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Certificate of Authorization #32455
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ENGINEER **TEST** **CONSULT**

P.E. EVALUATION REPORT (PEER)

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

PEER-GAF-011.B.R3
FL4911-R26 (HVHZ)
Date of Issuance: 08/15/2024
Revision 3: 01/29/2025

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** sections noted herein.

DESCRIPTION: GAF Waterproofing and Plaza Deck 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: "NEMO P.E. Evaluated" may be displayed in advertising literature. If any portion of the PEER is displayed, then it shall be in its entirety.

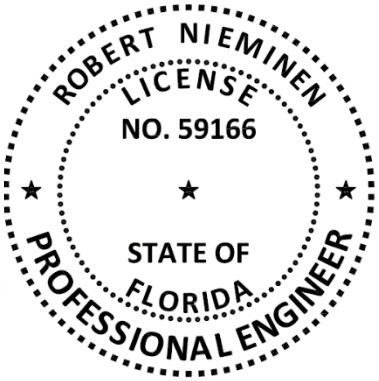
INSPECTION: Upon request, a copy of this entire PEER shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This PEER consists of pages 1 through 5, plus 8-pages of Appendix.

Prepared by:

Digitally signed by Robert Nieminen
Date: 2025.01.29 12:47:57 '-05'00

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 SYSTEMS EVALUATION:

1. SCOPE:

Product Category: Roofing
Sub-Category: Waterproofing
Product Approval Method: Method 1, Option D: Codified Material, Evaluation by Engineer
Compliance Statement: **GAF Waterproofing and Plaza Deck Systems**, as produced by **GAF**, have demonstrated compliance with the following sections of the **8th Edition (2023) Florida Building Code, High Velocity Hurricane Zone** 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	Wind resistance	TAS 114
TAS 110	Material standard (asphaltic)	ASTM D4601
TAS 110	Material standard (modified bitumen)	ASTM D6163, D6164, D6222
TAS 110	Material standard (thermoplastic)	ASTM D6878
TAS 110	Material standard (liquids)	ASTM D6083
TAS 110	Physical Properties	TAS 139

3. REFERENCES:

ENTITY	EXAMINATION	REFERENCE	DATE
NEMO	ASTM D6163, D6164, D6222	GAF-PEER-007.A&B	Current
NEMO	ASTM D6878	GAF-PEER-009.A&B	Current
NEMO (TST6049)	ASTM D6083, Table 1 (IL)	4p-GAF-SSLAP-001.A	05/29/2024
NEMO (TST6049)	Physical Properties	4j-GAF-SSUDL-004.A	11/19/2024
PRI (TST 5878)	ASTM D6083, Table 2 (IL)	743T0014	07/31/2020
PRI (TST 5878)	Physical Properties (AR)	376T0466	10/24/2023
PRI (TST 5878)	Physical Properties (AR)	376T0465	12/11/2023
ERD (TST6049)	TAS 114	18031.07.02	07/24/2002
FM (TST1867)	FM 4470/4474	3061784	07/25/2018
FM (TST1867)	FM 4474	RR241387	05/10/2024
FM (TST1867)	FM 4474	PR468153	11/04/2024
NEMO (TST6049)	TAS114(J)	4a-GAF-LSWUS-01.A	04/26/2023
NEMO (TST6049)	Criticality	4i-GAF-SSCRT-001.A	05/29/2024
NEMO (TST6049)	TAS 114	4a-GAF-SSWUS-001.A	07/24/2024
NEMO (TST6049)	Criticality	4i-GAF-SSCRT-002.A	12/09/2024
PRI (TST 5878)	TAS114(J)	GAF-462-02-11	06/30/2014
UL, LLC. (QUA9625)	Quality Assurance	Service Confirmation	07/12/2022
UL, LLC (QUA9625)	Quality Assurance	Service Confirmation (AR)	12/04/2023
UL, LLC. (QUA9625)	Quality Assurance	Florida BCIS	Current

4. PRODUCT DESCRIPTION:

This PEER covers **GAF Waterproofing and Plaza Deck Systems** installed in accordance with **GAF** published installation instructions and the Limitations of Use herein.

TABLE 1: EVALUATED WATERPROOFING COMPONENTS

TYPE	PRODUCT	MATERIAL STANDARD			PLANT(S)
		REFERENCE	TYPE	GRADE	
APP, SMOOTH-SURFACED MEMBRANES	Ruberoid® Torch Smooth	ASTM D6222	I	S	CA-S, GA, IN
	Tri-Ply® APP Smooth Membrane				
APP, GRANULE-SURFACED MEMBRANES	Ruberoid® Torch Granule	ASTM D6222	I	G	CA-S, GA, IN
	Tri-Ply® APP Granule Membrane				
SBS, SMOOTH-SURFACED MEMBRANES	Liberty™ SBS Self-Adhering Base/Ply Sheet	ASTM D4601	II	N/A	GA, IN
	Ruberoid® Mop Smooth	ASTM D6164	I	S	GA
	Ruberoid® Mop Smooth 1.5				
	Ruberoid® Mop Plus Smooth				
SBS, GRANULE-SURFACED MEMBRANES	Ruberoid® Mop Granule	ASTM D6164	I	G	CA-S, GA
	Tri-Ply® SBS Granule Cap Sheet				
THERMOPLASTIC	EverGuard® TPO Fleece-Back Membrane	ASTM D6878	N/A	N/A	IN, PA, UT
	EverGuard Extreme® TPO Fleece-Back Membrane	ASTM D6878	N/A	N/A	IN
LIQUID APPLIED	GAF Surface Seal SB Thermoplastic Rubber Coating	ASTM D6083	I	N/A	IL
	GAF FlexSeal™ Sealant	TAS 139	N/A	N/A	AR
	GAF TPO Red Primer	N/A	N/A	N/A	AR
VAPOR BARRIER MEMBRANES	GAFGLAS® #75 Base Sheet	ASTM D4601	II	N/A	AL, CA-F, GA
	Tri-Ply® #75 Base Sheet		II	N/A	AL, CA-F, GA
	GAFGLAS #80 Ultima Base Sheet		II	N/A	AL, GA
	GAFGLAS® Ply 4	ASTM D2178	IV	N/A	AL, CA-F, GA
	Tri-Ply Ply 4 Ply Sheet		IV	N/A	AL, CA-F, GA
	GAFGLAS® Ply 4 M		IV	N/A	AL
	GAFGLAS® FlexPly™ 6		VI	N/A	AL, GA
	GAFGLAS® FlexPly™ 6 M		VI	N/A	AL
	Ruberoid® 20 Smooth	ASTM D6163	I	S	AR
	Ruberoid® HW 20 Smooth		I	S	AR
	Ruberoid® HW 25 Smooth		I	S	GA
	Ruberoid® HW 30 Smooth		I	S	AR
	Ruberoid® 30 Granule		I	G	GA
	Ruberoid® HW Smooth	ASTM D6164	I	S	GA
	Ruberoid® Mop Smooth		I	S	GA
	Ruberoid® Mop Smooth 1.5		I	S	GA
	Ruberoid® Mop Plus Smooth		I	S	GA
	Liberty™ SBS Self-Adhering Cap Sheet		I	G	AR, GA
	Ruberoid® HW Granule		I	G	GA
	Ruberoid® Mop Granule		I	G	CA-S, GA
	Ruberoid® HW Plus Granule		II	G	GA
	Ruberoid® Mop Plus Granule		II	G	GA
	Ruberoid® Torch Smooth	ASTM D6222	I	S	CA-S, GA, IN
	Ruberoid® Torch Granule		I	G	CA-S, GA, IN
	GAF SA Vapor Retader XL and XL40	N/A	N/A	N/A	IN

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, or otherwise not mentioned in Section 4.

6. INSTALLATION:

GAF Waterproofing and Plaza Deck Systems shall be installed in accordance with **GAF** published installation instructions, subject to the Limitations of Use noted herein. Flashing and detailing shall be in accordance with GAF published installation instructions using GAF specified materials to establish a watertight condition.

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 physical properties specifications.

9. QUALITY ASSURANCE ENTITY:

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

- THE 8-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	Mech. Attached Base Insulation, Bonded Top Insulation, Bonded Roof Cover	6
2A	Structural concrete	New or Reroof (Tear-Off)	A-1	Bonded Insulation, Bonded Waterproofing (topping slab overburden)	7
2B	Structural concrete	New or Reroof (Tear-Off)	A-1	Bonded Insulation, Bonded Waterproofing (ceramic tile overburden)	8
2C	Structural concrete	New or Reroof (Tear-Off)	F	Non-Insulated, Bonded Waterproofing	8

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. Fasteners shall be of sufficient length for the following engagements:

FASTENER/PLATE OPTIONS				
		PARTS		
DECK TYPE	BY	LOOSE PARTS	PRE-ASSEMBLED 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, 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 3" ASAP Flat, Drill-Tec 3" ASAP Recessed, Drill-Tec ASAP 3S or Drill-Tec Heavy Duty ASAP Roofing Fastener Assembled with a 3" Metal Plate	Minimum ¾-inch plywood penetration or minimum 1-inch wood plank embedment

3 RESERVED

4 RESERVED

5 RESERVED

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'	23-0802.14	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.
OMG, Inc.	OlyBond 500 Adhesive Fastener	'OB500'	24-0422.18	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	24-0227.08	0.5	-232.5
LRF-XF	EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation	24-0227.08	0.5	-292.5
LRF-XF	EnergyGuard RA	24-0402.09	0.5	-487.5
OB500	EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation	24-0227.08	0.5	-292.5
OB500	EnergyGuard RH	19-1017.09	0.5	-315.0
OB500	EnergyGuard RA	24-0402.09	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.

12 For bonded insulation or membrane over existing substrates in a re-roof (tear off) installation, the existing deck 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 to the satisfaction of the Authority Having Jurisdiction. Field uplift testing, if required by the Authority Having Jurisdiction, shall be in accordance with Testing Application Standard TAS 124.

13 RESERVED

14 RESERVED

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

MEMBRANE / ADHESIVE COMBINATIONS WATERPROOFING COVERS			
REFERENCE	**LAYER**	**MATERIAL**	**APPLICATION**
APP-TA (APP, Torch-Applied)	Base Ply or Ply:	One (1) ply (if Cap Ply installed) or minimum two (2) plies (if no Cap Ply installed), Ruberoid Torch Smooth; Tri-Ply APP Smooth Membrane	Torch-applied
	Cap Ply:	Ruberoid Torch Granule, Tri-Ply APP Granule Membrane	
SBS-AA (SBS, Asphalt-Applied)	Base Ply or Ply:	One (1) ply (if Cap Ply installed) or minimum two (2) plies (if no Cap Ply installed), Ruberoid Mop Smooth 1.5; Ruberoid Mop Smooth; Ruberoid Mop Plus Smooth	Hot asphalt at 25 lbs/square.
	Cap Ply:	Ruberoid Mop Granule, Tri-Ply SBS Granule Cap Sheet	
SBS-CA (SBS, Cold-Applied)	Base Ply or Ply:	One (1) ply (if Cap Ply installed) or minimum two (2) plies (if no Cap Ply installed), Ruberoid Mop Smooth 1.5; Ruberoid Mop Smooth; Ruberoid Mop Plus Smooth	Matrix 102 SBS Membrane Adhesive at 1.5 gal/sq.
	Cap Ply:	Ruberoid Mop Granule, Tri-Ply SBS Granule Cap Sheet	
SBS-SA (self-adhering)	Base Ply or Ply:	LIBERTY SBS Self-Adhering Base/Ply Sheet	Self-adhered
TPOFB-LM	Waterproofing:	EverGuard TPO Fleece-Back Membrane	GAF LRF Adhesive M, wet lay (substrate), 1-inch wide ribbons spaced as noted in tables herein or "spatter pattern" at 0.55 to 0.75 gal/square.
TPOFB-LMC	Waterproofing:	EverGuard TPO Fleece-Back Membrane	GAF LRF Adhesive M Canister, wet lay (substrate), "spatter pattern" at 0.3 gal/square
TPOFB-OB	Waterproofing:	EverGuard TPO Fleece-Back Membrane	OlyBond 500 Canister, wet lay (substrate), "spatter pattern" at 0.32 gal/square
TPOFB-XF	Waterproofing:	EverGuard TPO Fleece-Back Membrane	GAF LRF Adhesive XF, wet lay (substrate), "spatter pattern" at 3.0 lbs/square.
GAF Surface Seal SB Thermoplastic Rubber Coating	Waterproofing:	Two (2) coats at 1.5 gal./square per coat. Consult GAF for allowable cure-time between coats.	

MEMBRANE / ADHESIVE COMBINATIONS VAPOR BARRIERS		
REFERENCE	**MATERIAL**	**APPLICATION**
VB-APP-TA (smooth)	Ruberoid Torch Smooth	Torch-applied
VB-APP-TA (granule)	Ruberoid Torch Granule	Torch-applied
VB-BP1-AA	One or more GAFGLAS #75 Base Sheet, Tri-Ply #75 Base Sheet, GAFGLAS #80 Ultima Base Sheet	Hot asphalt at 25 lbs/square.
VB-BP2-AA	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	
VB-SBS-AA	Ruberoid 20 Smooth, Ruberoid Mop Smooth, Ruberoid Mop Smooth 1.5, Ruberoid Mop Plus Smooth, Ruberoid 30 Granule or Ruberoid Mop Granule, Ruberoid Mop Plus Granule	Hot asphalt at 25 lbs/square.
VB-SBS-CA	Ruberoid 20 Smooth, Ruberoid Mop Smooth, Ruberoid Mop Smooth 1.5, Ruberoid Mop Plus Smooth, Ruberoid 30 Granule or Ruberoid Mop Granule, Ruberoid Mop Plus Granule	Matrix 102 SBS Membrane Adhesive at 1.5 gal/sq.
VB-SBS-SA	Liberty SBS Self-Adhering Cap Sheet	Self-adhering
VB-SBS-TA	Ruberoid HW 20 Smooth, Ruberoid HW 25 Smooth, Ruberoid HW 30 Smooth, Ruberoid HW Smooth, Ruberoid HW Granule or Ruberoid HW Plus Granule	Torch-applied

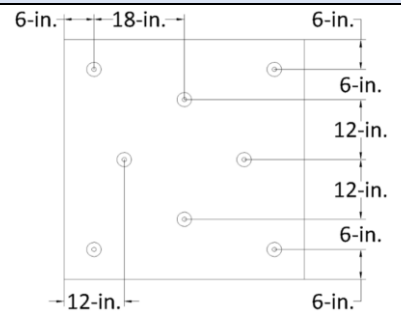
16 **Thermal Barrier and/or Vapor Barrier Options:**

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

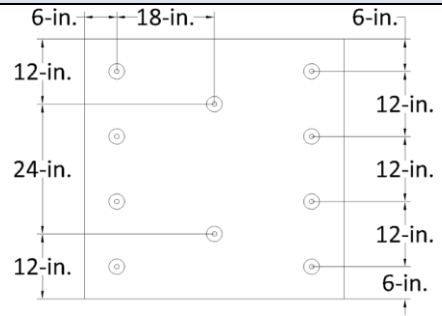
Structural Concrete Deck: Vapor Barrier followed by Adhered Insulation					
Option #	Primer	Vapor Barrier (Note 15)		Insulation Adhesive per Table 2A or 2B	MDP (psf)
		Type	Application		
C-VB-1.	None	GAF SA Vapor Retarder XL	Self-adhering	LRF-M, 12-inch o.c.	-180.0
C-VB-2.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	VB-APP-TA (granule), VB-SBS-AA, VB-SBS-CA, VB-SBS-SA or VB-SBS-TA	See Note 15	LRF-M, 12-inch o.c.	-180.0
C-VB-3.	GAF SA Primer	GAF SA Vapor Retarder	Self-adhering	LRF-M, 12-inch o.c.	-202.5
C-VB-4.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	VB-BP1-AA, VB-BP2-AA or VB-SBS-AA	Hot asphalt applied	LRF-M, 12-inch o.c.	-495.0
C-VB-5.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	VB-APP-TA (granule)	Torch-applied	LRF-XF, 12-inch o.c.	-169.0
C-VB-6.	None	GAF SA Vapor Retarder XL	Self-adhering	LRF-XF 12-inch o.c.	-180.0
C-VB-7.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	VB-APP-TA (granule), VB-SBS-AA, VB-SBS-CA, VB-SBS-SA or VB-SBS-TA	See Note 15	LRF-XF, 12-inch o.c.	-180.0
C-VB-8.	GAF SA Primer	GAF SA Vapor Retarder	Self-adhering	LRF-XF, 12-inch o.c.	-202.5
C-VB-9.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	VB-SBS-SA	Self-adhering	LRF-XF, 12-inch o.c.	-250.0
C-VB-10.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	VB-BP1-AA, VB-BP2-AA or VB-SBS-AA	Hot asphalt applied	LRF-XF, 12-inch o.c.	-262.5
C-VB-11.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	Ruberoid 30	Hot asphalt applied	LRF-XF, 12-inch o.c.	-270.0
C-VB-12.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	VB-APP-TA (smooth)	Torch-applied	OB500, 12-inch o.c.	-165.0
C-VB-13.	None	GAF SA Vapor Retarder XL	Self-adhering	OlyBond 500, 12-inch o.c.	-180.0
C-VB-14.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	VB-SBS-AA, VB-SBS-CA, VB-SBS-SA or VB-SBS-TA	See Note 15	OB500, 12-inch o.c.	-180.0
C-VB-15.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	VB-SBS-SA	Self-adhering	OB500, 12-inch o.c.	-187.5
C-VB-16.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	Ruberoid 20 Smooth	Matrix 102 SBS Membrane Adhesive at 1.5 gal/square	OB500, 12-inch o.c.	-202.5
C-VB-17.	GAF SA Primer	GAF SA Vapor Retarder	Self-adhering	OB500, 12-inch o.c.	-202.5
C-VB-18.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	VB-APP-TA (granule)	Torch-applied	OB500, 12-inch o.c.	-225.0
C-VB-19.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	Ruberoid HW Smooth	Torch-applied	OB500, 12-inch o.c.	-232.5
C-VB-20.	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	VB-BP1-AA, VB-BP2-AA or VB-SBS-AA	Hot asphalt applied	OB500, 12-inch o.c.	-352.5

17 Unless otherwise noted, insulation or coverboard attachment patterns for Type B-1, Type B-2, Type C-1 and C-2 systems are as outlined below.

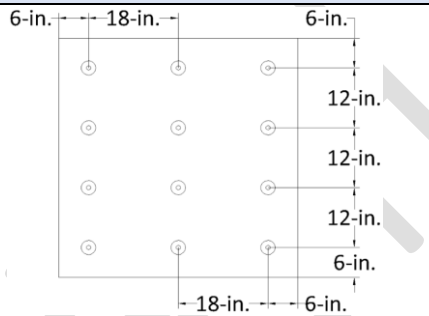
INSULATION ATTACHMENT PATTERNS – 4X4 FT BOARDS



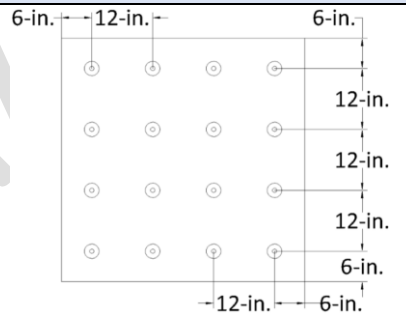
1 per 2.0 ft² (8 per board)



1 per 1.6 ft² (10 per board)

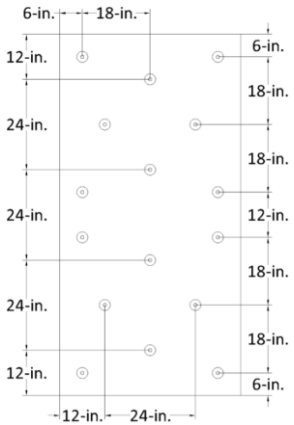


1 per 1.3 ft² (12 per board)

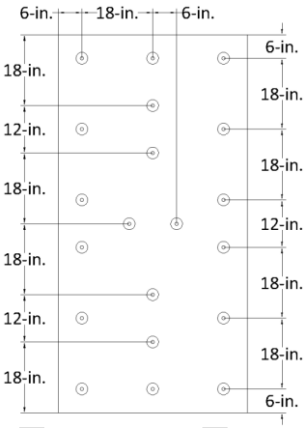


1 per 1.0 ft² (16 per board)

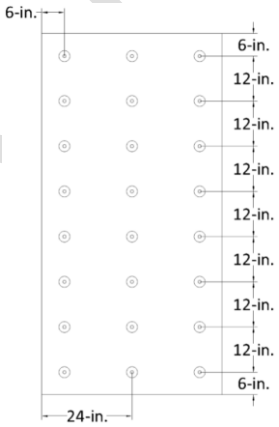
INSULATION ATTACHMENT PATTERNS – 4X8 FT BOARDS



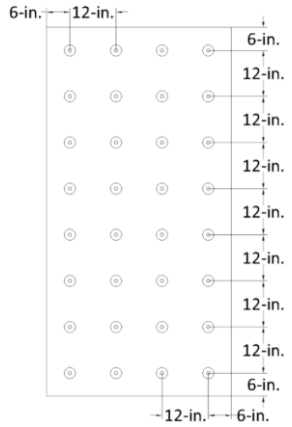
1 per 2.0 ft² (16 per board)



1 per 1.6 ft² (20 per board)



1 per 1.3 ft² (24 per board)



1 per 1.0 ft² (32 per board)

18 Overburden of soil and plantings (for 'garden roofs'; root barriers, filter fabric, drainage components, EPS / XPS insulation, etc.) or structural concrete topping slabs which are specified by the Designer of Record, acceptable to the Authority Having Jurisdiction, and do not form part of the load path to the waterproofing system, are permissible over the waterproofing assemblies noted herein with no adverse effect on the wind uplift performance of the waterproofing system. The Authority Having Jurisdiction may require integrity flood testing (ASTM D5957) or electric field vector mapping tests of all waterproofing systems prior to placement of overburden materials. Testing, if required by the Authority Having Jurisdiction, should be conducted by a qualified testing agency or professional

19 The following products are interchangeable within the scope of this Evaluation Report:

ACCEPTABLE ALTERNATES				
SUB-CATEGORY	MANUFACTURER	FBC FILE OR NOA	LISTED PRODUCT HEREIN	ALTERNATE
MEMBRANE	GAF	21-0520.14	EverGuard TPO Fleece-Back Membrane	EverGuard Extreme TPO Fleece-Back Membrane
ROOFING INSULATION	GAF	24-0227.08	EnergyGuard Polyiso Insulation	EnergyGuard NH Polyiso Insulation
			EnergyGuard Ultra Polyiso Insulation	EnergyGuard NH Ultra Polyiso Insulation
	Georgia-Pacific Gypsum, LLC	22-1223.04	DensDeck Prime	DensDeck StormX Prime Roof Board
VAPOR BARRIER	GAF	N/A	GAF SA Vapor Retarder XL	GAF SA Vapor Retarder XL40

20 "MDP" = Maximum Design Pressure is the result of testing for wind load resistance based on allowable wind loads. Refer to FBC (HVHZ) 1620 and Roofing Application Standard RAS 128 for determination of design wind loads. (Notes 9 and 10)

TABLE 1A: WOOD DECKS - NEW CONSTRUCTION, REROOF (TEAR-OFF) OR RECOVER
SYSTEM TYPE B-1: MECHANICALLY ATTACHED BASE INSULATION, BONDED TOP INSULATION, LIQUID APPLIED ROOF SYSTEM

System No.	Deck (Note 1)	Base Insulation Layer			Top Insulation Layer		Waterproofing (Note 15)	Wearing Course or Overburden (Note 18)	MDP (psf)
		Type	Fasten (Note 2, Note 11)	Attach (Note 17)	Type	Attach (Notes 6,7,8)			
GAF SURFACE SEAL SB THERMOPLASTIC RUBBER COATING:									
W-1.	Min. 19/32-inch plywood or 1-inch wood plank; 2 ft span; 8d ring shank nails 6" o.c.	Min 2-inch EnergyGuard Polyiso Insulation, EnergyGuard RH	Note 2 (#14 Fastener only)	1 per 2.0 ft²	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	LRF-M, LRF-XF or OB500	GAF Surface Seal SB Thermoplastic Rubber Coating	Exterior grade ceramic tiles (ANSI A137.1) embedded in FlexBond in accordance with ANSI A108.5 and Custom Building Products instructions	-52.5
W-2.	Min. 19/32-inch plywood or 1-inch wood plank; 2 ft span; blocked 4 ft o.c.; 8d ring shank nails 6" o.c.	Min. 1.5-inch EnergyGuard Polyiso Insulation	Note 2 (#14 Fastener only)	1 per 1.6 ft²	Min. 0.25-inch DensDeck Prime	LRF-M, LRF-XF or OB500	GAF Surface Seal SB Thermoplastic Rubber Coating	Exterior grade ceramic tiles (ANSI A137.1) embedded in FlexBond in accordance with ANSI A108.5 and Custom Building Products instructions	-60.0
W-3.	Min. 19/32-inch plywood or 1-inch wood plank; 2 ft span; blocked 4 ft o.c.; 8d ring shank nails 6" o.c.	Min. 1-inch EnergyGuard Polyiso Insulation	Note 2 (#14 Fastener only)	1 per 1.3 ft²	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	LRF-M, LRF-XF or OB500	GAF Surface Seal SB Thermoplastic Rubber Coating	Exterior grade ceramic tiles (ANSI A137.1) embedded in FlexBond in accordance with ANSI A108.5 and Custom Building Products instructions	-82.5
W-4.	Min. 19/32-inch plywood or 1-inch wood plank; 2 ft span; blocked 4 ft o.c.; 8d ring shank nails 3" o.c.	Min. 3-inch EnergyGuard Polyiso Insulation	Note 2 (#14 Fastener only)	1 per 1.0 ft²	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	LRF-M, LRF-XF or OB500, 6-inch o.c.	GAF Surface Seal SB Thermoplastic Rubber Coating	Exterior grade ceramic tiles (ANSI A137.1) embedded in FlexBond in accordance with ANSI A108.5 and Custom Building Products instructions	-135.0

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TABLE 2A: STRUCTURAL CONCRETE DECKS; NEW CONSTRUCTION OR REROOF (TEAR-OFF) SYSTEM TYPE A-1: BONDED INSULATION, BONDED WATERPROOFING (TOPING SLAB OVERBURDEN)											
Sys. No.	Deck (Note 1)	Prime	Vapor Barrier	Base Insulation		Top Insulation		Waterproofing (Note 15)		Wearing Course or Overburden (Note 18)	MDP (psf)*
				Type	Attach (Notes 6,7,8)	Type	Attach (Notes 6,7,8)	Base Ply(s)	Cap Ply		
C-1.	Structural concrete	Matrix™ 307 Premium Asphalt Primer or ASTM D41	None	Min. 1.5-inch EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation, EnergyGuard RA, EnergyGuard RH	Hot asphalt	Min. 0.5-inch DensDeck	Hot asphalt	SBS-AA or APP-TA	(Optional) SBS-AA or APP-TA	Drainage board and structural concrete topping slab	N/A
C-2.	Structural concrete	(Optional) Matrix™ 307 Premium Asphalt Primer or ASTM D41	None	Min. 1.5-inch EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation, EnergyGuard RA, EnergyGuard RH	LRF-M, LRF-XF or OB500	Min. 0.5-inch DensDeck	LRF-M, LRF-XF or OB500	SBS-AA or APP-TA	(Optional) SBS-AA or APP-TA	Drainage board and structural concrete topping slab	N/A
C-3.	Structural concrete	ASTM D41 primer, Matrix™ 307 Premium Asphalt Primer or GAF SA Primer	GAF SA Vapor Retarder	Min. 1.5-inch EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation, EnergyGuard RA, EnergyGuard RH	LRF-M, LRF-XF or OB500	Min. 0.5-inch DensDeck	LRF-M, LRF-XF or OB500	SBS-AA or APP-TA	(Optional) SBS-AA or APP-TA	Drainage board and structural concrete topping slab	N/A
C-4.	Structural concrete	None	GAF SA Vapor Retarder XL	Min. 1.5-inch EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation, EnergyGuard RA, EnergyGuard RH	LRF-M, LRF-XF or OB500	Min. 0.5-inch DensDeck	LRF-M, LRF-XF or OB500	SBS-AA or APP-TA	(Optional) SBS-AA or APP-TA	Drainage board and structural concrete topping slab	N/A
C-5.	Structural concrete	ASTM D41 primer, Matrix™ 307 Premium Asphalt Primer or GAF SA Primer	GAF SA Vapor Retarder	Min. 0.5-inch EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation, EnergyGuard RH; min. 1-inch EnergyGuard RA	LRF-M, LRF-XF or OB500	(Optional) Additional layer(s) base insulation	LRF-M, LRF-XF or OB500	Base Ply: SBS-SA Ply: (Optional if using Cap Ply) APP-TA	(Optional if using Ply) APP-TA	Drainage board and structural concrete topping slab	N/A
C-6.	Structural concrete	None	GAF SA Vapor Retarder XL	Min. 0.5-inch EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation, EnergyGuard RH; min. 1-inch EnergyGuard RA	LRF-M, LRF-XF or OB500	(Optional) Additional layer(s) base insulation	LRF-M, LRF-XF or OB500	Base Ply: SBS-SA Ply: (Optional if using Cap Ply) APP-TA	(Optional if using Ply) APP-TA	Drainage board and structural concrete topping slab	N/A
C-7.	Structural concrete	ASTM D41 primer, Matrix™ 307 Premium Asphalt Primer or GAF SA Primer	GAF SA Vapor Retarder	Min. 0.5-inch EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation, EnergyGuard RH; min. 1-inch EnergyGuard RA	LRF-M, LRF-XF or OB500	Min. 0.5-inch DensDeck Prime or SECUROCK Gypsum-Fiber Roof Board	LRF-M, LRF-XF or OB500	Base Ply: SBS-SA Ply: (Optional) if using Cap Ply) APP-TA	(Optional if using Ply): APP-TA	Drainage board and structural concrete topping slab	N/A
C-8.	Structural concrete	None	GAF SA Vapor Retarder XL	Min. 0.5-inch EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation, EnergyGuard RH; min. 1-inch EnergyGuard RA	LRF-M, LRF-XF or OB500	Min. 0.5-inch DensDeck Prime or SECUROCK Gypsum-Fiber Roof Board	LRF-M, LRF-XF or OB500	Base Ply: SBS-SA Ply: (Optional) if using Cap Ply) APP-TA	(Optional if using Ply): APP-TA	Drainage board and structural concrete topping slab	N/A

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TABLE 2B: STRUCTURAL CONCRETE DECKS; NEW CONSTRUCTION OR REROOF (TEAR-OFF) SYSTEM TYPE A-1: BONDED INSULATION, BONDED WATERPROOFING (CERAMIC TILE OVERBURDEN) REFER TO NOTE 16 FOR VAPOR BARRIER OPTIONS										
System No.	Deck (Note 1)	Base Insulation		Top Insulation		Waterproofing (Note 15)			Wearing Course or Overburden (Note 18)	MDP (psf)*
		Type	Attach (Notes 6,7,8)	Type	Attach (Notes 6,7,8)	Membrane	Primer	Coating		
C-9.	Structural concrete	Min. 1-inch EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation	OB500, 12-inch o.c.	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	OB500, 12-inch o.c.	TPOFB-OB	TPO Red Primer 0.5 gal/sq.	GAF Surface Seal SB Thermoplastic Rubber Coating	Exterior grade ceramic tiles (ANSI A137.1) embedded in FlexBond in accordance with ANSI A108.5 and Custom Building Products instructions	-247.5
C-10.	Structural concrete	Min. 1-inch EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation	LRF-XF, 12-inch o.c.	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	LRF-XF, 12-inch o.c.	TPOFB-XF	TPO Red Primer 0.5 gal/sq.	GAF Surface Seal SB Thermoplastic Rubber Coating	Exterior grade ceramic tiles (ANSI A137.1) embedded in FlexBond in accordance with ANSI A108.5 and Custom Building Products instructions	-377.5
C-11.	Structural concrete	Min. 1-inch EnergyGuard Polyiso Insulation, EnergyGuard Ultra Polyiso Insulation	LRF-M Canister, 12-inch o.c.	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	LRF-M Canister, 12-inch o.c.	TPOFB-LMC	TPO Red Primer 0.5 gal/sq.	GAF Surface Seal SB Thermoplastic Rubber Coating	Exterior grade ceramic tiles (ANSI A137.1) embedded in FlexBond in accordance with ANSI A108.5 and Custom Building Products instructions	-510.0

TABLE 2C: STRUCTURAL CONCRETE DECKS; NEW CONSTRUCTION OR REROOF (TEAR-OFF) SYSTEM TYPE F: NON-INSULATED, WATERPROOFING						
System No.	Deck (Note 1)	Primer	Waterproofing (Note 15)		Wearing Course or Overburden (Note 18)	MDP (psf)*
			Base Ply(s)	Cap Ply		
C-12.	Structural concrete	Matrix™ 307 Premium Asphalt Primer or ASTM D41	SBS-AA, APP-TA or SBS-CA	(Optional) SBS-AA, APP-TA or SBS-CA	Drainage board and structural concrete topping slab	N/A
C-13.	Structural concrete	Matrix™ 307 Premium Asphalt Primer or ASTM D41	One or more SBS-AA	SBS-AA	Exterior grade ceramic plaza deck walking tiles embedded in Custom Building Products thin-set mortar applied with a ¼-inch notched trowel in accordance with ANSI A108.5	-447.5
C-14.	Structural concrete	Matrix™ 307 Premium Asphalt Primer or ASTM D41	One or more APP-TA	APP-TA	Exterior grade ceramic plaza deck walking tiles embedded in Custom Building Products thin-set mortar applied with a ¼-inch notched trowel in accordance with ANSI A108.5	-537.5
C-15.	Structural concrete	(Optional) GAF Bonding Primer or GAF Multi-Purpose Primer	GAF Surface Seal SB Thermoplastic Rubber Coating		Exterior grade ceramic tiles (ANSI A137.1) embedded in FlexBond in accordance with ANSI A108.5 and Custom Building Products instructions	-510.0