



PFS TECO Research Report 0110M

Date of Acceptance: June 19, 2018
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Expiration Date: June 19, 2020

Revision Date: _____
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TYPE OF ACCEPTANCE: Product Material - Wood and Plastics
CSI Specification Division 060000 (Structural Plastic) and Section 065300
(Plastic Decking)

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RESEARCH REPORT SUBJECT: AERT, Inc., Deck Boards and Stair Treads for Exterior Applications
Installation on construction complying with the International Residential Code
(IRC) and complying with International Building Code (IBC).

DESCRIPTION OF BUILDING COMPONENTS:

A. Deck Boards

AERT, Inc. deck boards are wood thermoplastic composite lumber (WTCL) product consisting of plastic, wood filler plus additives and color. The product specifications are listed in the approved quality control manual. The AERT, Inc. deck board components are manufactured in several colors by the mono-extrusion process (except for the **MoistureShield® Pro**, **MoistureShield® Refine** and **MoistureShield® Infuse** deck boards that are co-extruded). **MoistureShield® Pro**, **Lifecycle® Basics**, **MoistureShield® Infuse**, **MoistureShield® Refine** and **ChoiceDek™** deck boards can have capping covering three sides of the deck board.

1. Deck Boards: Solid

- (a) The **MoistureShield®** deck board is rectangular (25 x 127 mm) in shape, has rounded edges and is completely solid. See attached drawing in Table 1. This deck board is also named **ModernView™**, **MoistureShield® Vision** and **Essential Collection®**.
- (b) The **MoistureShield®** deck board is rectangular (25 x 137 mm) in shape, has rounded edges and is completely solid. See attached drawing in Table 1. This deck board is also named **Vantage Collection®**, **Vantage Collection® FR**, **Lifecycle® Vantage**, **LifeCycle® MoistureShield®** and **MoistureShield® Vision**.
- (c) The **MoistureShield®** deck board is rectangular (28 x 137 mm) in shape, has rounded edges, is completely solid. See attached drawing in Table 1. This deck board is also named **MoistureShield® FR**, **Elite Collection®**, and **ChoiceDek™ FR**.
- (d) The **MoistureShield®** deck board is rectangular (38 x 89 mm) in shape, has rounded edges and is completely solid. This deck board is also used as a guardrail profile. See attached drawing in Table 1. This deck board is also named **ChoiceDek™**, **ChoiceDek™ Foundations**, **ChoiceDek™ Premium**, **MoistureShield® Vision**, **MoistureShield® Vantage Collection®**, **MoistureShield® Elite** and **Lifecycle® Basics**.
- (e) The **MoistureShield®** deck board is rectangular (36 x 137 mm) in shape, has rounded edges and is completely solid. See attached drawing in Table 1. This deck board is also named **Lifecycle® Basics**, **ChoiceDek™**, **MoistureShield® Vision**, **MoistureShield® Vantage Collection®**, **ChoiceDek™ Premium**, **ChoiceDek™ FR**, **MoistureShield® Elite** and **MoistureShield® FR**.
- (f) The **MoistureShield®** deck board is rectangular (36 x 184 mm) in shape, has rounded edges and is completely solid. See attached drawing in Table 1. This deck board is also named **ChoiceDek™**, **ChoiceDek™ Premium**, **MoistureShield® Vision**, **MoistureShield® Vantage Collection®**, **MoistureShield® Elite** and **Lifecycle® Basics**.

- (g) The **MoistureShield®** deck board is rectangular (25 x 137 mm) in shape, has rounded edges, is completely solid and has a proprietary polymer capstock that covers three (3) sides of the deck board. See attached drawing in Table 1. This deck board is also named **ChoiceDek™**, **MoistureShield® Refine**, **MoistureShield® Infuse** and **MoistureShield® Pro**.
- (h) The **MoistureShield®** deck board is rectangular (21 x 137 mm) in shape, has rounded edges and is completely solid. See attached drawing in Table 1. This deck board is also named **ModernView™**, **MoistureShield® Vision**, **LifeCycle® by MoistureShield®** and **LifeCycle® Elite by MoistureShield®**.

2. Deck Boards: Solid with Lobes (Oval and Square)

- (a) The **MoistureShield®** deck board with three (3) oval lobes on the bottom is rectangular (25 x 127 mm) in shape, has rounded edges and is completely solid. See attached drawing in Table 1. This deck board is also named **MoistureShield® Vision**, **LifeCycle® Premium**, **MoistureShield® Basics** and **LifeCycle® Basics**.
- (b) The **ChoiceDek™** deck board with three (3) oval lobes is rectangular (25 x 137 mm) in shape, has rounded edges and is completely solid. See attached drawing in Table 1. This deck board is also named **ChoiceDek™ Foundations**, and **ChoiceDek™ Premium**.
- (c) The **ChoiceDek™** deck board with three (3) oval lobes is rectangular (30 x 137 mm) in shape, has rounded edges and is completely solid. See attached drawing in Table 1.
- (d) The **MoistureShield®** deck board with three (3) square lobes is rectangular (30 x 137 mm) in shape, has rounded edges and is completely solid. See attached drawing in Table 1. This deck board is also named **LifeCycle® Basics**.
- (e) The **MoistureShield®** deck board with three (3) square lobes is rectangular (38 x 140 mm) in shape, has rounded edges and is completely solid. See attached drawing in Table 1. This deck board is also named **LifeCycle® Basics**.
- (f) The **MoistureShield®** deck board with seven (7) oval lobes is rectangular (21 x 137 mm) in shape, has rounded edges and is completely solid. See attached drawing in Table 1. This deck board is also named **ModernView™**, **MoistureShield® Vision**, **LifeCycle® by MoistureShield®** and **LifeCycle® Euro by MoistureShield®**.

3. Deck Boards: Solid with Side Grooves

- (a) The **MoistureShield®** deck board is rectangular (25 x 127 mm) in shape, has rounded edges, is completely solid and has a groove on each side of the board. See attached drawing in Table 1. This deck board is also named **MoistureShield® Vision**, **ModernView™** and **Essential Collection®**.
- (b) The **MoistureShield®** deck board is rectangular (25 x 137 mm) in shape, has rounded edges, is completely solid and has a groove on each side of the board. See attached drawing in Table 1. This deck board is also named **MoistureShield® Vision**, **Vantage Collection®** and **MoistureShield® Infuse**.
- (c) The **MoistureShield®** deck board is rectangular (25 x 137) in shape, has rounded edges, is completely solid, has a groove on each side of the board and has a proprietary polymer capstock on the top of the board. See attached drawing in Table 1. This deck board is also named **MoistureShield Pro®**, **MoistureShield® Refine** and **ChoiceDek™**.
- (d) The **MoistureShield®** deck board is rectangular (21 x 137 mm) in shape, has rounded edges, is completely solid and has a groove on each side of the board. See attached drawing in Table 1. This deck board is also named **ModernView™**, **MoistureShield® Vision**, **LifeCycle® by MoistureShield®** and **LifeCycle® Elite by MoistureShield®**.

4. Deck Boards: Solid with Side Grooves and Lobes (Oval and Square)

- (a) The **MoistureShield®** deck board is rectangular (25 x 127 mm) in shape, has rounded edges, is completely solid, has three lobes on the bottom and has a groove on each side of the board. See attached

drawing in Table 1. This deck board is also named **ModernView™**, **MoistureShield® Vision** and **Essential Collection®**.

- (b) The **MoistureShield®** deck board is rectangular (25 x 137 mm) in shape, has rounded edges, is completely solid, has three lobes on the bottom and has a groove on each side of the board. See attached drawing in Table 1. This deck board is also named **MoistureShield® Vision**, **ChoiceDek™**, **ChoiceDek™ Foundations**, **CD Premium**, and **LifeCycle® Basics**.
- (c) The **MoistureShield®** deck board is rectangular (21 x 137 mm) in shape, has rounded edges, is completely solid, has seven lobes on the bottom and has a groove on each side of the board. See attached drawing in Table 1. This deck board is also named **ModernView™**, **MoistureShield® Vision**, **LifeCycle® by MoistureShield®** and **LifeCycle® Euro by MoistureShield®**.
5. AERT, Inc. deck boards must be installed perpendicular to supporting construction at maximum span. Deck boards can be used as stair treads and must be installed perpendicular to the supporting construction. The decking and stair tread must be installed with a minimum gap of 4.8 mm between parallel boards for drainage and decking must be installed with a minimum 3.2 mm space provided at each end of the board. See manufacturer's installation instructions noted item 6 below.
6. For additional decking installation details see manufacturer's published installation instructions as follows: MoistureShield decking dated June 2015, MoistureShield decking clips dated April 2015, ChoiceDek decking dated May 2013 and LifeCycle decking dated June 2011.

APPLICABLE CODES:

- 2015 *International Building Code®* (IBC)
- 2012 *International Building Code®* (IBC)
- 2009 *International Building Code®* (IBC)
- 2006 *International Building Code®* (IBC)
- 2015 *International Residential Code®* (IRC)
- 2012 *International Residential Code®* (IRC)
- 2009 *International Residential Code®* (IRC)
- 2006 *International Residential Code®* (IRC)

APPLICABLE CHARACTERISTICS REVIEWED:

B. Deck Board(s) – “See Section A – 1 thru 4 above for list of all the names and descriptions of the deck boards reviewed.

1. Deck Board: Structural Performance

- (a) The deck boards have been reviewed for uniform load, maximum span and deck board direction when installed on support framing members. See attached Table 1.
- (b) The deck boards have been reviewed for wind uplift resistance and have an uplift load rating when installed as indicated in Table 1 in this report.
- (c) The deck boards used as stair treads meet the code prescribed load requirements including the concentrated load of 1334.5 N when installed in accordance with the manufacturers' installation instructions and Table 1 in this report. Deck boards and stair treads must be installed perpendicular to supporting members.

2. Deck Board: Fastening

- (a) Solid Deck Boards, including those with lobes, side grooves and side grooves and lobes must be fastened to the structural supporting members in accordance with the manufacturer's installation instructions and Table 1 in this report. When manufacturer's installation instructions differ from this report, this report governs.

- (b) The deck board attachment to structural supporting members is outlined in the manufacturers' installation instructions and Table 1 of this report. When the manufacturer's installation instructions differ from this report, this report governs.
- (c) When deck boards are used as stair treads, they must be installed in accordance with the manufacturer's installation instructions and Table 1 in this report. When the manufacturer's installation instructions differ from this report, this report governs. Review of the structural design for code compliance of supporting members, have not been evaluated and is not a part of this research report.

3. Deck Board Durability: Temperature

- (a) The deck boards have been reviewed for the temperature range of -29 degrees C (-20 degrees F) to 52 degrees C (+125 degrees F).

4. Deck Board Flame Spread Index:

- (a) The flame spread rating for the deck boards, described in this report was less than 200 when tested with ASTM E84 "Standard Test Method for Surface Burning Characteristics of Building Materials."

5. Deck Board Decay Resistance:

- (a) The deck boards reviewed for this report have been deemed comparable to naturally durable wood for resistance to fungal decay.

6. Deck Board Termite Resistance:

- (a) The deck boards reviewed for this report have been deemed comparable to preservative treated wood for resistance to termite attack.

7. UV Testing:

- (a) The UV testing was conducted, and an appropriate adjustment factor was applied in accordance with ASTM D 7032-17 "Standard for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)".

APPLICABLE USES:

The AERT, Inc., deck boards evaluated in this report are limited to exterior applications for balconies, porches, stair treads, walking surfaces and decks.

LIMITATIONS OF ACCEPTANCE:

The AERT, Inc. deck boards described in this report comply with those codes listed in Applicable Codes section above and are subject to the following conditions:

1. The deck board products must be limited to Type V-B (IBC) and residential construction in accordance with the IRC construction for exterior use as a deck board for balconies, porches, decks and stair treads.
2. Installation of the deck boards must comply with this report, the manufacturer's published installation instructions (see section A-6 above), and the applicable code. When deck board manufacturer's installation instructions differ from this report, this report governs.
3. The fasteners described in this report have been evaluated for the installation of the AERT, Inc. deck boards only. Compatibility of the fasteners to the treated supporting construction has not been evaluated.
4. The AERT, Inc. deck boards indicated in the report must be fastened to the supporting construction as indicated in the manufacturer's installation manual and outlined in this report. When deck board manufacturer's fastening instructions differ from this report, this report governs.
5. When required, the structural deck board layout must be designed by a professional and submitted to the authority having jurisdiction for final acceptance.
6. The AERT, Inc. deck boards have not been evaluated as a member of a fire-resistance-rated assembly.
7. AERT, Inc., has a Third-Party inspection program provided by PFS Corporation.

DOCUMENTATION SUBMITTED:

Submitted data was provided in accordance with PFS TECO 1601 (Quality control manual, Specifications, Manufacturer's installation instructions, Test data and Descriptive information) and the product has been evaluated in accordance with "Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (AC174)".

PRODUCT IDENTIFICATION:

The AERT, Inc., deck boards evaluated in this Research Report must be identified with a label, stamp, or laser imprint on every deck board. The information that is required is as follows: AERT, Inc. product identification, compliance to ASTM D7032 including the maximum deck board span (inches on center spacing of supports) and loading (psf), the Research Report number (RR 0110M), and PFS Certification Mark. Deck boards without this information are not covered under this report.

Table 1: Span Table and Fastening Schedule for Deck Boards

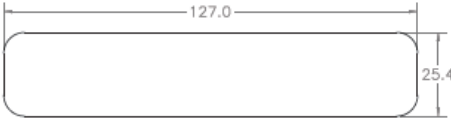
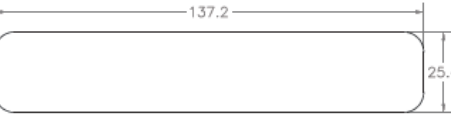
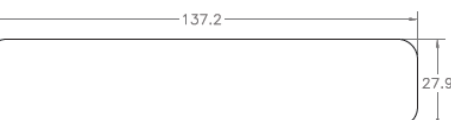
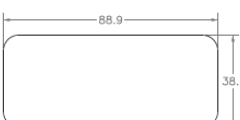
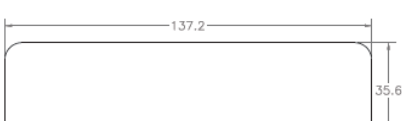
Product Trade Name	Deck Board Profile	Nominal Size	Shape	Maximum Span ¹ Rating (mm) for Allowable Load (KPa)			Fastening Schedule ² and Uplift Values	Maximum Stair Tread Span (mm)
				4.79	7.18	9.58		
A.1. Deck Boards: Solid								
MoistureShield [®] , ModernView [™] , MoistureShield [®] Vision, Essential Collection [®]		25x127	Solid	400	300	250	507 N per #7x57mm SS Deck Screw	230
MoistureShield [®] , Vantage Collection [®] , Vantage Collection [®] FR, Lifecycle [®] Vantage, LifeCycle [®] MoistureShield [®] MoistureShield [®] Vision		25x137	Solid	400	300	250	507 N per #7x57mm SS Deck Screw	230
MoistureShield [®] , MoistureShield [®] FR, Elite Collection [®] , ChoiceDek [™] FR		28x137	Solid	450	400	300	507 N per #7x57mm SS Deck Screw	300
MoistureShield [®] , ChoiceDek [™] , ChoiceDek [™] Foundations, ChoiceDek [™] Premium, MoistureShield [®] Vision, MoistureShield [®] Vantage Collection [®] , MoistureShield [®] Elite, Lifecycle [®] Basics		38x89	Solid	500	450	400	507 N per #7x57mm SS Deck Screw	350
MoistureShield [®] , Lifecycle [®] Basics, ChoiceDek [™] , MoistureShield [®] Vision, MoistureShield [®] Vantage Collection [®] , ChoiceDek [™] Premium, ChoiceDek [™] FR, MoistureShield [®] Elite, MoistureShield [®] FR		36x137	Solid	600	450	400	507 N per #7x57mm SS Deck Screw	400

Table 1 Continued

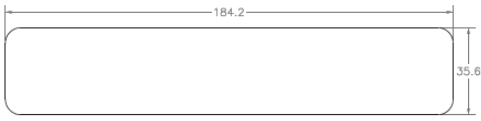
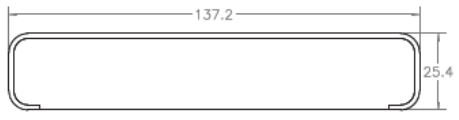
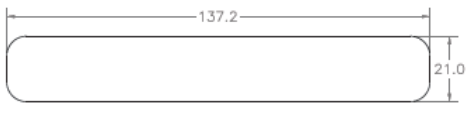
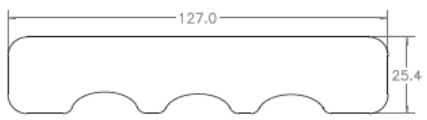
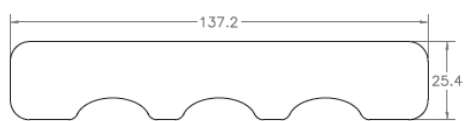

MoistureShield®, ChoiceDek™, ChoiceDek™ Premium, MoistureShield® Vision, MoistureShield® Vantage Collection®, MoistureShield® Elite, Lifecycle® Basics		36x184	Solid	600	450	400	507 N per #7x57mm SS Deck Screw	450
MoistureShield®, ChoiceDek™, MoistureShield® Refine, MoistureShield® Infuse, MoistureShield® Pro		25x137	Solid	400	300	250	507 N per #7x57mm SS Deck Screw	230
MoistureShield®, ModernView™, MoistureShield® Vision, LifeCycle® by MoistureShield®, LifeCycle® Elite by MoistureShield®		21x137	Solid	400	300	250	507 N per #7x57mm SS Deck Screw	200
A.2. Deck Boards: Solid with Lobes (Oval and Square)								
MoistureShield®, MoistureShield® Vision, LifeCycle® Premium, MoistureShield® Basics, LifeCycle® Basics		25x127	Oval Fluted	400	300	250	507 N per #7x57mm SS Deck Screw	230
ChoiceDek™, ChoiceDek™ Foundations, ChoiceDek™ Premium		25x137	Oval Fluted	400	300	250	507 N per #7x57mm SS Deck Screw	230
ChoiceDek®		30x137	Oval Fluted	450	400	300	507 N per #7x57mm SS Deck Screw	300

Table 1 Continued

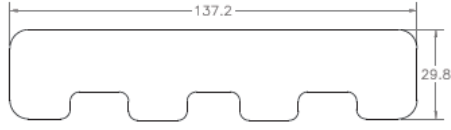

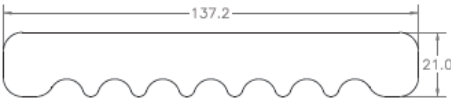
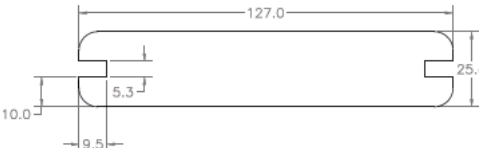
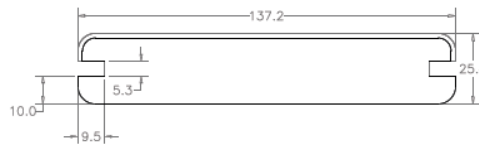
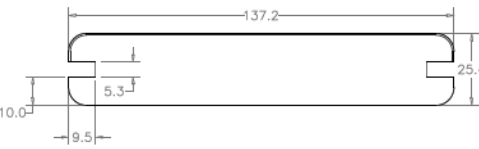
MoistureShield® Lifecycle® Basics		30x137	Square Fluted	450	400	300	507 N per #7x57mm SS Deck Screw	300
MoistureShield® Lifecycle® Basics		38x140	Square Fluted	500	450	400	507 N per #7x57mm SS Deck Screw	400
MoistureShield® ModernView™ MoistureShield® Vision, LifeCycle® by MoistureShield® Euro by MoistureShield®		21x137	Oval Fluted	350	300	250	507 N per #7x57mm SS Deck Screw	200
A.3. Deck Boards: Solid with Side Grooves								
MoistureShield® ModernView™ MoistureShield® Vision, Essential Collection®		25x127	Grooved	400	300	250	4.79 KPa with hidden fastening system	230
MoistureShield® MoistureShield® Vision, Vantage Collection®, MoistureShield® Infuse		25x137	Grooved	400	300	250	4.79 KPa with hidden fastening system	230
MoistureShield® MoistureShield Pro®, MoistureShield® Refine, ChoiceDek™		25x137	Grooved	400	300	250	4.79 KPa with hidden fastening system	230

Table 1 Continued

MoistureShield®, ModernView™, MoistureShield® Vision, LifeCycle® by MoistureShield®, LifeCycle® Elite by MoistureShield®		21x137	Grooved	400	300	250	4.79 KPa with hidden fastening system	200	
A.4. Deck Boards: Solid with Side Grooves and Lobes (Oval and Square)									
MoistureShield®, ModernView™, MoistureShield® Vision, Essential Collection®		25x127	Oval Fluted- Grooved	400	300	250	4.79 KPa with hidden fastening system	230	
MoistureShield®, MoistureShield® Vision, ChoiceDek™, ChoiceDek™ Foundations, CD Premium, Lifecycle® Basics		25x137	Oval Fluted – Grooved	400	300	250	4.79 KPa with hidden fastening system	230	
MoistureShield®, ModernView™, MoistureShield® Vision, LifeCycle® by MoistureShield®, LifeCycle® Euro by MoistureShield®		21x137	Oval Fluted – Grooved	350	300	250	4.79 KPa with hidden fastening system	200	

¹ Deck boards must be installed perpendicular to supporting construction at the maximum span.

² Deck boards installed with screws must be attached to each joist with 2 #7 x 57 mm stainless steel deck screws. All fasteners installed with an end/edge distance closer than 38 mm must be predrilled. Deck boards with side grooves installed with hidden Mantis 320 must be attached to each joist with a fastener according to the Mantis 320 manufacturer's installation instructions.

The joists to which the deck boards are attached must have a minimum specific gravity of 0.50 or better (Southern Pine) or the fastening must be designed. Deck boards and stair treads must be installed perpendicular to supporting members with a minimum of 2-spans.

No duration of load increase is allowed for the uplift values noted in Table 1 in this report.