



## Code Compliance Research Report

## CCRR-0128

Subject to Renewal: 11/23/2012  
Visit [www.ati-es.com](http://www.ati-es.com) for current status

Issued: 11/23/2011  
Page 1 of 8

**TimberTech® Limited**  
894 Prairie Avenue  
Wilmington, Ohio 45177  
(866) 862-7832

[www.timbertech.com](http://www.timbertech.com)

### 1.0 Subject

TimberTech® Decking Planks  
(Wood-Plastic Composite Deck Boards)

- DockSider™ Plank*
- Earthwood® Plank*
- Earthwood® Grooved Plank*
- Earthwood® Evolutions™ Plank*
- Earthwood® Evolutions™ Grooved Plank*
- TwinFinish® Plank*
- TwinFinish® Grooved Plank*
- Floorizon® Plank*
- ReliaBoard*

TimberTech® Decking Planks  
(Plastic Composite Deck Boards)

- XLM® Solid Plank*
- XLM® Grooved Plank*

### 2.0 Research Scope

#### 2.1. Building Codes:

- 2009 International Building Code (IBC)
- 2009 International Residential Code (IRC)

#### 2.2. Properties:

- Structural Performance
- Durability
- Surface Burning
- Decay Resistance
- Termite Resistance

### 3.0 Description

3.1. General – TimberTech® Decking Planks are intended for use as a walking surface on exterior decks, balconies, porches, and walkways, including stairs.

#### 3.2. Materials and Processes –

3.2.1. *DockSider™, Earthwood®, Earthwood® Grooved, Earthwood® Evolutions™, Earthwood® Evolutions™ Grooved, TwinFinish®, TwinFinish® Grooved, ReliaBoard and Floorizon®* Wood-Plastic Composite Deck Boards are extrusions of a common wood plastic composite (WPC) material comprised primarily of high density polyethylene (HDPE) and hard wood fiber/flour.

3.2.2. *DockSider™, Earthwood®, Earthwood® Grooved, TwinFinish® and TwinFinish® Grooved* deck boards may be either Mono-Extrusions or Co-Extrusions of WPC cap and core.

3.2.3. *Earthwood® Evolutions™ and Earthwood® Evolutions™ Grooved* deck boards have a polymer cap stock on all surfaces. The top surface is embossed with a simulated wood-grain pattern. See Figure 9.

3.2.4. *ReliaBoard* deck boards are a co-extrusion with chamfered edges and a bottom surface which contains three 0.20 inch deep longitudinal scallops. The top surface is embossed with a simulated wood-grain pattern. See Figure 10.

3.2.5. *XLM® (Solid and Grooved)* Plastic Composite Deck Boards are co-extrusions of a PVC capstock and cellular PVC core. Co-extrusions may be fully capped or semi capped in cross section. See Figures 6 and 7.

3.3. Profiles – TimberTech® Decking Planks have a solid cross-section, solid cross-section with grooves, and contoured cross-section profiles. See Table 3 and Figures 1 through 9.

3.4. Walking Surface - TimberTech® Decking Planks use three different types of walking surfaces. *Vertigrain™* is an embossed simulated wood-grain pattern surface. *Flat Grain* is a smooth extruded surface. *Brushed* is a linear brushed pattern. *Serrated* is a surface texture imparted through the extrusion process and is not to be used as a walking surface. See Table 3 and Figures 1 through 9.

#### 4.0 Performance Characteristics

4.1. Uniform Live Load ratings are given in Table 1 for the corresponding deck boards and fasteners indicated.

4.2. Deck boards used as stair treads are rated for the code-prescribed concentrated load equal to 300 lb. when installed with a maximum span indicated in Table 2. Deck boards used as stair treads shall be installed in a minimum two-span condition.

4.3. Wind Uplift Resistance ratings are given in Table 2 for the corresponding deck boards and fasteners indicated.

4.4. TimberTech Decking Planks have a flame spread index as indicated in Table 1 when tested in accordance with ASTM E 84. The referenced criteria of AC174, requires a flame spread index not exceeding 200.

4.5. Materials used are deemed equivalent to preservative treated or naturally durable wood for resistance to weathering effects, attack from termites and fungus decay.

4.6. Structural performance has been demonstrated for a temperature range from -20°F (-29°C) to 125°F (52°C).

#### 5.0 Installation

Installation shall be in accordance with the manufacturer's installation instructions and this report. Where differences occur between this report and the manufacturer's installation instructions, this report shall govern.

5.1. Solid deck boards are face-fastened and require two fasteners at every joist 0.75 inch from the side and at least 0.75 inch from the end of the board.

5.2. Grooved deck boards shall be secured with *CONCEALoc*<sup>®</sup> Hidden Fasteners at each joist. See Figure 12. Alternatively, they may be face-fastened and require two fasteners at every joist 1 inch from the side and at least 0.75 inch from the end of the board. Fasteners used for face-fastening shall be as identified in Table 2 for the equivalent solid deck board.

5.3. Tongue and groove fastening of the *Floorizon*<sup>®</sup> Planks shall be with #8 x 2.50 inch deck screws. A #8 x 2.50 inch deck screw shall be installed at each tongue and groove joint at each joist. See Figure 10.

5.4. Table 2 indicates type of fasteners that are to be used for each installation.

#### 6.0 Supporting Evidence

6.1. Manufacturer's drawings and installation instructions.

6.2. Reports of testing demonstrating compliance with ICC-ES AC174, Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails), effective July 1, 2010.

6.3. Reports of testing demonstrating compliance with ICC-ES AC109, Acceptance Criteria for Thermoplastic Composite Lumber Products, effective July 1, 2006.

6.4. Reports of testing and engineering analysis demonstrating compliance with the performance requirements of ASTM D 7032-07, Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails).

6.5. Quality control manual in accordance with ICC-ES AC10, Acceptance Criteria for Quality Documentation, effective March 1, 2009.

#### 7.0 Conditions of Use

The TimberTech<sup>®</sup> Decking Plank applications identified in this report are deemed to comply with the intent of the provisions of the referenced building codes subject to the following conditions.

7.1. TimberTech<sup>®</sup> Decking Planks identified in this report are limited to use in Type V-B (5B) construction.

7.2. Deck boards placed at an angle other than 90 degrees to the supporting joist will require support framing at a reduced spacing such that the span of the deck board does not exceed the span identified in Table 2.

7.3. The wind uplift resistance rating recognized in this report is based on attachment to treated Southern Pine framing (specific gravity,  $G=0.55$ ). Installation on wood framing with a lesser specific gravity may result in a lower wind uplift rating.

7.4. Where required by the building official, engineering calculations and details shall be provided. The calculations shall verify that the anchorage complies with the building code for the type of framing and condition of the supporting construction.

7.5. Compatibility of the supporting construction materials with all fasteners, metal post mount components and other hardware components is subject to approval by the code official.

7.6. Only those types of fasteners and fastening methods described in this report have been evaluated for the installation of the TimberTech® Decking Planks; other methods of attachment are outside the scope of this report.

7.7. XLM products are manufactured in Columbus, Ohio, and all other products are manufactured in Wilmington, Ohio by TimberTech® Limited in accordance with the manufacturer's approved quality control system with inspections by Architectural Testing (IAS AA-676).

### 8.0 Identification

TimberTech® Decking Planks are produced in accordance with this report shall be identified with labeling on the individual deck boards that includes the following information:

8.1. Name and/or trademark of the manufacturer.

8.2. The following statement: "ASTM D 7032. See ATI CCRR-0128 at [www.ati-es.com](http://www.ati-es.com)."

8.3. The Architectural Testing Code Compliance Research Report mark and number (CCRR-0128)

### 9.0 Code Compliance Research Report Use

9.1. Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

9.2. Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product or manufacturer by Architectural Testing.

9.3. Reference to the Architectural Testing internet web site address at [www.ati-es.com](http://www.ati-es.com) is recommended to ascertain the current version and status of this report.

**Table 1**

<b>Deck Board</b>	<b>Flame Spread Index</b>
<i>Earthwood® Square Edge, Earthwood® Grooved and Floorizon® deck boards (Mono-Extruded)</i>	75
<i>DockSider™, TwinFinish® and Earthwood® Grooved deck boards (Co-Extruded)</i>	70
<i>XLM® (Solid and Grooved) and XLM® Semi-Capped (Solid and Grooved)</i>	20 (Non-Capped Surface)
	30 (Capped Surface)
<i>ReliaBoard</i>	70
<i>Earthwood® Evolutions™ and Earthwood® Evolutions™ Grooved</i>	85

**Table 2**

<b>Decking Plank</b>	<b>Span/Load Rating<sup>1</sup></b>	<b>Stair Tread Span<sup>2</sup></b>	<b>Fastening<sup>3</sup></b>	<b>Wind Uplift Resistance<sup>3</sup></b>
<i>Earthwood<sup>®5</sup> TwinFinish<sup>®5</sup></i>	24/100	12"	#8 x 3" Deck Screw	220 lb/ ft. <sup>2</sup>
<i>Earthwood<sup>®5</sup> Grooved<sup>5</sup> TwinFinish<sup>®5</sup> Grooved<sup>5</sup></i>	24/100	Not Permitted <sup>4</sup>	CONCEALoc <sup>®</sup> Hidden Fastener System <sup>6</sup>	104 lb/ ft. <sup>2</sup>
<i>Earthwood<sup>®</sup> Evolutions™ Solid</i>	18/100	12"	#8 x 2-1/2" TOPLoc Steel Deck Screw	419 lb/ ft. <sup>2</sup>
			#8 x 2-1/2" Deck Screw	435 lb/ft. <sup>2</sup>
<i>Earthwood<sup>®</sup> Evolutions™ Grooved</i>	18/100	Not Permitted <sup>4</sup>	CONCEALoc <sup>®</sup> Hidden Fastener System <sup>6</sup>	167 lb/ ft. <sup>2</sup>
<i>DockSider™</i>	24/200	21"	#8 x 3" Deck Screw	220 lb/ ft. <sup>2</sup>
<i>Floorizon<sup>®</sup></i>	24/100	Not Permitted	#8 x 2-1/2" Deck Screw	98 lb/ ft. <sup>2</sup>
<i>XLM<sup>®</sup> Solid</i>	16/100	10"	#8 x 2-1/2" TOPLoc Steel Deck Screw	445 lb/ ft. <sup>2</sup>
			#8 x 2-1/2" Deck Screw	287 lb/ft. <sup>2</sup>
<i>XLM<sup>®</sup> Grooved</i>	16/100	Not Permitted <sup>4</sup>	CONCEALoc <sup>®</sup> Hidden Fastener System <sup>6</sup>	196 lb/ ft. <sup>2</sup>
<i>XLM<sup>®</sup> Semi-Capped</i>	16/100	10"	#8 x 2-1/2" Deck Screw	287 lb/ ft. <sup>2</sup>
<i>XLM<sup>®</sup> Semi-Capped Grooved</i>	16/100	Not Permitted <sup>4</sup>	CONCEALoc <sup>®</sup> Hidden Fastener System <sup>6</sup>	173 lb/ ft. <sup>2</sup>
ReliaBoard	16/100	9"	#8 x 2-1/2" Deck Screw	340 lb/ft. <sup>2</sup>

<sup>1</sup> Span/Load rating is the maximum span in inches and the maximum allowable live load in pounds per square feet (psf).

<sup>2</sup> Stair tread span is based on a continuous deck board over two or more equal spans (3 supports).

<sup>3</sup> Wind uplift resistance is based on two fasteners at each support (wood joist) except *Grooved Planks* which use one CONCEALoc<sup>®</sup> hidden fastener located at each joist.

<sup>4</sup> *Grooved Deck Planks* are not used as stair treads.

<sup>5</sup> Mono-Extruded and Co-Extruded values are the same.

<sup>6</sup> Alternatively, grooved deck boards may be face fastened with the fasteners recognized for the relevant solid deck board.



**Table 3**

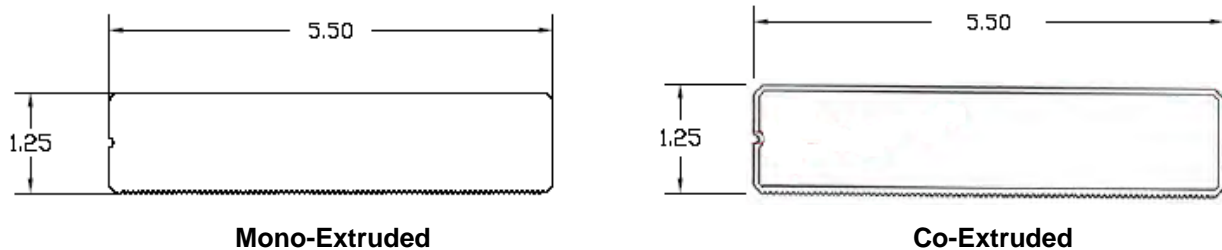
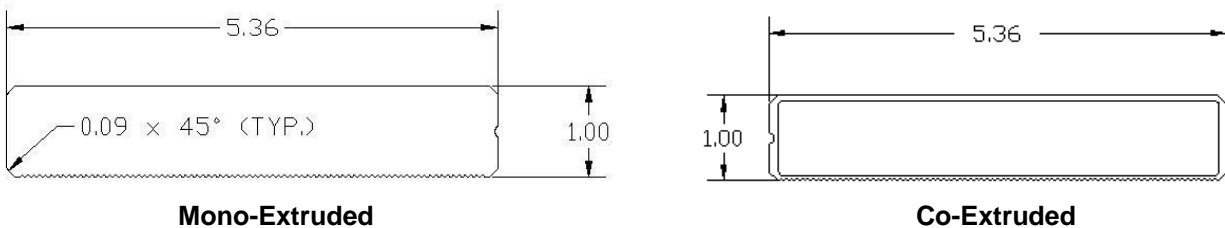
Decking Plank	Description	Surfaces		Color(s)
		Finish	Walking Surface	
<i>Earthwood</i> <sup>®</sup>	1.0" x 5.4" Solid cross-section with 0.09" x 45° beveled corners.	<i>VertiGrain</i> <sup>™</sup>	Yes	Tropical Walnut, Tropical Rosewood, Tropical Teak, Grey, Cedar, Redwood
		Serrated	No	
<i>TwinFinish</i> <sup>®</sup>	1.0" x 5.4" Solid cross-section with 0.09" x 45° beveled corners.	<i>VertiGrain</i> <sup>™</sup>	Yes	
		Serrated	No	
<i>Earthwood</i> <sup>®</sup> <i>Grooved</i>	1.0" x 5.4" Solid cross-section with 0.09" x 45° beveled corners and 0.21" x 0.40" deep longitudinal side grooves for <i>CONCEALoc</i> <sup>®</sup> hidden fasteners.	<i>VertiGrain</i> <sup>™</sup>	Yes	
		Serrated	No	
<i>TwinFinish</i> <sup>®</sup> <i>Grooved</i>	1.0" x 5.4" Solid cross-section with 0.09" x 45° beveled corners and 0.21" x 0.40" deep longitudinal side grooves for <i>CONCEALoc</i> <sup>®</sup> hidden fasteners.	<i>VertiGrain</i> <sup>™</sup>	Yes	
		Serrated	No	
<i>Floorizon</i> <sup>®</sup>	1.5" x 6.79" ribbed cross-section with opposing tongue and groove longitudinal sides and 0.38" wall thickness	<i>VertiGrain</i> <sup>™</sup>	Yes	
<i>DockSider</i> <sup>™</sup>	1.25" x 5.5" Solid cross-section with 0.125" x 45° beveled corners.	<i>VertiGrain</i> <sup>™</sup>	Yes	
		Serrated	No	
<i>Earthwood</i> <sup>®</sup> <i>Evolutions</i> <sup>™</sup> <i>Solid</i>	.938" x 5.4" Solid cross-section with the top surface corners having 0.15" x 45° beveled corners and the bottom surface corners having 0.165" x 45° beveled corners.	<i>VertiGrain</i> <sup>™</sup>	Yes	Pacific Walnut, Pacific Rosewood, Pacific Teak
<i>Earthwood</i> <sup>®</sup> <i>Evolutions</i> <sup>™</sup> <i>Grooved</i>	.938" x 5.4" Solid cross-section with the top surface corners having 0.15" x 45° beveled corners and the bottom surface corners having 0.165" x 45° beveled corners. Longitudinal side grooves are 0.21" x 0.40" deep for <i>CONCEALoc</i> <sup>®</sup> hidden fasteners.	<i>VertiGrain</i> <sup>™</sup>	Yes	

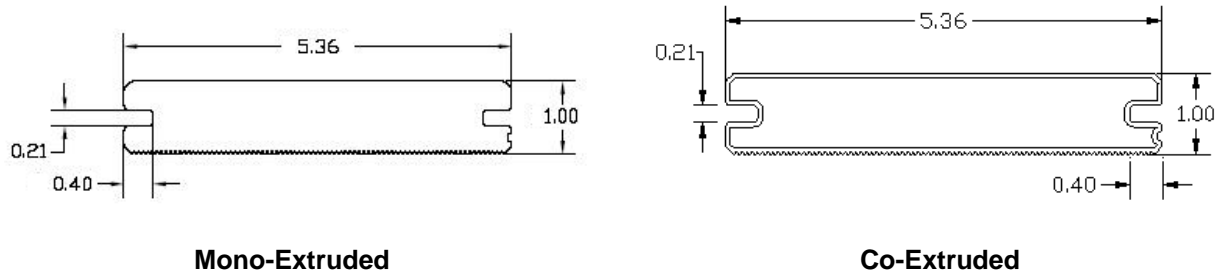
(continued on next page)

**Table 3 (continued)**

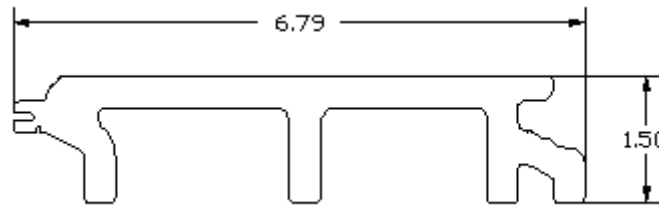
<i>XLM<sup>®</sup> Solid</i>	1.0" x 5.4" Solid cross-section with 0.125" radius corners.	<i>VertiGrain<sup>™</sup></i>	Yes	RiverRock, SandRidge, Mountain Cedar, Harbor Stone, Harvest Bronze, RusticBark, Desert Bronze <sup>1</sup>
		Flat Grain	Yes	
<i>XLM<sup>®</sup> Grooved</i>	1.0" x 5.4" Solid cross-section with 0.125" radius corners and 0.21" x 0.40" deep longitudinal side grooves for <i>CONCEALoc<sup>®</sup></i> hidden fasteners.	<i>VertiGrain<sup>™</sup></i>	Yes	
		Flat Grain	Yes	
<i>ReliaBoard</i>	.938" x 5.4" Solid cross-section with 0.092" x 45° beveled corners and 3 - 0.20" deep longitudinal grooves on the under side.	Flat Grain	Yes	Grey and Cedar

<sup>1</sup> Desert Bronze color produced only in the Semi-Capped deck board.

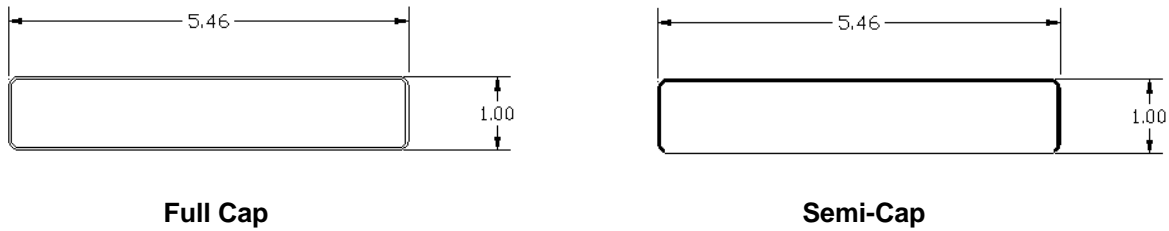

**Figure 1 – DockSider<sup>™</sup> Plank**

**Figure 2 – Earthwood<sup>®</sup> & TwinFinish<sup>®</sup> Plank**



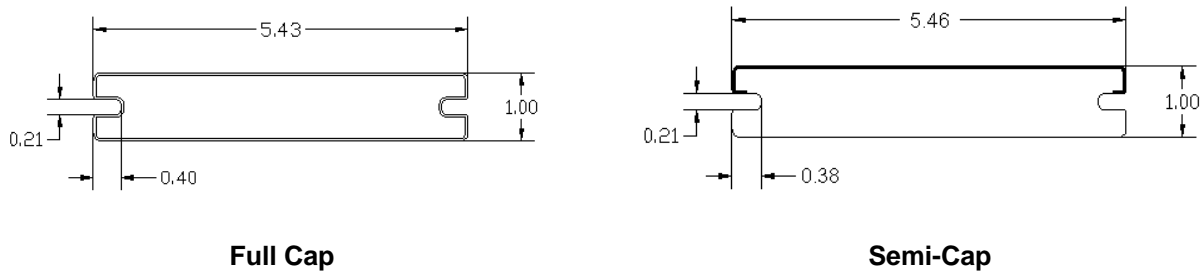
**Figure 3 – Earthwood<sup>®</sup> Grooved & TwinFinish<sup>®</sup> Grooved Deck Board Profile**



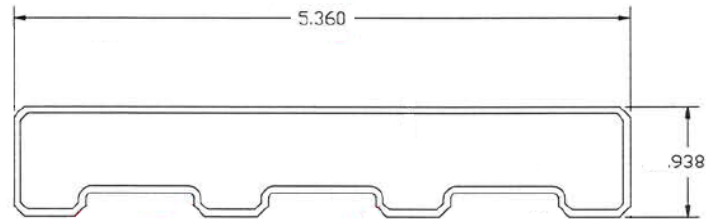
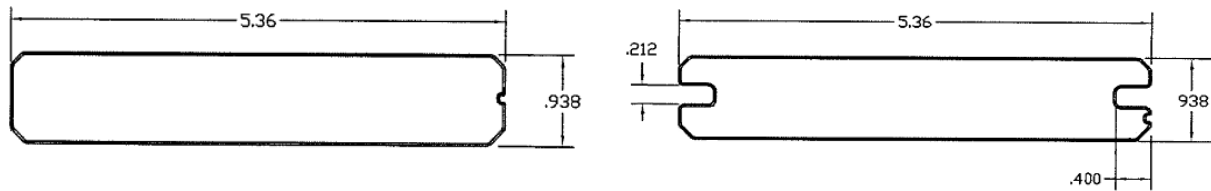
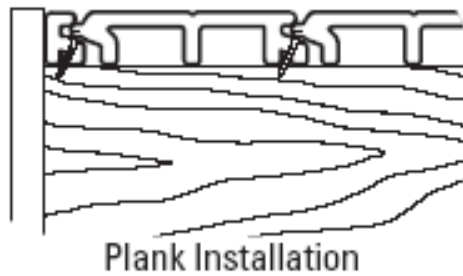
**Figure 4 - Floorizon<sup>™</sup> Plank Profile**



**Figure 5 – XLM<sup>®</sup> Solid Deck Board Profile**



**Figure 6 – XLM<sup>®</sup> Grooved Deck Board Profile**

**Figure 7 - ReliaBoard****Solid****Grooved****Figure 8 – Earthwood® Evolutions™ Solid & Grooved Deck Board Profiles****Plank Installation****Figure 9 - Floorizon™ Plank Installation****Figure 10 – CONCEALoc® Hidden Fastener Clip**