WHY AT THE BEGINNING OF THE 21ST CENTURY IS BASEMENT WATER - PROOFING ACCEPTED AS A HIGH RISK OPERATION?

Raymond Foulkes, Founder of Basement Systems UK asks some searching questions about our approach to basement Waterproofing. Ray is the technical officer for the British Structural Waterproofing Association, Chairman of the Technical Committee of the Basement Development Group and is a committee member for the Construction Industry Training Board proposed new NVQ in Basement Waterproofing. The views expressed in this article are his own and do not necessarily represent those of the various organisations to which he belongs.

Ask anyone with experience in basement construction or renovations and they will agree that the most crucial part of the project is the waterproofing. Yet it is commonly accepted that this is also the most likely element to fail. (Sunday Times and Independent references).

If such a high risk of failure was prevalent in any other aspect of the construction process it would not be tolerated. Imagine if one in ten walls that were built fell down or if 25% of roofs leaked soon after construction. So Why, at the beginning of the 21st Century do we accept that basement waterproofing should be a high risk operation?

Can it be put down to chance or are there more fundamental factors at work?

There is a growing body of opinion amongst experts within the industry that, as a nation, we tend to tackle the problem in fundamentally the wrong way. We have been doing so for most of the last century, ever since the concept of 'tanking' was adopted as the general approach to basement waterproofing.

Tanking originated as the process of applying a waterproof lining to the inside of a structure to enable it to hold water on the inside (positive pressure side). Adapted for remedial basement waterproofing this application is reversed with the water pressure on the outside (negative pressure side) tending to push the system off the structure.

It is accepted wisdom that tanking is totally reliant upon the soundness of the substrate and the rigidity of the structure, i.e its ability to limit differential movement to within the tolerances of the applied system. No amount of diligence can turn an unstable substrate or a structure that is prone to movement into one that is suitable to receive a bonded tanking system. The fact that such systems are often applied with apparent success to such substrates is by virtue of the fact that no real water pressure comes to bear in many cases. Where water pressure does come to bear, the system is thoroughly tested and the laws of physics determine the outcome. If the force of the water pressure is greater that the ability of the structure and its tanking system to resist it over the entire area - then the system will fail and the basement will leak. The failure rate in such circumstance will be 100%, not chance but a predetermined outcome. **It is the insurance companies that are left to pick up the tab for this mis-calculation.**

So what is the answer to this perennial problem and why do the Germans and the Americans put basements into ca. 98% of their new homes whilst we habitually avoid them? What did we do to keep our basements dry for centuries before 'tanking' was invented? And what do our European colleagues and Trans -Atlantic Cousins do differently to allow them to fully exploit the potential of sub-terranian living space?

Mr Manzano of Dulwich found the answer to this question after his recently constructed basement flooded for the fourth time in seven years. His insurance company paid out three times totaling £42,000, most of which was spent on repairing or replacing the failed tanking systems. When his insurance company offered to pay yet again Mr. M decided that enough was enough and set out to find an alternative. He found it in Basement Systems whose methods eliminate the water pressure via sub-floor drainage channels rather than attempting to hold it back. His insurance company will never have to pay out again on this one.

Case History :– Anthony Nolan Nolan Bone Marrow Appeal Laboratories, Royal Free NHS Trust, Hampstead, by Trace Basement Systems

Shortly after opening the new wing with a basement of some 30mby 15m the basement flooded.

At the time of construction, an adhesive membrane was applied to the ground retaining walls on the negative side within the cavity, continued across the floor slab below a screed. Ground water pressure subsequently forced the membrane to push off or break seals at overlaps, resulting in escape of water at the vulnerable wall and floor joints, with standing water upon the floors.
Repairs were initially undertaken by applying cementitious tanking to the existing walls and floors in an attempt to 'hold back the dam', but heave occurred, causing the second tanking medium to crack and allow more water to escape.

WaterGuard ™ drainage channels and two Supersumps ™ with battery back up were installed, controlling and removing the offending water, with Cavity Drainage membrane laid on the slab, covered in a floating timber floor of Waterproof chipboard. The WaterGuard™ channel relieved the pressure, allowing the waterproofing on the walls to remain largely undisturbed. As a precaution a skirt of cavity drain membrane was formed allowing future extension of the system in case water later entered at high level through the walls.

Ray Foulkes of Basement Systems UK investigates the water ingress through the failed waterproof screed and (inset) the Waterguard channel™ prior to concreting in at the wall floor joint.

To find out more about Basement Systems visit
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