16

Architectural Testing

AAMA/NWWDA 101/I.S. 2-97 TEST REPORT

Rendered to:

SPECIALTY WINDOWS
5520 Industrial Boulevard
Milton, Florida 32583

Report No: 07-30215.02
Test Date: 11/08/01
Report Date: 04/30/02
Expiration Date: 11/08/05

Project Summary: Architectural Testing, Inc. (ATI) was contracted by Dayton Technologies, LLC to witness tests performed on one Dayton Series/Model 190.093 SH, PVC single hung window at their Monroe, Ohio, facility. The sample tested successfully met the performance requirements for a H-R50 44 x 96 rating. This test report is a reissue of the original report 07-30215.01. This report is issued in the name of Specialty Windows through written authorization of Dayton Technologies, LLC. Test specimen descriptions and results are reported herein.

Test Procedure: The test specimen was evaluated in accordance with AAMA/NWWDA 101/I.S. 2-97, *"Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors."*

Test Specimen Description:

Series/Model: Series 1900

Type: PVC Single Hung Window

Overall Size: 3' 7-7/8" wide by 7' 11-3/4" high

Sash Size: 3' 4-3/4" wide by 2' 4-1/2" high

Fixed Daylight Opening Size: 3' 2-3/8" wide by 5' 2-3/4" high

Screen Size: 3' 3-1/4" wide by 2' 3-9/16" high

Glass Type: Nominal 3/4" thick insulating glass fabricated from two sheets 1/8" thick clear tempered sheets with a spacer system.

Reinforcement: Aluminum reinforcement was utilized in fixed meeting rail and bottom lift rail. See Dayton Technologies drawings #6189 and #A6202.

Finish: White PVC.

130 Derry Court
York, PA 17402-9405
phone: 717.764.7700
fax: 717.764.4129
www.archtest.com

Allen N. Reeves
30 APRIL 2002

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30 APRIL 2002

AAMA/NWWDA 101/I.S. 2-97
TEST REPORT

Rendered to:

SPECIALTY WINDOWS

SERIES/MODEL: Series 1900
TYPE: PVC Single Hung

Title of Test	Summary of Results
Rating	H-R50 44 x 96
Overall Design Pressure	50 psf
Operating Force	8 lbs max.
Air Infiltration	0.08 cfm/ft^2
Water Resistance	7.50 psf
Structural Test Pressure	±75.0 psf
Deglazing	Pass
Forced Entry Resistance	Pass Level 10

Reference should be made to full report for test specimen description and data.

Allen M. Reuss
30 APRIL 2002

Report No: 07-30215.02
Report Date: 04/30/02
Expiration Date: 11/08/05

Test Specimen Description: (Continued)

Glazing Details: The fixed sash was interior wet glazed with silicone and secured with interior PVC snap in beads. The operable sash were exterior wet glazed with silicone with exterior and secured with exterior PVC glazing beads.

Weatherstripping:

Description	Quantity	Location
Bulb (P82060-F)	1 Row	Lift rail
0.290" high by 0.187" back pile with center fin	1 Row	Sill and operable sash meeting rail
0.290" high by 0.187" back pile with center fin	2 Rows	Bottom sash stile

Frame Construction: The frame was constructed of extruded PVC members with mitered and thermally welded corners. The fixed meeting rail was secured with #6 by 1-1/2" steel screws through exterior of jamb into aluminum reinforcement at midpoint of jambs (two total).

Sash Construction: The sash was constructed of extruded PVC members with mitered and thermally welded corners.

Screen Construction: The screen frame was constructed of extruded aluminum with PVC corner keys. Fiberglass mesh was secured with a flexible spline.

Hardware:

Description	Quantity	Location
Cam lock	2	8" from jambs, 25" apart
Tilt latch	2	Upper sash corners
Tilt pin	2	Lower sash corners
Coil balance	2	One in each jamb

Allen N. Reeve
30 APRIL 2062

Test Specimen Description: (Continued)

Drainage: Sloped sill

Description	Quantity	Location
1" wide by 1/8" high weepslot	2	Screen slot
3/8" wide by 3/16" high weepslot	2	Bottom lift rail
1/4" hole	2	Fixed meeting rail

Installation: The test sample was installed into a nominal 2" by 12" #2 Southern pine wood buck with #6 by 1-1/2" steel screws into jambs, 6" up from sill and 6" down from head, (four total). Exterior perimeter was sealed with silicone.

Test Results: The results are tabulated as follows.

Paragraph	Title of Test	Results	Allowed
2.2.1.6.1	Operating Force Lower Sash	8 lbs	30 lbs max.
2.1.2	Air Infiltration (ASTM E 283-91) (See Note #1) @ 1.56 psf (25 mph)	0.08 cfm/ft^2	0.30 cfm/ft^2 max.

Note #1: The tested specimen meets the performance levels specified in AAMA/NWWDA 101/I.S. 2-97 for air infiltration

2.1.3	Water Resistance (ASTM E 547-00) (with and without screen) WTP = 2.86 psf	No leakage	No leakage
2.1.4.1	Uniform Load Deflection (ASTM E 330-97) (Measurements reported were taken on the fixed meeting rail) @ 15.0 psf (positive) @ 15.0 psf (negative)	 0.17" 0.16"	 0.22" max. 0.22" max.
2.1.4.2	Uniform Load Structural (ASTM E 330-97) (Measurements reported were taken on the fixed meeting rail) @ 22.5 psf (positive) @ 22.5 psf (negative)	 0.02" 0.02"	 0.15" max. 0.15" max.

Allen N. Reese
30 APRIL 2002

Test Results: (Continued)

Paragraph	Title of Test	Results	Allowed
2.2.1.6.2	Deglazing Test (ASTM E 987-88) In operating direction @ 70 lbs		
	Lower Sash		
	Meeting Rail	0.04"/8%	0.50"/100%
	Bottom Rail	0.04"/8%	0.50"/100%
	In remaining direction @ 50 lbs		
	Right stile	0.02"/4%	0.50"/100%
	Bottom Rail	0.02"/4%	0.50"/100%
2.1.7	Welded Corner Test	Meets as stated	Meets as stated
2.1.8	Forced Entry Resistance (ASTM F 588-97) (Unit was tested with single and double locks)		
	Type A Grade 10		
	Lock Manipulation Test	No entry	No entry
	Test A1 through A7	No entry	No entry
	Lock Manipulation Test	No entry	No entry

Optional Performance:

4.3	Water Resistance (ASTM E 547-00) (with and without screen) WTP =7.50 psf	No leakage	No leakage
4.4.1	Uniform Load Deflection (ASTM E 330-97) (Measurements reported were taken on the fixed meeting rail)		
	@ 50.0 psf (positive)	0.69"*	0.22" max.
	@ 50.0 psf (negative)	0.64"*	0.22" max.
4.4.2	Uniform Load Structural (ASTM E 330-97) (Measurements reported were taken on the fixed meeting rail)		
	@ 75.0 psf (positive)	0.15"	0.15" max.
	@ 75.0 psf (negative)	0.15"	0.15" max.

**Exceeds L/175 for deflection, but meets all other test requirements.*

Allen N. Reese
30 APRIL 2007

This report is reissued in the name of Specialty Windows through written authorization of Dayton Technologies, LLC to whom the original report was rendered. The original Dayton Technologies, LLC Report No. is 07-30215.01.

Detailed drawings, representative samples of the test specimen, and a copy of this report will be retained by ATI for a period of four years. The above results were secured by using the designated test methods and they indicate compliance with the performance requirements of the above referenced specification. This report does not constitute certification of this product, which may only be granted by the certification program administrator.

For ARCHITECTURAL TESTING, INC.:

Larry D. Mankin
Technician

Allen N. Reeves, P.E.
Director - Engineering Services
30 APRIL 2002

LDM:nlb
07-30215.02

AAMA/NWWDA 101/I.S. 2-97
TEST REPORT

Rendered to:

SPECIALTY WINDOWS

SERIES/MODEL: Series 1900
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30 APRIL 2002

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30 APRIL 2002

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Larry D. Mankin RLH
Larry D. Mankin
Technician

Allen N. Reeves
Allen N. Reeves, P.E.
Director - Engineering Services
30 APRIL 2002

LDM:nlb
07-30215.02

received
3.27.02

ELK Premium Roofing

March 6, 2002

Subject: Elk Product Approval Information

All Prestique® and Capstone® products manufactured in Tuscaloosa, AL are certified under the Miami – Dade County Building Code Office (BCCO). These products also meet the requirements for the Florida Building Code since they are MD approved. The following test protocols must be passed by each of the products in order for MD product certification:
ASTM D3462
PA 100 (110 mph uplift and wind driven rain resistance)
PA 107 (Modified ASTM D3161 - 110 mph wind uplift resistance)

The nailing patterns that were used during the PA 100 and PA 107 wind test protocols for the Prestique and Capstone products are listed below. Also listed below are the Miami – Dade Notice of Acceptance Numbers (NOA).

Raised Profile, Prestique High Definition, Prestique 25, or Prestique 30 –
PA 100 = 4 nails
PA 107 = 5 nails
MD NOA# = 01-1226.04

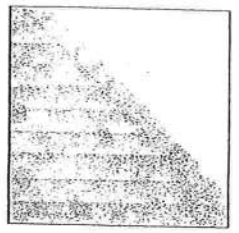
Prestique I 35 or Prestique I* –
PA 100 = 4 nails
PA 107 = 5 nails
MD NOA# = 01-1226.05

Prestique Plus or Prestique Gallery Collection* –
PA 100 = 4 nails
PA 107 = 4 nails
MD NOA# = 01-1226.03

Capstone*
PA 100 = 4 Nails
PA 107 = 4 Nails
MD NOA# = 01-0523.01
* As per the Elk Limited Warranty, six nails are required for the Elk high wind warranty.

If there are any questions please contact:

Mike Reed – Technical Manager (205) 342-0287
or
Daniel DeJarnette – QA Engineer (205) 342-0298



PRESTIQUE® HIGH DEFINITION®

High Definition

Product size	13¼"x 39⅜"
Exposure	5⅝"
Pieces/Bundle	16
Bundles/Square	4/98.5 sq.ft.
Squares/Pallet	11

50-year limited warranty period: non-prorated coverage for shingles and application labor for the initial 5 years, plus an option for transferability*; prorated coverage for application labor and shingles for balance of limited warranty period; 5-year limited wind warranty*.

High Definition

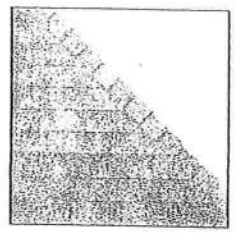
Product size	13¼"x 39⅜"
Exposure	5⅝"
Pieces/Bundle	16
Bundles/Square	4/98.5 sq.ft.
Squares/Pallet	14

40-year limited warranty period: non-prorated coverage for shingles and application labor for the initial 5 years, plus an option for transferability*; prorated coverage for application labor and shingles for balance of limited warranty period; 5-year limited wind warranty*.

High Definition

Product size	13¼"x 38⅜"
Exposure	5⅝"
Pieces/Bundle	22
Bundles/Square	3/100 sq.ft.
Squares/Pallet	16

30-year limited warranty period: non-prorated coverage for shingles and application labor for the initial 5 years, plus an option for transferability*; prorated coverage for application labor and shingles for balance of limited warranty period; 5-year limited wind warranty*.



RAISED PROFILE™

Product size	13¼"x 38⅜"
Exposure	5⅝"
Pieces/Bundle	22
Bundles/Square	3/100 sq.ft.
Squares/Pallet	16

30-year limited warranty period: non-prorated coverage for shingles and application labor for the initial 5 years, plus an option for transferability*; prorated coverage for application labor and shingles for balance of limited warranty period; 5-year limited wind warranty*.

HIP AND RIDGE SHINGLES

Size: 12"x 12"
Exposure: 6⅝"
Pieces/Bundle: 45
Coverage: 4 Bundles = 100 linear feet

52 Bundles/Pallet
18 Pallets/Truck
936 Bundles/Truck
19 Pieces/Bundle
1 Bundle = 120.33 linear feet

Available Colors: Antique Slate, Weatheredwood, Shakewood, Sablewood, Hickory, Barkwood**, Forest Green, Wedgewood**, Birchwood**, Sandalwood. Gallery Collection: Balsam Forest™, Weathered Sage™, Sienna Sunset™.

All Prestique, Raised Profile and Seal-A-Ridge roofing products contain Elk WindGuard® sealant. WindGuard activates with the sun's heat, bonding shingles into a wind and weather resistant cover that resists blow-offs and leaks.

Check for availability with built-in StainGuard® treatment to inhibit the discoloration of roofing granules caused by the growth of certain types of algae. Not available in Sablewood.

All Prestique and Raised Profile shingles meet UL® Wind Resistant (UL 997) and Class "A" Fire Ratings (UL 790); and ASTM Specifications D 3018, Type-I; D 3161, Type-I; E 108 and the requirements of ASTM D 3462.

All Prestique and Raised Profile shingles meet the latest Metro Dade building code requirements.

***See actual limited warranty for conditions and limitations.**
****Check for product availability.**

SPECIFICATIONS

SCOPE: Work includes furnishing all labor, materials and equipment necessary to complete installation of (name) shingles specified herein. Color shall be (name of color). Hip and ridge type to be Elk Seal-A-Ridge with formula *FLX*.

All exposed metal surfaces (flashing, vents, etc.) to be painted with matching Elk roof accessory paint.

PREPARATION OF ROOF DECK: Roof deck to be dry, well-seasoned 1" x 6" (25.4mm x 152.4mm) boards; exterior-grade plywood (exposure 1 rated sheathing) at least 3/8" (9.525mm) thick conforming to the specifications of the American Plywood Association; 7/16" (11.074mm) oriented strandboard; or chipboard. Most fire retardant plywood decks are NOT approved substrates for Elk shingles. Consult Elk Field Service for application specifications over other decks and other slopes.

MATERIALS: Underlayment for standard roof slopes, 4" per foot (101.6/304.8mm) or greater: apply non-perforated No. 15 or 30 asphalt-saturated felt underlayment. For low slopes [4" per foot (101.6/304.8mm) to a minimum of 2" per foot (50.8/304.8mm)], use two plies of underlayment overlapped a minimum of 19". Fasteners shall be of sufficient length and holding power for securing material as required by the application instructions printed on shingle wrapper.

For areas where algae is a problem, shingles shall be (name) with StainGuard treatment, as manufactured by the Elk Tuscaloosa plant. Hip and ridge type to be Seal-A-Ridge with formula *FLX* with StainGuard treatment.

Complete application instructions are published by Elk and printed on the back of every shingle bundle. All warranties are contingent upon the correct installation as shown on the instructions. These instructions are the minimum required to meet Elk application requirements. In some areas, building codes may require additional application techniques or methods beyond our instructions. In these cases, the local code must be followed. Under no circumstances will Elk accept application requirements less than those contained in its application instructions.

For specifications in CSI format, call 800.354.SPEC (7732) or e-mail specinfo@elkcorp.com.

SOUTHEAST & ATLANTIC OFFICE:
800.945.5551

CORPORATE HEADQUARTERS:
800.354.7732

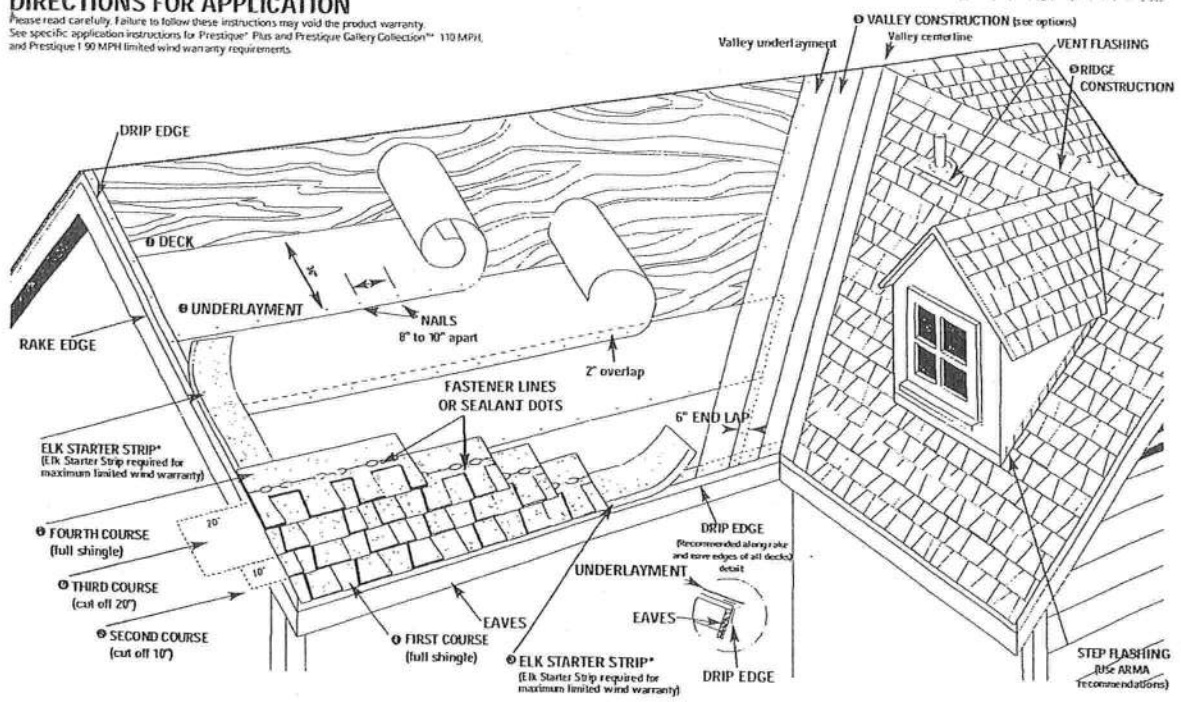
PLANT LOCATION:
800.945.5545

ELK
www.elkcorp.com

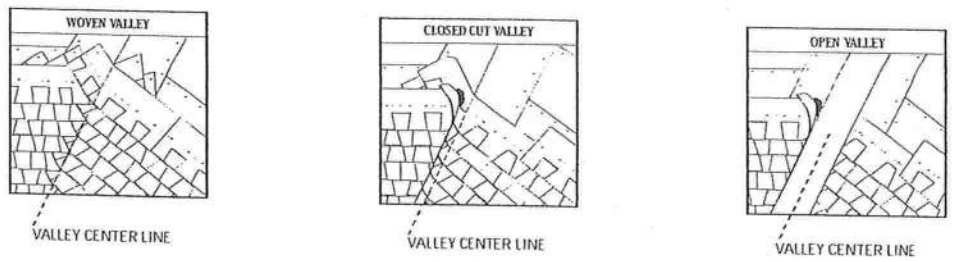
354-021 1/02

DIRECTIONS FOR APPLICATION

Please read carefully. Failure to follow these instructions may void the product warranty. See specific application instructions for Prestique® Plus and Prestique Gallery Collection™ 110 MPH and Prestique I 90 MPH limited wind warranty requirements.



❺ **VALLEY CONSTRUCTION OPTION** (California Open and California Closed are also acceptable) NOTE: For complete ARMA valley installation details, see ARMA Residential Asphalt Roofing Manual.



DIRECTIONS FOR APPLICATION

These application instructions are the minimum required to meet Elk's application requirements. Your failure to follow these instructions may void the product warranty. In some areas, the building codes may require additional application techniques or methods beyond our instructions. In these cases, the local code must be followed. Under no circumstances will Elk accept application requirements that are less than those printed here. Shingles should not be jammed tightly together. All attics should be properly ventilated. Note: It is not necessary to remove tape on back of shingle.

❶ DECK PREPARATION

Roof decks should be dry, well-seasoned 1" x 6" boards or exterior grade plywood minimum 3/8" thick and conform to the specifications of the American Plywood Association or 7/16" oriented strandboard, or 7/16" chipboard.

❷ UNDERLAYMENT

Apply underlayment (Non-Perforated No. 15 or 30 asphalt saturated felt). Cover drip edge at eaves only.

For low slope (2/12 up to 4/12), completely cover the deck with two plies of underlayment overlapping a minimum of 19". Begin by fastening a 19" wide strip of underlayment placed along the eaves. Place a full 36" wide sheet over the starter, horizontally placed along the eaves and completely overlapping the starter strip.

EAVE FLASHING FOR ICE DAMS (ASK A ROOFING CONTRACTOR, REFER TO ARMA MANUAL OR CHECK LOCAL CODES)

For standard slope (4/12 to less than 21/12), use coated roll roofing of no less than 50 pounds over the felt underlayment extending from the eave edge to a point at least 24" beyond the inside wall of the living space below or one layer of a self-adhered eave and flashing membrane.

For low slope (2/12 up to 4/12), use a continuous layer of asphalt plastic cement between the two plies of underlayment from the eave edge up roof to a point at least 24" beyond the inside wall of the living space below or one layer of a self-adhered eave and flashing membrane.

Consult the Elk Field Service Department for application specifications over other decks and other slopes.

❸ STARTER SHINGLE COURSE

USE AN ELK STARTER STRIP OR A STRIP SHINGLE INVERTED WITH THE HEADLAP APPLIED AT THE EAVE EDGE. With at least 4" trimmed from the end of the first shingle, start at the rake edge overhanging the eave 1/2" to 3/4". Fasten 2" from the lower edge and 1" from each side. Shingles may be applied with a course alignment of 45° on the roof.

❶ FIRST COURSE

Start at rake and continue course with full shingles laid flush with the starter course.

❷ SECOND COURSE

Start at the rake with the shingle having 10" trimmed off and continue across roof with full shingles.

❸ THIRD COURSE

Start at the rake with the shingle having 20" trimmed off and continue across roof with full shingles.

❹ FOURTH COURSE

Start at the rake and continue with full shingles across roof.

FIFTH AND SUCCEEDING COURSES.

Repeat application as shown for second, third, and fourth courses. Do not rack shingles straight up the roof.

❺ VALLEY CONSTRUCTION

Open, woven and closed cut valleys are acceptable when applied by Asphalt Roofing Manufacturing Association (ARMA) recommended procedures. For metal valleys, use 36" wide vertical underlayment prior to applying 18" metal flashing (secure edge with nails). No nails are to be within 6" of valley center.

❻ RIDGE CONSTRUCTION

For ridge construction use Class "A" Seal-A-Ridge® with formula *FLX*™ (See ridge package for installation instructions.)

FASTENERS

While nailing is the preferred method for Elk shingles, Elk will accept fastening methods according to the following instructions.

Always nail or staple through the fastener line or on products without fastener lines, nail or staple between and in line with sealant dots.

NAILS: Corrosive resistant, 3/8" head, minimum 12-gauge roofing nails. Elk recommends 1-1/4" for new roofs and 1-1/2" for roof-overs. In cases where you are applying shingles to a roof that has an exposed overhang, for new roofs only, 3/4" ring shank nails are allowed to be used from the eave's edge to a point up the roof that is past the outside wall line. 1" ring shank nails allowed for re-roof.

STAPLES: Corrosive resistant, 16-gauge minimum, crown width minimum of 15/16". Note: An improperly adjusted staple gun can result in raised staples that can cause a fish-mouthed appearance and can prevent sealing.

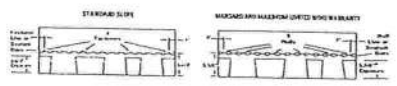
Fasteners should be long enough to obtain 3/4" deck penetration or penetration through deck, whichever is less.

MANSARD APPLICATIONS

Correct fastening is critical to the performance of the roof. For slopes exceeding 60° (or 21/12) use six fasteners per shingle. Locate fasteners in the fastener area 1" from each side edge with the remaining four fasteners equally spaced along the length of the double thickness (laminated) area. Only fastening methods according to the above instructions are acceptable.

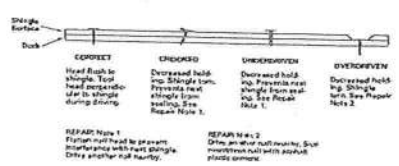
LIMITED WIND WARRANTY

- For a Limited Wind Warranty, all Prestique and Raised Profile™ shingles must be applied with 4 properly placed fasteners, or in the case of mansard applications, 6 properly placed fasteners per shingle.
- For a Limited Wind Warranty up to 110 MPH for Prestique Gallery Collection or Prestique Plus or 90 MPH for Prestique I, shingles must be applied with 6 properly placed NAILS per shingle. SHINGLES APPLIED WITH STAPLES WILL NOT QUALIFY FOR THIS ENHANCED LIMITED WIND WARRANTY. Also, Elk Starter Strip shingles must be applied at the eaves and rake edges to qualify Prestique Plus, Prestique Gallery Collection and Prestique I shingles for this enhanced Limited Wind Warranty. Under no circumstances should the Elk Shingles or the Elk Starter Strip overhang the eaves or rake edge more than 3/4 of an inch.



HELP STOP BLOW-OFFS AND CALL-BACKS

A minimum of four fasteners must be driven into the DOUBLE THICKNESS (laminated) area of the shingle. Nails or staples must be placed along – and through – the "fastener line" or on products without fastener lines, nail or staple between and in line with sealant dots. CAUTION: Do not use fastener line for shingle alignment.



Refer to local codes which in some areas may require specific application techniques beyond those Elk has specified.
All Prestique and Raised Profile shingles have a UL® Wind Resistance Rating when applied in accordance with these instructions using nails or staples on re-roofs as well as new construction.

CAUTION TO WHOLESALER: Careless and improper storage or handling can harm fiberglass shingles. Keep these shingles completely covered, dry, reasonably cool, and protected from the weather. Do not store near various sources of heat. Do not store in direct sunlight until applied. DO NOT DOUBLE STACK. Systematically rotate all stock so that the material that has been stored the longest will be the first to be moved out.

ELK

www.elkcorp.com

Lake City Glass, Inc.

P. O. Box 114 ~ Lake City, FL 32056
Phone 386-752-6204 ~ Fax 386-752-5952 ~ Email lcglass@isgroup.net
1-877-735-7720

received
4-11-02

April 08, 2002

To: All Contractors

Since the new windload code has been enforced for the State of Florida we have had several calls wanting information regarding the test reports and pricing. The following prices and enclosures should answer most of your questions. However, if you need further information please contact myself or Carl Bullard, Jr. We will be happy to assist you.

Contractor Prices:
Stratford Series

16 x 7 Raised Panel Steel Door (non-windload)	$425.00
9 x 7 Raised Panel Steel Door (non-windload)	$325.00
8 x 7 Raised Panel Steel Door (non-windload)	$295.00

For 110 mph windload add:

16 x 7	$125.00
9 x 7	$ 45.00
8 x 7	$ 45.00

Note glass, inserts, and insulation are extra, please call for pricing. The above prices do not include sales tax.

Sincerely,

Mandie Jo Page, Office Manager

Enc.: 4
cc: file