Product Approval
USER: Public User

FL #	FL31653-R4
Application Type	Revision
Code Version	2023
Application Status	Approved
Comments	
Archived	☐
Product Manufacturer	Metal Alliance Inc.
Address/Phone/Email	2120 SW Poma Dr. Palm City, FL 34990 (844) 638-2548 orders@metalalliance.com
Authorized Signature	Tara Faulkner orders@metalalliance.com
Technical Representative Address/Phone/Email	
Quality Assurance Representative Address/Phone/Email	
Category	Roofing
Subcategory	Metal Roofing
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer ☐ Evaluation Report - Hardcopy Received
Florida Engineer or Architect Name who developed the Evaluation Report	David Eng
Florida License	PE-81377
Quality Assurance Entity	Keystone Certifications, Inc.
Quality Assurance Contract Expiration Date	05/06/2029
Validated By	James R Wally, PE ☑ Validation Checklist - Hardcopy Received
Certificate of Independence	FL31653_R4_COI_32AI_150MS_plywood_20in.pdf

Referenced Standard and Year (of Standard)

Standard	Year
TAS 100	2023
TAS 125	2003
UL 580	2006

Equivalence of Product Standards Certified By

Sections from the Code

Product Approval Method	Method 1 Option D
Date Submitted	12/13/2023
Date Validated	12/26/2023
Date Pending FBC Approval	01/02/2024
Date Approved	02/13/2024

Summary of Products

FL #	Model, Number or Name	Description
31653.1	01: 150MS 1.5" Mechanical Seam 032 Aluminum 20" panel	150MS 1.5" mechanical seam panel from nominal 0.032" aluminum or thicker on 15/32" (min) plywood or 3/4" (min) wood plank | 20" coverage
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-178 **Other:** 178psf with clips @ 13", 76psf @ 19"		**Installation Instructions** FL31653_R4_II_32Al_150MS_plywood_20in_13_19.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_32Al_150MS_plywood_20in_13_19.pdf Created by Independent Third Party: Yes
31653.2	02: 150MS 1.5" Mechanical Seam 24ga	150MS 1.5" mechanical seam panel from 24ga (min) on 15/32" (min) plywood or 3/4" (min) wood plank
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-198.5 **Other:** 198.5 with clips @ 8" oc, 166psf @ 16" oc		**Installation Instructions** FL31653_R4_II_24ga_150MS_plywood.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_24ga_150MS_plywood.pdf Created by Independent Third Party: Yes
31653.3	03: 150MS 1.5" Mechanical Seam 26ga	150MS 1.5" mechanical seam panel from 26ga (min) on 15/32" (min) plywood or 3/4" (min) wood plank
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-218.8 **Other:** 218.8psf with clips @ 12" oc		**Installation Instructions** FL31653_R4_II_26ga_150MS_plywood.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_26ga_150MS_plywood.pdf Created by Independent Third Party: Yes
31653.4	04: 150MS 1.5" Mechanical Seam 032 Aluminum 20" panel	150MS 1.5" mechanical seam panel from nominal 0.032" aluminum or thicker on 15/32" (min) plywood or 3/4" (min) wood plank | 20" coverage
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-198.5 **Other:** 198.5psf with clips @ 10.5", 156psf @ 13"		**Installation Instructions** FL31653_R4_II_32Al_150MS_plywood_20in.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_32Al_150MS_plywood_20in.pdf Created by Independent Third Party: Yes
31653.5	05: 150MS 1.5" Mechanical Seam 16oz Copper	150MS 1.5" mechanical seam panel from 16oz copper or thicker on 15/32" (min) plywood or 3/4" (min) wood plank
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-198.5 **Other:** 198.5psf with 3" clip @ 12" oc, 149psf with 2" clip @ 16" oc		**Installation Instructions** FL31653_R4_II_16ozCu_150MS_plywood.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_16ozCu_150MS_plywood.pdf Created by Independent Third Party: Yes
31653.6	06: 200MS 2.0" Mechanical Seam 24ga	200MS 2.0" mechanical seam panel from 24ga (min) on 15/32" (min) plywood or 3/4" (min) wood plank
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-228.5 **Other:** 228.5psf with clips @ 9", 194.75psf with clips @ 19"		**Installation Instructions** FL31653_R4_II_24ga_200MS_plywood.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_24ga_200MS_plywood.pdf Created by Independent Third Party: Yes

31653.7	07: 200MS 2.0" Mechanical Seam 032 Aluminum	200MS 2.0" mechanical seam panel from nominal 0.032" aluminum or thicker on 15/32" (min) plywood or 3/4" (min) wood plank
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-200 **Other:** 200psf with clips @ 9" oc, 167psf with clips @ 19" oc		**Installation Instructions** FL31653_R4_II_32Al_200MS_plywood.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_32Al_200MS_plywood.pdf Created by Independent Third Party: Yes
31653.8	08: 150MS 1.5" Mechanical Seam 032 Aluminum	150MS 1.5" mechanical seam panel from nominal 0.032" aluminum or thicker on 15/32" (min) plywood or 3/4" (min) wood plank
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-213.5 **Other:** 213.5psf with clips @ 8", 138.5psf @ with clips @ 16" oc		**Installation Instructions** FL31653_R4_II_32Al_150MS_plywood.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_32Al_150MS_plywood.pdf Created by Independent Third Party: Yes
31653.9	09: 150MS 1.5" Mechanical Seam 032 Aluminum	150MS 1.5" mechanical seam panel from nominal 0.032" aluminum or thicker on 15/32" (min) plywood or 3/4" (min) wood plank
Limits of Use **Approved for use in HVHZ:** No **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-206 **Other:** 206psf with clips @ 8" oc, 101psf with clips @ 16" oc		**Installation Instructions** FL31653_R4_II_32Al_150MS_plywood-nonHVHZ.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_32Al_150MS_plywood-nonHVHZ.pdf Created by Independent Third Party: Yes
31653.10	10: 150MS 1.5" Mechanical Seam 24ga	150MS 1.5" mechanical seam panel from 24ga (min) on 15/32" (min) plywood or 3/4" (min) wood plank
Limits of Use **Approved for use in HVHZ:** No **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-206 **Other:** 206psf with clips @ 8" oc, 168.5psf with clips @ 16" oc		**Installation Instructions** FL31653_R4_II_24ga_150MS_plywood-nonHVHZ.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_24ga_150MS_plywood-nonHVHZ.pdf Created by Independent Third Party: Yes
31653.11	11: 150MS 1.5" Mechanical Seam 16oz Copper	150MS 1.5" mechanical seam panel from 16oz copper or thicker on 15/32" (min) plywood or 3/4" (min) wood plank
Limits of Use **Approved for use in HVHZ:** No **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-159.25 **Other:** See report for details		**Installation Instructions** FL31653_R4_II_16ozCu_150MS_plywood im.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_16ozCu_150MS_plywood im.pdf Created by Independent Third Party: Yes
31653.12	12: 150MS 1.5" Mechanical Seam 24ga	150MS 1.5" mechanical seam panel from 24ga (min) on 15/32" (min) plywood or 3/4" (min) wood plank
Limits of Use **Approved for use in HVHZ:** No **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-189.25 **Other:** See report for details		**Installation Instructions** FL31653_R4_II_24ga_150MS_plywood im.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_24ga_150MS_plywood im.pdf Created by Independent Third Party: Yes
31653.13	13: 150MS 1.5" Mechanical Seam 032 Aluminum	150MS 1.5" mechanical seam panel from nominal 0.032" aluminum or thicker on 15/32" (min) plywood or 3/4" (min) wood plank
Limits of Use **Approved for use in HVHZ:** No **Approved for use outside HVHZ:** Yes **Impact Resistant:** N/A **Design Pressure:** +N/A/-159.25 **Other:** See report for details		**Installation Instructions** FL31653_R4_II_32Al_150MS_plywood im.pdf Verified By: David Eng, PE 81377 Created by Independent Third Party: Yes **Evaluation Reports** FL31653_R4_AE_32Al_150MS_plywood im.pdf Created by Independent Third Party: Yes

Back Next

Contact Us :: 2601 Blair Stone Road, Tallahassee FL 32399 Phone: 850-487-1824

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Product Approval Accepts:

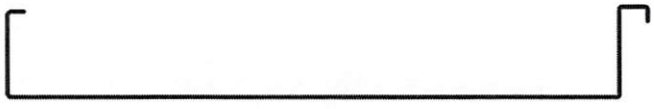


Credit Card Safe securityMETRICS

150MS

1.5" MECHANICAL 24GA

24ga (min) 1.5" Mechanical Seam over 15/32" (min) plywood



Metal Alliance, Inc:

2120 SW Poma Dr | Palm City FL 34990
Produced by Metal Alliance's Network of Approved Regional Manufacturers

Product Description

Mechanical seam panel with a 16" maximum panel width and a nominal rib height of 1.5"

Product Material

24ga (min) steel
24ga is nominally 0.0239" with yield strength of at least 50ksi, and shall be corrosion resistant per FBC 1507.4.3 where required.

Fastener

#10 1-inch pancake style fastener with nominal 2" long x 1.5" tall 26ga clip and (2) fasteners per clip. Panel seamed to 90° seam. *Compliant with FBC 1506.6 where required.*

Substrate/Deck

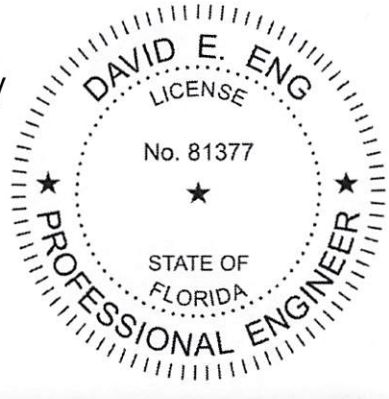
15/32" (min) plywood or 3/4" (min) thick wood plank (min S.G. of 0.42)

EVALUATED BY:

David Eng, PE
Timberlake Cove, LLC
FL PE 81377 • FL CA 33344
1317 Edgewater Dr Ste 2339
Orlando FL
timberlakecove.com

Digitally signed by David E Eng
Date: 2023.12.03 12:42:26-05'00'

This item has been digitally signed and sealed by David Eng, PE on the date indicated. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.



Underlayment: Comply with local building code or FBC 1507.1.1/1518.2 where required.

Slope: Comply with local building code or FBC 1507.4.2/FBC 1515.2 where required. Outside the HVHZ, FBC 1507.4.2 minimum slope is 1/4:12. In the HVHZ, FBC 1515.2 minimum slope is 2:12.

Re-Roofing: This panel may be installed over a single layer of existing shingles as permitted by local building code or FBC 1511/1521, provided the existing roof meets the conditions required by the applicable code.

Fire Barrier: Comply with FBC 1516.1 and 1516.2 where required.

High Velocity Hurricane Zone: This product is approved for installation in Miami-Dade & Broward counties, and other jurisdictions which require HVHZ or NOA approvals.

Technical Documentation: This product has been tested to the TAS 125 / UL 580 standard by Intertek Testing (TST-1527), report J6368.25-450-44 R0 and to TAS 100 under report J6368.07-450-44 R0.

Compliance Statement: This product as described has demonstrated compliance with Florida Building Code 2023, 1504.3.2 (non-HVHZ) and 1518.9.1/1523.6.5.2.4 (HVHZ), as required by FL Rule 61G20-3, method 1D.

This product as described has been tested and demonstrated compliance with:
- UL580 – Test for Uplift Resistance of Roof Assemblies
- UL 1897 – Uplift test for roof covering systems
- TAS 125 – Standard Requirements for Metal Roofing Systems
- TAS 100 - Wind and Wind-Driven Rain

Maximum Allowable Loads & Installation Requirements:

Method	Fastener Pattern	Clip Spacing	Panel Seam	Allowable Pressure
Method A	(2) #10 x 1" fasteners per 2" clip	16" o.c.	90°	-166 PSF
Method B	(2) #10 x 1" fasteners per 2" clip	8" o.c.	90°	-198.5 PSF

A factor of safety of 2 has been applied.

Design Process: Compare the maximum allowable loads on page 2 to the ASD uplift pressures for the project to determine sufficiency and installation requirements.

Alternatively, as an option, the load tables in this report provides one prescriptive option for the fastening requirement for the applicable wind loads for roofs within the parameters described.

For roofs outside of the listed parameters, design wind loads shall be determined as required by FBC 1609, ASCE 7, or other design code in force, using allowable stress. These load tables are based on ASCE 7-22. Use of these tables assumes that the structure is: Enclosed and conforms to wind-borne debris provisions and is a regular shaped building and is not subject to across-wind loading, vortex shedding, or instability; nor does it have a site location for which channeling or buffeting warrant consideration

Engineering analysis may be completed by other licensed engineers for project specific approval by local authorities having jurisdiction.

Notice to Other Entities: This product approval applies only to metal supplied by Metal Alliance or its formally approved manufacturing partners. Other manufacturers, distributors, installers, engineers, architects, or other parties relying on this approval for any product not supplied by Metal Alliance assume full, strict product liability. Traceability of coil, audited quality assurance programs, and compliance with FAC 61G20-3 are solely the responsibility of the entity relying on this approval. Metal Alliance assumes no liability for non-compliance or product performance for any product relying on this approval but not supplied by Metal Alliance.

Certification of Independence: David Eng, PE and Timberlake Cove, LLC do not have, nor will acquire a financial interest in any company manufacturing or distributing products under this evaluation. The same entities do not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.

Exclusions and Limitations: Design of deck and roof structure (to include attachment of plywood or wood plank) shall be completed by others. Fire classification and shear diaphragm design are outside the scope of this evaluation. Accelerated weathering/salt spray is outside the scope of this evaluation.

This report is limited to compliance with structural wind load requirements of FBC 1504.3.2, as required by Rule 61G20-3. Neither Timberlake Cove nor the manufacturer shall be responsible for any conclusions, interpretations, or designs made by others based on this evaluation report. This report is limited solely to documenting compliance with Rule 61G20-3, and makes no express or implied warranty regarding performance of this product. Installation shall be subject to the local building code and authority having jurisdiction; this report shall not be construed to supersede local codes in force.

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A Value Added Supplier of Metals

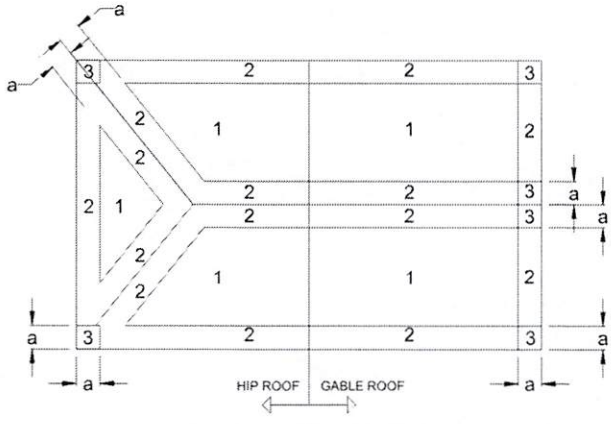
OPTIONAL ENGINEERING LOAD TABLES

150MS FL31653.02 – R4 *HVHZ*

Use of Load Tables: These load tables are provided as a courtesy to provide one possible prescriptive option for a generic, typical structure without calculating the design pressures.

For structures outside the parameters of these load tables (e.g. height above 30 feet), calculate the required allowable design pressure and compare to the maximum allowable loads shown on page 2. These load tables shall not be construed to in any way limit the installation of this product to the cases shown.

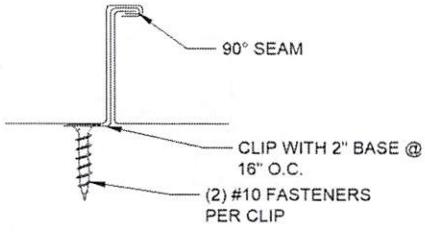
Instructions: Select the appropriate load table that applies to the structure in question. Determine the design wind speed for the project location. Use the attachment method indicated for that windspeed within each roof zone.



a: 10% OF LEAST HORIZONTAL DIMENSION OR 0.4h, WHICHEVER IS SMALLER, BUT NOT LESS THAN EITHER 4% OF LEAST HORIZONTAL DIMENSION OR 3FT (0.9M) OR AS DETERMINED BY DESIGN OR OTHER APPLICABLE CODE

ROOF ZONES FOR GENERIC BUILDING

METHOD A



Use this load table for structures which meet the following criteria:
Are located in **Exposure B** area
Have either a **flat roof, or gable/hip roof** with **max slope of 45°**
Have a mean Roof Height of **30 feet or less**

FL31653.02: 24ga 150MS on 15/32" plywood

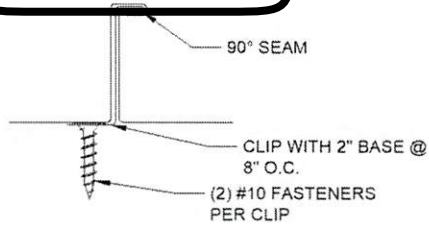
Wind	105	110	120	130	140	150	160	170	180	190	200
Zone 1:	A	A	A	A	A	A	A	A	A	A	A
Zone 2:	A	A	A	A	A	A	A	A	A	A	A
Zone 3:	A	A	A	A	A	A	A	A	A	A	A

Use this load table for structures which meet the following criteria:
Are located in **Exposure B** area
Have either a **flat roof less than 7°, hip roof** with
max slope of 45°, or gable roof with slope between 20° and 45°
Have a mean Roof Height of **30 feet or less**

FL31653.02: 24ga 150MS on 15/32" plywood

Wind	105	110	120	130	140	150	160	170	180	190	200
Zone 1:	A	A	A	A	A	A	A	A	A	A	A
Zone 2:	A	A	A	A	A	A	A	A	A	A	A
Zone 3:	A	A	A	A	A	A	A	A	A	A	A

METHOD B



Use this load table for structures which meet the following criteria:
Are located in **B, C, or D exposure** area
Have either **a flat roof, or gable/hip roof** with **max slope of 45°**
Have a mean Roof Height of **30 feet or less**

FL31653.02: 24ga 150MS on 15/32" plywood

Wind	105	110	120	130	140	150	160	170	180	190	200
Zone 1:	A	A	A	A	A	A	A	A	A	A	A
Zone 2:	A	A	A	A	A	A	A	A	A	A	B
Zone 3:	A	A	A	A	A	A	A	A	B	NR	NR

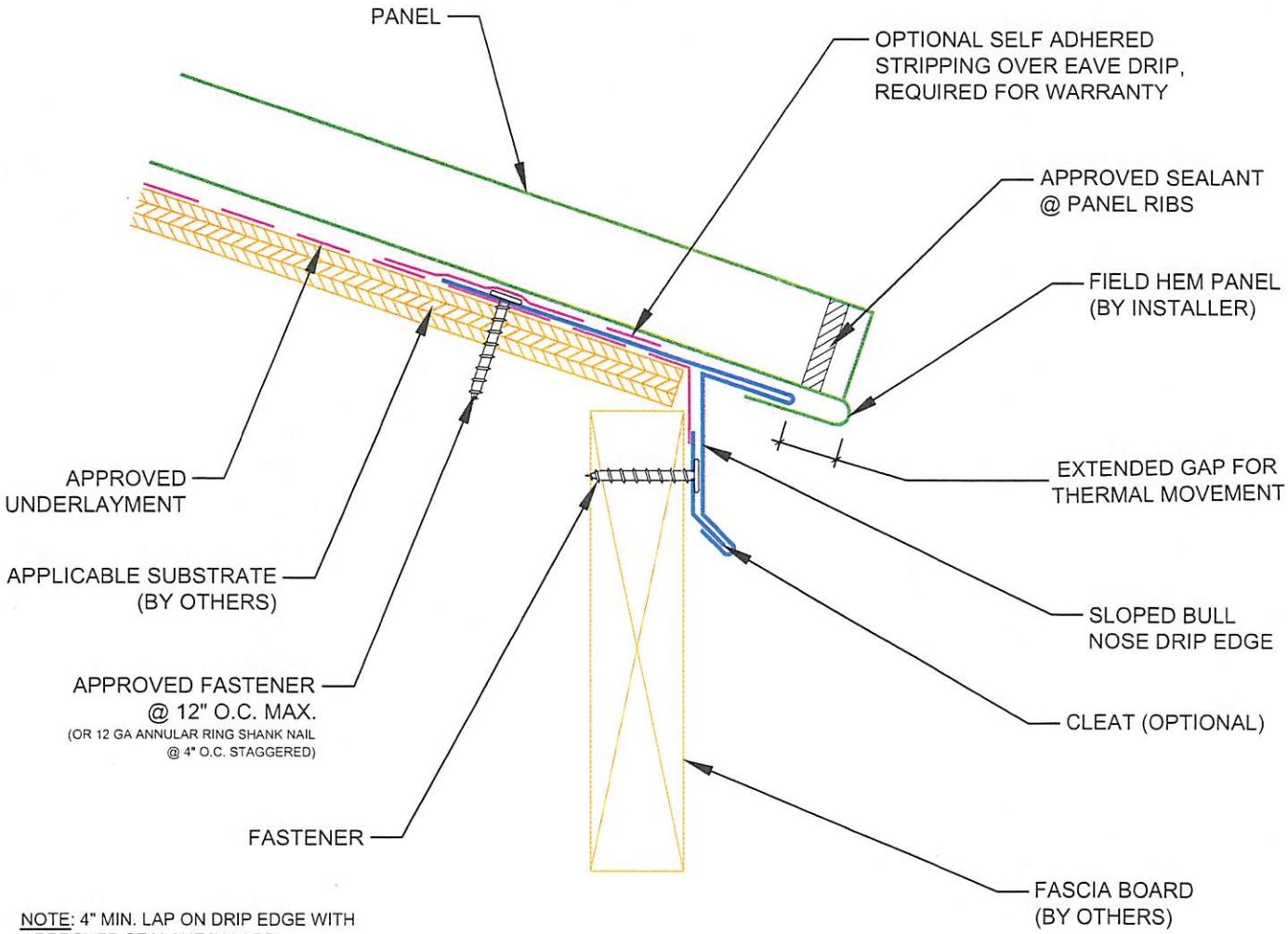
Use this load table for structures which meet the following criteria:
Are located in **B, C, or D exposure** area
Have either a **flat roof less than 7°, hip roof** with
max slope of 45°, or gable roof with slope between 20° and 45°
Have a mean Roof Height of **30 feet or less**

FL31653.02: 24ga 150MS on 15/32" plywood

Wind	105	110	120	130	140	150	160	170	180	190	200
Zone 1:	A	A	A	A	A	A	A	A	A	A	A
Zone 2:	A	A	A	A	A	A	A	A	A	A	A
Zone 3:	A	A	A	A	A	A	A	A	A	B	NR

Eave Detail

Detail No. **SS-ED1** NOT TO SCALE



NOTE: 4" MIN. LAP ON DRIP EDGE WITH APPROVED SEALANT IN LAPS.

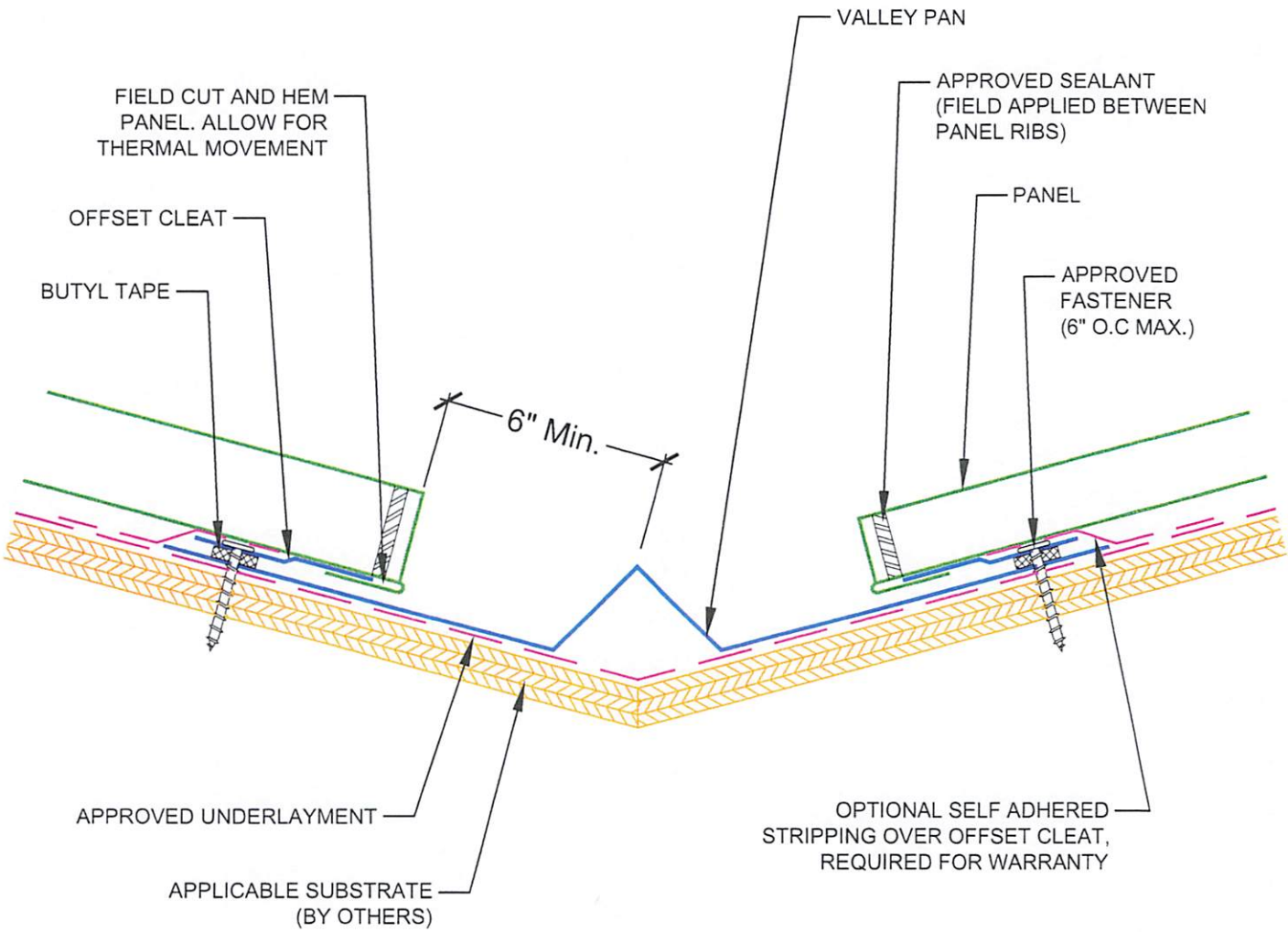
NOTE: PERIMETER CLEAT FASTENED WITH 12 GA. ANNULAR RING SHANK NAIL OR #10 DIAMETER SCREW, 10" O.C.AT PERIMETER ROOF AREAS AND 6" O.C. AT CORNER ROOF AREAS.

Rev. 12/21

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Valley - Cleat Detail

Detail No. **SS-VF1** NOT TO SCALE



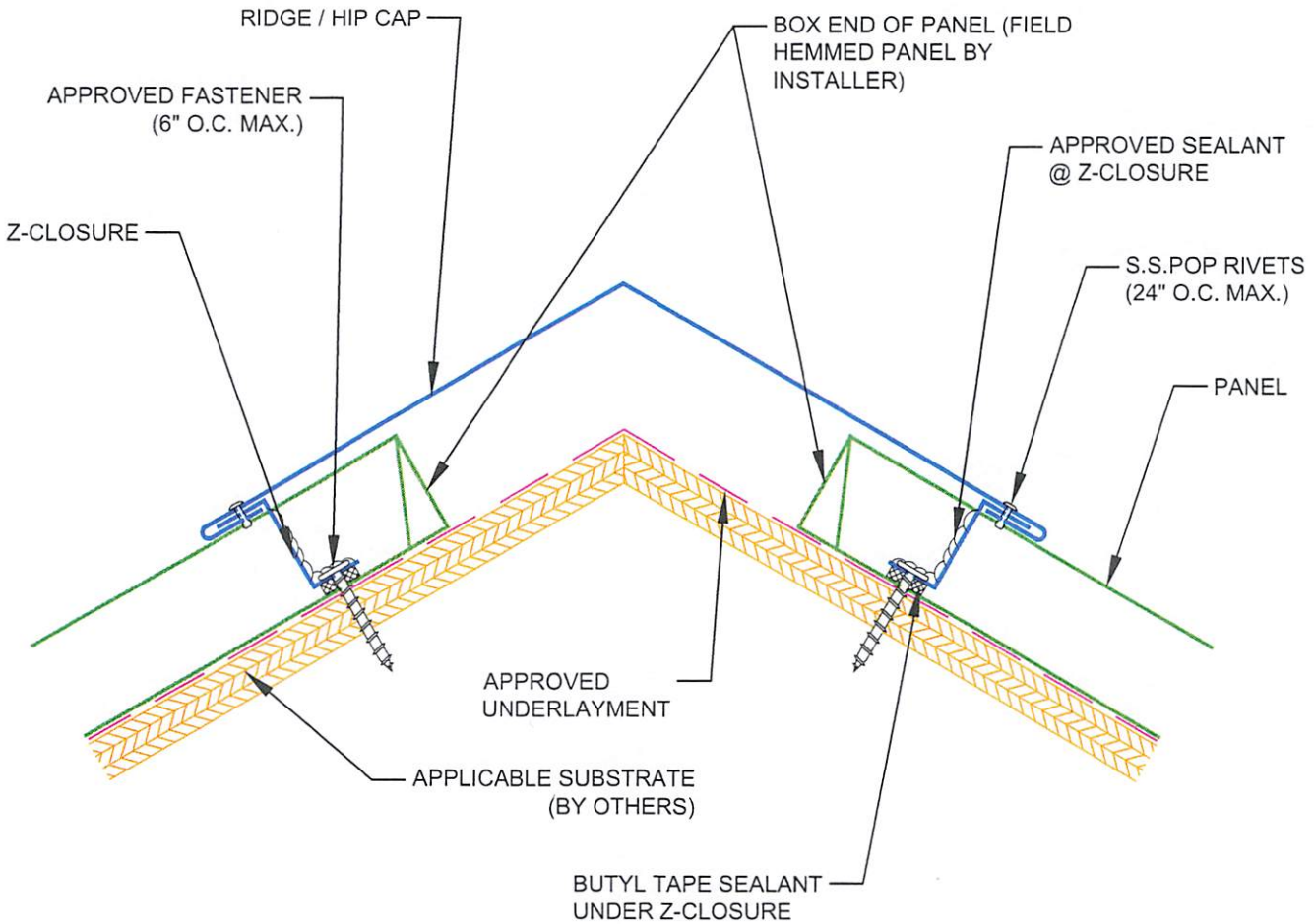
NOTE: FLASHING LAPS IN VALLEY ARE 6" MIN. USE TWO ROWS OF APPROVED TUBE SEALANT IN ALL LAPS.

Rev. 12/21

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Fixed Ridge/Hip Detail

Detail No. **SS-RH1** NOT TO SCALE

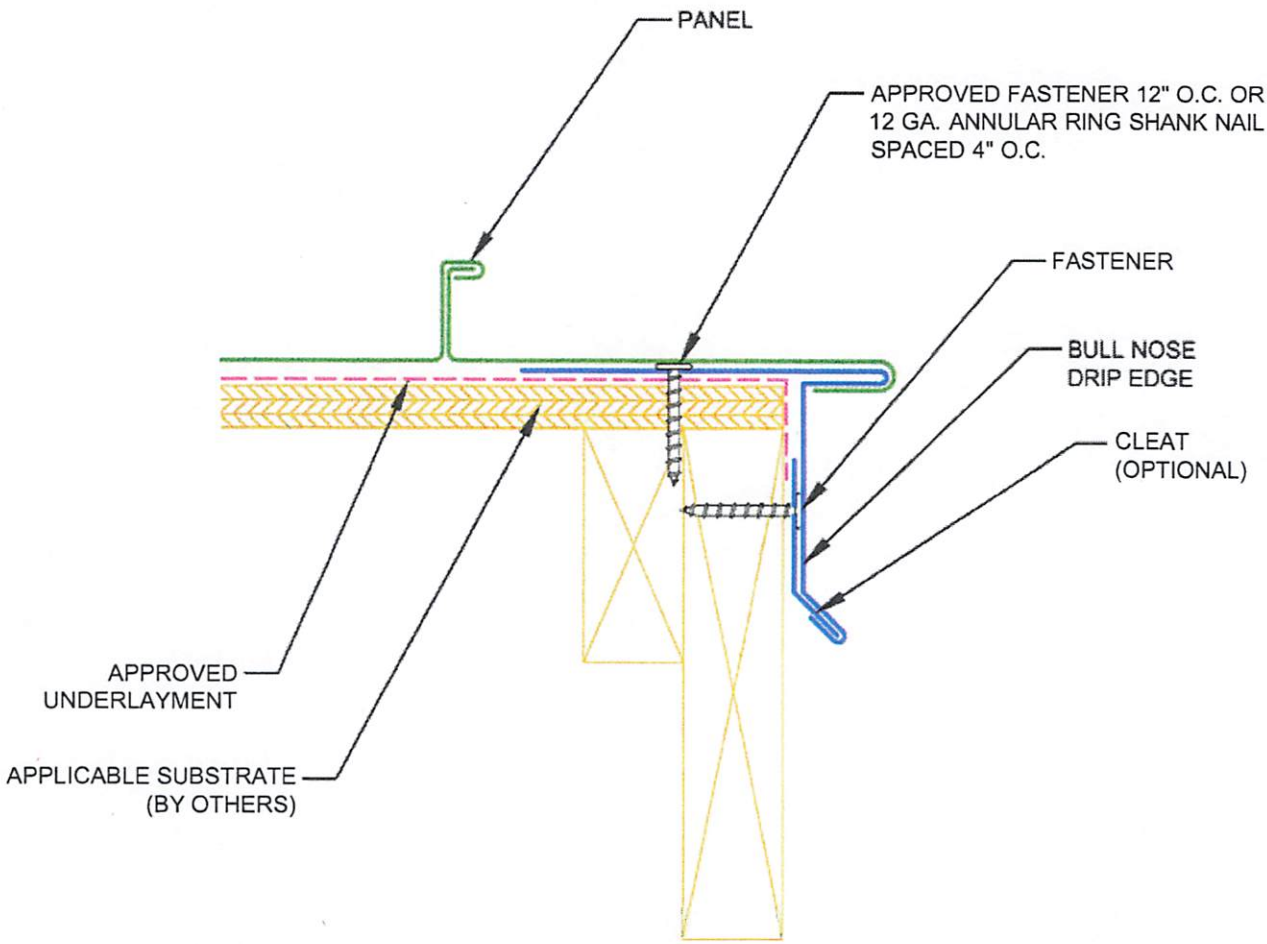


Rev. 12/21

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Hemmed Rake/Gable Detail

Detail No. **SS-GR1** NOT TO SCALE



NOTE: 4" MIN. LAP ON RAKE DRIP EDGE WITH APPROVED SEALANT IN LAPS.

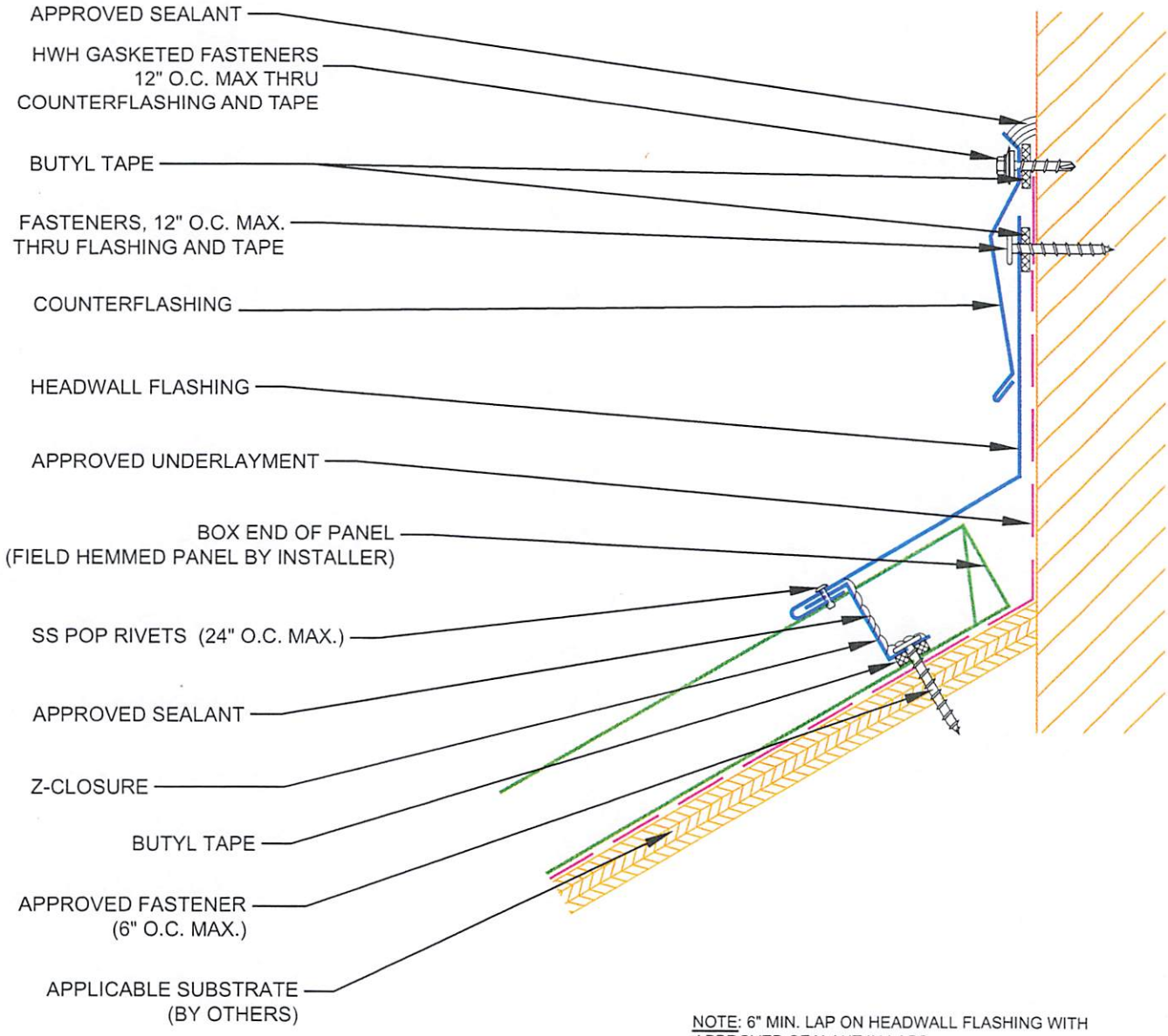
NOTE: PERIMETER CLEAT FASTENED WITH 12 GA. ANNULAR RING SHANK NAIL OR #10 DIAMETER SCREW, 10" O.C.AT PERIMETER ROOF AREAS AND 6" O.C. AT CORNER ROOF AREAS.

Rev. 12/21

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Headwall - Surface Mount Detail

Detail No. **SS-HW1** NOT TO SCALE



NOTE: 6" MIN. LAP ON HEADWALL FLASHING WITH APPROVED SEALANT IN LAPS.

Rev. 12/21

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Roofing Systems

COMPANY

Metal Alliance Inc
2120 SW Poma Dr.
Palm City, FL 34490 United States

R40147

Coated steel panels (surfacing) identified as "50ALLCOR" or "25ALLCORWALL", "50ALLRIB" or "25ALLRIBWALL", "50ALLPBR" or "25ALLPBRWALL".

Coated steel or aluminum panels identified as "200MSALLSEAM", "175SLALLSEAM", "145SLALLSEAM", "155SLALLSEAM", "100SLALLSEAM", "150SLALLSEAM", and "50ALLV".

Coated steel, aluminum, or copper panel identified as "150MSALLSEAM".

Any UL Classified peel and stick underlayment may be used in conjunction with "VersaShield® Fire-Resistant Roof Deck Protection" and "VersaShield® Underlayment" in any of the following systems.

One or more layers of GAF "VersaShield Underlayment," mechanically fastened, or Polyglass USA Inc "Polystick XFR", self-adhered, may be used in lieu of the Barrier Board in all combustible Classifications with steel or copper panels.

Two or more layers of GAF "VersaShield Underlayment," mechanically fastened, or Polyglass USA Inc "Polystick XFR", self-adhered, may be used in lieu of the Barrier Board in all combustible Classifications with aluminum panels.

BUILDING UNITS

Class A

13. **Deck:** C-15/32 or spaced sheathing **Incline:** Unlimited

Base Sheet (Optional): — Minimum one ply Type 15 or Type 30 asphalt saturated felt or Type G1 or Type G2 asphalt saturated glass mat, or Polyglass USA Inc "PolyAnchor HV" or "Elastobase V" or "PolyAnchor UDL 40" mechanically fastened, or "Polystick XFR", "Polystick MTS", "Polystick MTS Plus", "Polystick MU-X", "Polystick MX", "Polystick® IR-Xe", or "PolyVap SA G" self-adhered.
Underlayment: — One ply Polyglass USA Inc "Polystick XFR" self-adhered.
Insulation (Optional): — Any UL Classified polyisocyanurate, perlite, wood fiber or polyisocyanurate/perlite board, any thickness mechanically fastened or adhered with any UL Classified insulation adhesive.
Ply Sheet (Optional): — Minimum one ply Type 15 or Type 30 asphalt saturated felt or Type G1 or Type G2 asphalt saturated glass mat or Polyglass USA Inc "PolyAnchor HV" or "Elastobase V" or "PolyAnchor UDL 40" mechanically fastened or "Polystick XFR", "Polystick MTS", "Polystick MTS Plus", "Polystick MU-X", "Polystick MX", "Polystick® IR-Xe", or "PolyVap SA G" self-adhered.
Surfacing: — Coated steel panels designated "50ALLCOR" or "25ALLCORWALL", "50ALLRIB" or

"25ALLRIBWALL", "50ALLPBR" or "25ALLPBRWALL, or copper panel designated "150MSALLSEAM", mechanically fastened.