



NEMO|etc.

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ENGINEER

EVALUATE

TEST

CONSULT

P.E. EVALUATION REPORT (PEER)

The Garland Company, Inc.

3800 East 91st Street
Cleveland, OH 44105
(216) 430-3516

PEER-GRL-002.A.R6

FL2324-R9 (NON-HVHZ)

Date of Issuance: 08/24/2011

Revision 6: 12/19/2023

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** [sections noted herein](#).

DESCRIPTION: Garland HPR Built-Up Roof Systems (NON-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 4, plus an 8-page Appendix.

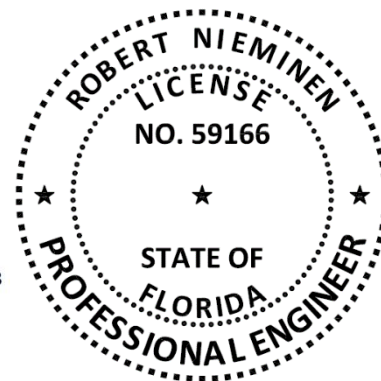
Prepared by:

Digitally signed by
Robert Nieminen
Date: 2023.12.20
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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.

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ROOFING SYSTEMS EVALUATION:
1. SCOPE:

Product Category: Roofing
Sub-Category: Built-Up Roof Systems
Product Approval Method: Method 1, Option D – Codified Material, Evaluation by Engineer
Compliance Statement: HPR Built-Up Roof Systems, as produced by The Garland Company, Inc., have demonstrated compliance with the following sections of the 8th Edition (2023) Florida Building Code through testing in accordance with the following Standards. Compliance is subject to the [Installation Requirements](#) and [Limitations of Use](#) set forth herein.

2. STANDARDS:

<u>SECTION</u>	<u>PROPERTY</u>	<u>STANDARD</u>
1504.3.1	Wind resistance	FM 4474
1504.7	Impact resistance	FM 4470
1507.10.2	Material standard	ASTM D2178
1507.10.2	Material standard	ASTM D4601
1507.10.2	Material standard	ASTM D5726
1507.11.2	Material standard	ASTM D6163

3. REFERENCES:

<u>ENTITY</u>	<u>EXAMINATION</u>	<u>REFERENCE</u>	<u>DATE</u>
NEMO CERT (CER13842)	Various	Certified Products	Current
ERD (TST6049)	FM 4470/4474	G15080.10.09	10/14/2009
CTL (TST1577)	FM 4470/4474	CTLA 114R-3	09/17/2009
CTL (TST1577)	FM 4470/4474	CTLA 116R	11/16/2009
CTL (TST1577)	FM 4470/4474	CTLA 116R-2	11/16/2009
FM Approvals (TST1867)	FM 4470	0Y5A6.AM	09/08/1997
FM Approvals (TST1867)	FM 4470	3D3A5.AM	09/15/1998
FM Approvals (TST1867)	FM 4470	3009117	12/21/2000
FM Approvals (TST1867)	FM 4470	3010113	11/18/2002
FM Approvals (TST1867)	FM 4470	3004392	04/17/2003
FM Approvals (TST1867)	FM 4470/4474	3023458	07/18/2006
FM Approvals (TST1867)	FM 4470/4474	3028410	02/19/2007
FM Approvals (TST1867)	FM 4470/4474	3032471	04/18/2008
FM Approvals (TST1867)	FM 4470/4474	3033444	08/28/2008
FM Approvals (TST1867)	FM 4470/4474	797-04451-267	04/08/2009
FM Approvals (TST1867)	FM 4470/4474	3036229	10/09/2009
UL LLC (QUA9625)	Quality Assurance	Service Confirmation	01/28/2019
UL LLC (QUA9625)	Quality Assurance	Florida BCIS	Current

4. PRODUCT DESCRIPTION:

This PEER covers **HPR Built-Up Roof Systems** installed in accordance with **The Garland Company, Inc.** published installation instructions and the [Limitations of Use](#) herein.

TABLE 1: EVALUATED MEMBRANES ¹					
TYPE	PRODUCT	MATERIAL STANDARD			PLANT(s)
		REFERENCE	TYPE	GRADE	
Base Sheets / Base Ply	HPR Glasbase	ASTM D4601	II	N/A	AL
	HPR Premium Glasbase	ASTM D4601	II	N/A	AL
	HPR Tri-Base Premium	ASTM D4601	II	N/A	OH
	HPR Torch Base Sheet	ASTM D6163	III	S	OH
	VersiPly 40	ASTM D4601	II	N/A	OH
Ply	HPR Glasfelt	ASTM D2178	IV	N/A	AL
	HPR Premium Glasfelt	ASTM D2178	VI	N/A	AL
	HPR Polyscrim Plus	ASTM D5726	III	N/A	NC

¹ Membrane/plant combinations are Certified by ISO/IEC 17065 Certification Entity; [NEMO|cert.](#) to the noted standard.

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 not for use in FBC High Velocity Hurricane Zone jurisdictions, as defined in FBC Chapter 2 (Broward and Miami-Dade Counties).
- 5.3 This PEER pertains to above-deck roof components. Roof decks and structural members shall be in accordance with FBC requirements to the satisfaction of the Authority Having Jurisdiction.
- 5.4 This PEER does not include evaluation of fire classification. Refer to **FBC 1505** 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 **FBC 1504.5** for requirements and limitations regarding edge securement for low-slope roofs.
- 5.6 Refer to **FBC 1511** 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 [ANSI/SPRI FX-1](#) or [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 [ANSI/SPRI IA-1](#), [ASTM E907](#), [FM Loss Prevention Data Sheet 1-52](#) or [Testing Application Standard TAS 124](#) shall be conducted on mock-ups of the proposed new roof assembly.

- 5.6.3 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 **ASTM E907**, [FM Loss Prevention Data Sheet 1-52](#) or [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 **FBC 1504.9** has already been applied). Refer to **FBC 1609** for determination of design wind loads.
- 5.7.2 For mechanically attached components or partially-bonded insulation, 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 Chapter 16**. Elevated pressure zones shall employ an attachment density designed by a qualified design professional to resist the elevated pressure criteria. Commonly used methods are [ANSI/SPRI WD1](#), [FM Loss Prevention Data Sheet 1-29](#), [Roofing Application Standard RAS 117](#) or [RAS 137](#). Assemblies marked with an asterisk* carry the limitations set forth in **Section 2.2.10.1 of FM Loss Prevention Data Sheet 1-29 (February 2020)** for Zone 2/3 enhancements.
- 5.7.3 For assemblies with all components fully bonded in place, the maximum design pressure for the selected assembly shall meet or exceed critical design pressure determined in accordance with **FBC Chapter 16**. No rational analysis is permitted for these systems.
- 5.8 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:

HPR Built-Up Roof Systems shall be installed in accordance with **The Garland Company, Inc.** 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 8-PAGES THAT FOLLOW FORM PART OF THIS PEER -

APPENDIX 1: ATTACHMENT REQUIREMENTS FOR WIND UPLIFT RESISTANCE

TABLE	DECK	APPLICATION	TYPE	DESCRIPTION	PAGE
1A	Steel or Structural Concrete	New, Reroof (Tear-Off) or Recover	B-1	Mechanically Attached Base Insulation, Bonded Top Insulation, Bonded Roof Cover	4
1B	Steel or Structural Concrete	New, Reroof (Tear-Off) or Recover	B-2	Mechanically Attached Thermal Barrier, Bonded Vapor Barrier, Bonded Insulation, Bonded Roof Cover	4
1C	Steel or Structural Concrete	New, Reroof (Tear-Off) or Recover	C-1	Mechanically Attached Insulation, Bonded Roof Cover	5
2A	Structural Concrete	New or Reroof (Tear-Off)	A-1	Bonded Insulation, Bonded Roof Cover	6
2B	Structural Concrete	New or Reroof (Tear-Off)	A-1a	Bonded Vapor Barrier, Bonded Insulation, Bonded Roof Cover	7
2C	Structural Concrete	New or Reroof (Tear-Off)	F	Non-Insulated, Bonded Roof Cover	7
3A	Lightweight concrete	New or Reroof (Tear-Of)	E-2	Mechanically Attached Base Sheet, Bonded Roof Cover	8
4A	Various	Recover	A-1	Bonded Insulation, Bonded Roof Cover	8

The following notes apply to the systems outlined herein:

- The roof system evaluation herein pertains to above-deck roof components. Roof decks and structural members shall be in accordance with FBC requirements to the satisfaction of the Authority Having Jurisdiction.
- Unless otherwise noted, fasteners and stress plates shall be as follows. Recessed plates are not for use with cement-based or gypsum-based hardboard coverboards. Fasteners shall be of sufficient length for the following engagements:

FASTENER/PLATE OPTIONS				
DECK TYPE	By	FBC	PARTS	MINIMUM ENGAGEMENT
Wood	Altenloh, Brinck and Co. U.S., Inc.	FL4500	Trufast HD Fastener with Trufast 3" Metal Insulation Plates	Minimum ¾-inch plywood penetration or minimum 1-inch wood plank embedment
	OMG, Inc.	FL699	OMG #14 Roofgrip with Accutrac Flat Bottom or Flat Bottom Metal Plate or OMG HD with OMG 3 in. Galvalume Steel Plate	
	SFS Group USA, Inc.	FL20311	Dekfast DF-#14-PH3 with Dekfast PLT-H-2-7/8 or Dekfast PLT-R-3	
Steel	Altenloh, Brinck and Co. U.S., Inc.	FL4500	Trufast HD Fastener with Trufast 3" Metal Insulation Plates	Minimum ¾-inch steel penetration and engage the top flute of the steel deck
	OMG, Inc.	FL699	OMG #14 Roofgrip with Accutrac Flat Bottom or Flat Bottom Metal Plate or OMG HD with OMG 3 in. Galvalume Steel Plate	
	SFS Group USA, Inc.	FL20311	Dekfast DF-#14-PH3 with Dekfast PLT-H-2-7/8 or Dekfast PLT-R-3	
Structural Concrete	Altenloh, Brinck and Co. U.S., Inc.	FL4500	Trufast HD Fastener with Trufast 3" Metal Insulation Plate	Minimum 1-inch embedment. Fastener installed with a pilot hole in accordance with the fastener manufacturer's published installation instructions
	OMG, Inc.	FL699	OMG #14 Roofgrip with Accutrac Flat Bottom or Flat Bottom Metal Plate or OMG HD or CD-10 with OMG 3 in. Galvalume Steel Plate	
	SFS Group USA, Inc.	FL20311	Dekfast DF-#14-PH3 with Dekfast PLT-H-2-7/8 or Dekfast PLT-R-3	

- Unless otherwise noted, insulation may be any one layer or combination of FBC Approved (Local or Statewide) board(s) that meet FBC 1505 and, for foam plastic, FBC Chapter 26, when installed with the roof cover.
- Minimum 200 psi, minimum 2-inch thick FBC Approved lightweight insulating concrete may be substituted for 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.
- Preliminary insulation attachment: Unless otherwise noted, use FBC Approved roofing fasteners and plates and refer to Section 2.2.10.1.3 of [FM Loss Prevention Data Sheet 1-29](#).

- 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	FBC	ADHESIVE	REFERENCE	MINIMUM RATE
The Garland Company	N/A	Insul-Lock II	IL-II	Continuous 0.5 to 0.75-inch wide ribbons, 12-inch o.c.
		Insul-Lock HR	IL-HR	Continuous 0.25 to 0.5-inch wide ribbons, 12-inch o.c.
Generic, ASTM D312, Type IV	N/A	hot asphalt	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		
IL-II	Any polyisocyanurate listed with adhesive herein	Various	1.0	-82.5
IL-HR	Any polyisocyanurate listed with adhesive herein	Various	1.0	-157.5
Hot asphalt	Any polyisocyanurate listed with adhesive herein	Various	1.0	-202.5

- 8 For adhered roof insulation and board-size: Unless otherwise noted, refer to Section 2.2.10.6.2 of [FM Loss Prevention Data Sheet](#) 1-29.
- 9 For mechanically attached components or partially-bonded insulation, 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 Chapter 16. Elevated pressure zones shall employ an attachment density designed by a qualified design professional to resist the elevated pressure criteria. Commonly used methods are [ANSI/SPRI](#) WD1, [FM Loss Prevention Data Sheet](#) 1-29, [Roofing Application Standard](#) RAS 117 or RAS 137. Assemblies marked with an asterisk* carry the limitations set forth in Section 2.2.10.1 of [FM Loss Prevention Data Sheet](#) 1-29 for Zone 2/3 enhancements.
- 10 For assemblies with all components fully bonded, 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. A qualified design professional shall review the data for comparison to the minimum requirements for the system. Testing and analysis shall be in accordance with [ANSI/SPRI](#) FX-1 or [Testing Application Standard](#) TAS 105. 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 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. Field uplift testing shall be in accordance with ASTM E907, [FM Loss Prevention Data Sheet](#) 1-52 or [Testing Application Standard](#) TAS 124.
- 13 Refer to FBC 1511 for requirements and limitations regarding recover installations. 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 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 1505 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 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 Unless otherwise noted, a HPR Built-Up Roof Cover consists of one of the following. Systems shall be surfaced in accordance with The Garland Company, Inc. requirements to meet the fire resistance requirements of FBC 1505.

GARLAND HPR BUILT-UP ROOF COVERS	
SYSTEM REFERENCE	DESCRIPTION
1	Three or four plies HPR Glasfelt, HPR Premium Glasfelt or HPR Polyscrim Plus applied in hot asphalt at 25 lb/square with flood coat & gravel or roof coating holding Florida Product Approval.
2	One ply HPR Glasbase, HPR Premium Glasbase or HPR Tri-Base Premium followed by two or three plies HPR Glasfelt, HPR Premium Glasfelt or HPR Polyscrim Plus applied in hot asphalt at 25 lb/square with flood coat & gravel or roof coating holding Florida Product Approval.
3	Three or four plies HPR Glasfelt, HPR Premium Glasfelt, HPR Glasbase, HPR Premium Glasbase or HPR Tri-Base Premium applied in Weatherking Mastic or Weatherking Plus Mastic at 2.5 gal/square with flood coat & gravel or roof coating holding Florida Product Approval.
4	Three to five plies HPR Polyscrim Plus applied in coal tar pitch at 25 to 30 lb/square with flood coat & gravel or roof coating holding Florida Product Approval.
5	One ply HPR Glasbase, HPR Premium Glasbase or HPR Tri-Base Premium followed by two to four plies HPR Polyscrim Plus applied in coal tar pitch at 25 to 30 lb/square with flood coat & gravel or roof coating holding Florida Product Approval.

- 16 "MDP" = Maximum Design Pressure is the result of testing for wind load resistance based on allowable wind loads. Refer to FBC 1609 for determination of design wind loads. [\(Notes 9 and 10\)](#)

TABLE 1A: STEEL OR STRUCTURAL CONCRETE DECKS – NEW CONSTRUCTION, REROOF (TEAR-OFF) OR RECOVER
SYSTEM TYPE B-1: MECHANICALLY ATTACHED BASE INSULATION, BONDED TOP INSULATION, BONDED ROOF COVER

System No.	Deck (Note 1)	Base Insulation Layer			Top Insulation Layer		Roof Cover (Note 15)	MDP (psf)
		Type	Fasteners (Note 11)	Attach	Type	Attach (Notes 6,7,8)		
S-1	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	Note 2	1 per 2.0 ft ²	Min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation	Hot asphalt, IL-II or IL-HR	System 3	-37.5*
S-2	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	Note 2	1 per 2.0 ft ²	Min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation	Hot asphalt, IL-II or IL-HR	System 1, 2, 4 or 5	-45.0*
S-3	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	Min. 2.0-inch ACFoam II, ENRGY 3 or H-Shield	Note 2	1 per 2.7 ft ²	Min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation or Dens Deck	Hot asphalt, IL-II or IL-HR	System 1, 2, 4 or 5	-45.0*

TABLE 1B: STEEL DECKS - NEW CONSTRUCTION, REROOF (TEAR-OFF)
SYSTEM TYPE B-2: MECHANICALLY ATTACHED THERMAL BARRIER, BONDED VAPOR BARRIER, BONDED TOP INSULATION, BONDED ROOF COVER

System No.	Deck (Note 1)	Thermal Barrier			Vapor Barrier	Insulation			Roof Cover (Note 15)	MDP (psf)
		Type	Fastener (Note 11)	Attach		Base	Top	Attach (Notes 6,7,8)		
S-4	Min. 22 ga., Type B, Grade 33 steel	Min. 0.625-inch Dens Deck	Note 2 (OMG only)	1 per 4.0 ft ²	Two plies HPR Glasfelt in hot asphalt	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	Min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation	Hot asphalt, IL-II or IL-HR	System 1, 2, 3, 4 or 5	-45.0*

TABLE 1C: STEEL OR STRUCTURAL CONCRETE DECKS – NEW CONSTRUCTION, REROOF (TEAR-OFF) OR RECOVER
SYSTEM TYPE C-1: MECHANICALLY ATTACHED INSULATION, BONDED ROOF COVER

System No.	Deck (Note 1)	Base Insulation Layer(s) (Note 13)	Top Insulation Layer			Roof Cover (Note 15)	MDP (psf)
			Type	Fasteners (Note 11)	Attach		
S-5	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	Min. 1-inch, one or more layers, any combination, loose laid	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	Note 2	1 per 4.0 ft ²	System 1, 2, 4 or 5	-37.5*
S-6	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	(Optional) Min. 1.5-inch, one or more layers, any combination, loose laid	Min. 0.5-inch Structodek High Density Fiberboard Roof Insulation	Note 2	1 per 2.0 ft ²	System 3	-37.5*
S-7	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	Min. 2-inch, one or more layers, any combination, loose laid	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	Note 2	1 per 4.0 ft ²	System 1, 2, 4 or 5	-45.0*
S-8	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	(Optional) Min. 1.5-inch, one or more layers, any combination, loose laid	Min. 0.5-inch Structodek High Density Fiberboard Roof Insulation	Note 2	1 per 2.0 ft ²	System 1 or 2	-45.0*
S-9	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	(Optional) One or more layers, any combination, loose laid	Min. 2.0-inch ACFoam II, ENRGY 3 or H-Shield	Note 2	1 per 2.0 ft ²	System 3	-45.0*
S-10	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	Min. 2-inch, one or more layers, any combination, loose laid	Min. 0.5-inch SECUROCK Gypsum-Fiber Roof Board	Note 2	1 per 1.8 ft ²	System 1, 2, 4 or 5	-60.0
S-11	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	Min. 1.5-inch ACFoam II or H-Shield	Min. 0.5-inch Dens Deck Prime	Trufast HD with Trufast Trufast 3" Metal Insulation Plates	1 per 1.3 ft ²	System 1 or 2	-112.5
S-12	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	Min. 1.5-inch ACFoam II or H-Shield	Min. 0.5-inch SECUROCK Gypsum-Fiber Roof Board	Trufast HD with Trufast Trufast 3" Metal Insulation Plates	1 per 1.3 ft ²	System 4 or 5	-112.5
S-13	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	Min. 1.5-inch ACFoam II or H-Shield	Min. 0.5-inch SECUROCK Gypsum-Fiber Roof Board	Trufast HD with Trufast Trufast 3" Metal Insulation Plates	1 per 1.3 ft ²	System 1 or 2	-157.5
S-14	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	Min. 1.5-inch ACFoam II or H-Shield	Min. 0.5-inch Dens Deck Prime	Trufast HD with Trufast Trufast 3" Metal Insulation Plates	1 per 1.0 ft ²	System 1 or 2	-157.5
S-15	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi structural concrete	Min. 1.5-inch ACFoam II or H-Shield	Min. 0.5-inch SECUROCK Gypsum-Fiber Roof Board	Trufast HD with Trufast Trufast 3" Metal Insulation Plates	1 per 1.0 ft ²	System 1 or 2	-172.5

**TABLE 2A: STRUCTURAL CONCRETE DECKS – NEW CONSTRUCTION OR REROOF (TEAR-OFF)
SYSTEM TYPE A-1: BONDED INSULATION, BONDED ROOF COVER**

Sys. No.	Deck (Note 1)	Primer	Base Insulation Layer		Top Insulation Layer		Roof Cover (Note 15)	MDP (psf)
			Type	Attach (Notes 6,7,8)	Type	Attach (Notes 6,7,8)		
C-1.	Min. 2,500 psi structural concrete	ASTM D41	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	hot asphalt	Min. 0.5-inch Structodek High Density Fiberboard Roof Insulation	hot asphalt	System 3	-142.5
C-2.	Min. 2,500 psi structural concrete	ASTM D41	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	hot asphalt	Min. 0.5-inch Structodek High Density Fiberboard Roof Insulation	hot asphalt	System 1 or 2	-180.0
C-3.	Min. 2,500 psi structural concrete	ASTM D41	Min. 2-inch ACFoam II, ENRGY 3 or H-Shield	hot asphalt	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	hot asphalt	System 1 or 2	-225.0
C-4.	Min. 2,500 psi structural concrete	ASTM D41	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	hot asphalt	Min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation	hot asphalt	System 1 or 2	-322.5
C-5.	Min. 2,500 psi structural concrete	ASTM D41	Min. 1.5-inch H-Shield	hot asphalt	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	hot asphalt	System 1 or 2	-375.0
C-6.	Min. 2,500 psi structural concrete	None	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	IL-II	Min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation	IL-II	System 3	-127.5
C-7.	Min. 2,500 psi structural concrete	None	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	IL-II	None	N/A	System 3	-135.0
C-8.	Min. 2,500 psi structural concrete	None	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	IL-HR	Min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation	IL-HR	System 3	-127.5
C-9.	Min. 2,500 psi structural concrete	None	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	IL-HR	None	N/A	System 3	-157.5
C-10.	Min. 2,500 psi structural concrete	None	Min. 2-inch ACFoam II, ENRGY 3 or H-Shield	IL-HR	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	IL-HR	System 1 or 2	-225.0
C-11.	Min. 2,500 psi structural concrete	None	Min. 1.5-inch H-Shield	IL-HR, 6-inch o.c.	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	IL-HR, 6-inch o.c.	System 1 or 2	-290.0
C-12.	Min. 2,500 psi structural concrete	None	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	IL-HR, 3-inch o.c.	None	N/A	System 1 or 2	-452.5

TABLE 2B: STRUCTURAL CONCRETE DECKS - NEW CONSTRUCTION OR REROOF (TEAR-OFF)
SYSTEM TYPE A-1A: BONDED VAPOR BARRIER, BONDED INSULATION, BONDED ROOF COVER

Sys. No.	Deck (Note 1)	Primer	Vapor Barrier	Base Insulation Layer		Top Insulation Layer		Roof Cover (Note 15)	MDP (psf)
				Type	Attach (Notes 6,7,8)	Type	Attach (Notes 6,7,8)		
C-13.	Min. 2,500 psi structural concrete	ASTM D41	two plies HPR Glasfelt in hot asphalt	Min. 1.5-inch AC Foam II, ENRGY 3 or H-Shield	IL-II	Min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation	IL-II	System 3	-127.5
C-14.	Min. 2,500 psi structural concrete	ASTM D41	HPR Torch Base	Min. 1.5-inch AC Foam II, ENRGY 3 or H-Shield	IL-HR	Min. 0.5-inch Dens Deck Prime	IL-HR	System 1, 2 or 3	-135.0
C-15.	Min. 2,500 psi structural concrete	ASTM D41	two plies HPR Glasfelt in hot asphalt	Min. 1.5-inch AC Foam II, ENRGY 3 or H-Shield	IL-II	None	N/A	System 3	-135.0
C-16.	Min. 2,500 psi structural concrete	ASTM D41	two plies HPR Glasfelt in hot asphalt	Min. 1.5-inch AC Foam II, ENRGY 3 or H-Shield	IL-HR	Min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation	IL-HR	System 3	-127.5
C-17.	Min. 2,500 psi structural concrete	ASTM D41	HPR Torch Base	Min. 1.5-inch AC Foam II, ENRGY 3 or H-Shield	IL-HR	Min. 0.5-inch Dens Deck Prime	IL-HR	System 1, 2 or 3	-150.0
C-18.	Min. 2,500 psi structural concrete	ASTM D41	two plies HPR Glasfelt in hot asphalt	Min. 1.5-inch AC Foam II, ENRGY 3 or H-Shield	IL-HR	None	N/A	System 3	-157.5

TABLE 2C: STRUCTURAL CONCRETE DECKS – NEW CONSTRUCTION OR REROOF (TEAR-OFF)
SYSTEM TYPE F: NON-INSULATED, BONDED ROOF COVER

System No.	Deck (Note 1)	Primer	Roof Cover (Note 15)	MDP (psf)
C-19.	Min. 2,500 psi structural concrete	ASTM D41	System 1 or 2	-375.0
C-20.	Min. 2,500 psi structural concrete	ASTM D41	System 4 or 5	-270.0

TABLE 3A: LIGHTWEIGHT CONCRETE DECKS – NEW CONSTRUCTION OR REROOF (TEAR-OFF)
SYSTEM TYPE E-2: MECHANICALLY ATTACHED BASE SHEET, BONDED ROOF COVER

System No.	Deck (Note 1)	Lightweight Concrete (Note 14)	Base Sheet			Roof Cover (Note 15)	MDP (psf)
			Type	Fasteners (Note 11)	Attach		
CELCORE (FL2037)							
LWC-1	Min. 22 ga., Type BV, Grade 33 steel at max 5 ft spans or structural concrete	Min. 300 psi, min. 2-inch thick Celcore MF Cellular Concrete with Celcore HS Rheology Modifying Admixture	VersiPly 40	Trufast FM-90 or OMG Assembled CR Base Ply Fastener	8-inch o.c. at the min. 4-inch side lap and 8-inch o.c. at three (3) staggered rows in the center of the sheet	System 1 or 2	-75.0
LWC-2	Min. 22 ga., Type BV, Grade 33 steel at max. 6 ft spans or structural concrete	Min. 300 psi, min. 2-inch thick Celcore Cellular Concrete	HPR Tri-Base Premium	Trufast FM-90 or OMG Assembled CR Base Ply Fastener	7-inch o.c. at the min. 3-inch side lap and 7-inch o.c. at two (2) staggered rows in the center of the sheet	System 1, 2, 4 or 5	-75.0
LWC-3	Min. 22 ga., Type BV, Grade 33 steel at max 5 ft spans or structural concrete	Min. 300 psi, min. 2-inch thick Celcore MF Cellular Concrete with Celcore HS Rheology Modifying Admixture	HPR Tri-Base Premium	Trufast FM-90 or OMG Assembled CR Base Ply Fastener	8-inch o.c. at the min. 4-inch side lap and 8-inch o.c. at three (3) staggered rows in the center of the sheet	System 1 or 2	-90.0
CONCRECEL (FL5584 or FL10500)							
LWC-4	Min. 22 ga., Type BV, Grade 80 steel at max. 6 ft spans or structural concrete	Min. 300 psi, min. 2.25-inch thick Concrecel Concrete	HPR Tri-Base Premium	Trufast FM-90 or OMG Assembled CR Base Ply Fastener	7-inch o.c. at the min. 3-inch side lap and 7-inch o.c. at two (2) staggered rows in the center of the sheet	System 1, 2, 4 or 5	-82.5

TABLE 4A: RECOVER APPLICATIONS
SYSTEM TYPE A-1: BONDED INSULATION, BONDED ROOF COVER

^A The reported MDP documents the allowable maximum design pressure of the new insulation and roof cover when installed atop the substrate, irrespective of the deck type (See Note 1) or performance of the substrate (See Note 12). The deck and substrate shall be capable of resisting the project design pressure requirements, not to exceed the noted MDP, to the satisfaction of the Authority Having Jurisdiction.

System No.	Substrate (Notes 1, Note 12)	Base Insulation Layer		Top Insulation Layer		Roof Cover (Note 15)	MDP (psf) ^A
		Type	Attach (Notes 6,7,8)	Type	Attach (Notes 6,7,8)		
R-1	Existing fully bonded, smooth or granule surfaced modified bitumen or BUR	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	IL-II	Min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation	IL-II	System 3	-127.5
R-2	Existing fully bonded, smooth or granule surfaced modified bitumen or BUR	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	IL-II	None	N/A	System 3	-135.0
R-3	Existing fully bonded, smooth or granule surfaced modified bitumen or BUR	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	IL-HR	Min. 0.5-inch thick Structodek High Density Fiberboard Roof Insulation	IL-HR	System 3	-127.5
R-4	Existing fully bonded, smooth or granule surfaced modified bitumen or BUR	Min. 1.5-inch ACFoam II, ENRGY 3 or H-Shield	IL-HR	None	N/A	System 3	-157.5
R-5	Existing fully bonded, smooth or granule surfaced modified bitumen or BUR	Min. 2-inch ACFoam II, ENRGY 3 or H-Shield	IL-HR	Min. 0.25-inch SECUROCK Gypsum-Fiber Roof Board	IL-HR	System 1 or 2	-225.0