Intertek ETL SEMKO

FILE COPY

April 29, 2005

MIN-TECH Marketing Inc.
Trademark New Group Asia Building Products Inc.
19111 Walden Forest Drive
Humble, TX 77346

Attention: **Mr. Terry Lam**

Dear Mr. Lam:

Re: **Final Report #3063426**
Accelerated Weathering Results for NewTech Slate

Intertek Testing Services NA Ltd., (Intertek) has conducted tensile testing, in accordance with ASTM D638, on samples of NewTech Slate, roofing material.

SAMPLE SELECTION

Intertek representative, Chris Bowness, independently sampled a series of NewTech Slate product on August 16, 2004. The product was manufactured at Hong Hao Plastic & Metal Factory, Tang Kou Industrial Park, Shi Shan, Nanhai, Fu Shan City, Guangdong Province, PRC China.

The sample selection process was carried out in accordance with ICC Evaluation Services AC 85 "*Acceptance Criteria for Test Reports and Product Sampling*" dated July 2003.

METHOD AND RESULTS

Tensile testing was conducted on April 27, 2005. Testing was conducted on "as received" (control) samples and again on samples after exposure to 2,000 hrs. of Xenon Arc Ultraviolet light in accordance with ASTM G 26 and G155.

TABLE 1 - CONTROL SAMPLES

Property	Avg. of 5 tests	Sdev	COV
Break Strength (lbs/in.)	208.6	11.0	5.3 %
Tensile Strength (psi)	1498.3	224.7	15.0 %
% Elongation	52.8	0.1	11.9 %

Intertek Testing Services NA Ltd.
1500 Brigantine Drive, Coquitlam, BC V3K 7C1
Telephone: 604-520-3321 Fax: 604-524-9186 Web: www.intertek-etlsemko.com

TABLE 2 - AFTER 2,000 HRS UV

Property	Avg. of 5 tests	Sdev	COV
Break Strength (lbs/in.)	197.2	11.3	5.7 %
Tensile Strength (psi)	1436.1	72.6	5.1 %
% Elongation	38.4	0.0	9.1 %

OBSERVATIONS

After UV exposure, the samples were examined for the following effects:

Cracking of surface	No cracking observed
Crazing of surface	No crazing observed
Pitting on surface	No pitting observed
Chalking on surface	No chalking observed
Discoloration	No discoloration
Deformation	Samples stretched in direction of hanging due to heat Shape deformation observed due to heat

CONCLUSION

Aside from the deformation noted under "OBSERVATIONS", the property changes after 2,000 hours of Xenon Arc exposure are as follows:

Loss in Break strength:	5.5%
Loss in Tensile strength:	4.1%
Loss in Elongation at break:	27.3%

INTERTEK TESTING SERVICES NA LTD.

Reported by: _____
Geri Nishio
Technician, Construction Products

Reviewed by: _____
Chris Bowness, P. Eng.
Manager, Construction Products

Enclosures

GN/ahvs

ITS Intertek Testing Services

Tensile Strength

Client: Min-Tech
Proj. #: 3063426
Test std: ASTM D638
Tech: G. Nishio

Date: April 27/05

Product NewTech Roof Slate

Notes: Crosshead speed= 2.0 ins/min.

Load measured with Artech 500 lb capacity load cell ITS-S/N 9-0489

Sample size: As per ASTM D638 Table 1 (Type IV)

Control Samples-Before UV

Test sample	Width (inches)	Thickness (inches)	lgth @ brk (inches)	Break load (lbs)	Roof shingle Sample	Brk. Str (lbs/inch)	Tensile (psi)	Elong. (%)
1	0.26	0.16	2.99	51.0	3	193.18	1246.33	49.3%
2	0.26	0.12	3.13	55.3	11	213.10	1718.57	56.4%
3	0.26	0.15	3.02	52.4	12	201.15	1306.18	50.9%
4	0.26	0.15	3.24	57.3	13	217.05	1491.72	61.8%
5	0.26	0.13	2.92	57.4	6	218.67	1728.59	45.8%
Avg						**208.63**	**1498.28**	**52.8%**
Sdev						11.02	224.72	0.06
COV						5.3%	15.0%	11.9%

Samples-After 2,000 hrs Xenon Arc UV Exposure

Test sample	Width (inches)	Thickness (inches)	lgth @ brk (inches)	Break load (lbs)	Roof shingle Sample	Brk. Str (lbs/inch)	Tensile (psi)	Elong. (%)
1	0.27	0.13	2.84	53.1	2UV	197.25	1547.05	41.8%
2	0.27	0.13	2.69	49.9	4UV	184.02	1373.30	34.3%
3	0.27	0.16	2.71	58.5	5UV	215.18	1383.82	35.4%
4	0.27	0.13	2.83	51.5	7UV	193.40	1470.69	41.7%
5	0.27	0.14	2.78	52.4	10UV	196.10	1405.77	39.1%
Avg						**197.19**	**1436.13**	**38.4%**
Sdev						11.32	72.64	0.03
COV						5.7%	5.1%	9.1%
% of control samples						**94.5%**	**95.9%**	**72.7%**

Tested by: _____
G. Nishio
Technologist-Building Products

Intertek ETL SEMKO

Date September 29, 2004

Project No. 3063426
Report No. 1
Client No. 44891

Description: **Testing of Synthetic Slate Shingles**

Client New Group Asia Building Products Inc.
2316 Timber Shadows, Suite 208
Kingwood, Texas. U.S.A. 77339 Attention: Mr. Terry Lam

Introduction

This report covers testing of synthetic slate shingles. An Intertek Testing Services representative sampled the shingles on August 16, 2004. The samples were received in new and undamaged condition on September 2, 2004. Testing was performed between the dates of September 13-22, 2004.

Samples were tested for Penetration according to section 4.5 of ICBO Evaluation Service, Inc., "Acceptance Criteria for Special Roofing Systems, AC07". Penetration tests were performed using a Baldwin/UTS Universal Testing Machine with 0-1" dial type deflection gauge. Uplift bend tests in accordance with section 4.4 were performed using a Chatillon 100N force gauge and a calibrated weight.

Product Description

The product identified as synthetic slate shingles were made from recycled plastic (PEP), being flexible and embossed to emulate a slate shingle. The shingles were gray in colour with an embossed slate-like finish. The shingles measured nominally 16-3/4" (425 mm) long by 12" (305 mm) wide and were 1/8" to 1/4" (3.2 mm to 6.4 mm) thick. The top corners of the shingles were cut off at an angle, 3-1/4" (83 mm) in from the side and 2-1/2" (63.5 mm) down from the top edge. The recommended nominal exposure was 6" (152 mm) to 7-1/2" (191 mm), depending on roof slope. The dimensional coverage was approximately 6" (152 mm) by 12" (305 mm) wide to 7-1/2" (191 mm) by 12" (305 mm) wide, giving an area coverage of 0.500 ft^2 (0.0464 m^2) to 0.625 ft^2 (0.0583 m^2).

Contd....

Intertek Testing Services NA Ltd.
3210 American Drive, Mississauga, Ontario Canada L4V 1B3
Telephone 905-678-7820 Fax 905-678-7191

Product Description (contd)

The shingles were complete with two 1/4" (6.4 mm) radius semi-circular shaped spacing nubs per side edge, spaced 3-3/4" (95.3 mm) apart on centre. The shingles were intended for installation over solid decking and fastened with two corrosion resistant 1-1/2" (38 mm) 10 ga. hot dipped galvanized, stainless steel, or copper roofing nails with a 3/8" (10 mm) diameter head per shingle. Recommended gap between adjacent shingles is 3/8" (9.5 mm).

A copy of the installation guide for the product stamped "Intertek Testing Services NA Ltd." is appended to this report.

Test Methods

1. Penetration Tests- ICBO AC07 Section 4.5

   Penetration tests were performed using a Baldwin/UTS Universal Testing Machine (Intertek Inventory No. 280-01-0015; calibration: current) and with 0-1" dial type deflection gauge (Intertek Inventory No. 280-01-0669; calibration: current). A 200 lb. (890N) load was centred on the "exposed" surface of the shingle. The 200 lb. (890N) load was applied 5 times to the shingle through a 3" (76 mm) diameter steel plate, the load being reduced to zero between load applications. The penetration under load, were taken at each load application, and the residual readings were taken following release of each load application.

2. Uplift Bend Tests- ICBO AC07 Section 4.4

   Uplift bend tests were performed using a Chatillon 100N force gauge (Intertek Inventory No. 280-02-0017; calibration: current), and a calibrated weight. A roof section was fabricated from 2 x 4 wood studs on 24" (610 mm) and 1/2" plywood sheathing. The roof section was covered with a layer of asphalt saturated non-perforated felt. The shingles were installed on the roof section, four to five shingle per course and five courses high. Each shingle was installed using two 1-1/2" (38 mm) 10 ga. hot dipped galvanized roofing nails with 3/8" (10 mm) diameter heads. The nails were installed at the labeled nailing locations. Two roof sections were prepared, one with the minimum recommended 6" (152 mm) shingle exposure for roof pitches of 2:12 or greater, the other with the maximum recommended 7-1/2" (191 mm) shingle exposure for roof pitches greater than 6:12.

   Each roof section was secured in the vertical position, with the required loads being applied horizontally. The horizontal load was applied at the centre of the butt edge of an inner shingle in the second course from the bottom of the test specimen. The loads required to lift the shingle 1/8" (3.2 mm) and 2" (51 mm) were recorded. This was repeated for the butt edge of an inner shingle in the top course of the test specimen. The test continued with a load equal to three times the shingle weight applied horizontally outward and vertically downward at the centre of the butt edge of an inner shingle in the second course from the bottom.

   The uplift bend tests were performed "as installed" as well as following exposure to sunlight for eight days to promote the self-adhesive characteristics of the singles.

contd.....

Results

1. Penetration Tests ICBO AC07 Section 4.5

200-lb. (890N) load applied 5 times to a 3" (76 mm) diameter plate

Sample No.	Penetration No.	Indentation Under Load (in. {mm})	Residual Indentation (in. {mm})	Comments	Specified
1	1	0.015 (0.38)	0.004 (0.10)	No visual depression, tearing, cracking or excessive permanent deformation[1] noted. Met requirement	No tearing or cracking causing exposure of glass fibers, foam or other compressible materials or excessive permanent deformation
	2	0.017 (0.43)	0.006 (0.15)		
	3	0.017 (0.43)	0.006 (0.15)		
	4	0.018 (0.46)	0.007 (0.18)		
	5	0.018 (0.46)	0.007 (0.18)		
2	1	0.010 (0.25)	0.003 (0.08)	No visual depression, tearing, cracking or excessive permanent deformation[1] noted. Met requirement	No tearing or cracking causing exposure of glass fibers, foam or other compressible materials or excessive permanent deformation
	2	0.010 (0.25)	0.004 (0.10)		
	3	0.010 (0.25)	0.005 (0.13)		
	4	0.010 (0.25)	0.005 (0.13)		
	5	0.010 (0.25)	0.005 (0.13)		
3	1	0.017 (0.43)	0.005 (0.13)	No visual depression, tearing, cracking or excessive permanent deformation[1] noted. Met requirement	No tearing or cracking causing exposure of glass fibers, foam or other compressible materials or excessive permanent deformation
	2	0.018 (0.46)	0.006 (0.15)		
	3	0.018 (0.46)	0.006 (0.15)		
	4	0.019 (0.48)	0.007 (0.18)		
	5	0.019 (0.48)	0.007 (0.18)		
4	1	0.014 (0.36)	0.004 (0.10)	No visual depression, tearing, cracking or excessive permanent deformation[1] noted. Met requirement	No tearing or cracking causing exposure of glass fibers, foam or other compressible materials or excessive permanent deformation
	2	0.014 (0.36)	0.004 (0.10)		
	3	0.014 (0.36)	0.004 (0.10)		
	4	0.014 (0.36)	0.004 (0.10)		
	5	0.014 (0.36)	0.004 (0.10)		
5	1	0.012 (0.31)	0.003 (0.08)	No visual depression, tearing, cracking or excessive permanent deformation[1] noted. Met requirement	No tearing or cracking causing exposure of glass fibers, foam or other compressible materials or excessive permanent deformation
	2	0.012 (0.31)	0.003 (0.08)		
	3	0.012 (0.31)	0.003 (0.08)		
	4	0.012 (0.31)	0.003 (0.08)		
	5	0.012 (0.31)	0.003 (0.08)		

contd.....

Results (contd)

1. Penetration Tests ICBO AC07 Section 4.5 (contd)

Note: 1. The standard indicates that the surface penetration should be measured to the nearest hundredth of an inch. The final permanent deformation of all samples tested was 0.01 inches or less. The amount of deformation was therefore judged to be not excessive and would not result in unsatisfactory performance of the roof covering.

2. Uplift-Bend Test

Average weight of shingle: 652 g. 13.8 N

6" (152 mm) exposure- "as installed"- No Self Adhesive Action

Location	Up lift Height	Load Direction	Load Applied	Specified	Comment
Second Course Center of Butt end. Inner shake	1/8" (3.2 mm)	Perpendicular and outward	Less than 0.2 lb (1 N)	2.87 lbs (12.8 N) Minimum[1]	Did not meet the requirement
	2" (50.8 mm)	Perpendicular and outward	0.2 lbs (1 N)	Force required to pull shake 2" (50.8 mm)	Considered by the Standard as the maximum load
Top Course Center of Butt end. Inner shake	1/8" (3.2 mm)	Perpendicular and outward	Less than 0.2 lb (1 N)	2.87 lbs (12.8 N)) Minimum[1]	Did not meet the requirement
	2" (50.8 mm)	Perpendicular and outward	Less than 0.2 lb (1 N)	Force required to pull shake 2" (50.8 mm)	Considered by the Standard as the maximum load
Second Course Center of Butt end. Inner shake	–	Perpendicular and outward	4.31 lbs. (19.2 N)[2]	No cracking breaking or falling off the deck	No cracking breaking or falling off the deck
		Parallel and downward	4.31 lbs. (19.2 N)[2]		

7-1/2" (191 mm) exposure- "as installed"- No Self Adhesive Action

Location	Up lift Height	Load Direction	Load Applied	Specified	Comment
Second Course Center of Butt end. Inner shake	1/8" (3.2 mm)	Perpendicular and outward	Less than 0.2 lb (1 N)	2.87 lbs (12.8 N) Minimum[1]	Did not meet the requirement
	2" (50.8 mm)	Perpendicular and outward	Less than 0.2 lb (1 N)	Force required to pull shake 2" (50.8 mm)	Considered by the Standard as the maximum load
Top Course Center of Butt end. Inner shake	1/8" (3.2 mm)	Perpendicular and outward	Less than 0.2 lb (1 N)	2.87 lbs (12.8 N) Minimum[1]	Did not meet the requirement
	2" (50.8 mm)	Perpendicular and outward	Less than 0.2 lb (1 N)	Force required to pull shake 2" (50.8 mm)	Considered by the Standard as the maximum load
Second Course Center of Butt end. Inner shake	–	Perpendicular and outward	4.31 lbs. (19.2 N)[2]	No cracking breaking or falling off the deck	No cracking breaking or falling off the deck
		Parallel and downward	4.31 lbs. (19.2 N)[2]		

contd.....

Results (contd)

2. Uplift-Bend Test (contd)

6" (152 mm) Exposure- Conditioned in Sun- Self Adhesive Action of Shingles Activated

Location	Up lift Height	Load Direction	Load Applied	Specified	Comment
Second Course Center of Butt end. Inner shake	1/8" (3.2 mm)	Perpendicular and outward	3.8 lb (17 N)	2.87 lbs (12.8 N) Minimum[1]	Met requirement
	2" (50.8 mm)	Perpendicular and outward	8.1 lbs (36 N)	Force required to pull shake 2" (50.8 mm)	Considered by the Standard as the maximum load
Top Course Center of Butt end. Inner shake	1/8" (3.2 mm)	Perpendicular and outward	3.2 lb (14 N)	2.87 lbs (12.8 N) Minimum[1]	Met requirement
	2" (50.8 mm)	Perpendicular and outward	6.1lb (27 N)	Force required to pull shake 2" (50.8 mm)	Considered by the Standard as the maximum load
Second Course Center of Butt end. Inner shake	–	Perpendicular and outward	4.31 lbs. (19.2 N)[2]	No cracking breaking or falling off the deck	No cracking breaking or falling off the deck
		Parallel and downward	4.31 lbs. (19.2 N)[2]		

7-1/2" (191 mm) Exposure- Conditioned in Sun- Self Adhesive Action of Shingles Activated

Location	Up lift Height	Load Direction	Load Applied	Specified	Comment
Second Course Center of Butt end. Inner shake	1/8" (3.2 mm)	Perpendicular and outward	3.4 lb (15 N)	2.87 lbs (12.8 N) Minimum[1]	Met requirement
	2" (50.8 mm)	Perpendicular and outward	7.4 lb (33 N)	Force required to pull shake 2" (50.8 mm)	Considered by the Standard as the maximum load
Top Course Center of Butt end. Inner shake	1/8" (3.2 mm)	Perpendicular and outward	3.2 lb (14 N)	2.87 lbs (12.8 N) Minimum[1]	Met requirement
	2" (50.8 mm)	Perpendicular and outward	5.8 lb (26 N)	Force required to pull shake 2" (50.8 mm)	Considered by the Standard as the maximum load
Second Course Center of Butt end. Inner shake	–	Perpendicular and outward	4.31 lbs. (19.2 N)[2]	No cracking breaking or falling off the deck	No cracking breaking or falling off the deck
		Parallel and downward	4.31 lbs. (19.2 N)[2]		

Note 1 Minimum specified force to pull shake 1/8" (3.2 mm) is two (2) times average weight of the shake: 2.87 lbs (12.8 N)

Note 2 Specified forces applied to in a perpendicular and outward direction is three (3) times average weight of the shake: 4.31 lbs. (19.2 N)

contd.....

Conclusion

The synthetic slate shingles met the requirements of the Penetration Test of ICBO Acceptance Criteria AC07.

The synthetic slate shingles did not meet the requirements of the Uplift-Bend Tests of ICBO Acceptance Criteria AC07 when not exposed to the heat of the sun. However, the synthetic slate shingles met the requirements of the Uplift-Bend Tests of ICBO Acceptance Criteria AC07 when exposed to the heat of the sun to activate the self-adhesion of the shingles.

Tested and reported by: David Wren

Respectfully submitted,
INTERTEK TESTING SERVICES NA LTD.

David Wren, P.Eng.
Physical Testing Services

Reviewed By:

Vern W. Jones, C.E.T.
Manager
Physical Testing Services

DW/VWJ/dw
2 cc: client
Encl.

Intertek ETL SEMKO

Date	October 29, 2004
Project No.	3063426
Report No.	2
Client No.	44891

Description: **Testing of Synthetic Slate Shingles**

Client: New Group Asia Building Products Inc.
2316 Timber Shadows, Suite 208
Kingwood, Texas. U.S.A. 77339

Attention: Mr. Terry Lam

Introduction

This report covers testing of synthetic slate shingles. An Intertek Testing Services representative sampled the shingles on August 16, 2004. The samples were received in new and undamaged condition on September 2, 2004. Testing was performed between the dates of September 16 and October 17, 2004.

Samples were tested for Temperature-cycling in accordance with Section 4.9 of ICBO Evaluation Service, Inc., "Acceptance Criteria for Special Roofing Systems, AC07". Temperature Cycling Tests were performed using a VWR Brand, G S Laboratory Equipment Model No. A4013U30 freezer, a Eurotherm 808 temperature controller and a D4-56 spray nozzle.

Product Description

The product identified as synthetic slate shingles were made from recycled plastic (PEP), being flexible and embossed to emulate a slate shingle. The shingles were gray in colour with an embossed slate-like finish. The shingles measured nominally 16-3/4" (425 mm) long by 12" (305 mm) wide and were 1/8" to 1/4" (3.2 mm to 6.4 mm) thick. The top corners of the shingles were cut off at an angle, 3-1/4" (83 mm) in from the side and 2-1/2" (63.5 mm) down from the top edge. The recommended nominal exposure was 6" (152 mm) to 7-1/2" (191 mm), depending on roof slope. The dimensional coverage was approximately 6" (152 mm) by 12" (305 mm) wide to 7-1/2" (191 mm) by 12" (305 mm) wide, giving an area coverage of 0.500 ft^2 (0.0464 m^2) to 0.625 ft^2 (0.0583 m^2).

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Intertek Testing Services NA Ltd.
3210 American Drive, Mississauga, Ontario Canada L4V 1B3
Telephone 905-676-7820 Fax 905-676-7781

Product Description (contd)

The shingles were complete with two 1/4" (6.4 mm) radius semi-circular shaped spacing nubs per side edge, spaced 3-3/4" (95.3 mm) apart on centre. The shingles were intended for installation over solid decking and fastened with two corrosion resistant 1-1/2" (38 mm) 10 ga. hot dipped galvanized, stainless steel, or copper roofing nails with a 3/8" (10 mm) diameter head per shingle. Recommended gap between adjacent shingles is 3/8" (9.5 mm).

A copy of the installation guide for the product stamped "Intertek Testing Services NA Ltd." is appended to this report.

Test Methods

Temperature Cycling Tests ICBO AC07 Section 4.8

Twenty-five cycles, each cycle consisting of 1 hour of water spray exposure, (spray nozzles set at a height of 7 feet, 2134 mm, delivering 6 inches, 152 mm of water per hour), 6 hours at -40°F (-40°C), 2 hours at 70°F (21°C), 14 hours at 180°F (82°C), and 1 hour at 70°F (21°C).

Specified: Shall withstand test without crazing, cracking or suffering any other deleterious surface or joint changes. Additionally, there shall be no sign of failure or distress at fastener locations and at panel joints.

contd....

Observations and Results

There were no signs of any of the roofing tile samples either cracking or crazing. There were no signs of any visible changes in colour, sheen or other deleterious surface or joint changes. There was no significant deformation of the tiles. There were no signs of failure or distress at the fastener locations. There were no signs of nail pull out.

Conclusion

The synthetic slate shingles met the conditions of acceptance of the Temperature Cycling Tests of ICBO Acceptance Criteria AC07 paragraph 9.4.2.

Tested by: David Wren
Reported by: Vern jones

Respectfully submitted,
INTERTEK TESTING SERVICES NA LTD.

David Wren, P.Eng.
Physical Testing Services

Reviewed By:

Vern W. Jones, C.E.T.
Manager
Physical Testing Services

DW/VWJ/dw
2 cc: client
Encl.

Intertek ETL SEMKO

Lachine, June 28, 2005

Mr. Jon B. Nichols
New Group Asia Construction Material Supply, Inc.
19111 Walden Forest
Houston,TX 77346
Phone: 281-359-2288
Fax: 281-359-2088

Ref./No.: 3078155

Dear Mr. Nichols:

This is to confirm that Intertek has completed the evaluation of your Rubber Slate roof tile shingle.:

Enclosed is one copy of the Testing Report for your records. The invoice covering the work done on this project will be send under separate cover.

Your continued interest in Intertek' services is appreciated. Please contact us if you have questions.

Sincerely,

Claude Pelland, P. Eng.
Regional Manager
Certification & Physical Testing

CP/gl

Services d'essais Intertek AN Ltée
Intertek Testing Services NA Ltd.
1829 32e Avenue, Lachine, Québec H8T 3J1 Canada
Téléphone: (514) 631-3100 Télécopieur: (514) 631-1133 www.intertek-etlsemko.com

Intertek ETL SEMKO

Project No. 3078155

Date Issued: June 21,2005

TEST REPORT NO. 3078155

INSPECTION, TESTS AND EVALUATION
OF

RUBBER SLATE

RENDERED TO

NEW GROUP ASIA CONSTRUCTION MATERIAL SUPPLY, INC.
Houston, Texas

GENERAL: This report gives the results of the tests and evaluation of the above-mentioned product for compliance with applicable requirements of the Standard indicated below. This investigation was authorized by Mr. Terry Lam through Quote No.303251 dated May 25, 2005. The investigation began on June 17th , 2005 and was completed on June 21st , 2005. A prototype sample in good condition was provided by the client on June 16th, 2005 and tested at Intertek's Lachine, Qc facility.

UL 2218 - May 31, 1996 (Revision: January 25, 2002)
IMPACT RESISTANCE OF PREPARED ROOF COVERING MATERIALS

Participant:
New Group Asia Construction Material Supply, Inc.
19111 Walden Forest
Houston,TXZ 77346

Manufacturer:
Same as Participant

Contact: Mr. Jon B. Nichols
Phone: 281-359-2288
Fax: 281-359-2088

Services d'essais Intertek AN Ltée
Intertek Testing Services NA Ltd.
1829 32e Avenue, Lachine, Québec H8T 3J1 Canada
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New Group Asia Construction Material Supply, Inc.

Report Content:	Numbering
Cover	1
Revisions	2
Main Report	3-6
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Appendix II	9-16
Total Number of Pages	16

REVISION SUMMARY - The following changes have been made to this Report:

Date/Project #	Project Handler	Page	Item	Description of Change
				NONE

New Group Asia Construction Material Supply, Inc.

Report Content:	Numbering
Cover	1
Revisions	2
Main Report	3-6
Appendix I	7-8
Appendix II	9-16
Total Number of Pages	16

REVISION SUMMARY - The following changes have been made to this Report:

Date/Project #	Project Handler	Page	Item	Description of Change
				NONE

PRODUCT DESCRIPTION

PRODUCT COVERED

The product covered is a Rubber Slate shingle:

PRODUCT DESCRIPTION

The product evaluated is a Composite roof shingle. It is moulded from natural slate for a length of approximately 9 inches in length, the tile has a slate like pattern from moulding. Other than adjustment lines the next 7 ½ in is textureless. Nail positioning is identified by two circles with the mention "nail here" (one of the moulds shows 'nial' on the left end side. Alignment marks permit preset overlap between 5 ½ to 7 ½". Tile also has side spacers of ¼".

Tile widths: 12 inches
Tile thickness at butt end: approximately 1/8 in.
Tile length: 16 ½" inch

New Group Asia Construction Material Supply, Inc.

TEST PERFORMANCE

A representative sample of the product was tested in accordance with the Standard for UL 2218 - May 31, 1996 Impact Resistance of Prepared Roof Covering Materials.

Unless otherwise specified, tests are performed at 23°C and 50% room humidity.

TEST PROCEDURE

The product was applied to a 3 ft x 3 ft test deck framed with trade sized 2x4 and sheathed with 15/32" plywood, in accordance with UL 2218 and installation was done according to instructions found on the "New Group Asia" web site (see Appendix II).

No adhesive was used.

Testing was done in accordance with UL 2218 using the requirements of Class 4 in section 5.4. Class 4 specifies two coincident impacts from a 2-inch diameter steel ball, dropped from a height of 20 feet above the test sample. Six impact locations were selected on the prepared sample including those determined as being the most vulnerable.
Refer to data sheet in Appendix I for Drop Locations.

TEST RESULTS

After impacting the assembly, a visual inspection was made and the following was found.
No tearing, cracking, splitting, rupturing, crazing or damage to tiles (shakes) at point of impact
No evidence of opening of the roof covering
No damage to underlying tiles (shakes)

Meets Class 4 Requirements.

Results of the tests indicate the specimens conform to applicable test criteria.
The test videos of the actual impact were made and are available on CD ROM.

New Group Asia Construction Material Supply, Inc.

EQUIPMENT USED

List of instruments and equipment used during testing :
Calibration records are kept in file for future reference. The calibration matrix of all equipment meets the requirement of ISO 17025.

Description	Number	Calibration date
Measuring Tape	180-189	--
Scale (Mettler)	180-280	July 10, 2005

CONCLUSION

A representative sample of the product covered by this report has been evaluated and found to comply with the applicable requirements of the Standard for UL 2218 - May 31, 1996 Impact Resistance of Prepared Roof Covering Materials.

Test performed by :

Martine Bourbonnais, P. Eng
Certification & Physical Testing

Report written by :

D. Rochelson for

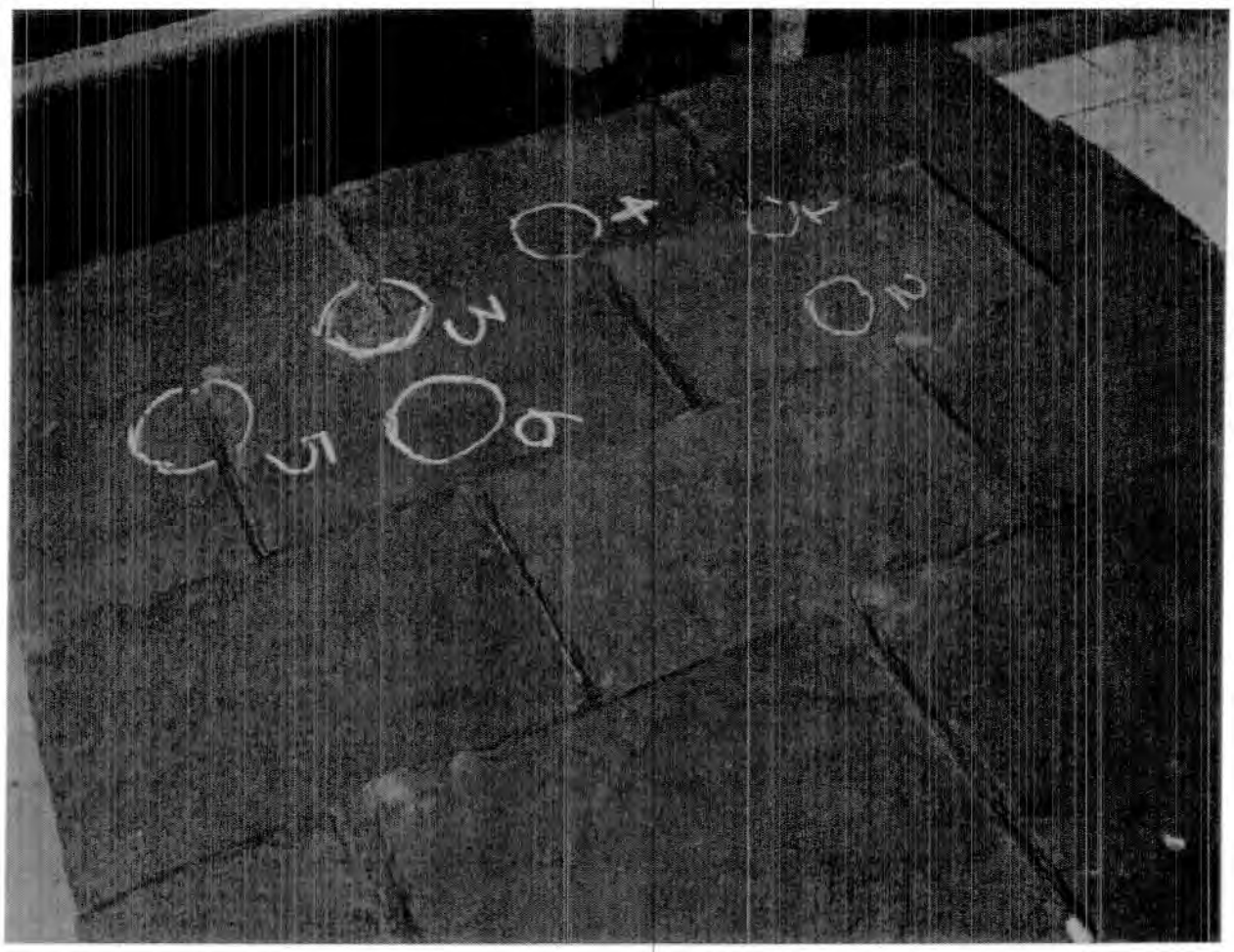
Ghislaine Leduc
Building Materials Report Writer
Certification & Physical Testing

Report reviewed by :

Claude Pelland, P. Eng.
Regional Manager
Certification & Physical Testing

APPENDIX 1

LOCATION OF IMPACT



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TECHNOLOGIES

MIAMI - DADE
Approved Product
Testing Laboratory

Accredited Testing
Laboratory TL 189

Product Testing
Laboratory TST 1556

Evaluation of
New Group Asia Construction Material Supply, Inc.
NewTech Slate Shingle
in Accordance With
Florida Building Code (HVHZ) Test Protocol TAS 100-95
TEST PROCEDURE FOR WIND AND WIND DRIVEN RAIN RESISTANCE OF DISCONTINUOUS ROOF SYSTEMS

Metro-Dade Notification Number: PRI04168

December 27, 2004

PRI Asphalt Technologies, Inc. 6408 Badger Drive Tampa, FL 33610 Tel: 813-621-5777 Fax: 813-621-5840 e-mail mail@priasphalt.com WebSite: http://www.priasphalt.com

TEST REPORT

FLORIDA BUILDING CODE (HVHZ) TEST PROTOCOL TAS 100-95

TEST PROCEDURE FOR WIND AND WIND DRIVEN RAIN RESISTANCE OF DISCONTINUOUS ROOF SYSTEMS

December 27, 2004

Client: Intertek ETL SEMKO
211 Schoolhouse Street
Coquitlam, BC V3K 4X9
Canada

Metro-Dade Notification No: PRI04168
Test Date: December 22, 2004
PRI Test No: ITSC-002-02-01

1.1 Description of Discontinuous Roof System:

Prepared Roof Covering

Manufacturer: New Group Asia Construction Material Supply
2316 Timber Shadows, Suite 208
Houston, TX 77339
Product Name: NewTech Slate
Product Dimensions: 0.225 X 12 X 16⅝
Product Type: Synthetic Slate Shingle

Felt Underlayment

Manufacturer: Tamko Roofing Products
Type: ASTM D 226, Type II (No. 30)

Roof Cement/Mastic

Manufacturer: Tropical Asphalt
Name: 2100 Flashing Cement
Type: ASTM D XL19, Type I

Primer

Manufacturer: Tamko Roofing Products
Name: Quick Dry Primer
Type: ASTM D 41

Asphalt Coated (Open Mesh) Fabric, 6 in. Wide:

Manufacturer: Gardner

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Other Materials:

Nails:	11 gauge 1¼ inch X ⅜ inch galvanized annular ring shank nails 11 gauge 1½ inch X ⅜ inch galvanized annular ring shank nails
Edge Metal:	26 gage, 3 X 3 inches X 10 feet
Flashing Metal:	26 gage, 16 inches wide
Tin Caps:	32 gage, 1⅝ inch diameter

1.2 Method of Roof Construction:

PRI Asphalt Technologies constructed the deck used for this testing as described in the following and in accordance with the requirements of TAS 100-95, the Florida Building Code: Section 1518 and 1518.6.

Deck

The plywood deck was constructed with standard 2 X 6 framing members, spaced 24 inches apart and 15/32 inch thick 4 ply APA 32/16 span rated sheathing. The sheathing was attached with 8d common nails placed 6 inches on center at the edges and 12 inches on center at intermediate supports. One valley was also constructed located at the front edge of the test deck as noted in Figure 1 from TAS 100-95.

Underlayment

The underlayment for this deck, ASTM D 226, Type II (No. 30) felt, was installed in accordance with the minimum requirements set forth in Section 1518 of the Florida Building Code. The underlayment was applied with a 4 inch overlap and minimum 6 inch end laps. The underlayment was fastened to the deck using 11 gauge 1¼ inch X ⅜ inch galvanized annular ring shank nails through 32 gage 1⅝ inch diameter tin caps placed 6 inches on center at edges and laps and staggered 12 inches on center in the field. Vertical laps at the valley were woven with the top ply extended a minimum of 12 inches past the valley center.

Metal Flashing

Valley flashing metal, 26 gage and 16 inches wide, was centered on the valley. The valley flashing metal was then fastened using 11 gauge 1¼ inch X ⅜ inch galvanized annular ring shank nails placed approximately 12 inches on center 1 inch from the edge of the metal. The edge of the valley flashing metal was primed with asphalt primer 4 inches wide and a ⅛ inch thick X 8 inch wide layer of roof cement was applied centered on the flashing edge,

then a 6 inch wide strip of asphalt coated open mesh fabric centered on the flashing edge was embedded in the ⅛ inch thick X 8 inch wide layer of roof cement and a second ⅛ inch thick layer of roof cement used on top of the fabric to finish the application.

Galvanized, 26 gage, nominal 3 X 3 inch metal drip edge was installed at the perimeter of the deck in a ⅛ inch thick layer of roof cement and fastened 4 inches on center in a staggered pattern using 11 gauge 1¼ inch X ⅜ inch galvanized annular ring shank nails. All corners were overlapped a minimum of 4 inches, all overlaps and any gaps were sealed with roof cement.

Synthetic Slate Application

The New Group Asia construction Supply, NewTech Slate shingles were applied in accordance with the manufacturer installation instructions. At the eave the starter course was placed over hanging the eave 1 inch. The starter shingles were fastened to the deck with 11 gauge 1½ inch X ⅜ inch galvanized annular ring shank nails placed at the two fastener locations marked on the shingles. The first course and all subsequent courses were fastened to the deck with 11 gauge 1½ inch X ⅜ inch galvanized annular ring shank nails placed at the fastener locations marked on the shingles. The slate shingles were applied with a 6 inch exposure and with 6 inch side offsets.

At the valley, the shingles were mitered at the centerline of the valley forming a closed valley.

1.3 Method of Conditioning

The deck with roofing system applied was conditioned for sixteen hours. A recording thermocouple verified that the surface temperature of the shingles reached 135°F for the sixteen hours of the conditioning period.

1.4 Absorptive Material Description

The absorptive material used for the simulated rainfall calibration was 46 gage organic felt.

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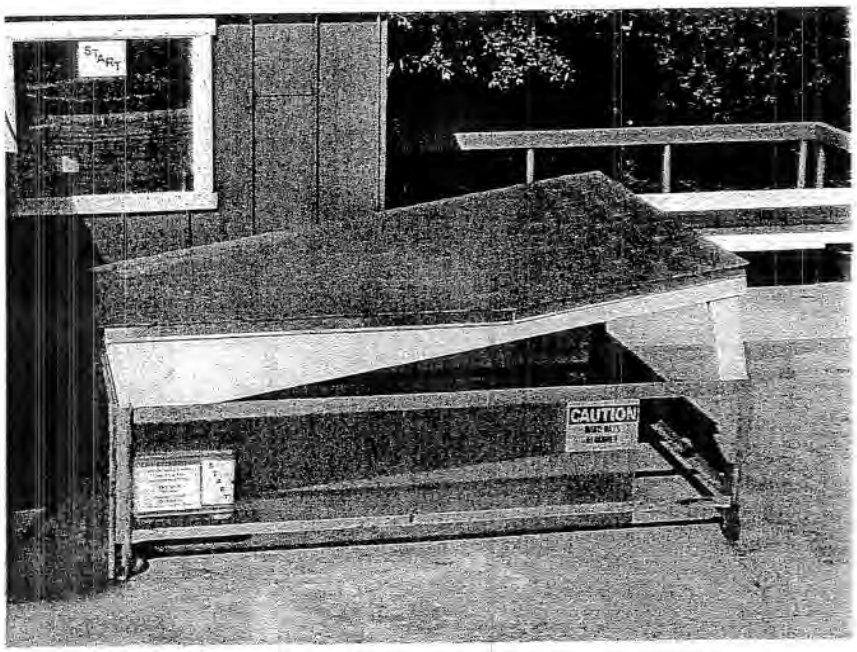
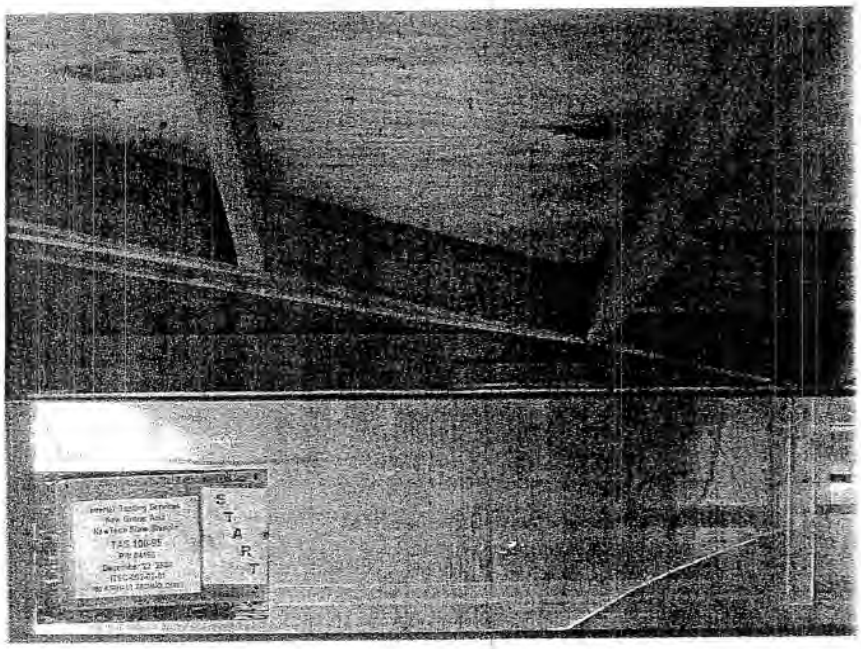
1.5 Photographs of Top and Underside of Deck Immediately Prior and Subsequent to Commencement and Termination of Testing.

TOP OF DECK IMMEDIATELY BEFORE COMMENCEMENT OF TEST



UNDERSIDE OF DECK IMMEDIATELY PRIOR TO COMMENCEMENT OF TEST



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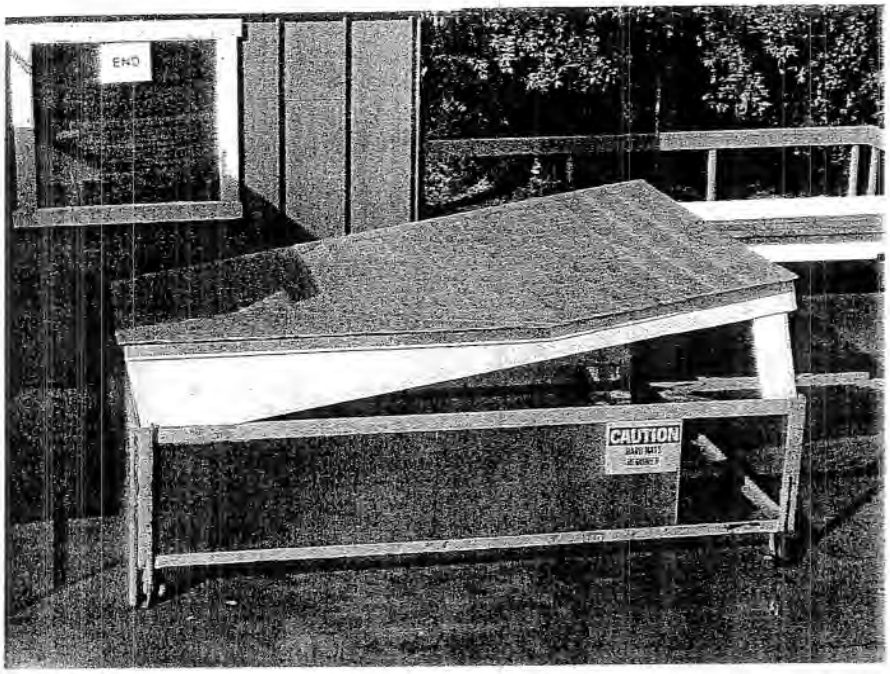
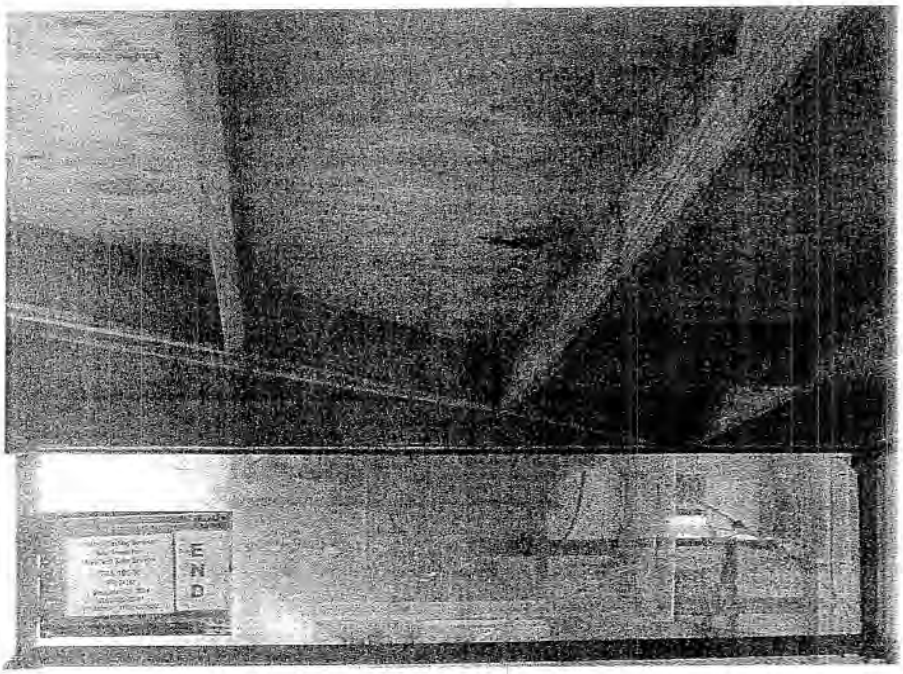
TOP OF DECK IMMEDIATELY AFTER TEST

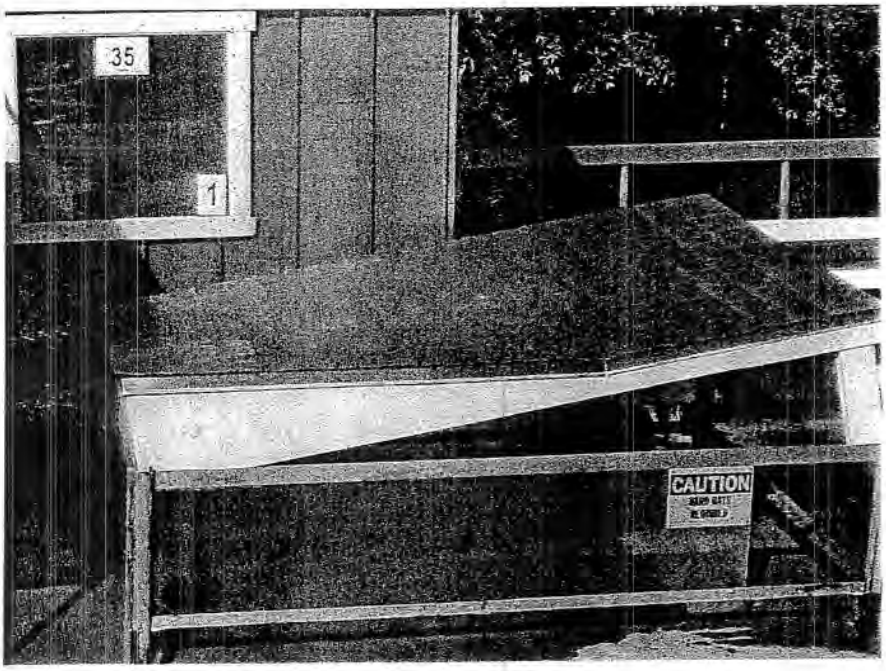


UNDERSIDE OF DECK IMMEDIATELY AFTER TEST

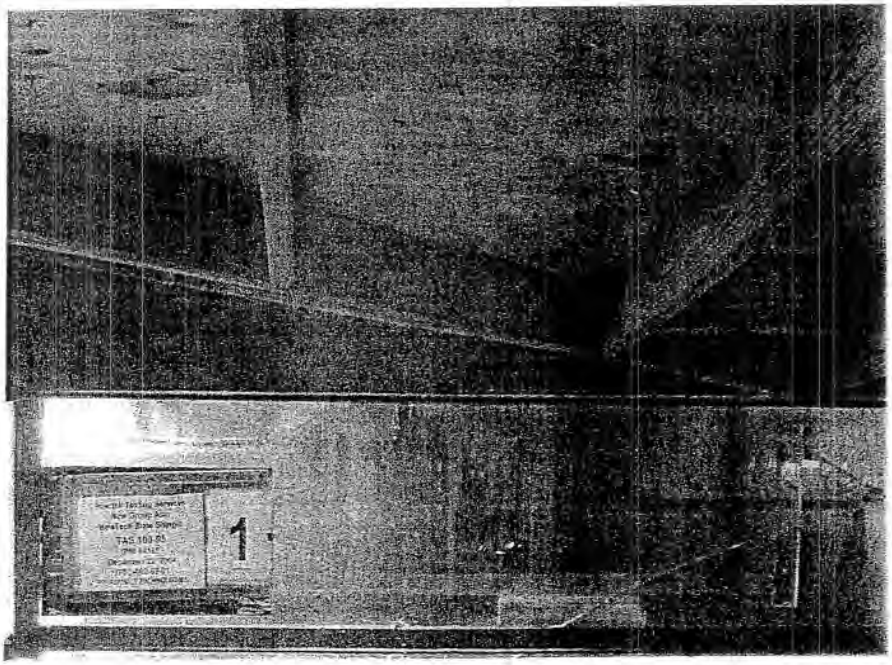


1.6 Photographs of Top and Underside of Deck XL Seconds Prior to Completion of Each Testing Interval.

TOP OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 1: 35 MPH



UNDERSIDE OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 1: 35 MPH



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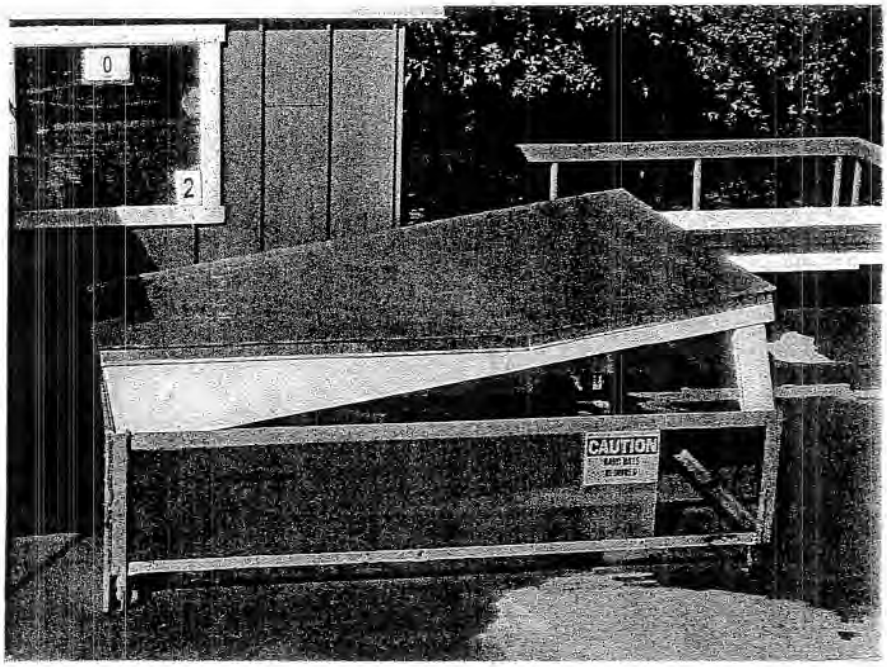
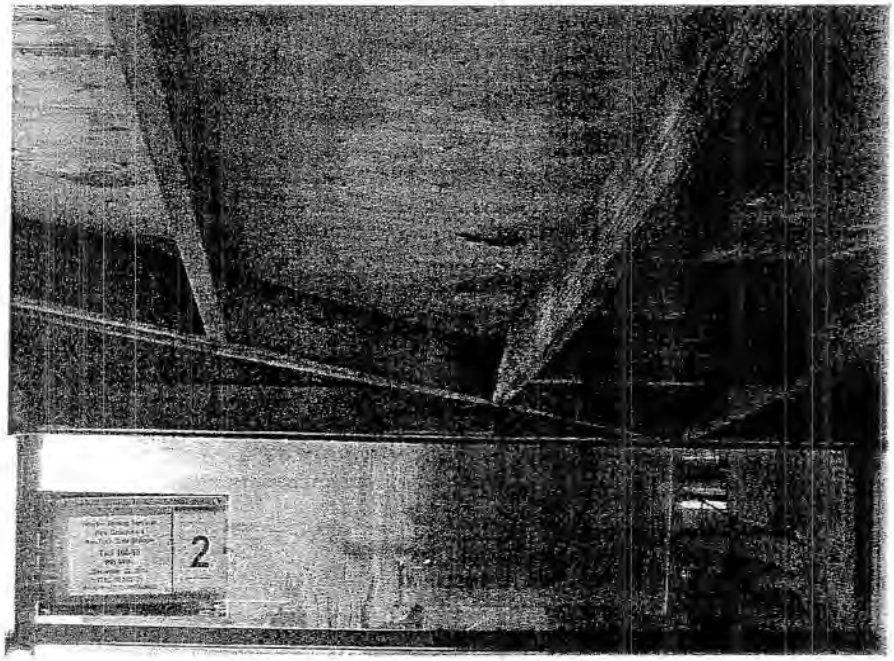
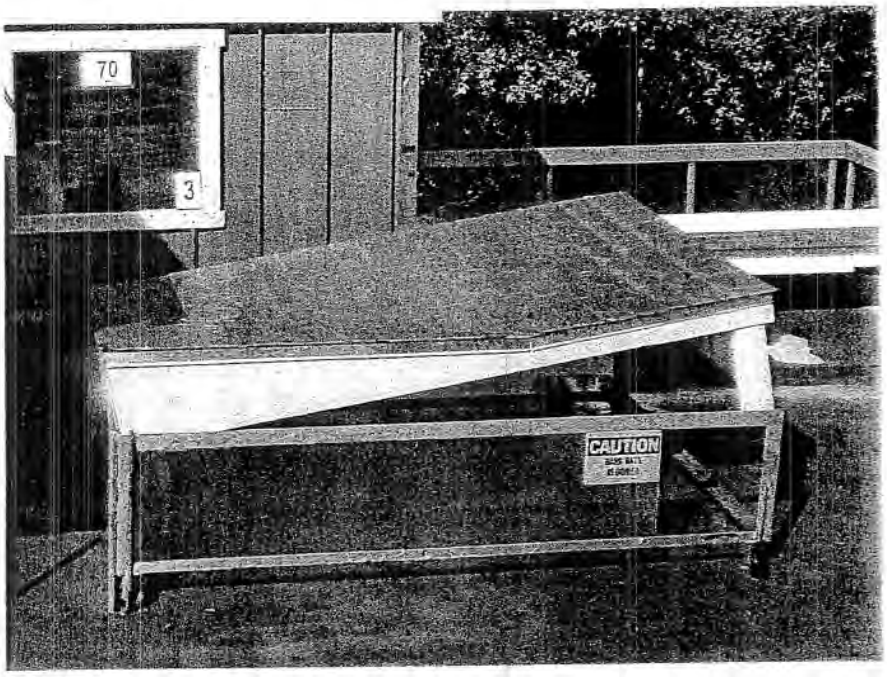
TOP OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 2: 0 MPH



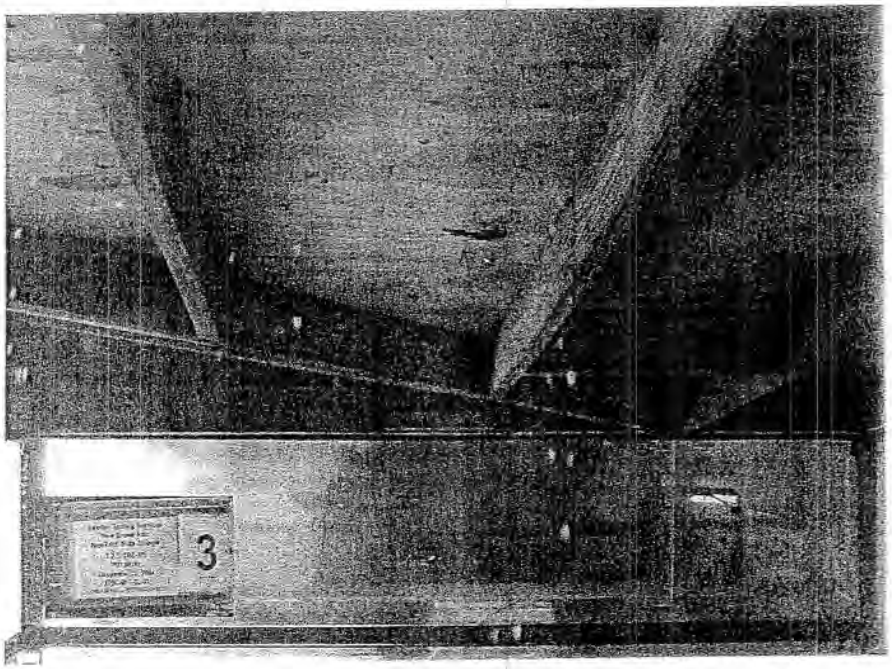
UNDERSIDE OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 2: 0 MPH



TOP OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 3: 70 MPH



UNDERSIDE OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 3: 70 MPH



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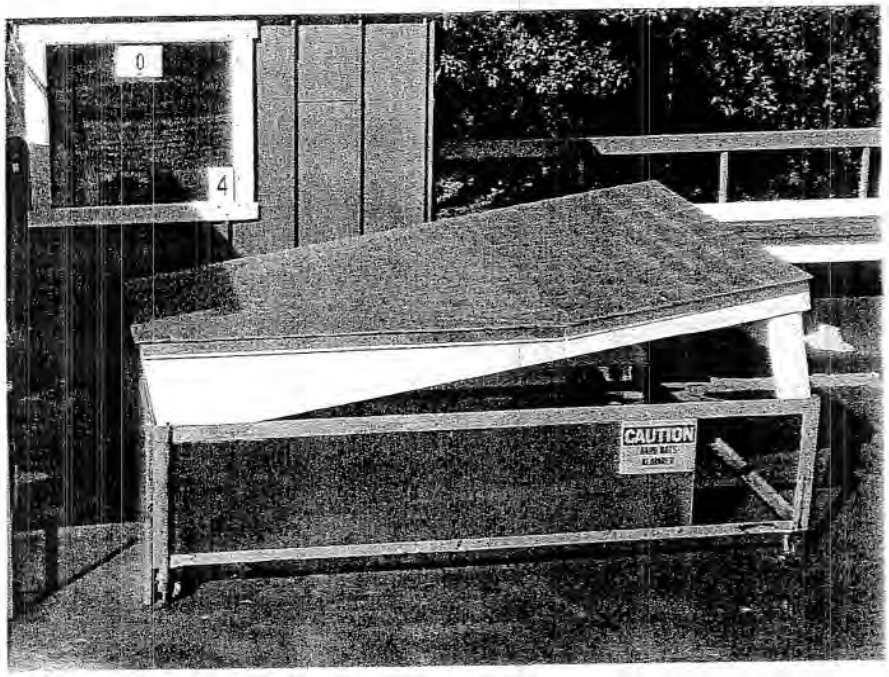
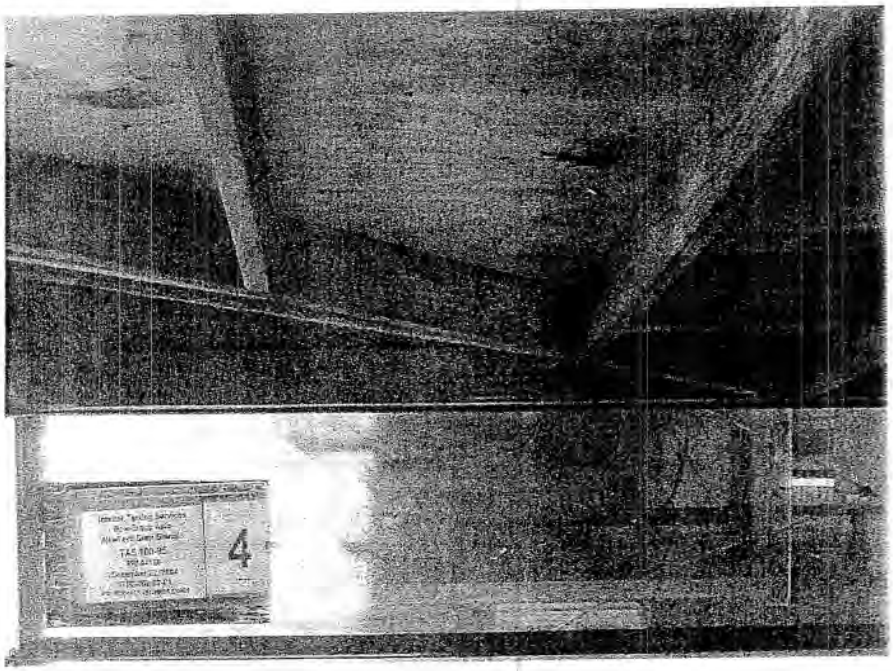
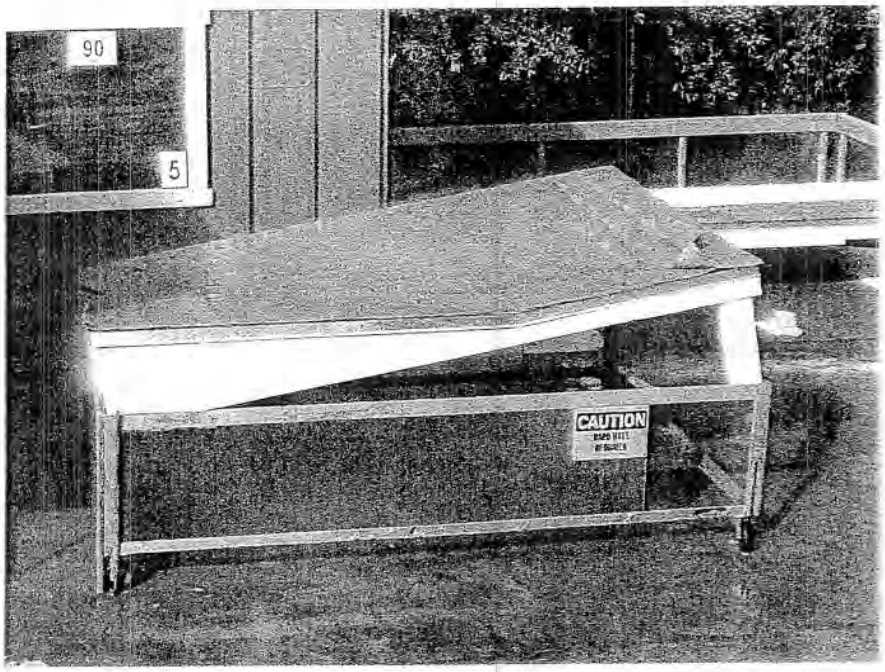
TOP OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 4: 0 MPH



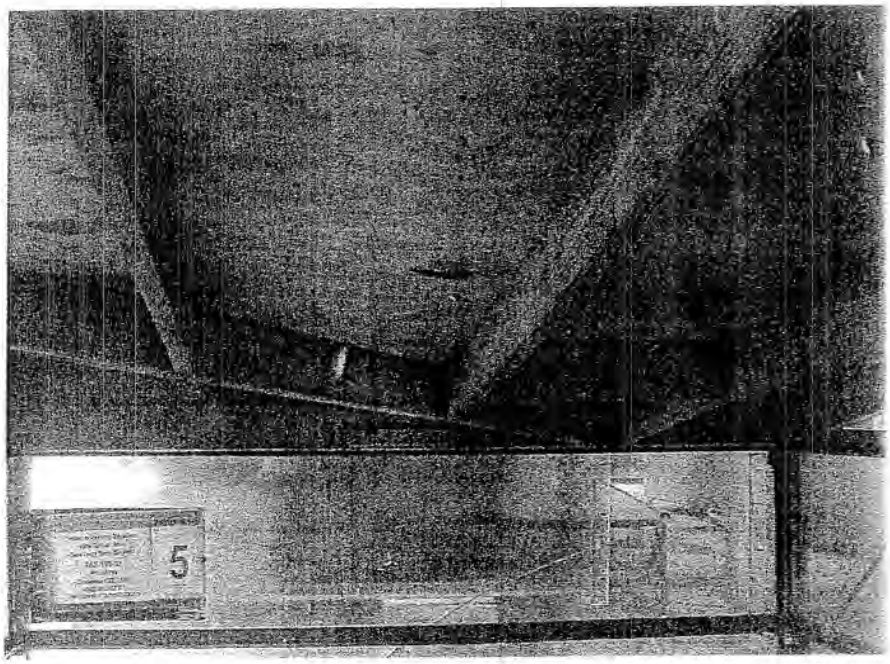
UNDERSIDE OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 4: 0 MPH



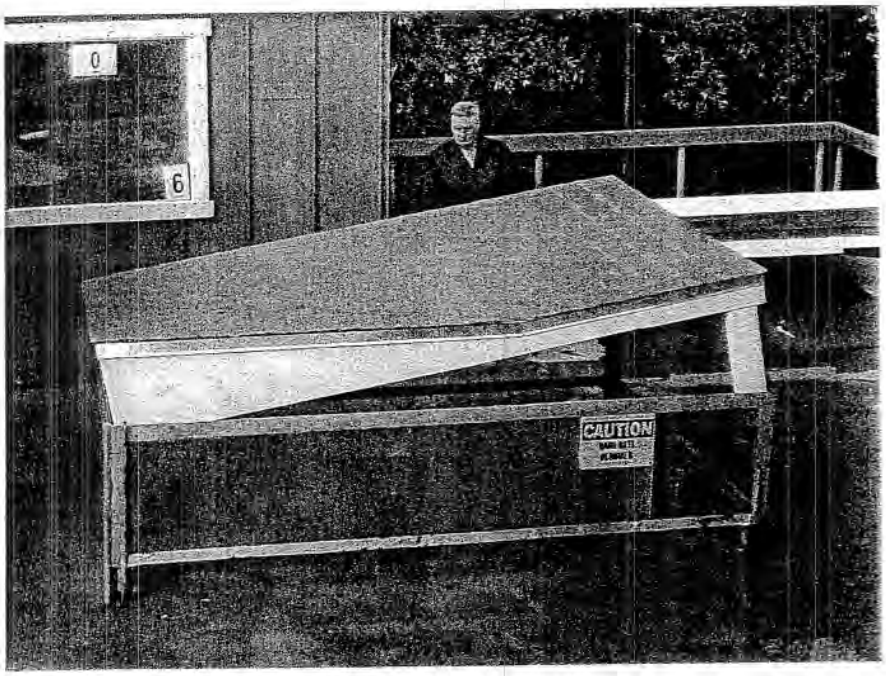
TOP OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 5: 90 MPH



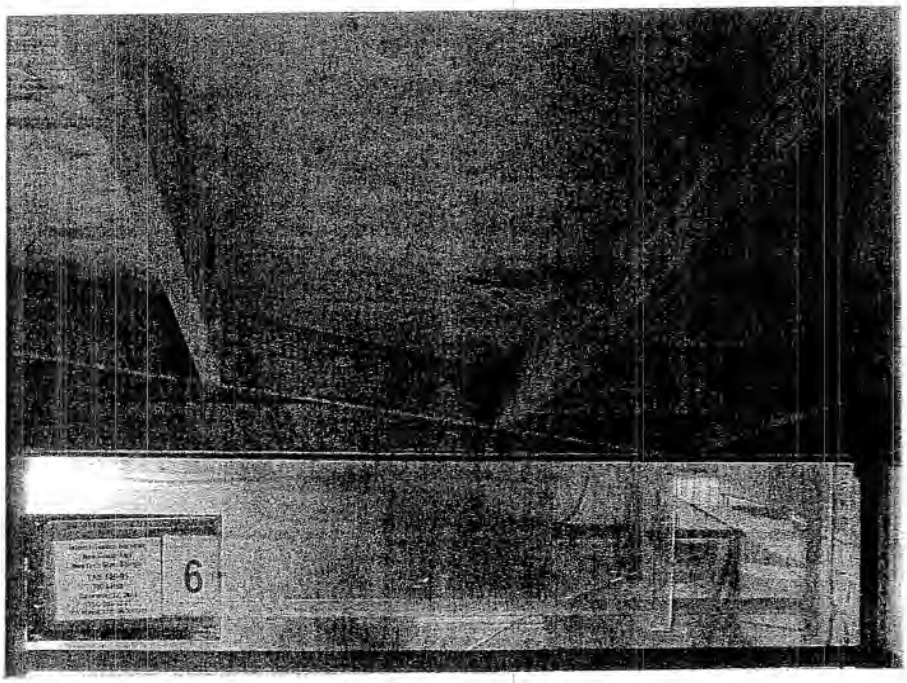
UNDERSIDE OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 5: 90 MPH



TOP OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 6: 0 MPH



UNDERSIDE OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 6: 0 MPH



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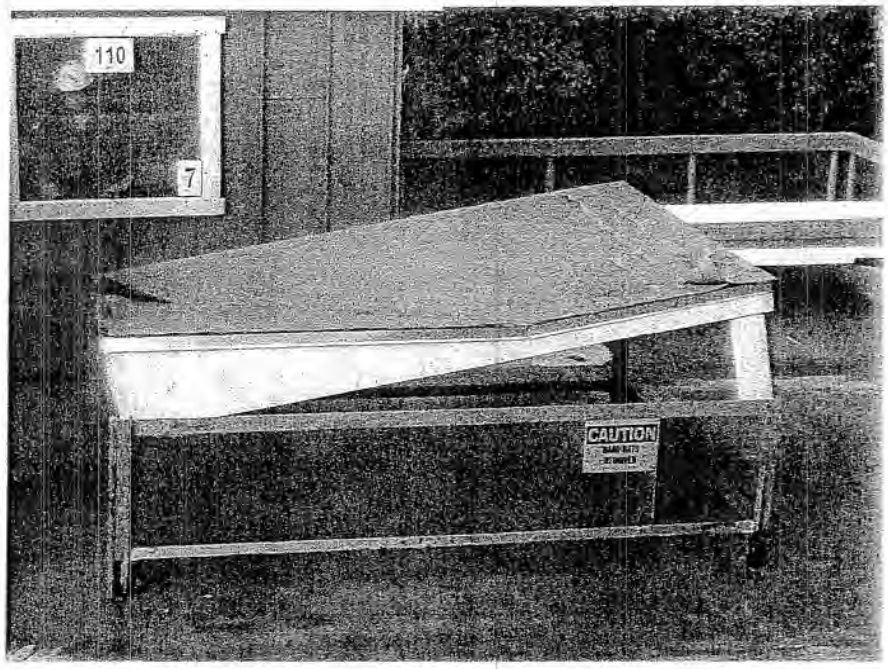
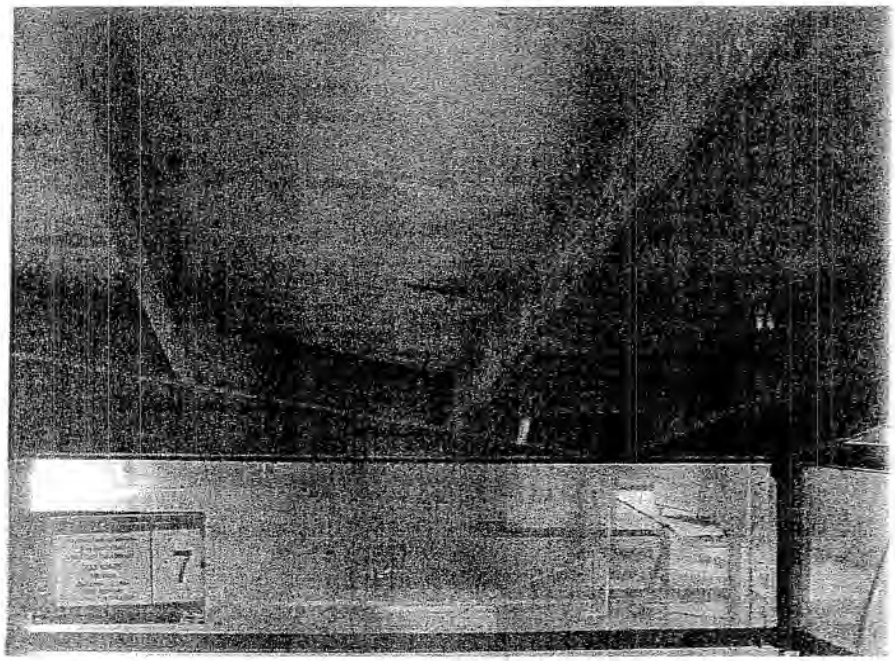
TOP OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 7: 110 MPH



UNDERSIDE OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 7: 110 MPH



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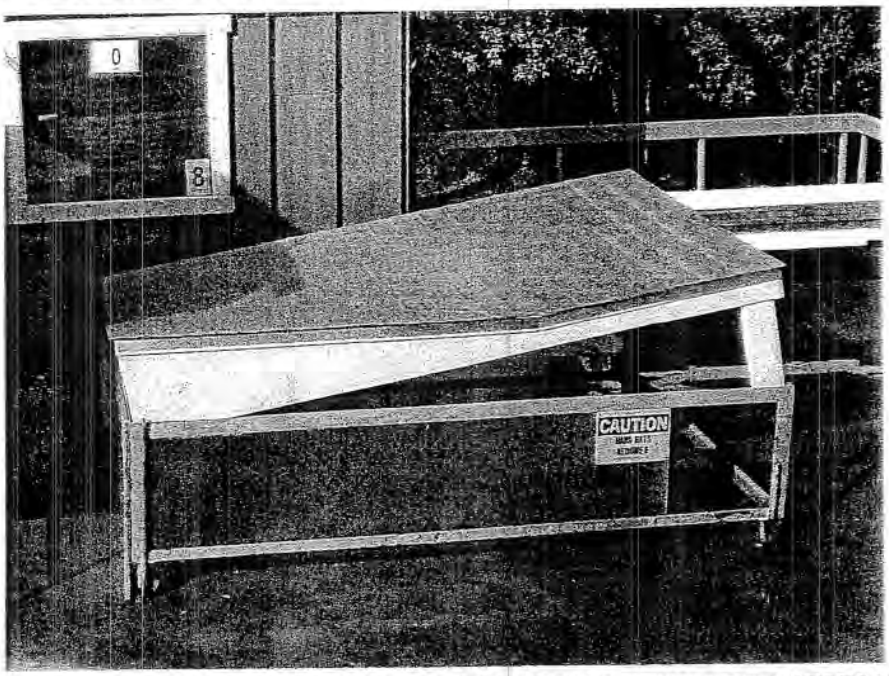
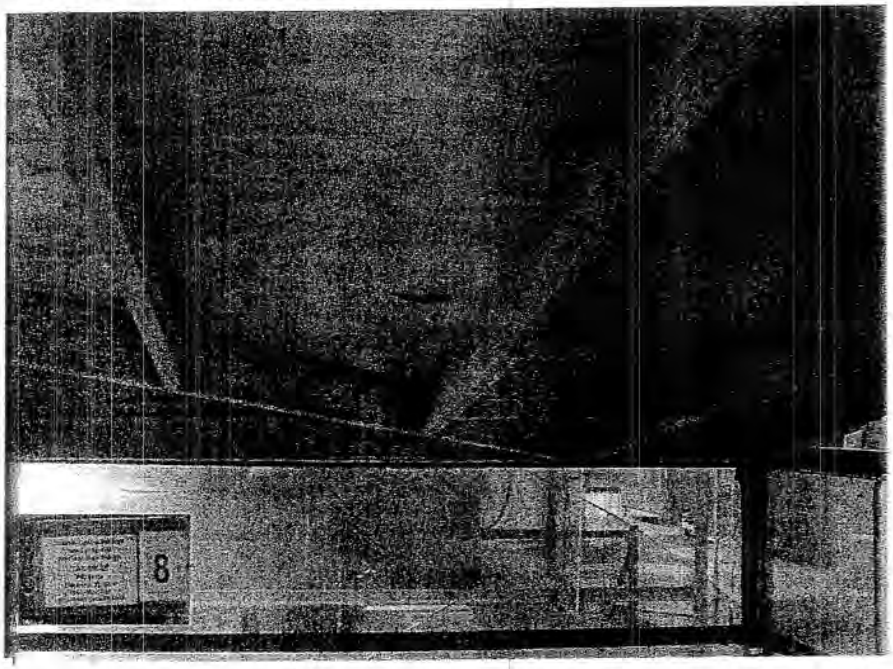
TOP OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 8: 0 MPH



UNDERSIDE OF DECK 30 SECONDS PRIOR TO COMPLETION OF INTERVAL 8: 0 MPH



1.7 Wind stream, Simulated Rain Fall, and Flow Meter Calibration Data and Calculations.

See Appendix A.

1.8 Detailed Observations.

TAS 100 DATA AND OBSERVATIONS
New Group Asia Construction Material Supply
NewTech Slate
Test Date: December 22, 2004

Slope: 2" in 12" **Air:** 75 °F **Deck Conditioning:** 16Hrs@135°F

Air Velocity Condition	Simulated Rainfall Condition	Duration
35 mph No shingle movement	8.8 in/hr No water infiltration under deck	15 min
0 mph No shingle movement	Off No water infiltration under deck	10 min
70 mph No shingle movement	8.8 in/hr No water infiltration under deck	15 min
0 mph No shingle movement	Off No water infiltration under deck	10 min
90 mph Lifted corners in field course 3 & at eave, rake 7 valley.	8.8 in/hr No water infiltration under deck	15 min
0 mph No shingle movement	Off No water infiltration under deck	10 min
110 mph No additional lift observed.	8.8 in/hr No water infiltration under deck	5 min
0 mph All lifted shingles relaxed to a normal position.	Off No water infiltration under deck	10 min

Summary Observations At 90 mph some shingle corners lifted but relaxed to a normal position immediately after the test. No water infiltration on the underside of the deck was observed during the test.

1.9 Volume of water, which infiltrated the sheathing at area of ridge vent.

Not applicable in this test.

1.10 Water Infiltration Through Sheathing.

None

1.11 Shingles Which Blow Off, Tear or Blow Upward Without Reseating:

None

2.0 Result of Testing:

Pass

The New Group Asia Construction Material Supply NewTech (synthetic) Slates comply with all the requirements of Florida Building Code (HVHZ) Test Protocol TAS 100-95, **TEST PROCEDURE FOR WIND AND WIND DRIVEN RAIN RESISTANCE OF DISCONTINUOUS ROOF SYSTEMS.**

Signed: Gary H. Griswold
Gary H. Griswold
Manager, Testing Services

Date: 12/22/04

Approved: Charles L. Thomas
Charles L. Thomas
Professional Engineer
P.E. Number: 29439

Date: 1/14/05

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Appendix A

TAS 100 - 95 CALIBRATION DATA

Report Section 11.1.7

December 17, 2004

PRI Asphalt Technologies, Inc. 6408 Badger Drive Tampa, FL 33610 Tel: 813-621-5777 Fax: 813-621-5840 e-mail mail@priasphalt.com WebSite: http://www.priasphalt.com

TAS 100 - 95 CALIBRATION PROCEDURES
FOR
WIND GENERATOR WIND STREAM
INCLUDING
WIND VELOCITY, FLOW METERS, AND SIMULATED RAIN FALL

December 17, 2004

Procedure:

Wind Stream

The wind stream velocity calibration was measured using the vertical plane grid test frame defined in TAS 100-95. The grid consisted of eight individual two feet by two feet sections with four along the length and two high. The grid was located two feet in front of the wind tunnel exit.

A Dwyer No. 16D U-tube was connected to a Dwyer Model 160-48 Pitot tube used to sense the velocity pressure in each grid. The pressure was read directly in inches of water on the U-tube. These velocity pressures were converted to miles per hour.

The wind generator was started and target engine RPM was established for each wind speed required by the test. Once the target wind speed was attained, the readings using the Pitot tube were taken in each of the vertical plane grids and recorded.

Flow Meters and Simulated Rain Fall

The flow meters were calibrated using readings on two flow meters to establish theoretical flow through the system. The water delivered by each of the flow meters was collected in a tared container for a period of one minute. The weight of the water was determined for each flow meter and converted to inches of water per hour simulated rain fall using the calculation in TAS 100 - 95. The number reported in the calibration is the average of five trials.

The calibration of the simulated rain fall on the deck was determined by placing absorptive material, 46 gauge organic felt, on the deck as described in TAS 100 - 95. This part of the calibration was completed on November 11, 2002. The slope was adjusted to 2 inches per foot. The average weight 2 foot by 2 foot sections was determined by weighing ten 2 feet by 2 feet sections. The wind generator was adjusted to 35 MPH and water injected into the air stream for 10 minutes. A second deck was prepared using the same type absorptive material. The wind generator was adjusted to 70 MPH

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and water injected into the air stream for 10 minutes. Following each test, the wet absorptive material was weighed to determine the quantity of water absorbed during the water distribution calibration period.

Results:

Wind Stream Velocity Calibration Summary (September 16, 2004)

Target Speed, MPH	Measured Average Speed, MPH	Calculated Difference from Target, %	Permitted Tolerance, %
35	34.9	-0.28	±10
70	70.8	+1.1	±10
90	89.1	-1.0	±10
110	105.3	-4.2	±10

The calibration of the wind stream resulted in the wind generator meeting the requirement of a tolerance of ± 10 percent on wind velocity attained in comparison to target velocity.

Simulated Rain Fall and Flow Meter Calibration Summary

The calibration of the flow meters resulted in a delivery rate for water within the required tolerance of ± 5 percent of target of 8.8 inches per hour.

Water Distribution Calibration Summary

The water distribution calibration resulted in water distribution at 35 and 70 MPH within the tolerance of ± 15 percent at 35 MPH and ± 10 percent at 70 MPH.

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Wind Generator Wind Stream Velocity Calibration
Section 7.1

Pitot Tube Readings in Inches of Water for Each Vertical Plane Grid

@ 1500 Engine RPM

0.56	0.56	0.58	0.58
0.58	0.56	0.60	0.62

@ 2600 Engine RPM

2.20	2.40	2.40	2.50
2.40	2.20	2.50	2.50

@ 3500 Engine RPM

3.80	3.60	3.80	3.80
3.80	3.60	3.80	4.00

@ 4200 Engine RPM

5.00	5.00	5.20	5.20
5.40	5.20	5.60	5.60

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Converted Wind Speed in MPH for Each Vertical Plane Grid

35 MPH ± 10% (31.5-38.5)

34.3	34.3	34.9	34.9
34.9	34.3	35.5	36.1

(-2.0% – 3.0%)

Avg:= 34.9

70 MPH ± 10% (63.0 – 77.0)

68.0	71.0	71.0	72.5
71.0	68.0	72.5	72.5

(-2.8% - +3.4%)

Avg:= 70.8

90 MPH ± 10% (81.0 – 99.0)

89.4	87.0	89.4	89.4
89.4	87.0	89.4	91.7

(-3.4% - +1.8%)

Avg. = 89.1

110 MPH ± 10% (100.0 – 120.0)

102.5	102.5	104.5	104.5
106.5	104.5	108.5	108.5

(-1.4% - -7.1)

Avg:= 105.2

Conversion Formula: $MPH = 12.45678\sqrt{Pv/d}$

P_v = Pitot Tube Pressure, in. H_2O
d = air density @ 79°F = 0.0739 pcf at 30.01Hg Bar. Press
Air Temp: 79°F; Engine Hours: 238.4

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Simulated Rainfall and Flow Meter Calibration
Section 7.2
December 17, 2004

Flow Meter Calibration	Result	
Flow Meter	**Top**	**Bottom**
Flow Meter Setting, gal/min	2.2	2.2
Water Captured in 1 minute, lbs/min[1]	18.5	18.5
Water Captured in 1 minute, gal/min	2.22	2.22
Water Captured in 1 minute, in/hr on 8 x 6 foot TAS 100(A) Deck (Target 8.8 in/hr)	8.90	
Tolerance compared to target 8.8 in/hr, % **(Tolerance ± 5%)**	+1.1	
Flow Meter Setting, gal/min.	3.6	3.6
Water Captured in 1 minute, lbs/min[1]	30.8	30.6
Water Captured in 1 minute, gal/min	3.69	3.65
Water Captured in 1 minute, in/hr on 8 x 10 foot TAS 100 Deck (Target 8.8 in/hr)	8.87	
Tolerance compared to target 8.8 in/hr, % **(Tolerance ± 5%)**	+0.8	

Note 1: Water captured measurement is the average of 5 determinations for each flow meter.

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Simulated Rain Fall Distribution Calibration @ 35 MPH

Section 7.3.4

	17	**18**	**18**	**20**
Felt, g	215.0	215.0	215.0	215.0
Felt + Water, g	715.0	722.5	740.0	705.0
Water, g	500.0	507.5	525.0	490.0
	13	**14**	**15**	**16**
Felt, g	215.0	215.0	215.0	215.0
Felt + Water, g	710.0	715.0	712.5	705.5
Water, g	495.0	500.0	497.5	490.5
	9	**10**	**11**	**12**
Felt, g	215.0	215.0	215.0	215.0
Felt + Water, g	718.0	728.5	740.0	734.0
Water, g	503.0	513.5	525.0	519.0
	5	**6**	**7**	**8**
Felt, g	215.0	215.0	215.0	215.0
Felt + Water, g	705.0	700.5	698.0	708.0
Water, g	490.0	485.5	483.0	493.0
	1	**2**	**3**	**4**
Felt, g	215.0	215.0	215.0	215.0
Felt + Water, g	709.0	688.0	678.0	718.5
Water, g	494.0	473.0	463.0	503.5

Top Flow meter:	3.5	gpm
Bottom Flow meter:	3.6	gpm
Engine RPM:	1500	
Temperature:	79°F	

High	525.0
Low	463.0
Average	497.6
Specification ± 15%	
Actual	5.5%
Actual	-6.9%

Simulated Rain Fall Calibration @ 70 MPH
Section 7.3.7

	17	**18**	**18**	**20**
Felt, g	215.0	215.0	215.0	215.0
Felt + Water, g	650.0	652.5	658.5	654.5
Water, g	435.0	437.5	443.5	439.5
	13	**14**	**15**	**16**
Felt, g	215.0	215.0	215.0	215.0
Felt + Water, g	700.0	709.5	702.5	665.0
Water, g	485.0	494.5	487.5	450.0
	9	**10**	**11**	**12**
Felt, g	215.0	215.0	215.0	215.0
Felt + Water, g	700.0	709.5	711.0	670.5
Water, g	485.0	494.5	496.0	455.5
	5	**6**	**7**	**8**
Felt, g	215.0	215.0	215.0	215.0
Felt + Water, g	720.5	712.5	698.0	670.5
Water, g	505.5	497.5	483.0	455.5
	1	**2**	**3**	**4**
Felt, g	215.0	215.0	215.0	215.0
Felt + Water, g	679.5	675.5	683.5	650.0
Water, g	464.5	460.5	468.5	435.0

Top Flow meter:	3.5	gpm
Bottom Flow meter:	3.6	gpm
Engine RPM:	2600	
Temperature:	79°F	

High	505.5
Low	435.0
Average	468.7
Specification: ± 10%	
Actual	7.9%
Actual	-7.2%

These calibrations were conducted by and are certified by:

Signed: _____
Gary H. Griswold
Manager, Testing Services

Date: 12/22/04

Signed: Charles L Thomas
Charles L. Thomas
Professional Engineer
P. E. Number 29439

Date: 12/30/04

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Signed: _____

Donald C. Portfolio
Vice President

Date: 12/14/2004

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