



DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

**MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION**

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www.miamidade.gov/economy

NOTICE OF ACCEPTANCE (NOA)

EcoStar, LLC
42 Edgewood Drive
Holland, NY 14080

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER - Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the Florida Building Code including the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: Empire Slate, Empire Niagara Slate, Empire Shake, Empire Shake Plus, Empire Niagara Shake, and Empire Niagara Concrete

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA renews and revises NOA # 22-0301.04 and consists of pages 1 through 48.
The submitted documentation was reviewed by Alex Tigera.



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 1 of 48

ROOFING ASSEMBLY APPROVAL

Category: Roofing
Sub-Category: Roofing Slate/Shake
Materials Plastic
Deck Type: Wood
Maximum Design Pressure –187.5 psf.

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

<u>Product</u>	<u>Dimensions</u>	<u>Test Specifications</u>	<u>Product Description</u>
Empire Slate – 10” Traditional <i>Manufacturing Location #1</i>	Length = 18” Width = 10” Thickness = ¼”	TAS 110	Slate looking plastic shingle
Empire Slate – 12” Traditional <i>Manufacturing Location #1</i>	Length = 18” Width = 12” Thickness = ¼”	TAS 110	Slate looking plastic shingle
Empire Niagara Slate – 10” Manufacturing Location #1	Length = 22” Width = 10” Thickness = 5/8”	TAS 110	Slate looking plastic shingle
Empire Niagara Slate – 12” Manufacturing Location #1	Length = 22” Width = 12” Thickness = 5/8”	TAS 110	Slate looking plastic shingle
Empire Niagara Slate – 14” Manufacturing Location #1	Length = 22” Width = 14” Thickness = 5/8”	TAS 110	Slate looking plastic shingle
Empire Shake – 6” Manufacturing Location #1	Length = 20” Width = 6” Thickness = 3/8”	TAS 110	Shake looking plastic shingle
Empire Shake – 9” Manufacturing Location #1	Length = 20” Width = 9” Thickness = 3/8”	TAS 110	Shake looking plastic shingle
Empire Shake – 12” Manufacturing Location #1	Length = 20” Width = 12” Thickness = 3/8”	TAS 110	Shake looking plastic shingle



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 2 of 48

Empire Shake Plus – 6” <i>Manufacturing Location #1</i>	Length = 20” Width = 6” Thickness = ¾”	TAS 110	Shake looking plastic shingle
Empire Shake Plus – 9” <i>Manufacturing Location #1</i>	Length = 20” Width = 9” Thickness = ¾”	TAS 110	Shake looking plastic shingle
Empire Shake Plus – 12” <i>Manufacturing Location #1</i>	Length = 20” Width = 12” Thickness = ¾”	TAS 110	Shake looking plastic shingle
Empire Niagara Shake – 7”	Length = 22” Width = 7” Thickness = ¾”	TAS 110	Shake looking plastic shingle
Empire Niagara Shake – 8”	Length = 22” Width = 8” Thickness = ¾”	TAS 110	Shake looking plastic shingle
Empire Niagara Shake – 9”	Length = 22” Width = 9” Thickness = ¾”	TAS 110	Shake looking plastic shingle
Empire Niagara Shake – 10”	Length = 22” Width = 10” Thickness = ¾”	TAS 110	Shake looking plastic shingle
Empire Niagara Concrete – 12”	Length = 22” Width = 12” Thickness = ¾”	TAS 110	Flat concrete looking plastic shingle

MANUFACTURING LOCATION:

1. Holland, NY



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 3 of 48

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY OTHERS:

<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>	<u>Manufacturer</u>
Ecostar Glacier Guard™	3' x 66' rolls	ASTM D 1970	Self-adhering reinforced membrane for use as an underlayment in sloped roof assemblies.	EcoStar, Inc. (With current Notice of Acceptance).
VersaShield® Fire-Resistant Roof Deck Protection	42" x 100' rolls	ASTM D 226 Type II	Non-Asphaltic fiberglass-based underlayment and/or fire barrier.	GAF (With current Notice of Acceptance)



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 4 of 48

EVIDENCE SUBMITTED:

<u>Test Agency</u>	<u>Test Identifier</u>	<u>Test Name/Report</u>	<u>Date</u>
Architectural Testing, Inc.	B2511.05-109-18	TAS 100	10/04/11
	C0706.01-109-18	TAS 135	11/06/12
	C0706.01-109-18	ASTM D 635	11/06/12
	C0706.01-109-18	ASTM D 638	11/06/12
	C0706.01-109-18	ASTM D 1929	11/06/12
	C0706.01-109-18	ASTM D 2843	11/06/12
	C0706.01-109-18	ASTM G 155	11/06/12
	C0706.01-109-18	TAS 125	11/06/12
	D0978.01-106-18	TAS 135	11/11/13
	C8727.01-109-18	TAS 125	03/28/14
	C9091.01-109-18	TAS 125	03/28/14
	C8728.01-109-18	TAS 125	08/02/13
	C9092.01-109-18	TAS 125	03/28/14
	D0569.01-109-18	TAS 100	03/28/14
		Letter	05/12/14
	D0570.01-109-18	TAS 100	03/28/14
		Letter	05/12/14
	D0569.02-109-18	TAS 100 Calibration	03/31/14
	C0706.01-109-18	ASTM D 635	06/11/14
	Letter	ASTM D 638	
		ASTM D 1929	
		ASTM D 2843	
		ASTM G 155	
Underwriters Laboratories Inc.	11NK11975	UL 790	11/30/11
	TFXX.R18920	Fire Classification	02/24/14
PRI Construction Material	ESTR 001-02-01.1	TAS 125	07/30/18
	ESTR 001-02-02.1	TAS 125	07/30/18
	ESTR 001-02-04	TAS 100	11/09/17
	1993T0016	TAS 100	08/23/21
	1993T0018	TAS 125	09/07/21
	1993T0020	TAS 125	09/14/21
	1993T0024	ASTM D 635 / ASTM D 1929 / ASTM 2843	04/21/23



NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 5 of 48

APPROVED ASSEMBLIES:

System A:	Empire Slate – 10” or 12” Traditional
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank only.
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table A below

Deck Attachment:	<p>In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6” around the board perimeter and 6” o.c. in the board field.</p> <p>Install nominal 2x10 cross members in between the trusses at each plywood butt joint location. Secure the cross members using two corrosion resistant #8 x 3” long Phillips flat head screws at each end.</p>
Underlayment:	<p>Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6” o.c. at all laps and two staggered rows 12” o.c. in the field of the roll. Or, any Miami-Dade County Product Control Approved underlayment having a current NOA.</p> <p>Install a layer of EcoStar Glacier Guard™ self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.</p>
Fire Barrier:	<p>Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.</p>
Valleys:	<p>Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over a minimum 36” wide sweat sheet of approved self-adhered membrane. Valley metal shall be secured with roofing nails spaced a maximum 12" o.c. at the outer most part of metal on each side. Install “T” shaped flashing on each side secured with 1 ½” long x 0.12” diameter corrosion resistant ring shank nails, spaced 6” o.c.</p> <p>When additional protection for the valley metal edges is required the edges shall be stripped-in with an “ice & water shield” type product. Valley details shall be completed in accordance with the current published manufacturer’s literature.</p>
Ridge & Hips:	<p>See EcoStar LLC’s published installation manual for details.</p>



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 6 of 48

Starter:

Install a starter row of slates along the eave edge with a $\frac{3}{4}$ " overhang using the number of fasteners listed below in **Table A**. The space between the slates shall be a minimum $\frac{3}{8}$ ". The final slate in the starter row may have to be cut to fit.

Begin installing the first row of slate by completely covering the starter row with the first row of slate. Offset the slate by half a shingle width from the starter row.

General Application:

EcoStar Empire Slate shall be installed in accordance with EcoStar's current published installation specifications using a maximum 7" exposure for the Empire Slate products. EcoStar Empire Slate shall be fastened with the number of fasteners listed below in **Table A**.

Do not butt the slates tight together. Maintain a $\frac{3}{8}$ " gap between adjacent slates by aligning each successive row of slates with the vertical guidelines molded into the slates. Each row of slates must be offset by half a slate width from the row below to cover the nails previously installed.

Continue installing rows of slate up the slope until the roof deck is covered. The slates can be cut as needed by scoring with a utility knife and snapping by hand. Install pre-formed ridge slates to all hips and ridges.

TABLE A
MAXIMUM DESIGN PRESSURES

Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-120 psf.	-165 psf.
Amount of Fasteners	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
A. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the slates. (See Detail A).		
B. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (see Detail C).		



System B:	Empire Slate – 10” or 12” Traditional
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank, or Reroofing minimum ¹⁵ / ₃₂ ” plywood.
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table B below

Deck Attachment: In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6” around the board perimeter and 6” o.c. in the board field.

Install nominal 2x10 cross members in between the trusses at each plywood butt joint location. Secure the cross members using two corrosion resistant #8 x 3” long Phillips flat head screws at each end.

In reroofing, where the deck is less than ¹⁹/₃₂” thick (Minimum ¹⁵/₃₂”) the above attachment method must be in addition to existing attachment.

Underlayment: Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6” o.c. at all laps and two staggered rows 12” o.c. in the field of the roll. Or, any Miami-Dade County Product Control Approved underlayment having a current NOA.

Install a layer of an EcoStar Glacier Guard™ self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.

Fire Barrier: Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.

Valleys: Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over a minimum 36” wide sweat sheet of approved self-adhered membrane. Valley metal shall be secured with roofing nails spaced a maximum 12" o.c. at the outer most part of metal on each side. Install “T” shaped flashing on each side secured with 1 ½” long x 0.12” diameter corrosion resistant ring shank nails, spaced 6” o.c.

When additional protection for the valley metal edges is required the edges shall be stripped-in with an “ice & water shield” type product. Valley details shall be completed in accordance with the current published manufacturer’s literature.

Ridge & Hips: See EcoStar LLC’s published installation manual for details.



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 8 of 48

Starter: Install a starter row of slates along the eave edge with a $\frac{3}{4}$ " overhang using the number of fasteners listed below in **Table B**. The space between the slates shall be a minimum $\frac{3}{8}$ ". The final slate in the starter row may have to be cut to fit.

Begin installing the first row of slate by completely covering the starter row with the first row of slate. Offset the slate by half a shingle width from the starter row.

General Application: EcoStar Empire Slate shall be installed in accordance with EcoStar's current published installation specifications using a maximum 7" exposure for the Empire Slate products. EcoStar Empire Slate shall be fastened with the number of fasteners listed below in **Table B**.

Do not butt the slates tight together. Maintain a $\frac{3}{8}$ " gap between adjacent slates by aligning each successive row of slates with the vertical guidelines molded into the slates. Each row of slates must be offset by half a slate width from the row below to cover the nails previously installed.

Continue installing rows of slate up the slope until the roof deck is covered. The slates can be cut as needed by scoring with a utility knife and snapping by hand. Install pre-formed ridge slates to all hips and ridges.

TABLE B MAXIMUM DESIGN PRESSURES		
Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-93.75 psf.	-127.5 psf.
Amount of Fasteners	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
<p>A. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the slates. (See Detail A).</p> <p>B. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (see Detail C).</p>		



NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 9 of 48

System C:	Empire Shake – 6”, 9”, or 12”
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank only.
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table C below

Deck Attachment:	<p>In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6” around the board perimeter and 6”o.c. in the board field.</p> <p>Install nominal 2x10 cross members in between the trusses in the locations where plywood edges land. Secure the cross members using two corrosion resistant #8 x 3” long Phillips flat head screws at each end.</p>
Underlayment:	<p>Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6”o.c. at all laps and two staggered rows 12”o.c. in the field of the roll, or any Miami-Dade County Product Control Approved underlayment having a current NOA.</p> <p>Install a layer of EcoStar Glacier Guard™ self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.</p>
Fire Barrier:	Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.
Valleys:	<p>Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over an Ecostar Glacier Guard™ 36” sweat sheet. Valley metal shall be secured with corrosion resistant 1 ½” long roofing nails spaced a maximum 12”o.c.</p> <p>Valley details shall be completed in accordance with the current published manufacturer’s literature and applicable building code requirements.</p>
Ridge & Hips:	See EcoStar LLC’s published installation manual for details.
Starter:	<p>Install a starter row of shakes along the eave edge with a ¾” overhang using the number of fasteners listed below in Table C. The space between the shakes shall be a minimum ³/₈”.</p> <p>The final shake in the starter row may have to be cut to fit.</p> <p>Begin installing the first row of shakes by completely covering the starter row with the first row of shake. Offset the shakes by half a shake width from the starter row.</p>



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 10 of 48

**General
Application:**

EcoStar Empire Shake shall be installed in accordance with EcoStar's current published installation specifications using a maximum 8" exposure for the Empire Shake products. See **Detail B** for sample installation pattern. EcoStar Empire Shake shall be fastened with the number of fasteners listed below in **Table C**.

Do not butt the shakes tight together. Maintain a $\frac{3}{8}$ " gap between adjacent shakes. Each row of shakes must be offset by half a shake width from the row below to cover the nails previously installed.

Continue installing rows of shakes up the slope until the roof deck is covered. The shakes can be cut as needed by scoring with a utility knife and snapping by hand. Install pre-formed ridge shakes to all hips and ridges.

TABLE C MAXIMUM DESIGN PRESSURES		
Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-123.75psf	-142.5psf
Amount of Fasteners	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
A. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the shakes. (See Detail A)		
B. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (See Detail C).		



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 11 of 48

System D:	Empire Shake – 6”, 9”, or 12”
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank, or re-roofing minimum ¹⁵ / ₃₂ ” plywood.
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table D below

Deck Attachment:	<p>In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6” around the board perimeter and 6”o.c. in the board field.</p> <p>Install nominal 2x10 cross members in between the trusses in the locations where plywood edges land. Secure the cross members using two corrosion resistant #8 x 3” long Phillips flat head screws at each end.</p> <p>In reroofing, where the deck is less than ¹⁹/₃₂” thick (Minimum ¹⁵/₃₂”) the above attachment method must be in addition to existing attachment.</p>
Underlayment:	<p>Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6”o.c. at all laps and two staggered rows 12”o.c. in the field of the roll, or any Miami-Dade County Product Control Approved underlayment having a current NOA.</p> <p>Install a layer of EcoStar Glacier Guard™ self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.</p>
Fire Barrier:	Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.
Valleys:	Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over an Ecostar Glacier Guard™ 36” sweat sheet. Valley metal shall be secured with corrosion resistant 1 ½” long roofing nails spaced a maximum 12"o.c. Valley details shall be completed in accordance with the current published manufacturer’s literature and applicable building code requirements.
Ridge & Hips:	See EcoStar LLC’s published installation manual for details.



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 12 of 48

Starter: Install a starter row of shakes along the eave edge with a $\frac{3}{4}$ " overhang using the number of fasteners listed below in **Table D**. The space between the shakes shall be a minimum $\frac{3}{8}$ ". The final shake in the starter row may have to be cut to fit.

Begin installing the first row of shakes by completely covering the starter row with the first row of shake. Offset the shakes by half a shake width from the starter row.

General Application: EcoStar Empire Shake shall be installed in accordance with EcoStar's current published installation specifications using a maximum 8" exposure for the Empire Shake products. See **Detail B** for sample installation pattern. EcoStar Empire Shake shall be fastened with the number of fasteners listed below in **Table D**.

Do not butt the shakes tight together. Maintain a $\frac{3}{8}$ " gap between adjacent shakes. Each row of shakes must be offset by half a shake width from the row below to cover the nails previously installed.

Continue installing rows of shakes up the slope until the roof deck is covered. The shakes can be cut as needed by scoring with a utility knife and snapping by hand. Install pre-formed ridge shakes to all hips and ridges.

TABLE D MAXIMUM DESIGN PRESSURES		
Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-97.5psf	-157.5psf
Amount of Fasteners	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
A. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the shakes. (See Detail A). B. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (See Detail C).		



System E:	Empire Shake Plus – 6”, 9”, or 12”
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank only.
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table E below

Deck Attachment:	<p>In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6”o.c. around the board perimeter and 6”o.c. in the board field installed over perimeter and intermediate supports spaced 24” apart.</p> <p>Install nominal 2x10 cross members at each plywood butt joint location. Secure the cross members using two corrosion resistant #8 x 3” long Phillips flat head screws at each end.</p>
Underlayment:	<p>Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6”o.c. at all laps and two staggered rows 12”o.c. in the field of the roll, or any Miami-Dade County Product Control Approved underlayment having a current NOA.</p> <p>Install a layer of EcoStar Glacier Guard self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.</p>
Fire Barrier:	Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.
Valleys:	Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over an EcoStar Glacier Guard™ 36” sweat sheet. Valley metal shall be secured with corrosion resistant 1 ½” long roofing nails spaced a maximum 12"o.c. Valley details shall be completed in accordance with the current published manufacturer’s literature and applicable building code requirements.
Ridge & Hips:	See EcoStar LLC’s published installation manual for details.
Starter:	<p>Install a starter row of shakes along the eave edge with a ¾” overhang using the number of fasteners listed below in Table E. The space between the shakes shall be a minimum ³/₈”.</p> <p>The final shake in the starter row may have to be cut to fit.</p> <p>Begin installing the first row of shake by completely covering the starter row with the first row of shake. Offset the shakes by half a shake width from the starter row. When installing Empire Shake Plus, Empire Shake must be used for the starter row.</p>



**General
Application:**

EcoStar Empire Shake Plus shall be installed in accordance with EcoStar's current published installation specifications using a maximum 8" exposure for the Empire Shake Plus products. See **Detail B** for sample installation pattern. EcoStar Empire Shake Plus shall be fastened with the number of fasteners listed below in **Table E**.

Do not butt the shakes tight together. Maintain a $\frac{3}{8}$ " gap between adjacent shakes. Each row of shakes must be offset by half a shake width from the row below to cover the nails previously installed.

Continue installing rows of shake up the slope until the roof deck is covered. Empire Shake Plus shakes can be cut as needed by using a saw to cut. Install pre-formed ridge shakes to all hips and ridges.

TABLE E		
MAXIMUM DESIGN PRESSURES		
Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-138.75psf	-187.5psf
Amount of Fasteners	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
A. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the shakes. (See Detail A).		
B. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (See Detail C).		



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 15 of 48

System F:	Empire Shake Plus – 6”, 9”, or 12”
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank, or re-roofing minimum ¹⁵ / ₃₂ ” plywood.
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table F below

Deck Attachment:	<p>In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6”o.c. around the board perimeter and 6”o.c. in the board field installed over perimeter and intermediate supports spaced 24” apart.</p> <p>Install nominal 2x10 cross members at each plywood butt joint location. Secure the cross members using two corrosion resistant #8 x 3” long Phillips flat head screws at each end.</p> <p>In reroofing, where the deck is less than ¹⁹/₃₂” thick (Minimum ¹⁵/₃₂”) the above attachment method must be in addition to existing attachment.</p>
Underlayment:	<p>Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6”o.c. at all laps and two staggered rows 12”o.c. in the field of the roll, or any Miami-Dade County Product Control Approved underlayment having a current NOA.</p> <p>Install a layer of EcoStar Glacier Guard™ self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.</p>
Fire Barrier:	Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.
Valleys:	Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over an Ecostar Glacier Guard™ 36” sweat sheet. Valley metal shall be secured with corrosion resistant 1 ½” long roofing nails spaced a maximum 12"o.c. Valley details shall be completed in accordance with the current published manufacturer’s literature and applicable building code requirements.
Ridge & Hips:	See EcoStar LLC’s published installation manual for details.



Starter:

Install a starter row of shakes along the eave edge with a $\frac{3}{4}$ " overhang using the number of fasteners listed below in **Table F**. The space between the shakes shall be a minimum $\frac{3}{8}$ ". The final shake in the starter row may have to be cut to fit.

Begin installing the first row of shake by completely covering the starter row with the first row of shake. Offset the shakes by half a shake width from the starter row. When installing Empire Shake Plus, Empire Shake must be used for the starter row.

General Application:

EcoStar Empire Shake Plus shall be installed in accordance with EcoStar's current published installation specifications using a maximum 8" exposure for the Empire Shake Plus products. See **Detail B** for sample installation pattern. EcoStar Empire Shake Plus shall be fastened with the number of fasteners listed below in **Table F**.

Do not butt the shakes tight together. Maintain a $\frac{3}{8}$ " gap between adjacent shakes. Each row of shakes must be offset by half a shake width from the row below to cover the nails previously installed.

Continue installing rows of shakes up the slope until the roof deck is covered. Empire Shake Plus shakes can be cut as needed by using a saw to cut. Install pre-formed ridge shakes to all hips and ridges.

TABLE F
MAXIMUM DESIGN PRESSURES

Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-108.75psf	-165psf
Amount of Fasteners	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
<p>A. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the shakes. (See Detail A).</p> <p>B. Use 0.12" diameter x 1 ½" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (See Detail C).</p>		



NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 17 of 48

System G:	Empire Niagara Slate – 10”, 12” or 14”
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank only.
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table G below

Deck Attachment:	<p>In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6”o.c. around the board perimeter and 6”o.c. in the board field installed over perimeter and intermediate supports spaced 24” apart.</p> <p>Install nominal 2x10 cross members at each plywood butt joint location. Secure the cross members using two corrosion resistant #8 x 3” long Phillips flat head screws at each end.</p>
Underlayment:	<p>Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6”o.c. at all laps and two staggered rows 12”o.c. in the field of the roll, or any Miami-Dade County Product Control Approved underlayment having a current NOA.</p> <p>Install a layer of EcoStar Glacier Guard™ self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.</p>
Fire Barrier:	Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.
Valleys:	Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over an EcoStar Glacier Guard™ 36” sweat sheet. Valley metal shall be secured with corrosion resistant 1 ½” long roofing nails spaced a maximum 12"o.c. Valley details shall be completed in accordance with the current published manufacturer’s literature and applicable building code requirements.
Ridge & Hips:	See EcoStar LLC’s published installation manual for details.
Starter:	<p>Install a starter row of slates along the eave edge with a ¾” overhang using the number of fasteners listed below in Table G. The space between the slates shall be a minimum ³/₈”.</p> <p>The final slate in the starter row may have to be cut to fit.</p> <p>Begin installing the first row of slates by completely covering the starter row with the first row of slates. Offset the slates by half a slate width from the starter row. When installing Empire Niagara Slate, either Empire Slate or Empire Niagara Slate may be used for the starter row.</p>



NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 18 of 48

**General
Application:**

EcoStar Empire Niagara Slate shall be installed in accordance with EcoStar's current published installation specifications using a maximum 10" exposure for the Niagara Slate products. EcoStar Empire Niagara Slate shall be fastened with the number of fasteners listed below in **Table G**.

Do not butt the slates tight together. Maintain a 3/8" gap between adjacent slates by aligning each successive row of slates with the vertical guidelines molded into the slates. Each row of slates must be offset by half a slate width from the row below to cover the nails previously installed.

Continue installing rows of slate up the slope until the roof deck is covered. The slates can be cut as needed by using a utility knife or saw to cut. Install pre-formed ridge slates to all hips and ridges.

TABLE G MAXIMUM DESIGN PRESSURES		
Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-86.25	-112.5psf
Amount of Fasteners ^A	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
A. Use 0.12" diameter x 1 3/4" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the slates. (See Detail A)		
B. Use 0.12" diameter x 1 3/4" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (See Detail C).		



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 19 of 48

System H:	Empire Niagara Slate – 10”, 12” or 14”
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank only, or re-roofing minimum ¹⁵ / ₃₂ plywood.
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table H below

Deck Attachment:	<p>In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6”o.c. around the board perimeter and 6”o.c. in the board field installed over perimeter and intermediate supports spaced 24” apart.</p> <p>Install nominal 2x10 cross members at each plywood butt joint location. Secure the cross members using two corrosion resistant #8 x 3” long Phillips flat head screws at each end.</p> <p>In reroofing, where the deck is less than ¹⁹/₃₂” thick (Minimum ¹⁵/₃₂”) the above attachment method must be in addition to existing attachment.</p>
Underlayment:	<p>Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6”o.c. at all laps and two staggered rows 12”o.c. in the field of the roll, or any Miami-Dade County Product Control Approved underlayment having a current NOA.</p> <p>Install a layer of EcoStar Glacier Guard™ self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.</p>
Fire Barrier:	Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.
Valleys:	Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over an Ecostar Glacier Guard™ 36” sweat sheet. Valley metal shall be secured with corrosion resistant 1 ½” long roofing nails spaced a maximum 12"o.c. Valley details shall be completed in accordance with the current published manufacturer’s literature and applicable building code requirements.
Ridge & Hips:	See EcoStar LLC’s published installation manual for details.



Starter: Install a starter row of slates along the eave edge with a ¾” overhang using the number of fasteners listed below in **Table H**. The space between the slates shall be a minimum ⅜”. The final slate in the starter row may have to be cut to fit.

Begin installing the first row of slates by completely covering the starter row with the first row of slates. Offset the slates by half a slate width from the starter row. When installing Empire Niagara Slate, either Empire Slate or Empire Niagara Slate may be used for the starter row.

General Application: EcoStar Empire Niagara Slate shall be installed in accordance with EcoStar’s current published installation specifications using a maximum 10” exposure for the Niagara Slate products. See **Detail B** for sample installation pattern. EcoStar Empire Niagara Slate shall be fastened with the number of fasteners listed below in **Table H**.

Do not butt the slates tight together. Maintain a 3/8” gap between adjacent slates by aligning each successive row of slates with the vertical guidelines molded into the slates. Each row of slates must be offset by half a slate width from the row below to cover the nails previously installed.

Continue installing rows of slate up the slope until the roof deck is covered. The slates can be cut as needed by using a utility knife or saw to cut. Install pre-formed ridge slates to all hips and ridges.

TABLE H MAXIMUM DESIGN PRESSURES		
Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-63.75	-97.5psf
Amount of Fasteners	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
A. Use 0.12” diameter x 1 3/4” long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the slates. (See Detail A)		
B. Use 0.12” diameter x 1 3/4” long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (See Detail C).		



System I:	Empire Niagara Shake – 7”, 8”, 9” or 10”
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank only, or re-roofing minimum ¹⁵ / ₃₂ plywood.
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table I below

Deck Attachment:	<p>In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6”o.c. around the board perimeter and 6”o.c. in the board field installed over perimeter and intermediate supports spaced 24” apart.</p> <p>In reroofing, where the deck is less than ¹⁹/₃₂” thick (Minimum ¹⁵/₃₂”) the above attachment method must be in addition to existing attachment.</p>
Underlayment:	<p>Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6”o.c. at all laps and two staggered rows 12”o.c. in the field of the roll, or any Miami-Dade County Product Control Approved underlayment having a current NOA.</p> <p>Install a layer of EcoStar Glacier Guard™ self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.</p>
Fire Barrier:	Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.
Valleys:	Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over an Ecostar Glacier Guard™ 36” sweat sheet. Valley metal shall be secured with corrosion resistant 1 ½” long roofing nails spaced a maximum 12"o.c. Valley details shall be completed in accordance with the current published manufacturer’s literature and applicable building code requirements.
Ridge & Hips:	See EcoStar LLC’s published installation manual for details.



NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 22 of 48

Starter: Install a starter row of shakes along the eave edge with a $\frac{3}{4}$ " overhang using the number of fasteners listed below in **Table I**. The space between the slates shall be a minimum $\frac{3}{8}$ ". The final slate in the starter row may have to be cut to fit.

Begin installing the first row of slates by completely covering the starter row with the first row of slates. Offset the shakes by half a shake width from the starter row. When installing Empire Niagara Shake, Empire Shake must be used for the starter row.

General Application: EcoStar Empire Niagara Shake shall be installed in accordance with EcoStar's current published installation specifications using a maximum 10" exposure for the Niagara Shake products. See **Detail B** for sample installation pattern. EcoStar Empire Niagara Shake shall be fastened with the number of fasteners listed below in **Table I**.

Do not butt the shakes tight together. Maintain a $\frac{3}{8}$ " gap between adjacent shakes. Each row of shakes must be offset by half a shake width from the row below to cover the nails previously installed.

Continue installing rows of shake up the slope until the roof deck is covered. The shakes can be cut as needed by using a saw to cut. Install pre-formed ridge shakes to all hips and ridges.

TABLE I MAXIMUM DESIGN PRESSURES		
Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-60.00	-127.5psf
Amount of Fasteners	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
A. Use 0.12" diameter x 1 1/2" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the slates. (See Detail A)		
B. Use 0.12" diameter x 1 1/2" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (See Detail C).		



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 23 of 48

System J:	Empire Niagara Shake – 7”, 8”, 9” or 10”
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank only
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table J below

Deck Attachment:	In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6”o.c. around the board perimeter and 6”o.c. in the board field installed over perimeter and intermediate supports spaced 24” apart.
Underlayment:	<p>Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6”o.c. at all laps and two staggered rows 12”o.c. in the field of the roll, or any Miami-Dade County Product Control Approved underlayment having a current NOA.</p> <p>Install a layer of EcoStar Glacier Guard™ self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.</p>
Fire Barrier:	Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.
Valleys:	Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over an Ecostar Glacier Guard™ 36” sweat sheet. Valley metal shall be secured with corrosion resistant 1 ½” long roofing nails spaced a maximum 12"o.c. Valley details shall be completed in accordance with the current published manufacturer’s literature and applicable building code requirements.
Ridge & Hips:	See EcoStar LLC’s published installation manual for details.
Starter:	<p>Install a starter row of shakes along the eave edge with a ¾” overhang using the number of fasteners listed below in Table J. The space between the slates shall be a minimum ³/₈”.</p> <p>The final slate in the starter row may have to be cut to fit.</p> <p>Begin installing the first row of slates by completely covering the starter row with the first row of slates. Offset the shakes by half a shake width from the starter row. When installing Empire Niagara Shake, Empire Shake must be used for the starter row.</p>



NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 24 of 48

**General
Application:**

EcoStar Empire Niagara Shake shall be installed in accordance with EcoStar's current published installation specifications using a maximum 10" exposure for the Niagara Shake products. See **Detail B** for sample installation pattern EcoStar Empire Niagara Shake shall be fastened with the number of fasteners listed below in **Table J**.

Do not butt the shakes tight together. Maintain a $\frac{3}{8}$ " gap between adjacent shakes. Each row of shakes must be offset by half a shake width from the row below to cover the nails previously installed.

Continue installing rows of shake up the slope until the roof deck is covered. The shakes can be cut as needed by using a saw to cut. Install pre-formed ridge shakes to all hips and ridges.

TABLE J
MAXIMUM DESIGN PRESSURES

Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-90 psf	-150 psf
Amount of Fasteners	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
A. Use 0.12" diameter x 1 1/2" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the slates. (See Detail A)		
B. Use 0.12" diameter x 1 1/2" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (See Detail C).		



System K:	Empire Niagara Concrete – 12”
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank only
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table K below

Deck Attachment:	In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6”o.c. around the board perimeter and 6”o.c. in the board field installed over perimeter and intermediate supports spaced 24” apart.
Underlayment:	<p>Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6”o.c. at all laps and two staggered rows 12”o.c. in the field of the roll, or any Miami-Dade County Product Control Approved underlayment having a current NOA.</p> <p>Install a layer of EcoStar Glacier Guard™ self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.</p>
Fire Barrier:	Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.
Valleys:	Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over an Ecostar Glacier Guard™ 36” sweat sheet. Valley metal shall be secured with corrosion resistant 1 ½” long roofing nails spaced a maximum 12"o.c. Valley details shall be completed in accordance with the current published manufacturer’s literature and applicable building code requirements.
Ridge & Hips:	See EcoStar LLC’s published installation manual for details.
Starter:	<p>Install a starter row of concrete tiles along the eave edge with a ¾” overhang using the number of fasteners listed below in Table K. The space between the concrete tiles shall be a minimum ³/₈”. The final concrete tile in the starter row may have to be cut to fit.</p> <p>Begin installing the first row of concrete tiles by completely covering the starter row with the first row of concrete tiles. Offset the concrete tiles by half a tile width from the starter row. When installing Empire Niagara Concrete, Empire Niagara Concrete or Empire Slate must be used for the starter row.</p>



NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 26 of 48

**General
Application:**

EcoStar Empire Niagara Concrete shall be installed in accordance with EcoStar's current published installation specifications using a maximum 10" exposure for the Empire Niagara Concrete products. See **Detail B** for sample installation pattern EcoStar Empire Niagara Concrete shall be fastened with the number of fasteners listed below in **Table K**.

Do not butt the concrete tiles tight together. Maintain a $\frac{3}{8}$ " gap between adjacent concrete tiles. Each row of concrete tiles must be offset by half a concrete tile width from the row below to cover the nails previously installed.

Continue installing rows of concrete tile up the slope until the roof deck is covered. The concrete tiles can be cut as needed by using a saw to cut. Install pre-formed ridge concrete tiles to all hips and ridges.

**TABLE K
MAXIMUM DESIGN PRESSURES**

Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-101.25 psf	-131 psf
Amount of Fasteners	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
C. Use 0.12" diameter x 1 3/4" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the slates. (See Detail A)		
D. Use 0.12" diameter x 1 3/4" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (See Detail C).		



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 27 of 48

System L:	Empire Niagara Concrete – 12”
Deck Type:	Wood, Non-Insulated
Deck Description	New Construction ¹⁹ / ₃₂ ” or greater plywood or wood plank only, or re-roofing minimum ¹⁵ / ₃₂ plywood.
Slope Range:	2”:12” or greater
Maximum Uplift Pressure:	See Table I below

Deck Attachment:	<p>In accordance with applicable Building Code, but in no case shall the sheathing be installed with less than #8d ring shank nails spaced 6”o.c. around the board perimeter and 6”o.c. in the board field installed over perimeter and intermediate supports spaced 24” apart.</p> <p>In reroofing, where the deck is less than ¹⁹/₃₂” thick (Minimum ¹⁵/₃₂”) the above attachment method must be in addition to existing attachment.</p>
Underlayment:	<p>Minimum underlayment shall be an ASTM D 226 Type II installed with a minimum 4” side-laps and 6” end-laps. Underlayment shall be fastened with corrosion resistant tin-caps and 1¼” annular ring-shank nails, spaced 6”o.c. at all laps and two staggered rows 12”o.c. in the field of the roll, or any Miami-Dade County Product Control Approved underlayment having a current NOA.</p> <p>Install a layer of EcoStar Glacier Guard™ self-adhered underlayment on roof perimeter and valleys (see valleys below) over the mechanically fastened underlayment.</p>
Fire Barrier:	Any approved fire barrier having a current NOA. Refer to a current fire directory listing for fire ratings of this roofing system assembly as well as the location of the fire barrier within the assembly. See Limitation # 1.
Valleys:	Valley metal shall be a minimum 16" wide 26 gage G-90 galvanized steel. Valley metal shall be set over an Ecostar Glacier Guard™ 36” sweat sheet. Valley metal shall be secured with corrosion resistant 1 ½” long roofing nails spaced a maximum 12"o.c. Valley details shall be completed in accordance with the current published manufacturer’s literature and applicable building code requirements.
Ridge & Hips:	See EcoStar LLC’s published installation manual for details.



NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 28 of 48

Starter: Install a starter row of concrete tile along the eave edge with a $\frac{3}{4}$ " overhang using the number of fasteners listed below in **Table L**. The space between the concrete tiles shall be a minimum $\frac{3}{8}$ ". The final concrete tile in the starter row may have to be cut to fit.

Begin installing the first row of concrete tile by completely covering the starter row with the first row of concrete tile. Offset the concrete tile by half a tile width from the starter row. When installing Empire Niagara Concrete, Empire Niagara Concrete or Empire Slate must be used for the starter row.

General Application: EcoStar Empire Niagara Concrete shall be installed in accordance with EcoStar's current published installation specifications using a maximum 10" exposure for the Empire Niagara Concrete products. See **Detail B** for sample installation pattern. EcoStar Empire Niagara Concrete shall be fastened with the number of fasteners listed below in **Table L**.

Do not butt the concrete tile tight together. Maintain a $\frac{3}{8}$ " gap between adjacent concrete tile. Each row of concrete tiles must be offset by half a tile width from the row below to cover the nails previously installed.

Continue installing rows of concrete tile up the slope until the roof deck is covered. The concrete tiles can be cut as needed by using a saw to cut. Install pre-formed ridge concrete tiles to all hips and ridges.

TABLE L MAXIMUM DESIGN PRESSURES		
Roof Areas	Field	Perimeter and Corner ¹
Maximum Design Pressures	-71.25	-120 psf
Amount of Fasteners	2 ^A	4 ^B
1. Extrapolation shall not be allowed		
<p>C. Use 0.12" diameter x 1 3/4" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations molded into the slates. (See Detail A)</p> <p>D. Use 0.12" diameter x 1 3/4" long corrosion resistant ring shank roofing nails (stainless steel is recommended) at the nail locations shown in (See Detail C).</p>		



NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 29 of 48

GENERAL LIMITATIONS:

1. Fire classification is not part of this acceptance; refer to a current Approved Roofing Materials Directory for fire ratings of this product.
2. The maximum designed pressure limitation listed shall be applicable to all roof pressure zones (i.e. field, perimeters, and corners). Neither rational analysis, nor extrapolation shall be permitted for enhanced fastening at enhanced pressure zones (i.e. perimeters, extended corners and corners).
3. All slates and shakes shall be permanently labeled with the manufacturer's name and/or logo, city and state of manufacturing facility, and the following statement: "Miami-Dade County Product Control Approved" **or** with the Miami-Dade County Product Control Seal as seen below.



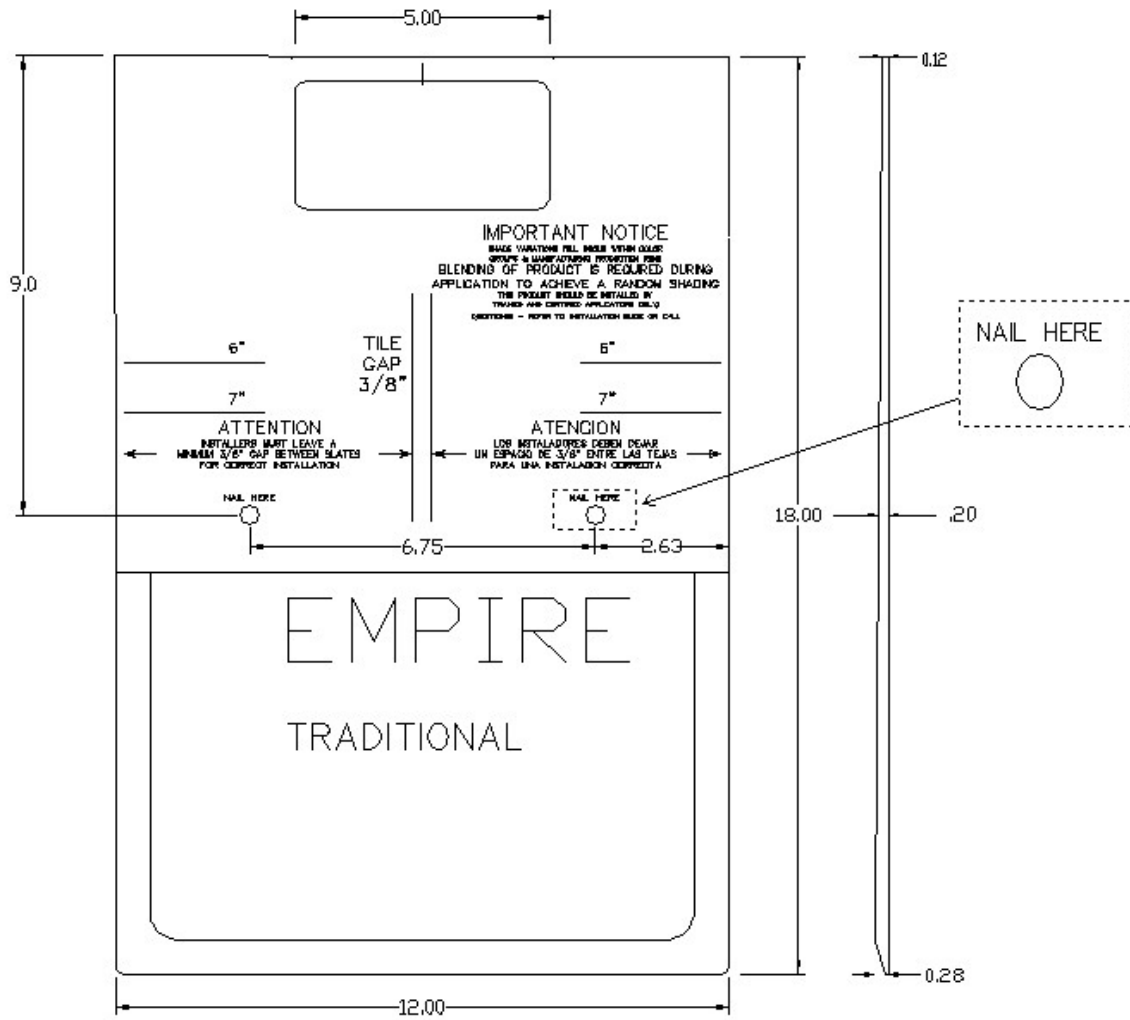
4. All products listed herein shall have a quality assurance audit in accordance with the Florida Building Code and Rule 61G20-3 of the Florida Administrative Code.



NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 30 of 48

DRAWINGS

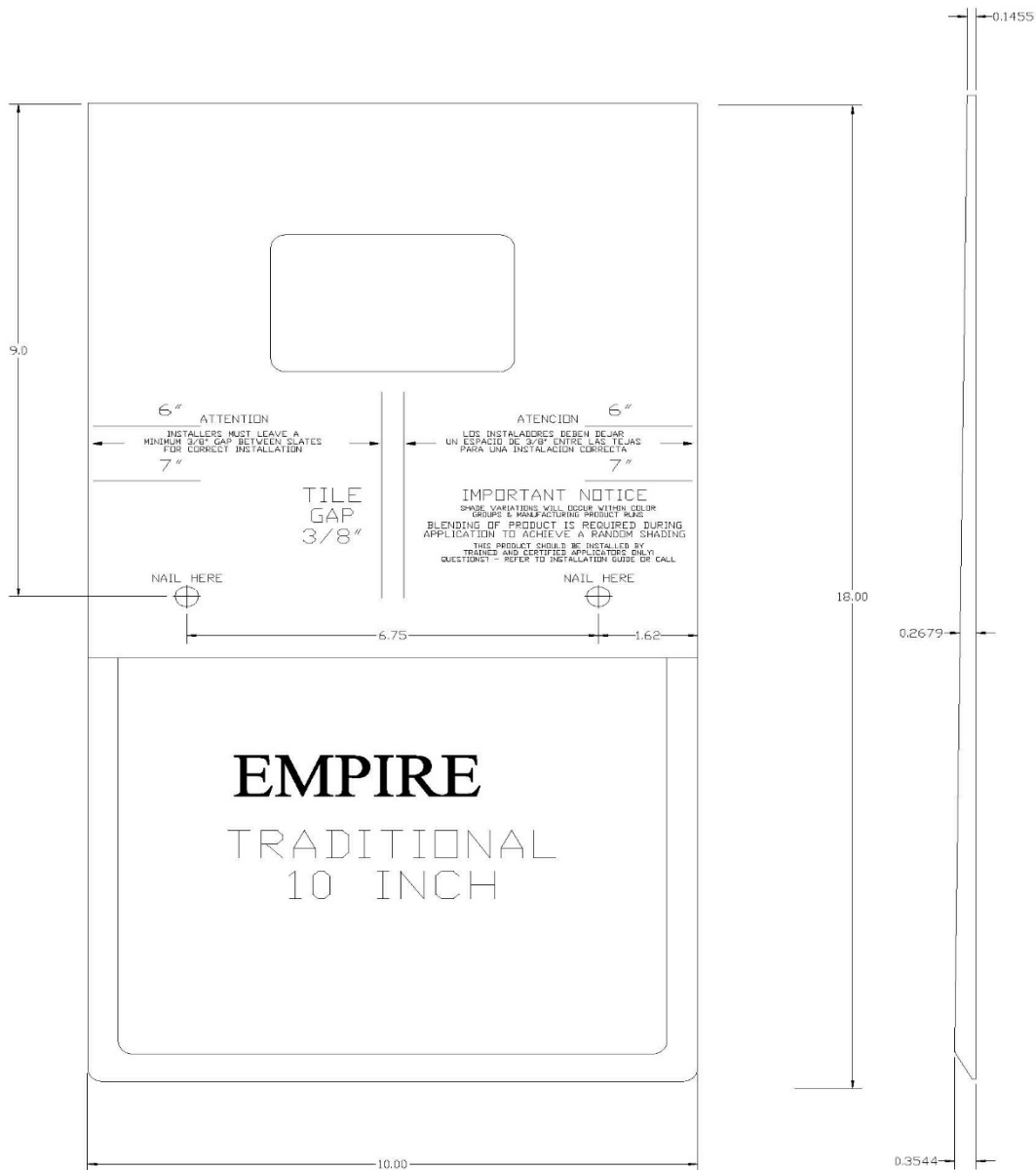
DETAIL A



EMPIRE SLATE 12" TRADITIONAL



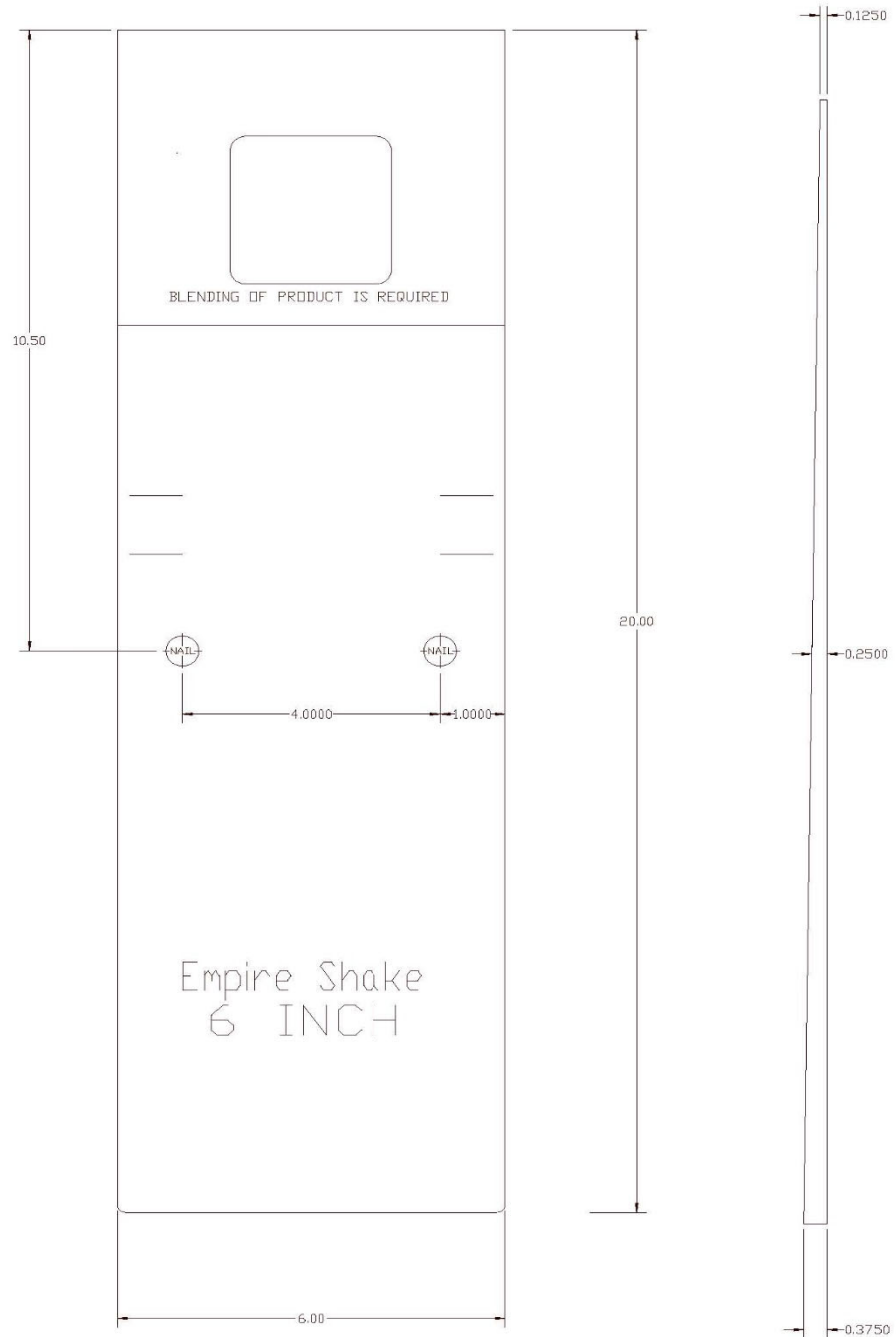
NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 31 of 48



EMPIRE SLATE 10" TRADITIONAL



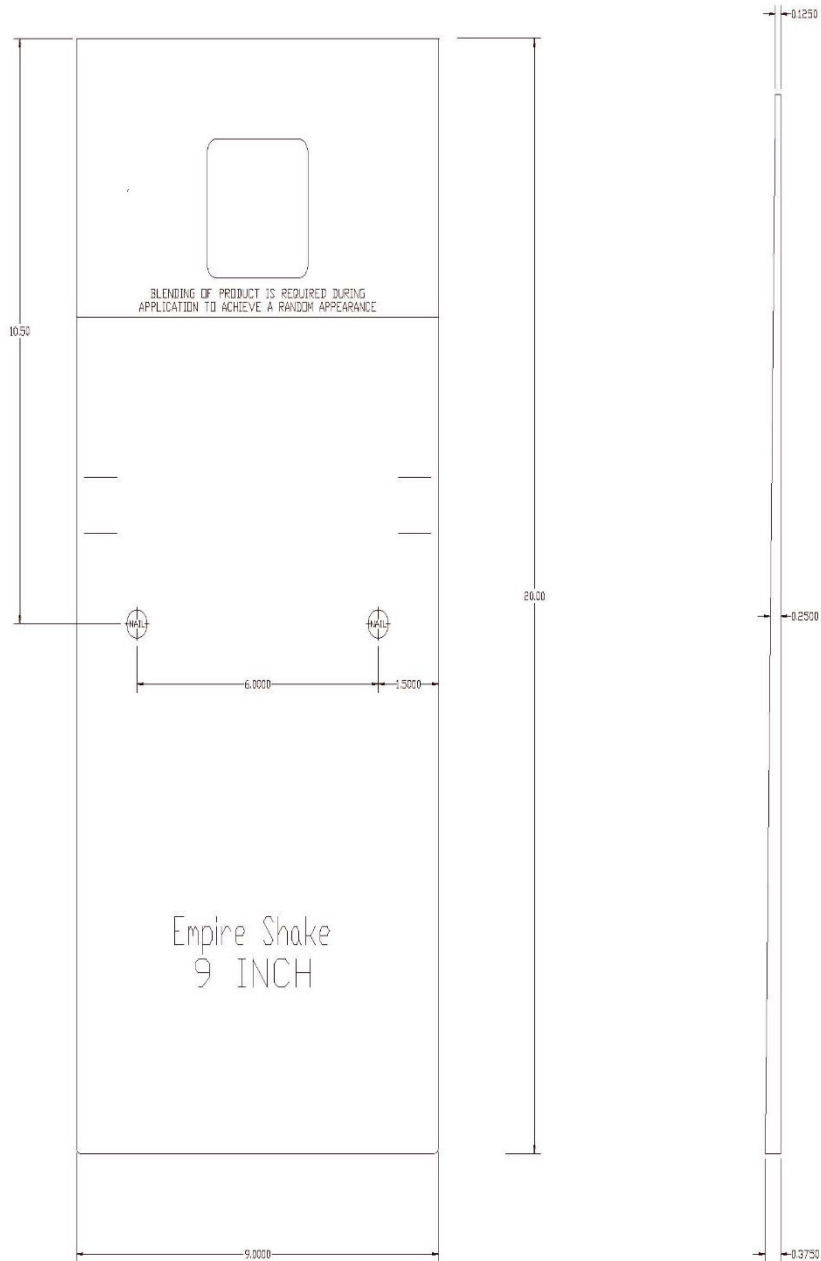
NOA No.: 23-0601.01
Expiration Date: 11/07/28
Approval Date: 10/12/23
Page 32 of 48



EMPIRE SHAKE 6"



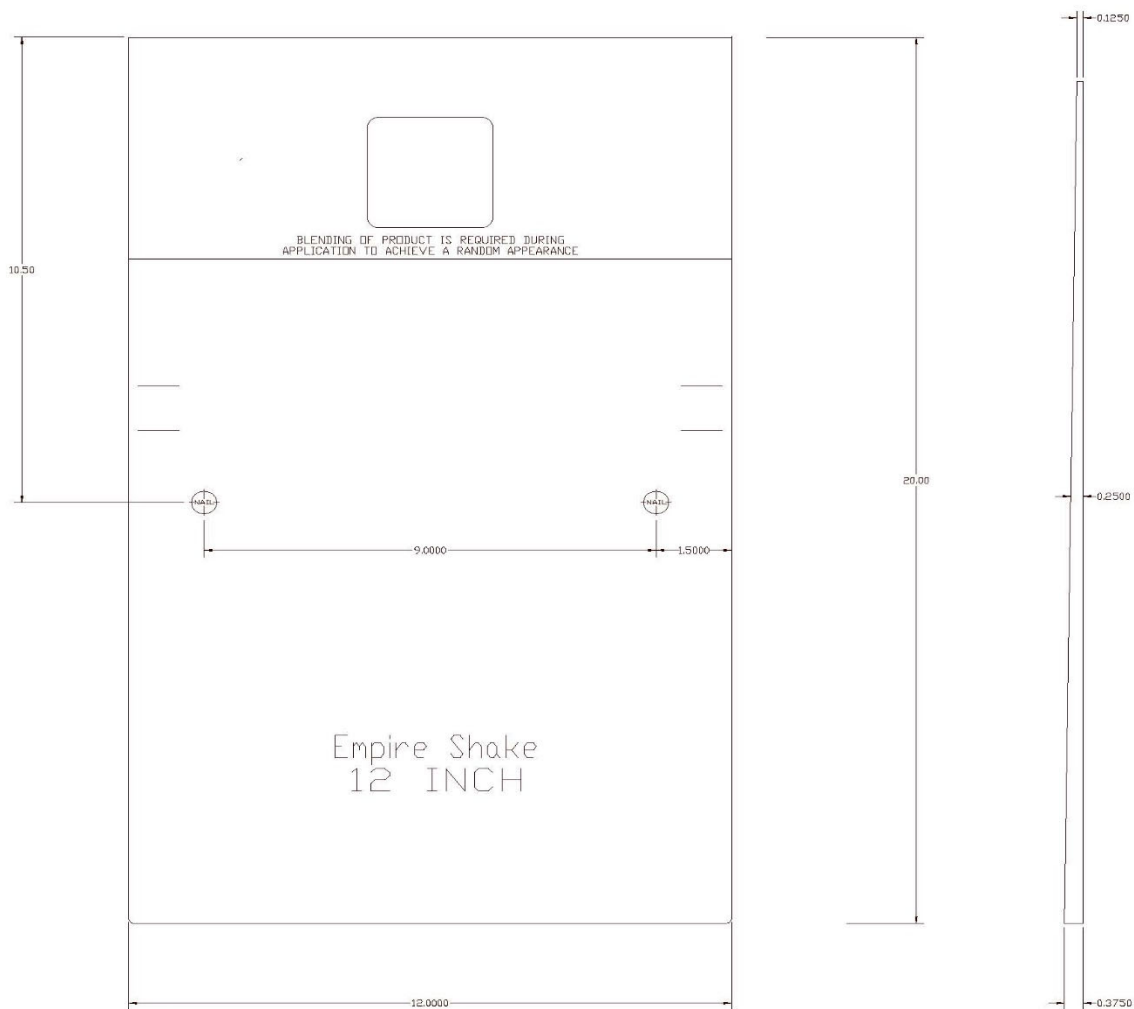
NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 33 of 48



EMPIRE SHAKE 9"



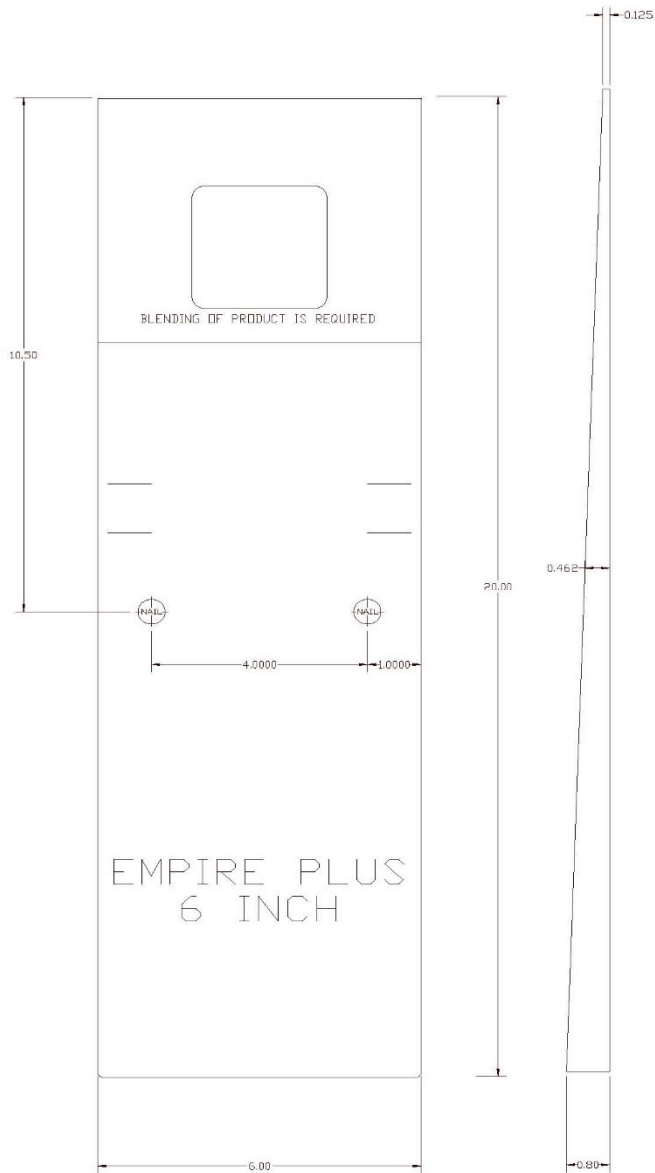
NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 34 of 48



EMPIRE SHAKE 12"

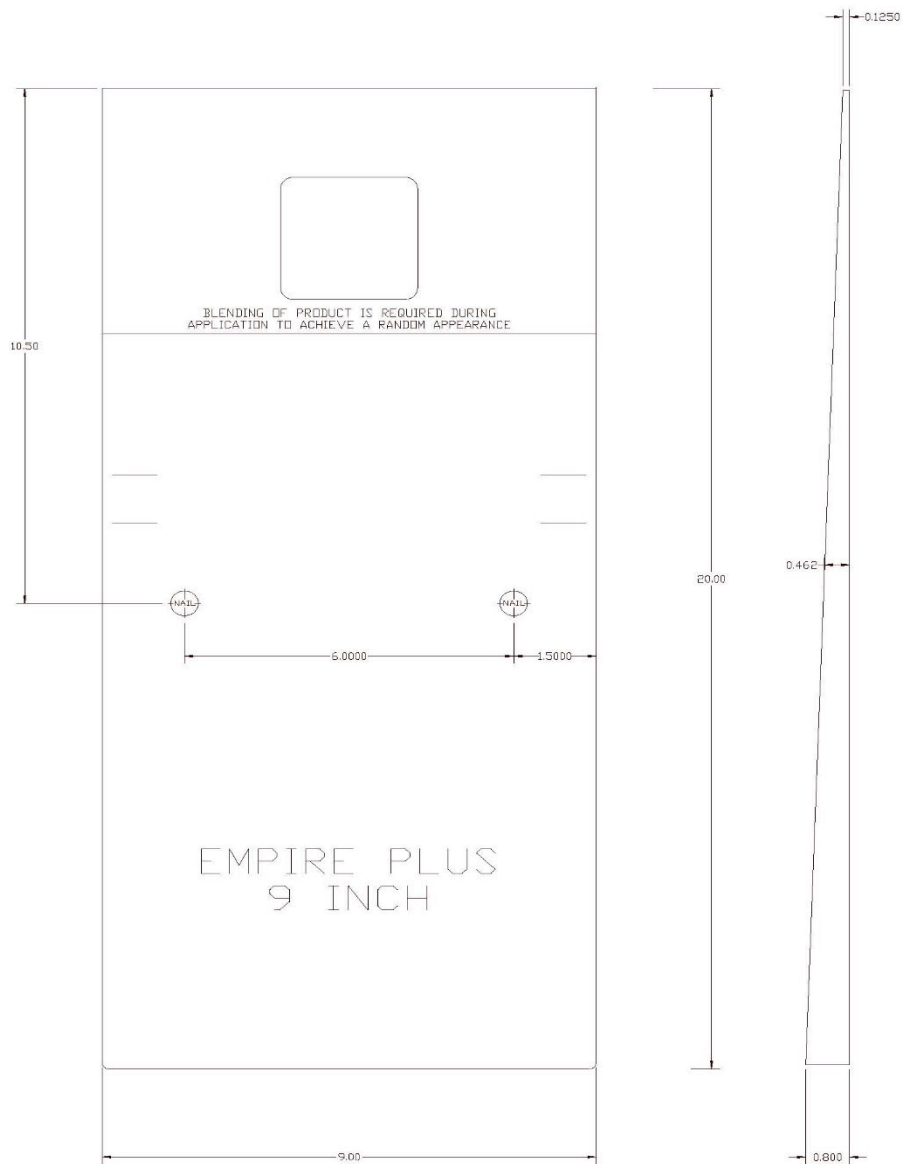


NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 35 of 48



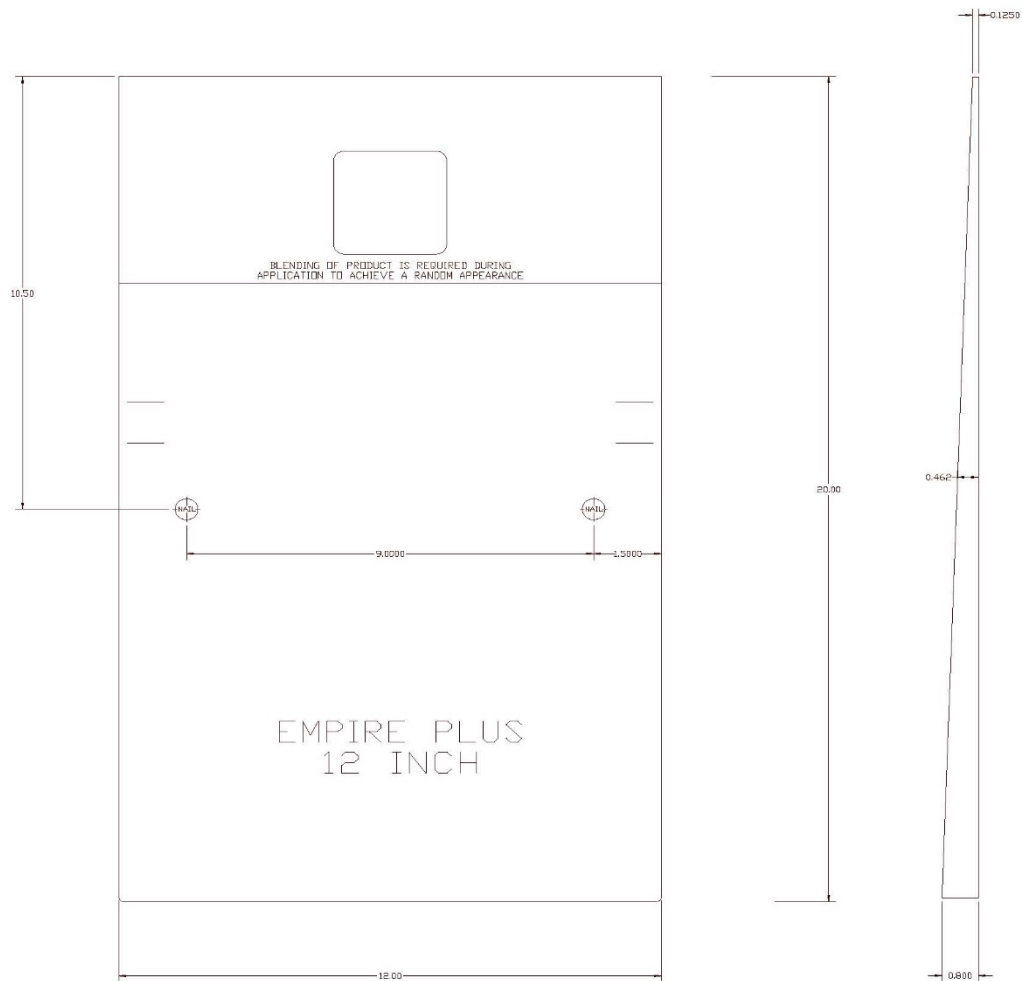
EMPIRE SHAKE PLUS 6"





EMPIRE SHAKE PLUS 9"

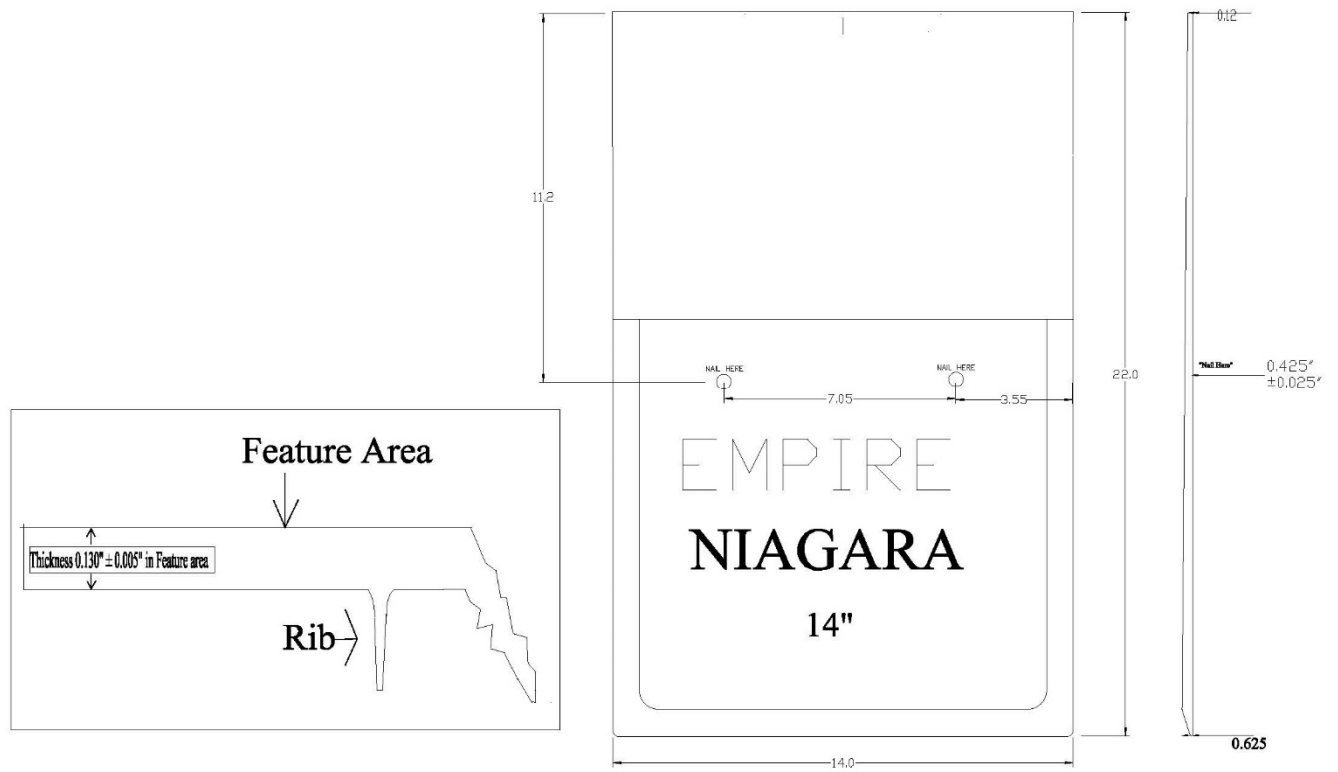




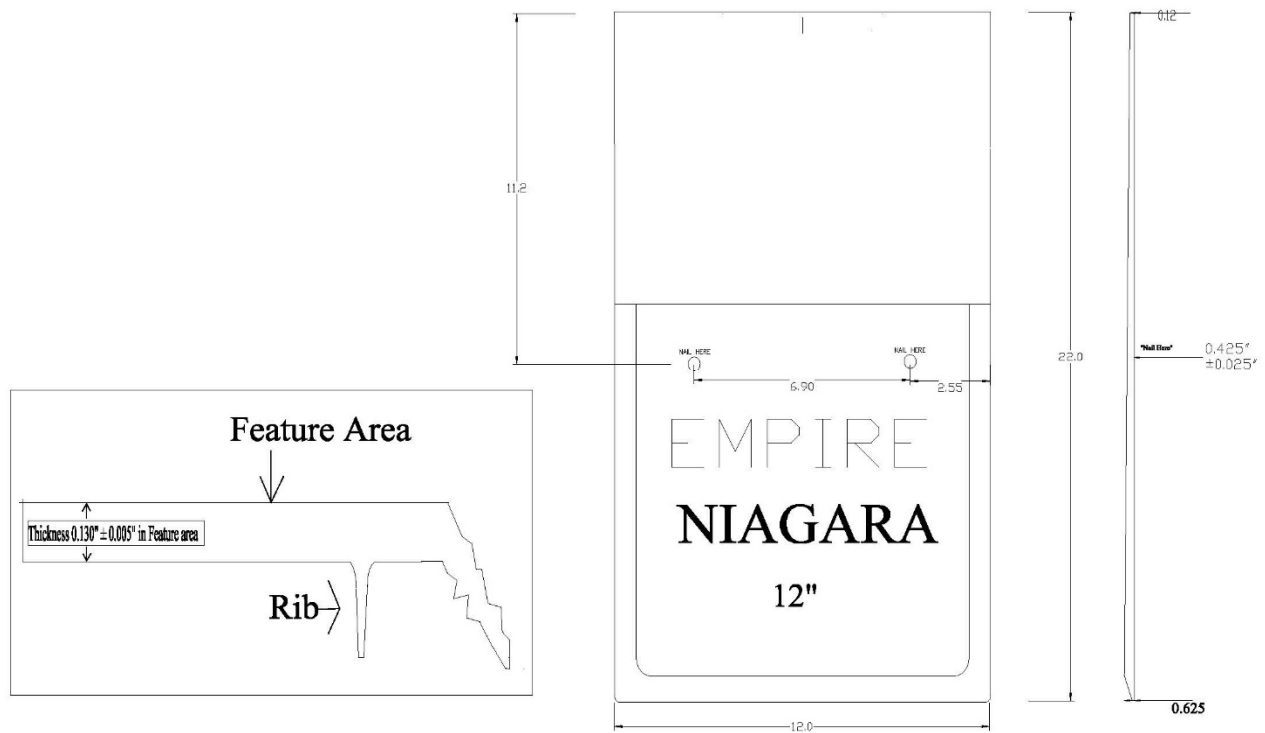
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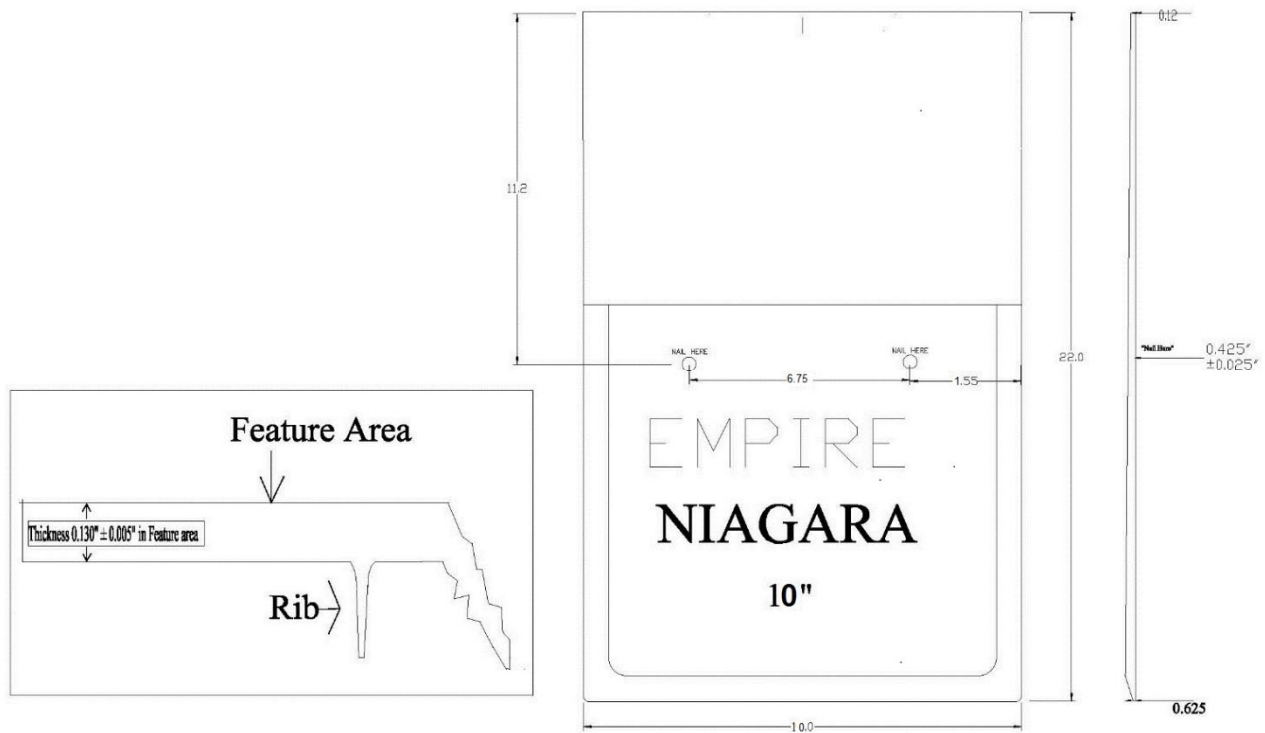
NOA No.: 23-0601.01
 Expiration Date: 11/07/28
 Approval Date: 10/12/23
 Page 38 of 48



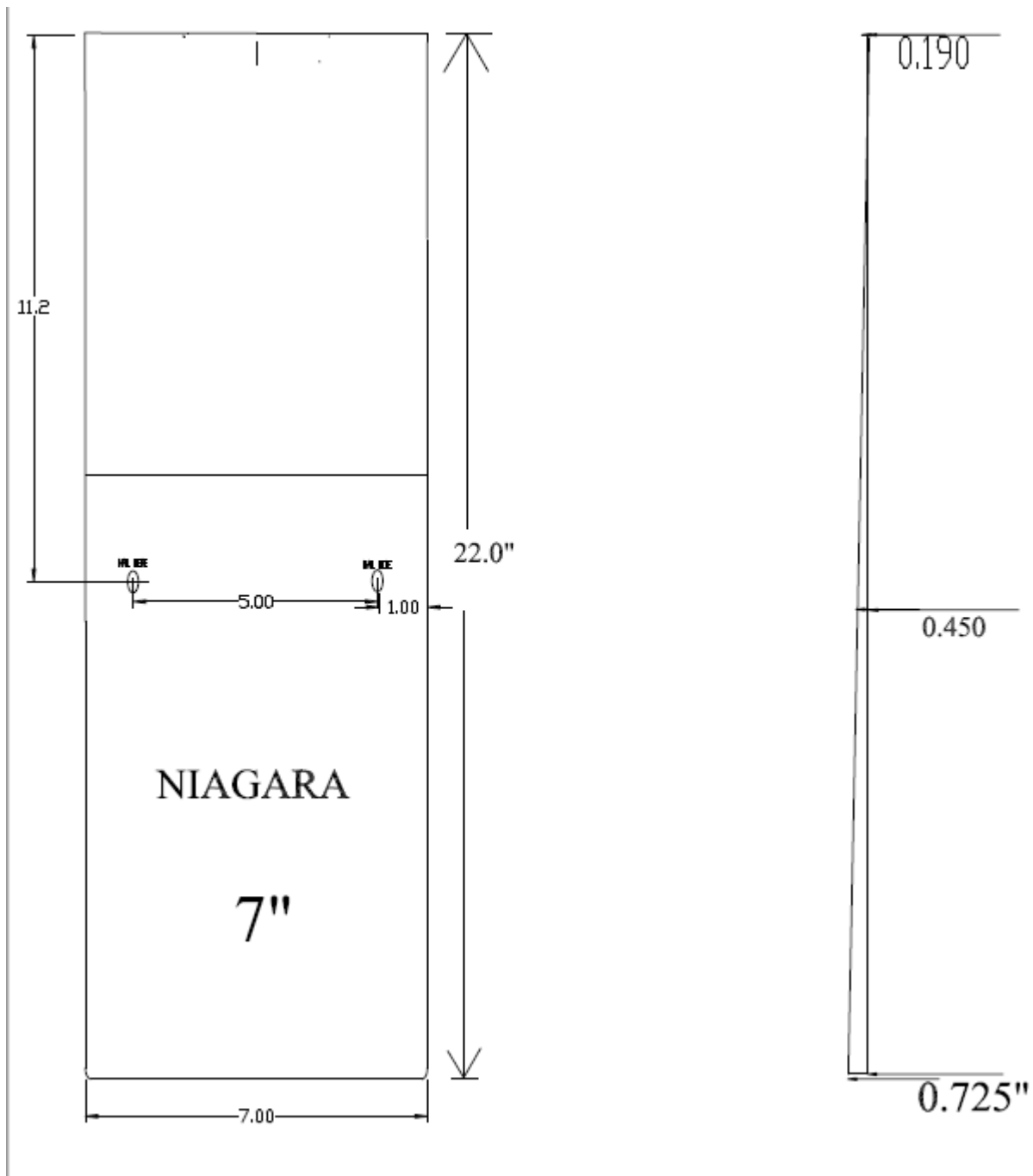
EMPIRE NIAGARA SLATE 14"



EMPIRE NIAGARA SLATE 12"

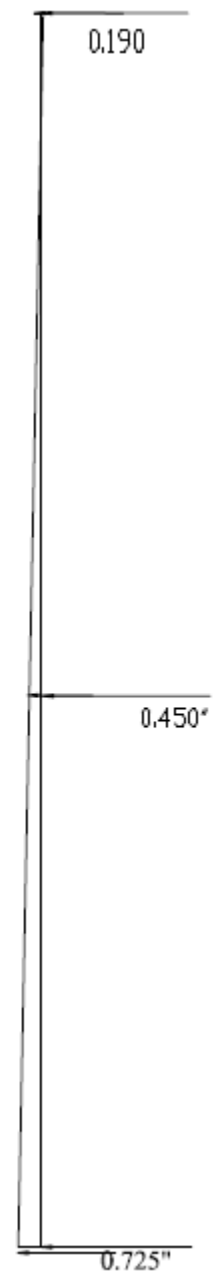
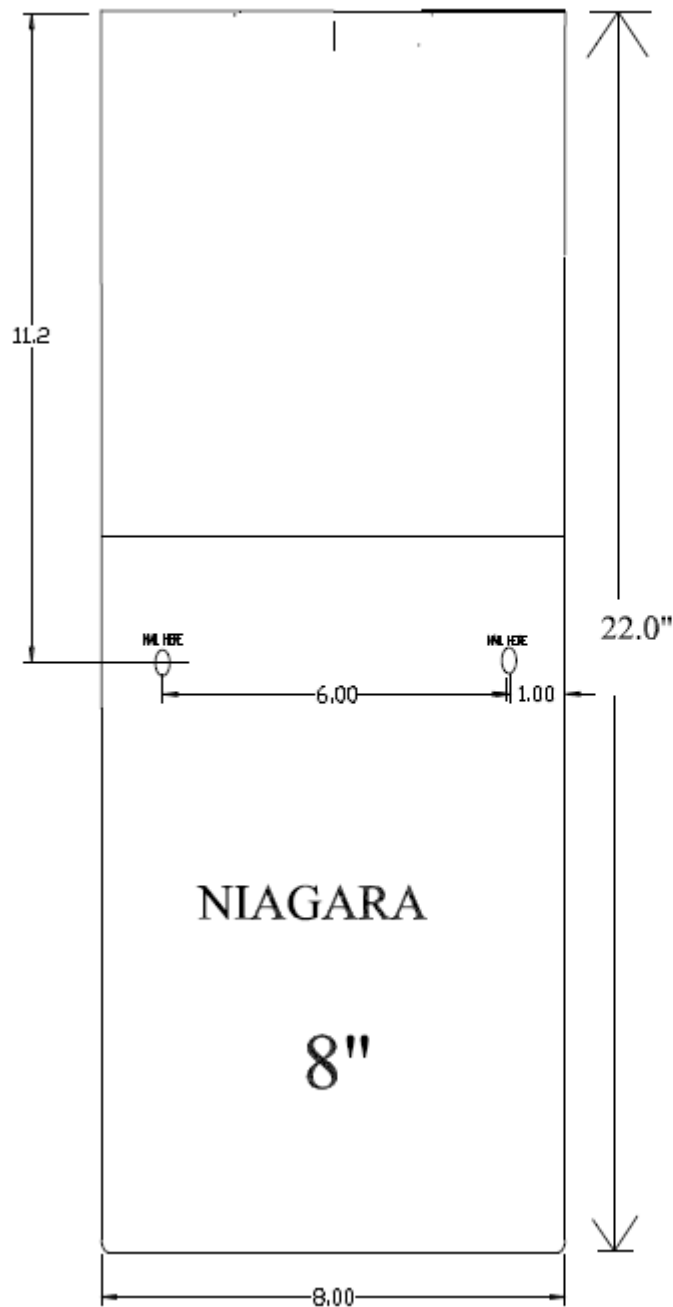


EMPIRE NIAGARA SLATE 10"

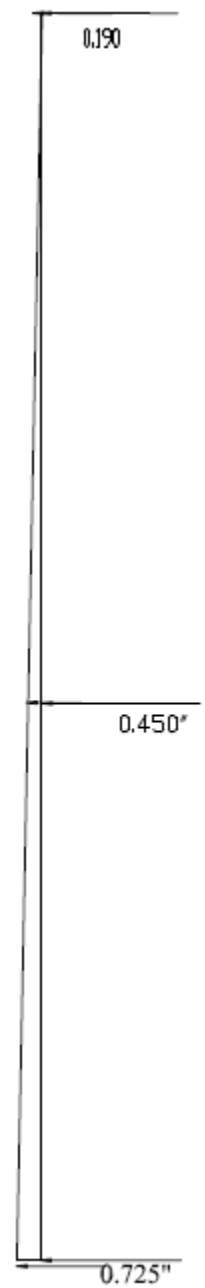
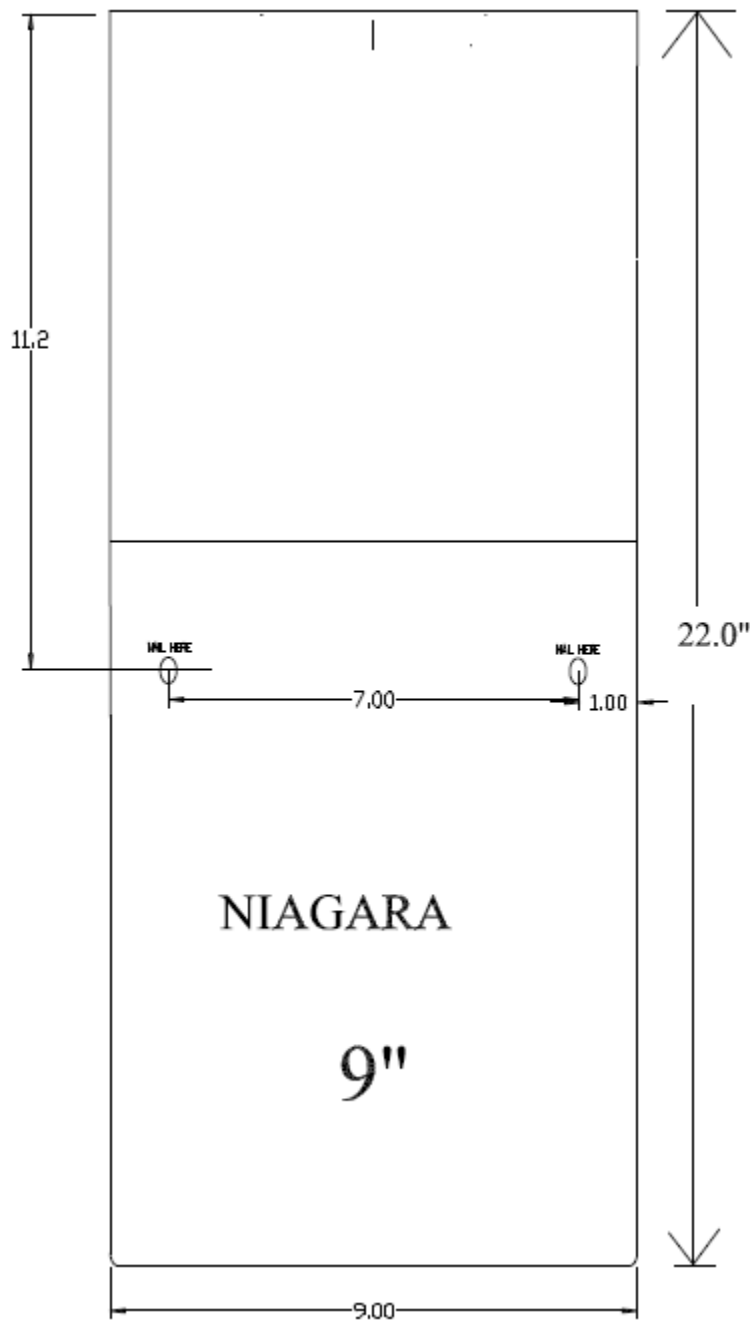


EMPIRE NIAGARA SHAKE 7"

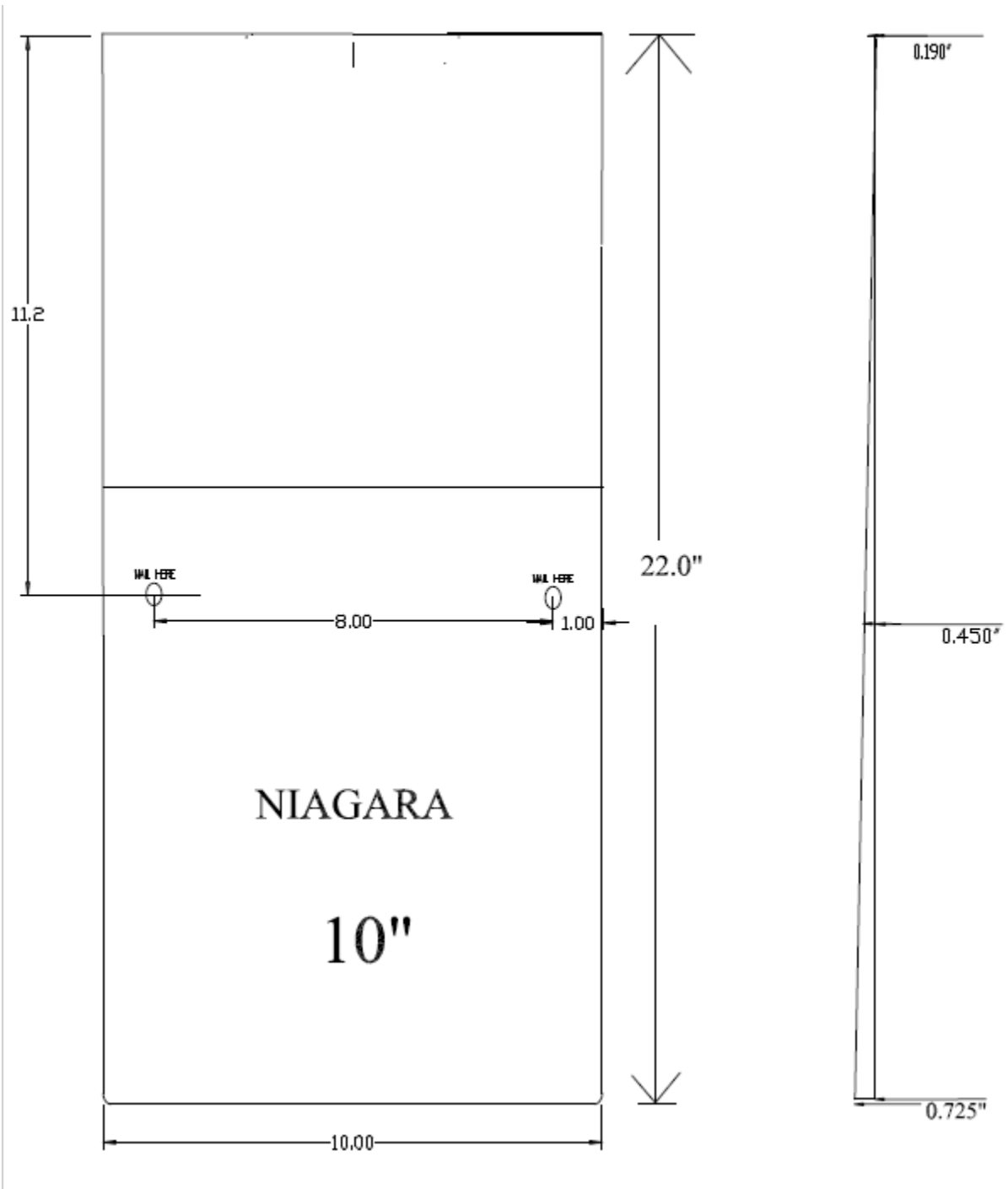




EMPIRE NIAGARA SHAKE 8"

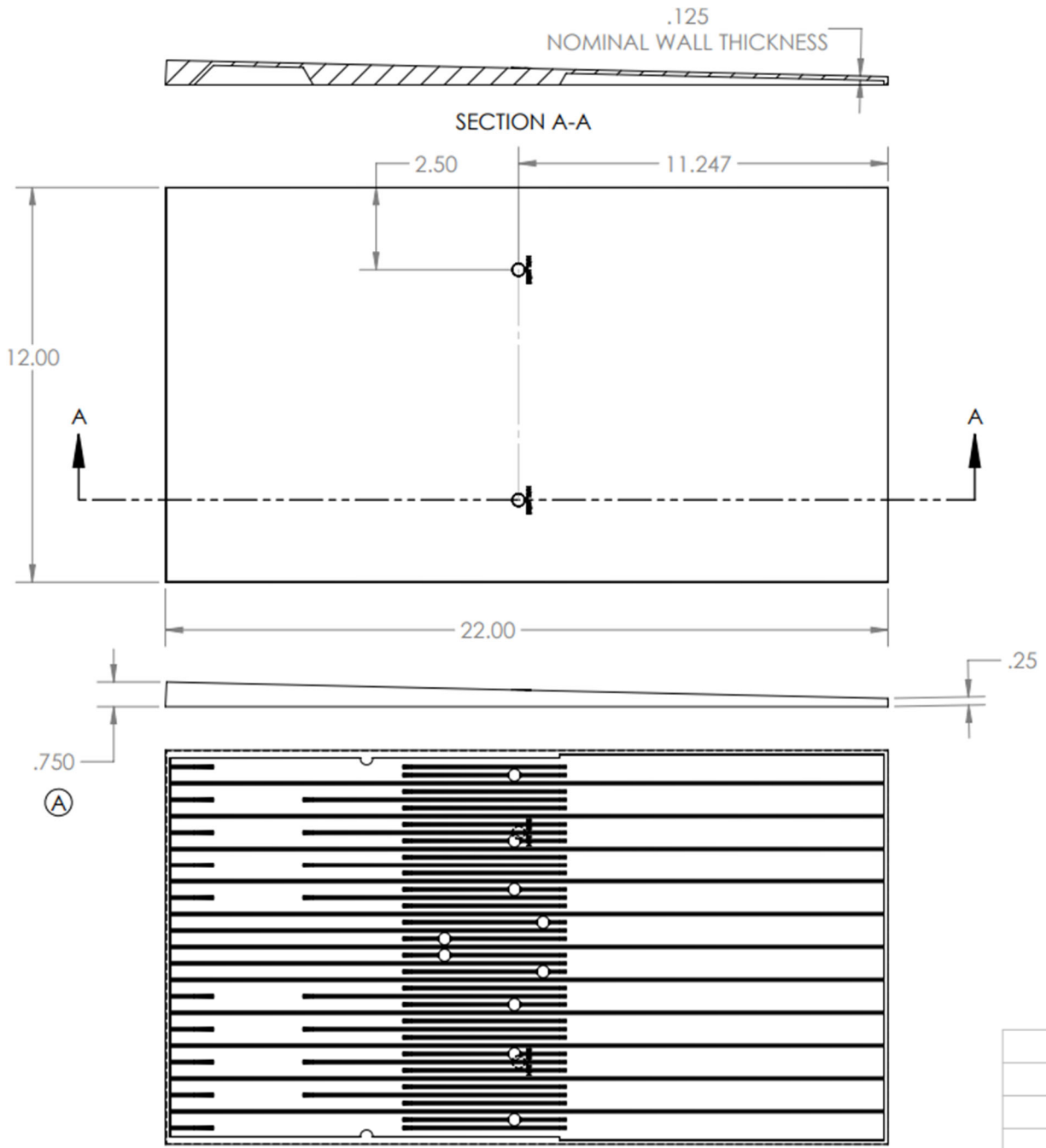


EMPIRE NIAGARA SHAKE 9"



EMPIRE NIAGARA SHAKE 10''

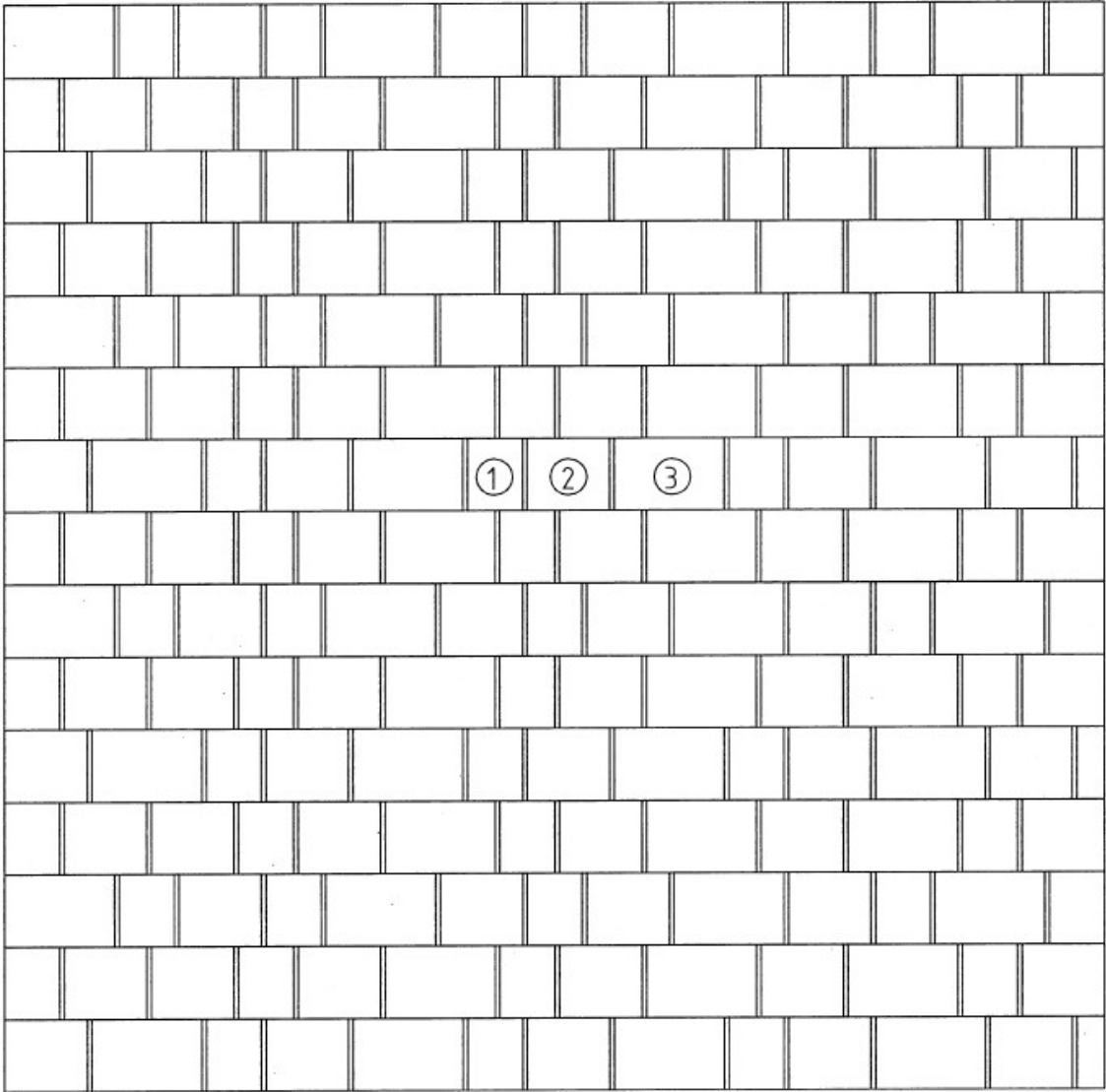




EMPIRE NIAGARA CONCRETE 12"

DETAIL B

SAMPLE INSTALLATION PATTERN EMPIRE SHAKE & EMPIRE SHAKE PLUS

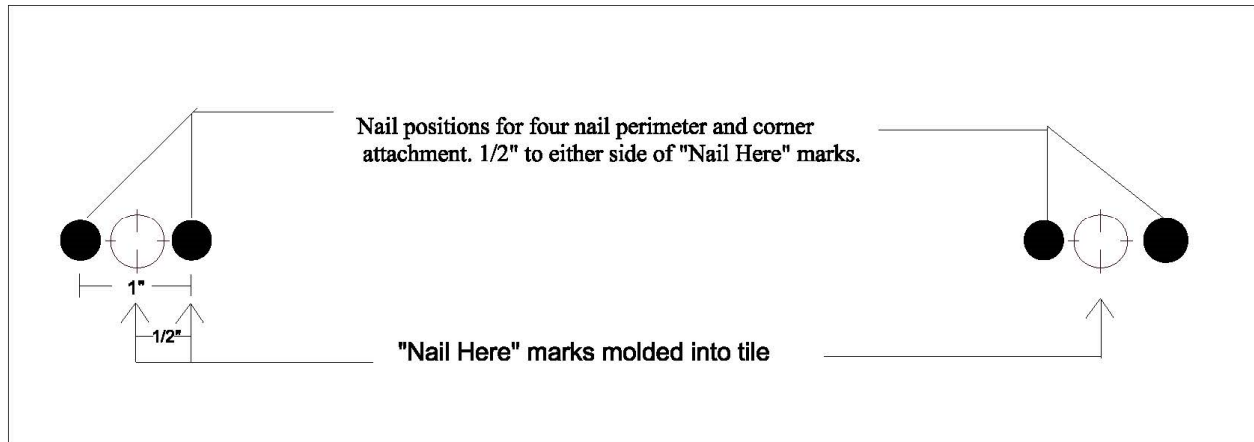


TILE SIZE #1: 6" x 20"
TILE SIZE #2: 9" x 20"
TILE SIZE #3: 12" x 20"



DETAIL C

PERIMETER AND CORNER FASTENING PATTERN FOR ALL EMPIRE PRODUCTS



END OF THIS ACCEPTANCE