

Mule-Hide Living Roof™ Systems

"Attachment I"

Addendum for Ballasted EPDM and TPO Membrane Roofing Systems

A. General

1. Refer to the EPDM or the TPO Membrane Roofing System specifications for general installation methods.
2. The information provided herein are options to be followed when installing the GreenGrid modules over loose-laid Mule-Hide EPDM or TPO membrane roofing systems where the GreenGrid modules or EcoBallast™ modules are providing the "ballast" to secure the roof system.
3. Insulation other than Mule-Hide Poly ISO 1 or Poly ISO 2 insulation must be approved by Mule-Hide prior to installation.
4. Acceptable cover boards shall be either Dens-Deck Prime or Securock. Boards other than those listed must be reviewed and approved by Mule-Hide prior to installation of the roof system.
5. Insulation and cover board are loose laid unless required by the project to be attached to the roof deck (when required to meet building code or project requirements). If attachment is required, follow the options in Section B. Insulation Attachment.
6. When using the GreenGrid modules as ballast to secure the roof membrane, the weight of the modules shall be no less than 10 lbs per sq ft. Deeper modules may be required, or pavers may be used, to address the perimeter and corner weight requirements.
7. Concrete pavers or stone ballast may be required in perimeter areas along exterior roof edges where parapet walls are not provided. Contact Mule-Hide for specific project requirements.
8. This system should only be used in non-hurricane wind zones and those areas where design wind speeds do not exceed 90 mph. It is the building owner's/owner's representative's responsibility to determine the suitability of the GreenGrid modules for the intended project and confirm the roof deck will support the weight of the saturated GreenGrid modules, specified roof system and any other live or construction loads.

B. Insulation Attachment

1. The insulation and membrane must be installed and secured in compliance with the specific job design requirements for fire and uplift. For ballasted systems, the insulation and cover boards are typically loose laid unless dictated otherwise by the building designer/specifier.
2. If attachment is required, refer to Section D. Acceptable Assemblies for EPDM membranes, for options on insulation attachment, seaming requirements, use of a cover board, and protection fabric requirements
3. If attachment is required, refer to Section E. Acceptable Assemblies for TPO Membranes, for options on insulation attachment, seaming requirements, use of a cover board, and protection fabric requirements.

C. Membrane Installation

1. Non-reinforced EPDM is recommended for loose laid systems to utilize the larger sheet sizes, minimizing the number of field seams on the project.
2. When using the EPDM membrane, all field seams must be completed with 3" wide In-Seam Tape and then covered with 6" wide Cured Cover Tape. Mule-Hide Tape Primer is required with the use of all Mule-Hide Tape products.
3. When using the TPO Membrane, all field seams shall be covered with 6" wide TPO Cover Strip (using Mule-Hide Tape Primer) or 6" wide TPO Reinforced Flashing strip. The TPO Reinforced Flashing Strips must be hot air welded along all edges. After welding has been completed and the seams checked, a bead of Cut-Edge Sealant shall be applied along all cut edges. Seam intersections ("T-Joints") must be overlaid with hot air welded 6" x 6" pieces of Non-reinforced TPO Flashing. Complete seam intersections (T-Joints) prior to applying Cut-Edge Sealant to cut edges. Refer to Section E. for assemblies.
4. If the intent is to only cover part of the roof surface with the GreenGrid Modules, the remaining portions of the roof shall be covered with pavers or smooth, river-washed stone.

D. Acceptable Assemblies for EPDM Membranes

1. 10 or 15 year System (with or without Wrap-Around Warranty)
 - a. Assembly EB-1

Membrane Thickness:	.045" or .060"
Insulation Attachment:	1 layer loose laid or multi-layer loose laid
Cover board:	Required (min 1/2" thick, must be loose laid)
Membrane Seaming:	3" In-Seam Tape (min 2-1/2" wide seam). Seam covered with 6" wide Cured Cover Tape
Protection Fabric:	6 oz/yd ²
Module Depth:	4" or 8"

- b. Assembly EB-2
 - Membrane Thickness: .045" or .060"
 - Insulation Attachment: 1 layer or multi-layer mechanically attached or adhered
 - Cover board: Required (must be adhered)
 - Membrane Seaming: 3" In-Seam Tape (min 2-1/2" wide seam). Seam covered with 6" wide Cured Cover Tape
 - Protection Fabric: 6 oz/yd²
 - Module Depth: 4" or 8"
2. 20-year System (with or without Wrap-Around Warranty)

Note: When using .090" thick EPDM membrane, all 30-yr enhancements and 30-yr details shall be followed. When using the 60" thick EPDM membrane, 20-yr enhancements shall be followed.

- a. Assembly EB-3
 - Membrane Thickness: .060" or .090"
 - Insulation Attachment: 1 layer loose laid or multi-layer loose laid
 - Cover board: Required (min 1/2" thick, must be loose laid)
 - Membrane Seaming: 3" In-Seam Tape (min 2-1/2" wide seam). Seam covered with 6" wide Cured Cover Tape and all seams caulked with Lap Sealant
 - Protection Fabric: 6 oz/yd²
 - Module Depth: 4" or 8"
- b. Assembly EB-4
 - Membrane Thickness: .060" or .090"
 - Insulation Attachment: 1 layer or multi-layer mechanically attached or adhered.
 - Cover board: Required (must be adhered)
 - Membrane Seaming: 3" In-Seam Tape (min 2-1/2" wide seam). Seam covered with 6" wide Cured Cover Tape and all seams caulked with Lap Sealant
 - Protection Fabric: 6 oz/yd²
 - Module Depth: 4" or 8"

E. Acceptable Assemblies for TPO Membranes

- 1. 10 or 15 year System (with or without Wrap-Around Warranty)
 - a. Assembly TB-1
 - Membrane Thickness: .045" or .060"
 - Insulation Attachment: 1 layer loose laid or multi-layer loose laid
 - Cover board: Required (min 1/2" thick, must be loose laid)
 - Membrane Seaming: Min. 1.5" wide heat welded seam covered with 6" wide TPO Cover Strip or 6' wide TPO Reinforced Flashing Strip heat welded
 - Protection Fabric: 6 oz/yd²
 - Module Depth: 4" or 8"
 - b. Assembly TB-2
 - Membrane Thickness: .045" or .060"
 - Insulation Attachment: 1 layer or multi-layer mechanically attached or adhered
 - Coverboard: Required (must be adhered)
 - Membrane Seaming: Min. 1.5" wide heat welded seam covered with 6" wide TPO Cover Strip or 6' wide TPO Reinforced Flashing Strip heat welded
 - Protection Fabric: 6 oz/yd²
 - Module Depth: 4" or 8"

2. 20-year System (with or without Wrap-Around Warranty)

Note: When using .060" or .080" thick TPO membrane, all 20-yr enhancements must be followed.

a. Assembly TB-3

Membrane Thickness:	.060" or .080"
Insulation Attachment:	1 layer loose laid or multi-layer loose laid
Coverboard:	Required (min 1/2" thick, must be loose laid)
Membrane Seaming:	Min. 1.5" wide heat welded seam covered with 6" wide TPO Reinforced Flashing Strip heat welded
Protection Fabric:	6 oz/yd ²
Module Depth:	4" or 8"

b. Assembly TB-4

Membrane Thickness:	.060" or .080"
Insulation Attachment:	1 layer or multi-layer mechanically attached or adhered
Coverboard:	Required (must be adhered)
Membrane Seaming:	Min. 1.5" wide heat welded seam covered with 6" wide TPO Reinforced Strip heat welded
Protection Fabric:	6 oz/yd ²
Module Depth:	4" or 8"

Always check the Mule-Hide Website (www.mulehide.com) for the latest revisions to this document. Mule-Hide reserves the right to make changes without notice.

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