

Appraisal of a Building Product



The ERff 50mm Autoclaved Aerated Concrete Panel



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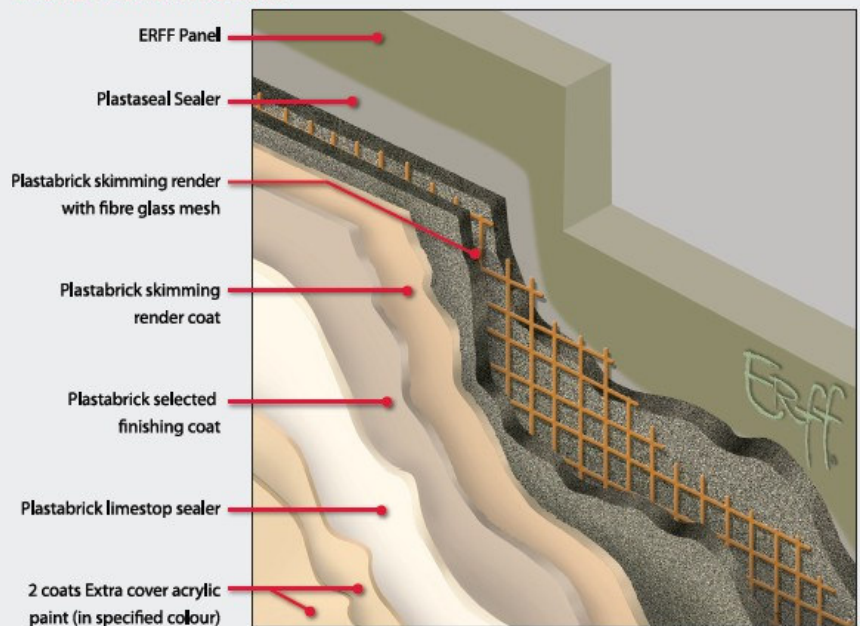
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SYSTEM CONSTRUCTION:



General Information

Description of Product

The ERff[®] 50 mm Autoclaved Aerated Concrete Panel from NZ Building Supplies Ltd. is a 50mm thick masonry panel nominally 2200mm x 600mm in size, used as a cladding substrate, over which is applied a render and weather resistance coating system. (see illustration above)

The panels are fixed horizontally onto 200mm long 50 x 50mm treated timber battens, which are themselves fixed to

the steel framing to create a 50mm deep drained and ventilated cavity. Autoclaved Aerated Concrete (AAC) is well known for its fire – resistant, thermally insulating, durable properties. It has been used overseas for more than 50 years and in New Zealand for 20 years as a building element. With appropriate fixings, it is also suited to regions where seismic activity is known.



C818 Revised March 2009
Verification of Clauses B1, B2 and E2
of the New Zealand Building Code



Trade Literature

The **ERff® PANEL Technical Manual & Installation Guide dated December 2008** describes the correct method of installation.

Applicant

The applicant is NZ Building Supplies Ltd.

Scope & Limitations

The ERff® 50mm AAC Panel has been appraised as a masonry cladding substrate installed horizontally onto H3.1 treated timber battens, nominally 200mm long with sloping top and bottom, and 50mm x 50mm in width and depth complying with NZS 3602:2003, and with fixings complying with Table 20 of compliance document E2/AS1.

This appraisal is based on the use of steel framing complying with NASH 3405 and for use in wind zones up to Very High as described in NZS3604.

Detailed Information

Detailed Description

The ERff® 50mm AAC Panel is deemed an Alternative Solution in terms of E2/AS1. The 50mm AAC Panel substrate made a homogenous surface by use of ERff® Bond adhesive to adhere adjacent panels to each other.

Though the ERff® 50mm AAC Panel is appraised to be installed on steel framed buildings, timber framing complying with NZS 3604 may be used in place.

The installation and finishing of the ERff® 50mm AAC Panel shall be as described in the 'ERff® PANEL Technical Manual & Installation Guide' dated May 2008 and carried out by NZ Building Supplies Ltd. approved Licensed applicators.

FRAMING:

The ERff® 50mm AAC Panel is to be used in conjunction with light-weight steel framing complying with NASH 3405, together with components of a cladding assembly that when installed produces a cladding 'system' that complies with the performance requirements of the New Zealand Building Code.

SUBSTRATE:

The ERff® 50mm AAC Panel system is suited for the application of cement based renders and over the render, a weather resistant coating system, complying in all respects with the performance requirements of the New Zealand Building Code.

ACCESSORIES:

The ERff® 50mm AAC Panel system utilizes 200mm long, 50mm x 50mm H3.1 treated battens with a 22.5° sloping top and bottom on which the ERff® 50mm AAC Panels are fixed to. Batten to steel framing fixings shall be 65mm long 10-16CSK Tek screws complying with Table 20 of E2/AS1.

Panel to batten fixings shall be 14 x 100mm bugle head class 2 screws, which shall be embedded into the panel 10mm below the surface.

The positioning of the battens shall be as set out in the 'ERff® PANEL Technical Manual & Installation Guide' dated May 2008.

The edges of the panel shall be adhered to the adjacent panel using ERff® bond.

Vents are required every 1500mm at the top and bottom of the wall where the panel sits onto a concrete rebated floor.

Storage & Handling

The ERff® 50mm AAC Panel are supplied in 2200mm long x 600mm wide panels and protected from the weather by plastic sheeting. Handling of the panels requires care to prevent damage to the edges.

Specific Performances with the NZ Building Code

Clause B2 - Durability

The 50mm AAC Panel when used in accordance with this Appraisal will meet Performance B2.3.1(b) 15 years of the New Zealand Building Code.

Clause E2 - External Moisture

The 50mm AAC Panel contributes to the compliance of Clause E2 of the Building Code when installed in accordance with this Appraisal.

In other words, the product as appraised will contribute, when used with compatible cladding materials complying with the performance requirements of the New Zealand Building Code, will "prevent the penetration of water that could cause



undue dampness, or damage to building elements”.

How to install the product

The product shall be installed as described in the **50mm AAC Panel Technical Manual dated December 2008**. Only NZ Building Supplies Ltd. approved licensed installers are approved to install the panel.

Basis of Appraisal

[BEAL use the Compliance Verification Procedure to demonstrate compliance with the relevant clauses of the NZ Building Code based on a risk-analysis procedure.]

B2 - Durability

For assessing the durability of the ERff® 50mm AAC Panel, an evaluation of Durability based on the following was carried out:

- the composition of the panel
- the manufacturer
- in-service history
- likely affect of NZ weather and environment

[Refer to Verification of Compliance on page 4.]

E2 - External Moisture

The 50mm AAC Panel was assessed as to how it would be expected to comply with Clause E2 when a render system and weather protecting coating system was applied. [Refer to the Verification of Compliance - page 4.]

The ERff 50mm AAC Panel system was also evaluated in practical building situations to assess the following:

- Ease of installing the panel
- Potential risks of non performance when being installed
- Any external factors that could affect the quality of the installed product
- Ease of repair or maintenance (where applicable)
- The impact of other building products /systems when in contact
- Comparison with similar panels.

These assessments and tests demonstrated compliance with the requirements of Clause E2 (External Moisture) of the NZ Building Code.

Product QA Information

- The overseas manufactured panels are manufactured to an in-house standard.
 - The timber battens are manufactured on site from timber that complies with NZS 3602:2003 .
 - The vents are manufactured by and meet the requirements of Table 20 of E2/AS1.
 - The batten fixings are manufactured overseas in conformance with AS1397.
 - The panel fixings are manufactured overseas in conformance with Table 20 of E2/ AS1.
- All products are covered by NZ Building Supplies Ltd's Quality Assurance Programme to ensure the installed panel will comply with the New Zealand Building Code.

Design Considerations

Owner/Builder to supply and fit:

- Framing construction in accordance with NASH 3405 for steel framing or NZS 3604 for timber framing.
- Wall wrap, windows and doors and meter boxes as required
- All flashings required for windows, doors and all other penetrations
- All above items shall be checked before installation of the panels.

Installer to supply and fit:

- 200mm long, 50mm x 50mm H3.1 treated battens with sloping top and bottom
- The ERff® 50mm AAC Panel system using ERff bond to adhere each of the sides of the panels to adjacent panels.

Note:

The panels are not to be installed when rain is imminent.



Verification of Compliance

Methods Used

- Testing and assessment by a laboratory or testing facility (BEAL)
- In service history of 50mm AAC Panel - over 4 years in Asia, 4 years in New Zealand

This appraisal uses the in service history provided by the applicant for a number of materials, together with BQI Procedure 103, The Compliance Verification Procedure – a method for demonstrating Compliance with the performance requirements of the NZ Building Code, as the 'methods' for demonstrating compliance with the relevant clauses of the Building Code. [Methods suggested by the Department of Building and Housing]

TEST METHOD CRITERIA RESULT

TEST	METHOD	CRITERIA	RESULT
Dimensional consistency of panels	ASTM C1386	< 5% variation	Pass
Dry Density	ASTM C1386	585kg/m ³ indicating type AAC4	Pass
Compression strength	ASTM C1386	> 3.0MP for type AAC4	Pass
Water Vapour Transmission	ASTM E96-00	> 40 Perms	Pass
Corrosion Resistance of reinforcing wire	ASTM B117	Minimal defects	Pass
Pull-off adhesion resistance of a typical cement based render	AS/NZS 1580.408.5	> 40Mpa (average)	Pass
Ease of Installation	BQI TM 802	> 8 (out of 10)	Pass

NOTE

For information about AS/NZS Test Methods, refer to www.standards.co.nz

For information about Test Methods developed by BEAL, refer to www.bqi.org.nz

Sources of Information

BQI Procedure 103 - The Compliance Verification Procedure – a method for demonstrating Compliance with the performance requirements of the NZ Building Code

NASH 3405:2006 Steel Framed Buildings

NZS 3604:1999 Timber Framed Buildings

New Zealand Building Code

Table 20 of Compliance Document E2/AS1

ASTM C1386 - 07, Standard Specification for Precast Autoclaved Aerated Concrete (AAC) Wall Construction Units

ASTM E96– 00, Standard Test Method for Water Vapour Transmission of Materials

ASTM C1363-05, Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus

ASTM B117-07, Standard Practice for Operating Salt Spray (Fog).

NZS 3602:2003, Timber and wood based products for use in building

AS/NZS 1580.408.5:1994, Adhesion Pull-off Test

The manufacturer's technical literature



Conditions of this Appraisal

1. The Products continue to comply with the quality assurance measures of NZ Building Supplies Ltd. These quality assurance measures have been viewed and approved by BEAL.
2. The products comply with the conditions of this appraisal and with the ERff® PANEL Technical Manual & Installation Guide' dated December 2008 .
3. NZ Building Supplies Ltd. continues to have the product and accessories reviewed and the quality assurance programme audited annually by BEAL.
4. The overall quality and performance of the products are maintained.
5. NZ Building Supplies Ltd. shall notify BEAL of any changes in specification or quality assurance measures prior to them coming into effect.
6. BEAL staff use New Zealand or appropriate international Standards or a BQI Interim Performance Standard (in the absence of a relevant New Zealand Standard) for carrying out testing and assessments. The evaluation of products is performed either at BEAL's facilities or at a nominated laboratory and carried out by experienced and qualified specialists.
7. The system has been tested against one or more of the following criteria which was applicable at the time of the appraisal:
 - a measurable criteria described in the Building Code, or
 - a relevant New Zealand or Australian Standard, or
 - an appropriate requirement set out in a New Zealand Department of Building & Housing document, or
 - a requirement set out in a Building Quality Institute "Interim Performance Standard"
8. BEAL's verification of the building product or system complying with one or more abovementioned criteria is given on the basis that the criteria used were those that were appropriate to demonstrate compliance with the Building Code at the date of this appraisal. In the event that the criteria are withdrawn or amended at a later date, this Appraisal may no longer remain valid.
9. This appraisal will be reviewed within five years. In the event that there are changes, this appraisal will no longer be valid.

Authorised Signatory -



6 October 2008

C R Prouse - Director

Date of Issue

BEAL's new approval logo is the assurance that a building product complies with the requirements of the New Zealand Building Code.

Using the latest in Australasian and overseas testing and assessment methods and criteria, BEAL's logo is a sign of confidence -

- ◆ Confidence for the architect or designer that the product literature and details will meet their specific needs;
- ◆ Confidence for the Building Certifying Authority that the product has been evaluated in a rigorous manner to demonstrate or otherwise, compliance with the relevant Clauses of the NZ Building Code;
- ◆ Confidence for the builder and installer that the Technical Manuals are clear and easy to understand.

BEAL's new 'Approval Logo' is being promoted throughout the building industry thus ensuring maximum exposure for all products that carry this logo. For further information contact Colin Prouse at BEAL on (+64) 4 233 6661 or e-mail at sales@beal.co.nz



Contact Details



The distributor of the 50mm Autoclaved Aerated Concrete Panel is NZ Building Supplies Ltd .

NZ Building Supplies Ltd can be contacted at:
Head Office 07 574 2340
Fax 07 574 9537
Web Site <http://www.erff.co.nz>



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Head Office 04 233 6661
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E-mail sales@beal.co.nz
Web Site <http://www.beal.co.nz>
Further information about this Appraisal can be directed to Mr Colin Prouse



The Building Quality Institute can be contacted at:
E-mail: info@bqi.org.nz
Web Site: www.bqi.org.nz