



MIAMI-DADE COUNTY PERFORMANCE TEST REPORT

Report No.: F7513.01-109-18

Rendered to:

FIBER COMPOSITES LLC
New London, North Carolina

PRODUCT TYPE: Composite Deck Boards
SERIES/MODEL: Horizon Deck Board with Permatech

This report contains in its entirety:

Cover Page: 1 page
Report Body: 11 pages
Sketch(es): 2 pages
Photograph(s): 1 page
Drawing(s): 1 page

Test Start Date: 04/25/16
Test End Date: 04/26/16
Report Date: 05/19/16
Test Record Retention End Date: 04/26/26
Miami-Dade County Notification No.: ATI 16021

1.0 Client Identification:

- 1.1 Report Issued To:** Fiber Composites LLC
181 Random Drive
New London, North Carolina 28127
- 1.2 Contact Person:** Rick Lappin

2.0 Laboratory Identification:

- 2.1 Test Laboratory:** Architectural Testing, Inc., an Intertek company ("Intertek-ATI")
130 Derry Court
York, Pennsylvania 17406-8405
- 2.2 Phone Number:** 717-764-7700

3.0 Project Summary:

- 3.1 Introduction:** Intertek-ATI was contracted by Fiber Composites LLC to conduct TAS 201, TAS 202, and TAS 203 testing in accordance with Florida Building Code for High Velocity Hurricane Zone and Miami-Dade County requirements. The four specimen(s) tested met the performance requirements set forth in the protocols. The results are summarized in Table 1.

Table 1: Summary of Test Results

Specimen #	Test Protocol	Design Pressure
1	TAS 202	+120.0 / -120.0 psf
2	TAS 201 / 203 (Large Missile)	+120.0 / -120.0 psf
3	TAS 201 / 203 (Large Missile)	+120.0 / -120.0 psf
4	TAS 201 / 203 (Large Missile)	+120.0 / -120.0 psf

- 3.2 Product Type:** Composite Deck Boards
- 3.3 Series/Model:** Horizon Deck Board with Permatech
- 3.4 Miami-Dade County Notification No.:** ATI 16021
- 3.5 Laboratory Certification No.:** 12-0501.01
- 3.6 Test Date(s):** 04/25/16 – 04/26/16
- 3.7 Test Record Retention End Date:** 04/26/26
- 3.8 Test Location:** Intertek-ATI test facility in York, Pennsylvania.

3.0 Project Summary: (Continued)

3.9 Test Specimen Source: The test specimen(s) were provided by the client. Representative samples of the test specimen(s) will be retained by Intertek-ATI for a minimum of ten years from the test completion date.

3.10 Drawing Reference: The test specimen drawings have been reviewed by Intertek-ATI and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek-ATI per the drawings located in Appendix C. Any deviations are documented herein and on the drawings.

3.11 List of Official Observers:

<u>Name</u>	<u>Company</u>
Rick Lappin	Fiber Composites LLC
Timothy J. McGill	Intertek-ATI
Joseph A. Reed, P.E.	Intertek-ATI
Andrew P. Mehalick	Intertek-ATI

4.0 Test Protocol(s):

TAS 201-94, *Impact Test Procedures*

TAS 202-94, *Criteria for Testing Impact & Non Impact Resistant Building Envelope Components Using Uniform Static Air Pressure*

TAS 203-94, *Criteria for Testing Products Subject to Cyclic Wind Pressure Loading*

5.0 Test Specimen Description:

5.1 Product Sizes: Table 2 provides product sizes for the overall test specimen(s).

Table 2: Overall Specimen Sizes

Overall Area: 18.3 ft ²	Width (in.)	Height (in.)
Overall size	96	27-1/2
Deck board	96	5-3/8

5.0 Test Specimen Description: (Continued)

5.2 Deck Board Construction: Each deck board was constructed from an extruded composite material and measured 5-3/8" wide by 15/16" thick.

5.3 Test Wall Construction: The test wall measured 8' 1-1/2" wide by 2' 6-1/8" high and was constructed of #2 Spruce-Pine-Fir nominal 2x4 lumber. Five studs were spaced 16" on center (six spans) and were attached to the top and bottom plates with 3" long drywall screws. A sheet of nominal 5/8" thick plywood, with five 4" diameter holes to allow pressure to transfer to the deck boards, was secured to the studs with #8 x 1-5/8" drywall screws. Vertical battens constructed from #2 Spruce-Pine-Fir nominal 1x3 lumber were secured over the plywood sheathing, spaced 16" on center and secured with #8 x 2" drywall screws. Silicone was utilized on the backside of the test panel to seal the perimeter. A 2 mil thick plastic film was loosely draped over the interior of the siding to enable attainment of pressure.

5.4 Mounting Details: Each specimen consisted of five horizontal courses of deck boards. The second, third, and fourth courses utilized one vertical seam located at one of the battens. The deck boards were mounted with two #9 x 2-1/2" composite deck screws per batten location, spaced 16" on center, through the batten, sheathing, and into the studs. A 3/16" spacing was maintained between horizontal rows of deck boards.

5.5 Reinforcement: No reinforcement was utilized.

5.6 Weatherstripping: No weatherstripping was utilized.

5.7 Glazing Details: No glazing was utilized.

5.8 Drainage: No drainage was utilized.

5.9 Hardware: No hardware was utilized.

6.0 Test Results: The temperature during TAS 202 testing was 65°F. Results are tabulated as follows:

6.1 Protocol TAS 202-94, Static Air Pressure

Table 3 provides the results for positive and negative uniform static load test at a duration of 30 seconds.

Table 3: Test Specimen #1 TAS 202, Preload and Design Load Test Results

Load (psf)	Indicator Location	Deflection (in.)		Permanent Set (in.)	
		Measured	Allowed	Measured	Allowed
+90.0 50% of Test Pressure	1	0.01	N/A	0.01	N/A
	2	0.01	N/A	<0.01	N/A
+120.0 Design Pressure	1	0.01	N/A	<0.01	N/A
	2	0.02	N/A	<0.01	N/A
-90.0 50% of Test Pressure	1	0.01	N/A	0.01	N/A
	2	0.01	N/A	<0.01	N/A
-120.0 Design Pressure	1	0.01	N/A	0.01	N/A
	2	0.02	N/A	<0.01	N/A
+180.0 Test Pressure	1	0.01	N/A	0.01	N/A
	2	0.02	N/A	<0.01	N/A
-180.0 Test Pressure	1	0.01	N/A	0.01	N/A
	2	0.03	N/A	0.01	N/A

Note: See Intertek-ATI Sketch #1 for indicator locations. Deflection/permanent set reported is the overall deflection between three points (longest unsupported span) which accounts for support movement.

Conclusion: Intertek-ATI observed no signs of failure in any area of the test specimen during the TAS 202 testing; as such, the test specimen satisfies the requirements of TAS 202.

6.0 Test Results: The temperature during TAS 201 testing was 68°F. Results are tabulated as follows:

6.2 Protocol TAS 201-94, Large Impact Procedures

Tables 4, 5, and 6 provide the results for the large missile impact test.

Table 4: Test Specimen #2 TAS 201, Large Missile Impact Test Results

Impact #	Missile Weight (lbs.)	Missile Length (in.)	Missile Velocity (ft./sec.)
1	8.97	98.5	49.5
2	8.97	98.5	49.7

Table 5: Test Specimen #3 TAS 201, Large Missile Impact Test Results

Impact #	Missile Weight (lbs.)	Missile Length (in.)	Missile Velocity (ft./sec.)
1	8.97	98.5	50.5
2	8.97	98.5	49.8

Table 6: Test Specimen #4 TAS 201, Large Missile Impact Test Results

Impact #	Missile Weight (lbs.)	Missile Length (in.)	Missile Velocity (ft./sec.)
1	8.97	98.5	49.7
2	8.97	98.5	49.8

Note: See Intertek-ATI Sketch #2 for impact locations.

Conclusion: The large missiles impacted each intended target and Intertek-ATI carefully inspected each impact location. Intertek-ATI observed no signs of penetration, rupture, or opening after the large missile impact test; as such, each test specimen satisfies the large missile requirements of TAS 201.

6.0 Test Results: The temperature during TAS 203 testing was 73°F. Results are tabulated as follows:

6.3 Protocol TAS 203-94, Cyclic Wind Pressure Loading

Tables 7 through 15 provide the results for the positive and negative cyclic load test.

Table 7: Test Specimen #2 TAS 203, Cyclic Test Spectrum and Average Cycle Time

Design Pressure	+120.0 / -120.0 psf	Stage		
		1	2	3
Positive Pressure Range (psf)		0 – 60.0	0 – 72.0	0 – 156.0
Average Cycle Time (sec.)		2.12	2.47	4.00
Number of Cycles		600	70	1
	Stage	4	5	6
Negative Pressure Range (psf)		0 – 60.0	0 – 72.0	0 – 156.0
Average Cycle Time (sec.)		2.18	2.39	4.00
Number of Cycles		600	70	1

Table 8: Test Specimen #2 TAS 203, Positive Cyclic Load Test Results

Indicator Location	Maximum Deflection (in.)	Permanent Set (in.)
1	0.06	0.03
2	0.02	0.01

Table 9: Test Specimen #2 TAS 203, Negative Cyclic Load test results

Indicator Location	Maximum Deflection (in.)	Permanent Set (in.)
1	0.06	0.06
2	0.03	0.03

Note: See Intertek-ATI Sketch #1 for indicator locations. Deflection/permanent set reported is the overall deflection between three points (longest unsupported span) which accounts for support movement.

6.0 Test Results: (Continued)

6.3 Protocol TAS 203-94, Cyclic Wind Pressure Loading

Table 10: Test Specimen #3 TAS 203, Cyclic Test Spectrum and Average Cycle Time

Design Pressure	+120.0 / -120.0 psf	Stage		
		1	2	3
Positive Pressure Range (psf)		0 – 60.0	0 – 72.0	0 – 156.0
Average Cycle Time (sec.)		2.50	2.36	4.00
Number of Cycles		600	70	1
		4	5	6
Negative Pressure Range (psf)		0 – 60.0	0 – 72.0	0 – 156.0
Average Cycle Time (sec.)		2.12	2.16	4.00
Number of Cycles		600	70	1

Table 11: Test Specimen #3 TAS 203, Positive Cyclic Load Test Results

Indicator Location	Maximum Deflection (in.)	Permanent Set (in.)
1	0.01	<0.01
2	0.02	0.01

Table 12: Test Specimen #3 TAS 203, Negative Cyclic Load Test Results

Indicator Location	Maximum Deflection (in.)	Permanent Set (in.)
1	0.01	<0.01
2	<0.01	0.01

Note: See Intertek-ATI Sketch #1 for indicator locations. Deflection/permanent set reported is the overall deflection between three points (longest unsupported span) which accounts for support movement.

6.0 Test Results: (Continued)

6.3 Protocol TAS 203-94, Cyclic Wind Pressure Loading

Table 13: Test Specimen #4 TAS 203, Cyclic Test Spectrum and Average Cycle Time

Design Pressure	+120.0 / -120.0 psf	Stage		
		1	2	3
Positive Pressure Range (psf)		0 – 60.0	0 – 72.0	0 – 156.0
Average Cycle Time (sec.)		2.27	2.48	4.00
Number of Cycles		600	70	1
		4	5	6
Negative Pressure Range (psf)		0 – 60.0	0 – 72.0	0 – 156.0
Average Cycle Time (sec.)		2.14	2.23	4.00
Number of Cycles		600	70	1

Table 14: Test Specimen #4 TAS 203, Positive Cyclic Load Test Results

Indicator Location	Maximum Deflection (in.)	Permanent Set (in.)
1	0.03	0.02
2	0.01	<0.01

Table 15: Test Specimen #4 TAS 203, Negative Cyclic Load Test Results

Indicator Location	Maximum Deflection (in.)	Permanent Set (in.)
1	0.01	0.01
2	0.01	0.01

Note: See Intertek-ATI Sketch #1 for indicator locations. Deflection/permanent set reported is the overall deflection between three points (longest unsupported span) which accounts for support movement.

Conclusion: Intertek-ATI observed no signs of failure in any area of the test specimens during the cyclic load test; as such, the test specimens satisfy the cyclic load requirements of TAS 203.

7.0 Test Equipment:

Cannon: Constructed from steel piping utilizing compressed air to propel the missile

Missile: 2x4 Southern Pine

Timing Device: Electronic beam type

Cycling Mechanism: Computer controlled centrifugal blower with electronic pressure measuring device

Deflection Measuring Device: Linear transducers

8.0 Laboratory Compliance Statements:

The following are provided as required by the protocols for the testing reported herein.

Upon completion of testing, specimens tested for TAS 201-94 met the requirements of Section 1626 of the Florida Building Code, Building.

Upon completion of testing, specimens tested for TAS 202-94 met the requirements of Section 1620 of the Florida Building Code, Building.

Upon completion of testing, specimens tested for TAS 203-94 met the requirements of Section 1625 of the Florida Building Code, Building.

Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

Intertek-ATI will service this report for the entire test record retention period. Test records such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Intertek-ATI.

For ARCHITECTURAL TESTING, INC.:

Andrew P. Mehalick
Technician

Joseph A. Reed, P.E.
Director - Engineering

APM:asm/cmd

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix A: Sketch(es) (2)

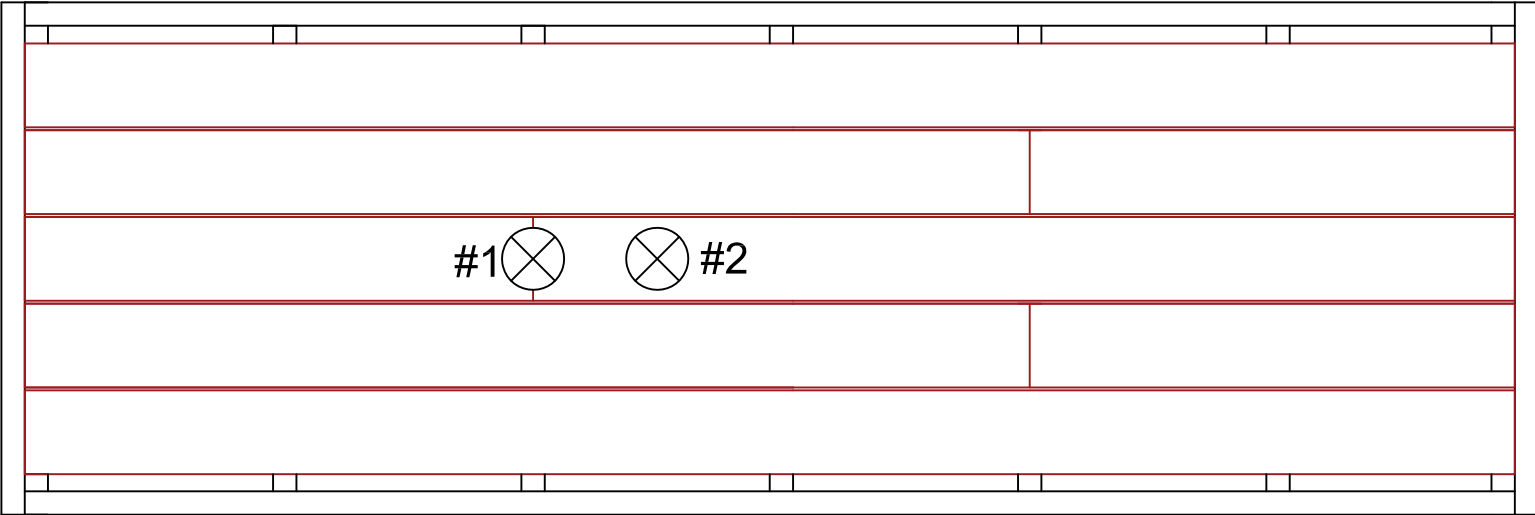
Appendix B: Photograph(s) (1)

Appendix C: Drawing(s) (1)

Appendix A

Sketch(es)

REV	DATE	DESCRIPTION	BY



INDICATOR LOCATIONS

PROJECT NO.
F7513.01
109 – 18

PROJECT NAME: TAS 201, 202, 203 EVALUATION
CLIENT: FIBER COMPOSITES, LLC



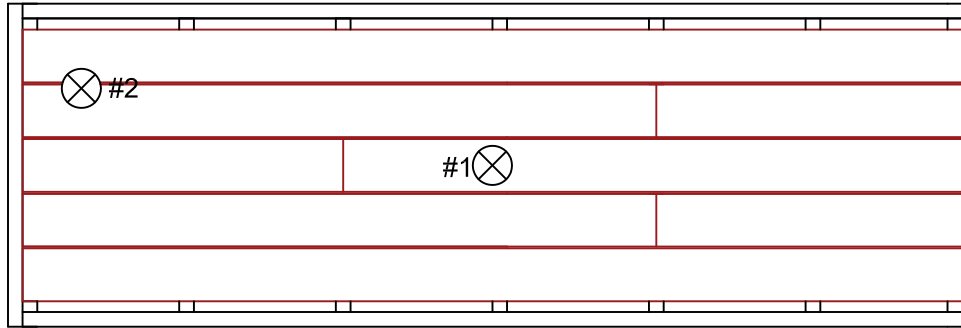
DRAWING
SKETCH #1 INDICATOR LOCATIONS

DWG. BY: EMB
DATE: 5/10/16

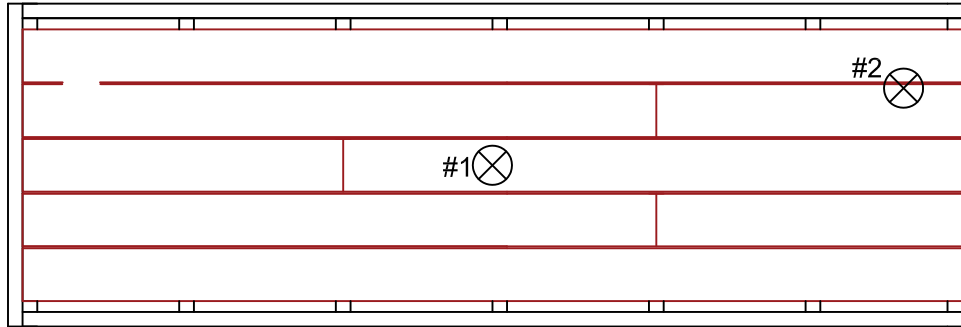
SHEET
1 OF
1

REV	DATE	DESCRIPTION	BY
-----	------	-------------	----

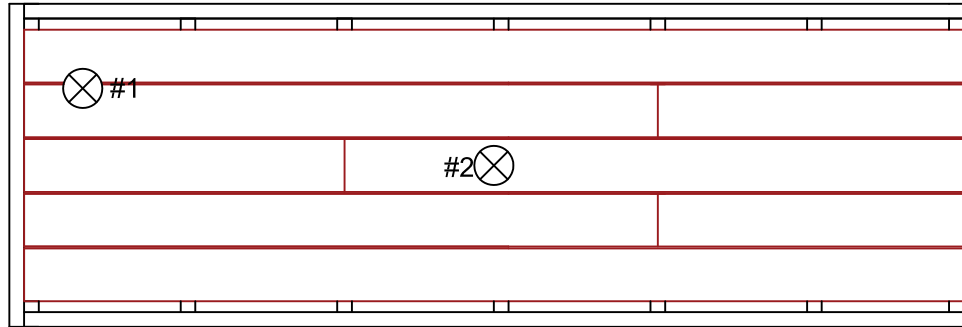
UNIT #1



UNIT #2



UNIT #3



IMPACT LOCATIONS

Appendix B
Photograph(s)

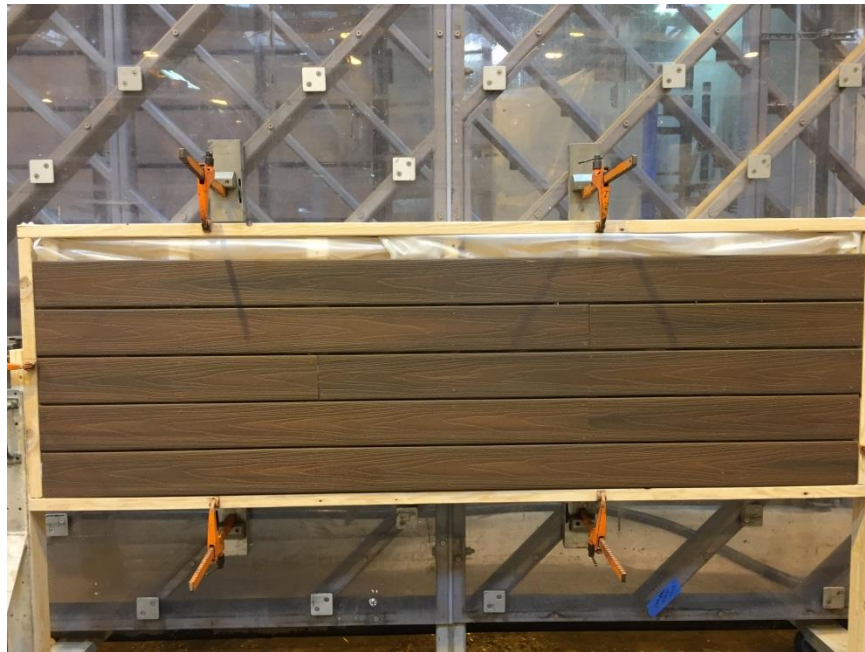


Photo No. 1
Test Specimen Prior to Testing

Appendix C

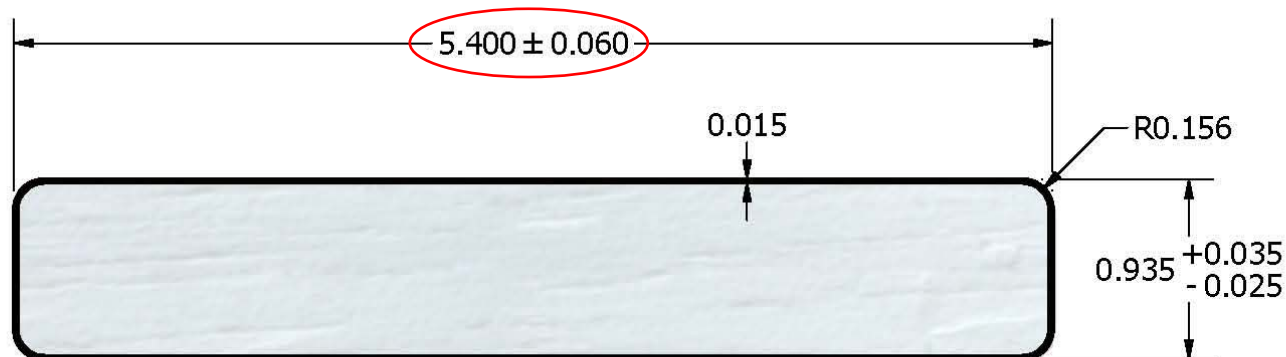
Drawing(s)

2

1

B


B



NOTE: FOR ALL PUBLICATIONS (I.E. END TAGS, AND ANY OTHER DOCUMENTATION THAT APPLIES TO CA STATE WEIGHTS, MEASURES, AND AIR STANDARDS):
 MINIMUM WIDTH TO BE SPECIFIED AS: 5.28 INCHES
 MINIMUM THICKNESS TO BE SPECIFIED AS: 0.91 INCHES

THIS DOCUMENT CONTAINS CONFIDENTIAL INFORMATION AND IS THE EXCLUSIVE PROPERTY OF FIBER COMPOSITES, LLC AND MUST BE RETURNED ON REQUEST. ALL USE, COPY, OR DISCLOSURE IN WHOLE OR IN PART IS STRICTLY FORBIDDEN UNLESS WITH PRIOR WRITTEN AUTHORIZATION FROM FIBER COMPOSITES, LLC.

Intertek |  Report #: F7513.01
 Date: 4/27/2016
 Verified by: *Andrew P. Mahabadi*

DO NOT SCALE DRAWING	CHECKED BY		Fiber Composites, LLC	
	QA APPROVED		181 Random Dr. New London, NC 28127	
	MFG APPROVED		DESCRIPTION Horizon Deck Board w/Permatech	
	DRAWN Rick Lappin	DWG NO 010-0030		REV C
SCALE	WEIGHT/LBS PER FOOT	SIZE A	DATE 10/8/2008	SHEET 1 OF 1
PART VOLUME	MATERIAL			

C	4/1/09	Width tolerance changed	0107
B	12/5/08	Formerly E-00269	
A	12/5/08	Tolerance changes	
REV.	DATE	DESCRIPTION	ECN #

2

1

A

A