

## Evaluation Report

**“imperflex®”**

**Roof System**

**Manufacturer:**

**BITEC, Inc.**

**#2 Industrial Park Drive  
Morrilton, Arkansas 72110  
(800) 535-8597**

*for*

**Florida Product Approval**

**# FL 16347.1 R4**

**Florida Building Code 7th Edition (2020)**

**Method: 1 - D**

**Category: Roofing**

**Sub - Category: Modified Bitumen Roof System**

**Product: “imperflex®” System**

**Description: Self-Adhered Modified Bitumen System**

**Support: Plywood Deck**

**Prepared by:**

James L. Buckner, P.E., SECB

Florida Professional Engineer # 31242

Florida Evaluation ANE ID: 1916

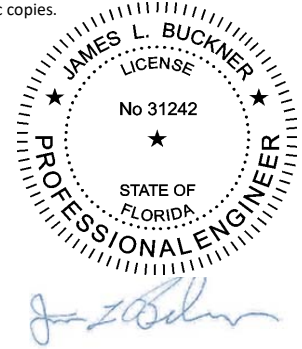
Project Manager: Diana Galloway

Report No. 20-246-Imperflex-W-ER

*(Revises 17-123- Imperflex1203-ER, FL16347.1 R1)*

Date: 10 / 01 / 20

This item has been electronically signed and sealed by James L. Buckner, P.E., on this date using a Digital Signature. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.



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|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Manufacturer:</b>                  | <b>BITEC, Incorporated</b><br>#2 Industrial Park Drive<br>P.O. Box 497<br>Morrilton, AR 72110<br>(800) 535-8597<br><a href="http://www.bi-tec.com">http://www.bi-tec.com</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Product Name:</b>                  | imperflex®                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Product Category:</b>              | Roofing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Product Sub-Category</b>           | Modified Bitumen Roof System                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Compliance Method:</b>             | State Product Approval Rule 61G20-3.005 (1) (d)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Product/System Description:</b>    | <p>Bitec, Inc.: imperflex® Specification MSA-12-03<br/>Modified bitumen roofing system comprised of the following Bitec, Inc's products:</p> <ul style="list-style-type: none"><li>• <b>imperflex® MSA Cap Sheet</b><br/>140-mils thick (nominally), self-adhering, fiberglass-mat reinforced, modified asphalt, granular mineral surface with a 3.5" selvedge edge and a release liner.</li><li>• <b>imperflex® USA Base Sheet</b><br/>60-mils thick (nominally), self-adhering, fiberglass-mat reinforced, modified asphalt, smooth mineral surface with a release liner.<br/>Fully self-adhered to non-insulated plywood deck.</li></ul> |
| <b>Product Assembly As Evaluated:</b> | <p>Refer to Page 4 of this report for product assembly components/materials &amp; standards:</p> <p>imperflex® MSA Cap Sheet (Self-adhered)<br/>imperflex® USA Base Sheet (Self-adhered)<br/>Primer</p>                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Support Type:</b>                  | <b>Plywood Deck</b><br>(Design of support is outside the scope of this evaluation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Slope:</b>                         | Minimum slope shall be <b>1/4 : 12</b><br>in accordance with manufacturer's recommendations, FBC Section 1507.11.1 and applicable code sections.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Performance:</b>                   | <p>Wind Uplift Resistance:</p> <ul style="list-style-type: none"><li>• Design Uplift Pressure*: <b>- 345 psf</b><br/>*Allowable design pressure(s) for allowable stress design (ASD).</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Impact Resistance:</b>                 | Meets criteria for Impact resistance for low-slope roofs (< 2:12)<br><br>Impact Test Standard: CGSB 37-GP-52M, Par 7.2.10<br>Results: Pass<br>Assembly: As described in this evaluation report                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Performance Standards:</b>             | The product described herein has been tested in compliance with: <ul style="list-style-type: none"><li>• ASTM D 1970-15a – Specification Self-adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roof Underlayment for Ice Dam Protection</li><li>• FM 4474 (11), – Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures</li><li>• CGSB 37-GP-52M, Par 7.2.10 – Roofing and Waterproofing Membrane, Sheet Applied Elastomeric</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Test Equivalency:</b>                  | The TAS 114-05, “D” standard version used to test the evaluated product assembly is equivalent with the prescribed standards in FM 4474-11, “B” & ASTM D 1970-01 standard version used to test the evaluated product is equivalent with the ASTM D 1970-15a prescribed standards adopted by the Florida Building Code 7th Edition (2020).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Code Compliance:</b>                   | The product(s) described herein have demonstrated compliance with the performance standards listed above as referenced in the Florida Building Code 7th Edition (2020).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Evaluation Report Scope:</b>           | 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 61G20-3.001.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Limitations and Conditions of Use:</b> | <ul style="list-style-type: none"><li>• <u>Scope of “Limitations and Conditions of Use” for this evaluation:</u><br/>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”.</li><li>• <u>Option for application outside “Limitations and Conditions of Use”</u><br/>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.</li><li>• 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.</li></ul> |

- 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).

**Product Components  
Materials/ Standards:**

**Bitec, Inc.'s imperflex® Modified Bitumen Roof System  
Specification MSA-12-03**

**imperflex® MSA Cap Sheet**

|                       |                       |
|-----------------------|-----------------------|
| Material              | SBS, Mineral surfaced |
| Standard:             | ASTM D 1970           |
| Available Colors:     | Various               |
| Nominal Thickness:    | 140 mils              |
| Roll Size:            | 32.8 ft. x 3.28 ft.   |
| Method of Attachment: | Self-Adhered          |

**imperflex® USA Base Sheet**

|                       |                      |
|-----------------------|----------------------|
| Material              | SBS, Smooth surfaced |
| Standard:             | ASTM D 1970          |
| Available Colors:     | Various              |
| Nominal Thickness:    | 60 mils              |
| Roll Size:            | 45.75 ft. x 3.28 ft. |
| Method of Attachment: | Self-Adhered         |

**Primer (Applied to Plywood Deck):**

|            |                        |
|------------|------------------------|
| Type:      | Asphalt                |
| Standard:  | ASTM D 41              |
| Coverage:  | 100 sq. ft. per gallon |
| Cure Time: | 24 hours               |

**Installation:**

**Installation Method:**

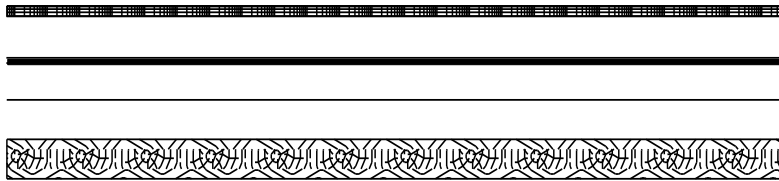
(Refer to end of of this evaluation report for Manufacturers recommended installation guidelines.)

Bitec, Inc's "imperflex®" roof system shall be installed in compliance with this report, applicable code sections of FBC 7th Edition (2020) (subject to the Limitations and Conditions of Use listed in this Evaluation Report) and manufacturer's installation instructions as a supplemental guide for attachment.

**Referenced Data:**

1. TAS 114-05 (D) Uplift Resistance Test  
By PRI Construction Material Technologies (FBC Organization #TST ID: 5878]  
Report #: BIT-006-02-01, Dated: 8 / 19 / 09
2. ASTM D 1970-01 Properties Test(s)  
By PRI Asphalt Technologies (FBC Organization #TST ID: 1556)  
Report #: BIT-005-02-01, Report Date: 7 / 18 / 05
3. CGSB 37-GP-52M Impact Test  
By PRI Asphalt Technologies (FBC Organization #TST ID: 1556)  
Report #: BIT-015-02-01, Report Date: 9 / 30 / 11
4. Equivalency of Test Standard Certification  
By James L. Buckner, P.E. @ CBUCK Engineering  
(FBC Organization # ANE 1916)
5. Quality Assurance  
By Keystone Certifications, Inc., (FBC Organization #QUA ID:1824)  
BITEC, Inc. Licensee # 340
6. Certification of Independence  
By James L. Buckner, P.E. @ CBUCK Engineering  
(FBC Organization # ANE 1916)

**INSTALLATION METHOD**  
**BITEC, Inc.**  
**imperflex® Modified Bitumen Roof System**



IMPERFLEX® MSA Cap Sheet Membrane, 1 layer  
IMPERFLEX® USA Base Sheet Membrane, 1 layer  
ASTM D41 Asphalt Primer  
Plywood Deck

**Manufacturer's Recommended Installation Guidelines:**

- Plywood Deck to be dried and cleaned in order to provide a surface that will allow the membrane to bond completely.
- Prime Plywood deck with ASTM D41 asphalt primer; rapid dry formula.
- Cut imperflex® USA base starter sheet to one half width and length as needed.
- Align starter sheet along lower edge of roof.
- Stick one end of sheet to the deck being carefully not to form any wrinkles as the release paper is being removed and the membrane is being stuck to the deck.
- Install other end of sheet by the same process.
- Roll each roll of membrane with a minimum 75 pound roller to insure proper adhesion, rolling on both directions.
- Continue with full width sheet of imperflex® USA base sheet by aligning sheet first, then removing the release paper from only one side of the membrane sheet at a time and carefully adhere the sheet to the deck without forming any wrinkles.
- Remove the release paper from the other side of the membrane sheet as done with the other side.
- Roll each roll of membrane as it is installed before installing another roll.
- Continue with imperflex® USA base membrane until the area is completed, being sure that each roll has been rolled in both directions (across and lengthwise) insuring that no wrinkles have being formed before the imperflex® MSA cap sheet membrane is started.
- Being sure that the imperflex® USA base sheet membrane is clean and dry, and starting at the lower edge of the roof area, install a full width of imperflex® MSA cap sheet by first removing the release paper from one half of the sheet as the exposed portion is stuck to the base sheet without any wrinkles.
- Remove the release paper from the other half of the sheet as the exposed portion is adhered to the base sheet.
- Roll each roll of the imperflex® MSA cap sheet membrane in both directions as noted previously, being careful not to form any wrinkles.
- Apply membrane only in fair weather when the air, surface and membrane are at a minimum temperature of 50° F.

Installation shall comply with this report, applicable code sections of FBC 7th Edition (2020) (subject to the Limitations and Conditions of Use listed in this Evaluation Report) and manufacturer's installation instructions as a supplemental guide for attachment.