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EVALUATION REPORT

Tuff Industries, Inc.
9570 Bottom Wood Lake Road
Lake Country, BC V4V 1S7
Canada

Evaluation Report T32790.08.10
FL13993
Date of Issuance: 08/12/2010

SCOPE:

This Evaluation Report is issued under Rule 9B-72 and the applicable rules and regulations governing the use of construction materials in the State of Florida. The documentation submitted has been reviewed by Robert Nieminen, P.E. for use of the product under the Florida Building Code. The product described herein has been designed to comply with the 2007 Florida Building Code.

DESCRIPTION: Tufdek Waterproofing Systems

LABELING: Each unit shall bear labeling in accordance with the requirements the Accredited Quality Assurance Agency noted herein.

CONTINUED COMPLIANCE: This Evaluation Report is valid until such time as the named product(s) changes, the referenced Quality Assurance documentation changes, or provisions of the Code that relate to the product change. Acceptance of this Evaluation Report by the named client constitutes agreement to notify Robert Nieminen, P.E. if the product changes or the referenced Quality Assurance documentation changes. Trinity|ERD requires a complete review of this Evaluation Report relative to updated Code requirements with each Code Cycle.

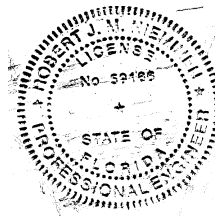
ADVERTISEMENT: The Evaluation Report number preceded by the words "Trinity | ERD Evaluated" may be displayed in advertising literature. If any portion of the Evaluation Report is displayed, then it shall be done in its entirety.

INSPECTION: Upon request, a copy of this entire Evaluation Report 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 Evaluation Report consists of pages 1 through 3, plus a 2-page Appendix.

Prepared by:

Robert J.M. Nieminen, P.E.
 Florida Registration No. 59166, Florida DCA ANE1983



The facsimile seal appearing was authorized by Robert Nieminen, P.E. on 08/12/2010. This does not serve as an electronically signed document. Signed, sealed hardcopies have been transmitted to the Product Approval Administrator and to the named client.

CERTIFICATION OF INDEPENDENCE:

1. Exterior Research & Design, LLC. d/b/a Trinity | ERD does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products it evaluates.
2. Exterior Research & Design, LLC. d/b/a Trinity | ERD is not owned, operated or controlled by any company manufacturing or distributing products it evaluates.
3. Robert Nieminen, P.E. does not have nor will acquire, a financial interest in any company manufacturing or distributing products for which the evaluation reports are being issued.
4. Robert Nieminen, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.

ROOFING SYSTEMS EVALUATION:

1. SCOPE:

Product Category: Roofing
Sub-Category: Single Ply Roof Systems
Compliance Statement: Tufdek Waterproofing Systems, as produced by Tuff Industries, Inc., have demonstrated compliance with the following sections of the Florida Building Code through testing in accordance with the following Standards. Compliance is subject to the Installation Requirements and Limitations / Conditions of Use set forth herein.

2. STANDARDS:

<u>Section</u>	<u>Property</u>	<u>Standard</u>	<u>Year</u>
1504.3.1	Wind	FM 4470	1992
1504.7	Impact	FM 4470	1992
1507.13.2 & TAS 110	Physical Properties	ASTM D4434	2004
1523.6.2	System Performance	TAS 114	1995

3. REFERENCES:

<u>Entity</u>	<u>Examination</u>	<u>Reference</u>	<u>Date</u>
ERD (TST6049)	Physical Properties	02750.02.08	02/04/2008
ERD (TST6049)	FM 4470 / TAS 114	T32800.08.10	08/10/2010
ITW/WH (QUA1673)	Quality Control	ITS Directory Listing	Exp. 08/12/2013

4. PRODUCT DESCRIPTION:

The following membrane is fully adhered to Approved substrates using adhesives as outlined Appendix 1 and the Limitations / Conditions of Use herein.

- **Tufdek** membranes are nominal 60-mil (1.5 mm) thick, polyester scrim reinforced, PVC single-ply roof membranes with various surface conditions (“Solid”, “Designer”, “Ultra” and “Supreme”).

5. LIMITATIONS:

5.1 All Jurisdictions:

- 5.1.1 Refer to a current Roofing Materials Directory for fire ratings of this product.
- 5.1.2 Unless otherwise noted in Appendix 1, roof decking and its attachment shall be specified and installed to meet project design criteria to the satisfaction of the AHJ.
- 5.1.3 The maximum design pressure for the selected assembly shall meet or exceed critical design pressure determined in accordance with FBC Chapter 16. No rational analysis is permitted for these systems.
- 5.1.4 For application over existing substrates in a re-roof (tear off) installation, the existing deck shall be examined for compatibility with the adhesive to be installed. If any surface conditions exist that bring system performance into question, field uplift testing in accordance with ASTM E907, FM LPDS 1-52 or TAS 124 shall be conducted.
- 5.1.5 All products in the roof assembly shall have quality assurance audit in accordance with the FBC and F.A.C. Rule 9B-72.

5.2 Non-HVHZ Jurisdictions:

- 5.2.1 For edge securement, refer to FBC 1504.5 or 1507.2.9.3, as deemed applicable by the Authority Having Jurisdiction.

5.3 HVHZ Jurisdictions:

- 5.3.1 Direct-bonding to wood decks is not permitted in HVHZ jurisdictions. Only the concrete deck assembly in Appendix 1 is permissible for use in HVHZ.
- 5.3.2 All attachment and sizing of perimeter nailers, metal profile and/or flashing termination designs shall conform with RAS 111 and the wind load requirements of FBC Chapter 16 for HVHZ.

6. INSTALLATION:

- 6.1 Tufdek Waterproofing Systems shall be installed in accordance with Tuff Industries, Inc. published installation instructions, subject to the Limitations / Conditions of Use noted herein.
- 6.2 System attachment requirements for wind load resistance are set forth in Appendix 1.

7. BUILDING PERMIT REQUIREMENTS:

As required by the Building Official or Authority Having Jurisdiction in order to properly evaluate the installation of this product.

8. MANUFACTURING PLANTS:

Contact the named QA entity for manufacturing facilities covered by F.A.C. Rule 9B-72 QA requirements

9. QUALITY ASSURANCE ENTITY:

Intertek Testing Services NA Inc. – ETL/Warnock Hersey – QUA1673

- THE TWO-PAGES THAT FOLLOW FORM PART OF THIS EVALUATION REPORT -

APPENDIX 1: ATTACHMENT REQUIREMENTS FOR WIND UPLIFT RESISTANCE

Table	Deck	Application	Type	Description	Page
1	Wood	New, Reroof (Tear-Off)	F	Non-Insulated, Bonded Roof Cover	2
2	Concrete	New, Reroof (Tear Off)	F	Non-Insulated, Bonded Roof Cover	2

The following notes apply to the systems outlined herein:

1. Roof decks shall be in accordance with FBC requirements to the satisfaction of the AHJ. Wind load resistance of the roof deck shall be documented through proper codified and/or FBC Approval documentation.
2. The maximum design pressure for the selected assembly shall meet or exceed critical design pressure determined in accordance with FBC Chapter 16, and no rational analysis is permitted.
3. For application over existing substrates in a re-roof (tear off) installation, the existing deck shall be examined for compatibility with the adhesive to be installed. If any surface conditions exist that bring system performance into question, field uplift testing in accordance with ASTM E907, FM LPDS 1-52 or TAS 124 shall be conducted.
4. Membrane adhesive application rates are as follows:
 - Tufdek I (Trowel on adhesive) applied to substrate only using a 1/16" x 1/16" x 1/16" U-notch trowel at 115-140 ft²/gal.
 - Tufdek Roll-On (Latex Adhesive) applied to substrate only using Tufdek 6 mm solvent resistant adhesive roller 160 ft²/gal.
 - Tufdek II (Solvent Adhesive) applied to both the substrate and the bottom side of the roof cover at 50-70 ft²/gal (2.0 to 2.5 dry mils coated both sides).

TABLE 1: WOOD DECKS - NEW CONSTRUCTION or REROOF (Tear-Off) SYSTEM TYPE F: NON-INSULATED, BONDED ROOF COVER NOT FOR USE IN HVHZ					
System No.	Deck (See Note 1)		Roof Cover		MDP (psf)
	Type / Attachment	Joint Treatment	Type	Application	
W-1	Minimum 5/8-inch thick T&G plywood mechanically attached 6-inch o.c. with #8 wood screws and bonded with LePage Bulldog Grip PL 400 Heavy-Duty Sub-Floor Adhesive to wood structural supports spaced max. 16-inch o.c.	Plywood joints are filled / leveled with Tuf-Patch Premium Fast-Drying, Cement-Based Skim-Coating Compound	Tufdek	Tufdek I, Tufdek Roll-On or Tufdek II	-172.5 NO HVHZ

TABLE 2: CONCRETE DECKS - NEW CONSTRUCTION or REROOF (Tear-Off) SYSTEM TYPE F: NON-INSULATED, BONDED ROOF COVER				
System No.	Deck (See Note 1)	Roof Cover		MDP (psf)
		Type	Application	
C-1.	Min. 2,500 psi structural concrete	Tufdek	Tufdek I, Tufdek Roll-On or Tufdek II	-630.0