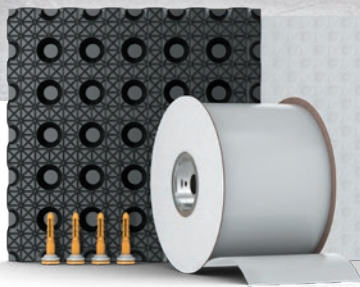


DRYBASE®

BASEMENT WATERPROOFING



Drybase®
Cavity Drainage



Drybase®
Cementitious Waterproofing



Drybase®
Sentry Sumps

Basement Waterproofing Systems

Basement System 1 Pack



CAD Details
CAD drawings for all details and complete system.



NBS Clauses
NBS & CAWS Clauses for all details and complete system.

Request Pack & Discuss Requirements:

+44 (0)1403 210204
basements@safeguardeurope.com

Download Full Pack:

<http://www.safeguardeurope.com/sbs1>

Design Specialists

A waterproofing specialist with a CSSW qualification should be consulted at design stage of all projects.

Find a Design Specialist:

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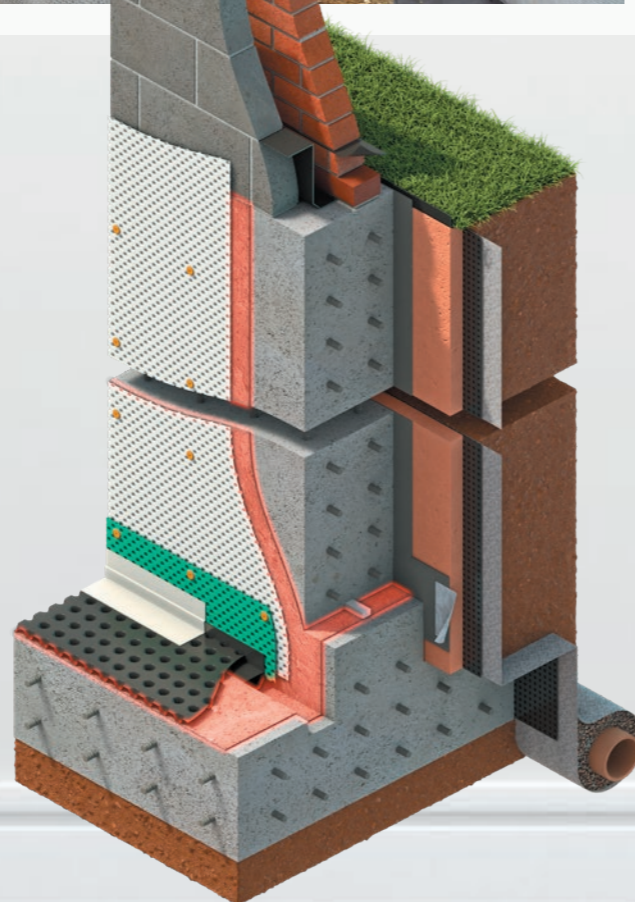


System 1: Newbuild Reinforced Concrete

Where basements are excavated and backfilled in the traditional way the primary waterproofing system (Drybase® Crystalline Tanking) can be applied to the external face of the basement wall. This is covered with a subsurface drainage layer (Drybase® Gtx) to reduce the hydrostatic pressure coming to bear on the basement structure and reducing the risk of water ingress through defects.

As a second line of defence, a maintainable cavity drainage system (Drybase® Xv) is installed on the internal side of the basement walls.

- Combined protection (BS 8102 6.2.2).
- Maintainable internal cavity drainage system (Oldroyd Xv).
- Expanding waterstop (Vandex Expaseal) combined with Drybase® Crystalline Tanking at vulnerable construction joint between floor and wall.
- Drybase® Gtx lowers potential for hydrostatic pressure on the waterproofing system (BS 8102 6.4).



Basement System 2 Pack



CAD Details
CAD drawings for all details and complete system.



NBS Clauses
NBS & CAWS Clauses for all details and complete system.

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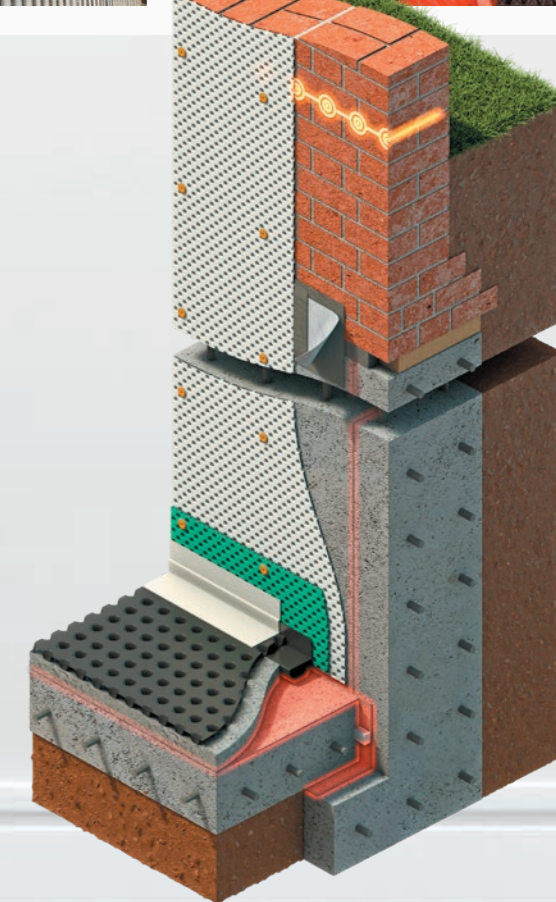


System 2: Dig Out

Where basements are constructed under existing buildings ('dig out' basements), it is not practically possible to apply a waterproofing system to the external face of the basement wall.

In such cases, applying Drybase® Crystalline Tanking water-proofer to the internal face of the concrete walls and slab provides a solution. A maintainable cavity drainage system (Oldroyd Xv) is applied on top of the Vandax layer to provide secondary protection.

- Combined protection (BS 8102 6.2.2).
- Maintainable internal cavity drainage system (Drybase® Xv).
- Drybase® Crystalline Tanking offers primary waterproofing and protection against free lime.



Basement System 3 Pack



CAD Details
CAD drawings for all details and complete system.



NBS Clauses
NBS & CAWS Clauses for all details and complete system.

Request Pack & Discuss Requirements:

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Design Specialists

A waterproofing specialist with a CSSW qualification should be consulted at design stage of all projects.

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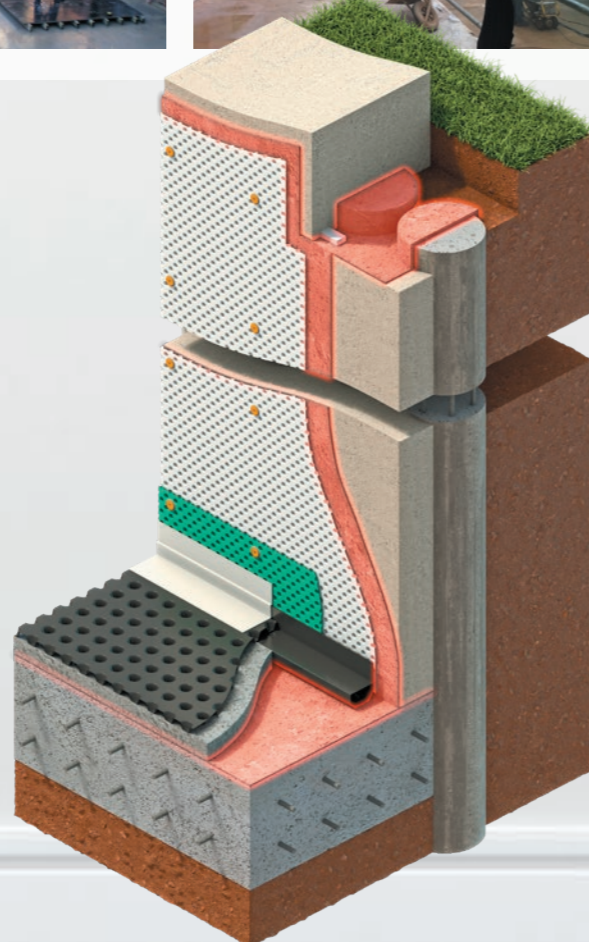
System 3: Piled Retaining Walls

In most cases piled retaining walls do not provide adequate resistance to water in their own right so a waterproofing system will need to be applied on top.

Depending on the type of piles used, reinforced concrete or sprayed reinforced concrete will need to be applied on top of the piles to consolidate them and provide a suitable surface for the waterproofing system.

The waterproofing system used could be a cavity drainage system (Drybase® Xv 20), a crystalline active water-proofer (Drybase® Crystalline Tanking), or preferably a combination of the two.

- Combined protection (BS 8102 6.2.2).
- Drybase® Crystalline Tanking applied to shotcrete and concrete slab provides primary water resistance.
- Drybase® Xv 20 provides maintainable secondary protection.



Basement System 4 Pack



CAD Details
CAD drawings for all details and complete system.



NBS Clauses
NBS & CAWS Clauses for all details and complete system.

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Design Specialists

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Find a Design Specialist:

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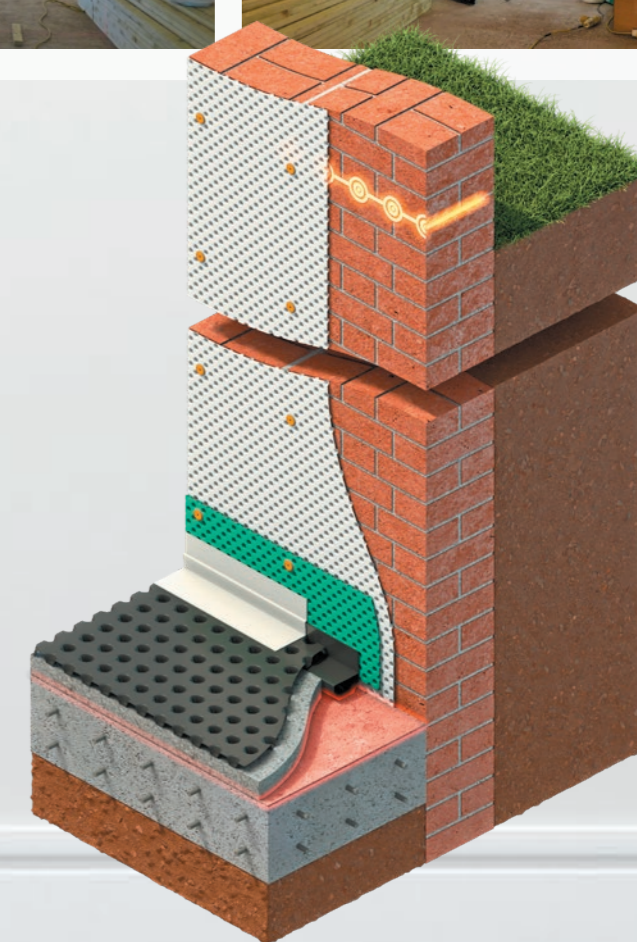
System 4: Refurb of Existing Basement

Old cellars and basements will usually require waterproofing if they are to be used as habitable areas.

In the UK, cavity drainage systems (Drybase® Xv) are the most popular waterproofing option for old basements. These redirect water to a sump and pump rather than physically holding it back, so preparation of the old brick substrate is less critical than when using traditional waterproofing systems.

It should be noted that BS 8102 states that "The outer leaf of the exterior wall should be capable of controlling the quantity of water that can pass through it, in order not to exceed the drainage capacity of the system." For this reason localised repairs or traditional "tanking" (e.g. using Drybase® Universal Mortar or Drybase® Tanking Slurry) may be necessary to improve the primary resistance of the basement wall. For similar reasons it is normally recommended that a new floor slab is poured using reinforced concrete and waterproofed using Drybase® Crystalline Tanking.

- Combined waterproofing is not always possible in existing basements.
- Localised repairs and/or Drybase® tanking may be required to increase primary resistance of basement walls.



Designing Basement Waterproofing Systems

Waterproofing

Basements are susceptible to the ingress of moisture and contaminants from the ground. For this reason, a waterproofing system will usually be required. Guidance on the requirements for basement waterproofing systems is given in BS 8102:2009, "Code of practice for protection of below ground structures against water from the ground".

The choice of waterproofing system will depend on a number of factors such as the method and type of basement construction, the depth below ground, and the proposed end use. The example designs in this guide are intended to demonstrate how BS 8102 compliant solutions can be achieved for some of the most common basement waterproofing scenarios.

Ventilation

In addition to dampness from the ground, basements are also commonly affected by condensation issues due to moisture-laden air within the basement structure. For this reason, the waterproofing systems described in this document will usually need to be supplemented by mechanical ventilation.

A waterproofing design specialist (see below) will be able to advise on suitable ventilation options depending on the proposed end use (e.g. car parking, document storage etc...)

Design Specialist

A waterproofing design specialist with a CSSW qualification should be consulted at the design stage. Call our technical department on **01403 210104** or email basements@safeguardeurope.com for details of suitable basement design specialists in your area.

Key Design Considerations

Continuous Linking

Continuous linking between the waterproofing below-ground and the damp-proofing/cavity trays above-ground is often overlooked.

Construction Joints

These are a weak point, so correct design and installation is important. Water bars, such as Drybase® Expaseal, should be incorporated into construction joints where possible. Drybase® Crystalline Tanking and Drybase® Construction Joint Tape can be used to provide additional protection.

Simplicity of Design

Corners, voids, footers, service entries etc... present increased risk when detailing and installing any waterproofing system. Minimising these features therefore helps to minimise risk.

Service Penetrations

Minimise and eliminate if possible – e.g. by taking services up and over walls to avoid penetrating the basement structure.

Free Lime Control

When using a cavity drainage system a lime control agent should be applied to all new concrete surfaces to reduce the build-up of free lime (calcium carbonate) behind the membrane and in the drainage channel/pumping system.

In the examples shown in this document, Drybase® Crystalline Tanking is used as it functions as a combined waterproofing layer and lime control agent.

Construction Material

Basements constructed from reinforced concrete generally present a lower risk than basements constructed from blockwork as there are fewer joints.

Pumps, Drainage and Maintenance

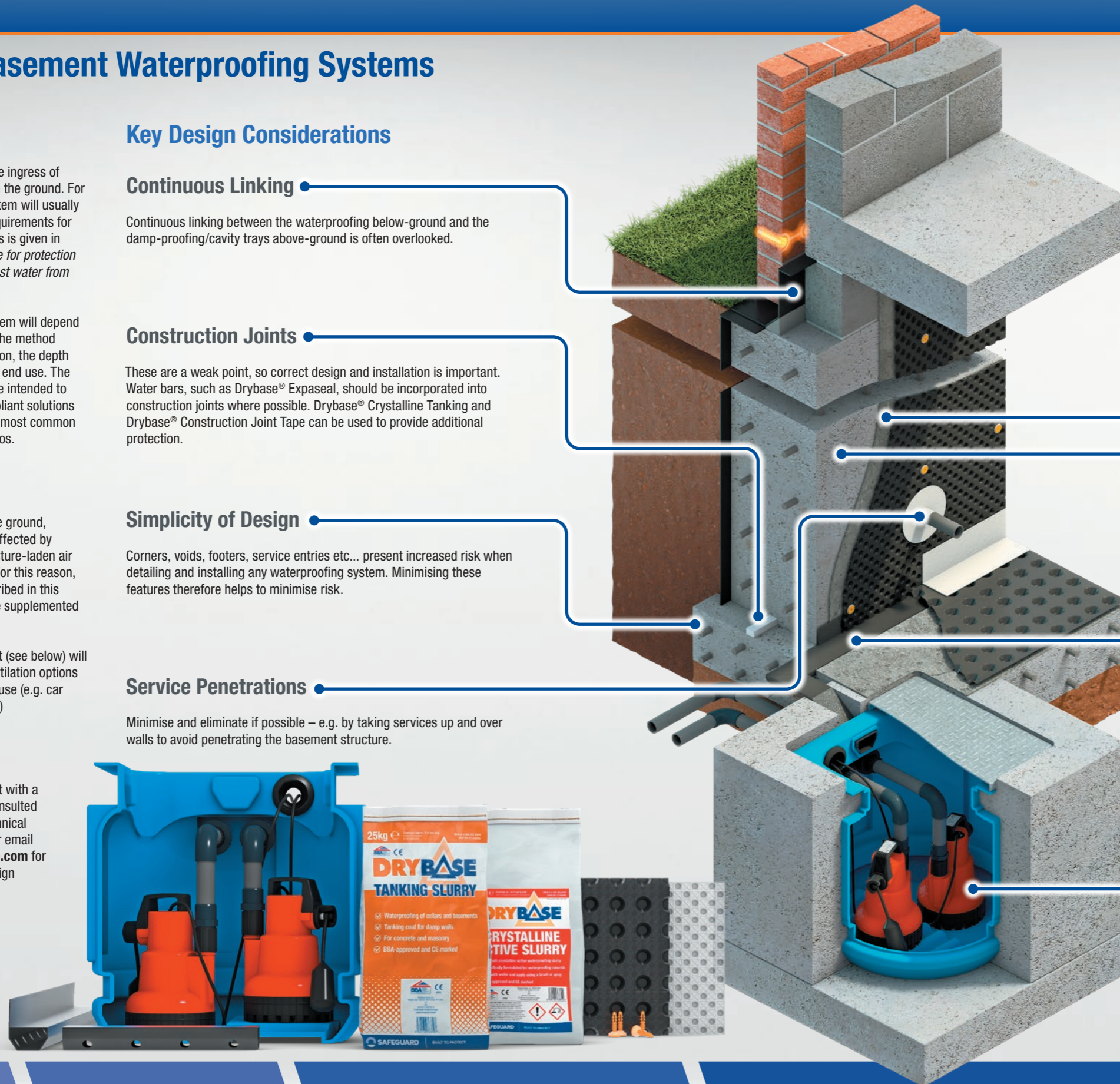
All of the basement waterproofing designs in this brochure feature an internally applied cavity drainage membrane (Drybase® Xv/Drybase® Xv 20) connected to a sump system.

PCA guidance states that; a minimum of two pumps with alarm and battery back-up must be included in the sump chamber. Provision should be made for a suitable discharge method, either by means of a mechanical (Drybase® Sentry™) sump pump system or appropriate discharge point.

Maintenance is essential – the Drybase® Aquadrain Perimeter Drainage Channel (via access points) and the Sentry sump pumps should be serviced on a regular basis. Pump maintenance schedules can ensure the success and longevity of any system.

More information is available in the free publication: **PCA Best Practice Guidance – Groundwater Pumping Stations**

The designer must assume responsibility for adapting the information contained within the brochure to fit his or her specific requirements. A CSSW-qualified basement design specialist should be consulted at the design stage. Call 01403 210204 or email basements@safeguardeurope.com for details of waterproofing design specialists in your area.



1) Design resilient basement structure

E.g. Reinforced concrete structure, simple shape, minimal service penetrations

2) Choose suitable waterproofing system

Choose a waterproofing system appropriate for the type of basement. The designs in this guide are a useful starting point.

3) Waterproofing design specialist

A CSSW-qualified waterproofing design specialist should be employed to draw up a detailed waterproofing design. Call **01403 210204** or email basements@safeguardeurope.com for details of waterproofing design specialists in your area.

4) Specialist basement waterproofing contractor

Correct installation of basement waterproofing systems requires specialist skills – e.g. surface preparation, detailing of joints etc... Call **01403 210204** or email basements@safeguardeurope.com for details of specialist basement waterproofing contractors in your area.

5) Maintenance

Drainage channels and sump pumps should be serviced on a regular basis.

Basement CPD Seminars

Safeguard offer the following RIBA-Approved CPD seminars on the topic of basement waterproofing:

- Existing Basements (1 hr CPD)
- Newbuild Basements (1 hr CPD)
- Newbuild and Existing Basements (2 hr CPD)

Specifiers are faced with a number of decisions when it comes to waterproofing basements. Aside from product choice, decisions need to be made about whether to waterproof internally or externally, and whether to rely on a single waterproofing system or a combination of systems. Choices will also have to be made regarding the most appropriate method of waterproofing for potential weak spots such as construction joints.

These seminars provide a useful overview of the choices available with reference to their appropriateness for different types of basement structure. The seminars have been fully updated to take account of the changes made in the 2009 edition of BS 8102, “Code of practice for protection of below ground structures against water from the ground”.



Further Information

Basement designs in this guide are designed to be effective and comply with BS 8102, but it should be noted that they are generic and a CSSW-qualified waterproofing design specialist should be consulted before designing a basement waterproofing system for a specific project. Choosing the most appropriate basement waterproofing design will depend on a number of factors including:

- Newbuild or refurbishment
- Soil type
- Construction type/material used
- Proposed end use
- Depth below ground level
- Soil contaminants/ground gases

All members of the waterproofing design team should be familiar with BS 8102, NHBC Chapter 5.4 and guidance documents from the Property Care Association and Basement Information Centre.



Design Specialist

A waterproofing specialist with a CSSW qualification should be consulted at design stage. For smaller projects, this could be a specialist basement waterproofing contractor, however for larger or more complicated projects an independent waterproofing design specialist would normally be employed.

For details of suitable qualified design specialists in your area, call our technical department on: **01403 210204** or email **basements@safeguardeurope.com**



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