAB. CERTIFICATION No.: 04-0816.01 (MIAMI-DADE COUNTY, FLORIDA)
FBC ORGANIZATION No: TST1691

PRODUCT: **6" Thick Sandwich Aluminum-Foam Panel**
PRODUCT SIZE: 48" wide x 270" long x 6" deep, and ½" OSB TOP and **0.024"** thick Aluminum bottom skin.
DRAWING TITLE: PT-OSB/FM-004 by Elite Aluminum Corporation , dated 1/17/06.
PRODUCT DESCRIPTION: Insulated Foam panel with **0.024"** aluminum skin on both sides (Reference Material Tensile Test Report No. HETI-06-T502)
TEST WITNESSED BY: Syed Waqar Ali, Ph. D. (HETI)
Dr. Nasreen K. Ali, E.I. (HETI)
WITNESSING ENGINEER: Mrs. Ivonne Ghia, P.E. (HETI)

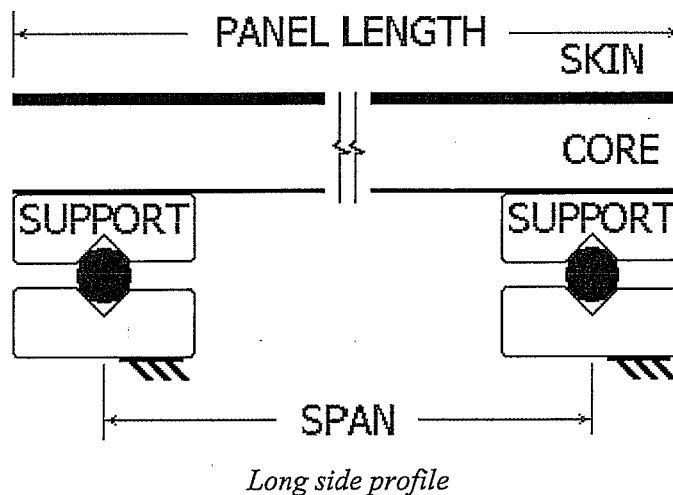


Product Description

- Each sample consisted of an upper layer of ½" **Oriented Strand Board (OSB)** and lower aluminum facing and a core. The aluminum weight was 0.3125 lbs per squared foot. The measurement was performed with a 0.0125 lbs accuracy scale on a 1 squared foot sheet paint was removed. The paint thickness was 0.75 MIL.
- Actual panel width: 48"
- Nominal panel width 48"
- Span: 266"
- Panel length 270"
- Panel depth 6"
- Top or Upper Facing: ½" ADVANTECH OSB by HUBER
- Bottom or Lower Facing: 0.024" nominal (0.0214" actual without paint and embossed) baked enamel finish 3105H154 Aluminum
- Core density: 0.91 lbs/ft³
- Core composition Expanded Polystyrene (EPS).
- Core thickness: 5.50" (prior to fabrication)
- Edge construction: roll formed
- Additional reinforcement: none.
- Adhesive ISOGRIP SP 2020 by Ashland Specialty

Test Procedure

- Symmetrical Assembly.
- Apparatus: Tested as per ASTM E 72 - 05 Section 11.3.1.1 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 - 05. The pressure was read with a water column manometer and a pressure transducer.
- Supports: The samples were supported by rollers as per diagram below:



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

Test Results

Sample I

	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	10	1.16	0.012	99	300
Load	20	2.34	0.035	99	300
Load	30	3.66	0.092	97	300
Load	40	5.19	0.405	92	300
Load	50	8.07	1.965	76	300
Failure Load	Test stopped after recovery was less than 80%.				

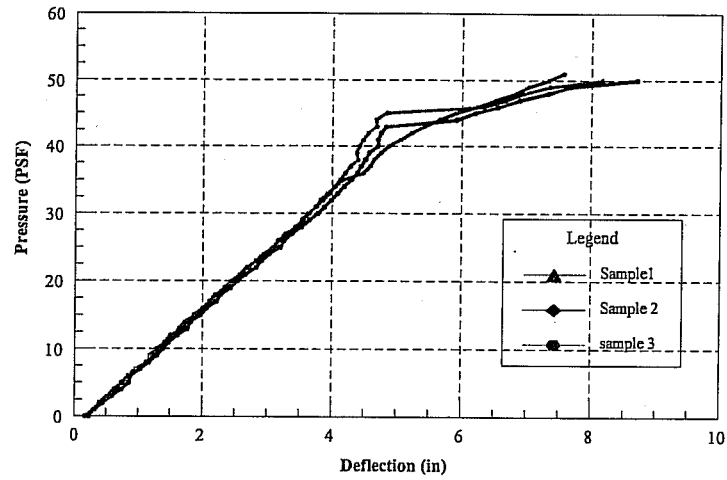
Sample II

	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	10	1.07	0.00	100	300
Load	20	2.42	0.035	99	300
Load	30	3.68	0.116	97	300
Load	40	4.84	0.277	94	300
Load	50	8.91	2.543	71	300
Failure Load	Test stopped after recovery was less than 80%.				

Sample III

	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	10	1.07	0.012	99	300
Load	20	2.09	0.012	99	300
Load	30	3.41	0.069	98	300
Load	40	4.59	0.231	95	300
Load	50	8.29	2.219	73	300
Failure Load	Test stopped after recovery was less than 80%.				

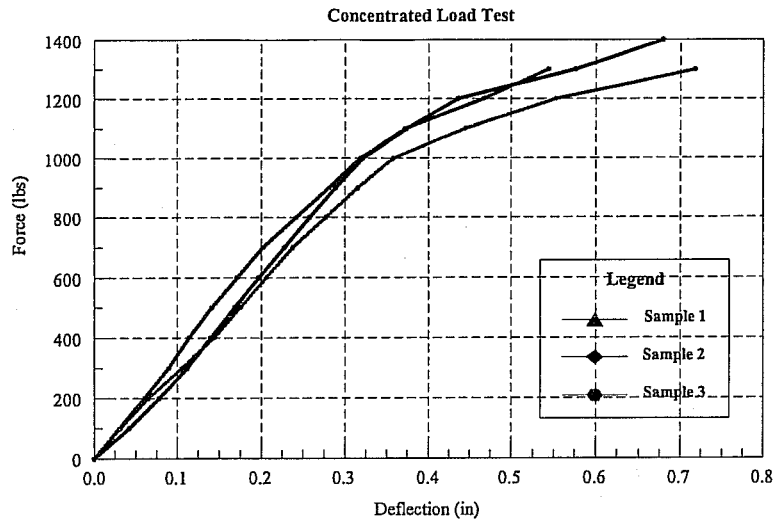
Sample 1-3 Load Deflection Comparison Graph



Concentrated Load Test

Force (lbs)	Sample 1 Deflection (in)	Sample 2 Deflection (in)	Sample 3 Deflection (in)	Duration (Sec)
0.0	0.000	0.0	0.0	0
100	0.030	0.042	0.031	60
200	0.060	0.078	0.065	60
300	0.089	0.112	0.106	60
400	0.114	0.140	0.144	60
500	0.141	0.169	0.175	60
600	0.171	0.197	0.206	60
700	0.202	0.228	0.238	60
800	0.242	0.258	0.277	60
900	0.281	0.289	0.316	60
1000	0.319	0.322	0.358	60
1100	0.372	0.374	0.445	60
1200	0.467	0.436	0.553	60
1300	0.544	0.576	0.718	60
1400	-	0.679	-	60
Failure Load	Failed at 1298	Failed at 1400	Failed at 1380	

Note: Failed status indicates that 1" diameter round bar used to apply concentrated load ruptured and penetrated the OSB board. Reference Group 05-2049.



Conclusion

The samples were tested as in accordance with ASTM E 72-05. The Comparison Graph reflects the last test run where failure occurred for each sample.

NOTE: The above results were obtained using the designated test methods, which 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 tests or labels.

Dr. Nasreen K. Ali
Vice President

Ivonne Ghia, P.E.
Resident Engineer

01/23/06

HURRICANE ENGINEERING & TESTING, INC.

Computer Controlled Product Testing & Design,
..... Wind Load Analysis

ASTM E 72-05 Strength Test of Panels for Building Construction Transverse Load Test – Horizontal Specimen

December 15, 2005

REPORT NUMBER: **HETI-05-2033**

MANUFACTURER: Elite Aluminum Corporation.
4650 Lyons Technology Parkway, Coconut Creek, FL. 33073.

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

FBPE Certificate of Authorization Number: 6905

LAB. CERTIFICATION No.: 04-0816.01 (MIAMI-DADE COUNTY, FLORIDA)

FBC ORGANIZATION No: TST1691

PRODUCT: **6" Thick Sandwich Aluminum-Foam Panel**

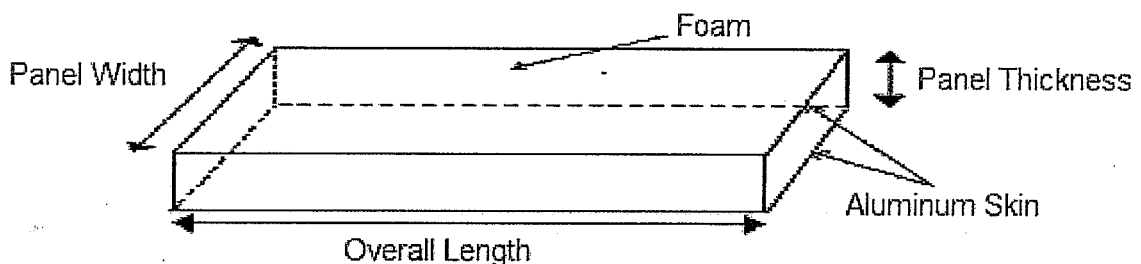
PRODUCT SIZE: 48" wide x 80" long x 6" deep, and ½" OSB TOP and 0.030" thick Aluminum bottom skin.

DRAWING TITLE: PT-OSB/FM-007 by Elite Aluminum Corporation , dated 1/17/06.

PRODUCT DESCRIPTION: Insulated Foam panel with 0.030" aluminum skin on both sides
(Reference Material Tensile Test Report No. HETI-06-T516)

TEST WITNESSED BY: Syed Waqar Ali, Ph. D. (HETI)
Dr. Nasreen K. Ali, E.I. (HETI)

WITNESSING ENGINEER: Mrs. Ivonne Ghia, P.E. (HETI)

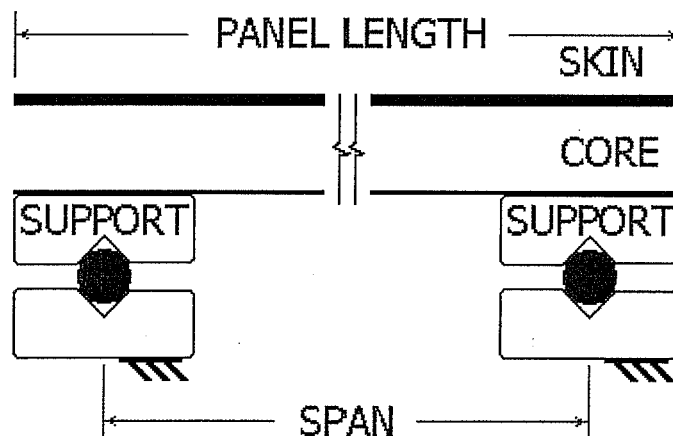


Product Description

- Each sample consisted of an upper layer of $\frac{1}{2}$ " **Oriented Strand Board (OSB)** and lower aluminum facing and a core. The aluminum weight was 0.408 lbs per squared foot. The measurement was performed with a 0.0125 lbs accuracy scale on a 1 squared foot sheet paint was removed. The paint thickness was 0.75 MIL.
- Actual panel width: 48"
- Nominal panel width 48"
- Span: 76"
- Panel length 80"
- Panel depth 6"
- Top or Upper Facing: $\frac{1}{2}$ " ADVANTECH OSB by HUBER
- Bottom or Lower Facing: 0.032" nominal (0.027" actual without paint and embossed) baked enamel finish 3105H154 Aluminum
- Core density: 0.91 lbs/ft³
- Core composition Expanded Polystyrene (EPS).
- Core thickness: 5.50" (prior to fabrication)
- Edge construction: roll formed
- Additional reinforcement: none.
- Adhesive ISOGRIP SP 2020 by Ashland Specialty

Test Procedure

- Symmetrical Assembly.
- Apparatus: Tested as per ASTM E 72 - 05 Section 11.3.1.1 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 - 05. 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).

Test Results

Sample I

	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	100	0.43	0.000	100	300
Load	125	0.47	0.000	100	300
Load	150	0.57	0.012	98	300
Load	175	0.66	0.012	98	300
Load	200	0.87	0.104	88	300
Load	225	0.97	0.069	93	300
Load	250	1.21	0.185	85	300
Load	275	1.49	0.289	81	300
Load	300	1.78	0.381	79	300
Failure Load	Test stopped after recovery was less than 80%.				

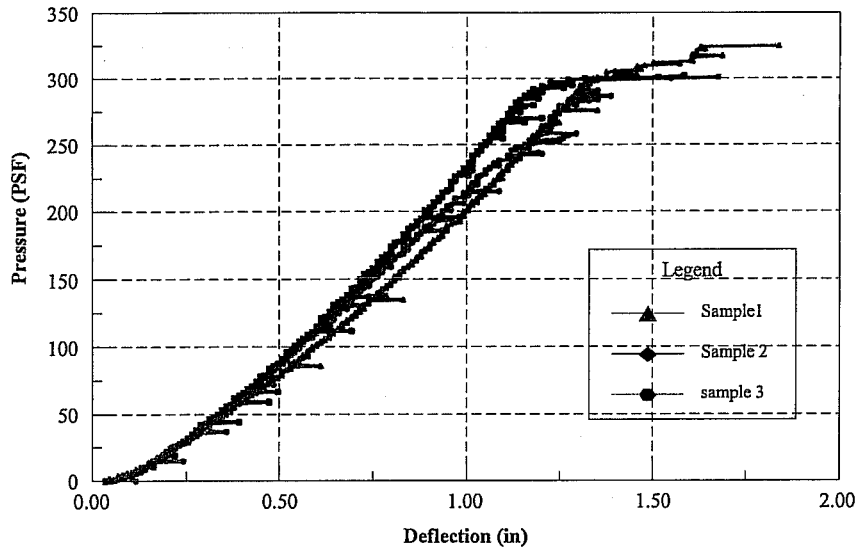
Sample II

	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	100	0.43	0.000	100	300
Load	125	0.48	0.000	100	300
Load	150	0.56	0.000	100	300
Load	175	0.66	0.023	97	300
Load	200	0.81	0.058	93	300
Load	225	0.97	0.116	88	300
Load	250	1.13	0.127	89	300
Load	275	1.38	0.243	82	300
Load	300	1.64	0.370	77	300
Failure Load	Test stopped after recovery was less than 80%.				

Sample III

	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	100	0.41	0.000	100	300
Load	125	0.45	0.000	100	300
Load	150	0.53	0.000	100	300
Load	175	0.64	0.023	96	300
Load	200	0.76	0.046	94	300
Load	225	0.92	0.092	90	300
Load	250	1.10	0.139	87	300
Load	275	1.39	0.243	82	300
Load	300	1.63	0.312	81	300
Load	325	1.92	0.486	75	300
Failure Load	Test stopped after recovery was less than 80%.				

Sample 1-3 Load Deflection Comparison Graph



Conclusion

The samples were tested as in accordance with ASTM E 72-05. The Comparison Graph reflects the last test run where failure occurred for each sample.

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

STATEMENT OF INDEPENDENCE

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Vice President

Ivonne Ghia, P.E.
Resident Engineer

01/23/06

HURRICANE ENGINEERING & TESTING, INC.

Computer Controlled Product Testing & Design,
.....Wind Load Analysis

ASTM E 72-05

Strength Test of Panels for Building Construction Transverse Load-Horizontal Specimen & Concentrated Load Test

December 15, 2005

REPORT NUMBER: **HETI-05-2025**

MANUFACTURER: Elite Aluminum Corporation.
4650 Lyons Technology Parkway, Coconut Creek, FL. 33073.

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

FBPE Certificate of Authorization Number: 6905

LAB. CERTIFICATION No.: 04-0816.01 (MIAMI-DADE COUNTY, FLORIDA)

FBC ORGANIZATION No: TST1691

PRODUCT: **6" Thick Sandwich Aluminum-Foam Panel**

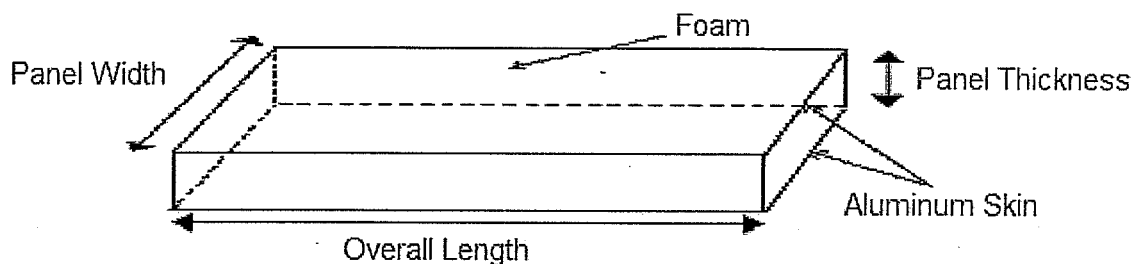
PRODUCT SIZE: 48" wide x 288" long x 6" deep, and 1/2" OSB TOP and 0.030" thick Aluminum bottom skin.

DRAWING TITLE: PT-OSB/FM-008 by Elite Aluminum Corporation , dated 1/17/06.

PRODUCT DESCRIPTION: Insulated Foam panel with 0.030" aluminum skin on both sides
(Reference Material Tensile Test Report No. HETI-06-T516)

TEST WITNESSED BY: Syed Waqar Ali, Ph. D. (HETI)
Dr. Nasreen K. Ali, E.I. (HETI)

WITNESSING ENGINEER: Mrs. Ivonne Ghia, P.E. (HETI)

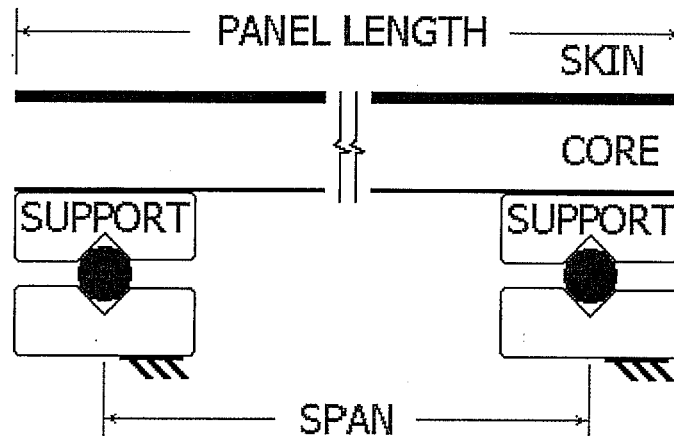


Product Description

- Each sample consisted of an upper layer of $\frac{1}{2}$ " **Oriented Strand Board (OSB)** and lower aluminum facing and a core. The aluminum weight was 0.408 lbs per squared foot. The measurement was performed with a 0.0125 lbs accuracy scale on a 1 squared foot sheet paint was removed. The paint thickness was 0.75 MIL.
- Actual panel width: 48"
- Nominal panel width 48"
- Span: 284"
- Panel length 288"
- Panel depth 6"
- Top or Upper Facing: $\frac{1}{2}$ " ADVANTECH OSB by HUBER
- Bottom or Lower Facing: 0.032" nominal (0.027" actual without paint and embossed) baked enamel finish 3105H154 Aluminum
- Core density: 0.91 lbs/ft³
- Core composition Expanded Polystyrene (EPS).
- Core thickness: 5.50" (prior to fabrication)
- Edge construction: roll formed
- Additional reinforcement: none.
- Adhesive ISOGrip SP 2020 by Ashland Specialty

Test Procedure

- Symmetrical Assembly.
- Apparatus: Tested as per ASTM E 72 - 05 Section 11.3.1.1 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 - 05. 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).

Test Results

Sample I

	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	10	1.26	0.000	100	300
Load	20	2.36	0.032	99	300
Load	30	3.07	0.029	99	300
Load	40	3.55	0.035	99	300
Load	50	4.12	0.447	89	300
Failure Load	Failed at 50 psf, Left end shear failure				

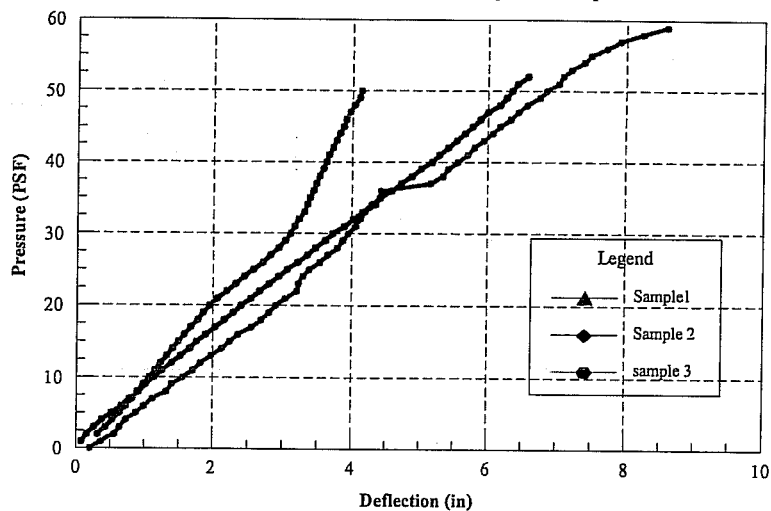
Sample II

	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	10	1.22	0.026	98	300
Load	20	2.50	0.052	98	300
Load	30	3.88	0.101	97	300
Load	40	5.16	0.305	94	300
Load	50	6.32	0.61	90	300
Load	60	9.00	3.000	66	300
Failure Load	Test stopped after recovery was less than 80%.				

Sample III

	Pressure (psf)	AVG Center Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Starting Load	0.0	0.00	0.000	100	300
Load	10	1.28	0.023	98	300
Load	20	2.63	0.046	98	300
Load	30	4.01	0.069	98	300
Load	40	4.95	0.150	97	300
Load	50	7.62	0.950	87	300
Load	60	9.02	1.410	84	300
Failure Load	Test stopped after exceeding $1.5 * (L/80)$ Deflection Criteria				

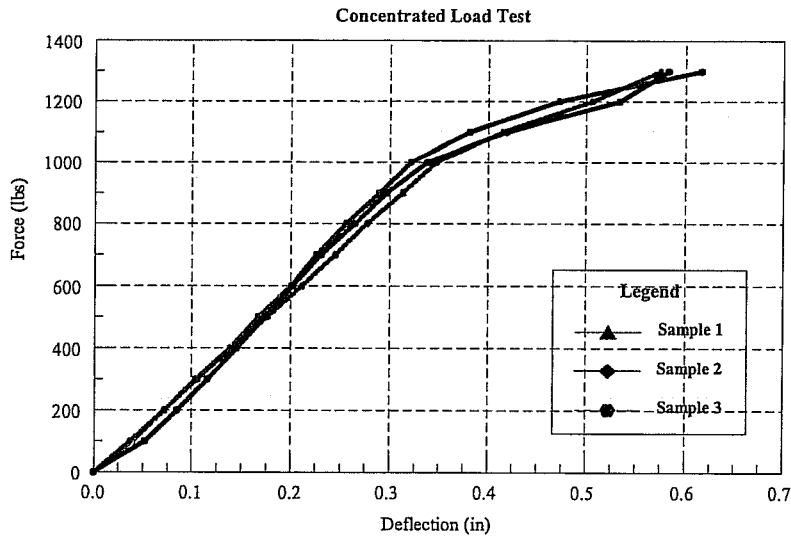
Sample 1-3 Load Deflection Comparison Graph



Concentrated Load Test

Force (lbs)	Sample 1 Deflection (in)	Sample 2 Deflection (in)	Sample 3 Deflection (in)	Duration (Sec)
0.0	0.000	0.000	0.000	0
100	0.039	0.052	0.037	60
200	0.072	0.085	0.072	60
300	0.104	0.116	0.106	60
400	0.139	0.146	0.140	60
500	0.167	0.174	0.177	60
600	0.200	0.202	0.211	60
700	0.226	0.231	0.245	60
800	0.256	0.265	0.277	60
900	0.289	0.297	0.313	60
1000	0.321	0.338	0.347	60
1100	0.381	0.419	0.415	60
1200	0.472	0.534	0.506	60
1300	0.616	0.583	0.575	60
Failure Load	Failed at 1298	Failed at 1290	Failed at 1300	

Note: Failed status indicates that 1" diameter round bar used to apply concentrated load ruptured and penetrated the OSB board. Reference Group 05-2050.



Conclusion

The samples were tested as in accordance with ASTM E 72-05. The Comparison Graph reflects the last test run where failure occurred for each sample.

NOTE: The above results were obtained using the designated test methods, which 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 tests or labels.

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