



Code Compliance Research Report

CCRR-0128

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1.0 Subject

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

- DockSider™ Plank*
- Earthwood® Evolutions™ Solid Plank*
- Earthwood® Evolutions™ Grooved Plank*
- Earthwood Evolutions Legacy Solid Plank*
- Earthwood Evolutions Legacy Grooved Plank*
- Earthwood® Evolutions™ Terrain Solid Plank*
- Earthwood® Evolutions™ Terrain Grooved Plank*
- ReliaBoard Plank*
- TwinFinish® Solid Plank*
- TwinFinish® Grooved Plank*
- Style Selections Solid Plank*
- Style Selections Grooved Plank*

TimberTech® Decking Planks
(Plastic Composite Deck Boards)

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

2.0 Research Scope

2.1. Building Codes:

- 2012 International Building Code (IBC)
- 2012 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 – Reference Table 1

3.3. Profiles – TimberTech® Decking Planks have a solid cross-section, solid cross-section with grooves, and contoured cross-section profiles. See Table 4 and Figures 1 through 10.

4.0 Performance Characteristics

4.1. Uniform Live Load ratings are given in Table 2 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 3. 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 for the corresponding deck boards and fasteners indicated.

4.4. TimberTech Decking Planks have a flame spread index as indicated in Table 2 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 Formosan 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*[®] Hidden Fasteners or *Trex Hideaway*[®] *Universal* Hidden Fasteners (specified in Table) at each joist. 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 3 for the equivalent solid deck board.

5.3. Table 3 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), approved January 2012.

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 7032-08, 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 June 2014.

7.0 Conditions of Use

The TimberTech[®] 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[®] Decking Planks identified in this report are limited to use in Type V-B (5B) construction and Types II-B and III-B construction where combustible construction is permitted in accordance with IBC Section 1406.3.

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 3.

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. Deck boards recognized in this report have been evaluated for use in areas subject to Formosan termite attack.

7.8. All products recognized by this report 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."

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 is recommended to ascertain the current version and status of this report.

Table 1

Product	WPC Core¹	PVC Core	WPC Cap	Polymer Cap	PVC Cap	Full Cap	Semi Cap	Co-Extruded	Mono-Extruded
<i>Dockside Plank</i>	X		X			X		X	
<i>Earthwood[®] Evolutions[™] Grooved and Solid Planks</i>	X			X		X		X	
<i>Earthwood[®] Evolutions[™] Terrain Grooved and Solid Planks</i>	X			X		X		X	
<i>Reliaboard</i>	X		X			X		X	
<i>TwinFinish[®] Grooved and Solid Planks</i>	X		X			X		X	
<i>Style Selections Grooved and Solid Planks</i>	X			X		X		X	
<i>Earthwood Evolutions Legacy Grooved and Solid Planks</i>	X			X		X		X	
<i>XLM[®] Grooved and Solid Planks</i>		X			X		X	X	

¹ WPC is Wood Plastic Composite comprised of high density polyethylene (HDPE) and hardwood fiber/flour

Table 2

Deck Board	Flame Spread Index
<i>DockSider™, TwinFinish®, and ReliaBoard</i>	Does not Exceed 200
<i>Earthwood® Evolutions™ Terrain deck boards and Style Selections</i>	Does not Exceed 200
<i>XLM® Solid and Grooved</i>	Does not Exceed 200 (Non-Capped Surface)
	Does not Exceed 200 (Capped Surface)
<i>Legacy Solid and Grooved</i>	Does not Exceed 200
<i>Earthwood® Evolutions™ and Earthwood® Evolutions™ Grooved</i>	Does not Exceed 200

Table 3

Decking Plank	Span/Load Rating ¹	Stair Tread Span ²	Fastener ³	Wind Uplift Resistance ³
<i>TwinFinish®</i>	24/100	12"	#8 x 3" Deck Screw	220 lb/ft. ²
<i>TwinFinish® Grooved⁵</i>	24/100	Not Permitted ⁴	1.6" long trim head stainless steel screw CONCEALoc® Hidden Fastener System ⁶	104 lb/ft. ²
<i>Earthwood® Evolutions™ Solid</i>	18/100	12"	#10 x 2-1/2" TOPLoc Steel Deck Screw	282 lb/ft. ²
			#9 x 2-1/2" GripRite® PrimeGuard® Plus steel deck screw	344 lb/ft. ²
<i>Earthwood® Evolutions™ Grooved</i>	18/100	Not Permitted ⁴	1.6" long trim head stainless steel screw CONCEALoc® Hidden Fastener System ⁶	167 lb/ft. ²
<i>Earthwood® Evolutions™ Terrain Solid</i>	18/100	16"	#10 x 2 x 2-1/2" TOPLoc™ Steel Deck Screw	464 lb/ft. ²
			2-1/2" GripRite PrimeGuard® Plus Screw	575 lb/ft. ²
<i>Earthwood® Evolutions™ Terrain Grooved</i>	18/100	Not Permitted ⁴	1.6" long trim head stainless steel screw CONCEALoc® Hidden Fastener System ⁶	170 lb/ft. ²
<i>DockSider™</i>	24/200	21"	#8 x 3" Deck Screw	220 lb/ft. ²
<i>Legacy Solid</i>	18/100	10"	#10 x 2-1/2" TOPLoc Steel Deck Screw	393 lb/ft. ²
			2-1/2" GripRite PrimeGuard® Plus Screw	393 lb/ft. ²
<i>Legacy Grooved</i>	18/100	Not Permitted ⁴	1.6" long trim head stainless steel screw CONCEALoc® Hidden Fastener System	184 lb/ft. ²

Table 3 (continued)

Decking Plank	Span/Load Rating ¹	Stair Tread Span ²	Fastener ³	Wind Uplift Resistance ³
<i>XLM® Solid</i>	16/100	10"	#10 x 2-1/2" <i>TOPLoc™</i> Steel Deck Screw	287 lb/ft. ²
<i>XLM® Grooved</i>	16/100	Not Permitted ⁴	1.6" long trim head stainless steel screw <i>CONCEALoc®</i> Hidden Fastener System ⁶	173 lb/ft. ²
<i>ReliaBoard</i>	16/100	9"	#8 x 2-1/2" Deck Screw	340 lb/ft. ²
<i>Style Selections Solid</i>	16/100	9"	#10 x 2-1/2" <i>TOPLoc™</i> Steel Deck Screw	318 lb/ft. ²
			#9 x 2-1/2" <i>GripRite® PrimeGuard® Plus</i> steel deck screw	385 lb/ft. ²
<i>Style Selections Grooved</i>	16/100	Not Permitted ⁴	<i>Trex Hideaway® Universal</i> Hidden Fastener System ⁶	100 lb/ft. ²

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

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

³ Wind uplift resistance is based on two fasteners at each support (wood joist) except *Grooved* Planks which use one hidden fastener located at each joist. Values have been adjusted for wind load duration and end use. No further adjustments shall be made.

⁴ *Grooved* Deck Planks are not used as stair treads.

⁵ Mono-Extruded and Co-Extruded values are the same.

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

**Table 4**

Decking Plank	Description	Surface Descriptions	Color(s)
<i>TwinFinish</i> [®]	1.0" x 5.4" Solid cross-section with 0.09" x 45° beveled corners.	Textured with Embossed Wood Pattern	Grey, Cedar, Redwood
<i>TwinFinish 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> [®] hidden fasteners.	Textured with Embossed Wood Pattern	
<i>DockSider</i> [™]	1.25" x 5.5" Solid cross-section with 0.125" x 45° beveled corners.	Textured with Embossed Wood Pattern	Grey and Cedar
<i>Earthwood Evolutions</i> [™] <i>Solid</i>	0.938" 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.	Textured with Embossed Wood Pattern	Pacific Walnut, Pacific Rosewood, Pacific Teak, Brick, Brownstown, and Slate
<i>Earthwood Evolutions</i> [™] <i>Grooved</i>	0.938" 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> [®] hidden fasteners.	Textured with Embossed Wood Pattern	
<i>Earthwood Evolutions</i> [™] <i>Terrain Solid</i>	0.937" x 5.360" cross section with two bottom longitudinal grooves 0.437" deep and separated by 0.980" rib. Single side longitudinal groove is 0.173" deep.	Textured with Embossed Wood Pattern	Brown Oak, Silver Maple, Sandy Birch, Rustic Elm and Stone Ash
<i>Earthwood Evolutions</i> [™] <i>Terrain Grooved</i>	0.937" x 5.360" cross section with two bottom longitudinal grooves 0.437" deep and separated by 1.010" rib. Dual side longitudinal grooves are 0.400" deep. Single side longitudinal notch is 0.173" deep.	Textured with Embossed Wood Pattern	

(continued on next page)

Table 4 (continued)

Decking Plank	Description	Surface Descriptions	Color(s)
<i>XLM[®] Solid</i>	1.0" x 5.4" Solid cross-section with 0.125" radius corners.	Textured with Embossed Wood Pattern	RiverRock, SandRidge, Mountain Cedar, Harbor Stone, Harvest Bronze, RusticBark, Desert Bronze ¹ Walnut Grove
<i>XLM[®] 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[®]</i> hidden fasteners.	Textured with Embossed Wood Pattern	
<i>ReliaBoard</i>	0.938" x 5.4" Solid cross-section with 0.092" x 45° beveled corners and 3 - 0.20" deep longitudinal grooves on the underside.	Textured with Embossed Wood Pattern	Grey and Cedar
<i>Style Selections Solid</i>	0.925" x 5.25" Solid cross-section with 0.092" x 45° beveled corners and 2 - 0.25" deep longitudinal grooves on the underside.	Textured with Embossed Wood Pattern	Beechwood Brown and Fieldstone Grey
<i>Style Selections Grooved</i>	0.925" x 5.25" Solid cross-section with 0.165" x 45° beveled corners and 2 - 0.25" deep longitudinal grooves on the underside. Longitudinal side grooves are 0.238" x 0.35" deep for <i>Trex Hideaway[®] Universal</i> Hidden Fasteners.	Textured with Embossed Wood Pattern	
<i>LegacySolid</i>	Nominal 1" x 5-3/8" solid cross section with chamfered edges	Textured with Embossed Wood Pattern	Mocha, Pecan, Tigerwood Ashwood
<i>Legacy Grooved</i>	Nominal 1" x 5-3/8" solid cross section with chamfered edges and approximate 3/8" x 3/16" high groove located in the center of the edges running the entire length of the deck board.	Textured with Embossed Wood Pattern	

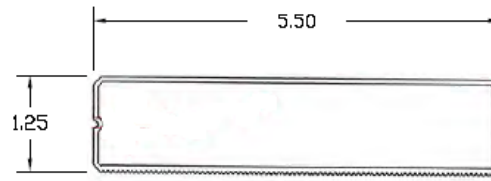
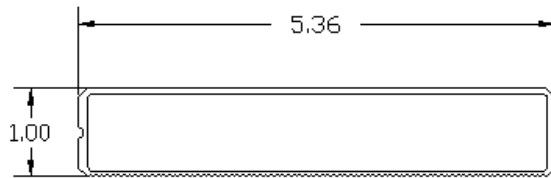
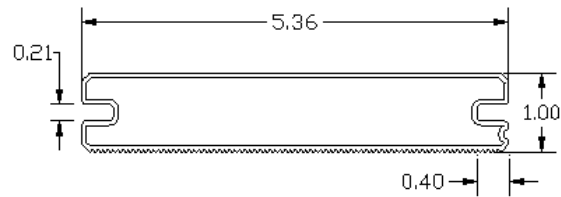
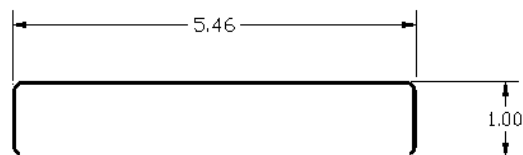
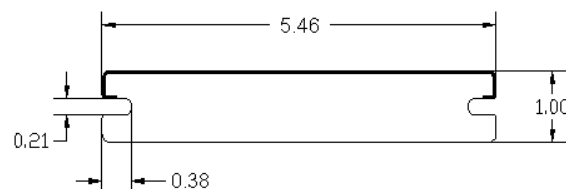
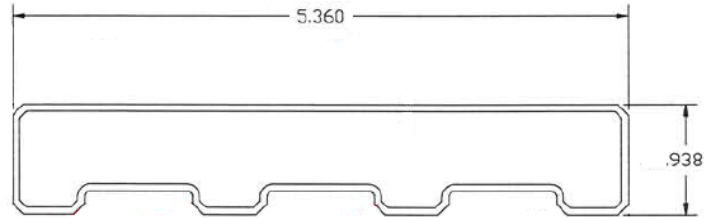
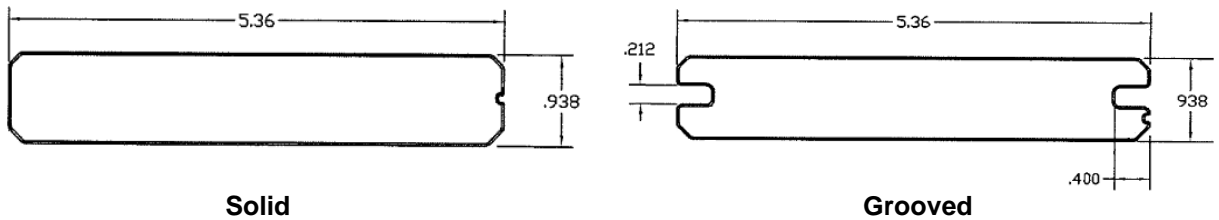
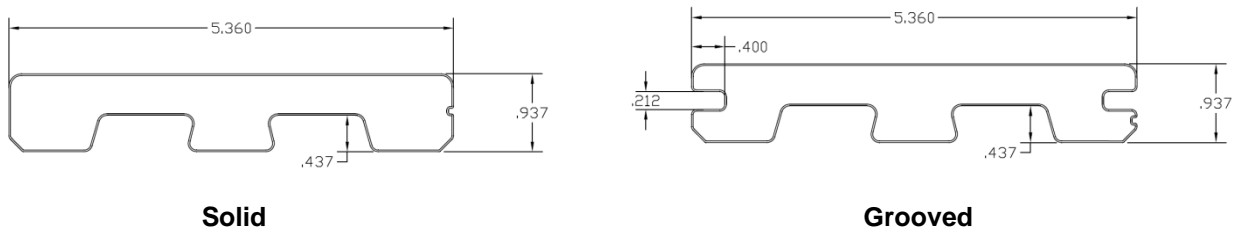
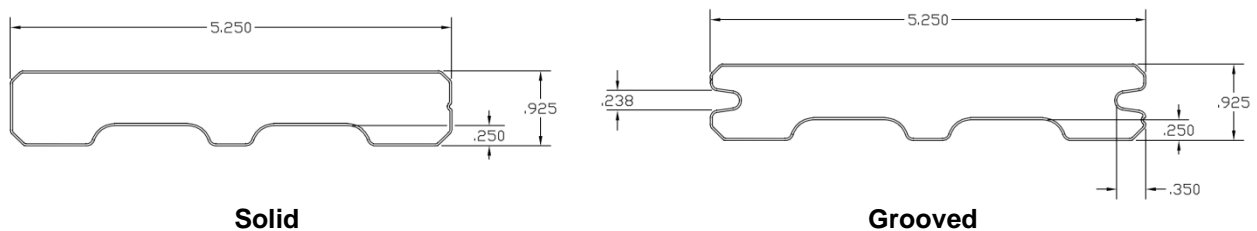
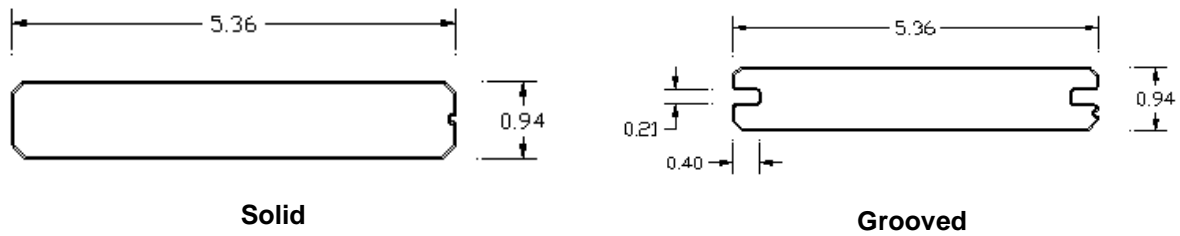

Co-Extruded
Figure 1 – DockSider™ Plank

Solid

Grooved
Figure 2 – Co-Extruded Solid and Grooved TwinFinish® Plank

Semi-Cap
Figure 3 – XLM® Solid Deck Board Profile

Semi-Cap

Figure 4 – XLM[®] Grooved Deck Board Profile

Figure 5 – ReliaBoard Deck Board Profile

Figure 6 – Earthwood[®] Evolutions[™] Solid & Grooved Deck Board Profiles

Figure 7 - Earthwood[®] Evolutions Terrain Solid & Grooved Deck Board Profiles

Figure 8 – Style Selections Decking

**Figure 9 – Legacy Decking****Figure 10 – CONCEALoc® Hidden Fastener Clip****Figure 11 – Trex Hideaway® Universal Hidden Fastener System**