



EXTERIOR RESEARCH & DESIGN, LLC.

Certificate of Authorization #9503

353 Christian Street

Oxford, CT 06478

PHONE: (203) 262-9245

FAX: (203) 262-9243

EVALUATION REPORT

Flex Membrane International, Inc.

2670 Leiscz's Bridge Rd, Suite 400

Leesport, PA 19533

Evaluation Report F13130.04.09-R4

FL1587-R8

Date of Issuance: 04/27/2009

Revision 4: 04/14/2015

SCOPE:

This Evaluation Report is issued under Rule 61G20-3 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 evaluated for compliance with the 5th Edition (2014) Florida Building Code sections noted herein.

DESCRIPTION: Flex Single Ply Roof Systems

LABELING: Labeling shall be 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.

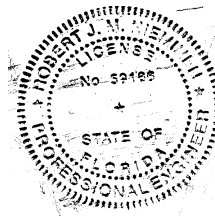
INSPECTION: Upon request, a copy of this entire Evaluation Report shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This Evaluation Report consists of pages 1 through 3, plus a 9-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 04/14/2015. 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.
5. This is a building code evaluation. Neither Trinity|ERD nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this Evaluation Report, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.

ROOFING SYSTEMS EVALUATION:
1. SCOPE:

Product Category: Roofing
Sub-Category: Single Ply Roof Systems

Compliance Statement: Flex Single Ply Roof Systems, as produced by Flex Membrane International, 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 4474	2004
1504.3.1	Wind	UL 1897	2004
1504.7	Impact	FM 4470	1992
1507.13.2	Physical Properties	ASTM D4434	2009

3. REFERENCES:

<u>Entity</u>	<u>Examination</u>	<u>Reference</u>	<u>Date</u>
ERD (TST6049)	Physical Properties	F35940.10.11-2	10/28/2011
ERD (TST6049)	Physical Properties	F42130.06.13	06/05/2013
ERD (TST6049)	Physical Properties	F42130.06.13-1	06/05/2013
ERD (TST6049)	Physical Properties	F42130.09.13	09/13/2013
FM Approvals (TST1867)	FM 4470	2W5A3.AM	12/22/1993
FM Approvals (TST1867)	FM 4470	2X4A1.AM	11/07/1994
FM Approvals (TST1867)	FM 4470	3003819	04/24/2000
FM Approvals (TST1867)	FM 4470	3013704	04/22/2002
FM Approvals (TST1867)	FM 4470/4474	3023406	02/22/2006
FM Approvals (TST1867)	FM 4470/4474	3033126	07/11/2008
FM Approvals (TST1867)	FM 4470/4474	3037879	02/04/2010
FM Approvals (TST1867)	FM 4470/4474	3039715	10/19/2011
FM Approvals (TST1867)	FM 4470/4474	3043325	11/18/2011
FM Approvals (TST1867)	FM 4470/4474	3043941	12/01/2011
FM Approvals (TST1867)	FM 4470/4474	3044248	04/30/2012
FM Approvals (TST1867)	FM 4470/4474	3044073	06/20/2012
FM Approvals (TST1867)	FM 4470/4474	3046628	12/06/2012
FM Approvals (TST1867)	FM 4470/4474	3054336	12/29/2012
UL LLS (TST9628)	UL1897	08CA15815	10/22/2008
UL LLC (QUA9625)	Quality Control	Service Confirmation R8103, 22QA	Exp. 02/25/2018

4. PRODUCT DESCRIPTION:

The following roof covers are mechanically attached or fully adhered to Approved substrates using fasteners, stress plates and adhesives, as outlined in the Limitations / Conditions of Use herein.

- **Tripolymer MF/R** membranes are nominal 45-mil (1.1-mm), 50-mil (1.3-mm), 60-mil (1.5-mm) or 120-mil (3.0-mm) synthetic fiber reinforced, thermoplastic single-ply roof membranes.
- **Flex MFR PVC** membranes are nominal 50-mil (1.3-mm), 60-mil (1.5-mm) or 80-mil (2.0-mm) thick, polyester scrim reinforced, thermoplastic single-ply roof membranes.
- **Tripolymer FB** membranes are nominal 45-mil (1.1-mm), 50-mil (1.3-mm), 60-mil (1.5-mm) or 120-mil (3.0-mm) synthetic fiber reinforced, thermoplastic single-ply roof membrane with a nonwoven polyester felt backing.
- **Flex MFR PVC FB** membranes are nominal 50-mil (1.3-mm), 60-mil (1.5-mm) or 80-mil (2.0-mm) thick, polyester scrim reinforced, thermoplastic single-ply roof membranes with a polyester fleece backing.

5. LIMITATIONS:

- 5.1 This is a building code evaluation. Neither Trinity|ERD nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this Evaluation Report, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.
- 5.2 This Evaluation Report is not for use in HVHZ.
- 5.3 Refer to a current Roofing Materials Directory for fire ratings of this product.

- 5.4 For steel deck installations, foam plastic insulation shall be separated from the building interior in accordance with FBC 2603.4 unless the exceptions stated in FBC 2603.4.1 or 2603.6 apply.
- 5.5 The roof system evaluation herein pertains to above-deck roof components. Roof decks and structural members shall be in accordance with FBC requirements to the satisfaction of the AHJ. Load resistance of the roof deck shall be documented through proper codified and/or FBC Approval documentation.
- 5.6 For recover installations, the existing roof shall be examined in accordance with FBC 1510.
- 5.7 For mechanically attached insulation or membrane or strip-bonded insulation, the maximum design pressure for the selected assembly shall meet or exceed the Zone 1 design pressure determined in accordance with FBC Chapter 16. Zones 2 and 3 shall employ an attachment density designed by a qualified design professional to resist the elevated pressure criteria. Commonly used methods are RAS 117, RAS 137 and FM LPDS 1-29. Assemblies marked with an asterisk* carry the limitations set forth in Section 2.2.1.5.1(a) of FM LPDS 1-29 for Zone 2/3 enhancements.
- 5.8 For assemblies with all components fully bonded in place, 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.
- 5.9 For mechanically attached insulation or membrane over existing roof decks, fasteners shall be tested in the existing deck for withdrawal resistance. A qualified design professional shall review the data for comparison to the minimum requirements for the system. Testing and analysis shall be in accordance with TAS 105 or ANSI/SPRI FX-1.
- 5.10 For bonded insulation or membrane over existing substrates in a re-roof (tear off) or recover installation, the existing deck or existing roof surface 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, ANSI/SPRI IA-1 or TAS 124 shall be conducted on mock-ups of the proposed new roof assembly.
- 5.11 For bonded insulation or membrane over existing substrates in a recover installation, the existing roof system shall be capable of resisting project design pressures on its own merit to the satisfaction of the AHJ, as documented through field uplift testing in accordance with ASTM E907, FM LPDS 1-52 or TAS 124.
- 5.12 Metal edge attachment (except gutters), shall be designed and installed for wind loads in accordance with FBC Chapter 16 and tested for resistance in accordance with ANSI/SPRI ES-1 or RAS 111, except the basic wind speed shall be determined from FBC Figure 1609.
- 5.13 All products in the roof assembly shall have quality assurance audit in accordance with the FBC and F.A.C. Rule 61G20-3.

6. INSTALLATION:

- 6.1 Flex Single Ply Roof Systems shall be installed in accordance with Flex Membrane International, 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. "MDP" = Maximum Design Pressure is the result of testing for wind load resistance based on allowable wind loads, and reflects the ultimate passing pressure divided by 2 (the 2 to 1 margin of safety per FBC 1504.9 has already been applied). Refer to FBC 1609 for determination of design wind loads.
- 6.3 For mechanically fastened membrane systems (Type D) over profiled steel deck, membrane shall be installed running perpendicular to steel deck flutes.

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 noted QA agency for information on product locations covered by F.A.C. Rule 61G20-3 QA requirements.

9. QUALITY ASSURANCE ENTITY:

UL LLC, QUA 9625 (847) 664-3281

- THE 9-PAGES THAT FOLLOW FORM PART OF THIS EVALUATION REPORT -