



**BRANZ Appraised**

Appraisal No.722 [2011]

BRANZ Appraisals

Technical Assessments of products  
for building and construction

**BRANZ  
APPRAISAL  
No. 722 (2011)**

## **THE SPEEDWALL® EX1 EXTERNAL WALL SYSTEM**

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## Product

1.1 The Speedwall® EX1 External Wall System incorporates Speedwall® panels that are used to construct single skin, non-loadbearing, standard, fire and acoustically rated external walls.

1.2 Speedwall® panels are made from lightweight aerated concrete encased in profiled galvanised sheet steel or factory applied paint coated sheet steel formwork.



*Speedwall® EX1 boundary wall colour matched with adjoining long run steel clad wall.*

## Scope

2.1 The Speedwall® EX1 External Wall System has been appraised for use as single skin, non-loadbearing, standard, fire and acoustically rated external walls for all buildings of importance levels 1 to 5 as defined by AS/NZS 1170, except that housing and communal residential buildings are excluded.

2.2 The Speedwall® EX1 External Wall System has been appraised for vertical, straight in-fill panel walls with no penetrations.

2.3 When used with the Speedwall® EX1 External Wall System the Speedwall® panels are installed in a vertical orientation. The maximum span for the panels between structural supports is 8 m. The overall height or length of a Speedwall® System wall will be determined by the structural support. When used as part of a fire rated system, the maximum span of the Speedwall® panels is 4 m. Greater spans are subject to specific engineering design and/or fire engineering assessment and are outside the scope of this Appraisal.

2.4 The Speedwall® EX1 External Wall System is not suitable for use in NZS 3604: 2011 Exposure Zone D or near Geothermal Hotspots.

## Building Regulations

### New Zealand Building Code (NZBC)

**3.1** In the opinion of BRANZ, the Speedwall® EX1 External Wall System, if designed, installed, used and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

**Clause B1 STRUCTURE:** Performance B1.3.1, B1.3.2 and B1.3.4. The Speedwall® EX1 External Wall System meets the requirements for loads arising from self-weight, earthquake, wind, impact and creep and shrinkage [i.e. B1.3.3 (a), (f), (h), (j), and (q)]. See Paragraphs 8.1 - 8.2.

**Clause B2 DURABILITY:** Performance B2.3.1(b), 15 years, Performance B2.3.1(c), 5 years. The Speedwall® EX1 External Wall System meets these requirements. See Paragraphs 9.1 - 9.3.

**Clause C3 SPREAD OF FIRE:** Performance C3.3.1, C3.3.2 and C3.3.5. The Speedwall® EX1 External Wall System will meet these requirements. See Paragraphs 13.1 - 13.5.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.2. The Speedwall® EX1 External Wall System will meet this requirement. See Paragraphs 14.1 - 14.2.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. The Speedwall® EX1 External Wall System meets this requirement and will not present a health hazard to people.

**3.2** This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

## Technical Specification

### General

**4.1** The Speedwall® EX1 External Wall System is a non-loadbearing external wall system that is attached to the structural frames of buildings to provide external walls.

#### Speedwall® Panels

**4.2** Speedwall® panels are manufactured from lightweight aerated concrete encased in a steel permanent formwork. The permanent formwork is roll-formed from either:

- Zinc coated steel strips with a base metal thickness of 0.4 mm with ZM275 zinc coating.
- AZ150 coated steel strips with a base metal thickness of 0.4 mm and a factory applied paint coating.

Paint coated steel coil may be used on both faces.

**4.3** The Speedwall® panels are supplied in lengths of up to 8 metres. They are 78 mm thick and 288 mm wide. The long edges are tongue and groove so the pitch of the panels when installed is 250 mm.

**4.4** The Speedwall® panels are available in nominal densities of 400 kg/m<sup>3</sup>, 600 kg/m<sup>3</sup>, 800 kg/m<sup>3</sup> and 1000 kg/m<sup>3</sup>.

#### Accessories

**4.5** Accessories and materials used with the Speedwall® System that are supplied by Speedwall® (NZ) Ltd are:

- Speedwall® C-track - 60 x 80 x 60 x 1.15 mm (base metal thickness) C-section available in galvanised steel and powder coated to match the paint coated steel coil.
- Speedwall® angle - 50 x 60 x 1.2 mm (bmt) angle available in galvanised steel and powder coated to match the paint coated steel coil.
- Fasteners for panel to panel connection, panel to C-track and angle connection, C-track and angle to concrete and C-track and angle to steelwork.

**4.6** Accessories used with the Speedwall® EX1 External Wall System that are supplied by Speedwall® (NZ) Ltd or the building contractor are:

- Light gauge steel framing.
- 130 x 40 x 3 mm galvanised L-section steel angle or 3 mm galvanised steel plate for the base of the wall.
- 25 x 25 mm Speedwall® closed cell foam.
- 6.5 mm x 75 mm countersunk Bluetip screw bolts.
- Polyurethane sealant.

### Packaging, Handling and Storage

**5.1** Speedwall® panels are delivered to site in packages. They must be handled with care to avoid physical damage, particularly to the bottom edges and the finished exposed faces, and must be stored so that they are protected from the weather under clean, dry and ventilated conditions. They should be stored on bearers no more than 2 m apart.

**5.2** Accessories used with the Speedwall® EX1 External Wall System must also be handled with care to avoid damage. Components such as sealants must be stored in dry locations protected from the weather. Other components should be stored so that they are protected from the weather.

## Technical Literature

**6.1** Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Speedwall® EX1 External Wall System. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, installation, use and maintenance contained within the Technical Literature and within the scope of this Appraisal must be followed.

## Design Information

### General

**7.1** The Speedwall® EX1 External Wall System Technical Literature contains design information and procedures required to allow building designers to design structures incorporating the Speedwall® System. This includes incorporating both fire rated systems and noise control systems depending upon the users requirements.

**7.2** The maximum length of Speedwall® panel allowed between structural supports is 8 m. Where the system is being used as a fire rated system, the maximum length of Speedwall® panel allowed between structural supports is 4 m. Greater spans are subject to specific engineering design and/or fire engineering assessment and are outside the scope of this Appraisal.

**7.3** Speedwall® panels used with the Speedwall® EX1 External Wall System are erected vertically.

**7.4** For selection of finishes for durability refer to Speedwall® (NZ) Ltd.

### Structure

#### General

**8.1** The Speedwall® EX1 External Wall System is for use within concrete framed structures that have been designed in accordance with NZS 3101 and/or steel framed structures that have been designed in accordance with NZS 3404.

## Design

8.2 Design of the Speedwall® EX1 External Wall System must be in accordance with the information and methods given in the Technical Literature and must be carried out by a suitably qualified design engineer considering all loading types as specified in Paragraph 3.1.

**Table 1: Speedwall serviceable life**

External Material Type	NZS 3604: 2011 Environment			
	Zone C	Zone B	Geothermal	Zone D
Galvabond G2	10 years	15 years	Not recommended	Not recommended
ZM275 coated steel with factory applied paint coating	10 years	15 years	Not recommended	Not recommended
AZ150 coated steel with factory applied paint coating	15 years	15 years	Not recommended	Not recommended

## Durability

9.1 Table 1 gives the expected serviceable life of the Speedwall® EX1 External Wall System.

9.2 Where the internal faces of the Speedwall® panels will experience regular use of chemical cleaning agents, or be in the presence of vapours that may attack galvanised steel components during service, then Speedwall® (NZ) Ltd should be contacted to determine the correct panel coating selection is made to ensure the required service life of the system is achieved.

## Maintenance

10.1 Where Speedwall® panels are exposed an inspection should be carried out at least annually to ensure that no undue degradation is occurring. Where items such as corrosion are identified, then the cause must be determined, and repairs must be made to restore the system.

10.2 Where Speedwall® panels are not exposed to corrosive environments then no maintenance should be required.

## Outbreak of Fire

11.1 The Speedwall® EX1 External Wall System has not been assessed for construction associated with heating appliances and must not be used as such.

## Control of Internal Fire and Smoke Spread

12.1 For the purposes of complying with the requirements for internal surface finishes, Speedwall® panels have a Spread of Flame Index (SFI) and a Smoke Developed Index (SDI) as given in Table 1. This SFIs and SDIs means that they can be used in buildings containing any purpose group in accordance with NZBC Acceptable Solution C/AS1 Part 6, Table 6.2.

12.2 When an applied finish or lining is used over the Speedwall® EX1 External Wall System, the SFI and SDI must be obtained from the manufacturer of the finished product or system.

**Table 1. Surface Finish Properties**

Product	Spread of Flame Index	Smoke Developed Index
Galvanised steel	0	0
Paint coated steel coil	0	0-2

## Spread of Fire

13.1 The Speedwall® EX1 External Wall System has a fire resistance rating of -/240/120.

13.2 Where the Speedwall® EX1 External Wall System is used as part of a fire rated system then the maximum span of the Speedwall® panels is 4 m. Greater spans are subject to specific engineering design and/or fire engineering assessment and are outside the scope of this Appraisal.

13.3 In order to satisfy the requirements of NZBC Clause C4 Structural Stability during Fire, designers must ensure that fire rated element, i.e. the Speedwall® EX1 External Wall System, is supported by building elements having at least the same FRR as the fire rated element they are supporting.

13.4 The Speedwall® EX1 External Wall System fire rated system given in the Technical Literature will comply with NZBC Clause C3.3.2 for fire separation when used to provide a FRR that meets the requirements of NZBC Acceptable Solution C/AS1.

13.5 The Speedwall® EX1 External Wall System fire rated system given in the Technical Literature will comply with NZBC Clause C3.3.5 when used to provide a FRR that meets the requirements of NZBC Acceptable Solution C/AS1 Part 7.10.

## External Moisture

14.1 The Speedwall® EX1 External Wall System has been tested in accordance with the requirements of AS/NZS 4284 and has been found suitable up to an Ultimate Limit State (ULS) wind load of 2.5 kPa (refer to Paragraph 2.1). This test method is designed to verify the performance of commercial building facades.

14.2 The Speedwall® EX1 External Wall System, if installed and maintained in accordance with the requirements of the Technical Literature and this Appraisal, will provide an external wall that will prevent the penetration of moisture that could cause undue dampness or damage to building elements.

## Airborne and Impact Sound

15.1 The Technical Literature gives a Sound Transmission Class (STC) rating of 40 for the Speedwall® EX1 External Wall System. If a greater STC is required from the wall then Speedwall (NZ) Ltd should be consulted.

15.2 The Speedwall® EX1 External Wall System noise control system given in the Technical Literature is based on Speedwall® panels with concrete density of 400 kg/m<sup>3</sup>.

## Installation Information

### Installation Skill Level Requirement

16.1 Installation of the Speedwall® panels must be carried out by experienced building contractors.

### General

17.1 The Speedwall® EX1 External Wall System must be installed in accordance with the specifications contained in the Technical Literature.

### Inspections

17.2 For inspection, reference must be made to the specific building design documentation and the Technical Literature.

### Cutting Panels

17.3 Speedwall® panels can be cut to length with the use of a sabre saw, circular saw or evacuated grinder to minimise dust. Where Speedwall® panels are trimmed to width, the cut section of the panel is fitted with track and is always the last panel abutting the wall or column. The panel is then sealed and fixed with an angle section.

### Health and Safety

17.4 Suitable safety glasses, ear muffs and face masks must always be worn when cutting Speedwall panels.

17.5 Where powder-actuated fasteners are used OSH guidelines on the use of powder-actuated hand-held fastening tools must be followed.

### Framing

17.6 The structural frame to which the Speedwall® systems will be attached must be as per the designer's specifications, and must be plumb, level and in true alignment.

### Fixing

17.7 The fixing of all Speedwall® panels, channels and angles must be strictly in accordance with the Technical Literature.

## Other Investigations

19.1 The Speedwall® EX1 External Wall System Technical Literature has been examined by BRANZ and found to be satisfactory.

19.2 Site visits were carried out by BRANZ to assess the practicability of the installation of the systems, and to view completed installations.

19.3 An assessment was made of the durability of the systems by BRANZ technical experts and found to be satisfactory.

## Quality

20.1 Speedwall (NZ) Ltd's manufacturing process and details of the quality and composition of the materials have been examined by BRANZ and found to be satisfactory.

20.2 Speedwall (NZ) Ltd is responsible for the quality of the product supplied.

20.3 Quality on site is the responsibility of the installer.

20.4 Designers are responsible for incorporating the Speedwall® EX1 External Wall System into the design of their buildings.

20.5 Building owners are responsible for the maintenance of the Speedwall® EX1 External Wall System in accordance with the instructions of Speedwall (NZ) Ltd.

## Sources of Information

- AS/NZS 1170 Structural design actions.
- NZS 3101.1 & 2:2006 Concrete structures standard.
- NZS 3404.1 & 2:1997 Steel structures standard.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4284: 2008 Testing of building facades.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (including Amendment 5, 1 August 2011).
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition September 2010.
- The Building Regulations 1992.

## Basis of Appraisal

The following is a summary of the technical investigations carried out:

### Tests

18.1 Fire testing has been carried out to determine the performance of the Speedwall® EX1 External Wall System under fire conditions. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

18.2 Sound insulation testing has been carried out to determine the acoustic performance of the Speedwall® EX1 External Wall System. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

18.3 BRANZ expert opinion on NZBC E2 Code Compliance for the Speedwall® EX1 External Wall System was based on testing carried out in accordance with AS/NZS 4284 by an IANZ Accredited testing laboratory.





**BRANZ**

In the opinion of BRANZ, **The Speedwall® EX1 External Wall** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Speedwall® (NZ) Ltd**, and is valid until further notice, subject to the Conditions of Appraisal.

#### Conditions of Appraisal

1. This Appraisal:
  - a) relates only to the product 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 BRANZ.
2. **Speedwall® (NZ) Ltd**:
  - a) continues to have the product reviewed by BRANZ;
  - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
  - c) abides by the BRANZ Appraisals Services Terms and Conditions.
  - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty 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 **Speedwall® (NZ) Ltd**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Speedwall® (NZ) Ltd** or any third party.

For BRANZ

P Burghout  
Chief Executive

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