



# National Evaluation Service, Inc.

5203 Leesburg Pike, Suite 600, Falls Church, Virginia 22041-3401

Phone: 703/931-2187 Fax: 703/931-6505

website: www.nateval.org



## NATIONAL EVALUATION REPORT

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Report No. **NER-603**

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### WEATHERBEST™ COMPOSITE DECKING AND RAILING

#### LOUISIANA PACIFIC CORPORATION

10115 KINCEY AVE., SUITE 150

HUNTERSVILLE, NC 28078

PHONE NO. (704) 632-1452

FAX NO. (704) 875-9938

E-MAIL ADDRESS: customer.support@lpcorp.com

WEB SITE: www.WeatherBest.lpcorp.com

#### 1.0 SUBJECT

- 1.1 WeatherBest™<sup>SP</sup> Composite Decking
- 1.2 WeatherBest™<sup>EHP</sup> Composite Decking
- 1.3 WeatherBest™ Composite Railing

#### 2.0 PROPERTY FOR WHICH EVALUATION IS SOUGHT

- 2.1 Structural
- 2.2 Durability

#### 3.0 DESCRIPTION

WeatherBest™ is an alternate to preservative-treated or naturally durable lumber when used as a flooring, non-structural trim and guard component for exterior balconies, porches and decks. WeatherBest™ is a manufactured composite material that consists of more than 50 percent wood fiber by weight with the remainder of the materials being predominantly thermoplastic polymers. This composite is manufactured by an extrusion process in accordance with the approved quality assurance manual to produce lumber sized members up to a nominal thickness of 2 inches (51 mm) and a maximum nominal width of 6 inches (152 mm).

WeatherBest™ shall not be used in interior framing applications such as components of trusses or as joists, rafters, studs, beams, columns, or posts.

##### 3.1 WeatherBest<sup>SP</sup> Composite Decking

WeatherBest<sup>SP</sup> Composite Decking is a nominal 5/4 inch thick by 6 inch wide solid plank used for deck surfaces over wood or other structural members spaced a maximum of 16 inches on center.

##### 3.2 WeatherBest<sup>EHP</sup> Composite Decking

WeatherBest<sup>EHP</sup> Composite Decking is 2 inch thick by 6 inch nominal wide hollow planks used for deck surfaces over wood or other structural members spaced a maximum of 24 inches on center. In order to conceal the hollow ends of the planks, a non-

structural trim component is provided in the shape of an angle to run the length of the deck.

##### 3.3 WeatherBest™ Composite Railing

WeatherBest™ Composite Railing is a rail system consisting of all hollow members. The components are nominal 2 inch by 6 inch top and bottom rails, 2 inch by 4 inch side rails, and 2 inch by 2 inch balusters. The rail system is installed between and connected to vertical post components, typically wood posts. The vertical components are not part of the guard system and are beyond the scope of this report.

3.4 WeatherBest™ products are equivalent to preservative treated lumber when subjected to insect and fungi attack. It is permitted to be used as an alternative to preservative treated or naturally durable lumber.

#### 4.0 INSTALLATION

Installation of WeatherBest™ shall comply with the provisions of this report and the manufacturer's published installation instructions, entitled WeatherBest™ Composite Railing and WeatherBest™ Composite Decking & Railing. The manufacturer's published installation instructions shall be available at all times on the job site during installation.

##### 4.1 WeatherBest<sup>SP</sup> Composite Decking

WeatherBest<sup>SP</sup> Composite Decking is installed on supporting members spaced up to 16 inches on center. Fasteners to be located within 1-1/4 inch of the end of each board shall be pre-drilled. A minimum 1/8 inch space shall be provided between the deck board edges.

Table 1 lists allowable spans and loading for WeatherBest™ used as planking (flatwise bending). The allowable values are based on use at a maximum air temperature of 130°F (54.4°C).

##### 4.2 WeatherBest<sup>EHP</sup> Composite Decking

WeatherBest<sup>EHP</sup> Composite Decking is to be installed on supporting construction spaced up to 24 inches on center. Fasteners to be located within 1-1/4 inch of the end of each board shall be pre-drilled. The deck boards are fastened to the supporting construction through the fastener grooves on the surface of the board. Fasteners shall be countersunk into the groove taking care not to overdrive the fastener. A minimum 1/8 inch space shall be provided between the deck board edges.

Table 1 lists allowable spans and loading for WeatherBest™ used as planking (flatwise bending). The allowable values are based on use at a maximum air temperature of 130°F (54.4°C).

*This report is limited to the specific product and data and test reports submitted by the applicant in its application requesting this report. No independent tests were performed by the National Evaluation Service, Inc. (NES), and NES specifically does not make any warranty, either expressed or implied, as to any finding or other matter in this report or as to any product covered by this report. This disclaimer includes, but is not limited to, merchantability. This report is also subject to the limitation listed herein.*

#### 4.3 WeatherBest™ Composite Railing

WeatherBest™ Composite Railing is designed to be installed in two different configurations. The first consists of a top rail and vertical balusters. The balusters are connected to the top rail and extend down, and fasten to, the supporting construction. The second consists of a top rail, a bottom rail and vertical balusters. The balusters are connected to the top and bottom rail. Two balusters (one at each third point) extend down and connect to the supporting construction.

Each of the two configurations above are installed between vertical post components located a maximum distance of 72 inches apart. The rails are fastened to the post with two #8 by 2-1/2 inch long screws at each connection. The balusters are placed at a maximum distance of 5 inches on center with two #8 by 2-1/2 inch long screws in each end. The screws shall be located no closer than 3/4 inch from any edge of a member. The top plate is attached to the top rail with #8 by 2-1/2 inch long screws every 16 inches along its length and at the posts.

Table 2 contains material and installation requirements for guard assemblies. When installed in accordance with this report, the system complies with the structural load requirements specified in the applicable building codes for guards.

#### 5.0 IDENTIFICATION

Each of the WeatherBest™ products described in this report shall be identified by a stamp bearing the manufacturer's name and/or trademark, the product type, the name or logo of the third-party inspection agency, PFS, and the National Evaluation Service evaluation report number.

#### 6.0 EVIDENCE SUBMITTED

- 6.1 Test report on mechanical properties, prepared by PFS Corporation, Report No. 99-1910, dated October 20, 1999, signed Graham E. McFarland.
- 6.2 Test report on flexure using ASTM D6109 prepared by PFS Corporation, Report No. 00-0009, dated July 3, 2000, signed Graham E. McFarland.
- 6.3 Test report on flexure using ASTM D1037 prepared by PFS Corporation, Report No. 2-006, dated March 21, 2000, signed Graham E. McFarland.
- 6.4 Forest Products Laboratory of Oregon State University reports dated April 2, 2000 and June 2000 on wood destroying fungi tests conducted in accordance with AWP A E10-91.
- 6.5 Installation manuals: *WeatherBest™ Composite Railing* and *WeatherBest™ Composite Decking & Railing*.
- 6.6 Quality Assurance Manual, prepared in conjunction with PFS Corporation and signed by representatives of PFS Corporation and Louisiana Pacific Corporation, dated May 2001.
- 6.7 Test report on "Wood-Plastic Composite Performance Tests Full-Size Handrail System Testing" prepared by PFS Corporation, Report No. 00-004, dated January 23, 2001, signed by Graham E. McFarland and J. Robert Nelson, P.E.
- 6.8 Test Report on "Field Termite Test" prepared by Michigan Technological University, dated January 15, 2001, signed by Glenn M. Larkin.

#### 7.0 CONDITIONS OF USE

The National Evaluation Service Committee finds that Louisiana Pacific's WeatherBest™ Composite Decking & Railing, described in this report, comply with or are acceptable alternatives to those specified in the BOCA National Building/1999, the 1999 Standard Building Code, the 1997 Uniform Building Code, the 2000 International Building Code and the 2000 International Residential Code subject to the following conditions:

- 7.1 WeatherBest™ shall not be used as a component in a truss, structural diaphragm, or in interior framing applications for joist, rafters, studs, beams, columns, or posts.
- 7.2 The design and installation of WeatherBest™ shall be in accordance with this report and the manufacturer's published installation instructions. The instructions within this report govern if there are any conflicts between the manufacturer's published installation instructions and this report.
- 7.3 When WeatherBest™ is used in guard assemblies, information shall be submitted to the code official to verify compliance with Table 2 of this report.
- 7.4 The maximum spans for decking shall comply with Table 1 of this report. Guardrail assemblies shall comply with Table 2 of this report. The design loads listed in Table 1 are for loads of a normal duration and are applicable to either dry or wet conditions of use. The design loads are applicable in uses up to a maximum deck temperature of 130°F (54.4°C). Loads shall not be increased.
- 7.5 Each piece of WeatherBest™ shall bear a brand, stamp, or label having the information identified in Section 5.0 of this report.
- 7.6 WeatherBest™ shall be limited to use with building types in which combustible materials are permitted for exterior balconies, porches and decks. WeatherBest™ shall not be used as a component in heavy timber construction.
- 7.7 WeatherBest™ shall be gapped to allow for drainage in accordance with the manufacturer's published installation instructions. WeatherBest™ shall not be attached to any solid surface or watertight flooring or roofing system such as waterproof membranes, roof decks, concrete, sheathing, or patios.
- 7.8 WeatherBest™ shall be fastened to supporting construction having adequate strength and stiffness.
- 7.9 The use of deck clips have not been evaluated and are not covered by this report.
- 7.10 Design calculations and details for specific applications shall be furnished to the code official verifying compliance with this report, the applicable code, and which address the ability of the supporting construction, and all connections between the WeatherBest™ Composite Decking and Railing to the supporting construction, to resist all imposed loads, required by the applicable code. The individual preparing such documents shall possess the necessary credentials regarding competency and qualifications as required by the applicable code and the professional registration laws of the state where the construction is undertaken.
- 7.11 This report is subject to re-examination on a periodic basis. For information on the current status of this report, consult the NES Product Evaluation Listing or contact the NES.

**TABLE 1**  
**ALLOWABLE DESIGN LOAD AND DECKING SPANS (IN.) FOR WEATHERBEST™ COMPOSITE LUMBER DECKING<sup>1</sup>**

Product Designation	Nominal Size	Maximum Span, in.	Maximum Uniform Design Load, psf
WeatherBest <sup>SP</sup>	5/4x6	16	100
WeatherBest <sup>EHP</sup>	2x6	24	100

<sup>1</sup> WeatherBest™ used as decking (flatwise bending)

**TABLE 2**  
**WEATHERBEST™ GUARD ASSEMBLY REQUIREMENTS<sup>1,2</sup>**

Component	Installation Requirement
Balusters	WeatherBest™ balusters (nominal 2x2s) shall be spaced no more than five (5) inches on center.
Railings:    Top Plate Top Rail Bottom Rail	WeatherBest™ 2x6, 5/4x6 WeatherBest™ 2x4, 2x6 WeatherBest™ 2x4, 2x6
Posts	Maximum post spacing shall be six (6) feet or less on center. Post components are not part of the guard system and are outside the scope of this report.

<sup>1</sup> Guardrail components shall be connected as follows:

- All fastener holes shall be predrilled with a diameter no larger than the fastener diameter.
- Baluster to Top Rail – a minimum of two #8 screws 2 ½ inch long, spaced 2 inches apart vertically through each baluster.
- Top Rail to Top Plate – a minimum #8 screw 2 ½ inches long, spaced every 16 inches on center through the top plate.
- Top Rail to Post – a minimum of two #8 screws 2 ½ inches long, spaced 2 inches apart into each post.
- Top Plate to Post - a minimum of two #8 screws 2 ½ inches long, spaced 2 inches apart into each post.

<sup>2</sup> The maximum height of the guardrail assembly shall be forty two (42) inches above the deck board surface. The minimum height of the guardrail assembly shall be determined by the applicable code.