



MULE-HIDE PRODUCTS CO., INC.

“The name trusted in roofing since 1906”

MULE-HIDE PRODUCTS, CO., INC. UNDERWRITERS LABORATORIES (UL) ROOFING SYSTEMS - TPO

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* Note: Assembly numbers shown in the following listings correspond to the UL Master Listing number for all Mule-Hide Products, Co., Inc.

**Note: Assembly numbers shown in the following listings correspond to the UL Master Listing number for Atlas Roofing Corp.

1. Unless otherwise indicated, insulation is mechanically fastened to the roof deck.

Unless otherwise indicated, when referring to gypsum board in the following classifications, the following will be referenced: G-P Gypsum DensDeck®, 1/4 in., regular gypsum board (not Classified) laid with staggered joints (6 in. offset) measuring 0.463 in. thick min and weighing 184 lbs/sq min or Georgia Pacific "Sound Deadening Board", measuring 0.208 in. thick min and weighing 109 lbs/sq min.

Straight or tapered insulation may be used in the following assemblies provided they do not exceed the indicated incline or thickness and carry a UL label.

Unless otherwise indicated in the systems described below, any adhesive splice may be overlaid with pressure-sensitive flashing in any TPO system.

Any UL Classified United Solar Systems Corp Photovoltaic (Solar) Module System may be installed over any of the following UL Classified Mule-Hide roofing membrane assemblies that utilizes gypsum board, provided that the roofing membrane is applied directly over the gypsum (either adhered to, mechanically fastened over or loosely-laid over the gypsum):

Standard EPDM, FR EPDM, White-On-Black EPDM, Standard Reinforced EPDM, FR Reinforced EPDM, TPO-c, TPO-c (FR), TPO-c Extra, TPO-c Extra (FR) and TPO-c Fleece Back.

The Module system is either self-adhered directly to the roofing membrane in the field or self-adhered to an intermediate roofing material layer in the factory and then attached to the roofing membrane in the field using liquid adhesive, tape adhesive or fasteners. The Classification applies to combustible and non-combustible decks. Any UL Classified insulation, any combination, any thickness, may be installed below the gypsum. The maximum incline and Classification (Class A, B or C) shall be in accordance with the Classification established for the membrane roofing assembly, however the incline can not exceed 1-1/2:12.

CLASS A – BALLASTED

Unless otherwise indicated in the systems described below, the insulation and the membrane are laid loosely and surfaced with river bottom stone, nom 1-1/2 in. diameter, at 1000 lbs/sq min. Suitable alternates are size Nos. 1, 2, 24, 3 and 4 (as per ASTM D448), also at 1000 lbs/sq min. In addition, concrete pavers or crushed stone may be used. Pavers must weigh 1000 lbs/sq min and spaced no more than 1/8 in. apart and the crushed stone must meet the above size and weight requirements. Thermoplastic membrane may be adhered to the substrate with "Mule-Hide Thermoplastic Membrane Bonding Adhesive" at 1 gal/100 sq ft.

10. Deck: C-15/32

Incline: 2

Insulation (Optional): — Any UL Classified insulation, any thickness.

Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back", loose laid, adhered or mechanically fastened.

Surfacing: — Stone or paver ballast applied at min 10 lb/sq/ft

CLASS A – FULLY ADHERED

Unless otherwise indicated, membrane is adhered to the insulation with Tacc International "FA661" at 1 gal/sq.

Unless otherwise indicated, 7/16 in. (min) thick nonveneer APA rated oriented strand board may be substituted for wood fiber in the following systems.

Unless otherwise indicated the "Mule-Hide SP-100" or "Mule-Hide SP-100-LT" may be applied in 2-3 in. beads spaced 12 in. OC max as an alternate to full coverage.

54. Deck: NC

Incline: 1/2

Insulation: — Atlas Roofing "ACFoam II", wood fiber, glass fiber or perlite, any thickness.

Membrane: — "Mule-Hide TPO", 45-60 mil, fully adhered with Imperial "4459MG" Roofing Adhesive, 60 sq/ft/gal.

61. Deck: C - 7/16-in. "Mule-Hide FR Deck Panel A"* **Incline:** 1/2

Membrane: — Any UL Classified fully adhered EPDM, PVC, TPO or self-adhered modified bitumen cap sheet. Maximum incline is determined by the existing membrane Classification but cannot exceed 1/2:12.* - All deck joints blocked with 2 x 4 lumber. Gaps in ""Mule-Hide FR Deck Panel"" are caulked with W. R. Grace & Co. ""FlameSafe FS900+"" caulk.

72. Deck: NC

Incline: 1

Insulation: — Any UL Classified wood fiberboard; Johns Manville "ENRGY 3 Plus" (composite) insulation; cellular concrete, precast concrete with grouted joints or structural (poured-in-place) concrete.

Membrane: — "Mule-Hide TPO-c (FR)", fully adhered with "Mule-Hide TPO-c Bonding Adhesive", at 1-1/3 gal/sq.

72A. **Deck:** NC **Incline:** 1/2

Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness.

Membrane: — "Mule-Hide TPO-c (FR)", fully adhered with "Mule-Hide TPO-c Bonding Adhesive", at 1-1/3 gal/sq.

73. **Deck:** C-15/32 **Incline:** Unlimited

Insulation (Optional): — Any UL Classified, any combination, any thickness.

Barrier Board: — 1/2 in. min gypsum board or 1/4 in. thick G-P Gypsum DensDeck®.

Membrane: — "Mule-Hide TPO-c (FR)", fully adhered with "Mule-Hide TPO-c Bonding Adhesive" at 1-1/3 gal/sq.

74. **Deck:** C-15/32 **Incline:** See Note

Slip Sheet: — Two layers Elk "VersaShield Underlayment" or "VersaShield FB-2S".

Insulation: — Any UL Classified (except EPS), any combination, any thickness.

Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the insulation/membrane roofing system, but cannot exceed 2:12.

75. **Deck:** C-15/32 **Incline:** See Note

Slip Sheet: — One layer Atlas Roofing "FR-10" or "FR-50", Elk "VersaShield Underlayment" or "VersaShield FB-2S".

Insulation: — Atlas Roofing "ACFoam III", min 1.5 in. thick with joints staggered min 6 in. from the deck joints.

Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the insulation/membrane roofing system.

76. **Deck:** NC **Incline:** 1-1/2

Insulation: — Any UL Classified wood fiberboard; Johns Manville "ENRGY 3 Plus" (composite) insulation; cellular concrete, precast concrete with grouted joints or structural (poured-in-place) concrete.

Membrane: — "Mule-Hide TPO-c", fully adhered with "Mule-Hide TPO-c Bonding Adhesive", at 1-1/3 gal/sq.

77. **Deck:** NC **Incline:** 1/4

Insulation: — Atlas Roofing "ACFoam II", any thickness.

Membrane: — "Mule-Hide TPO-c", fully adhered with "Mule-Hide TPO-c Bonding Adhesive" at 1-1/3 gal/sq.

78. **Deck:** NC **Incline:** 1/8
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness.
Membrane: — "Mule-Hide TPO-c", fully adhered with "Mule-Hide TPO-c Bonding Adhesive" at 1-1/3 gal/sq.
79. **Deck:** NC **Incline:** 3
Insulation (Optional): — Any UL Classified, any combination, any thickness.
Barrier Board: — 1/2 in. min gypsum board.
Membrane: — "Mule-Hide TPO-c", fully adhered with "Mule-Hide TPO-c Bonding Adhesive" at 1-1/3 gal/sq.
80. **Deck:** NC **Incline:** 2-1/2 **Impact:** 2
Insulation (Optional): — Any UL Classified, any combination, any thickness.
Barrier Board: — 1/2 in. min gypsum board.
Membrane: — "72 mil Mule-Hide TPO-c Extra" or "80 mil Mule-Hide TPO-c Extra", fully adhered with "Mule-Hide TPO-c Bonding Adhesive" at 1-1/3 gal/sq.
81. **Deck:** C-15/32 **Incline:** Unlimited
Slip Sheet: — Three layers Elk "VersaShield Underlayment" or "VersaShield FB-2S".
Insulation: — Any UL Classified (except EPS or fiberboard), any combination, any thickness.
Membrane: — "Mule-Hide TPO-c (FR)" membrane, fully adhered with "Mule-Hide TPO-c Bonding Adhesive" at 1-1/3 gal/sq.
82. **Deck:** NC **Incline:** 3/8
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness.
Membrane: — "Mule-Hide TPO-c" or "Mule-Hide TPO-c Extra", fully adhered with "Aqua Base 120 Bonding Adhesive", at 120 ft²/gal.
83. **Deck:** NC **Incline:** 1/2
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness.
Membrane: — "Mule-Hide TPO-c (FR)" or "Mule-Hide TPO-c Extra (FR)", fully adhered with "Aqua Base 120 Bonding Adhesive", at 120 ft²/gal.
84. **Deck:** NC **Incline:** 1/2
Insulation: — Any UL Classified wood fiberboard; Johns Manville "ENRGY 3 Plus" (composite) insulation; cellular concrete, precast concrete with grouted joints or structural (poured-in-place) concrete.
Membrane: — "Mule-Hide TPO-c" or "Mule-Hide TPO-c Extra", fully adhered with "Aqua Base 120 Bonding Adhesive", at 120 ft²/ gal.

- 85. Deck: NC Incline: 1**
Insulation: — Any UL Classified wood fiberboard; Johns Manville "ENRGY 3 Plus" (composite) insulation; cellular concrete, precast concrete with grouted joints or structural (poured-in-place) concrete.
Membrane: — "Mule-Hide TPO-c (FR)" or Mule-Hide TPO-c Extra (FR)", fully adhered with "Aqua Base 120 Bonding Adhesive", at 120 ft²/gal.
- 86. Deck: NC Incline: 1**
Insulation (Optional): — Any UL Classified, any combination, any thickness.
Barrier Board: — 1/2 in. min gypsum board or 1/4 in. thick G-P Gypsum DensDeck®.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c (FR)" or "Mule-Hide TPO-c Extra (FR)", fully adhered with "Aqua Base 120 Bonding Adhesive" at 120 ft²/gal.
- 87. Deck: C-15/32 Incline: 1**
Insulation (Optional): — Any UL Classified, any combination, any thickness.
Barrier Board: — 1/2 in. min gypsum board or 1/4 in. thick G-P Gypsum DensDeck®.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c (FR)" or "Mule-Hide TPO-c Extra (FR)", fully adhered with "Aqua Base 120 Bonding Adhesive" at 120 ft²/gal.
- 88. Deck: NC Incline: 1/2**
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness.
Membrane: — "Mule-Hide TPO-c Fleece Back 100 or 115" (TPO), fully adhered with "Mule-Hide SP-100 Adhesive".
- 89. Deck: NC Incline: 1-1/2**
Insulation (Optional): — Any UL Classified, any thickness.
Insulation: — Any UL Classified wood fiberboard; Johns Manville "ENRGY 3 Plus" (composite) insulation.
Membrane: — "Mule-Hide TPO-c Fleece Back 110 or 115" (TPO), fully adhered with "Mule-Hide SP-100 Adhesive".
- 90. Deck: NC Incline: 3**
Insulation: — Any UL Classified, any thickness.
Barrier Board: — 1/4 in. G-P Gypsum DensDeck® or 1/2 in. gypsum wallboard.
Membrane: — "Mule-Hide TPO-c Fleece Back 110 or 115" (TPO), fully adhered with "Mule-Hide SP-100 Adhesive".
- 91. Deck: C-15/32 Incline: See Note**
Slip Sheet: — Two layers Elk "VersaShield Underlayment" or "VersaShield FB-2S" or three layers Elk "VersaShield FB-1S".
Insulation (Optional): — Any UL Classified (except EPS), any combination, any thickness.
Membrane: — "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the insulation/membrane roofing system when insulation is used or established for the

membrane roofing system applied over fiberboard or gypsum when insulation is not used, but can not exceed 2:12.

92. **Deck:** NC **Incline:** 1/4
Insulation: — Johns Manville "ENRGY3" any combination, any thickness.
Membrane: — "Mule-Hide TPO-c Fleece Back 100 or 115" (TPO), fully adhered with "Mule-Hide SP-100-LT" adhesive.
93. **Deck:** NC **Incline:** 1/2
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness.
Membrane: — "Mule-Hide TPO-c Fleece Back 100 or 115" (TPO), fully adhered with "Mule-Hide SP-100-LT" adhesive.
94. **Deck:** NC **Incline:** 1
Insulation: — Any UL Classified, any thickness.
Insulation: — Johns Manville "ENRGY 3 Plus" (composite) insulation or 1/2 in. (min) wood fiberboard.
Membrane: — "Mule-Hide TPO-c Fleece Back 100 or 115" (TPO), fully adhered with "Mule-Hide SP-100-LT" adhesive.

CLASS B – FULLY ADHERED

9. **Deck:** NC **Incline:** 3/4
Insulation: — Any UL Classified wood fiberboard; Johns Manville "ENRGY 3 Plus" (composite) insulation; cellular concrete, precast concrete with grouted joints or structural (poured-in-place) concrete.
Membrane: — "72 mil Mule-Hide TPO-c Extra" or "80 mil Mule-Hide TPO-c Extra", fully adhered with "Mule-Hide TPO-c Bonding Adhesive", at 1-1/3 gal/sq.
10. **Deck:** NC **Incline:** 3
Insulation (Optional): — Any UL Classified, any combination, any thickness.
Barrier Board: — 1/2 in. min gypsum board or 1/4 in. thick G-P Gypsum DensDeck®.
Membrane: — "Mule-Hide TPO-c (FR)" or "Mule-Hide TPO-c Extra (FR)", fully adhered with "Aqua Base 120 Bonding Adhesive" at 120 ft²/gal.
11. **Deck:** C-15/32 **Incline:** 3
Insulation (Optional): — Any UL Classified, any combination, any thickness.
Barrier Board: — 1/2 in. min gypsum board or 1/4 in. thick G-P Gypsum DensDeck®.
Membrane: — "Mule-Hide TPO-c (FR)" or "Mule-Hide TPO-c Extra (FR)", fully adhered with "Aqua Base 120 Bonding Adhesive" at 120 ft²/gal.
12. **Deck:** NC **Incline:** 3
Membrane: — "Mule-Hide TPO-c Fleece Back 100 or 115" (TPO), fully adhered with "Mule-Hide SP-100-LT" adhesive, 100 sq.ft./gal.

CLASS C – FULLY ADHERED

5. **Deck:** C - 7/16-in. "Mule-Hide FR Deck Panel C" **Incline:** 1/2
Membrane: — Any UL Classified fully adhered EPDM, PVC, TPO or self-adhered modified bitumen cap sheet. Maximum incline is determined by the existing membrane Classification but cannot exceed 1/2:12.
4. **Deck:** NC **Incline:** 1/2
Insulation: — Atlas Roofing "ACFoam II", wood fiber, glass fiber or perlite, any thickness.
Membrane: — "Mule-Hide TPO", 45-60 mil, fully adhered with Ashland "PILOBOND 2825", 60 sq/ft/gal.
11. **Deck:** C-15/32 **Incline:** 1
Insulation: — Johns Manville "ENRGY 3 Plus" (composite) insulation or any UL Classified wood fiberboard, 1/2 in. thick min.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".
12. **Deck:** NC **Incline:** Unlimited
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c (FR)", or "Mule-Hide TPO-c Extra (FR)", 45 to 80 mil thickness, adhered with "Mule-Hide TPO-c Bonding Adhesive".
13. **Deck:** C-15/32 **Incline:** Unlimited
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, min 2" thickness.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c (FR)", or "Mule-Hide TPO-c Extra (FR)", 45 to 80 mil thickness, adhered with "Mule-Hide TPO-c Bonding Adhesive".

Class C - FleeceBack Fully Adhered (FAST Adhesive)

1. **Deck:** C-15/32 **Incline:** 1
Insulation: — Johns Manville "ENRGY 3 Plus" (composite) insulation or any UL Classified wood fiberboard, 1/2 in. thick min.
Membrane: — "Mule-Hide TPO-c Fleece Back".

98. **Deck:** C-15/32 **Incline:** See Note
Slip Sheet: — Two layers "VersaShield Underlayment" or "VersaShield FB-2S".
Insulation: — Any UL Classified (except EPS), any combination, any thickness.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the insulation/membrane roofing system, but cannot exceed 2:12.

99. **Deck:** C-15/32 **Incline:** Unlimited
Insulation (Optional): — Any UL Classified, any combination, any thickness.
Barrier Board: — 1/2 in. min gypsum board or 1/4 in. thick G-P Gypsum DensDeck® with staggered joints (6 in. offset).
Membrane: — "Mule-Hide TPO-c (FR)".

100. **Deck:** C-15/32 **Incline:** See Note
Slip Sheet: — One layer Atlas Roofing "FR-10" or "FR-50", Elk "VersaShield Underlayment" or "VersaShield FB-2S".
Insulation: — Atlas Roofing "ACFoam III", 1.5 in. thick with joints staggered min 6 in. from the deck joints.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the insulation/membrane roofing system.

101. **Deck:** C-15/32 **Incline:** 1/2
Slip Sheet: — Two plies Atlas Roofing "FR-50".
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

- 101A. **Deck:** C-15/32 **Incline:** See Note
Slip Sheet: — Two layers Atlas Roofing "FR 50" or Elk "VersaShield Underlayment" or VersaShield FB-2S".
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the membrane roofing system applied over fiberboard or gypsum, but can not exceed 1-1/2:12.

102. **Deck:** C-15/32 **Incline:** 2-1/2
Insulation (Optional): — Any UL Classified, any combination, any thickness.
Barrier Board: — 1/2 in. min gypsum board.
Membrane: — "72 mil Mule-Hide TPO-c Extra" or "80 mil Mule-Hide TPO-c Extra".

103. **Deck:** NC **Incline:** 1-1/2
Insulation: — Any UL Classified wood fiberboard; Johns Manville "ENRGY 3 Plus" (composite) insulation; cellular concrete, precast concrete with grouted joists or structural (poured-in-place) concrete.
Membrane: — "72 mil Mule-Hide TPO-c Extra" or "80 mil Mule-Hide TPO-c Extra".
104. **Deck:** NC **Incline:** 1/2
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness.
Membrane: — "72 mil Mule-Hide TPO-c Extra" or "80 mil Mule-Hide TPO-c Extra".
105. **Deck:** NC **Incline:** 1/2
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness.
Membrane: — "Mule-Hide TPO-c Fleece Back 100 or 115" (TPO).
106. **Deck:** NC **Incline:** 1-1/2
Insulation (Optional): — Any UL Classified, any thickness.
Insulation: — Any UL Classified wood fiberboard; Johns Manville "ENRGY 3 Plus" (composite) insulation.
Membrane: — "Mule-Hide TPO-c Fleece Back 100 or 115" (TPO).
107. **Deck:** NC **Incline:** 3
Insulation: — Any UL Classified, any thickness
Barrier Board: — 1/4 in. G-P Gypsum DensDeck® or 1/2 in. gypsum wallboard.
Membrane: — "Mule-Hide TPO-c Fleece Back 100 or 115" (TPO).
108. **Deck:** C-15/32 **Incline:** See Note
Slip Sheet: — Two layers Elk "VersaShield Underlayment" or "VersaShield FB-2S".
Insulation : — Any UL Classified (except EPS), any combination, any thickness.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".
- Note: Max incline shall be in accordance with Classification established for the insulation/membrane roofing system, but can not exceed 2:12.
109. **Deck:** NC **Incline:** 1
Insulation: — Any UL Classified expanded or extruded polystyrene, any combination, any thickness
Slip Sheet: — One layer Atlas Roofing "FR-10" or "FR-50", Atlas Roofing "FR 50" or Elk "VersaShield Underlayment" or "VersaShield FB-2S"
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

110. **Deck:** C-15/32 **Incline:** See Note
Slip Sheet: — Three layers Elk "VersaShield FB-1S".
Insulation: — Any UL Classified (except EPS), any combination, any thickness.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the insulation/membrane roofing system, but cannot exceed 2:12.

111. **Deck:** C-15/32 **Incline:** See Note
Slip Sheet: — Three layers Elk "VersaShield FB-1S".
Insulation (Optional): — Any UL Classified (except EPS and wood fiberboard), any combination, any thickness.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the insulation/membrane roofing system when insulation is used or established for the membrane roofing system applied over fiberboard or gypsum when insulation is not used.

CLASS B – MECHANICALLY FASTENED

- **6. **Deck:** C-15/32 **Incline:** 1/2, See Note
Slipsheet: — One Ply Atlas "FR-10," mechanically fastened
Membrane: — Any UL Classified PVC, CPE, CSM, CSPE, EPDM, NBP, PIB, TPO, EIP or TRE membrane. (Note: Membrane must be currently Classified for use over the insulation used. Actual incline is determined by the maximum existing membrane/insulation Classification incline, but cannot exceed 1/2:12.)

20. **Deck:** NC **Incline:** Unlimited
Membrane: — "Mule-Hide TPO", 45-60 mil.

26. **Deck:** C-15/32 **Incline:** See Note
Base Sheet: — One layer Owens Corning "Perma Ply No. 28", GAF "Gafglas #75 Base Sheet", Johns Manville "Glasbase", Tamko "Glass Base", Celotex Type G2 "Vaporbar GB", Atlas Roofing "FR 50", Elk "VersaShield Underlayment" or "VersaShield FB-2S", mechanically fastened.
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness; Johns Manville "ENRGY 3 Plus" (composite) insulation; UL Classified wood fiber board, min 1/2 in. thick over any Classified insulation (any combination), min 1 in. thick. The bottom insulation layer joints are to be staggered a min 6 in. from the deck joints.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the insulation/membrane roofing system but not to exceed 1 in.

27. **Deck:** C-15/32 **Incline:** See Note
Insulation: — Johns Manville "ENRGY 3 Plus" (composite) insulation or UL Classified wood fiberboard, min 1-1/2 in. thick. The bottom insulation layer joints are to be staggered a min 6 in. from the deck joints.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the insulation/membrane roofing system but not to exceed 1 in.

28. **Deck:** C-15/32 **Incline:** See Note
Slip Sheet: — One layer Atlas Roofing "FR 50" or Elk "VersaShield Underlayment" or "VersaShield FB-2S".
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the membrane roofing system applied over fiberboard or gypsum, but can not exceed 1-1/2:12.

29. **Deck:** C-15/32 **Incline:** 1/2
Insulation (Optional): — Polyisocyanurate, min 1 in. thickness.
Slip Sheet: — Two layers Atlas Roofing "FR 50" or Elk "VersaShield Underlayment" or "VersaShield FB-2S".
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

30. **Deck:** C-15/32 **Incline:** 1/2
Slip Sheet: — One ply Atlas Roofing "FR-50".
Membrane: — "Mule-Hide TPO-c (FR)".

CLASS C – MECHANICALLY FASTENED

15. **Deck:** C-15/32 **Incline:** 1
Base Sheet: — One layer, Johns Manville "Perma Ply No. 28", GAF "GAFGLAS #75 Base Sheet", Johns Manville "Glasbase", Tamko "Glass Base", Celotex Type G2 "Vaporbar GB", Atlas Roofing "FR 50", Elk "VersaShield Underlayment" or "VersaShield FB-2S", mechanically fastened.
Membrane: — Any UL Classified Mule-Hide TPO membrane.
16. **Deck:** C-15/32 **Incline:** 1
Insulation: — Johns Manville "ENRGY 3 Plus" (composite) insulation or any UL Classified wood fiberboard, 1/2 in. thick min.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

17. **Deck:** NC **Incline:** Unlimited
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c (FR)", or "Mule-Hide TPO-c Extra (FR)", 45 to 80 mil thickness.
18. **Deck:** C-15/32 **Incline:** Unlimited
Insulation: — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, min 2" thickness.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c (FR)", or "Mule-Hide TPO-c Extra (FR)", 45 to 80 mil thickness.

MAINTENANCE AND REPAIR SYSTEMS

The insulation and membrane are fastened to the deck with metal screws and discs. The membrane laps are hot air welded.

CLASS A, B, AND C

7. **Deck:** C-15/32 **Incline:** 1/2
Existing Roof System: — Class A, B or C roofing system, to retain the existing Classification, is covered with:
Slip Sheet: — One or more layers of the following - Lydall "Manniglas 1200" mat, 15 mil, Atlas Roofing "FR-10" or "FR 50", Elk "Versashield" or Type G2 base sheet, laid loosely.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c Extra", or "Sure-Flex PVC", mechanically fastened.
8. **Deck:** C-15/32 **Incline:** 3/4
Existing Roof System: — Class A, B or C roofing system, to retain the existing Classification, is covered with:
Slip Sheet: — One or more layers of the following - Lydall "Manniglas 1200" mat, 15 mil, Atlas Roofing "FR-10" or "FR 50", Elk "Versashield" or Type G2 base sheet, laid loosely.
Membrane: — "Mule-Hide TPO-c (FR)", mechanically fastened.
9. **Deck:** C-15/32 or NC **Incline:** 1
Existing Roof System: — Class A, B or C roofing, gravel to be maintained on gravel built-up system, to retain the existing Classification, is cover with:
Insulation: — Owens Corning Specialty & Foam Products "Durapink", 1 in. max.
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back", mechanically fastened.

10. **Deck:** C-15/32 **Incline:** See Note
Existing Roof System: — Class A, B or C roofing system, to retain the existing Classification, is covered with:
Slip Sheet (Optional): — One or more layers Atlas Roofing "FR 50", Elk "VersaShield Underlayment" or "VersaShield FB-2S".
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back".

Note: Max incline shall be in accordance with Classification established for the existing roofing system, but can not exceed 1-1/2:12.

11. **Deck:** C-15/32 **Incline:** See Note
Existing Roof System: — Any Class A, B or C roofing system, covered with:
Membrane: — "Mule-Hide TPO-c Fleece Back 100 or 115 Membrane", adhered with "Mule-Hide SP-100 Adhesive".

Note: Max incline shall be in accordance with Classification established for the existing roofing system, but can not exceed 1:12.

CLASS A

16. **Deck:** C-15/32 **Incline:** ¼
Existing Roof System: — Class A, roofing system gravel maintained on gravel built-up system, covered with:
Insulation: — Tenneco "AMOCOR®-PB6, PG38 or PG39".
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra" or "Sure-Flex PVC", mechanically fastened.
17. **Deck:** NC **Incline:** ¼
Existing Roof System: — Class A, B or C roofing (gravel may be removed from gravel built-up system).
Insulation: — Tenneco "AMOCOR®-PB6, PB6W, PG38 or PG39", mechanically fastened.
Slip Sheet: — One layer Atlas Roofing"FR 10" or FR 50", or Elk "VersaShield Underlayment" or "VersaShield FB-2S".
Membrane: — "Mule-Hide TPO-c (FR)", mechanically fastened.

18. **Deck:** C-15/32 **Incline:** 1/2
Existing Roof System: — Class A, B or C roofing system, to retain the existing Classification, is covered with:
Slip Sheet: — Two or more layers Atlas Roofing "FR-50", Elk "VersaShield Underlayment" or "VersaShield FB-2S".
Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back", mechanically fastened.

19. **Deck:** NC

Incline: 1/2

Existing Roof System: — Class A, B or C BUR or modified bitumen roofing system gravel may be removed, covered with:

Insulation (Optional): — Atlas Roofing "ACFoam II" or "ACFoam III", Dow "Hy-Therm AP", Hunter Panels "H-Shield", Johns Manville "ENRGY-3", Firestone Building Products "ISO 95+GL", "GW" or "HF", Rmax Inc. "Multi-Max-3", any combination, any thickness.

Insulation (Optional): — Any UL Classified wood fiberboard; Johns Manville "ENRGY 3 Plus" (composite) insulation.

Membrane: — "Mule-Hide TPO-c Fleece Back 100" (TPO) or "Mule-Hide TPO-c Fleece Back 115" (TPO), mechanically attached or fully adhered with "Mule-Hide SP-100 Adhesive".

20. **Deck:** NC

Incline: 1

Existing Roof System: — Any Class A, B or C roofing system, covered with:

Membrane: — "Mule-Hide TPO-c Fleece Back 100 or 115 Membrane", adhered with "Mule-Hide SP-100 Adhesive".

CLASS B

5. **Deck:** C-15/32

Incline: 1/2

Existing Roof System: — Class B mineral or smooth surfaced built-up or modified roofing system, to retain the existing Classification, is covered with:

Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back", mechanically fastened.

CLASS B AND C

1. **Deck:** C-15/32

Incline: 1/2

Existing Roof System: — Class B or C roofing system, to retain the existing Classification, is covered with:

Slip Sheet: — One or more layers Atlas Roofing "FR-50", Elk "VersaShield Underlayment" or "VersaShield FB-2S".

Membrane: — "Mule-Hide TPO-c", "Mule-Hide TPO-c (FR)", "Mule-Hide TPO-c Extra", "Mule-Hide TPO-c Extra (FR)" or "Mule-Hide TPO-c Fleece Back", mechanically fastened.