BRANZ Appraised
Appraisal No.394 [2006]

BRANZ Appraisals

Technical Assessments of products for building and construction

BRANZ APPRAISAL CERTIFICATE No. 394 (2006)

This Certificate replaces Appraisal Certificate No 394 (2000) issued 20 July 2000.

GIB® NOISE CONTROL SYSTEMS

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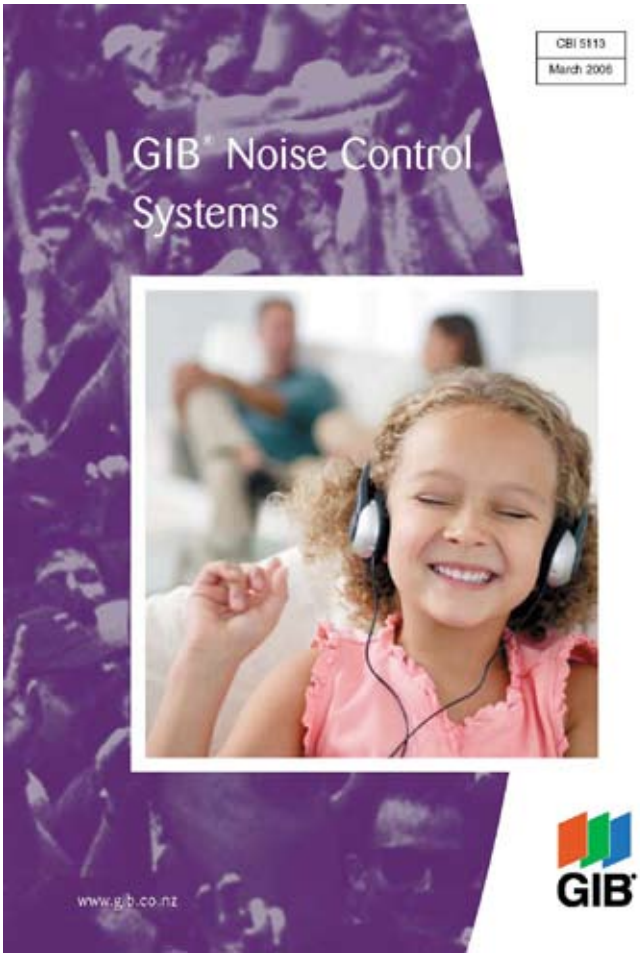
Product

1.1 GIB® Noise Control Systems are a range of intertenancy and sub-intertenancy building element constructions based on the use of GIB® plasterboards. GIB® Noise Control Systems are *Sound Transmission Class* rated for walls and floor/ceilings and *Impact Insulation Class* rated for floor/ceilings.

1.2 The range consists of timber and steel framed wall systems and timber floor joist with metal ceiling batten floor/ceiling systems. The range also includes floor, wall and roof constructions for environmental noise reduction.

1.3 GIB® plasterboard products used in the GIB® Noise Control Systems are GIB Noiseline®, GIB® Standard plasterboard and GIB Fyreline®.



Scope

2.1 GIB® Noise Control Systems have been appraised for use as *Sound Transmission Class (STC)* rated for walls and floor/ceilings and *Impact Insulation Class (IIC)* rated for floor/ceilings construction elements in buildings. They have also been appraised for environmental noise reduction.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the GIB® Noise Control Systems, if designed, used, installed and maintained in accordance with the statements and conditions of this Certificate, will meet the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. GIB® Noise Control Systems meet the requirements for loads arising from self-weight and impact [i.e. B1.3.3 (a) and (j)]. See Paragraph 10.1.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, B2.3.1 (b) 15 years and B2.3.1 (c) 5 years. GIB® Noise Control Systems meet the requirements. See Paragraph 11.1 and 11.2.
Clause C3 SPREAD OF FIRE: Performance C3.3.1, C3.3.2 and C3.3.5. GIB® Noise Control Systems meet the requirements by providing passive fire and smoke protection. See Paragraphs 13.1 - 13.5.
Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. GIB® Noise Control Systems meet this requirement and will not present a health hazard to people.
Clause G6 AIRBORNE AND IMPACT SOUND: Performance G6.3.1 and G6.3.2. GIB® Noise Control Systems meet the requirements. See Paragraph 15.1.

3.2 This Certificate appraises an **Alternative Solution** in terms of New Zealand Building Code compliance.

Technical Specification

4.1 The GIB® plasterboards and accessories used in the GIB® Noise Control Systems and supplied or specified by Winstone Wallboards Limited are as follows:

GIB® Plasterboards

- **GIB Noiseline®**

4.2 GIB Noiseline® is a high-density fibreglass reinforced paper-bound gypsum-plaster core sheet lining material. The sheets have a taper on the two long sheet edges. GIB Noiseline® is available in 10 mm and 13 mm sheet thicknesses, a sheet width of 1200 mm and in lengths of 2400 mm, 2700 mm and 3000 mm. The nominal weights are 9 kg/m^2 and 12.4 kg/m^2 for 10 mm and 13 mm thick sheets respectively. GIB Noiseline® face paper is light buff in colour.

- **GIB® Standard Plasterboard**

4.3 GIB® Standard plasterboard is a paper-bound gypsum-plaster core sheet lining material. GIB® Standard Plasterboard is available in 10 mm and 13 mm thicknesses and a sheet width of 1200 mm and 1350 mm (GIB® Wideline). The sheets have a taper on the two long sheet edges. The 10 mm thick sheets are also available with a square edge. Sheets are available in various lengths from 2400 mm to 6000 mm. The nominal weights are 7 kg/m^2 and 8.7 kg/m^2 for 10 mm and 13 mm thick sheets respectively. GIB® Standard plasterboard face paper is a light buff colour.

- **GIB Fyreline®**

4.4 GIB Fyreline® is a paper-bound gypsum-plaster core sheet lining material. Glass fibre and other additives are added to the core during manufacture. The sheets have a taper on the two long sheet edges. GIB Fyreline® is available in thicknesses of 10 mm, 13 mm, 16 mm and 19 mm with a sheet width of 1200 mm. Sheet thicknesses of 10 mm and 13 mm are available in standard lengths between 2400 mm and 3600 mm and sheet thicknesses of 16 mm and 19 mm are available in standard lengths between 2400 mm and 3000 mm. The maximum weight is 7 kg/m^2, 9.7 kg/m^2, 13.9 kg/m^2, and 16.6 kg/m^2 for 10 mm, 13 mm, 16 mm and 19 mm thick sheet respectively. GIB Fyreline® face paper is pink in colour.

Fastenings

- GIB® Grabber® High Thread Drywall screws for fixing to timber:
  6g x 25, 32, 41 mm and 7g x 51, 57 mm.
- GIB® Grabber® Self Tapping Drywall screws for fixing to light gauge steel:
  6g x 25, 32, 41 mm; 7g x 51 mm and 8g x 63, 76 mm.
- GIB® Nail annular threaded shank:
  30 x 2.87 mm and 40 x 2.87 mm.

Sealant

- GIB Soundseal® is a flexible water-based acoustic sealant.

Accessories

- GIB Rails® are folded, galvanised mild steel resilient rails.
- GIB Quiet® Ties are galvanised steel cleats connected with a zinc plated steel bolt and isolated with rubber washers.
- ST-001 Clip.
- GIB® Rondo™ metal ceiling batten and clip system and USG Donn® ScrewFix™ Suspension System are ceiling supporting systems which comprise steel battens, clips and perimeter tracks.
- The USG Donn® ScrewFix™ Suspension System is a suspended ceiling grid comprising wire hangers, strongback channels, and furring channels.
- GIB® Rondo™ Quiet Stud®

Sound Control Infill

- Pink® Batts® R1.8 glass wool insulation
- Pink® Batts® Silencer glass wool insulation.

Accessories and Compounds

4.5 A combination of GIB® Paper Tape, GIB-Cove®, Trims and compounds are used. The requirements are specified in the GIB® Fire Rated Systems Technical Literature and details of the products and installation are found in the GIB® Site Guide Technical Literature.

Handling and Storage

5.1 The best results are achieved when GIB® plasterboards are treated as a finishing material and protected from damage. Sheets must be stacked flat and kept dry at all times. For limits on stack heights see the GIB® Site Guide. Sheets must be carried on edge and not dragged.

5.2 All accessories must be kept dry.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the GIB® Noise Control Systems. The Technical Literature must be read in conjunction with this Certificate. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Certificate must be followed.

Design Information

General

7.1 GIB® Noise Control Systems include systems that meet the provisions of NZBC G6 for the transfer of airborne and structure-borne sound through wall and floor/ceiling elements between occupancies. Also included are system designs not requiring NZBC compliance such as between rooms and spaces of the same occupancy. The GIB® Noise Control Systems also contain methods to reduce

environmental noise in buildings, such as traffic, industrial and aircraft noise.

7.2 Fire Resistance Ratings for the wall and floor/ceiling systems are also contained in the GIB® Noise Control Systems Technical Literature.

7.3 Pink® Batts® insulation must be used where specified in GIB® Noise Control Systems to achieve the Sound Transmission Class (STC) and Impact Insulation Class (IIC) classifications stated in the manual.

7.4 GIB® Noise Control Systems specifies the use of 20 mm thick flooring grade particleboard, or 17 mm structural plywood, fixed in accordance with the flooring manufacturer's instructions.

7.5 The correct floor finish must be selected to achieve the required IIC. The GIB® Noise Control Systems, Technical Literature provides a number of IIC performances for alternative floor finishes. A 1630 g/m^2 (48 oz) hard twist wool carpet with hessian backing over waffle rubber underlay must be used where specified in the manual to achieve the IIC of 73 and 74. Where carpet and underlay is used to contribute to meeting the requirements of NZBC G6, the carpet and underlay must be installed prior to the receipt of the Code Compliance Certificate. The floor finishes used in GIB® Noise Control Systems have not been assessed for other properties and are outside the scope of this Certificate.

7.6 GIB® plasterboards must not be exposed to temperatures of 52ºC or greater for prolonged periods. Refer to appliance and fitting manufacturers for installation details.

Control Joints

8.1 Where control joints are required, the joints must be specifically designed to maintain the integrity of the sound control system and fire rated system.

GIB® Noise Control Systems

9.1 GIB® Noise Control Systems Technical Literature addresses the following systems:

GIB® Noise Control Systems Intertenancy STC55 and higher

- Double Timber Frame
- Timber Frame with GIB Rail®
- Timber Frame with Acoustic Resilient Mount
- Double Steel Frame
- Staggered Stud Steel Frame
- Steel Frame with GIB Rail®
- GIB® Rondo® Quiet Stud® Steel Frame
- Intertenancy Floor Ceiling

GIB® Noise Control Systems Sub-intertenancy below STC55

- Sub-Intertenancy Walls
- Sub-Intertenancy Floor/Ceilings

The Technical Literature also contains construction and junction details.

(Note: Proprietary floor joist, flooring, suspended ceiling systems, ceiling systems and wall stud systems have not been assessed for other than sound and fire properties and are otherwise outside the scope of this Certificate.)

Structure

Framing

10.1 Supporting framing must comprise one of the following subject to the minimum sizes, dwang centres and all other frame requirements of GIB® Noise Control Systems Technical Literature:

- Timber framing must be designed and constructed in accordance with NZS 3604, or to a specific design using NZS 3603 and NZS 4203 (AS/NZS 1170).
- Steel framing must be designed to withstand loads in accordance with NZS 4203 (AS/NZS 1170).

Impact Resistance

10.2 GIB® plasterboards provide adequate resistance to soft body impact, based upon experience of use in domestic and light commerical applications.

Durability

Serviceable Life

11.1 GIB® Noise Control Systems, including linings and their fixings have a serviceable life of at least 50 years. The ability of the systems to remain durable is dependent on them remaining dry in service, and being maintained in accordance with this Certificate.

11.2 GIB Soundseal® sealant is expected to remain effective for at least 15 years provided the instructions are followed.

Maintenance

11.3 Lining systems must be protected from internal and external moisture in accordance with NZBC E2 and E3.

11.4 Holes resulting from damage to the lining, up to 100 x 100 mm square, must be repaired. Such holes may be repaired by patching, stopping and finishing as appropriate. Independent expert advice must be sought to assess the effect and repair of larger areas of damage.

11.5 Normal maintenance includes the reinstatement of damaged or deteriorated sealants, repair or renewal of carpet and rubber underlays and the maintenance of the paper face on walls and ceilings.

Outbreak of Fire

12.1 Separation or protection must be provided to GIB® Systems from heat sources such as stoves, heaters, flues and chimneys.

12.2 NZBC Acceptable Solution C/AS1, Part 9 and Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

Spread of Fire

13.1 In order to satisfy the requirements of NZBC C4 Structural Stability during Fire, designers must ensure that fire rated elements are supported by building elements having at least the same FRR as the fire rated element they are supporting.

13.2 The GIB® Noise Control Systems Technical Literature contains details of the Fire Resistance Ratings (FRR) for use to limit the Spread of Fire. It also contains details of construction methods, fixings, dimensions and limitations of the FRR. The information contained in the Technical Literature must be followed in detail.

13.3 GIB® Noise Control Systems will comply with C3.3.1 when used within the limits of the Spread of Flame Index (SFI) and Smoke Developed Index (SDI) and for locations as defined in Table 6.2 of Acceptable Solution C/AS1. Refer to GIB® Fire Rated Systems Technical Literature for the AS 1530: Part 3 surface finish properties for GIB® plasterboards without applied paint or wallpaper finishes.

13.4 GIB® Noise Control Systems will comply with

C3.3.2 for fire separation when used to provide a FRR that meets the requirements of Acceptable Solution C/AS1.

13.5 GIB® Noise Control Systems will comply with C3.3.5 when used to provide a FRR that meets the requirements of Acceptable Solution C/AS1 Part 7.10.

For specific information on GIB® Fire Rated System refer to the GIB® Fire Rated Systems Technical Literature.

Internal Moisture

14.1 GIB® Noise Control Systems must be used in dry internal situations, and must not be used where likely to be exposed to liquid water, or where extended exposure to humidity above 90% RH is expected, e.g. such as may be expected in sauna rooms, commercial kitchens and the like.

Airborne and Impact Sound

15.1 The inter-tenancy provisions of NZBC G6 for wall and floor/ceiling elements will be achieved when a GIB® Noise Control System with a minimum STC rating of 55 and a minimum IIC rating of 55 is used in accordance with this Certificate.

Installation Information

Installation Skill Level Requirement

16.1 Installation must be carried out by contractors experienced in drywall construction and the principles of noise control construction.

General

17.1 GIB® Noise Control Systems must be installed in accordance with the specifications contained in the GIB® Noise Control Systems Technical Literature and the GIB® Site Guide. For inspection, reference must be to the Technical Literature.

Cutting Sheets

17.2 GIB® plasterboards are cut by scoring the paper face with a sharp, short-bladed trimming knife. The plasterboard must then be snapped away from the cut face and the back paper cut. Cut-outs for switch boxes and other penetrations should be made using a keyhole saw.

Health and Safety

17.3 Dust resulting from the sanding of stopping and finishing compounds may be a respiratory irritant, therefore the use of a suitable face mask is recommended. The recommended installation practices of the insulation manufacturer must be followed when insulation is installed.

Wall Framing

17.4 GIB® Sound Control Systems Technical Literature specifies timber framing with a moisture content of less than 18% at the time interior linings are installed. The use of kiln-dried machine stress-graded timber is recommended.

17.5 Resilient rails must be fixed horizontally to studs at 600 mm centres.

17.6 The wall frames in double-framed systems must be acoustically isolated from each other. However, where frames must be connected for fire and structural performance, GIB® Quiet Ties® may be used. GIB® Quiet Ties® are connected by nail fixing at the floor plate and at the roof level, and are spaced at maximum 1800 mm centres or in accordance with a Specific Engineering Design.

Fixing Sheets

17.7 The fixing method specified for each system in the GIB® Noise Control Systems Technical Literature must be used. Sheet fixings must be no closer than 12 mm to sheet edges. Where linings are fixed to resilient rails, fixings must not touch or penetrate the stud. Sheet joints must be staggered between layers.

Suspended Ceilings

17.8 GIB® Noise Control Systems floor/suspended ceiling systems use galvanized mild steel suspension systems. The ceiling must be designed and installed in accordance with the suspended ceiling manufacturer's technical information. Suspended ceiling systems have not been assessed and are outside the scope of this Certificate.

Insulation (Sound Control Infill)

16.9 Insulation must be installed in accordance with the insulation manufacturer's instructions. The insulation must be a neat friction fit between framing members with no edge gaps. Insulation must not be compressed, folded or tucked. In ceiling voids, loose laid insulation must be installed with all edges neatly butted.

Sealant

17.10 GIB Soundseal® must be applied to the perimeter of the framing in single lining systems, and when two or more linings are used it must be applied to the perimeter of the inner lining. Linings must be bedded onto the sealant to provide an airtight seal. A positive, no gaps bond must be made to the contact surfaces.

Building Services

17.11 Flush boxes tested and approved as suitable for fire rated and/or sound-rated applications must be used to ensure that the fire/sound-rated performance requirements are not compromised. Alternatively, the sound control performance will not be compromised if flush boxes are fitted to each side of the wall and separated by a minimum distance of 450 mm.

17.12 Plumbing pipe-work installed with bends with generous radii and smooth bores and tapered joints will reduce the generation of plumbing noise by turbulence. The transfer of plumbing noise may be reduced by isolating elements with the use of resilient pipe clips and pipe wraps. Plumbing systems designed to prevent excessive pressure, water hammer, splashing, thermal movement of pipes, aeration or appliance noise will complement GIB® Noise Control Systems by reducing the noise generated by plumbing.

Jointing and Finishing

17.13 Jointing and finishing must be carried out in accordance with the GIB® Site Guide.

Basis of Appraisal

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

Tests

18.1 Airborne sound and impact reduction indices tests according to ISO 140-3 and ISO 140-4 were conducted by the University of Auckland Acoustics Testing Service and reviewed by Marshall Day Acoustics Limited.

Other Investigations

19.1 The GIB® Noise Control Systems Technical Literature has been reviewed by Marshall Day Acoustics Limited and an opinion given on the sound insulation performance of the systems.

19.2 The GIB® Noise Control Systems and GIB® Site Guide Technical Literature have been examined by BRANZ and found to be satisfactory.

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

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

19.5 The properties of Winstone Wallboards Limited GIB® plasterboards have been assessed for the following properties, MOR, MOE, paper tensile strength, paper shear strength, nail pull resistance, Hunter hardness, inspection for fungal spores, hard and soft body impact tests.

Quality

20.1 Winstone Wallboards Limited'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 The quality management systems of Winstone Wallboards Limited have been assessed and registered by TELARC as meeting the requirements of ISO 9001, Registration No. 581.

20.3 Winstone Wallboards Limited is responsible for the quality of the product supplied.

20.4 The quality of the application and finish on site is the responsibility of the installation and stopping contractors.

20.5 Designers are responsible for the design of buildings.

20.6 Building owners are responsible for the maintenance in accordance with the instructions of Winstone Wallboards Limited.

Sources of Information

- BRANZ Bulletin No. 426 Acheiving Acoustic Separation.
- BRANZ Bulletin No. 364 Preventing noise in plumbing installations.
- ISO 140-3 Airborne Sound Insulation.
- ISO 140-4 Impact Sound Insulation.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2588: 1998 Gypsum Plasterboard.
- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3603: 1993 Timber structures standard.
- NZS 3604: 1999 Timber and framed buildings.
- NZS 4203: 1992 Code of practice for general structural design and design loadings of buildings.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- The Building Regulations 1992, up to, and including October 2004 Amendment.

BRANZ

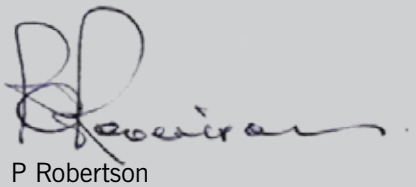
In the opinion of BRANZ, GIB® Noise Control Systems are fit for purpose and will comply with the Building Code to the extent specified in this Certificate provided they are used, designed, installed and maintained as set out in this Certificate.

The Appraisal Certificate is issued only to the Certificate Holder, Winstone Wallboards Limited, and is valid until further notice, subject to the Conditions of Certification.

Conditions of Certification

1. This Certificate:
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. The Certificate Holder:
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.
3. The product and the manufacture are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ.
4. BRANZ 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 Certificate Holder.
5. Any reference in this Certificate to any other publication shall be read as a reference to the version of the publication specified in this Certificate.

For BRANZ



P Robertson
Chief Executive

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