



BRANZ Appraised

Appraisal No. 517 [2013]

PROTECTOWALL® DPM MEMBRANE

Appraisal No. 517 [2013]

This Appraisal replaces BRANZ Appraisal No. 517 [2006] dated 3 July 2006.

Amended 21 December 2015.



BRANZ Appraisals

Technical Assessments of products for building and construction.



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Product

- 1.1 ProtectoWall® is a self adhesive damp-proof membrane [DPM], designed to be applied to the exterior face of basement retaining walls to prevent water vapour penetrating to the interior face in spaces where moisture may cause damage.
- 1.2 The product is supplied as self-adhering, cold-applied, polymer-rubber modified bitumen sheets in roll form.

Scope

- 2.1 ProtectoWall® has been appraised as a damp-proof membrane behind concrete masonry basement walls and under floor slabs complying with NZS 4229.
- 2.2 ProtectoWall® has also been appraised for use as a damp-proof membrane on buildings subject to specific design within the following scope:
 - where the design of the building will be the responsibility of the building designer; and,
 - with clean, sound, continuous substrates of insitu or precast concrete complying with NZS 3101 and AS/NZS 1170 or concrete masonry complying with NZS 4230 and 4210; and,
 - where the membrane is adequately protected against damage during backfilling and in service; and,
 - where subsoil drainage and free draining granular backfill has been placed behind basement walls.
- 2.3 The product must be installed by Marshall Innovations Limited Approved and Trained Installers.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 **In the opinion of BRANZ, ProtectoWall® if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:**
 - Clause B2 DURABILITY:** Performance B2.3.1 [a] not less than 50 years. ProtectoWall® meets this requirement. See Paragraph 10.1.
 - Clause E2 EXTERNAL MOISTURE:** Performance E2.3.3. ProtectoWall® meets this requirement. See Paragraphs 12.1 – 12.3.
 - Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. ProtectoWall® meets this requirement and will not present a health hazard to people.
- 3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

Technical Specification

4.1 Materials supplied by Marshall Innovations Limited are as follows:

- **ProtectoWall®** - A self-adhering sheet waterproofing membrane system consisting of a tough fabric reinforcement laminated between two layers of SBS (styrene-butadiene-styrene) modified rubberized asphalt. ProtectoWall® is tacky on both sides of the membrane providing adhesion to the substrate and an adhesive face to hold the protection board in place. The membrane is 1.5 mm thick, and supplied in rolls 900 mm wide x 15 m long.
- **Protecto Wrap #100 Primer** - A high-tack SBS rubber based primer for use on all surfaces (prior to the application of the membrane). Supplied in 1, 4 and 20 litre cans.
- **Protecto Wrap Detail Tape** - A conformable sheet membrane used for detailing around protrusions and footings. Supplied in 150 mm wide x 15 m long rolls.
- **JS 160H Mastic** - A rubberized, adhesive, liquid membrane used to seal all terminations, around all penetrations in the membrane and over all mechanical fastenings. Supplied in 310 ml tubes and 4 litre cans.
- **Pro-Drain 8** - A drainage/protection board used to protect the DPM from backfill material. Available in 1.2 m x 2.1 m sheets.

Handling and Storage

5.1 Handling and storage of all materials whether on or off site is under the control of the installer. Dry storage must be provided for all products and the membranes must be protected from sunlight and UV radiation. Rolls of membrane must be stored on end.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the ProtectoWall® membrane. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Substrate Design

- 7.1 Substrate design must be in accordance with the NZBC to a relevant standard, such as NZS 3101 for concrete and NZS 4210, NZS 4230 or NZS 4229 for concrete masonry.
- 7.2 The substrate must have a surface finish that is smooth, clean and free from defects or irregularities which may damage the membrane.

Control Joints

8.1 Where control or construction joints are formed in the substrate, Marshall Innovations Limited must be consulted for use of the membranes over these joints.

Backfilling and Drainage

- 9.1 The membrane must be protected against damage by the placement of a protection material between the membrane and the granular fill.
- 9.2 The minimum requirement for backfilling is that a granular, free-draining material is used with the top of the backfill capped with an impervious clay fill that may be covered with topsoil if required. The impervious capping and topsoil must slope at a minimum of 1:30 fall away from the wall.
- 9.3 A minimum 100 mm diameter subsoil perforated drainage pipe must be installed at the bottom of the wall. The pipe must be covered with a geotextile filter fabric, be laid at a minimum 1:200 fall and discharge to a drainage outlet. Provision for cleaning the pipe must also be provided.

Durability

Serviceable Life

- 10.1 ProtectoWall® is a suitable DPM material (modified bitumen sheet), therefore it is expected to have a serviceable life of at least 50 years provided it is installed and maintained in accordance with the Technical Literature and this Appraisal and is continually protected from sunlight and UV radiation.

Maintenance

- 11.1 Annual inspections must be made of the membrane top edge seal and protection, the backfill capping, and the drainage pipe to ensure all are functioning as originally designed.
- 11.2 If required, the drainage pipe must be cleared to remove any sediment or silt build-up. The slope of the backfill capping must be maintained at all times.

External Moisture

- 12.1 ProtectoWall® membrane, when installed in accordance with this Appraisal and the Technical Literature, will prevent water vapour from penetrating to the interior face of basement retaining walls in spaces where moisture may cause damage. The membrane has a vapour flow resistance of not less than 90 MN s/g.
- 12.2 The membrane self-adheres, and can be used to form sealed joints and to seal penetrations. The top edge of the membrane must be sealed to the wall as set out in the Technical Literature, and must be protected.
- 12.3 Building designers must ensure junctions with other membranes, such as at the floor/wall junction, form a waterproof joint. Junctions have not been assessed and are outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

- 13.1 Installation of the ProtectoWall® membrane must be completed by Marshall Innovations Limited Trained and Approved Installers.

System Installation

Substrate Preparation

- 14.1 All surfaces must be checked to ensure they are dry, clean, smooth and free from sharp edges, loose or foreign materials, oil, grease or other deleterious material that may affect adhesion or may damage the membrane.

Priming

- 14.2 Prior to application of the membrane all prepared surfaces must be primed with Protecto Wrap #100 primer at a rate of 5 m² per litre, and must be touch dry before proceeding.

Membrane Installation

- 14.3 Starting at the top of the wall, the membrane must be installed in accordance with the Technical Literature. Sheet edges must be overlapped a minimum of 50 mm as marked on the sheets. End laps must be a minimum of 100 mm. Where a horizontal joint is unavoidable, care must be taken to ensure the joint is lapped with the upper sheet over the lower sheet. Internal and external corners must be detailed using Protecto Wrap Detail Tape as detailed in the Technical Literature.

Backfilling

- 14.4 Protection material must be installed before backfilling. Backfilling must commence immediately after the membrane is installed to ensure the membrane is not left exposed to sunlight or UV radiation.

Inspections

- 14.5 The Technical Literature must be referred to during the inspection of membrane installations by building consent authorities and territorial authorities.

Health and Safety

15.1 Safe use and handling procedures for the membrane system are provided in the Technical Literature.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

16.1 The following testing of ProtectoWall® has been undertaken:

- Bursting strength, peel strength, tensile strength and elongation.
- Water absorption.
- Breaking strength, elongation, water resistance, low temperature flexibility, water vapour transmission, lap joint strength, crack bridging.
- Water resistance of Jiffy Seal 140/60.
- Fungus and micro-organism resistance, seam breaking strength, breaking strength, dimensional stability, waterproofness.
- Self sealability test on Jiffy Seal products.

Test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

17.1 A durability opinion has been given by BRANZ technical experts.

17.2 Practicability of installation has been assessed by BRANZ and found to be satisfactory.

17.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

18.1 The manufacture of the membrane and primer has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

18.2 The quality management system of the membrane and primer manufacturer, ProtectoWrap Company has been assessed by ICC Evaluation Service Inc and is covered in ES Report No. 1127.

18.3 The quality of materials supplied to the market is the responsibility of Marshall Innovations Limited.

18.4 Quality of installation on site is the responsibility of the installer.

18.5 Designers are responsible for the building design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of Marshall Innovations Limited.

18.6 Building owners are responsible for the maintenance of the membrane systems in accordance with the instructions of Marshall Innovations Limited.

Sources of Information

- NZS 3101: 2006 The design of concrete structures.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4210: 2001 Masonry construction materials and workmanship.
- NZS 4229: 2013 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230: 2004 Design of reinforced concrete masonry structures.
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.



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Amendments

Amendment No. 1, dated 15 April 2013.

This Appraisal has been amended to update Appraisal Holder details.

Amendment No. 2, dated 21 December 2015.

This Appraisal has been amended to update the available roll size of Protecto Wall Sheet Membrane, add an additional #100 Primer can size and to update the name of Protecto Wrap Detail Tape.



In the opinion of BRANZ, **ProtectoWall® DPM Membrane** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Marshall Innovations Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the technical literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Marshall Innovations Limited:**
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Marshall Innovations Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Marshall Innovations Limited** or any third party.

For BRANZ



Pieter Burghout
Chief Executive
Date of Issue:
23 January 2013