BEAL APPRAISED · BUILDING CODE COMPLIANT · C1408b

EXPIRES :30 April 2022

BEAL Appraisal Certificate

PROBUILT VILLAGE STONE'S Stone Veneer Cladding System

Product

1.1 The PROBUILT VILLAGE STONE stone veneer cladding system (SVCS) uses a fibre-cement board as the cladding substrate onto which is adhered selected natural stones or manufactured stone veneer, to provide an attractive stone finish for application to residential, and light commercial feature walls.

1.2 PROBUILT VILLAGE STONE'S SVCS utilises a natural stone veneer or PROBUILT VILLAGE STONE'S manufactured stone veneer ranging in weight from 55kg/m² to 80kg/m².

1.3 The cladding substrate is BGC 9mm thick Stonesheet™, which is fixed on to the building structure over mechanically fixed timber cavity battens. The 40mm x 20mm H3.2 battens are fixed over a 'frame protection system' (building wrap system) complying the performance requirements of the NZBC to timber framing complying with NZS3604 or over light-gauge steel framing complying with NASH Standards Parts 1 and 2.

1.4 The BGC Stonesheet™ is fixed over battens to the framing by way of 10g x 65mm stainless steel screws at 150mm centres applied around the perimeter and centre of the board. In order to ensure the board meets the durability requirements, the board is primed on the face using a proprietary sealer. To prevent the ingress of moisture at vertical and horizontal junctions, a special board tape is used, and for inter-storey junctions, the tape is used in place of h or z flashings.

Building Regulations

2.1 In the opinion of BEAL, the PROBUILT VILLAGE STONE SVCS, if designed, installed and maintained in accordance with the statements and conditions of this Appraisal Certificate, will meet the following provisions of the New Zealand Building Code (NZBC):

2.2 Clause B1 STRUCTURE

Performance B1.3.1 and B1.3.3.(a), (f), (h), (j) and (q). The PROBUILT VILLAGE STONE SVCS meets these requirements for loads arising from self weight, earthquake, wind, impact and creep. See paragraphs 10.1 - 10.3.

2.3 Clause B2 DURABILTY

Performance B2.3.1 (a), at least 50 years and B2.3.2. The PROBUILT VILLAGE STONE SVCS meets these requirements. See paragraphs 11.1-11.5.

2.4 Clause E2 EXTERNAL MOISTURE

Performance E2.3.2. The PROBUILT VILLAGE STONE SVCS meets this requirement. See paragraph 12.1 - 12.6.

2.5 Clause F2 HAZARDOUS BUILDING

Applicant:

ProBuilt Village Stone

ProBuilt Village Stone
PO Box 15,
Patumahoe,
Auckland, 2344
TEL: 0800 484 552
E-Mail: info@probuilt.co.nz
www.probuilt.co.nz

Appraiser:

BEAL BUILDING ELEMENT ASSESSMENT LABORATORY LIMITED

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

MATERIALS

Performance F2.3.1. The PROBUILT VILLAGE STONE SVCS meets this requirement and is not a health hazard to people.

2.6 The PROBUILT VILLAGE STONE SVCS has been appraised as an **Alternative Solution** in terms of New Zealand Building Code Compliance.

Scope and Limitations

3.1 The PROBUILT VILLAGE STONE SVCS 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 NZS 3604:2011; and or,
- Constructed with steel framing complying with NASH Standards Parts 1 and 2; 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 'Extra High' wind zones as described in NZS 3604:2011 Timber-framed Buildings.

3.2 The PROBUILT VILLAGE STONE SVCS must only be installed on vertical surfaces in accordance with the PROBUILT VILLAGE STONE Technical Manual v2.2 (dated March, 2016).

3.3 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 PROBUILT VILLAGE STONE SVCS 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).

Technical Literature

4.1 Refer to the PROBUILT VILLAGE STONE SVCS Technical Manual v2.2 (dated March, 2016). The Technical Literature must be read in conjunction with this Appraisal. 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.probuilt.co.nz

Technical Specification

5.1 System components and accessories covered by the technical manual includes:

BGC Stonesheet™

- BGC Stonesheet™ is a fibre-cement type sheet, 2400mm by 1200mm, 9mm thick. The method of installation incorporating the use of Render Tape at all vertical and horizontal joints, is covered in BEAL Appraisal C807.

Cavity Battens

- Timber cavity battens shall be H3.2, 40mm x 20mm.
- Cavibat Cavity Battens, if used, are manufactured from extruded polypropylene. The battens are cut after extruding to a finished size of approximately 45 mm wide by 18 mm thick. The battens are supplied in 1200 mm long lengths . The battens are 45mm wide by 20mm to 50mm thick and are supplied in 250mm minimum lengths or full length battens can be used.

Fasteners

- For timber framed construction – 10g x 65mm Stainless Steel 316 screws with M6 x 19mm x 1.6mm washers compliant with AS3566.2 at 150mm spacings.
- For steel framed construction – 10g x 50mm Stainless Steel 316 screws with m6 x 19mm x 1.6mm washers compliant with AS3566.2 at 150mm spacings.

Adhesive Mortar

- A two part adhesive specifically designed for stone veneer is used; Part A is Araplex SBR, a carboxylated styrene/butadiene co-polymer emulsion, which is added to Part B, which is a pre-bagged premium grade cement based adhesive.
- Part A and B are mixed in the correct proportions necessary for use with the PROBUILT VILLAGE STONE SVCS. Refer to the technical literature.

PROBUILT VILLAGE STONE'S Stone Veneer

- The 'natural stone veneer' is a natural stone approximately 30mm to 50mm thick with an average weight of 80kg per square metre, though some patterns and styles may vary a little.
- The 'manufactured stone' is a cement based stone veneer 30mm to 50mm thick with an average weight of 55kg per square metre, with a variety of patterns and styles.

5.2 Accessories required as part of the PROBUILT VILLAGE STONE stone veneer cladding system include:

- A Frame Protection System incorporating building wrap (underlay), complying with the performance requirements of the NZBC, self-adhesive boots to seal all pipe penetrations to the wrap, and self-adhesive tape suited to seal all overlaps and edges of the wrap, that prevents any ingress of moisture or wind.
- Bottom cavity closer or Vents
- Proprietary pipe seals or flashing tape for sealing around pipes and all penetrations to the BGC Stonesheet™.

5.3 Components supplied by the owner or main con tractor are:

- Window head, jamb and sill flashings complying with the performance requirements of the NZBC, installed in accordance with the manufacturer's instructions.

Handling and Storage

6.1 Handling and storage of all the materials supplied by PROBUILT VILLAGE STONE or the licensed contractor, both on and off site are under the control of PROBUILT VILLAGE STONE trained and approved contractors.

6.2 Dry storage must be provided on site for the BGC Stonesheet™ and Adhesive Mortar and these must be protected from physical damage. CaviBat battens if used, 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 BGC Stonesheet™ requires care to prevent damage to corners or excessive flexing.

6.4 Handling and storage of all the 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 manufacturer's 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 3604:2011 for both buildings or parts of buildings within the scope and limitations of NZS 3604. Where buildings or parts of buildings are outside the scope of NZS 3604 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 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 and NASH Standards Parts 1 and 2.

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 of 0.55mm.

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

BGC Stonesheet™ Layout

7.7 BGC Stonesheet™'s are installed vertically, supported at fixing locations with vertical and horizontal cavity battens. See technical drawing details supplied with the PROBUILT VILLAGE STONE Technical Manual v2.2 (dated March, 2016).

General

8.1 Punchings in the slotted vermin control cavity closer must 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 ground 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 PROBUILT VILLAGE STONE SVCS by a minimum of 100mm, and unpaved surfaces by 175mm.

8.3 At balcony, deck or roof to wall junctions , the bottom edge of the PROBUILT VILLAGE STONE SVCS must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 35mm.

8.4 Where the PROBUILT VILLAGE STONE SVCS abuts other cladding systems, designers must detail the junction to meet their own requirements whilst meeting performance requirements of the NZBC. The Technical Literature includes detail drawings for common junctions. 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 BGC Stonesheet™ are used must be constructed in accordance with the Technical Literature and as follows;

- Horizontal control joints - To be installed when intermediate timber floor joists are not seasoned and/or when the height of the wall exceeds 5.6m.
- Vertical Control Joints - at maximum 5.4m centres or 6m if wall finishes on an external corner; aligned with any control joint within the structural framing, or where the system abuts other cladding systems.

(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 this Appraisal Certificate and are the responsibility of the designer.)

Structure - Clause B1

Mass

10.1 The PROBUILT VILLAGE STONE SVCS (panel and coating system) has a approximate mass of 65 to 90kg/m², which ranges from a "medium" to "heavy" cladding in terms of NZS 3604.

Impact Resistance

10.2 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

10.3 The PROBUILT VILLAGE STONE SVCS is suitable for use in all building wind zones as per NZS 3604, up to, and including 'Extra High'.

Durability– Clause B2

11.1 The PROBUILT VILLAGE STONE SVCS 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 (a), at least 50 years for the cladding system.

Maintenance

11.2 Regular maintenance is essential to ensure the performance requirements of the NZBC are met and to ensure the maximum serviceability of the PROBUILT VILLAGE STONE SVCS .

11.3 Periodic cleaning of the cladding system is required to remove grime, dirt and organic growth as per the Technical Literature in order to maximize the life and appearance of the stones and adhesive.

11.4 Any cracks, damaged areas or areas showing signs of deterioration that could allow water ingress, must be repaired immediately. The PROBUILT VILLAGE STONE SVCS must be maintained and repaired in accordance with the instructions from PROBUILT VILLAGE STONE.

11.5 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.

External Moisture - Clause E2

12.1 When installed in accordance with this Appraisal Certificate and Technical Literature, the PROBUILT VILLAGE STONE SVCS 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.

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

12.3 The PROBUILT VILLAGE STONE SVCS 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.

12.4 The details provided within the Technical Literature for weather resistance incorporating a Frame Protection System are based on the design principle of employing 3 lines of defence against moisture entry for joints, penetrations and junctions. Moisture ingress must be prevented by detailing any joinery or wall junctions as shown in the detail drawings provided in the PROBUILT VILLAGE STONE Technical Manual. Any other weathertightness details developed by a designer are outside the scope of this Appraisal Certificate and are the responsibility of the designer .

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

12.6 When the PROBUILT VILLAGE STONE SVCS is installed over a steel frame, 10mm extruded polystyrene thermal break sheeting with a R value of at least 0.3, must be installed over the steel frame (stud, nog, top and bottom plate) to provide an effective thermal break. Building wrap (underlay) is then typically dressed over the top of the thermal break followed by the installation of the cavity battens.

Installation Information

Installation Skill Level Requirement

13.1 Installation and finishing of the components and accessories supplied by PROBUILT VILLAGE STONE and the approved contractors must be completed by trained installers/applicators, approved by PROBUILT VILLAGE STONE.

13.2 Installation of the accessories supplied by the building contractor must be completed by a tradesperson who has an understanding of cavity based cladding construction, in accordance with instructions given within the PROBUILT VILLAGE STONE Technical Manual and this Appraisal Certificate.

System Installation

14.1 The selected frame protection system Wrap and accessories) must be installed by a contractor in accordance with the manufacturer's instructions, prior to the installation of the cavity battens and the PROBUILT VILLAGE STONE SVCS.

14.2 Note all laps and outer edges of the wall wrap shall be taped to prevent the ingress of wind.

14.3 Aluminum joinery must be installed by the building contractor in accordance with the manufacturer's instructions. 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.

14.4 PROBUILT VILLAGE STONE SVCS shall be installed in accordance with the Technical Literature by PROBUILT VILLAGE STONE approved contractors.

14.5 The Technical Literature must be referred to during any inspections of the PROBUILT VILLAGE STONE SVCS installations.

Health and Safety

15.1 When cutting, drilling or grinding the BGC Stonesheet™, this must be carried out in an open air or well ventilated area, and a dust mask, eye protection and gloves must be worn.

15.2 All aspects of cutting, drilling or grinding must comply with the latest regulations of the occupational health and safety division of the Ministry of Business, Innovation & Employment.

15.3 Refer to the Technical Literature from the relevant manufacturer for the safe use and handling of the components that make up the PROBUILT VILLAGE STONE SVCS.

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

16.1 The following testing of the PROBUILT VILLAGE STONE'S SVCS and its respective components has been undertaken by BEAL unless otherwise noted:

- BEAL opinion on clause E2 code compliance was based on the evaluation of all details within the scope of this Appraisal and testing of the PROBUILT VILLAGE STONE SVCS to E2/VM1. 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. BEAL have also reviewed the details within the Technical Manual v2.2 (dated March, 2016), and an opinion has been given by BEAL that the system will meet the performance levels of E2/AS1 for a drained cavity system.
- Density and water absorption of the PROBUILT VILLAGE STONE stone veneer.
- Adhesion and compatibility testing of the PROBUILT VILLAGE STONE adhesive/mortar mix with the BGC Stonesheet™ has been carried out in accordance with ASTM C297.

Other Investigations

16.1 Wind loadings, self weight, seismic loadings, shear force, panel capacity, fastener pull through testing and calculations for the PROBUILT VILLAGE STONE SVCS were determined by an independent Chartered Engineer in respect to the requirements of compliance document B1 Structure. Structural and durability opinions were provided.

16.2 Ease of application has been assessed at BEALs facilities and found satisfactory.

16.3 The Technical Literature for the PROBUILT VILLAGE STONE SVCS has been examined by BEAL and found to be satisfactory.

Quality

17.1 The manufacture of the stone veneer has been assessed by BEAL, including quality control measures. Details regarding the quality and composition of the materials used were obtained by BEAL and found to be satisfactory.

17.2 The quality of materials, components and accessories supplied by PROBUILT VILLAGE STONE is managed through the use of a Building Product Quality Plan.

17.3 The PROBUILT VILLAGE STONE SVCS Building Product Quality Plan ensures continuous conformance with the quality requirements from purchase to supply of components.

17.4 PROBUILT VILLAGE STONE'S Building Product Quality Plan is reviewed at least annually by BEAL.

17.5 Quality on site is the responsibility of the PROBUILT VILLAGE STONE licensed contractors.

17.6 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems, joinery, frame protection system (building wrap), flashing tapes, head flashings and air seals in accordance with the manufacturer's instructions and this Appraisal Certificate.

17.7 The quality of the installation of the PROBUILT VILLAGE STONE SVCS is managed through the use of a Building Product Quality Plan.

17.8 For a copy of this Technical Literature and any subsequent updates please refer to: www.probuilt.co.nz

17.9 Building owners are responsible for the maintenance of the PROBUILT VILLAGE STONE SVCS in accordance with the written maintenance instructions from PROBUILT VILLAGE STONE.

Sources of Information

- AS 3566 Self Drilling Screws for the Building and Construction Industries.
- AS/NZS 1170:2002 Structural Design Actions.
- ASTM C 297: Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions.
- AS/NZS 2908.2: Cellulose-cement Products.
- NASH Standards Parts 1 and 2; Light Steel Framed Buildings, www.nash.org.nz
- NZS 3602:2003 Timber and Wood-based Products for use in Building.
- NZS 3603:1993 Timber Structures Standard.
- NZS 3604:2011 Timber Framed Buildings.
- NZS 4211:1985 Specification for Performance of Windows.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- The Building Regulations 1992, up to, and including October 2004 Amendment.

Concluding statement

18.1 In the opinion of BEAL, the PROBUILT VILLAGE STONE SVCS 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 and the PROBUILT VILLAGE STONE technical literature.

18.2 The Appraisal Certificate is issued only to PROBUILT VILLAGE STONE, and is valid until further notification, subject to the conditions of this Appraisal.

Conditions of Appraisal

1. This Appraisal Certificate :
   A. Relates only to the PROBUILT VILLAGE STONE SVCS 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 valid to the date on the front cover of this appraisal certificate;
   E. Is copyright of BEAL.

2. The Appraisal Certificate holder continues to meet the quality requirements of the PROBUILT VILLAGE STONE SVCS Building Product Quality Plan and has the plan audited before revalidating the appraisal by BEAL on an annual basis.

3. PROBUILT VILLAGE STONE, shall notify BEAL and obtain approval of any changes in 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,

BEAL BUILDING ELEMENT ASSESSMENT LABORATORY

C R Prouse - Principal Building Scientist

April 2016

C1408b

