



## **STOPOREN BRICK VENEER CONSTRUCTION**

### **STOPOREN PLASTER ON POREN BRICK VENEER SPECIFICATION**

BRANZ Appraisal No 739 (2011) - ACAD Details [www.sto.co.nz](http://www.sto.co.nz) building with Sto

#### **Project:**

#### **Prepared for:**

#### **StoPoren Brick Veneer Construction**

This specification details the construction of the **Poren Brick Veneer** and **StoPoren Plaster System** incorporating; **Poren Brick Veneer on 40mm min Cavity Construction** sealed with **S-Protect WS 205** stay dry sealer, **StoPoren** meshed basecoat plaster, primed with **Stoplex W** sealer, finished in selected **Stolit K** coloured finishing render coated with **StoColor Maxicryl** facade paint, supported by timber frame construction built to the requirements of NZBC Acceptable Solution E2/AS1.

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## **1. CONSTRUCTION**

### **Responsibility**

All work in this section shall be the responsibility of the Main Contractor, unless otherwise expressly agreed. The Main Contractor is to ensure that he or she is fully conversant with all Sto ACAD installation and fixing details (see [www.sto.co.nz](http://www.sto.co.nz) – Building with Sto) and the Main Contractor's responsibilities before works commence. The Main Contractor is to be responsible for all liaison with the various sub contractors to ensure that all items relating to weather tightness of joints or connections affecting the Sto Plaster System are strictly in accordance with Sto ACAD standard or project specific details, i.e. items such as dissimilar materials junctions, electrical wiring, flashings, plumbing etc or any items that are adjacent or penetrate the substrate. The main contractor shall be responsible for ensuring all joinery is installed in accordance with Sto details by others before the Sto System has commenced.

A Sto QA Compliance Form is required to be filled out by the various parties involved for the Sto Warranty.

### **Timber Frame**

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 1170series. Studs must be at maximum 600 mm centres in Low, Medium, High and Very High Building Wind Zones and maximum 400 mm centres for Extra High Wind Zones and specifically designed buildings. Dwangs must be fitted flush between the studs at maximum 800 mm centres. All framing shall be true in vertical and horizontal planes with particular attention to intersections of top plate/floor joists/bottom plate in multi-storey construction. Adequate timber framing & blocking shall be provided by the Main Contractor to facilitate membrane up stands and exterior fixtures. The timber grade and level of treatment shall be in accordance with the latest requirements contained in NZBC Acceptable Solution B2/AS1 and NZS 3602, generally a minimum treatment level of H1.2 and an overall maximum moisture content of 24% prior to the cladding being installed. A concrete foundation is required for brick construction with a minimum 50mm high rebate and a minimum height of 150mm to unpaved ground or 100mm to paved surfaces from the top of the rebate.

### **Poren Brick Timber Lintel Spans**

See StoPoren ACAD details for **Pryda or Mitek Fitch Beam span tables** to meet NZS 3604.

**Note;** Timber or laminated timber beams can be used but must be specifically engineered for the load and span.

### **Wall insulation**

NZBC Acceptable Solution H1/AS1 or NZBC Verification Method H1/VM1 can be used for housing, communal residential, communal non-residential and commercial buildings. For buildings with a glazing area of 30% or less of the total wall area, the minimum wall R-values required for non-solid construction are: Climate Zone 1 & 2 – R 1.9 and Climate Zone 3 – R 2.0. The Thermal resistance of building elements is verified by using NZS 4214. The BRANZ House Insulation Guide Fourth Edition provides thermal resistances of common building elements based on calculations from NZS 4214.

### **Wall Underlay**

A flexible wall underlay is suitable for use in NZS 3604 Wind Zones up to, and including, Very High. A rigid underlay is required in Extra High Wind Zones and specific design wind pressures. A wall underlay meeting the requirements of E2/AS1 shall be installed in strict accordance with the manufactures instructions. The wall underlay shall always be returned into the recesses of all openings and double lapped and flashing taped as per E2/AS1, WANZ or a BRANZ appraised wrap specification.

Rigid wall underlay - Plywood or fibre cement sheet complying with NZBC Acceptable Solution E2/AS1 Table 23 or rigid sheathing materials covered by a valid BRANZ Appraisal for use as a rigid air barrier system. **Note:** Ensure any items requiring fixing or penetrating the timber frame such as fixing brackets etc are installed and flashing taped onto the building underlay in accordance with E2/AS1.

### **Aluminum Joinery & Head Flashings**

The Aluminium joinery shall be fixed before the installation of the bricks.

All windows, doors etc shall be fitted prior to installation of the bricks by the appointed window installer positioned to sit between 10mm and 20mm into the brick reveal line (cavity + 10 - 20mm). Where a WANZ joinery support bracket is used ensure that it finishes 10mm short of the joinery jambs. The proprietary aluminium head flashing is required to have a minimum 35mm up stand, 15 degree slope, sit 2 x 10mm past the jambs (20mm total to cover the StoPoren Jamb flashings), have minimum 10mm stop ends that end in the cavity and 10mm cover over the joinery head. All Joinery is fitted before the Poren Bricks are installed and the **StoPoren Sill & Jamb flashings and proprietary aluminium head flashing** must be fitted as the bricks are installed. **Note** ensure the joinery edges are clean before adhering flashings in place and the head flashing up stand is flashing taped to the wall underlay. The **Sto Adjustable foot tray with the extension** leg is fitted at the flashing line for the **Poren Lintel**.

### **Timber Frame Shrinkage**

An allowance must be made for timber frame shrinkage to the solid brick veneer. Generally allow 6.0 to 8mm at soffits that are filled with a polyurethane adhesive foam.

### **Penetrations**

Penetrations such as waste pipes and fixing brackets shall be flashed with flashing tape to the wall underlay or the underlay backed by min 75mm blocking and the exterior pipe finished with a flange sealed in accordance with E2/AS1 Fig 68. All penetrations through the bricks shall be adequately sealed using MS Sealant installed over a backer rod. All electrical wiring etc shall only penetrate the cladding system with the appropriate sized uPVC conduit installed at minimum 5° downwards rake. Plumbing piping should be set at a downwards rake and sealed using MS Sealant before plastering.

### **NOTE: MAIN CONTRACTOR & ALL SUB TRADES INVOLVED IN ANY EXTERIOR WORK**

**All Details must be in strict accordance with E2/AS1 and Sto standard or project specific details**

## 2. POREN BRICK CONSTRUCTION

### Responsibility

All the work in this section relating to the **StoPoren Plaster System** shall be the responsibility of the **Sto Contractor** including StoPoren flashings as required. The laying of the **StoPoren Bricks** is to be undertaken by a licensed building practitioner (LBP) brick layer who shall sign off the finished brick work on completion. The contractors must ensure adequate masking / protection of all adjacent dissimilar materials is undertaken before commencing.

### General

The **StoPoren Brick & StoPoren Plaster System** installation incorporates the following; **Poren Brick Veneer** installation, **S-Protect WS 205 stay dry** sealer **StoPoren meshed** basecoat plaster, primed with **Stoplex W** sealer finished in selected **Stolit K or MP** coloured finishing render coated in **StoColor Maxicryl** facade paint.

### Materials

#### Poren Bricks & Lintels

#### Poren Mortar

#### S-Protect WS 205 stay dry

#### Stoplex W sealer

#### StoColor Maxicryl facade paint

#### Sto uPVC joinery flashings, drip edges, S/S angles, pre meshed corners and control joints

#### 310mm Poren Shelf brackets

#### StoPoren PVC Lintel Heads or Drip Edges

#### StoPoren meshed basecoat plaster

#### Stolit K or MP coloured finishing render

#### StoFlexyl waterproofing

### Poren Brick Installation (600 x 200 x 75)

Install the **Poren Bricks** with a 5 to maximum 20mm overhang over the concrete foundation rebate (recommended rebate width minimum 125mm) to achieve a minimum 40mm cavity (maximum 75mm) from the supporting timber frame constructed to the requirements of NZS 3604. Reinforcement, Brick ties (minimum Grade EM), foundation weep holes (1000mm<sup>2</sup> per lineal metre – min 8 x 75mm @ 600mm centre's) and mortar joints shall be made in strict accordance with the project specifications, drawings and Sto ACAD design and installation details. In particular the bricks shall be laid true, in both vertical and horizontal planes bedded in running bond **StoPoren mortar** with all joinery and services cut outs correctly made using **Poren Brick Lintels** or cladding infill's over any openings. Mortar joints should be 10mm+/-2mm tooled flush finish with the bricks squared off the foundation on a mortar course of up to 20mm. Suitable corrosion proof brick ties are required to be fully embedded in the mortar joints and installed minimum half way through the brick (max 15mm from exterior face) extending across the cavity to be screw fixed into the framing by minimum 35mm at approximately 5 per square metre - maximum 600mm centre's longitudinally (every stud) & minimum 400mm vertically (every second course) including 2 @ maximum 150mm from control joint centres or as per the project specific details. As required install snake wire reinforcing at 800 centre's on corners, above large joinery openings, across narrow widths and at stress points. Care must be taken to avoid dropping mortar into the cavity by the employment of protection boards and cleaning of wash out openings at least daily to remove any mortar droppings. All bricks should be cut neatly with sills laid at a minimum 15 degrees incorporating a 30 - 50mm overhang if required. A curing time (normally 5/7days weather dependant) shall be allowed after placement, for curing and stabilization to take place, before application of the **StoPoren Plaster System**. All Maximum Tolerances shall be in strict accordance with NZS 4210: 2001 2.7.1.4 Table 2.2, i.e. No more than 3mm surface alignment deviation over a 1200mm radius. The Poren bricks shall be free of all surface contaminants and be dry enough to accept a sealer before plastering commences. The Main Contractor is to ensure that any areas or details adjacent to the bricks have been adequately waterproofed or flashed to avoid any water migration behind the system.

### Coastal Locations

Coastal locations as defined in NZS 3604 as salt spray zone D and some Microclimatic conditions such as geothermal areas require corrosion proof lintels, Brick ties and screws as per E2/AS1 table 18C & D

The information contained in this Specification is based on our experience and testing and represents the latest information available at the date of production. No responsibility is taken for uses to which this information may be put, but we advise that where application of products and processes is in complete conformity with this specification an appropriate warranty is available. We reserve the right to alter or update information parameters and formulations at any time without prior notice.

### **Poren Steel Reinforced Lintels**

**Poren Lintels** are available in 200 x 75 x 2400mm size to span openings up to 2000mm unsupported allowing for the minimum 200mm lintel / brick support on either side of the opening with two brick ties 150mm apart at the joints. Where openings are larger than 2000mm the **Poren Shelf Bracket** (galvanized 75h x 100d x 310mm brackets) are to be fixed to timber lintels using M10 x 75mm galvanized coach screws or M10 coach bolts for Fitch beams positioned as per the **StoPoren Details**.

**Poren Lintels** are rebated for the shelf bracket and joined on the **Poren Shelf Bracket with 10mm of Poren Mortar**. Brick ties are required on top embedded in the mortar bed at minimum 600mm centre's with 2 x Brick ties at joints including ends placed 150mm apart. The **Poren Shelf Bracket** must extend across cavity to under seat the **Poren Lintel** by a minimum 55mm pack off frame as required and adjust coach fixings accordingly.

**Note;** The **StoPoren PVC Adjustable Foot** is used to finish the underside of the lintel. To install fit vented cavity base with extension leg glued in to align with underside of lintel after shelf brackets have been fitted, position lintel and push adjustable front of foot in place and glue adhere before plastering

### **Narrow Widths & Stress Points**

As required on narrow widths or stress points such as adjacent to garages, large openings, apexes etc extend the **Poren Lintel** 600mm past the stress point see Sto Poren ACAD Details.

### **Sealant**

All junctions between the brick and adjacent dissimilar material surfaces shall be flashed by the main contractor and detailed and sealed using **MS Sealant** over PEF rod. The sealant must be applied in accordance with the manufactures TDS sheet instructions.

### **S-Protect WS 205 stay dry**

All dry **Poren Brick** surfaces must be treated with a sealer coat of **S-Protect WS 205 stay dry** at 4 - 5 square metres per litre applied with low-pressure garden sprayer or block brush on dry clean bricks and lintel surfaces and left to dry for 24 hours before plastering.

### **Control Joints – Based on Australian Building Code for Brick Veneers.**

Control joints as designated by the project drawings, engineer or Sto details must be incorporated in the brick cladding and capped using Sto PVC Control Joints. Vertical control joints are normally required every 6 metre's on walls preferably above and below joinery openings, where the height of the wall changes by more than 20%, at foundation expansion joints and dissimilar material junctions see the Sto Poren ACAD details for specific design. Either side of the control joint is reinforced with brick ties placed a maximum 150mm from the joint at maximum 400mm horizontal centres.

### **Aluminium Joinery**

Ensure all joinery is flashed accordingly as previously detailed before commencing.

## **3. STOPOREN PLASTER SYSTEM**

### **StoPoren meshed basecoat plaster**

To clean, dry brick surfaces apply a basecoat of **StoPoren plaster** by hawk and trowel at approximate thickness of 2.5mm. While the **StoPoren plaster** is still wet, lightly embed **Sto Mesh**, ensuring adjacent drops of mesh are overlapped by a minimum of 75mm, lightly float the surface to ensure that the mesh has been embedded onto the basecoat and use Sto pre meshed corner angles on all external corners. Allow to dry and apply one further coat of **StoPoren** at approximately 1.5mm by hawk and trowel to leave an even straight plane surface free of hollows and deviations.

**Note:** Any narrow widths or stress points require additional mesh butterflies on top of the mesh coat. Once dry remove any ridging etc of finished surface with a Sto rasp ready for subsequent topcoat.

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### Plastered Wall Caps

All plastered horizontal surfaces must have a minimum 10° fall (sills 15° fall). On plastered **parapets** or **balustrades caps Sto Flexyl** must be correctly mixed (drill mix 1/1- with **fresh** cement) and applied with a layer of Sto mesh embedded into the **StoFlexyl** which is then floated to a level surface attaining a total minimum film thickness of 1 -1.5mm. Extend membrane 75 mm up or down adjacent vertical surfaces and allow to dry overnight. Apply **StoFlexyl waterproofing** over the StoPoren meshed basecoat before the second coat to avoid a shadow line.

**Note: StoFlexyl waterproofing** has been evaluated by BRANZ to meet the **AS/NZS 4858** waterproof membrane requirement as required by **E2/AS1**.

### Stoplex W sealer

To clean and dry **StoPoren** plastered surfaces; apply a sealer coat of **Stoplex W sealer** by brush and roller at the approximate spreading rate of 8m<sup>2</sup>/litre to seal the plastered surface.

### Sealant Installation

After the sealer has dried, all junctions between joinery and adjacent dissimilar surfaces and the Sto Plaster and around penetrations details shall be sealed with **MS Sealant**.

### Architectural Profiles

Any Architectural shapes used to create detailing shall be correctly cut to size and fitted using **Gluecoat Mortar** applied to the back of the shape with a notch trowel prior to placing. Fixings may be used to position shapes correctly or for mechanically securing large profiles. Profiles are placed after the reinforcement mesh coat and are edge meshed on to the surface at the perimeter junction.

### Finishing Section - select finish

#### Stolit K coloured finishing render as selected

#### Stolit K texture is available in a flat 1.0mm , 1.5mm or 2.0mm aggregate plaster

To all exterior plastered surfaces apply selected finishing render **Stolit K** tinted to the selected colour, applied with a stainless steel trowel gauging to the thickness of the aggregate size and finished with a plastic trowel to the requisite pattern and allow to dry normally overnight. The spreading rate shall be approximately 12sqm/1.0mm, 9sqm/1.5mm, 7sqm/2.0mm-/per pail.

#### StoColor Maxicryl façade paint

All **Stolit K** surfaces shall receive one (1) full coat of **StoColor Maxicryl** façade paint tinted to the selected colour and applied by brush and roller at approximately 6/7 m<sup>2</sup> per litre. **Note:** Always maintain wet edges between cutting in and rolling in tight to ensure an even film build is maintained.

### ALTERNATIVE SELECTION

#### Stolit MP or MP Natural coloured finishing render

**Stolit MP or MP Natural** are fine pre coloured sponge finishes applied in two (2) tight coats.

A basecoat of **Stolit MP or MP Natural** or alternatively depending on finish **Stolit K 1.0 or 1.5mm** tinted to the selected colour is applied and allowed to dry before the finishing coat of **Stolit MP or MP Natural** is applied and float finished or randomly lightly sponged to the selected pattern. The spreading rate of the Stolit MP is approximately 12 – 16sqm -per pail.

#### S-Protect SC stay clean sealer

To **Stolit MP** Apply an even coat of **S-Protect SC stay clean** Silane sealer ( clear invisible sealer) in a flood coat using a low pressure garden sprayer and Sto brick brush to work the product into the Stolit plaster wiping off any lingering drips etc. Surfaces must be well coated and work in a pattern preferably out of the sun to ensure that there are no misses as the sealer is invisible once dry.

**Note: S-Protect SC stay clean** all joinery and glazing must be completely masked off to prevent the glazing being damaged and any excess product must be removed or polished into the surface during application to avoid a surface film forming.

#### 4. GENERAL NOTES

##### Colour

As selected by the client or specifier Stoanz Limited recommends that the selected colour should have an Light Reflectance Value of 20% or greater to avoid thermal stress. If a colour is selected outside of this recommendation, the warranty offered may be affected.

#### 5. MAINTENANCE

##### Refer; Sto Maintenance Schedule for comprehensive guide

The Sto Plaster System must be cleaned annually by washing to remove all existing surface contaminants with special attention to non-rain washed areas. When recoating is required at the 7/8-year period to maintain long-term integrity and a pristine condition this can be carried out using the appropriate Sto coating over a cleaned surface. Physical damage must be repaired using the appropriate Sto Plaster materials as required. Where a colour change is required, Stoanz Limited should be consulted for a specific specification.

Annual inspections are to be implemented after completion to clearly identify any faults in the cladding, sealant beads, flashings and any other connections. A repair process must be implemented immediately to address any faults so the long-term warranty is not compromised.

#### 6. WARRANTY

The **StoPoren Brick Veneer System** described in this specification is warranted for a period of fifteen (15) years from the date of practical completion. This is to comply with the relevant clauses in the New Zealand Building Code; B1 Structure, B2 Durability, E2 External Moisture and F2 Hazardous Building Material for this type of building element provided normal maintenance requirements as set out in the Sto Maintenance Schedule are followed.

The warranty is supplied by the Sto Contractor on completion and includes a five (5) year workmanship warranty signed by the Sto Contractor carrying out the work. The warranty is issued and backed by the Stoanz Limited as to the suitability of the material supplied provided that;

- (a) All specified work is carried out by the approved Sto Contractor who must complete and sign the Sto QA Compliance Procedure Forms and a PS3 Workmanship Warranty
- (b) All work is carried out in accordance with this Specification or any written amendments issued by the Manufacturers.
- (c) The warranty does not cover situations where the plaster system is subjected to physical disturbance, chemical spillage or interference.

