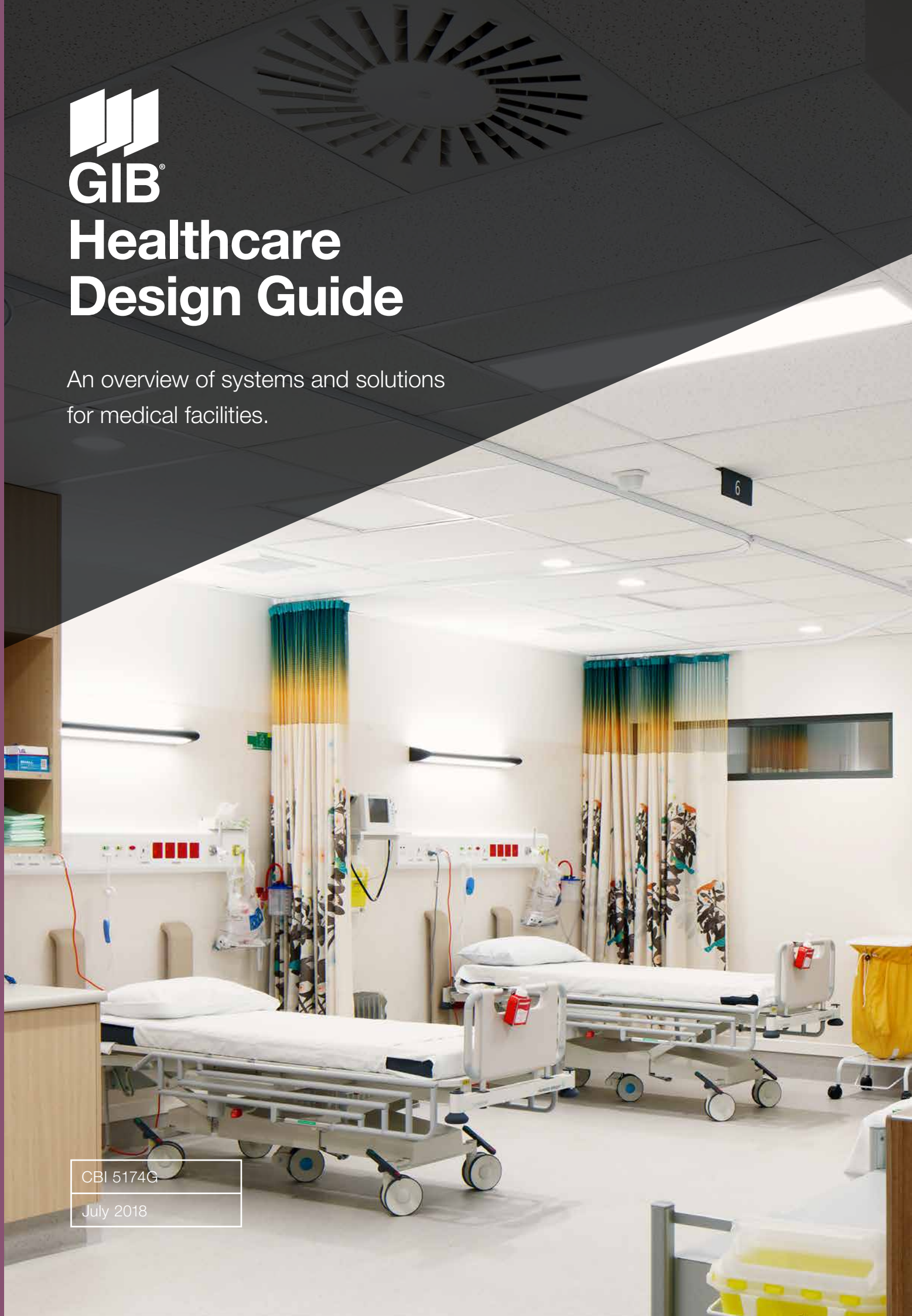
GIB®

Healthcare Design Guide

An overview of systems and solutions for medical facilities.



CBI 5174G
July 2018

NATIONAL SUPPORT

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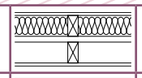
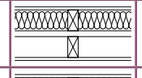
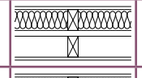
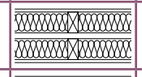
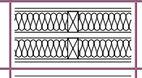
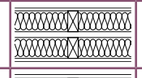
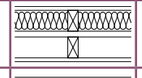
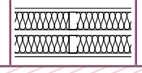
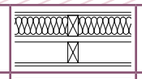
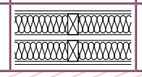
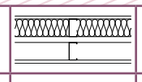
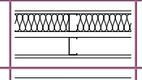
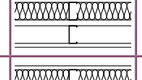
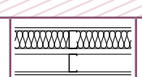
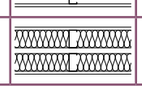
Hospital and healthcare facilities require careful attention to design and material specification. Internal plasterboard linings offering the appropriate performance, quality, durability, sustainability and aesthetics are essential in achieving the desired building attributes.

This document provides product and service information along with technical details of GIB® plasterboard lining systems for designers, specifiers and contractors that are specifically suited to hospital and healthcare environments. The information can be used during the building design process to help select systems to achieve the designed impact, acoustic, fire, hygiene, wet area or specialised performance requirement.

FRONT COVER: Ward within Burwood Hospital, Christchurch, utilising GIB® plasterboard systems.
LEFT: A GIB® plasterboard wall and ceiling detail.

GIB® Systems – intertenancy

Double frame wall

Specification number	LB/ NLB	STC	Rw	Insulation	FRR	Lining requirements	Detail	Page
Double timber frame walls								
GBTLA 60a	LB	56	55	1 x layer	60/60/60	1 x 13mm GIB Toughline® each side		32
GBTLA 60b	LB	56	57	1 x layer	60/60/60	1 x 13mm GIB Braceline® / GIB Noiseline® each side		32
GBTLA 60c	LB	56	55	1 x layer	60/60/60	1 x 13mm GIB Fyreline® each side		32
GBTLA 60a2	LB	62	60	2 x layers	60/60/60	1 x 13mm GIB Toughline® each side		32
GBTLA 60b2	LB	63	62	2 x layers	60/60/60	1 x 13mm GIB Braceline® / GIB Noiseline® each side		32
GBTLA 60c2	LB	62	60	2 x layers	60/60/60	1 x 13mm GIB Fyreline® each side		32
GBTLA 90e	LB	60	59	1 x layer	90/90/90	1 x 16mm GIB Fyreline® each side		34
GBTLA 90e2	LB	65	63	2 x layers	90/90/90	1 x 16mm GIB Fyreline® each side		34
Double timber frame walls — wet area option								
GBTLA 60d	LB	56	55	1 x layer	60/60/60	1 x 13mm GIB Toughline® Aqua each side		32
GBTLA 60d2	LB	62	60	2 x layers	60/60/60	1 x 13mm GIB Toughline® Aqua each side		32
Double steel frame walls								
GBSA 60d	NLB	57	55	1 x layer	-/60/60	1 x 13mm GIB Toughline® each side		36
GBSA 60e	NLB	58	57	1 x layer	-/60/60	1 x 13mm GIB Braceline® / GIB Noiseline® each side		36
GBSA 60d2	NLB	62	60	2 x layers	-/60/60	1 x 13mm GIB Toughline® each side		36
GBSA 60 e2	NLB	62	62	2 x layers	-/60/60	1 x 13mm GIB Braceline® / GIB Noiseline® each side		36
GBSA 90e	NLB	60	59	1 x layer	-/90/90	1 x 16mm GIB Fyreline® each side		38
GBSA 90e2	NLB	64	63	2 x layers	-/90/90	1 x 16mm GIB Fyreline® each side		38
Double steel frame walls — wet area option								
GBSA 60f	NLB	57	55	1 x layer	-/60/60	1 x 13mm GIB Toughline® Aqua each side		36
GBSA 60f2	NLB	62	60	2 x layers	-/60/60	1 x 13mm GIB Toughline® Aqua each side		36

GIB® Systems – intertenancy

Single frame wall

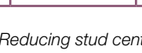
Specification number	LB/ NLB	STC	Rw	Insulation	FRR	Lining requirements	Detail	Page
GIB® Rondo® Quiet Stud® 92 x 45 x 0.75mm BMT								
GBQSA 90a	NLB	61	60	1 x layer	-/90/90	1 x 13mm GIB Toughline® (outer layer) and 1 x 10mm GIB Braceline® / GIB Noiseline® each side		40
GIB® Rondo® Quiet Stud® 92 x 45 x 0.75mm BMT — wet area option								
GBQSA 90b	NLB	61	60	1 x layer	-/90/90	1 x 13mm GIB Toughline® Aqua (outer layer) and 1 x 10mm GIB Braceline® / GIB Noiseline® each side		40

Warning: The STC performance figures listed in the tables above are based on studs spaced at 600mm centres. Reducing stud centres to less than 600mm or increasing the gauge of steel framing above 0.50 BMT may significantly lower the STC performance of these systems.

NB: When noise control performance only is required, single or outer layers of plasterboard can be fixed with a single screw at 300mm centres around the sheet perimeter, place daubs of GIBFix® adhesive at 300mm centres to intermediate studs. Do not place GIBFix® adhesive at sheet edges or within 200mm of fasteners. Use fasteners length specified.

GIB® Systems – sub-intertenancy

Single frame wall

Specification number	LB/ NLB	STC	Rw	Insulation	FRR	Lining requirements	Detail	Page
Single timber frame sub-intertenancy system								
GST 132a	LB	40	39	1 x layer	30/30/30	1 x 13mm GIB® Standard		42
Single steel frame sub-intertenancy systems								
GSS 132a	NLB	45	44	1 x layer	-/30/30	1 x 13mm GIB® Standard each side		44
GSS 134a	NLB	50	49	1 x layer	-/45/45	2 x 13mm GIB® Standard each side		46
GTS 132	NLB	48	48	1 x layer	-/60/60	1 x 13mm GIB Toughline® each side		48
Single steel frame sub-intertenancy system — wet area option								
GTWS 132	NLB	48	48	1 x layer	-/60/60	1 x 13mm GIB Toughline® Aqua each side		48
GIB® Rondo® Quiet Stud® 92 x 45 x 0.75mm BMT sub-intertenancy system								
GBQSA 90c	NLB	47	49	1 x layer	-/90/90	1 x 16mm GIB Fyreline® each side		50

NB: Recent acoustic testing with current formulations has resulted in an improvement in STC/RW rating for a small numbers of system configurations.

For a comprehensive range of fire and acoustic rated ceiling and floor/ceiling systems refer to:- GIB® Fire Rated Systems Oct 2012, GIB® Noise Control Systems Sept 2017 and GIB® Reverberation Control Systems Sept 2016 for sound reverberation control.

Burwood Hospital, Christchurch.

CONTENTS

Helping you find the right system for your project.

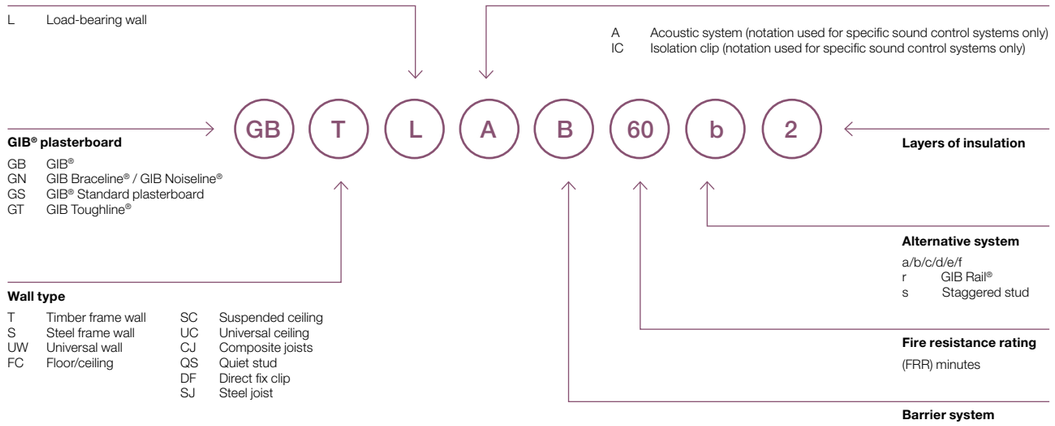
This guide was developed to help navigate through the design and construction challenges of hospital and healthcare facilities and to provide a summary of some of the different systems and solutions available, as well as clarify their performance requirements.

Throughout, this document will direct you to specific support and systems literature for technical assistance and details. The GIB® Helpline is always available where our technical team of builders and engineers can provide GIB® specification assistance.

Circulation corridor within the Elective Surgery Centre — North Shore Hospital, Auckland.

Specification reference

The specification reference allows a quick and precise reference to a particular system.



Example: **GBSA 90e2**
is GIB® plasterboard, Steel frame wall, Acoustic system, 90 minute fire rating, alternative system, 2 layers of insulation.

Scope of use

GIB® plasterboard systems in the GIB® Healthcare Design Guide are designed to deliver solutions for common lining needs in clinical and care facilities. They offer multiple performance attributes incorporating, noise attenuation, fire, impact, wet area and mould resistance, X-ray protection, reverberation control and more, while considering the most cost effective, environmentally sensitive system solutions.

The systems offered include both NZBC compliant and discretionary levels of performance.

Independently tested

GIB® performance systems have been independently tested and evaluated and can be depended on to perform. They represent the best in cost-effective plasterboard lining systems.

The table on the following page lists the Winstone Wallboards Ltd BRANZ appraised systems, they can also be found on our literature and website, or a list on the BRANZ website.

Beware of substitution

GIB® performance systems are very sensitive to design detailing and construction practices. All GIB® Systems have been developed specifically for New Zealand conditions and independently tested or assessed to ensure the required level of performance is achieved. Therefore, it is important to use GIB® branded components where specified and closely follow the specified design details and construction practices, to ensure the required level of performance is achieved on site.

For further information on substitution please refer to the GIB® Product and System Warranty document that can be found on our website, visit: gib.co.nz

GIB® systems supplements and product updates

From time to time updated information will be communicated via Systems Supplements, which are available only on the GIB® website at gib.co.nz. Search ‘supplements’ for the latest updates.

Sign up to the GIB® database to ensure you are contacted when technical updates are made.

BRANZ Appraisals

Number	Title	Country
289 (2012)	GIB® Fire Rated Systems	NZ
394 (2017)	GIB® Noise Control Systems 2017	NZ
427 (2007)	GIB Aqualine® Wet Area Systems	NZ
928 (2016)	GIB EzyBrace® Systems 2016	NZ
940 (2016)	GIB® Intertenancy Barrier Systems for Terrace Homes	NZ
394 (2017)	GIB® Noise Control Systems 2017	NZ

Compliance with the New Zealand Building Code

NZBC CLAUSE B1: STRUCTURE
The design and material specification for framing used in conjunction with this manual must be in accordance with the performance requirements for NZBC Clause B1. NZS 3604:2011 is a Compliance Document to NZBC Clause B1.

NZBC CLAUSE B2: DURABILITY
Under normal conditions of dry internal use the products detailed Fire and Noise Control Systems within the GIB® Healthcare Design Guide have a service life in excess of 50 years and satisfy the requirements of NZBC Clause B2.

NZBC CLAUSES C1–C6: PROTECTION FROM FIRE
Fire Rated Systems within the GIB® Healthcare Design Guide can be used to provide passive fire protection in accordance with the requirements of NZBC Clause C1-C6 — Protection from Fire.

NZBC CLAUSE F2: HAZARDOUS BUILDING MATERIALS
Under normal conditions of use and serviceable life, the products detailed in GIB® Healthcare Design Guide do not constitute a health hazard and meet the provisions of the NZBC Clause F2.

NZBC CLAUSE G6: AIRBORNE AND IMPACT SOUND
Noise Control Systems within the GIB® Healthcare Design Guide achieving STC and IIC 55+ provide airborne noise control ratings that meet or exceed the minimum requirements for NZBC Clause G6 — Airborne and Impact Sound.

CLAUSE E3: INTERNAL MOISTURE
When installed in accordance with this literature, tiled or vinyl covered GIB Toughline® Aqua systems may be used in areas directly exposed to liquid water, such as showers, to provide an impervious and easily cleaned wall surface. These systems comply with the requirements of NZBC Clause E3 (Internal Moisture)

Fixing for noise control only in GIB® systems

Where a noise control rating ONLY is required, single and outer layers may be installed using a single screw at 300mm centres to the perimeter of the wall, and GIBFix® adhesive at 300mm centres to intermediate studs. Please contact the GIB® Helpline for further information 0800 100 442.

Sustainability and the environment

Winstone Wallboards is committed to a holistic view of sustainability: environmental, social and economic.

— We manufacture products that are good for the environment.
— We actively consider the full lifecycle of our products and support recycling initiatives both from our manufacturing and general construction waste.
— We innovate systems and solutions that keep people safe and protected in buildings.
— We support jobs and growth within our communities.

GIB® plasterboard — a green building material

GIB® plasterboard is a sustainable, non-toxic, compostable and infinitely recyclable product made from natural gypsum and 100% recycled paper.

GIB® plasterboards do not use fly ash, a derivative of coal extraction, as a bulk filler* in place of naturally occurring gypsum. Due to this, unlike many imported alternatives, a range of GIB® plasterboards are considered Red List Free, certified through Declare.

** Note: 10mm GIB Aqualine® board uses a less than 0.7% fly ash as a processing agent, not as a bulk filler.*

Certifications

DECLARE
Winstone Wallboards has Declare certification for a range of our plasterboards. Considered one of the most advanced sustainability certification in the built environment, Declare is like a nutritional label for building products, offering specifiers, contractors and building users insight into the ingredients used in the manufacture of building products.

GLOBAL GREENTAG
A range of GIB® plasterboards have also achieved Global Greentag Certification, one of the world's most robust, trusted and widely recognised ecolabels.

ENVIRONMENTAL PRODUCT DECLARATION (EPD)
Winstone Wallboards has been the first and only plasterboard manufacturer in Australasia to publish an Environmental Product Declaration (EPD). The EPD quantifies the environmental performance of GIB® plasterboard including its carbon footprint, embodied energy and other environmental data.

Projects utilising GIB® plasterboard will qualify for full Green Star points due to Winstone Wallboards holding an EPD for six or more products. The EPD for GIB® plasterboard is available on the GIB® website.

Visit gib.co.nz to download these certifications.

Waste recycling

Winstone Wallboards works closely with local waste companies on initiatives to recycle plasterboard waste.

Green Gorilla has introduced a plasterboard recycling service in Auckland. Plasterboard is collected separately from general building and construction waste, the waste volumes and tonnages are recorded and reported per project for builders and their customers which allow plasterboard recovery statistics to be provided as part of total site landfill diversion and environmental reporting for Greenstar and Homestar accreditation.

In Christchurch, plasterboard manufacturing waste is processed with off-cuts shredded and screened to return it to gypsum form. The recycled gypsum is supplied as a soil conditioner to farmers, orchards and vineyards.

Local manufacture

GIB® plasterboard and compounds are manufactured in New Zealand*. We have complete oversight of our factory conditions and the teams who work in our manufacturing plants. Our decision to manufacture locally supports local jobs and directly supports the country's economy.

**Note: GIB Barrierline® plasterboard is manufactured to Winstone Wallboards' specific specification from a reputable overseas manufacturer.*

GIB® SERVICES — ADDING VALUE TO YOUR PROJECT

Technical support services

With comprehensive technical information always at hand, and a professional team of experienced builders and building engineering experts available by phone, online or face-to-face, you'll always get the right information when you need it.

— **Quick answers save you time.** GIB® technical literature and manuals provide robust, accurate and logically organised information making it easy to find what you're looking for.

— **Supporting your wider consultant team.** Our GIB® Technical Support Team will provide direct, specific and localised design advice.

— **Save time using GIB® CAD and BIM details.** For accurate, engineered solutions that avoid unnecessary risks in detailing from first principles.

— **Limit your liability for on-site problems.** Rely on our GIB® Technical Support Team to assess and make recommendations for the best solution.

— **Developed for NZ codes and conditions.** Have peace of mind that you can trust the systems will perform as claimed and designed.

Expert technical support

Our professional team of experienced builders, building engineering experts, chemists and technical sales representatives are dedicated to providing you with the highest possible technical service. Our team has a wide range of knowledge and experience meaning you can always get the right information, specific to your project, when you need it.

Complex projects often require an alternative approach and innovative solutions. For specific advice or questions related to hospital and healthcare design, contact one of our team at an early stage in the project for in-depth technical support.

LEFT: The specialist GIB® Delivered to Site team unload plasterboard to your site safely and quickly.

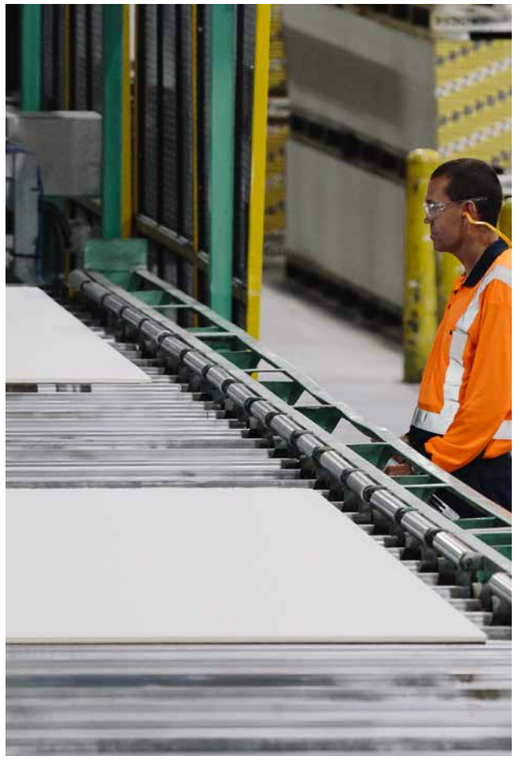
Cut-to-length service

Order your plasterboard to the specific length you need.

— **Faster installation.** Less on-site handling, material savings and improved quality of finish due to fewer joins.

— **Less waste.** Save labour in disposal and cost in dumping, as well as being good for the environment.

Minimum order and lead times apply. For further details call the GIB® Helpline on 0800 100 442.



ABOVE: GIB® plasterboard coming off the manufacturing line at the Auckland factory.

Delivery service

We deliver next day to your local merchant, nationwide.

Our Delivered To Site service offers next day, on time delivery in the greater Auckland, Hamilton, Tauranga and Christchurch areas. Following a free inspection to ensure your site is plasterboard-ready, our experienced delivery team will unload your GIB® plasterboard, carry it to the right floor and split it into room lots as required*.

— **Save time and money.** Our experienced logistics team ensure we always have stock available, have minimal delays and efficient programming of plasterboard deliveries.

— **Avoid failed delivery costs.** Free site inspections are available to ensure site is plasterboard-ready so you're not paying for additional or unnecessary services.

— **Keep your builders building, not moving plasterboard.** Our experienced delivery team will ensure that your GIB® plasterboard is unloaded, carried to the right floor and split into room lots as required*.

— **We'll replace damaged board at our cost, if damaged during delivery.** Using our delivery team takes the risk out of damaging the product when moving it around site.

— **Less risk of expensive downtime due to injury.** Use our experienced delivery team to carry plasterboard around site, saving you time and resources.

**Some conditions and additional charges may apply.*

For further details call the GIB® Helpline on 0800 100 442 or visit gib.co.nz.

DESIGN AND CONSTRUCTION OF HEALTHCARE FACILITIES

Hospital and healthcare facilities require a wide range of wall and ceiling solutions offering specific performance. Corridors and waiting areas may require additional durability of linings, while patient rooms may be designed with increased attention to noise control. Outlined below are some of the key design considerations for GIB® plasterboard linings for hospital and healthcare projects.

Impact resistance

The GIB Toughline® range offers impact resistance, noise attenuation, water, mould, fire and bracing resistance making the range ideal for specifying broadly across a project to improve the level of wall performance.

To reduce day-to-day dings and dents, as well as avoid more significant breakages and cracks in the wall linings, the use of an impact resistant plasterboard is suggested to maintain a high quality finish for longer, and reduce overall maintenance costs.

GIB TOUGHLINE® AND GIB TOUGHLINE® AQUA

GIB Toughline® and GIB Toughline® Aqua are 13mm thick high density paper-faced plasterboard linings which are significantly denser than GIB® Standard plasterboard. As well as fibreglass fibres contained within the core, the 13mm GIB Toughline® range has a reinforcing fibreglass crenette mesh embedded inside the back face of the sheet giving it greater impact resistance by dissipating energy from impacts.

GIB Toughline® and GIB Toughline® Aqua provide superior impact resistance in high traffic areas and using GIB Toughline® Aqua, wet areas. This reduces repair costs associated with accidental wear and tear.

GIB Toughline® Aqua is a direct replacement for GIB Superline®. GIB Superline® has now been removed from the GIB® range but any GIB Superline® specifications can be substituted with GIB Toughline® Aqua. Due to our commitment to sustainability, there may be a period where GIB Toughline® Aqua utilises gold rather than purple face paper.

IMPACT TESTING

To assess the impact resistance of GIB Toughline® and GIB Toughline® Aqua, comparative hard and soft body impact tests were performed.

Refer to the following page for results.

HARD BODY IMPACT

Hard body impact tests simulate loads resulting from hard objects, such as trolleys hitting walls.

A standardised hard-body impact test includes a 25mm ball bearing being dropped from a set height on wall lining materials, and resulting in impact energy of 2 joules. This simulates an impact greater than that caused by a briefcase corner hitting a wall at walking pace.

When this test was undertaken on GIB Toughline® and GIB Toughline® Aqua the resulting indentation was approximately 0.4mm. When this test was repeated with GIB® Standard the indentation was approximately 1mm, showing a significant protection from hard object impacts resulting in a better wall finish for longer.

SOFT BODY IMPACT

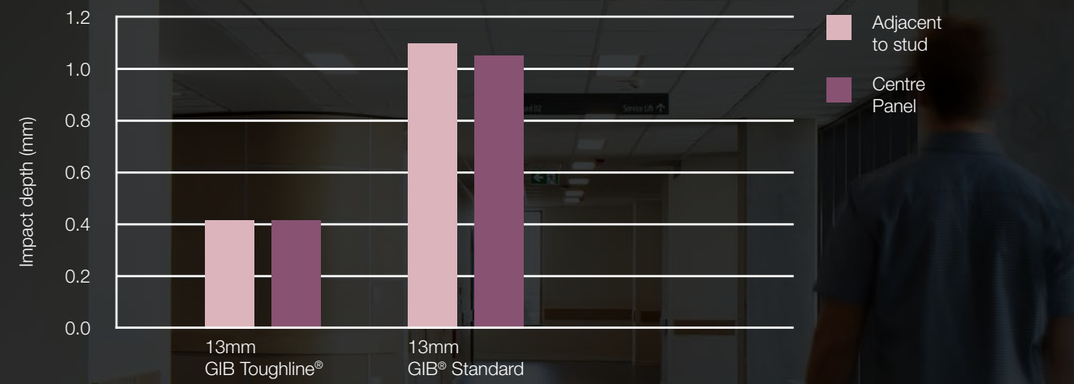
Soft body impact test simulate loads resulting from soft objects, like a bump or shove from a human body. In real life situations, a hard blow to a wall imparts 60 joules of energy and a male shoulder impacting a wall imparts 120 joules.

Tests representing soft human body impact are based on the ISO Standard 7892:1988 using a large 50kg leather bag filled with glass beads. The bag is allowed to swing like a pendulum and by varying the drop height, different impact energies are simulated. The test is continued until the lining is penetrated.

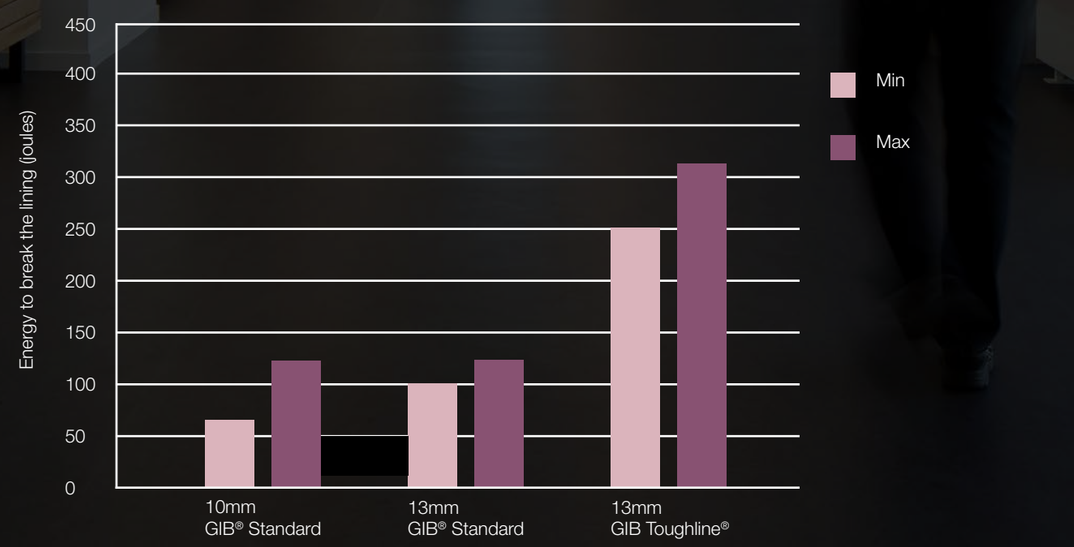
It took approximately 250 joules to break through GIB Toughline® and GIB Toughline® Aqua, showing the boards' resistance to impacts beyond typical soft body impact. When this test was repeated with GIB® Standard plasterboard it required approximately 100 joules for complete break through.

To assess the impact resistance of GIB Toughline® and GIB Toughline® Aqua, comparative hard and soft body impact tests were performed.

Small 25mm ball bearing hard body impact tests (2 joules)



50KG Soft body impact



Case study: Elective Surgery Centre — North Shore Hospital

JASMAX

Jasmax, with Sydney firm McConnel Smith & Johnson, were the designers of the Elective Surgery Centre — North Shore Hospital. Designed to fast track planned inpatient elective surgery, the DHB made optimising staff and patient workflows a priority. This has allowed the Elective Surgery Centre to perform more procedures, treat more patients, and streamline coordination; all of which has flow on effects for the design and specification of lining materials. With more movements and traffic through foyer areas and corridors, there was a greater need for impact resistance.

Sarah Hayden, Principal at Jasmax Auckland, says, "When we approach a healthcare project, we need to understand the unique aspects of what is happening in a particular space. Throughout the Elective Surgery Centre there are a lot of high impact areas that are subject to knocks and scrapes due to the movement of people, mobile equipment and furniture. In addition to this there are often multiple performance criteria that require consideration such as: potential impact, acoustics, fire, infection control not to mention a lot of surface mounted equipment. The challenge for designers is meeting all of these requirements while at the same time adding 'joy' through the use of interior linings, finishes, colour and texture."

The architects specified GIB Toughline® together with PVC wall protection in all corridors to provide the required impact resistance of both hard and soft body impacts. Since opening, the facility has been a success for patients, staff and the North Shore District Health Board.

LEFT: Walls requiring additional impact resistance within the Elective Surgery Centre — North Shore Hospital utilised GIB Toughline® systems.

OVERLAYS

For added protection from wear and tear, overlays on wall linings may be considered in corridors, with a crash rail for further protection from damage caused by equipment, gurneys and beds. Using GIB Toughline® behind these additional overlays is still recommended, particularly for resistance to soft body impacts.

Whilst full height installation of 13mm GIB Toughline® provides optimum impact performance, when overlays and crash rails are present you may wish to consider horizontal installation of 13mm GIB Toughline® plasterboard sheets for the lower half of a wall (to dado height) with horizontal installation of other 13mm GIB® plasterboards to the upper half of the wall, to provide a balance of cost effectiveness and impact resistance.

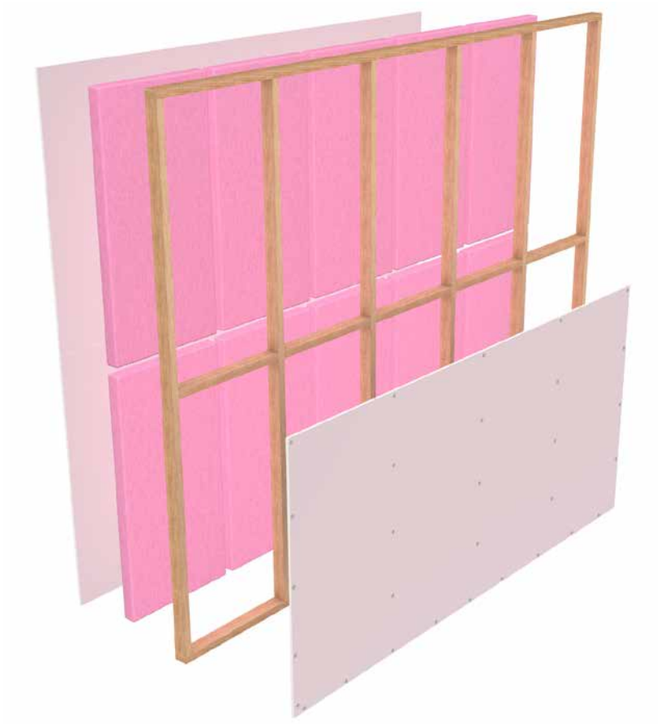
Note: For fire rated systems all sheet joints must occur over framing. Please refer to the relevant system data sheet for all fire rated system requirements. Where sheet end joints are unavoidable they must be over nogs.

EASE OF REPAIR

Even when high performance wall systems have their elements carefully chosen, damage may still occur. Whilst this will be a significantly less frequent event with GIB® Tough systems, the ease of repair is important. Making repairs to GIB Toughline® and GIB Toughline® Aqua, if and when needed, are generally a straightforward localised repair using standard drywall techniques. This has a significant bearing on minimising maintenance costs and work flow interruptions through reducing both the size and the frequency of repairs.

GIB Toughline® is not only stronger, but easier to repair if damaged.

Horizontal installation of GIB Toughline® on a timber frame wall



Infection and mould resistance

Both GIB Toughline® and GIB Toughline® Aqua have anti-microbial performance, making these products particularly suited to areas where infection control is a high priority.

In laboratory testing, no mould growth was observed. This reduces the risk of infectious agents growing on the board should any moisture be present. This mould resistance helps ensure a cleaner, healthier environment in specialised high-hygiene areas such as hospitals. It should be noted that this standard testing was conducted in a lab environment against a selected strain of bugs; the variety of potential microbes that plasterboard could be exposed to outside of lab conditions is vast and cannot be replicated in the lab environment.

GIB Toughline® Aqua can be used in place of 13mm GIB Aqualine® in GIB Aqualine® Wet Area Systems. For further design and construction details refer to the most recent GIB Aqualine® Wet Area Systems technical literature.

Surface abrasion resistance

Whilst most consequential damage to walls arises from impact, abrasion damage can be significant. The abrasion resistance of any finished wall system depends on the abrasion properties of the applied surface coating rather than on the abrasion resistance of the lining material itself.

As a coating is worn away through wear, the abrasion resistance property of the lining becomes more significant. Paper-faced plasterboard are an ideal lining surface because of their superiority as a substrate for paint or other finishes and further have good inherent abrasion resistance properties.

The resistance to surface abrasion, paint chipping and burnishing is highly dependent on the choice of paint system. There are significant differences between manufacturers, paint types and coating thickness. There are many water-borne paint systems with enhanced mark and abrasion resistance. Consult your paint supplier before selecting the most suitable paint finish for your particular application.

Water resistance

As well as mould resistance, GIB Toughline® Aqua plasterboard has the additional benefit of wet area protection. In wet areas, including water splash areas like baths and vanities, as well as shower enclosures, it is highly desirable to incorporate lining materials which will maintain their integrity longer when exposed more frequently to water or steam and particularly to one-off events such as leakages or flooding of a room.

GIB Toughline® Aqua is ideal in such situations because it features a water resistant special polymer impregnated core. Unlike other commonly used substrates, the water resistant core resists water 'wicking' up the core, a common cause of long term damage where a water resistant lining has not been used.

GIB TOUGHLINE® AQUA IS HIGHLY RECOMMENDED FOR WET AREA APPLICATIONS.

The below graphically shows the difference between GIB Toughline® Aqua (left) and standard plasterboard after a two-hour soak test in green dye.

GIB Toughline® Aqua is manufactured to comply with the water resistance requirements of AS/NZS 2588:1988 Gypsum plasterboard

Tiled and vinyl covered GIB Toughline® Aqua systems comply with the requirements of NZBC Clause E3 (Internal Moisture) and may be used in areas directly exposed to liquid water, such as showers, to provide an impervious and easily cleaned wall surface.

GIB Toughline® Aqua can be used in place of 13mm GIB Aqualine® in GIB Aqualine® Wet Area Systems. For full wet area detailing refer to the GIB Aqualine® System Literature.

TILING

The embedded fibreglass and denser core of GIB Toughline® Aqua gives added strength that easily supports the weight of tiles to provide a solid, stable backing, making it suitable for ceramic tiles up to 32kg/m^2.

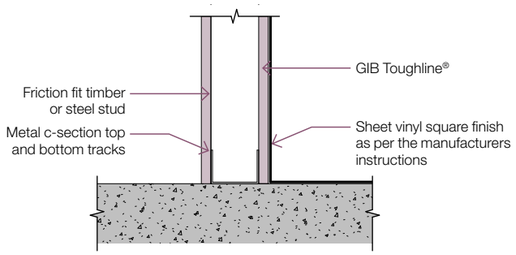
VINYL OVERLAY

GIB Toughline® Aqua is a suitable substrate for flexible vinyl finishes in wet areas.

Note:

- *GIB Toughline® Aqua linings must be jointed and stopped to a Level 4 finish as trowel marks can telegraph through even a commercial grade 2mm vinyl.*
- *In areas directly exposed to liquid water, all joints in flexible sheet vinyl must be heat welded.*
- *Installation of the flexible vinyl must be carried out strictly in accordance with the specifications provided by the suppliers/manufacturers of the vinyl.*

Detail for square finish of vinyl overlay over GIB Toughline®.



Noise control

Controlling noise to improve acoustic comfort, privacy and wellbeing is important for patients, staff and visitors. The negative effects of noise are associated with slower patient recovery and increased levels of stress. Improved acoustic conditions in healthcare facilities have also been shown to reduce risks of conflicts and errors.

The Association of Australasian Acoustical Consultants Guidelines for Healthcare Facilities suggests that poor acoustics can lead to increased sensitivity to pain and sleep disturbance, decreased rates of rehabilitation and increased risks of staff fatigue, error and occupational stress. Just as significant, the guide outlines that poor noise control impacts communication in that "patients have been found to withhold important or perhaps crucial health information, or not state their true feelings in confidence where they believe they may be overheard by others and want to avoid embarrassment."

While there is no specific New Zealand Building Code provision for noise control in hospitals, considerations should be made for potential noise transfer internally and externally. Designers often aim for STC reduction levels exceeding that of standard partitions by utilising GIB® sub-intertenancy noise control systems.

EXPERT VIEW:
Dr Jeremy Trevathan, Principal Acoustic Engineer, Acoustic engineering services.

Though good acoustics can have a major positive impact on patient recovery and staff morale, they are often not identified early on as a key client consideration. Additionally, other performance and layout requirements can mean that best practice acoustic design solutions (for example floor plans that separate noisy areas like plant rooms from quiet areas like patient rooms) are not always possible. The acoustic engineer's role, then, is to work with the design team to achieve the best outcome as is practicable. Trevathan suggests, however, that early acoustic engineer input can avoid some particularly challenging layouts and ensure that the right compromise is achieved between competing design considerations.

The key acoustic design aspects relate to: consulting spaces which require a high degree of speech privacy; theatres which require a high level of concentration and thus noise control to avoid noise intrusion; patient rooms which need a degree of quiet to aid rest and recovery; and high noise spaces including plant rooms. Once the user requirements associated with each of these areas has been defined the acoustic engineer moves to consider appropriate noise or reverberation control solutions.

Trevathan suggests that there is rarely a single solution to a problem, and a good engineer should be able to suggest different ways to achieve a similar acoustic result, whilst accommodating other non-acoustic constraints — for example, a double frame noise control system or a GIB® Rondo® Quiet Stud® system.

Case study: Burwood Hospital — foyer and café spaces

SHEPPARD AND ROUT ARCHITECTS IN ASSOCIATION WITH JASMAX AND KLEIN ARCHITECTS

Hospitals are busy, noisy environments, but also places where personal information is communicated with frequency. Sheppard and Rout Architects, designers of the foyer and café spaces within Burwood Hospital, Christchurch, understood that even in public foyer areas patients and visitors needed to clearly understand reception calls or nurse instructions, while office staff needed to clearly hear patient details to best direct care. The architects chose GIB Quietline® for the ceilings of the lofty atrium foyer to absorb and reflect sound in the large space. By reducing reverberation with the use of GIB Quietline®, communication has been enhanced in the large space. The perforated ceiling also adds another layer of texture and visual interest to the atrium.

The busy café has also utilised GIB Quietline® to dampen this noisy 'live' space making the café more comfortable for visitors and staff and helps support the hospital's intention for the café to be a central hub.

RIGHT: The foyer entry to Burwood Hospital, Christchurch, uses GIB Quietline® on the atrium ceiling.

Reverberation control

Reverberation control is essential in supporting hearing (of both staff and patients) and reducing the negative effects of noise on their wellbeing.

For those with hearing impairment, speech discrimination can dramatically decline in reverberant noisy conditions adding to patient stress and poor communication. Providing sound-absorbent plasterboard linings is a low impact and highly effective measure to shorten reverberation time.

GIB® Reverberation Control Systems specially address spaces with hard reflective surfaces by absorbing and dispersing sound. By reducing the reverberation of sound, a space becomes more comfortable. GIB Quietline® is effective at controlling sound reverberation in large open areas with hard surfaces and can be chosen based on their pattern and acoustic performance. Through consideration of the pattern, the ceiling void and the inclusion (or not) of insulation, different NRC vales can be achieved.

By reducing the reverberation of sound, a space becomes more comfortable.

Fire resistance

The New Zealand Building Code requirements for fire safety represent the minimum allowable standard of protection to ensure the health and life safety of building occupants. An effective fire design for hospital and healthcare facilities should not only satisfy the minimum NZBC requirements, but should consider additional containment, protection of property, as well as ongoing functionality. Hospital facilities are usually rated as a Level 4 in Building Importance Levels (NZBC Clause A3) which may affect the fire resistance requirements of elements within the building.

GIB® Fire Rated Systems include both NZBC compliant and discretionary levels of performance, and offer a range of Fire Resistance Ratings (FRR) from 10 to 240 minutes.

PENETRATIONS AND BUILDING SERVICES

Any penetration in a wall, floor, ceiling (e.g. light fittings, power outlet, pipe, HVAC, doors) has the potential to degrade system performance. The degree of degradation depends on the specific system and components involved. Penetrations, where possible, should be avoided in fire walls. Where required, refer to the penetrations section of the GIB® Fire Rated Systems and GIB® Noise Control Systems literature for appropriate details. It should be noted that, if a fire resistance rating is required, the fire resistance of the penetration detail must be assessed and considered in an appropriate solution.

Seismic design

After any major seismic event, it is important that hospital and healthcare facilities remain in operation. In order to minimise the damage resulting from the event and to allow the continued operation of the facility, it is recommended that seismic relief be provided in wall systems.

In New Zealand, the stiffness and strength of gypsum plasterboard linings is recognised and long established procedures exist (NZS 3604:2011), enabling gypsum plasterboard to provide bracing resistance in low-rise light steel or timber-framed residential construction. During the recent earthquakes GIB® plasterboard bracing systems in houses performed well when design and construction methods were in accordance with recommended practice.

In commercial buildings, wind and earthquake forces are often much higher. The main structure, commonly concrete or steel, is designed to provide resistance.

Gypsum plasterboard-lined partitions are non-structural and cannot resist forces associated with main structure deformations, such as expected ‘inter-storey drifts’ during design level earthquakes. To minimise the risk of damage, plasterboard-lined partitions must be separated from the main structure and be designed to accommodate anticipated structural movement.

LOW DAMAGE SOLUTIONS

Testing at Canterbury University (Tasligedik et al, 2012) has shown that by simply incorporating regular relief joints, ‘low damage’ solutions for non-structural partitions can be designed successfully. ‘Shadow lines’ or ‘negative details’ at wall junctions and intersections with the main structure, and breaking up expansive areas with regular control joints, provides freedom for the non-structural elements to accommodate main structural movements. Gaps can be arranged by simple calculation and can easily be made aesthetically pleasing or hidden with sealants or trim finishes.

X-ray protection

GIB X-BLOCK® RADIATION SHIELDING SYSTEMS

GIB X-Block® Radiation Shielding Systems provides cost effective X-ray protection. A specialist 13mm GIB X-Block® plasterboard containing Barytes and jointing systems achieves an effective radiation barrier without the use of lead, eliminating complex and costly installation procedures. It is easy to achieve a uniform appearance throughout a facility, as they match other plasterboard systems to provide a seamless surface finish. GIB X-Block® also provides other critical functions such as noise control and fire resistance ratings.

Effective radiation barrier without the use of lead.

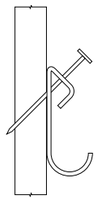
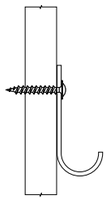
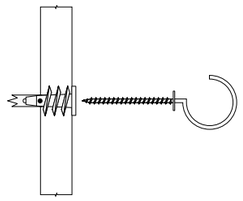
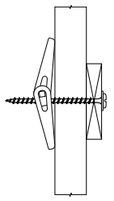
Fixtures

Architects are usually made aware of key heavy fittings and machinery and can design nogging to provide support for those items. There are a range of steel angles that will hold timber nogs to make this possible even with steel framing.

For smaller fixtures and fittings, many of which are unknown at the time of design or may change position in use, wall anchors or a plywood substrate allow the hanging of items on the plasterboard.

There is a wide range of proprietary fastenings for attaching fixtures of varying weights to GIB® plasterboard where framing cannot be located. Some options are shown below and are suitable for lightweight items such as pictures, coat hooks, etc.

Heavier items, such as shelving, must always be supported by wall framing members. Any fixture attached to a fire rated wall must always be supported by framing.

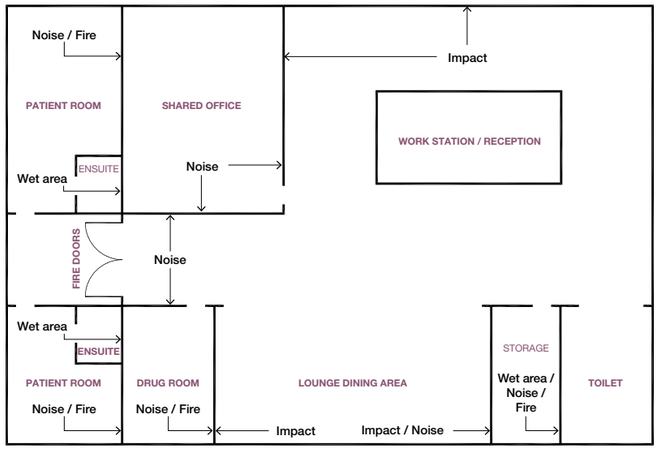
Allowable fixture weight 3kg	**Allowable fixture weight 6–8kg**	**Allowable fixture weight 8kg**	**Allowable fixture weight 15–20kg**
			

DESIGNING WITH GIB® SYSTEMS

Within a hospital different areas will have many different performance requirements, including fire, acoustics, impact control and infection control.

By identifying areas that require impact resistant GIB Toughline®, fire walls or noise control systems, the designer is able to tailor the wall linings to the specific purpose and avoid over-specification (and potential value management at a later stage). For example, while impact resistance throughout may be best practice internationally for ongoing maintenance, many designers find it sufficient to only use GIB Toughline® in critical areas.

In this example, a typical portion of a hospital plan identifies areas that would likely require fire systems, noise control systems and tough systems to meet an acceptable performance level. The systems within this book allow you to choose systems that will be the most cost effective for the level of performance.



Product information and sheet sizes

GIB Toughline® sheet sizes

	Board thickness (mm)	Sheet width (mm)	2400	2700	3000	3300	3600	4200	4800	6000	Max. kg/m²
TE/TE	13	1200	✓	✓	✓		✓				11.4

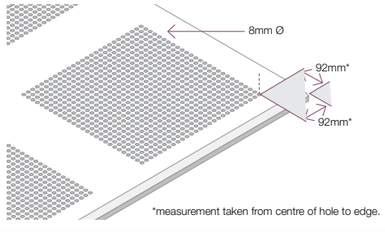
GIB Toughline® Aqua sheet sizes

	Board thickness (mm)	Sheet width (mm)	2400	2700	3000	3300	3600	4200	4800	6000	Max. kg/m²
TE/TE	13	1200	✓	✓	✓						11.4

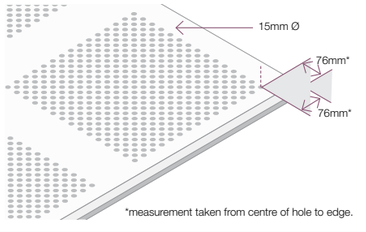
GIB X-Block® sheet sizes

	Board thickness (mm)	Sheet width (mm)	2400	2700	3000	3300	3600	4200	4800	6000	Max. kg/m²
TE/TE	13	1200	✓		✓						17

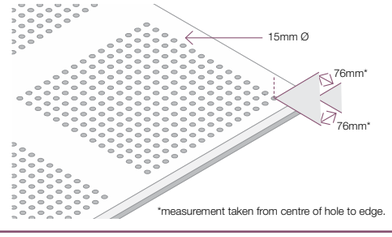
15501 — GIB Quietline® circle 8mm Ø 8 panel — 10% perforation



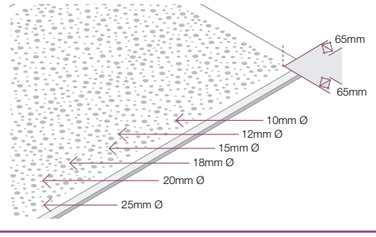
15502 — GIB Quietline® circle 15mm Ø 8 panel — 20% perforation



15397 — GIB Quietline® circle 15mm Ø 8 panel — 10% perforation



15503 — GIB Quietline® random 1 panel — 15% perforation



Winstone Wallboards offers a Cut to Length service. See page 14 of this guide or gib.co.nz for more information.

Hospitals, like this room within Burwood Hospital, Christchurch, require a wide range of specialist performance such as X-ray protection.

Two way FRR – double timber frame wall

Specification number	Performance		Specifications	
GBTLA 60a	**STC**	56	**Lining**	1 x 13mm GIB Toughline® each side
	Rw	55	**LB/NLB**	Load bearing
	FRR	60/60/60	**Insulation**	1 x layer Pink® Batts® BIB R1.8 (75mm)
GBTLA 60b	**STC**	56	**Lining**	1 x 13mm GIB Braceline® / GIB Noiseline® each side
	Rw	57	**LB/NLB**	Load bearing
	FRR	60/60/60	**Insulation**	1 x layer Pink® Batts® BIB R1.8 (75mm)
GBTLA 60c	**STC**	56	**Lining**	1 x 13mm GIB Fyreline® each side
	Rw	55	**LB/NLB**	Load bearing
	FRR	60/60/60	**Insulation**	1 x layer Pink® Batts® BIB R1.8 (75mm)
GBTLA 60a2	**STC**	62	**Lining**	1 x 13mm GIB Toughline® each side
	Rw	60	**LB/NLB**	Load bearing
	FRR	60/60/60	**Insulation**	2 x layers Pink® Batts® BIB R1.8 (75mm)
GBTLA 60b2	**STC**	63	**Lining**	1 x 13mm GIB Braceline® / GIB Noiseline® each side
	Rw	62	**LB/NLB**	Load bearing
	FRR	60/60/60	**Insulation**	2 x layers Pink® Batts® BIB R1.8 (75mm)
GBTLA 60c2	**STC**	62	**Lining**	1 x 13mm GIB Fyreline® each side
	Rw	60	**LB/NLB**	Load bearing
	FRR	60/60/60	**Insulation**	2 x layers Pink® Batts® BIB R1.8 (75mm)
Wet area option				
GBTLA 60d	**STC**	56	**Lining**	1 x 13mm GIB Toughline® Aqua each side
	Rw	55	**LB/NLB**	Load bearing
	FRR	60/60/60	**Insulation**	1 x layer Pink® Batts® BIB R1.8 (75mm)
GBTLA 60d2	**STC**	62	**Lining**	1 x 13mm GIB Toughline® Aqua each side
	Rw	60	**LB/NLB**	Load bearing
	FRR	60/60/60	**Insulation**	2 x layers Pink® Batts® BIB R1.8 (75mm)

FRAMING

Stud size	Space between frames
90mm	25mm min

Framing to comply with:

— NZBC B1 — Structure: AS1 Clause 3 — Timber (NZS 3604) or VM1 Clause 6 — Timber (NZS 3603).
— NZBC B2 — Durability: AS1 Clause 3.2 — Timber (NZS 3602).
— Studs at 600mm centres maximum.
— Nogs at 1200mm centres for horizontal fixing.

Non-loading — Framing dimensions and heights as determined by NZS 3604 stud tables for non-loadbearing partitions.

Loadbearing — Framing Dimensions and height as determined by NZS 3604 stud and top plate tables for loadbearing walls.

Warning: The STC performance figures listed in the table above are based on studs spaced at 600mm centres. Reducing stud centres to less than 600mm will significantly lower the STC performance of these systems.

SOUND CONTROL INFILL

Pink® Batts® BIB R1.8 (75mm) minimum glass wool insulation installed between the studs and nogs.

WALL LINING

GIB® plasterboard linings as prescribed in the table above.

Vertical or horizontal fixing permitted.

Sheets shall be touch fitted.

When fixing vertically, use full height sheets where possible.

To achieve the fire rated performance figures listed in the table above all sheet joints must be formed over solid timber framing.

ACOUSTIC SEALANT

A bead of GIB Soundseal® acoustic sealant is required around the perimeter of the framing. The linings are then bedded onto the bead.

FASTENING THE LINING

Fasteners
41mm x 6g GIB® Grabber® High Thread Drywall Screws.

Fastener centres
Single screw at 300mm centres around the sheet perimeter.

Single screw at 300mm centres to intermediate studs.

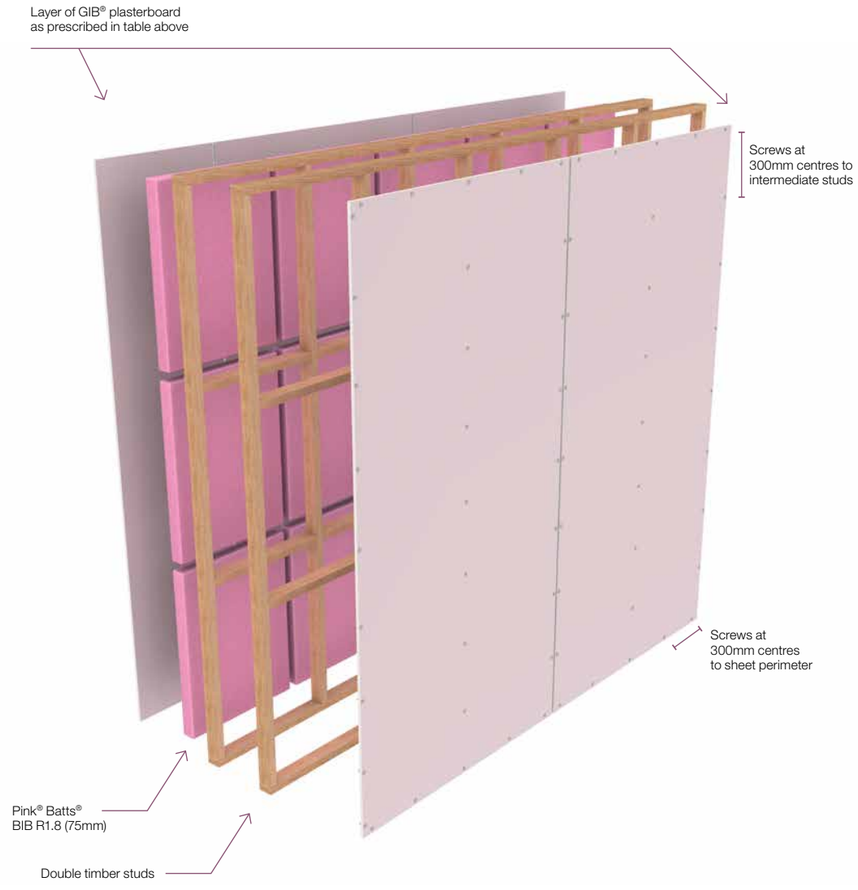
Place fasteners 12mm from bound sheet edges and 18mm from sheet ends.

For tiled walls (tile weight up to 32kg/m²)
Single screw at 100mm centres to perimeter of tiled wall and to all intermediate studs. No Adhesive.

Refer to GIB Aqualine® Wet Area System literature for complete wet area system details.

JOINTING

All fastener heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled "GIB® Site Guide". Wall to ceiling junctions are to be reinforced with GIB® Paper Tape or GIB® RocTape and square stopped or finished with GIB-Cove®.



Two way FRR – double timber frame wall

Specification number	Performance		Specifications	
GBTLA 90e	**STC**	60	**Lining**	1 x 16mm GIB Fyreline® each side
	Rw	59	**LB/NLB**	Load bearing
	FRR	90/90/90	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)
GBTLA 90e2	**STC**	65	**Lining**	1 x 16mm GIB Fyreline® each side
	Rw	63	**LB/NLB**	Load bearing
	FRR	90/90/90	**Insulation**	2 x layers Pink® Batts® R1.8 (75mm)

FRAMING

Stud size	Space between frames
90mm	25mm min

Framing to comply with:

— NZBC B1 — Structure: AS1 Clause 3 — Timber (NZS 3604) or VM1 Clause 6 — Timber (NZS 3603).
— NZBC B2 — Durability: AS1 Clause 3.2 — Timber (NZS 3602).
— Studs at 600mm centres maximum.
— Nogs at 1200mm centres for horizontal fixing.

Non-loading — Framing dimensions and heights as determined by NZS 3604 stud tables for non-loadbearing partitions.

Loadbearing — Framing Dimensions and height as determined by NZS 3604 stud and top plate tables for loadbearing walls.

Warning: The STC performance figures listed in the table above are based on studs spaced at 600mm centres. Reducing stud centres to less than 600mm will significantly lower the STC performance of these systems.

SOUND CONTROL INFILL

Pink® Batts® BIB R1.8 (75mm) minimum glass wool insulation installed between the studs and nogs.

WALL LINING

1 layer of 16mm GIB Fyreline® each side of the frame.

Vertical or horizontal fixing permitted.

Sheets shall be touch fitted.

When fixing vertically, use full height sheets where possible.

To achieve the fire rated performance figures listed in the table above all sheet joints must be formed over solid timber framing.

ACOUSTIC SEALANT

A bead of GIB Soundseal® acoustic sealant is required around the perimeter of the framing. The linings are then bedded onto the bead.

FASTENING THE LINING

Fasteners
51mm x 7g GIB® Grabber® High Thread Drywall Screws.

Fastener centres
Single screw at 300mm centres around the sheet perimeter.

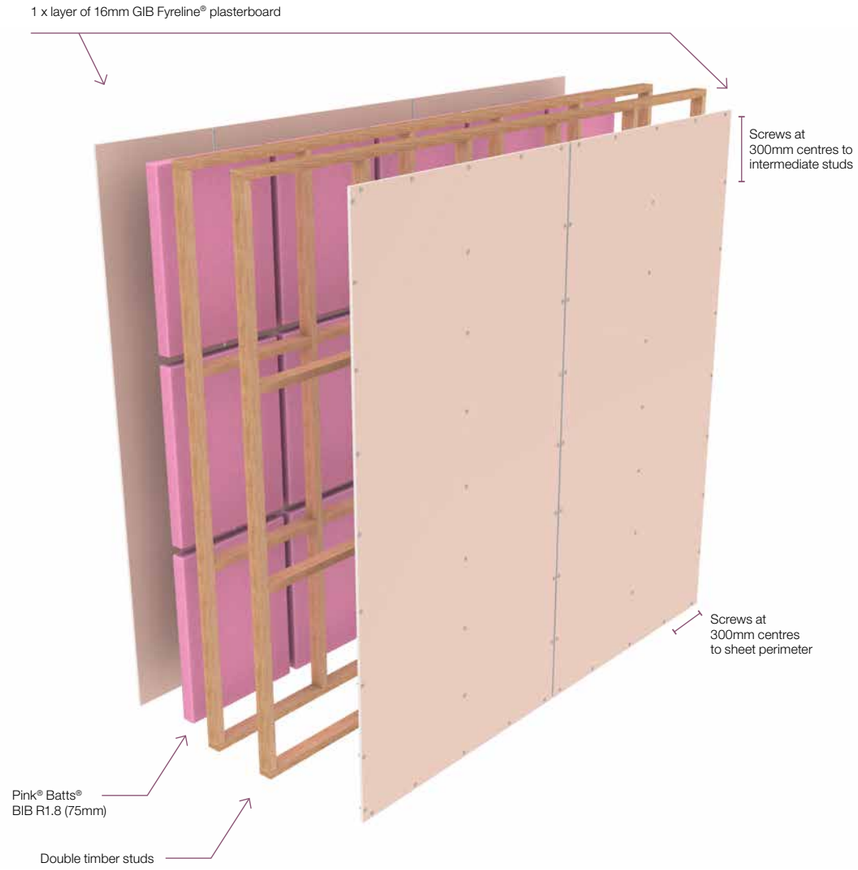
Single screw at 300mm centres to intermediate studs.

Place fasteners 12mm from bound sheet edges and 18mm from sheet ends.

JOINTING

All fastener heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled "GIB® Site Guide". Wall to ceiling junctions are to be reinforced with GIB® Paper Tape or GIB® RocTape and square stopped or finished with GIB-Cove®.

GIB HEALTHCARE SYSTEMS – INTERTENANCY



Two way FRR – double steel frame wall

Specification number	Performance		Specifications	
GBSA 60d	**STC**	57	**Lining**	1 x 13mm GIB Toughline® each side
	Rw	55	**LB/NLB**	Non load bearing
	FRR	-/60/60	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)
GBSA 60e	**STC**	58	**Lining**	1 x 13mm GIB Braceline® / GIB Noiseline® each side
	Rw	57	**LB/NLB**	Non load bearing
	FRR	-/60/60	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)
GBSA 60d2	**STC**	62	**Lining**	1 x 13mm GIB Toughline® each side
	Rw	60	**LB/NLB**	Non load bearing
	FRR	-/60/60	**Insulation**	2 x layers Pink® Batts® R1.8 (75mm)
GBSA 60e2	**STC**	62	**Lining**	1 x 13mm GIB Braceline® / GIB Noiseline® each side
	Rw	62	**LB/NLB**	Non load bearing
	FRR	-/60/60	**Insulation**	2 x layers Pink® Batts® R1.8 (75mm)
Wet area option				
GBSA 60f	**STC**	57	**Lining**	1 x 13mm GIB Toughline® Aqua each side
	Rw	55	**LB/NLB**	Non load bearing
	FRR	-/60/60	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)
GBSA 60f2	**STC**	62	**Lining**	1 x 13mm GIB Toughline® Aqua each side
	Rw	60	**LB/NLB**	Non load bearing
	FRR	-/60/60	**Insulation**	2 x layers Pink® Batts® R1.8 (75mm)

FRAMING AND WALL HEIGHT

Stud size	Space between frames
64 x 34 x 0.50mm	25mm min

Minimum steel stud dimensions to be 64 x 34 x 0.50mm nominal with a 6mm return.

Minimum steel track dimensions to be 64 x 30 x 0.50mm nominal.

Top and bottom tracks are fixed to the floor and ceiling in true alignment.

Stud spacing at 600mm centres maximum.

Place studs to allow an expansion gap at the top of the frame as per the table below.

The studs are held in place by the “grip” of the channel runners. Light locating fasteners that fail at high temperatures, such as single aluminium rivets may be used. Otherwise positive fixing must be avoided.

Recommended maximum wall height
Note that maximum wall heights for fire-rated systems can be lower than what can be achieved with non-fire-rated construction.

Nominal stud dimension (mm)	BMT (mm)	Stud centres (mm)	Max. wall height (mm)	Expansion at top of studs (mm)
64 x 34	0.50 or 0.55	600	2700	15
		400	3000	15
76 x 34	0.55	600	3200	15
		400	3600	20*
	0.75	600	3600	20*
		400	4200	20*
92 x 34	0.55	600	3600	20*
		400	4200	20*
	0.75	600	4200	20*
		400	4800	25*

**Use a minimum 50mm deep head channel.*

Contact the GIB® Helpline for different framing configurations.

GIB HEALTHCARE SYSTEMS – INTERTENANCY

SOUND CONTROL INFILL

Pink® Batts® BIB R1.8 (75mm) minimum glass wool insulation installed between the studs.

ACOUSTIC SEALANT

A bead of GIB Soundseal® acoustic sealant is required around the perimeter of the framing. The linings are then bedded onto the bead.

LINING

GIB® plasterboard as prescribed in the tables above.

Vertical fixing only permitted.

Sheets shall be touch fitted.

Offset joints between sheets on opposite sides of the frame.

Full height sheets shall be used where possible.

When sheet end butt joints are unavoidable, they shall fixed at 200mm centres and be formed over nogs.

All sheet joints must be formed over framing. Linings are fixed hard to floor.

FASTENING THE LINING

Fasteners
25mm x 6g GIB® Grabber® Drywall Self Tapping Screws.

Fastener centres
300mm centres up each stud.

Place stud fasteners 12mm from sheet edges generally and 50mm from sheet ends.

Fastening the linings at 18mm from sheet ends to top and bottom tracks is permitted as long as the fasteners do not connect the studs and tracks.

For tiled walls (tile weight up to 32kg/m²)
Single screw at 100mm centres to perimeter of tiled wall and to all intermediate studs. No Adhesive.

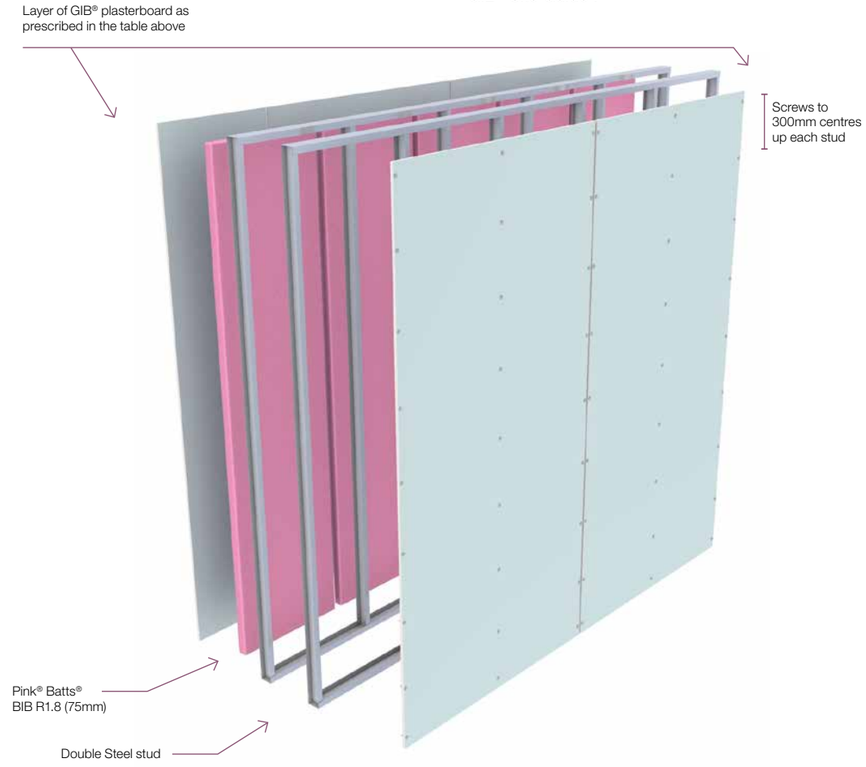
Refer to GIB Aqualine® Wet Area System literature for complete wet area system details.

SERVICES

Holes may be drilled or pre-punched in the metal studs to allow installation of electrical service lines and plumbing supply pipes.

JOINTING

All screw heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled “GIB® Site Guide”.



Two way FRR – double steel frame wall

Specification number	Performance		Specifications	
GBSA 90e	**STC**	60	**Lining**	1 x 16mm GIB Fyreline® each side
	Rw	59	**LB/NLB**	Non load bearing
	FRR	-/90/90	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)
GBSA 90e2	**STC**	64	**Lining**	1 x 16mm GIB Fyreline® each side
	Rw	63	**LB/NLB**	Non load bearing
	FRR	-/90/90	**Insulation**	2 x layers Pink® Batts® R1.8 (75mm)

FRAMING AND WALL HEIGHT

Stud size	Space between frames
64 x 34 x 0.50mm	25mm min

Minimum steel stud dimensions to be 64 x 34 x 0.50mm nominal with a 6mm return.

Minimum steel track dimensions to be 64 x 30 x 0.50mm nominal.

Top and bottom tracks are fixed to the floor and ceiling in true alignment.

Stud spacing at 600mm centres maximum.

Place studs to allow an expansion gap at the top of the frame.

The studs are held in place by the “grip” of the channel runners. Light locating fasteners that fail at high temperatures, such as single aluminium rivets may be used. Otherwise positive fixing must be avoided.

Recommended maximum wall height
Note that maximum wall heights for fire-rated systems can be lower than what can be achieved with non-fire-rated construction.

Nominal stud dimension (mm)	BMT (mm)	Stud centres (mm)	Max. wall height (mm)	Expansion at top of studs (mm)
64 x 34	0.50 or 0.55	600	2700	15
		400	3000	15
76 x 34	0.55	600	3200	15
		400	3600	20*
	0.75	600	3600	20*
		400	4200	20*
92 x 34	0.55	600	3600	20*
		400	4200	20*
	0.75	600	4200	20*
		400	4800	25*

**Use a minimum 50mm deep head channel.*

Contact the GIB® Helpline for different framing configurations.

SOUND CONTROL INFILL

Pink® Batts® BIB R1.8 (75mm) minimum glass wool insulation installed between the studs.

ACOUSTIC SEALANT

A bead of GIB Soundseal® acoustic sealant is required around the perimeter of the framing. The linings are then bedded onto the bead.

LINING

1 layer of 16mm GIB Fyreline® each side of the frame.

Vertical fixing only permitted.

Sheets shall be touch fitted.

Offset joints between sheets on opposite sides of the frame.

Full height sheets shall be used where possible.

When sheet end butt joints are unavoidable, they shall be formed over nogs.

All sheet joints must be formed over framing. Linings are fixed hard to floor.

FASTENING THE LINING

Fasteners
32mm x 6g GIB® Grabber® Drywall Self Tapping Screws.

Fastener centres
300mm centres up each stud.

Place stud fasteners 12mm from sheet edges generally and 50mm from sheet ends.

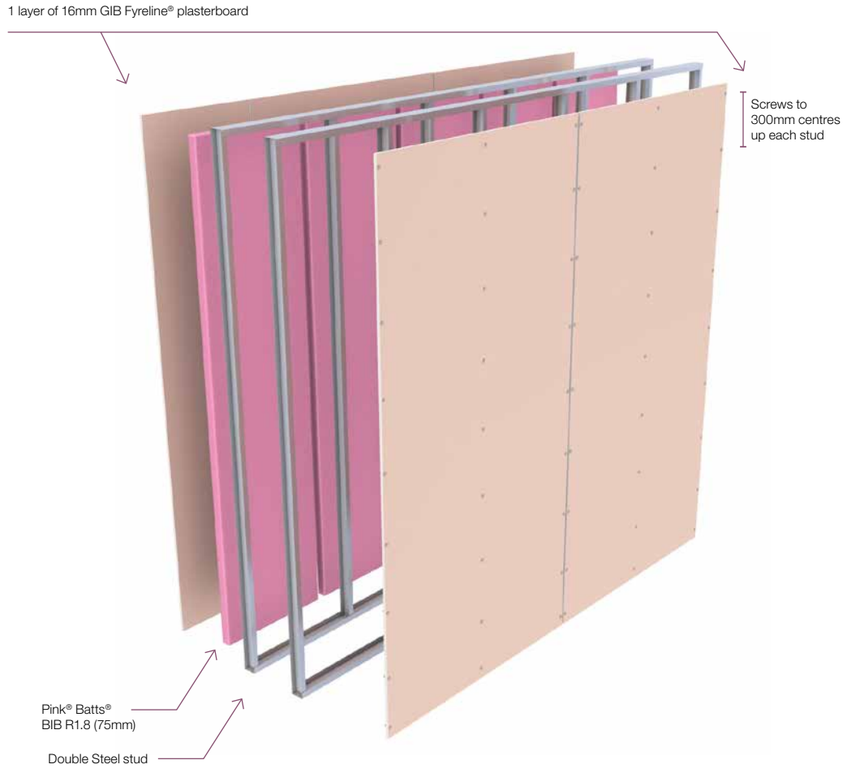
Fastening the linings at 18mm from sheet ends to top and bottom tracks is permitted as long as the fasteners do not connect the studs and tracks.

SERVICES

Holes may be drilled or pre-punched in the metal studs to allow installation of electrical service lines and plumbing supply pipes.

JOINTING

All screw heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled “GIB® Site Guide”.



Two way FRR – steel frame wall – GIB Rondo® Quiet Stud®

Specification number	Performance		Specifications	
GBQSA 90a	**STC**	61	**Lining**	1 x 13mm GIB Toughline® (outer layer) and 1 x 10mm GIB Braceline® / GIB Noiseline® (inner layer) each side
	Rw	60	**LB/NLB**	Non load bearing
	FRR	-/90/90	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)
Wet area option				
GBQSA 90b	**STC**	61	**Lining**	1 x 13mm Toughline® Aqua (outer layer) and 1 x 10mm GIB Braceline® / GIB Noiseline® (inner layer) each side
	Rw	60	**LB/NLB**	Non load bearing
	FRR	-/90/90	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)

FRAMING

Stud size	Space between frames
92 x 45 x 0.75mm	N/A

GIB Rondo® Quiet Stud® resilient steel stud 92 x 45 x 0.75mm BMT and placed in 92 x 30 x 0.55mm BMT steel channel. Channel is fixed to floor and ceiling. Studs are friction fitted at 600mm centres maximum with a 15mm expansion gap at the top of the frame. No fixings to the top channel.

WALL HEIGHTS

Recommended maximum wall height is 3000mm. For wall heights up to 3400mm place studs at 400mm centres. For greater heights please contact the GIB® Helpline.

SOUND CONTROL INFILL

Pink® Batts® BIB R1.8 (75mm) minimum glass wool insulation installed between the studs.

ACOUSTIC SEALANT

A bead of GIB Soundseal® acoustic sealant is required around the perimeter of the inner lining. The outer lining is then bedded onto the bead.

LINING

1 layer of 13mm GIB Toughline® or GIB Toughline® Aqua plasterboard (outer layer) and 1 layer 10mm GIB Braceline® / GIB Noiseline® (inner layer) each side of the frame.

Inner layer joints on opposite sides of the frame are offset. Vertical joints of the outer layer are offset 600mm from those of the inner layer.

The inner layers must be fitted hard to floor. Use full height sheets where possible.

Sheet joints are touch fitted and must occur over framing. Where sheet end joints are unavoidable they must be over nogs and the outer layer joints offset from those on the inner layer.

FASTENING THE LINING

Fasteners
Inner Layer: 25mm x 6g GIB® Grabber® Drywall Self Tapping Screws.

Outer Layer: 41mm x 6g GIB® Grabber® Self Tapping Screws.

Fastener centres
Inner and Outer layer: 300mm centres up each stud.

Place stud fasteners 12mm from sheet edges generally and 50mm from sheet ends.

Fastening the linings at 18mm from sheet ends to top and bottom tracks is permitted as long as the fasteners do not connect the studs and tracks.

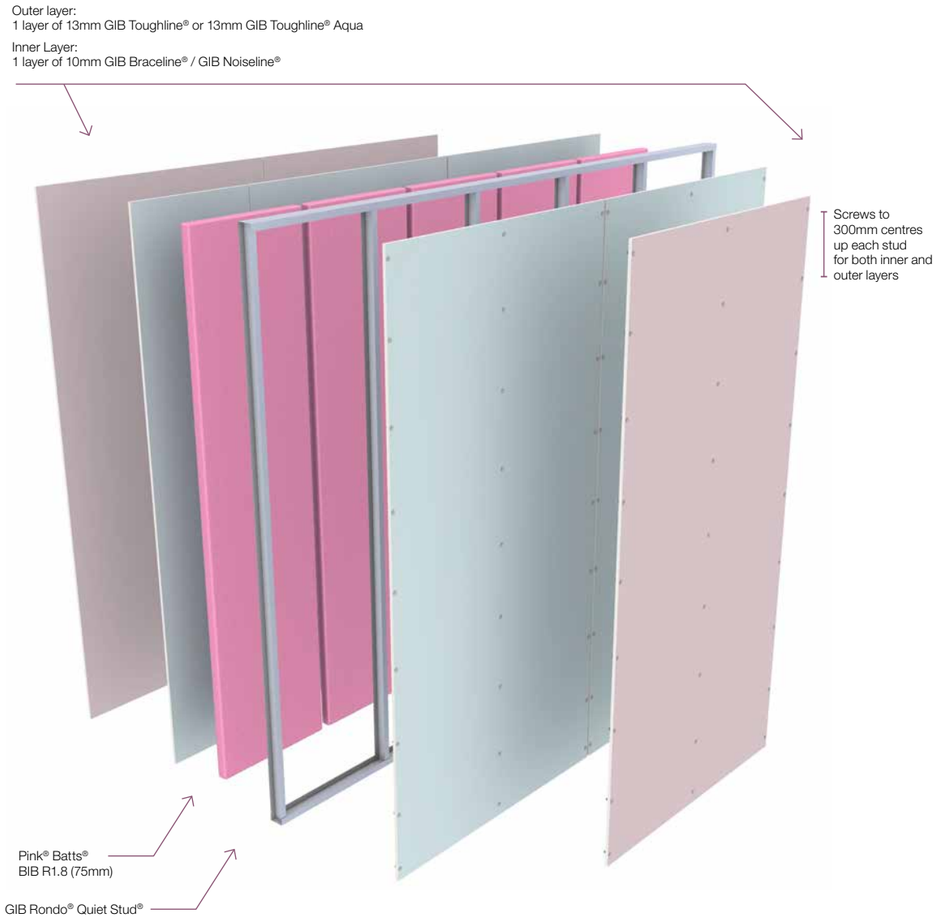
For tiled walls (tile weight up to 32kg/m²)
Outer Layers: Single screw at 100mm centres to perimeter of tiled wall and to all intermediate studs. No Adhesive.

Refer to GIB Aqualine® Wet Area system literature for complete wet area system details.

JOINTING

All screw heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled “GIB® Site Guide”.

GIB HEALTHCARE SYSTEMS – INTERTENANCY



Two way FRR – timber frame wall

Specification number	Performance		Specifications	
GST 132a	**STC**	40	**Lining**	1 x 13mm GIB® Standard each side
	Rw	39	**LB/NLB**	Load bearing
	FRR	30/30/30	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)

FRAMING

Stud size	Space between frames
90mm	N/A

Framing to comply with:

— NZBC B1 — Structure: AS1 Clause 3 — Timber (NZS 3604) or VM1 Clause 6 — Timber (NZS 3603).
— NZBC B2 — Durability: AS1 Clause 3.2 — Timber (NZS 3602).
— Studs at 600mm centres maximum.
— Nogs at 1200mm centres for horizontal fixing.

Non-loading — Framing dimensions and heights as determined by NZS 3604 stud tables for non-loadbearing partitions.

Loadbearing — Framing Dimensions and height as determined by NZS 3604 stud and top plate tables for loadbearing walls.

Warning: The STC performance figures listed in the table above are based on studs spaced at 600mm centres. Reducing stud centres to less than 600mm will significantly lower the STC performance of these systems.

SOUND CONTROL INFILL

A layer of Pink® Batts® BIB R1.8 (75mm) minimum glass wool insulation installed between the studs and nogs.

WALL LINING

1 layer of 13mm GIB® Standard each side of the frame.

Vertical or horizontal fixing permitted.

Sheets shall be touch fitted.

When fixing vertically, use full height sheets where possible.

All sheet joints must be formed over solid timber framing.

ACOUSTIC SEALANT

A bead of GIB Soundseal® acoustic sealant is required around the perimeter of the framing. The linings are then bedded onto the bead.

FASTENING THE LINING

Fasteners
41mm x 6g GIB® Grabber® High Thread Drywall Screws.

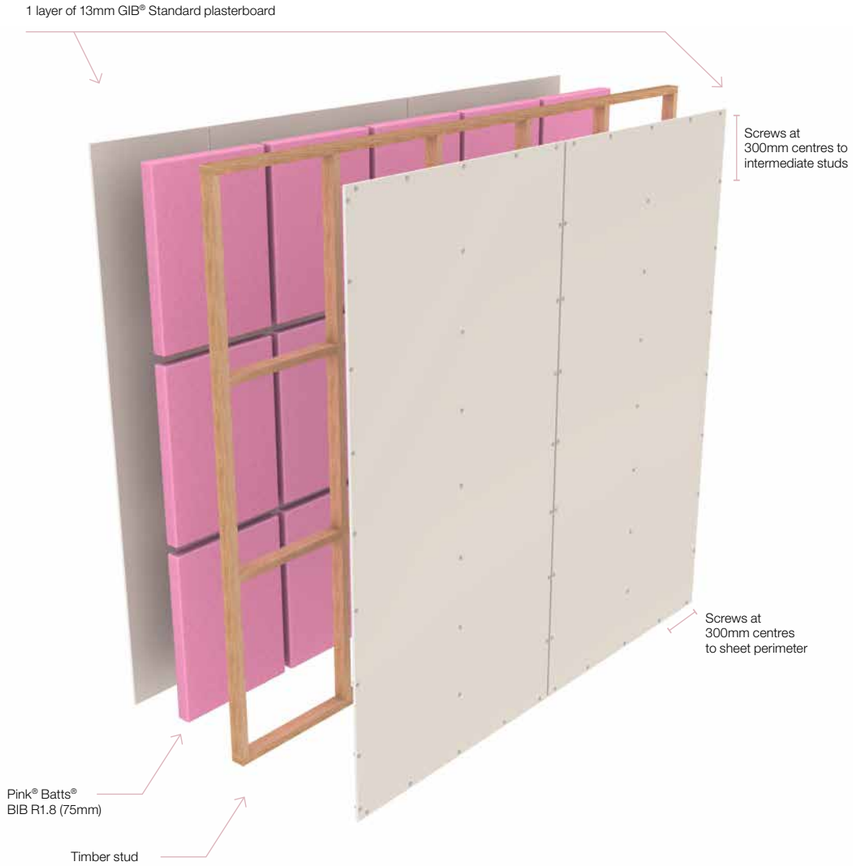
Fastener centres
Single screw at 300mm centres around the sheet perimeter.

Single screw at 300mm centres to intermediate studs.

Place fasteners 12mm from bound sheet edges and 18mm from sheet ends.

JOINTING

All fastener heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled "GIB® Site Guide". Wall to ceiling junctions are to be reinforced with GIB® Paper Tape or GIB® RocTape and square stopped or finished with GIB-Cove®.



GIB HEALTHCARE SYSTEMS – SUB-INTERTENANCY

Two way FRR – steel frame wall

Specification number	Performance		Specifications	
GSS 132a	**STC**	45	**Lining**	1 x 13mm GIB® Standard each side
	Rw	44	**LB/NLB**	Non load bearing
	FRR	-/30/30	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)

FRAMING AND WALL HEIGHT

Minimum steel stud dimensions to be 64 x 34 x 0.50mm nominal with a 6mm return.

Minimum steel track dimensions to be 64 x 30 x 0.50mm nominal.

Top and bottom tracks are fixed to the floor and ceiling in true alignment.

Stud spacing at 600mm centres maximum.

Place studs to allow an expansion gap at the top of the frame as per the table below.

The studs are held in place by the “grip” of the channel runners. Light locating fasteners that fail at high temperatures, such as single aluminium rivets may be used. Otherwise positive fixing must be avoided.

Recommended maximum wall height
Note that maximum wall heights for fire-rated systems can be lower than what can be achieved with non-fire-rated construction.

Nominal stud dimension (mm)	BMT (mm)	Stud centres (mm)	Max. wall height (mm)	Expansion at top of studs (mm)
64 x 34	0.50 or 0.55	600	2700	15
		400	3000	15
76 x 34	0.55	600	3200	15
		400	3600	20*
	0.75	600	3600	20*
		400	4200	20*
92 x 34	0.55	600	3600	20*
		400	4200	20*
	0.75	600	4200	20*
		400	4800	25*

**Use a minimum 50mm deep head channel.*

Contact the GIB® Helpline for different framing configurations.

SOUND CONTROL INFILL

Pink® Batts® BIB R1.8 (75mm) minimum glass wool insulation installed between the studs and nogs.

ACOUSTIC SEALANT

A bead of GIB Soundseal® acoustic sealant is required around the perimeter of the framing. The linings are then bedded onto the bead.

LINING

1 layer of 13mm GIB® Standard plasterboard each side of the frame.

Vertical fixing only permitted.

Sheets shall be touch fitted.

Offset joints between sheets on opposite sides of the frame.

Full height sheets shall be used where possible.

When sheet end butt joints are unavoidable, they shall be fixed at 200mm centres and formed over nogs.

All sheet joints must be formed over framing. Linings are fixed hard to floor.

FASTENING THE LINING

Fasteners
25mm x 6g GIB® Grabber® Drywall Self Tapping Screws.

Fastener centres
300mm centres up each stud.

Place stud fasteners 12mm from sheet edges generally and 50mm from sheet ends.

Fastening the linings at 18mm from sheet ends to top and bottom tracks is permitted as long as the fasteners do not connect the studs and tracks.

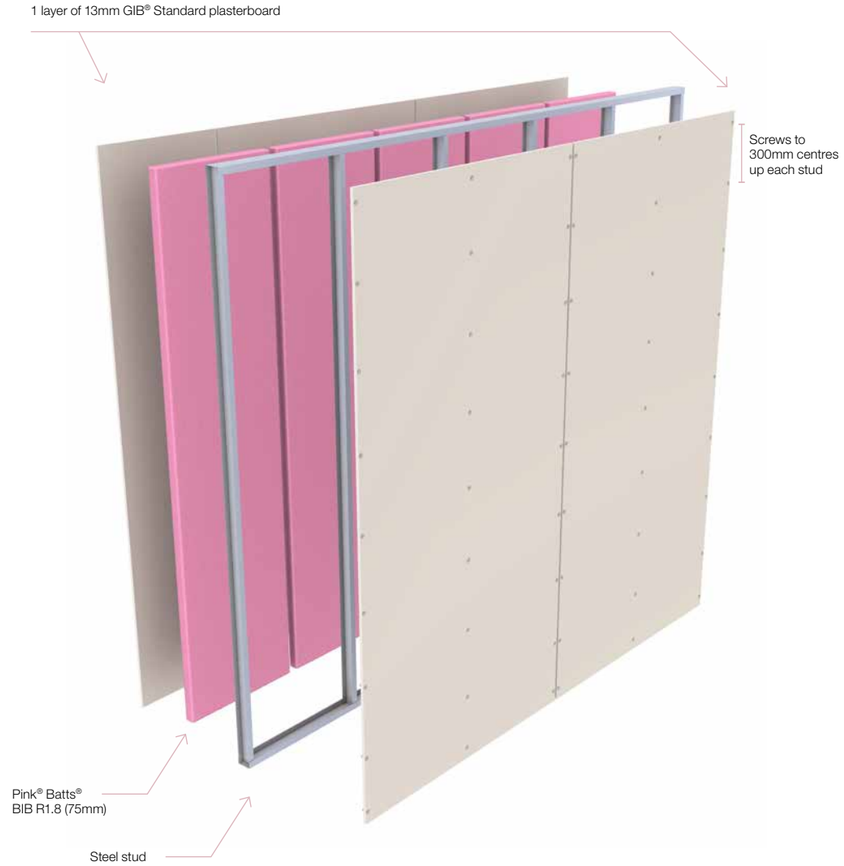
SERVICES

Holes may be drilled or pre-punched in the metal studs to allow installation of electrical service lines and plumbing supply pipes.

JOINTING

All screw heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled “GIB® Site Guide”.

GIB HEALTHCARE SYSTEMS – SUB-INTERTENANCY



Two way FRR – steel frame wall

Specification number	Performance		Specifications	
GSS134a	**STC**	50	**Lining**	2 x 13mm GIB® Standard each side
	Rw	49	**LB/NLB**	Non load bearing
	FRR	-/45/45	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)

FRAMING AND WALL HEIGHT

Minimum steel stud dimensions to be 64 x 34 x 0.50mm nominal with a 6mm return.

Minimum steel track dimensions to be 64 x 30 x 0.50mm nominal.

Top and bottom tracks are fixed to the floor and ceiling in true alignment.

Stud spacing at 600mm centres maximum.

Place studs to allow an expansion gap at the top of the frame as per the table below.

The studs are held in place by the “grip” of the channel runners. Light locating fasteners that fail at high temperatures, such as single aluminium rivets may be used. Otherwise positive fixing must be avoided.

Recommended maximum wall height
Note that maximum wall heights for fire-rated systems can be lower than what can be achieved with non-fire-rated construction.

Nominal stud dimension (mm)	BMT (mm)	Stud centres (mm)	Max. wall height (mm)	Expansion at top of studs (mm)
64 x 34	0.50 or 0.55	600	2700	15
		400	3000	15
76 x 34	0.55	600	3200	15
		400	3600	20*
	0.75	600	3600	20*
		400	4200	20*
92 x 34	0.55	600	3600	20*
		400	4200	20*
	0.75	600	4200	20*
		400	4800	25*

**Use a minimum 50mm deep head channel.*

Contact the GIB® Helpline for different framing configurations.

SOUND CONTROL INFILL

Pink® Batts® BIB R1.8 (75mm) minimum glass wool insulation installed between the studs.

ACOUSTIC SEALANT®

A bead of GIB Soundseal® acoustic sealant is required around the perimeter of the inner lining. The outer lining is then bedded onto the bead.

LINING

2 layers of 13mm GIB® Standard plasterboard fixed vertically each side of the frame.

Inner layer joints on opposite sides of the frame are offset. Vertical joints of the outer layer are offset 600mm from those of the inner layer.

The inner layers must be fitted hard to floor. Use full height sheets where possible.

Sheet joints are touch fitted and must occur over framing. Where sheet end joints are unavoidable they must be over nogs and the outer layer joints offset from those on the inner layer.

FASTENING THE LINING

Fasteners
Inner Layer: 25mm x 6g GIB® Grabber® Drywall Self Tapping Screws.

Outer Layer: 41mm x 6g GIB® Grabber Self Tapping Drywall Screws.

Fastener centres
Inner and outer layer: 300mm centres up each stud.

Place stud fasteners 12mm from sheet edges generally and 50mm from sheet ends.

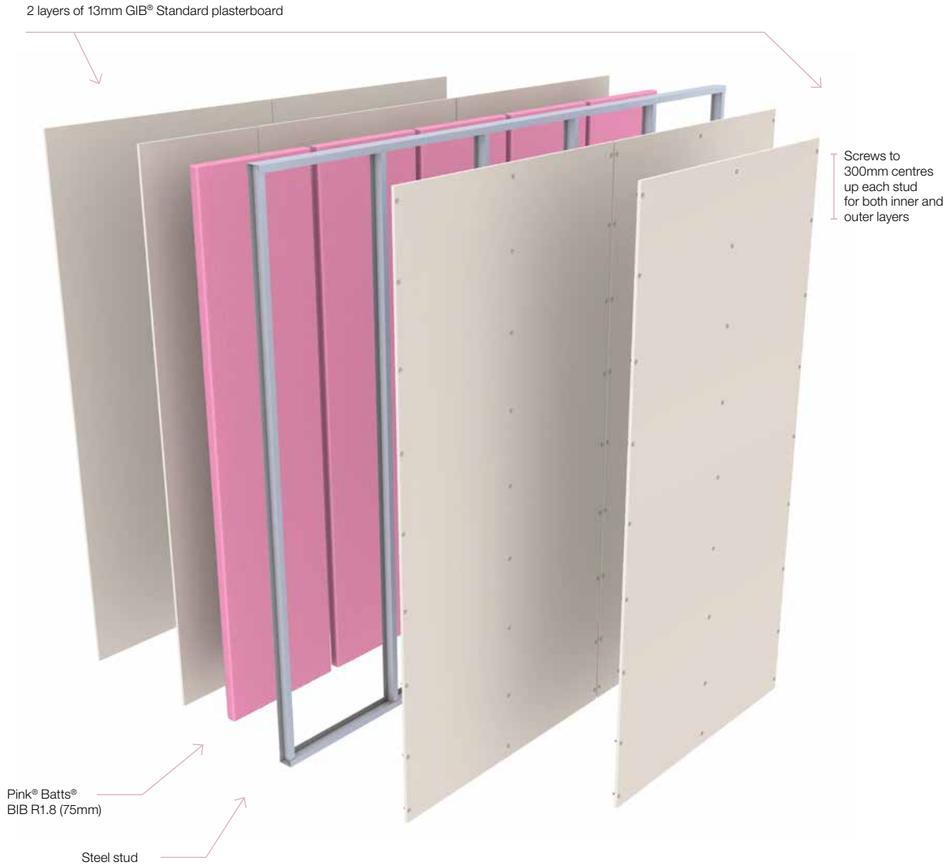
Fastening the linings at 18mm from sheet ends to top and bottom tracks is permitted as long as the fasteners do not connect the studs and tracks.

SERVICES

Holes may be drilled or pre-punched in the metal studs to allow installation of electrical service lines and plumbing supply pipes.

JOINTING

All screw heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled “GIB® Site Guide”.



GIB HEALTHCARE SYSTEMS – SUB-INTERTENANCY

Two way FRR – steel frame wall

Specification number	Performance		Specifications	
GTS 132	**STC**	48	**Lining**	1 x 13mm GIB Toughline® each side
	Rw	48	**LB/NLB**	Non load bearing
	FRR	-/60/60	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)
Wet area option				
GTWS 132	**STC**	48	**Lining**	1 x 13mm GIB Toughline® Aqua each side
	Rw	48	**LB/NLB**	Non load bearing
	FRR	-/60/60	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)

FRAMING AND WALL HEIGHT

Minimum steel stud dimensions to be 64 x 34 x 0.50mm nominal with a 6mm return.

Minimum steel track dimensions to be 64 x 30 x 0.50mm nominal.

Top and bottom tracks are fixed to the floor and ceiling in true alignment.

Stud spacing at 600mm centres maximum.

Place studs to allow an expansion gap at the top of the frame as per the table below.

The studs are held in place by the “grip” of the channel runners. Light locating fasteners that fail at high temperatures, such as single aluminium rivets may be used. Otherwise positive fixing must be avoided.

Recommended maximum wall height
Note that maximum wall heights for fire-rated systems can be lower than what can be achieved with non-fire-rated construction.

Nominal stud dimension (mm)	BMT (mm)	Stud centres (mm)	Max. wall height (mm)	Expansion at top of studs (mm)
64 x 34	0.50 or 0.55	600	2700	15
		400	3000	15
76 x 34	0.55	600	3200	15
		400	3600	20*
	0.75	600	3600	20*
		400	4200	20*
92 x 34	0.55	600	3600	20*
		400	4200	20*
	0.75	600	4200	20*
		400	4800	25*

**Use a minimum 50mm deep head channel.*

Contact the GIB® Helpline for different framing configurations.

SOUND CONTROL INFILL

Pink® Batts® BIB R1.8 (75mm) minimum glass wool insulation installed between the studs.

ACOUSTIC SEALANT

A bead of GIB Soundseal® acoustic sealant is required around the perimeter of the framing. The linings are then bedded onto the bead.

LINING

1 layer of 13mm GIB® Toughline or 13mm GIB Toughline® Aqua plasterboard each side of the frame.

Vertical fixing only permitted.

Sheets shall be touch fitted.

Offset joints between sheets on opposite sides of the frame.

Full height sheets shall be used where possible.

When sheet end butt joints are unavoidable, they shall be formed over nogs.

All sheet joints must be formed over framing. Linings are fixed hard to floor.

FASTENING THE LINING

Fasteners
25mm x 6g GIB® Grabber® Drywall Self Tapping Screws.

Fastener centres
300mm centres up each stud.

Place stud fasteners 12mm from sheet edges generally and 50mm from sheet ends.

Fastening the linings at 18mm from sheet ends to top and bottom tracks is permitted as long as the fasteners do not connect the studs and tracks.

For tiled walls (tile weight up to 32kg/m²)
Single screw at 100mm centres to perimeter of tiled wall and to all intermediate studs. No Adhesive.

Refer to GIB Aqualine® Wet Area System literature for complete wet area system details.

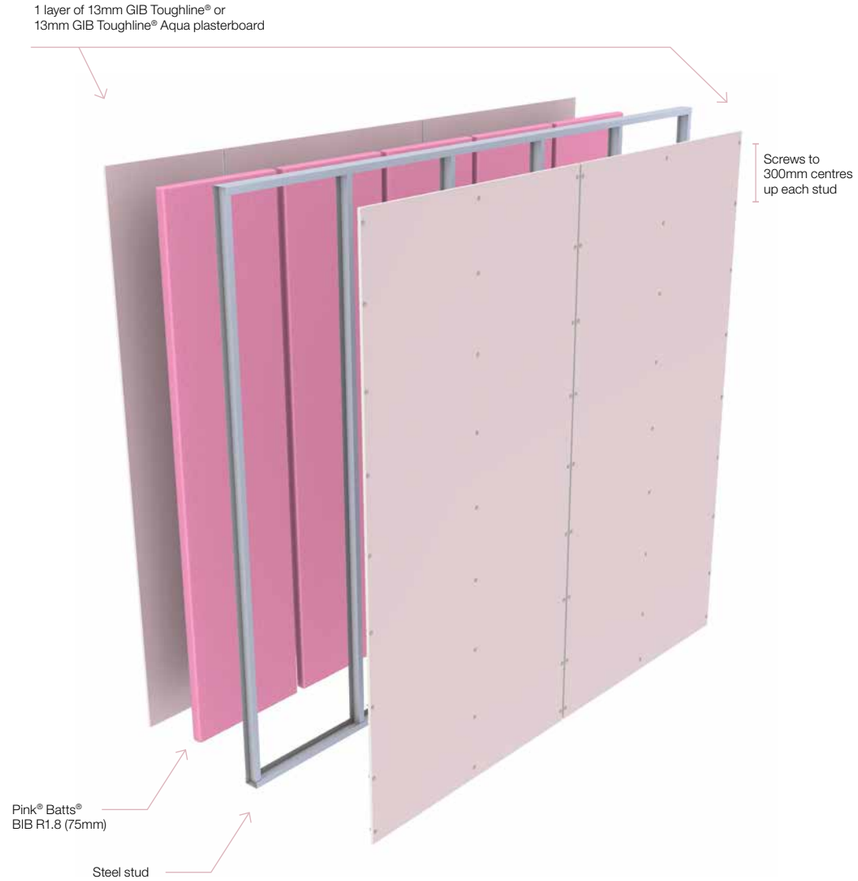
GIB HEALTHCARE SYSTEMS – SUB-INTERTENANCY

SERVICES

Holes may be drilled or pre-punched in the metal studs to allow installation of electrical service lines and plumbing supply pipes.

JOINTING

All screw heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled “GIB® Site Guide”.



Two way FRR – steel frame wall – GIB Rondo® Quiet Stud®

Specification number	Performance		Specifications	
GBQSA 90c	**STC**	47	**Lining**	1 x 16mm GIB Fyreline® each side
	Rw	49	**LB/NLB**	Non load bearing
	FRR	-/90/90	**Insulation**	1 x layer Pink® Batts® R1.8 (75mm)

FRAMING

GIB Rondo® Quiet Stud® resilient steel stud 92 x 45 x 0.75mm BMT and placed in 92 x 30 x 0.55mm BMT steel channel. Channel is fixed to floor and ceiling. Studs are friction fitted at 600mm centres maximum with a 15mm expansion gap at the top of the frame. No fixings to the top channel.

WALL HEIGHTS

Recommended maximum wall height is 3000mm. For wall heights up to 3400mm place studs at 400mm centres. For greater heights please contact the GIB® Helpline.

SOUND CONTROL INFILL

Pink® Batts® BIB R1.8 (75mm) minimum glass wool insulation installed between the studs.

ACOUSTIC SEALANT

A bead of GIB Soundseal® acoustic sealant is required around the perimeter of the framing. The linings are then bedded onto the bead.

LINING

1 layer of 16mm GIB® Fyreline each side of the frame.

Vertical fixing only permitted.

Sheets shall be touch-fitted

Offset joints between sheets on opposite sides of the frame.

Full height sheets shall be used where possible.

When sheet end butt joints are unavoidable, they shall be formed over nogs.

All sheet joints must be formed over framing. Linings are fixed hard to floor.

FASTENING THE LINING

Fasteners
32mm x 6g GIB® Grabber® Drywall Self Tapping Screws.

Fastener centres
300mm centres up each stud.

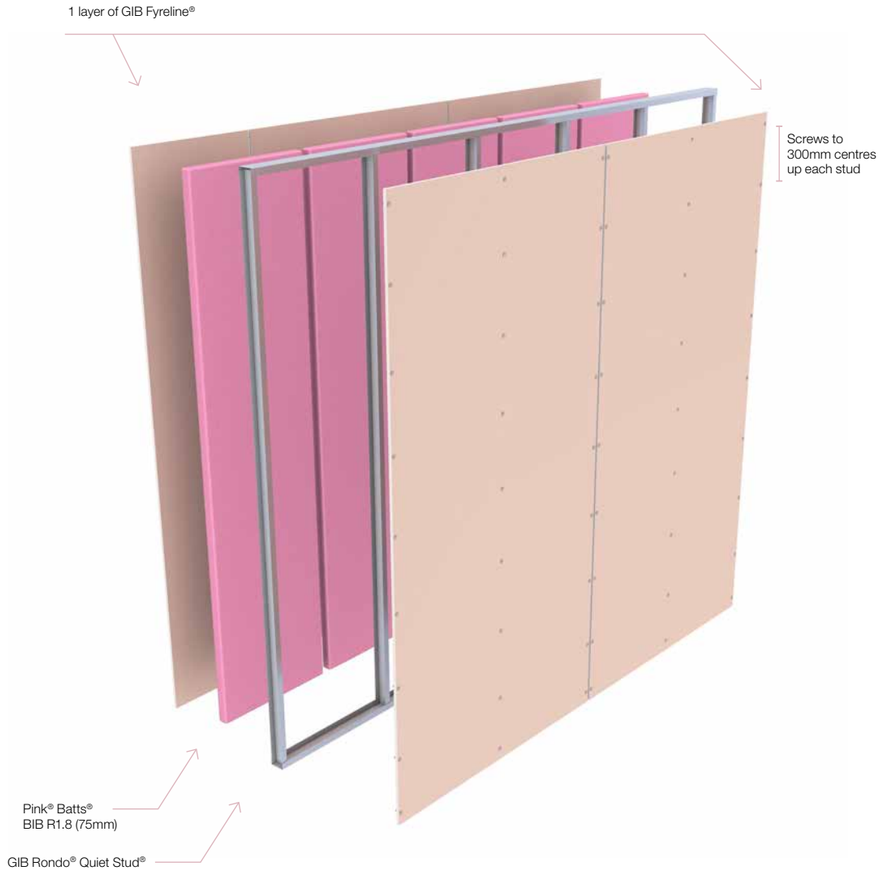
Place stud fasteners 12mm from sheet edges generally and 50mm from sheet ends.

Fastening the linings at 18mm from sheet ends to top and bottom tracks is permitted as long as the fasteners do not connect the studs and tracks.

JOINTING

All screw heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled “GIB® Site Guide”.

GIB HEALTHCARE SYSTEMS – SUB-INTERTENANCY



Notes

GIB® Healthcare Design Guide, July 2018

Winstone Wallboards Ltd accepts no liability if the GIB® Healthcare Design Guide and junction details are not installed in strict accordance with instructions contained in this publication.

USE ONLY THE CURRENT SPECIFICATION

This publication may be superseded by a new publication. Winstone Wallboards accepts no liability for reliance upon publications that have been superseded. You should check the GIB® website to ensure you are using the current publication. If you are unsure whether this is the current publication, simply call the GIB® Helpline on 0800 100 442.

SUBSTITUTION

GIB® Systems have been specifically designed and tested to achieve the listed STC, Rw and FRR stated for each system. To maintain the GIB® Product and System Warranty, all system components detailed in this publication must be used when specifying and installing GIB® Systems. You should check the GIB® website to ensure you are using the current publication.

TRADEMARKS

The names GIB®, GIB Fyreline®, GIB Ultraline®, GIB Toughline®, GIB Braceline® / GIB Noiseline®, GIB Aqualine®, GIB Nail®, GIB Tradeset®, GIB Plus 4®, GIB-Cove®, GIB Lite Blue®, GIBFix®, GIB Quiet Stud®, GIB Rail®, GIB Barrierline®, GIB Soundseal®, GIB Clip®, the colour mauve for GIB Toughline®, the colour blue for GIB Braceline®, the colour pink for GIB Fyreline®, the colour green for GIB Aqualine®, and the shield device are registered trademarks of Fletcher Building Holdings Limited.

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COUNTRY OF ORIGIN

We make GIB® plasterboard in New Zealand*, for New Zealand conditions, giving you 100% certainty.

**Note: GIB Barrierline® plasterboard is manufactured to Winstone Wallboards' specific specification from a reputable overseas manufacturer.*

GIB®

FOR MORE INFORMATION VISIT

gib.co.nz

OR CALL THE GIB® HELPLINE

0800 100 442

July 2018