

Appraisal of a Building Product



Classic Stone's Manufactured Stone Veneer Cladding System



Contents

1 General Information

- 1 Description of Product
- 2 Trade Literature
- 2 Scope & Limitations

2 Detailed Information

- 2 Technical Description
- 2 Product Data
- 2 Handling & Storage
- 2 Specific Performances with the Building Code
- 2 How to Install the Product

3 Basis of Appraisal

- 3 Product QA Information
- 3 Design Considerations

4 Verification of Compliance

- 4 Installation Information
- 4 Ordering Information
- 4 Health & Safety, Handling & Storage Information

5 Conditions of this APPRAISAL

6 Contact Details



General Information

Description of Product

Classic Stone's Manufactured Stone Veneer Cladding System comprises of weather resistant light-weight manufactured stone pieces adhered by way of a durable acrylic modified cement based adhesive to one of three types of substrate over either timber or lightweight steel framing. The substrates include fibre-cement sheet,

concrete block, and concrete tilt-up slab. The fibre cement sheets are fixed to cavity battens according to the manufacturer's instructions and subject to the limitations described in this appraisal.

Framing must comply with the requirements of E2/AS1 for timber framing or NASH 3405 for lightweight steel framing.



C716 Completed Jan 2008
Verification of Clauses B1, B2, C3, E2 and F2
of the New Zealand Building Code



Trade Literature

The Classic Stone Technical Manual and Installation CD dated March 2008 describes the correct method of installation.

Applicant

The applicant is Classic Stone Ltd.

Scope & Limitations

FRAMING: Classic Stone's Manufactured Stone Veneer Cladding System must be used in conjunction with timber framing and other components of a wall assembly that comply with E2/AS1 or in place of timber framing with lightweight steel framing that complies with NASH 3405, in all respects except as varied herein, in order to meet the Performances of the Building Code claimed in this Appraisal. This limitation includes requiring the cladding system to incorporate the use of cavity battens, and wall wraps that comply with Table 23 of E2/AS1.

SUBSTRATES:

Classic Stone's Manufactured Stone Veneer Cladding System has been appraised to be used in conjunction with sealed concrete block, sealed tilt-up concrete panel, Stonesheet fibre-cement sheet supplied by BGC, and sealed Eterpan fibre-cement sheet supplied by PBS Group subject to the limitations described in this appraisal.

E2/AS1 refers to the acceptable solution contained in the Department of Building and Housing's Compliance Document for New Zealand Building Code Clause E2 'External moisture', Third Edition including Amendments 1 and 2 and Erratum 1.

The Classic Stone's Manufactured Stone Veneer Cladding System has been appraised as providing an alternative solution to the requirements of E2/AS1.

Detailed Information

Detailed Description

Classic Stone's Manufactured Stone Veneer Cladding System is deemed a Medium Wall Cladding based on NZS 3604, being 40 TO 50 Kg /m², comprising of approximately 20 -

45mm thick pieces of light-weight manufactured stone of varying sizes (a proprietary masonry product) glued on their back to the nominated substrate using a proprietary acrylic-modified sand and cement based adhesive. The adhesive is also used as the splash coat and grout between the pieces of manufactured stone to produce a weather resistant aesthetically attractive finish.

In order to prevent moisture ingress past the face of the cladding system, two coats of CS Water Repellant is applied over the finished wall or column once the installation of the manufactured stones is complete.

This cladding system is described throughout this appraisal as 'the Classic Stone Cladding System'

Storage & Handling

The Classic Stone manufactured stones are supplied loose in cardboard boxes, of varying sizes and can be stored indefinitely when kept dry and out of the weather.

The CS Acrylic Stone admixture is supplied in 5 and 20 Litre plastic containers. The CS graded sand is supplied in 20 kg paper sacks. The cement complying with NZS 3122 is obtained from trade suppliers in 25 kg paper sacks.

All products shall be stored in a dry space out of the weather and to prevent accidental damage.

Specific Performances with the NZ Building Code

Clause B1 - Structure

The Classic Stone Cladding System when used in accordance with this Appraisal will meet Performance Requirements of B1.3.3 (a), (b), (f) and (h) of the New Zealand Building Code.

Clause B2 - Durability

The Classic Stone Cladding System when used in accordance with this Appraisal will meet Performance B2.3.1(b) of the New Zealand Building Code. In other words, the product as appraised will be durable for at least 15 years.

Clause C3 - Spread of Fire

The Classic Stone Cladding System when used in accordance with this Appraisal will meet Performance C3.3.5 of the New Zealand Building Code.

**CLASSIC
STONE**



Clause E2 - External Moisture

The Classic Stone Cladding System complies with clause E2.3.2 of the Building Code when installed in accordance with this Appraisal.

In other words, the product as appraised will “prevent the penetration of water that could cause undue dampness, or damage to building elements”. In the opinion of BEAL the maximum Risk Score, based on intersections of roof to cladding to be by specific design, using the risk matrix process described in E2/AS1, is 17.

Clause F2 – Hazardous Building Materials

The product contains no hazardous materials and complies with clause F2.3.2 of the Building Code.

How to install the product

The product shall be installed as described in the Classic Stone Technical Manual dated March 2008. Only trained installers are approved to install the manufactured stones, adhesive and water repellent onto the nominated substrate.

All details of the construction and installation of the substrates must comply with E2/AS1 except as varied by this Appraisal.

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.]

Clause B1 - Structure

The ability of the Classic Stone Cladding System to support self weight and wind loadings, was assessed by an independent engineer.

B2 - Durability

For assessing the durability of the Classic Stone Cladding System, an evaluation was carried out in four stages:

Durability of:

- The nominated substrates
- The adhesive
- The manufactured stone
- The cladding system as a whole

[Refer to Verification of Compliance on page 4.]

Clause C3 - Spread of Fire

For assessing the resistance to spread of fire of the Classic Stone Wall Panel System, historical information was used.

E2 - External Moisture

The Classic Stone Cladding System was assessed for proper design and tested to verify or otherwise compliance with Clause E2. [Refer to the Verification of Compliance - page 4.]

The Classic Stone’s Manufactured Stone Veneer Cladding System was also evaluated in practical building situations to assess the following:

- Ease of installing the product / system
 - Potential risks of non performance when being installed
 - Any external factors that could effect 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 other similar Products.

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

F2 Hazardous Building Materials

For assessing the potential for Classic Stone’s Manufactured Stone Veneer Cladding System to become hazardous to health, BEAL considered the materials used in the manufacture of the manufactured stone and adhesive and concluded that no threat is presented. Installers of the Classic Stone Cladding System shall wear appropriate protective clothing.

Product QA Information

- The Classic Stone manufactured stone product is manufactured to an in-house standard.
- The CS adhesive admixture is manufactured and supplied to Classic Stone to an in-house standard.
- The cement used shall be manufactured to NZS 3122.
- The graded sand is supplied against a Supplier’s in-house standard.
- The fibre-cement sheet shall comply with NZS 2908 Part2
- The concrete block shall comply with AS/NZS 4455.

The tilt-up concrete shall comply with NZS 2908 Part2

All products are covered by Classic Stone's Quality Assurance Programme to ensure the completed cladding system will comply with the New Zealand Building Code.

The Classic Stone Technical Manual dated March 2008 and DVD describes the correct method of installation.

Design Considerations

The Classic Stone Cladding System can be installed over timber framing complying with NZS 3604 and over light-weight steel framing complying with NASH 3405:2006 Steel Framed Buildings.

The use of Eterpan fibre cement sheets is limited to the use of 9mm thick sheets sealed both sides with an appraised sealer and installed in Low to Medium wind zones only, up to two stories. Fixing shall be by way of stainless steel nails or screws as

described in the manufacturer's fixing instructions (4201V Ventclad Cladding System). Taubmans UltrProof acrylic enamel diluted up to 50% with clean water is appraised as a sealer.

Stonesheet fibre cement sheets (6mm) may be installed in all wind zones covered by NZS 3604 and shall be fixed using stainless steel fixings as described in the manufacturer's fixing instructions (BGC Stonesheet Fixing Guide).

It is essential that the fixings are not closer than 12mm from the edge of the sheets and not over-tightened.

Concrete block when used as a substrate to a specific design shall comply with AS/NZS 4455 and AS/NZS4210.

Concrete tit-up panels when used as a substrate to a specific design shall comply with the guidelines described in TM 34, Tilt-up Technical Manual from Cement & Concrete Assn. NZ.

Verification of Compliance

Methods Used

- Testing and assessment by a laboratory or testing facility (BEAL)
- In service history - over 4 years in New Zealand.

This appraisal uses the in service history provided by the manufacturer, 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
Moisture resistance of manufactured stone	AS/NZS 4201.4	< 0.5% w/w	Pass
Moisture resistance of adhesive	AS/NZS 4201.4	< 0.5% w/w	Pass
Moisture resistance of sealed Eterpan**	AS/NZS 4201.4	< 0.5% w/w	Pass
Moisture resistance of Stonesheet	AS/NZS 4201.4	< 0.5% w/w	Pass
Freeze-Thaw conditioning of adhesive	BQI TM 504	No delamination	Pass
Tensile adhesion testing of Adhesive	NZS1580.408.5 Adhesion (mod)	>1.0 MPa	Pass
Weathertightness of cladding system (up to 600 Pa)	BQI TM 414	No leaks	Pass

**** representing unsealed concrete block and unsealed concrete tilt-up panel**

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



Conditions of this Appraisal

1. The Products continue to comply with the quality assurance measures of Classic Stone 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 Classic Stone's Manufactured Stone Veneer Cladding System Technical Manual.
3. Classic Stone Ltd continues to have the product range reviewed and quality assurance programme audited annually by BEAL.
4. The overall quality and performance of the products are maintained.
5. Classic Stone 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.

Authorised Signatory -

4 March 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 manufacturer of the Manufactured Stone Veneer Cladding System is Classic Stone Ltd.

Classic Stone Ltd. can be contacted at:
Head Office 03 688 7036
Fax 03 688 7037
E-mail info@classicstone.co.nz
Web Site www.classicstone.co.nz
Sales and technical enquires to Steve Little on 0800 278 663



BEAL can be contacted at:
Head Office 04 233 6661
Fax 04 233 6662
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