

DIAGNOSING DAMP

HOW TO SAY WHAT YOU SEE

BY

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KNOW YOUR ENEMY

- IT FLOATS IN ITS SOLID STATE BECAUSE IT IS LESS DENSE AS A SOLID
- UNLIKE MOST CHEMICALS IT EXISTS NATURALLY ON THE PLANET IN 3 STATES; SOLID, LIQUID AND GAS
- IT EXPANDS 8% FROM FROZEN AND CAN EXERT THE EQUIVALENT OF 2 TONS PER SQUARE CENTIMETRE AS IT EXPANDS
- IT TAKES AS MUCH ENERGY TO TAKE ICE FROM 0°C TO WATER AT 4°C AS IT DOES TO RAISE THE TEMPERATURE FROM 4°C TO 80°C
- IT HAS HIGH COHESIVE AND ADHESIVE STRENGTH
- IT CANNOT BE COMPRESSED
- DON'T GET IN ITS WAY

KNOW YOUR ENEMY

- 3 PRINCIPLES TO APPLY:
- CAPILLARITY - THE ABSORPTION/ DESORPTION OF WATER AS LIQUID
- HYGROSCOPICITY - THE ABSORPTION/ DESORPTION OF WATER AS A GAS (AS RELATIVE HUMIDITY CHANGES)
- VAPOUR PERMEABILITY- THE ABILITY OF A MATERIAL TO ALLOW WATER VAPOUR TO PASS THROUGH IT WATER VAPOUR MOVEMENT THROUGH WALLS IS MAINLY BY ENTRAINMENT IN AIR FLOWING THROUGH THE WALL UNDER WIND PRESSURE OR THERMAL EXPANSION PRESSURE.

Types of METERS.

No such thing as a damp meter but we call them damp meters just like speedometers, tape measures, weighing scales, light meters, altitude meters are names of meters.

Speedy carbide meter



- Resistance meter
- Fringe capacitance meter



In most residential survey situations destructive testing is not permitted. Non destructive methods need to be employed.

WHAT IS DAMP DIAGNOSIS

•WHAT DOES DAMP MEAN?



THE SURVEY WILL CHECK FOR DAMP?

- DESCRIBE THE IDENTIFIABLE RISK OF POTENTIAL OR HIDDEN DEFECTS IN AREAS NOT INSPECTED
- PROPOSE THE MOST PROBABLE CAUSE(S) OF THE DEFECTS BASED ON THE INSPECTION
- OUTLINE THE LIKELY SCOPE OF ANY APPROPRIATE REMEDIAL WORK AND EXPLAIN THE LIKELY CONSEQUENCES OF NON-REPAIR
- MAKE GENERAL RECOMMENDATIONS IN RESPECT OF THE PRIORITY AND LIKELY TIMESCALE FOR NECESSARY WORK
- IDENTIFY AND DESCRIBE THE LEGAL IMPLICATIONS OF OWNERSHIP IN DETAIL; AND
- GIVE AN INDICATION OF LIKELY COSTS (THIS ASPECT WOULD NORMALLY FORM PART OF THE LEVEL THREE SERVICE, BUT SOME SURVEYORS MAY CHOOSE TO OMIT IT. THE TERMS AND CONDITIONS MUST MAKE THIS CHOICE CLEAR).

DIAGNOSIS

- “ JUDGEMENT” ABOUT WHAT A PARTICULAR PROBLEM IS AFTER EXAMINATION.
- AN ANALYSIS OF “FACTS” OR PROBLEMS IN ORDER TO REACH UNDERSTANDING

- SURVEY LEVEL TWO

SURVEY LEVEL TWO REPORTS MAY FOLLOW A SIMILAR STRUCTURE AND FORMAT TO LEVEL ONE. ALTHOUGH THEY WILL PROVIDE MORE INFORMATION, THEY SHOULD STILL BE SHORT AND TO THE POINT, •

- AVOIDING IRRELEVANT OR UNHELPFUL DETAILS AND JARGON. THEY WILL HAVE THE FOLLOWING ADDITIONAL CHARACTERISTICS: •
- THEY SHOULD INCLUDE COMMENTS WHERE THE DESIGN OR MATERIALS USED IN THE CONSTRUCTION OF A BUILDING ELEMENT MAY RESULT IN MORE FREQUENT AND/OR MORE •
- COSTLY MAINTENANCE AND REPAIRS THAN WOULD NORMALLY BE EXPECTED •
- THEY SHOULD BROADLY OUTLINE THE SCOPE OF THE LIKELY REMEDIAL WORK AND WHAT NEEDS TO BE DONE BY WHOM AND BY WHEN (INCLUDING A SUMMARY OF LEGAL IMPLICATIONS OF THE WORK). •
- THEY SHOULD CONCISELY EXPLAIN THE IMPLICATIONS OF NOT ADDRESSING THE IDENTIFIED PROBLEMS; AND •
- THEY SHOULD CROSS-REFER TO THE SURVEYOR'S OVERALL ASSESSMENT.

SURVEY LEVEL TWO REPORTS SHOULD ALSO MAKE IT CLEAR THAT THE CLIENT SHOULD OBTAIN ANY FURTHER ADVICE AND QUOTATIONS RECOMMENDED BY THE SURVEYOR BEFORE THEY ENTER INTO A LEGAL COMMITMENT TO BUY THE PROPERTY.

- **SURVEY LEVEL THREE**

- A LEVEL THREE REPORT SHOULD REFLECT THE THOROUGHNESS AND DETAIL OF THE INVESTIGATION. IT SHOULD ADDRESS THE FOLLOWING MATTERS: •
- THE FORM OF CONSTRUCTION AND MATERIALS USED FOR EACH PART OF THE BUILDING SHOULD BE DESCRIBED IN DETAIL, OUTLINING ANY PARTICULAR PERFORMANCE CHARACTERISTICS. THIS IS ESPECIALLY IMPORTANT FOR OLDER AND HISTORIC BUILDINGS WHERE THE MOVEMENT OF MOISTURE THROUGH BUILDING MATERIALS CAN BE CRITICAL TO HOW THE BUILDING PERFORMS •
- OBVIOUS DEFECTS SHOULD BE DESCRIBED AND THE IDENTIFIABLE RISK OF THOSE THAT MAY BE HIDDEN SHOULD BE STATED
- REMEDIAL OPTIONS SHOULD BE OUTLINED ALONG WITH, IF CONSIDERED TO BE SERIOUS, THE LIKELY CONSEQUENCES IF THE REPAIRS ARE NOT DONE •
- A TIMESCALE FOR THE NECESSARY WORK SHOULD BE PROPOSED, INCLUDING (WHERE APPROPRIATE AND NECESSARY) RECOMMENDATIONS FOR FURTHER INVESTIGATION PRIOR TO COMMITMENT TO PURCHASE •
- FUTURE MAINTENANCE OF THE PROPERTY SHOULD BE DISCUSSED, IDENTIFYING THOSE ELEMENTS THAT MAY RESULT IN MORE FREQUENT AND/OR MORE COSTLY MAINTENANCE AND REPAIRS THAN WOULD NORMALLY BE EXPECTED; AND THE NATURE OF RISKS OF THE PARTS THAT HAVE NOT BEEN INSPECTED SHOULD BE IDENTIFIED.

DEMONSTRATION

- **LOOKING FOR PATTERNS AND COMPARISONS.**

the readings which are important, not the actual reading itself.

Table 3: Example moisture meter readings:

Height	i	ii	iii	iv	v	vi	vii
2000mm	0	0	0	0	0	0	100
1750mm	0	0	25	0	0	0	100
1500mm	0	10	*90	0	*90	0	100
1250mm	10	*85	*90	0	*75	0	100
1000mm	80	*05	40	0	0	0	100
750mm	90	35	65	0	0	0	100
500mm	90	20	90	0	0	0	100
250mm	85	20	90	75	10	5	100

* = 'salt band'

- i. Old or inadequate plasterwork, no effective DPC.
- ii. Old contaminated plasterwork, effective DPC – readings increase due to hygroscopic salt band.
- iii. Old or inadequate plasterwork, partially effective DPC – water at base and salt band towards maximum height.
- iv. Defective construction of floor/wall junction.
- v. New effective render following DPC insertion but dpc failed and rising above new work.
- vi. No apparent problem.

BEING ORGANISED

- DO A COMPARISON OF READINGS AND OBSERVATIONS
- COLLECT VISUAL EVIDENCE – MAKE NOTES –TAKE PHOTOGRAPHS
- WHAT ARE YOU LOOKING AT
- WHAT HAVE YOU SEEN
- WHAT ASSUMPTIONS HAVE YOU MADE
- WHAT ARE YOUR CONCLUSIONS
- WHAT IS YOUR ADVICE ON BALANCE.

Int temperature	degrees C
Relative humidity	In Percentage
Actual moisture	In parts per million PPM
Location	
Comparison reading	
Building exposure	High medium low
Effect of fans and natural ventilation	Good / average / poor / exacerbating
Evidence of damage to surfaces	
Vulnerable details or defects /sources of water	

High spots including beams – plan sketch
 Condensation risk areas.

PRESENTATION OF EVIDENCE

- METHODOLOGY
- THE FOLLOWING WAS ASSESSED AND TAKEN INTO CONSIDERATION WHEN ASSESSING THE NATURE OF DAMP PENETRATION WITHIN THE PROPERTY.
- A VISUAL INSPECTION WAS MADE OF ALL INTERNAL FINISHES FOR ANY EVIDENCE OF DAMAGE.
- LEAKS FROM GUTTERS OR OTHER SOURCES WERE ASSESSED FOR POTENTIAL THREATS.
- THE DESIGN OF THE WALLS AND FLOORS AND THE EXPECTED PERFORMANCE OF THE MATERIALS USED.
- TEMPERATURE AND RELATIVE HUMIDITY.
- RECENT WEATHER PATTERNS, ORIENTATION AND SHADING OF THE BUILDING.
- STATIC AND MECHANICAL VENTILATION.
- THE EXPECTED CONFIGURATION OF DRAINS AND BURIED SERVICE PIPES.
- RELATIVE EFFECT OF POTENTIAL CONDENSATION ON OBSERVATIONS.
- AN INDUSTRY STANDARD MOISTURE METER WAS USED TO TAKE SAMPLE METER READINGS TO EXTERNAL WALLS, FLOORS AND ASSOCIATED TIMBER.

Location of reading	
Internal temp	18 °C
Relative humidity	61%
Actual moisture	8.1 parts per million
Comparison reading	Hallway – returned green / dry reading
Building exposure	High medium low
Effects of fans and natural ventilation	Good / average / poor / exacerbating
Notes	e.g. There was no heating at the time of the inspection and the house was unoccupied.

Damage to surfaces: Blown or loose plaster, damage to decorative surfaces, staining to walls.

Vulnerable details: Raised ground levels, solid walls with no damp proof course, leaking gutters, limited mechanical ventilation

Considerations and assumptions: Winter time, heating off, unoccupied, new decorations, some past damp proofing apparent.

• CONCLUSIONS & RECOMMENDATIONS

• THE VISUAL ASSESSMENT AND METER READINGS SUGGEST TO ME THAT THE SITUATION IN RELATION TO THE PERFORMANCE OF DAMP IN THE WALLS IS

• OUT OF BALANCE. THAT IS TO SAY THERE IS MORE MOISTURE ENTERING THE WALLS THAN LEAVING AND THIS HAS THE POTENTIAL TO DAMAGE WALL FINISHES AND HARM UNTREATED TIMBERS.

• IN BALANCE AND RELATIVELY STATIC WHICH IS AS WOULD BE EXPECTED IN AN OLDER PROPERTY.

OPTIONS

- DO NOTHING
- DO SOMETHING
- ELIMINATE ALL DAMP

DO NOTHING – BUT HELP THE WALLS

- KEEP THE HEATING CYCLE AS LOW LEVEL BACKGROUND HEATING RATHER THAN FAST HEAT UP AND COOLING.
- DO NOT OPERATE THE HEATING CONTROL MANUALLY.
- DO NOT SWITCH THE HEATING OFF IF YOU GO AWAY DURING THE WINTER MONTHS AND DO NOT PROGRAMME IT TO COME ON JUST BEFORE YOU ARRIVE BACK.
- DON'T SEAL THE WALLS INTERNALLY WITH OIL BASED PAINTS OR VINYL PAPERS.
- KEEP THE HOUSE WELL VENTED (WHERE POSSIBLE, BY SETTING THE WINDOWS IN THEIR TRICKLE VENT POSITION.) IN PARTICULAR, BEDROOM WINDOWS AT NIGHT AND LIVING ROOM WINDOWS WHEN IN USE IN THE EVENINGS.
- ALWAYS USE EXTRACT FANS WERE FITTED.
- AVOID DRYING CLOTHES ON RADIATORS IN UNVENTED SPACES.
- KEEP A CHIMNEY OPEN ALL YEAR ROUND.
- KEEP BATHROOM DOORS CLOSED WHEN THE ROOM HAS JUST BEEN USED FOR A SHOWER OR BATH.
- OPEN AS MANY WINDOWS AND DOORS AS POSSIBLE IN DRY SEASONS.
- DO NOT GROW PLANTS AGAINST THE WALLS.
- DO NOT ALLOW GUTTERS TO OVERFLOW OVER THE WALLS.
- ALWAYS PAINT THE BACK OF ANY TIMBER THAT WILL COME INTO CONTACT WITH THE WALL.
- DO NOT USE DEHUMIDIFIERS TOO AGGRESSIVELY TO TRY TO RESOLVE A PERCEIVED DAMP PROBLEM.
- BE CAREFUL WHERE YOU LET PET DOGS SLEEP.
- DO NOT ALLOW OTHER OCCUPANTS TO ADJUST THE HEATING SETTINGS INSTEAD USE PORTABLE ECLECTIC THERMOSTATICALLY CONTROLLED FANS TO SPOT HEAT INDIVIDUAL ROOMS

DO SOMETHING- HELP TO BALANCE THE WALLS

- INTRODUCE MORE EXTRACT FANS CONTROLLED BY HUMIDITY SENSORS.
- REPLACE OR RATIONALISE THE GUTTERING TO INCREASE THE CAPACITY AND DIRECT THE DOWNPIPES DIRECTLY INTO THE GULLIES.
- BETTER VENT THE FLOOR VOIDS.
- UNDERTAKE A CCTV SURVEY TO ENSURE ALL GULLIES RUN TO DRAINS OR WORKING SOAKAWAYS.
- IMPROVE AND UPGRADE THE HEATING CONTROLS IN THE HOUSE.
- IMPROVE THERMAL PERFORMANCE BUT DO THIS IN CONTEXT WITH VENTILATION AND WITH REFERENCE TO EXPOSURE AND BUILDING USE.
- CONSIDER A PROFILE TEST OF THE WALLS AND OBTAIN AN INDEPENDENT REPORT ON MINIMAL INTERVENTION WITH MOISTURE RESISTANT MATERIALS WITH PARTICULAR REFERENCE TO THE WALLS.
- POINTING TO THE EXTERNAL WALLS
- RE DETAIL WATER BUTTS TO HAVE PROPER OVER FLOWS.
- REMOVE THE FLAGS TO THE FRONT BORDER AND LOWER THE GROUND LEVEL.
- CUT BACK THE PAVING FLAGS TO THE PERIMETER OF THE HOUSE AND FORM A LOW TRENCH FILLED WITH GRAVEL.
- FORM A PROPER GUTTER TO THE REAR CONCRETE PATHS.
- IMPROVE THE DRAINAGE TO THE DRIVE.
- REMOVE THE PLANTS GROWING AGAINST THE WALLS.
- INSTALL PROPERLY DESIGNED FRENCH DRAINS

Costs?

Priorities?

COMPLETELY ELIMINATE – RISK AVERSE

- THE REMOVAL OF PLASTER FROM THE WALLS.
- THE FITTING OF A DRAINED AND TANKED FLOORING AND WALL SYSTEM.
- THE INSTALLATION OF DRY LINING.
- A RE-WIRE TO CURRENT REGULATIONS.
- ALL THE WORK LISTED IN OPTION 2.
- RENDER THE EXTERNAL WALLS IN LIME RENDER OR FIXING PLAIN TILING TO THE WALLS.
- ISOLATE THE FIRST FLOOR JOISTS FROM THE WALLS.
- REDECORATE THE AFFECTED AREAS.
- FIT NEW SKIRTINGS AND ARCHITRAVES.
- MAKE GOOD ANY DISTURBED AREAS.

Priorities?

cost?

consent?

Viable?

Necessary?

WORDS AND PHRASES

- **FACT AND FICTION**

- APPARENT – PRESENT – VISIBLE – THOUGHT TO HAVE
- PROBABLE - POSSIBLE
- GOOD - SATISFACTORY - AS EXPECTED - NOT LIKELY TO HAPPEN
- I HAVE ASSUMED, IT IS APPARENT THAT, THERE WAS EVIDENCE TO SUGGEST
- **IN MY OPINION**, IN MY EXPERIENCE, SUFFICIENT EVIDENCE
- THERE WAS INSUFFICIENT EVIDENCE TO WARRANT FURTHER INVESTIGATION
- IN ORDER TO KNOW THE PRECISE CONSTRUCTION / CONDITION IT WOULD BE NECESSARY TO