May 2024

Failures in Concrete and water damage management

This paper explains how normal day to day procedures in restoration have caused uncessary claim costs and delays and how new technology can reduce insurance claim costs.

Part 1
Worthless concrete drying Certificates

Water damage restoration is a major cost to insurers and property owners and unfortunately, much of the cost is swallowed up by following measurment protocols that simply don't work. If I asked how to measure a wet concrete floor most would suggest a moisture meter and most would recognise the failure shown in the first two examples shown below.But how many have used the following equipment and have raised concerns on outcome?

Photo by Protimeter
Using the wrong methodology ?

Moisture meter manufacturers across the world promote their meters and declare their meters meet various international standards and criteria for dry.

The first reality check is of course who wrote these standards and after providing technical input on many standards in UK and USA I realised only one issue was important. Who paid for or had the most to gain from the standard.

Looking back at 40 years in water damage I have followed standards but like many started to develop concerns when after achieving recognised standards. This is especially pertinent when failure resulted and claims were made against flooring contractors, builders and of course insurers.

As a consulatant I have considered rising damp, changes in pososity after removinbg vappour barriers such a thermoplastic floor tiles (on ground floor).I have been told it was dry and must have been a second floor event.

This review points the way to better understanding and explains how and why most of us have been wrong and foolish to trust meter manufacturers or standard makers.

But the floor was dry before I laid the flooring ?

Failure to measure moisture content properly post water damage and prior to laying resilient flooring can result in failure, uncessary costs and damage.

Undertaking post flood remediation audits, I was constantly faced with contractors blank faces when I found floors to be wet after they had issued a drying certificate.

The cause I was assured, was rising water table and cappiliary action, but oher excuses included hydrostatic pressure, which when attempting to measure is negligable.Some even thought a second flood had occurred but the truth and reality is very different and perhaps challenging to some.

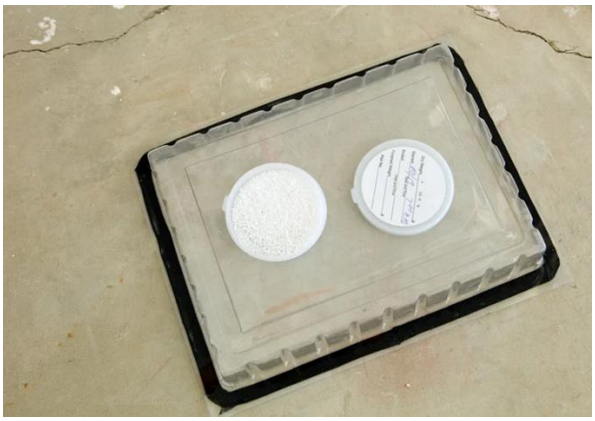
We satrt with obvious failures in using moisture detection equipment and the photo of delicate steel pins being hammered into masonry is unfotunately not far from reality.

It is presumed and accepted that the calcium carbide meter, or also referred to as the speedy meter, is in fact the most reliable form of moisture measurement.

Most don't follow the guidance as per BRE DG245 and even if they did its results are possibly worthless in concrete measurment.

The Protimeter set in non destructive impedence mode provides almost worthless information

The humidity box used for years provides worthless results.



Another adaption of the humidity box test is the Calcium Chloride Dome test. This is where a weighed measure of calcium chloride is left in a sealed dome for a specified period and re weighed. (Major failures)

Short sleeves into concrete to measure specific humidity (major failure)

The following list of concrete meter manufacturers show ranges from £150 to £800
None comply to realistic requirments regrding moisture content of concrete .

The following two conductive probe tests are worthless in terms of concrte moisture content and risk.

Two methods of conductivity moisture meter evaluation.

Neither are accurate.

There are many more examples but most in the industry already have their own concerns and witnessed drying failures and doubt on drying certification**.**

Building Forensics can provide training and or site measurement following the new standards of drying and measuring concrete.

Part 2

2 RAAC and conventional concrete problem part solution.

Aerated concrete has hit the headlines and various control solutions have been put forward. Typical response may be supporting sagging soffits with steelwork, and this of course may be the safest option.

Another risk control is laser light beam alarms to identify movement again a possible early warning.

While these responses are usual, they may not be the best option and as certified concrete specialist Building Forensics may be able to provide alternatives.

General Concrete failure

Concrete buildings and structures are increasingly collapsing. Motorway flyover toppling over, concrete buildings simply collapsing.

The problem is the concrete although mixed and formed properly is substandard. Concrete life has been known to be in excess of 100 years but increasingly fails after 40 years.

Buildings of the 1980s are now regularly collapsing.

There are ample examples but equally recognisable defects in manufacture. The causation of these defects have been identified and basically are due to changes in cement manufacture.

Building Forensics can provide support in these issues as a Grade 1 certified Concrete slab testing technician. We offer consultancy in these fields.

Part 3 Water damage Claims

Cost escalation in water damage form ineffective claim control .

Contractors embark on training and competence in water damage restoration, but financial constraints may influence their or their employee's response.

When wide area claims occur or just a little too many claims arrive in holiday season there may be a commercial decision to slow down response to claims**.**

Nominated restoration contractors often scope drying and restoration works, and loss adjusters may agree but two issues often occur.

Secondary and Unnecessary damage

This is where the initial primary damage causes secondary damage to previously unaffected areas. Usually caused by uncontrolled evaporation due to poor installation of the drying program. Typically, too much air movement and not enough moisture management from dehumidifiers will see uncontrolled evaporation moving to affect hydrophilic materials in other previously unaffected areas. This may result in more strip out and mould.

Scope drift

The initial scope of work was agreed and accepted but further on and post strip out further and more significant damage has been identified. The cost escalates.

These common examples are often industry accepted but there may be solutions to prevent both events.

Example of claim control

Following claim notification, independent third-party surveyor installs a remote cloud based environmental and surface measurement system. This measures the moisture in the air (in grains or g/kg of dry air and moisture content of surfaces. This information is relayed by cloud to all stakeholders in real time.

What the data and results mean

Following the notified claim conditions are measured and recorded. Insurers will now know when or if nominated contractors attend and more importantly the level of environmental control and drying efficiency. Where contractors have failed to respond in a timely and competent manner, they may be responsible for additional damage and claim costs such as Alternative accommodation.

Contamination.

While installing the monitoring equipment a simple air or surface test can be undertaken to assess if contamination rises or falls post contractors works, another major issue**.**

Failure in decontamination

As experts in decontamination, we are constantly asked to review decontamination effectiveness by the restoration industry. While insurers may not be interested in results, they may be interested in knowing in all cases decontamination protocols don't work and most result in leaving greater risks and hazards post treatment. The drying and

decontamination certificates invariably worthless but significantly not provided may see future issues develop.

Building Forensics can provide answers and some solutions to the issues raised.

Jeff Charlton

Principle consultant