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HOW TO IDENTIFY & RESOLVE SCREED PROBLEMS OR CONCERNS

Common Causes & How Screed Failure Can Be Avoided

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If properly applied and maintained then most screeds can happily be left undisturbed beneath the floor finish for a very long time – often for the lifetime of the building.

However failures and problems can creep into the screeding process that can put the whole floor area at risk.

Therefore it is important to understand the causes and cures of common screed issues in order to ensure that this critical layer is up to the task at hand.

In this eBook we'll take a look at some of the ***most common causes of screed failure*** and ***how they can be avoided***…

PROBLEM 1

THE SCREED ISN'T HARD ENOUGH

If the screed is crumbling away, isn't the right colour and has lots of broken patches then it's probably not hard enough.

WHY?

This could have happened for a number of reasons, mostly to do with the dryness or fineness of the sand or cement used in the mix.

If it is too dry, the amount of cement in the mix isn't right or it's been poorly compacted then it could all lead to friability.

WHAT'S THE SOLUTION?

If the problem is restricted to certain areas then it's possible to cut out and replace the affected spots. Alternatively specialist resins or cementitious overlays can repair the damaged screed.

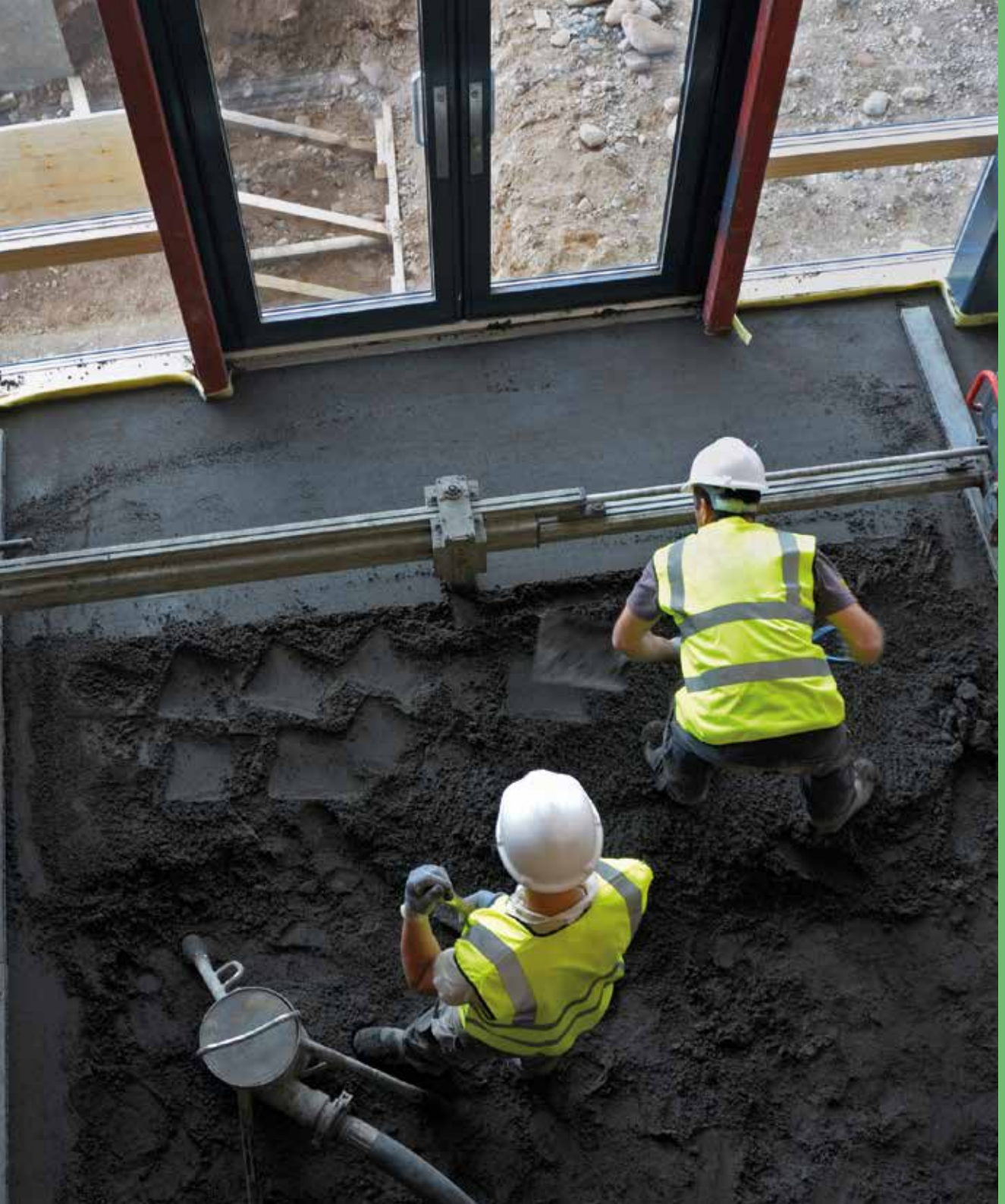
To stop it happening in the future, make sure to test the workability of the screed (squeeze it in the palm of your hand and if a snowball forms that doesn't crumble or drip then it's on the right lines). If the test shows that the water content has been overdone (i.e. the snowball drips too much) then water reducing admixtures can be used.

Make sure that you're using the right amount of materials for the space and when applying use a hand-rammer or roller to get the right level of compression. Testing the screed 14 days after installation using the BRE drop hammer test will ascertain if it has the necessary strength.

PROBLEM 2

THE SCREED ISN'T FLAT ENOUGH

When the screed isn't flat then it can make it very difficult, or even impossible, to apply a decent finish.



WHY?

Failing to correctly assess the surface regularity and not fixing steps in the substrate can lead to a bumpy, unreliable screed layer.

WHAT'S THE SOLUTION?

The fix can depend on the project's specific factors but it could involve applying a smoothing compound or grinding down protruding bumps.

Similar to the previous problem, consistency can play a key role. If the screed is semi-dry then it helps to make the final layer flat and level. Surface regularity tests can be carried out to check if the screed has achieved the required flatness prior to a coating going down.

PROBLEM 3

THE SCREED IS TOO WET

A high moisture content can cause the screed to give off a damp aroma and will seriously impair the quality of the finish.

WHY?

There are several reasons for this, which can range from external water getting into the screed, condensation, spillages and leaks or applying the finish before the screed has dried out.

WHAT'S THE SOLUTION?

If the high moisture is caught quickly enough then you may have time to allow the screed to dry out – the problems multiply when the finish is laid down on a wet screed! Just allowing the drying out process more time could be all that's required.

During this time it is important to do everything possible to protect the screed from moisture, such as by using dehumidification equipment, applying a damp proof membrane, moisture tolerant primer or moisture resistant adhesives. A common cause is when a building isn't weatherproof, as open windows and leaks can lead to way too much moisture getting into the new screed.

DRYING TIMESCALE

BS 8203 sets out how long a screed should be given to dry.

It stipulates that a traditional screed of up to 40mm should be given 1mm per day, with another day per every additional one or two mms (with the exact drying time depending on the ambient conditions).

Proprietary screeds however can dry much faster than this.

COMPARING SCREED TYPES

	TRADITIONAL SAND & CEMENT	PROPRIETARY	ANHYDRITE (SYNTHETIC)	ALPHA HEMIHYDRITE	PUMPABLE CEMENTITIOUS
Drying time	1 day per mm (at 75 mm)	1 week per 25 mm	1 day per mm	8 days per 10 mm	24 hours
Curing Time (to following trades)	7 days	3 days	2 days	24 hours	2–4 hours
Compressive Strength	20 N/mm^2	30 N/mm^2 (BS EN 4551)	30 N/mm^2 in situ	35 N/mm^2 (BS EN 13892)	30 N/mm^2 in situ
Sand:Cement	6:1 or 5:1	4:1	N/A	N/A	N/A
Shrinkage = Less shrinkage	More water	Less water	N/A	<0.4%	N/A
			Tested at 20°C and 65% RH		

PROBLEM 4

THE SCREED HAS CRACKED

This one is quite self-evident. If you can see cracks then you've got a cracking problem in the screed.

WHY?

A certain amount of cracking could have occurred because of drying shrinkage and usually this isn't a significant problem (although it should be regularly checked to make sure it doesn't get worse).

However excessive cracking could creep in at several stages of the screed's application. It might have happened during the design phase if no expansion joints were put in or if too much water was added while the screed was being mixed.

After application, cracking could be caused by the screed being subjected to heavy loads, impacts, surface abrasions or excessive cement shrinkage. Additionally other components could fail and crack the screed, for example if underlying insulation collapses.

WHAT'S THE SOLUTION?

Repairing cracks can be tricky, it might be possible to use a resin injection system but this should only be undertaken following specialist advice. The best way to avoid it is to make sure the above factors are considered during the design and installation phases.

TIP

Flexible insulation should be put in before the screed to create a supple movement joint around the perimeter and any service or column penetrations. Such insulation needs to be tightly butt-jointed together with a separating layer of polythene between the insulation and screed. Individual joints in the screed for corridors and door thresholds can be put in after the screed has been laid.

PROBLEM 5

THE SCREED IS THE WRONG LEVEL

If the level of the screed is wrong, it can have a knock on effect for a long list of other building elements…

The alignment of stair treads, lift lobbies, window and door thresholds, insulation fittings and if the screed has to join up to an existing floor can all be affected. This could also lead to an inability to cover the area in question with the materials supplied if too much has been inadvertently put down elsewhere.

WHY?

The prime culprit for this is failing to properly assess the level of the screed as it is being applied.

WHAT'S THE SOLUTION?

The best way to avoid this from happening is to conduct an effective level survey as you go along.

PROBLEM 6

THE SCREED CURLS AT THE EDGES

The main screed area might be fine but you notice curling around the edges resulting in a difference of level at the joints, with one side being higher than the other.

WHY?

This is usually because of the specific type of screed construction, with overly wet unbonded and floating screeds being prone to this.

WHAT'S THE SOLUTION?

Adding an impervious sheet and leaving it in situ for seven days before applying the finish will redistribute the moisture and reverse curl the screed layer.

Reinforcing the screed with steel fabric at mid-depth restrains lateral movement and minimises curling.

KNOW YOUR SCREEDS

A floating screed is not applied to the base but is put on top of insulation and an unbonded installation is when a separating membrane, usually a polythene sheet, is placed between the concrete and the screed, typically because a damp proof membrane is required.

PROBLEM 7

THE SCREED ISN'T COMPACTED AROUND PIPES

If underfloor heating has been incorporated into the screed then it can be difficult to compact the screed around and underneath the system's pipes, resulting in a weak screed in these areas.

WHY?

This can be particularly problematic with traditional semi-dry cement / sand screeds that are too dry after mixing.

WHAT'S THE SOLUTION?

A slightly wetter screed and applying a base layer can help with the compaction around the pipes.

Following this up with a slightly drier mix will then ensure that the screed achieves the right surface regularity, safe in the knowledge that it will be compact enough around the pipe network.

Other solutions include reinforcing the screed with fibres or steel mesh over the pipes, or using a high-workability fine concrete sand with a super plasticiser to increase compaction.

PROBLEM 8

THE SCREED HAS COLLAPSED

We've saved potentially the worst for last – what do you do if the screed has either partially or completely collapsed? This will probably rear its head initially in locations where heavy loads have been placed on the floor and will often spread into the surrounding areas.

WHY?

The causes of this are similar to those for cracking, e.g. poor mixing, poor compaction, too dry a mix, early loading, failed insulation, etc.

WHAT'S THE SOLUTION?

An investigation is required before determining the next step in this scenario. It is important to ascertain the condition of the surrounding screed and how much area the inadequate screed covers.

The repair method would then depend on the extent of the screed's failure, the cause of the failure, the type of screed and floor finish and the time available.

To help avoid this situation it is advisable to used forced action mixers instead of mixing by hand and conducting drop hammer tests before applying the finish (at least if you know the screed has gone bad before putting the finish on you'll save yourself a good amount of hassle in the long run).

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