FL #	FL40569-R2
Application Type	Revision
Code Version	2020
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 mstieh@gaf.com
Technical Representative	
Address/Phone/Email	
Quality Assurance Representative	
Address/Phone/Email	
Category	Roofing
Subcategory	Single Ply Roof Systems
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	Zachary R. Priest
Florida License	PE-74021
Quality Assurance Entity	UL LLC
Quality Assurance Contract Expiration Date	12/31/2024
Validated By	Steven M. Urich, PE ☑ Validation Checklist - Hardcopy Received
Certificate of Independence	FL40569_R2_COI_GAF21001.2 2020 FBC Eval TPO final.pdf

Referenced Standard and Year (of Standard)

Standard	Year
ASTM D 6878	2013
FM 4470	2016
FM 4474	2011
TAS 110	2000
TAS 114 (D&J)	2011

Equivalence of Product Standards Certified By

Sections from the Code

Product Approval Method	Method 1 Option D
Date Submitted	06/09/2022
Date Validated	06/09/2022
Date Pending FBC Approval	06/16/2022
Date Approved	08/09/2022

Summary of Products

FL #	Model, Number or Name	Description
40569.1	EverGuard® TPO, EverGuard® Extreme® TPO, EverGuard® TPO Fleece-Back and EverGuard® Extreme® TPO Fleece-Back	Thermoplastic polyolefin single-ply roof membranes
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +0/-230 **Other:** See evaluation report for limits of use.		**Installation Instructions** FL40569_R2_II_GAF21001.2 2020 FBC Eval TPO final.pdf Verified By: Zachary R. Priest PE-74021 Created by Independent Third Party: Yes **Evaluation Reports** FL40569_R2_AE_GAF21001.2 2020 FBC Eval TPO final.pdf Created by Independent Third Party: Yes

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CREEK
TECHNICAL SERVICES, LLC

Registry No. 29824
17520 Edinburgh Drive
Tampa, FL 33647
(813) 480-3421

EVALUATION REPORT

FLORIDA BUILDING CODE, 7TH EDITION (2020)

Issued June 9, 2022

Manufacturer:
GAF
1 Campus Drive
Parsippany, NJ 07054
(877) 423-7663
www.gaf.com

Manufacturing Plants:
Mt. Vernon, IN
Gainesville, TX
Cedar City, UT
New Columbia, PA

Quality Assurance: UL LLC (QUA9625)

SCOPE

Category: Roofing
Subcategory: Single Ply Roof System
Code Edition: Florida Building Code, 7th Edition (2020) including High-Velocity Hurricane Zones (HVHZ)
Code Sections: 1504.3.1, 1504.6, 1504.7, 1507.2.4, 1507.1, 1515.1.1 , 1515.1.4, 1515.2.4, 1523.1.1, 1523.6.2
Properties: Wind Resistance, Impact Resistance, Physical Properties

PRODUCT DESCRIPTION

Products	Specification	Description
EverGuard® TPO Membrane (Mt Vernon, IN; Gainsville, TX; Cedar City, UT; New Columbia, PA)	ASTM D 6878 TAS 110	45-mil, 60-mil, or 80-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester weft-inserted reinforcement
EverGuard Extreme® TPO Membrane (Mt Vernon, IN; Gainsville, TX; Cedar City, UT; New Columbia, PA)	ASTM D 6878 TAS 110	50-mil, 60-mil, 70-mil or 80-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester weft-inserted reinforcement
EverGuard® TPO Fleece-Back Membrane (Mount Vernon, IN; Cedar City, UT; New Columbia, PA)	ASTM D 6878 TAS 110	45-mil, 60-mil, or 80-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester weft-inserted reinforcement and 3.5oz/yd^2 non-woven polyester fleece backing
EverGuard Extreme® TPO Fleece-Back Membrane (Mount Vernon, IN)	ASTM D 6878 TAS 110	50-mil, 60-mil, 70-mil or 80-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester weft-inserted reinforcement and 3.5oz/yd^2 non-woven polyester fleece backing

REFERENCES

Entity	Report No.	Standard (Year)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 16-002	TAS 114(J) (2011); FM 4474(D) (2011)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 20-016	TAS 114(D) (2011)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 20-017	TAS 114(D) (2011)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 20-019	TAS 114(D) (2011)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 20-020	TAS 114(D) (2011)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 20-021	TAS 114(D) (2011)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 20-022	TAS 114(D) (2011)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 20-023	TAS 114(D) (2011)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 21-006	TAS 114(J) (2011); FM 4474(D) (2011)
FM Approvals (TST1867)	3023368	FM 4470 (2016)
FM Approvals (TST1867)	3036141	FM 4470 (2016)
FM Approvals (TST1867)	3036980	FM 4470 (2016)
FM Approvals (TST1867)	3038215	FM 4470 (2016)
FM Approvals (TST1867)	3040377	FM 4470 (2016)
FM Approvals (TST1867)	3041769	FM 4470 (2016)
FM Approvals (TST1867)	3045166	FM 4470 (2016)
FM Approvals (TST1867)	3046280	FM 4470 (2016)
FM Approvals (TST1867)	3046388	FM 4470 (2016)
FM Approvals (TST1867)	3047636	FM 4470 (2016)
FM Approvals (TST1867)	3053501	FM 4470 (2016)
FM Approvals (TST1867)	3055491	FM 4470 (2016)
FM Approvals (TST1867)	3056933	FM 4470 (2016)
FM Approvals (TST1867)	3060250	FM 4470 (2016)
FM Approvals (TST1867)	3061784	FM 4470 (2016)
FM Approvals (TST1867)	PR452971	FM 4470 (2016)
FM Approvals (TST1867)	PR453601	FM 4470 (2016)
FM Approvals (TST1867)	PR455417	FM 4470 (2016)
FM Approvals (TST1867)	PR456101	FM 4470 (2016)
FM Approvals (TST1867)	PR458073	FM 4470 (2016)
IRT-ARCON (TST5296)	02-008	TAS 114(J) (2011)
NEMO ETC LLC (TSTS6049)	G40620.07.12-2-R1	ASTM D 6222/D 6222M (2011); TAS 110 (2000)
NEMO ETC LLC (TSTS6049)	4q-GAF-18-001.01.19-1	ASTM D 2178/D 2178M-15
NEMO ETC LLC (TSTS6049)	4q-GAF-18-001.03.19.A-R1	ASTM D 6222/D 6222M (2011); TAS 110 (2000)
NEMO ETC LLC (TSTS6049)	4q-GAF-19-SSMBB-01.A	ASTM D 6164/D 6164M (2011); TAS 110 (2000)
NEMO ETC LLC (TSTS6049)	4q-GAF-19-SSMBB-02.A	ASTM D 6163/D 6163M-00(2015)e1; TAS 110 (2000)
NEMO ETC LLC (TSTS6049)	4q-GAF-21-SSMBB-01.A	ASTM D 4601/D 4601M 2004(2012)E1
NEMO ETC LLC (TSTS6049)	4q-GAF-21-SSMBB-01.B	ASTM D 4897/D 4897M 2001(2009)
PRI Construction Materials Technologies (TST5878)	GAF-421-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-422-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-424-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-425-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-584-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-585-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-586-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-700-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-776-02-02	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	GAF-782-02-02	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	GAF-836-02-01	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	GAF-836-02-02	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	GAF-836-02-03	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	GAF-836-02-04	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	GAF-858-02-01	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	GAF-858-02-03	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	GAF-858-02-04	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	GAF-858-02-06	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	GAF-870-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-871-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-889-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-894-02-01	TAS 110 (2000); ASTM D 6878 (2013)
PRI Construction Materials Technologies (TST5878)	GAF-904-02-01	TAS 110 (2000); ASTM D 6878 (2013)

Entity	Report No.	Standard (Year)
PRI Construction Materials Technologies (TST5878)	MSA-039-02-01	ASTM D 2178/D 2178M-15
PRI Construction Materials Technologies (TST5878)	MSA-039-02-02	ASTM D 2178/D 2178M-15
PRI Construction Materials Technologies (TST5878)	376T0016	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	376T0017	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	376T0098	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	376T0099	TAS 114(J) (2011); FM 4474(D) (2011)
PRI Construction Materials Technologies (TST5878)	376T0143	ASTM D 6222/D 6222M (2011); TAS 110 (2000)
PRI Construction Materials Technologies (TST5878)	376T0144	ASTM D 6222/D 6222M (2011); TAS 110 (2000)
PRI Construction Materials Technologies (TST5878)	376T0227	ASTM D 4897 2001(2009)
PRI Construction Materials Technologies (TST5878)	376T0229	ASTM D 4601 2004(2012)E1
PRI Construction Materials Technologies (TST5878)	376T0275	ASTM D 2178 (2015)
Trinity|ERD (TST6049)	01509.03.04-2	TAS 114(J) (2011); FM 4470 (2016)
Trinity|ERD (TST6049)	01881.11.03-2-R1	TAS 114(D) (2011)
Trinity|ERD (TST6049)	G40630.01.14-1	ASTM D 6163/D 6163M-00(2015)e1; TAS 110 (2000)
Trinity|ERD (TST6049)	G40630.01.14-2A	ASTM D 6164/D 6164M (2011); TAS 110 (2000)
Trinity|ERD (TST6049)	G40630.01.14-2A-1-R1	ASTM D 6164/D 6164M (2011); TAS 110 (2000)
Trinity|ERD (TST6049)	GF43180.03.14	ASTM D 6164/D 6164M (2011); TAS 110 (2000)
Trinity|ERD (TST6049)	GAF-SC8580.01.16-1	TAS 114(J) (2011); FM 4474(D) (2011)
Trinity|ERD (TST6049)	GAF-SC9700.08.15-R1	ASTM D 2178/D 2178M-15
Trinity|ERD (TST6049)	GAF-SC13285.03.17-5	ASTM D 6164/D 6164M (2011); TAS 110 (2000)
Trinity|ERD (TST6049)	GAF-SC13105-.03.17-R1	ASTM D 6164/D 6164M (2011); TAS 110 (2000)

LIMITATIONS

1. Fire classification is not within the scope of this evaluation.
2. Foam plastic insulation shall be separated from the building interior in accordance with the FBC 2603.4 and 2603.6.
3. The roof deck and the roof deck attachment information are provided based on testing. FBC requirements for the rational design of the roof deck, including the attachment, are not within the scope of this evaluation.
4. In the HVHZ, fastener spacing for insulation attachment is determined using a Minimum Characteristic Force (F') of 275 lbf as demonstrated via testing to TAS 105. If the field tested fastener value is below 275 lbf, then insulation attachment shall not be acceptable.
5. In the HVHZ, fastener spacing for base sheets or membrane attachment shall meet the minimum fastener resistance value and the *MDP* for the specified assembly. It is permissible for a qualified professional to submit a revised fastener spacing utilizing the withdrawal resistance value obtained from TAS 105 testing and calculations performed in accordance with RAS 117 and/or RAS 137, when the fastener resistance is found less than required.
6. In the HVHZ, if mechanical attachment through the lightweight insulating concrete to the structural deck is proposed, a field fastener withdrawal test shall be conducted in compliance with TAS 105 to determine equivalent or increased attachment densities. Revised fastener densities shall be submitted utilizing the withdrawal resistance value obtained from TAS 105 testing and calculations performed in accordance with RAS 117 and/or RAS 137.
7. **HVHZ:** For assemblies containing mechanical attachment, the allowable uplift pressure for the selected assembly shall meet or exceed the minimum design loads as determined in accordance with the FBC Chapter 16. The attachment density may be increased by a qualified design professional, as necessary, to meet the design pressure requirements in the periphery zones. Calculations shall be conducted in compliance with RAS 117 and/or RAS 137.
   Non-HVHZ: For assemblies containing mechanical attachment or adhered in ribbon-applied adhesive, the allowable uplift pressure for the selected assembly shall meet or exceed the minimum design loads as determined in accordance with the FBC Chapter 16. The attachment density may be increased by a qualified design professional, as necessary, to meet the design pressure requirements in the periphery zones. Calculations shall be conducted in compliance with RAS 117, RAS 137, or Section 2.2.10.1 FM LPDS 1-29 (February 2020).
8. Reroofing applications shall be examined in accordance with FBC Section 1511 outside of the HVHZ and FBC Section 1521 within the HVHZ. For mechanically fastened systems, a field withdrawal resistance test (TAS 105 in the HVHZ; ANSI/SPRI FX-1 or TAS 105 in the non-HVHZ) shall be conducted by a qualified professional to ensure the fastener meets the minimum design load requirements of the system. For adhered systems, a field uplift resistance test (TAS 124 in the HVHZ; ASTM E 907, FM LPDS 1-52, ANSI/SPRI IA-1, or TAS 124 in the non-HVHZ) shall be conducted to confirm conformance of the existing to the minimum design loads.
9. **HVHZ:** For assemblies containing fully adhered or ribbon adhered attachment, or where extrapolation of the assembly is not permitted, the *MDP* for the selected assembly shall meet or exceed the minimum design loads as determined in accordance with the FBC Chapter 16 without augmentation.
   Non-HVHZ: For assemblies adhered in ribbon-applied adhesive, the allowable uplift pressure for the selected assembly shall meet or exceed the minimum design loads as determined in accordance with the FBC Chapter 16. The attachment density may be increased by a qualified design professional, as necessary, to meet the design pressure requirements in the periphery zones. Calculations shall be conducted in compliance with Section 2.2.10.1 FM LPDS 1-29 (February 2020).
10. Installation of the evaluated products shall comply with this report, the FBC, and the manufacturer's published application instructions. Where discrepancies exist between these sources, the more restrictive and FBC compliant installation detail shall prevail.
11. The minimum roof slope shall be 1/4:12 for new construction.
12. All products listed in this report shall be manufactured under a quality assurance program in compliance with Rule 61G20-3.

COMPLIANCE STATEMENT

The products evaluated by Zachary R. Priest, P.E. herein have demonstrated compliance with the Florida Building Code, 7th Edition (2020) including High-Velocity Hurricane Zones (HVHZ) as evidenced in the referenced documents submitted by the named manufacturer.

This item has been digitally signed and sealed by Zachary R. Priest, PE, on 6/9/2022.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Zachary R. Priest, P.E.
Florida Registration No. 74021
Organization No. ANE9641

CERTIFICATION OF INDEPENDENCE

CREEK Technical Services, LLC does not have, nor will it acquire, a financial interest in any company manufacturing or distributing products under this evaluation.

CREEK Technical Services, LLC is not owned, operated, or controlled by any company manufacturing or distributing products under this evaluation.

Zachary R. Priest, P.E. does not have, nor will acquire, a financial interest in any company manufacturing or distributing products under this evaluation.

Zachary R. Priest, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.

APPENDICES

1) APPENDIX A – Installation (3 pages)
2) APPENDIX B – Nomenclature and Approved Assemblies (10 pages)

INSTALLATION

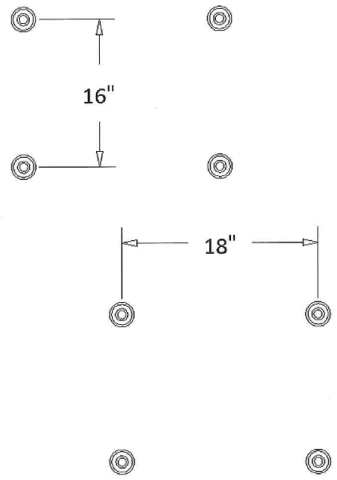
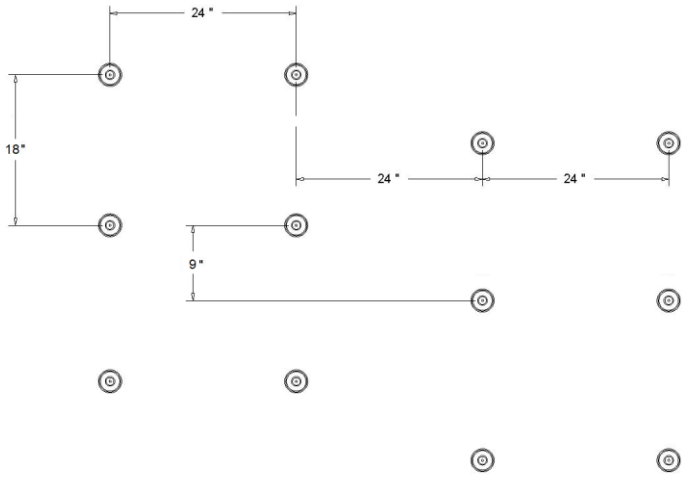
*Note - Refer to the **APPROVED ASSEMBLIES** section of this report for specific installation details of a selected assembly.*

Unless otherwise specified in this report the following installation details shall be met for the named products:

Component	Product	Installation Detail
Fasteners & Plates	Drill-Tec™ 2-3/8" Barbed XHD Plate	2-3/8-inch diameter; Galvalume steel, seam plate with barbs
	Drill-Tec™ 2" Double Barbed XHD Plate	2-inch diameter; Galvalume steel, seam plate with barbs
	Drill-Tec™ 2.4" Barbed Seam Plate	2.4-inch diameter; Galvalume steel, seam plate with barbs
	Drill-Tec™ 2.4" Scoop Seam Plate	2.4-inch diameter; Galvalume steel, seam plate with scoops
	Drill-Tec™ 2-3/4" Barbed SXHD Plate	2-3/4-inch diameter; Galvalume steel, seam plate with barbs
	Drill-Tec™ Eyehook AccuSeam® Plate	2-3/8-inch diameter; Galvalume steel, seam plate with eyehooks
	Drill-Tec™ 3" ASAP® Flat	Drill-Tec #12 Fastener and Drill-Tec 3" Standard Steel Plate
	Drill-Tec™ 3" ASAP® Recessed	Drill-Tec #12 Fastener and Drill-Tec 3" Steel Plate
	Drill-Tec™ Extra Heavy Duty ASAP Roofing Fastener - Insulation	Drill-Tec XHD Fastener with Drill-Tec 3" Standard Steel Plate
	Drill-Tec™ 3" Flat Steel Plate	3-inch diameter; Galvalume steel insulation plate
	Drill-Tec™ Heavy Duty ASAP® Roofing Fastener Assembled with 3" Metal Plate	Drill-Tec #14 Fastener with Drill-Tec 3" Standard Steel Plate
	Drill-Tec™ 3" Recessed Steel Plate	3-inch diameter; Galvalume steel insulation plate; for use with EnergyGuard Polyiso Insulation only
	Drill-Tec™ 3" Standard Steel Plate	3-inch diameter; Galvalume steel insulation plate
	Drill-Tec™ ASAP® 3S	Drill-Tec #12 Fastener with Drill-Tec 3" Standard Steel Plate
	Drill-Tec™ #12 Fastener	#12 fastener; Min. 0.75-inch penetration through the top rib of the steel deck or wood deck
	Drill-Tec™ #12 DP Fastener	
	Drill-Tec™ #12 DPH Fastener	
	Drill-Tec™ #14 Fastener	#14 fastener; Min. 0.75-inch penetration through the top rib of the steel deck or wood deck; Min. 1-inch penetration into concrete deck
	Drill-Tec™ #14 HD Fastener	
	Drill-Tec™ #15 EHD Fastener	#15 fastener; Min. 0.75-inch penetration through the top rib of the steel deck or wood deck
	Drill-Tec™ XHD Fastener	
	Drill-Tec™ SXHD Fastener	#21 fastener; Min. 0.75-inch penetration through the top rib of the steel deck or wood deck
	Drill-Tec™ Base Sheet Fastener	1.7-inch shank; Full embedment of shank into cellular lightweight concrete substrate
	Drill-Tec™ Base Sheet Fastener E	
	Trufast® FM-290	
	Drill-Tec™ Locking Impact Nail	1.8-inch shank; Full embedment of shank into cellular lightweight concrete substrate
	Drill-Tec™ RhinoBond® XHD Plates	Min. 3-inch diameter, steel insulation plate; Induction welded in the field of membrane with RhinoBond® welding tool; welds not permitted at lap seams
	Drill-Tec™ RhinoBond® XHD Tread Safe Plates	
Vapor Barrier	GAFGLAS® #75 Base Sheet	ASTM D 4601, Type II sheet
	GAFGLAS® FlexPly 6	ASTM D 2178, Type IV and VI sheet
	GAFGLAS® FlexPly 6 M	ASTM D 2178, Type IV and VI sheet
	GAFGLAS® Ply 4	ASTM D 2178, Type IV sheet
	GAFGLAS® Ply 4 M	ASTM D 2178, Type IV sheet
	Liberty™ SBS Self-Adhering Cap Sheet	ASTM D 6164, Type I
	Ruberoid® HW 25 Smooth	ASTM D 6163, Type I, Grade S
	Ruberoid® HW Smooth	ASTM D 6164, Type I, Grade S
	Ruberoid® Torch Granule	ASTM D 6222, Type I, Grade G
	Ruberoid® Torch Smooth	ASTM D 6222, Type I, Grade S
	Tri-Ply® #75 Base Sheet	ASTM D 4601, Type II
	Tri-Ply® Ply 4 Base Sheet	ASTM D 2178, Type IV

Component	Product	Installation Detail
Vapor Barrier Primer	GAF SA Primer	Applied at a rate of 0.7-1.0 gal/100ft^2
	Matrix™ 307 Premium Asphalt Primer	Applied at a rate of 0.5 gal/100ft^2; rate varies with texture of surface to be primed
Insulation Adhesives	LRF Adhesive M	Partially adhered in 0.75 to 1-inch wide ribbons
	GAF LRF Adhesive XF	Partially adhered in 0.75 to 1-inch wide ribbons
	OlyBond500®	Partially adhered in 0.75 to 1-inch wide ribbons
Insulation/Cover Boards	Georgia-Pacific DensDeck® or DensDeck® Prime	Min. 0.25-inch thick
	EnergyGuard™ HD Polyiso Insulation	Min. 0.5-inch thick; Min. 80 psi; Adhered boards shall be a maximum 4 ft. x 4 ft.
	EnergyGuard™ HD Polyiso Cover Board	
	EnergyGuard™ Polyiso Insulation	Min. 0.5-inch thick; Min. 20 psi; Adhered boards shall be a maximum 4 ft. x 4 ft.
	EnergyGuard™ Ultra Polyiso Insulation	
	USG SECUROCK® Glass-Mat Roof Board	Min. 0.25-inch thick
	USG SECUROCK® Gypsum-Fiber Roof Board	Min. 0.25-inch thick
Separator Sheets	EverGuard® Polymat Separation Layer	3 oz/yd²
	EverGuard® Polymat Cushioning Layer	6 oz/yd²
Single-Ply Adhesives	Hot Asphalt	ASTM D 312 asphalt fully adhered within the EVT range at a rate of 25-30 lbs/100 ft^2; For fleece-backed membranes only
	EverGuard® TPO 1121 Bonding Adhesive	Fully adhered at rate of 1.67gal/100 ft^2; Applied simultaneously to underside of membrane and substrate
	EverGuard® TPO 6 Square Low VOC Bonding Adhesive	Fully adhered at rate of 0.83gal/100 ft^2; Applied simultaneously to underside of membrane and substrate
	EverGuard® TPO 3 Square Low VOC Bonding Adhesive	Fully adhered at rate of 1.67/100 ft^2; Applied simultaneously to underside of membrane and substrate
	EverGuard® TPO Quick Spray Adhesive	Fully adhered at rate of 0.71 lbs./100 ft^2; Applied simultaneously to underside of membrane and substrate
	EverGuard® TPO Quick Spray Adhesive LV-50	Fully adhered at rate of 0.84 lbs./100 ft^2; Applied simultaneously to underside of membrane and substrate
	EverGuard® WB181 Bonding Adhesive	Fully adhered at rate of 0.83gal/100 ft^2; Applied simultaneously to underside of membrane and substrate
	LRF Adhesive O	Partially adhered in 1-inch wide ribbons; For fleece-backed membranes only
	GAF LRF Adhesive XF	Adhered in “spatter” pattern at a rate of 3 lbs./100ft^2; For fleece-backed membranes only
	OlyBond500®	Adhered in “spatter” pattern at a rate of 0.32 gal/100ft^2; For fleece-backed membranes only
Base Sheets	GAFGLAS® #75 Base Sheet	ASTM D 4601, Type II
	GAFGLAS® #80 Ultima Base Sheet	ASTM D 4601, Type II
	GAFGLAS® Stratavent® Nailable Venting Base Sheet	ASTM D 4897, Type II
	Ruberoid® 20 Smooth	ASTM D 6163, Type I, Grade S
	Ruberoid® 25 HW Smooth	ASTM D 6163, Type I, Grade S
	Ruberoid® HW Smooth	ASTM D 6164, Type I, Grade S
	Ruberoid® Mop Plus Smooth	ASTM D 6164, Type II, Grade S
	Ruberoid® Mop Smooth 1.5	ASTM D 6164, Type I, Grade S
	Tri-Ply® #75 Base Sheet	ASTM D 4601 Type II
Single-Ply Membrane	EverGuard® TPO	Min. 2-inch wide side-laps with min. 1.5-inch wide heat weld; In-lap fastened systems shall have min. 6-inch wide side-laps with min. 1.5-inch wide heat weld; Side-laps shall be installed perpendicular to the direction of the steel deck ribs and parallel to the direction of the wood trusses for mechanically attached systems
	EverGuard Extreme® TPO	
	EverGuard® TPO Fleece-Back Membrane	
	EverGuard Extreme® TPO Fleece-Back Membrane	

Component	Product	Installation Detail
Cellular Lightweight Concrete	Cellular Lightweight Concrete	Min. 2-inch thick

Alternate Fastener Patterns for Induction Weld Assemblies Only	
Description	Fastening Array Repeated Using the Geometric Grid Shown Below
16-inch x 18-inch staggered grid	
18-inch x 24-inch staggered grid	

NOMENCLATURE

The following naming conventions are utilized to specify products in the APPROVED ASSEMBLIES section of this report. Refer to the nomenclature below when deciphering the allowable products for use in the selected assembly. Installation requirements shall be as noted in the APPROVED ASSEMBLIES section of this report.

Name	Definition		
#14 Drill-Tec	One of the following plate and fastener combinations: 1) Drill-Tec #14 Fasteners Drill-Tec 3" Steel Plate, Drill-Tec AccuTrac Flat Plate, or Drill-Tec AccuTrac Recessed Plate (insulation only), 2) Drill-Tec Heavy Duty ASAP Roofing Fastener Assembled with a 3" Metal Plate 3) Drill-Tec #14 HD Fastener with Drill-Tec 3" Flat Steel Plate		
#14 Fastener	Drill-Tec #14 Fastener		
#14 HD	Drill-Tec #14 HD Fastener		
1121	EverGuard TPO 1121 Bonding Adhesive		
2 XHD Seam	Drill-Tec 2" Double Barbed XHD Plates		
2-3/4 Seam	Drill-Tec 2-3/4" Barbed SXHD Plate		
2-3/8 Seam	Drill-Tec 2-3/8" Barbed XHD Plate		
3SQ	EverGuard TPO 3 Square Low VOC Bonding Adhesive		
6SQ	EverGuard TPO 6 Square Low VOC Bonding Adhesive		
AccuSeam	Drill-Tec Eyehook AccuSeam Plate		
Base Sheet I	One ply of any of the following products: GAFGLAS #75 Base Sheet, Tri-Ply #75 Base Sheet, GAFGLAS #80 Ultima Base Sheet, GAFGLAS Stratavent Nailable Venting Base Sheet, or Ruberoid 20 Smooth		
Base Sheet II	Ruberoid Mop Smooth 1.5		
BSF	1.7-inch Drill-Tec Base Sheet Fastener, Drill-Tec Base Sheet Fastener E, or Drill-Tec Locking Impact Nail		
Deck Detail	*As Tested* deck construction details are described as follows:		
	Concrete Deck	Min. f'_c = 2,500 psi at 28 days	
	Steel Deck	Min. 22 ga, Wide Rib Deck (Type WR) conforming to ANSI/SDI-RD1.0 & FBC; 0.5% Vented and ASTM A653 G90 for *LWIC* applications only. The following nomenclature is used to further describe the *As Tested* condition.	
		F<#>	<#> #12-24 HWH self-drilling screws or equivalent fastener at each flute used to secure the deck to the structural supports; Min. 0.25-inch penetration
		G<#>	Min. Grade <#> of *Steel Deck*
		HS<#>	Hilti S-SLC 01 M HWH screws or equivalent fastener secured <#>-inch o.c. along the panel side laps
		HXE<#>	<#> Hilti X-ENP 19 L 15 powder-driven fasteners or equivalent at each flute used to secure the deck to the structural supports; Min. 0.25-inch penetration
		HXH<#>	<#> Hilti X-HSN 24 powder-driven fasteners or equivalent at each flute used to secure the deck to the structural supports; Min. 0.25-inch penetration
		L<#>	Max. span of <#> ft.
		P	Min. 5/8-inch diameter puddle welds at each flute used to secure the deck to the structural supports
		PW	Min. 5/8-inch diameter puddle welds with weld washers at each flute used to secure the deck to the structural supports
		S<#>	1/4 "-14 HWH x7/8" self-drilling screws or equivalent fastener secured <#>-inch o.c. along the panel side laps
		W	0.75-inch O.D. flat washer used with indicated fastener

Name	Definition		
Deck Detail (Cont'd)	*Wood Deck*	The following nomenclature is used to further describe the *As Tested* condition:	
		T<#>P	Min. <#>-inch thickness of the plywood or wood plank
		T<#>O	Min. <#>-inch thickness of the OSB sheathing
		L<#>	Max. span of <#> inches
		N<#>	8d ring shank nails spaced <#>-inch o.c. at all intermediate supports and at the perimeter of each board
Drill-Tec	One of the following plate and fastener combinations: 1) Drill-Tec #12 Fasteners, Drill-Tec #14 Fasteners, or Drill-Tec XHD Fastener with Drill-Tec 3" Steel Plate, Drill-Tec AccuTrac Flat Plate, or Drill-Tec AccuTrac Recessed Plate (insulation only), 2) Drill-Tec ASAP 3S 3) Drill-Tec Heavy Duty ASAP Roofing Fastener Assembled with a 3" Metal Plate 4) Drill-Tec Extra Heavy Duty ASAP Roofing Fastener - Insulation Drill-Tec #12 DP Fastener, Drill-Tec #14 HD Fastener or Drill-Tec #15 EHD Fastener with Drill-Tec 3" Flat Steel Plate 5) Drill-Tec #12 DPH Fastener with Drill-Tec 3" Recessed Steel Plate, Drill-Tec 3" ASAP Flat or Drill-Tec 3" ASAP Recessed		
Drill-Tec #14 Seam	One of the following seam plate and fastener combinations: 1) Drill-Tec #14 Fasteners with Drill-Tec 2-3/8" Barbed XHD Plates, Drill-Tec Eyehook AccuSeam Plate, Drill-Tec 2" Double Barbed XHD Plates, or Drill-Tec 2-3/4" Barbed SXHD Plates 2) Drill-Tec #14 Fasteners with Drill-Tec 2-3/4" Barbed SXHD Plates 3) Drill-Tec #14 HD Fasteners with Drill-Tec 2.4" Barbed Seam Plate or Drill-Tec 2.4" Scoop Seam Plate		
Drill-Tec Seam	One of the following seam plate and fastener combinations: 1) Drill-Tec XHD Fasteners with Drill-Tec 2-3/8" Barbed XHD Plates, Drill-Tec Eyehook AccuSeam Plate, Drill-Tec 2" Double Barbed XHD Plates, or Drill-Tec 2-3/4" Barbed SXHD Plates 2) Drill-Tec SXHD Fasteners with Drill-Tec 2-3/4" Barbed SXHD Plates 3) Drill-Tec #15 EHD Fasteners with Drill-Tec 2.4" Barbed Seam Plate or Drill-Tec 2.4" Scoop Seam Plate		
DensDeck Prime	Min. 0.25-inch Georgia-Pacific DensDeck Prime		
EnergyGuard	EnergyGuard Polyiso Insulation		
EnergyGuard HD	EnergyGuard HD Polyiso Insulation or EnergyGuard HD Polyiso Cover Board		
HA	Hot Asphalt		
Insulation	Any *Approved* insulation or cover board		
LRF-M	LRF Adhesive M		
LRF-O	LRF Adhesive O		
LRF-XF	GAF LRF Adhesive XF		
LV-50	EverGuard TPO Quick Spray Adhesive LV-50		
LWIC	Cellular Lightweight Concrete		
MCRF	Minimum Characteristic Resistance Force as determined by TAS 105 for the named fastener in the selected assembly		
MDP	Maximum Design Pressure		
PLY HA	One or two plies of any of the following products applied in hot asphalt: Ruberoid 20 Smooth or Ruberoid Mop Smooth 1.5		
PLY TA	One or two plies of any of the following products applied by torch adhering: Ruberoid HW 25 Smooth or Ruberoid HW Smooth		
QSA	EverGuard TPO Quick Spray Adhesive		
SXHD Seam	Drill-Tec 2-3/4" Barbed SXHD Plates		
OB500	OlyBond 500		

<table>
<tr><th>Name</th><th>Definition</th></tr>
<tr><td>Preliminarily Secured</td><td>Minimum four fasteners per 4-ft x 4-ft or 4-ft x 8-ft board</td></tr>
<tr><td>Recover</td><td>Where assemblies are used to recover an existing roof, the existing roof shall consist of only one layer of roofing, i.e. recovering a previously recovered roof is not permitted. Recover roofing shall be conducted in compliance with FBC Section 1511 outside of the HVHZ and FBC Section 1521 within the HVHZ. For mechanically fastened roof assemblies, the existing roof insulation thickness may be contributory in meeting the minimum insulation thickness requirements for a given assembly.</td></tr>
<tr><td>Separator Sheet</td><td>EverGuard Polymat Separation Layer or EverGuard Polymat Cushioning Layer</td></tr>
<tr><td>RhinoBond</td><td>Drill-Tec XHD Fastener (Steel Deck or Wood Deck) or Drill-Tec #14 Fasteners (Concrete Deck) with Drill-Tec RhinoBond TPO XHD Plates or Drill-Tec RhinoBond TPO XHD Tread Safe Plates</td></tr>
<tr><td>TPO</td><td>One ply of any one of the following products:
1) 45-mil thick, 60-mil thick, or 80-mil thick EverGuard TPO Membrane
2) 50-mil thick, 60-mil thick, 70-mil or 80-mil thick EverGuard Extreme TPO Membrane</td></tr>
<tr><td>TPO FB</td><td>One ply of any one of the following products:
1) 45-mil thick, 60-mil thick, or 80-mil thick EverGuard TPO Fleece-Back Membrane
2) 50-mil thick, 60-mil thick, 70-mil or 80-mil thick EverGuard Extreme TPO Fleece-Back Membrane</td></tr>
<tr><td>WB181</td><td>EverGuard WB181 Bonding Adhesive</td></tr>
<tr><td>XHD</td><td>Drill-Tec XHD Fastener</td></tr>
<tr><td>Vapor Barriers</td><td>One of the following options may be utilized as allowed by the Approved Assembly in All Layers Adhered over Concrete Deck table. The MDP shall be limited to the lesser of rating of the Approved Assembly and the MDP for the chosen vapor barrier.
<table>
<tr><th>Primer</th><th>Vapor Barrier</th><th>VB Application</th><th>Insulation Adhesives</th><th>MDP (psf)</th></tr>
<tr><td>Matrix 307 Premium Asphalt Primer or ASTM D41 primer</td><td>One or two plies GAFGLAS Ply 4, GAFGLAS Ply 4 M, Tri-Ply Ply 4 Ply Sheet, GAFGLAS FlexPly 6, GAFGLAS Flex PLY M, or one ply of Ruberoid 20 Smooth</td><td>Hot asphalt applied</td><td>Hot Asphalt</td><td>-360.0</td></tr>
<tr><td>Matrix 307 Premium Asphalt Primer or ASTM D41 primer</td><td>Ruberoid HW 25 Smooth or Ruberoid HW Smooth</td><td>Torch-applied</td><td>LRF-M 12-inch o.c.</td><td>-180.0</td></tr>
<tr><td>Matrix 307 Premium Asphalt Primer or ASTM D41 primer</td><td>Ruberoid HW 25 Smooth or Ruberoid HW Smooth</td><td>Torch-applied</td><td>LRF-XF 12-inch o.c.</td><td>-180.0</td></tr>
<tr><td>Matrix 307 Premium Asphalt Primer or ASTM D41 primer</td><td>Ruberoid HW 25 Smooth</td><td>Torch-applied</td><td>OB500 12-inch o.c.</td><td>-180.0</td></tr>
<tr><td>Matrix 307 Premium Asphalt Primer or ASTM D41 primer</td><td>Ruberoid 20 Smooth</td><td>Matrix 102 SBS Membrane Adhesive at 1.5 gal/square</td><td>OB500 12-inch o.c.</td><td>-202.5</td></tr>
<tr><td>Matrix 307 Premium Asphalt Primer or ASTM D41 primer</td><td>Ruberoid HW Smooth</td><td>Torch-applied</td><td>OB500 12-inch o.c.</td><td>-232.5</td></tr>
<tr><td>Matrix 307 Premium Asphalt Primer or ASTM D41 primer</td><td>One or two plies, GAFGLAS #75 Base Sheet, Tri-Ply #75 Base Sheet, GAFGLAS Ply 4, GAFGLAS Ply 4 M, Tri-Ply Ply 4 Ply Sheet, GAFGLAS FlexPly 6 or GAFGLAS FlexPly 6 M</td><td>Hot asphalt applied</td><td>OB500 12-inch o.c.</td><td>-352.5</td></tr>
</table></td></tr>
</table>

APPROVED ASSEMBLIES

The following notes shall be observed when using the assembly tables below.

1. Allowable pressures were calculated using a 2:1 margin of safety per FBC Section 1504.9.
2. Refer to LIMITATIONS and NOMENCLATURE sections of this evaluation when using the table(s) below.
3. Refer to INSTALLATION section of this report for installation detail when the information is not explicitly stated for the selected assembly.
4. The on-center (o.c.) spacing given is the maximum allowable attachment spacing for the rated system.
5. *As Tested* information for roof deck construction is provided for information only. The addition of the *As Tested* deck information does not obviate the requirement for rational design of the roof deck and roof deck attachment in accordance with FBC requirements.

Assembly System Numbers and Definitions	
C-M-#	Mechanically Fastened Assemblies over *Concrete Deck* (New, Existing, or *Recover*)
C-W-#	Induction Welded Assemblies over *Concrete Deck* (New, Existing, or *Recover*)
LC-A-#	Lightweight Concrete Assemblies with All Layers Adhered over *Concrete Deck* (New or Existing)
LS-A-#	Lightweight Concrete Assemblies with All Layers Adhered over *Steel Deck* (New or Existing)
L-AM-#	Lightweight Concrete Assemblies with Adhered Membranes over *Steel Deck* or *Concrete Deck* (New or Existing)
S-A-#	Assemblies with All Layers Adhered over *Steel Deck* (New or Existing)
S-M-#	Mechanically Fastened Assemblies over *Steel Deck* (New, Existing, or *Recover*)
S-W-#	Induction Welded Assemblies over *Steel Deck* (New, Existing, or *Recover*)
W-M-#	Mechanically Fastened Assemblies over *Wood Deck* (New, Existing, or *Recover*)

Mechanically Fastened Assemblies over *Concrete Deck* (New, Existing, or *Recover*)								
System No.	Vapor Barrier	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Membrane	Membrane Attachment	*MDP* (psf)
C-M-1	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO* (72-inch wide)	Attached in-lap 12-inch o.c. with *#14 Fastener & 2 XHD Seam;* Side laps spaced 66-inch o.c.	**-45 (Lim. 7)**
C-M-2	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO* (144-inch wide)	Attached in-lap 6-inch o.c. with *Drill-Tec #14 & 2 XHD Seam;* Side laps spaced 138-inch o.c.	**-45 (Lim. 7)**
C-M-3	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO* (60-inch wide)	Attached in-lap 12-inch o.c. with *#14 Fastener & 2 XHD Seam;* Side laps spaced 54-inch o.c.	**-52.5 (Lim. 7)**
C-M-4	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO* (72-inch wide)	Attached in-lap 12-inch o.c. with *#14 Fastener & 2-3/4 Seam;* Side laps spaced 66-inch o.c.	**-52.5 (Lim. 7)**

Mechanically Fastened Assemblies over *Concrete Deck* (New, Existing, or *Recover*)								
System No.	Vapor Barrier	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Membrane	Membrane Attachment	*MDP* (psf)
C-M-5	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO* (60-inch wide)	Attached in-lap 12-inch o.c. with *#14 Fastener & 2-3/4 Seam;* Side laps spaced 54-inch o.c.	**-60 (Lim. 7)**
C-M-6	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	Min. 60 mil *TPO* (144-inch wide)	Attached 6-inch o.c. through 6-inch wide overlaps with *#14 Fastener & 2-3/8 Seam* spaced 138-inch o.c.; 8-inch wide cover strip attached over plates and sealed with a 1.5-inch wide heat weld on each side	**-67.5 (Lim. 7)**

Induction Welded Assemblies over *Concrete Deck* (New, Existing, or *Recover*)								
System No.	Vapor Barrier	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Membrane	Membrane Attachment	*MDP* (psf)
C-W-1	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or secured with top layer	OPTIONAL *Cover Board*	*RhinoBond* fastened in a *18-inch x 24-inch staggered grid*	*TPO*	Induction welded to *RhinoBond* plates	**-82.5 (Lim. 7)**
C-W-2	-	Min. 1.-inch *Insulation*	*Preliminarily Secured* or secured with top layer	OPTIONAL *Cover Board*	*RhinoBond* fastened 1 per 2.7ft^2 (18-inch x 24-inch grid)	*TPO*	Induction welded to *RhinoBond* plates	**-82.5 (Lim. 7)**
C-W-3	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or secured with top layer	OPTIONAL *Cover Board*	*RhinoBond* fastened in a *16-inch x 18-inch staggered grid*	*TPO*	Induction welded to *RhinoBond* plates	**-105 (Lim. 7)**

Lightweight Concrete Assemblies with All Layers Adhered over *Concrete Deck* (New or Existing)							
System No.	Vapor Barrier	LWIC	Board Layer	Board Attachment	Membrane	Membrane Attachment	*MDP* (psf)
LC-A-1	-	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	*TPO FB*	*OB500*	**-120 (Lim. 9)**
LC-A-2	-	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	*TPO*	*1121*	**-127.5 (Lim. 9)**
LC-A-3	-	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	*TPO FB*	*LRF-XF*	**-130 (Lim. 9)**
LC-A-4	-	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	*EnergyGuard HD*	*OB500* 12-inch o.c.	*TPO*	*QSA*	**-140 (Lim. 9)**
LC-A-5	-	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	*TPO*	*QSA*	**-150 (Lim. 9)**
LC-A-6	-	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	*TPO*	*LV-50*	**-155 (Lim. 9)**
LC-A-7	-	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	*EnergyGuard HD*	*LRF-XF* 12-inch o.c.	*TPO*	*QSA*	**-230 (Lim. 9)**

Lightweight Concrete Assemblies with All Layers Adhered over *Steel Deck* (New or Existing)							
System No.	*Deck Detail*	*LWIC*	Board Layer	Board Attachment	Membrane	Membrane Attachment	*MDP* (psf)
LS-A-1	*G33*	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	*TPO FB*	*OB500*	**-120 (Lim. 9; HVHZ only)**

Lightweight Concrete Assemblies with All Layers Adhered over *Steel Deck* (New or Existing)							
System No.	*Deck Detail*	*LWIC*	Board Layer	Board Attachment	Membrane	Membrane Attachment	*MDP* (psf)
LS-A-2	*G33*	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	*TPO*	*1121*	**-127.5 (Lim. 9; HVHZ only)**
LS-A-3	*G33*	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	*TPO FB*	*LRF-XF*	**-130 (Lim. 9; HVHZ only)**
LS-A-4	*G33*	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	*EnergyGuard HD*	*OB500* 12-inch o.c.	*TPO*	*QSA*	**-140 (Lim. 9; HVHZ only)**
LS-A-5	*G33*	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	*TPO*	*QSA*	**-150 (Lim. 9; HVHZ only)**
LS-A-6	*G33*	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	*TPO*	*LV-50*	**-155 (Lim. 9; HVHZ only)**
LS-A-7	*G33*	Min. 400 psi Cellular Lightweight Concrete (MCRF ≥ 117 lbf using Drill-Tec Base Sheet Fastener)	*EnergyGuard HD*	*LRF-XF* 12-inch o.c.	*TPO*	*QSA*	**-230 (Lim. 9; HVHZ only)**

Lightweight Concrete Assemblies with Adhered Membranes (New or Existing)									
System No.	*Deck Detail*	LWIC	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Base Ply	Membrane	*MDP* (psf)
L-AM-1	*Steel Deck (G33, P, L6, S18) or Concrete Deck*	Min. 340 psi *LWIC* (*MCRF* ≥ 60lbf) with min. 1-inch EPS holey board	*Base Sheet I*	*BSF* attached 7-inch o.c. at the 4-inch laps and 7-inch o.c. in two equally spaced, staggered rows in the field of the roll	-	-	OPTIONAL *PLY HA* or *PLY TA*	*TPO FB* adhered in *HA*	**-52.5 (Lim. 7)**

Lightweight Concrete Assemblies with Adhered Membranes (New or Existing)									
System No.	*Deck Detail*	LWIC	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Base Ply	Membrane	*MDP* (psf)
L-AM-2	*Steel Deck (G33, P, L6, S18) or Concrete Deck*	Min. 210 psi *LWIC* (*MCRF* ≥ 78lbf)	Ruberoid 20 Smooth	*BSF* attached 7-inch o.c. at the 4-inch laps and 7-inch o.c. in two equally spaced, staggered rows in the field of the roll	-	-	*PLY TA*	*TPO FB* adhered in *LRF-XF* or *OB500*	**-82.5 (Lim. 7)**
L-AM-3	*Steel Deck (G33, P, L6, S18) or Concrete Deck*	Min. 210 psi *LWIC* (*MCRF* ≥ 78lbf)	GAFGLAS #80 Ultima Base Sheet	1.7-inch Drill-Tec Base Sheet Fastener attached 7-inch o.c. at the 4-inch laps and 7-inch o.c. in two equally spaced, staggered rows in the field of the roll	-	-	*PLY TA*	*TPO FB* adhered in *LRF-XF* or *OB500*	**-82.5 (Lim. 7)**

Assemblies with All Layers Adhered over *Steel Deck* (New or Existing)									
System No.	*Deck Detail*	Vapor Barrier	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Membrane	Membrane Attachment	*MDP* (psf)
S-A-1	*G33, P, L6, S24*	-	Min. 1.5-inch *EnergyGuard*	*LRF-M* 6-inch o.c.	-	-	*TPO*	*LV-50*	**-82.5 (Lim. 9)**
S-A-2	*G33, P, L6, S24*	-	Min. 1.5-inch *EnergyGuard*	*LRF-M* 6-inch o.c.	-	-	*TPO*	*1121, 6SQ, 3SQ*, or *WB181*	**-120 (Lim. 9)**
S-A-3	*G33, P, L6, S24*	-	Min. 1.5-inch *EnergyGuard*	*LRF-M* 6-inch o.c.	-	-	*TPO FB*	*LRF-XF* or *OB500*	**-120 (Lim. 9)**

Mechanically Fastened Assemblies over *Steel Deck* (New, Existing, or *Recover*)									
System No.	*Deck Detail*	Vapor Barrier	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Membrane	Membrane Attachment	*MDP* (psf)
S-M-1	*G33, HXH1, L6, HS6*	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO* (72-inch wide)	Attached in-lap 12-inch o.c. with *XHD & 2 XHD Seam;* Side laps spaced 66-inch o.c.	**-45 (Lim. 7)**

Mechanically Fastened Assemblies over *Steel Deck* (New, Existing, or *Recover*)									
System No.	*Deck Detail*	Vapor Barrier	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Membrane	Membrane Attachment	*MDP* (psf)
S-M-2	*G80, HXH1, L5, HS24*	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO* (144-inch wide)	Attached in-lap 6-inch o.c. with *XHD & 2 XHD Seam;* Side laps spaced 138-inch o.c.	**-45 (Lim. 7)**
S-M-3	*G33, HXH1, L6, HS24*	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO* (60-inch wide)	Attached in-lap 12-inch o.c. with *XHD & 2 XHD Seam;* Side laps spaced 54-inch o.c.	**-52.5 (Lim. 7)**
S-M-4	*G33, HXH1, L6, HS24*	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO* (72-inch wide)	Attached in-lap 12-inch o.c. with *XHD & SXHD Seam;* Side laps spaced 66-inch o.c.	**-52.5 (Lim. 7)**
S-M-5	*G33, HXH1, L6, HS24*	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO* (60-inch wide)	Attached in-lap 12-inch o.c. with *XHD & SXHD Seam;* Side laps spaced 54-inch o.c.	**-60 (Lim. 7)**
S-M-6	*G33, P, L6, S12*	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	Min. 60mil *TPO* (144-inch wide)	Attached 6-inch o.c. through 6-inch wide overlaps with *XHD & 2-3/8 Seam* spaced 138-inch o.c.; 8-inch wide cover strip attached over plates and sealed with a 1.5-inch wide heat weld on each side	**-67.5 (Lim. 7)**

Induction Welded Assemblies over *Steel Deck* (New, Existing, or *Recover*)									
System No.	*Deck Detail*	Vapor Barrier	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Membrane	Membrane Attachment	*MDP* (psf)
S-W-1	*G33, P L6,S12*	-	Min. 2-inch *Insulation*	*Preliminarily Secured* or secured with top layer	OPTIONAL *Cover Board*	*RhinoBond* fastened in a *18-inch x 24-inch staggered grid*	*TPO*	Induction welded to *RhinoBond* plates	**-82.5 (Lim. 7)**
S-W-2	*G33, HXH1, L6, HS24*	-	Min. 2-inch *Insulation*	*Preliminarily Secured* or secured with top layer	OPTIONAL *Cover Board*	*RhinoBond* fastened 1 per 2.7ft^2 (18-inch x 24-inch grid)	*TPO*	Induction welded to *RhinoBond* plates	**-82.5 (Lim. 7)**
S-W-3	*G33, P L6,S24*	-	Min. 2-inch *Insulation*	*Preliminarily Secured* or secured with top layer	OPTIONAL *Cover Board*	*RhinoBond* fastened in a *16-inch x 18-inch staggered grid*	*TPO*	Induction welded to *RhinoBond* plates	**-105 (Lim. 7)**

Mechanically Fastened Assemblies over *Wood Deck* (New, Existing, or *Recover*)									
System No.	*Deck Detail*	Vapor Barrier	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Membrane	Membrane Attachment	*MDP* (psf)
W-M-1	*T19/32P, L24, N6*	-	Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO FB*	Attached in-lap 6-inch o.c. with *XHD & 2 XHD Seam;* Side laps spaced 114.5-inch o.c.; Min. 1.75-inch wide heat weld	**-45 (Lim. 7)**
W-M-2	*T19/32O, L24, N6*	-	OPTIONAL Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO FB*	Attached in-lap 6-inch o.c. with *XHD & 2-3/8 Seam;* Side laps spaced 54-inch o.c.	**-45 (Lim. 7; Non-HVHZ)**
W-M-3	*T19/32P, L24, N6*	-	Min. 1.5-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO FB*	Attached in-lap 6-inch o.c. with *#14 HD & 2 XHD Seam;* Side laps spaced 55-inch o.c.; Min. 1.75-inch wide heat weld	**-52.5 (Lim. 7)**
W-M-4	*T15/32P, L24, N6*	-	OPTIONAL Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO FB*	Attached in-lap 12-inch o.c. with *#14 Fastener & 2 XHD Seam;* Fasteners secured through the deck into trusses/rafters minimum 1-inch*;* Side laps spaced 48-inch o.c.	**-52.5 (Lim. 7)**
W-M-5	*T15/32P, L24, N6*	-	-	-	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO FB*	Attached in-lap 6-inch o.c. with *#14 Fastener & 2 XHD Seam;* Fasteners secured through the deck into trusses/rafters minimum 1-inch*;* Side laps spaced 48-inch o.c.	**-67.5 (Lim. 7)**
W-M-6	*T15/32P, L24, N6*	-	OPTIONAL Min. 1-inch *Insulation*	*Preliminarily Secured* or Secured with Top Layer	OPTIONAL *Separator Sheet*	*Preliminarily Secured*	*TPO FB*	Attached in-lap 12-inch o.c. with *#14 Fastener & 2-3/4 Seam;* Fasteners secured through the deck into trusses/rafters minimum 1-inch*;* Side laps spaced 48-inch o.c.	**-67.5 (Lim. 7)**

END OF REPORT