



## **STOARMAT POREN BRICK CONSTRUCTION**

### **STOARMAT PLASTER SYSTEM 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:**

#### **StoArmat Plaster on Poren Brick veneer construction**

This specification is detailed for the construction of the **Poren Brick Veneer** with the **StoArmat Plaster System** incorporating; **Poren Bricks** on minimum 40mm cavity, sealed with **Protectosil WS 205** stay dry, **StoPoren** basecoat plaster, **StoArmat Classic** meshed reinforcement plaster, finished in selected **Stolit K or MP** coloured finishing render coated with **StoColor Maxicryl** facade paint or **S-Protect** sealer.

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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 Poren Brick System. The main contractor shall be responsible for ensuring all joinery is installed in accordance with Sto details by others before the Poren Brick System has commenced.

A Sto QA Compliance Form is required to be filled out by the various parties 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 AS/NZS 1170. 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. Dwargs 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 veneer construction with a minimum 40mm cavity, 50mm high rebate and a minimum height of 150mm to 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.

### **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 may be 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 and after the **Poren Lintel** is fitted the front leg is pushed into place.

### **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 blocks 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 SYSTEM

### 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

**StoArmat Plaster on Poren Brick veneer construction** installation incorporates;  
**Poren Blocks** Veneer installation, **S-Protect WS 205** stay dry sealer, **StoPoren** basecoat plaster, **StoArmat Classic** meshed reinforcement plaster finished in selected **Stolit K or MP** coloured finishing render coated in **StoColor Maxicryl** facade paint or **S-Protect** sealer.

### Materials

<b>Poren Bricks &amp; Lintels</b>	<b>310mm Poren Shelf brackets</b>
<b>Poren Mortar</b>	<b>StoPoren PVC Lintel Heads or Drip Edges</b>
<b>S-Protect WS 205 stay dry</b>	<b>Poren</b> basecoat plaster
<b>Stoplex W sealer</b>	<b>StoArmat Classic</b> meshed reinforcement plaster
<b>Stolit K or MP</b> coloured finishing render	<b>StoColor Maxicryl</b> facade paint
<b>StoFlexyl waterproofing</b>	<b>Sto uPVC joinery flashings, drip edges, pre meshed corners etc</b>

### 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 blocks 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 blocks 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 bricks.

### 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

### **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** in accordance with the manufactures TDS sheet.

### **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 brush on dry clean blocks and lintel surfaces and left to dry at least 24 hours before commencing plastering.

**Aluminium Joinery** ensure joinery is flashed accordingly as previously detailed before commencing.

### **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.

## **3. STOARMAT MIRAL PLASTER SYSTEM**

### **StoPoren basecoat plaster**

To clean, cured dry brick surfaces apply a basecoat of **StoPoren** plaster by hawk and trowel at approximate thickness of 3 -6mm to leave an even straight plane surface free of hollows and deviations. Once dry remove any ridging etc of finished surface with a Sto rasp ready for subsequent reinforcement plaster.

### **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 over the basecoat 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 1.5mm. Extend membrane 75 mm up or down adjacent vertical surfaces and allow to dry overnight.

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

### **StoArmat Classic meshed reinforcement plaster**

To clean dry plastered surfaces apply one coat of **StoArmat Classic** by hawk and trowel at approximate thickness of 1.5 to 2.0mm. While the **StoArmat Classic** is still wet, lightly embed **Sto Mesh**, ensuring adjacent drops of mesh are overlapped by a minimum of 75mm and the mesh is encapsulated into the **StoArmat Classic**. Allow to dry and apply one further coat of **StoArmat Classic** at approximately 1.0mm thick by hawk and trowel to leave a level plane surface free of voids or deviations. Once dry remove any slight ridging etc of finished surface with a Sto rasp ready for subsequent finishing coats.

### **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 sizes 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 easy clean sealer**

To **Stolit MP** Apply an even coat of **S-Protect SC easy clean** Silane sealer ( clear invisible sealer) in a flood coat using a low pressure garden sprayer and Sto block 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 easy clean** all joinery and glazing must be completely masked off to prevent the glazing being damage 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 Architect or client with a recommended light reflectance value of 20% or greater. As darker colours subject the system to thermal stress. As required the applicator is to prepare a sample for approval before plastering commences.

## 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 9 – 10 year period to maintain long-term integrity 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 **StoArmat Plaster System on Poren Brick Veneer construction** described in this specification is warranted for a period of twenty (20) 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 Twenty Year Maintenance Schedule are followed.

The warranty is supplied by the Sto Contractor on completion and includes a five (5) year cycle workmanship warranty signed by the Sto Contractor carrying out the work. The warranty is issued and backed by the Stoanz Limited as to the quality 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.

