



BRANZ Appraised
Appraisal No.739 [2012]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
No. 739 (2012)**

STOPOREN BRICK VENEER CLADDING SYSTEM

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Product

1.1 The StoPoren Brick Veneer Cladding System is an external wall cladding system for use on single and two storey buildings where domestic construction techniques are used.

1.2 The system consists of autoclaved aerated concrete bricks (Poren bricks) installed using brick ties to form a 40-75 mm cavity. The coating system consists of a minimum 5 mm thickness of fibreglass mesh reinforced synthetic resin plasters and synthetic resin finishing plasters applied to the Poren bricks. The plaster system is finished with the Sto exterior paint system. The top coat plasters can be textured to give different finished appearances.



Scope

2.1 The StoPoren Brick Veneer Cladding System has been appraised for use as a veneer cladding system for buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1 Paragraph 1.1 in terms of floor area, with a maximum of two stories; and,
- with a maximum height of brick veneer of 7.5 m above the supporting foundation, except that at gable ends and some piers this height may be up to 10.0 m, and a maximum height of 4.0 m above a roof line or 7.5 m above an adjacent building foundation, whichever is the lesser; and,
- with a depth of cavity of between 40 mm and 75 mm; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1 Table 2; and,
- with timber framing constructed on slab-on-ground in accordance with NZS 3604 for brick veneer and/or concrete masonry foundation constructed in accordance with NZS 4229; and,
- situated in NZS 3604 Wind Zones up to and including 'Extra High'.

2.2 The StoPoren Brick Veneer Cladding System is appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *(The Appraisal of the StoPoren Brick Veneer Cladding System relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone.)*

2.3 Installation of plasters and accessories supplied by Stoanz Limited and approved applicators must be carried out only by Stoanz Limited approved applicators.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the StoPoren Brick Veneer Cladding System 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 B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. The StoPoren Brick Veneer Cladding System meets the requirements for loads arising from self-weight, earthquake (out of plane loading), wind, impact and creep and shrinkage [i.e. B1.3.3 (a), (f), (h), (j) and (q)]. See Paragraphs 11.1 – 11.9.

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years, B2.3.1 (c) 5 years and B2.3.2. The StoPoren Brick Veneer Cladding System meets these requirements. See Paragraphs 12.1 – 12.4.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The StoPoren Brick Veneer Cladding System meets this requirement. See Paragraphs 16.1 – 16.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The StoPoren Brick Veneer Cladding System 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 System components and accessories supplied by Stoanz Limited for the StoPoren Brick Veneer Cladding System are:

Poren Bricks

- Poren bricks are 75 mm thick, manufactured from autoclaved aerated concrete with an approximate density of 52 kg/m³. Poren bricks are supplied 600 mm long x 200 mm wide.

Poren Lintels

- Poren steel reinforced lintels are 75 mm thick, manufactured from autoclaved aerated concrete. Poren lintels are supplied 2400 mm long x 200 mm high.

StoPoren Brick Veneer Cladding System Plasters and Primers

- *StoPoren Mortar* is a polymer modified, cement-based adhesive mortar comprising graded sand and additives. The mortar is supplied in 25 kg bags and is mixed on site with clean drinking water. It is trowel applied in a 10 mm +/- 2 mm layer to joint adjacent bricks and encase the brick tie. The StoPoren Mortar is tooled flush with the face of Poren bricks.
- *Protectosil WS205 Stay Dry* is a milky white, ready to use silane sealer available in 20 litre containers. It is low pressure spray or brush and roller applied to dry Poren bricks prior to commencing plastering.
- *StoPoren Plaster* is a polymer-modified, white cement-based plaster comprising graded sand and adhesives. The plaster is supplied in 25 kg bags and mixed on site with clean water. It is trowel applied as a base coat in a 2.5 mm thick layer, followed by the embedment of fibreglass mesh reinforcement in the outer surface. An additional 1.5 mm layer is applied to fully encase the mesh.
- *Stoplex W* is a yellow tinted, ready to use, acrylic-based primer available in 10 litre containers. It is brush and roller applied to dry StoPoren Plaster surfaces prior to the application of the finishing plaster.

- *Stolit MP/K* is a plasticiser free, coloured, ready-to-use, polymer-modified, cement free finishing plaster with a 1, 1.5 or 2 mm grain size or MP sponge finish. It is supplied in 25 kg pails and is trowel-applied to an approximate thickness of 1 - 2 mm.
- *Sto Flexyl* is a cementitious waterproof paste. It is used as a waterproofing membrane over plastered reinforced concrete balustrades and fixing blocks. Sto Flexyl is supplied in 18 kg pails.

StoPoren Brick Veneer Cladding System Paints

- *StoColor Maxicryl* is a ready-to-use, tintable, acrylic exterior paint system for application over finishing plasters. It is supplied in 15 litre pails, and may be brush, roller or spray applied. The paint colour selected must have a light reflectance value (LRV) of 20% minimum regardless of gloss value.
- *StoLotusan Color G* is a ready-to-use, tintable, special dirt and algae resistant mineral silicone resin exterior paint system for application over finishing plasters. It is supplied in 15 litre pails, and may be brush, roller or spray applied. The paint colour selected must have a light reflectance value (LRV) of 20% minimum regardless of gloss value.
- *StoLastic Color* is a ready-to-use, tintable, satin matt, acrylic exterior paint system paint for application over finishing plasters. It is supplied in 15 litre pails, and may be brush, roller or spray applied. The paint colour selected must have an LRV of 20% minimum regardless of gloss value.

Accessories

- Poren Lintel Shelf Bracket – hot-dip galvanised steel angle 75 mm high x 100 mm deep x 310 mm wide to support Poren Lintels at the lintel ends when not able to be supported over 200 mm on adjacent brick work. The brackets are fixed to the timber lintel behind with M10 x 75 mm hot dip galvanised coach screws.
- Shelf angle – hot-dip galvanised steel angle 75 mm high x 100 mm deep to support Poren bricks above the roof line on 2-storey construction. The shelf bracket is fixed to the timber studs behind with M10 x 75 mm hot dip galvanised coach screws at maximum 600 mm centres.

(Note: Coastal locations as defined in NZS 3604 as Zone D and some Microclimatic conditions such as geothermal areas require corrosion proof lintels, brick ties and screws as per NZBC Acceptable Solution E2/AS1 Tables 18C and 18D.)

- Reinforcing mesh - alkali-resistant fibreglass mesh with a nominal mesh size of approximately 6.0 x 6.0 mm and an approximate weight of 165 g/m², or with a nominal mesh size of approximately 4.0 x 4.0 mm and an approximate weight of 165 g/m².
- uPVC components – StoPoren uPVC head flashing, StoPoren joinery flashing, drip edge and control joint flashing.
- Sto pre-meshed corner beads – uPVC and fibreglass mesh corner mouldings.

4.3 Accessories used with the plaster systems which are supplied by the approved applicator are:

- Brick ties and screw fixings – Grade EM or better ties and screws complying with AS/NZS 2699.1.
- Flexible sealant - sealant complying with NZBC Acceptable Solution E2/AS1, or sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.

4.4 Accessories used with the StoPoren Brick Veneer Cladding System which are supplied by the building contractor are:

- Flexible wall underlay – paper or underlay complying with NZBC Acceptable Solution E2/AS1, Table 23, or breather-type flexible underlays covered by a valid BRANZ Appraisal for use as wall underlays on buildings situated in NZS 3604 wind zones up to, and including, Very High.

- Flexible wall underlay support – polypropylene strap for securing the flexible building underlay in place and preventing bulging of the bulk insulation into the drainage cavity.
- Rigid wall underlay – rigid sheathing complying with NZBC Acceptable Solution E2/AS1, Table 23, or rigid sheathing covered by a valid BRANZ Appraisal for use as rigid air barriers on buildings situated in NZS 3604 wind zones up to, and including, Extra High.
- Flexible sill and jamb tapes – flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
- Joinery head flashings – as supplied by the joinery manufacturer or contractor.
- Window and door trim cavity air seals – air seals complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6, or self expanding, moisture cure polyurethane foam air seals covered by a valid BRANZ Appraisal for use around window, door and other wall penetration openings.

Packaging, Handling and Storage

5.1 Handling and storage of all materials supplied by Stoanz Limited or the approved applicators, whether on or off site is under the control of Stoanz Limited approved applicators. Poren bricks and lintels must be handled with care to avoid physical damage, particularly to corners and edges, and must be stored so that they are protected from the weather. Dry storage must be provided for the fibreglass mesh and bags and pails of plaster mix. uPVC flashings and profiles must be protected from direct sunlight and physical damage, and should be stored flat and under cover. Liquid components must be stored in frost-free conditions.

5.2 Components such as brick ties, lintel shelf brackets and shelf angles must be handled so as to avoid damage. They must also be stored in dry locations protected from the weather.

5.3 Handling and storage of all materials supplied by the building contractor, whether on or off the site is under the control of the building contractor. Materials must be handled and stored in accordance with the relevant manufacturer's instructions.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ Website for details of the current Technical Literature for the StoPoren Brick Veneer Cladding System. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained within the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

7.1 The StoPoren Brick Veneer Cladding System allows brick veneer cladding to be erected to a height greater than that specified by NZBC Acceptable Solution E2/AS1, Section 9.2.

7.2 This system also allows the use of the veneer supported above roof lines on steel shelf angles coach screw fixed to the wall framing (see Paragraph 11.7).

7.3 The StoPoren Brick Veneer Cladding System is designed for use with a veneer cavity of 40-75 mm.

Framing

Timber Treatment

8.1 Timber wall framing behind the StoPoren Brick Veneer Cladding System must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber Framing

8.2 Timber framing must comply with NZS 3604 for buildings or parts of a building within the scope limitations of NZS 3604. Buildings or parts of a building outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and the AS/NZS 1170 series. Studs must be at maximum 600 mm centres in Low, Medium, High and Very High Wind Zones and at maximum 400 mm centres in the Extra High Wind Zone. Dwargs must be fitted flush between the studs at maximum 800 mm centres.

8.3 The maximum span of any external opening where the veneer is supported over the opening must be in accordance with the lintel tables in the Technical Literature.

8.4 The framing must have a maximum moisture content of 24% at the time of the cladding installation. *(If Poren bricks are fixed to framing with a moisture content of greater than 24% problems may occur at a later date due to excessive timber shrinkage.)*

General

9.1 Ventilation openings through the Poren brick perpend at the base of the wall must provide a ventilation opening area of 1000 mm² per lineal metre of wall in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3 (b).

9.2 The ground clearance to finished floor levels as set out in NZS 3604 must be adhered to at all times. At ground level, paved surfaces, such as footpaths, must be kept clear of the bottom edge of the cladding system by a minimum of 50 mm, and unpaved surfaces by 100 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Table 18.

9.3 At balcony, deck or roof/wall junctions, the bottom edge of the cladding system must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 35 mm in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.6.

9.4 All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for wind zones up to and including Very High, and rigid underlays for buildings in the Extra High wind zone. Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the brick tie fixing length must be increased by a minimum of the thickness of the underlay.

9.5 Where the system abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Control Joints

10.1 Vertical control joints must be constructed in accordance with the Technical Literature, and be provided at maximum 6 m centres; aligned with any control joint in structural framing or foundation; where the height of the veneer changes by more than 20%; or where the system abuts different cladding types. *(Note: The design of vertical control joints where the system abuts different cladding types is outside the scope of this Appraisal and is the responsibility of the designer – see Paragraph 9.5.)*

Structure

Mass

11.1 The mass of the StoPoren Brick Veneer Cladding System is approximately 55 kg/m² at equilibrium moisture content, therefore it is considered a medium wall cladding in terms of NZS 3604.

Impact Resistance

11.2 The system has adequate resistance to impact loads likely to be encountered in normal residential use. The likelihood of impact damage to the system when used in light commercial type situations should be considered at the design stage, and appropriate protection such as the installation of barriers or bollards should be provided for vulnerable areas. *(Note: Additional coats of reinforced plaster or a heavier grade mesh can be used to increase impact resistance. This has not been assessed and is outside the scope of this Appraisal.)*

Wind Zones

11.3 The system is suitable for use in all Wind Zones of NZS 3604 up to, and including, 'Extra High'.

Foundations

11.4 Foundation systems supporting the StoPoren veneer must consist of concrete slab-on-ground systems complying with either NZS 3604 or NZS 4229 for brick veneer, or to specific engineering design.

Veneer Height

11.5 The maximum permitted height of veneer for the StoPoren Brick Veneer Cladding System is 7.5 m above its foundation support, except that at gable ends and some piers this height may be up to 10.0 m. Where veneer is above roofs, the maximum permitted height is 4.0 m above the veneer roof-line support, or 7.5 m above an adjacent building foundation, whichever is the lesser.

Wall Bracing Requirements

11.6 Bracing requirements of walls may be calculated by using the prescribed tables in NZS 3604 for medium weight wall claddings.

Supporting Poren Bricks Above Roof Lines

11.7 Shelf brackets must be used to support Poren bricks above a roof line where no direct foundation support is available. The shelf bracket must be fixed to the timber studs behind with M10 x 75 mm hot dip galvanised coach screws at maximum 600 mm centres.

Poren Lintels

11.8 Poren lintels are used to span clear openings between Poren brick panels to support Poren bricks above. The lintels must be seated 200 mm onto the Poren brick veneer at each side of the opening. Where the opening is wider than the lintel length, Poren shelf brackets must be used at junctions between the Poren lintels. Refer to the Technical Literature for Poren lintel layout drawings and connection details.

Poren Brick Ties

11.9 The Poren bricks are supported laterally by the veneer ties fixed to the framing. The ties must be at least Grade EM and fully embedded in the StoPoren Mortar and must be installed at maximum 600 mm horizontal centres and maximum 400 mm vertical centres (every second course).

Durability

Serviceable Life

12.1 The StoPoren Brick Veneer Cladding System meets the performance requirements of NZBC Clause B2.3.1 (b), 15 years for the cavity system, Poren Bricks and plaster finish, and the performance requirements of NZBC Clause B2.3.1 (c), 5 years for the exterior paint system.

12.2 The StoPoren Brick Veneer Cladding System is expected to have a serviceable life of at least 30 years provided the system is maintained in accordance with this Appraisal and the Poren bricks, Poren lintels, brick ties and fixings and plaster are continuously protected by a weathertight coating and remain dry in service.

12.3 Coastal locations can be very corrosive to fasteners, especially locations within distances of up to 500 m from the sea including harbours, or 100 metres from tidal estuaries and sheltered inlets, and otherwise as shown in NZS 3604 Figure 4.2. These coastal locations are defined in NZS 3604 as Zone D. In Zone D, brick ties must be Grade 316, 316L or 304 stainless steel. Brick ties outside Zone D must be protected in accordance with NZBC Acceptable Solution E2/AS1 Table 18C. Lintel shelf brackets and shelf angles must be protected in accordance with NZBC Acceptable Solution E2/AS1 Table 18D for the relevant Corrosion Zone.

12.4 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres, and contamination from agricultural chemicals or fertilisers can convert a mildly corrosive atmosphere into aggressive environments for fasteners. The protection of fixings for brick ties and shelf angles in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604 Paragraph 4.2.4, and is outside the scope of this Appraisal.

Maintenance

13.1 Regular maintenance is essential to ensure the performance requirements of the NZBC are continually met and to ensure the maximum serviceability of the system.

13.2 Annual inspections must be made to ensure that all aspects of the cladding system, including the paint coating system, plaster, flashings and any sealed joints remain in a weatherproof condition. Any cracks, damaged areas or areas showing signs of deterioration which would allow water ingress, must be repaired immediately. Sealant, paint coatings and the like must be repaired in accordance with the sealant or Stoanz Limited's instructions.

13.3 Although the paint system is designed as a special dirt and algae resistant type, regular cleaning (at least annually) is still recommended to remove any grime, dirt and organic growth that may have accumulated, and to maximise the life and appearance of the coating. Grime may be removed by brushing with a soft brush, warm water and detergent. The paint system must be recoated at approximately 5-10 yearly intervals in accordance with Stoanz Limited's instructions.

13.4 Minimum ground clearances as set out in this Appraisal and the Technical Literature must be maintained at all times during the life of the system. *(Failure to adhere to the ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of the system.)*

Control of External Fire Spread

14.1 The StoPoren Brick Veneer Cladding System is considered to meet the performance provisions of NZBC C3.3.5 for use as an external wall cladding system when restricted to:

- Single storey buildings 1 m or more from the boundary for all purpose groups.
- Buildings up to 7 m high, 1 m or more from the boundary, for all purpose groups other than SC and SD.
- Fully sprinklered buildings up to 10 m high, 1 m or more from the boundary for all purpose groups other than SC, SD, SA and SR.
- Buildings containing purpose group SH, with a building height less than 10 m and located 1 m or more from the boundary.

(Note: The scope of this Appraisal limits building heights (refer to Paragraph 2.1). The building heights referenced in Paragraph 14.1 above are as defined in the Definitions Section of the Fire Safety Clauses of the NZBC.)

Outbreak of Fire

15.1 The StoPoren Brick Veneer Cladding System must be separated from chimneys and flues in accordance with the requirements of NZBC Acceptable Solution C/AS1 Part 9 for the protection of combustible materials.

External Moisture

16.1 The StoPoren Brick Veneer Cladding System, when installed in accordance with this Appraisal and the Technical Literature, prevents the penetration of moisture that could cause undue dampness or damage to building elements.

16.2 The cavity must be sealed off from the roof and sub-floor space to meet compliance with NZBC E2.3.5.

16.3 The StoPoren Brick Veneer Cladding System allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet compliance with NZBC Clause E2.3.6.

16.4 The details given in the Technical Literature for weather sealing are based on the design principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing joinery and wall interfaces as shown in the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Appraisal and are the responsibility of the designer for compliance with the NZBC.

16.5 The use of the StoPoren Brick Veneer Cladding System where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirement for junctions, penetrations, etc to remain weather resistant.

Internal Moisture

17.1 The StoPoren Brick Veneer Cladding System alone does not meet NZBC Acceptable Solution E3/AS1, Paragraph 1.1.1(a). Buildings must be constructed with an adequate combination of thermal resistance and ventilation, and space temperature must be provided to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate.

Water Vapour

17.2 The StoPoren Brick Veneer Cladding System is not a barrier to the passage of water vapour, and when correctly installed will not create or increase the risk of moisture damage resulting from condensation.

Installation Skill Level Requirement

18.1 Installation and finishing of components and accessories supplied by Stoanz Limited and its approved applicators must be completed by trained applicators, approved by Stoanz Limited.

18.2 Installation of the accessories supplied by the building contractor must be completed by tradespersons with an understanding of brick veneer construction, in accordance with the instructions given within the StoPoren Brick Veneer Cladding System Technical Literature and this Appraisal.

System Installation

Building Underlay and Flexible Sill and Jamb Tape Installation

19.1 The selected building underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the rest of the StoPoren Brick Veneer Cladding System. Flexible building underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75mm minimum at horizontal joints and 150mm minimum over studs at vertical joints. Generic rigid sheathing materials must be installed in accordance with NZBC Acceptable Solution E2/AS1 and be overlaid with a flexible wall underlay. Proprietary systems shall be installed in accordance with the manufacturer's instructions. Particular attention must be paid to the installation of the building underlay and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.

Aluminium Joinery Installation

19.2 Aluminium joinery and associated head flashings must be installed by the building contractor in accordance with the Technical Literature. A 7.5-10 mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.

StoPoren Brick Veneer Cladding System

19.3 The system must be installed in accordance with the Technical Literature by a Stoanz Limited approved applicator.

19.4 The StoPoren plaster system must only be applied when the air and substrate temperature is within the range of +5°C to +30°C. A curing time of 5 to 7 days must be allowed after laying the Poren bricks before application of the StoPoren plaster system.

Inspections

19.5 The Technical Literature must be referred to during the inspection of the StoPoren Brick Veneer Cladding System installations.

Health and Safety

20.1 Cutting of Poren bricks and lintels must be carried out in well ventilated areas, and a dust mask and eye protection must be worn.

20.2 When power tools are used for cutting, grinding or forming holes, health and safety measures must be observed because of the amount of dust generated.

20.3 Safe use and handling procedures for the components that make up the StoPoren Brick Veneer Cladding System are provided in the relevant manufacturer's Technical Literature.

Basis of Appraisal

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

Tests

21.1 The following testing has been completed by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for the StoPoren Brick Veneer Cladding System was based on evaluation of all details within the scope and stated within this Appraisal and testing of the StoTherm Cavity System to E2/VM1. The testing assessed the performance of the window head, jamb and sill details, meter box head, jamb and sill details, vertical control joints, internal and external corners. The StoPoren Brick Veneer Cladding System follows the same flashing and weathertightness design principles as the StoTherm Cavity System. In addition to the weathertightness test, the details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of NZBC Acceptable Solution E2/AS1 for brick veneer cladding.
- BRANZ expert opinion on NZBC B1 code compliance for the StoPoren Brick Veneer Cladding System was based on testing and evaluation of the following properties; differential movement, mortar/brick bond, brick tie strength, internal shear resistance, lintel bending resistance and lintel support.
- Durability testing of the Poren bricks and lintels. The testing included compressive strength, length change during moisture movement, corrosion protection of steel reinforcement and mineralogy by x-ray diffraction crystallography.

Other Investigations

22.1 Structural and durability opinions have been provided by BRANZ technical experts.

22.2 The manufacturer's Technical Literature has been examined by BRANZ and found to be satisfactory.

22.3 Site inspections were carried out by BRANZ to assess methods used for construction of the StoPoren Brick Veneer Cladding System and to inspect completed systems.

Quality

23.1 The manufacture of the plasters and paints 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.

23.2 The quality management system of the plaster and paint manufacturer, Sto AG, has been assessed and registered as meeting the requirements of ISO 9001: 2008.

23.3 Sto External Wall Insulation Systems are the subject of a current British Board of Agrément (BBA) Certificate No 95/3132 and the manufacture of the systems continues to be checked by the BBA during the validity period of the Certificate. Plasters and paints used within the StoPoren Brick Veneer Cladding System and imported by Stoanz Limited are covered by the BBA Certificate.

23.4 The manufacture of the Poren bricks and lintels has been examined by an agent of BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

23.5 The quality of materials, components and accessories supplied by Stoanz Limited are the responsibility of Stoanz Limited.

23.6 Quality on site is the responsibility of the Stoanz Limited approved applicators.

23.7 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and joinery, building wraps, flashing tapes, air seals and joinery head flashings in accordance with Stoanz Limited's instructions.

23.8 Building owners are responsible for the maintenance of the StoPoren Brick Veneer Cladding System in accordance with Stoanz Limited's instructions.

Sources of Information

- AS/NZS 1170 Series - Structural design actions.
- AS/NZS 2699.1: 2000 Built-in components for masonry construction – Wall ties.
- NZS 3603: 1993 Timber structures standard.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4210: 2001 Masonry construction: Materials and workmanship.
- NZS 4211: 2008 Specification for performance of windows.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (Amendment 5, 1 August 2011).
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition (Amendment 12, 10 October 2011).
- The Building Regulations 1992.



BRANZ

In the opinion of BRANZ, **StoPoren Brick Veneer Cladding System** 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 **Stoanz 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. **Stoanz 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 **Stoanz 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 **Stoanz Limited** or any third party.

For BRANZ

P Burghout
Chief Executive

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