Product Approval
USER: Public User

FL #	FL11946-R22
Application Type	Revision
Code Version	2023
Application Status	Approved
Comments	
Archived	☐
Product Manufacturer	GAF
Address/Phone/Email	1 Campus Drive Parisppany, NJ 07054 (800) 766-3411 mstieh@gaf.com
Authorized Signature	Michael Stieh michael.stieh@gaf.com
Technical Representative	William Broussard
Address/Phone/Email	1 Campus Drive Parsippany, NJ 07054 (800) 766-3411 TechnicalQuestionsGAF@gaf.com
Quality Assurance Representative	
Address/Phone/Email	
Category	Roofing
Subcategory	Built up Roofing
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer ☐ Evaluation Report - Hardcopy Received
Florida Engineer or Architect Name who developed the Evaluation Report	Robert Nieminen
Florida License	PE-59166
Quality Assurance Entity	UL LLC
Quality Assurance Contract Expiration Date	07/12/2025
Validated By	John W. Knezevich, PE ☑ Validation Checklist - Hardcopy Received
Certificate of Independence	FL11946_R22_COI_2023_07_COI_NIEMINEN.pdf

Referenced Standard and Year (of Standard)

Standard	Year
ASTM D2178	2015
ASTM D3909	2014
ASTM D4601	2012
ASTM D4897	2016
ASTM D6163	2016
ASTM D6164	2016
ASTM D6222	2016
FM 4470	2016
FM 4474	2011

Equivalence of Product Standards
Certified By

Sections from the Code

Product Approval Method	Method 1 Option D
Date Submitted	10/11/2023
Date Validated	10/18/2023
Date Pending FBC Approval	11/01/2023
Date Approved	12/12/2023

Summary of Products

FL #	Model, Number or Name	Description
11946.1	GAF Conventional Built-Up Roof Systems (HVHZ)	Asphaltic built-up roof (BUR) systems for use in FBC HVHZ jurisdictions.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** No **Impact Resistant:** N/A **Design Pressure:** +N/A/-457.5 **Other:** 1.) The design pressure in this application relates to one specific assembly. Refer to the PEER Appendix for all assemblies and associated max. design pressures. 2.) Refer to PEER Section 5 for Limits of Use.		**Installation Instructions** FL11946_R22_II_2023_10_11_FINAL_A1_PEER-GAF-003.B_BUR_HVHZ_FL11946-R22.pdf Verified By: Robert Nieminen PE-59166 Created by Independent Third Party: Yes **Evaluation Reports** FL11946_R22_AE_2023_10_11_FINAL_PEER-GAF-003.B_BUR_HVHZ_FL11946-R22.pdf Created by Independent Third Party: Yes
11946.2	GAF Conventional Built-Up Roof Systems (NON-HVHZ)	Asphaltic built-up roof (BUR) systems for use in FBC non-HVHZ jurisdictions.
Limits of Use **Approved for use in HVHZ:** No **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-457.5 **Other:** 1.) The design pressure in this application relates to one specific assembly. Refer to the PEER Appendix for all assemblies and associated max. design pressures. 2.) Refer to PEER Section 5 for Limits of Use.		**Installation Instructions** FL11946_R22_II_2023_10_11_FINAL_A1_PEER-GAF-003.A_BUR_NON-HVHZ_FL11946-R22.pdf Verified By: Robert Nieminen PE-59166 Created by Independent Third Party: Yes **Evaluation Reports** FL11946_R22_AE_2023_10_11_FINAL_PEER-GAF-003.A_BUR_NON-HVHZ_FL11946-R22.pdf Created by Independent Third Party: Yes

Back Next

NEMO|etc.
Certificate of Authorization #32455
353 Christian Street, Unit #13
Oxford, CT 06478
(203) 262-9245

ENGINEER **EVALUATE** **TEST** **CONSULT**

P.E. EVALUATION REPORT (PEER)

GAF
1 Campus Drive
Parsippany, NJ 07054
(800) 766-3411

PEER-GAF-003.B.R19
FL11946-R22 (HVHZ)
Date of Issuance: 12/18/2013
Revision 19: 10/11/2023

SCOPE:
This P.E. Evaluation Report (henceforth 'PEER') is issued under **F.A.C. 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 **8th Edition (2023) Florida Building Code, High Velocity Hurricane Zone (HVHZ)** sections noted herein.

DESCRIPTION: GAF Conventional Built-Up Roof Systems (HVHZ)

LABELING: Labeling shall be in accordance with the requirements of the Accredited Quality Assurance Agency noted herein.

CONTINUED COMPLIANCE: This PEER is valid until such time as the named product(s) changes, the referenced Quality Assurance or production facility location(s) changes, or Code provisions that relate to the product(s) change. Acceptance of our PEERs by the named client constitutes agreement to notify NEMO ETC, LLC of any changes to the product(s), the Quality Assurance or the production facility location(s). NEMO ETC, LLC requires a complete review of its PEER relative to updated Code requirements with each Code Cycle.

ADVERTISEMENT: The Florida Product Approval Number (FL#) preceded by the words "NEMO P.E. Evaluated" may be displayed in advertising literature. If any portion of the PEER is displayed, then it shall be done in its entirety.

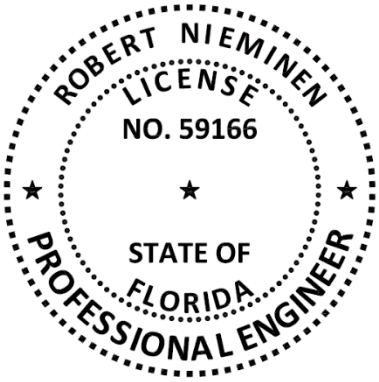
INSPECTION: Upon request, a copy of this entire PEER shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This PEER consists of pages 1 through 5, plus a 34-page Appendix.

Prepared by:

Digitally signed by Robert Nieminen
Date: 2023.10.11 '11:56:54 -04'00

This item has been digitally signed and sealed by Robert Nieminen, P.E.
Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.
Robert Nieminen, Florida P.E. 59166, FBC ANE1983
NEMO ETC, LLC, Florida CA #32455



CERTIFICATION OF INDEPENDENCE:
1. NEMO ETC, LLC 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. NEMO ETC, LLC 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 PEERs 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 NEMO ETC, LLC nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this PEER, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.

ROOFING SYSTEM EVALUATION:

1. SCOPE:

Product Category: Roofing
Sub-Category: Built-Up Roofing Systems
Product Approval Method: Method 1, Option D: Codified Material, Evaluation by Engineer
Compliance Statement: **GAF Conventional Built-Up Roof Systems**, as produced by **GAF**, have demonstrated compliance with the following sections of the **8th Edition (2023) Florida Building Code, High Velocity Hurrican Zones (HVHZ)** through testing in accordance with the following Standards. Compliance is subject to the Installation Requirements and Limitations of Use set forth herein.

2. STANDARDS:

SECTION	PROPERTY	STANDARD
TAS 110	Resistance to Foot Traffic	TAS 114, Section 8.9
TAS 110	Wind resistance	TAS 114, Appendix C, D or J
TAS 110	Susceptibility Hail Damage	TAS 114, Appendix F
TAS 110	Susceptibility to Leakage	TAS 114, Appendix G
TAS 110	Material standard	ASTM D2178
TAS 110	Material standard	ASTM D3909
TAS 110	Material standard	ASTM D4601
TAS 110	Material standard	ASTM D4897
TAS 110	Material standard	ASTM D6163
TAS 110	Material standard	ASTM D6164
TAS 110	Material standard	ASTM D6222

3. REFERENCES:

ENTITY	EXAMINATION	REFERENCE	DATE	ENTITY	EXAMINATION	REFERENCE	DATE
ERD (TST6049)	ASTM D6163 (GA)	G40630.01.14-1	01/06/14	FM (TST1867)	FM 4470 / 4474	3043900	08/16/12
ERD (TST6049)	ASTM D6164 (GA)	G40630.01.14-2A	01/07/14	FM (TST1867)	FM 4470 / 4474	3046388	09/24/12
ERD (TST6049)	ASTM D6164 (GA)	G40630.01.14-2A-1-R1	01/07/14	FM (TST1867)	FM 4470 / 4474	3041769	09/27/12
ERD (TST6049)	ASTM D6222 (IN)	G43180.03.14	03/03/14	FM (TST1867)	FM 4470 / 4474	797-09636-267	07/24/14
ERD (TST6049)	ASTM D3909	SC6870.08.14	08/19/14	FM (TST1867)	FM 4470 / 4474	797-09662-267	07/24/14
ERD (TST6049)	ASTM D6163 (GA)	G46160.02.15-2D-1	02/09/16	FM (TST1867)	FM 4470 / 4474	797-09665-267	07/24/14
ERD (TST6049)	ASTM D6164 (GA)	GAF-SC13285.03.17-5	03/23/17	FM (TST1867)	FM 4470 / 4474	797-09934-267	10/23/14
ERD (TST6049)	ASTM D6164 (GA)	GAF-SC13105.03.17-R1	03/23/17	FM (TST1867)	FM 4470 / 4474	797-09972-267	10/27/14
NEMO (TST6049)	ASTM D2178 (GA)	4S-GAF-18-001.01.19-1	01/02/19	FM (TST1867)	FM 4470 / 4474	797-09973-267	10/27/14
NEMO (TST6049)	ASTM D6222 (IN)	4S-GAF-18-001.03.19.A	03/13/19	FM (TST1867)	FM 4470 / 4474	797-10025-267	11/12/14
NEMO (TST6049)	ASTM D6164 (AR)	4q-GAF-19-SSMBB-01A	04/08/19	FM (TST1867)	Criticality	3056207 (released)	02/09/16
NEMO (TST6049)	ASTM D6163 (AR)	4q-GAF-19-SSMBB-02A	04/08/19	FM (TST1867)	FM 4470 / 4474	3056933	07/19/18
NEMO (TST6049)	ASTM D3909	4q-GAF-20-SSMBB-01.A	03/04/21	FM (TST1867)	FM 4470 / 4474	3061784	07/25/18
NEMO (TST6049)	ASTM D4601 (AL)	4q-GAF-21-SSMBB-01.A	09/07/21	FM (TST1867)	FM 4470 / 4474	3055904	10/25/18
NEMO (TST6049)	ASTM D4897 (AL)	4q-GAF-21-SSMBB-01.B	09/07/21	FM (TST1867)	FM 4470 / 4474	RR215191-267	11/07/18
NEMO (TST6049)	ASTM D3909	4q-GAF-21-SSMBB-02.A	12/02/21	FM (TST1867)	Criticality	PR452971-R1	01/28/20
NEMO (TST6049)	Physical Properties	4j-GAF-22-SSUDL-03.A	04/25/23	FM (TST1867)	FM 4474	PR455417	12/23/20
PRI (TST5878)	ASTM D2178 (AL)	MSA-039-02-02	09/27/17	FM (TST1867)	FM 4474	PR458073	04/08/21
PRI (TST5878)	ASTM D2178 (AL)	MSA-039-02-01	09/27/17	FM (TST1867)	FM 4470	RR227768	04/09/21
PRI (TST5878)	ASTM D6222 (CA-S)	376T0143	08/23/21	FM (TST1867)	FM 4474	PR457312	04/20/21
PRI (TST5878)	ASTM D6222 (CA-S)	376T0144	08/26/21	FM (TST1867)	FM 4470	PR459831	04/21/21
PRI (TST5878)	ASTM D4601 (GA)	376T0229	12/20/21	FM (TST1867)	FM 4474	PR456101	06/24/21
PRI (TST5878)	ASTM D4897 (GA)	376T0227	12/20/21	FM (TST1867)	FM 4474	PR460889	08/01/22
PRI (TST5878)	ASTM D4897 (GA)	376T0228	12/20/21	FM (TST1867)	FM 4474	PR460126	09/20/22
PRI (TST5878)	ASTM D4601 (GA)	376T0240	12/21/21	FM (TST1867)	FM 4474	PR464081	02/20/23
PRI (TST5878)	ASTM D2178 (CA-F)	376T0275	01/31/22	FM (TST1867)	FM 4474	RR237726	08/23/23
PRI (TST5878)	ASTM D3909 (GA)	376T0272	02/03/22	IRT (TST7408)	TAS 114	00001	04/05/00
PRI (TST5878)	ASTM D4601 (CA-F)	376T0276	02/03/22	IRT (TST7408)	TAS 114	00002	04/05/00
PRI (TST5878)	ASTM D6222 (GA)	376T0274	05/04/22	IRT (TST7408)	TAS 114	01-0136	12/18/01
PRI (TST5878)	ASTM D6222 (GA)	376T0273	08/29/22	IRT (TST7408)	TAS 114	02-005	01/18/02
ACRC (TST4671)	TAS 114	ACRC 11-048	08/10/11	IRT (TST7408)	TAS 114	02-011	02/26/02
ACRC (TST4671)	TAS 114	ACRC 11-049	08/10/11	IRT (TST7408)	TAS 114	02-014	03/22/02
ACRC (TST4671)	TAS 114	ACRC 11-053	08/12/11	IRT (TST7408)	TAS 114	02-015	03/26/02
ERD (TST6049)	TAS 114	01880.09.03	09/10/03	IRT (TST7408)	TAS 114	02-026	07/26/02
ERD (TST6049)	TAS 114	GAF-SC16825.12.17-1	12/31/17	IRT (TST7408)	TAS 114	04-009	01/26/04

Entity	Examination	Reference	Date	Entity	Examination	Reference	Date
FM (TST1867)	FM 4470 / 4450	2B8A4.AM	07/02/97	NEMO (TST6049)	TAS 114	4L-GAF-18-002.05.19.A	05/29/19
FM (TST1867)	FM 4470 / 4450	3B9Q1.AM	01/08/98	PRI (TST5878)	TAS 114	GAF-549-02-01	08/08/14
FM (TST1867)	FM 4470 / 4450	0Y9Q5.AM	04/01/98	PRI (TST5878)	TAS 114	GAF-549-02-02	08/08/14
FM (TST1867)	FM 4470 / 4450	0D0A8.AM	07/09/99	PRI (TST5878)	TAS 114	GAF-559-02-01	10/16/14
FM (TST1867)	FM 4470 / 4450	3011140	08/14/01	PRI (TST5878)	TAS 114	GAF-559-02-04	10/16/14
FM (TST1867)	FM 4470 / 4450	3014547	05/22/03	PRI (TST5878)	TAS 114	GAF-559-02-05	10/16/14
FM (TST1867)	FM 4470 / 4474	3017250	04/05/04	PRI (TST5878)	TAS 114	GAF-559-02-06	10/16/14
FM (TST1867)	FM 4470 / 4474	3020703	07/30/04	PRI (TST5878)	TAS 114	GAF-559-02-07	10/16/14
FM (TST1867)	FM 4470 / 4474	3025524	03/13/06	PRI (TST5878)	TAS 114	GAF-559-02-08	10/16/14
FM (TST1867)	FM 4470 / 4474	3023458	07/18/06	PRI (TST5878)	TAS 114	GAF-559-02-09	10/16/14
FM (TST1867)	FM 4470 / 4474	3028478	01/05/07	PRI (TST5878)	TAS 114	GAF-559-02-11	10/16/14
FM (TST1867)	FM 4470 / 4474	3029832	05/11/07	PRI (TST5878)	TAS 114	GAF-559-02-12	10/16/14
FM (TST1867)	FM 4470 / 4474	Approval Extension	05/07/08	PRI (TST5878)	TAS 114	GAF-559-02-13	10/16/14
FM (TST1867)	FM 4470 / 4474	797-05610-267	06/10/10	PRI (TST5878)	TAS 114	GAF-559-02-14	10/16/14
FM (TST1867)	FM 4470 / 4474	797-05695-267	07/15/10	PRI (TST5878)	TAS 114	GAF-559-02-18	10/16/14
FM (TST1867)	FM 4470 / 4474	797-05748-267	08/10/10	PRI (TST5878)	Criticality	376T0006-3	09/06/19
FM (TST1867)	FM 4470 / 4474	797-05970-267	10/25/10	PRI (TST5878)	Criticality	376T0006-1	01/18/21
FM (TST1867)	FM 4470 / 4474	797-05550-267	10/25/10	UL (QUA9625)	Quality Control	Service Confirm	07/12/22
				UL (QUA9625)	Quality Control	Florida BCIS	Current

4. PRODUCT DESCRIPTION:

This PEER covers **GAF Built-Up Roof Systems (BUR)** installed in accordance with **GAF** published installation instructions and the Limitations of Use herein.

TABLE 1: EVALUATED MEMBRANES

Type	Product	Material Standard		Plant(s)
		Reference	Type	
Base Sheet	GAFGLAS® #75 Base Sheet	ASTM D4601	II	Fontana, CA Savannah, GA Tuscaloosa, AL
	Tri-Ply® #75 Base Sheet	ASTM D4601	II	Fontana, CA Savannah, GA Tuscaloosa, AL
	GAFGLAS® #80 Ultima™ Base Sheet	ASTM D4601	II	Savannah, GA Tuscaloosa, AL
	GAFGLAS® Stratavent® Nailable Venting Base Sheet	ASTM D4897	II	Savannah, GA Tuscaloosa, AL
Venting Base Sheet	GAFGLAS® Stratavent® Perforated Venting Base Sheet	ASTM D4897	II	Savannah, GA Tuscaloosa, AL
Ply Sheet	GAFGLAS® Ply 4	ASTM D2178	IV	Fontana, CA Savannah, GA
	GAFGLAS® Ply 4 M	ASTM D2178	IV	Tuscaloosa, AL
	Tri-Ply® Ply 4 Ply Sheet	ASTM D2178	IV	Fontana, CA Savannah, GA
	GAFGLAS® FlexPly™ 6	ASTM D2178	VI	Savannah, GA
	GAFGLAS® FlexPly™ 6 M	ASTM D2178	VI	Tuscaloosa, AL
Ply Sheet, Modified Bitumen	Ruberoid® 20 Smooth	ASTM D6163	I	Arkadelphia, AR
	Ruberoid® Mop Smooth	ASTM D6164	I	Savannah, GA
	Ruberoid® Mop Smooth 1.5	ASTM D6164	I	Savannah, GA
Cap Sheet	GAFGLAS® Mineral-Surfaced Cap Sheet	ASTM D3909	N/A	Fontana, CA Savannah, GA Tuscaloosa, AL
	Tri-Ply® BUR Granule Cap Sheet	ASTM D3909	N/A	Fontana, CA Savannah, GA Tuscaloosa, AL
	GAFGLAS® EnergyCap™ Mineral-Surfaced Cap Sheet	ASTM D3909	N/A	Stockton, CA

TABLE 1: EVALUATED MEMBRANES				
TYPE	PRODUCT	MATERIAL STANDARD		PLANT(S)
		REFERENCE	TYPE	
VAPOR BARRIER MEMBRANES	Ruberoid® 20 Smooth	ASTM D6163	I	Arkadelphia, AR
	Ruberoid® HW 25 Smooth	ASTM D6163	I	Savannah, GA
	Ruberoid® 30 Granule	ASTM D6163	I	Savannah, GA
	Ruberoid® HW Smooth	ASTM D6164	I	Savannah, GA
	Ruberoid® Mop Smooth	ASTM D6164	I	Savannah, GA
	Ruberoid® Mop Smooth 1.5	ASTM D6164	I	Savannah, GA
	Liberty™ SBS Self-Adhering Cap Sheet	ASTM D6164	I	Arkadelphia, AR Mt. Vernon, IN Savannah, GA
	Ruberoid® Torch Smooth	ASTM D6222	I	Mt. Vernon, IN Savannah, GA Stockton, CA
	Ruberoid® Torch Granule	ASTM D6222	I	Mt. Vernon, IN Savannah, GA Stockton, CA

5. LIMITATIONS:

5.1 This is a building code evaluation. Neither NEMO ETC, LLC nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this PEER, or previous versions thereof, is/was used for permitting or design guidance. PEERs are not to be construed as representing any attributes not specifically listed, nor are PEERs to be construed as an endorsement of the subject, or a recommendation for its use. There is no warranty by NEMO ETC, LLC or Robert Nieminen, P.E., express or implied, as to any finding or other matter in this PEER, or as to any product covered by the PEER.

5.2 This PEER is exclusively for use in High Velocity Hurricane Zone jurisdictions, as defined in FBC Chapter 2 (Broward and Miami-Dade Counties).

5.3 The evaluation herein pertains to above-deck roof components; deck-attachment details pertain to 'as-tested' conditions under Testing Application Standard **TAS 114, Appendix J**. Roof decks shall be in accordance with **FBC HVHZ** requirements to the satisfaction of the Authority Having Jurisdiction.

5.4 This PEER does not include evaluation of fire classification. Refer to **FBC HVHZ 1516** for requirements and limitations regarding roof assembly fire classification. Refer to **FBC 2603** for requirements and limitations concerning the use of foam plastic insulation.

5.5 This PEER does not include evaluation of roof edge termination. Refer to Roofing Application Standard **RAS 111** for requirements and limitations regarding edge securement for low-slope roofs.

5.6 Refer to **FBC HVHZ 1521** for requirements and limitations regarding recover installations.

5.6.1 For mechanically attached components 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 shall be in accordance with Testing Application Standard **TAS 105**.

5.6.2 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 Testing Application Standard **TAS 124** shall be conducted on mock-ups of the proposed new roof assembly.

5.6.3 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 Testing Application Standard **TAS 124**.

5.7 Refer to Appendix 1 for system attachment requirements for wind load resistance.

5.7.1 "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 **Testing Application Standard TAS 114** has already been applied). Refer to **FBC HVHZ 1620** and **Roofing Application Standard RAS 128** for determination of design wind loads.

5.7.2 For mechanically attached components, the maximum design pressure for the selected assembly shall meet or exceed at least the Zone 1 PRIME design pressure determined in accordance with **FBC HVHZ 1620** or **Roofing Application Standard RAS 128**. Elevated pressure zones shall employ an attachment density designed by a qualified design professional to resist the elevated pressure criteria. Analysis shall be in accordance with **Roofing Application Standard RAS 117** or **RAS 137**. ***This extrapolation is not permitted for systems marked with an asterisk****.

5.7.3 For tables and/or assemblies marked with an asterisk*, the maximum design pressure (MDP) limitation shall be applicable to all roof pressure zones. Rational analysis is not permitted.

5.8 All components in the roof assembly shall have quality assurance audit in accordance with **F.A.C. Rule 61G20-3**. Refer to the Product Approval of the component manufacturer for components listed in Appendix 1 that are produced by a Product Manufacturer other than the report holder on Page 1 of this PEER.

6. INSTALLATION:

GAF Conventional Built-Up Roof Systems shall be installed in accordance with **GAF** published installation instructions, subject to the Limitations of Use herein.

7. BUILDING PERMIT REQUIREMENTS:

As required by the Building Official or Authority Having Jurisdiction 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 61G20-3** QA requirements. Refer to Section 4 herein for products and production locations having met codified material standards.

9. QUALITY ASSURANCE ENTITY:

UL (QUA9625): (360) 817-5512; bsai.inspections@ul.com

- THE 34-PAGES THAT FOLLOW FORM PART OF THIS PEER -

Appendix 1: Attachment Requirements for Wind Uplift Resistance

Table	Deck	Application	Type	Description	Page
1A	Wood	New, Reroof (Tear-Off) or Recover	B-1	Mechanically Attached Base Insulation, Bonded Top Insulation, Bonded Roof Cover	6
1B	Wood	New or Reroof (Tear-Off)	B-3	Mechanically Attached Anchor Sheet (nails & caps), Bonded Insulation, Bonded Roof Cover	6
1C	Wood	New, Reroof (Tear-Off) or Recover	B-3	Mechanically Attached Anchor Sheet (screws & plates), Bonded Insulation, Bonded Roof Cover	7
1D	Wood	New, Reroof (Tear-Off) or Recover	C-1	Mechanically Attached Insulation, Bonded Roof Cover	9
1E	Wood	New, Reroof (Tear-Off) or Recover	D-2	Insulated, Mechanically Attached Base Sheet, Bonded Roof Cover	9
1F	Wood	New or Reroof (Tear-Off)	E-2	Non-Insulated, Mechanically Attached Base Sheet (nails & caps), Bonded Roof Cover	10
1G	Wood	New, Reroof (Tear-Off) or Recover	E-2	Non-Insulated, Mechanically Attached Base Sheet (screws & plates), Bonded Roof Cover	11
2A	Steel	New, Reroof (Tear-Off)	A-1	Bonded Insulation, Bonded Roof Cover	12
2B	Steel or Structural Concrete	New, Reroof (Tear-Off) or Recover	B-1	Mechanically Attached Base Insulation, Bonded Top Insulation, Bonded Roof Cover	12
2C	Steel or Structural concrete	New, Reroof (Tear-Off), Recover	B-2	Mechanically Attached Thermal Barrier, Bonded Vapor Retarder, Bonded Insulation, Bonded Roof Cover	14
2D	Steel or Structural Concrete	New, Reroof (Tear-Off) or Recover	C-1	Mechanically Attached Insulation, Bonded Roof Cover	15
2E	Steel or Structural Concrete	New, Reroof (Tear-Off) or Recover	D-2	Insulated, Mechanically Attached Base Sheet, Bonded Roof Cover	16
3A	Structural Concrete	New or Reroof (Tear-Off)	A-1	Bonded Insulation, Bonded Roof Cover	18
3B	Structural Concrete	New or Reroof (Tear-Off)	F	Non-Insulated, Bonded Roof Cover	20
4A	Deck with Lightweight concrete	New or Reroof (Tear-Off)	A-1	Bonded Insulation, Bonded Roof Cover	21
4B	Deck with Lightweight concrete	New or Reroof (Tear-Off)	B-3	Mechanically Attached Anchor Sheet, Bonded Insulation, Bonded Roof Cover	21
4C	Deck with Lightweight concrete	New, Reroof (Tear-Off) or Recover	D-2	Insulated, Mechanically Attached Base Sheet, Bonded Roof Cover	23
4D	Deck with Lightweight concrete	New or Reroof (Tear-Off)	E-2	Non-Insulated, Mechanically Attached Base Sheet, Bonded Roof Cover	24
4E	Deck with Lightweight concrete	New or Reroof (Tear-Off)	F	Non-Insulated, Bonded Roof Cover	24
5A	Cementitious wood fiber	Reroof (Tear-Off) or Recover	B-1	Mechanically Attached Base Insulation, Bonded Top Insulation, Bonded Roof Cover	25
5B	Cementitious wood fiber	Reroof (Tear-Off) or Recover	B-3	Mechanically Attached Anchor Sheet, Bonded Insulation, Bonded Roof Cover	26
5C	Cementitious wood fiber	Reroof (Tear-Off) or Recover	C-1	Mechanically Attached Insulation, Bonded Roof Cover	26
5D	Cementitious wood fiber	Reroof (Tear-Off) or Recover	D-2	Insulated, Mechanically Attached Base Sheet, Bonded Roof Cover	27
5E	Cementitious wood fiber	Reroof (Tear-Off) or Recover	E-2	Non-Insulated, Mechanically Attached Base Sheet, Bonded Roof Cover	27
6A	Existing gypsum	Reroof (Tear-Off)	B-1	Mechanically Attached Base Insulation, Bonded Top Insulation, Bonded Roof Cover	28
6B	Existing gypsum	Reroof (Tear-Off)	B-3	Mechanically Attached Anchor Sheet, Bonded Insulation, Bonded Roof Cover	29
6C	Existing gypsum	Reroof (Tear-Off)	C-1	Mechanically Attached Insulation, Bonded Roof Cover	30
6D	Existing gypsum	Reroof (Tear-Off)	D-2	Insulated, Mechanically Attached Base Sheet, Bonded Roof Cover	31
6E	Existing gypsum	Reroof (Tear-Off)	E-2	Non-Insulated, Mechanically Attached Base Sheet, Bonded Roof Cover	31
7A	Various	Recover	A-1	Bonded Insulation, Bonded Roof Cover	32
7B	Various	Recover	F	Non-Insulated, Bonded Roof Cover	34

The following notes apply to the systems outlined herein:

1 The roof system evaluation herein pertains to above-deck roof components. Roof decks and structural members shall be in accordance with FBC HVHZ requirements to the satisfaction of the Authority Having Jurisdiction. Deck-attachment details pertain to 'as-tested' conditions under Testing Application Standard TAS 114, Appendix J.

2 Unless otherwise noted, fasteners and stress plates shall be as follows. Fastener shall be of sufficient length for the following engagements:

FASTENER/PLATE OPTIONS			
DECK TYPE	**BY**	**PARTS**	**MINIMUM ENGAGEMENT**
Wood	GAF	Drill-Tec #12 Fastener, Drill-Tec #12 DP Fastener, Drill-Tec #12 DPH Fastener, Drill-Tec #14 Fastener or Drill-Tec #14 HD Fastener with Drill-Tec 3" Standard Steel Plate, Drill-Tec 3" Steel Plate or Drill-Tec AccuTrac Flat Plate, Drill-Tec AccuTrac Recessed Plate (insulation only), Drill-Tec 3" Flat Steel Plate or Drill-Tec 3" Recessed Steel Plate; Drill-Tec ASAP 3S; Drill-Tec Heavy Duty ASAP Roofing Fastener Assembled with a 3" Metal Plate; Drill-Tec 3" ASAP Flat or Drill-Tec 3" ASAP Recessed	Minimum ¾-inch plywood penetration or minimum 1-inch wood plank embedment
Steel	GAF	Drill-Tec #12 Fastener, Drill-Tec #12 DP Fastener, Drill-Tec #12 DPH Fastener, Drill-Tec #14 Fastener, Drill-Tec #14 HD Fastener, Drill-Tec XHD Fastener or Drill-Tec #15 EHD Fastener with Drill-Tec 3" Standard Steel Plate, Drill-Tec 3" Steel Plate or Drill-Tec AccuTrac Flat Plate or Drill-Tec AccuTrac Recessed Plate (insulation only), Drill-Tec 3" Flat Steel Plate or Drill-Tec 3" Recessed Steel Plate; Drill-Tec ASAP 3S; Drill-Tec Heavy Duty ASAP Roofing Fastener Assembled with a 3" Metal Plate; Drill-Tec Extra Heavy Duty ASAP Roofing Fastener – Insulation; ; Drill-Tec 3" ASAP Flat or Drill-Tec 3" ASAP Recessed	Minimum ¾-inch steel penetration and engage the top flute of the steel deck
	Note:	Unless otherwise noted, Drill Tec #12 DF Fastener or Drill Tec #14 DF Fastener with Drill Tec 3" DF Steel Insulation Plate may be used in place of Drill-Tec #12 Fastener or Drill-Tec #14 Fastener with Drill-Tec 3" Standard Steel Plate when used to secure DensDeck Prime, SECUROCK Gypsum-Fiber Roof Board or SECUROCK Ultralight Coated Glass-Mat Roof Board to steel deck, up to a maximum allowable design pressure (MDP) of -120.0 psf.	
	Note:	Unless otherwise noted, Drill Tec #12 DF Fastener or Drill Tec #14 DF Fastener with Drill Tec 3" DF Steel Insulation Plate may be used in place of Drill-Tec #12 Fastener or Drill-Tec #14 Fastener with Drill-Tec 3" Standard Steel Plate when used to secure min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation, 0.75-inch EnergyGuard Perlite Roof Insulation (homogeneous) or min. 1.5-inch EnergyGuard POLYISO INSULATION or EnergyGuard Ultra Polyiso Insulation to steel deck.	
	Note:	Unless otherwise noted, Drill Tec #12 DF Fastener or Drill Tec #14 DF Fastener with Drill Tec 3" DF Steel Insulation Plate may be used in place of Drill-Tec #12 Fastener or Drill-Tec #14 Fastener with Drill-Tec 3" Standard Steel Plate when used to secure GAFGLAS #75 Base Sheet to steel deck	
Structural Concrete	GAF	Drill-Tec #14 Fastener, Drill-Tec #14 HD Fastener or Drill-Tec CD-10 with Drill-Tec 3" Standard Steel Plate, Drill-Tec 3" Steel Plate or Drill-Tec AccuTrac Flat Plate or Drill-Tec AccuTrac Recessed Plate (insulation only), Drill-Tec 3" Flat Steel Plate or Drill-Tec 3" Recessed Steel Plate; Drill-Tec Heavy Duty ASAP Roofing Fastener Assembled with a 3" Metal Plate or Drill-Tec 3" ASAP Flat (#14 only)	Minimum 1.25-inch embedment. Fastener installed with a pilot hole in accordance with the fastener manufacturer's published installation instructions
	Note:	Unless otherwise noted, Drill Tec #14 DF Fastener with Drill Tec 3" DF Steel Insulation Plate may be used in place of Drill-Tec #14 Fastener with Drill-Tec 3" Standard Steel Plate when used to secure DensDeck Prime, SECUROCK Gypsum-Fiber Roof Board or SECUROCK Ultralight Coated Glass-Mat Roof Board to structural concrete deck, up to a maximum allowable design pressure (MDP) of -120.0 psf.	
	Note:	Unless otherwise noted, Drill Tec #14 DF Fastener with Drill Tec 3" DF Steel Insulation Plate may be used in place of Drill-Tec #14 Fastener with Drill-Tec 3" Standard Steel Plate when used to secure min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation, 0.75-inch EnergyGuard Perlite Roof Insulation (homogeneous) or min. 1.5-inch EnergyGuard POLYISO INSULATION or EnergyGuard Ultra Polyiso Insulation to structural concrete deck.	

3 Unless otherwise noted, insulation may be any one layer or combination of FBC Approved (Local or Statewide) board(s) that meet FBC HVHZ 1516 and, for foam plastic, FBC Chapter 26, when installed with the roof cover.

4 Minimum 200 psi, minimum 2-inch thick FBC HVHZ Approved lightweight insulating concrete may be substituted for or installed below, rigid insulation board for System Types B-1, C-1, C-2, D-1 or D-2, whereby fasteners are installed through the lightweight insulating concrete to engage the structural deck. The structural deck shall be of equal or greater type, thickness and strength to the steel and structural concrete deck listings. Roof decks and structural members shall be in accordance with FBC requirements to the satisfaction of the Authority Having Jurisdiction. This is a wind uplift resistance allowance and does not purport to address non-wind-uplift-related issues, such as deck venting or moisture levels within the LWIC and the potential effect on overlying components. If mechanical attachment to the structural deck through lightweight insulating concrete is proposed, field withdrawal resistance testing shall be performed to confirm equivalent or determine enhanced fastening patterns and density. All testing and fastening design shall be in compliance with Testing Application Standard TAS 105 and Roofing Application Standard RAS 117 and/or RAS 137. Calculations shall be prepared, signed and sealed by a qualified design professional.

5 Preliminary insulation attachment: Unless otherwise noted, use FBC HVHZ Approved roofing fasteners and plates minimum four fasteners per 4 x 8 ft board or minimum two fasteners per 4 x 4 ft board.

6 Unless otherwise noted, insulation adhesive application rates are as follows.

- Ribbon or bead width is at the time of application; the ribbons/beads shall expand as noted in the manufacturer's published instructions.
- If applying hot asphalt to concrete deck, deck shall be primed with ASTM D41 primer.
- When multiple layers(s) of insulation and/or coverboard are installed in ribbon-applied adhesive, board joints shall be staggered.
- The maximum edge distance from the adhesive ribbon to the edge of the insulation board shall be not less than one-half the specified ribbons spacing.

Insulation Adhesive References				
By	Adhesive	Reference	FBC File or NOA	Minimum Rate
GAF	GAF LRF Adhesive M	'LRF-M'	N/A	Continuous 0.75 to 1-inch ribbons, 12-inch o.c.
GAF	GAF LRF Adhesive M Canister	'LRF-M Canister'	N/A	Continuous 1 to 1.5-inch ribbons, 12-inch o.c.
GAF	GAF LRF Adhesive XF	'LRF-XF'	N/A	Continuous 0.75 to 1-inch ribbons, 12-inch o.c.
H.B. Fuller Company	Millennium One Step Foamable Adhesive	'M-OSFA'	21-1018.06	Continuous 0.25 to 0.5-inch wide ribbons, 12-inch o.c.
OMG, Inc.	OlyBond 500 Adhesive Fastener	'OB500'	22-0519.04	Continuous 0.75-inch wide ribbons, 12-inch o.c. (PaceCart, SpotShot or Canister)
Generic, ASTM D312, Type IV	hot asphalt	N/A	N/A	Full coverage at 25-30 lbs/square

7 Unless otherwise noted, all insulations are flat-stock or taper board of the minimum thickness noted. Tapered polyisocyanurate at the following thickness limitations may be substituted with the following Maximum Design Pressure (MDP) limitations. In no case shall these values be used to 'increase' the MDP listings in the tables; rather if MDP listing below meets or exceeds that listed for a particular system in the tables, then the thinner board listed below may be used as a drop-in for the equivalent thicker material listed in the table.

MDP Limitations for Tapered Polyisocyanurate Insulations				
Adhesive	Insulation		Min. Tapered Thickness (in)	MDP (psf)
	Listed Product	FBC File or NOA		
LRF-M	EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation	22-1202.06	0.5	-232.5
LRF-XF	EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation	22-1202.06	0.5	-292.5
LRF-XF	EnergyGuard RA	23-0130.03	0.5	-487.5
M-OSFA	Any EnergyGuard polyisocyanurate listed with adhesive herein	various	0.5	-157.5
OB500	EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation	22-1202.06	0.5	-292.5
OB500	EnergyGuard RH	19-1017.09	0.5	-315.0
OB500	EnergyGuard RN	18-1126.10	0.5	-315.0
OB500	EnergyGuard RA	23-0130.03	0.5	-487.5
Hot asphalt	Any EnergyGuard polyisocyanurate listed with adhesive herein	Various	0.5	-240.0

8 Bonded polyisocyanurate insulation boards shall be maximum 4 x 4 ft.

9 For mechanically attached components, the maximum design pressure for the selected assembly shall meet or exceed at least the Zone 1 PRIME design pressure determined in accordance with FBC HVHZ 1620 or Roofing Application Standard RAS 128. Elevated pressure zones shall employ an attachment density designed by a qualified design professional to resist the elevated pressure criteria in accordance with Roofing Application Standard RAS 117 or RAS 137. *This extrapolation is not permitted for systems marked with an asterisk*

10 For tables and/or assemblies marked with an asterisk*, 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.

11 For mechanically attached components over existing decks, fasteners shall be tested in the existing deck for withdrawal resistance in accordance with Testing Application Standard TAS 105. A qualified design professional shall review the data for comparison to the minimum requirements for the system. Should the fastener resistance be less than that required, a revised fastener spacing – prepared, signed and sealed by a qualified design professional in accordance with Roofing Application Standard RAS 117 or RAS 137 – may be submitted to the Building Official for review and acceptance. For systems using Trufast Versa-Fast, the number of Versa-Fast Fasteners installed through the Versa-Fast Plate may be increased from the minimum noted in order to yield minimum required withdrawal resistance.

12 Refer to FBC HVHZ 1521 for requirements and limitations regarding recover installations. 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 shall be conducted on mock-ups of the proposed new roof assembly. 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 Testing Application Standard TAS 124.

13 For Structural Concrete Deck or Recover Applications using System Type C-1 the base insulation layer is optional and for System Type C-2, D-1 or D-2, the insulation is optional. Alternatively, an FBC HVHZ Approved insulation board or coverboard may be used as a separation layer. Board products shall be preliminarily attached prior to roof cover installation **(Note 5)**. The separator component shall be documented as meeting FBC HVHZ 1516 and, for foam plastic, FBC Chapter 26, when installed with the roof cover in Recover applications.

14 Lightweight insulating concrete (LWIC) shall be cast in accordance with FBC Section 1917 to the satisfaction of the Authority Having Jurisdiction. For systems where specific LWIC is referenced, refer to current LWIC FBC HVHZ Product Approval for specific deck construction and limitations. Unless otherwise noted, for systems where specific LWIC is not referenced, the minimum design mix shall be 300 psi. In all cases, the minimum top-coat thickness is 2-inches. For LWIC over structural concrete, reference is made to FBC Section 1917.4.1, Point 1. For "pre-existent" LWIC references, listings were established through testing over lightweight concrete cast using only foaming agent (ASTM C896), water and Portland cement (ASTM C150), with no proprietary additives, in accordance with procedures adopted by Miami-Dade BCCO (FBC CER1592). Use of these listings in new construction or re-roof (tear-off) applications is at the discretion of the Designer or Record and Authority Having Jurisdiction.

15 For bonded membrane applications, unless otherwise noted, refer to the following.

MEMBRANE / ADHESIVE COMBINATIONS		
REFERENCE	TYPE	APPLICATION
Base Sheet (BS)	Optional base sheet of GAFGLAS #75 Base Sheet, Tri-Ply #75 Base Sheet, GAFGLAS #80 Ultima Base Sheet, GAFGLAS Ply 4, GAFGLAS Ply 4 M, Tri-Ply Ply 4 Ply Sheet or GAFGLAS FlexPly 6, GAFGLAS FlexPly 6 M	Hot asphalt
Venting Base Sheet (V-BS)	GAFGLAS Stratavent Perforated Venting Base Sheet	Loose-laid
Ply Sheet (PS)	Two or more plies of GAFGLAS Ply 4, GAFGLAS Ply 4 M, Tri-Ply Ply 4 Ply Sheet or GAFGLAS FlexPly 6, GAFGLAS FlexPly 6 M	Hot asphalt
Ply Sheet, Modified Bitumen (PS-MB)	One or two plies of GAFGLAS #80 Ultima Base Sheet, Ruberoid 20 Smooth, Ruberoid Mop Smooth or Ruberoid Mop Smooth 1.5	Hot asphalt
Cap Sheet (CS)	Optional cap sheet of GAFGLAS Mineral-Surfaced Cap Sheet, Tri-Ply BUR Granule Cap Sheet or GAFGLAS EnergyCap Mineral-Surfaced Cap Sheet	Hot asphalt

Note: Systems without a cap sheet shall be surfaced in accordance with GAF requirements, meeting the fire resistance requirements of FBC Section 1516, and in accordance with FBC Section 1519.12.

16 **Thermal Barrier and/or Vapor Barrier Options:**

16A Structural Concrete Decks: The lesser of the MDP listings below vs. that for the selected assembly applies.

VAPOR BARRIER OPTIONS, STRUCTURAL CONCRETE DECK, ADHERED INSULATION					
OPTION #	PRIMER	VAPOR BARRIER (NOTE 15)		INSULATION ADHESIVE PER TABLE 3A	MDP (PSF)
		TYPE	APPLICATION		
C-VB-1.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	Ruberoid Torch Granule	Torch-applied	Hot asphalt	-225.0
C-VB-2.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	BP-AA	Hot asphalt applied	Hot asphalt	-360.0
C-VB-3.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	One or two plies, GAFGLAS Ply 4, GAFGLAS Ply 4 M, Tri-Ply Ply 4 Ply Sheet, GAFGLAS FlexPly 6 or GAFGLAS FlexPly 6 M or SBS-AA	Hot asphalt applied	Hot asphalt	-495.0
C-VB-4.	None	GAF SA Vapor Retarder XL	Self-adhering	LRF-M, 12-inch o.c.	-112.5
C-VB-5.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	SBS-TA	Torch-applied	LRF-M, 12-inch o.c.	-180.0
C-VB-6.	GAF SA Primer	GAF SA Vapor Retarder	Self-adhering	LRF-M, 12-inch o.c.	-202.5
C-VB-7.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	BP-AA or one or two plies GAFGLAS Ply 4, GAFGLAS Ply 4 M, GAFGLAS FlexPly 6 or GAFGLAS Flex Ply 6 M or SBS-AA	Hot asphalt applied	LRF-M, 12-inch o.c.	-495.0
C-VB-8.	None	GAF SA Vapor Retarder XL	Self-adhering	LRF-XF 12-inch o.c.	-112.5
C-VB-9.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	Ruberoid Torch Granule	Torch-applied	LRF-XF, 12-inch o.c.	-169.0
C-VB-10.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	SBS-TA	Torch-applied	LRF-XF, 12-inch o.c.	-180.0

TABLE 3A: STRUCTURAL CONCRETE DECKS – NEW CONSTRUCTION OR REROOF (TEAR-OFF)
SYSTEM TYPE A-1: BONDED INSULATION, BONDED ROOF COVER
SEE Note 16 FOR VAPOR BARRIER OPTIONS

System No.	Deck (Note 1)	Prime	Base Insulation Layer		Top Insulation Layer		Roof Cover (Note 15)			MDP (psf)
			Type	Attach (Notes 6,7,8)	Type	Attach (Notes 6,7,8)	Base	Ply	Cap	
C-12.	Min. 2,500 psi structural concrete	None	Min. 1.5-inch EnergyGuard Polyiso Insulation	LRF-M Canister	Insulation: (Optional) Additional layer(s) base insulation. Coverboard: Min. 0.25-inch Dens Deck Prime or SECUROCK Gypsum-Fiber Roof Board	LRF-M Canister	BS	GAF BUR. Note 15.		-202.5*
C-13.	Min. 2,500 psi structural concrete	None	Min. 1.0-inch EnergyGuard Polyiso Insulation or EnergyGuard Ultra	LRF-XF	Insulation: (Optional) Additional layer(s) base insulation. Coverboard: Min. 0.25-inch DensDeck Prime or SECUROCK Gypsum-Fiber Roof Board	LRF-XF	BS	GAF BUR. Note 15.		-202.5*
C-14.	Min. 2,500 psi structural concrete	None	(Optional) Min. 1.5-inch EnergyGuard RA	LRF-XF	Min. 0.25-inch DensDeck Prime or SECUROCK Gypsum-Fiber Roof Board	LRF-XF	BS	GAF BUR. Note 15.		-240.0*
C-15.	Min. 2,500 psi structural concrete	None	Min. 0.5-inch Structodek High Density Fiberboard Roof Insulation	OB500	None	N/A	BS	GAF BUR. Note 15.		-165.0*
C-16.	Min. 2,500 psi structural concrete	None	Min. 1.5-inch EnergyGuard RA or RN	OB500	Min. 0.5-inch Structodek High Density Fiberboard Roof Insulation	OB500	BS	GAF BUR. Note 15.		-165.0*
C-17.	Min. 2,500 psi structural concrete	None	Min. 1.5-inch EnergyGuard RA or RN	OB500	Min. 0.25-inch Dens Deck or Dens Deck Prime	OB500	BS	GAF BUR. Note 15.		-150.0*
C-18.	Min. 2,500 psi structural concrete	None	Min. 1.0-inch EnergyGuard Polyiso Insulation or EnergyGuard Ultra	OB500	Insulation: (Optional) Additional layer(s) base insulation. Coverboard: Min. 0.25-inch Dens Deck Prime or SECUROCK Gypsum-Fiber Roof Board	OB500	BS	GAF BUR. Note 15.		-202.5*
C-19.	Min. 2,500 psi structural concrete	None	Min. 1.5-inch EnergyGuard RA or RN	OB500	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	OB500	BS	GAF BUR. Note 15.		-225.0*
VENTING BASE SYSTEMS:										
C-20.	Min. 2,500 psi structural concrete	ASTM D41	Min. 0.5-inch EnergyGuard Polyiso Insulation	hot asphalt	(Optional) Additional layer(s) base insulation	hot asphalt	V-BS	GAF BUR. Note 15.		-150.0*
C-21.	Min. 2,500 psi structural concrete	ASTM D41	Min. 1-inch EnergyGuard RN	hot asphalt	(Optional) Additional layers base insulation	hot asphalt	V-BS	GAF BUR. Note 15.		-292.5*
C-22.	Min. 2,500 psi structural concrete	None	Min. 1.0-inch EnergyGuard Polyiso Insulation or EnergyGuard Ultra	LRF-M	Insulation: (Optional) Additional layer(s) base insulation.	LRF-M	V-BS	GAF BUR. Note 15.		-150.0*
C-23.	Min. 2,500 psi structural concrete	None	Min. 1.0-inch EnergyGuard Polyiso Insulation or EnergyGuard Ultra	LRF-M	Insulation: (Optional) Additional layer(s) base insulation. Coverboard: Min. 0.25-inch Dens Deck Prime or SECUROCK Gypsum-Fiber Roof Board	LRF-M	V-BS	GAF BUR. Note 15.		-202.5*