

Drying Out Existing Roof Assemblies With Use of Vapor-Permeable Self-Adhered Membranes

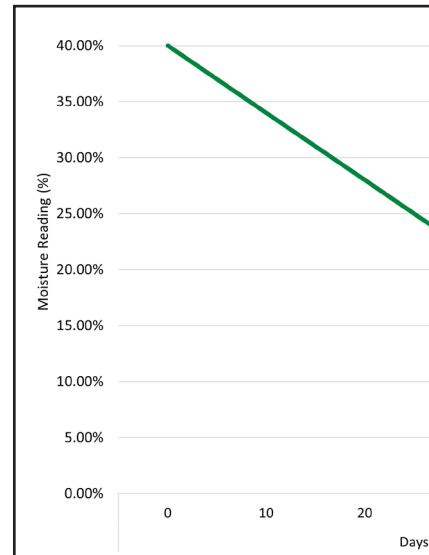
Project: Three Story Condominium
 Location: Portland, OR
 Roof Deck: 19/32" plywood (Two Layers)
 Original Roof: 60mil Mechanically Attached TPO

Image 1 - Overview of Investment, East Building 2118 (left) and West Building 2128 (right), Lower Roofs of Terrace Decks and Garden Roofs

Inspection revealed the three-year-old TPO roofs, installed directly to the double layer of plywood deck, was leaking. Sources of water entry was primarily through the TPO roof cover with some leakage at drains and condensation.

The deck assembly consisted of two layers of 19/32" plywood secured to T&B with nails. The underside of the deck is a four-inch layer of closed cell foam bonded to the underside of the deck. The roof continuous insulation was a combination of closed cell foam below the deck and rigid insulation above. The roof assembly has a "N" gypsum coverboard above the rigid insulation layer.

Original case study from the client with highly technical language.



Initial basic graph developed from the data buried in the case study.

Project Case Study Three Story Condo | Portland, OR

Could moisture vapor diffusion allow wetted substrates to dry and allow residents to remain in their condos?

In Portland, Oregon, this concept was proven, using SlopeShield Plus SA air barrier and permeable vapor retarder with Self Drying Technology, in an attempt to dry a wetted plywood substrate. Thereby salvaging the existing substrate materials, including the spray polyurethane foam, interior gypsum ceiling.

Existing Roof Assembly

- Vegetative green roof
- TPO single ply membrane
- 1/2 inch gypsum coverboard
- Polyisocyanurate insulation
- Two layers of 19/32 plywood
- 4" closed cell spray polyurethane foam (SPF)
- Interior gypsum ceiling and finish**

The Issue

Residents experienced interior water intrusion as a result of leakage through membrane laps and joints, also improperly sealed penetration flashings.

Moisture removal required wet coverboards, insulation, and plywood substrate materials.

The initial moisture meter readings, on the top plywood layer, indicated a moisture content exceeding 45%.

Product renderings and enhanced content used for new and improved case study.

The Problem

Remediating leaks through rooftop amenity spaces is an expensive process that requires total removal of the overboarded roofing, membrane, and associated materials, including coverboard, insulation, roof deck, cavity insulation, and interior ceiling.

This work is costly (high disposal fees, complete material replacement) and results in temporary resident displacement and revenue loss for the property owner.

Remedy and Findings

The wetting materials were removed down to the plywood. The entire deck was covered in SlopeShield Plus SA, allowing the damp substrate to dry through speed moisture vapor diffusion.

The Solution: SlopeShield Plus SA

The Results: Minimal Impact to Occupants and a New Roof

- Vegetative green roof
- PVC roofing membrane
- 1/2 inch gypsum coverboard
- Polyisocyanurate insulation
- SlopeShield Plus SA
- Two layers of 19/32 plywood
- 4" closed cell spray polyurethane foam (SPF)
- Interior gypsum ceiling and finish**

With a target moisture content at or below 15%, it was determined the materials could be reused and the subsequent new roofing components are shown below to be installed.

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Description and Background

For this project, our team transformed a complex 15-page case study into an easy-to-read 2-page pictorial overview. This document, designed specifically to be used in sales calls, demonstrates the effectiveness of the product with images, graphs, and scientific data.

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