

# Creating safe and robust waterproofing solutions for structures

Delta Membrane Systems' Christopher Burbridge explores the challenges and complexities around delivering waterproofing design solutions



**Developments within the construction industry have seen a major change in how we view structural waterproofing**



The basis of waterproofing structures is to stop water ingress, reduce risk and prolong the lifetime of a structure, whether upgrading existing basement rooms, waterproofing new buildings or converting damp, unused below-ground spaces into dry and habitable rooms. Developments in the industry have delivered a change in how we view structural waterproofing.

The introduction of BIM (Building Information Modelling), for example, has created value in the design process, increasing efficiency within the build process and coordinated project delivery while also driving time and budget savings for building and infrastructure alike. Technical drawings are also vital in visually representing and communicating how a waterproofing system functions or is constructed, and are a valued tool.

When considering what is best for a certain project there are various options available to designers.

## Engage specialists

A waterproofing design specialist provides expertise in structural waterproofing, which is a complex task since every project had its own unique set of challenges.

The specialist should attend site, undertake site investigations, produce reports and manage documentation in relation to the design, ensuring at all stages that sufficient protection is designed into the project. Getting the design correct prior to construction will save significant costs.

## The three grades of waterproofing below ground structures

British Standard 8102:2009 (Code of Practice for the Protection of Below

Ground Structures against water from the Ground) defines three grades of basement: Grade 1 – basic utility – car parking, plant rooms (excluding electrical equipment) and workshops; Grade 2 – better utility required from Grade 1 – workshops and plant rooms requiring drier environments Grade 3 – habitable – ventilated residential and commercial areas.

The 1990 edition of BS:8102 made reference to Grade 4 (archive storage). This is the same as Grade 3 but with a higher performance level for ventilation, air conditioning or dehumidification.

## Available systems

There are three types of structural waterproofing systems available within the UK: Type A Barrier Protection; Type B Structurally Integral Protection; Type C Drained Protection; and finally, Combined Systems.

### 1. Type A

Type A (Barrier) Protection, often referred to as "Tanking", provides protection against ground water ingress by application of a waterproof material to the negative (external) walls and structural slab of a basement or underground structure to form a barrier between the structure and any groundwater present.

Type A materials can be applied to either the negative (external) or positive (internal) surface of the wall or floor and also in between wall or floor surfaces. Type A systems can offer a double layer of protection when applied to both negative and positive surfaces.

Type A materials include: Liquid Applied Membranes, Bonded Sheet Membranes and Cementitious slurries and powders.

## 2. Type B

Type B (Structurally Integral) Protection is the incorporation of materials to the external shell of the structure itself.

Type B materials include: Reinforced water-resistant concrete or reinforced water-resistant structural steel.

Design, materials and quality of workmanship are paramount when specifying a Type B system due to the pattern of any seepage, poor joints, cracks or other discontinuities such as service penetrations.

## 3. Type C

Type C (Drained) Protection is the incorporation of a cavity drainage system (internal water management system).

In principle, a Drained Cavity System collects and manages any ground water which breaches the integrity of a structure by managing, collecting and discharging such free water via a suitable evacuation point such as a packaged pump station.

The Cavity Drainage System provides protection to a structure by application of a dimpled High Density Polyethylene (HDPE) membrane, which is applied to the positive (internal) walls and structural slab of a

basement or underground structure to form a barrier between the structure and any groundwater present.

A cavity drain system requires minimal preparation and disturbance to an existing substrate.

Type C materials include: Cavity Drain Membranes and Submersible Pump.

## 4. Combined Systems

Some building warranty providers insist on two forms of waterproofing on projects where they are to provide the building warranty.

Difficult and complex projects may also require combination waterproofing.

British Standard 8102:2009 recommends the consideration for combined systems where the risk is deemed high. A waterproofing design specialist would have the knowledge and understanding of a range of waterproofing systems to provide a robust design based on compatible materials.

As with all waterproofing protections, all rely heavily upon the design and how these materials are incorporated into a project.

*Christopher Burbridge is managing director of Delta Membrane Systems*



## Connecting Cross-Laminated Timber



To support the growing use of cross-laminated timber (CLT) in the UK and Europe, one of the leading connector manufacturers Simpson Strong-Tie has released an updated version of its 'Connectors for CLT' catalogue. Featuring a host of new products including heavy duty angle brackets, hold-down connectors and structural screws, this edition represents a complete set of solutions for the assembly of CLT buildings, as well as steel and chemical mortar products designed specifically to connect the entire structure to concrete. Sales Director, Jon Head explains: "We have drawn together a huge variety of products from across our European operations to produce a comprehensive range of performance tested connectors and fasteners to enable CLT constructions from floor to ceiling – the CLT designer need look nowhere else". To further support the design and construction of CLT structures, Simpson Strong-Tie also has a team of engineers based at its manufacturing plant in Tamworth, offering technical support and assistance. The new brochure can be downloaded from the Simpson Strong-Tie UK website.

01827 255600 [www.strongtie.co.uk](http://www.strongtie.co.uk)

## Something old, new, borrowed, black-blue



When Shauna Cameron Architect required a product that could replicate the aesthetics of Scottish slate for the Atlantic Islands Centre, CUPA PIZARRAS' Heavy 3 roofing slate was the ideal solution. Architect, Shauna

Cameron from Shauna Cameron Architect, had previously used CUPA PIZARRAS slate and was well aware of its high standards of quality as well as its 100-years warranty. Medium grained and black-blue in colour with occasional quartz grain detectable on the surface, Heavy 3 has an extremely close resemblance to traditional highland slates, which was ideal for a site with such a strong Scottish slate heritage.

01312 253111 [www.cupapizarras.com/uk](http://www.cupapizarras.com/uk)

## Langley scoops roofing award



Langley Roofing Systems has won best Reinforced Bitumen Membranes Project at this year's UK Roofing Awards. In recognition of Langley and Opus' contribution, the accolade celebrates the outstanding design and subsequent installation of the estate's extensive and complex new roofing system. The Girdlestone Estate project saw Langley working closely with Opus Waterproofing Solutions and Mears Group on an ambitious plan to strip the failing roof and install Langley's robust TA-20 RBM solution across six blocks; providing an efficient and cost-effective solution.

01327 704778 [www.langley.co.uk](http://www.langley.co.uk)

# CPD FOCUS

The latest CPD courses, seminars and documents for architects

## 'STEP ON IT!' SPECIFICATION OF ENTRANCE MATTING



**Quantum Flooring Solutions –** RIBA approved CPD seminar 'STEP ON IT!' is a presentation and discussion dealing with the subject of specifying safe and effective entrance matting. The CPD presentation includes: What entrance matting is designed to achieve and how to select the right one; How recent BRE guidelines affect the choices for specifiers; Environmental and health and safety considerations applicable to the manufacture, installation and maintenance of entrance matting.

0161 627 4222

[www.quantumprofilesystems.com](http://www.quantumprofilesystems.com)

## HEAT FREE JOINTING CPD MODULE LAUNCHED BY PEGLER YORKSHIRE



Pegler Yorkshire has launched its latest Continuous Personal Development (CPD) module aimed at supporting the increase in heat free jointing requirements. The new accredited CPD module, 'Benefits of Heat Free Jointing', addresses key issues now found on many projects where heat is not permissible. Other online training modules developed by Pegler Yorkshire and, which can be accessed via 'My PY' on the company's website, cover topics such as; Central Heating, Taps & Mixers, Metal Push-fit and Commissioning.

01302 560 560  
[www.pegleryorkshire.co.uk](http://www.pegleryorkshire.co.uk)

## BOILERMAG DELIVERS SUCCESSFUL HEATING SYSTEM PROTECTION



Ingleton Wood is the latest company to have received BoilerMag's Continuing Professional Development course on best practice for heating system protection. The CPD course on best practice for heating system protection was delivered by Bernard Barrett, BoilerMag's Specification Sales Manager and is aimed at industry professionals. The presentation aims to give an explanation of the best practice for heating system protection, including the reasons and causes for protecting a heating system.

0114 225 0624  
[www.boilermag.com](http://www.boilermag.com)

## NEW SIKA SARNAFIL FLAT ROOFING CPD MEETS MODERN DEMANDS



Sika Sarnafil has launched a new RIBA accredited Continual Professional Development (CPD) seminar, 'Selecting Flat Roofing System to Meet Modern Demands', for those wanting to specify high performance flat roofing that meets the most up-to-date legislative requirements. In response to a fast-paced industry, the experts at Sika Sarnafil created the CPD specifically to meet the needs of architects and specifiers. The seminar aims to inspire, educate and reassure by covering all the vital knowledge required to ensure a successful and effective roof system. The CPD provides specifiers with a breakdown of all the typical roof build-ups from cold and warm to protected roofs, with the new addition of blue roofs, through simple and engaging animations. This is accompanied by information on important design considerations, materials and workmanship. A further upgrade to the seminar is the inclusion of extra expertise on energy efficiency, BRE Accredited Details, sustainability and BIM to help architects, FMs, building managers and surveyors that are under increasing pressure to source environmentally responsible roofing products. Richard Lawton, Regional Sales Manager – South, Sika Sarnafil says: "Attending this CPD aids the decision-making process when choosing the perfect roof for a project."

01707 394444  
[gbr.sarnafil.sika.com/en/new-builds/contact/request-a-cpd.html](http://gbr.sarnafil.sika.com/en/new-builds/contact/request-a-cpd.html)

## DELTA MEMBRANE RIBA APPROVED DOUBLE POINT CPD SEMINAR



**Waterproofing: BS8102:2009 The Protection of Below Ground Structures Against Water from the Ground**, from Delta Membrane Systems Limited, is designed to help you design and specify waterproofing solutions to British Standard BS8102: 2009. It will help you to understand the forms or types of waterproofing available covering types A, B and C and their placement, the grades of waterproofing protection and understand the importance of using a waterproofing specialist. Delta Membrane Systems Limited has been rigorously assessed by the RIBA and our seminar is worth double CPD points to RIBA Chartered Architects. 01992 523 523  
[www.deltamembranes.com](http://www.deltamembranes.com)

## RENOLIT LAUNCHES NEW RIBA APPROVED SURFACE DESIGN CPD



RENOLIT has launched a new CPD seminar on the flexibility and uses of thermoformable PVC as a decorative surface which illustrates the benefits of PVC films over other decorative surface materials. The seminar provides architects with an understanding about PVC and its common uses within interior construction projects. It informs how to recognize different types of surfaces films, their applications and raises awareness of some specialist applications.

01670 718222  
[www.renolit.com/design](http://www.renolit.com/design)

## RIBA APPROVED XPS SUSPENDED GROUND FLOOR SEMINAR



Collecta, the specialist Acoustic and Thermal Insulation manufacturer, has launched a new RIBA approved CPD seminar, 'XPS Suspended Ground Floors'. The seminar is designed to provide practical insight in XPS Suspended Ground Floors and covers important topics such as the UK regulations associated with suspended flooring, why you would use XPS flooring. You can request more information or book a CPD at your premises free of charge.

01634 296677  
[www.collecta.co.uk](http://www.collecta.co.uk)