



**EXTERIOR RESEARCH & DESIGN, LLC.**

*Certificate of Authorization #9503*

353 Christian Street

Oxford, CT 06478

(203) 262-9245

**EVALUATION REPORT**

**Johns Manville**

P.O. Box 5108

Denver, CO 80217

**(303) 978-4879**

**Evaluation Report J9340.10.08-R8**

**FL11475-R8**

**Date of Issuance: 10/16/2008**

**Revision 8: 10/14/2017**

**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 **6<sup>th</sup> Edition (2017) Florida Building Code** sections noted herein.

**DESCRIPTION: JM TPO 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.

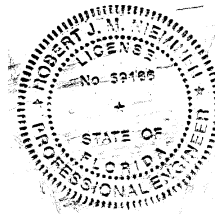
**INSPECTION:** Upon request, a copy of this entire Evaluation Report shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This Evaluation Report consists of pages 1 through 4, plus a 38-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 10/14/2017. This does not serve as an electronically signed document.

**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:** JM TPO Single Ply Roof Systems, as produced by Johns Manville, have demonstrated compliance with the following sections of the 6<sup>th</sup> Edition (2017) 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	2011
1504.7	Impact	FM 4470	2012
1507.13.2	Physical Properties	ASTM D6878	2011
1523.6.2	Wind	TAS 114	2011

**3. REFERENCES:**

<u>Entity</u>	<u>Examination</u>	<u>Reference</u>	<u>Date</u>
ACRC, LLC (TST4671)	TAS 114	14-044	12/05/2014
ERD (TST 6049)	FM 4470 / TAS 114	2009.J30820SC	11/19/2009
ERD (TST 6049)	FM 4470/4474	SC4910.02.14	02/10/2014
ERD (TST 6049)	FM 4474	JM-SC12145.02.17	02/06/2017
ERD (TST 6049)	FM 4474	JM-SC13465.04.17	04/19/2017
ERD (TST 6049)	FM 4474	JM-SC13465.08.17	08/25/2017
FM (TST 1867)	FM 4470	3009502	12/21/2000
FM (TST 1867)	FM 4470	3014692	08/05/2003
FM (TST 1867)	FM 4470/4474	3023458	07/18/2006
FM (TST 1867)	FM 4470/4474	3025881	08/09/2006
FM (TST 1867)	FM 4470/4474	3031917	02/20/2008
FM (TST 1867)	FM 4470/4474	3030383	05/13/2008
FM (TST 1867)	FM 4470/4474	3030259	06/02/2008
FM (TST 1867)	FM 4470/4474	3032235	06/27/2008
FM (TST 1867)	FM 4470/4474	1000004339	07/08/2008
FM (TST 1867)	FM 4470/4474	3033700	10/10/2008
FM (TST 1867)	FM 4470/4474	3034810	09/10/2009
FM (TST 1867)	FM 4470/4474	3035538	10/02/2009
FM (TST 1867)	FM 4470/4474	3036559	10/02/2009
FM (TST 1867)	FM 4470/4474	3036842	10/02/2009
FM (TST 1867)	FM 4470/4474	3037110	10/02/2009
FM (TST 1867)	FM 4470/4474	3037540	10/20/2010
FM (TST 1867)	FM 4470/4474	3043824	04/06/2012
FM (TST 1867)	FM 4470/4474	3044716	10/19/2012
FM (TST 1867)	FM 4470/4474	3046174	04/03/2013
FM (TST 1867)	FM 4470/4474	3051609	08/24/2014
FM (TST 1867)	FM 4470/4474	3053026	01/20/2015
FM (TST 1867)	FM 4470/4474	3056303	11/05/2015
FM (TST1867)	FM 4470/4474	3056049	01/13/2016
FM (TST 1867)	FM 4470/4474	3056677	02/22/2016
FM (TST1867)	FM 4470/4474	3058374	04/13/2016
FM (TST1867)	FM 4470/4474	3059030	04/29/2016
FM (TST1867)	FM 4470/4474	3055845	05/25/2016
FM TST1867)	FM 4470/4474	3058201	08/29/2016
FM TST1867)	FM 4470/4474	3058326	09/30/2016
FM (TST1867)	FM 4470/4474	3060138	01/11/2017
FM (TST1867)	FM 4470/4474	3060614	04/14/2017

FM (TST1867)	FM 4470/4474	3060573	05/12/2017
Johns Manville	Physical Properties	Formulation declaration	10/02/2017
MTI (TST 2508)	Physical Properties	RX14C8A	09/15/2008
MTI (TST 2508)	Physical Properties	RX10A8A	03/29/2010
MTI (TST 2508)	Physical Properties	RX10A8B	03/29/2010
PRI (TST 5878)	Physical Properties	JMC-216-02-01	05/05/2015
PRI (TST 5878)	Physical Properties	JMC-226-02-01	11/11/2015
PRI (TST 5878)	Physical Properties	Test declaration	10/09/2017
PRI (TST 5878)	FM 4470/4474	JMC-163-02-01	09/06/2013
PRI (TST 5878)	FM 4470/4474	JMC-193-02-01	04/01/2014
PRI (TST 5878)	FM 4470/4474	JMC-193-02-01A	04/28/2014
PRI (TST 5878)	FM 4470/4474	JMC-237-02-01	08/24/2015
UL LLC (QUA 9625)	Quality Control	R10167, Service Confirmation	Exp. 06/23/2019

#### 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.

- **JM TPO 45, JM TPO 60, JM TPO 72 and JM TPO 80** are a nominal 45-mil (1.1 mm), 60-mil (1.5 mm), 72-mil (1.8 mm) or 80-mil (2.0 mm) thick, polyester scrim reinforced, thermoplastic polyolefin, single-ply roof membranes.
- **JM TPO FB 100, JM TPO FB 115 and JM TPO FB 135** are a nominal 45-mil (1.1 mm), 60-mil (1.5 mm) or 80-mil (2.0 mm) thick, polyester scrim reinforced, thermoplastic polyolefin, single-ply roof membranes with a fleece backing.
- **JM TPO FB 150 and JM TPO FB 175** are a nominal 60-mil (1.5 mm) and 80-mil (2.0 mm) thick, polyester scrim reinforced, thermoplastic polyolefin, single-ply roof membranes with a fleece backing, for use in hot asphalt applications.
- **JM TPO SA** is a nominal 60-mil (1.5 mm) thick, polyester scrim reinforced, thermoplastic polyolefin, single-ply roof membrane, with a self-adhering back surface.

#### 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 jurisdictions.
- 5.3 Refer to a current UL 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** and **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 Authority Having Jurisdiction. 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 1511**.
- 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 **ANSI/SPRI WD1, FM Loss Prevention Data Sheet 1-29, Roofing Application Standard RAS 117** and **Roofing Application Standard RAS 137**. Assemblies marked with an asterisk\* carry the limitations set forth in **Section 2.2.10.1 of FM Loss Prevention Data Sheet 1-29 (January 2016)** 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 **ANSI/SPRI FX-1** or **Testing Application Standard TAS 105**.
- 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 **ANSI/SPRI IA-1**, **ASTM E907**, **FM Loss Prevention Data Sheet 1-52** or **Testing Application Standard 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 Authority Having Jurisdiction, as documented through field uplift testing in accordance with **ASTM E907**, **FM Loss Prevention Data Sheet 1-52** or **Testing Application Standard 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 **Roofing Application Standard RAS 111**, except the basic wind speed shall be determined from **FBC Figure 1609.3(1)**, **1609.3(2)** or **1609.3(3)**.
- 5.13 All products in the roof assembly shall have quality assurance in accordance with **FAC Rule 61G20-3**.

#### 6. INSTALLATION:

- 6.1 **JM TPO Single Ply Roof Systems** shall be installed in accordance with **Johns Manville** 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 named QA entity for manufacturing facilities covered by FAC Rule 61G20-3 QA requirements.

#### 9. QUALITY ASSURANCE ENTITY:

UL LLC– QUA9625; (847) 664-3623; [LeAnna.Gradecki@ul.com](mailto:LeAnna.Gradecki@ul.com)

**- THE 38-PAGES THAT FOLLOW FORM PART OF THIS EVALUATION REPORT -**