



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

MIAMI-DADE COUNTY  
PRODUCT CONTROL SECTION  
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## NOTICE OF ACCEPTANCE (NOA)

**Ludowici Roof Tile, Inc.**  
**4757 Tile Plant Road**  
**New Lexington, OH 43764**

### 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: Ludo Slate, Ludo Shake, Americana XL, Classic XL, Williamsburg XL, Lanai XL, and Imperial' Clay Roof Tile**

**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 revises NOA#17-0719.09 and consists of pages 1 through 8.

The submitted documentation was reviewed by **Freddy Semino** 



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Expiration Date: 01/31/23  
Approval Date: 11/07/19  
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## ROOFING ASSEMBLY APPROVAL

**Category:** Roofing  
**Sub-Category:** Roofing Tiles  
**Material:** Clay

### 1. SCOPE

This approves a roofing system using Ludowici ‘**Ludo Slate, Ludo Shake, Americana XL, Classic XL, Williamsburg XL, Lanai XL, and Imperial**’ Clay Roof Tile, as manufactured Ludowici Roof Tile, Inc. and described in Section 2 of this Notice of Acceptance. For locations where the pressure requirements, as determined by applicable Building Code does not exceed the design pressure values obtained by calculations in compliance with RAS 127 using the values listed in section 4 herein. The attachment calculations shall be done as a moment based system.

### 2. PRODUCT DESCRIPTION

| <u>Manufactured by<br/>Applicant</u>                                                                           | <u>Dimensions</u>                             | <u>Test<br/>Specifications</u> | <u>Product<br/>Description</u>                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ludo Slate, Ludo Shake<br>Americana XL, Classic<br>XL, Williamsburg XL,<br>Lanai XL, and Imperial<br>Roof Tile | See drawings herein                           | ASTM C 1167                    | Flat, interlocking, vitrified clay roof tile equipped with one nail hole. For direct deck or battened, nail-on (4/12 min), mortar set or adhesive set applications. |
| Trim Pieces                                                                                                    | l = varies<br>w = varies<br>varying thickness | ASTM C 1167                    | Accessory trim, clay roof pieces for use at hips, rakes, ridges and valley terminations. Manufactured for each tile profile.                                        |

#### 2.1 PRODUCT DESCRIPTION

1. New Lexington, OH.

#### 2.2 SUBMITTED EVIDENCE:

| <u>Test Agency</u>                          | <u>Test Identifier</u>    | <u>Test Name/Report</u>                                        | <u>Date</u>             |
|---------------------------------------------|---------------------------|----------------------------------------------------------------|-------------------------|
| Farabaugh Engineering & Testing             | T249-12                   | ASTM C 1167                                                    | 07/30/12                |
| IBA Consultants, Inc.                       | 2376-284                  | ASTM C 1167                                                    | Sept 2007               |
| Redland Technologies                        | 7161-03<br>Appendix III   | Static Uplift Testing<br>PA 102 & PA 102(A)                    | Dec. 1991               |
| The Center for Applied<br>Engineering, Inc. | 94-060B<br>94-084         | Static Uplift Testing<br>PA 101 (Adhesive Set)<br>(Mortar Set) | March, 1994<br>May 1994 |
| Redland Technologies                        | 7161-03<br>Appendix II    | Wind Tunnel Testing<br>PA 108 (Nail-On)                        | Dec. 1991               |
| Redland Technologies                        | Letter Dated Aug. 1, 1994 | Wind Tunnel Testing<br>PA 108 (Nail-On)                        | Aug. 1994               |
| Redland Technologies                        | P0631-01                  | Wind Tunnel Testing<br>PA 108 (Mortar Set)                     | July 1994               |



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## 2.2 SUBMITTED EVIDENCE:

| <u>Test Agency</u>                       | <u>Test Identifier</u> | <u>Test Name/Report</u>                                       | <u>Date</u>   |
|------------------------------------------|------------------------|---------------------------------------------------------------|---------------|
| Redland Technologies                     | P0402                  | Withdrawal Resistance Testing of screw vs. smooth shank nails | Sept. 1993    |
| The Center for Applied Engineering, Inc. | Project No. 307025     | Wind Driven Rain                                              | Oct. 1994     |
| Walker Engineering, Inc.                 | Test #MDC-76           | PA 100                                                        |               |
| Walker Engineering, Inc.                 | Calculations           | Aerodynamic Multiplier                                        | March 1999    |
| Walker Engineering, Inc.                 | Calculations           | 25-7094                                                       | February 1996 |
|                                          |                        | 25-7496                                                       | April 1996    |
| Walker Engineering, Inc.                 | Calculations           | 25-7584                                                       | December 1996 |
|                                          |                        | 25-7804b-8                                                    |               |
|                                          |                        | 25-7804-4 & 5                                                 |               |
|                                          |                        | 25-7848-6                                                     |               |
| Walker Engineering, Inc.                 | Calculations           | 25-7183                                                       | March 1995    |
| Walker Engineering, Inc.                 | Calculations           | Aerodynamic Multipliers                                       | April 1999    |
| Walker Engineering, Inc.                 | Calculations           | Two Patty Adhesive Set System                                 | April 1999    |

## 3. LIMITATIONS

- 3.1 Fire classification is not part of this acceptance.
- 3.2 For mortar or adhesive set tile applications, a static field uplift test shall be performed in accordance with TAS 106.
- 3.3 Applicant shall retain the services of a Miami-Dade County Certified Laboratory to perform quarterly test in accordance with TAS 112, appendix 'A'. Such testing shall be submitted to the Building Code Compliance Office for review.
- 3.4 Minimum underlayment shall be in compliance with the applicable Roofing Applications Standards listed section 4.1 herein.
- 3.5 30/90 hot mopped underlayment applications may be installed perpendicular to the roof slope unless stated otherwise by the underlayment material manufacturers published literature.
- 3.6 This acceptance is for wood deck applications. Minimum deck requirements shall be in compliance with applicable building code.
- 3.7 Mechanically attached tile 4/12 minimum slope.
- 3.8 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.



#### 4. INSTALLATION

- 4.1 Ludowici 'Ludo Slate, Ludo Shake, Americana XL, Classic XL, Williamsburg XL, Lanai XL, and Imperial' Clay Roof Tile and its components shall be installed in strict compliance with Roofing Application Standard RAS 118, RAS 119, and RAS 120.
- 4.2 Data For Attachment Calculations

**Table 1: Average Weight (W) and Dimensions (l x w )**

| Tile Profile                                       | Weight-W (lbf) | Length-l (ft) | Width-w (ft) |
|----------------------------------------------------|----------------|---------------|--------------|
| Ludo Slate, Ludo Shake Roof Tile                   | 5.95           | 1.35          | 0.911        |
| Americana XL Roof Tile                             | 6.01           | 1.33          | 0.896        |
| Classic XL, Williamsburg XL and Lanai XL Roof Tile | 6.65           | 1.33          | 0.896        |
| Imperial Roof Tile                                 | 6.43           | 1.25          | 0.833        |

**Table 2: Aerodynamic Multipliers -  $\lambda$  (ft<sup>3</sup>)**

| Tile Profile                                                                                        | $\lambda$ (ft <sup>3</sup> )<br>Batten Application | $\lambda$ (ft <sup>3</sup> )<br>Direct Deck Application |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------|
| Ludo Slate, Ludo Shake, Americana XL, Classic XL, Williamsburg XL, Lanai XL, and Imperial Roof Tile | 0.219                                              | 0.237                                                   |

**Table 3: Restoring Moments due to Gravity -  $M_g$  (ft-lbf)**

| Tile Profile                                                                                        | 3":12"  |             | 4":12"  |             | 5":12"  |             | 6":12"  |             | 7":12" or greater |             |
|-----------------------------------------------------------------------------------------------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|-------------------|-------------|
|                                                                                                     | Battens | Direct Deck | Battens | Direct Deck | Battens | Direct Deck | Battens | Direct Deck | Battens           | Direct Deck |
| Ludo Slate, Ludo Shake, Americana XL, Classic XL, Williamsburg XL, Lanai XL, and Imperial Roof Tile | N/A     | 3.38        | 3.30    | 3.77        | 3.23    | 3.69        | 3.15    | 3.60        | 3.06              | 3.50        |

**Table 4: Attachment Resistance Expressed as a Moment -  $M_f$  (ft-lbf)  
for Nail-On Systems**

| Tile Profile                                                                                        | Fastener Type                                  | Direct Deck<br>(min 15/32" plywood) | Direct Deck<br>(min. 19/32" plywood) | Battens |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------|--------------------------------------|---------|
| Ludo Slate, Ludo Shake, Americana XL, Classic XL, Williamsburg XL, Lanai XL, and Imperial Roof Tile | 2-10d Ring Shank Nails                         | 30.9                                | 38.1                                 | 17.2    |
|                                                                                                     | 1-10d Smooth or Screw Shank Nail               | 7.3                                 | 9.8                                  | 4.9     |
|                                                                                                     | 2-10d Smooth or Screw Shank Nails              | 14.0                                | 18.8                                 | 7.4     |
|                                                                                                     | 1 #8 Screw                                     | 30.8                                | 30.8                                 | 18.2    |
|                                                                                                     | 2 #8 Screw                                     | 51.7                                | 51.7                                 | 24.4    |
|                                                                                                     | 1-10d Smooth or Screw Shank Nail (Field Clip)  | 24.3                                | 24.3                                 | 24.2    |
|                                                                                                     | 1-10d Smooth or Screw Shank Nail (Eave Clip)   | 19.0                                | 19.0                                 | 22.1    |
|                                                                                                     | 2-10d Smooth or Screw Shank Nails (Field Clip) | 35.5                                | 35.5                                 | 34.8    |
|                                                                                                     | 2-10d Smooth or Screw Shank Nails (Eave Clip)  | 31.9                                | 31.9                                 | 32.2    |
|                                                                                                     |                                                |                                     |                                      |         |
|                                                                                                     | 2-10d Ring Shank Nails <sup>1</sup>            | 50.3                                | 65.5                                 | 48.3    |

<sup>1</sup> Installation with a 4" tile headlap and fasteners are located a min. of 2½" from head of tile.

**Table 6: Attachment Resistance Expressed as a Moment  $M_f$  (ft-lbf)  
for Two Patty Adhesive Set Systems**

| Tile Profile                                                                                        | Tile Application | Minimum Attachment Resistance |
|-----------------------------------------------------------------------------------------------------|------------------|-------------------------------|
| Ludo Slate, Ludo Shake, Americana XL, Classic XL, Williamsburg XL, Lanai XL, and Imperial Roof Tile | Adhesive         | 31.3 <sup>3</sup>             |

<sup>2</sup> See manufactures component approval for installation requirements.

<sup>3</sup> Flexible Products Company TileBond Average weight per patty 13.9 grams.

3M™ 2-Component Foam Roof Tile Adhesive AH-160 Average weight per patty 8 grams.

| <b>Table 7: Attachment Resistance Expressed as a Moment - <math>M_f</math> (ft-lbf)<br/>for Single Paddy Adhesive Set Systems</b> |                                                |                                      |
|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------------------------|
| <b>Tile Profile</b>                                                                                                               | <b>Tile Application</b>                        | <b>Minimum Attachment Resistance</b> |
| Ludo Slate, Ludo Shake, Americana XL, Classic XL, Williamsburg XL, Lanai XL, and Imperial Roof Tile                               | 3M™ 2-Component Foam Roof Tile Adhesive AH-160 | 118.9 <sup>4</sup>                   |
|                                                                                                                                   | 3M™ 2-Component Foam Roof Tile Adhesive AH-160 | 40.4 <sup>5</sup>                    |
| 4 Large paddy placement of 45 grams of AH-160                                                                                     |                                                |                                      |
| 5 Medium paddy placement of 24 grams of AH-160                                                                                    |                                                |                                      |

| <b>Table 8: Attachment Resistance Expressed as a Moment - <math>M_f</math> (ft-lbf)<br/>for Mortar Set Systems</b> |                         |                              |
|--------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------|
| <b>Tile Profile</b>                                                                                                | <b>Tile Application</b> | <b>Attachment Resistance</b> |
| Ludo Slate, Ludo Shake, Americana XL, Classic XL, Williamsburg XL, Lanai XL, and Imperial Roof Tile                | Mortar Set              | 39.00                        |

## 5. LABELING

All tiles shall bear the imprint or identifiable marking of the manufacturer's name or logo (See **Detail Below**), or following statement: "Miami-Dade County Product Control Approved".

# LUDOWICI ASTM C1167 GRADE I

IDENTIFICATION MARK FOR LUDO SLATE, LUDO SHAKE, AMERICANA XL, CLASSIC XL,  
WILLIAMSBURG XL, LANAI XL, AND IMPERIAL' CLAY ROOF TILE  
(LOCATED ON UNDERSIDE OF TILE)

## 6. BUILDING PERMIT REQUIREMENTS

6.1 Application for building permit shall be accompanied by copies of the following:

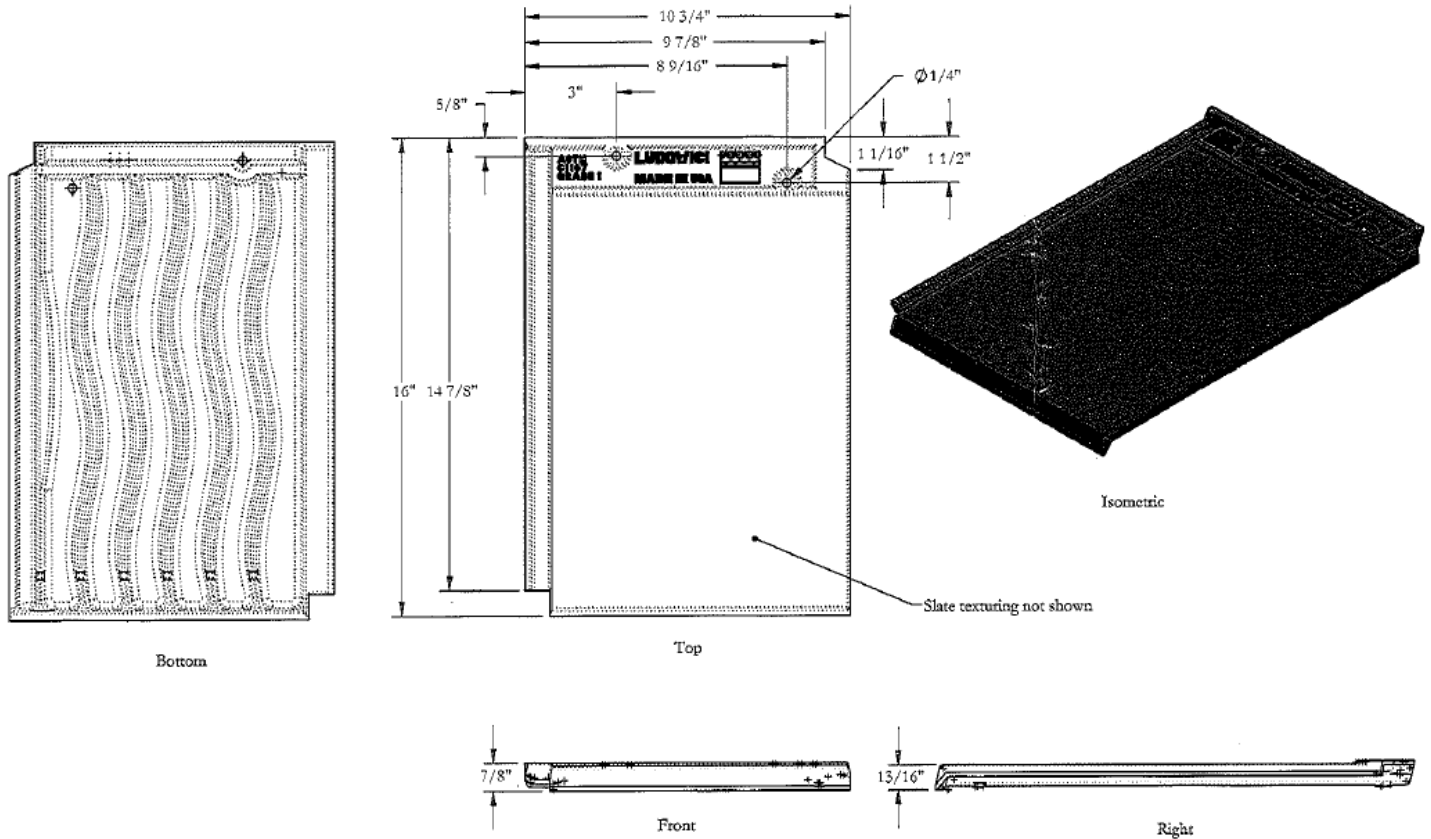
6.1.1 This Notice of Acceptance.

6.1.2 Any other documents required by the Building Official or applicable building code in order to properly evaluate the installation of this system.

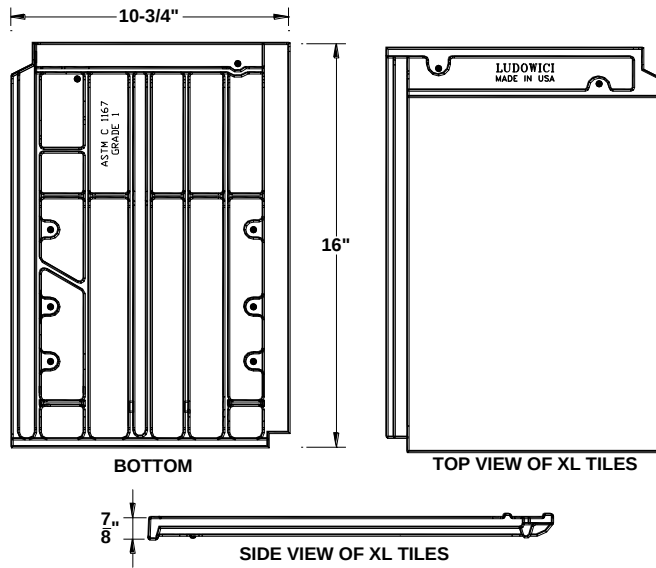


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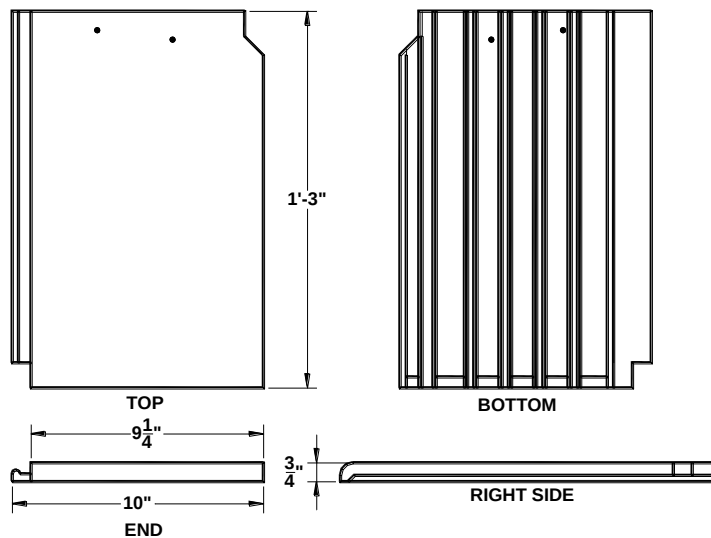
# PROFILE DRAWINGS



## LUDO SLATE AND LUDO SHAKE CLAY ROOF TILE (LUDO SHAKE CONTAINS STRIATIONS ON TOP SURFACE TO RESEMBLE A WOOD SHAKE)



## XL CLAY ROOF TILES



## IMPERIAL CLAY ROOF TILE

**END OF THIS ACCEPTANCE**