

System 400

NEWTON 403 HYDROBOND

Externally Applied Waterproofing Membrane



PRODUCT CODE: HB & HBGB

INTRODUCTION

IMPORTANT

Please read the whole of this document before attempting installation of the system. This manual is designed to flow as a guide and there may be important information pertaining to your specific installation on later pages. We especially recommend the LIMITATIONS section on page 10 be read before commencing work.

INTRODUCTION

[Newton 403 HydroBond®](#) is a high performance, self healing, composite sheet membrane, available in two variants. Both membranes have a hydrophilic polymer coating sealed and constrained between a layer of waterproof LDPE to the outer face and a polypropylene locking fleece to the inner face. Newton 403 HydroBond-GB includes a further layer of aluminium to provide higher resistance to radon, carbon dioxide and hydrocarbon gases.

When fitted above the raft support or to wall formwork, the membrane locking fleece is fully encapsulated into the newly placed concrete, becoming fully engaged and preventing water tracking. If the waterproof LDPE layer is punctured, the exposed hydrophilic coating expands, preventing water ingress, effectively sealing small holes that may be accidentally formed during fixing of the reinforcing steel or the pouring and compaction of the concrete.



SIZE & PACKAGING

Newton 403 HydroBond is supplied in rolls of 1.0 m x 20.0 m (20 m²). Weight of roll is 24.3 kg

Newton 403 HydroBond-GB is supplied in rolls of 1.5 m x 20.0 m (30m²). Weight of roll is 42.3 kg

METHODS OF APPLICATION

Newton 403 HydroBond is placed to formwork ready for the placement of concrete. For concrete rafts and slabs, Newton 403 HydroBond is fitted above a sound and uniform support such as a concrete blinding or compacted hardcore.

When installed to walls, Newton 403 HydroBond is fitted to sound and uniform permanent formwork such as existing walls or faced-off piles. Please see page 4 for a list of suitable support substrates.

CONSTRUCTION

The construction should conform with current Building Regulations, British Standards and relevant Codes of Practice. New concrete should be designed by a Structural Engineer to EN 1992 (Formally BS 8110 & BS 8007) to be structurally capable for the intended use as an earth retained structure, resisting loading from earth as well as water pressure as recommended within BS 8102:2009.

NEWTON HYDROBOND-LM

Where shuttering is to be removed to expose the outer face of the concrete walls, [Newton 108 HydroBond-LM](#) should be used to complete the HydroBond® System. 108 HydroBond-LM is a liquid rubber membrane that is spray applied to provide a continuous and seamless membrane to concrete walls, lapping over 403 HydroBond for a complete system. Newton 108 HydroBond-LM is very elastic, requires no primer and can be installed in cool and damp conditions ensuring that your project is finished on time and within budget. Up to 1000m² a day can be installed making 108 HydroBond-LM a very quick and cost efficient alternative to adhesive sheet membranes. [Newton 109-LM](#) is a derivative of 108 HydroBond-LM that can be applied by brush or roller where access for the spray machine is not possible, or for detailing.

For further information on Newton HydroBond-LM and our comprehensive range of waterproofing and damp proofing products and systems please contact our sales office on 01732 360095 or our website www.newtonwaterproofing.co.uk

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IMPORTANT - PLEASE READ

Newton 403 HydroBond is available in two variants: Newton 403 HydroBond (code HB) and Newton 403 HydroBond-GB (code HBGB).

Where protection against ground gases is also required, please ensure that the 403 HydroBond-GB is used. Double check with the specifier before commencing work.

Read the Newton 403 HydroBond [Data Sheet](#) and [MSDS](#) before commencing work.

PRODUCT INFORMATION & ANCILLARY PRODUCTS

The following products are required for a Newton 403 HydroBond installation to below the raft or slab and for installation to wall permanent formwork:

- Newton 403 HydroBond (Product Code HB) or Newton 403 HydroBond-GB (Product Code HBGB)
- Newton HydroBond Tape - Double-sided adhesive tape - 20m length x 70mm width - Product Code HBT
- Newton HydroBond GasTape - Single-sided tape - 20m length x 300mm width - Product Code HBGT
- [Newton 106 FlexProof](#) and Newton 109-LM - Paste for repairs & detailing.
 - Newton 106 Flexproof: 290mm cartridges or containers of 15 or 7.5kg - Product Code FP1 (X1) & FP4 (NV)
 - Newton 109-LM: Containers of 20L - Product Code 109-LM
- [Newton 314-BP](#) - Sodium bentonite detailing powder - 25kg sacks - Product Code BP314

Where protection against ground gases is required, use Newton 403 HydroBond-GB - Product Code HBGB. See additional installation instructions on Page 10.

Newton 403 HydroBond can be installed in salt water locations.

POST APPLICATION TO WALLS

For post application to walls where temporary formwork is removed to leave concrete walls where the outer face is accessible, or to walls of masonry supported off the concrete raft, 108 HydroBond-LM should be used. See separate [Data Sheet](#) for Newton 108 HydroBond-LM.

Where the concrete or masonry walls are supported from their own foundations, not from a concrete raft, there cannot be continuation of the 403 HydroBond below the slab to the outer face of the walls. The walls can be separately waterproofed with one of the following products:

- Newton 108 HydroBond-LM
- Newton 109-LM

SUITABLE SUBSTRATE

RAFT OR SLAB

- Concrete or sand blinding
- Compacted type 1 Hardcore

The following can be placed above the blinding or hardcore prior to the installation of 403 HydroBond:

- Void former
- Closed cell flooring grade insulation
- [Newton 410 GeoDrain](#)

WALL PERMANENT FORMWORK

- Existing structure
- Secant or contiguous concrete piles
- Metal sheet piles
- Diaphragm walls
- King post wall
- Sufficiently stable ground such as clay or chalk. Please speak with our technical department for confirmation of suitability

PERMANENT FORMWORK

Where the permanent formwork has an irregular surface, such as a piled wall, 403 HydroBond can be either fitted to follow the undulating face of the wall or the surface will need to be faced-off to leave a stable and uniform surface. Facing off undulating wall permanent formwork surfaces can be achieved using the following methods:

- Sprayed concrete
- Closed cell insulation
- Faced-off with shuttered and poured concrete
- Plywood sheets

Tools required (Please see page 8 regarding the installation of 403 HydroBond to permanent formwork):

- Craft knife or shears
- Tape measure
- Hammer & nails
- Hard roller
- Heat gun
- Scaffold pole or broom handle

TRAINING & COMPETENCY OF USER

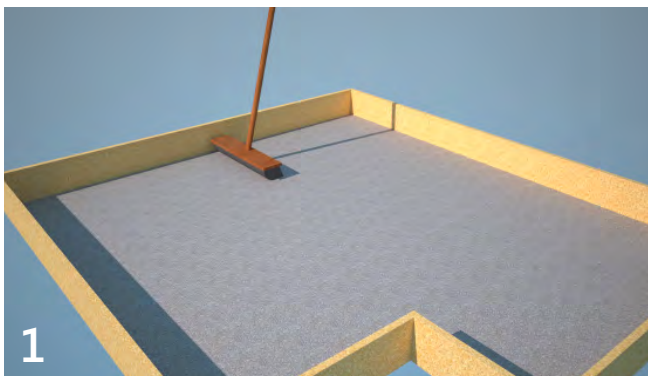
Newton 403 HydroBond should be used by those with an understanding of the requirement to waterproof structures and the knowledge and training to use the product as part of a coordinated approach to the waterproofing of the structure, which in many cases will require further waterproofing products so as to achieve the required habitable grade as defined by BS 8102:2009.

Newton Waterproofing has a list of trained registered contractors who are capable of designing and installing a full waterproofing solution for your project. Please contact us for a list of contractors for your area.

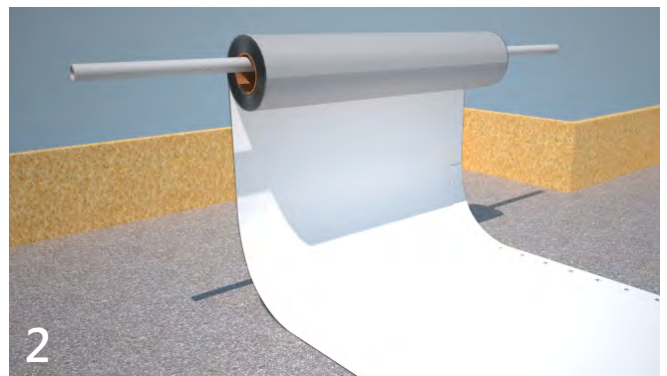
INSTALLATION - GENERAL INFORMATION

Newton 403 HydroBond is manufactured with an adhesive edge to one edge of the fleece side of the membrane for overlapping and adhesion to adjacent lengths of 403 HydroBond. On the grey polymer side there is a removable strip of film designed be removed prior to the 403 HydroBond overlap.

INSTALLATION - BELOW RAFT

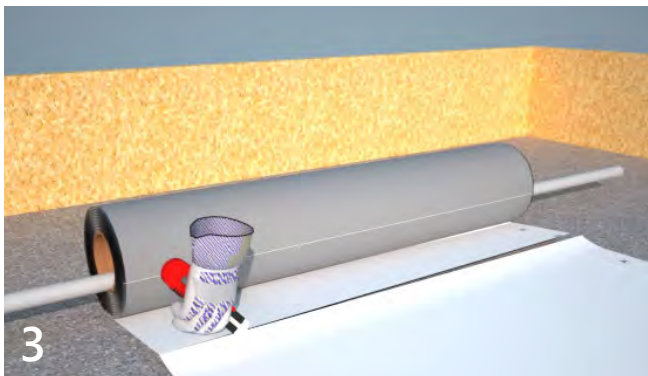


Sweep the support surface clean. Substrate should be smooth and firm. Concrete surfaces should be free of voids and sharp projections. Surface irregularities should be removed before installation. Voids must be filled with mortar, and holes filled with proprietary non-shrink mortar/grout.



Unroll Newton 403 HydroBond with the geotextile towards the concrete to be waterproofed (white fleece facing up) using a 2m long scaffold pole or similar.

Schedule waterproofing installation to coincide with placement of concrete. Concrete must be placed within 10 days of installation.



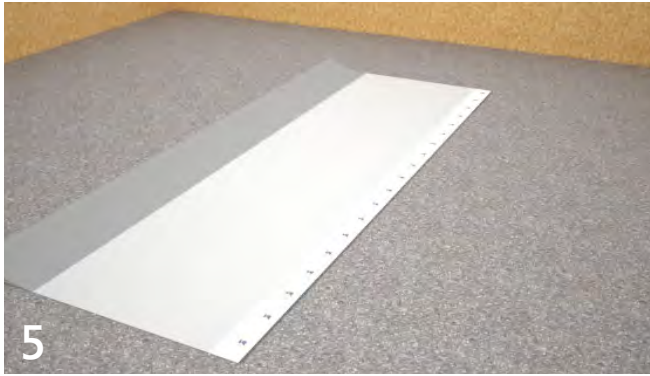
Measure the perimeter of the formwork to determine the length of the membrane required. Make provision for 70mm overlaps to each end joint of the 20m long membrane rolls. When cutting the membrane use a retractable craft knife or sharp shears whilst wearing safety gloves.



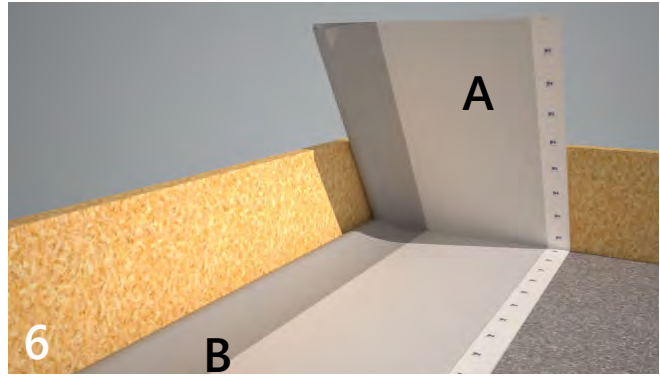
403 HydroBond is fitted to within 50mm of the top of the vertical raft temporary formwork. Mark out the height of the fold onto the membrane, marking out twice the height of the upstand, creating a guide for the fold.

Stages 5 to 9 of page 6 require accurate folding of the material and involve a number of procedures that may not be obvious when first attempted. Practicing first with a piece of paper is recommended.

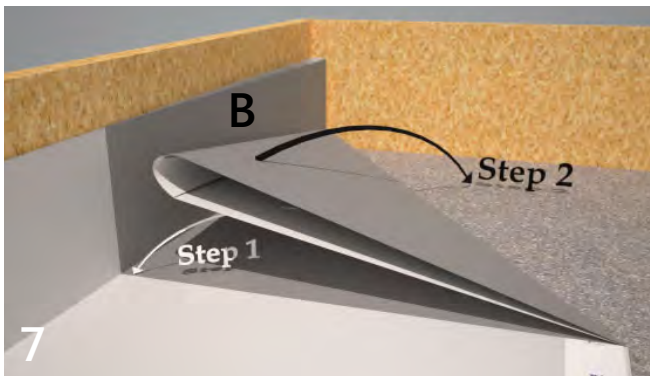
STEP BY STEP INSTALLATION



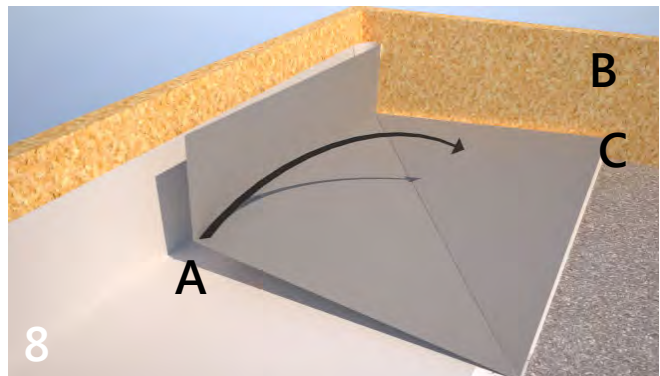
5
Fold along the guide created in the previous stage. Sharpen the crease with a hard roller.



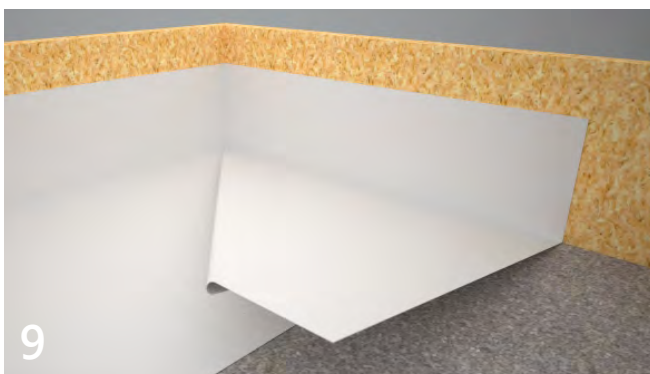
6
At internal corners, make a crease at the change in direction. Once the crease is formed, lift up the flap marked A and invert the upstand marked B so that the upstand of the flap A is in front of the main sheet upstand as shown in Fig. 7.



7
Step one: Form a crease as shown. Stage 2: Fold back.



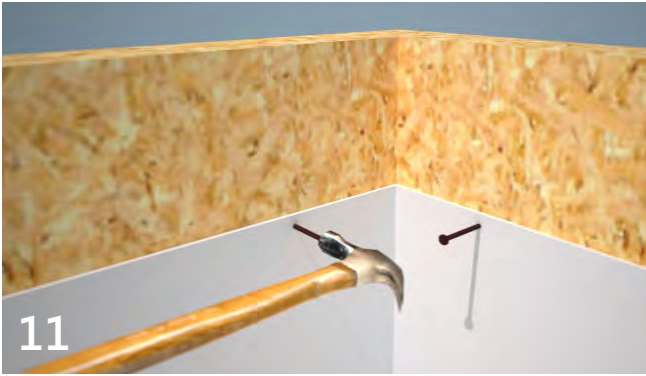
8
Holding the membrane at point A of the grey flap and fold back so that your hand is at point C. The upstand B of figure 7 should now be against the formwork at point B. At this stage only the white fleece should be facing upwards.



9
Fig. 9 shows the completed corner. At this stage only the white fleece should be seen. The fold is to the right hand side of the joint and the membrane is triple thickness.



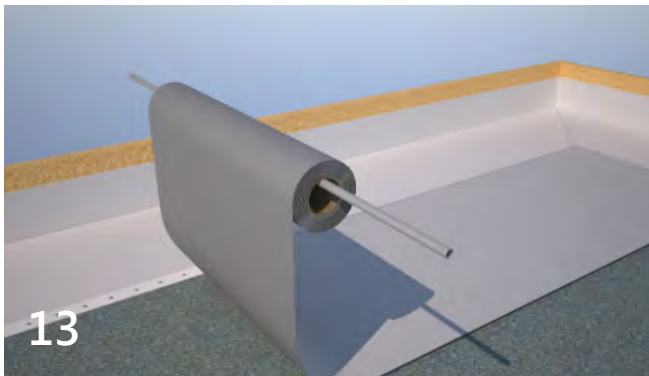
10
Seal the 45 degree joint with the double sided HydroBond tape. Use a hard roller to ensure a firm bond of the tape to the between the two surfaces of 403 HydroBond.



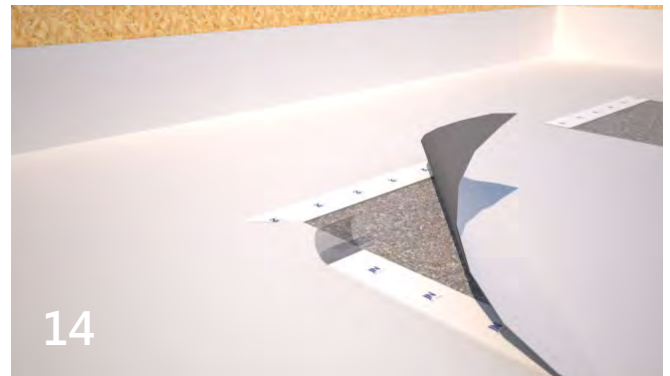
Nail the 403 HydroBond to the formwork leaving the nails exposed to give a key for the concrete and to ensure that the formwork can be easily removed. The nails are cut flush with the membrane after the formwork is removed. A dab of 106 FlexProof or 109-LM can be used over the small hole, although the membrane will self-heal.



For external corners, cut a square of 403 HydroBond and from a corner of that square, cut out a small square of about 75mm x 75mm. Fit the square to the corner and when in place, tape the square under the 403 HydroBond already in place.



Once all the perimeter of the substrate has been completed, ensure that all edges of the membrane above the floor support have either an adhesive edge or have been prepared with the double sided HydroBond Tape. Unroll strips of membrane, overlapping the 403 HydroBond that is already in place by 70mm.



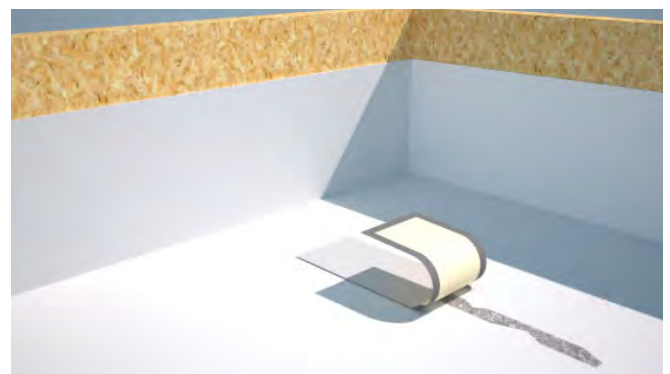
To complete the overlapped joints, peel off the protective release liner from the adhesive edge of the HydroBond Tape and press the laps together. Use a hard roller to ensure the laps are fully and constantly adhered.

MEMBRANE REPAIR

Repair damage by ensuring the area is clean and dry and free from dust. Repair small punctures (12mm or less) and cuts by applying a patch of Newton 403 HydroBond centred over the damaged area and secure with HydroBond Tape, pressing firmly using a hard roller to ensure a good bond. Overseal the outer edge of the patch with Newton Mesh Tape. Use a hard roller and a heat gun to fully adhere the Mesh Tape into the 403 HydroBond fleece.

Repair holes and large punctures by applying a patch of Newton 403 HydroBond membrane, which extends 150mm beyond the damaged area. Seal all edges of the patch with HydroBond Tape, pressing firmly using a hard roller to ensure a good bond. Overseal the outer edge of the patch with Newton Mesh Tape. Use a hard roller and a heat gun to fully adhere the Mesh Tape into the membrane fleece.

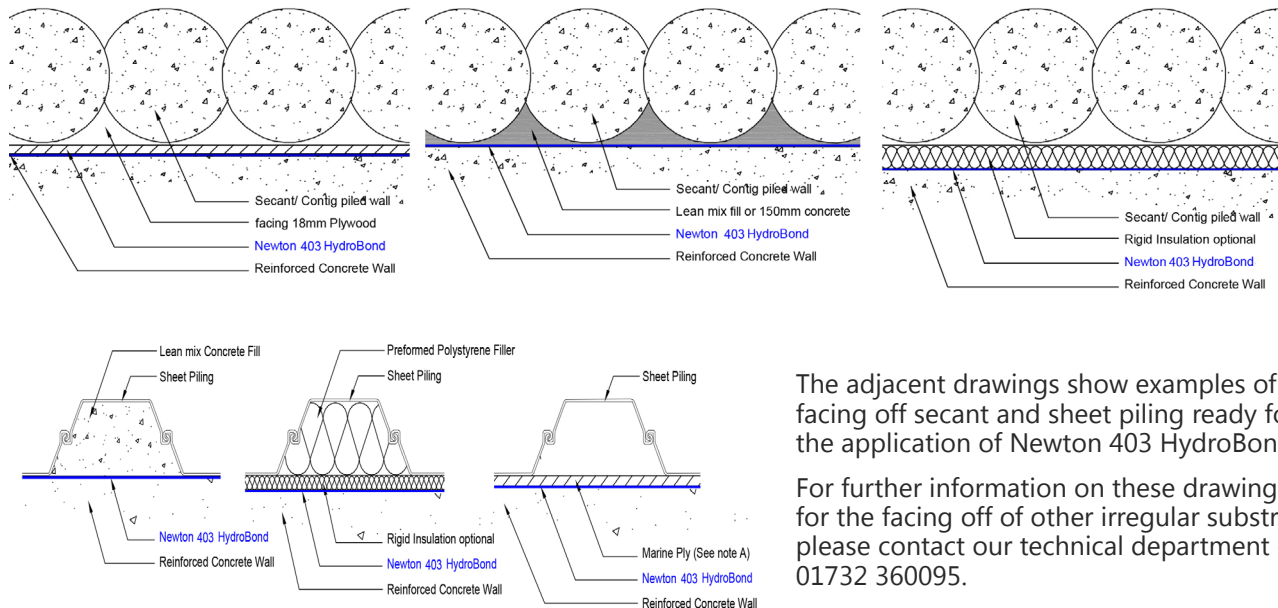
Where exposed adhesive edges have lost adhesion or laps have not been fully sealed, ensure the area is clean and dry and reseal with HydroBond Tape, resealing the lap and rolling firmly with a hard roller. Overtape with Newton Mesh Tape.



INSTALLATION - PERMANENT WALL FORMWORK

Where the permanent formwork has an irregular surface, such as a piled wall, Newton 403 HydroBond can be either fitted to follow the undulating face of the wall or the surface will need to be faced-off to leave a stable and uniform surface. 403 HydroBond should be fitted with the adhesive edge uppermost ready for the next adjoining strip of membrane. Install to the wall permanent formwork before the installation to the floor support. Installation should be continued upwards until the 403 HydroBond is terminating above ground and/or to a designed termination point ready for further detailing.

FACED-OFF PILES



The adjacent drawings show examples of facing off secant and sheet piling ready for the application of Newton 403 HydroBond.

For further information on these drawings or for the facing off of other irregular substrate, please contact our technical department on 01732 360095.

UNDULATING WALL PERMANENT FORMWORK

If not faced-off, on contiguous piling ensure that soil columns between piles are cut back to no less than one third of the pile diameter, to create a fixing cleavage, and reduce the likelihood of soil dislodging behind the membrane.

Use shot fired nails to install the membrane so that it is tightly fitted into the undulations of the formwork. Ensure that the 403 HydroBond is fully supported by the formwork. Pay particular attention to the joints which should be fully adhered by either the adhesive edge or the double sided HydroBond Tape.

INSTALLATION ABOVE FLOOR SUPPORT

To faced-off formwork, install as instructed within page 4 to page 6. Use HydroBond Tape or the adhesive edge to make the final seal between the upturned 403 HydroBond to that already installed to the walls.

To undulating wall formwork, cut the 403 HydroBond into 500mm wide strips to the measure of the perimeter, plus 70mm end overlaps, plus a small error margin. Fold to make a 250mm upstand. To force the upstand to the shape of the piles you will need to cut and splay the fold above the floor support to allow it to lay flat. Once the floor splayed membrane is laying flat, tape the upstand to the membrane already fitted to the undulating wall with HydroBond Tape.

At the interface with the wall, cut the floor membrane to the shape of the undulations and lay over the top of the cut splays. Seal the floor membrane to the splays with Newton 106 FlexProof. Overtape the joints with Newton Mesh Tape. Seal all other joints with the adhesive edge or HydroBond Tape and then overseal all joints with Newton Mesh Tape.

UNDER CONCRETE FLOOR SLABS

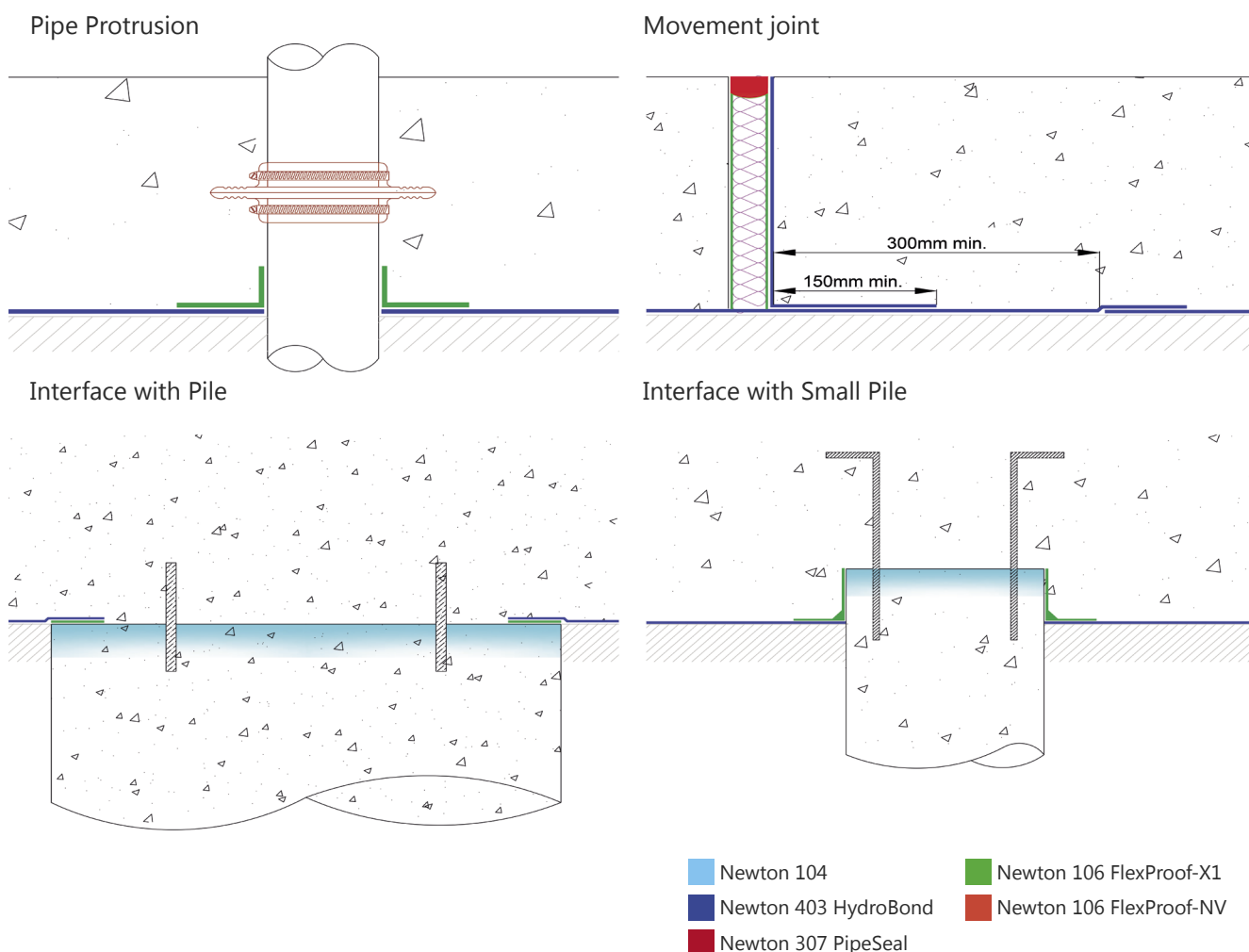
Newton 403 HydroBond is suitable for use below concrete floor slabs, giving the benefit of a self-healing and fully bonded membrane to protect the slab from water ingress via shrinkage cracks. It should be understood however that the slab is poured within walls and so a break is created that prevents the whole of the structure being waterproofed by a continuous HydroBond System. Therefore the walls will need to be waterproofed separately with the products mentioned on page 2.

The slab support should be as described in the 'Suitable Substrate' section on page 4, and the walls should be faced-off with concrete to allow for installation of a [waterbar](#). The slab should be structurally capable for the intended use as a basement slab as described in the 'Construction' section on page 2. Install the 403 HydroBond above a sound and uniform substrate with 70mm overlaps between adjacent lengths of membrane using either the adhesive edge or HydroBond Tape to form the sealed laps.

DETAILING

There are many potential detailing issues that may need to be overcome with a membrane system that completely encapsulates the structure. Newton Waterproofing have a library of many possible details and our technical team will be happy to confirm the appropriate detail for you. Below are a selection of common details. The additional products required for these details are:

- [Newton 104](#) - Crystalline waterproofing powder - Bags of 25kg - Product Code CW104
- [Newton 307 PipeSeal](#) - EDPM Pipe Flange - Product Code SX307
- [Newton PipeCollar](#) - Fabric reinforcement collar - 110mm diameter - Product Code PC110



ADDITIONAL SEALING - 403 HYDROBOND-GB

Watertight does not mean gas-tight. Gas molecules are much smaller than water or even water-vapour molecules. Third party testing has proven that a watertight lap is not a gas-tight lap. Therefore in order that the average gas transmission rates for methane and carbon dioxide of the Newton HydroBond-GB System comply with the requirement of BS 84851 article 7.2.4: $<40.0 \text{ ml.(m}^2\cdot\text{d}\cdot\text{atm)}^{-1}$ (average) for sheet and joints (tested in accordance with the manometric method in BS ISO 15105-12), further sealing of the laps is required.

To ensure the laps between sheets of Newton 403 HydroBond-GB are fully gas-proof the lapping sequence as conveyed on page 7 for the standard 403 Hydrobond requires additional accessory products in the form of Hydobond GasTape. (HBGT).

- Unroll sheet of HydroBond-GB with light blue side down and the white fleece upwards
- Unroll length of Hydobond Gas Tape with foil side down and release film upwards
- Place the tape halfway under edge lap of the membrane, along the whole edge of the sheet to be lapped
- Start to peel away the release film from half of the Hydobond GasTape and press down firmly through the top of the HydroBond-GB roll
- Ensuring that the Hydobond GasTape stays aligned all the way along the roll, continue to remove the release film whilst pressing down firmly on the top of the membrane to ensure a good bond. **NOTE:** In inclement conditions ensure the area is dry prior to application. In all situations, but especially when cold, the gentle use of a hot air gun favours a superior bond
- Unroll the next sheet of Hydobond-GB and locate over the previous roll to cover the standard water tight HydroBond taped edge
- Reaching underneath from one end, remove 2nd half of the Hydobond GasTape release film, and whilst ensuring that the sheets remain aligned, work along the length of the lap removing the remaining release film from half of the Hydobond GasTape roll whilst pressing down firmly on the top of the membrane to ensure a good bond
- Remove Hydobond Tape release film in the usual way. **NOTE:** the purpose of this tape is to eliminate any risk of poured concrete bridging the lap and must be done regardless of the fact that the Hydobond GasTape is adhered beneath
- It is always recommended that concrete continuity spacers be used to support the steel reinforcement and that where possible these are laid along the laps rather than perpendicular/across them

APPLICATION OF NEWTON HYDROBOND-LM

Where the formwork is removed and the HydroBond System is completed with the application of Newton 108 HydroBond-LM or Newton 109-LM, the liquid membrane lap to the Newton 403 HydroBond must be a minimum of 150 mm. Please read the installation instructions within the product data sheets.

LIMITATIONS

Horizontal installation surfaces should be free of excessive standing water, particularly where concrete under blinding is not utilised. Newton 403 HydroBond can be installed in most inclement weather conditions, providing the quality/accuracy of the installation is not affected e.g. 403 HydroBond floating, hydrophilic waterbars submersed, etc. Newton 403 HydroBond is not designed for unconfined above-ground waterproofing applications.

Newton 403 HydroBond is engineered for use under reinforced structural concrete rafts or slabs of 150mm thick or greater. Do not install 403 HydroBond in horizontal split-slab, plaza deck and roof applications that will receive a poured concrete wear surface or other solid topping.



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