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A basic understanding of Basement Waterproofing in Existing Buildings

Basement Waterproofing is the term that describes methods used to prevent water entering rooms that are below ground. Basement Waterproofing is needed when a new underground space is created or an existing basement is refurbished to provide a usable or habitable space.

Waterproofing and drainage will be important where ground water is likely to build up in the soil causing hydrostatic pressure (ground water under pressure) to be exerted on the walls and floors of the cellar. In unprotected cellars, hydrostatic pressure will result in water entering the building.

Rooms and spaces below the ground floor will, in almost all situations, have walls

that are below ground making them earth retaining. Damp proof courses (if they exist at all) will have been installed higher in the wall, above ground level, to protect the ground floor timbers. The soil-retaining walls will be vulnerable to water ingress, most often seen where the cellar floor joins the wall. Cellar floors in older buildings are often formed with rough cast slabs, stone or brick. These are seldom protected by waterproof membranes.



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As a result, walls and floors are susceptible to penetrating dampness and have little, if any, real resistance to hydrostatic water and potential flooding. It follows therefore that unprotected basements will remain damp to some degree and only suitable for basic storage use unless upgraded correctly.

A Waterproofed Basement is designed with the prime purpose of keeping water outside the occupied area to providing a dry habitable living space. Waterproofing of below ground structures is described in BS8102- 2009 ***“Code of practice for protection of below ground structures against water from the ground”***.

This code sets out in detail how waterproofing should be undertaken in new and existing buildings.



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Waterproofing is achieved by using a waterproofing system, there are 3 types of system which can be used separately or in combination:

Type A = Barrier protection (commonly referred to as Tanking – as the system creates a tank keeping water out) is either applied externally or internally. It relies on an unbroken “monolithic” membrane that will act to keep water out.

This form of waterproofing can be achieved by using a variety of impervious coatings and membranes that are applied directly to the existing floor and walls. Cement renders, slurry, resins, bitumen based products, spray on systems and bonded sheets are commonly used to waterproof walls and floors.



Type B = Structural integral protection - where the structure itself (waterproof reinforced concrete) is the protection. When constructing a new basement the use of Waterproof Reinforced Concrete is used to form the structure and floors.

Type C = Drained protection – This system removes water using cavity drain membrane (CDM) laid over the floors and walls. The system works by directing any water that comes through the earth retaining walls, to internal drains. It is then taken outside using pumps or gravity drains.

Cavity drain systems are used extensively as part of basement conversions in existing buildings, refurbishment of existing basements and historical buildings which suffer from penetrating damp.

Cavity drainage systems rely on the effectiveness of drainage to remove water from the perimeter channel. Drainage channels will become affected by build-up of minerals, silt and lime deposits and can become blocked if not maintained. The pumps and drainage channel must be serviced, cleared out and tested at least annually. Further consideration must be given to ‘battery back-up’ systems or even a reserve Generator in areas of regular power cuts and the risk of surface water flooding.

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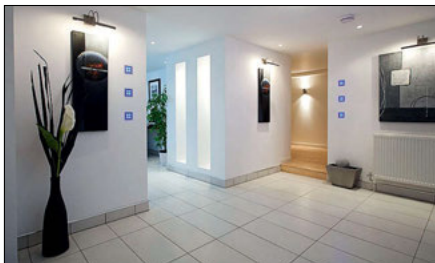


Retrofit Basements:

Basements are becoming one of the ways that domestic and commercial buildings can extend the size of the structure. In some cases in domestic properties, the basement is built into the garden. The garden can then be reinstated over the basement using Green Roof Technology.

Wall Finishes:

Free-standing dry lined walls such as timber or metal framed structures with plasterboard finishes can be built in front



of all systems. Type A internal 'tanking' materials and Type C meshed Cavity Drainage Membrane can be plastered with plaster or dot/dab plasterboard and Type C will accept batten fixed plasterboard by special fixings. Insulation materials can be installed behind the dry lining. Also blockwork walls can be built in front of the system.

Floor Finishes:

It is possible to incorporate almost any floor finish into a new basement room. Anything from reinforced concrete to carpets and timber engineered floors can be considered. NOTE: 100% Closed cell insulation must be used below floor finishes and floor membranes.

General

All systems are capable of creating a dry waterproofed internal environment

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despite being below ground level and subject to pressure on the structure from ground water. There are value added benefits in converting existing cellars to habitable use by undertaking waterproofing. Cellar basements originally used only for storage can be converted into bedrooms, offices, play rooms, television and cinema rooms, wine storage, and gymnasiums. Members have successfully created swimming pools and saunas in converted basements.

Basements are one of the most critical areas of construction and conversions and as such must comply with BS8102 2009. Failures in basement waterproofing is normally attributed to poor design or installation or waterproofing products. Unless a waterproofing system is correctly designed and applied, then additional problems will inevitably occur in the future.

Finding a Specialist

Waterproofing systems should be designed and applied by a Waterproofing Specialist who can demonstrate that they have a

suitable level of skill and knowledge. The Property Care Association (PCA) provides training and a qualification for surveyors and specialist contractors that recognises these qualities. The Certificated Surveyor in Structural Waterproofing (CSSW) is a recognized industry qualification which demonstrates that the holder has a detailed understanding of all forms of waterproofing.

Members of the Structural Waterproofing section of the PCA have been confirmed as having the skills and ability to design and install specialist structural waterproofing. In most cases this work can often be backed by guarantees and insurance.

References:

BS8102:2009 Code of practice for protection of below ground structures against water from the ground.



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Finding a PCA member

Finding a PCA member could not be easier. Just visit the PCA website www.property-care.org then click on the 'Find a Specialist' button. Enter your postcode, choose what type of member you'd like and the area of expertise. You will then see a list of PCA members closest to your postcode.

For comments and feedback about the PCA and its members, feel free to contact us using the online form or on pca@property-care.org or by phone **0844 375 4301**, fax **01480 417587** or write to us at:

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