

Evaluation Report

BITEC

Modified Bitumen Roof System

Roof System

Manufactured By:

BITEC, Inc.

#2 Industrial Park Drive

P.O. Box 497

Morrilton, AR 72110

(800) 535-8597

for

Florida Product Approval

FL 16347.2 R4

Florida Building Code 7th Edition (2020)

Method: 1 – D

Category: Roofing

Sub - Category: Modified Bitumen Roof Systems

System Type: Membrane fully adhered

Support: Wood Deck

Prepared by:

James L. Buckner, P.E., S.E.C.B.

Florida Professional Engineer # 31242

Florida Evaluation ANE ID: 1916

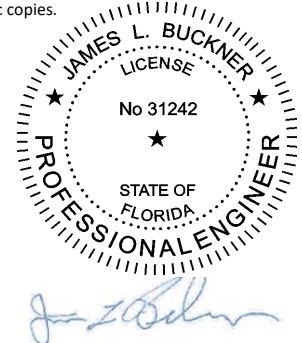
Project Manager: Diana Galloway

Report No. 20-246-SBS-IW-ER

(Revises 20-246-SBS-IW-ER.2) fka FL16347.2 R3)

Date: 10 / 01 / 20

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Contents:

Evaluation Report

Pages 1 – 9

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Manufacturer:	BITEC, Incorporated #2 Industrial Park Drive P.O. Box 497 Morrilton, AR 72110 (800) 535-8597 http://www.bi-tec.com
Product Name(s):	Insulated Modified Bitumen Roof System
Product Category:	Roofing
Product Sub-Category	Modified Bitumen Roof Systems
Compliance Method:	State Product Approval Rule 61G20-3.005 (1) (d)
Product/System Description:	This roof system is an APP/SBS modified bitumen membrane roofing system consisting of a BITEC membrane fully adhered to mechanically fastened insulation over wood deck.
Support:	Type: Wood Deck (Design of support and its attachment to support framing is outside the scope of this evaluation.) Description: • 15/32" or greater plywood, • or Wood plank (min. specific gravity of 0.42)
Product Assembly as Evaluated:	Refer to Pages 4 - 6 of this report for product assembly components/materials & standards: 1. Roof membrane 2. Adhesive 3. Base Sheet 4. Adhesive 5. Fasteners 6. Barrier Board 7. Insulation
Slope:	Minimum slope shall be 1/4 : 12 in accordance with manufacturer's recommendations, FBC Section 1507.11.1 and applicable code sections.
Performance:	Wind Uplift Resistance: • Design Uplift Pressure: Refer to Assembly Design Pressures

- Performance Standards:** The product described herein has demonstrated compliance with:
- UL580-06 – *Test for Uplift Resistance of Roof Assemblies*
 - UL 1897-12 – *Uplift test for roof covering systems*
- Standards Equivalency:** The UL 1897-98 standard version used to test the evaluated product assembly is equivalent with the prescribed standards in UL 580-06 & UL 1897-12 adopted by the Florida Building Code 7th Edition (2020).
- Code Compliance:** The product(s) described herein have demonstrated compliance with the performance standards listed above as referenced in the Florida Building Code 7th Edition (2020).
- Evaluation Report Scope:** This product evaluation is limited to compliance with the structural wind load requirements of the Florida Building Code, as related to the scope section to Florida Product Approval Rule 61G20-3-3.001.
- Limitations and Conditions of Use:**
- Scope of “Limitations and Conditions of Use” for this evaluation:
This evaluation report for “Optional Statewide Approval” contains technical documentation, specifications and installation method(s) which include “Limitations and Conditions of Use” throughout the report in accordance with Rule 61G20-3.005. Per Rule 61G20-3.004, the Florida Building Commission is the authority to approve products under “Optional Statewide Approval”.
 - Option for application outside “Limitations and Conditions of Use”
Rule 61G20-3.005(1)(e) allows engineering analysis for “project specific approval by the local authorities having jurisdiction in accordance with the alternate methods and materials authorized in the Code”. Any modification of the product as evaluated in this report and approved by the Florida Building Commission is outside the scope of this evaluation and will be the responsibility of others.
 - This report is a building code product evaluation per FLPE rule (FAC) 61G15-36 to comply with Florida product approval rule (FAC) 61G20-3. This evaluation report is part of the Florida Building Commission approval for the listed code related criteria. This report by James Buckner, P.E. and CBUCK Engineering is not a design certification of code compliance construction submittal documentation, per FBC section 107, for any individual structure, site specific or permit design.
 - Design of support system is outside the scope of this report.
 - The allowable uplift pressure shall meet or exceed the minimum design loads as determined in accordance with the FBC Chapter 16.
 - Fire Classification is outside the scope of Rule 61G20-3, and is therefore not included in this evaluation.
 - This evaluation report does not evaluate the use of this product for use in the High Velocity Hurricane Zone code section. (Dade & Broward Counties).

Quality Assurance: The manufacturer has demonstrated compliance of roof panel products in accordance with the Florida Building Code and Rule 61G20-3.0005 (3) for manufacturing under a quality assurance program audited by an approved quality assurance entity through Keystone Certifications, Inc. (FBC Organization ID# QUA 1824).

Installation: **Installation Method:**
"BITEC Insulated Modified Bitumen Roof System" shall be installed in compliance with the installation method listed in this report and applicable code sections of FBC 7th Edition (2020). The installation method described herein is in accordance with the scope of this evaluation report. Refer to manufacturer's installation instructions as a supplemental guide for attachment.

Assembly #: 1

System Type: Wood Deck, Non-Insulated

System Description: Membrane fully adhered over base sheet mechanically fastened to deck.

Base Sheet: One ply of the following:
BITEC's FS-2H, Imperflex MSA, Imperflex USA, DEFEND, MAT-40 or UDL-40, Beta Base,
or any UL Classified, Type G2 Asphalt Coated Glass-Fiber Mat (Felt), (Refer to UL, LLC's current certification directory).

Base Sheet Attachment: Base sheet shall be mechanically attached with:
Fasteners: Steel cap nails (1" diameter, 0.032" thick with anular ring shank nail, 0.120" diam, 1-1/2" long
Spacing: 7-1/2" o.c along 4" side laps and 12" o.c. in two interior rows located 11" from exposed side lap edges.

Membrane: One ply of the following BITEC roof membranes:
APM-4T, APM-4.5T, APS-4T, SPM-4.5T, ISA-4T, or Mineral Design MDA torch applied, OR
SFM-3.5H, SFM-3.5H-FR, SFM-4H-FR, SPM-3.5H, or Mineral Design MDS per one of the following:

- Hot mopped at an application rate of 25 lbs/100 ft², or
- Fully adhered in PMA-186 at an application rate of 1.5 gal/100 ft², or PMA-2000 1/8" thick, at an application rate of 5 gal/100 ft²

Performance:

- Design Uplift Pressure*: - 60 PSF

*Allowable design pressure(s) for allowable stress design (ASD)

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Assembly #:	2
System Type:	Wood Deck, Insulated
System Description:	Membrane fully adhered over base sheet mechanically fastened through insulation into deck.
Insulation:	One or more layers of any of the following: 1. Polyisocyanurate 2. Perlite 3. Wood Fiber Thickness: Any thickness (Insulation board shall be preliminarily attached.)
Base Sheet:	One ply of the following: BITEC's FS-2H, Imperflex MSA, Imperflex USA, DEFEND, MAT-40 or UDL-40, Beta Base, or any UL Classified, Type G2 Asphalt Coated Glass-Fiber Mat (Felt), (Refer to UL, LLC's current certification directory).
Base Sheet Attachment:	Base sheet shall be mechanically attached with:
Fasteners:	Annular ring shank nails (0.148" diameter with a 3" diameter, 0.021" thick formed disc Optional fastener for wood deck: #12-12.5 Truss-head or 1/4" HWH with a 3" diameter, 0.021" thick formed disc Optional fastener for wood plank: #14-10 Truss-head or 1/4" HWH with a 3" diameter, 0.021" thick formed disc
Spacing:	7-1/2" o.c along 4" side laps and 12" o.c. in two interior rows located 11" from exposed side lap edges. Nails to penetrate deck a min. of 1/2" or wood planking, 1".
Membrane:	One ply of the following BITEC roof membranes: APM-4T, APM-4.5T, APS-4T, SPM-4.5T, ISA-4T, or Mineral Design MDA torch applied, OR SFM-3.5H, SFM-3.5H-FR, SFM-4H-FR, SPM-3.5H, or Mineral Design MDS per one of the following: • Hot mopped at an application rate of 25 lbs/100 ft² , or • Fully adhered in PMA-186 at an application rate of 1.5 gal/100 ft² , or PMA-2000 1/8" thick, at an application rate of 5 gal/100 ft²
Performance:	• Design Uplift Pressure*: - 52.5 PSF *Allowable design pressure(s) for allowable stress design (ASD)

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Assembly #:	3
System Type:	Wood Deck, Insulated
System Description:	Membrane fully adhered to mechanically fastened insulation. All layers of insulation simultaneously attached.
Insulation:	One or more layers of any of the following: 1. Polyisocyanurate 2. Perlite 3. Wood Fiber Thickness: Any thickness (Preliminary attachment of insulation board to wood deck is optional.)
Barrier Board:	One or more layers of any of the following: 1. DensDeck 2. DensDeck Prime 3. DensDeck Prime 2 4. DensDeck DuraGuard 5. GlasRoc 6. Securock glass-mat roof board Thickness: Minimum ½" (Preliminary attachment of board to wood deck is optional.)
Insulation & Barrier Board Attachment:	Insulation & Barrier boards shall be mechanically attached with fasteners and density described below.
Fasteners:	#14 threaded screws with minimum 3" round plates
Fastener Density:	1 : 1 ft ²
Base Sheet:	One ply of the following: Asphalt Coated Glass-Fiber Mat (Felt), BITEC's Beta Base, or any UL Classified, Type G2 (Refer to UL, LLC's current certification directory).
Base Sheet Attachment:	Fully adhered to barrier board per one of the following: • In a full mopping of approved asphalt applied within the EVT range and at a rate of 25 lbs/100 ft² • Cold-adhered in PMA-186 at an application rate of 1.5 gal/100 ft² , or PMA-2000 1/8" thick, at an application rate of 5 gal/100 ft²
Membrane:	One ply of the following BITEC roof membranes: APM-4T, APM-4.5T, APS-4T, SPM-4.5T, ISA-4T, or Mineral Design MDA torch applied, OR SFM-3.5H, SFM-3.5H-FR, SFM-4H-FR, SPM-3.5H, or Mineral Design MDS per one of the following: • Hot mopped at an application rate of 25 lbs/100 ft² , or • Fully adhered in PMA-186 at an application rate of 1.5 gal/100 ft² , or PMA-2000 1/8" thick, at an application rate of 5 gal/100 ft²
Performance:	• Design Uplift Pressure*: - 67.5 PSF *Allowable design pressure(s) for allowable stress design (ASD)

TABLE A
Products by Manufacturer:

Product	Standard	Nominal Width	Description
Base Sheet	ASTM D 4601	36"	Asphalt-Coated Glass Fiber Base Sheet Used in Roofing
Beta Base I or Beta Base II	ASTM D 4601	Rolls 108 ft. x 36 in.	Fiberglass reinforced base sheet
FS-2H	ASTM D 5147	39"	Modified bitumen membrane reinforced with fiberglass for use as a base sheet
Imperflex MSA	ASTM D 1970	39"	Polymer modified bitumen underlayment reinforced with fiberglass for use as a base sheet
Imperflex USA	ASTM D 1970	39"	Polymer modified bitumen underlayment reinforced with fiberglass for use as a base sheet
DEFEND	ASTM D 1970	39"	Modified bitumen membrane reinforced with fiberglass for use as a base sheet
MAT-40	ASTM D 1970	39"	Modified bitumen membrane reinforced with a combination of polyester and fiberglass for use as a base sheet
UDL-40	ASTM D 4601	39"	Monolithic compound reinforced with fiberglass mat for use as a base sheet
APM-4T	ASTM D 6223	39"	APP mineral surfaced modified bitumen membrane reinforced with polyester for use as a roof membrane sheet
APM-4.5T	ASTM D 6223	39"	APP mineral surfaced modified bitumen membrane reinforced with polyester for use as a roof membrane sheet
APS-4T	ASTM D 6223	39"	APP modified bitumen membrane reinforced with polyester for use as a roof membrane sheet
SPM-4.5T	ASTM D 6162	39"	SBS mineral surfaced modified bitumen membrane reinforced with polyester for use as a roof membrane sheet.
ISA-4T	ASTM D 6223	39"	APP smooth surfaced modified bitumen membrane reinforced with a non-woven polyester mat for use as a roof membrane sheet

TABLE A
Products by Manufacturer (Continued):

Product	Standard	Nominal Width	Description
Mineral Design MDA	ASTM D 6223	39"	APP colored pattern mineral surfaced modified bitumen membrane reinforced with polyester for use as a roof membrane sheet
SFM-3.5H	ASTM D 6162	39"	SBS modified bitumen, mineral surface membrane reinforced with fiberglass for use as a roof membrane sheet
SFM-3.5H-FR	ASTM D 6163	39"	SBS modified bitumen, mineral surface membrane reinforced with fiberglass for use as a roof membrane sheet
SFM-4H-FR	ASTM D 6163	39"	SBS modified bitumen, mineral surface membrane reinforced with fiberglass for use as a roof membrane sheet.
SPM-3.5H	ASTM D 6162	39"	SBS mineral surfaced modified bitumen membrane reinforced with polyester for use as a roof membrane sheet
Mineral Design MDS	ASTM D 6162	39"	SBS colored pattern mineral surfaced modified bitumen membrane reinforced with polyester for use as a roof membrane sheet
PMA-186	Proprietary	5 gal.	SBS rubberized, modified asphalt adhesive
PMA-2000	Proprietary	3 gal.	SBS rubberized, modified asphalt adhesive

TABLE B

Products Not by Manufacturer:

Product	Description	Manufactured By:
Dens Deck, DensDeck Prime, Dens Deck Prime 2, DensDeck DuraGuard	Silicon treated gypsum	Georgia-Pacific Gypsum LLC
GlasRoc	Glass reinforced gypsum	Certaineed Gypsum, Inc.
Securock Glass-Mat Roof Board	Gypsum Coverboard	USG, Corp.
Polyisocyanurate Insulation	Polyisocyanurate Foam	Generic
Perlite Insulation Board	Perlite Insulation	Generic
Wood Fiberboard	Wood Fiber insulation board	Generic
Fasteners	#14 threaded screws with minimum 3" round plates	UL Classified

Referenced Data:

1. UL 580-06/1897-04 Uplift Resistance
By UL, LLC (FBC Organization #TST ID: 9628)
File #R13231, Project #13NK02886, System 1-3, Dated 3/29/13
2. Quality Assurance
By Keystone Certifications, Inc.
(FBC Organization #QUA 1824)
BITEC, Inc. Licensee # 340
3. Certification of Independence
By James L. Buckner, P.E. @ CBUCK Engineering
(FBC Organization # ANE 1916)