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COMPATABLE WATERPROOFING MATERIALS

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Roofmeadow is not limited by the specific requirements of any single waterproofing system or provider. However, we prefer heavy-duty waterproofing products that are installed in conjunction with rigorous quality control, inspection and testing. A properly installed waterproofing system, protected by a vegetated cover, should last for half a century, or longer. Although the resistance of waterproofing materials to root attack may vary greatly, Roofmeadow can introduce a supplemental root-barrier layer, as necessary, so that the waterproofing system can be made fully compatible with our Roofmeadow vegetated covers.

We recommend are **reinforced PVC (polyvinyl chloride)** with a minimum of 1.5 millimeter (nominally 60 mil) thick sheets. Reinforced thermoplastic membranes used in green roof applications should be manufactured using the extrusion process in order to eliminate the potential for delamination. These very rugged membranes are seamed using hot-air fusion methods. Other membranes that require adhesives to create watertight seams are less ideal for green roof applications. Examples are butyl rubber and EPDM (ethylene-propylene rubber) materials¹. However, some EPDM manufacturers offer polymer-alloy or un-vulcanized rubber tapes that can provide a secure hot-weld seam. We recommend 1.5 mm EPDM sheets for use with our Roofmeadow® green roof systems. PVC, TPO and EPDM membranes are 'root proof.' Most other waterproofing system will require supplemental root penetration protection.

Flame applied or 'mopped' SBS modified bituminous waterproofing membranes are also compatible with green roofs. We also recommend SBS modified bituminous membrane set in SEBS polymer-modified bitumen. These products can also be used in conjunction with our electronic leak detection systems. We recommend a two-ply installation for all modified bituminous membranes. The cumulative thickness of the membrane plys should equal or exceed 260 mils. These materials have the inherent weakness that they are vulnerable to root

¹ When using these materials (called thermosets) we recommend 'cap stripping' all seams with a 12-inch strip of similar membrane. Bonding agents should be certified by the manufacturer as compatible with green roof conditions.

attack. Some modified bituminous waterproofing systems are provided with an integral root-barrier membrane. Unless supplemented by the manufacturer with an approved root-barrier layer, Roofmeadow will provide its own root-barrier sub-system with the green roof installation.

Roofmeadow systems can also be installed in conjunction with **hot liquid-applied rubberized asphalt systems** and **premium coal-tar pitch BUR systems**. These systems are applied in multiple layers. They are particularly suited to concrete roof decks. They create a seamless waterproofing layer that can also be flowed around projections and penetrations. However, these materials are also vulnerable to root attack and must be protected with a supplemental root-barrier system.

Finally, some cold liquid-applied membrane systems are compatible with Roofmeadow systems. These systems also provide a seamless surface coating. At present Roofmeadow recognizes **moisture-triggered polyurethane membranes** that are fiberglass reinforced as suitable for both extensive and intensive green roof projects. The minimum thickness of the waterproofing should be 80 mils. The vulnerability to root attack and the potential requirement for a supplemental root-barrier may vary. Follow the manufacturer's recommendations regarding the use of root-barriers.

Most membranes are also compatible with electric leak detection (Electric Field Vector Mapping) systems. However, black EPDM membranes cannot be used successfully with electric leak detection.