



EVALUATION REPORT

FLORIDA BUILDING CODE, 8TH EDITION (2023)

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

Issued September 20, 2023

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, 8th Edition (2023) including High-Velocity Hurricane Zones (HVHZ)
Code Sections: 1504.3.1, 1504.6, 1504.7, 1507.12, 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® PVC (Cedar City, UT)	ASTM D 4434 Type III	50-mil, 60-mil, or 80-mil thick thermoplastic PVC, heat-weldable, single-ply roof membrane with polyester weft-inserted reinforcement
EverGuard® PVC Fleeceback (Cedar City, UT)	ASTM D 4434 Type III	50-mil, 60-mil, or 80-mil thick thermoplastic PVC, heat-weldable, single-ply roof membrane with polyester weft-inserted reinforcement and 3.5oz/yd ² non-woven polyester fleece backing
EverGuard® PVC KEE (Cedar City, UT)	ASTM D 4434 Type III	50-mil, 60-mil, or 80-mil thick thermoplastic PVC KEE, heat-weldable, single-ply roof membrane with polyester weft-inserted reinforcement
EverGuard® PVC KEE Fleeceback (Cedar City, UT)	ASTM D 4434 Type III	50-mil, 60-mil, or 80-mil thick thermoplastic PVC KEE, heat-weldable, single-ply roof membrane with polyester weft-inserted reinforcement and 3.5oz/yd ² non-woven polyester fleece backing
EverGuard® TPO (Mt Vernon, IN; Gainesville, 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 (Mt Vernon, IN; Gainesville, 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 (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® TPO Fleece-Back Membrane 100 (Mount Vernon, IN; Cedar City, UT; New Columbia, PA)	ASTM D 6878 TAS 110	45-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester weft-inserted reinforcement and 5.4oz/yd ² non-woven polyester fleece backing

Products	Specification	Description
EverGuard® TPO Fleece-Back Membrane 115 (Mount Vernon, IN; Cedar City, UT; New Columbia, PA)	ASTM D 6878 TAS 110	60-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester weft-inserted reinforcement and 5.4oz/yd ² non-woven polyester fleece backing
EverGuard® TPO Fleece-Back Membrane 135 (Mount Vernon, IN; Cedar City, UT; New Columbia, PA)	ASTM D 6878 TAS 110	80-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester weft-inserted reinforcement and 5.4oz/yd ² non-woven polyester fleece backing
EverGuard Extreme® TPO Fleece-Back (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

<u>Entity</u>	<u>Report No.</u>	<u>Standard (Year)</u>
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)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 23-012	TAS 114(D) (2011)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 23-013	TAS 114(D) (2011)
Atlantic & Caribbean Roof Consulting (TST4671)	ACRC 23-014	TAS 114(D) (2011)
FM Approvals (TST1867)	3019881	FM 4470 (2016)
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)
FM Approvals (TST1867)	PR458321	FM 4470 (2016)
FM Approvals (TST1867)	PR456101	FM 4470 (2016)
FM Approvals (TST1867)	3036614	FM 4470 (2016)
FM Approvals (TST1867)	3034749	FM 4470 (2016)
FM Approvals (TST1867)	3056933	FM 4470 (2016)
FM Approvals (TST1867)	PR466463	FM 4470 (2016)
FM Approvals (TST1867)	RR237727	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 (2016); TAS 110 (2000)
NEMO ETC LLC (TSTS6049)	4j-GAF-21-SSUDL-01.A-R2	Physical Properties
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 (2016); TAS 110 (2000)
NEMO ETC LLC (TSTS6049)	4q-GAF-19-SSMBB-01.A	ASTM D 6164/D 6164M (2016); TAS 110 (2000)
NEMO ETC LLC (TSTS6049)	4q-GAF-19-SSMBB-02.A	ASTM D 6163/D 6163M (2016); 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 (2016a)
NEMO ETC LLC (TSTS6049)	4j-GAF-21-SSUDL-01.A-R2	Physical Properties
NEMO ETC LLC (TSTS6049)	4S-GAF-18-003.12.18-1	ASTM D 4434/D 4434M (2015)
NEMO ETC LLC (TSTS6049)	4S-GAF-18-003.12.18-2	ASTM D 4434/D 4434M (2015)
PRI Construction Materials Technologies (TST5878)	GAF-421-02-01	TAS 110 (2000); ASTM D 6878 (2021)
PRI Construction Materials Technologies (TST5878)	GAF-422-02-01	TAS 110 (2000); ASTM D 6878 (2021)
PRI Construction Materials Technologies (TST5878)	GAF-424-02-01	TAS 110 (2000); ASTM D 6878 (2021)
PRI Construction Materials Technologies (TST5878)	GAF-425-02-01	TAS 110 (2000); ASTM D 6878 (2021)
PRI Construction Materials Technologies (TST5878)	GAF-584-02-01	TAS 110 (2000); ASTM D 6878 (2021)
PRI Construction Materials Technologies (TST5878)	GAF-585-02-01	TAS 110 (2000); ASTM D 6878 (2021)
PRI Construction Materials Technologies (TST5878)	GAF-586-02-01	TAS 110 (2000); ASTM D 6878 (2021)
PRI Construction Materials Technologies (TST5878)	GAF-700-02-01	TAS 110 (2000); ASTM D 6878 (2021)
GAF21001.4	FL40569-R4	

Entity	Report No.	Standard (Year)
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 (2021)
PRI Construction Materials Technologies (TST5878)	GAF-871-02-01	TAS 110 (2000); ASTM D 6878 (2021)
PRI Construction Materials Technologies (TST5878)	GAF-889-02-01	TAS 110 (2000); ASTM D 6878 (2021)
PRI Construction Materials Technologies (TST5878)	GAF-894-02-01	TAS 110 (2000); ASTM D 6878 (2021)
PRI Construction Materials Technologies (TST5878)	GAF-904-02-01	TAS 110 (2000); ASTM D 6878 (2021)
PRI Construction Materials Technologies (TST5878)	MSA-039-02-01	ASTM D 2178/D 2178M (2015a)
PRI Construction Materials Technologies (TST5878)	MSA-039-02-02	ASTM D 2178/D 2178M (2015a)
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 (2016); TAS 110 (2000)
PRI Construction Materials Technologies (TST5878)	376T0144	ASTM D 6222/D 6222M (2016); TAS 110 (2000)
PRI Construction Materials Technologies (TST5878)	376T0227	ASTM D 4897 (2016a)
PRI Construction Materials Technologies (TST5878)	376T0229	ASTM D 4601 2004(2012)E1
PRI Construction Materials Technologies (TST5878)	376T0275	ASTM D 2178 (2015a)
PRI Construction Materials Technologies (TST5878)	376T0315	ASTM D 413
PRI Construction Materials Technologies (TST5878)	376T0399	ASTM D 413
PRI Construction Materials Technologies (TST5878)	GAF-506-02-13	TAS 114(J) (2011); FM 4474(D) (2011)
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 (2016); TAS 110 (2000)
Trinity ERD (TST6049)	G40630.01.14-2A	ASTM D 6164/D 6164M (2016); TAS 110 (2000)
Trinity ERD (TST6049)	G40630.01.14-2A-1-R1	ASTM D 6164/D 6164M (2016); TAS 110 (2000)
Trinity ERD (TST6049)	GF43180.03.14	ASTM D 6164/D 6164M (2016); 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 (2015a)
Trinity ERD (TST6049)	GAF-SC13285.03.17-5	ASTM D 6164/D 6164M (2016); TAS 110 (2000)
Trinity ERD (TST6049)	GAF-SC13105-.03.17-R1	ASTM D 6164/D 6164M (2016); 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 (July 2022).
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 (July 2022).
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, 8th Edition (2023) 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 9/20/2023.

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Digitally signed by Zachary R. Priest
CREEK Technical Services, LLC

2023.09.20
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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 (14 pages)

INSTALLATION

Note - Refer to the [APPROVED ASSEMBLIES](#) section of this report for specific installation details of a selected assembly.

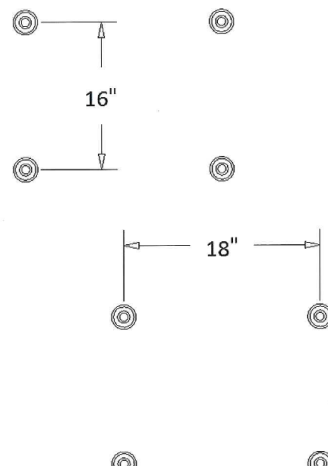
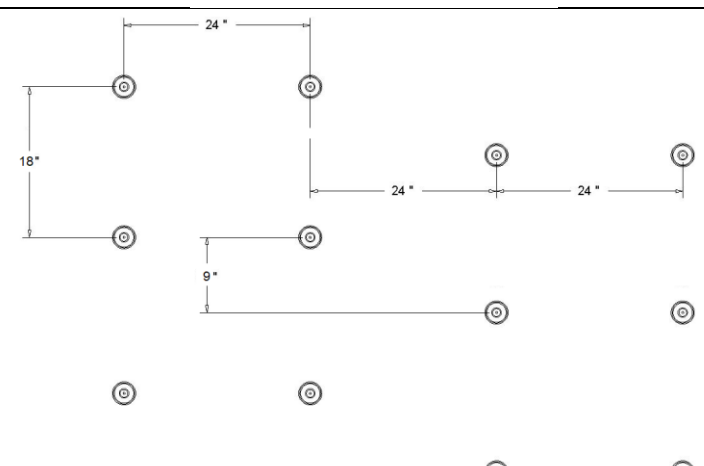
Unless otherwise specified in this report the following installation details shall be met for the named products:

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™ 2-3/8" Double Barbed XHD Plate	2-3/8-inch diameter; Galvalume steel, seam plate with barbs
	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	1.8-inch shank; Full embedment of shank into cellular lightweight concrete substrate
	Drill-Tec™ Locking Impact Nail	
	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	GAFLAS® #75 Base Sheet	ASTM D 4601, Type II sheet
	GAFLAS® FlexPly 6	ASTM D 2178, Type IV and VI sheet
	GAFLAS® FlexPly 6 M	ASTM D 2178, Type IV and VI sheet
	GAFLAS® Ply 4	ASTM D 2178, Type IV sheet
	GAFLAS® 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
	SA Vapor Retarder XL	Self-adhered membrane
	SA Vapor Retarder XL 40	Self-adhered membrane



Component	Product	Installation Detail
Vapor Barrier (Continued)	Tri-Ply® #75 Base Sheet	ASTM D 4601, Type II
	Tri-Ply® Ply 4 Base Sheet	ASTM D 2178, Type IV
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	GAF LRF Adhesive M	Partially adhered in 0.75 to 1-inch wide ribbons
	GAF LRF Adhesive M Canister	Partially adhered in 1 to 1.5-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
Separator Sheets	USG SECUROCK® Gypsum-Fiber Roof Board	Min. 0.25-inch thick
	EverGuard® Polymat Separation Layer	3 oz/yd ²
Single-Ply Adhesives	EverGuard® Polymat Cushioning Layer	6 oz/yd ²
	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
Base Sheets	OlyBond500®	Adhered in "spatter" pattern at a rate of 0.32 gal/100ft ² ; For fleece-backed membranes only
	GAFFLAS® #75 Base Sheet	ASTM D 4601, Type II
	GAFFLAS® #80 Ultima Base Sheet	ASTM D 4601, Type II
	GAFFLAS® 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
Base Sheet Adhesives	Tri-Ply® #75 Base Sheet	ASTM D 4601 Type II
	Millennium Hurricane Force 1-Part Membrane Adhesive	Fully adhered at rate of 1.5-2 gal/100ft ²

Component	Product	Installation Detail
Single-Ply Membranes	EverGuard® PVC	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® PVC Fleeceback	
	EverGuard® PVC KEE	
	EverGuard® PVC KEE Fleeceback	
	EverGuard® TPO	
	EverGuard Extreme® TPO	
	EverGuard® TPO Fleece-Back	
	EverGuard® TPO Fleece-Back Membrane 100	
	EverGuard® TPO Fleece-Back Membrane 115	
	EverGuard® TPO Fleece-Back Membrane 135	
	EverGuard Extreme® TPO Fleece-Back	
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
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
	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
Steel Deck	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 (Continued)	Wood Deck
	Solid or closely fitted min. 15/32 in., 32/16 span rated, 4-ply, CDX plywood sheathing for new and existing construction at max. 24 in. span; In the HVHZ, new construction shall be min. 19/32 in., 40/20 span rated, CDX plywood at max. 24 in. span. 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 or LRF Adhesive M Canister
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
MHF-1	Millennium Hurricane Force 1-Part Membrane Adhesive
OB500	OlyBond 500
PQSA	EverGuard PVC Quick Spray Adhesive
PVC	One ply of any one of the following products: 50-mil thick, 60-mil thick, or 80-mil thick EverGuard PVC

Name	Definition
<i>PVC FB</i>	One ply of any one of the following products: 50-mil thick, 60-mil thick, or 80-mil thick EverGuard PVC Fleeceback
<i>PVC KEE</i>	One ply of any one of the following products: 50-mil thick, 60-mil thick, or 80-mil thick EverGuard PVC KEE
<i>PVC KEE FB</i>	One ply of any one of the following products: 50-mil thick, 60-mil thick, or 80-mil thick EverGuard PVC KEE Fleeceback
<i>PLY HA</i>	One or two plies of any of the following products applied in hot asphalt: Ruberoid 20 Smooth or Ruberoid Mop Smooth 1.5
<i>PLY TA</i>	One or two plies of any of the following products applied by torch adhering: Ruberoid HW 25 Smooth or Ruberoid HW Smooth
<i>QSA</i>	EverGuard TPO Quick Spray Adhesive
<i>Preliminarily Secured</i>	Minimum four fasteners per 4-ft x 4-ft or 4-ft x 8-ft board
<i>Recover</i>	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.
<i>RhinoBond</i>	Drill-Tec XHD Fastener (<i>Steel Deck</i> or <i>Wood Deck</i>) or Drill-Tec #14 Fasteners (<i>Concrete Deck</i>) with Drill-Tec RhinoBond TPO XHD Plates or Drill-Tec RhinoBond TPO XHD Tread Safe Plates
<i>Separator Sheet</i>	EverGuard Polymat Separation Layer or EverGuard Polymat Cushioning Layer
<i>SXHD Plate</i>	Drill-Tec 2-3/4" Barbed SXHD Plates
<i>TPO</i>	One ply of any one of the following products: 1) 45-mil thick, 60-mil thick, or 80-mil thick EverGuard TPO 2) 50-mil thick, 60-mil thick, 70-mil or 80-mil thick EverGuard Extreme TPO
<i>TPO FB</i>	One ply of any one of the following products: 1) 45-mil thick, 60-mil thick, or 80-mil thick EverGuard TPO Fleece-Back 2) 50-mil thick, 60-mil thick, 70-mil or 80-mil thick EverGuard Extreme TPO Fleece-Back 3) EverGuard TPO Fleece-Back Membrane 100, EverGuard TPO Fleece-Back Membrane 115, or EverGuard TPO Fleece-Back Membrane 135
<i>WB181</i>	EverGuard WB181 Bonding Adhesive
<i>XHD</i>	Drill-Tec XHD Fastener
<i>XHD 2" Plate</i>	Drill-Tec 2" Double Barbed XHD Plates
<i>XHD 2-3/8" Plate</i>	Drill-Tec 2-3/8" Barbed XHD Plate

Name	Definition				
Vapor Barriers	One of the following options may be utilized as allowed by the <i>Approved Assembly</i> in All Layers Adhered over <i>Concrete Deck</i> table. The <i>MDP</i> shall be limited to the lesser of rating of the <i>Approved Assembly</i> and the <i>MDP</i> for the chosen vapor barrier.				
	Primer	Vapor Barrier	VB Application	Insulation Adhesives	MDP (psf)
	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	One or two plies GAFGLAS Ply 4, GAFGLAS Ply 4 M, Tri-Ply Ply 4 Ply Sheet, GAFGLAS FlexPly 6, GAFGLAS Flex PLY M, or one ply of Ruberoid 20 Smooth	Hot asphalt applied	Hot Asphalt	-360.0
	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	Ruberoid HW 25 Smooth or Ruberoid HW Smooth	Torch-applied	LRF-M 12-inch o.c.	-180.0
	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	Ruberoid HW 25 Smooth or Ruberoid HW Smooth	Torch-applied	LRF-XF 12-inch o.c.	-180.0
	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	Ruberoid HW 25 Smooth	Torch-applied	OB500 12-inch o.c.	-180.0
	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
	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	Ruberoid HW Smooth	Torch-applied	OB500 12-inch o.c.	-232.5
	Matrix 307 Premium Asphalt Primer or ASTM D41 primer	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	Hot asphalt applied	OB500 12-inch o.c.	-352.5
	None	GAF SA Vapor Retarder XL or GAF SA Vapor Retarder XL40	Self-adhered	OB500 12-inch o.c.	-127.5

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 <i>Concrete Deck</i> (New, Existing, or Recover)
C-W-#	Induction Welded Assemblies over <i>Concrete Deck</i> (New, Existing, or Recover)
LC-A-#	Lightweight Concrete Assemblies with All Layers Adhered over <i>Concrete Deck</i> (New or Existing)
LS-A-#	Lightweight Concrete Assemblies with All Layers Adhered over <i>Steel Deck</i> (New or Existing)
L-AM-#	Lightweight Concrete Assemblies with Adhered Membranes over <i>Steel Deck</i> or <i>Concrete Deck</i> (New or Existing)
RC-M-#	Recover Mechanically Fastened Assemblies over <i>Concrete Deck</i>
RS-M-#	Recover Mechanically Fastened Assemblies over <i>Steel Deck</i>
S-A-#	Assemblies with All Layers Adhered over <i>Steel Deck</i> (New or Existing)
S-M-#	Mechanically Fastened Assemblies over <i>Steel Deck</i> (New, Existing, or Recover)
S-W-#	Induction Welded Assemblies over <i>Steel Deck</i> (New, Existing, or Recover)
W-M-#	Mechanically Fastened Assemblies over <i>Wood Deck</i> (New, Existing, or Recover)

Mechanically Fastened Assemblies over <i>Concrete Deck</i> (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 or Min. 60mil TPO FB (72-inch wide)	Attached in-lap 12-inch o.c. with #14 Fastener & XHD 2" Plate; 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 or Min. 60mil TPO FB (144-inch wide)	Attached in-lap 6-inch o.c. with Drill-Tec #14 & XHD 2" Plate; 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 or Min. 60mil TPO FB (60-inch wide)	Attached in-lap 12-inch o.c. with #14 Fastener & XHD 2" Plate; 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 or Min. 60mil TPO FB (72-inch wide)	Attached in-lap 12-inch o.c. with #14 Fastener & SXHD Plate; 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. 1.5-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (120-inch wide)	Attached in-lap 6-inch o.c. with #14 Fastener & XHD 2-3/8" Plate or XHD 2" Plate; Side laps spaced 114-inch o.c.	-52.5 (Lim. 7)
C-M-6	-	Min. 1-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (60-inch wide)	Attached in-lap 12-inch o.c. with #14 Fastener & SXHD Plate; Side laps spaced 54-inch o.c.	-60 (Lim. 7)
C-M-7	-	Min. 1-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (120-inch wide)	Attached in-lap 6-inch o.c. with #14 Fastener & SXHD Plate; Side laps spaced 114-inch o.c.	-67.5 (Lim. 7)
C-M-8	-	Min. 1-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	Min. 60 mil TPO or TPO FB (144-inch wide)	Attached 6-inch o.c. through 6-inch wide overlaps with #14 Fastener & XHD 2-3/8" Plate 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/Base Sheet	Board/Sheet Attachment	Membrane	Membrane Attachment	MDP (psf)
LC-A-1	-	Min. 235 psi Cellular Lightweight Concrete (MCRF $\geq$ 85 lbf using Drill-Tec Base Sheet Fastener)	-	-	PVC	PQSA	-112.5 (Lim. 9; HVHZ only)
LC-A-2	-	Min. 235 psi Cellular Lightweight Concrete (MCRF $\geq$ 85 lbf using Drill-Tec Base Sheet Fastener)	Ruberoid 20 Smooth	MHF-1	TPO FB	OB500	-112.5 (Lim. 9; HVHZ only)
LC-A-3	-	Min. 235 psi Cellular Lightweight Concrete (MCRF $\geq$ 85 lbf using Drill-Tec Base Sheet Fastener)	-	-	TPO	LV-50	-112.5 (Lim. 9; HVHZ only)
LC-A-4	-	Min. 400 psi Cellular Lightweight Concrete (MCRF $\geq$ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	TPO FB	OB500	-120 (Lim. 9; HVHZ only)
LC-A-5	-	Min. 400 psi Cellular Lightweight Concrete (MCRF $\geq$ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	TPO	1121	-127.5 (Lim. 9; HVHZ only)
LC-A-6	-	Min. 400 psi Cellular Lightweight Concrete (MCRF $\geq$ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	TPO FB	LRF-XF	-130 (Lim. 9; HVHZ only)
LC-A-7	-	Min. 400 psi Cellular Lightweight Concrete (MCRF $\geq$ 117 lbf using Drill-Tec Base Sheet Fastener)	EnergyGuard HD	OB500 12-inch o.c.	TPO	QSA	-140 (Lim. 9; HVHZ only)
LC-A-8	-	Min. 400 psi Cellular Lightweight Concrete (MCRF $\geq$ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	TPO	QSA	-150 (Lim. 9; HVHZ only)
LC-A-9	-	Min. 400 psi Cellular Lightweight Concrete (MCRF $\geq$ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	TPO	LV-50	-155 (Lim. 9; HVHZ only)
LC-A-10	-	Min. 400 psi Cellular Lightweight Concrete (MCRF $\geq$ 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 All Layers Adhered over Concrete Deck (New or Existing)							
System No.	Vapor Barrier	LWIC	Board Layer/Base Sheet	Board/Sheet Attachment	Membrane	Membrane Attachment	MDP (psf)
LC-A-11	-	Min. 248 psi Cellular Lightweight Concrete (MCRF $\geq$ 111 lbf using Drill-Tec Base Sheet Fastener)	Ruberoid 20 Smooth	MHF-1	TPO FB	OB500	-230 (Lim. 9; HVHZ only)
LC-A-12	-	Min. 248 psi Cellular Lightweight Concrete (MCRF $\geq$ 111 lbf using Drill-Tec Base Sheet Fastener)	-	-	TPO	LV-50	-230 (Lim. 9; HVHZ only)
LC-A-13	-	Min. 418 psi Cellular Lightweight Concrete (MCRF $\geq$ 116 lbf using Drill-Tec Base Sheet Fastener)	-	-	TPO	LV-50	-297.5 (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-1	G33	Min. 400 psi Cellular Lightweight Concrete (MCRF $\geq$ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	TPO FB	OB500	-120 (Lim. 9; HVHZ only)
LS-A-2	G33	Min. 400 psi Cellular Lightweight Concrete (MCRF $\geq$ 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 $\geq$ 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 $\geq$ 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 $\geq$ 117 lbf using Drill-Tec Base Sheet Fastener)	-	-	TPO	QSA	-150 (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-6	G33	Min. 400 psi Cellular Lightweight Concrete (MCRF $\geq$ 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 $\geq$ 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 $\geq$ 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)
L-AM-2	Steel Deck (G33, P, L6, S18) or Concrete Deck	Min. 210 psi LWIC (MCRF $\geq$ 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 $\geq$ 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)

Recover Mechanically Fastened Assemblies over Concrete Deck								
System No.	Vapor Barrier	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Membrane	Membrane Attachment	MDP (psf)
RC-M-1	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (72-inch wide)	Attached in-lap 12-inch o.c. with #14 Fastener & XHD 2" Plate; Side laps spaced 66-inch o.c.	-45 (Lim. 7)
RC-M-2	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (144-inch wide)	Attached in-lap 6-inch o.c. with Drill-Tec #14 & XHD 2" Plate; Side laps spaced 138-inch o.c.	-45 (Lim. 7)
RC-M-3	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (60-inch wide)	Attached in-lap 12-inch o.c. with #14 Fastener & XHD 2" Plate; Side laps spaced 54-inch o.c.	-52.5 (Lim. 7)
RC-M-4	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (72-inch wide)	Attached in-lap 12-inch o.c. with #14 Fastener & SXHD Plate; Side laps spaced 66-inch o.c.	-52.5 (Lim. 7)
RC-M-5		OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (120-inch wide)	Attached in-lap 6-inch o.c. with #14 Fastener & XHD 2-3/8" Plate or XHD 2" Plate; Side laps spaced 114-inch o.c.	-52.5 (Lim. 7)
RC-M-6	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (60-inch wide)	Attached in-lap 12-inch o.c. with #14 Fastener & SXHD Plate; Side laps spaced 54-inch o.c.	-60 (Lim. 7)
RC-M-7		OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (120-inch wide)	Attached in-lap 6-inch o.c. with #14 Fastener & SXHD Plate; Side laps spaced 114-inch o.c.	-67.5 (Lim. 7)
RC-M-8	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	Min. 60 mil TPO or TPO FB (144-inch wide)	Attached 6-inch o.c. through 6-inch wide overlaps with #14 Fastener & XHD 2-3/8" Plate 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)

Recover Mechanically Fastened Assemblies over Steel Deck									
System No.	Deck Detail	Vapor Barrier	Base Layer	Base Layer Attachment	Top Layer	Top Layer Attachment	Membrane	Membrane Attachment	MDP (psf)
RS-M-1	G33, L6	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (120-inch wide)	Attached in-lap 12-inch o.c. with XHD & XHD 2-3/8" Plate; Side laps spaced 114-inch o.c.	-30 (Lim. 7; Non-HVHZ)
RS-M-2	G33, HXH1, L6, HS6	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (72-inch wide)	Attached in-lap 12-inch o.c. with XHD & XHD 2" Plate; Side laps spaced 66-inch o.c.	-45 (Lim. 7)
RS-M-3	G80, HXH1, L5, HS24	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (144-inch wide)	Attached in-lap 6-inch o.c. with XHD & XHD 2" Plate; Side laps spaced 138-inch o.c.	-45 (Lim. 7)
RS-M-4	G33, HXH1, L6, HS24	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (60-inch wide)	Attached in-lap 12-inch o.c. with XHD & XHD 2" Plate; Side laps spaced 54-inch o.c.	-52.5 (Lim. 7)
RS-M-5	G33, HXH1, L6, HS24	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (72-inch wide)	Attached in-lap 12-inch o.c. with XHD & SXHD Plate; Side laps spaced 66-inch o.c.	-52.5 (Lim. 7)
RS-M-6	G33, L6, F1, S24	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (120-inch wide)	Attached in-lap 6-inch o.c. with XHD & XHD 2-3/8" Plate or XHD 2" Plate; Side laps spaced 114-inch o.c.	-52.5 (Lim. 7)
RS-M-7	G33, HXH1, L6, HS24	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (60-inch wide)	Attached in-lap 12-inch o.c. with XHD & SXHD Plate; Side laps spaced 54-inch o.c.	-60 (Lim. 7)
RS-M-8	G33, P, L6, S24	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (120-inch wide)	Attached in-lap 6-inch o.c. with XHD & SXHD Plate; Side laps spaced 114-inch o.c.	-67.5 (Lim. 7)
RS-M-9	G33, P, L6, S12	-	OPTIONAL Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	Min. 60mil TPO or TPO FB (144-inch wide)	Attached 6-inch o.c. through 6-inch wide overlaps with XHD & XHD 2-3/8" Plate 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)

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, L6	-	Min. 1.5-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (120-inch wide)	Attached in-lap 12-inch o.c. with XHD & XHD 2-3/8" Plate; Side laps spaced 114-inch o.c.	-30 (Lim. 7; Non-HVHZ)
S-M-2	G33, HXH1, L6, HS6	-	Min. 1-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (72-inch wide)	Attached in-lap 12-inch o.c. with XHD & XHD 2" Plate; Side laps spaced 66-inch o.c.	-45 (Lim. 7)
S-M-3	G80, HXH1, L5, HS24	-	Min. 1-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (144-inch wide)	Attached in-lap 6-inch o.c. with XHD & XHD 2" Plate; Side laps spaced 138-inch o.c.	-45 (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 or Min. 60mil TPO FB (60-inch wide)	Attached in-lap 12-inch o.c. with XHD & XHD 2" Plate; Side laps spaced 54-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 or Min. 60mil TPO FB (72-inch wide)	Attached in-lap 12-inch o.c. with XHD & SXHD Plate; Side laps spaced 66-inch o.c.	-52.5 (Lim. 7)
S-M-6	G33, L6, F1, S24	-	Min. 1.5-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (120-inch wide)	Attached in-lap 6-inch o.c. with XHD & XHD 2-3/8" Plate or XHD 2" Plate; Side laps spaced 114-inch o.c.	-52.5 (Lim. 7)
S-M-7	G33, HXH1, L6, HS24	-	Min. 1-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (60-inch wide)	Attached in-lap 12-inch o.c. with XHD & SXHD Plate; Side laps spaced 54-inch o.c.	-60 (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-8	G33, P, L6, S24	-	Min. 1-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB (120-inch wide)	Attached in-lap 6-inch o.c. with XHD & SXHD Plate; Side laps spaced 114-inch o.c.	-67.5 (Lim. 7)
S-M-9	G33, P, L6, S12	-	Min. 1-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	Min. 60mil TPO or TPO FB (144-inch wide)	Attached 6-inch o.c. through 6-inch wide overlaps with XHD & XHD 2-3/8" Plate 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 or Min. 60mil TPO FB	Attached in-lap 6-inch o.c. with XHD & XHD 2" Plate; Side laps spaced 114.5-inch o.c.; Min. 1.75-inch wide heat weld	-45 (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-2	T19/32O, L24, N6	-	OPTIONAL Min. 1-inch Insulation	Preliminarily Secured or Secured with Top Layer	OPTIONAL Separator Sheet	Preliminarily Secured	TPO or Min. 60mil TPO FB	Attached in-lap 6-inch o.c. with XHD & XHD 2-3/8" Plate; 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 or Min. 60mil TPO FB	Attached in-lap 6-inch o.c. with #14 HD & XHD 2" Plate; 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 or Min. 60mil TPO FB	Attached in-lap 12-inch o.c. with #14 Fastener & XHD 2" Plate; 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 or Min. 60mil TPO FB	Attached in-lap 6-inch o.c. with #14 Fastener & XHD 2" Plate; 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 or Min. 60mil TPO FB	Attached in-lap 12-inch o.c. with #14 Fastener & SXHD Plate; 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