

4131WR WPS RAWMAT™ BENTONITE TANKING

1. GENERAL

This section relates to the application of **Sealco Waterproofing Systems Ltd Rawmat™** pre-hydrated bentonite tanking system for basement foundation and vertical wall applications.

It is used:

- with concrete, concrete masonry and polystyrene/concrete masonry substrates
- in high hydrostatic applications used when basement waterproofing is critical such as below the water table or in large/complex constructions

1.1 RELATED WORK

Refer to ~ for ~.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:
BRANZ BU 397 Waterproofing basements

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Rawmat™ Product Manual (3rd Edition October 2007)
Standard detailed drawings
BBA Certificate No. 97/3337 (2nd Issue)

Manufacturer/supplier contact details

Company: **Sealco Waterproofing Systems Ltd**
Web: www.sealco.co.nz
Email: admin@sealco.co.nz
Telephone: 03 366 9495 (head office) or 0508 (SEALCO)
Northland, Auckland 027 5445532

Warranties

1.4 MANUFACTURERS MATERIAL WARRANTY

Provide a materials warranty in the suppliers standard form:

20 years: for materials
From: Date of completion of the application

1.5 WARRANTY - INSTALLERS

Installer's warranty for the system under normal environmental and use conditions against failure.

5 years: Execution warranty

Provide this warranty on the installer's standard form.

Requirements

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Sealco Waterproofing Systems Ltd system, or associated components and products.

1.7 QUALIFICATIONS

Waterproofing work to be carried out by licensed applicators approved by Sealco Waterproofing Systems Ltd.

- 1.8 PROJECT REGISTRATION
Contact Sealco Waterproofing Systems Ltd to confirm that the project has been registered.
Web: www.sealco.co.nz/register
Telephone: 03 - 366 9495 or 0508 (SEALCO)
If the project has not been registered, telephone and provide all required details.

Performance

- 1.9 PRE INSTALLATION MEETING
Convene a meeting between the applicator, contractor, all associated consultants and Sealco Waterproofing Systems Ltd to ensure all parties know what is required for effective performance of the system.
- 1.10 SPECIAL DETAILS
Where a standard detail does not exist, or if a standard detail cannot be applied, an approved alternative must be obtained from Sealco Waterproofing Systems Ltd before proceeding with the installation.
- 1.11 PRESSURE RATING
Obtain a written assurance from Sealco Waterproofing Systems Ltd that the waterproofing system, comprising membrane and jointing methods, is capable of sustaining the designated water pressure head. Refer to SELECTIONS for the designated water pressure head.
- 1.12 QUALITY ASSURANCE
Maintain quality necessary to assure that work is performed in accordance with this specification and the qualifying requirements of Sealco Waterproofing Systems Ltd.

Ensure that Sealco Waterproofing Systems Ltd's Quality Control sheets are completed fully and faithfully for each installation area.

2. PRODUCTS

Materials

- 2.1 BENTONITE TANKING MEMBRANE
Rawmat™ Type P pre-hydrated high density bentonite membrane manufactured from a high quality sodium bentonite clay all marked with the manufacturer's mark. Membrane to have minimum 7.9 kg/m² sodium bentonite.
- 2.2 WATER STOPS
Rawseal™ water stops (Rectangular CJ2025 profiles) manufactured from a high quality sodium bentonite clay all marked with the manufacturer's mark.

Accessories

- 2.3 NON RIGID PROTECTION SHEET
3mm plastic coreflute protection boards.
- 2.4 DRAINAGE PROTECTION SHEET
DrainV, comprised of a layer of geo-textile polypropylene fabric and a dimpled high density polyethylene (HDPE) membrane. Available in rolls 6mm thick, 2m wide x 20m long.
Draining material consists of needle-punched polypropylene (DrainV).

3. EXECUTION

Conditions

- 3.1 GENERALLY
Work and materials to Sealco Waterproofing Systems Ltd Rawmat™ Product Manual.

- 3.2 **LAYOUT**
If not detailed on the drawings, confirm the layout to suit site conditions and Sealco Waterproofing Systems Ltd specifications. Pre-plan the work to keep the number of membrane laps to an absolute minimum.
- 3.3 **DE-WATERING**
Maintain water level minimum 300mm below the level of the work area during the progress of the tanking work and until protective loading coats and walls are complete and fully set.
- 3.4 **DRAINAGE**
Install certified drainage system to remove water from foundations. Ensure drain is protected with a geotextile cloth to prevent from clogging with fines, and that it is correctly located. Ensure the drain is kept 150 mm away from the membrane and 200mm below the foundation/wall construction joint and that a polythene or corflute sheet is used as a barrier between the bentonite and the drainage metal.
- 3.5 **CHECK SUBSTRATE**
Check that the substrate will allow work of the required standard. Complete any remedial work identified before commencing any work. Substrate to comply with performance requirements of the NZBC.

Preparation

- 3.6 **PRE INSTALLATION MEETING**
Convene a meeting between the applicator, contractor, concrete supplier, all associated consultants and Sealco Waterproofing Systems Ltd to ensure all parties know what is required for effective performance of the system.
- Co-ordinate work to minimise the time membrane is left exposed.
 - Agree detail drawings.
 - Discuss the importance of concrete placement.
 - Discuss the importance of confinement importance - (both faces and all edges) no voids.
- 3.7 **STORAGE**
Store Rawmat™ membrane and Rawseal™ water-stops in the protective wrapping, and away from heat and direct sunlight until use. Return part rolls and part boxes to their wrapping until used again.
- 3.8 **SUBSTRATE CONDITION**
Ensure that the substrate is in a suitable condition to allow work of the required standard. Ensure compacted base is smooth, without voids or debris and compacted to 85% MP density. Blinding concrete substrates to be 50 mm thick with smooth finish and free from contaminants or foreign matter that may impair the performance of the waterproofing system. Substrates do not have to be dry. Check for live cracks in the concrete substrate and report for special detail.
- 3.9 **SUBSTRATE PREPARATION**
Carry out any remedial work required to substrate.
- 3.10 **PILE PENETRATIONS**
Where piles penetrate the over-site blinding or compacted sub-base, place Rawpaste mastic and Rawseal™ CJ2025 water-stop around perimeter of pile cap to dress piles. Neatly cut the Rawmat™ membrane around the pile and turn up the face of the pile to cover the CJ2025 fillet as a minimum. Place a fillet of Rawpaste mastic around the pile cap and extend out onto the Rawmat™ membrane. Refer to Sealco Waterproofing Systems Ltd details.
- 3.11 **INSTALL RAWSEAL™ WATER-STOP REBATES**
Water-stops must be located within a pre-formed rebate or nailed and held securely in place prior to pouring the concrete. Rebate to be a minimum 50 mm from the rebar.

- 3.12 **INSTALL RAWSEAL™ WATER-STOPS**
- Install Rawseal™ CJ2025 water-stop to all internal construction joints.
- Join lengths of water-stop by butting tightly and thumbing together to ensure a continuous water-stop is formed.

Installation

- 3.13 **WEATHER CONDITIONS**
Rawmat™ can be installed onto wet substrates and during inclement weather including rain. Ensure the membrane is not left exposed or in standing water.
- 3.14 **INSTALL RAWMAT™**
Install Rawmat™ with rolls staggered. Rolls to be laid out allowing for 100 mm side laps and 150 mm end laps. Install with the light polyester scrim in contact with the concrete substrate being waterproofed. Stagger rolls to prevent lap build-up and ensure laps remain intact while placing the confinement over the top.
- 3.15 **LAP TYPE P MEMBRANES**
Peel back the grey non-woven fabric of the lower sheet in the overlap to give bentonite to bentonite contact in all laps. Apply Rawpaste mastic at the overlaps to ensure an immediate seal is formed where hydrocarbon contamination is present in the site.
- 3.16 **FLOOR TO WALL JUNCTION**
Extend the floor slab membrane 150 mm beyond the perimeter of the footing. Protect this extended membrane from damage until floor-to-wall junction is installed and it can form a lap with the vertical membrane.
- 3.17 **INSTALL RAWSEAL™ CJ2025**
Prior to forming the floor-to-wall junction, join lengths of Rawseal™ CJ2025 to form a continuous length of fillet. Then place Rawseal™ CJ2025 fillet at the toe of the wall on the horizontal membrane and push tightly into the concrete water-stop recess. Refer to Sealco Waterproofing Systems Ltd specifications.
- 3.18 **INSTALL VERTICAL RAWMAT™**
Install vertical Rawmat™ Type P working from the base of the wall. Ensure sheet of Rawmat™ is placed over the CJ2025 fillet and extends 150 mm across the horizontal membrane. Apply vertical Rawmat™ with the white woven geotextile outermost facing the backfill and the thin perforated scrim side against the concrete. When installing onto precast panels, the membrane can be glued or mechanically fixed to Sealco Waterproofing Systems Ltd specifications.

When installing onto precast panels and there is insufficient access behind the panel to manually form the floor to wall junction, contact Sealco Waterproofing Systems Ltd for specific installation instructions. Ensure when the tilt slab panels that are seated on the shims, the bottom of the tilt slab panel is tightly pressure fitted onto the upper face of the Rawseal. Make sure the lower face of the Rawseal waterstop is compressed onto the foundation water-stop recess surface forming continuous compression between the panel underside and the foundation surfaces

Install wall membrane sheets horizontally around the structure. Fix with Hilti nails and washers at 500 mm centres. Nail 150 mm below top of the sheet. Fix joint by additionally nailing through the joint. Continue this fixing around the structure at this level before the next row of sheets is applied. Ensure the nails do not fire through the membrane and only sufficient pressure is applied to hold the surface of the membrane in place.

To fix subsequent rows, fix the upper sheet, allowing it to overhang the lower sheet 100 mm minimum. Fix joint by additionally nailing with Hilti nails and washers through the joint to secure. End laps to be 150 mm minimum.

- 3.19 **COVERING AND CONFINEMENT**
To prevent the membrane from drying out or swelling prematurely during continuous inclement weather cover Rawmat™ membranes the following day with concrete or if this is not possible with DPC sheeting.

- Confine horizontal installations with a minimum of 200 mm reinforced concrete.
- Confine vertical installations with a cohesive backfill comprising sand or natural soil that can be compacted to a minimum 85% MP. Backfill material to have a minimum of 25% fines, and gravel or stones larger than 15 mm must not be used. Concrete to be vibrated to ensure no voids. Confinement of both faces of the Rawmat and termination of all edges must be achieved - no voids. It is important the confining concrete does not form a slab curl condition at the perimeter edges, movement or cold joints.

3.20 BACK FILL

Ensure the quality of the back fill is such that the Rawmat™ membrane is not damaged and it allows uniform compaction and confinement of the membrane. Ensure backfill does not get behind the membrane during installation. Place backfill in layers and compact to a minimum of 85% Proctor every 600mm, from bottom to top of the backfill compacted area which confines the Rawmat.

3.21 PROTECTION

Ensure the Rawmat™ membrane is not damaged during backfilling. Where adequate backfill compaction cannot be achieved, provide confinement with a suitable rigid protection system.

Protection

3.22 PROTECT HORIZONTAL SURFACES

After laying is complete the membrane can be protected until the floor slab is poured by covering the tanking with a 50 mm layer of 15 MPa blinding concrete or DPC sheets. This situation arises when there is an extended delay between the membrane installation and the placement of the floor slab or where vehicles and other construction machinery is being taken over the membrane.

3.23 INSTALL NON RIGID PROTECTION SHEETS - COREFLUTE BOARD

Neatly install coreflute sheets with an overlap of 50mm and joints taped, mechanically fixing them to the vertical tanking to Sealco Waterproofing Systems Ltd requirements.

3.24 INSTALL PROTECTION SHEETS - DRAIN V

Install DrainV in accordance with manufacturer's instructions:

- Unroll rolls with geo-textile fabric facing the ground, overlapping the edges by at least 200mm. For greater protection join the two edges using bituBond Self Stick waterproof bituminous strips.
- Fix DrainV profile to the edge and nail it down with JNH 40 plugs or steel nails.
- Form a suitable water collection and drainage tube (Draincoil or similar) at the foot of foundation, then fill with free draining stone and 25% grit sand fines around the draincoil followed by compactable fill (prior to fixing ensure compatibility with wall waterproofing system).

Completion

3.25 SECTIONAL COMPLETION

As sections of the tanking are completed, arrange for inspection of the work before covering with protective sheets, walls, or slabs. Complete the Sealco Waterproofing Systems Ltd Quality Control Sheets, and provide to them for issuing the Materials Warranty.

3.26 ACCEPTANCE

- Arrange for an inspection of the completed work.
- Complete Sealco Waterproofing Systems Ltd Quality Control sheets and provide to them for the issuing of the Materials Warranty.
- Protect the membrane until completion of the contract works.

3.27 CLEAN UP

Clean up as the work proceeds.

3.28 LEAVE

Leave this work in a sound condition, free of any defect.

3.29 REMOVE
Remove debris, unused materials and elements from the site.

4. SELECTIONS

For further details on selections go to www.sealco.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

4.1 PRESSURE RATING
Designated water pressure head: ~ metres

Bentonite system

4.2 RAWMAT™ BENTONITE TANKING MEMBRANE
Location: ~
Supplier: Sealco Waterproofing Systems Ltd
Type/brand: Rawmat™
Membrane type: Type P, for walls and floor slabs when working on sub-base substrates

4.3 RAWSEAL™ WATER STOPS
Location: ~
Supplier: Sealco Waterproofing Systems Lt
Brand: Rawseal™
Type: Rawseal™ CJ2025, for internal construction joints

Accessories - protection

4.4 COREFLUTE PROTECTION SHEET
Location: ~
Supplier: Sealco Waterproofing Systems Ltd
Type/brand: Coreflute
Thickness: 3mm

4.5 DRAINAGE MEMBRANE PROTECTION SHEET
Location: ~
Supplier: Sealco Waterproofing Systems Ltd
Type/brand: Drain V
Thickness: 6mm