



Stoanz Ltd
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STOPOREN 50mm PANEL 20mm CAVITY CONSTRUCTION STOARMAT PLASTER SYSTEM OVER POREN PANEL SPECIFICATION

BRANZ Appraisal No 772 - ACAD Details www.sto.co.nz building with Sto

Project:

Prepared for:

StoArmat Plaster System on Poren 50mm Panel & 20mm Cavity Construction

This specification details the installation of the **StoArmat Plaster System on Poren 50mm Panel Cladding** incorporating; **Poren 50mm Panel Cladding on 20mm Cavity**, **WS205 stay dry sealer**, **StoPoren** basecoat plaster, reinforced with **StoArmat Classic meshed** plaster, finished in selected **Stolit K or MP** coloured finishing render coated with **StoColor Maxicryl** facade paint on timber and steel frame construction built within the scope of NZBC Acceptable Solution E2/AS1.

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 the Sto Poren specification and ACAD installation and fixing details (see 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 system are strictly in accordance with the 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 cladding. The main contractor shall be responsible for ensuring all joinery is installed in accordance with the specification and details before the cladding 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 with dwangs 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.

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Steel Frame

Steel framing must be to a specific design meeting the requirements of the NZBC. The minimum framing specification is 'C' section studs and dwangs of overall section size of 75 mm web and 32 mm flange. Steel thickness must be minimum 0.8 mm. For steel framed buildings situated in NZS 3604 defined Wind Zones up to, and including, 'Very High' studs must be at maximum 600 mm centres. For all other buildings, studs must be at maximum 400 mm centres. Dwangs must be fitted flush between the studs at maximum 800 mm centres.

Thermal Break

Steel frame construction requires that a thermal break is installed in accordance with the requirements of NZBC Acceptable Solution E3/AS1, Paragraph 1.1.4(d). The National Association of Steel Frame Housing (NASH) lists solutions using battens or sheathing and wider Sto 20 x 80mm VH EPS Cavity Battens can be incorporated into their details. Alternatively a proprietary rigid thermal sheathing covered by a BRANZ Appraisal can be used. **Note** panel construction requires a minimum density VH grade poly or XPS batten or sheathing to be installed with the panel fixing penetrating the steel frame by a minimum 20 mm.

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 manufacturers instructions. Flexible 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 underlay specification. **Note:** Gables must be lined or incorporate an air barrier in accordance with NZBC E2/AS1 Table 23. Ensure any items requiring fixing or items penetrating the wall frame such as fixing brackets etc are installed and flashing taped onto the building underlay in accordance with E2/AS1. Proprietary rigid sheathing systems shall be installed in accordance with the manufacturer's instructions. Generic sheathing materials shall be selected and installed in accordance with NZBC Acceptable Solution E2/AS1 Table 23. Generic sheathing materials shall be overlaid with a flexible wall underlay in accordance with E2/AS1 Table 23.

Aluminum Joinery Flashings

All windows, doors etc shall be fitted prior to installation of the panels by the appointed window installer positioned to sit approximately 6.0 mm in the panel reveal line (approximately 23 – 24 mm from the frame to back of window flange to allow for tapes). Where a WANZ joinery support bracket is used ensure that it finishes 15 mm short of the joinery jambs (30 mm total). All Joinery is fitted before the Poren Panels are installed and the **Sto uPVC Cavity Sill & Jamb flashings, Sto uPVC Face Fixed Sill for joinery fitted with WANZ joinery bars and a proprietary aluminium head flashing** must be fitted as the panels are installed (refer to section two joinery installation).

Joinery Head Flashings

All proprietary aluminium or approved other type window and door head flashings are to be supplied by the Main Contractor. The supplied head flashings are to be fitted by the Sto installer, taped onto the building underlay they must measure 5 mm past the window frame jambs (10 mm total) so they tight butt into the extended Sto uPVC cavity joinery jamb flashings and are then sealant sealed to form stop ends. The proprietary aluminium head flashing is required to have a minimum 35 mm up stand taped to the underlay, 15 degree slope and 10 mm cover to the joinery (refer to section two joinery installation).

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 75 mm blocking and the exterior pipe finished with a flange sealed in accordance with E2/AS1 Fig 68. All penetrations through the panels 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 50mm PANEL on 20mm CAVITY CONSTRUCTION

Responsibility

All work in this section shall be the responsibility of the **Sto Contractor** who shall satisfy themselves that the timber or steel frame construction is satisfactory before proceeding with the installation of the Sto Poren System. The **Sto Contractor** is to ensure adequate protection apparel and equipment is supplied to meet their responsibilities under the Health and Safety regulations and that all dissimilar surfaces are protected.

General

The **StoPoren 50mm Panel Cladding System** incorporates the following; **Poren 50mm Panel** cladding installation, **WS 205 stay dry sealer** to seal the panel, **StoPoren basecoat** plaster, **StoArmat Classic** mesh reinforcement plaster finished in selected **Stolit K or MP** coloured finishing render coated in **StoColor Maxicryl** facade paint or **S-Protect SC** stay clean sealer on MP.

Materials

Poren 50mm Panels	Poren Adhesive Mortar or AAC Adhesive
S/S 100mm Poren Fixings	StoPoren uPVC Sill and Jamb flashings
WS 205 stay dry sealer	StoPoren basecoat plaster
StoArmat Classic meshed plaster	Stolit K or MP coloured finishing render
StoFlexyl waterproofing	StoColor Maxicryl facade paint
Sto uPVC, trays, caps, joinery flashings, finishing edges, corners drip edges, and control joints	

Framing

The framing is to be checked to ensure it is straight and any blocking or additional framing is in place before starting.

StoTherm 20mm VH Cavity Battens

All exterior framing shall be battened using **StoTherm 20mm VH Cavity Battens** placed in accordance with the batten layout as set out in the Sto Poren Panel ACAD details temporarily fixed to the full length of the studs with a fixing, staple or suitable contact adhesive. The battens must be centred where the studs with an additional batten or strap at 300 mm horizontal centres required on stud centre's are greater than 450 mm to prevent the insulation bulging into the cavity. Extra vertical battens are required as necessary at internal and external corners, joinery openings, dissimilar material junctions, etc. Horizontal spacer battens offset at a minimum 5 degrees slope and with a minimum 50 mm gap at the vertical batten transitions are required midway between 600 mm centred studs on the bottom plate and as required at the joinery heads or sills for support. The cavity is limited to two stories with maximum height of 7 metres and a drained interstorey metal flashing is required for three storey cavity construction.

Note: Nominal 50 x 20 (45 x 18 mm min) H3.1 timber battens or Cavibat battens can also be used. If a 40mm cavity is detailed **StoTherm 40 x 50mm VH Battens** or H3.1 timber battens are required.

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Foundations

At the foundation to cladding junction a vented vermin tray or StoPoren vented foot tray (min 1000mm² per l/m venting) is installed with the cladding set 50 mm below the bottom plate or supporting frame.

Rebated Concrete Foundations

Where a solid concrete rebate detail is detailed the rebate must be a minimum 50 mm below the floor or supporting frame and approximately 70 mm wide (panel 50 mm + 20 mm cavity) or 90 mm for 40 mm cavity with allowances made for frame overhang, tolerances, etc. The rebate is to have a coat of **StoFlexyl** or other approved liquid waterproofing brushed on.

Ventilation Openings

Where a solid concrete rebate detail is detailed, weather screened vents shall be installed through the bottom of the panel at the rebate line. The vents shall provide a ventilation opening area of 1000 mm² per lineal metre of wall.

Poren Panel Installation

Poren Panels are installed horizontally starting from the foundation in a straight line at least 50 mm below the supporting frame or on a rebate with joints occurring on or off the stud and alternative panels laid brick pattern to avoid continuous vertical joints. The panels are fixed at maximum 300 mm centres normally centred 150 mm from the edge of the panel using **100mm fully threaded stainless steel Poren fixings** centred on the studs. Fixings must always be at least 30 mm from the edge of the panel and sunk 4 mm below the surface with an additional fixing required on the bottom plate midway between 600 mm centred studs. In particular the panels shall be laid true, in both vertical and horizontal planes in running bond bedded **Poren Mineral Panel Adhesive or AAC 2hr Construction Glue** with all joinery and services cut outs correctly detailed. After placement cut off any excess adhesive before it dries, rasp back any irregularities and allow to dry before the 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 3 mm surface alignment deviation over a 1200 mm radius. The Poren panels shall be free of all surface contaminants and be dry enough to accept a the stay dry sealer or plastering before commencing. The Main Contractor is to ensure that any areas or details adjacent to the panels have been adequately waterproofed or flashed to avoid any water migration behind the cladding.

Notes: Any exposed panel reinforcing steel is to be primed with Sto steel primer.
Where a rigid underlay is used the Poren fixings are to be countersunk up to a maximum of 12 mm to maintain a minimum 30 mm embedment into the framing.
40mm Cavity Construction requires **125 mm Galvanised Poren Fixings**
Wind Zones: BRANZ Appraised up to 2500 Pa – 59.5 m/s – Extra High 2130 Pa – 55 m/s

S-Protect WS 205 stay dry

The Poren Panel surfaces is to be treated with a sealer coat of **S-Protect WS 205 stay dry** at 5 square metres per litre applied with low-pressure garden sprayer or brush on dry clean surfaces and left over night or longer before plastering.

Control Joints

All control & interstorey joints as designated by the project drawings, or Sto details must be followed. Refer StoPoren ACAD details for specific control joint design details. **Vertical control joints** are required to be placed at **maximum 8.0 lineal metres** as detailed. **Horizontal control joints** are required at **7.0 metres** including gables in accordance with NZBC E2/AS1 paragraph 9.1.9.4. and at **two storey Interstorey junctions** where un seasoned timber has been used. An **Interstorey drained joints** is required at the third storey to limit the cavity to two stories.

Note: Horizontal control joints are not required at two storey interstorey junctions where seasoned (dry) floor joists have been used.

Aluminium Joinery (refer to section one)

Joinery is flashed using the **Sto uPVC Cavity Jamb & Sill Flashings** bonded to the panel as required and the **Sto uPVC Vented Head detail** all installed as per the **StoPoren ACAD** details. The **Sto uPVC Cavity Jamb** is cut to tight butt to the sill and extend 30mm past the aluminium head flashing to form stopends by removing 30mm of the back hem at tear tab and the joinery flashing tab for a butt fit.

The aluminium head flashing is cut to sit tight against the altered jamb and is sealed in place with MS Sealant. A Sto vented head flashing or Sto vented base cap is used to finish the panel at the head.

Note: If a WANZ joinery support bracket has been used a **Sto uPVC Face Fixed Sill flashing** will need to be used to accommodate the bracket. Refer to www.sto.co.nz for current Sto ACAD details.

Sealant

All junctions between the cladding 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 manufacturer's TDS sheet instructions.

3. STOARMAT PLASTER SYSTEM

StoPoren basecoat plaster

To clean, cured dry surfaces apply a basecoat of **StoPoren plaster** by hawk and trowel at approximate thickness of 3.0 - 4.0mm by hawk and trowel to leave an even straight plane surface free of hollows and deviations.

Plastered Balustrades 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 basecoat before the **StoArmat Classic** plaster 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**.

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.

Detailing

As required install **Sto pre meshed Drip Edges** on lintel openings, **Sto pre meshed corners** and **Sto Stop Beads** in **StoArmat Classic** plaster as required.

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

Stolit K coloured finishing render as selected

Stolit K texture is available in 1.0 mm , 1.5 mm or 2.0 mm sized 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/1.0 mm, 9sqm/1.5 mm, 7sqm/2.0 mm-/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 m² 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 1.5 mm** 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 the client or specifier Stoanz Limited recommends that the selected colour should have a minimum Light Reflectance Value of 25% to avoid thermal stress. If a colour is selected outside of this recommendation the warranty offered will be affected.

5. MAINTENANCE

Refer; Sto Twenty Year Maintenance Schedule for comprehensive guide

The StoArmat Plaster System should 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 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.

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6. WARRANTY

The **StoArmat Plaster Cladding System** 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 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 workmanship warranty signed by the Sto Contractor carrying out the work with provision for 3 further 5 year workmanship warranties. The warranty is issued and backed by 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.

