

How to simply identify a damp house

A HOME OWNER'S GUIDE



Owners and prospective buyers of either renovated or unrenovated houses should be aware of potential damp issues that could cost thousands of dollars in remedial treatment. The presence of damp walls and a damp sub-floor area can generally be rectified or improved.

Dampness can cause health and associated problems, such as mould, bacteria and airborne infection. Dampness promotes insect attack of timber and causes odour problems. A damp house is a cold house and therefore expensive to heat.

The following sequence of checks should be carried out before commencing any renovation work on a house:

- Fix the roof
- Fix the drainage
- Fix the sub-floor ventilation
- Fix the rising damp
- Re-plaster after adequate drying time of the walls
- Then start renovating.

It is an unfortunate fact that this rarely occurs. Home owners and house buyers can follow a simple inspection procedure to identify sources of dampness.

Overview

An overview of the house's problems can be established by inspection for:

1. Water run away
2. Sub-floor ventilation for suspended timber floors
3. Bridging of present damp-proof course by concrete, earth or render
4. Penetrating damp

Water run away

Roof downpipes, spouting and waste pipes should clear water from the site. If stormwater is running into the earth or into spoon drains, this is a source of moisture that could be draining under the house, causing dampness under the floors and deterioration of timber floors. It is necessary to provide adequate ground drainage around the building to minimise water penetration into the foundations and ensure water is cleared from the foot of the walls.

Sub-floor ventilation for suspended timber floors

In wet soil conditions the building needs one double ventilator for every 1.5 m of wall length around the entire building perimeter.

All present vents should be clear. If a building is in a damp area and has had insufficient sub-floor ventilation in the past, then the timber floors and stumps could be in poor condition. Terracotta vents, as in Edwardian houses, are very poor ventilators and are part of the cause of floor problems in such buildings. (See Figure 1)

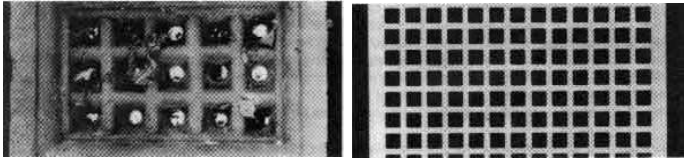


Figure 1.: Vent types

Ideally the earth level under the house should be at the same level as the earth outside the walls so that drainage to under the house does not occur. There should be enough space under the house to allow adequate ventilation. Inspect the sub-floor area in as many locations as possible (shine a torch through vents). Should there be a white-cream fungus material growing on the soil or on the bricks then the sub-floor area is very damp. In the worst case, if there is a fruit-like fungus with cotton wool-like strands on woodwork, this is a sign of dry rot infection.

There should be adequate double brick openings in the brickwork below floor level. These should be beneath doorways and within 1-2 m of the corners of each room and every 1.5m along walls. The openings should be near the ground.

A common practice in renovating older buildings is to ignore the need for adequate sub-floor ventilation to existing timber floors and to replace part of the timber floor with concrete. The new concrete blocks sub-floor ventilation to the timber floors and their lifetime is decreased substantially due to the probability of insect and fungal attack. A particularly vulnerable area is where the timber floor adjoins the concrete. An additional problem is that the fill under the new concrete may bridge the old damp course or bluestone and cause rising damp in the walls.

Be aware that if the building has ducted heating installed, the ducts could be blocking the sub-floor space and as such could cause significant floor problems. Hydronic heating is a safer option.

Bridging of present damp-proof course by concrete, earth or render

In Victorian buildings the theory of preventing rising damp was that bluestone, which is impermeable to water, was used as the footings and a damp course (eg., coal tar, bitumen and sand, or slate) was incorporated in the mortar line directly above it.

In the higher value buildings large bluestone pitchers were used as footings and the damp could only come up the mortar lines. However, in poorer buildings bluestone rubble was used with a large amount of lime mortar between the bluestone in the walls allowing the damp to rise easily. Once the damp reaches the hand made bricks, rising damp is firmly established. A build up of the earth level against the bluestone pitcher footings, either inside or outside the house, encourages the rise of the damp in the final mortar lines to the bricks. If the bluestone and the damp course are bridged then rising damp is the sure result. Bridging can also occur by render covering the damp course. (See Figure 2.)

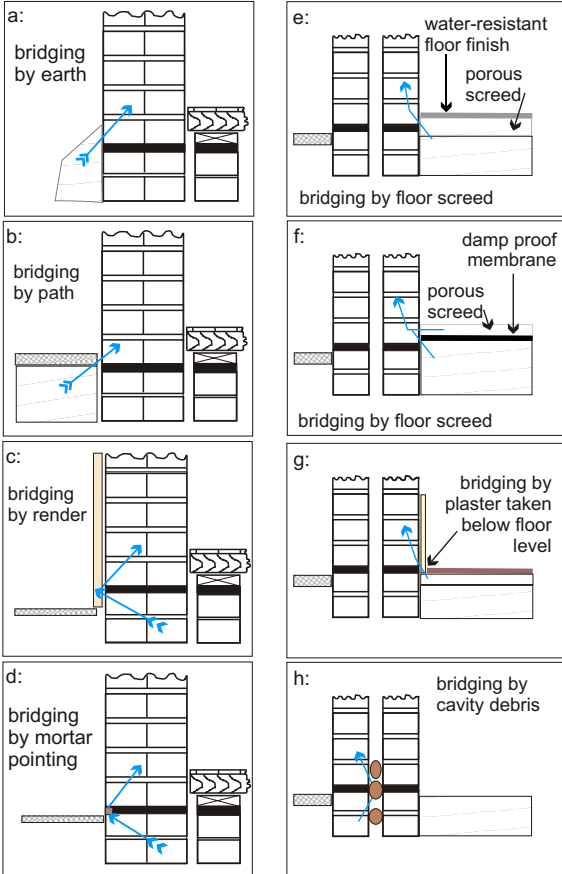


Figure 2.: Bridging of damp courses

In Edwardian buildings, the damp course, usually bitumen and sand, is normally located at the mortar line level at the top and bottom of the vents. The bitumen and sand damp course is not impermeable to water due to the presence of sand, which was incorporated initially to prevent extrusion of the bitumen.

Concrete, either inside or outside the building, may cause problems due to the bridging of the damp course by the fill under the concrete. In addition, in damp locations, the earth under the concrete can become very wet and cause rising damp in the walls where the old damp course in the walls is not sufficiently effective to stop it.

Penetrating Damp

Check for penetrating damp coming through masonry, especially on the weather side of the building. Where bricks have been sandblasted this may cause significant penetrating damp due to the poor condition of the mortar lines and the increased permeability of the bricks. This can be solved fairly simply by re-pointing the mortar lines and deep impregnation of the bricks with long life siloxane water repellent.

Inspection of the building for rising damp

There are two scenarios for assessment:

1. Unrenovated buildings
2. Renovated buildings

Unrenovated Buildings

In the case where a building has not been recently renovated it is easier to inspect a building for damp issues.

The symptoms of dampness, some or all of which may be present, are:

Inside

- Peeling and bubbling paintwork;
- Lifting wallpaper
- Water staining on the walls (water tide mark);
- Flaking plaster & render;
- Presence of white powder or crystals (efflorescence);
- Musty room smells;
- Presence of rotting skirting and floor boards.

Outside

- Mortar frets and falls out between bricks and stonework.
- Water staining (water tide mark);
- Efflorescence;
- Peeling and bubbling paintwork and render;
- Rusty vents.
- From a distance a darkening of the bricks at the base of the wall can be seen.

A typical sign of rising damp is a roughly horizontal tide mark on the wall, above which there is little or no damage, but below, the paint or plaster has been damaged or the wallpaper is stained or has lifted. Damp usually rises no more than 1 to 1.5 metres up the walls, although in very damp situations the damage may occur at higher levels.

In the case of inspecting a house for possible purchase, ensure to check behind furniture, which the owner may be using to hide rising damp on the walls.

A low-cost moisture metre is a useful qualitative tool to check the presence of moisture in the walls. Care should be exercised in interpreting the readings, as the presence of hygroscopic salts may cause readings.

Where waterproof render or plaster has been used in the past to cover up the rising damp, there may be a horizontal line on the plaster, above which the damp has risen.

Renovated Buildings

The diagnosis of rising damp in buildings where great effort has been taken to cover it up with waterproof render and plaster is very difficult. The only reliable method to detect it is to drive two masonry nails through the plaster and render into the bricks near the floor and take a qualitative reading on a moisture metre. This is not normally practicable in a house renovated for sale.

In general waterproof render and plaster is not a solution to rising damp and will fail sooner or later. It is only logical that what is needed is a positive horizontal barrier to stop the rising damp.

Methods for diagnosing rising damp in newly renovated walls are:

- hammer masonry nails into the plaster. Waterproof render needs a high cement mix and will be very hard. This may not be practicable on an inspection.
- inspect the wall and look for a join line of old plaster to the new plaster. A join line may mean that a damp course job has been done and replastering has been carried out. Alternatively it may mean that only waterproof plastering has been carried out. Ask the owner about any work completed and request the name of the contractor. Note that there are very few methods of damp course installation that are successful so investigation of the details of the work is necessary.
- tap the plaster with your knuckles and listen to the tone of the wall from above 2 m from the floor down to the wall at the top of the skirting board. A different tone usually indicates new plasterwork carried out above the skirting board. Waterproof render and plaster is a disaster for the buyers who finally retain the problem in the house. They lose the value of the decoration they have paid for in the house purchase price.

The skirting boards may have to be removed and affected plaster eventually replaced after a new damp course has been installed or the basic problem rectified.

In renovated buildings, search for new concrete at the rear of the building or in other areas. Many renovators pour concrete at the rear of a timber floored building and then place prime cost items such as the kitchen and bathroom in this position. The sub-floor ventilation is interfered with and a buyer cannot easily return to satisfactory sub-floor ventilation without large capital loss.

Another trap for buyers is the underlay under the new carpet. In many unrenovated buildings there were bare tongue and groove floorboards and possibly felt underlay under carpets. In this case damp air from the under floor area came through the floors and floor coverings into the rooms and eased the dampness under the floors. However, if new carpet has been laid in the renovated building without rectifying the sub-floor ventilation and rubber or foam underlay and backed carpet is now sealing the floors, this can cause problems. The timber floors can become very damp in a wet location and experience rapid deterioration.

A brief note on mould and condensation

Mould growth requires humid conditions in order to thrive. Conditions which favour high humidities on wall and ceiling surfaces therefore encourage mould growth. Measures which are helpful in mould control are those which exclude or remove excess moisture from the house, and those which increase the surface temperatures within the rooms.

When mould growth is a problem, therefore, it is important to check such things as the drainage of the site, the natural ventilation of the house, and the effectiveness of the removal of steam from the kitchen, bathroom, and laundry.

Condensation occurs when warm moisture-laden air cools to dew point (the temperature at which moisture condenses) against cold surfaces. Such cold surfaces commonly occur when the insulation value of the external wall is reduced by water penetration. Intermittent occupancy with intermittent heating provides the conditions for condensation of further water on these cold damp surfaces, particularly in ground floor bedrooms.

Contact Tech-Dry to request a copy of CSIRO report 'condensation in houses' and 'mould growth in houses'.

Disclaimer:

This brochure is a guide only. It is the responsibility of the reader of this document to determine the suitability of this information for any particular application. Tech-Dry strongly recommends that the advice of a qualified technician or inspector be sought prior to commencing any costly work.

Tech-Dry products available for treating dampness:

Rising Damp

- DIY DAMP COURSING FLUID
- DIY APPLICATOR KIT
- MORTAR ADDITIVE (admixture for new brick work)
- SALT RETARDER (admixture for cement renders)
- DAMP DETECTOR (inexpensive and easy-to-use)

Penetrating Damp (sealers for masonry & cementitious surfaces)

- PROTECTACRETE (water repellent)
- PROTECTASEAL 1441 (oil & water repellent)
- TILE & GROUT SEALER (for bathrooms & showers)

Penetrating Damp (sealers for high density concrete surfaces)

- SOLID SILANE (cream)
- PROTECTASILANE (liquid)

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