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Introducing Internal Waterproofing To The LBP Regime Proposal 2b:

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Chairman, WMAI

Create a New Licence Class for Internal Waterproofing.

MBIE considers that the best option for internal waterproofing is Option 2: create a new 'Internal Waterproofing' licence class and expand the definition of restricted building work to include "application of internal waterproofing".

By adding a class and expanding the definition of restricted building work, only those who have been deemed competent by the Registrar will be able to do internal waterproofing work. Furthermore, the requirement to keep Records of Work will help create better documentation of the completed work.

If a new class is added without expanding the definition of restricted building work, there would be no restriction on who could do the work and the licence would simply act as a mark of competence for those that have it.

The sector has emphasised previously that there is no desire for classes that do not have restricted building work.

Waterproofing of wet areas makes up a disproportionate amount of remedial work on a house, and thus the status quo cannot be maintained.

A non-regulatory approach will not be enough to address the widespread problems either. Further, there are no existing classes that internal waterproofing shares enough competencies with for it to be added as an area of practice.

Water Testing/Electric Field Vector Mapping.

GERRY MEKKELHOLT
Vice Chairman, WMAI

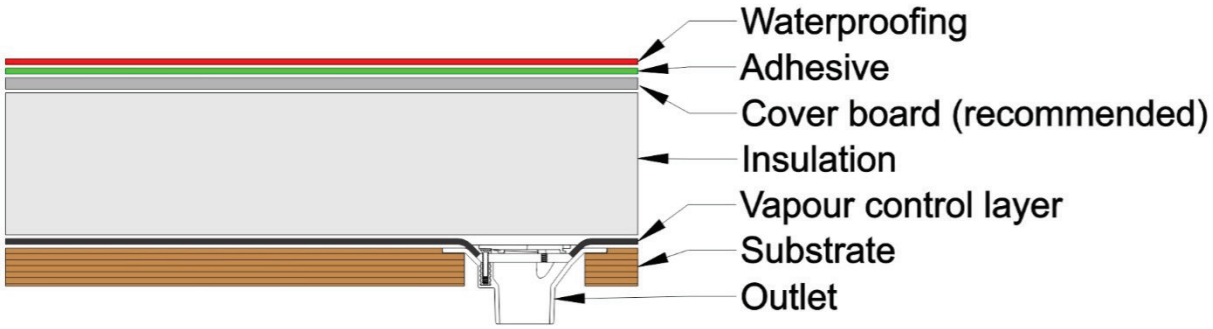
Leaks in membranes are caused by a variety of reasons. Damage, design, workmanship, product failure, age, organic substances, organic growth, weather events and more.

The first point that should be made.

What warning signs are there if a warm roof with vapour barrier was leaking. Would we know, or would the insulated area just fill up until it finds a point of internal entry, or even worse, the structure collapses with the weight of the water?

At best the insulation value is compromised. I have no doubt this scenario is already occurring now, on systems installed in NZ.

Just like a gutter, I believe the answer is an outlet installed into the warm roof system. The dropper should be placed at the lowest point of the substrate and discharged to somewhere obvious. Now we have an early warning system.



Finding the location of any breach in the membrane may not be easy, as water may have travelled a fair distance before reaching the overflow dropper.

If you consider that a damaged membrane may only release a cup of water into the system over a heavy rain event, it may take many events to accumulate enough leaked water to reach the overflow. The old school water test would most likely be a long and inconclusive hit-and-miss method of leak detection. This is the problem with water testing alone.

A pre-installed EFVM system is a very useful method of leak detection. Electric Field Vector Mapping (EFVM) requires some form of conductive product under the membrane to allow the technician to pinpoint the breach.

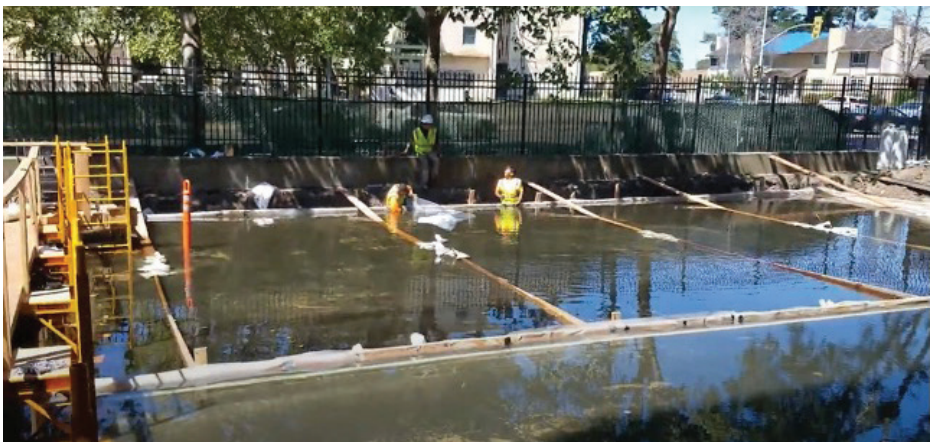
ILD NZ has a range of methods for different membrane systems, from thin mesh to conductive coating/primer options. The inclusion of these systems should in my view, be mandatory with all WarmRoof with vapor barrier systems, including Green Roofs.

The second point.

I would like to think that EFVM is happening with all completed membranes systems, but the reality is that most likely, this is not the case. How do I know? Having questioned students passing through our training scheme (over 500 students), it is clear that EFVM has not yet been widely adopted. And so, we are left with water testing.

Failed membrane-drainage causes can be blocked pipes and/or outlet grates, or rain events beyond design intent. When the roof, deck, or gutter floods it is likely the roofs and decks will experience a head of water on them equal to overflow height, or worse. This is simulated in the water-test.

What is the Achilles heel of water testing? I believe it is the duration times we have forced upon applicators for this process. Is it 12 hrs, 24 hrs 48hrs or 72hrs? In the literature I have reviewed, all of these times frames have been specified. The reality is any (failed) flood test that I have performed has leaked within 15 minutes or less.



So why the long timeframe for water testing? If one hour was the minimum time frame it is more likely that roofs would be tested.

The main aim of the applicators water test is to pick up any workmanship or membrane issues that may have occurred. Not doing the water test exposes the installer and applicator to financial and reputational risk.

Every water test should have photo evidence of the area under test.

So, what is the advantage of a longer water test?

This may pick up the smallest of leaks that take a very long time to show. If the substrate is non-porous, water may travel for a long distance to find an entry point. Unless under pressure, some may never leak at all.

Applicators must allow time and money to every water test they conduct. This should be itemised in the quote.

On the Auckland PS3 (and other councils), the applicator must confirm that either they have conducted a water test or, an EFVM system has been installed.

So, what if this 'box is ticked' but not actually conducted?

I recommend that councils require the photo evidence of a water test to accompany the PS3, or the LBP provide this, as part of the Record of Works.

Is this an inconvenience? Yes, it is, but it does put all applicators on the same playing field, and it ensures the water test will be done.

E2.3.7 requires that building elements must be constructed in a way that makes allowance for the following:

1. The consequence of failure.
2. The effects of uncertainties resulting from construction or from the sequence in which different aspects of construction occur.

Being electrically testable and having a drain at Vapour Barrier level should satisfy both of the above requirements, for the product and more importantly, for the designer.

E2.3.5 stipulates: Concealed Spaces and Cavities must be constructed in a way to dissipate moisture. Without this consideration, allowing a Warm Roof cell to accumulate additional weight can have knock-on consequences. H1 performance, and B1structure compliance may not be achieved.

Construction Phase Impact:

Given that the construction phase can be especially damaging to the membrane, what considerations are made for sequences in which various trades work directly on the membrane after its installation? If the waterproofing installer completes their work well before other trades, how is the product's watertightness integrity verified after the construction process is completed?

Waterproofing in winter.

RAIN, RAIN, some COLD, and then more RAIN.

Everyone has noticed the weather changes/cycles of the past years. Whangārei is now close to changing names to Whanga-rain.

It was not long-ago Auckland was worried the dams were close to dry. The South Island has had some cold snaps, which for this time of year is to be expected. Europe is in the midst of a heat wave. This sounds great to us right now, until it's us on the receiving end of one.

How installers manage these extremes has always been a challenge. Regardless of product, the substrate must be dry. The biggest mistake we see from builders is the expectation a tarp or polythene cover, placed directly onto the roof/deck will keep the substrate dry. Often the removal of the said covering will reveal a sodden substrate.

"Not to worry, the lads have a gas torch in the van. That will speed up the process".

Not a good idea.

Force drying can cause the substrate to delaminate. If this occurs the Plywood Manufacturer will not be responsible for the delamination. This will be directed to the applicator to replace and repair at their expense.

If the substrate is concrete the actual moisture content may not be correctly measured. The measurement is only getting the top few mills of concrete. The result will be bubbles and un-adhered membrane.

This is where management and communication play an important role.

The builder/main contractor must be made aware of the importance of a cover that is raised off the substrate and has falls to move the water away from the roof/deck area. This air gap will allow the substrate to continue to dry.

Pre-priming the sheets will help, as well as the use of construction adhesive between the sheet if this is part of the substrate check sheet provided by the supplier.

Once the Builder/Main Contractor understands that you will not lay, or force dry the substrate and that the resulting delays will affect the building program, they will build a temporary roof with falls over the substrate. Often this is the only option to achieve the correct result the client expects.

Cold dry days have their own challenges. Membranes cracking, adhesives not drying or moisture collecting on the adhesive. The sun is out, and the frustration is up as you can't make any headway on the project.

The inclusion of low temperature adhesives may help, but the preferred option is a tented area with warm airflow. Spray adhesives and gas bottles may require electric blankets to keep the constant flow and avoid them freezing.

In these difficult times it is the prepared applicators that will continue to make money, while the remainder sit at home becoming frustrated at something they think they have no control over.

To get the control back the first thing: you need a plan. Thinking outside the box can save your client some money. A tent does not necessarily mean shrink wrap.

The second part to getting through the cold wet times is communication. This needs to be outlined as early as quote acceptance. Nobody likes surprises when it comes to extra costs, especially the Main Contractor.

Lastly staff get disengaged and depressed when the weather is cold, wet, and dreary. Staff moral drops as does productivity. If they do have work they can get on with, they will feel the sense of achievement. Let's face it: Fishing isn't an option on these days so we may as well be working.

TANZ Update.

The NZ LBS (Leaky Building Syndrome) cost an estimated $47 billion dollars and counting, resulted in many homeowners and builders losing everything.

BRENDON MANSON
President, TANZ

The change in building processes has addressed many of the poor building practices with claddings and flashings to prevent the issue from reoccurring again.

The changes included the LBP program being developed and stricter processes with claddings and flashings being adopted to address the issues, as claddings for approximately 20 years was the number 1 building issue, as the claddings made up a large proportion of the building envelope it was critical that this portion of the construction process was address, to prevent moisture from damaging buildings from the outside-in.

It is interesting to know what the new number one issues is in construction, **its leaky bathrooms**, the irony of this is that the first LBS was trying to stop moisture entry into a home, the new LBS is to try and stop the moisture that is already in the home from damaging the inside-out.

Containment of moisture in a wet area is critical and when poor building practices are adopted the result is another cost to the construction industry resulting in cost to the builder's reputation and affecting builder/homeowner relationships.

This was reported on by BRANZ in 2015 that tiled showers could pose a problem if not correctly installed *www.buildmagazine.org.nz/index.php/articles/show/waterproofing-tiled-showers* the facts are all type showers can pose an issue if not correctly installed and through the 6 years of investigating failed wet areas TANZ has identified that leaky showers/bathrooms are evenly represented by both tiled and acrylic showers as the most common failure in new construction in NZ.

Failure occurs from many different areas, including building processes with incorrect framing details, installation of wall boards, plumbing details, membrane application, tile installation, shower screen placement and a lack of maintenance by the homeowner, resulting in wet areas not meeting B2 and E3 of the NZBC.

So, what is the answer? first we must have a complete understanding of what the problem is. That there is a lack of education on how to construct wet areas/showers so that they will meet the required performance criteria as per the NZBC.

TANZ has by default investigated wet area/shower failures and we have been doing this since 2017, we have the information documented as to what the most common areas of failure and how simply these failures can be avoided.

When you know better you can do better, right? Absolutely.

Our research has identified the issues and then compiled into a full day training course to give construction managers, builders, water-proofers, and tilers the knowledge they need to build, apply and install products that not only look good but also meets the performance requirements of the NZBC.

The fact that the construction industry has not required Internal membrane application to be a licensed trade has led to a low bar being set, this has allowed membrane application, which under E3 is a critical section of the Building Code, to be performed without correct training of the standards that guide correct membrane application and wet area construction.

In addition to this, some of the connecting factors, such as building substrates, plumbing wastes, wall cavity protectors and shower screen placement installed by other trades, have a direct link to the failures occurring often without anyone understanding the knock-on effect that will occur and result in the failure.

The TANZ T.E.A.M (Tile Education Adhesives and Membranes) program is designed to educate standards that provide the pathway for successful wet area construction, but also to demonstrate how each trade can work together (as a TEAM) to meet the NZBC requirements and avoid failure.

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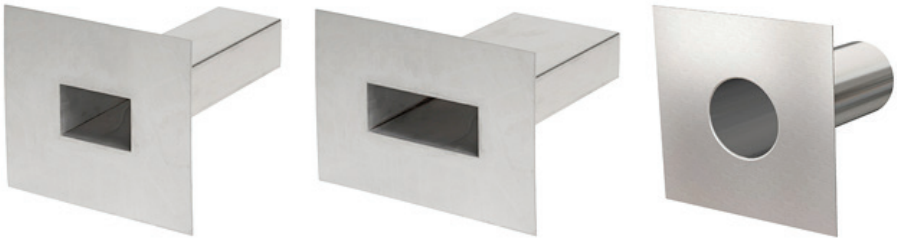

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