



[AMENDED APRIL 2011]

BEAL Appraisal

Enviro® AAC Panel System



Product

1.1 The Enviro® AAC Panel System is a cavity-based aerated concrete wall cladding with a painted textured finish. It is designed to be used as an external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.

1.2 The system consists of autoclaved aerated concrete (AAC) panels (Enviro® AAC Panel) fixed over either high density polystyrene or timber H3.2 timber battens forming a 20mm cavity or H3.2 timber Enviro® Tie battens to form a 45mm cavity. The coating system consists of a 4-5mm thick fiberglass mesh reinforced, base coat plaster, followed by the application of a plaster leveling coat, which is finished with the application of 1-2mm thick finishing plaster that is then painted with a 100% acrylic exterior paint system. The chosen finishing plaster is applied to give a range of different appearances, such as a sponge, patterned, or spray textured finish.

1.3 The system incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall framing with a nominal 20mm or 45mm drained cavity.

Building Regulations

2.1 In the opinion of BEAL, the Enviro® AAC Panel System, if designed, installed and maintained in accordance with the statements and conditions of this Appraisal Certificate, will meet the following provisions of the NZBC.

2.2 Clause B1 STRUCTURE

Performance B1.3.1, B1.3.2 and B1.3.4. The Enviro® AAC Panel System meets the requirements for loads arising from selfweight, earthquake, wind, impact and creep [i.e. B1.3.3 (a), (f), (h), (j) and (q)]. See paragraphs 11.1-11.5

2.3 Clause B2 DURABILITY

Performance B2.3.1 (b), 15 years, B2.3.1 (c), 5 years, and B2.3.2. The Enviro® AAC Panel System meets this requirement. See paragraphs 12.1-12.5

Applicant:



MASONS PLASTABRICK



MASONS PLASTABRICK Ltd

P.O. BOX 300 771
ALBANY
AUCKLAND
TEL: 09 414 7551
FAX: 03 414 7553
www.masonsplastabrick.co.nz

Appraiser:



BEAL

2A Plimmerton Drive
Plimmerton, Porirua, NZ
Tel: +64 233 6661
Fax: +64 233 6662
E-Mail: sales@beal.co.nz
www.beal.co.nz



The most up to date version of this BEAL Appraisal Certificate can be viewed at www.beal.co.nz

2.4 Clause E2 EXTERNAL MOISTURE

Performance E2.3.2. The Enviro® AAC Panel System meets this requirement. See paragraph 14.1-14.8

2.5 Clause F2 HAZARDOUS BUILDING MATERIALS

Performance F2.3.1. The Enviro® AAC Panel System meets this requirement and will not present a health hazard to people.

2.6 The Enviro® AAC Panel System has been appraised as an **Alternative Solution** in terms of New Zealand Building Code Compliance.

Scope and Limitations

3.1 The Enviro® AAC Panel System has been appraised for use as an external wall cladding system for buildings within the following scope:

- Scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- Constructed with timber framing complying with the NZBC; and,
- Constructed with steel framing complying with the NZBC; and,
- With a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- Can be situated in up to and including 'Very High' wind zones as described in NZS 3604 Building Wind Zones.

3.2 The Enviro® AAC Panel System has also been appraised for weathertightness and structural wind loading when used for timber or steel framed buildings subject to specific design up to a design differential ultimate limit state (ULS) wind pressure of 2500 Pa.

3.3 The Enviro® AAC Panel System must only be installed on vertical surfaces (except for tops of parapets, sills and balustrades, which must have a minimum 10° slope and be waterproofed in accordance with the Technical Literature).

3.4 The system is appraised for use with aluminum window and door joinery that is installed with vertical jambs and horizontal heads and sills. (The Appraisal of the Enviro® AAC Panel System relies on joinery meeting the requirements of NZS 4211 for the relevant building wind zone or being specifically designed for use in specifically designed buildings.)

3.5 Installation of components and accessories supplied by Masons Plastabrick Ltd, and licensed contractors must be carried out only by personnel trained and certified by Masons Plastabrick Ltd.

Technical Literature

4.1 Refer to the Enviro® Panel System Technical Manual Jan Ver1.0 2011(both 20mm and 45mm version). The Technical Literature must be read in conjunction with this Appraisal Certificate. All aspects of design, use, installation and maintenance contained within the Technical Literature and scope of this Appraisal Certificate must be followed .

4.2 For a copy of this Technical Literature and any subsequent updates please refer to:

www.masonsplastabrick.co.nz

Technical Specification

5.1 System components and accessories supplied by Masons Plastabrick Ltd as follows:

Cavity Battens

45mm Cavity

- The 'AAC Enviro® Tie' is a H3.2 timber batten complying with NZS 3602. The battens are 45mm wide by 45mm thick cut to 200mm lengths at an angle of 22.5 degrees (parallel).

20mm Cavity

- Cavity battens are manufactured from very high density (Class VH) EPS with a density of no less than 28kg/m³. The battens are 45mm wide by 20mm thick and are supplied in 1200mm lengths, fixed at max.600mm centres Or;
- The 'AAC Enviro® Batten' is a H3.2 timber batten complying with NZS 3602. The battens are 45mm wide by 20mm thick and supplied in suitable lengths.

Enviro® AAC Panel

- Enviro® AAC Panels are 50mm thick, manufactured from autoclaved aerated concrete with an approximate density of 525kg/m³. Enviro AAC Panels are supplied in lengths of 2200mm long by 600mm wide.

Plasters

- **Masons Plastabrick Meshing Render** is a polymer-modified, Portland cement-based plaster supplied in 20 kg bags and is mixed on site with clean drinking water. It is applied as the base coat, in a minimum 2mm thick layer over selected uPVC components (Plastabrick PVC sill flashing and Plastabrick base shoe and cavity closure)
- **Masons Plastabrick Skimming render** is a polymer-modified, Portland cement-based plaster supplied in 20kg bags and is mixed on site with clean drinking water. It is applied as the base coat in a minimum 4-5mm layer followed by the embedment of fiberglass mesh reinforcement in the outer surface.
- **Masons Plastabrick 1.0mm** is a polymer-modified, Portland cement-based finishing plaster supplied in 20kg bags and mixed on site with clean drinking water.
- **Masons Plastabrick Adobe** is a polymer-modified, Portland cement-based finishing plaster supplied in 20kg bags and mixed on site with clean drinking water. This finishing plaster produces a undulating plaster finish.
- **Masons Plastabrick Plastaseal** is a 100% acrylic based paint with a fine grit content supplied in 10 litre pails. It is applied to Enviro® AAC Panels to ensure sufficient surface adhesion for the subsequent application of the Masons Plastabrick Skimming render. Plastaseal is also applied over both Sill and baseshoe uPVC flashings as a primer prior to the application of Masons Plastabrick Meshing Render.

Paint System

- A minimum of two of coats of a 100% acrylic-based exterior paint must be used over the finishing plasters to make the system weathertight and produce the desired finish colour to exterior walls. Plastabrick Premium Build High Build

Exterior Acrylic Paint is a 100% acrylic based exterior paint formulated for use over cement-based plasters and can be used over Masons Plastabrick 1.0mm and Adobe finishing plasters. Plastabrick Premium Build High Build Exterior Acrylic Paint is supplied in 4 litre and 15 litre pails.

- Proprietary paint systems not supplied by Masons Plastabrick Ltd have not been assessed and are therefore outside the scope of this Appraisal Certificate.
- Plastabrick Limestop Plaster Sealer is a 100% acrylic-based paint that works as a penetrating sealer supplied in 4 litre and 15 litre pails. It is applied over the relevant finishing plaster (Masons Plastabrick 1mm or adobe) to promote sufficient surface adhesion for the subsequent application of the Plastabrick Premium Build High Build Exterior Acrylic Paint.

Accessories

- Reinforcing Mesh— Alkali resistant fiberglass mesh with a nominal size of approx. 4mm square and a weight of 150g/m² for use in domestic and light commercial situations.
- uPVC Components – Mason Plastabrick; sill flashing, reveal bead flashing, baseshoe and cavity closure, vented cavity closure, sill soaker, pre-meshed corner bead, horizontal and vertical control joint flashings.
- Masons Plastabrick Aluminium weep hole vent
- 'AAC Enviro® Tie' and 'AAC Enviro® Batten' fixings (timber frame) - 75 x 3.15mm hot dipped galvanized AS/NZS4680 angular grooved nails.
- Enviro® AAC Panel (timber frame) [50mm and 20mm cavity] - 14g x 100mm long AS3566 corrosion class 3 Type 17 Bugle head screws for use in NZS 3604 defined corrosion zones 1, 2, 3 and 4. Grade 304 stainless steel in the sea spray zone.

5.2 Accessories used with the system which are supplied by the Masons Plastabrick Ltd certified installer:

- Waterproof Membrane tapes - tapes covered by a valid BEAL and /or BRANZ Appraisal for use as waterproofing membranes over the tops of plastered parapets, balustrades and the like.
- Flexible sealant— Bostik Safe Seal Sealant or other sealant complying with NZBC Acceptable Solution E2/AS1 for use as a weather sealing sealant for exterior use that is compatible for use with the Enviro® AAC Panel System. Flexible sealant is also used for adhering uPVC components to the Enviro® AAC panels as and where required.
- Masons Plastabrick Jointing Glue - AAC compatible adhesive for bonding Enviro® AAC panel joints during construction.
- EPS cavity battens— construction adhesive for temporary fixing of battens to the building wrap over timber or steel frame fixed at maximum 600mm centres.
- Anti-Corrosion paint - CRC Zinc It primer is a single component zinc rich compound with a special epoxy binder and contains over 90% pure zinc. CRC Zinc It is spray applied on to exposed reinforcing steel (grounded back) to prevent corrosion. It is supplied in a 350g aerosol can.

- Foam tape - Inseal 3259 single sided foam tape 3mm wide by 3mm thick length cut to suit.
- DPC - Masons Plastabrick DRYFIX polyethylene DPC.

5.3 Accessories used with the system which are supplied by the building contractor are:

- Head flashing - Aluminum head flashing complying with NZBC Acceptable Solution E2/ AS1 paragraph 4.6.1.6 and table 7 with a minimum stop end of 10mm, installed in accordance with the Technical Literature.
- Building wrap - paper or wrap complying with the requirements of NZBC Acceptable Solution E2/ AS1 Table 23.
- Flexible flashing sill and jamb tapes - flexible flashing tapes complying with AAMA 711-07, or a flexible flashing tape covered by a valid BEAL and/or BRANZ Appraisal for use around window and door joinery openings
- Air seals around windows and doors - air seals complying with NZBC Acceptable Solution E2/ AS1 9.1.6, or low foaming self expanding, moisture cure polyurethane foam air seals covered by a valid BEAL and/or BRANZ Appraisal for use around window, door and other wall penetration openings or manufactured to comply with AAMA 812-04.
- Building wrap strapping - Polypropylene tape for securing the building wrap in place and preventing bulging of the insulation into the drain cavity where cavity battens are installed at greater than 450mm centres as per NZBC Acceptable Solution E2/AS1 9.1.8.5 (b).

Handling and Storage

6.1 Handling and storage of the all materials supplied by Masons Plastabrick Ltd or the licensed contractor, both on and off site are under the control of Masons Plastabrick Ltd certified installer.

6.2 Dry storage must be provided on site for the Enviro® AAC Panel, fibreglass and bags of render with the Enviro® AAC Panels stored flat and protected from physical damage. EPS battens, AAC Enviro Tie Timber battens, uPVC flashing and mouldings must be protected from direct sunlight, physical damage and stored flat and under cover. All liquid components shall be stored in dry frost free conditions.

6.3 Handling of the Enviro® AAC Panels requires care to prevent damage to corners or excessive flexing.

6.4 Handling and storage of the all materials supplied by the building contractor, both on and off site is the responsibility of the building contractor. Materials must be handled and stored in accordance with the manufacturers instructions.

Design Information

Framing

Timber Framing

7.1 Timber used in timber framing shall be treated as required by NZS 3602.

7.2 Timber framing must comply with NZS 3604 for both buildings or parts of buildings within the scope

limitations of NZS 3604. Where buildings or parts of buildings are outside the scope of NZS3604 then they must be to specific design in accordance with NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least the equivalent stiffness to the framing provisions of NZS 3604. In all cases, studs must be at a maximum of 600mm centres.

7.3 Timber framing and AAC Enviro® Tie battens must have a maximum moisture content of 18% at the time of cladding application. (Problems could arise later on due to timber shrinkage if over 18%)

Steel Framing

7.4 Steel framing must be to a specific design meeting the requirements of the NZBC. (NASH 3405:2006)

7.5 The minimum steel framing specification is 'C' section studs and nogs of overall section dimensions of 76mm web by 40mm flange. Steel thickness must be a minimum 0.55mm.

7.6 For steel framed buildings situated within NZS3604 defined wind zones up to and including 'Very High' studs, must be at maximum 600mm centres. All other buildings studs must be at maximum 400mm centres. Dwangs must be fitted flush with the stud.

Enviro® AAC Panel Layout

7.7 Enviro® AAC Panels are installed horizontally in a stretcher bond pattern. Vertical panel edges may be jointed on stud or off stud. Enviro® AAC Panels must be supported at fixing locations with vertical cavity battens or cavity spacers 100mm long max. in accordance with the requirements of NZBC Acceptable Solution E2/AS1, paragraph 9.1.8.2(f). At the base of the wall the Enviro® AAC Panel can be either rested on a concrete rebate (100mm below finished floor level) or hang 50mm below the finish floor level.

General

8.1 Punchings in the cavity closer and head flashing provide a minimum ventilation opening area of 1000mm² per lineal metre of wall as per the requirements of NZBC Acceptable Solution E2/AS1, paragraph 9.1.8.3 (b).

8.2 The Masons Plastabrick aluminum weep hole vents provide a minimum ventilation opening area of 1000mm² per lineal metre of wall when fixed at 1200mm centres as per the requirements of NZBC Acceptable Solution E2/AS1 paragraph 9.1.8.3 (b).

8.3 The clearance between the finished floor level and ground level as outlined in NZS 3604 must be adhered to at all times. At ground level, paved surfaces must be kept clear from the bottom edge of the Enviro® AAC Panel System by a minimum of 100mm, and unpaved surfaces by 175mm in accordance with the requirements of NZBC Acceptable Solutions E2/AS1, Table 18.

8.4 At balcony, deck or roof to wall junctions, the bottom edge of the Enviro® AAC Panel must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 35mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, paragraph 9.1.3.6.

8.5 Where the Enviro® AAC Panel Systems abuts other cladding systems, designers must detail the junction to meet their own requirements whilst meeting performance requirements of the NZBC. The Technical Literature does provide some guidance. Details not

included within the Technical Literature have not been assessed and are therefore outside the scope of this Appraisal.

Control Joints

9.1 Control joints where Enviro® AAC Panels are used must be constructed in accordance with the Technical Literature and provided as follows;

- Horizontal control joints - To be installed when intermediate floor joists are not seasoned and/or when the height of the wall exceeds 10m
- Vertical Control Joints - at maximum 10m centres; aligned with any control joint within the structural framing, or where the system abuts other cladding systems. Located at both internal and external corners.

(Note: Where possible control joints shall be located in line with window and door openings. Horizontal and vertical control joints must be located over structural supports. The Technical Literature provides some guidance for the design of vertical control joints where the system abuts different cladding types. Details not included within the Technical literature or those that are marked as 'Specific Design Only' are outside the scope of the Appraisal Certificate and are the responsibility of the designer.)

Interstorey Junction

10.1 Inter-storey drained joints must be provided for walls over 2 storeys in height, in accordance with the requirements of NZBC acceptable solution E2/AS1, paragraph 9.1.9.4 (b).

Structure - Clause B1

Mass

11.1 The mass of Enviro® AAC Panel is approximately 25kg/m² and when the Plastabrick Plaster System is applied, the wall cladding is then considered a medium wall cladding in terms of NZS 3604.

Impact Resistance

11.2 The system has adequate resistance to impact loads that the cladding system is likely to be subjected to when used in a residential situation. The likelihood of impact damage to the system when used in light commercial situations should be considered at the design stage, with appropriate protection provided such as bollards or barriers where necessary.

Wind zone

11.3 The Enviro® AAC Panel system is suitable for use in all building wind zones as per NZS 3604, up to, and including 'Very High' where buildings are designed to meet the performance requirements of NZBC Acceptable solution E2/AS1, or up to the ultimate limit state (ULS) wind pressure of 2500Pa when the building is subject to specific design.

Enviro® AAC Panel fixing

11.4 Where a 45mm cavity is produced the Enviro® Tie Batten is fixed through to the wall framing at 500 centres vertically. The Enviro® AAC Panel must then be fixed through into the Enviro® Tie Batten and cavity spacers at 500mm vertical fixing centres.

11.5 Where a 20mm cavity is produced the Enviro® AAC Panel must be fixed through the cavity battens and cavity spacers to the wall framing at maximum centres of 500mm.

Note:

- 500mm centres is applicable to both Low– very high NZS 3604 defined building wind zones with studs at maximum 600mm centres, and; Specifically designed buildings up to design differential 2.5kPa ULS wind pressure with studs at maximum 600mm centres.
- Fixings to be positioned minimum 50mm in from the edge of the panel giving an overall layout of 500mm centres per panel.
- Fixings are also required horizontally at 600mm centres.
- A minimum of 6 bugle head screws per panel is required
- Bugle head screws must be embedded a maximum 10mm into the Enviro® AAC Panel.

Durability– Clause B2

12.1 The Enviro® AAC Panel System when used in accordance with this Appraisal Certificate and subjected to normal conditions of environment and use will meet the performance requirements of NZBC B2.3.1 (b), 15 years for the cladding system and plaster finish, and the performance requirements of NZBC B2.3.1 (c), 5 years for the exterior paint system (the life of the product not being less than 5 years).

Maintenance

12.2 Regular maintenance is essential to ensure the performance requirements of the NZBC are met and to ensure the maximum serviceability of the Enviro® AAC Panel System.

12.3 Regular cleaning (at least annually) of the paint coating is required to remove grime, dirt and organic growth as per the Technical Literature in order to maximize the life and appearance of the acrylic paint coating. Paint coatings must be reapplied every 5 years in accordance with the paint manufacturers instructions. Re-coating colours shall have an LRV (light reflectance value) of 40% or greater.

12.4 Regular inspections (at least annually) must be made on the system to ensure that all aspects of the Enviro® AAC Panel System including the coating system, plasters, flashings and any sealed joints remain in a weatherproof condition. Any cracks, damaged areas or areas showing signs of deterioration that could allow water ingress, must be repaired immediately. The Enviro® AAC Panel System must be maintained and repaired in accordance with the instructions from Masons Plastabrick Ltd.

12.5 Minimum ground clearance as set out in this Appraisal and Technical Literature must be maintained at all times during the life of the system to maintain the durability and weathertightness of the system.

Control of External Fire Spread

13.1 The Enviro® AAC Panel System is considered to meet the performance requirements of NZBC C3.3.5 for use as an external wall cladding when restricted to:

- Single storey buildings 1m or more from the boundary for all purpose groups
- Buildings up to 7m high, 1m or more from the boundary, for all purpose groups other than SC and SD.

13.2 Clearance separations from chimneys and flues are not required for the Enviro® AAC Panel. Where the panel is used with or attached to a heat sensitive material, the heat sensitive materials must be separated from chimneys and flues in accordance with the performance requirements of NZBC Acceptable Solution C/AS1, part 9 for protection of combustible materials.

External Moisture—Clause E2

14.1 When installed in accordance with this Appraisal Certificate and Technical Literature, the Enviro® AAC Panel System will prevent the penetration of water that could cause undue dampness and/or damage to building elements and will therefore comply with clause E2.3.2.

14.2 The cavity must be sealed off from the roof and subfloor space in order to meet the performance requirement of E2.3.5.

14.3 The Enviro® AAC Panel System allows excess moisture present at the completion of construction to be dissipated without causing permanent damage to the building elements to meet the performance requirement of Clause E2.3.6.

14.4 The details provided within the Technical Literature for weather resistance are based on the design principle of employing both a 1st and 2nd line of defence against moisture entry for joints, penetrations and junctions. Moisture ingress is prevented by detailing joinery or wall junctions as shown in the Enviro® AAC Panel System technical manual. Any weathertightness details developed by the designer are outside the scope of this Appraisal Certificate and are the responsibility of the designer.

14.5 The presence of a drained cavity does not reduce the requirement to ensure the cladding wall and all the relevant junction, penetrations etc remain weather resistant in order to comply with Clause E2.3.6.

Water Vapour

14.6 The Enviro® AAC Panel System is not impermeable therefore allows the escape of water vapour.

14.7 When the Enviro® AAC Panel System is installed over a steel frame, an expanded polystyrene thermal break must be installed over the building wrap over each steel member (stud, nog, top and bottom plate) to provide a thermal break in accordance with the requirements of NZBC Acceptable Solution E3/AS1, Paragraph 1.1.4(d). The thermal break will also act as the cavity batten for the Enviro® AAC Panel System and will therefore be a minimum 20mm thick in accordance with the requirements of Acceptable Solution E2/AS1, paragraph 9.1.8.4.

14.8 Where the thermal break is used across steel nogs it shall be reduced in thickness to 10mm thick to comply with the requirements of Acceptable Solution E2/AS1, Paragraphs 9.1.8.2(f) and 9.1.8.3 (b).

Installation Information**Installation Skill Level Requirement**

15.1 Installation and finishing of the components and accessories by Masons Plastabrick Ltd and the licensed contractors must be completed by certified installers/applicators, certified and trained by Masons Plastabrick Ltd.

15.2 Installation of the accessories supplied by the building contractor must be completed by a tradesperson who has an understanding of cavity construction, in accordance with instructions given within the Enviro® AAC Panel System Technical manual and this Appraisal Certificate.

System Installation

16.1 The selected building wrap and flexible flashing tape must be installed by the building contractor in accordance with the wrap and tape manufacturer's instructions, prior to the installation of the cavity battens and the rest of the Enviro® AAC Panel System. The building wrap shall be run horizontally and be continuous around corners.

16.2 Aluminum joinery must be installed by the building contractor in accordance with the Technical Literature. A 7.5-10mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and airseal can be installed after the joinery has been secured in place. The joinery must be spaced approx 47mm from the outside of the wall frame for the 50mm cavity system.

16.3 The joinery must be spaced approx 22mm from the outside of the wall frame for the 20mm cavity system.

Enviro® AAC Panel System

16.4 Must be installed in accordance with the Technical Literature by Masons Plastabrick Ltd certified installers.

16.5 The Technical Literature must be referred to during the inspection of the Enviro® AAC Panel System installations.

Finishing Coat

16.6 The application of the paint finish must be applied in accordance with the paint manufacturers instructions at all times. The plaster must be cured for a minimum of 2-3 days and must be dry before painting may commence.

16.7 A coating of 'Plastabrick Limestop Sealer' must be applied over the cured plaster and allowed to dry prior to the application of the 'Plastabrick Premium Build High Build Exterior Acrylic Paint'.

Health and Safety

17.1 When cutting, drilling or grinding the Enviro® AAC Panel, this must be carried out in an open air or well ventilated area, and a dust mask, eye protection and gloves must be worn.

17.2 All aspects of cutting, drilling or grinding must comply with the latest regulations of the occupational safety and health division of the labour department.

17.3 Refer to the Technical Literature from the relevant manufacturer for the safe use and handling of the components that make up the Enviro® AAC Panel System.

Basis of Appraisal

BEAL use the Compliance verification procedure to demonstrate compliance with the relevant clauses of the NZBC based on a risk analysis procedure. The following is a summary of the technical investigations carried out

Tests

18.1 The following testing of the Enviro® AAC Panel System and its respective components has been undertaken by BEAL Unless otherwise noted:

- BEAL opinion on NZBC E2 code compliance was based on the evaluation of all details within the scope of this Appraisal and testing of Enviro® AAC Panel System to E2/MM1. The testing assessed the performance of the window head, jamb and sill details, meterbox head, jamb and sill details, vertical control joints, internal and external corners and a pipe penetration. BEAL have also reviewed the details contained within the technical manual, and a opinion has been given by BEAL that the system will meet the performance levels of E2/AS1 for a drained cavity system.
- Adhesion and compatibility testing of the Masons Plastabrick Render products with the Enviro® AAC Panel in accordance with ASTM C297.
- The flexural ability of the Masons Plastabrick render products were also assessed to verify durability of the renders.
- Testing undertaken by OPUS laboratories in determining the compressive strength, dry bulk density and drying shrinkage of the Enviro® AAC Panel to verify the durability of the system.
- Testing undertaken by OPUS Laboratories in determining the adhesion strength/compatibility of the Masons Plastabrick Skimming Render.
- Corrosion protection of the steel reinforcement in the Enviro® AAC Panel was tested to verify durability and conducted by AZUMA design in Australia to AS2331.3.11 and ASTM B117.

Other Investigations

19.1 Wind loadings, self weight, seismic loadings, shear force, panel capacity, fastener pull through testing and calculations for the Enviro® AAC Panel System were determined by an independent Chartered Engineer in respect to the requirements of compliance document B1 Structure. Structural and durability opinions were provided.

19.2 Ease of application in relation to the Technical Literature has been assessed.

19.3 The Technical Literature for the Enviro® AAC Panel System has been examined by BEAL and found to be satisfactory.

Quality

20.1 The manufacture of the AAC panel and Plastabrick Plasters has not been assessed by BEAL, but details regarding the quality and composition of the materials used were obtained and found to be satisfactory.

20.2 The quality of materials, components and accessories supplied by Masons Plastabrick Ltd is managed through the use of a Building Product Quality Plan.

20.3 The Masons Plastabrick Ltd Building Product Quality plan ensures continuous conformance with the quality requirements from purchase to supply of components.

20.4 Masons Plastabrick Ltd Building Product Quality Plan is reviewed at least annually by BEAL.

20.5 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems, joinery, building wrap, flashing tapes, head flashings and air seals in accordance with the instructions of Masons Plastabrick Ltd and this Appraisal Certificate.

20.6 For a copy of this Technical Literature and any subsequent updates please refer to:

www.masonsplastabrick.co.nz

20.7 Building owners are responsible for the maintenance of the Enviro® AAC Panel System in accordance with instructions of Masons Plastabrick Ltd and this Appraisal Certificate.

Sources of Information

- AAMA 711 - 07 Voluntary specification for self adhering flashing used for installation of exterior wall fenestration products.
- AS 2331.3.1 Methods of test for metallic and related coatings -Corrosion and related property test
- AS 3566 Self drilling screws for the building and construction industries.
- AS 3730 Guide to the properties of paints for buildings
- AS/NZS 1170:2002 Structural design actions
- ASTM B117 Standard practice for operating salt spray apparatus
- ASTM C 297 Standard test method for flatwise tensile strength of sandwich constructions.
- ASTM C 1386: Standard specification for precast autoclaved aerated concrete (AAC)
- NASH 3405:2006 Steel framed buildings
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3603:1993 Timber structures standard
- NZS 3604:1999 Timber framed Buildings
- NZS 4211:1985 Specification for performance of windows
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third edition May 2008, incorporating amendments 1 to 4.
- New Zealand Building Code Handbook and Approved Documents, Building industry Authority, 1992.
- The Building Regulations 1992, up to, and including October 2004 Amendment.

Amendments

A1.0 - April 2011:

Updated appraisal document to new format and the addition of further information and limitations including

- Scope and limitations reconfigured
- Technical specifications revised and expanded
- Expansion of handling and storage conditions
- Technical literature version updated
- Design information expanded and applied
- Installation Information added
- Basis of appraisal revised and expanded
- 'Product QA information' revised and expanded under new sub heading 'Quality'
- Sources of Information updated
- Conditions of appraisal revised and updated.

Concluding statement

21.1 In the opinion of BEAL, the Enviro® AAC Panel System is fit for purpose and will comply with the NZBC to the extent specified provided that it is used, designed, installed and maintained as set out in this Appraisal Certificate.

The Appraisal Certificate is issued only to Masons Plastabrick Ltd, and is valid until further notification, subject to the conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal Certificate :
 - A) Relates only to the Enviro® AAC Panel System system 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 BEAL
2. The Appraisal Certificate holder continues to meet the quality requirements of the Enviro® AAC Panel System Building Product Quality Plan and has the plan revalidated by BEAL on an annual basis.
3. Masons Plastabrick Ltd, shall notify BEAL and obtain approval of any changes to product specification or quality assurance prior to product being marketed including any trade literature, web site info or the like.
4. BEAL makes no representation 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 the Appraisal Certificate holder
5. BEAL's verification of the building product or system complying with one or more above-mentioned criteria is given on the basis that the criteria used were those that were appropriate to demonstrate compliance with the NZBC at the date of this Appraisal Certificate. In the event that the criteria is withdrawn or amended at a later date, this Appraisal may no longer remain valid.
6. Any reference in this Appraisal Certificate to any other publication shall be read as a reference to the version of publication specified in this Appraisal Certificate.

Authorised signatory



C R Prouse—Director
[14 APRIL 2010]

