KNAUF

TECHNICAL MANUAL

PLASTERBOARD SYSTEMS

About Knauf

DISCLAIMER

Products manufactured and systems designed by Knauf are produced in accordance with the Building Code of Australia and relevant Australian Standards. Plasterboard installation and construction details in this manual are a guide only as many aspects of construction are not comprehensively covered. Knauf Plasterboard Pty Ltd will not be held responsible for any claims resulting from the installation of its products or other associated products not in accordance with the manufacturer's technical literature or relevant Australian Standard.

This manual provides information on how to install plasterboard. It also provides recommendations for best practices in plasterboard installation.

Knauf technical information is regularly updated. To ensure this document is current with the latest information, visit **knaufplasterboard.com.au** or please contact Knauf Customer Service Centre on **1300 724 505.**

WARRANTY

Knauf products are guaranteed by a 10 Year Warranty. Visit **knaufplasterboard.com.au** for details.

KNAUF VERSION 1

H_Is_pw 2012

Certified System™
Quality
ISO 9001
SAI GLOBAL

Knauf's comprehensive range of quality wall and ceiling lining products are developed with specific characteristics to enhance performance and provide fire, water, acoustic and decorative solutions to all constructions projects.

Knauf is committed to providing excellent technical service and sales support to continually improve the quality of current products and systems, and to identify innovative products, systems and solutions.

In Australia, Knauf has manufacturing facilities located in Matraville (Sydney) and Altona (Melbourne) which supply plasterboard, compounds, cornice and associated products and systems to the Australian building industry through its national distribution network of PlastaMasta stores.

Contents

1

KNAUF PRODUCT RANGE

PRODUCT PROPERTIES


Fire Resistant


Water Resistant


Sound Resistant


Impact Resistant


X-Ray Resistant


Interior Design


Air Purifying


Certified by Global GreenTag to GreenRate Level A

Plasterboard	Thickness (mm)	Width (mm)	Length (mm)									Weight* (kg/m²)	Properties	
			1200	2400	2700	3000	3600	4200	4800	5400	6000			
MastaShield	10	1200		●	●	●	●	●	●	●	●	6.5		
		1350		●	●	●	●	●	●	●	●			
	13	1200		●	●	●	●	●	●		●	8.5		
		1350				●	●		●					
SpanShield	10	1200				●	●	●	●	●	●	7.0		
		1350				●	●	●	●		●			
WaterShield	10	1200		●	●	●	●	●				7.4		
		1350					●		●					
	13	1200			●	●						9.7		
SoundShield	10	1200				●			●			8.4		
		1350							●					
	13	1200				●						12.3		
CurveShield	6.5	1200					●					4.5		
FireShield	13	1200		●	●	●	●					10.5		
		1350					●							
	16	1200		●	●	●	●					12.3		
		1350					●							
MultiShield	13	1200				●	●					10.7		
	16	1200			●	●						12.5		
ImpactShield	13	1200				●						11.5		
		1350						●						
QuadShield	13	1200						(up to)				11.7		
ShaftLiner	25	600				●	●					20		
GIB X-Block	13	1200				●						15.3		

Ceiling Panels	Thickness (mm)	Width (mm)	Length (mm)	Weight* (Kg/m²)	Properties	
SpanGrid	10	600	●	7.3		
SpanGrid Pro-Tech	10	600	●	7.3		
	13	600	●	8.4		
SpanGrid Cleancare	10	600	●	7.3		
	13	600	●	8.4		

*Weights indicated are nominal.
Special sizes available, minimum order quantity and lead times apply.
Square Edge/Recessed Edge and Square Edge/Square Edge available, minimum order quantity and lead times apply.

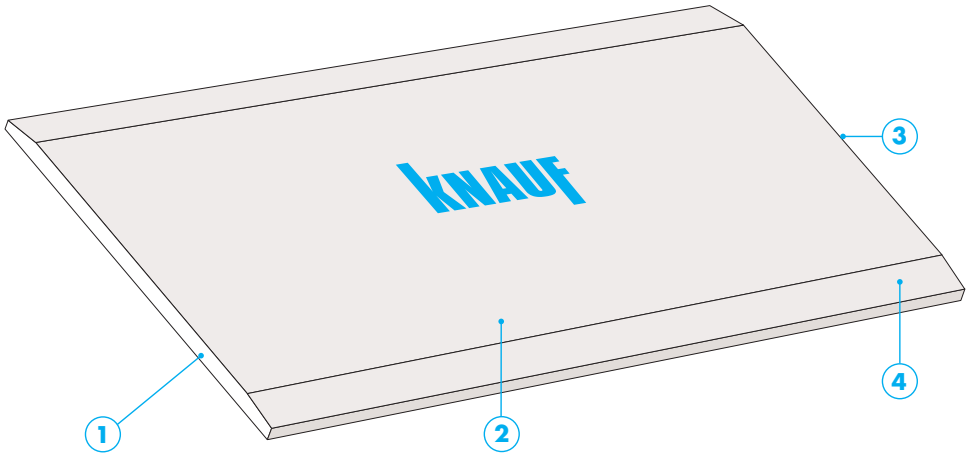
Cornice	Width (mm)	Length (mm)									Weight* (kg/lm)	Profiles
		1200	2400	2700	3000	3600	4200	4800	5400	6000		
ClassicLook	55				●	●	●	●	●		0.78	
	75							●			0.92	
	90				●	●	●	●			1.35	
WaveLook	75						●				2.3	
StepLook	50						●				1.64	
	75						●				2.46	
	100						●				2.71	
PacificLook	90						●				2.3	
SkyLook	90						●				2.04	

Compounds	Type	Possible Application For Each Type of Compound			Wet Areas Under Tiles	Fire Rated Systems
Jointing		**Bedding**	**Second**	**Finish**		
Bedding Cement						
MastaBase	Setting Powder	●	●		●	
MastaLongset	Setting Powder	●	●		●	
Finishing Compound						
MastaFinish	Air-Drying Premixed			●		
MastaGlide	Air-Drying Premixed			●		
All Purpose Compound						
MastaLite	Air-Drying Premixed	●	●	●		
MastaCoat3	Air-Drying Premixed	●	●	●		
Cornice and Specialty		**Cornicing**	**Bedding**	**Jointing**		
Cornice Cement						
MastaCove45	Setting Powder	●	●		●	
MastaCove75	Setting Powder	●	●		●	
MastaSmooth	Setting Powder	●	●		●	
Specialty Compound						
MastaFix20	Setting Powder	●	●	●	●	
MastaBlock	Setting Powder	Back-Blocking Only				
Adhesive						
MastaBond	Adhesive	Masonry Walls Only				
MastaGrip	Adhesive	Timber	Treated Timber	Steel		

*Weights indicated are nominal.

2 BUILDING WITH PLASTERBOARD

2.1 Plasterboard Properties



INTRODUCTION

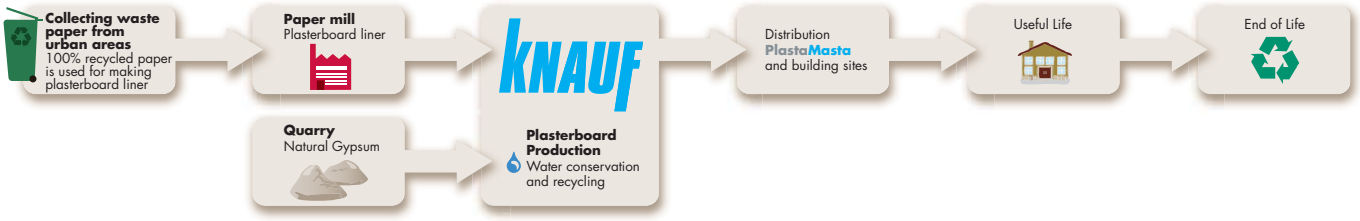
Plasterboard is the most commonly used building material worldwide for internal wall and ceiling linings.

Plasterboard is made from a core (1) of a naturally occurring mineral called gypsum, also known as calcium sulphate dihydrate or $CaSO_4.2H_2O$. The core is sandwiched between two layers of heavy duty recycled paper (2). The face paper is suitable for painting or wallpaper. Plasterboard has square profile cut ends (3) and long recessed edges (4) to enable easy jointing.

Plasterboard systems provide a wide variety of economical construction solutions that are recognised for their light weight and high performance.

Knauf manufactures plasterboard to high internal standards which meet or exceed the requirements of AS/NZS 2588, *Gypsum Plasterboard*.

Plasterboard must be installed and finished according to the requirements of AS/NZS 2589:2007, *Gypsum linings – Application and finishing*.



ENVIRONMENTAL BENEFITS

Plasterboard is an ideal product for sustainable construction. As a light weight building material, plasterboard reduces transport costs and emissions as well as the total weight of buildings. Plasterboard is also 100% recyclable, with low embodied energy, and made largely from a naturally occurring mineral – gypsum. Knauf sources its gypsum from large natural reserves within Australia. The liner paper used to make plasterboard is biodegradable and made from recycled paper such as waste newspaper and cardboard.

The plasterboard manufacturing process operates under strict environmental guidelines:

- Efficient use of energy and water: including heat recovery and storm water collection
- Effective collection and monitoring of dust
- Ongoing waste and raw material usage reduction
- Minimisation of plant impact on surroundings.

For more information refer to:

knaufplasterboard.com.au/sustainability

DIMENSIONAL STABILITY

Plasterboard is dimensionally stable when compared to other building materials. Two measures of dimensional stability are listed below:

- Thermal coefficient of linear expansion (α) = 16.7 x 10^{-6} / °C, measured unrestrained over the temperature range of 3°C – 32°C
- Hygrometric coefficient of expansion = 6.5 x 10^{-6} / %RH, measured unrestrained over the Relative Humidity (RH) range of 10% – 90%.

FIRE RESISTANCE

All plasterboard is naturally fire resistant and is classified as non-combustible according to the Building Code of Australia (BCA) Section C1.12. The core slows down the spread of fire by releasing chemically bound water when heated. This is a similar process to evaporation and aids cooling.

FIRE HAZARD PROPERTIES

Fire Hazard Indices have been superseded in the BCA Section C1.10 by 'Fire Hazard Properties'. Wall and ceiling materials are required to be tested and classified with a Group number from 1 to 4, with Group 1 being the least fire hazardous. Fire hazard properties relate to the combustibility of plasterboard, not its performance in a fire test.

The following products are classified as:

Group 1:

MastaShield
WaterShield
FireShield
ImpactShield
AcoustiShield
MastaDeco
GIB X-Block
SpanShield
SoundShield
MultiShield
QuadShield
CurveShield
ShaftLiner
SpanGrid Ceiling Panel – Paper Faced.

Group 2:

SpanGrid Ceiling Panel – Vinyl Faced.

All Knauf products have an Average Specific Extinction Area of <250 m^2/kg as required by Specification C1.10a, Clause 3(c) of the BCA.

THERMAL PROPERTIES

THERMAL 'R' VALUE

The R-value of plasterboard is a measure of its thermal insulation ability. Higher numbers indicate a better insulator. The values for plasterboard are:

10mm plasterboard = 0.059 Km^2/W

13mm plasterboard = 0.076 Km^2/W

16mm plasterboard = 0.094 Km^2/W

SPECIFIC HEAT CAPACITY

The specific heat capacity of plasterboard is the amount of heat energy required to raise the temperature of 1kg of plasterboard by 1°C. The value for plasterboard is 1090 J/kgK.

SAFETY

Standard plasterboard is not classified as hazardous according to the criteria of National Occupational Health and Safety Commission (NOHSC). It is non-toxic and non-flammable.

- Material Safety Data Sheets (MSDS) are available at knaufplasterboard.com.au or by calling 1300 724 505.
- Some plastering compounds have safe handling requirements. *[Refer to the health and safety information printed on the compound packaging for details]*

2.2

Care and Use of Plasterboard

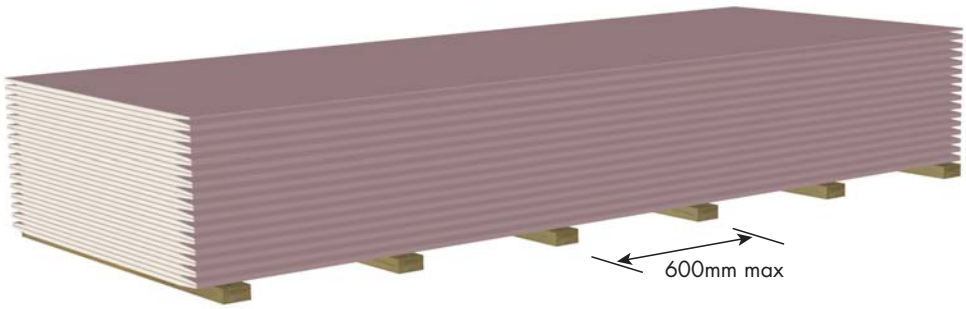


FIGURE 1 Storage of Plasterboard

STORAGE, DELIVERY AND HANDLING

Plasterboard must be kept dry and should be stacked clear of the floor using supports not more than 600mm apart as shown in Figure 1.

If outdoor storage is unavoidable, plasterboard and accessories should be fully protected from the weather. Plasterboard that has been exposed to direct sunlight, or has been fixed and left standing unpainted for long periods, may become discoloured. If this happens, it must be sealed with a stain sealer undercoat as recommended by the paint manufacturer.

Reduce the possibility of damage to plasterboard, arrange delivery to site immediately before installation. During delivery, care should be taken not to damage recessed edges. Exposure to excessive humidity during storage can result in plasterboard becoming damp and soft, and may appear defective. In this case allow the plasterboard to dry out and handle with care during installation.

To help protect plasterboard from absorbing humidity:

- Avoid open sources of water such as wet floors
- Wrap the plasterboard with plastic overnight
- Provide ventilation
- Install soon after delivery
- Install during dry weather for best results.

CONDENSATION AND VENTILATION

Plasterboard must not be installed until the building is weatherproof, particularly in coastal areas subject to sea spray. Complete all exterior doors, walls, windows and the roof before installing plasterboard. Prevent rain from entering buildings, avoid water on floors or other sources of open water and allow wet concrete or masonry to dry. These precautions will reduce excessive humidity that may be absorbed by timber or unpainted plasterboard and minimise defects caused by timber shrinkage or moist plasterboard.

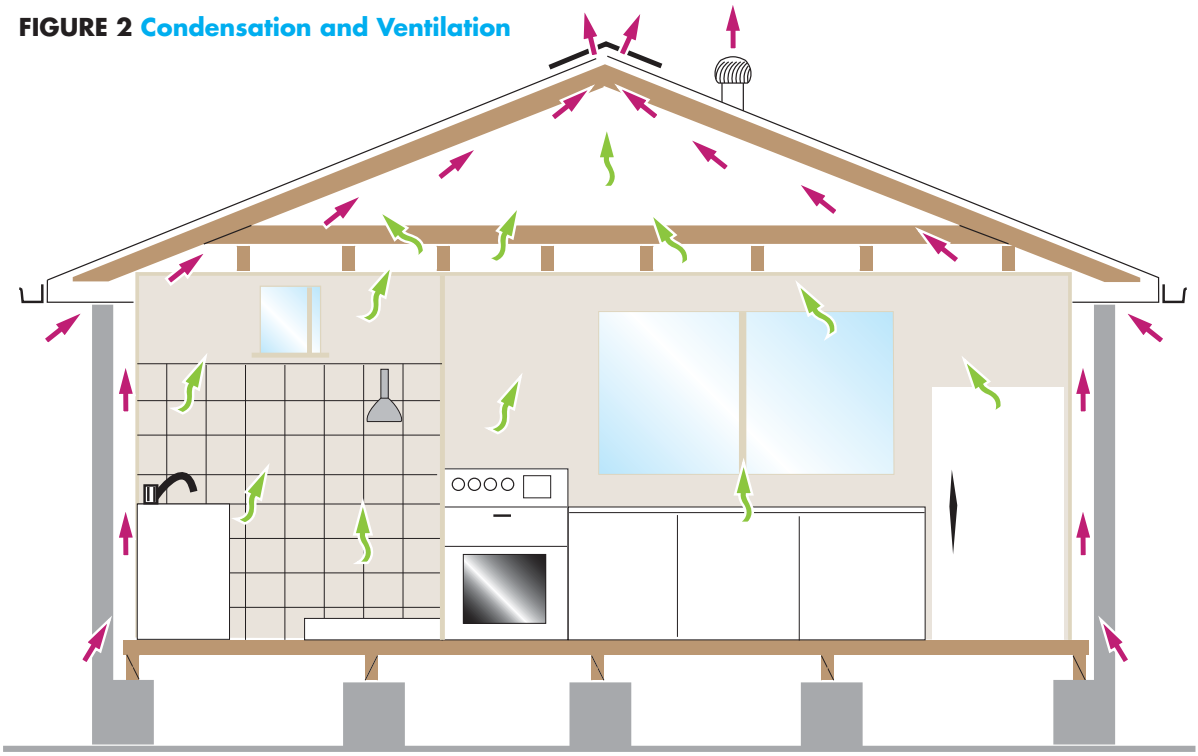
Condensation of water onto either the face or back of the plasterboard must be avoided. Insufficient protection from condensation can result in joint distortion, plasterboard sagging, mould growth and fastener popping.

Many inter-related factors must be taken into account to control condensation. Good practice is to make use of wall and ceiling insulation, vapour barriers, and especially ventilation. Ventilation must be considered for the spaces in walls, under floors and in particular under roofs.

To minimise the effects of condensation:

- Use **WaterShield**, **MultiShield** or **QuadShield** to increase protection against moisture.
- Use moisture barriers, sarking, and insulation. However, it is important that the right type is selected for the construction type and that it is installed correctly. *[Refer to the manufacturer's specifications]*
- Use foil backed insulation under metal roofs as they are susceptible to forming condensation.
- Install eave vents, gable vents and roof ventilators in the roof cavity. *[See Figure 2]*
- Remove humidity from bathrooms via an exhaust fan to the outside.
- In hot and humid climates where the building is air-conditioned below the dew point of the outside air, the wall and ceiling framing members and internal linings should be fully protected by moisture barriers to separate them from the humid external air. The moisture barriers should be thermally insulated to maintain them at a temperature above the dew point.
- Use a quality paint system to provide protection against paint peeling and condensation soaking into plasterboard and compounds.

FIGURE 2 Condensation and Ventilation



EXTERNAL CEILINGS

External ceilings include alfresco areas, carports, balconies and breezeways with plasterboard installed horizontally or sloping away from the main dwelling.

External ceilings are subjected to harsher conditions than internal ceilings, and therefore they need additional protection from the weather. This extra protection is designed to control the major causes of external ceiling faults which are:

- Condensation on the plasterboard
- Condensation on framing or roof lining and dripping down onto the plasterboard
- Water penetrating the paint system
- Distortion of joints
- Plasterboard sagging
- Mould growth
- Fastener popping.

MINIMUM CONDITIONS TO USE PLASTERBOARD IN EXTERNAL CEILINGS

- The plasterboard substrate must be designed for the appropriate loading conditions including wind loading.
- The cavity above the plasterboard ceiling must have cross ventilation. *[Refer to Condensation and Ventilation]*
- Condensation on the back and front of the plasterboard lining must be controlled. Use condensation prevention measures such as, adequate roof cavity ventilation and thermal insulation. In particular, foil-backed insulation must be used under a metal roof.
- The plasterboard and compounds must not be subjected to any direct water, long periods of high humidity, sea spray or damp conditions.
- The plasterboard and compounds must be installed after the roof covering has been completely installed and sealed.
- Minimum 100mm clearance from external ceiling lining to lower edge of verandah beam or masonry lintel, otherwise provide protection against wind blown rain. *[Refer to Figures 5, 6, 7, 8 and 9]*

INSTALLATION REQUIREMENTS FOR EXTERNAL CEILINGS

- Use either 10mm SpanShield, 13mm MastaShield, 10mm or 13mm SoundShield,13mm or 16mm FireShield, or 13mm ImpactShield.
- For improved water resistance, use either 10mm or 13mm WaterShield, 13mm or 16mm MultiShield, or 13mm QuadShield.
- Ceiling framing at maximum 450mm framing centres.
- Provide additional framing around the perimeter by inserting trimmers between ceiling frames or installing steel angle, or installing additional ceiling battens. *[Refer to Figures 3, 4 and 8]*
- Fix the ceiling sheets using the 'Screw Only Method'. Nails are not permitted in this application. *[Refer to Section 3.4.1 for ceiling installation]* Additional screws may be required for high wind areas.
- Fix the perimeter of the plasterboard sheets using screws at 300mm maximum spacing.
- Install control joints in at 6m maximum intervals.
- Back-block all plasterboard joints. *[Refer to Section 4.2]*
- Plaster set joints using two coats of MastaBase or MastaLongset and any Knauf finish coat.
- Roll or brush on a high quality sealer undercoat designed for exterior use.
- Use a premium exterior paint system that includes a mould inhibitor.

Please note that plasterboard must not be installed in eaves or as exterior cladding.

Thermal insulation is recommended directly above the plasterboard. This will minimise the temperature difference between the plasterboard and outside air, limiting ceiling sag and mould formation by reducing condensation on the plasterboard.

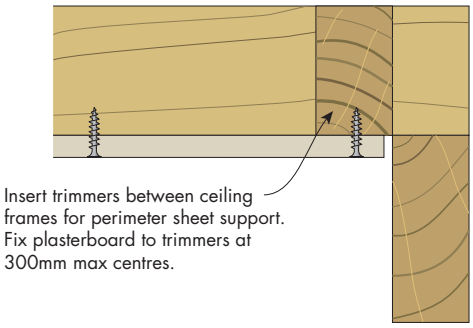


FIGURE 3 Perimeter Trimmers
External ceilings

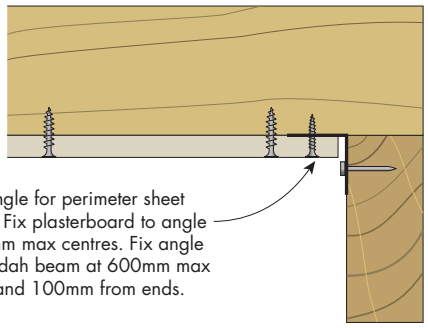


FIGURE 4 Perimeter Angle
External ceilings

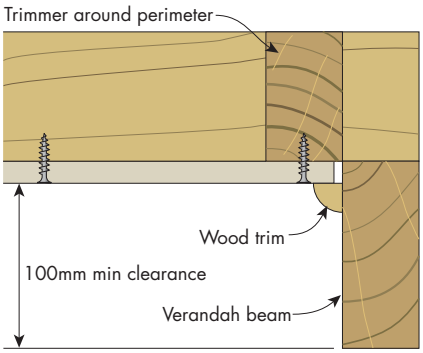


FIGURE 5 External Ceilings
With wood trim

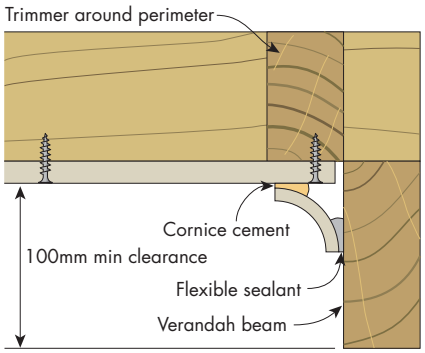


FIGURE 6 External Ceilings
With cornice

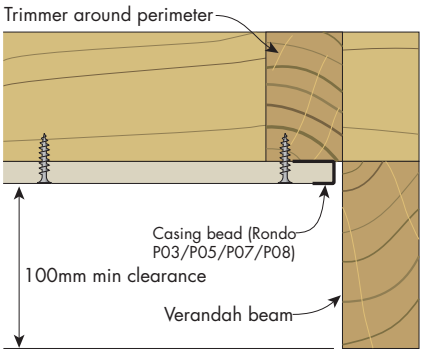


FIGURE 7 External Ceilings
With casing bead

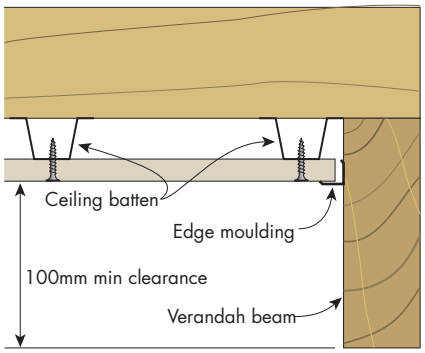


FIGURE 8 External Ceilings
With edge moulding on battens

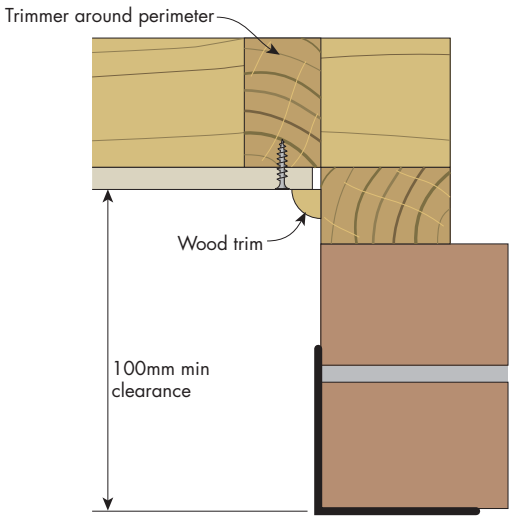


FIGURE 9 External Ceilings
With wood trim to masonry lintel

GARAGE CEILINGS

Garage ceilings are subject to conditions that are more demanding than in other parts of the home. This is the case even when garages are located under the same roof as the rest of the home. Garages have large doors that when open let in rain and strong wind. Cars are garaged wet and they are not normally heated spaces. These factors call for a more durable installation to avoid future maintenance issues.

MINIMUM CONDITIONS TO USE PLASTERBOARD IN GARAGE CEILINGS

- The plasterboard framing must be designed for the appropriate wind loading conditions.
- The cavity above the plasterboard ceiling must have cross ventilation. *[Refer to Condensation and Ventilation]*

INSTALLATION REQUIREMENTS FOR GARAGE CEILINGS

- Fix the ceiling sheets using the 'Screw Only Method' or the 'One Third Fixing Method'. *[Refer to Section 3.4.1 for ceiling installation]*
- Provide additional framing around perimeter by inserting trimmers between ceiling frames or installing steel angle. *[Refer to Figures 10 and 11]*
- Fix the perimeter of the sheets using screws at 300mm maximum spacing.
- Avoid windy conditions during and immediately after installation to ensure adhesive sets intact.
- Back-block all plasterboard joints. *[Refer to Section 4.2]*
- Roll or brush on a high quality sealer undercoat designed for exterior use.
- Use a premium exterior paint system that includes a mould inhibitor.

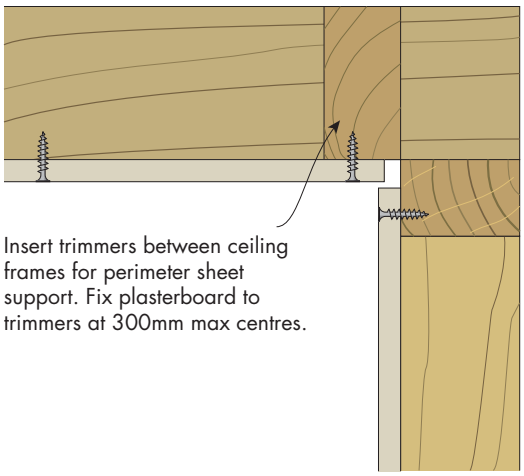


FIGURE 10 Perimeter Trimmers
Garage ceilings

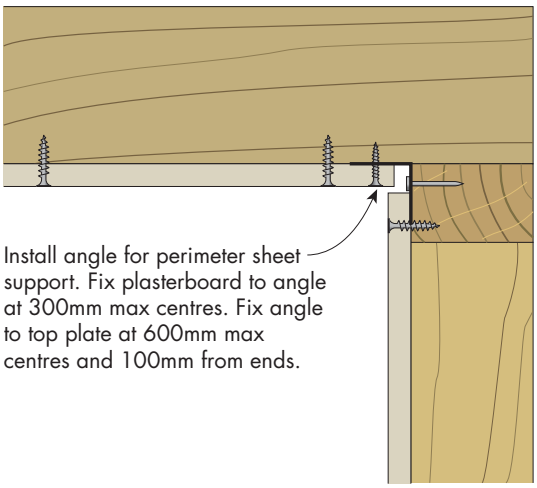


FIGURE 11 Perimeter Angle
Garage ceilings

EXPOSURE TO HIGH HUMIDITY

Ceilings in rooms such as indoor swimming pools and communal showers are subject to long periods of high relative humidity (above 90%). The use of plasterboard on these ceilings is not guaranteed by Knauf.

WaterShield, MultiShield or QuadShield completely covered with a waterproof membrane complying with AS/NZS 4858:2004 may be used for walls in rooms subject to long periods of high relative humidity. Vertical junctions and wall to floor junctions must also be waterproof. *[Refer to Section 3.1.4 for installation of wet areas]*

For rooms with intermittent periods of high relative humidity such as bathrooms, WaterShield, MultiShield or QuadShield may be used. In these rooms a source of ventilation is required to enable removal of excess moisture, such as an open window or exhaust fan.

EXPOSURE TO EXCESSIVE HEAT

Plasterboard is an ideal building material for normal ambient temperatures. It is not suitable for long periods at elevated temperatures such as installed near fireplace flues or chimneys. FireShield is no exception. It is designed to slow down a fire, not to resist constant elevated temperatures.

The effect of high temperatures on plasterboard is to chemically dehydrate the core. This process generally begins at around 80°C but can occur at lower temperatures under certain conditions. AS/NZS 2589:2007, *Gypsum linings – Application and finishing*, states that plasterboard must not be exposed to temperatures above 52°C for prolonged periods.

Heat generating appliances have installation instructions for the correct distances between plasterboard linings and heat sources. The Building Code of Australia (BCA) also has requirements for installation of heating appliances.

GLASS OR STAINLESS STEEL SPLASHBACK

For compliance with AS 5601-2004 *Gas Installations*.

Clearance to Glass or Stainless Steel Splashback is Less Than 200mm*

No plasterboard product may be used behind a glass or stainless steel splashback without tiles. Any plasterboard may be used if it is behind ceramic tiles of minimum 5mm thickness.

Clearance to Glass or Stainless Steel Splashback is 200mm or More

Any plasterboard product may be used. The wall surface must still be covered with a glass or stainless steel splashback.

* The minimum clearance from the gas burner to the splashback must be 140mm. Clearance is measured from the edge of the nearest burner to the glass or stainless steel.

2.3

Building Requirements and Solutions

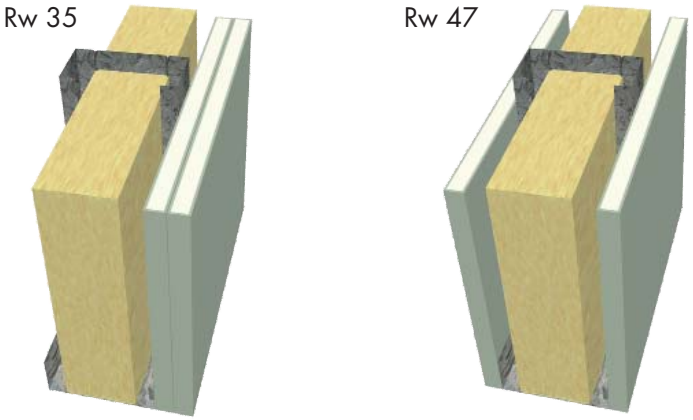


FIGURE 12 Two Systems with Different Configurations but Using the Same Products

Both systems in Figure 12 use exactly the same products but have a significant difference in acoustic performance. The system on the left has Rw of 35, while the system on the right has Rw of 47. There is a large difference in the performance between these two wall systems as a result of the type of construction.

USING PRODUCTS IN SYSTEMS TO MEET BUILDING REQUIREMENTS

Knauf offers systems for a large variety of building requirements.

- Fire protection
- Wet areas
- Aesthetics
- Sound insulation
- Impact resistance
- Noise absorption
- X-ray shielding

These systems are composed of plasterboard and jointing compounds, along with framing and other specified materials such as adhesives, sealants, screws and insulation. While the products alone do not provide performance, using them in the complete assembled system will. Always check that the building solution you have selected complies with the requirements of the Building Code of Australia (BCA).

System performance relies on following the correct installation details such as stud spacing and fixing centres, as well as using the nominated components such as plasterboard, compounds, studs and insulation. Even small details like sealing gaps can have a large effect on system performance. Variations in construction or materials may reduce a system's fire and acoustic rating, structural capacity or other aspects of performance.

STEEL COMPONENTS

- Unless otherwise stated, systems in this manual were designed using steel components manufactured by Rondo Building Services Pty Ltd. Alternative components may only be used:
- In accordance with the respective manufacturer's literature, or
- If their performance is equivalent or better and they comply with the relevant standard.

TIMBER COMPONENTS

Unless otherwise stated, systems in this manual were designed using grade MGP10 timber.

Timber is a natural product and its dimensions vary with changes in surrounding moisture. Timber should be allowed to reach equilibrium with its surroundings before lining it with plasterboard. The equilibrium moisture content of timber is usually 10-14%.

FASTENERS

Green timber and certain treated timbers such as Copper Chromium Arsenate (CCA) are corrosive to steel components, especially in combination with moisture. Select appropriate fasteners for the conditions by consulting the manufacturer.

Corrosion Class of Fastener	Application
1	General internal use
2	High humidity internal use
3	External environments
4	Marine environments

Minimum densities for insulation nominated in Knauf systems are listed in the following table.

Insulation Description	Minimum Density (kg/m^3)
50mm EarthWool	11
50mm Glasswool Semi-Rigid	32
75mm EarthWool	11
110mm Glasswool	11
50mm Polyester	7
65mm Polyester	7
75mm Polyester	8
100mm Polyester	10

Insulations with a nominated R value have no restrictions on density or thickness.

FIBRE CEMENT

Systems in this manual that include fibre cement were tested and evaluated using James Hardie fibre cement products.

FRAME DESIGN

AS 1170.0 *Structural Design Actions – General Principles* defines the loads that a structure is subjected to.

Wall and ceiling system framing must be designed according to the relevant standard:

- AS 1684 *Residential Timber Framed Construction*
- AS 1720 *Timber Structures*
- AS 4100 *Steel Structures*
- AS/NZS 4600 *Cold Formed Steel Structures*
- NASH *Standard for Residential and Low-rise Steel Framing, Part 1*
- AS 3623 *Domestic Metal Framing*
- AS/NZS 2785 *Suspended Ceilings.*

The Wood Solutions Technical Design Guides are a good source for timber framed construction including fire rated construction details.

Internal Walls and Ceilings

All internal wall systems and wall height tables published in this manual comply with the relevant section of Building Code of Australia (BCA) Specification C1.8. Wall heights for fire rated systems have been verified by independent fire engineers.

As a minimum, all internal wall systems published in this manual comply with the deflection under the Uniformly Distributed Load (UDL) requirements from BCA Specification C1.8. The allowable deflection under a static pressure of 0.25 kPa must be less than either the wall height ÷ 240 or 30mm.

Some applications have additional requirements such as the walls of shafts and fire isolated exits. Unusually strong wind loading conditions such as those experienced in tall buildings may require internal walls and ceilings to be designed to higher pressures than the standard 0.25 kPa. *[Refer to BCA]*

Frame Fasteners

Ensure fasteners used to fix top and bottom track/plate are appropriate for the Uniform Distributed Load (UDL) on walls. At 600mm fastener centres and UDL of:

- 0.25 kPa, the fasteners must withstand a shear load of 0.75 kN
- 0.35 kPa, the fasteners must withstand a shear load of 1.1 kN.

External Walls and Ceilings

Frame design of external wall systems must consider local environmental loading conditions and applied vertical load on the studs. *[Refer to as 1170.0 Structural Design Actions – General Principles]*

Control Joints

Control joints allow for any building movement resulting from influences such as moisture migration, loading, structural movement and foundation settlement. Cracks in plasterboard and plasterboard joints should be eliminated by using control joints and the correct installation techniques.

Control joints must be installed in plasterboard walls and ceilings at:

- Maximum 12 metre intervals
- Control joints in the structure
- Any change in the substrate material.

Distance between control joints may need to be reduced to less than 12 metres due to conditions such as large temperature or humidity variations.

FIRE RESISTANCE

FIRE TERMS AND DEFINITIONS

Fire Resistance Level

Fire systems are rated to withstand a fire under test conditions for a certain period of time. This time is known as the Fire Resistance Level (FRL) and consists of the three criteria listed below:

FIGURE 1

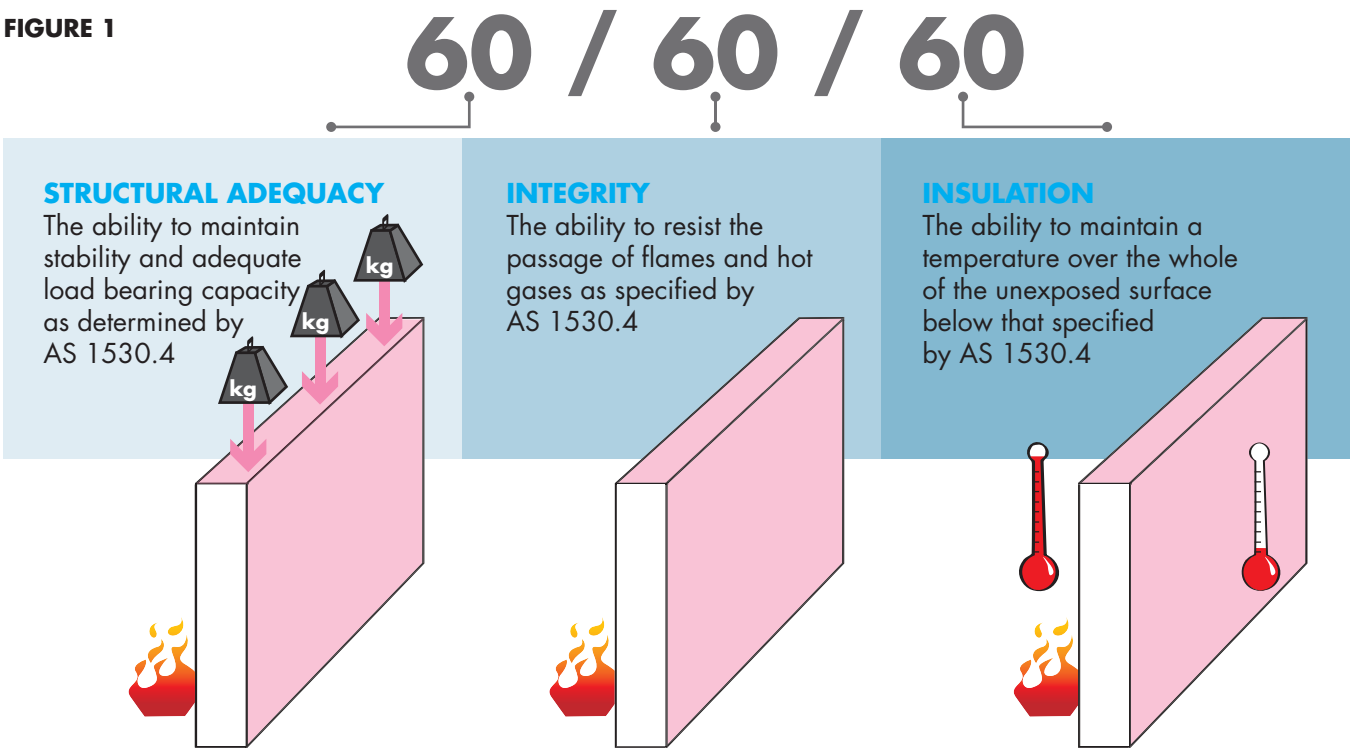


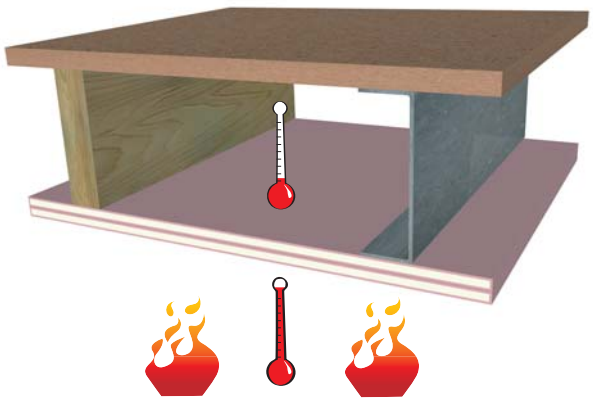
Figure 1 above shows FRL of 60/60/60. This means that during a fire test, the system did not fail for 60 minutes for each of the criteria.

A dash in FRL means no requirement for that criterion. For example, 90/–/– means there is no requirement for Integrity and Insulation. Structures such as non-load bearing walls do not have FRL requirement for Structural Adequacy, for example –/60/60.

Fire testing is carried out in accordance with AS 1530.4 *Methods for fire tests on building materials, components and structures*. All fire rated plasterboard systems in this manual have been the subject of a report by a registered testing authority.

RESISTANCE TO INCIPIENT SPREAD OF FIRE (RISF)

Resistance to the Incipient Spread of Fire (RISF) is the ability of a ceiling to limit the temperature rise in the ceiling cavity *[shown below]*. The RISF is a requirement of the BCA in specific applications. It is aimed at preventing 'flashover', which is when a fire starts spontaneously due to high temperatures. The RISF for Knauf fire rated ceilings are stated in the system tables.



Acceptable Variations to Fire Rated Systems

Fire rated systems must be built according to the installation instructions in Section 3. However, there are some variations allowed that will not degrade the performance of the system:

- Increasing cavity width
- Increasing stud size or metal thickness
- Adding noggings to support fixtures or services
- Decreasing stud spacing
- Decreasing fastener spacing
- Substituting 13mm FireShield with 13mm MultiShield or 13mm ImpactShield or 13mm QuadShield
- Substituting 16mm FireShield with 16mm MultiShield
- Adding additional linings to a system up to a weight of 20 kg/m^2 and no thicker than 25mm. This includes fibre cement board up to 9mm thick and plasterboard up to 25mm thick. For load bearing walls, the load per stud must include the extra lining.

Modifications to Fire Rated Systems

Fire rated systems are often modified by the installation of:

- Fire rated inspection hatches
- Fire rated power points
- Fire rated light fittings
- Fire rated doors
- Fire dampers
- Electrical cables
- Metal or plastic pipes
- Other fire rated penetrations.

It is the responsibility of the manufacturer of these components to ensure that the fire and acoustic properties of the plasterboard system are maintained.

[Some modifications are detailed in Section 3].
Any modification not covered in this manual must be according to the relevant manufacturer's instructions.

SMOKE WALLS

The purpose of a smoke wall is to prevent smoke passing from one side of a wall to the other. A smoke wall must be built from non-combustible materials such as plasterboard, jointing compounds, steel studs, glasswool insulation, mineral fibre insulation and fire sealant.

Doors and windows used in smoke walls must comply with requirements in the BCA *Specification C2.5*. Ducts through the smoke wall must use a smoke damper, unless the duct is part of the smoke handling system and is required to function during a fire.

Class 9a Health-Care Buildings

Smoke walls in Class 9a buildings must extend up to:

- The floor above, or
- A non-combustible roof covering, or
- A ceiling having a RISF of 60 minutes.

Class 9c Aged-Care Buildings

Plasterboard used for smoke walls in Class 9c buildings must have a thickness of at least 13mm. Smoke walls in Class 9c buildings may also be lined on one side only and must extend up to:

- The floor above, or
- A non-combustible roof covering, or
- A jointed plasterboard ceiling with a minimum thickness of 13mm with all penetrations sealed.

PLASTERBOARD TO RESIST FIRE

Knauf recommends the installation of FireShield, MultiShield, ImpactShield or QuadShield wall and ceiling systems to control the spread of fire. These specially formulated products contain additives that improve the natural fire resisting properties of plasterboard.

SOUND INSULATION PERFORMANCE

There are two types of acoustic functions: sound insulation and noise absorption. This Section explains common sound insulation terms. *[Noise absorption is addressed later in this Section]*

ACOUSTIC TERMS AND DEFINITIONS

Rw
Weighted Sound Reduction Index

Rw describes the airborne sound insulating power of a building element. It is a laboratory measured value that can apply to walls, ceiling/floors, ceiling/roofs, doors or windows. The higher the number, the greater the sound insulating power of the building element.

For example, an increase in the Rw of a wall by 10 points will reduce the perceived loudness of sound passing through the wall by about half. Table 1 shows how the sound insulating effectiveness of walls depends on their Rw or Rw + Ctr values.

Rw + Ctr
Rw Plus Spectrum Adaptation Term

Rw + Ctr is equal to Rw with the addition of a low frequency sound correction, Ctr. The use of Rw + Ctr has been adopted due to the increase in low frequency sound sources such as surround sound systems, traffic and aircraft noise, drums and bass guitars.

Two walls can have the same Rw rating but have different resistance to low frequency sound, thus a different Rw + Ctr.

DnTw and DnTw + Ctr
Measured On-Site

These values are the equivalent of Rw and Rw + Ctr, but measured on-site. Rw is the value measured in an acoustic laboratory, while DnTw is measured on-site.

An on-site measured value of DnTw + Ctr is permitted to be 5 points lower than the Rw + Ctr value. Where the BCA may call for an Rw + Ctr ≥ 50, the same requirement may be satisfied by measuring DnTw + Ctr ≥ 45 on-site.

Ln,w + Ci
Impact Sound Insulation Rating

Ln,w + Ci describes how easily impact sound travels through a wall or floor. Impact sound is generated by sources such as dryers, washing machines and heeled shoes on a wooden floor.

Unlike Rw values, better performing walls or floors have lower values. Therefore when specified, Ln,w + Ci values are maximums while Rw values are minimums. For example, the BCA requires some floors to have Ln,w + Ci ≤ 62.

Impact Sound Insulation

Walls that have Impact Sound Insulation are defined in the BCA as walls that do not have any rigid mechanical connection between two separate leaves except at the perimeter.

Systems in this manual that satisfy this BCA requirement are staggered stud plasterboard walls with no noggins, and walls that use resilient mounts.

Impact Sound Insulation with Discontinuous Construction

Discontinuous Construction is defined in the BCA as walls that have a gap of at least 20mm between two separate leaves. Double stud plasterboard walls are classed as 'discontinuous'. *[Refer to the BCA for a complete definition]*

TABLE 1 Effect of Various Walls on Sound Insulation Performance

Rw	Rw+ Ctr	Effect of Different Values of Rw and Rw + Ctr on Sound Insulation Performance
25	22	Normal speech can be heard easily
30	25	Loud speech can be heard easily
35	28	Loud speech can be heard but not understood
42	35	Loud speech heard as murmur
45	38	Must strain to hear loud speech
48	40	Loud speech can be barely heard
53	44	Loud speech can not be heard
63	55	Music heard faintly, bass notes 'thump'
70	60	Loud music still heard very faintly

ACOUSTIC REQUIREMENTS

TABLE 2 BCA Acoustic Requirements For Sole Occupancy Units (SOU)

	Airborne Sound Insulation	Impact Sound Insulation
Building Class 1 – NSW, VIC, QLD, TAS, WA, SA and ACT		
Walls separating a bathroom, toilet, laundry or kitchen and a habitable room (other than a kitchen) in adjoining SOUs.	Rw + Ctr ≥ 50	✔ Discontinuous
Walls separating SOUs in all other cases.	Rw + Ctr ≥ 50	
Walls or ceilings separating a duct, soil, waste or water supply pipe or storm water pipe from a habitable room.	Rw + Ctr ≥ 40	
Walls or ceilings separating a duct, soil, waste or water supply pipe or storm water pipe from a kitchen, bathroom or other non-habitable room.	Rw + Ctr ≥ 25	
Building Class 2 & 3 – NSW, VIC, QLD, TAS, WA, SA and ACT		
Walls separating habitable rooms in adjoining SOUs.	Rw + Ctr ≥ 50	
Walls separating kitchens, toilets, bathrooms and laundries in adjoining SOUs.	Rw + Ctr ≥ 50	
Walls between a bathroom, toilet, laundry or kitchen and a habitable room (other than a kitchen) in adjoining SOUs.	Rw + Ctr ≥ 50	✔ Discontinuous
Walls between a SOU and a public corridor, public lobby, stairway or the like or parts of a different classification.	Rw ≥ 50	
Walls between a SOU and a plant room or lift shaft.	Rw ≥ 50	✔ Discontinuous
Walls or ceilings separating a duct, soil, waste or water supply pipe or storm water pipe from a habitable room.	Rw + Ctr ≥ 40	
Walls or ceilings separating a duct, soil, waste or water supply pipe or storm water pipe from a kitchen or other non-habitable room.	Rw + Ctr ≥ 25	
Floors between SOUs and between a SOU and a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification.	Rw + Ctr ≥ 50	Lnw + Ci ≤ 62
Building Class 1, 2 and 3 – Northern Territory		
Walls separating a bathroom, toilet, laundry or kitchen and a habitable room (other than a kitchen) in adjoining SOUs.	Rw ≥ 50	✔
Walls separating SOUs in all other cases.	Rw ≥ 45	
Walls or ceilings separating a soil or waste pipe from a habitable room.	Rw ≥ 45	
Walls or ceilings separating a soil or waste pipe from a kitchen, bathroom or other non-habitable room.	Rw ≥ 30	
Floors between SOUs.	Rw ≥ 45	
Building Class 9c – All Australian States and Territories		
Walls separating SOUs from a kitchen or laundry.	Rw ≥ 45	✔ Discontinuous
Walls and floors separating SOUs and walls separating SOUs from a bathroom, toilet, plant room or utilities room.	Rw ≥ 45	
Walls or ceilings separating a duct, soil, waste or water supply pipe or storm water pipe from a habitable room.	Rw + Ctr ≥ 40	
Walls or ceilings separating a duct, soil, waste or water supply pipe or storm water pipe from a kitchen or other non-habitable room.	Rw + Ctr ≥ 25	

Table 2 is not intended as a substitute for the BCA. *[Refer to the BCA for the full details of acoustic requirements]*

ACOUSTIC REQUIREMENTS

Performance requirements of the BCA relating to sound transmission and insulation can be satisfied by one of the following three options:

1. Deemed-to-Satisfy Construction

Construct a wall or ceiling system that complies with the deemed-to-satisfy provisions of the BCA *Specification F5.2 – 2*. This section of the BCA details generic systems that satisfy the acoustic BCA requirements. However in general, more efficient solutions can be found in this manual.

2. Laboratory Test or Acoustic Engineering

Construct a wall or ceiling system with an acoustic rating from this manual. The systems in this manual were either laboratory tested according to the relevant acoustic testing standard or were given an Acoustic Opinion made by Day Design Pty Ltd consulting acoustical engineers of Sydney NSW, or Marshall Day acoustic software.

Acoustic testing laboratories are designed to ensure that flanking paths do not occur. Tested partition systems are constructed with extreme care to achieve optimum performance. For these reasons, on-site performance may be different to laboratory performance.

3. On-Site Testing

Conduct on-site acoustic testing on a wall or ceiling system. This is a 'verification method' accepted by the BCA to confirm the performance requirements are met. Also the effectiveness of the complete installed system can be verified by on-site acoustic testing.

HIGHER ACOUSTIC REQUIREMENTS

Where performance is critical or noise is higher than normal, accredited acoustic engineers should be consulted. Their role is to ensure that design and construction will meet any specific requirements.

Acoustic predictions for systems not published in Knauf technical literature can often be generated by acoustic modelling software. Contact Technical Services for an acoustic prediction based on the Knauf product range.

The Association of Australian Acoustical Consultants (AAAC) offer detailed guidance on acceptable acoustic performance. They have published their own star rating system. Ratings range from 2 to 6 stars and are based on field testing by an AAAC consultant to verify that they have been achieved. More information about AAAC Star Ratings for apartments and townhouses is available at www.aaac.org.au

ACOUSTIC TESTING AND ACTUAL PERFORMANCE

Attention to detail during construction is important for achieving good acoustics, as performance is governed by the weakest link in the system. Performance of installed acoustic systems may fall short of laboratory measured results. Acoustic measurements in a typical laboratory test represent the maximum performance that can be achieved. Meticulous care goes into laboratory installation of the system.

Actual site conditions are usually less than ideal and sound flanking paths normally exist around the perimeter of the system. Flanking paths may be minimised by sealing the perimeter with acoustic sealant, including behind the cornice and by installing services using acoustically rated details.

DESIGNING FOR ACOUSTIC PERFORMANCE

Acoustic performance is easier and cheaper to achieve if it is considered before construction begins. Good acoustic design includes:

- Selection of appropriate systems to limit sound transmission and/or sound reverberation
- Thoughtful design of the building layout
- Consideration of flanking paths.

Flanking paths are ways sound can travel around barriers, such as through windows, ceiling cavities, under doors and along services.

ACOUSTIC PERFORMANCE OF WALL PARTITIONS

Acoustic performance listed in systems tables may vary due to decreased stud spacing and increased steel stud thickness (BMT) to our tested systems. Acoustic performance may also vary due to any additional linings on battens or on separate stud walls.

The sound insulating capability of a basic wall or ceiling system can be upgraded by using a combination of:

- SoundShield
- Multiple plasterboard layers
- Insulation
- Resilient mounts
- Resilient channel
- Larger size studs
- Double stud walls
- Staggered stud walls
- Rondo Quiet Stud.

SOUNDSHIELD FOR SUPERIOR NOISE CONTROL

Knauf recommends the installation of SoundShield wall and ceiling systems to minimise noise from aircraft, traffic and neighbours.

SoundShield is a plasterboard with enhanced acoustic qualities. SoundShield has a super high-density* core which helps to resist the transmission of noise into rooms.

*The denser the plasterboard, the better it will resist sound transfer.

WET AREAS

The BCA requires wet area construction to protect the occupants from dangerous or unhealthy conditions, and to protect the building from damage. Acceptable construction for wet areas is detailed in the BCA and Australian Standard AS 3740-2004, *Waterproofing of Wet Areas within Residential Buildings*.

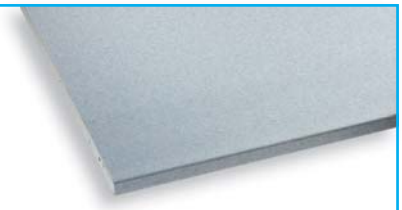
WaterShield, MultiShield and QuadShield are all water resistant plasterboards. The installation of these products in accordance with Section 3.1.4 of this manual complies with the requirements for wet areas from AS 3740 and the BCA.

MultiShield and QuadShield are water resistant plasterboards that are also fire resistant and can be substituted for FireShield in all systems.

WaterShield, MultiShield and QuadShield are manufactured to high internal standards that meet or exceed the requirements for water resistant gypsum board within Australian Standard AS 2588, *Gypsum Plasterboard*.

WaterShield, MultiShield and QuadShield are water resistant, however they are not waterproof. Direct contact with water over time must be avoided and if plasterboard has been water damaged, replace it.

Precautions against condensation listed in Section 2.2 'Condensation and Ventilation' must be followed. For external use of plasterboard *[Refer to Section 2.2 External Ceilings]*.



WATER RESISTANT PLASTERBOARD FOR WET AREAS

Knauf recommends the installation of WaterShield to resist moisture in wet areas like showers, bathrooms and laundries. For areas that require a fire rating as well as water resistance Knauf recommends a MultiShield and QuadShield system.

WaterShield, MultiShield and QuadShield are ideal substrates for tiles as they are dimensionally stable.

SOUND ABSORPTION

Hard surfaces reflect sound and can create noisy rooms or halls. Noise absorbing systems with NRC rating control noise by reducing sound reflections.

The Noise Reduction Coefficient (NRC) is the term used to rate a system for its ability to absorb sound. The higher the NRC value, the better the sound absorption of the system.

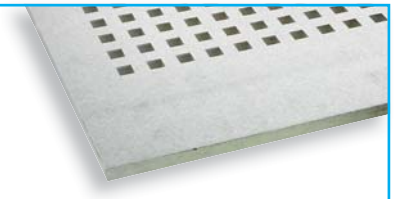
Noise Reduction Guidelines

Noise Reduction Coefficient	Room or Area
0.65	Foyers, waiting rooms, restaurants, shops and cafes.
0.65 – 0.85	Laboratories, theatres, offices, plant rooms, audiological rooms.

The advantages of using Knauf acoustic plasterboard include:

- Excellent sound absorption (controlling reflection)
- Control reverberation time
- A unique aesthetic appearance provided by superior quality perforations
- A smooth finished surface provided by recessed edges
- Prevention of dust emission and improved sound absorption due to the protective mat fixed to the back of the plasterboard.

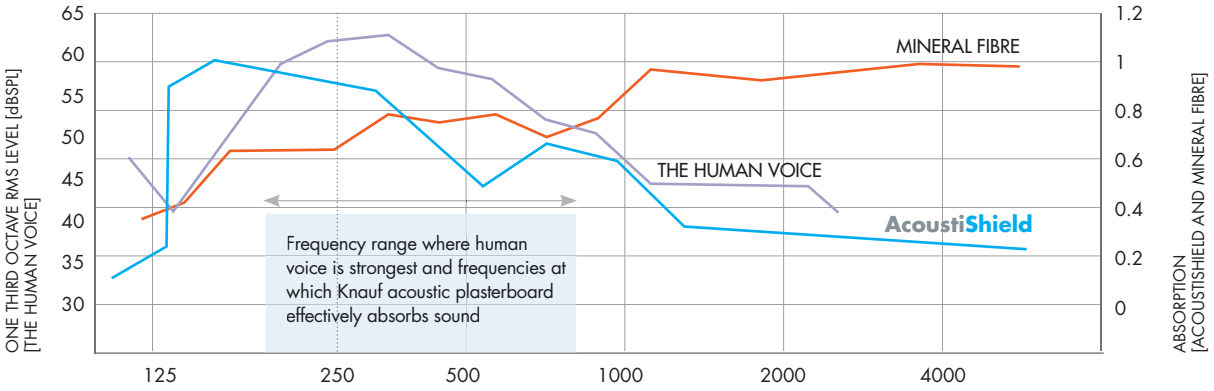
Together with the protective mat glued to the back of the board, the perforations in the Knauf acoustic boards are designed to absorb sound. The higher the rate of perforation, the higher the sound absorption performance and NRC value.



FOR NOISE REDUCTION AND AESTHETICS

Knauf recommends the installation of an acoustic plasterboard to increase sound absorption in noisy areas such as in hotels and restaurants.

Knauf acoustic plasterboard can be used on walls and ceilings to achieve Noise Reduction Coefficients as high as 0.85. Available in a range of unique patterns, it adds to the design.



Source: Knauf Internal Testing
Mineral Fibre ceiling tile (1200x600x20mm) on ceiling grid with plenum of 25cm (NRC 0.95).

IMPACT RESISTANCE

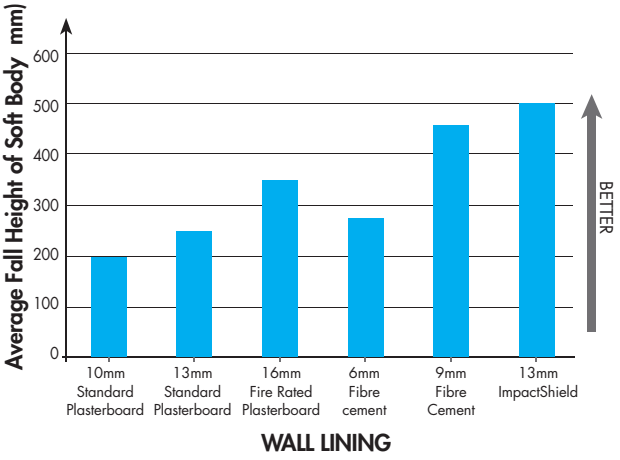
Areas subject to wear and tear need special consideration to reduce damage and maintenance costs. High traffic and wear areas are commonly found in:

- Shopping centres
- Hotels
- Correctional centres
- Garages
- Corridors
- Educational facilities
- Airports
- Hospitals
- Home gyms
- Rumpus rooms.

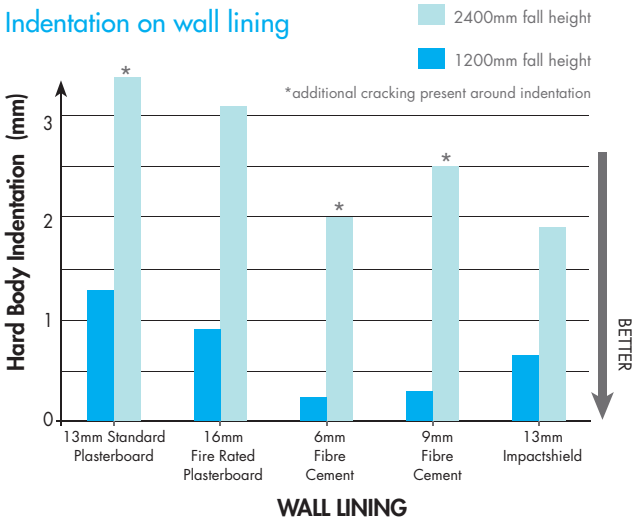
Testing of Impact Resistant Linings

Both soft and hard body impact tests were used to measure the performance of various wall linings. The results are displayed in the graphs below.

First damage on face of wall lining



Indentation on wall lining



Soft body tests were carried out by swinging a sand filled bag into a test wall according to BCA *Specification C1.8* with studs at 600mm centres. Soft body tests simulate the kind of loads applied to a wall system by the human body.

Hard body tests were carried out by dropping a steel ball from different heights and measuring the depth of the indentation caused by the impact. Hard body tests simulate loads such as a trolley or swinging a heavy suitcase.

Two conditions were measured for each of these tests:

- The damage on the face and back of wall lining
- The depth of indentation.

The benefits of ImpactShield and QuadShield include:

High resistance to marks, scores, dents and holes:

- Twice as tough and hard as standard 13mm plasterboard
- Economical and easy to repair.

13mm ImpactShield and 13mm QuadShield can be substituted for 13mm FireShield in any system and will maintain fire and acoustic performance.

ImpactShield and QuadShield are not intended to safeguard against damage from deliberate attack with heavy tools or in areas where heavy moving machinery may contact the walls (e.g. unprotected forklift operating areas). Consider the following to minimise damage in high wear areas:

- Make thoroughfares as wide as practical
- Install doorstops on all door openings.

FOR IMPACT RESISTANCE

Knauf recommends the installation of ImpactShield and QuadShield to minimise wear and tear in high traffic areas.

ImpactShield and QuadShield are impact resistant plasterboards reinforced with a continuous fibreglass mesh embedded in a high density core.

X-RAY RESISTANCE

Medical X-ray diagnostic rooms require the use of protective barriers to shield operators and occupants of adjacent areas against unacceptable levels of X-ray radiation.

The level of shielding required depends on:

- X-ray workload and frequency of use
- Direction of X-ray beam, voltage of X-ray tube, number of exposures and X-ray current
- Occupancy and usage of areas adjacent to X-ray suites
- Position of the X-ray unit and the controls in the room
- The dimensions of the room housing the equipment.

Protection usually takes the form of X-ray absorbing sheet material on the walls of the room in which equipment is operated, together with suitably shielded windows and doors. X-ray shielding may also be required on the floors and ceilings of X-ray facilities in multi-storey buildings.

X-ray Resistance Energy Levels

X-ray radiation is measured in kilovolts peak (kVp). Depending on the type of radiation equipment used in the room, diagnostic facilities will have different requirements for shielding:

- CT 120-140 kVp
- General radiographic rooms 60-90 kVp
- Dental 60-80 kVp
- Mammography 25-35 kVp

Other facilities such as nuclear medicine suites may use higher energy X-rays or different types of radiation and additional shielding may be necessary. The level and quality of radiation differs between applications, therefore a Health Physicist must always be involved in determining the shielding requirements for X-ray diagnostic facilities.

GIB X-BLOCK®
FOR RADIATION SHIELDING

Knauf recommends the use of GIB X-Block systems to provide X-ray radiation protection in medical X-ray diagnostic rooms within medical facilities and dental clinics.

GIB X-Block is a lead-free plasterboard system with high levels of barium sulphate which provides an effective radiation barrier. It eliminates the need for costly and complex installation procedures usually associated with installing lead based lining solutions.

GIB X-Block systems use GIB X-Block Jointing Compound, a compound specifically designed to give lead equivalent joints on walls and ceilings using GIB X-Block plasterboard.

Every Australian State and Territory has specific requirements for radiation shielding of diagnostic medical facilities. A Health Physicist or Radiation Consultant will be involved in projects to ensure that the local requirements for radiation shielding are fulfilled, according to the regulations of the State or Commonwealth.

The advantages of using GIB X-Block Shielding systems are:

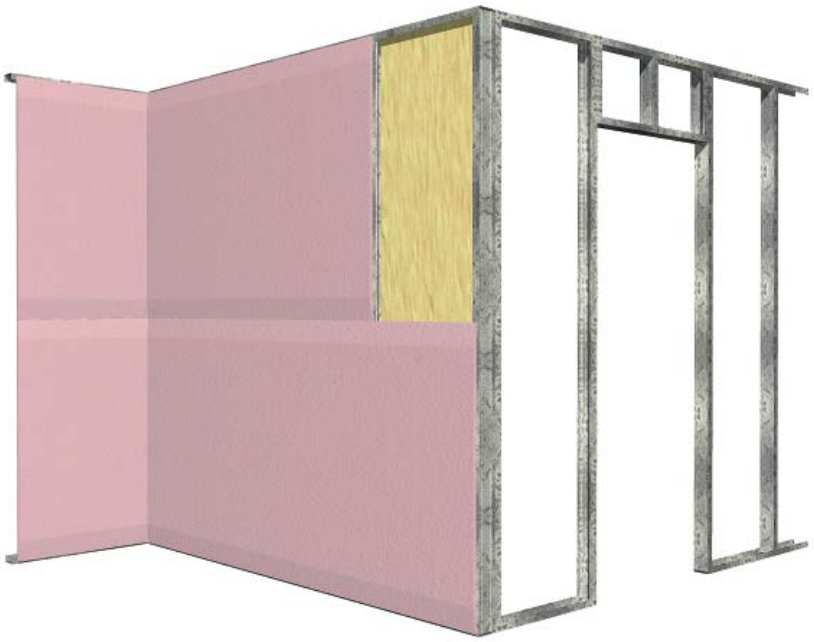
- Lead free and environmentally friendly
- Easy to install and joint as standard plasterboard
- Enhances other important performance requirements such as noise control and fire ratings
- Eliminates the need for backing joints with lead strips.

3 SYSTEMS AND INSTALLATION GUIDE

System descriptions, installation requirements and construction details.

3.1.1

Internal Steel Walls



INTRODUCTION

Internal steel walls are used in commercial applications such as office buildings and apartment blocks. They are light weight, quick to install, and the components are easy to deliver on site.

This section includes systems, installation instructions and construction details for general and fire rated internal steel walls.

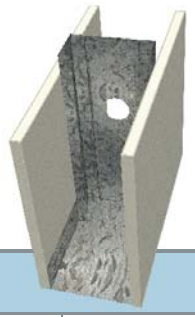
QUICK REFERENCE GUIDE

For walls surrounding Sole Occupancy Units (SOUs)

Acoustic Requirement	Fire Rating	System	Page
Rw ≥ 45	–/60/60 –/90/90 –/120/120	KSW310 KSW315 KSW312	44 51 44
Rw ≥ 50	–/60/60 –/90/90 –/120/120	KSW345 KSW345 KSW312	53 53 44
Rw ≥ 50 and Impact Sound Insulation	–/60/60 –/90/90 –/120/120	KSW320 KSW325 KSW322	55 57 55
Rw ≥ 50 and Discontinuous Construction	–/60/60 –/90/90 –/120/120	KSW330 KSW335 KSW332	59 61 59
Rw + Ctr ≥ 50	–/60/60 –/90/90 –/120/120	KSW322 KSW322 KSW322	55 55 55
Rw + Ctr ≥ 50 and Discontinuous Construction	–/60/60 –/90/90 –/120/120	KSW335 KSW335 KSW336	61 61 61

NON-FIRE RATED

KSW10



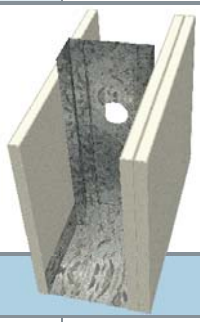
WALL LINING: [Side 1] 1 layer of 10mm **MastaShield**
[Side 2] 1 layer of 10mm **MastaShield**

FRAME: Steel studs at maximum 600mm centres

[10mm **MastaShield** may be substituted with 10mm **WaterShield**]

	Stud Size (mm)		Max height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
FRL –/ – / –	51	0.5 0.75	2.77 2.91	3.02 3.20	71	33 (24)	37 (29)	37 (29)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.33 3.93 4.17	3.58 4.18 4.46	84	33 (24)	39 (30)	38 (30)	–	
	76	0.55 0.75 1.15	3.70 4.43 4.65	4.02 4.78 5.07	96	33 (24)	39 (30)	39 (30)	39 (30)	
	92	0.55 0.75 1.15	4.54 4.83 5.11	4.85 5.27 5.62	112	33 (25)	40 (31)	40 (31)	40 (31)	
	150	0.75 1.15	6.55 7.22	7.14 7.75	170	35 (25)	43 (33)	42 (32)	43 (33)	

KSW11



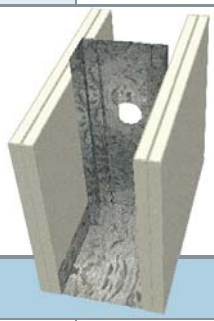
WALL LINING: [Side 1] 1 layer of 10mm **MastaShield**
[Side 2] 2 layers of 10mm **MastaShield**

FRAME: Steel studs at maximum 600mm centres

[10mm **MastaShield** may be substituted with 10mm **WaterShield**]

	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
FRL – / – / –	51	0.5 0.75	2.77 2.91	3.02 3.20	81	37 (28)	42 (34)	42 (34)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.33 3.93 4.17	3.58 4.18 4.46	94	38 (29)	43 (34)	43 (34)	–	
	76	0.55 0.75 1.15	3.70 4.43 4.65	4.02 4.78 5.07	106	38 (29)	44 (35)	44 (35)	44 (35)	
	92	0.55 0.75 1.15	4.54 4.83 5.11	4.85 5.27 5.62	122	38 (29)	45 (35)	45 (35)	45 (35)	
	150	0.75 1.15	6.55 7.22	7.14 7.75	180	40 (29)	48 (38)	48 (38)	48 (38)	

KSW12



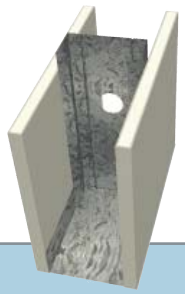
WALL LINING: [Side 1] 2 layers of 10mm **MastaShield**
[Side 2] 2 layers of 10mm **MastaShield**

FRAME: Steel studs at maximum 600mm centres

[10mm **MastaShield** may be substituted with 10mm **WaterShield**]

	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
FRL – / – / –	51	0.5 0.75	2.77 2.91	3.02 3.20	91	40 (31)	47 (37)	47 (37)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.33 3.93 4.17	3.58 4.18 4.46	104	41 (32)	48 (37)	48 (37)	–	
	76	0.55 0.75 1.15	3.70 4.43 4.65	4.02 4.78 5.07	116	41 (32)	49 (39)	49 (38)	49 (39)	
	92	0.55 0.75 1.15	4.54 4.83 5.11	4.85 5.27 5.62	132	42 (32)	50 (40)	50 (40)	50 (40)	
	150	0.75 1.15	6.55 7.22	7.14 7.75	190	44 (36)	53 (44)	52 (43)	53 (44)	

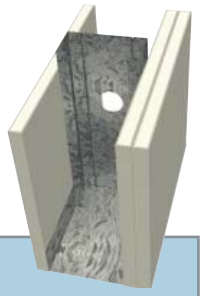
KSW15



WALL LINING: [Side 1] 1 layer of 13mm **MastaShield**
[Side 2] 1 layer of 13mm **MastaShield**
FRAME: Steel studs at maximum 600mm centres
[13mm **MastaShield** may be substituted with 13mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	51	0.5 0.75	3.20 3.32	3.42 3.57	77	33 (26)	41 (33)	41 (32)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	90	34 (26)	42 (33)	41 (32)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	102	34 (26)	43 (33)	42 (33)	43 (33)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	118	35 (27)	43 (33)	43 (33)	43 (33)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	176	37 (27)	45 (37)	45 (36)	45 (37)	

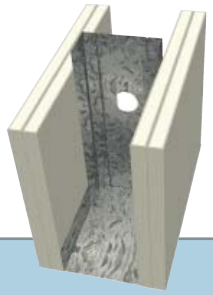
KSW16



WALL LINING: [Side 1] 1 layer of 13mm **MastaShield**
[Side 2] 2 layers of 13mm **MastaShield**
FRAME: Steel studs at maximum 600mm centres
[13mm **MastaShield** may be substituted with 13mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	51	0.5 0.75	3.20 3.32	3.42 3.57	90	39 (31)	46 (36)	45 (36)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	103	39 (31)	47 (37)	47 (37)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	115	40 (31)	47 (37)	47 (37)	47 (37)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	131	40 (31)	49 (39)	48 (39)	49 (39)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	189	42 (32)	50 (42)	50 (42)	50 (42)	

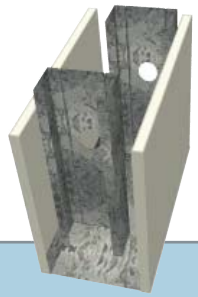
KSW17



WALL LINING: [Side 1] 2 layers of 13mm **MastaShield**
[Side 2] 2 layers of 13mm **MastaShield**
Frame: Steel studs at maximum 600mm centres
[13mm **MastaShield** may be substituted with 13mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	51	0.5 0.75	3.20 3.32	3.42 3.57	103	42 (33)	50 (40)	50 (40)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	116	43 (33)	51 (41)	51 (41)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	128	44 (34)	52 (43)	52 (43)	52 (43)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	144	44 (34)	53 (44)	53 (44)	53 (44)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	202	47 (39)	54 (47)	54 (47)	54 (47)	

KSW20



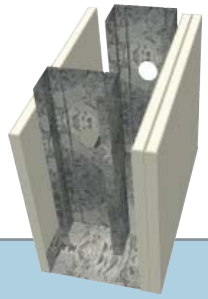
WALL LINING: [Side 1] 1 layer of 10mm **MastaShield**
[Side 2] 1 layer of 10mm **MastaShield**

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[10mm **MastaShield** may be substituted with 10mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.59 3.19 3.87	112	33 (26)	42 (31)	42 (31)	43 (32)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.80 3.32 4.00	112	33 (26)	42 (31)	42 (31)	43 (32)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	2.99 3.48 4.12	170	34 (26)	44 (32)	44 (32)	45 (33)	

KSW21



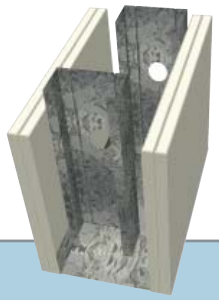
WALL LINING: [Side 1] 1 layer of 10mm **MastaShield**
[Side 2] 2 layers of 10mm **MastaShield**

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[10mm **MastaShield** may be substituted with 10mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.59 3.19 3.87	122	37 (29)	47 (35)	47 (35)	48 (36)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.80 3.32 4.00	122	37 (29)	47 (35)	47 (35)	48 (36)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	2.99 3.48 4.12	180	38 (29)	49 (38)	49 (38)	50 (39)	

KSW22



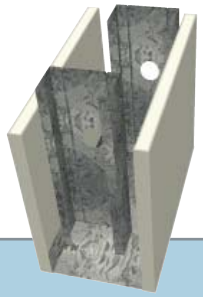
WALL LINING: [Side 1] 2 layers of 10mm **MastaShield**
[Side 2] 2 layers of 10mm **MastaShield**

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[10mm **MastaShield** may be substituted with 10mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.59 3.19 3.87	132	42 (33)	52 (42)	51 (42)	52 (43)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.80 3.32 4.00	132	42 (33)	52 (42)	51 (42)	52 (43)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	2.99 3.48 4.12	190	44 (34)	53 (45)	53 (45)	54 (46)	

KSW25



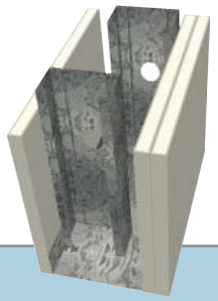
WALL LINING: [Side 1] 1 layer of 13mm **MastaShield**
[Side 2] 1 layer of 13mm **MastaShield**

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[13mm **MastaShield** may be substituted with 13mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	118	35 (27)	45 (33)	44 (33)	45 (34)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	118	35 (27)	45 (33)	44 (33)	45 (34)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	176	36 (28)	46 (36)	46 (36)	47 (37)	

KSW26



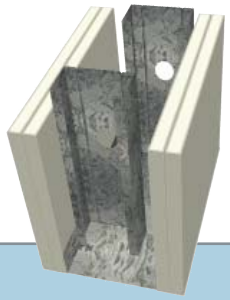
WALL LINING: [Side 1] 1 layer of 13mm **MastaShield**
[Side 2] 2 layers of 13mm **MastaShield**

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[13mm **MastaShield** may be substituted with 13mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	131	40 (32)	50 (40)	49 (40)	50 (41)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	131	40 (32)	50 (40)	49 (40)	50 (41)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	180	42 (33)	51 (44)	51 (44)	52 (45)	

KSW27



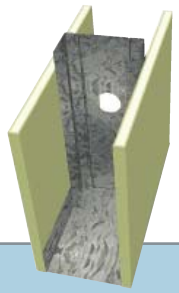
WALL LINING: [Side 1] 2 layers of 13mm **MastaShield**
[Side 2] 2 layers of 13mm **MastaShield**

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[13mm **MastaShield** may be substituted with 13mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	144	44 (35)	54 (46)	53 (46)	54 (47)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	144	44 (35)	54 (46)	53 (46)	54 (47)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	202	47 (37)	55 (49)	55 (48)	56 (49)	

KSW210

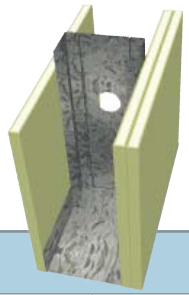


WALL LINING: [Side 1] 1 layer of 10mm SoundShield
[Side 2] 1 layer of 10mm SoundShield

FRAME: Steel studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	51	0.5 0.75	2.77 2.91	3.02 3.20	71	33 (26)	41 (33)	41 (33)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.33 3.93 4.17	3.58 4.18 4.46	84	34 (26)	42 (33)	42 (33)	–	
	76	0.55 0.75 1.15	3.70 4.43 4.65	4.02 4.78 5.07	96	34 (26)	43 (34)	42 (34)	43 (34)	
	92	0.55 0.75 1.15	4.54 4.83 5.11	4.85 5.27 5.62	112	35 (27)	43 (34)	43 (34)	43 (34)	
	150	0.75 1.15	6.55 7.22	7.14 7.75	170	37 (27)	46 (36)	45 (36)	46 (36)	

KSW211

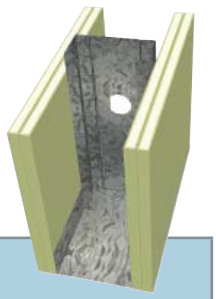


WALL LINING: [Side 1] 1 layer of 10mm SoundShield
[Side 2] 2 layers of 10mm SoundShield

FRAME: Steel studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	51	0.5 0.75	2.77 2.91	3.02 3.20	81	39 (31)	46 (37)	46 (36)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.33 3.93 4.17	3.58 4.18 4.46	94	39 (31)	46 (37)	46 (37)	–	
	76	0.55 0.75 1.15	3.70 4.43 4.65	4.02 4.78 5.07	106	40 (31)	48 (37)	47 (37)	48 (37)	
	92	0.55 0.75 1.15	4.54 4.83 5.11	4.85 5.27 5.62	122	40 (31)	49 (39)	48 (39)	49 (39)	
	150	0.75 1.15	6.55 7.22	7.14 7.75	180	42 (32)	50 (42)	50 (42)	50 (42)	

KSW212

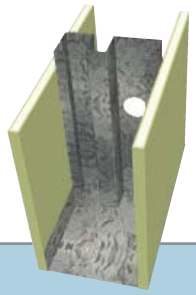


WALL LINING: [Side 1] 2 layers of 10mm SoundShield
[Side 2] 2 layers of 10mm SoundShield

FRAME: Steel studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	51	0.5 0.75	2.77 2.91	3.02 3.20	91	43 (33)	50 (40)	50 (40)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.33 3.93 4.17	3.58 4.18 4.46	104	43 (33)	51 (42)	51 (42)	–	
	76	0.55 0.75 1.15	3.70 4.43 4.65	4.02 4.78 5.07	116	44 (34)	52 (43)	52 (43)	52 (43)	
	92	0.55 0.75 1.15	4.54 4.83 5.11	4.85 5.27 5.62	132	45 (34)	53 (44)	53 (44)	53 (44)	
	150	0.75 1.15	6.55 7.22	7.14 7.75	190	47 (39)	54 (47)	54 (47)	54 (47)	

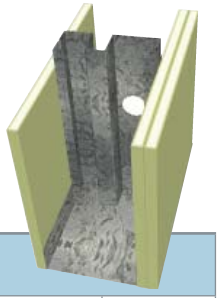
KSW240



WALL LINING: [Side 1] 1 layer of 10mm SoundShield
[Side 2] 1 layer of 10mm SoundShield
FRAME: Rondo QUIET STUDS® at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	92	0.55	3.70 No noggings	4.02 No noggings	112	36 (30)	45 (35)	45 (35)	46 (36)	Acoustic Report Day Design 3094-12

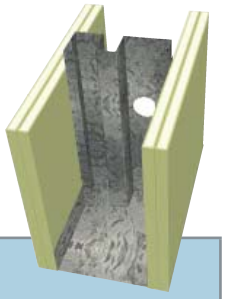
KSW241



WALL LINING: [Side 1] 1 layer of 10mm SoundShield
[Side 2] 1 layer of 10mm SoundShield
FRAME: Rondo QUIET STUDS® at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	92	0.55	3.70 No noggings	4.02 No noggings	122	42 (36)	52 (42)	51 (42)	52 (43)	Acoustic Report Day Design 3094-12

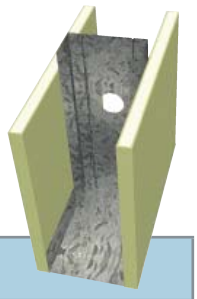
KSW242



WALL LINING: [Side 1] 2 layers of 10mm SoundShield
[Side 2] 2 layers of 10mm SoundShield
FRAME: Rondo QUIET STUDS® at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	92	0.55	3.70 No noggings	4.02 No noggings	132	47 (39)	56 (47)	56 (47)	57 (48)	Acoustic Report Day Design 3094-12

KSW215

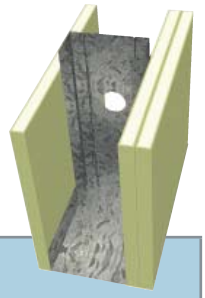


WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 1 layer of 13mm SoundShield

FRAME: Steel studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	51	0.5 0.75	3.20 3.32	3.42 3.57	77	36 (29)	45 (37)	45 (36)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	90	37 (29)	45 (37)	45 (37)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	102	37 (30)	46 (37)	46 (37)	46 (37)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	118	38 (30)	47 (39)	47 (39)	47 (39)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	176	41 (31)	48 (42)	48 (42)	48 (42)	

KSW216

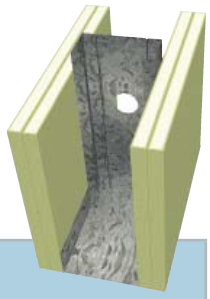


WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 2 layers of 13mm SoundShield

FRAME: Steel studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	51	0.5 0.75	3.20 3.32	3.42 3.57	90	42 (34)	50 (40)	49 (40)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	103	43 (34)	51 (42)	50 (42)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	115	44 (34)	51 (43)	51 (43)	51 (43)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	131	45 (35)	52 (44)	52 (44)	52 (44)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	189	47 (37)	53 (47)	53 (47)	53 (47)	

KSW217

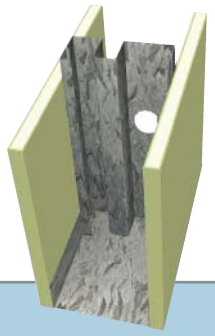


WALL LINING: [Side 1] 2 layers of 13mm SoundShield
[Side 2] 2 layers of 13mm SoundShield

FRAME: Steel studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	51	0.5 0.75	3.20 3.32	3.42 3.57	103	46 (40)	54 (46)	54 (46)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	116	47 (41)	55 (47)	55 (47)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	128	48 (41)	55 (48)	55 (48)	55 (48)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	144	49 (42)	55 (49)	55 (49)	55 (49)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	202	51 (44)	56 (52)	56 (51)	56 (52)	

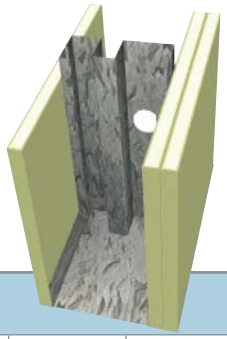
KSW245



WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 1 layer of 13mm SoundShield
FRAME: Rondo QUIET STUDS® at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	92	0.55	4.13 No noggings	4.41 No noggings	118	42 (35)	50 (42)	50 (42)	51 (43)	Acoustic Report Day Design 3094-12

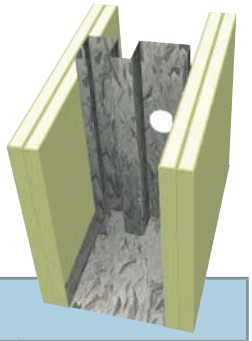
KSW246



WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 2 layers of 13mm SoundShield
FRAME: Rondo QUIET STUDS® at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	92	0.55	4.13 No noggings	4.41 No noggings	131	47 (40)	55 (47)	55 (47)	56 (48)	Acoustic Report Day Design 3094-12

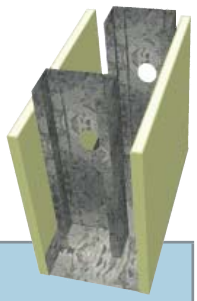
KSW247



WALL LINING: [Side 1] 2 layers of 13mm SoundShield
[Side 2] 2 layers of 13mm SoundShield
FRAME: Rondo QUIET STUDS® at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	92	0.55	4.13 No noggings	4.41 No noggings	144	52 (45)	59 (53)	59 (53)	60 (54)	Acoustic Report Day Design 3094-12

KSW220

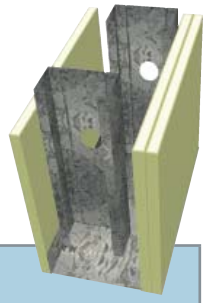


WALL LINING: [Side 1] 1 layer of 10mm SoundShield
[Side 2] 1 layer of 10mm SoundShield

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.59 3.19 3.87	112	35 (28)	45 (33)	44 (33)	45 (34)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.80 3.32 4.00	112	35 (28)	45 (33)	44 (33)	45 (34)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	2.99 3.48 4.12	170	37 (28)	46 (36)	46 (36)	47 (37)	

KSW221

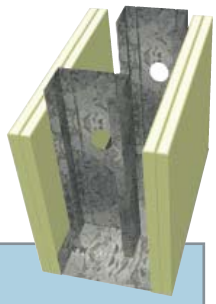


WALL LINING: [Side 1] 1 layer of 10mm SoundShield
[Side 2] 2 layers of 10mm SoundShield

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.59 3.19 3.87	122	40 (32)	50 (40)	49 (40)	50 (41)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.80 3.32 4.00	122	40 (32)	50 (40)	49 (40)	50 (41)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	2.99 3.48 4.12	180	42 (33)	51 (44)	51 (44)	52 (45)	

KSW222

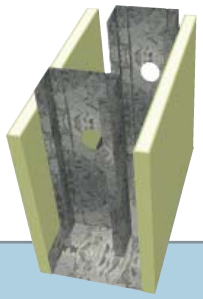


WALL LINING: [Side 1] 2 layers of 10mm SoundShield
[Side 2] 2 layers of 10mm SoundShield

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.59 3.19 3.87	132	44 (35)	54 (46)	54 (46)	55 (47)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.80 3.32 4.00	132	44 (35)	54 (46)	54 (46)	55 (47)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	2.99 3.48 4.12	190	47 (37)	55 (49)	55 (49)	56 (50)	

KSW225

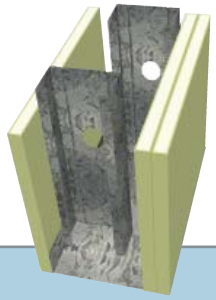


WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 1 layer of 13mm SoundShield

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	118	40 (32)	48 (40)	48 (40)	49 (41)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	118	40 (32)	48 (40)	48 (40)	49 (41)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	176	42 (33)	49 (43)	49 (43)	50 (44)	

KSW226

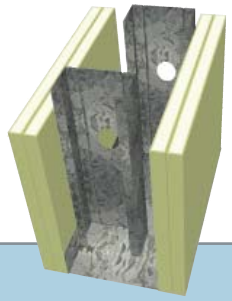


WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 2 layers of 13mm SoundShield

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	131	44 (36)	52 (46)	52 (46)	53 (47)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	131	44 (36)	52 (46)	52 (46)	53 (47)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	180	46 (37)	53 (48)	53 (48)	54 (49)	

KSW227

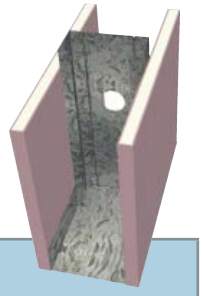


WALL LINING: [Side 1] 2 layers of 13mm SoundShield
[Side 2] 2 layers of 13mm SoundShield

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	144	49 (42)	58 (51)	59 (51)	59 (52)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	144	49 (42)	58 (51)	59 (51)	59 (52)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	202	51 (43)	59 (53)	59 (53)	60 (54)	

KSW310



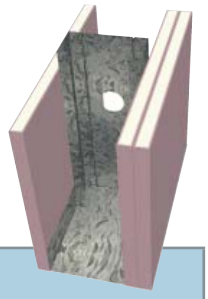
WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield**

FRAME: Steel studs at maximum 600mm centres

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /60/60 30/30/30 rated from both sides Fire Report FAR3210 FAR3230	51	0.5 0.75	3.20 3.32	3.42 3.57	77	36 (28)	43 (34)	43 (34)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	90	36 (28)	44 (35)	44 (35)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	102	37 (28)	45 (35)	44 (35)	45 (35)	Use 50mm Glasswool Semi-Rigid to achieve 45 (36)
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	118	38 (29)	46 (36)	45 (36)	46 (36)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	176	39 (29)	47 (40)	47 (40)	47 (40)	

KSW311



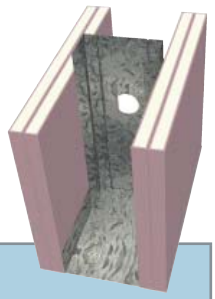
WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**

FRAME: Steel studs at maximum 600mm centres

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /90/90 30/30/30 rated from both sides Fire Report FAR3210 FAR3230	51	0.5 0.75	3.20 3.32	3.42 3.57	90	41 (33)	48 (39)	48 (39)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	103	42 (33)	49 (39)	49 (39)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	115	42 (33)	50 (40)	50 (40)	50 (40)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	131	43 (33)	51 (42)	50 (42)	51 (42)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	189	45 (35)	52 (45)	52 (45)	52 (45)	

KSW312



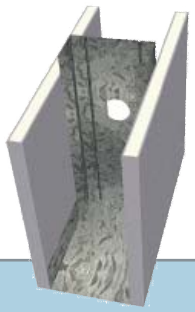
WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**

FRAME: Steel studs at maximum 600mm centres

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 90/90/90 rated from both sides Fire Report FAR3210 FAR3230	51	0.5 0.75	3.20 3.32	3.42 3.57	103	46 (39)	52 (43)	52 (43)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	116	47 (40)	53 (45)	53 (45)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	128	47 (40)	54 (46)	54 (46)	54 (46)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	144	49 (41)	55 (47)	54 (47)	55 (47)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	202	51 (42)	55 (**50**)	55 (**50**)	55 (**50**)	

KSW610

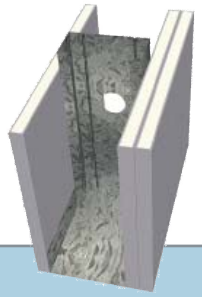


WALL LINING: [Side 1] 1 layer of 13mm QuadShield
[Side 2] 1 layer of 13mm QuadShield

FRAME: Steel studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm EarthWool 11 kg/m³	
– /60/60 30/30/30 rated from both sides Fire Report FAR 3596	51	0.5 0.75	3.20 3.32	3.42 3.57	77	34 (27)	44 (33)	43 (33)	–	Acoustic Report Day Design 3094-54 4738-10
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	90	35 (28)	45 (33)	44 (33)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	102	36 (28)	46 (36)	45 (36)	46 (36)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	118	37 (28)	47 (39)	47 (39)	49 (38)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	176	39 (30)	49 (42)	48 (42)	49 (42)	

KSW611

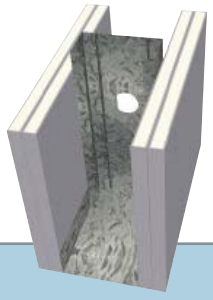


WALL LINING: [Side 1] 1 layer of 13mm QuadShield
[Side 2] 2 layers of 13mm QuadShield

FRAME: Steel studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ISB3	75mm EarthWool 11 kg/m³	
– /90/90 30/30/30 rated from both sides Fire Report FAR 3596	51	0.5 0.75	3.20 3.32	3.42 3.57	90	41 (32)	49 (37)	48 (37)	–	Acoustic Report Day Design 3094-54
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	103	42 (32)	50 (41)	50 (41)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	115	43 (34)	51 (41)	50 (41)	51 (42)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	131	44 (35)	52 (44)	51 (44)	52 (44)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	189	46 (36)	53 (47)	53 (47)	53 (47)	

KSW612

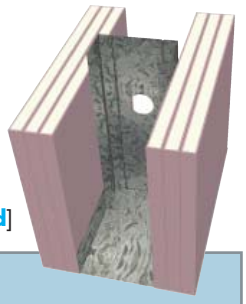


WALL LINING: [Side 1] 2 layers of 13mm QuadShield
[Side 2] 2 layers of 13mm QuadShield

FRAME: Steel studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ISB3	75mm EarthWool 11 kg/m³	
– /120/120 90/90/90 rated from both sides Fire Report FAR 3596	51	0.5 0.75	3.20 3.32	3.42 3.57	103	45 (39)	53 (44)	53 (44)	–	Acoustic Report Day Design 3094-54
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	116	47 (40)	55 (47)	54 (47)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	128	47 (41)	55 (49)	55 (48)	55 (49)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	144	48 (41)	56 (49)	56 (49)	56 (49)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	202	50 (43)	57 (**52**)	56 (**51**)	57 (**52**)	

KSW314



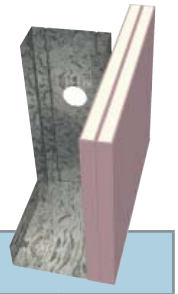
WALL LINING: [Side 1] 3 layers of 13mm **FireShield**
[Side 2] 3 layers of 13mm **FireShield**

FRAME: Steel studs at maximum 600mm centres

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /180/180 120/120/120 rated from both sides Fire Report FAR3210 FAR3230	51	0.5 0.75	3.20 3.32	3.42 3.57	129	50 (43)	58 (**50**)	58 (**50**)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	142	51 (43)	58 (**51**)	58 (**51**)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	154	52 (44)	59 (**52**)	59 (**52**)	59 (**52**)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	170	53 (45)	59 (**53**)	59 (**53**)	59 (**53**)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	228	56 (48)	60 (**55**)	60 (**55**)	60 (**55**)	

KSW301



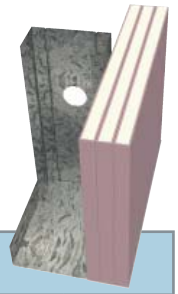
WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] Optional wall lining

FRAME: Steel studs at maximum 600mm centres

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /30/30 30/30/30 rated from the sheeted side only Fire Report FAR2827	51	0.5 0.75	2.32 2.60	2.52 2.86	77	34 (30)	–	–	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	2.72 3.25 3.58	2.93 3.53 3.93	90	34 (30)	–	–	–	
	76	0.55 0.75 1.15	3.24 3.82 4.05	3.58 4.17 4.45	102	34 (30)	–	–	–	
	92	0.55 0.75 1.15	3.61 4.18 4.69	4.05 4.61 5.15	118	34 (30)	–	–	–	
	150	0.75 1.15	5.37 6.81	6.51 7.40	176	34 (30)	–	–	–	

KSW302



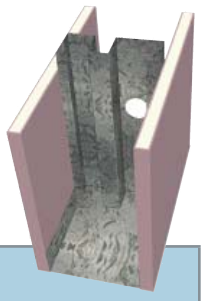
WALL LINING: [Side 1] 3 layers of 13mm **FireShield**
[Side 2] Optional wall lining

FRAME: Steel studs at maximum 600mm centres

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /90/90 90/90/90 rated from the sheeted side only Fire Report FAR2827	51	0.5 0.75	2.32 2.60	2.52 2.86	90	37 (34)	–	–	–	Acoustic Report Day Design 3094–33
	64	0.5 0.75 1.15	2.72 3.25 3.58	2.93 3.53 3.93	103	37 (34)	–	–	–	
	76	0.55 0.75 1.15	3.24 3.82 4.05	3.58 4.17 4.45	115	37 (34)	–	–	–	
	92	0.55 0.75 1.15	3.61 4.18 4.69	4.05 4.61 5.15	131	37 (34)	–	–	–	
	150	0.75 1.15	5.37 6.81	6.51 7.40	189	37 (34)	–	–	–	

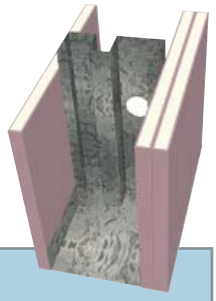
KSW340



WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield**
FRAME: Rondo QUIET STUDS® at maximum 600mm centres
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)					
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	2x50mm EarthWool 14 kg/m³	
– /60/60 rated from both sides Fire Report FAR3210	92	0.55	4.13 No noggings	4.41 No noggings	118	41 (35)	49 (39)	48 (39)	49 (40)	50 (40)	Acoustic Report Day Design 3094-12 4738-L2

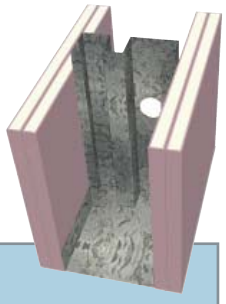
KSW341



WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**
FRAME: Rondo QUIET STUDS® at maximum 600mm centres
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
–/90/90 rated from both sides Fire Report FAR3210	92	0.55	4.13 No noggings	4.41 No noggings	131	45 (38)	54 (45)	53 (45)	54 (46)	Acoustic Report Day Design 3094-12

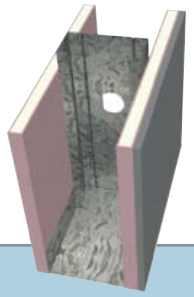
KSW342



WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**
FRAME: Rondo QUIET STUDS® at maximum 600mm centres
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 rated from both sides Fire Report FAR3210	92	0.55	4.13 No noggings	4.41 No noggings	144	50 (43)	59 (**51**)	58 (**51**)	59 (**52**)	Acoustic Report Day Design 3094-12

KSW510



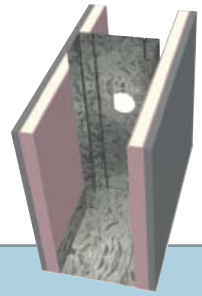
WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement

FRAME: Steel studs at maximum 600mm centres.

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /60/60 30/30/30 rated from both sides Fire Report FAR3210 FAR3230	51	0.5 0.75	3.20 3.32	3.42 3.57	83	42 (32)	48 (39)	48 (39)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	96	42 (32)	49 (39)	49 (39)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	108	42 (32)	50 (40)	50 (40)	50 (40)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	124	43 (33)	51 (42)	51 (41)	51 (42)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	182	45 (34)	52 (45)	52 (45)	52 (45)	

KSW512



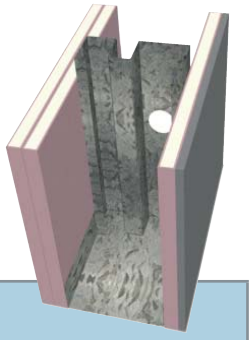
WALL LINING: [Side 1] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement

FRAME: Steel studs at maximum 600mm centres

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /90/90 30/30/30 rated from both sides Fire Report FAR2827 FAR3230	51	0.5 0.75	3.20 3.32	3.42 3.57	89	45 (35)	53 (42)	53 (42)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.72 4.22 4.43	3.93 4.43 4.69	102	46 (35)	54 (44)	54 (44)	–	
	76	0.55 0.75 1.15	4.13 5.02 5.22	4.41 5.33 5.57	114	46 (36)	55 (46)	54 (45)	55 (46)	
	92	0.55 0.75 1.15	4.94 5.50 5.75	5.21 5.89 6.19	130	47 (36)	55 (47)	55 (47)	55 (47)	
	150	0.75 1.15	6.99 7.54	7.52 8.04	188	49 (41)	56 (**50**)	56 (**50**)	56 (**50**)	

KSW540



WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement

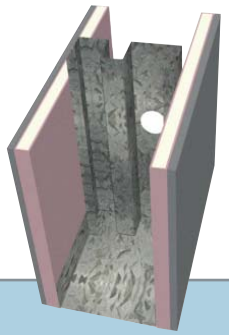
FRAME: Rondo QUIET STUDS® at maximum 600mm centres

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

[Order of wall linings can be reversed]

FRL – /90/90 rated from both sides Fire Report FAR2827	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
	92	0.55	4.13 No noggings	4.41 No noggings	137	50 (42)	59 (**50**)	59 (**50**)	60 (**51**)	Acoustic Report Day Design 3094-12

KSW542



WALL LINING: [Side 1] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement

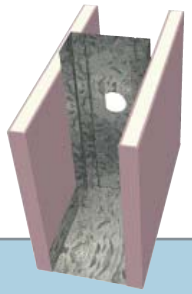
FRAME: Rondo QUIET STUDS® at maximum 600mm centres

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

[Order of wall linings can be reversed]

FRL – /90/90 rated from both sides Fire Report FAR2827	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
	92	0.55	4.13 No noggings	4.41 No noggings	130	50 (41)	59 (**50**)	59 (**50**)	60 (**51**)	Acoustic Report Day Design 3094-12

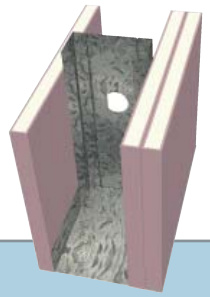
KSW315



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield**
FRAME: Steel studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /90/90 60/60/60 rated from both sides using EarthWool insulation – /60/60 60/60/60 rated from both sides using no insulation or polyester insulation Fire Report FAR3210 FAR3230	51	0.5 0.75	3.38 3.52	3.55 3.71	83	36 (29)	45 (37)	45 (37)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.91 4.35 4.52	4.13 4.60 4.82	96	37 (30)	46 (37)	46 (37)	–	
	76	0.55 0.75 1.15	4.30 5.25 5.42	4.58 5.58 5.79	108	38 (30)	47 (38)	46 (38)	47 (38)	
	92	0.55 0.75 1.15	5.18 5.71 5.92	5.45 6.12 6.39	124	38 (30)	47 (39)	47 (39)	47 (39)	
	150	0.75 1.15	7.19 7.65	7.62 8.13	182	40 (31)	49 (42)	48 (42)	49 (42)	

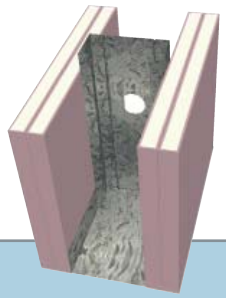
KSW316



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**
FRAME: Steel studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 60/60/60 rated from both sides Fire Report FAR3210 FAR3230	51	0.5 0.75	3.38 3.52	3.55 3.71	99	43 (34)	50 (41)	50 (41)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.91 4.35 4.52	4.13 4.60 4.82	112	43 (34)	51 (42)	51 (42)	–	
	76	0.55 0.75 1.15	4.30 5.25 5.42	4.58 5.58 5.79	124	44 (35)	51 (44)	51 (43)	51 (44)	
	92	0.55 0.75 1.15	5.18 5.71 5.92	5.45 6.12 6.39	140	45 (35)	52 (45)	52 (45)	52 (45)	
	150	0.75 1.15	7.19 7.65	7.62 8.13	198	47 (37)	53 (48)	53 (47)	53 (48)	

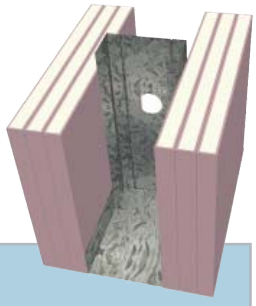
KSW317



WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**
FRAME: Steel studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 120/120/120 rated from both sides Fire Report FAR3210 FAR3230	51	0.5 0.75	3.38 3.52	3.55 3.71	115	47 (40)	54 (46)	54 (46)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.91 4.35 4.52	4.13 4.60 4.82	128	48 (41)	55 (48)	55 (48)	–	
	76	0.55 0.75 1.15	4.30 5.25 5.42	4.58 5.58 5.79	140	49 (41)	55 (49)	55 (49)	55 (49)	
	92	0.55 0.75 1.15	5.18 5.71 5.92	5.45 6.12 6.39	156	49 (42)	56 (**50**)	55 (**50**)	56 (**50**)	
	150	0.75 1.15	7.19 7.65	7.62 8.13	214	52 (44)	56 (**52**)	56 (**52**)	56 (**52**)	

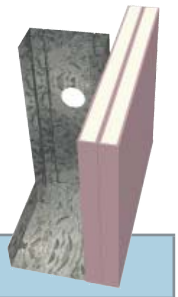
KSW319



WALL LINING: [Side 1] 3 layers of 16mm **FireShield**
[Side 2] 3 layers of 16mm **FireShield**
FRAME: Steel studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /240/240 120/120/120 rated from both sides Fire Report FAR3210 FAR3230	51	0.5 0.75	3.38 3.52	3.55 3.71	147	53 (46)	59 (**52**)	59 (**52**)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.91 4.35 4.52	4.13 4.60 4.82	160	54 (47)	59 (**54**)	59 (**54**)	–	
	76	0.55 0.75 1.15	4.30 5.25 5.42	4.58 5.58 5.79	172	55 (47)	60 (**54**)	59 (**54**)	60 (**54**)	
	92	0.55 0.75 1.15	5.18 5.71 5.92	5.45 6.12 6.39	188	56 (48)	60 (**55**)	60 (**55**)	60 (**55**)	
	150	0.75 1.15	7.19 7.65	7.62 8.13	246	59 (**50**)	60 (**56**)	60 (**56**)	60 (**56**)	

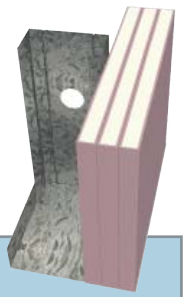
KSW304



WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] Optional wall lining
FRAME: Steel studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /60/60 60/60/60 rated from the sheeted side only Fire Report FAR2827	51	0.5 0.75	2.32 2.60	2.52 2.86	83	35 (31)	–	–	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	2.75 3.28 3.59	3.02 3.56 3.95	96	35 (31)	–	–	–	
	76	0.55 0.75 1.15	3.25 3.87 4.05	3.60 4.22 4.45	108	35 (31)	–	–	–	
	92	0.55 0.75 1.15	3.61 4.20 4.69	4.05 4.63 5.15	124	35 (31)	–	–	–	
	150	0.75 1.15	5.37 6.81	6.51 7.40	182	35 (31)	–	–	–	

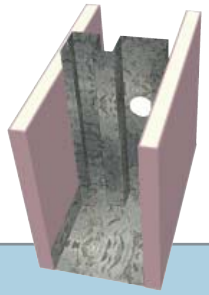
KSW305



WALL LINING: [Side 1] 3 layers of 16mm **FireShield**
[Side 2] Optional wall lining
FRAME: Steel studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 120/120/120 rated from the sheeted side only Fire Report FAR2827	51	0.5 0.75	2.32 2.60	2.52 2.86	99	38 (35)	–	–	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	2.75 3.28 3.59	3.02 3.56 3.95	112	38 (35)	–	–	–	
	76	0.55 0.75 1.15	3.25 3.87 4.05	3.60 4.22 4.45	124	38 (35)	–	–	–	
	92	0.55 0.75 1.15	3.61 4.20 4.69	4.05 4.63 5.15	140	38 (35)	–	–	–	
	150	0.75 1.15	5.37 6.81	6.51 7.40	198	38 (35)	–	–	–	

KSW345



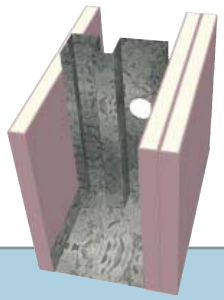
WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield**

FRAME: Rondo QUIET STUDS® at maximum 600mm centres

[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /90/90 rated from both sides using EarthWool insulation – /60/60 rated from both sides using no insulation or polyester insulation Fire Report FAR3210	92	0.55	4.30 No noggings	4.58 No noggings	124	42 (36)	50 (42)	50 (42)	51 (43)	Acoustic Report Day Design 3094-12

KSW346



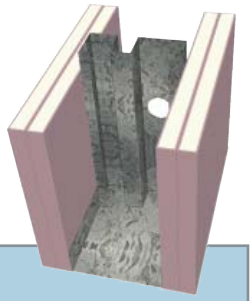
WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**

FRAME: Rondo QUIET STUDS® at maximum 600mm centres

[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 rated from both sides Fire Report FAR3210	92	0.55	4.30 No noggings	4.58 No noggings	140	48 (40)	56 (48)	56 (48)	57 (49)	Acoustic Report Day Design 3094-12

KSW347



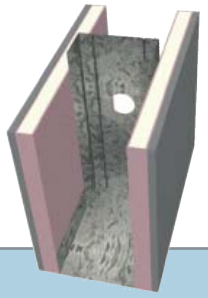
WALL LINING: [SIDE 1] 2 layers of 16mm **FireShield**
[SIDE 2] 2 layers of 16mm **FireShield**

FRAME: Rondo QUIET STUDS® at maximum 600mm centres

[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 rated from both sides Fire Report FAR3210	92	0.55	4.30 No noggings	4.58 No noggings	156	52 (45)	60 (**54**)	59 (**54**)	60 (**55**)	Acoustic Report Day Design 3094-12

KSW516



WALL LINING: [Side 1] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement

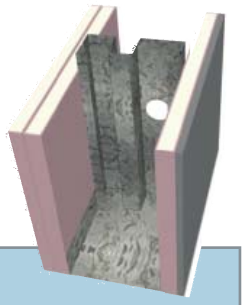
FRAME: Steel studs at maximum 600mm centres

[16mm **FireShield** can be substituted with 16mm **MultiShield**]

[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 60/60/60 rated from both sides Fire Report FAR3210 FAR3230	51	0.5 0.75	3.38 3.52	3.55 3.71	95	46 (39)	54 (44)	53 (44)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.91 4.35 4.52	4.13 4.60 4.82	108	47 (40)	55 (46)	54 (46)	–	
	76	0.55 0.75 1.15	4.30 5.25 5.42	4.58 5.58 5.79	120	47 (40)	55 (47)	55 (47)	55 (47)	
	92	0.55 0.75 1.15	5.18 5.71 5.92	5.45 6.12 6.39	136	48 (41)	56 (48)	55 (48)	56 (48)	
	150	0.75 1.15	7.19 7.65	7.62 8.13	194	51 (42)	56 (**51**)	56 (**51**)	56 (**51**)	

KSW545



WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement

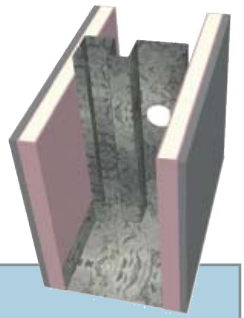
FRAME: Rondo QUIET STUDS® at maximum 600mm centres

[16mm **FireShield** can be substituted with 16mm **MultiShield**]

[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 rated from both sides Fire Report FAR3210	92	0.55	4.30 No noggings	4.58 No noggings	146	52 (44)	60 (**53**)	59 (**53**)	60 (**54**)	Acoustic Report Day Design 3094-12

KSW546



WALL LINING: [Side 1] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement

FRAME: Rondo QUIET STUDS® at maximum 600mm centres

[16mm **FireShield** can be substituted with 16mm **MultiShield**]

[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 rated from both sides Fire Report FAR3210	92	0.55	4.30 No noggings	4.58 No noggings	136	51 (43)	60 (**51**)	60 (**51**)	60 (**52**)	Acoustic Report Day Design 3094-12

KSW320

WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield**

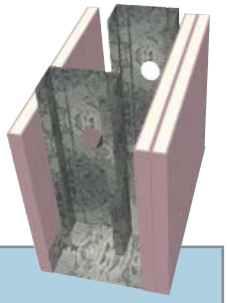
FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

["2 x" indicates 2 layers of insulation required]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	2 x 50mm EarthWool 11 kg/m³	
– /60/60 30/30/30 rated from both sides Fire Report FAR3210 FAR3230	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	118	38 (30)	47 (36)	46 (36)	50	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	118	38 (30)	47 (36)	46 (36)	50	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	176	39 (30)	48 (39)	48 (39)	–	

KSW321



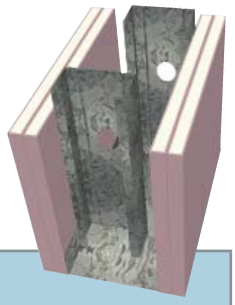
WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /90/90 30/30/30 rated from both sides Fire Report FAR3210 FAR3230	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	131	43 (34)	51 (43)	51 (43)	52 (44)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	131	43 (34)	51 (43)	51 (43)	52 (44)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	189	45 (35)	52 (46)	52 (46)	53 (47)	

KSW322



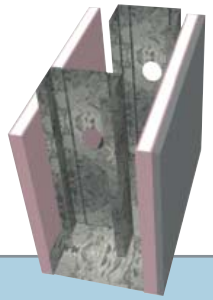
WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 90/90/90 rated from both sides Fire Report FAR3210 FAR3230	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	144	47 (40)	58 (**50**)	58 (49)	59 (**50**)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	144	47 (40)	58 (**50**)	58 (49)	59 (**50**)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	202	49 (41)	58 (**52**)	58 (**52**)	59 (**53**)	

KSW520



WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement

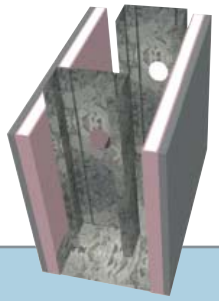
FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /60/60 30/30/30 rated from both sides Fire Report FAR3210 FAR3230	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	124	43 (34)	51 (43)	51 (43)	52 (44)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	124	43 (34)	51 (43)	51 (43)	52 (44)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	182	45 (35)	53 (46)	53 (46)	54 (47)	

KSW522



WALL LINING: [Side 1] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement

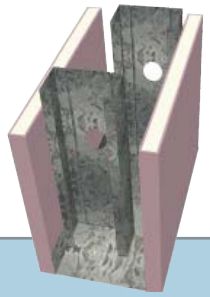
FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /90/90 30/30/30 rated from both sides Fire Report FAR2827 FAR3230	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	130	47 (37)	56 (48)	56 (48)	57 (49)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	130	47 (37)	56 (48)	56 (48)	57 (49)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	188	49 (39)	57 (**51**)	56 (**51**)	57 (**52**)	

KSW325



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield**

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

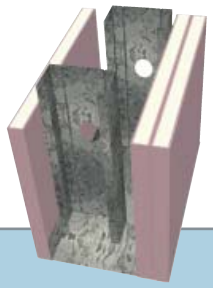
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

["1 x" indicates one layer of insulation]

["2 x" indicates two layers of insulation]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)						
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	1 x 50mm EarthWool 11 kg/m³	1 x 75mm EarthWool 11 kg/m³	2 x 50mm EarthWool 11 kg/m³	1 x 65mm Polyester TSB3/ASB3	1 x 75mm Polyester 14 kg/m³	
– /90/90 **60/60/60** rated from both sides using EarthWool insulation **– /60/60** **60/60/60** rated from both sides using no insulation or polyester insulation Fire Report FAR3210 FAR3230	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.70 3.35 3.95	124	40 (32)	48 (41)	50 (42)	52 (44)	48 (41)	49 (42)	Acoustic Report Day Design 3094-33 5008-8.1 Note: Impact Sound Resistant
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.92 3.45 4.17	124	40 (32)	48 (41)	–	52 (44)	48 (41)	49 (42)	
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.06 3.59 4.26	182	42 (33)	49 (44)	–	–	49 (43)	50 (44)	

KSW326



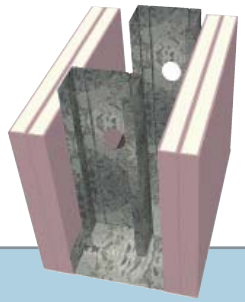
WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**

FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]

[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 **60/60/60** rated from both sides Fire Report FAR3210 FAR3230	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	140	45 (36)	52 (46)	52 (46)	53 (47)	Acoustic Report Day Design 3094-33 Note: Impact Sound Resistant
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	140	45 (36)	52 (46)	52 (46)	53 (47)	
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	198	47 (38)	53 (48)	53 (48)	54 (49)	

KSW327



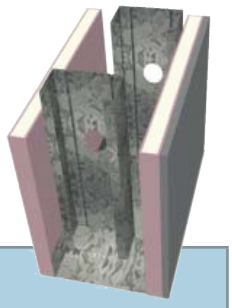
WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**

FRAME: Staggered steel studs at maximum 600mm [300mm staggered]

[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 **120/120/120** rated from both sides Fire Report FAR3210 FAR3230	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.65 3.27 3.93	156	49 (42)	58 (**52**)	58 (**52**)	59 (**53**)	Acoustic Report Day Design 3094-33 Note: Impact Sound Resistant
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.84 3.38 4.08	156	49 (42)	58 (**52**)	58 (**52**)	59 (**53**)	
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.03 3.53 4.19	214	51 (44)	59 (**53**)	59 (**53**)	60 (**54**)	

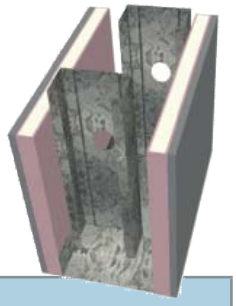
KSW524



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Order of wall linings can be reversed]

FRL – /90/90 60/60/60 rated from both sides Fire Report FAR2827 FAR3230	**Stud Size (mm)**		**Max Height UDL 0.25 kPa (m)**		**Width (mm)**	**Acoustics Rw (Rw + Ctr)**				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.70 3.35 3.95	130	44 (35)	52 (45)	52 (45)	53 (46)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.92 3.45 4.17	130	44 (35)	52 (45)	52 (45)	53 (46)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.06 3.59 4.26	188	46 (37)	53 (48)	53 (48)	54 (49)	

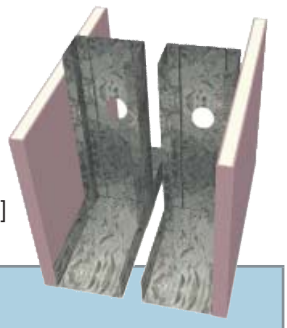
KSW526



WALL LINING: [Side 1] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Staggered steel studs at maximum 600mm centres [300mm staggered]
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Order of wall linings can be reversed]

FRL – /120/120 60/60/60 rated from both sides Fire Report FAR3210 FAR3230	**Stud Size (mm)**		**Max Height UDL 0.25 kPa (m)**		**Width (mm)**	**Acoustics Rw (Rw + Ctr)**				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
	64mm stud in 92mm track	0.5 0.75 1.15	2.375 2.83 3.51	2.70 3.35 3.95	136	48 (41)	59 (**51**)	59 (**51**)	60 (**52**)	Acoustic Report Day Design 3094-33
	76mm stud in 92mm track	0.55 0.75 1.15	2.61 3.00 3.60	2.92 3.45 4.17	136	48 (41)	59 (**51**)	59 (**51**)	60 (**52**)	Note: Impact Sound Resistant
	92mm stud in 150mm track	0.55 0.75 1.15	2.74 3.19 3.75	3.06 3.59 4.26	194	50 (42)	59 (**53**)	59 (**53**)	60 (**54**)	

KSW330



WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield**

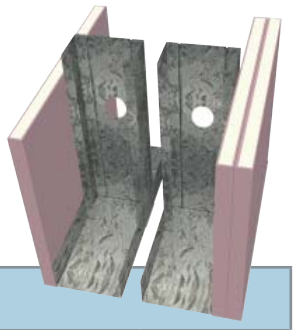
FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

[Install insulation in one frame only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /60/60 30/30/30 rated from both sides Fire Report FAR3210 FAR3230	64 148mm cavity	0.5	2.72	2.93	174	42 (35)	50 (38)	48 (38)	50 (39)	Acoustic Report Day Design 3094-33 Note: Impact Sound Resistant – Discontinuous Construction
		0.75	3.25	3.53						
		1.15	3.58	3.93						
	64 200mm cavity	0.5	2.72	2.93	226	43 (36)	51 (41)	49 (40)	50 (41)	
		0.75	3.25	3.53						
		1.15	3.58	3.93						

KSW331



WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**

FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

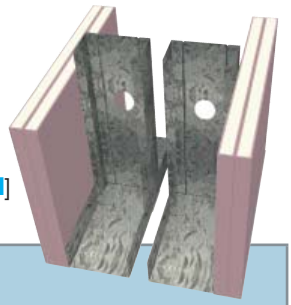
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

["1 x" indicates insulation required in one frame only]

["2 x" indicates insulation required in both frames]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)						
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	1 x 50mm EarthWool 11 kg/m³	1 x 65mm Polyester TSB3/ASB3	1 x 75mm EarthWool 11 kg/m³	2 x 75mm EarthWool 11 kg/m³	2 x 100mm Polyester TSB6/ASB6	
– /90/90 30/30/30 rated from both sides Fire Report FAR3210 FAR3230	64 148mm cavity	0.5	2.72	2.93	187	46 (39)	56 (45)	55 (45)	57 (47)	60 (**50**)	–	Acoustic Report Day Design 3094-39 4738-L15 Note: Impact Sound Resistant – Discontinuous Construction
		0.75	3.25	3.53								
		1.15	3.58	3.93								
	64 200mm cavity	0.5	2.72	2.93	239	47 (39)	57 (46)	55 (46)	58 (48)	61 (**50**)	59 (**51**)	
		0.75	3.25	3.53								
		1.15	3.58	3.93								

KSW332



WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**

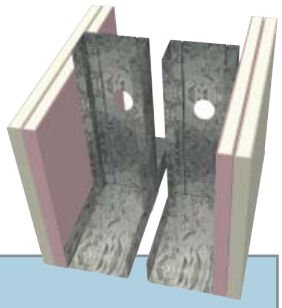
FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

[Install insulation in one frame only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	2 x 75mm EarthWool 11 kg/m³	
– /120/120 90/90/90 rated from both sides Fire Report FAR3210 FAR3230	64 148mm cavity	0.5	2.72	2.93	200	53 (45)	62 (**50**)	60 (**50**)	60 (**53**)	Acoustic Report Day Design 3094-33 4738-L12 Note: Impact Sound Resistant – Discontinuous Construction
		0.75	3.25	3.53						
		1.15	3.58	3.93						
	64 200mm cavity	0.5	2.72	2.93	252	55 (46)	63 (**52**)	61 (**52**)	64 (**55**)	
		0.75	3.25	3.53						
		1.15	3.58	3.93						

KSW380



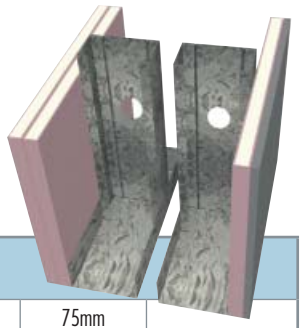
WALL LINING: [Side 1] 1 layer of 13mm **FireShield** plus 1 layer of 13mm **MastaShield**
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 13mm **MastaShield**

FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[13mm **MastaShield** can be substituted with 13mm **WaterShield**]
["1 x" indicates insulation required in one frame only]
["2 x" indicates insulation required in both frames]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)						
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	1 x 50mm EarthWool 11 kg/m³	2 x 50mm EarthWool 11 kg/m³	1 x 65mm Polyester TSB3/ASB3	2 x 65mm Polyester TSB3/ASB3	1 x 75mm EarthWool 11 kg/m³	
– /90/90 60/60/60 rated from both sides Fire Report FAR3210 FAR3230	64 148mm cavity	0.5	2.72	2.93	200	51 (42)	61 (48)	64 (**51**)	58 (48)	61 (**51**)	62 (**50**)	Acoustic Report Day Design 3094-48 Note: Impact Sound Resistant – Discontinuous Construction
		0.75	3.25	3.53								
		1.15	3.58	3.93								
	64 200mm cavity	0.5	2.72	2.93	252	52 (44)	62 (**50**)	65 (**53**)	59 (**50**)	62 (**53**)	63 (**52**)	
		0.75	3.25	3.53								
		1.15	3.58	3.93								

KSW531



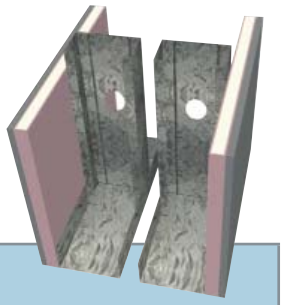
WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement

FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Install insulation in one frame only]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /90/90 30/30/30 rated from both sides Fire Report FAR3210 FAR3230	64 148mm cavity	0.5	2.72	2.93	193	52 (44)	63 (**50**)	60 (49)	61 (**50**)	Acoustic Report Day Design 3094-33 Note: Impact Sound Resistant – Discontinuous Construction
		0.75	3.25	3.53						
		1.15	3.58	3.93						
	64 200mm cavity	0.5	2.72	2.93	245	54 (45)	64 (**52**)	61 (**52**)	62 (**53**)	
		0.75	3.25	3.53						
		1.15	3.58	3.93						

KSW532



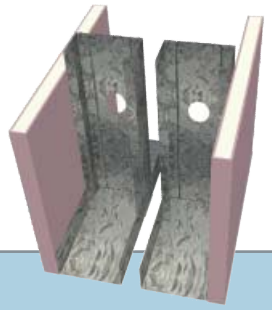
WALL LINING: [Side 1] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement

FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Install insulation in one frame only]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /90/90 30/30/30 rated from both sides Fire Report FAR3210 FAR3230	64 148mm cavity	0.5	2.72	2.93	186	52 (43)	62 (49)	60 (49)	61 (**50**)	Acoustic Report Day Design 3094-33 Note: Impact Sound Resistant – Discontinuous Construction
		0.75	3.25	3.53						
		1.15	3.58	3.93						
	64 200mm cavity	0.5	2.72	2.93	238	54 (45)	63 (**52**)	61 (**51**)	62 (**52**)	Use R1.5 EarthWool in both frames to achieve 62 (**50**)
		0.75	3.25	3.53						
		1.15	3.58	3.93						

KSW335



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield**

FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

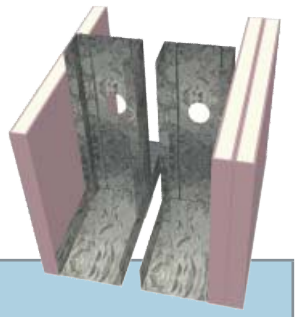
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

["1 x" indicates insulation required in one frame only]

["2 x" indicates insulation required in both frames]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)					
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	1 x 50mm EarthWool 11 kg/m³	1 x 65mm Polyester TSB3/ASB3	2 x 75mm EarthWool 11 kg/m³	2 x 110mm Glasswool 11 kg/m³	
– /90/90 60/60/60 rated from both sides using EarthWool insulation. **– /60/60 60/60/60** rated from both sides using no insulation or polyester insulation. Fire Report FAR3210 FAR3230	64 148mm cavity	0.5 0.75 1.15	2.75 3.28 3.59	3.02 3.56 3.95	180	44 (37)	53 (42)	50 (41)	–	–	Acoustic Report Day Design 3094-33 3094-37 CSIRO Test Note: Impact Sound Resistant – Discontinuous Construction
	64 172mm cavity	0.5 0.75 1.15	2.75 3.28 3.59	3.02 3.56 3.95	204	–	–	–	–	60 (**50**)	
	64 200mm cavity	0.5 0.75 1.15	2.75 3.28 3.59	3.02 3.56 3.95	232	45(38)	54(44)	51(43)	61(**51**)	–	

KSW336



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**

FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

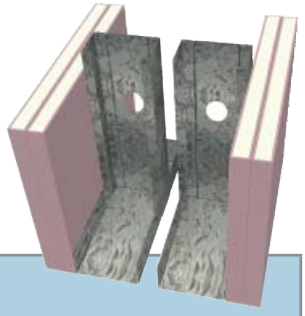
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

["1 x" indicates insulation required in one frame only]

["2 x" indicates insulation required in both frames]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)						
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	1 x 50mm EarthWool 11 kg/m³	2 x 50mm EarthWool 11 kg/m³	1 x 65mm Polyester TSB3/ASB3	2 x 65mm Polyester TSB3/ASB3	1 x 75mm Polyester 14 kg/m³	
– /120/120 60/60/60 rated from both sides Fire Report FAR3210 FAR3230	64 148mm cavity	0.5 0.75 1.15	2.75 3.28 3.59	3.02 3.56 3.95	196	50 (42)	59 (48)	62 (**51**)	56 (47)	59 (**50**)	57 (48)	Acoustic Report Day Design 3094-33 Note: Impact Sound Resistant – Discontinuous Construction
	64 200mm cavity	0.5 0.75 1.15	2.75 3.28 3.59	3.02 3.56 3.95	248	52 (44)	60 (**50**)	–	57 (49)	–	58 (**50**)	

KSW337



WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**

FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

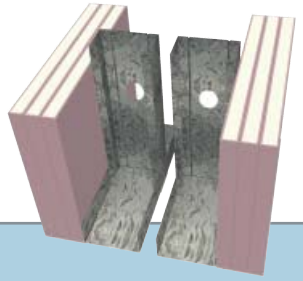
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

["1 x" indicates insulation required in one frame only]

["2 x" indicates insulation required in both frames]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)						
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	1 x 50mm EarthWool 11 kg/m³	2 x 50mm EarthWool 11 kg/m³	1 x 65mm Polyester TSB3/ASB3	2 x 65mm Polyester TSB3/ASB3	1 x 75mm Polyester 14 kg/m³	
– /120/120 120/120/120 rated from both sides Fire Report FAR3210 FAR3230	64 148mm cavity	0.5 0.75 1.15	2.75 3.28 3.59	3.02 3.56 3.95	212	56 (47)	65 (**53**)	65 (**55**)	62 (**53**)	63 (**54**)	63 (**54**)	Acoustic Report Day Design 3094-33 4738-L4 Note: Impact Sound Resistant – Discontinuous Construction
	64 200mm cavity	0.5 0.75 1.15	2.75 3.28 3.59	3.02 3.56 3.95	264	58 (49)	66 (**56**)	67 (**57**)	63 (**55**)	64 (**55**)	64 (**56**)	

KSW339



WALL LINING: [Side 1] 3 layers of 16mm **FireShield**
[Side 2] 3 layers of 16mm **FireShield**

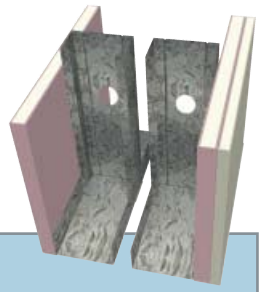
FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

[16mm **FireShield** can be substituted with 16mm **MultiShield**]

[Install insulation in one frame only]

FRL – /240/240 120/120/120 rated from both sides Fire Report FAR3210 FAR3230	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	Acoustic Report Day Design 3094-33 Note: Impact Sound Resistant – Discontinuous Construction
	64 148mm cavity	0.5	2.75	3.02	244	62 (**53**)	72 (**61**)	70 (**60**)	71 (**61**)	
		0.75	3.28	3.56						
		1.15	3.59	3.95						
	64 200mm cavity	0.5	2.75	3.02	296	64 (**55**)	73 (**63**)	71 (**62**)	72 (**63**)	
		0.75	3.28	3.56						
		1.15	3.59	3.95						

KSW381



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 10mm **MastaShield**

FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

[16mm **FireShield** can be substituted with 16mm **MultiShield**]

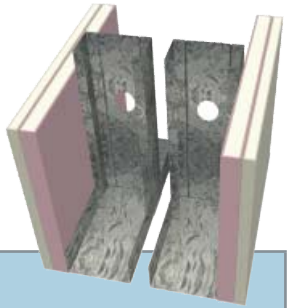
[10mm **MastaShield** can be substituted with 10mm **WaterShield**]

["1 x" indicates insulation required in one frame only]

["2 x" indicates insulation required in both frames]

FRL – /90/90 60/60/60 rated from both sides Fire Report FAR3210 FAR3230	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)						
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	1 x 50mm EarthWool 11 kg/m³	1 x 65mm Polyester TSB3/ASB3	1 x 75mm EarthWool 11 kg/m³	2 x 75mm EarthWool 11 kg/m³	2 x 100mm Polyester TSB6/ASB6	Acoustic Report Day Design 3094-39 Note: Impact Sound Resistant – Discontinuous Construction
	64 148mm cavity	0.5	2.75	3.02	190	46 (39)	56 (46)	55 (45)	57 (48)	60 (**50**)	59 (**50**)	
		0.75	3.28	3.56								
		1.15	3.59	3.95								
	64 200mm cavity	0.5	2.75	3.02	242	48 (40)	58 (48)	56 (47)	59 (**50**)	62 (**52**)	60 (**53**)	
		0.75	3.28	3.56								
		1.15	3.59	3.95								

KSW382



WALL LINING: [Side 1] 1 layer of 16mm **FireShield** plus 1 layer of 10mm **MastaShield**
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 10mm **MastaShield**

FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap

[16mm **FireShield** can be substituted with 16mm **MultiShield**]

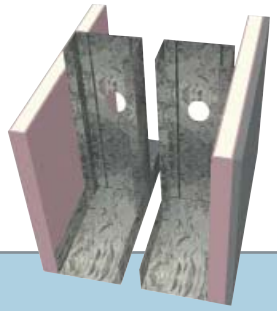
[10mm **MastaShield** can be substituted with 10mm **WaterShield**]

["1 x" indicates insulation required in one frame only]

["2 x" indicates insulation required in both frames]

FRL – /120/120 60/60/60 rated from both sides Fire Report FAR3210 FAR3230	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)							
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	1 x 50mm EarthWool 11 kg/m³	2 x 50mm EarthWool 11 kg/m³	1 x 65mm Polyester TSB3/ASB3	2 x 65mm Polyester TSB3/ASB3	1 x 75mm Polyester 14 kg/m³	Acoustic Report Day Design 3094-33 Note: Impact Sound Resistant – Discontinuous Construction
	64 148mm cavity	0.5	2.75	3.02	200	50 (43)	61 (49)	64 (**52**)	58 (48)	61 (**51**)	59 (49)	
		0.75	3.28	3.56								
		1.15	3.59	3.95								
	64 200mm cavity	0.5	2.75	3.02	252	52 (44)	62 (**51**)	–	59 (**51**)	–	60 (**52**)	
		0.75	3.28	3.56								
		1.15	3.59	3.95								

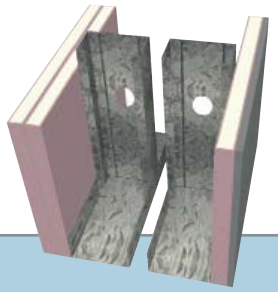
KSW534



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Install insulation in one frame only]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /90/90 60/60/60 rated from both sides Fire Report FAR2827 FAR3230	64 148mm cavity	0.5	2.75	3.02	186	50 (42)	59 (47)	56 (46)	57 (47)	Acoustic Report Day Design 3094-33 Note: Impact Sound Resistant – Discontinuous Construction
		0.75	3.28	3.56						
		1.15	3.59	3.95						
	64 200mm cavity	0.5	2.75	3.02	238	51 (43)	59 (49)	57 (48)	58 (49)	Use R1.5 EarthWool in both frames to achieve 59 (**50**)
		0.75	3.28	3.56						
		1.15	3.59	3.95						

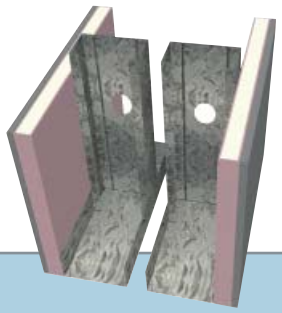
KSW535



WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Install insulation in one frame only]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 60/60/60 rated from both sides Fire Report FAR2827 FAR3230	64 148mm cavity	0.5	2.75	3.02	202	55 (47)	65 (**52**)	62 (**52**)	63 (**53**)	Acoustic Report Day Design 3094-33 Note: Impact Sound Resistant – Discontinuous Construction
		0.75	3.28	3.56						
		1.15	3.59	3.95						
	64 200mm cavity	0.5	2.75	3.02	254	57 (48)	66 (**55**)	63 (**54**)	64 (**55**)	
		0.75	3.28	3.56						
		1.15	3.59	3.95						

KSW536



WALL LINING: [Side 1] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Double steel studs at maximum 600mm centres with minimum 20mm air gap
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Install insulation in one frame only]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– /120/120 60/60/60 rated from both sides Fire Report FAR2827 FAR3230	64 148mm cavity	0.5	2.75	3.02	192	54 (46)	64 (**51**)	61 (**51**)	62 (**52**)	Acoustic Report Day Design 3094-33 Note: Impact Sound Resistant – Discontinuous Construction
		0.75	3.28	3.56						
		1.15	3.59	3.95						
	64 200mm cavity	0.5	2.75	3.02	244	56 (47)	65 (**54**)	62 (**53**)	63 (**54**)	
		0.75	3.28	3.56						
		1.15	3.59	3.95						

GENERAL REQUIREMENTS

	Non-Fire Rated	Fire Rated
Install control joints in plasterboard walls: › At 12m maximum intervals › With fibre cement at 9m maximum intervals for steel framing <0.8mm BMT › With fibre cement at 6m maximum intervals for steel framing >0.8mm BMT › With tiled fibre cement walls at 4.8m maximum intervals › At all control joints in the structure › At any change in the substrate material › At the floor line in stairwells. Cover the gap with a moulding fastened to one edge.	✔	✔
Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and: › Two coats of **MastaBase**/**MastaLongset**, or › Three coats of **MastaLite**. Never joint sheets with fire sealant. *[Refer to Section 4]*		✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.		✔
Pack any gaps between the top of the wall and the underside of the roof covering with mineral fibre or other suitable fire resisting material. This maintains the fire rating of the system. *[Refer to mineral fibre manufacturers specifications for minimum widths required]*		✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.		✔

For acceptable modifications or variations to fire rated systems. *[Refer to Section 2.3 Fire Resistance]*

FRAMING

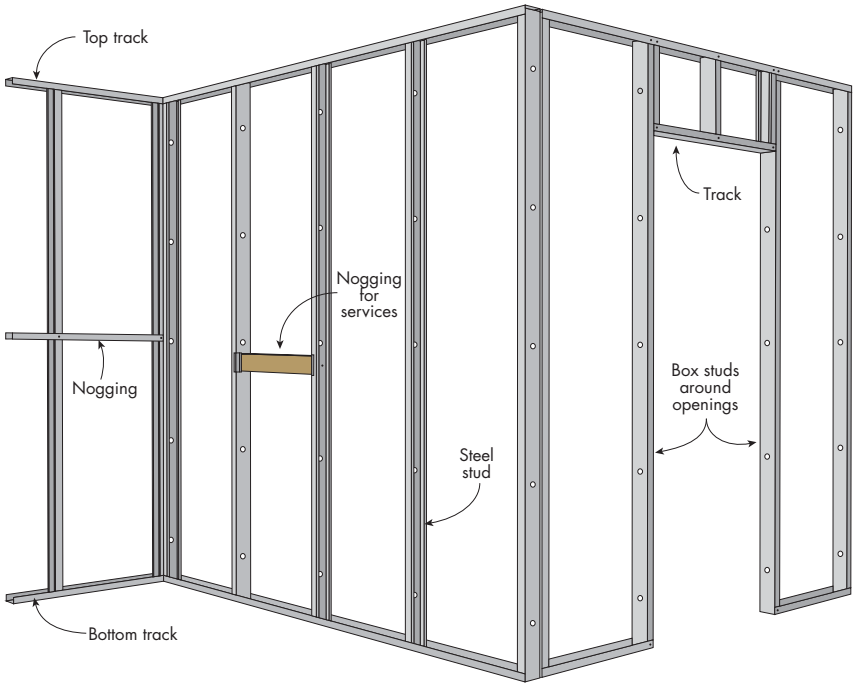


FIGURE 1 Steel Frame Layout

	Non-Fire Rated	Fire Rated
Fix the bottom track and top track or deflection head at 600mm maximum centres and 100mm maximum from each end.	✔	✔
Use a deflection head if: › Wall heights are 4800mm or greater › Ceiling, roof or floor movement is expected.	✔	✔
Space studs at 600mm maximum centres. Follow the table of nogging requirements and the stud clearances in the Construction Details.	✔	✔
Face studs in the same direction if possible, to allow easier fastening of plasterboard. However, installation of some services may require the studs to be positioned in opposite directions. *[Refer to Construction Details figures 90 and 91]*	✔	✔
Push studs down completely into bottom track.	✔	✔
For non-load bearing walls, do not fix studs to top track. *[Refer to Construction Details]*	✔	✔
For load bearing walls, fix studs to top track. *[Refer to Construction Details]*	✔	✔
Box studs around windows and door frames or follow frame manufacturer's requirements. Fix boxed studs to bottom and top tracks.	✔	✔
Use stud clips (Rondo No. 126 or 152) to hold the studs in place for staggered stud walls. *[Refer to Construction Details]*	✔	✔

- Noggings are permitted to assist the fixing of services. Copper Chromium Arsenate (CCA) treated timber must not be used.
- Plumbing and electrical services must not protrude beyond the face of the stud.

SINGLE AND DOUBLE STEEL STUD MAXIMUM WALL HEIGHT – NON-LOAD BEARING

Deflection Limit: Height/240 or 30mm		Fire Rated and Non-Fire Rated Walls (UDL 0.25 kPa)						Fire Rated Walls (UDL 0.35 kPa)			
		Single stud wall lined with plasterboard on both sides			Double stud wall, or single stud wall lined with plasterboard on one side only			Single stud wall lined with plasterboard on both sides		Double stud wall, or single stud wall lined with plasterboard on one side only	
Stud Depth (mm)	**Stud BMT (mm)**	**10mm**	**13mm**	**16mm**	**10mm**	**13mm**	**16mm**	**13mm**	**16mm**	**13mm**	**16mm**
Steel Studs at 600mm Maximum Centres											
51	0.5	2770	3200	3380	2320	2320	2320	2810	2870	2070	2070
	0.75	2910	3320	3520	2600	2600	2600	2920	3120	2320	2320
64	0.5	3330	3720	3910	2720	2720	2750	3290	3390	2340	2340
	0.75	3930	4220	4350	3130	3250	3280	3750	3840	2800	2900
	1.15	4170	4430	4520	3530	3580	3590	3940	3990	3170	3180
76	0.55	3700	4130	4300	3200	3240	3250	3650	3780	2760	2760
	0.75	4430	5020	5250	3580	3820	3870	4410	4410	3370	3410
	1.15	4650	5220	5420	4050	4050	4050	4600	4770	3620	3620
92	0.55	4540	4940	5180	3610	3610	3610	4390	4590	3060	3060
	0.75	4830	5500	5710	4130	4180	4200	4840	5010	3700	3700
	1.15	5110	5750	5920	4690	4690	4690	5060	5200	4200	4200
150	0.75	6550	6990	7190	5330	5370	5370	5710	6370	4830	4830
	1.15	7220	7540	7650	6810	6810	6810	5710	6890	5530	5530
Steel Studs at 450mm Maximum Centres											
51	0.5	3020	3420	3550	2520	2520	2520	3020	3150	2260	2260
	0.75	3200	3570	3710	2860	2860	2860	3150	3300	2560	2560
64	0.5	3580	3930	4130	2930	2930	3020	3490	3650	2560	2540
	0.75	4180	4430	4600	3410	3530	3560	3950	4070	3140	3170
	1.15	4460	4690	4820	3870	3930	3950	4180	4270	3500	3510
76	0.55	4020	4410	4580	3500	3580	3600	3900	4050	3160	3170
	0.75	4780	5330	5580	3910	4170	4220	4710	4850	3700	3740
	1.15	5070	5570	5790	4450	4450	4450	4930	5110	3980	3980
92	0.55	4850	5210	5450	4050	4050	4050	4640	4840	3540	3530
	0.75	5270	5890	6120	4520	4610	4630	5200	5390	4090	4100
	1.15	5620	6190	6390	5150	5150	5150	5470	5634	4610	4610
150	0.75	7140	7520	7620	6510	6510	6510	6680	6840	5160	5150
	1.15	7750	8040	8130	7400	7400	7400	7310	7400	6610	6610
Steel Studs at 400mm Maximum Centres											
51	0.5	3130	3510	3620	2630	2630	2630	3100	3280	2350	2350
	0.75	3320	3680	3750	2970	2970	2970	3250	3380	2660	2660
64	0.5	3690	4020	4220	3070	3070	3140	3570	3740	2660	2640
	0.75	4280	4530	4710	3540	3660	3700	4030	4170	3260	3290
	1.15	4590	4810	4950	4020	4090	4100	4280	4390	3640	3650
76	0.55	4160	4530	4700	3640	3740	3760	4010	4160	3300	3310
	0.75	4930	5450	5710	4070	4320	4380	4830	5050	3840	3890
	1.15	5240	5720	5950	4620	4620	4620	5070	5260	4140	4140
92	0.55	4990	5330	5560	4210	4210	4210	4740	4950	3750	3750
	0.75	5460	6050	6280	4700	4800	4820	5350	5540	4260	4280
	1.15	5840	6380	6580	5360	5360	5360	5650	5810	4800	4800
150	0.75	7340	7610	7750	6740	6740	6740	6890	7050	5350	5340
	1.15	7970	8190	8300	7650	7650	7650	7500	7590	6840	6830
Steel Studs at 300mm Maximum Centres											
51	0.5	3390	3730	3800	2890	2890	2890	3310	3380	2590	2590
	0.75	3620	3940	4020	3270	3270	3270	3490	3580	2930	2930
64	0.5	3960	4260	4450	3380	3380	3460	3790	3950	2890	2880
	0.75	4570	4780	4980	3900	4010	4050	4270	4420	3580	3610
	1.15	4930	5120	5270	4430	4490	4510	4570	4690	4010	4020
76	0.55	4510	4830	5010	4010	4130	4150	4290	4440	3660	3670
	0.75	5310	5770	6030	4480	4730	4790	5130	5350	4210	4260
	1.15	5690	6110	6330	5090	5090	5090	5430	5620	4560	4560
92	0.55	5340	5640	5860	4630	4640	4640	5030	5220	4150	4150
	0.75	5930	6450	6690	5180	5290	5310	5720	5920	4710	4720
	1.15	6390	6860	7070	5900	5920	5930	6090	6260	5280	5280
150	0.75	7840	8110	8230	7350	7350	7350	7380	7490	6540	6540
	1.15	8570	8740	8850	8290	8290	8290	7990	8070	7420	7410

MINIMUM NUMBER OF NOGGINGS REQUIRED IN STEEL STUD WALLS

	Single Stud Wall Lined With Plasterboard on Both Sides		Double Stud Wall, Or Single Stud Wall Lined With Plasterboard on One Side Only			
Wall Height (m)	0 – 4.4	4.4 – 8.8	0 – 3	3 – 6	6 – 8	8 +
Minimum Number of Noggings	0	1	1	2	3	4

- Deflection Limit is height/240 to a maximum of 30mm at 0.25 kPa or 0.35 kPa, in accordance with BCA Specification C1.8.
- Tabulated heights are not for axial loads but do include self weight and lateral pressures.
- Shelf loading is not permitted on these tabulated wall heights.
- Loadings: P ultimate = 0.375 kPa, P service = 0.25 kPa or P ultimate = 0.525 kPa, P service = 0.35 kPa.
- These walls are not for external applications.
- All loadings in accordance with AS1170:2002.
- Walls analysed in accordance with AS4600:1996.
- Noggings in accordance with table.
- BMT = Base Metal Thickness.
- Double stud walls and single stud walls lined with plasterboard on one side only require an additional nogging installed 100mm below the top track/deflection head track.

STAGGERED STEEL STUD MAXIMUM WALL HEIGHT – NON-LOAD BEARING

Deflection Limit: Height/240 or 30mm		Fire Rated and Non-Fire Rated Walls (UDL 0.25 kPa)		
		Staggered stud wall lined with plasterboard on both sides		
Stud Depth (mm)	**Stud BMT (mm)**	**10mm**	**13mm**	**16mm**
Steel Studs at 600mm Maximum Centres				
51	0.5 0.75	2320 2600	2320 2600	2320 2600
64	0.5 0.75 1.15	2375 2830 3510	2375 2830 3510	2375 2830 3510
76	0.55 0.75 1.15	2610 3000 3600	2610 3000 3600	2610 3000 3600
92	0.55 0.75 1.15	2740 3190 3750	2740 3190 3750	2740 3190 3750
150	0.75 1.15	3660 4150	3660 4150	3660 4150
Steel Studs at 450mm Maximum Centres				
51	0.5 0.75	2520 2860	2520 2860	2520 2860
64	0.5 0.75 1.15	2590 3190 3870	2650 3270 3930	2700 3350 3950
76	0.55 0.75 1.15	2800 3320 4000	2840 3380 4080	2920 3450 4170
92	0.55 0.75 1.15	2990 3480 4120	3030 3530 4190	3060 3590 4260
150	0.75 1.15	3970 4550	4000 4600	4040 4640
Steel Studs at 400mm Maximum Centres				
51	0.5 0.75	2630 2970	2630 2970	2630 2970
64	0.5 0.75 1.15	2690 3310 4020	2740 3390 4090	2800 3480 4100
76	0.55 0.75 1.15	2900 3440 4150	2950 3500 4230	3000 3570 4330
92	0.55 0.75 1.15	3100 3610 4270	3140 3660 4340	3180 3710 4420
150	0.75 1.15	4090 4710	4130 4760	4170 4800
Steel Studs at 300mm Maximum Centres				
51	0.5 0.75	2890 3270	2890 3270	2890 3270
64	0.5 0.75 1.15	2930 3610 4430	2990 3700 4490	3060 3790 4510
76	0.55 0.75 1.15	3180 3740 4560	3230 3810 4660	3280 3890 4760
92	0.55 0.75 1.15	3390 3910 4680	3430 3970 4760	3480 4040 4840
150	0.75 1.15	4420 5130	4460 5180	4500 5230

- Deflection Limit is Height/240 to a maximum of 30mm at 0.25kPa, in accordance with BCA Specification C1.8.
- Tabulated heights are not for axial loads but do include self weight and lateral pressures.
- Shelf loading is not permitted on these tabulated wall heights.
- Loadings: P ultimate = 0.375 kPa, P service = 0.25 kPa.
- These walls are not for external applications.
- All loadings in accordance with AS1170:2002.
- Walls analysed in accordance with AS4600:1996.
- No noggings are used in staggered stud walls.
- BMT = Base Metal Thickness.
- Where studs are shown in the above table spaced at 600mm centres, this means staggering the studs at every 300mm centres etc.

RONDO QUIET STUD® MAXIMUM WALL HEIGHT

Deflection Limit: Height/240 or 30mm		Fire Rated and Non-Fire Rated Walls (UDL 0.25 kPa)		
		Rondo Quiet Stud® wall lined with plasterboard on both sides		
Stud Depth (mm)	**Stud BMT (mm)**	**10mm**	**13mm**	**16mm**
Steel Studs at 600mm Maximum Centres				
92	0.55	3700	4130	4300
Steel Studs at 450mm Maximum Centres				
92	0.55	4020	4410	4580

Maximum Wall Height Tables apply to Rondo steel components. Alternative components may be used if their performance is equivalent or better and they comply with the relevant standard. All components must be installed in accordance with the manufacturer's literature.

- Deflection Limit is Height/240 to a maximum of 30mm at 0.25kPa, in accordance with BCA Specification C1.8.
- Rondo Quiet Stud® walls do not contain noggings.
- BMT = Base Metal Thickness.

PLASTERBOARD LAYOUT

	Non-Fire Rated	Fire Rated
Alternate from one side of the wall to the other when fixing the plasterboard sheets.	✔	✔
Vertical joints must be 200mm minimum from the edge of any opening such as windows and doorways to minimise cracking at the joints.	✔	✔
Horizontal Layout		
Stagger butt joints by 600mm minimum on adjoining sheets, between layers and on opposite sides of the wall.	✔	✔
First layer butt joints must be backed by a stud or back-blocked.	✔	
First layer butt joints must be backed by a stud.		✔
Stagger recessed edges by 300mm minimum between layers.	✔	✔
Stagger recessed edges by 300mm minimum on opposite sides of the wall or alternatively, back by a nogging.		✔
Vertical Layout		
Stagger butt joints by 600mm minimum on adjoining sheets, between layers and on opposite sides of the wall.	✔	✔
First layer butt joints must be backed by a nogging or back-blocked.	✔	
First layer butt joints must be backed by a nogging.		✔
Stagger recessed edges by 300mm minimum between layers and on opposite sides of the wall.	✔	✔

- Install plasterboard sheets horizontally when practical to minimise stud twisting and reduce the effect of glancing light.
- Minimise butt joints by using long sheets.

PLASTERBOARD FIXING

	Non-Fire Rated	Fire Rated
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✔	✔
Laminating screws can be used to fix butt joints in the second and third layer.	✔	✔
Screw and Adhesive Method		
Apply MastaGrip Stud Adhesive after the frame is clean, dry, and free from grease, dust and other contaminants.	✔	
Apply MastaGrip daubs 200mm minimum from screws and plasterboard edges.	✔	
Screw Only Method		
Use the 'Screw Only Method' in tiled or fire rated areas. Stud adhesive is not permitted.	✔	✔

The 'Screw and Adhesive Method' is recommended for non-fire rated applications.

MastaGrip will:

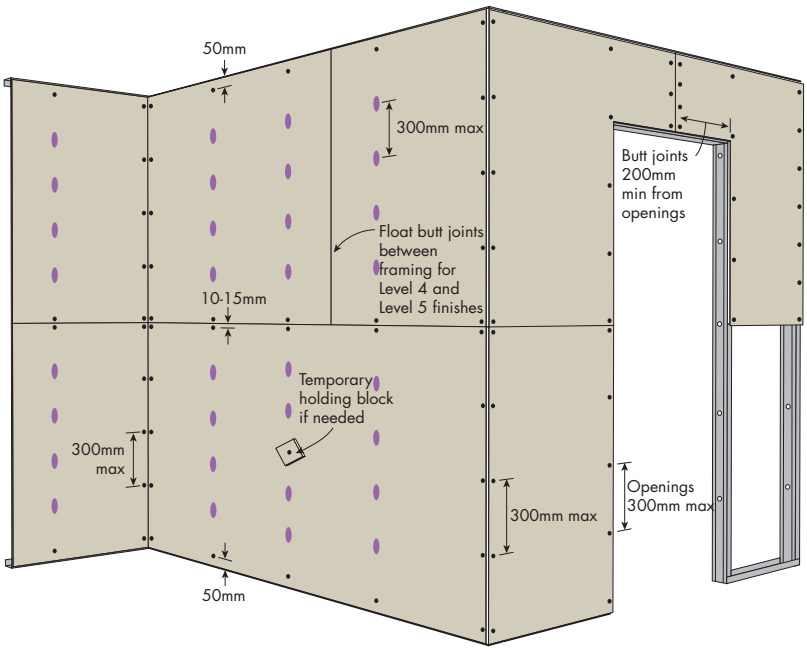
- Minimise screw popping
- Reduce the number of screw heads that may show in glancing light
- Assist in compensating for frame irregularities.

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm	25mm – 6g S screw	25mm – 6g S screw	–
10mm	25mm – 6g S screw	40mm – 6g S screw*	–
13mm	25mm – 6g S screw	40mm – 6g S screw*	60mm – 6g S screw*
16mm	30mm – 6g S screw	45mm – 6g S screw*	65mm – 6g S screw*

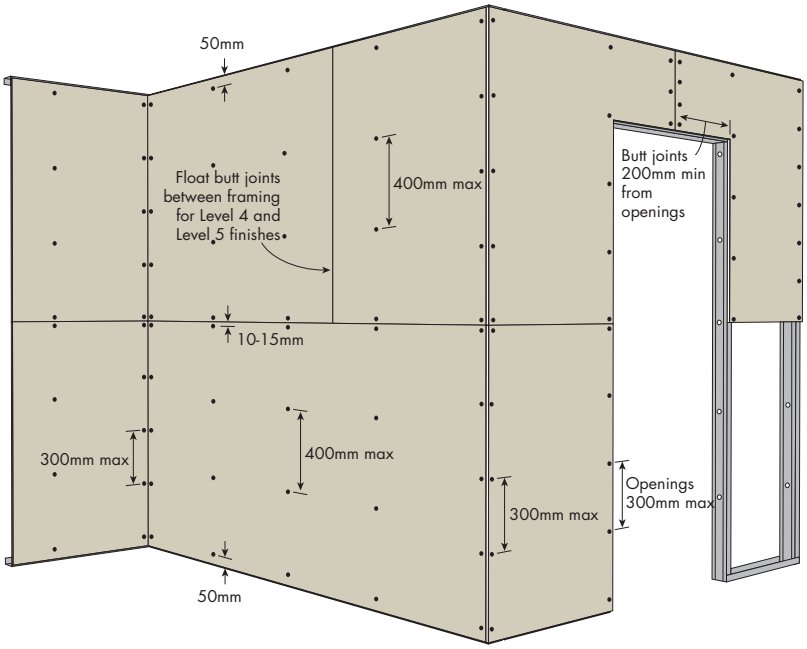
For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.

FIGURE 2 Non-Fire Rated 1 Layer – Horizontal
Screw and Adhesive Method



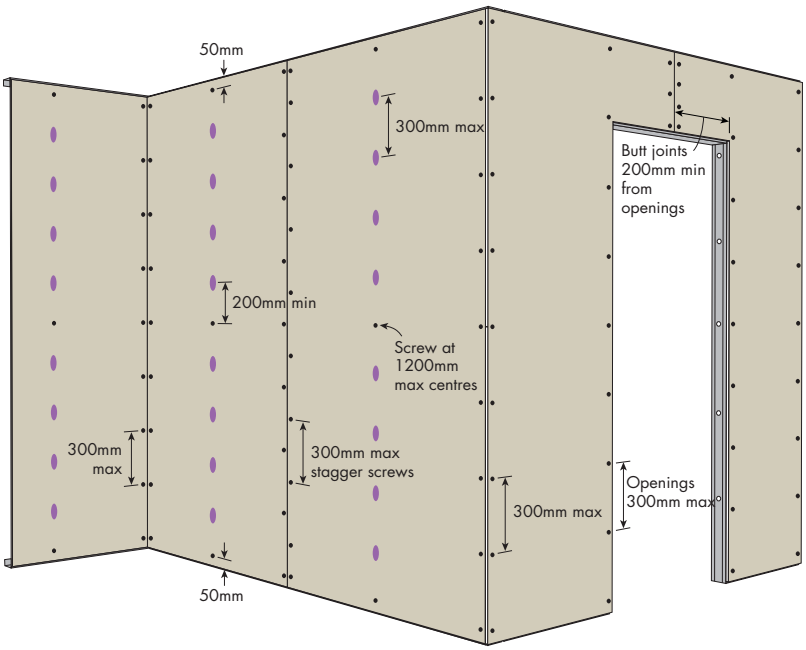
Fixing	Screw and Adhesive Method
Sheet Layout	Horizontal
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Adhesive daubs 25mm diameter and 15mm high, spaced at 300mm max centres and 200mm min from screw points and plasterboard edges.
Recessed Edges	Fix on each stud
Butt Joints	Float butt joints between studs and back-block for Level 4 and Level 5 Finishes. Butt joints permitted on a stud for Level 3 Finish. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall.
Internal and External Corners	Fix at 300mm max centres
Openings	Fix at 300mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity *[Refer to Construction Details]*
Plasterboard Width (mm)	Fastener and Adhesive pattern
900	S A A A S
1200	S A A A A S
1350	S A A A A A S
S = Screw A = Adhesive	

FIGURE 3 Non-Fire Rated 1 Layer – Horizontal
Screw Only Method



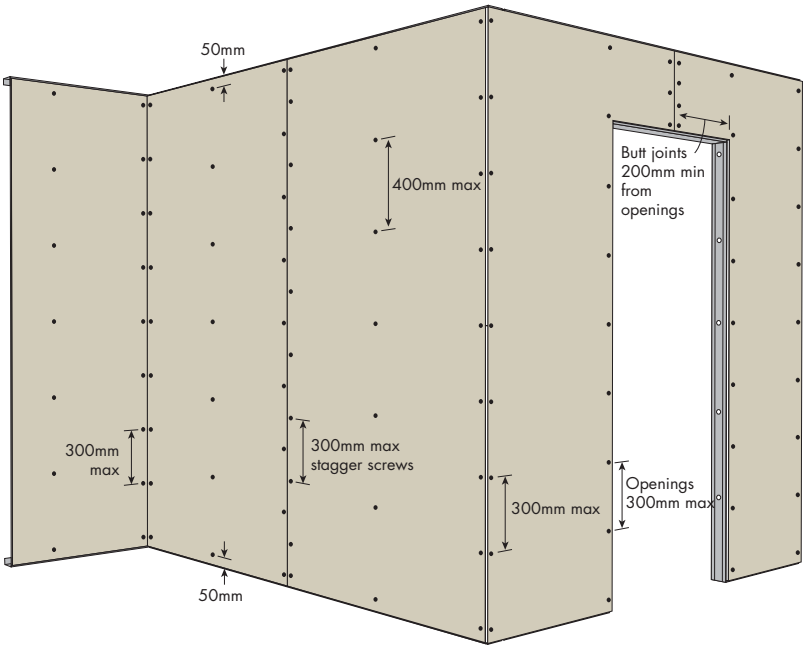
Fixing	Screw Only Method
Sheet Layout	Horizontal
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 400mm max centres
Recessed Edges	Fix on each stud
Butt Joints	Float butt joints between studs and back-block for Level 4 and Level 5 Finishes. Butt joints permitted on a stud for Level 3 Finish. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall.
Internal and External Corners	Fix at 300mm max centres
Openings	Fix at 300mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 4 Non-Fire Rated 1 Layer – Vertical
Screw and Adhesive Method



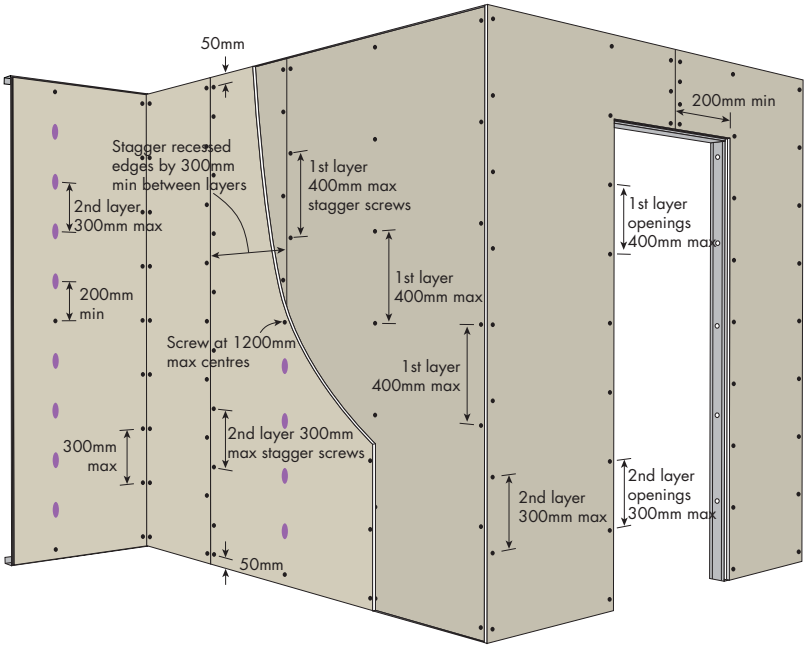
Fixing	Screw and Adhesive Method
Sheet Layout	Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Adhesive daubs 25mm diameter and 15mm high, spaced at 300mm max centres and 200mm min from screw points and plasterboard edges. Fix one screw at 1200mm max centres.
Recessed Edges	Fix at 300mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging or back-blocked.
Internal and External Corners	Fix at 300mm max centres
Openings	Fix at 300mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 5 Non-Fire Rated 1 Layer – Vertical
Screw Only Method



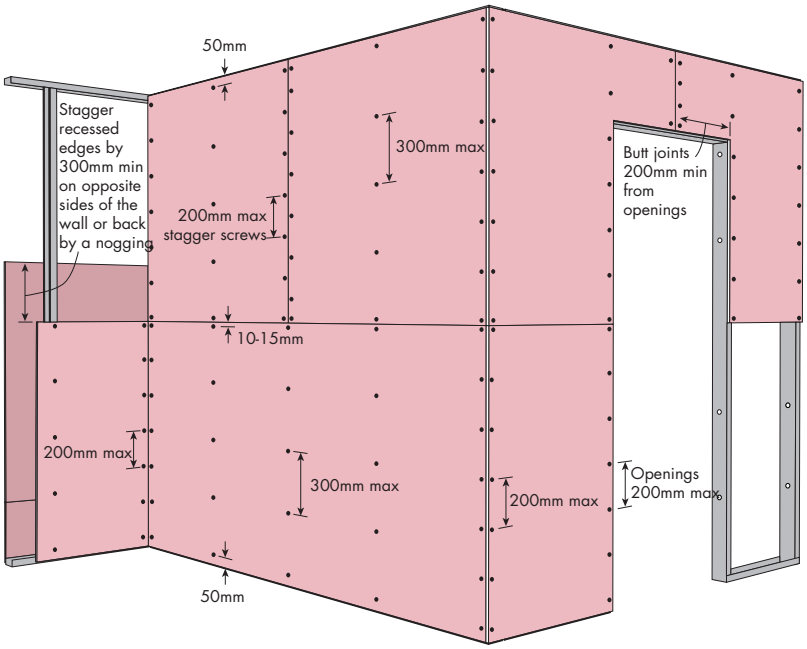
Fixing	Screw Only Method
Sheet Layout	Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 400mm max centres
Recessed Edges	Fix at 300mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging or back-blocked.
Internal and External Corners	Fix at 300mm max centres
Openings	Fix at 300mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 6 Non-Fire Rated 2 Layers – Vertical + Vertical
Screw Only Method + Screw and Adhesive Method



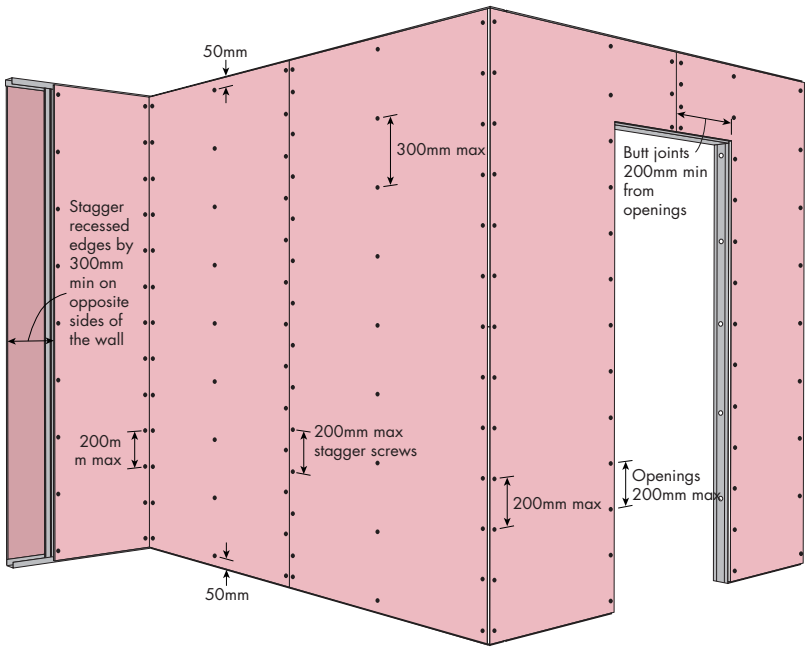
Fixing	1st layer: Screw Only Method 2nd layer: Screw and Adhesive Method
Sheet Layout	1st layer: Vertical 2nd layer: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 400mm max centres. 2nd layer: Adhesive daubs 25mm diameter and 15mm high, spaced at 300mm max centres and 200mm min from screw points and plasterboard edges. Fix one screw at 1200mm max centres.
Recessed Edges	1st layer: Fix at 400mm max centres and stagger screws. Stagger recessed edges by 300mm min between layers and on opposite sides of the wall. 2nd layer: Fix at 300mm max centres and stagger screws.
Butt Joints	1st layer: Fix at 300mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging or back-blocked. 2nd layer: Fix at 200mm max centres and stagger screws. Alternatively, laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 400mm max centres 2nd layer: Fix at 300mm max centres
Openings	1st layer: Fix at 400mm max centres 2nd layer: Fix at 300mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 7 Fire Rated 1 Layer – Horizontal
Screw Only Method



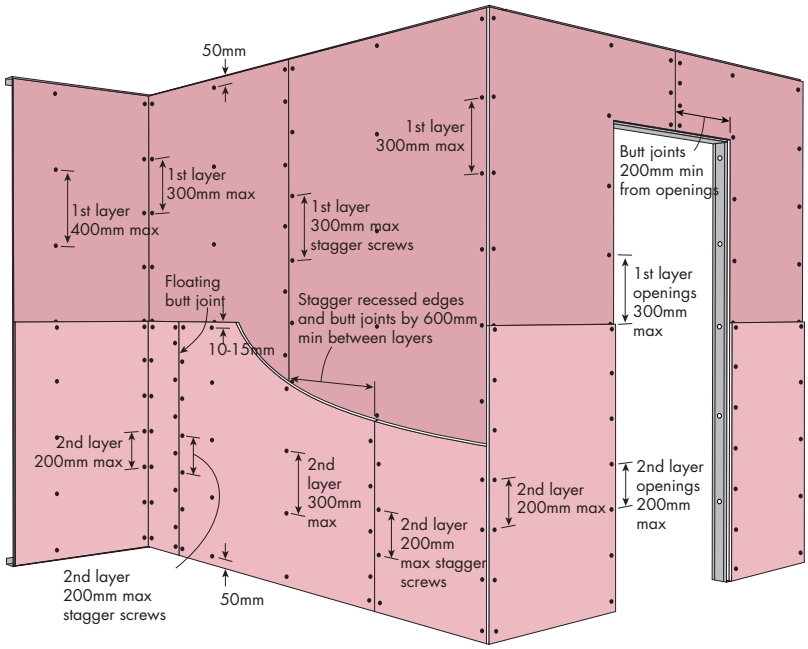
Fixing	Screw Only Method
Sheet Layout	Horizontal
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 300mm max centres
Recessed Edges	Fix on each stud. Stagger recessed edges by 300mm min on opposite sides of the wall or back by a nogging.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a stud.
Internal and External Corners	Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 8 Fire Rated 1 Layer – Vertical
Screw Only Method



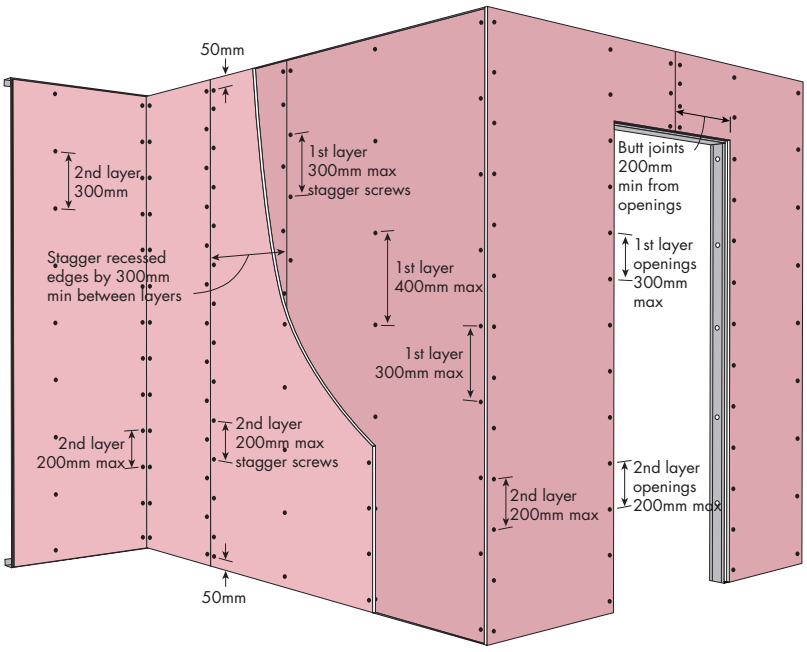
Fixing	Screw Only Method
Sheet Layout	Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 300mm max centres
Recessed Edges	Fix at 200mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a stud.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging.
Internal and External Corners	Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 9 Fire Rated 2 Layers – Vertical + Horizontal
Screw Only Method



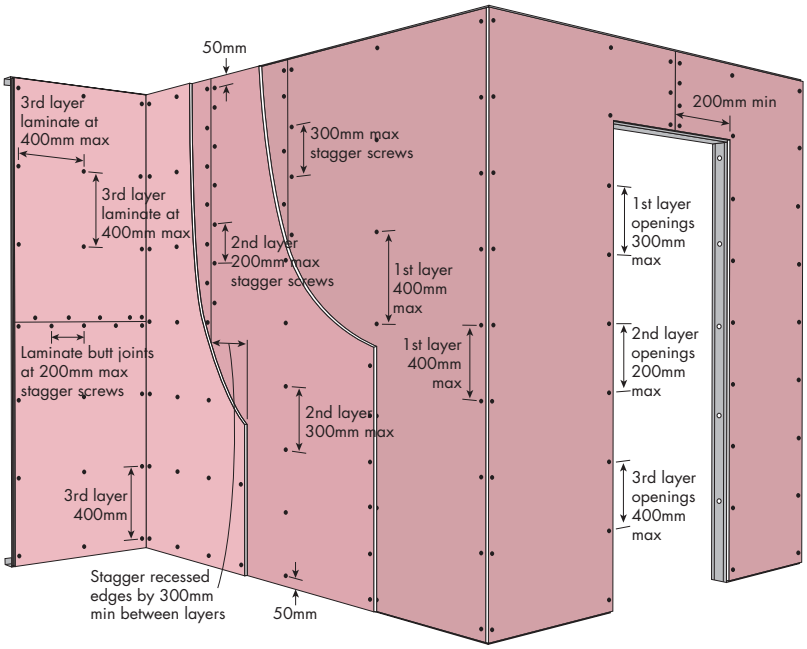
Fixing	Screw Only Method
Sheet Layout	1st layer: Vertical 2nd layer: Horizontal
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 400mm max centres 2nd layer: Fix at 300mm max centres
Recessed Edges	1st layer: Fix at 300mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a stud. 2nd layer: Fix on each stud.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joint must be backed by a nogging. 2nd layer: Fix at 200mm max centres and stagger screws. Alternatively, float butt joints and laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 10 Fire Rated 2 Layers – Vertical + Vertical
Screw Only Method



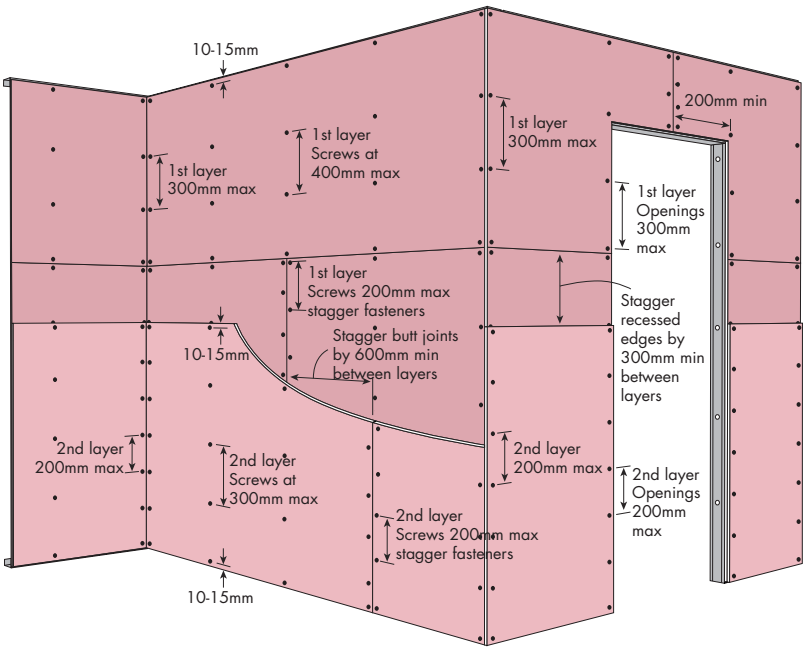
Fixing	Screw Only Method
Sheet Layout	1st layer: Vertical 2nd layer: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 400mm max centres 2nd layer: Fix at 300mm max centres
Recessed Edges	1st layer: Fix at 300mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a stud. 2nd layer: Fix at 200mm max centres and stagger screws. Recessed edges must be backed by a stud.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joint must be backed by a nogging. 2nd layer: Fix at 200mm max centres and stagger screws. Alternatively, laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 11 Fire Rated 3 Layers – All Vertical
Screw Only Method



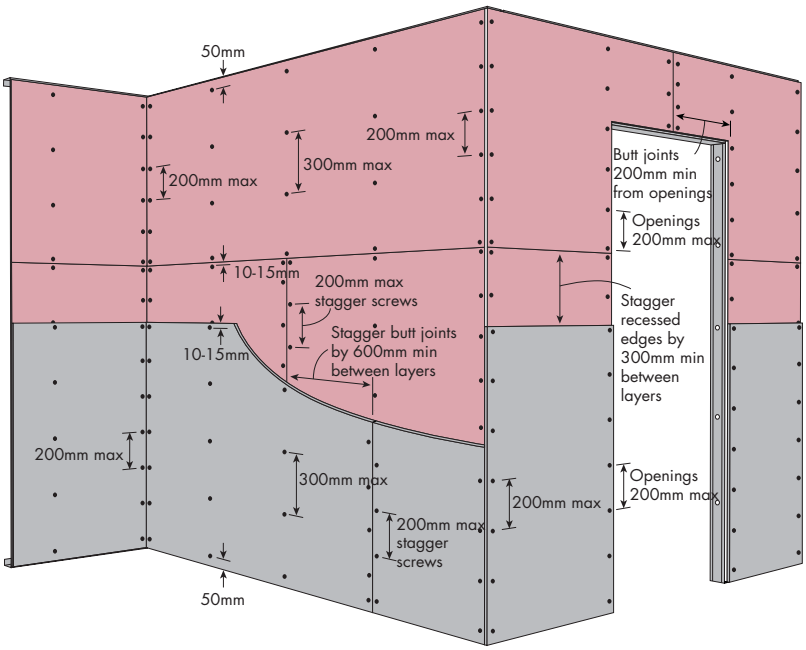
Fixing	Screw Only Method
Sheet Layout	1st, 2nd and 3rd layers: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 400mm max centres. 2nd layer: Fix at 300mm max centres. 3rd layer: Fix at 400mm max centres or alternatively, laminate to 2nd layer at 400x400mm max centres.
Recessed Edges	1st layer: Fix at 300mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a stud. 2nd layer: Fix at 200mm max centres and stagger screws. Recessed edges must be backed by a stud.3rd layer: Fix at 400mm max centres and stagger screws.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joint must be backed by a nogging. 2nd and 3rd layers: Fix at 200mm max centres and stagger screws. Alternatively, laminate to previous layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres 3rd layer: Fix at 400mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres 3rd layer: Fix at 400mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 11a Fire Rated 2 Layers – Horizontal + Horizontal
Screw Only Method



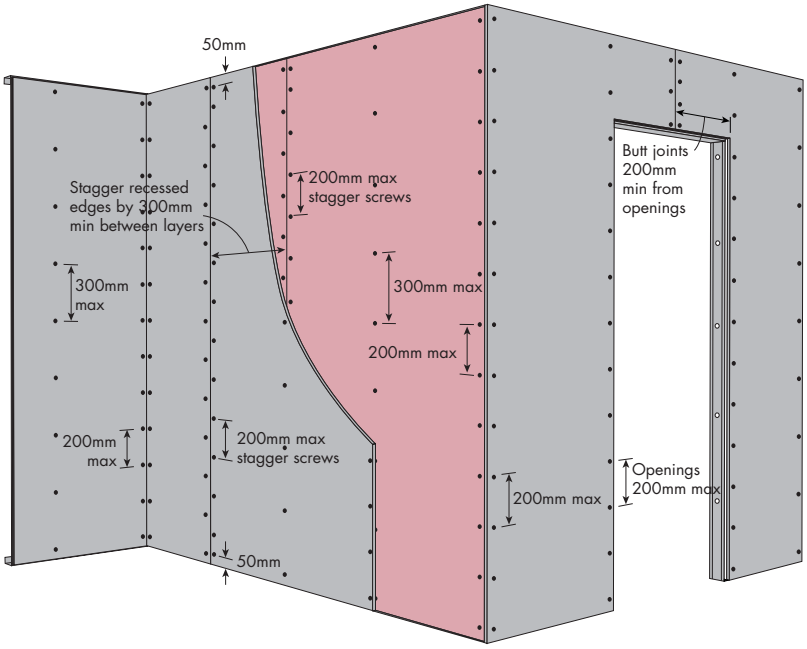
Fixing	Screw Only Method
Sheet Layout	1st layer: Horizontal 2nd layer: Horizontal
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 400mm max centres 2nd layer: Fix at 300mm max centres
Recessed Edges	1st layer: Fix on each stud. Stagger recessed edges by 300mm min between layers, and on opposite sides of the wall or back by a nogging. 2nd layer: Fix on each stud.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 2nd layer: Fix at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 12 Fire Rated 2 Layers – Horizontal + Horizontal
Screw Only Method



Fixing	Screw Only Method
Sheet Layout	1st layer: Horizontal (FireShield) 2nd layer: Horizontal (Fibre Cement)
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 300mm max centres 2nd layer: Fix at 300mm max centres
Recessed Edges	1st layer: Fix on each stud. Stagger recessed edges by 300mm min between layers, and on opposite sides of the wall or back by a nogging. 2nd layer: Fix on each stud.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by a stud. 2nd layer: Fix at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

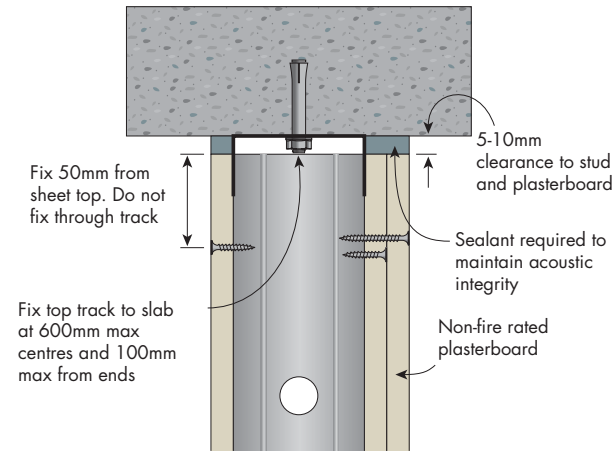
FIGURE 13 Fire Rated 2 Layers – Vertical + Vertical
Screw Only Method



Fixing	Screw Only Method
Sheet Layout	1st layer: Vertical (FireShield) 2nd layer: Vertical (Fibre Cement)
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 300mm max centres 2nd layer: Fix at 300mm max centres
Recessed Edges	1st layer: Fix at 200mm max centres and stagger screws. Stagger recessed edges by 300mm min between layers and on opposite sides of the wall. Recessed edges must be backed by a stud. 2nd layer: Fix at 200mm max centres and stagger screws. Recessed edges must be backed by a stud.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging. 2nd layer: Fix at 200mm max centres and stagger screws. Alternatively, laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

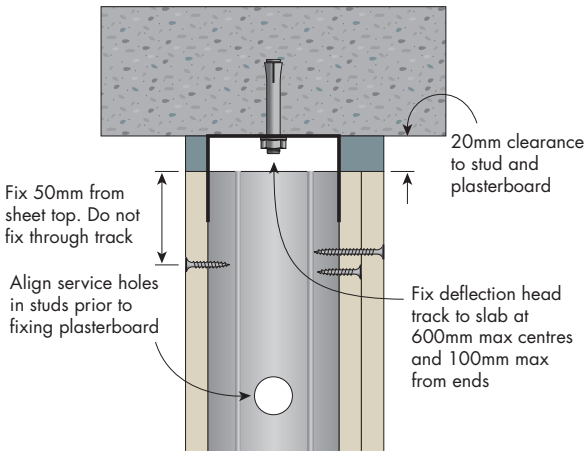
NON-FIRE RATED

WALL HEAD AND BASE FOR SINGLE AND DOUBLE STUD WALLS – ELEVATION



Do not rigidly fix cornice to walls where floating studs are used.

FIGURE 14 Wall Head to Slab
Non-load bearing wall



Do not rigidly fix cornice to walls where deflection heads are used.

FIGURE 15 Wall Deflection Head
Non-load bearing wall

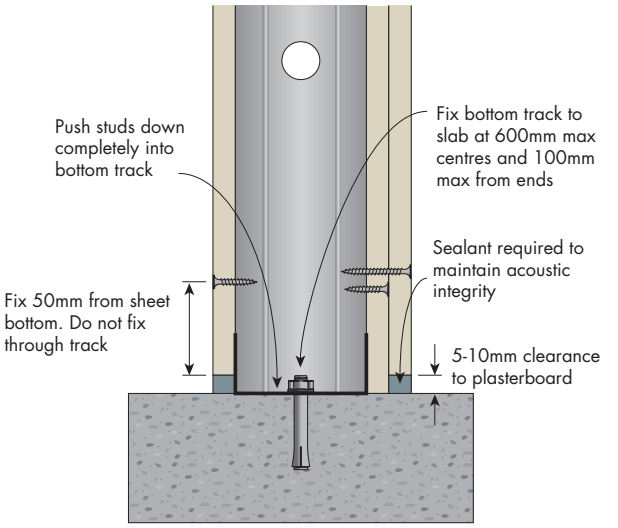
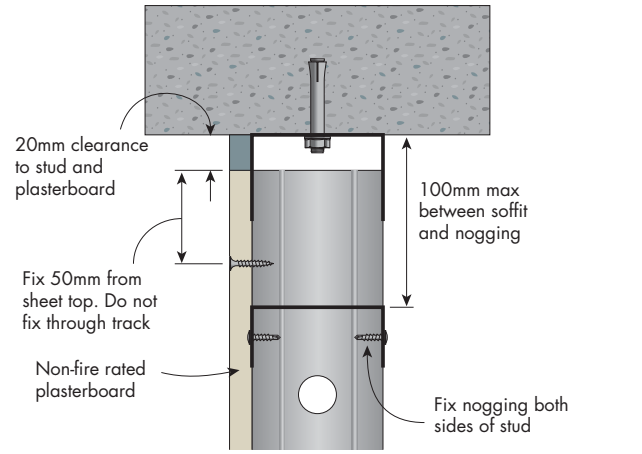


FIGURE 16 Wall Base to Slab
Non-load bearing wall



Do not rigidly fix cornice to walls where deflection heads are used.

FIGURE 17 Wall Lined One Side Only Deflection Head
Non-load bearing wall

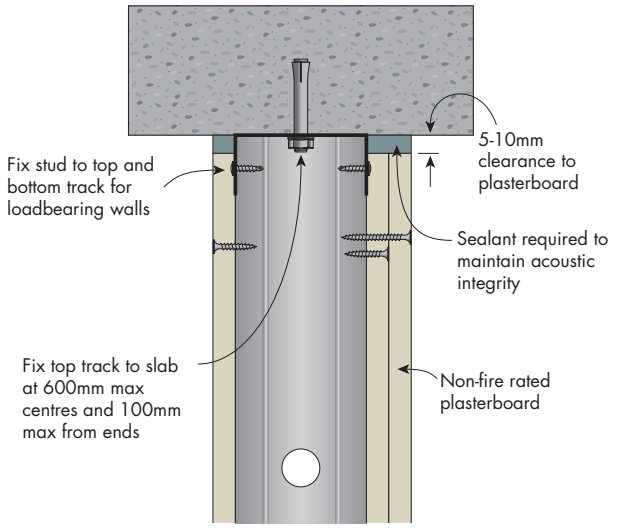


FIGURE 18 Wall Head to Slab
Load bearing wall

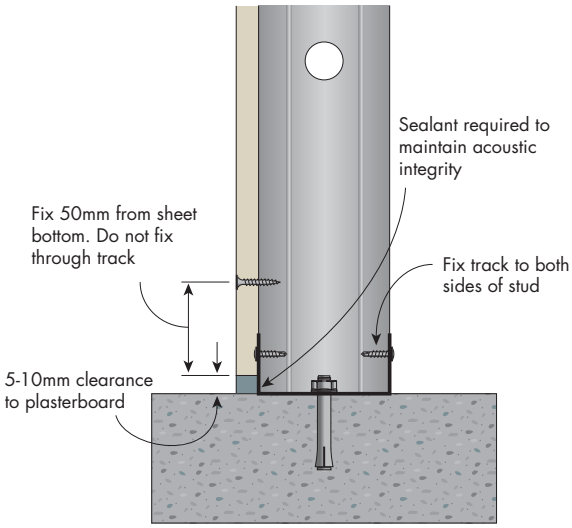
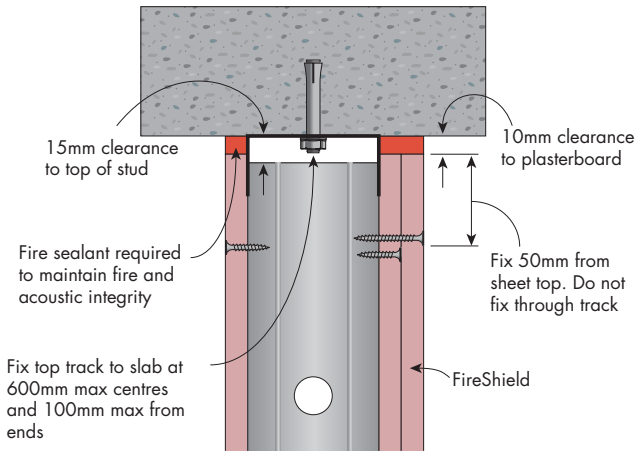


FIGURE 19 Wall Lined One Side Only
Non-load bearing wall

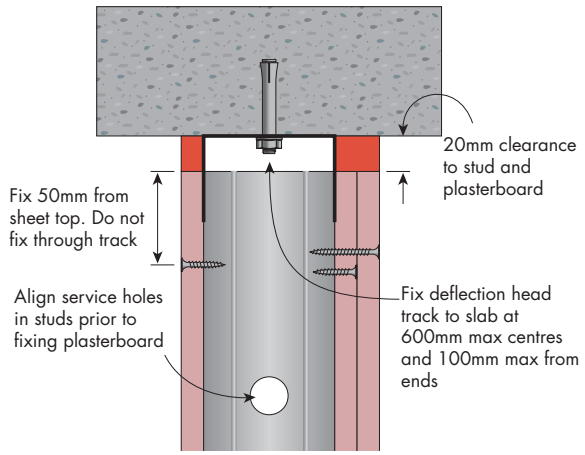
FIRE RATED

WALL HEAD AND BASE FOR SINGLE AND DOUBLE STUD WALLS – ELEVATION



Do not rigidly fix cornice to walls where floating studs are used.

FIGURE 20 Wall Head to Slab
Non-load bearing wall



Do not rigidly fix cornice to walls where deflection heads are used.

FIGURE 21 Wall Deflection Head
Non-load bearing wall

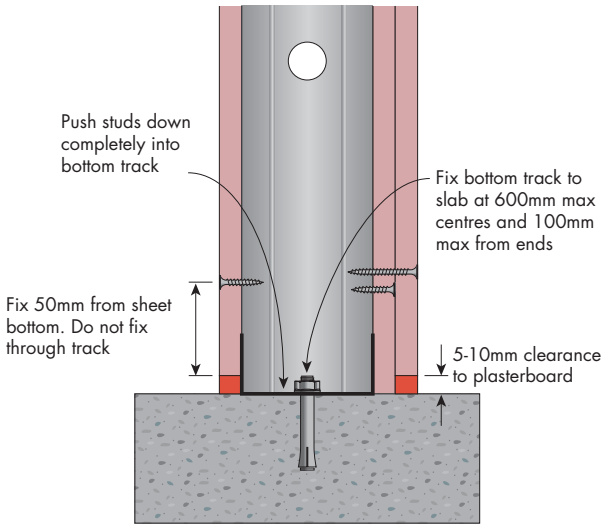
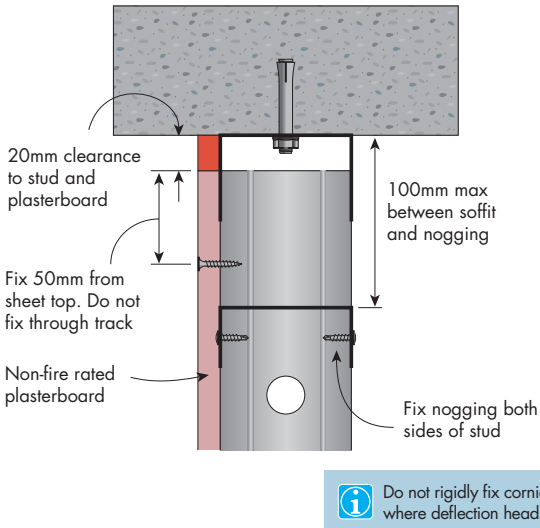


FIGURE 22 Wall Base to Slab
Non-load bearing wall



Do not rigidly fix cornice to walls where deflection heads are used.

FIGURE 23 Wall Lined One Side Only Deflection Head
Non-load bearing wall

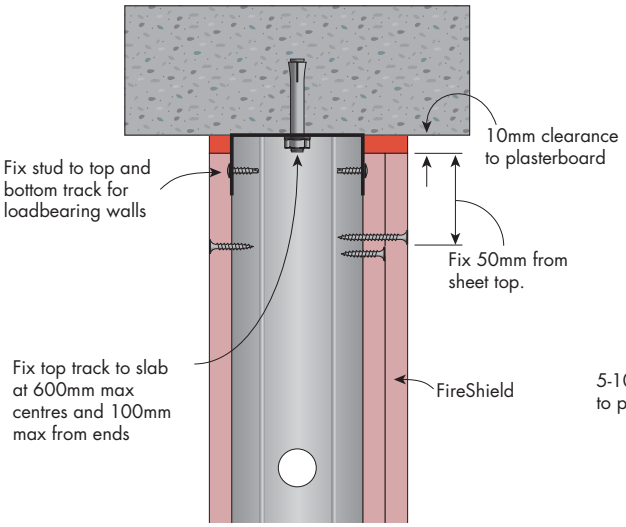


FIGURE 24 Wall Head to Slab
Load bearing wall

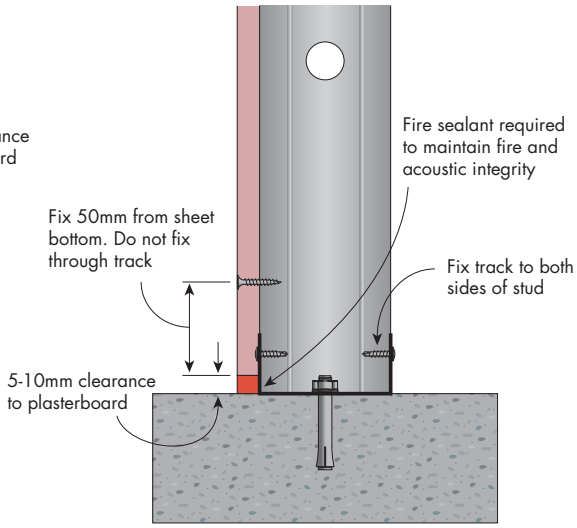


FIGURE 25 Wall Lined One Side Only
Non-load bearing wall

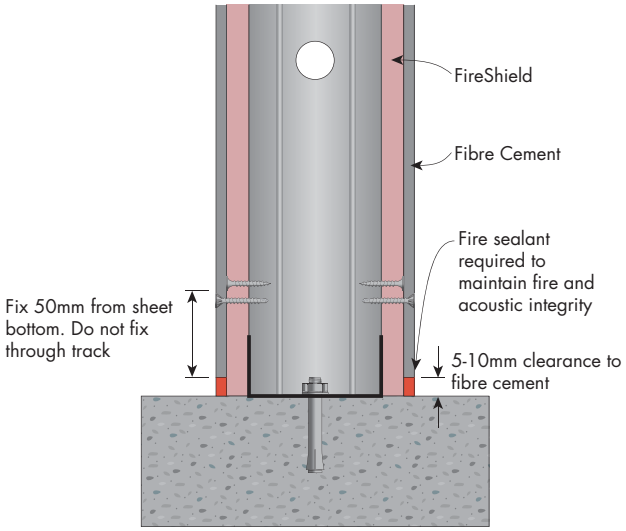


FIGURE 26 FireShield and Fibre Cement Wall Base
Non-load bearing wall

FIRE RATED AND NON-FIRE RATED
WALL HEAD AND BASE FOR STAGGERED STUD WALLS – ELEVATION

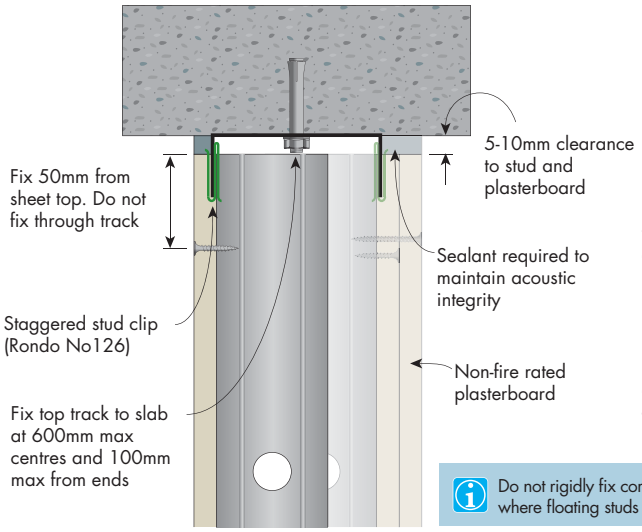


FIGURE 27 Staggered Stud Wall Head to Slab
Non-load bearing wall

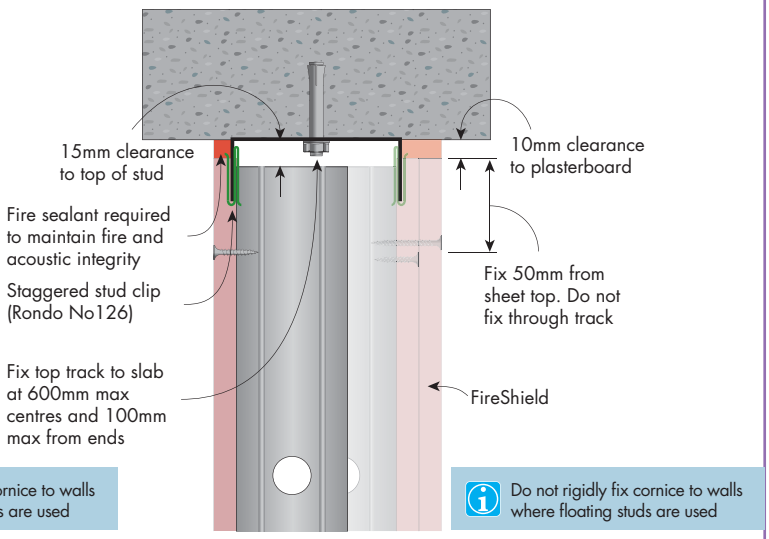


FIGURE 28 Staggered Stud Wall Head to Slab
Non-load bearing wall

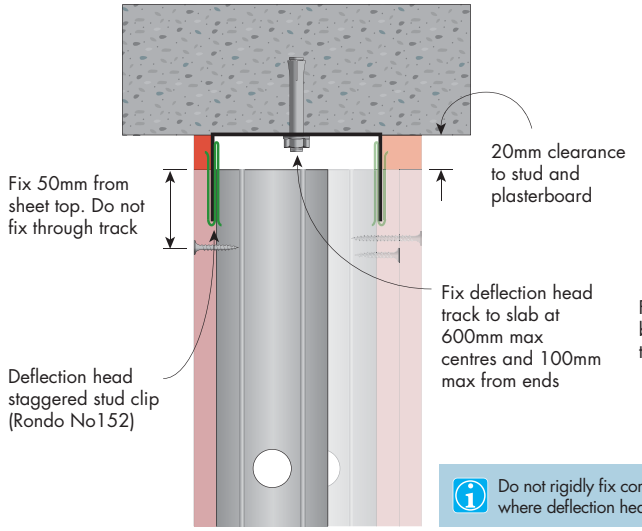


FIGURE 29 Staggered Stud Wall Deflection Head
Non-load bearing wall

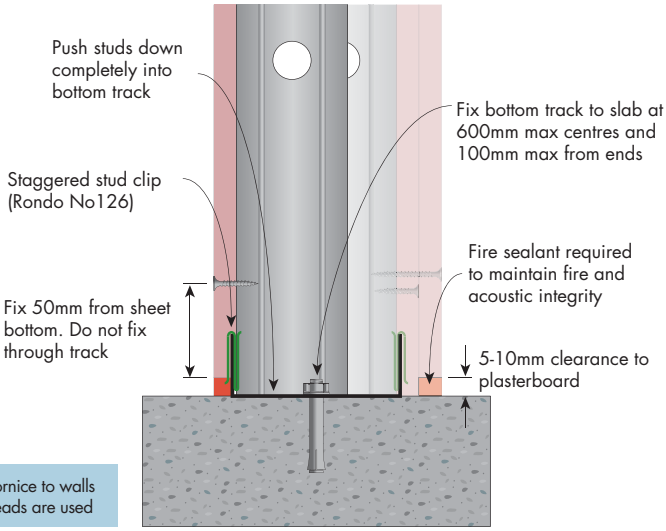


FIGURE 30 Staggered Stud Wall Base to Slab
Non-load bearing wall

NON-FIRE RATED

WALL HEAD FINISHING DETAIL FOR SINGLE, DOUBLE AND STAGGERED STUD WALLS – ELEVATION

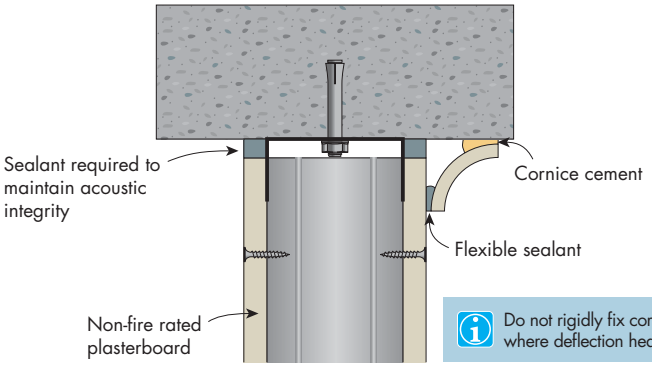


FIGURE 31 Wall Head to Slab Finishing Detail
With bare finish and cornice

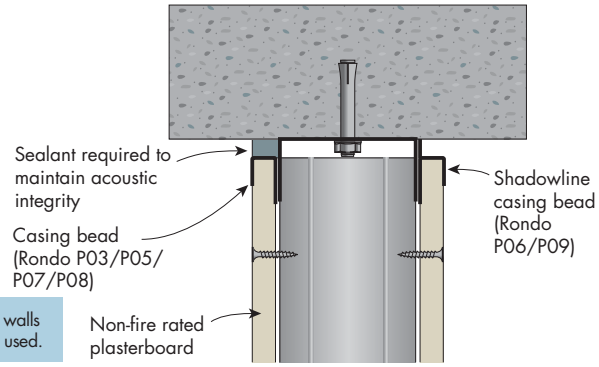


FIGURE 32 Wall Head to Slab Finishing Detail
With casing bead and shadowline

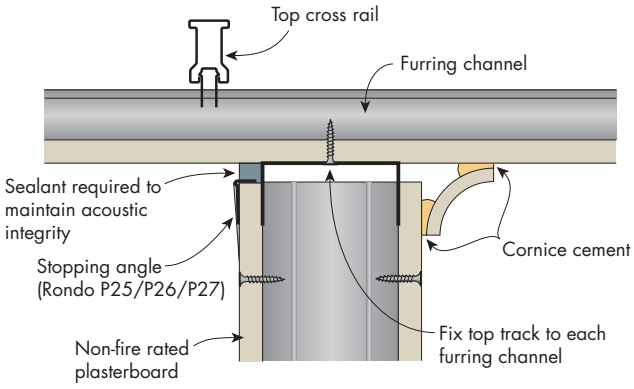


FIGURE 33 Wall Head to Suspended Ceiling Finishing Detail
With stopping angle and cornice

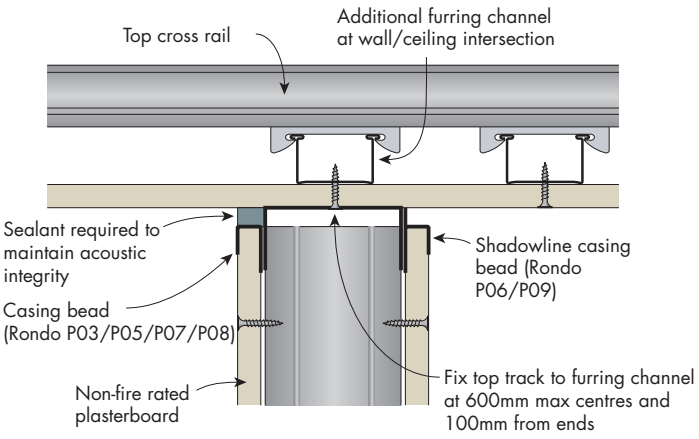


FIGURE 34 Wall Head to Suspended Ceiling Finishing Detail
With casing bead and shadowline

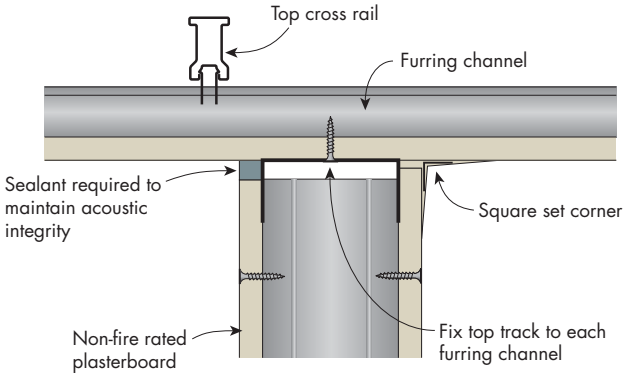


FIGURE 35 Wall Head to Suspended Ceiling Finishing Detail
With bare finish and square set

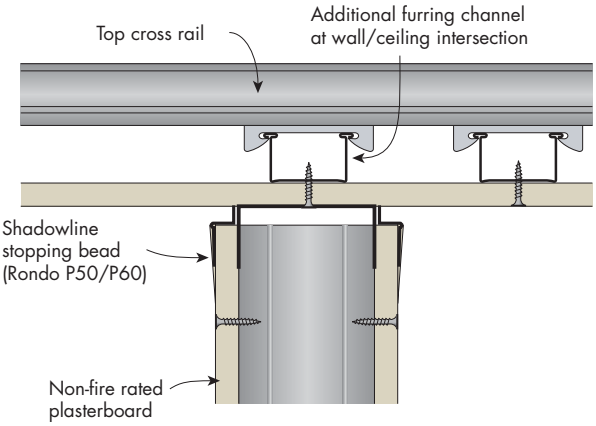


FIGURE 36 Wall Head to Suspended Ceiling Finishing Detail
With shadowline

Shadowline Stopping Beads should not be used adjacent to windows, doors and studs carrying loads greater than 0.25kPa.

WALL HEAD FINISHING DETAIL FOR SINGLE, DOUBLE AND STAGGERED STUD WALLS – ELEVATION

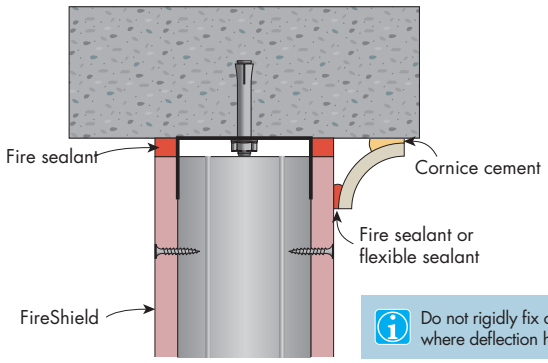


FIGURE 37 Wall Head to Slab Finishing Detail
With bare finish and cornice

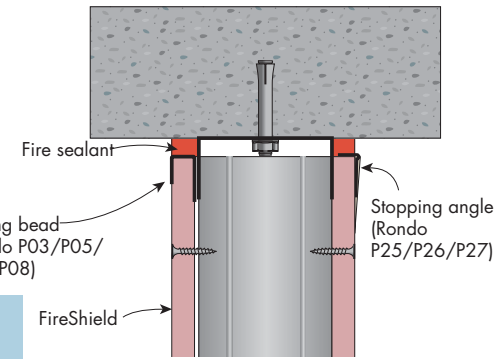


FIGURE 38 Wall Head to Slab Finishing Detail
With casing bead and stopping angle

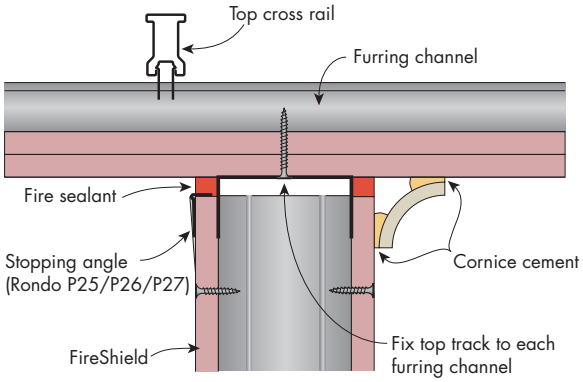


FIGURE 39 Wall Head to Suspended Ceiling Finishing Detail
With stopping angle and cornice

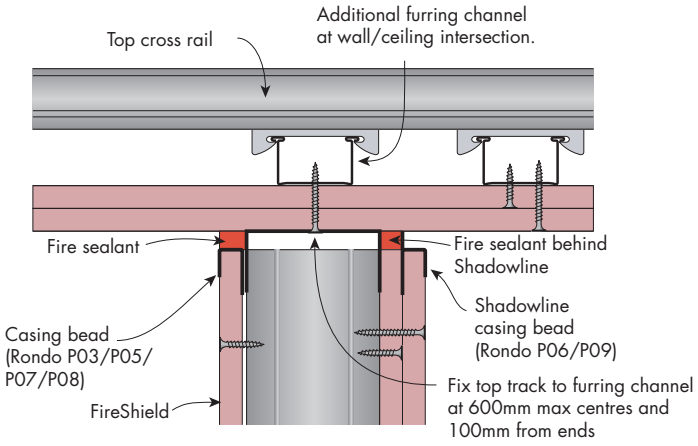


FIGURE 40 Wall Head to Suspended Ceiling Finishing Detail
With casing bead and shadowline

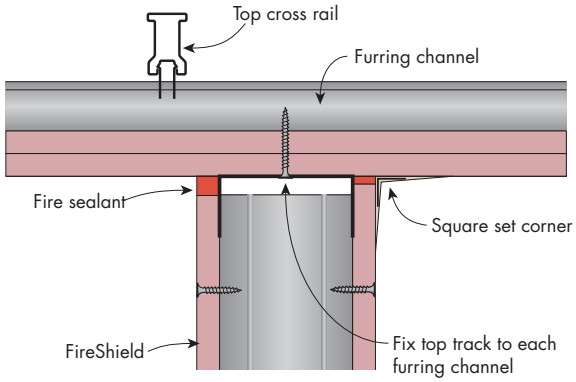


FIGURE 41 Wall Head to Suspended Ceiling Finishing Detail
With bare finish and cornice

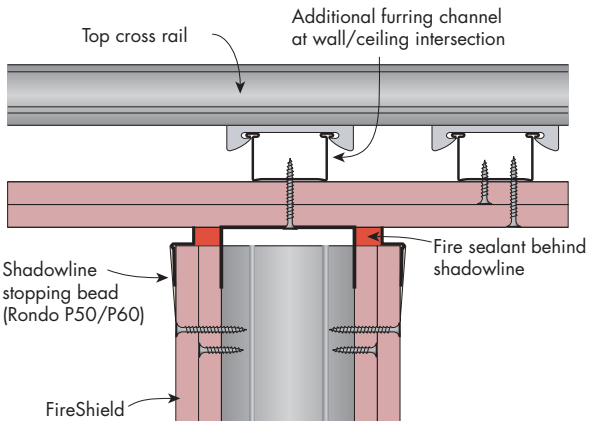


FIGURE 42 Wall Head to Suspended Ceiling Finishing Detail
With shadowline

Shadowline Stopping Beads should not be used adjacent to windows, doors and studs carrying loads greater than 0.25kPa.

Shadowline Stopping Beads must not be used on single layer fire rated systems. Check minimum fire sealant width and depth from the manufacturer to maintain FRL.

FIRE RATED
WALL HEAD FINISHING DETAIL FOR SINGLE, DOUBLE AND STAGGERED STUD WALLS – ELEVATION

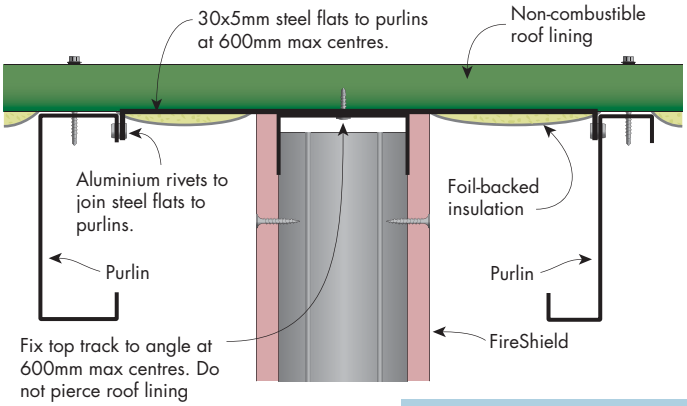


FIGURE 43 Wall Head to Roof
Wall to parallel purlins

Aluminium rivets must be used to join the steel flats to purlins. In the event of fire, the rivets will detach from the purlin.

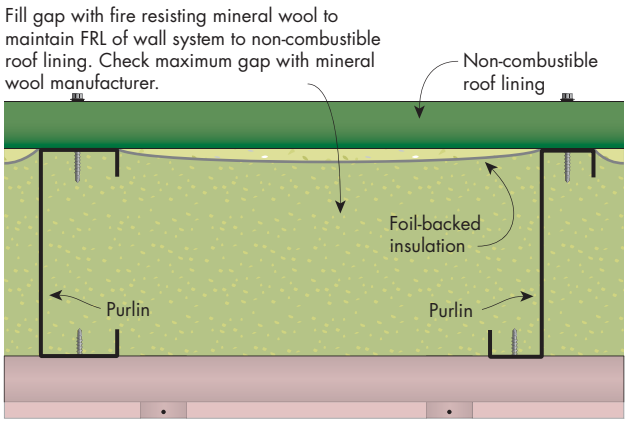
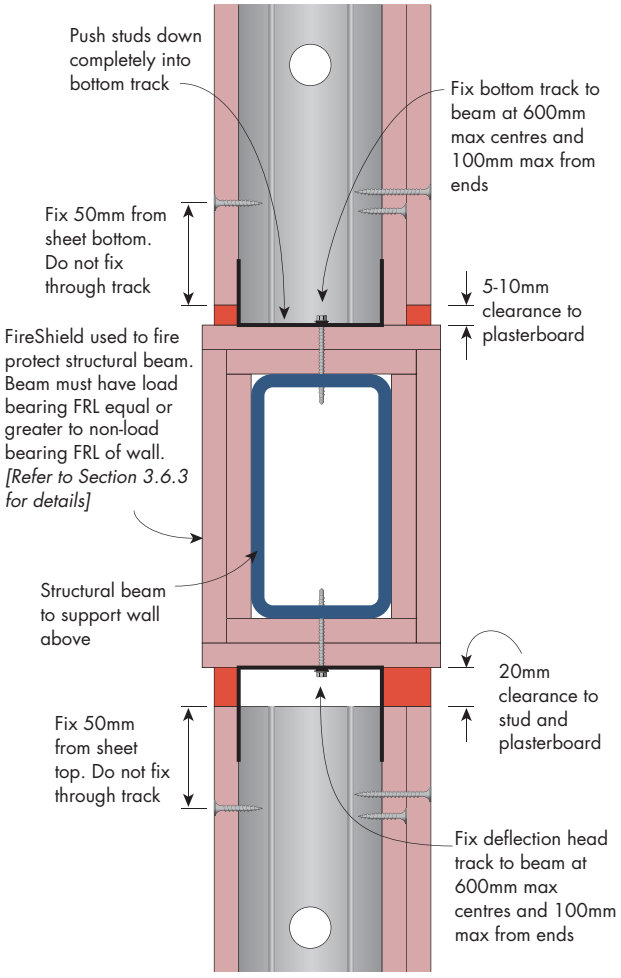


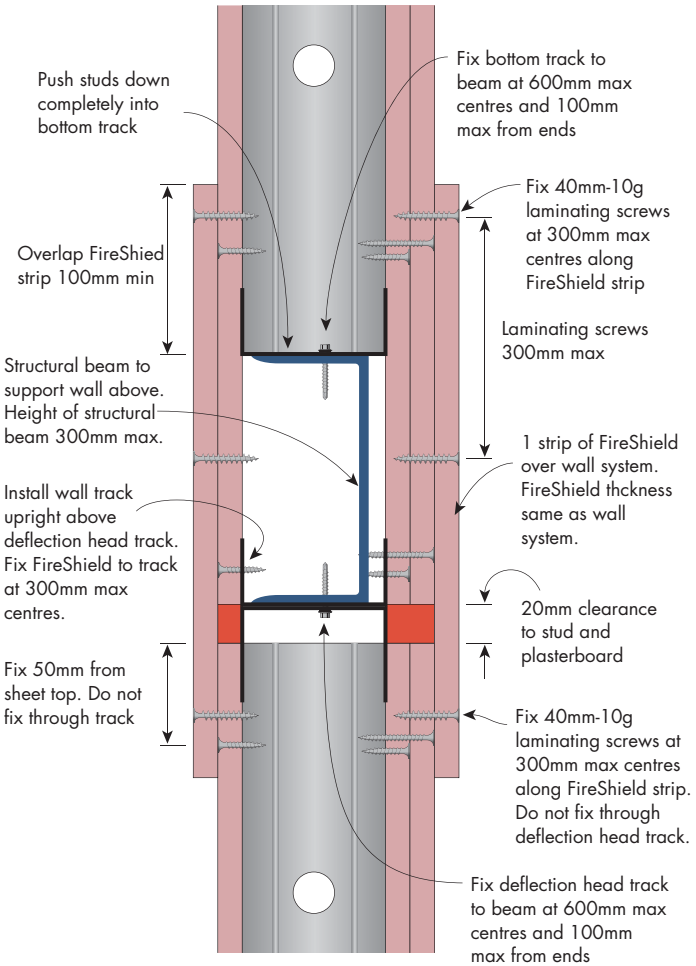
FIGURE 44 Wall Head to Roof
Wall perpendicular to purlins

FIRE RATED
WALL TO SUPPORTING STRUCTURAL BEAM – ELEVATION



Use this detail when wall exceeds maximum height limit of studs.

FIGURE 45 Wall Head to Supporting Structural Beam
Non-load bearing wall



Use this detail when wall exceeds maximum height limit of studs.

FIGURE 46 Wall Head to Supporting Structural Beam
Wall system designed for load bearing FRL to fire protect structural beam

NON-FIRE RATED
WALL JUNCTIONS FOR SINGLE AND DOUBLE STUD WALLS – PLAN VIEW

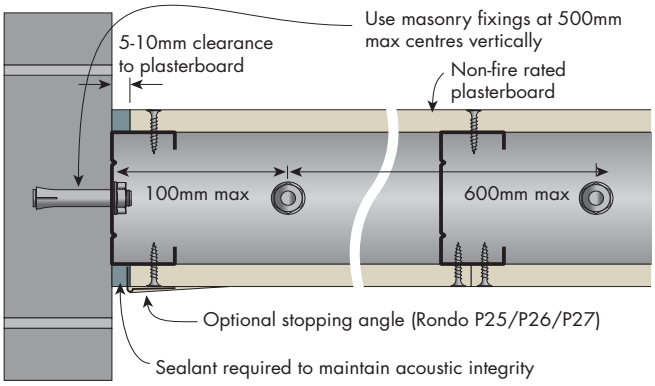


FIGURE 47 Plasterboard to Masonry
Intersecting wall

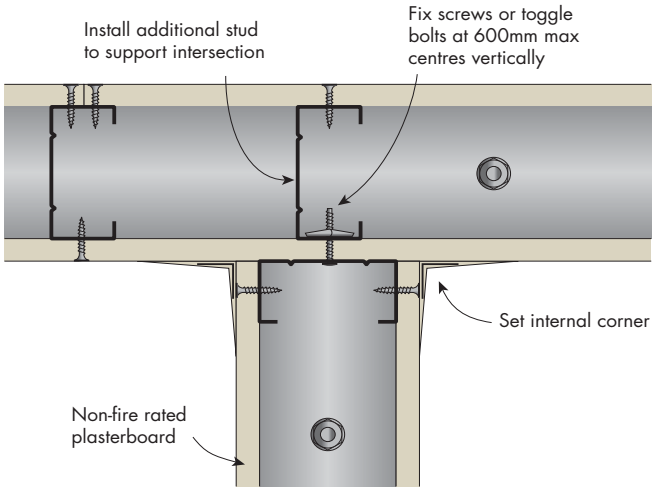


FIGURE 48 Intersecting Wall

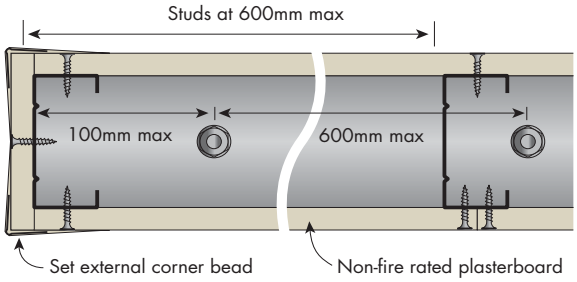


FIGURE 49 Wall End

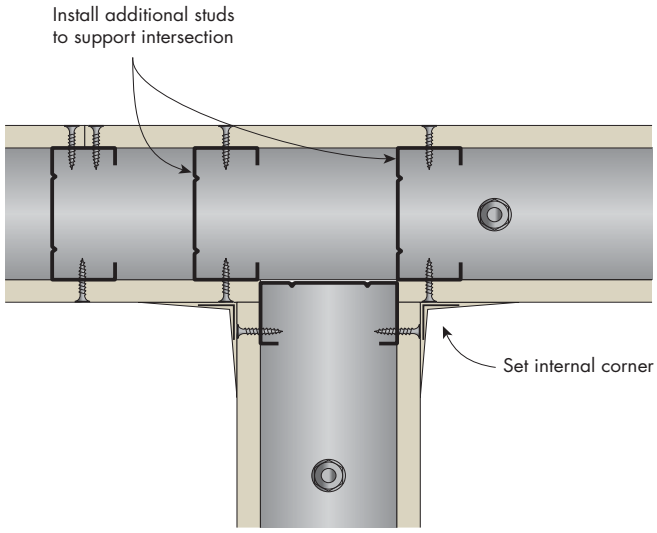


FIGURE 50 Alternate Intersecting Wall

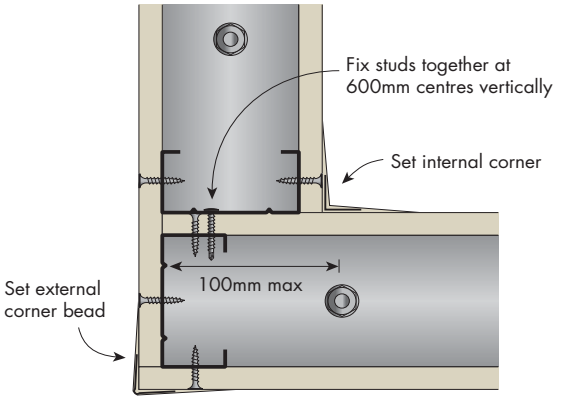


FIGURE 51 Corner

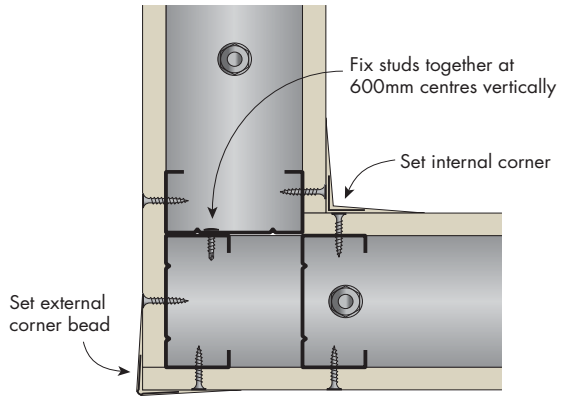


FIGURE 52 Alternate Corner

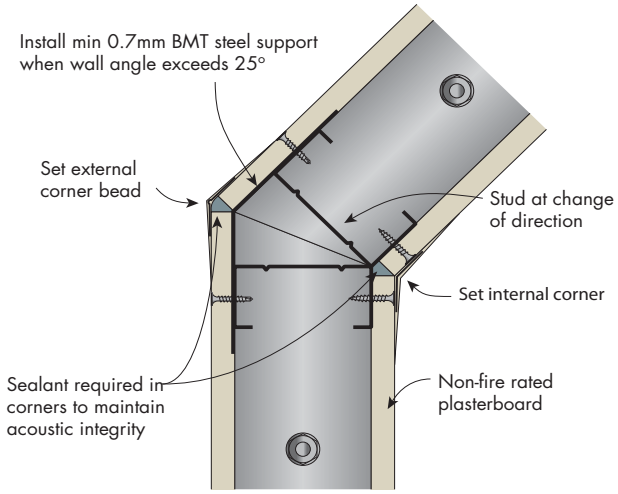


FIGURE 53 Angled Corner

FIRE RATED
WALL JUNCTIONS FOR SINGLE AND DOUBLE STUD WALLS – PLAN VIEW

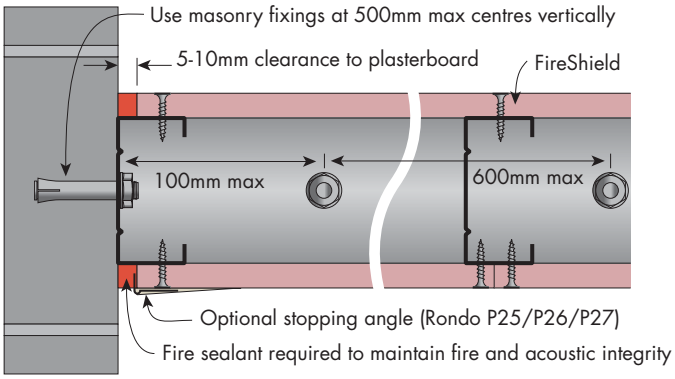


FIGURE 54 Plasterboard to Masonry
Intersecting wall

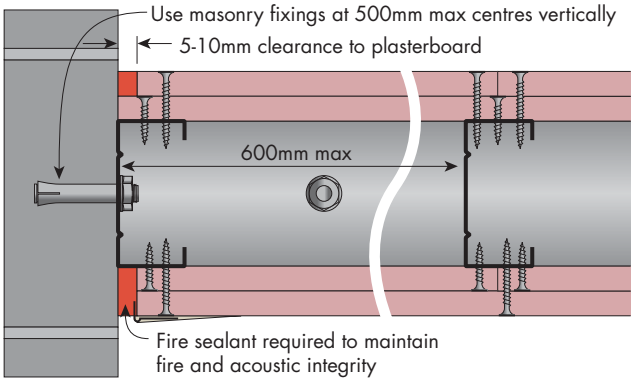
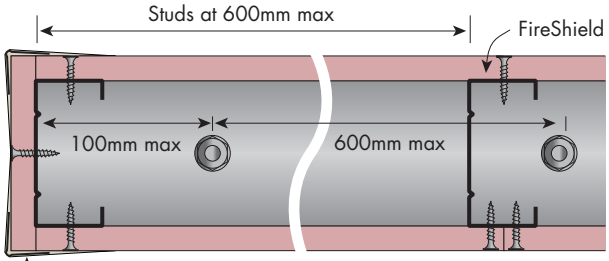


FIGURE 55 Plasterboard to Masonry
Intersecting wall



Fill any gaps with fire sealant to maintain fire and acoustic integrity.

FIGURE 56 Fire Rated Wall End

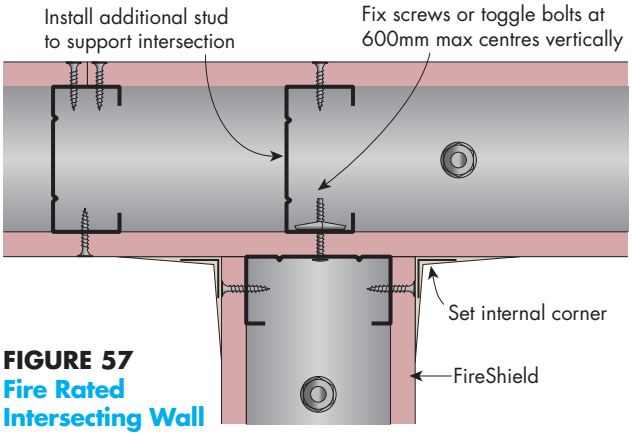


FIGURE 57 Fire Rated Intersecting Wall

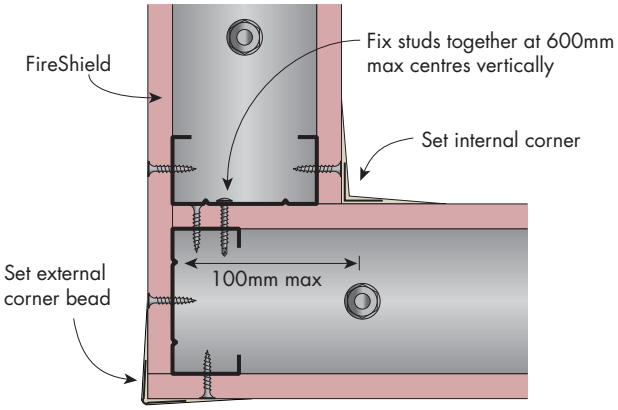


FIGURE 58 Corner

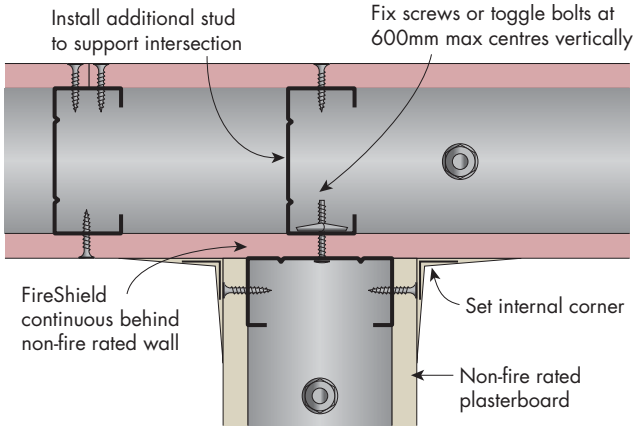


FIGURE 59 Non-Fire Rated Intersecting Wall

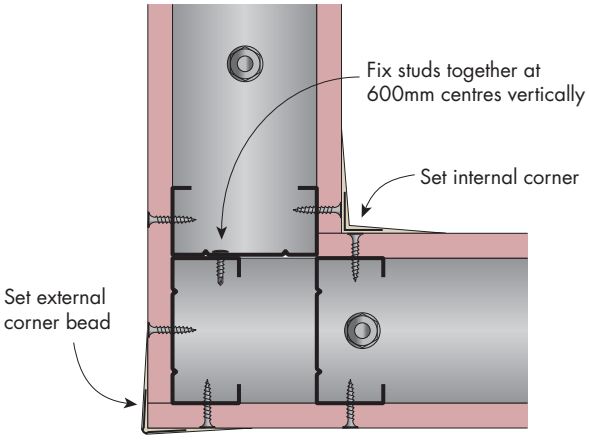


FIGURE 60 Corner

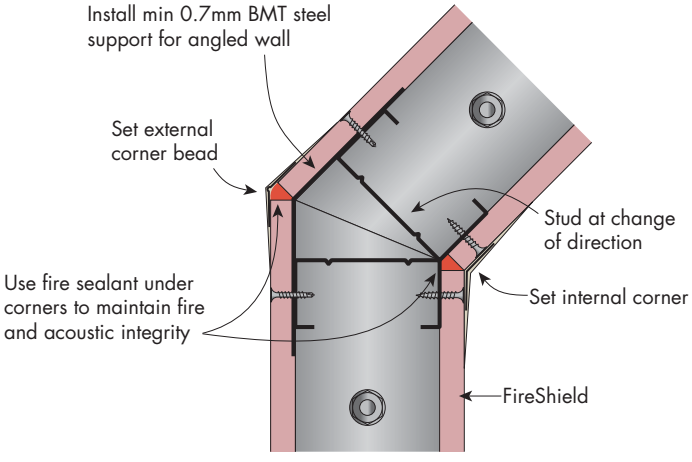
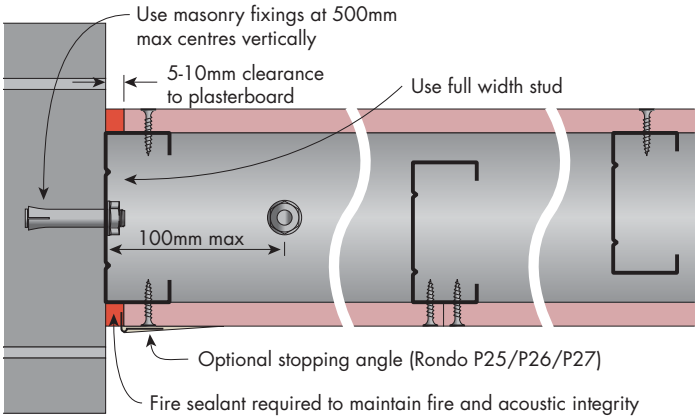


FIGURE 61 Angled Corner

WALL JUNCTIONS FOR STAGGERED STUD WALLS – PLAN VIEW



Fill any gaps with fire sealant to maintain fire and acoustic integrity.

FIGURE 62 Plasterboard to Masonry
Intersecting wall

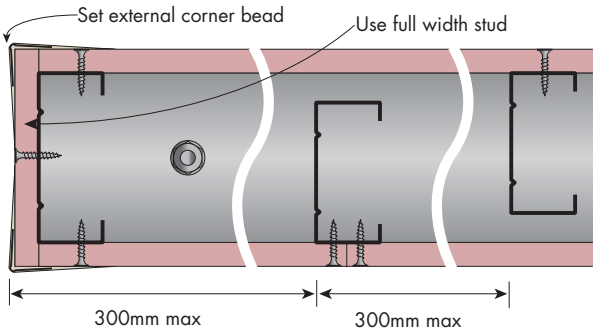


FIGURE 63 Wall End

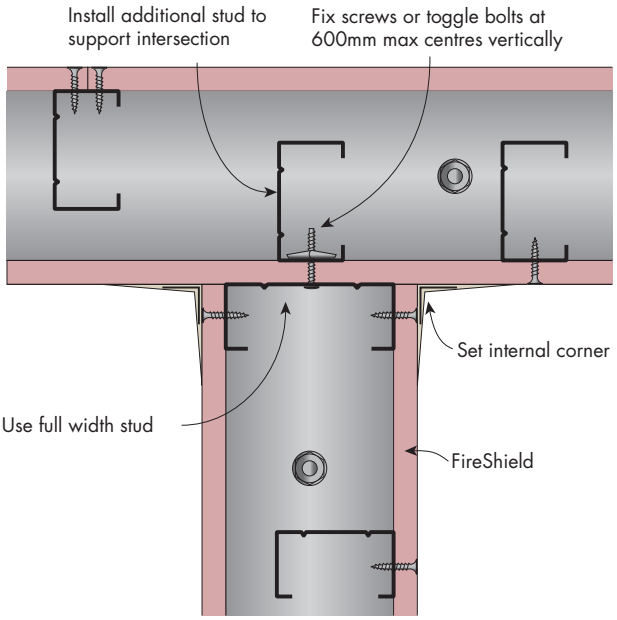


FIGURE 65 Intersecting Wall

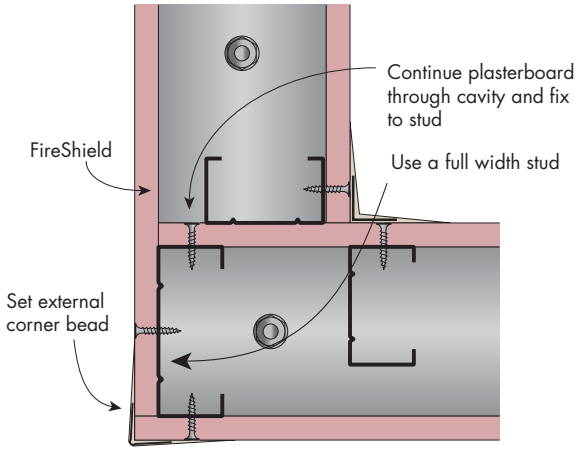


FIGURE 64 Corner

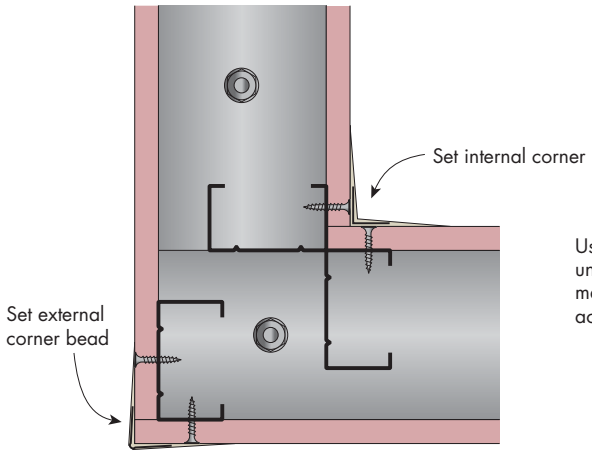


FIGURE 66 Alternate Corner

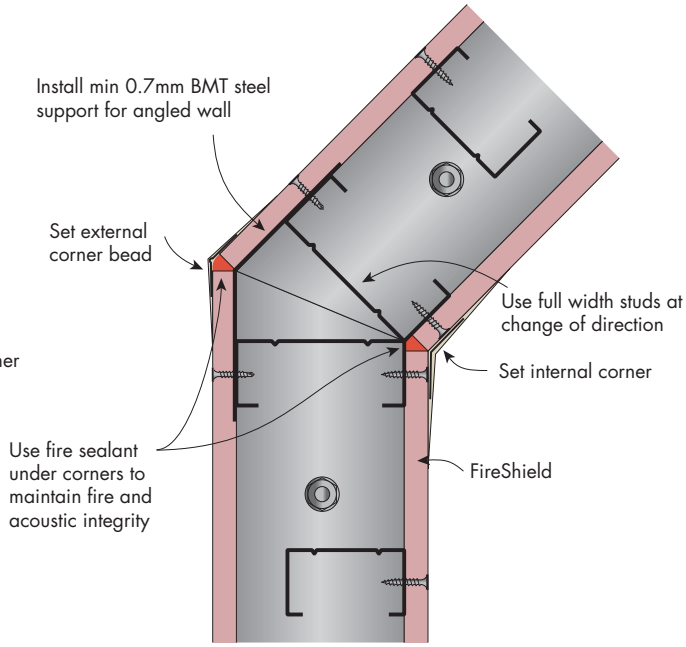


FIGURE 67 Angled Corner

FIRE RATED

STEEL STUD WALL BUILT FROM ONE SIDE ONLY

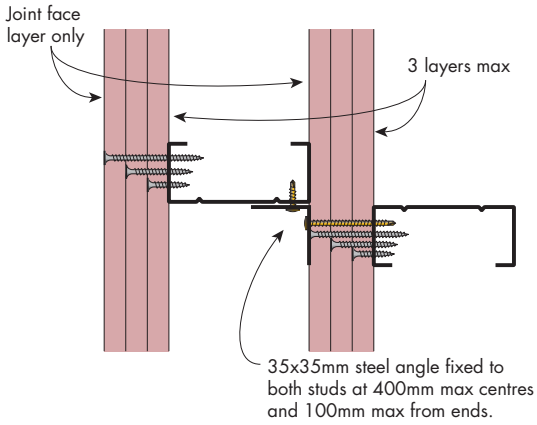


FIGURE 68 Fire Rated Wall Configutration
Fire rated from both directions
(Built from one side only) – Plan view

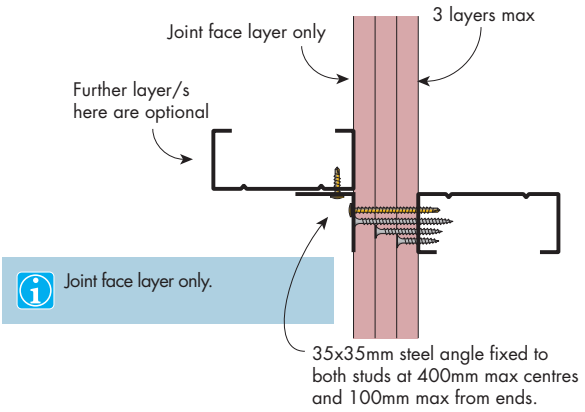


FIGURE 69 Fire Rated Wall Configutration
Fire rated from both directions
(Built from one side only) – Plan view

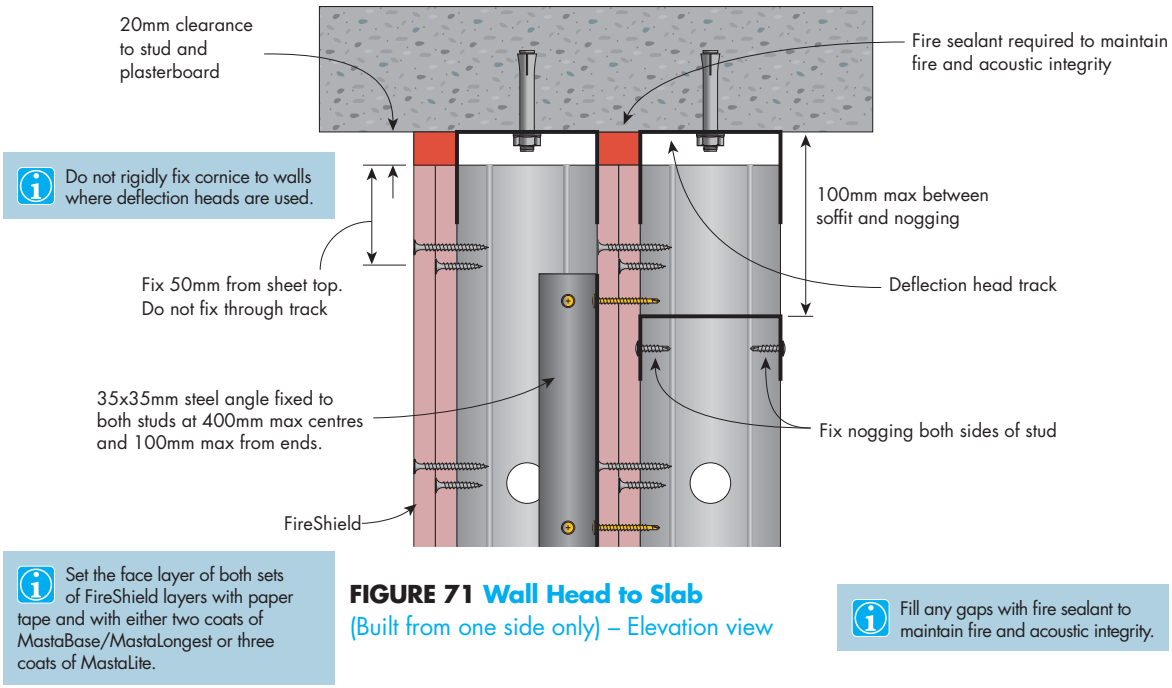


FIGURE 71 Wall Head to Slab
(Built from one side only) – Elevation view

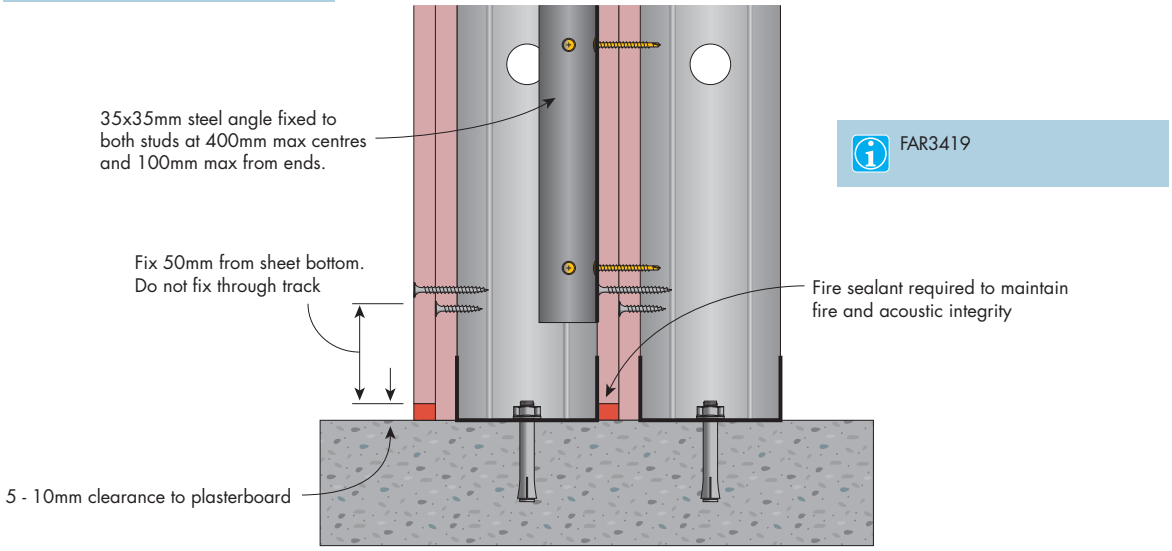
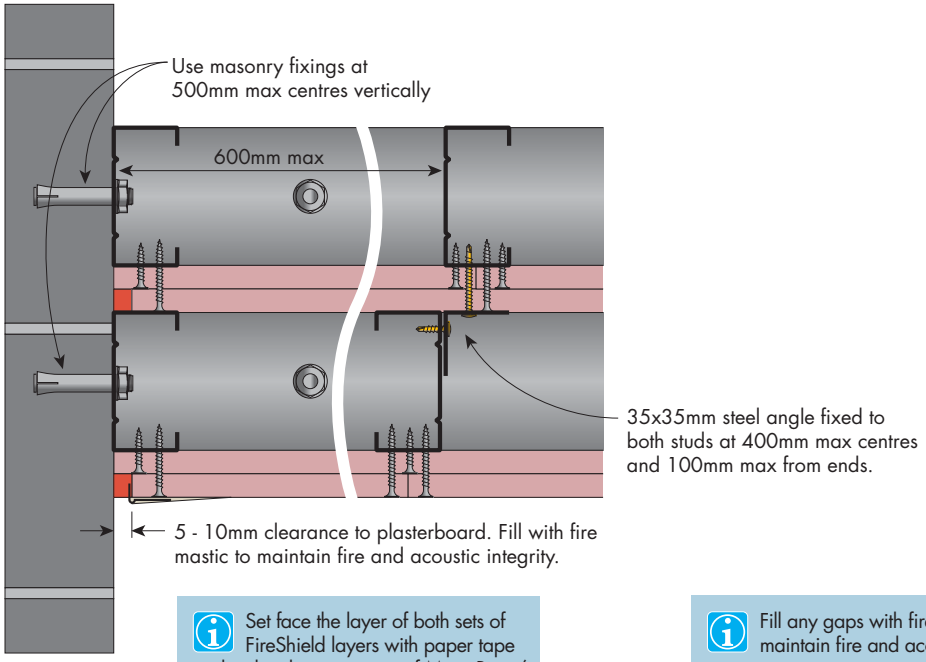


FIGURE 71 Wall Base to Slab
(Built from one side only) – Elevation view

FIRE RATED

STEEL STUD WALL BUILT FROM ONE SIDE ONLY – PLAN VIEW



Set face the layer of both sets of FireShield layers with paper tape and with either two coats of MastaBase/ MastaLongest or three coats of MastaLite.

Fill any gaps with fire mastic to maintain fire and acoustic integrity.

FIGURE 72 Plasterboard to Masonry
Interesecting wall

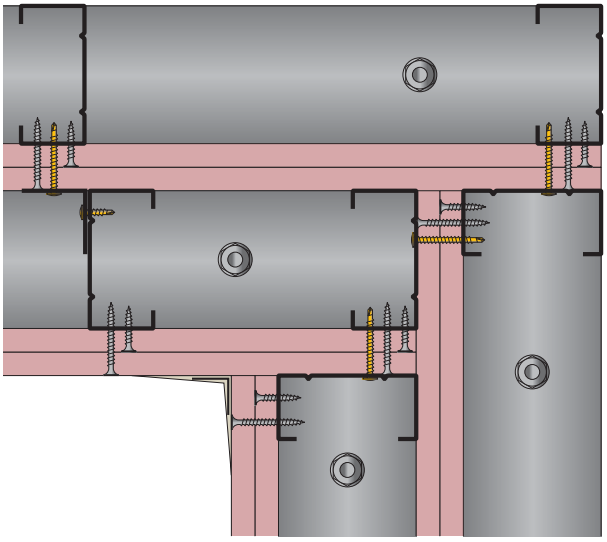


FIGURE 73 Internal Corner

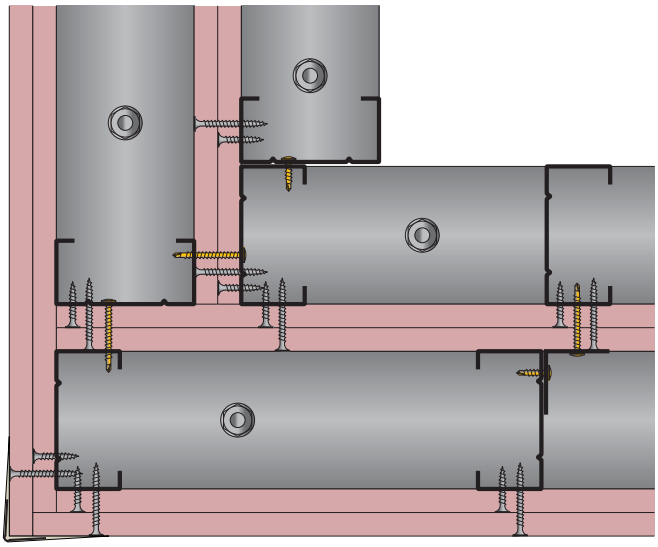


FIGURE 74 External Corner

FIRE RATED AND NON-FIRE RATED
WALL CONTROL JOINTS FOR SINGLE, DOUBLE AND STAGGERED STUD WALLS – PLAN VIEW

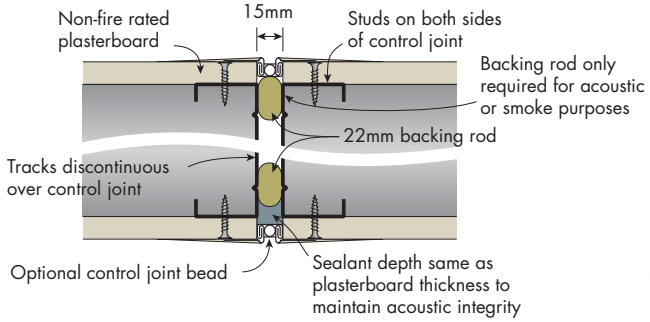


FIGURE 75 Control Joint

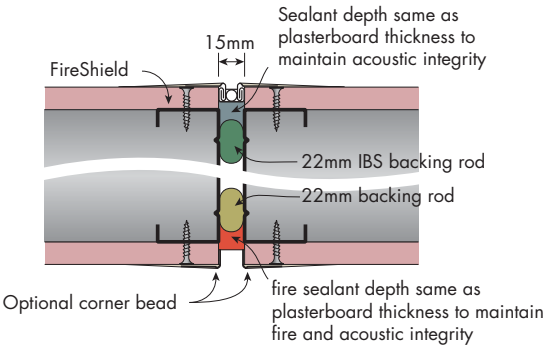


FIGURE 76 Fire Rated Control Joint

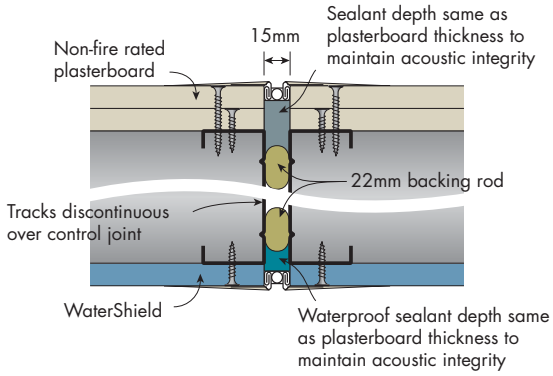


FIGURE 77 Control Joint
(Includes wet areas)

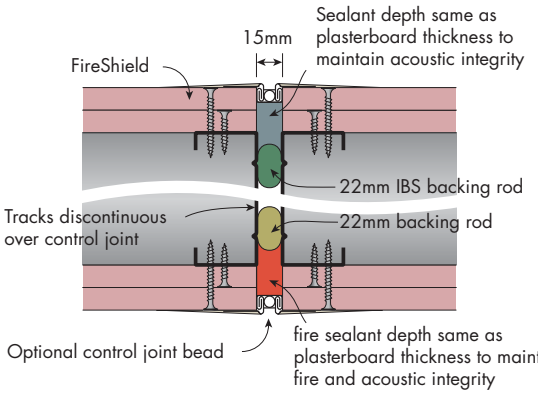


FIGURE 78 Fire Rated Control Joint

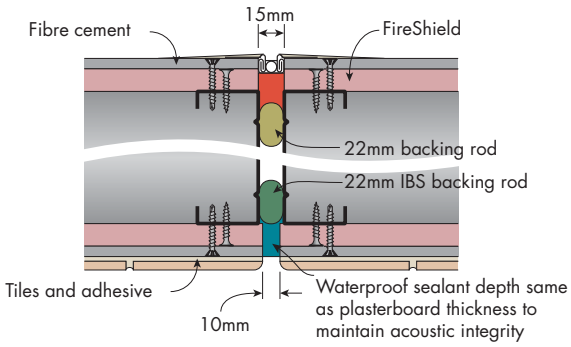


FIGURE 79 Fire rated control joint

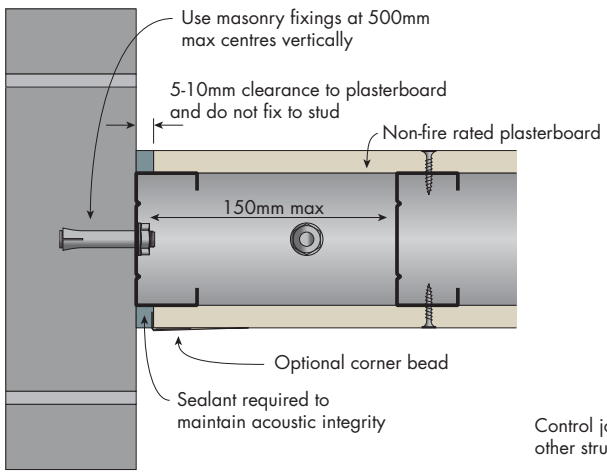


FIGURE 80 Control Joint at Intersecting Wall

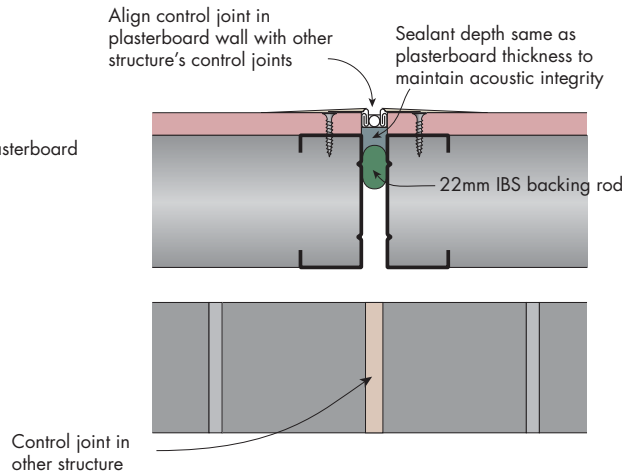


FIGURE 81 Fire Rated Control Joint
With other structure

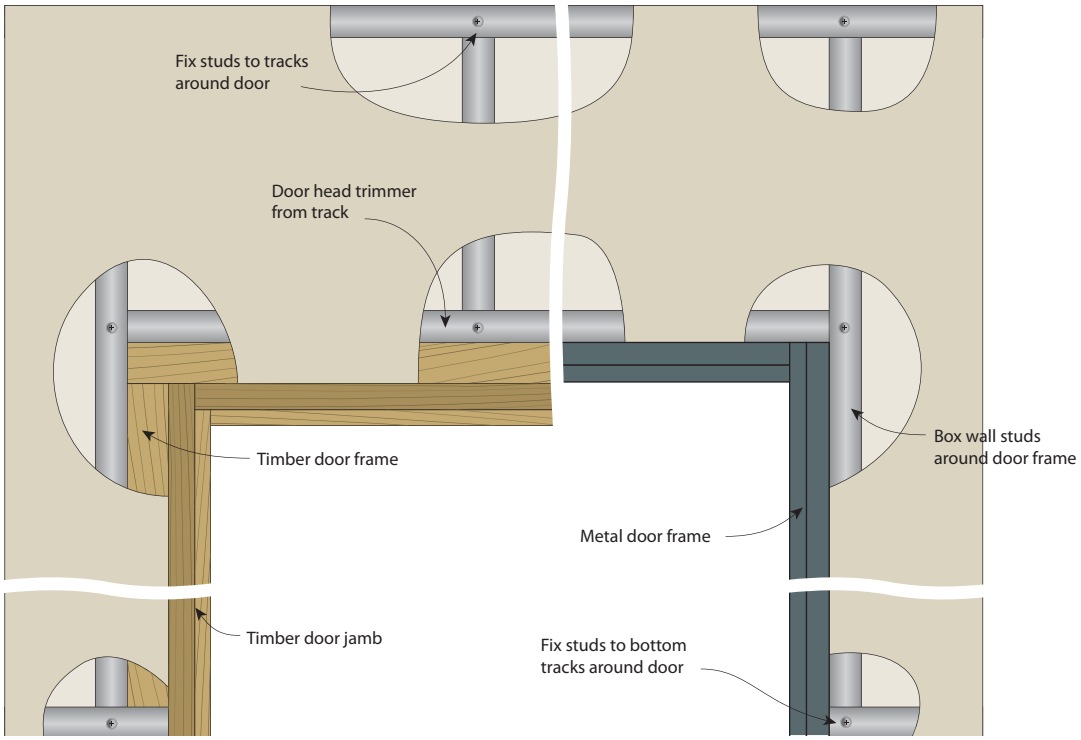


FIGURE 82 Door Frame – Elevation

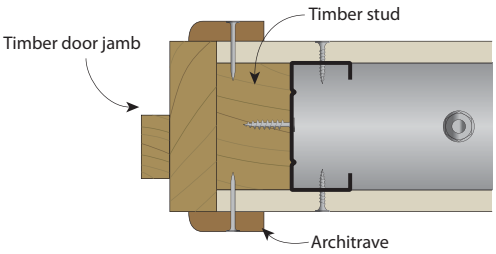


FIGURE 83 Timber Door Jamb – Plan View

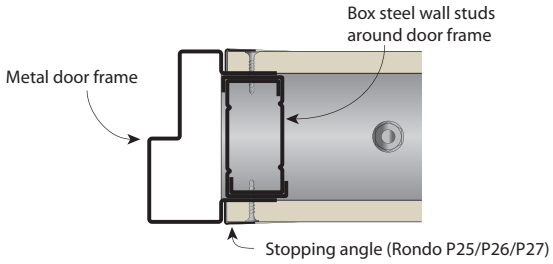


FIGURE 84 Typical Metal Door Jamb – Plan View

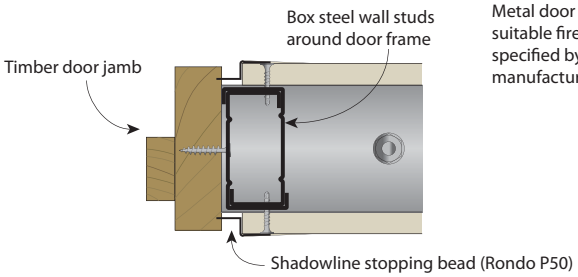


FIGURE 85 Timber Door Jamb – Plan View
With shadowline stopping bead

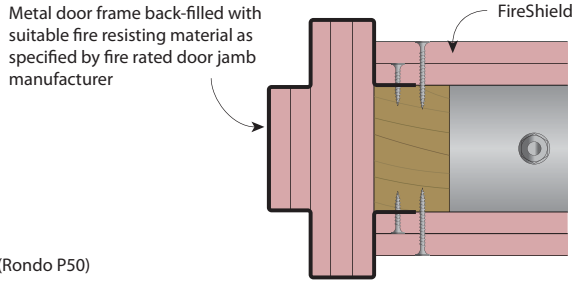


FIGURE 86 Fire Rated Metal Door Jamb
Example only – Plan view

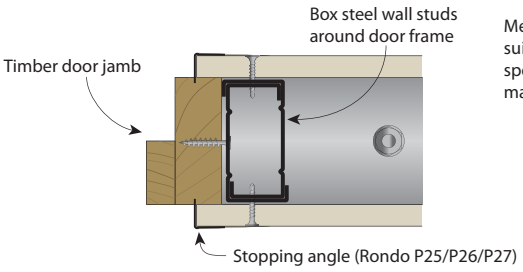


FIGURE 87 Timber Door Jamb – Plan View
With stopping angle

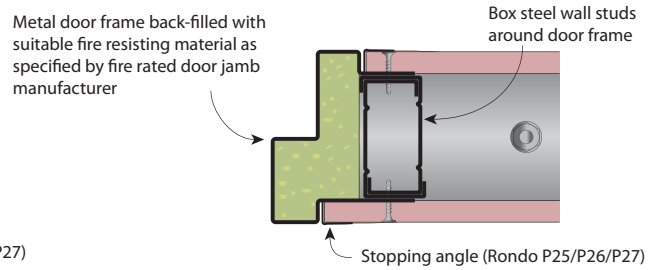


FIGURE 88 Fire Rated Metal Door Jamb
Example only – Plan view

FIRE RATED

FIRE PENETRATIONS FOR SINGLE, DOUBLE AND STAGGERED STUD WALLS

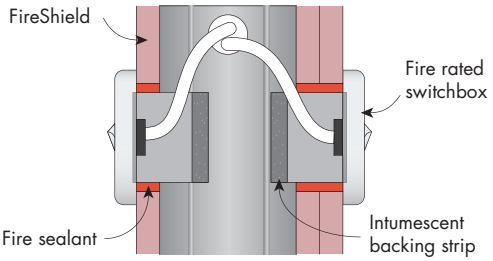
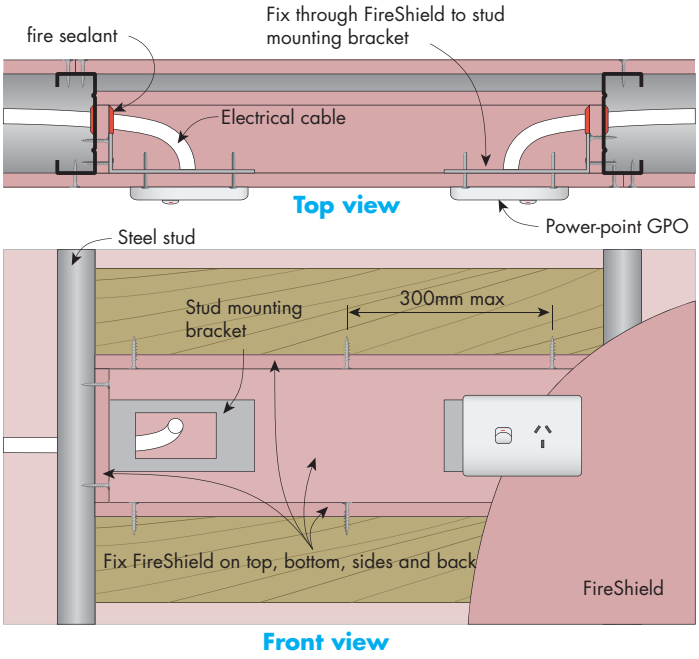


FIGURE 89 Fire Rated Switch-Plate and GPO
Elevation example only

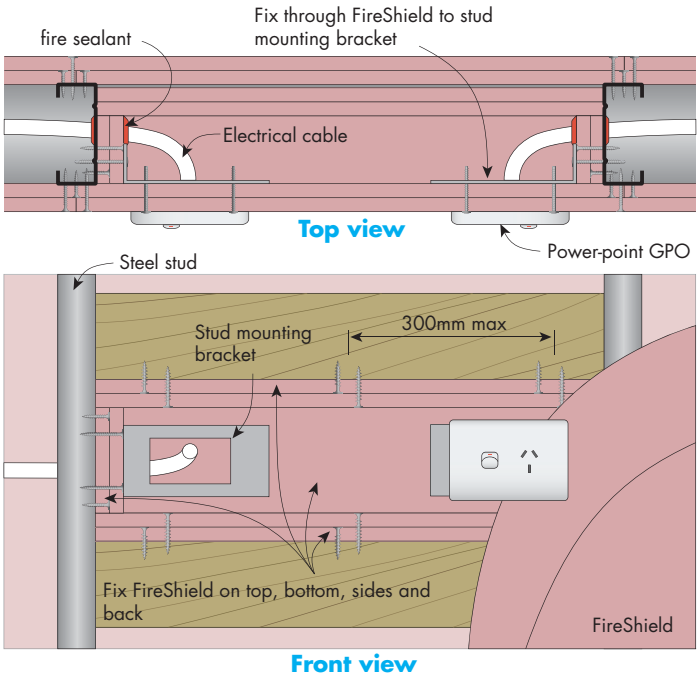
These fire rated penetration details may follow the proprietry installation requirements from particular fire protection product manufacturers. Installation instructions and product performance must be verified by the fire protection product manufacturer.

For fire rating plumbing penetration details refer to Section 3.1.4 Wet Areas



Maximum of two power-point GPOs per FireShield protection box. The FireShield protection box must be made of the same thickness and number of layers of FireShield as the system it is installed in. Any gaps must be sealed with fire sealant.

FIGURE 90 FireShield Protection Box For Non-Fire Rated Switch-Plate and GPO
Installed in double layer systems



Maximum of two power-point GPOs per FireShield protection box. The FireShield protection box must be made of the same thickness and number of layers of FireShield as the system it is installed in. Any gaps must be sealed with fire sealant.

FIGURE 91 FireShield Protection Box For Non-Fire Rated Switch-Plate and GPO
Installed in double layer systems

FIRE PENETRATIONS FOR SINGLE, DOUBLE AND STAGGERED STUD WALLS – ELEVATION

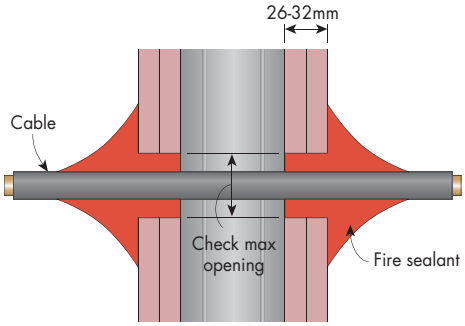


FIGURE 92 Typical Cable Penetration
Up to 2 hours FRL, example only

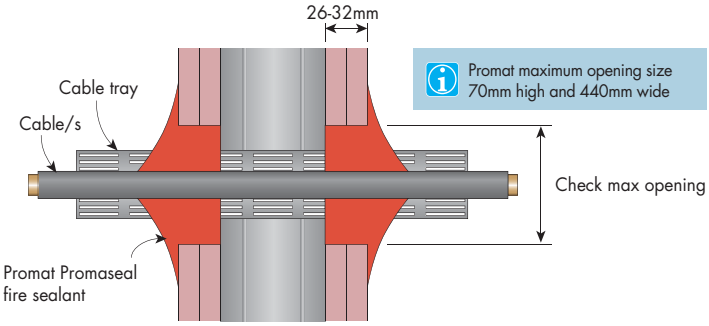


FIGURE 93 Typical Cable Tray Penetration
Up to 2 hours FRL, example only

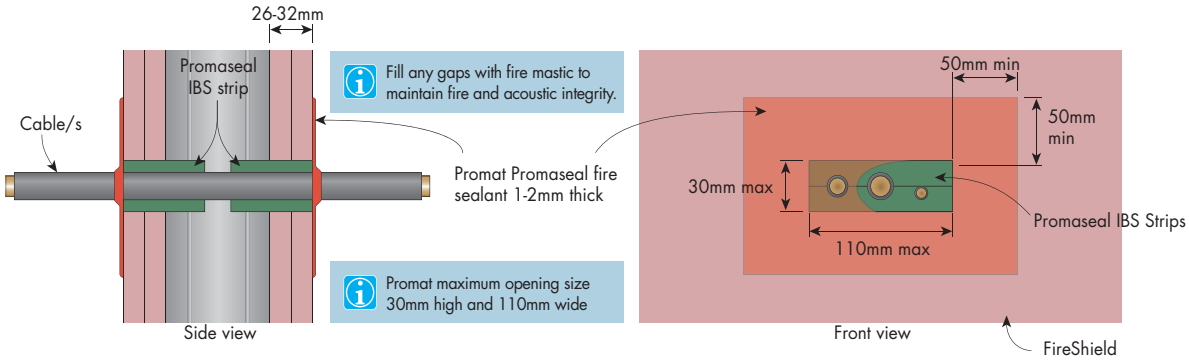


FIGURE 94 IBS Foam Strip Method For Cable Penetration
Maintains FRL of wall system, example only

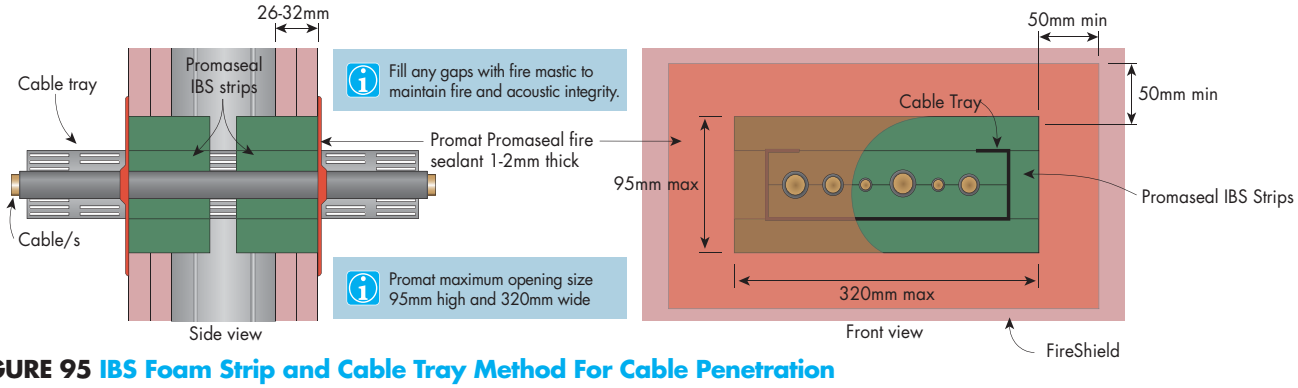


FIGURE 95 IBS Foam Strip and Cable Tray Method For Cable Penetration
Maintains FRL of wall system, example only

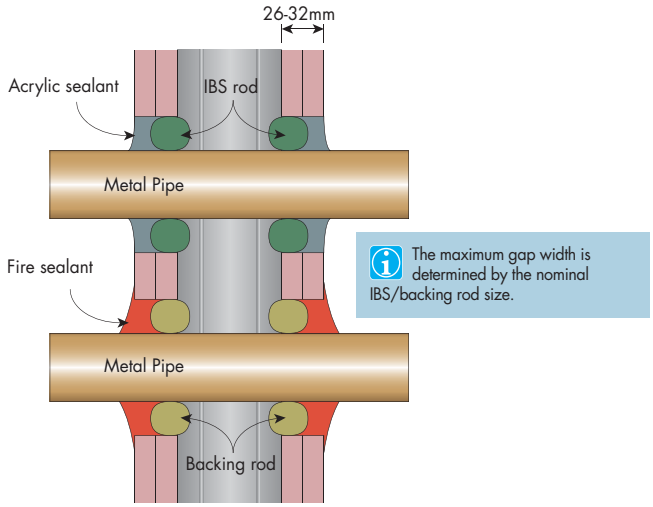


FIGURE 96 Typical Metal Pipe Penetrations
Up to 2 hours FRL, example only

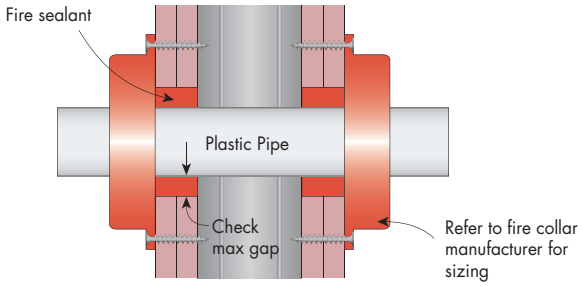


FIGURE 97 Fire Collar
Maintains FRL of wall system, example only

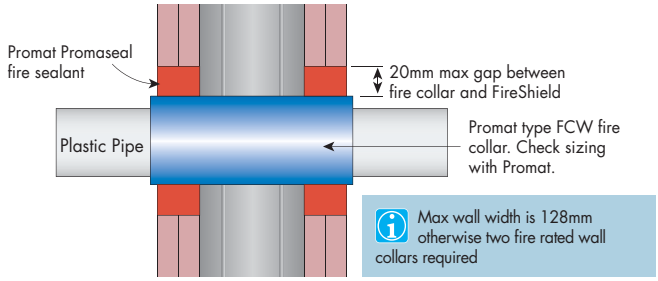
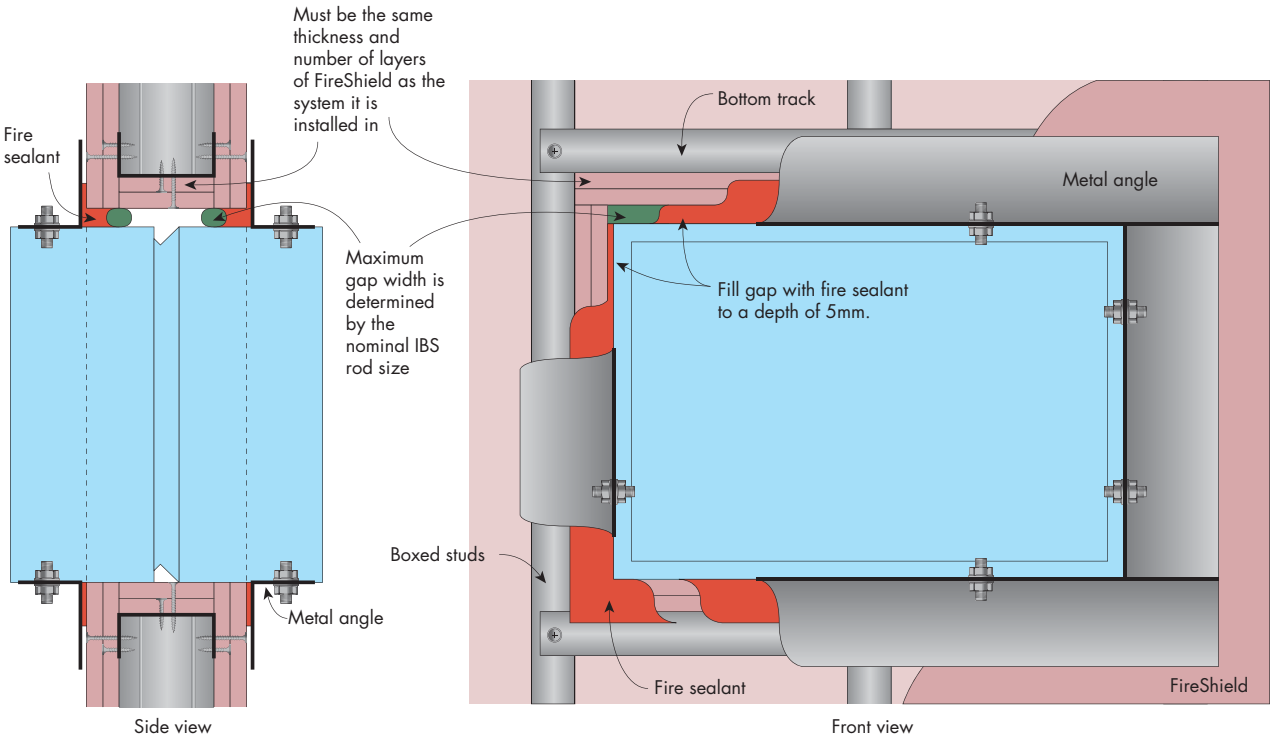


FIGURE 98 Fire Rated Wall Collar
Up to 2 hours FRL, example only

FIRE RATED

FIRE PENETRATIONS FOR SINGLE, DOUBLE AND STAGGERED STUD WALLS – ELEVATION

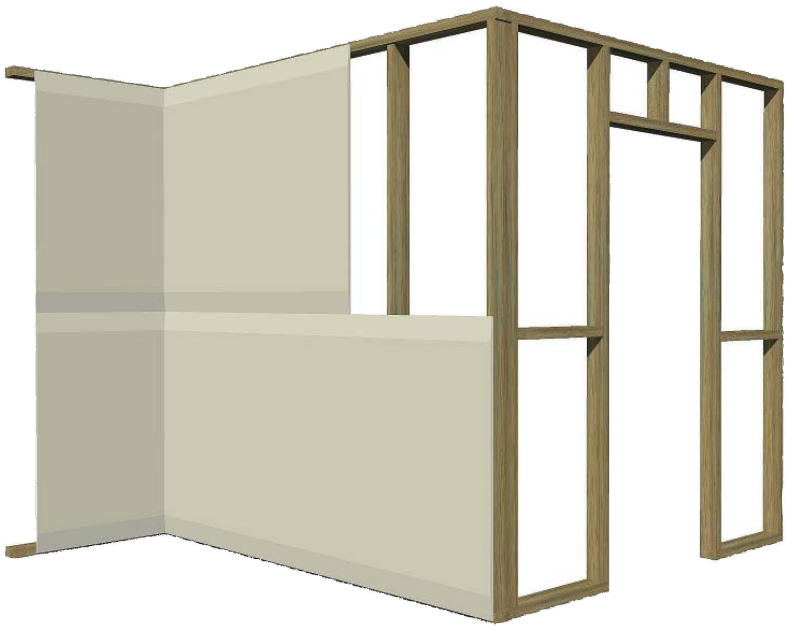


Refer to fire damper manufacturer for specific installation detail.

FIGURE 99 Fire Damper Installation
Example only

3.1.2

Internal Timber Walls



INTRODUCTION

Internal timber walls are a common form of construction for low rise residential and commercial buildings. Applications range from standard residential walls to home theatres and inter-tenancy separation.

This section contains systems, installation instructions and construction details for general and fire rated internal timber walls.

[For separating wall construction details, refer to Section 3.3.3]

[For Knauf InterHome systems and installation, refer to the latest InterHome brochure on the website]

QUICK REFERENCE GUIDE

For walls surrounding Sole Occupancy Units (SOUs)

Acoustic Requirement	Fire Rating	System	Page
Rw ≥ 45	– / – / –	KTW250	98
	– /60/60	KTW350	104
Rw ≥ 50	– /60/60	KTW355	101
	– /90/90	KTW355	101
	– /120/120	KTW326	114
Rw ≥ 50 and Discontinuous Construction	– /60/60	KTW330	116
	– /90/90	KTW335	118
	– /120/120	KTW336	118
Rw + Ctr ≥ 50	60/60/60	KTW322	112
	90/90/90	KTW322	112
	120/120/120	KTW327	114
Rw + Ctr ≥ 50 and Discontinuous Construction	60/60/60	KTW336	118
	90/90/90	KTW332	116
	120/120/120	KTW337	118

NON-FIRE RATED

KTW10

WALL LINING: [Side 1] 1 layer of 10mm **MastaShield**
[Side 2] 1 layer of 10mm **MastaShield**
FRAME: Timber studs at maximum 600mm centres
[10mm **MastaShield** can be substituted with 10mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	35	3.74	3.90	90	33 (25)	37 (28)	–	37 (28)	Acoustic Report Day Design 3094-45
		45	3.88	4.07						
	90	35	4.54	4.77	110	34 (25)	38 (28)	39 (30)	38 (28)	
		45	4.74	5.01						

KTW11

WALL LINING: [Side 1] 1 layer of 10mm **MastaShield**
[Side 2] 2 layers of 10mm **MastaShield**
FRAME: Timber studs at maximum 600mm centres
[10mm **MastaShield** can be substituted with 10mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	35	3.74	3.90	100	37 (30)	41 (33)	–	41 (33)	Acoustic Report Day Design 3094-45
		45	3.88	4.07						
	90	35	4.54	4.77	120	38 (30)	42 (33)	43 (34)	42 (33)	
		45	4.74	5.01						

KTW12

WALL LINING: [Side 1] 2 layers of 10mm **MastaShield**
[Side 2] 2 layers of 10mm **MastaShield**
FRAME: Timber studs at maximum 600mm centres
[10mm **MastaShield** can be substituted with 10mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	35	3.74	3.90	110	41 (33)	44 (36)	–	44 (36)	Acoustic Report Day Design 3094-45
		45	3.88	4.07						
	90	35	4.54	4.77	130	41 (33)	45 (37)	47 (38)	45 (37)	
		45	4.74	5.01						

KTW15

WALL LINING: [Side 1] 1 layer of 13mm **MastaShield**
[Side 2] 1 layer of 13mm **MastaShield**
FRAME: Timber studs at maximum 600mm centres
[13mm **MastaShield** can be substituted with 13mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	35	4.01	4.16	96	34 (27)	39 (30)	–	39 (30)	Acoustic Report Day Design 3094-45
		45	4.14	4.31						
	90	35	4.82	5.03	116	35 (27)	39 (31)	40 (32)	39 (31)	
		45	5.00	5.25						

KTW16

WALL LINING: [Side 1] 1 layer of 13mm **MastaShield**
[Side 2] 2 layers of 13mm **MastaShield**
FRAME: Timber studs at maximum 600mm centres
[13mm **MastaShield** can be substituted with 13mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	35	4.01	4.16	109	39 (31)	43 (34)	–	43 (34)	Acoustic Report Day Design 3094-45
		45	4.14	4.31						
	90	35	4.82	5.03	129	39 (32)	43 (36)	44 (37)	43 (36)	
		45	5.00	5.25						

KTW17

WALL LINING: [Side 1] 2 layers of 13mm **MastaShield**
[Side 2] 2 layers of 13mm **MastaShield**
FRAME: Timber studs at maximum 600mm centres
[13mm **MastaShield** can be substituted with 13mm **WaterShield**]

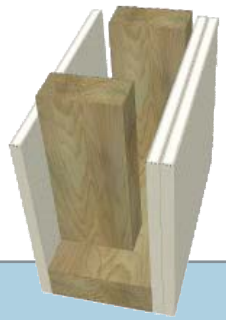
FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	35	4.01	4.16	122	42 (35)	46 (39)	–	46 (39)	Acoustic Report Day Design 3094-45
		45	4.14	4.31						
	90	35	4.82	5.03	142	43 (36)	47 (40)	48 (41)	47 (40)	
		45	5.00	5.25						

KTW20

WALL LINING: [Side 1] 1 layer of 10mm **MastaShield**
[Side 2] 1 layer of 10mm **MastaShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[10mm **MastaShield** can be substituted with 10mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– / – / –	70mm on 90mm plate	35	3.33	3.53	110	34 (27)	41 (33)	42 (34)	40 (32)	
		45	3.50	3.73						
	90mm on 120mm plate	35	4.11	4.39	140	35 (29)	42 (33)	43 (34)	42 (32)	
		45	4.35	4.67						

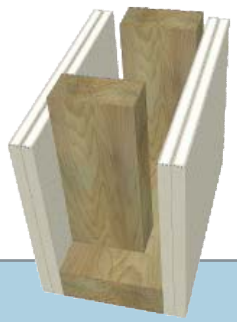
KTW21



WALL LINING: [Side 1] 1 layer of 10mm **MastaShield**
[Side 2] 2 layers of 10mm **MastaShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[10mm **MastaShield** can be substituted with 10mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– / – / –	70mm on 90mm plate	35	3.33	3.53	120	38 (33)	45 (36)	47 (37)	45 (36)	
		45	3.50	3.73						
	90mm on 120mm plate	35	4.11	4.39	150	38 (33)	47 (38)	48 (39)	47 (38)	
		45	4.35	4.67						

KTW22



WALL LINING: [Side 1] 2 layers of 10mm **MastaShield**
[Side 2] 2 layers of 10mm **MastaShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[10mm **MastaShield** can be substituted with 10mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– / – / –	70mm on 90mm plate	35	3.33	3.53	130	41 (35)	50 (41)	52 (43)	50 (41)	
		45	3.50	3.73						
	90mm on 120mm plate	35	4.11	4.39	160	42 (36)	51 (44)	53 (45)	51 (43)	
		45	4.35	4.67						

KTW25

WALL LINING: [Side 1] 1 layer of 13mm **MastaShield**
[Side 2] 1 layer of 13mm **MastaShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[13mm **MastaShield** can be substituted with 13mm **WaterShield**]

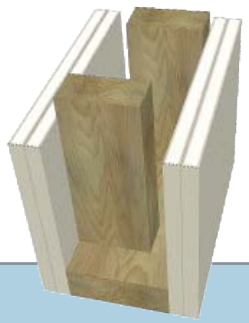
FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70mm on 90mm plate	35	3.50	3.69	116	36 (29)	43 (34)	45 (36)	43 (34)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.66	3.88						
	90mm on 120mm plate	35	4.28	4.54	146	37 (32)	45 (37)	46 (38)	44 (36)	
		45	4.51	4.81						

KTW26

WALL LINING: [Side 1] 1 layer of 13mm **MastaShield**
[Side 2] 2 layers of 13mm **MastaShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[13mm **MastaShield** can be substituted with 13mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70mm on 90mm plate	35	3.50	3.69	129	40 (35)	48 (40)	50 (41)	48 (40)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.66	3.88						
	90mm on 120mm plate	35	4.28	4.54	159	41 (35)	49 (42)	51 (43)	49 (42)	
		45	4.51	4.81						

KTW27



WALL LINING: [Side 1] 2 layers of 13mm **MastaShield**
[Side 2] 2 layers of 13mm **MastaShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[13mm **MastaShield** can be substituted with 13mm **WaterShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70mm on 90mm plate	35	3.50	3.69	142	44 (38)	52 (45)	54 (47)	52 (45)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.66	3.88						
	90mm on 120mm plate	35	4.28	4.54	172	45 (39)	53 (47)	54 (49)	53 (47)	
		45	4.51	4.81						

KTW210

WALL LINING: [Side 1] 1 layer of 10mm SoundShield
[Side 2] 1 layer of 10mm SoundShield
FRAME: Timber studs at maximum 600mm centres

FRL – / – / –	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.74	3.90	90	34 (27)	42 (31)	–	41 (31)	Acoustic Report Day Design 3094-45
		45	3.88	4.07						
	90	35	4.54	4.77	110	36 (28)	42 (32)	43 (33)	42 (32)	
		45	4.74	5.01						

KTW211

WALL LINING: [SIDE 1] 1 layer of 10mm SoundShield
[SIDE 2] 2 layers of 10mm SoundShield
FRAME: Timber studs at maximum 600mm centres

FRL – / – / –	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.74	3.90	100	39 (32)	44 (35)	–	44 (35)	Acoustic Report Day Design 3094-45
		45	3.88	4.07						
	90	35	4.54	4.77	120	40 (32)	44 (37)	45 (38)	44 (37)	
		45	4.74	5.01						

KTW212

WALL LINING: [Side 1] 2 layers of 10mm SoundShield
[Side 2] 2 layers of 10mm SoundShield
FRAME: Timber studs at maximum 600mm centres

FRL – / – / –	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.74	3.90	110	42 (35)	46 (39)	–	46 (39)	Acoustic Report Day Design 3094-45
		45	3.88	4.07						
	90	35	4.54	4.77	130	43 (36)	47 (40)	48 (41)	47 (40)	
		45	4.74	5.01						

KTW250

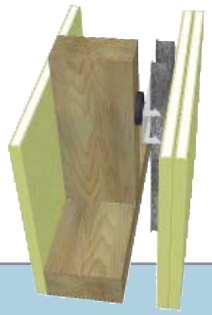
WALL LINING: [Side 1] 1 layer of 10mm SoundShield
[Side 2] 1 layer of 10mm SoundShield

FRAME: Timber studs at maximum 600mm centres with resilient mounts and minimum 16mm furring channel

[Resilient mounts and furring channel on one side only]

FRL	STUD SIZE (mm)		MAX HEIGHT UDL 0.25 kPa (m)		WIDTH (mm)	ACOUSTICS Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– / – / –	70	35	3.33	3.53	125	37 (29)	46 (35)	47 (36)	46 (35)	
		45	3.50	3.73						
	90	35	4.11	4.39	145	38 (29)	47 (36)	48 (37)	47 (36)	
		45	4.35	4.67						

KTW251



WALL LINING: [Side 1] 1 layer of 10mm SoundShield
[Side 2] 2 layers of 10mm SoundShield

FRAME: Timber studs at maximum 600mm centres with resilient mounts and minimum 16mm furring channel

[Resilient mounts and furring channel on one side only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– / – / –	70	35	3.33	3.53	135	42 (33)	51 (41)	53 (42)	51 (40)	
		45	3.50	3.73						
	90	35	4.11	4.39	155	42 (34)	52 (42)	53 (43)	52 (42)	
		45	4.35	4.67						

KTW215

WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 1 layer of 13mm SoundShield
FRAME: Timber studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	35	4.01	4.16	96	37 (30)	41 (33)	–	41 (33)	Acoustic Report Day Design 3094-45
		45	4.14	4.31						
	90	35	4.82	5.03	116	38 (30)	42 (34)	42 (36)	42 (34)	
		45	5.00	5.25						

KTW216

WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 2 layers of 13mm SoundShield
FRAME: Timber studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	35	4.01	4.16	109	42 (34)	44 (39)	–	44 (39)	Acoustic Report Day Design 3094-45
		45	4.14	4.31						
	90	35	4.82	5.03	129	42 (35)	45 (40)	46 (41)	45 (39)	
		45	5.00	5.25						

KTW217

WALL LINING: [Side 1] 2 layers of 13mm SoundShield
[Side 2] 2 layers of 13mm SoundShield
FRAME: Timber studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	35	4.01	4.16	122	45 (39)	47 (42)	–	47 (42)	Acoustic Report Day Design 3094-45
		45	4.14	4.31						
	90	35	4.82	5.03	142	46 (39)	47 (43)	48 (44)	47 (43)	
		45	5.00	5.25						

KTW255

WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 1 layer of 13mm SoundShield

FRAME: Timber studs at maximum 600mm centres with resilient mounts and minimum 16mm furring channel

[Resilient mounts and furring channel on one side only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– / – / –	70	35	3.50	3.69	131	41 (32)	49 (41)	51 (42)	49 (40)	
		45	3.66	3.88						
	90	35	4.28	4.54	151	42 (33)	50 (42)	51 (43)	50 (42)	
		45	4.51	4.81						

KTW256

WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 2 layers of 13mm SoundShield

FRAME: Timber studs at maximum 600mm centres with resilient mounts and minimum 16mm furring channel

[Resilient mounts and furring channel on one side only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– / – / –	70	35	3.50	3.69	144	46 (37)	54 (46)	55 (47)	54 (46)	
		45	3.66	3.88						
	90	35	4.28	4.54	164	47 (38)	54 (47)	56 (48)	54 (47)	
		45	4.51	4.81						

KTW220

WALL LINING: [Side 1] 1 layer of 10mm SoundShield
[Side 2] 1 layer of 10mm SoundShield

FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– / – / –	70mm on 90mm plate	35	3.33	3.53	110	36 (29)	43 (34)	45 (36)	43 (34)	
		45	3.50	3.73						
	90mm on 120mm plate	35	4.11	4.39	140	37 (32)	45 (37)	46 (38)	44 (37)	
		45	4.35	4.67						

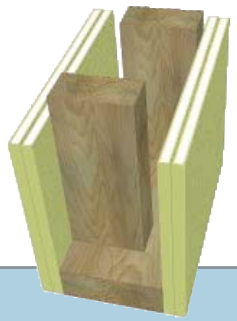
KTW221

WALL LINING: [Side 1] 1 layer of 10mm SoundShield
[Side 2] 2 layers of 10mm SoundShield

FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– / – / –	70mm on 90mm plate	35	3.33	3.53	120	40 (36)	48 (40)	50 (41)	48 (40)	
		45	3.50	3.73						
	90mm on 120mm plate	35	4.11	4.39	150	41 (36)	49 (42)	51 (43)	49 (42)	
		45	4.35	4.67						

KTW222



WALL LINING: [Side 1] 2 layers of 10mm SoundShield
[Side 2] 2 layers of 10mm SoundShield

FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– / – / –	70mm on 90mm plate	35	3.33	3.53	130	44 (38)	52 (46)	54 (47)	52 (45)	
		45	3.50	3.73						
	90mm on 120mm plate	35	4.11	4.39	160	45 (39)	53 (47)	54 (49)	53 (47)	
		45	4.35	4.67						

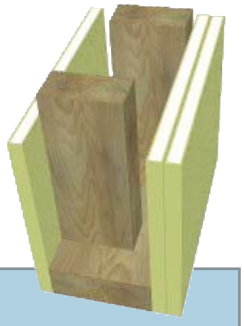
KTW225

WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 1 layer of 13mm SoundShield

FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70mm on 90mm plate	35	3.50	3.69	116	39 (32)	47 (40)	48 (41)	46 (40)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.66	3.88						
	90mm on 120mm plate	35	4.28	4.54	146	41 (35)	47 (42)	49 (43)	47 (42)	
		45	4.51	4.81						

KTW226

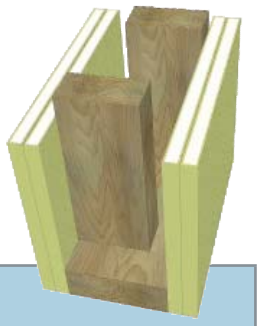


WALL LINING: [Side 1] 1 layer of 13mm SoundShield
[Side 2] 2 layers of 13mm SoundShield

FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70mm on 90mm plate	35	3.50	3.69	129	44 (39)	51 (45)	52 (47)	51 (45)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.66	3.88						
	90mm on 120mm plate	35	4.28	4.54	159	45 (39)	52 (47)	53 (48)	51 (47)	
		45	4.51	4.81						

KTW227



WALL LINING: [Side 1] 2 layers of 13mm SoundShield
[Side 2] 2 layers of 13mm SoundShield

FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70mm on 90mm plate	35	3.50	3.69	142	48 (42)	54 (50)	55 (51)	54 (50)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.66	3.88						
	90mm on 120mm plate	35	4.28	4.54	172	50 (43)	55 (51)	56 (52)	55 (51)	
		45	4.51	4.81						

KTW310

WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield**
FRAME: Timber studs at maximum 600mm centres
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL – /60/60 30/30/30 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.90	3.90	96	36 (28)	41 (32)	–	41 (32)	Acoustic Report Day Design 3094-45
		45	4.40	4.53						
	90	35	5.12	5.30	116	37 (29)	41 (33)	42 (34)	41 (33)	
		45	5.28	5.50						

KTW311

WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**
FRAME: Timber studs at maximum 600mm centres
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

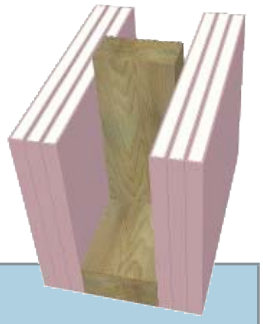
FRL – /90/90 30/30/30 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.90	3.90	109	40 (34)	44 (37)	–	44 (37)	Acoustic Report Day Design 3094-45
		45	4.40	4.53						
	90	35	5.12	5.30	129	41 (34)	44 (38)	45 (39)	44 (38)	
		45	5.28	5.50						

KTW312

WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**
FRAME: Timber studs at maximum 600mm centres
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL – /120/120 90/90/90 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.90	3.90	122	44 (37)	47 (41)	–	47 (41)	Acoustic Report Day Design 3094-45
		45	4.40	4.53						
	90	35	5.12	5.30	142	45 (38)	47 (42)	48 (43)	47 (42)	
		45	5.28	5.50						

KTW314



WALL LINING: [Side 1] 3 layers of 13mm **FireShield**
[Side 2] 3 layers of 13mm **FireShield**
FRAME: Timber studs at maximum 600mm centres
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

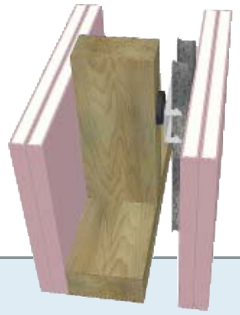
FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /180/180 120/120/120 rated from both sides Fire Report FAR 3348	70	35	3.90	3.90	148	49 (42)	51 (45)	–	51 (46)	Acoustic Report Day Design 3094-50
		45	4.40	4.53						
	90	35	5.12	5.30	168	50 (43)	51 (47)	52 (48)	51 (47)	
		45	5.28	5.50						

KTW350

WALL LINING: [Side 1] 1 layers of 13mm **FireShield**
[Side 2] 1 layers of 13mm **FireShield**
FRAME: Timber studs at maximum 600mm centres with resilient mounts and minimum 16mm furring channel
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Resilient mounts and furring channel on one side only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /60/60 30/30/30 rated from both sides Fire Report FAR 3348	70	35	3.69	3.86	131	37 (29)	47 (36)	47 (36)	46 (36)	Acoustic Report Day Design 3094-50 Note: Impact Sound Resistant
		45	3.83	4.03						
	90	35	4.48	4.72	151	38 (31)	48 (36)	48 (36)	47 (36)	
		45	4.68	4.96						

KTW352



WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**
FRAME: Timber studs at maximum 600mm centres with resilient mounts and minimum 16mm furring channel
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Resilient mounts and furring channel on one side only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /120/120 90/90/90 rated from both sides Fire Report FAR 3348	70	35	3.69	3.86	157	48 (38)	56 (47)	57 (48)	56 (47)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.83	4.03						
	90	35	4.48	4.72	177	49 (40)	56 (48)	57 (49)	56 (48)	
		45	4.68	4.96						

KTW360

WALL LINING: [Side 1] 1 layers of 13mm **FireShield**
[Side 2] 1 layers of 13mm **FireShield**

FRAME: Timber studs at maximum 600mm centres with resilient channel

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Resilient channel on one side only]

FRL – /60/60 30/30/30 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-50 Note: Impact Sound Resistant
	70	35	3.69	3.86	111	36 (29)	43 (32)	44 (32)	43 (32)	
		45	3.83	4.03						
	90	35	4.48	4.72	131	37 (29)	45 (36)	45 (36)	44 (35)	
		45	4.68	4.96						

KTW361

WALL LINING: [Side 1] 1 layers of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**

FRAME: Timber studs at maximum 600mm centres with resilient channel

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Resilient channel on one side only]

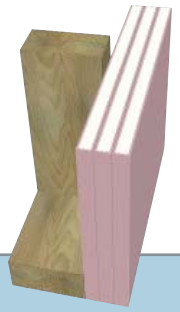
FRL – /90/90 30/30/30 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-50 Note: Impact Sound Resistant
	70	35	3.69	3.86	124	41 (33)	48 (38)	49 (38)	48 (37)	
		45	3.83	4.03						
	90	35	4.48	4.72	144	42 (35)	50 (40)	50 (40)	49 (40)	
		45	4.68	4.96						

KTW301

WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] Optional wall lining
FRAME: Timber studs at maximum 600mm centres
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL – /30/30 30/30/30 rated from the sheeted side only Fire Report FAR 3348	**Stud Size (mm)**		**Max Height UDL 0.25 kPa (m)**		**Width (mm)**	**Acoustics Rw (Rw + Ctr)**				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.69	3.86	96	34 (31)	–	–	–	Acoustic Report Day Design 3094-45
		45	3.83	4.03						
	90	35	4.48	4.72	116	34 (31)	–	–	–	
		45	4.68	4.96						

KTW302



WALL LINING: [Side 1] 3 layers of 13mm **FireShield**
[Side 2] Optional wall lining
FRAME: Timber studs at maximum 600mm centres
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL – /90/90 90/90/90 rated from the sheeted side only Fire Report FAR 3348	**Stud Size (mm)**		**Max Height UDL 0.25 kPa (m)**		**Width (mm)**	**Acoustics Rw (Rw + Ctr)**				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.69	3.86	109	37 (35)	–	–	–	Acoustic Report Day Design 3094-45
		45	3.83	4.03						
	90	35	4.48	4.72	129	37 (35)	–	–	–	
		45	4.68	4.96						

KTW510

WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Timber studs at maximum 600mm centres
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Order of wall linings can be reversed]

FRL – /60/60 30/30/30 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.90	3.90	102	40 (33)	44 (37)	–	44 (36)	Acoustic Report Day Design 3094-45
		45	4.40	4.53						
	90	35	5.12	5.30	122	41 (33)	44 (38)	45 (39)	44 (38)	
		45	5.28	5.50						

KTW512

WALL LINING: [Side 1] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Timber studs at maximum 600mm centres
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Order of wall linings can be reversed]

FRL – /90/90 60/60/60 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.90	3.90	108	44 (36)	47 (41)	–	47 (41)	Acoustic Report Day Design 3094-45
		45	4.40	4.53						
	90	35	5.12	5.30	128	44 (37)	48 (42)	49 (43)	48 (42)	
		45	5.28	5.50						

KTW315

WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield**
FRAME: Timber studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /90/90 60/60/60 rated from both sides Fire Report FAR 3348	70	35	3.90	3.90	102	38 (30)	41 (33)	–	41 (33)	Acoustic Report Day Design 3094-45
		45	4.53	4.53						
	90	35	5.44	5.61	122	38 (30)	42 (34)	42 (36)	42 (34)	
		45	5.59	5.79						

KTW316

WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**
FRAME: Timber studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

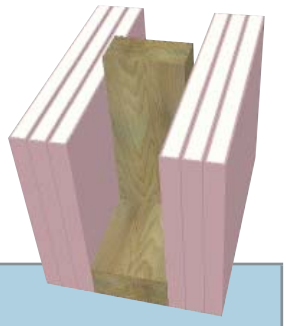
FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /120/120 60/60/60 rated from both sides Fire Report FAR 3348	70	35	3.90	3.90	118	42 (34)	44 (39)	–	44 (39)	Acoustic Report Day Design 3094-45
		45	4.53	4.53						
	90	35	5.44	5.61	138	43 (35)	45 (40)	46 (41)	45 (40)	
		45	5.59	5.79						

KTW317

WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**
FRAME: Timber studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /120/120 120/120/120 rated from both sides Fire Report FAR 3348	70	35	3.90	3.90	134	45 (39)	47 (42)	–	47 (42)	Acoustic Report Day Design 3094-45
		45	4.53	4.53						
	90	35	5.44	5.61	154	46 (39)	47 (43)	48 (44)	47 (43)	
		45	5.59	5.79						

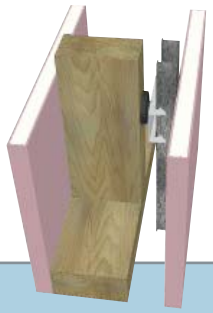
KTW319



WALL LINING: [Side 1] 3 layers of 16mm **FireShield**
[Side 2] 3 layers of 16mm **FireShield**
FRAME: Timber studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /240/240 120/120/120 rated from both sides Fire Report FAR 3348	70	35	3.90	3.90	166	50 (43)	51 (46)	–	51 (47)	Acoustic Report Day Design 3094-50
		45	4.53	4.53						
	90	35	5.44	5.61	186	50 (44)	51 (47)	52 (48)	51 (47)	
		45	5.59	5.79						

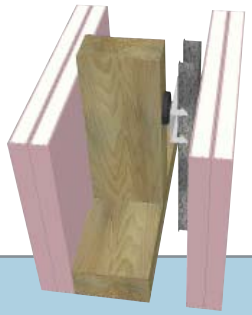
KTW355



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield**
FRAME: Timber studs at maximum 600mm centres with resilient mounts and minimum 16mm furring channel
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Resilient mounts and furring channel on one side only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /90/90 60/60/60 rated from both sides Fire Report FAR 3348	70	35	3.90	3.90	137	41 (32)	50 (41)	51 (42)	49 (41)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	4.04	4.22						
	90	35	4.69	4.91	157	42 (33)	50 (42)	51 (43)	50 (42)	
		45	4.88	5.14						

KTW357



WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**
FRAME: Timber studs at maximum 600mm centres with resilient mounts and minimum 16mm furring channel
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Resilient mounts and furring channel on one side only]

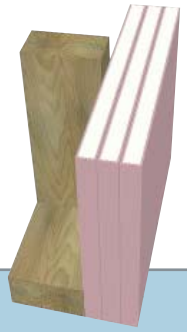
FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /120/120 120/120/120 rated from both sides Fire Report FAR 3348	70	35	3.90	3.90	169	50 (40)	*57* (49)	58 (**50**)	*57* (49)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	4.04	4.22						
	90	35	4.69	4.91	189	51 (42)	*57* (**50**)	58 (**51**)	*57* (**50**)	
		45	4.88	5.14						

KTW304

WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] Optional wall lining
FRAME: Timber studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /60/60 60/60/60 rated from the sheeted side only Fire Report FAR 3348	70	35	3.90	3.90	102	35 (32)	–	–	–	Acoustic Report Day Design 3094-45
		45	4.04	4.22						
	90	35	4.69	4.91	122	35 (32)	–	–	–	
		45	4.88	5.14						

KTW305



WALL LINING: [Side 1] 3 layers of 16mm **FireShield**
[Side 2] Optional wall lining
FRAME: Timber studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

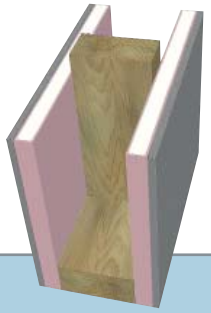
FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /120/120 120/120/120 rated from the sheeted side only Fire Report FAR 3348	70	35	3.90	3.90	118	38 (36)	–	–	–	Acoustic Report Day Design 3094-45
		45	4.04	4.22						
	90	35	4.69	4.91	138	38 (36)	–	–	–	
		45	4.88	5.14						

KTW515

WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Timber studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Order of wall linings can be reversed]

FRL – /90/90 60/60/60 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.90	3.90	102	41 (33)	44 (38)	–	44 (38)	Acoustic Report Day Design 3094-45
		45	4.53	4.53						
	90	35	5.44	5.61	122	42 (34)	44 (39)	45 (40)	44 (39)	
		45	5.59	5.79						

KTW516



WALL LINING: [Side 1] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Timber studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Order of wall linings can be reversed]

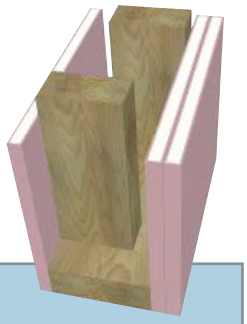
FRL – /120/120 60/60/60 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	35	3.90	3.90	114	44 (37)	47 (42)	–	47 (42)	Acoustic Report Day Design 3094-45
		45	4.53	4.53						
	90	35	5.44	5.61	134	45 (38)	48 (43)	49 (44)	48 (43)	
		45	5.59	5.79						

KTW320

WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /60/60 30/30/30 rated from both sides Fire Report FAR 3348	70mm on 90mm plate	35	3.69	3.86	116	37 (31)	45 (38)	47 (39)	45 (38)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.83	4.03						
	90mm on 120mm plate	35	4.48	4.72	146	38 (33)	46 (40)	48 (41)	46 (40)	
		45	4.68	4.96						

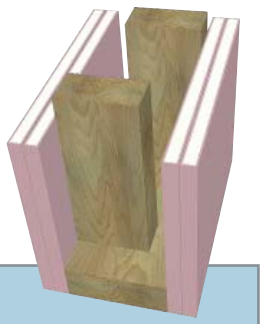
KTW321



WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /90/90 30/30/30 rated from both sides Fire Report FAR 3348	70mm on 90mm plate	35	3.69	3.86	129	42 (37)	50 (43)	51 (45)	50 (43)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.83	4.03						
	90mm on 120mm plate	35	4.48	4.72	159	43 (38)	51 (45)	52 (46)	51 (45)	
		45	4.68	4.96						

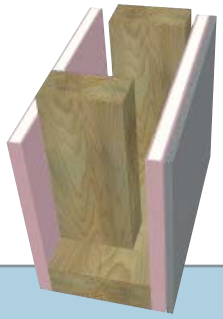
KTW322



WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /120/120 90/90/90 rated from both sides Fire Report FAR 3348	70mm on 90mm plate	35	3.69	3.86	142	46 (41)	54 (49)	55 (**50**)	54 (48)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.83	4.03						
	90mm on 120mm plate	35	4.48	4.72	172	48 (42)	54 (**50**)	55 (**51**)	54 (**50**)	
		45	4.68	4.96						

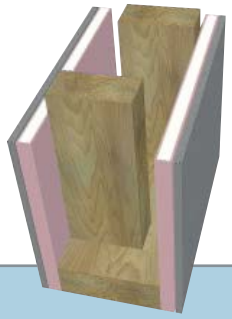
KTW520



WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /60/60 30/30/30 rated from both sides Fire Report FAR 3348	70mm on 90mm plate	35	3.69	3.86	122	42 (36)	50 (43)	51 (44)	50 (43)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.83	4.03						
	90mm on 120mm plate	35	4.48	4.72	152	43 (37)	51 (45)	52 (46)	51 (44)	
		45	4.68	4.96						

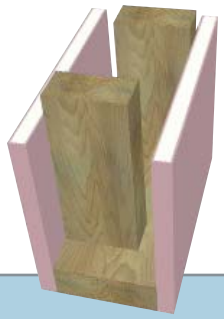
KTW522



WALL LINING: [Side 1] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /90/90 60/60/60 rated from both sides Fire Report FAR 3348	70mm on 90mm plate	35	3.69	3.86	128	46 (39)	54 (47)	55 (48)	54 (47)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	3.83	4.03						
	90mm on 120mm plate	35	4.48	4.72	158	47 (40)	54 (49)	56 (**50**)	54 (49)	
		45	4.68	4.96						

KTW325



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

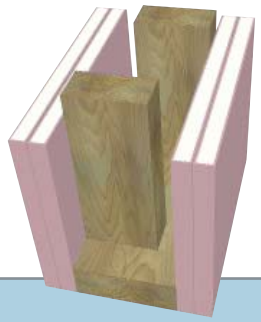
FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /90/90 60/60/60 rated from both sides Fire Report FAR 3348	70mm on 90mm plate	35	3.90	3.90	122	39 (32)	47 (40)	48 (41)	47 (40)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	4.04	4.22						
	90mm on 120mm plate	35	4.69	4.91	152	41 (35)	47 (42)	49 (43)	47 (42)	
		45	4.88	5.14						

KTW326

WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /120/120 60/60/60 rated from both sides Fire Report FAR 3348	70mm on 90mm plate	35	3.90	3.90	138	44 (39)	51 (46)	52 (47)	51 (45)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	4.04	4.22						
	90mm on 120mm plate	35	4.69	4.91	168	45 (40)	52 (47)	53 (48)	51 (47)	
		45	4.88	5.14						

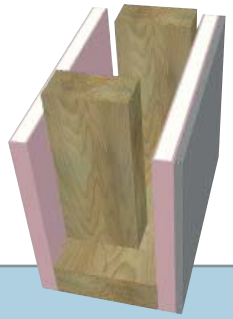
KTW327



WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– /120/120 120/120/120 rated from both sides Fire Report FAR 3348	70mm on 90mm plate	35	3.90	3.90	154	48 (42)	54 (**50**)	55 (**51**)	54 (**50**)	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
		45	4.04	4.22						
	90mm on 120mm plate	35	4.69	4.91	184	50 (43)	55 (**51**)	56 (**53**)	55 (**51**)	
		45	4.88	5.14						

KTW524



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– /90/90 60/60/60 rated from both sides Fire Report FAR 3348	70mm on 90mm plate	35	3.90	3.90	128	43 (38)	50 (44)	52 (46)	50 (44)	
		45	4.04	4.22						
	90mm on 120mm plate	35	4.69	4.91	158	45 (39)	51 (46)	52 (47)	51 (46)	
		45	4.88	5.14						

KTW526

WALL LINING: [Side 1] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Staggered timber studs at maximum 600mm centres [300mm staggered]
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant
– /120/120 60/60/60 rated from both sides Fire Report FAR 3348	70mm on 90mm plate	35	3.90	3.90	134	47 (40)	54 (48)	55 (**50**)	54 (48)	
		45	4.04	4.22						
	90mm on 120mm plate	35	4.69	4.91	164	48 (41)	54 (**50**)	56 (**51**)	54 (**50**)	
		45	4.88	5.14						

KTW330

WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield**
FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Install insulation in one frame only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
– /60/60 30/30/30 rated from both sides Fire Report FAR 3348	70mm 160mm cavity	35	3.69	3.86	186	43 (37)	52 (42)	53 (43)	51 (42)	Note: Impact Sound Resistant – Discontinuous Construction
		45	3.83	4.03						
	90mm 200mm cavity	35	4.48	4.72	226	45 (38)	52 (44)	54 (44)	52 (43)	
		45	4.68	4.96						

KTW331

WALL LINING: [Side 1] 1 layer of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**
FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Install insulation in one frame only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
– /90/90 30/30/30 rated from both sides Fire Report FAR 3348	70mm 160mm cavity	35	3.69	3.86	199	48 (41)	57 (48)	58 (49)	56 (48)	Note: Impact Sound Resistant – Discontinuous Construction
		45	3.83	4.03						
	90mm 200mm cavity	35	4.48	4.72	239	50 (42)	57 (**50**)	59 (**50**)	57 (49)	
		45	4.68	4.96						

KTW332

WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**
FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Install insulation in one frame only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
– /120/120 90/90/90 rated from both sides Fire Report FAR 3348	70mm 160mm cavity	35	3.69	3.86	212	53 (45)	62 (**54**)	63 (**55**)	61 (**53**)	Note: Impact Sound Resistant – Discontinuous Construction
		45	3.83	4.03						
	90mm 200mm cavity	35	4.48	4.72	252	55 (46)	62 (**55**)	64 (**56**)	62 (**55**)	
		45	4.68	4.96						

KTW380

WALL LINING: [Side 1] 1 layer of 13mm **FireShield** plus 1 layer of 13mm **MastaShield**
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 13mm **MastaShield**

FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[13mm **MastaShield** can be substituted with 13mm **WaterShield**]
[Install insulation in one frame only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
– /90/90 60/60/60 rated from both sides Fire Report FAR 3348	70mm 160mm cavity	35	3.69	3.86	212	52 (44)	61 (**52**)	62 (**53**)	60 (**52**)	Note: Impact Sound Resistant – Discontinuous Construction
		45	3.83	4.03						
	90mm 200mm cavity	35	4.48	4.72	252	53 (45)	61 (**54**)	63 (**54**)	61 (**53**)	
		45	4.68	4.96						

KTW531

WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement

FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Install insulation in one frame only]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
– /90/90 30/30/30 rated from both sides Fire Report FAR 3348	70mm 160mm cavity	35	3.69	3.86	205	53 (45)	61 (**53**)	63 (**54**)	61 (**53**)	Note: Impact Sound Resistant – Discontinuous Construction
		45	3.83	4.03						
	90mm 200mm cavity	35	4.48	4.72	245	54 (45)	62 (**55**)	64 (**55**)	61 (**54**)	
		45	4.68	4.96						

KTW532

WALL LINING: [Side 1] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 13mm **FireShield** plus 1 layer of 6mm Fibre Cement

FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Install insulation in one frame only]
[Order of wall linings can be reversed]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
– /90/90 60/60/60 rated from both sides Fire Report FAR 3348	70mm 160mm cavity	35	3.69	3.86	199	52 (44)	61 (**52**)	62 (**53**)	60 (**52**)	Note: Impact Sound Resistant – Discontinuous Construction
		45	3.83	4.03						
	90mm 200mm cavity	35	4.48	4.72	239	53 (45)	61 (**54**)	63 (**54**)	61 (**53**)	
		45	4.68	4.96						

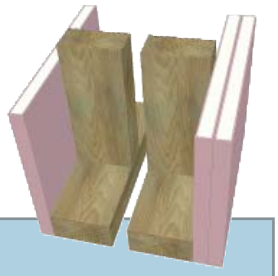
KTW335

WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield**
FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Install insulation in one frame only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)						
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	2 x R1.5 EarthWool	R2.0 EarthWool	2 x R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
– /90/90 60/60/60 rated from both sides Fire Report FAR 3348	70mm 160mm cavity	35	3.90	3.90	192	46 (39)	54 (45)	58 (48)	55 (45)	59 (49)	53 (44)	4738-17 Note: Impact Sound Resistant – Discontinuous Construction
		45	4.04	4.22								
	90mm 200mm cavity	35	4.69	4.91	232	47 (39)	55 (46)	59 (**50**)	56 (47)	60 (**51**)	54 (46)	
		45	4.88	5.14								

KTW336

WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**
FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Install insulation in one frame only]



FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
– /120/120 60/60/60 rated from both sides Fire Report FAR 3348	70mm 160mm cavity	35	3.90	3.90	208	51 (43)	59 (**51**)	60 (**51**)	58 (**50**)	Note: Impact Sound Resistant – Discontinuous Construction
		45	4.04	4.22						
	90mm 200mm cavity	35	4.69	4.91	248	52 (44)	60 (**52**)	61 (**53**)	59 (**52**)	
		45	4.88	5.14						

KTW337

WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**
FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Install insulation in one frame only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
– /120/120 120/120/120 rated from both sides Fire Report FAR 3348	70mm 160mm cavity	35	3.90	3.90	224	56 (47)	64 (**56**)	66 (**57**)	63 (**56**)	Note: Impact Sound Resistant – Discontinuous Construction
		45	4.04	4.22						
	90mm 200mm cavity	35	4.69	4.91	264	57 (48)	65 (**58**)	66 (**59**)	64 (**58**)	
		45	4.88	5.14						

KTW381

WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 10mm MastaShield

FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap

[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[10mm **MastaShield** can be substituted with 10mm **WaterShield**]
[Install insulation in one frame only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
– /90/90 60/60/60 rated from both sides Fire Report FAR 3348	70mm 160mm cavity	35	3.90	3.90	202	49 (41)	57 (48)	58 (49)	56 (48)	Note: Impact Sound Resistant – Discontinuous Construction
		45	4.04	4.22						
	90mm 200mm cavity	35	4.69	4.91	242	50 (42)	58 (**50**)	59 (**51**)	57 (49)	
		45	4.88	5.14						

KTW382

WALL LINING: [Side 1] 1 layer of 16mm **FireShield** plus 1 layer of 10mm MastaShield
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 10mm MastaShield

FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap

[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[10mm **MastaShield** can be substituted with 10mm **WaterShield**]
[Install insulation in one frame only]

FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
– /120/120 60/60/60 rated from both sides Fire Report FAR 3348	70mm 160mm cavity	35	3.90	3.90	212	51 (43)	59 (**51**)	61 (**52**)	59 (**51**)	Note: Impact Sound Resistant – Discontinuous Construction
		45	4.04	4.22						
	90mm 200mm cavity	35	4.69	4.91	252	53 (44)	60 (**53**)	62 (**54**)	59 (**52**)	
		45	4.88	5.14						

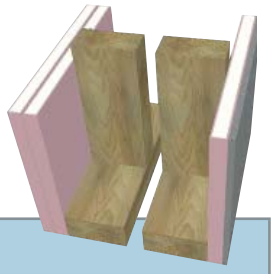
KTW534

WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Install insulation in one frame only]

FRL – /90/90 60/60/60 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant – Discontinuous Construction
	70mm 160mm cavity	35	3.90	3.90	198	50 (42)	58 (49)	60 (**50**)	57 (49)	
		45	4.04	4.22						
	90mm 200mm cavity	35	4.69	4.91	238	51 (43)	59 (**51**)	61 (**52**)	58 (**50**)	
		45	4.88	5.14						

KTW535

WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Install insulation in one frame only]
[Order of wall linings can be reversed]



FRL – /120/120 60/60/60 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant – Discontinuous Construction
	70mm 160mm cavity	35	3.90	3.90	214	55 (46)	63 (**55**)	65 (**56**)	62 (**55**)	
		45	4.04	4.22						
	90mm 200mm cavity	35	4.69	4.91	254	56 (47)	64 (**57**)	66 (**58**)	63 (**56**)	
		45	4.88	5.14						

KTW536

WALL LINING: [Side 1] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
[Side 2] 1 layer of 16mm **FireShield** plus 1 layer of 6mm Fibre Cement
FRAME: Double timber studs at maximum 600mm centres with minimum 20mm air gap
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Install insulation in one frame only]
[Order of wall linings can be reversed]

FRL – /120/120 60/60/60 rated from both sides Fire Report FAR 3348	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45 Note: Impact Sound Resistant – Discontinuous Construction
	70mm 160mm cavity	35	3.90	3.90	204	54 (45)	62 (**54**)	63 (**54**)	61 (**53**)	
		45	4.04	4.22						
	90mm 200mm cavity	35	4.69	4.91	244	55 (46)	62 (**55**)	64 (**56**)	62 (**55**)	
		45	4.88	5.14						

GENERAL REQUIREMENTS

	Non-Fire Rated	Fire Rated
Install control joints in timber framed walls: › With plasterboard at 12m maximum intervals › With fibre cement at 7.2m maximum intervals › With tiled fibre cement walls at 4.2m maximum intervals › At all control joints in the structure › At any change in the substrate material › At the floor line in stairways. Cover gap with a moulding fastened to one edge.	✔	✔
Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and: › Two coats of **MastaBase**/**MastaLongset**, or › Three coats of **MastaLite**. Never joint sheets with fire sealant. *[Refer to Section 4]*		✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.		✔
Pack any gaps between the top of the wall and the underside of the roof covering with mineral fibre or other suitable fire resisting material. This maintains the fire rating of the system. *[Refer to mineral fibre manufacturers specifications for minimum widths required]*		✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.		✔

For acceptable modifications or variations to fire rated systems. *[Refer to Section 2.3 Fire Resistance]*

FRAMING

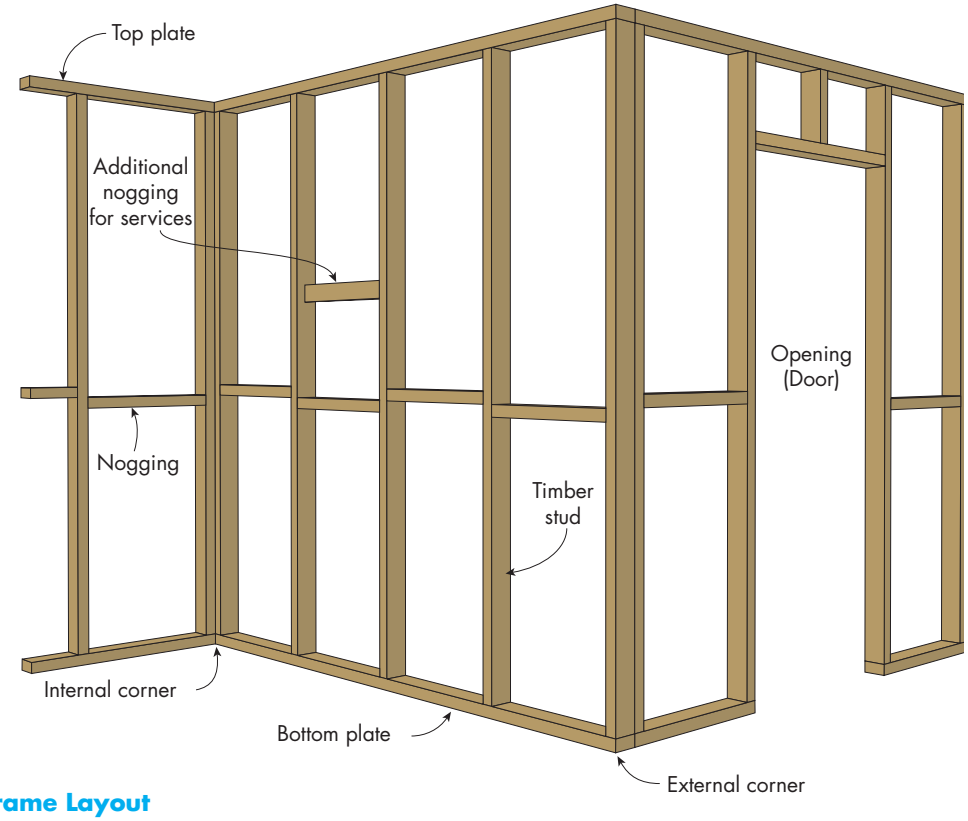


FIGURE 1 Timber Frame Layout

	Non-Fire Rated	Fire Rated
Framing members must be spaced at 600mm maximum centres	✔	✔
For load bearing walls use timber studs with minimum dimensions 70x45mm or 90x35mm.		✔

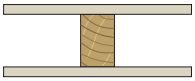
- Noggings are permitted to assist the fixing of services.
- For non-fire rated walls, noggings are not required behind recessed joints when sheeting plasterboard horizontally.
- Plumbing and electrical services must not protrude beyond the face of the stud.

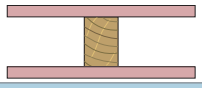
RESILIENT MOUNT SPACING

Framing Member	Maximum Resilient Mount Spacing
16mm Furring Channel – Rondo No.308	900mm
28mm Furring Channel – Rondo No.129	1200mm

Anchors for Furring Channel must also be fixed 100mm max from ends.

TIMBER STUD WALL MAXIMUM HEIGHT – NON-LOAD BEARING

Deflection Limit: Height/240 or 30mm		Non-Fire Rated Walls (UDL 0.25 kPa)											
		Single stud wall lined with plasterboard on both sides 											
		10mm Non-Fire Rated Plasterboard						13mm Non-Fire Rated Plasterboard					
Stud Depth (mm)	Stud Width (mm)	MGP10	MGP12	MGP15	F5	F8	F11	MGP10	MGP12	MGP15	F5	F8	F11
Timber Studs at 600mm Maximum Centres													
70	35	3.74	3.87	3.99	3.57	3.69	3.76	4.01	4.13	4.23	3.87	3.97	4.04
	45	3.88	4.04	4.17	3.68	3.82	3.91	4.14	4.28	4.40	3.96	4.09	4.16
90	35	4.54	4.73	4.89	4.30	4.47	4.58	4.82	4.99	5.14	4.61	4.76	4.85
	45	4.74	4.96	5.15	4.45	4.66	4.78	5.00	5.20	5.37	4.74	4.93	5.04
120	35	5.74	6.00	6.00	5.38	5.64	5.79	6.00	6.00	6.00	5.70	5.93	6.00
	45	6.00	6.00	6.00	5.61	5.92	6.00	6.00	6.00	6.00	5.91	6.00	6.00
Timber Studs at 450mm Maximum Centres													
70	35	3.90	4.06	4.20	3.70	3.84	3.93	4.16	4.30	4.42	3.98	4.11	4.18
	45	4.07	4.26	4.42	3.83	4.00	4.11	4.31	4.48	4.63	4.09	4.25	4.34
90	35	4.77	5.00	5.19	4.46	4.69	4.82	5.03	5.23	5.41	4.77	4.95	5.07
	45	5.01	5.28	5.50	4.67	4.92	5.06	5.25	5.49	5.70	4.94	5.16	5.29
120	35	6.00	6.00	6.00	5.65	5.96	6.00	6.00	6.00	6.00	5.94	6.00	6.00
	45	6.00	6.00	6.00	5.93	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Timber Studs at 300mm Maximum Centres													
70	35	4.19	4.40	4.58	3.92	4.12	4.23	4.41	4.60	4.77	4.18	4.35	4.45
	45	4.41	4.65	4.85	4.10	4.32	4.46	4.61	4.84	5.02	4.33	4.54	4.66
90	35	5.18	5.47	5.71	4.80	5.08	5.23	5.40	5.66	5.89	5.05	5.30	5.45
	45	5.48	5.81	6.09	5.05	5.36	5.55	5.68	5.99	6.25	5.28	5.57	5.74
120	35	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
	45	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

Deflection Limit: Height/240 or 30mm		Fire Rated Walls (UDL 0.25 kPa)											
		Single stud wall lined with plasterboard on both sides 											
		13mm Fire Rated Plasterboard						16mm Fire Rated Plasterboard					
Stud Depth (mm)	Stud Width (mm)	MGP10	MGP12	MGP15	F5	F8	F11	MGP10	MGP12	MGP15	F5	F8	F11
Timber Studs at 600mm Maximum Centres													
70	35	3.90	4.39	4.49	3.32	4.25	4.31	3.90	4.70	4.78	3.32	4.25	4.63
	45	4.40	4.52	4.63	3.83	4.36	4.42	4.53	4.81	4.91	3.83	4.67	4.72
90	35	5.12	5.27	5.40	4.84	5.07	5.15	5.44	5.58	5.70	4.84	5.40	5.47
	45	5.28	5.46	5.62	5.05	5.21	5.31	5.59	5.75	5.89	5.39	5.53	5.62
120	35	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
	45	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Timber Studs at 450mm Maximum Centres													
70	35	3.90	4.55	4.66	3.32	4.25	4.44	3.90	4.83	4.93	3.32	4.25	4.74
	45	4.53	4.71	4.84	3.83	4.50	4.58	4.53	4.97	5.09	3.83	4.79	4.86
90	35	5.30	5.49	5.65	4.84	5.24	5.34	5.61	5.76	5.92	4.84	5.55	5.64
	45	5.50	5.72	5.91	5.22	5.42	5.54	5.79	5.99	6.00	5.49	5.72	5.82
120	35	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
	45	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Timber Studs at 300mm Maximum Centres													
70	35	3.90	4.82	4.97	3.32	4.25	4.68	3.90	4.92	5.21	3.32	4.25	4.92
	45	4.53	5.03	5.21	3.83	4.76	4.87	4.53	5.27	5.43	3.83	4.82	5.12
90	35	5.62	5.89	6.00	4.84	5.55	5.69	5.62	6.00	6.00	4.84	5.83	5.96
	45	5.90	6.00	6.00	5.49	5.80	5.96	6.00	6.00	6.00	5.49	6.00	6.00
120	35	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
	45	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

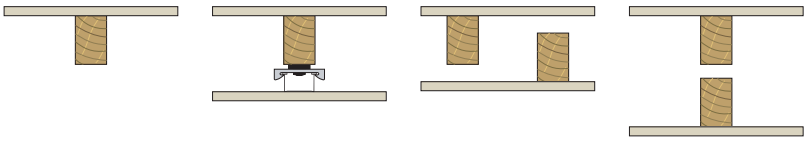
- Wall height is limited by either deflection limitations or fire engineering principles. Deflection limit is height/240 to a maximum of 30mm at 0.25 kPa, in accordance with BCA Specification C1.8 - 2009.
- Tabulated heights are not for axial loads but do include self weight and lateral pressures.
- Shelf loading is not permitted on these tabulated wall heights.
- These walls are not for external applications.
- Noggings must be installed at 1350mm maximum vertical centres. Noggings are not required in staggered stud walls.
- Where staggered stud walls are shown in the table above spaced at 600mm centres, this means staggering the studs every 300mm etc.
- F graded and MGP timber studs are commonly only available up to a maximum length of 6m.

TIMBER STUD WALL MAXIMUM HEIGHT – NON-LOAD BEARING

Deflection Limit: Height/240 or 30mm

Non-Fire Rated Walls (UDL 0.25 kPa)

Single stud wall lined with plasterboard on one side only, resilient mount and furring channel wall, staggered stud wall or double stud wall

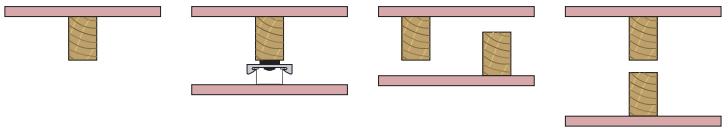


Stud Depth (mm)	Stud Width (mm)	10mm Non-Fire Rated Plasterboard						13mm Non-Fire Rated Plasterboard					
		MGP10	MGP12	MGP15	F5	F8	F11	MGP10	MGP12	MGP15	F5	F8	F11
Timber Studs at 600mm Maximum Centres													
70	35	3.33	3.49	3.63	3.11	3.27	3.36	3.50	3.65	3.78	3.31	3.45	3.53
	45	3.50	3.69	3.85	3.25	3.43	3.54	3.66	3.84	3.99	3.44	3.60	3.70
90	35	4.11	4.34	4.53	3.81	4.03	4.15	4.28	4.50	4.68	4.01	4.21	4.33
	45	4.35	4.61	4.83	4.01	4.26	4.40	4.51	4.75	4.96	4.19	4.42	4.56
120	35	5.29	5.62	5.89	4.86	5.17	5.35	5.46	5.77	6.00	5.06	5.35	5.52
	45	5.63	6.00	6.00	5.14	5.50	5.71	5.79	6.00	6.00	5.32	5.66	5.85
Timber Studs at 450mm Maximum Centres													
70	35	3.53	3.72	3.89	3.27	3.46	3.57	3.69	3.87	4.02	3.46	3.62	3.72
	45	3.73	3.96	4.14	3.44	3.65	3.78	3.88	4.08	4.26	3.61	3.80	3.92
90	35	4.39	4.66	4.88	4.04	4.29	4.44	4.54	4.79	5.00	4.22	4.45	4.59
	45	4.67	4.97	5.22	4.27	4.56	4.73	4.81	5.09	5.33	4.43	4.70	4.86
120	35	5.69	6.00	6.00	5.19	5.55	5.76	5.84	6.00	6.00	5.36	5.71	5.90
	45	6.00	6.00	6.00	5.52	5.93	6.00	6.00	6.00	6.00	5.67	6.00	6.00
Timber Studs at 300mm Maximum Centres													
70	35	3.87	4.11	4.31	3.55	3.79	3.92	4.01	4.23	4.42	3.71	3.93	4.05
	45	4.13	4.40	4.62	3.76	4.03	4.18	4.25	4.50	4.72	3.90	4.15	4.30
90	35	4.86	5.18	5.45	4.43	4.74	4.92	4.99	5.30	5.55	4.58	4.87	5.05
	45	5.20	5.56	5.86	4.71	5.07	5.27	5.31	5.66	5.95	4.85	5.19	5.38
120	35	6.00	6.00	6.00	5.74	6.00	6.00	6.00	6.00	6.00	5.88	6.00	6.00
	45	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

Deflection Limit: Height/240 or 30mm

Fire Rated Walls (UDL 0.25 kPa)

Single Stud Wall Lined with Plasterboard on one Side Only, Resilient Mount and Furring Channel Wall, Staggered Stud Wall or Double Stud Wall



Stud Depth (mm)	Stud Width (mm)	13mm Fire Rated Plasterboard						16mm Fire Rated Plasterboard					
		MGP10	MGP12	MGP15	F5	F8	F11	MGP10	MGP12	MGP15	F5	F8	F11
Timber Studs at 600mm Maximum Centres													
70	35	3.69	3.83	3.94	3.32	3.64	3.72	3.90	4.03	4.14	3.32	3.86	3.93
	45	3.83	3.99	4.13	3.63	3.78	3.86	4.04	4.18	4.31	3.83	3.98	4.06
90	35	4.48	4.67	4.84	4.23	4.41	4.51	4.69	4.87	5.03	4.47	4.63	4.73
	45	4.68	4.91	5.10	4.39	4.60	4.73	4.88	5.09	5.27	4.61	4.81	4.92
120	35	5.66	5.95	6.00	5.29	5.56	5.72	5.87	6.00	6.00	5.53	5.78	5.93
	45	5.96	6.00	6.00	5.53	5.84	6.00	6.00	6.00	6.00	5.75	6.00	6.00
Timber Studs at 450mm Maximum Centres													
70	35	3.86	4.02	4.16	3.32	3.80	3.89	3.90	4.21	4.34	3.32	4.00	4.09
	45	4.03	4.22	4.39	3.78	3.96	4.07	4.22	4.39	4.55	3.83	4.15	4.25
90	35	4.72	4.95	5.15	4.42	4.63	4.76	4.91	5.13	5.31	4.64	4.83	4.95
	45	4.96	5.23	5.46	4.61	4.86	5.01	5.14	5.39	5.61	4.81	5.05	5.19
120	35	6.00	6.00	6.00	5.57	5.89	6.00	6.00	6.00	6.00	5.79	6.00	6.00
	45	6.00	6.00	6.00	5.86	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Timber Studs at 300mm Maximum Centres													
70	35	3.90	4.36	4.54	3.32	4.08	4.19	3.90	4.52	4.69	3.32	4.25	4.36
	45	4.38	4.62	4.82	3.83	4.29	4.42	4.53	4.76	4.96	3.83	4.45	4.58
90	35	5.13	5.42	5.67	4.75	5.03	5.19	5.30	5.57	5.81	4.94	5.20	5.35
	45	5.44	5.77	6.00	5.00	5.32	5.51	5.59	5.91	6.00	5.17	5.47	5.65
120	35	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
	45	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00

PLASTERBOARD LAYOUT

	Non-Fire Rated	Fire Rated
Vertical joints must be 200mm minimum from the edge of any opening such as windows and doorways to minimise cracking at the joints.	✔	✔
Horizontal Layout		
Stagger butt joints by 600mm minimum on adjoining sheets, between layers and on opposite sides of the wall.	✔	✔
First layer butt joints must be backed by a stud or back-blocked.	✔	
First layer butt joints must be backed by a stud.		✔
Stagger recessed edges by 300mm minimum between layers.	✔	✔
Stagger recessed edges by 300mm minimum on opposite sides of the wall or alternatively, back by a nogging.		✔
Vertical Layout		
Stagger butt joints by 600mm minimum on adjoining sheets, between layers and on opposite sides of the wall.	✔	✔
First layer butt joints must be backed by a nogging or back-blocked.	✔	
First layer butt joints must be backed by a nogging.		✔
Stagger recessed edges by 300mm minimum between layers and on opposite sides of the wall.	✔	✔

- Install plasterboard sheets horizontally when practical to reduce the effect of glancing
- Minimise butt joints by using long sheets.

PLASTERBOARD FIXING

	Non-Fire Rated	Fire Rated
Drive fasteners to just below the sheet surface, taking care not to break the paper linerboard.	✔	✔
Laminating screws can be used to fix butt joints in the second and third layer.	✔	✔
Fastener and Adhesive Method		
Apply MastaGrip Stud Adhesive after the frame is clean, dry, and free from grease, dust and other contaminants.	✔	
Apply MastaGrip daubs 200mm minimum from fastener and plasterboard edges.	✔	
Fastener Only Method		
Use the 'Fastener Only Method' in tiled or fire rated areas. Stud adhesive is not permitted.	✔	✔

PLASTERBOARD FIXING

The 'Fastener and Adhesive Method' is recommended for non-fire rated applications. MastaGrip will:

- Minimise fastener popping
- Reduce the number of fastener heads that may show in glancing light
- Assist in compensating for frame irregularities
- Reduce rattle noise when applied to bracing straps.

FASTENER TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO SOFTWOOD TIMBER

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm	30mm x 2.8 Galvanised Nail or 25mm x 2.8 Ring Shank Nail or 25mm – 6g W screw	40mm x 2.8 Galvanised Nail or 30mm x 2.8 Ring Shank Nail or 30mm – 6g W screw	–
10mm	40mm x 2.8 Galvanised Nail or 30mm x 2.8 Ring Shank Nail or 25mm – 6g W screw for walls or 30mm – 6g W screw for ceilings	50mm x 2.8 Galvanised Nail or 40mm – 6g W screw*	–
13mm	40mm x 2.8 Galvanised Nail or 30mm x 2.8 Ring Shank Nail or 30mm – 6g Type W screw	50mm x 2.8 Galvanised Nail or 45mm – 6g W screw*	75mm x 3.75 Galvanised Nail or 65mm – 8g W screw*
16mm	50mm x 2.8 Galvanised Nail or 45mm – 6g W screw	65mm x 3.15 Galvanised Nail or 50mm – 6g W screw*	75mm x 3.75 Galvanised Nail or 65mm – 8g W screw*

For timber use Type 'W' coarse thread needle point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.

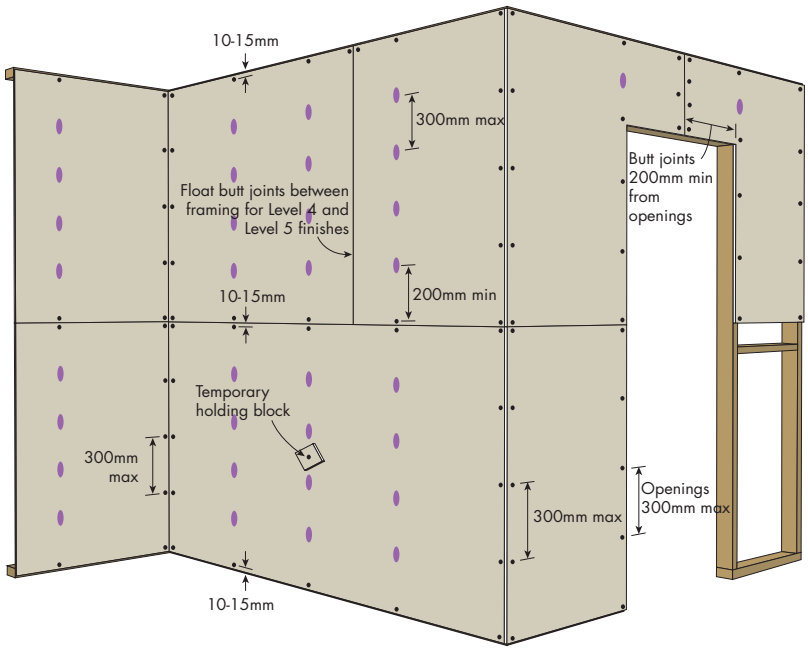
FASTENER TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO HARDWOOD TIMBER

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm	30mm x 2.8 Galvanised Nail or 25mm x 2.8 Ring Shank Nail or 25mm – 6g W screw	30mm x 2.8 Galvanised Nail or 25mm x 2.8 Ring Shank Nail or 30mm – 6g W screw	–
10mm	30mm x 2.8 Galvanised Nail or 25mm x 2.8 Ring Shank Nail or 25mm – 6g W screw for walls or 30mm – 6g W screw for ceilings	40mm x 2.8 Galvanised Nail or 35mm – 6g W screw*	–
13mm	30mm x 2.8 Galvanised Nail or 25mm x 2.8 Ring Shank Nail or 25mm – 6g W screw for walls or 30mm – 6g W screw for ceilings	40mm x 2.8 Galvanised Nail or 40mm – 6g W screw*	65mm x 3.15 Galvanised Nail or 65mm – 8g W screw*
16mm	40mm x 2.8 Galvanised Nail or 30mm – 6g W screw	50mm x 2.8 Galvanised Nail or 45mm – 6g W screw*	65mm x 3.15 Galvanised Nail or 65mm – 8g W screw*

For timber use Type 'W' coarse thread needle point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.

NON FIRE RATED

FIGURE 2 Non-Fire Rated 1 Layer – Horizontal
Fastener and Adhesive Method

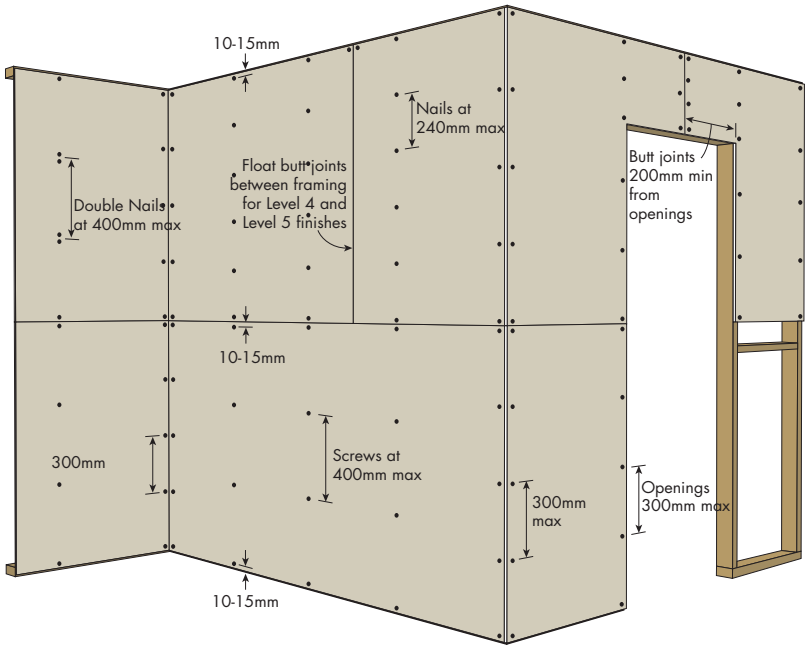


Fixing	Fastener and Adhesive Method
Sheet Layout	Horizontal
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Adhesive daubs 25mm diameter and 15mm high, spaced at 300mm max centres and 200mm min from fasteners and plasterboard edges. Temporary holding blocks or fastener on every second stud recommended.
Recessed Edges	Fix on each stud
Butt Joints	Float butt joints between studs and back-block for Level 4 and Level 5 Finishes. Butt joints permitted on a stud for Level 3 Finish. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall.
Internal and External Corners	Fix at 300mm max centres
Openings	Fix at 300mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

Plasterboard Width (mm)	Fastener and Adhesive Pattern
900	F A A A F
1200	F A A A A F
1350	F A A A A A F

F = Fastener (Screw or Nail) A = Adhesive

FIGURE 3 Non-Fire Rated 1 Layer – Horizontal
Fastener Only Method



Fixing	Fastener Only Method
Sheet Layout	Horizontal
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Fix screws or double nails at 400mm max centres Fix nails at 240mm max centres
Recessed Edges	Fix on each stud
Butt Joints	Float butt joints between studs and back-block for Level 4 and Level 5 Finishes. Butt joints permitted on a stud for Level 3 Finish. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall.
Internal and External Corners	Fix at 300mm max centres
Openings	Fix at 300mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

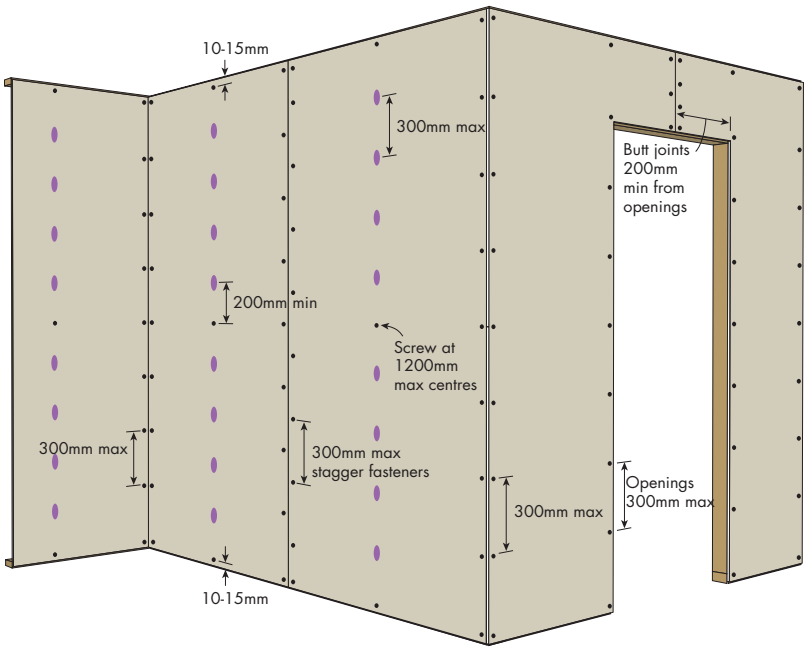
Plasterboard Width (mm)	Fastener and Adhesive Pattern
900	S S S S
1200	S S S S
1300	S S S S S

S = Screw

Plasterboard Width (mm)	Nail Pattern	Double Nail Pattern
900	N N N N N	N DN DN N
1200	N N N N N N	N DN DN N
1350	N N N N N N N	N DN DN DN N

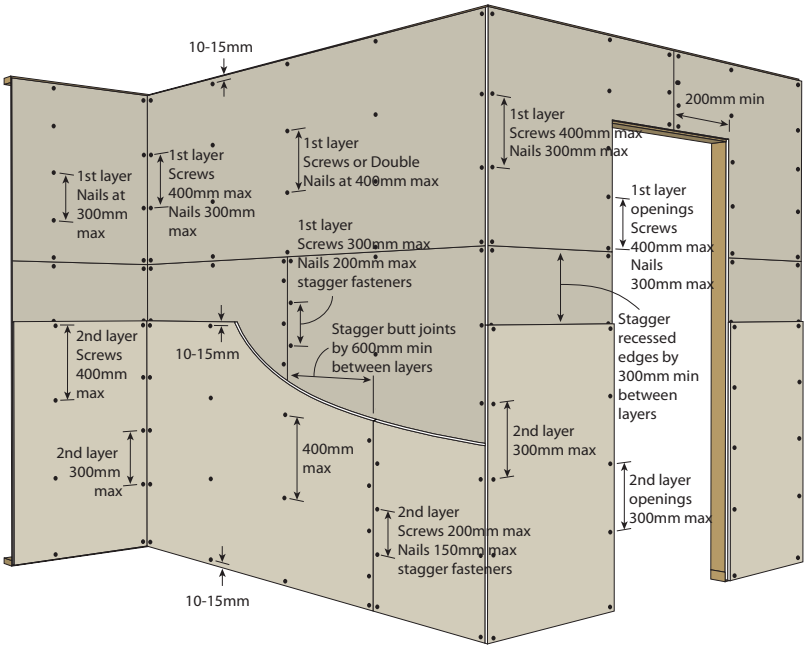
N = Nail, DN = Double Nail

FIGURE 4 Non-Fire Rated 1 Layer – Vertical
Fastener and Adhesive Method



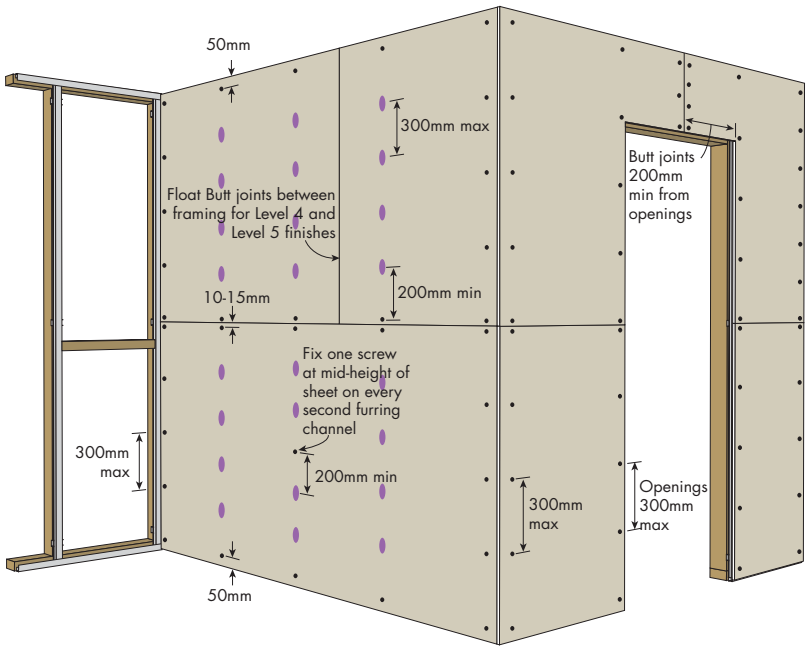
Fixing	Fastener and Adhesive Method
Sheet Layout	Vertical
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Adhesive daubs 25mm diameter and 15mm high, spaced at 300mm max centres and 200mm min from fasteners and plasterboard edges. Fix one fastener at 1200mm max centres.
Recessed Edges	Fix at 300mm centres and stagger fasteners. Stagger recessed edges by 300mm min on opposite sides of the wall.
Butt Joints	Fix at 200mm max centres and stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging or back-blocked.
Internal and External Corners	Fix at 300mm max centres
Openings	Fix at 300mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 5 Non-Fire Rated 2 Layers – Horizontal + Horizontal
Fastener Only Method



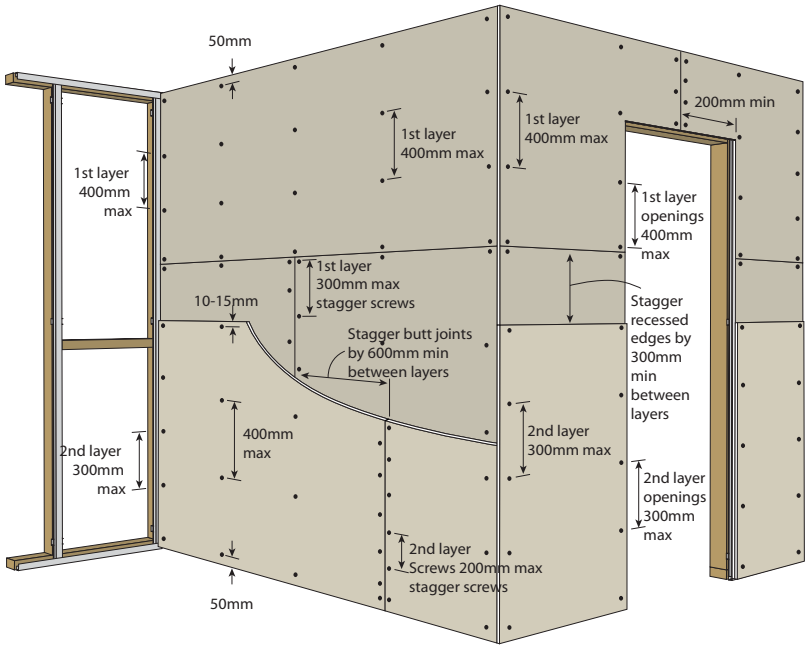
Fixing	1st layer: Fastener Only Method 2nd layer: Fastener Only Method
Sheet Layout	1st layer: Horizontal 2nd layer: Horizontal
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	1st layer: Fix screws or double nails at 400mm max centres. Fix nails at 300mm max centres. 2nd layer: Fix screws or double nails at 400mm max centres. Fix nails at 300mm max centres.
Recessed Edges	1st layer: Fix on each stud. Stagger recessed edges by 300mm between layers. 2nd layer: Fix on each stud.
Butt Joints	1st layer: Fix screws at 300mm max centres. Fix nails at 200mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by a stud. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Alternatively, float butt joints and laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix screws at 400mm max centres. Fix nails at 300mm max centres. 2nd layer: Fix at 300mm max centres.
Openings	1st layer: Fix screws at 400mm max centres. Fix nails at 300mm max centres. 2nd layer: Fix at 300mm max centres.
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 6 Non-Fire Rated 1 Layer – Horizontal
Screw and Adhesive Method on resilient mounts and furring channel



Fixing	Screw and Adhesive Method
Sheet Layout	Horizontal
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom of wall. Plasterboard must not be fixed to bottom track.
Field	Adhesive daubs 25mm diameter and 15mm high, spaced at 300mm max centres and 200mm min from screw points and plasterboard edges. Fix one screw at mid-height of sheet on every second furring channel.
Recessed Edges	Fix on each furring channel.
Butt Joints	Float butt joints between furring channel and back-block for Level 4 and Level 5 Finishes. Butt joints permitted on a furring channel for Level 3 Finish. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall.
Internal and External Corners	Fix at 300mm max centres.
Openings	Fix at 300mm max centres.
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 7 Non-Fire Rated 2 Layers – Horizontal + Horizontal
Screw Only Method on resilient mounts and furring channel

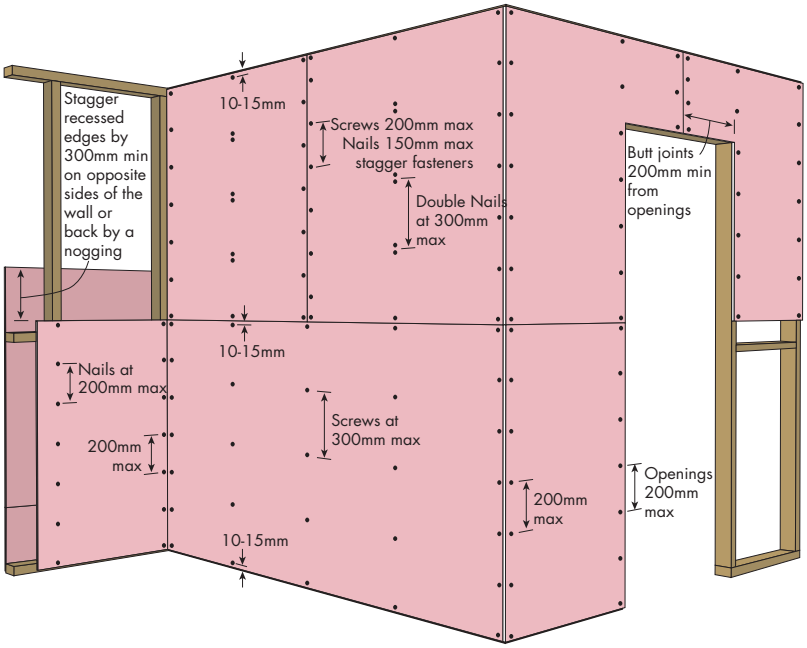


Fixing	1st layer: Screw Only Method 2nd layer: Screw Only Method
Sheet Layout	1st layer: Horizontal 2nd layer: Horizontal
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom of wall. Plasterboard must not be fixed to bottom track.
Field	1st layer: Fix at 400mm max centres. 2nd layer: Fix at 400mm max centres.
Recessed Edges	1st layer: Fix on each stud. Stagger recessed edges by 300mm between layers. 2nd layer: Fix on each stud.
Butt Joints	1st layer: Fix at 300mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by furring channel. 2nd layer: Fix at 200mm max centres and stagger screws. Alternatively, float butt joints and laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 400mm max centres. 2nd layer: Fix at 300mm max centres.
Openings	1st layer: Fix at 400mm max centres. 2nd layer: Fix at 300mm max centres.
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIRE RATED

FIGURE 8 Fire Rated 1 Layers – Horizontal

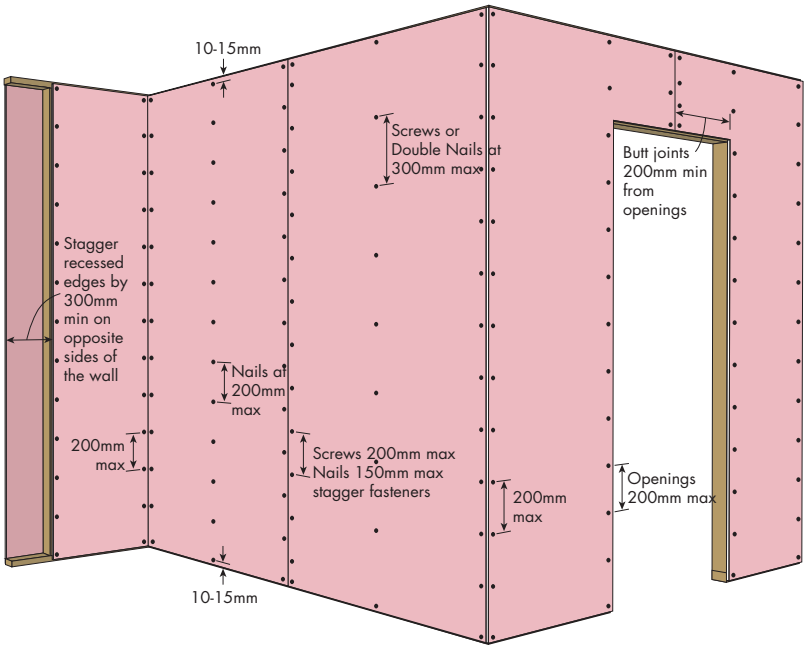
Fastener Only Method



Fixing	Fastener Only Method
Sheet Layout	Horizontal
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Fix screws or double nails at 300mm max centres. Fix nails at 200mm max centres.
Recessed Edges	Fix on each stud. Stagger recessed edges by 300mm min on opposite sides of the wall or back by a nogging.
Butt Joints	Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a stud.
Internal and External Corners	Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer To Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

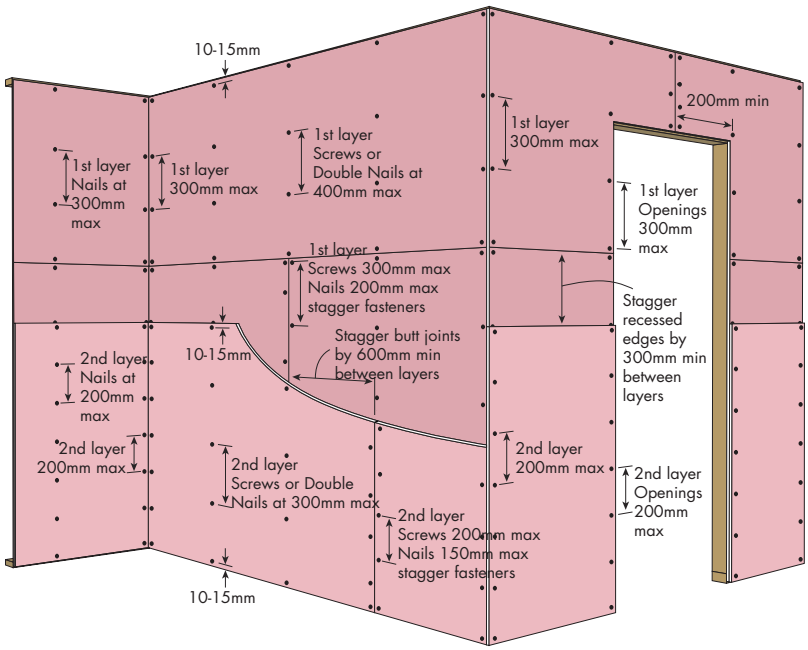
FIGURE 9 Fire Rated 1 Layer – Vertical

Fastener Only Method



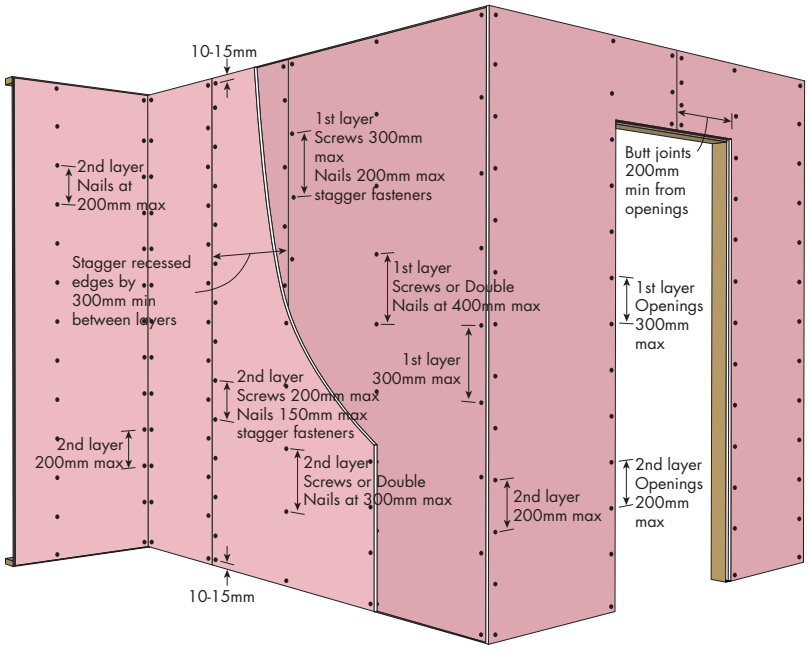
Fixing	Fastener Only Method
Sheet Layout	Vertical
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Fix screws or double nails at 300mm max centres. Fix nails at 200mm max centres.
Recessed Edges	Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a stud.
Butt Joints	Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging.
Internal and External Corners	Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 10 Fire Rated 2 Layers – Horizontal + Horizontal
Fastener Only Method



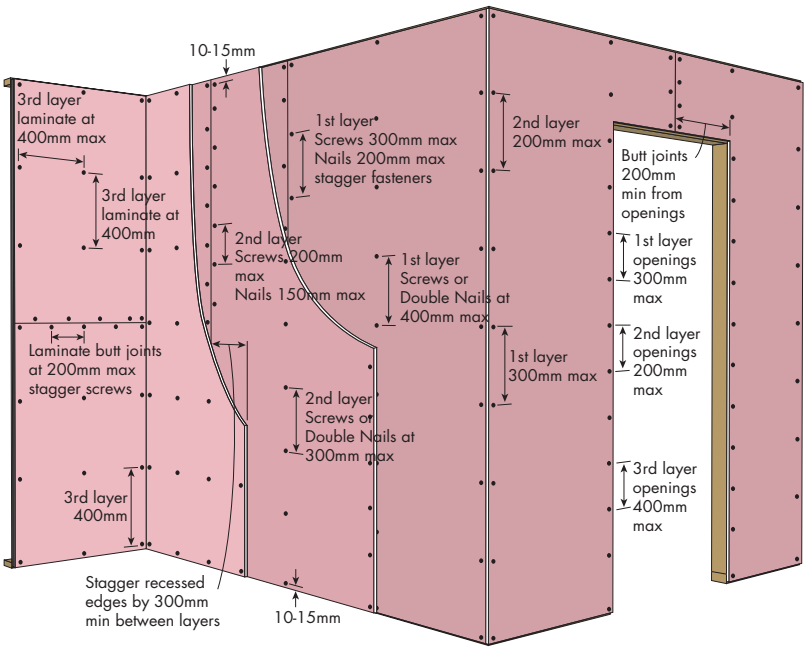
Fixing	Fastener Only Method
Sheet Layout	1st layer: Horizontal 2nd layer: Horizontal
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	1st layer: Fix screws or double nails at 400mm max centres. Fix nails at 300mm max centres. 2nd layer: Fix screws or double nails at 300mm max centres. Fix nails at 200mm max centres.
Recessed Edges	1st layer: Fix on each stud. Stagger recessed edges by 300mm min between layers and on opposite sides of the wall ,or back by a nogging. 2nd layer: Fix on each stud.
Butt Joints	1st layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by a stud. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Alternately, float butt joints and laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 11 Fire Rated 2 Layers – Vertical + Vertical
Fastener Only Method



Fixing	Fastener Only Method
Sheet Layout	1st layer: Vertical 2nd layer: Vertical
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	1st layer: Fix screws or double nails at 400mm max centres. Fix nails at 300mm max centres. 2nd layer: Fix screws or double nails at 300mm max centres. Fix nails at 200mm max centres.
Recessed Edges	1st layer: Fix screws at 300mm max centres. Fix nails at 200mm max centres. Stagger fasteners. Stagger recessed edges by 300mm min between layers and on opposite sides of the wall. Recessed edges must be backed by a stud. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Recessed edges must be backed by a stud.
Butt Joints	1st layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Alternately, laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

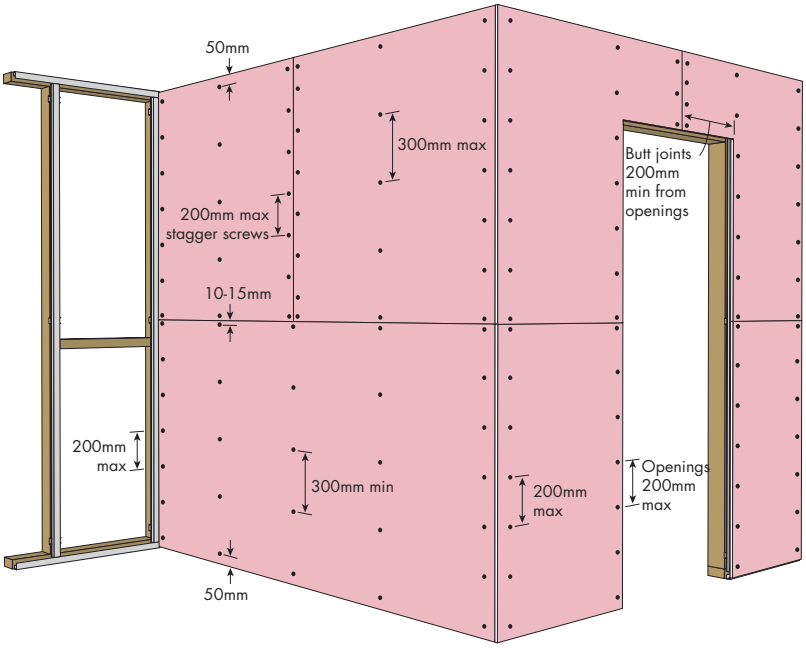
FIGURE 12 Fire Rated 3 Layers – All Vertical
Fastener Only Method



Fixing	Fastener Only Method
Sheet Layout	1st, 2nd and 3rd layers: Vertical
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	1st layer: Fix screws or double nails at 400mm max centres. Fix nails at 300mm max centres. 2nd layer: Fix screws or double nails at 300mm max centres. Fix nails at 200mm max centres. 3rd layer: Fix screws or double nails at 400mm max centres. Fix nails at 300mm max centres. Alternately, laminate to 2nd layer at 400x400mm max centres.
Recessed Edges	1st layer: Fix screws at 300mm max centres. Fix nails at 200mm max centres. Stagger fasteners. Stagger recessed edges by 300mm min between layers, and on opposite sides of the wall. Recessed edges must be back by a stud. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Recessed edges must be backed by a stud. 3rd layer: Fix screws at 400mm max centres. Fix nails at 300mm max centres.Stagger fasteners.
Butt Joints	1st layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Alternately, laminate to 1st layer using laminating screws at 200mm max centres and stagger screws. 3rd layer: Laminate to 2nd layer at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres 3rd layer: Fix at 400mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres 3rd layer: Fix at 400mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/ MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 13 Fire Rated 1 Layer – Horizontal

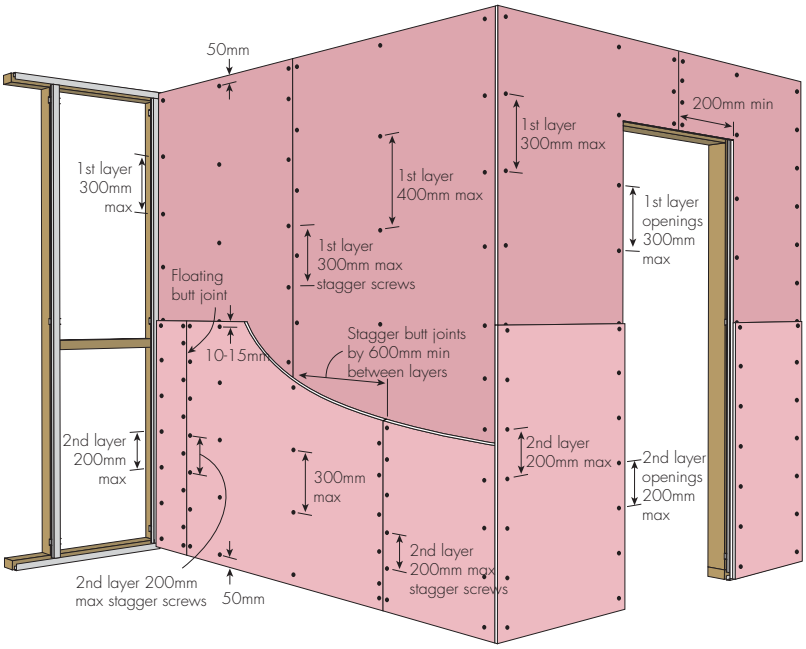
Screw Only Method on resilient mounts and furring channel



Fixing	Screw Only Method
Sheet Layout	Horizontal
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom of wall. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 300mm max centres
Recessed Edges	Fix on each furring channel. Stagger recessed edges by 300mm on opposite sides of the wall or back by furring channel.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by furring channel.
Internal and External Corners	Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/ MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

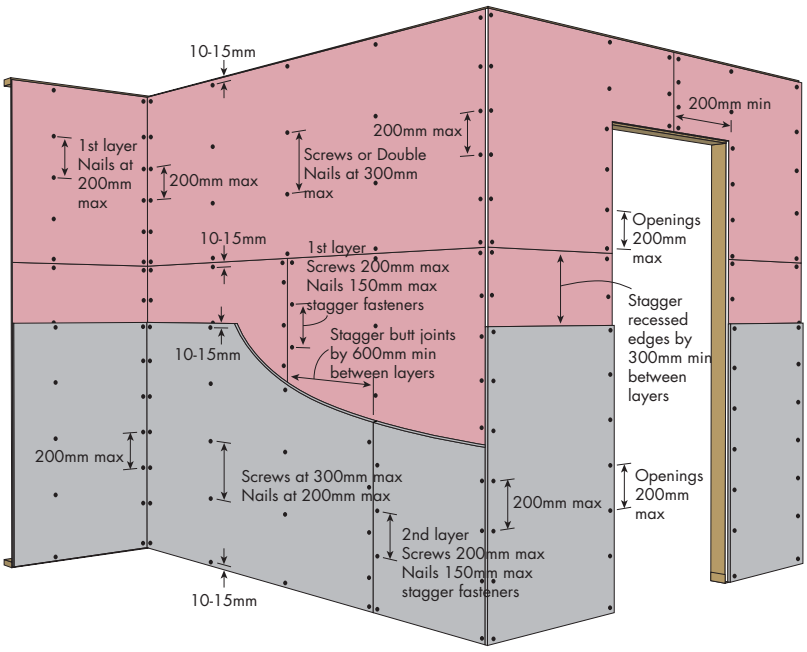
FIGURE 14 Fire Rated 2 Layers – Vertical + Horizontal

Screw Only Method on resilient mounts and furring channel



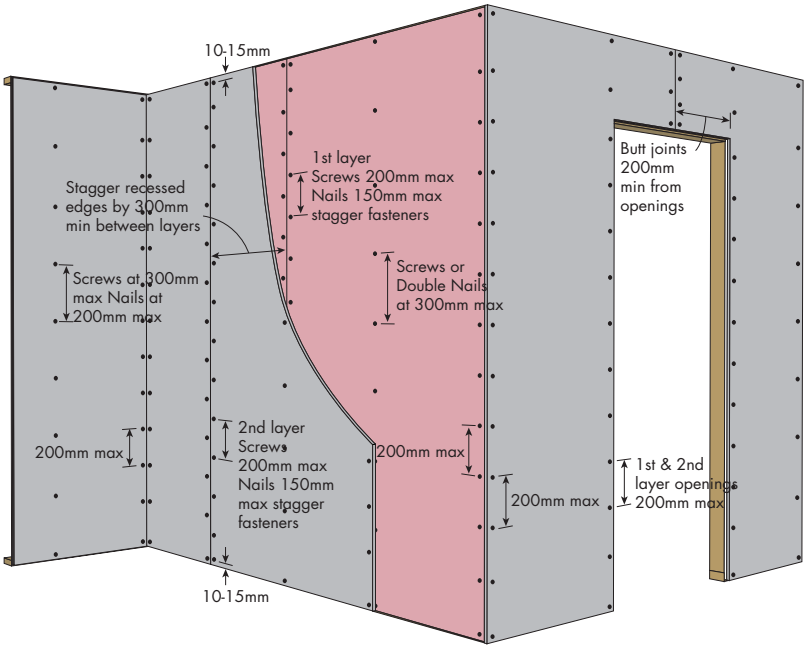
Fixing	Screw Only Method
Sheet Layout	1st layer: Vertical 2nd layer: Horizontal
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom of wall. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 400mm max centres 2nd layer: Fix at 300mm max centres
Recessed Edges	1st layer: Fix at 300mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a furring channel. 2nd layer: Fix on each furring channel.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by furring channel. 2nd layer: Fix at 200mm max centres and stagger screws. Alternatively, float butt joints and laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres. 2nd layer: Fix at 200mm max centres.
Openings	1st layer: Fix at 300mm max centres. 2nd layer: Fix at 200mm max centres.
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 15 Fire Rated 2 Layers – Horizontal + Horizontal
Fastener Only Method



Fixing	Fastener Only Method
Sheet Layout	1st layer: Horizontal (FireShield) 2nd layer: Horizontal (Fibre Cement)
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	1st layer: Fix screws or double nails at 300mm max centres. Fix nails at 200mm max centres. 2nd layer: Fix screws at 300mm max centres. Fix nails at 200mm max centres.
Recessed Edges	1st layer: Fix on each stud. Stagger recessed edges by 300mm min between layers and on opposite sides of the wall, or back by a nogging. 2nd layer: Fix on each stud.
Butt Joints	1st layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by a stud. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres.
Internal and External Corners	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 16 Fire Rated 2 Layers – Vertical + Vertical
Fastener Only Method



Fixing	Fastener Only Method
Sheet Layout	1st layer: Vertical (FireShield) 2nd layer: Vertical (Fibre Cement)
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	1st layer: Fix screws or double nails at 300mm max centres. Fix nails at 200mm max centres. 2nd layer: Fix screws at 300mm max centres. Fix nails at 200mm max centres.
Recessed Edges	1st layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger recessed edges by 300mm min between layers, and on opposite sides of the wall. Recessed edges must be backed by a stud. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners.
Butt Joints	1st layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Alternately, laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

NON-FIRE RATED

WALL HEAD AND BASE FOR SINGLE AND DOUBLE STUD WALLS – ELEVATION

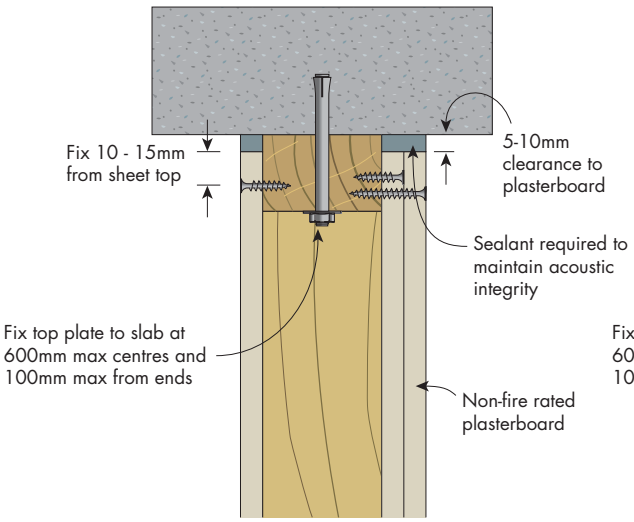


FIGURE 17 Wall Head To Slab

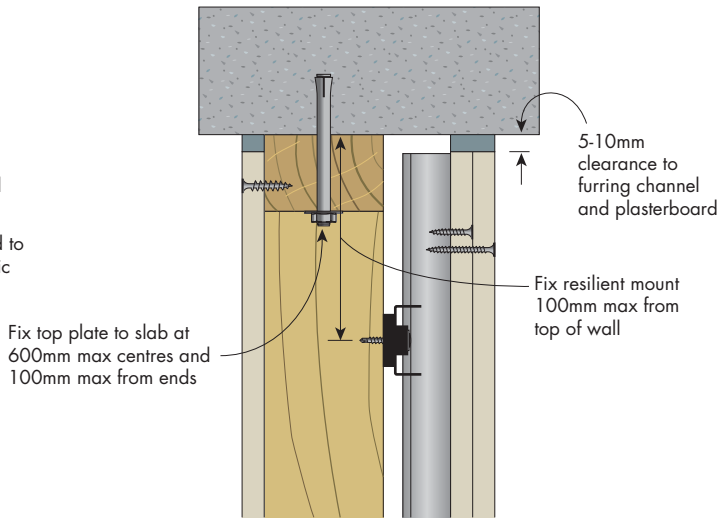


FIGURE 18 Wall Head to Slab
Resilient mount and furring channel

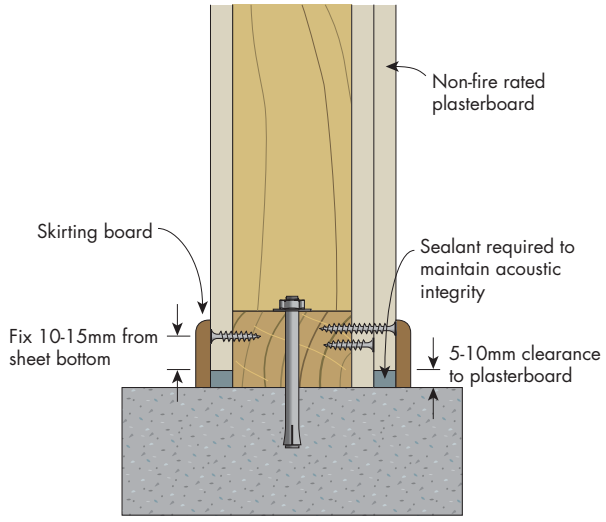


FIGURE 19 Wall Base to Slab

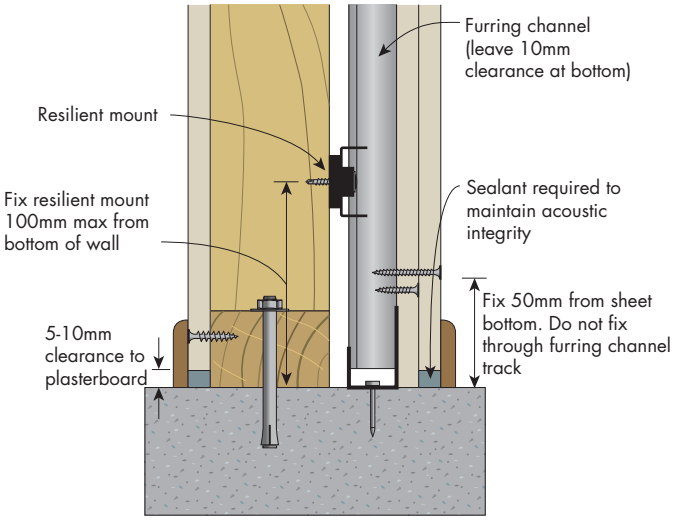


FIGURE 20 Wall Base to Slab
Resilient mount and furring channel

FIRE RATED

WALL HEAD AND BASE FOR SINGLE AND DOUBLE STUD WALLS – ELEVATION

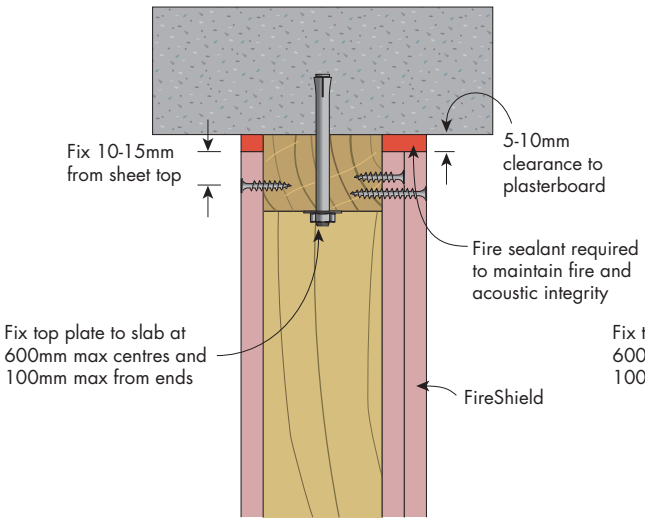


FIGURE 21 Wall Head to Slab

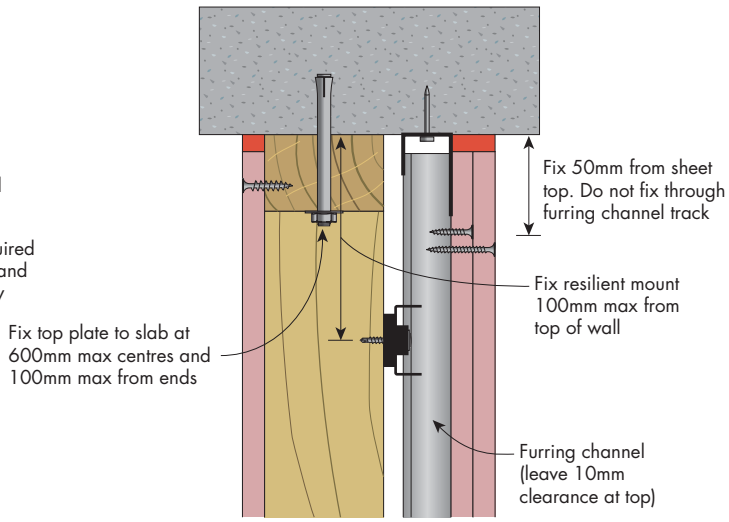


FIGURE 22 Wall Head to Slab
Resilient mount and furring channel

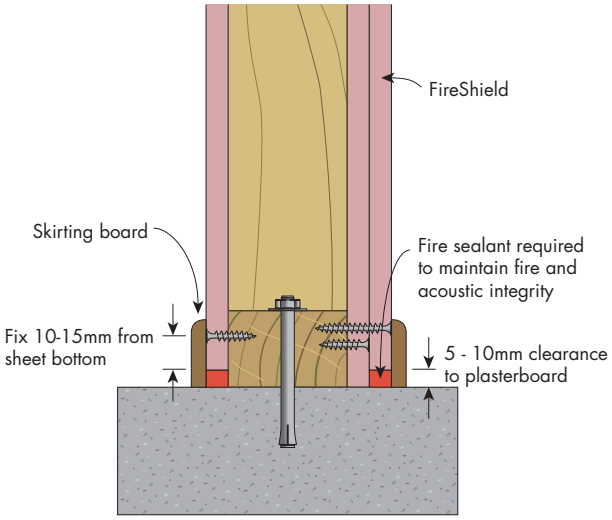


FIGURE 23 Wall Base to Slab

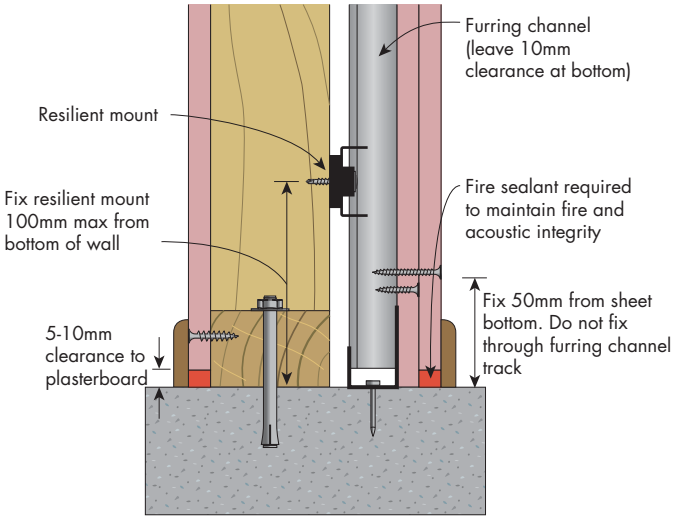


FIGURE 24 Wall Base to Slab
Resilient mount and furring channel

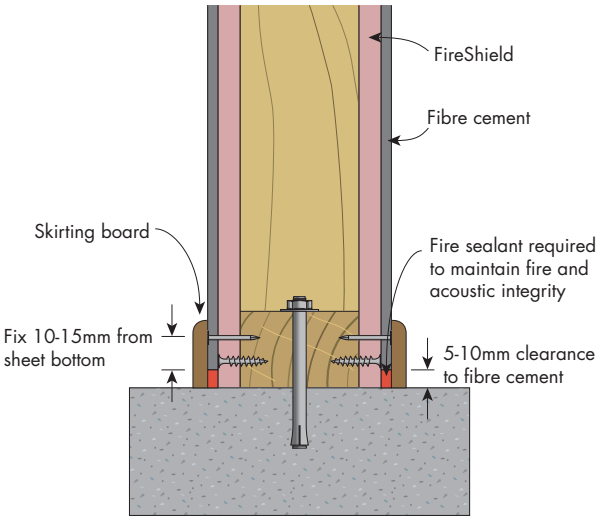


FIGURE 25 Wall Base to Slab
FireShield and Fibre Cement

NON-FIRE RATED
WALL JUNCTIONS – PLAN VIEW

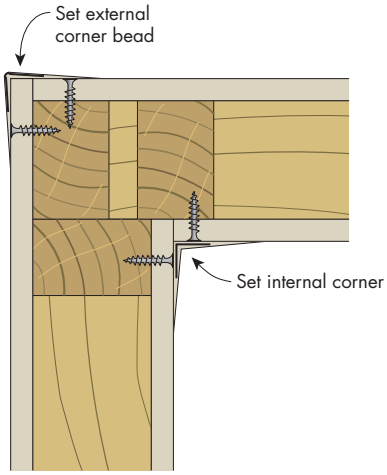


FIGURE 26 Corner

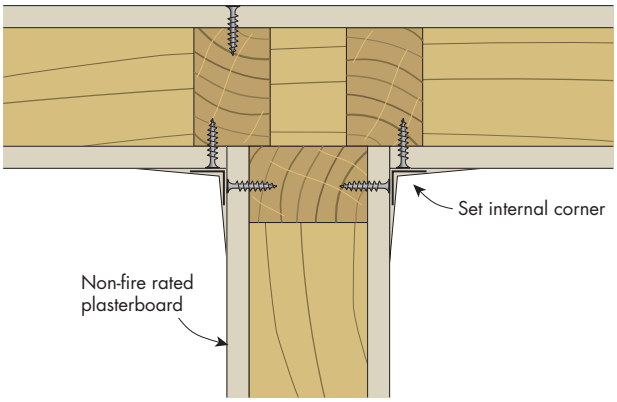


FIGURE 27 Intersecting Wall

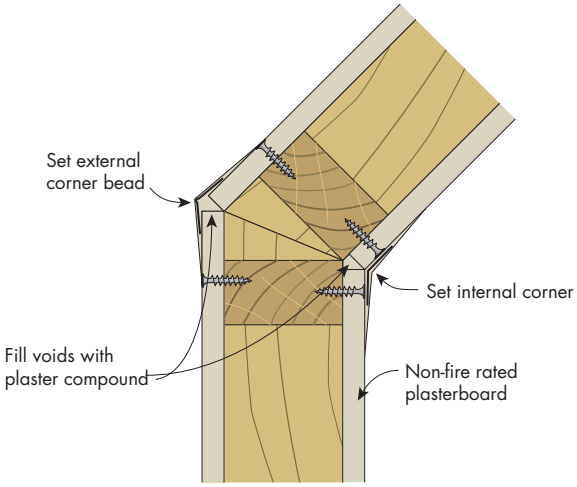


FIGURE 28 Angled Corner

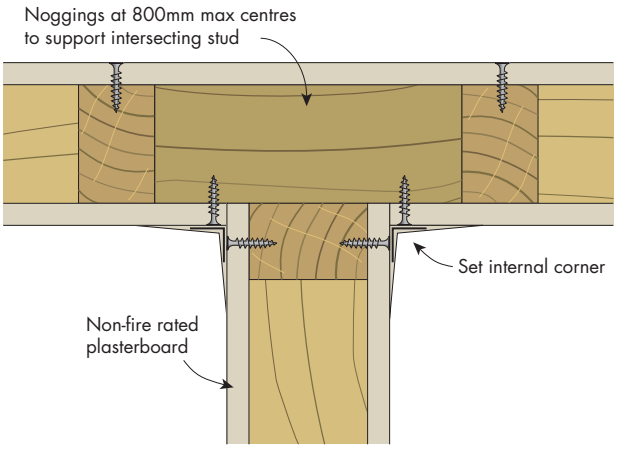


FIGURE 29 Intersecting Wall With Noggings

FIRE RATED
WALL JUNCTIONS – PLAN VIEW

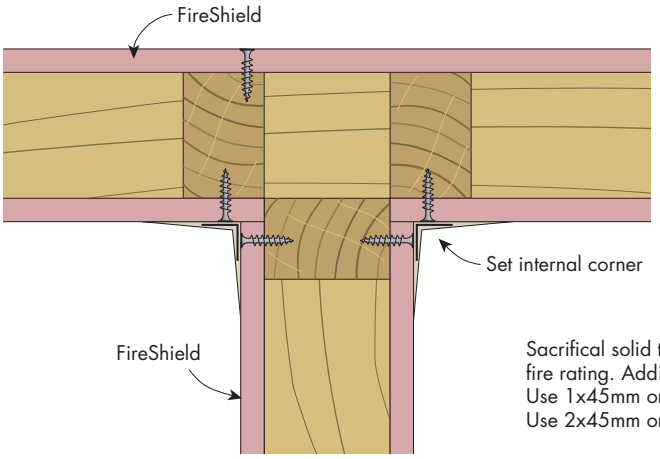


FIGURE 30 Intersecting Wall

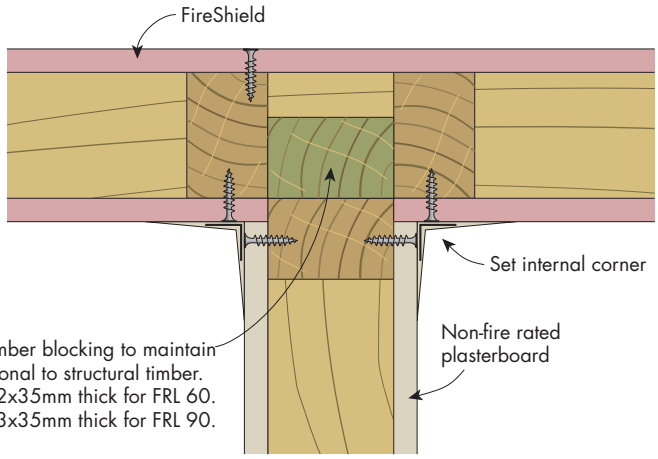


FIGURE 31 Intersecting Wall

Fill any gaps with fire sealant to maintain fire and acoustic integrity.

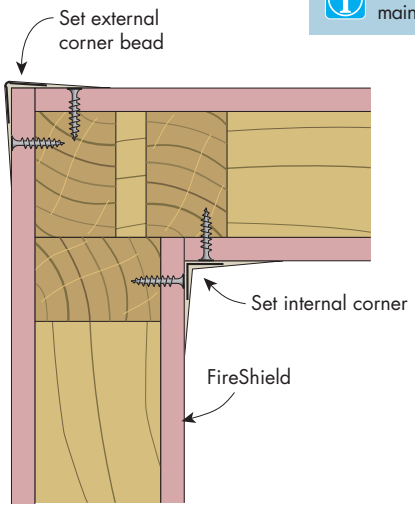


FIGURE 32 Corner

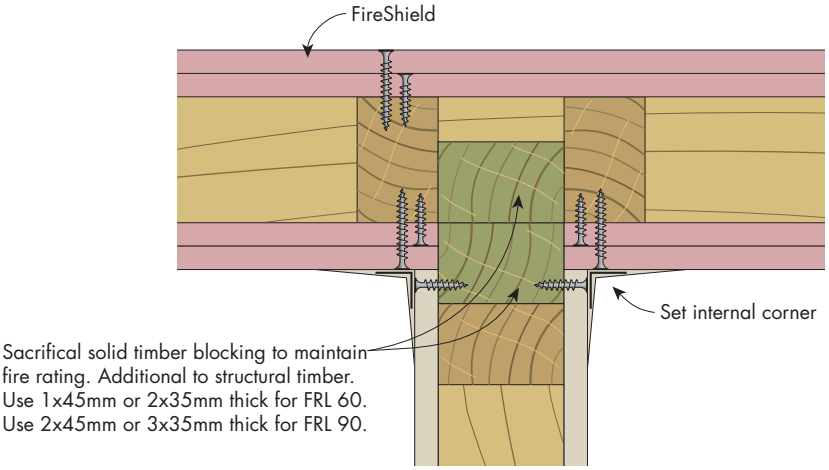


FIGURE 33 Intersecting Wall

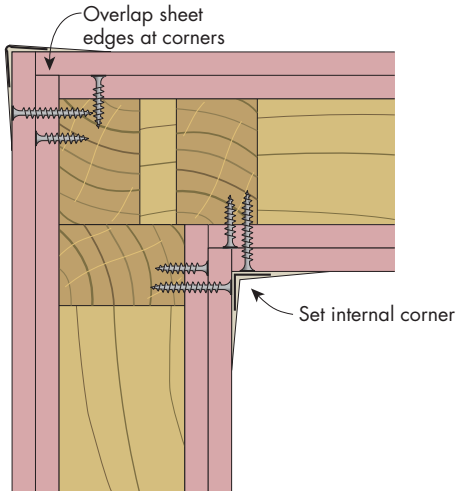


FIGURE 34 Corner

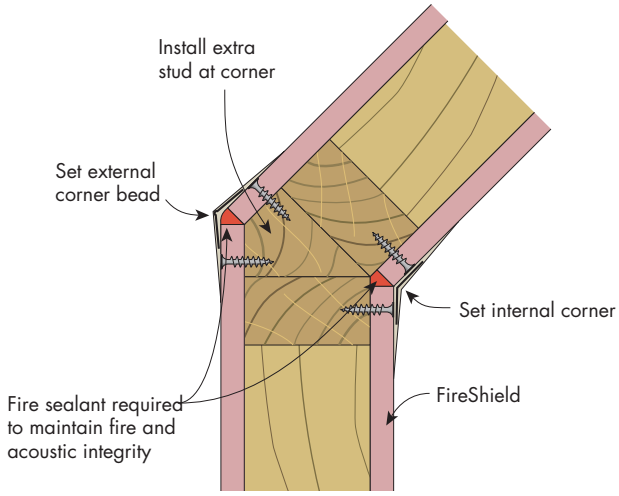


FIGURE 35 Angled Corner

FIRE RATED AND NON-FIRE RATED
WALL CONTROL JOINTS FOR SINGLE, DOUBLE AND STAGGERED STUD WALLS – PLAN VIEW

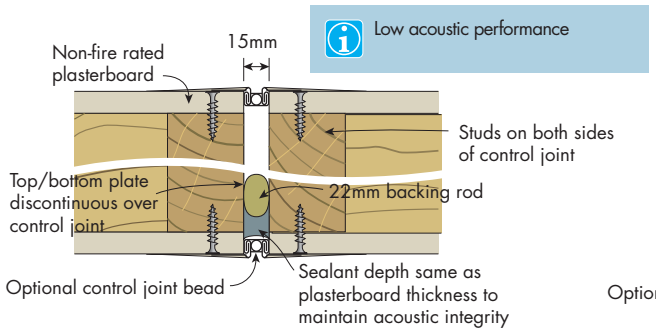


FIGURE 36 Control Joint

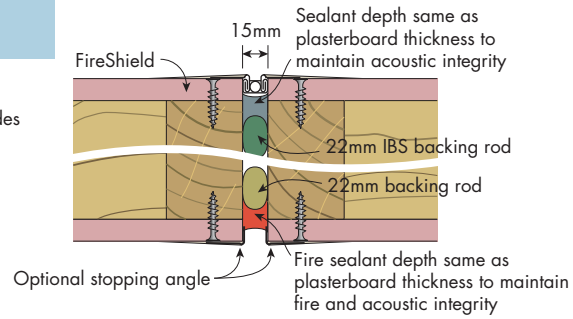


FIGURE 37 Fire Rated Control Joint

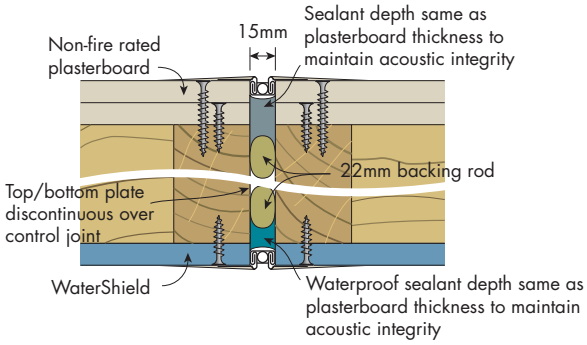


FIGURE 38 Control Joint Including Wet Areas

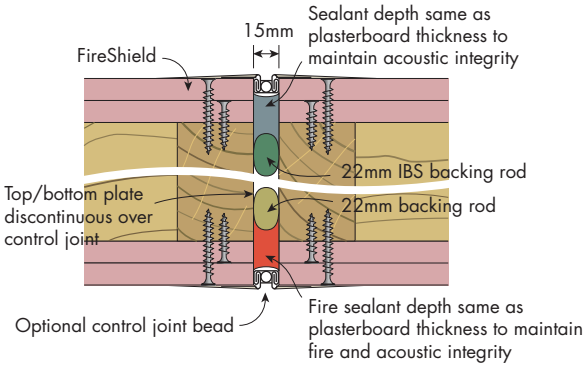


FIGURE 39 Fire Rated Control Joint

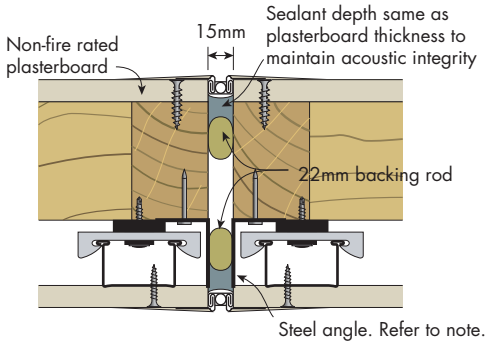


FIGURE 40 Control Joint Including Resilient Mount and Furring Channel

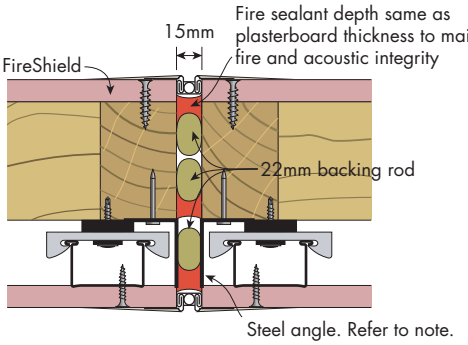


FIGURE 41 Fire Rated Control Joint Including Resilient Mount and Furring Channel

Control joints using resilient mount and furring channel to be backed with galvanised steel angle to support backing rod and sealant/fire sealant.

- 16mm furring channel use 35x35mm angle
- 28mm furring channel use 50x50mm angle

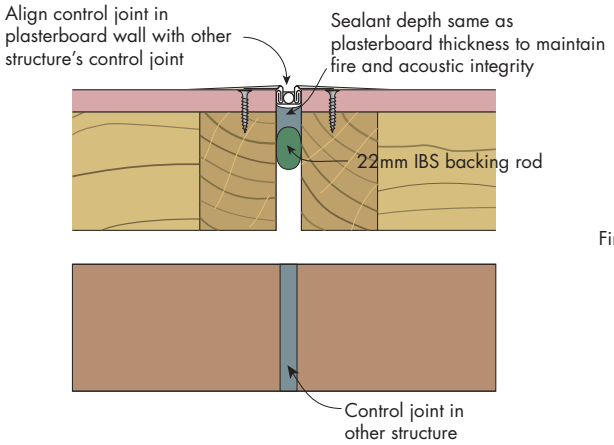


FIGURE 42 Fire Rated Control Joint With Other Structure

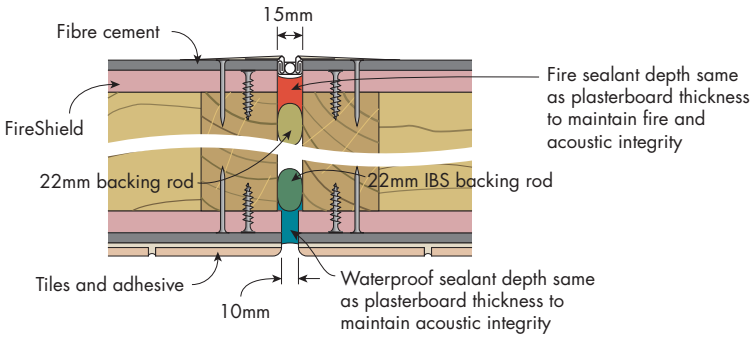


FIGURE 43 Fire Rated Control Joint

FIRE RATED AND NON-FIRE RATED
DOORS FOR SINGLE, DOUBLE AND STAGGERED STUD WALLS

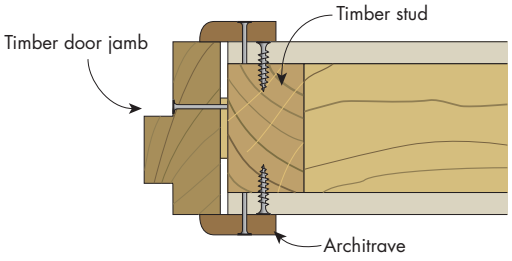


FIGURE 44 Timber Door Jamb

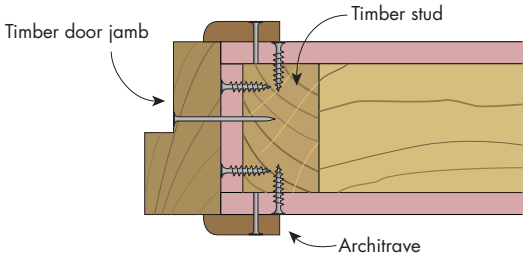


FIGURE 45 Timber Door Jamb
Fire rated wall

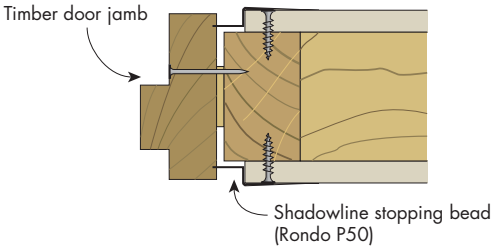


FIGURE 46 Timber Door Jamb
With shadowline stopping bead

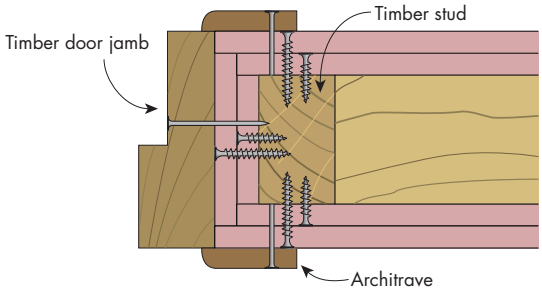


FIGURE 47 Timber Door Jamb
Fire rated wall

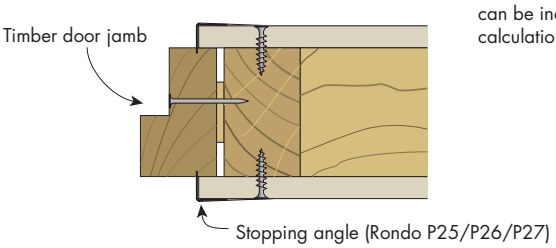


FIGURE 48 Timber Door Jamb
With stopping angle

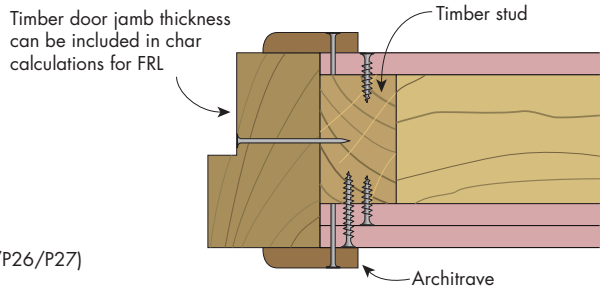


FIGURE 49 Timber Door Jamb
Fire rated wall

Fill any gaps with fire sealant to maintain fire and acoustic integrity.

FIRE PENETRATIONS FOR SINGLE, DOUBLE AND STAGGERED STUD WALLS

These fire rated penetration details may follow the proprietry installation requirements from particular fire protection product manufacturers. Installation instructions and product performance must be verified by the fire protection product manufacturer.

For fire rating plumbing penetration details *[Refer to Section 3.1.4 Wet Areas]*

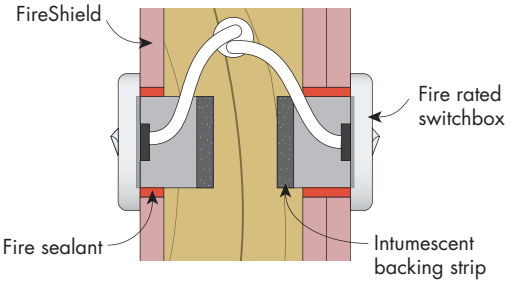
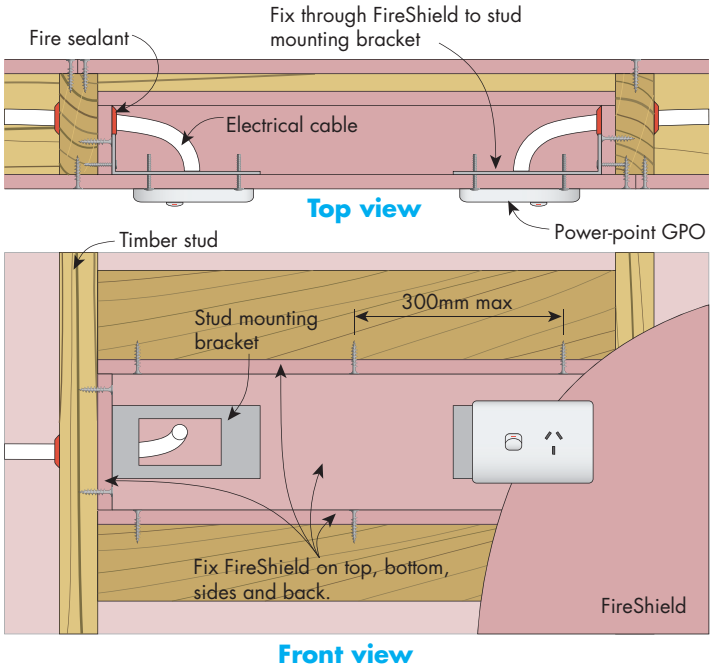
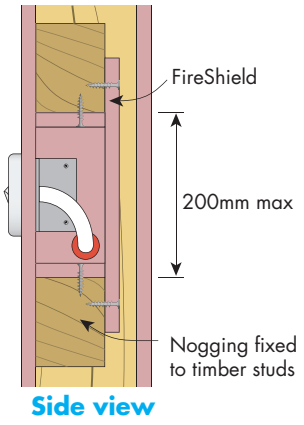


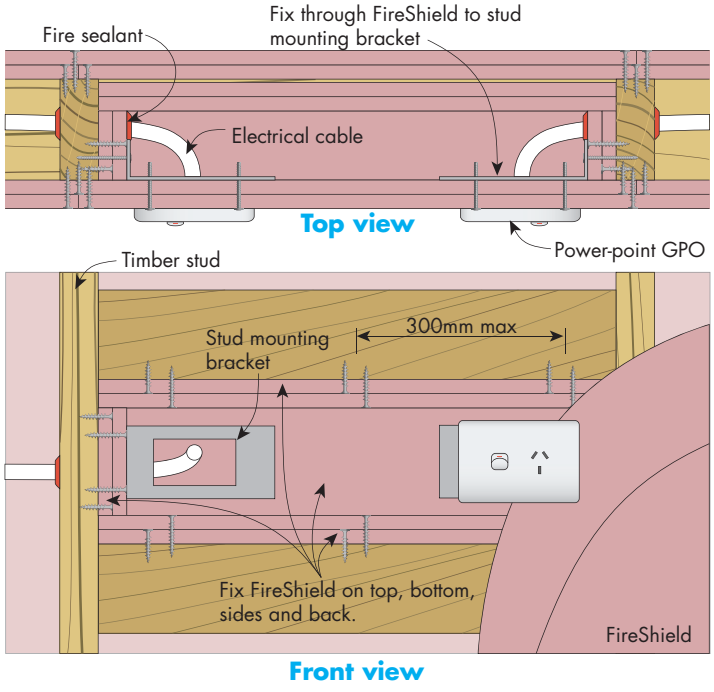
FIGURE 50 Fire Rated Switch-Plate or GPO
Elevation

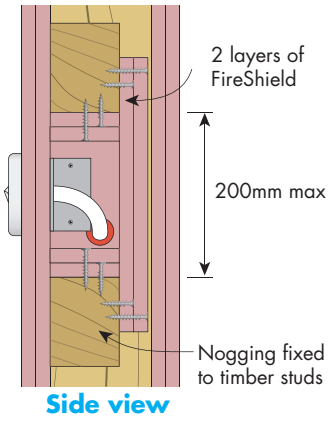




Maximum of two power-point GPOs per FireShield protection box. The FireShield protection box must be made of the same thickness and number of layers of FireShield as the system it is installed in. Any gaps must be sealed with fire sealant.

FIGURE 51 Fireshield Protection Box For Non-Fire Rated Switch-Plate or GPO
Installed in single layer systems

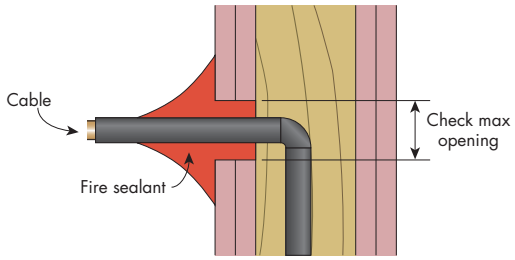




Maximum of two power-point GPOs per FireShield protection box. The FireShield protection box must be made of the same thickness and number of layers of FireShield as the system it is installed in. Any gaps must be sealed with fire sealant.

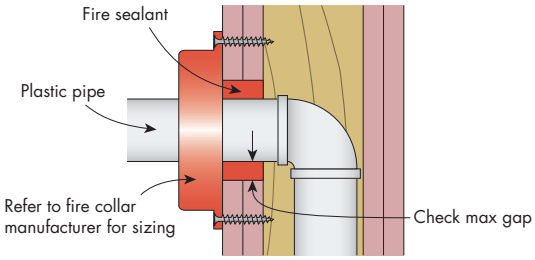
FIGURE 52 FireShield Protection Box For Non-Fire Rated Switch-Plate or GPO
Installed in double layer systems

FIRE PENETRATIONS FOR SINGLE, DOUBLE AND STAGGERED STUD WALLS – ELEVATION



Refer to fire sealant manufacturer for specific installation detail.

FIGURE 53 Typical Cable Penetration
Up to 2 hours FRL – Example only



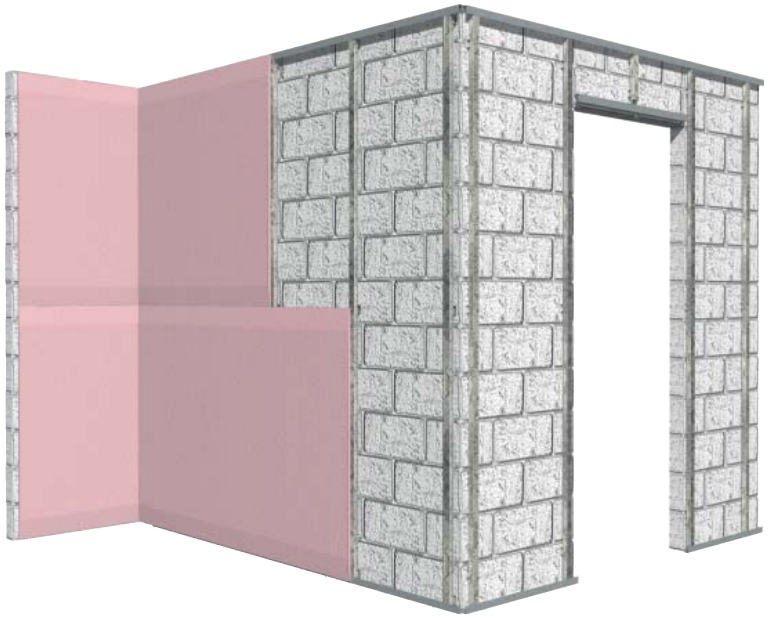
Refer to fire collar manufacturer for specific installation detail.

FIGURE 54 Typical Fire Collar
Maintains FRL of wall – Example only

For fire rated plumbing penetration details. *[Refer to Section 3.1.4 Wet Areas]*

3.1.3

Masonry Walls with Plasterboard



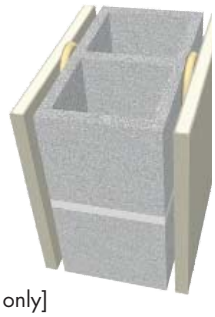
INTRODUCTION

Plasterboard may be installed over masonry walls to create a decorative finish. It removes the need for rendering and may also upgrade the fire and acoustic performance of a wall. Services may be installed in the cavity between the masonry and plasterboard, thus avoiding the need for chasing of masonry walls.

'Masonry' includes concrete, bricks, blocks and autoclaved aerated concrete.

ACOUSTIC UPGRADES

KMW15-1B – KMW60-1E



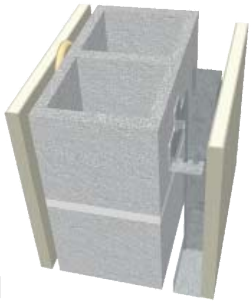
WALL LINING: [Side 1] Plasterboard as specified in table adhered with **MastaBond** Masonry Adhesive
[Side 2] Plasterboard as specified in table adhered with **MastaBond** Masonry Adhesive

MASONRY: Masonry wall as specified in table. *[Refer to masonry manufacturer for FRL]*

[13mm **MastaShield** can be substituted with 10mm **SoundShield** or any other Knauf 13mm plasterboard]
[13mm **ImpactShield** can be substituted with 13mm **QuadShield**]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[13mm **MastaShield** adhered with **MastaBond** Masonry Adhesive can be substituted with 13mm render on one side only]
[140mm core-filled concrete block can be substituted with minimum 125mm solid concrete]

Masonry Type	System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)	
			No Insulation	
Minimum Double 110mm Brick with minimum 50mm air-gap Minimum laid weight 320 kg/m²	KMW15-1B	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	55 (49)	
	KMW25-1B	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	56 (**50**)	
	KMW60-1B	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	56 (49)	
	KMW60-1B	[Side 1]: 1 layer of 13mm ImpactShield [Side 2]: 1 layer of 13mm ImpactShield	56 (**50**)	
Minimum 140mm unfilled Concrete Block Minimum laid weight 180 kg/m²	KMW15-1C	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	46 (40)	
	KMW25-1C	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	46 (40)	
	KMW60-1C	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	46 (40)	Acoustic Report Day Design 3094-55
Minimum 140mm core-filled Concrete Block Minimum laid weight 280 kg/m²	KMW15-1D	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	51 (43)	
	KMW25-1D	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	51 (44)	
	KMW60-1D	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	51 (44)	
Minimum 190mm unfilled Concrete Block Minimum laid weight 220 kg/m²	KMW15-1E	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	49 (42)	
	KMW25-1E	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	49 (42)	
	KMW60-1E	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	49 (42)	

KMW15-2C – KMW68-2F



WALL LINING: [Side 1] 13mm **MastaShield** adhered with **MastaBond** Masonry Adhesive
[Side 2] Plasterboard as specified in table fixed to furring channels at maximum 600mm centres on wall clip assembly

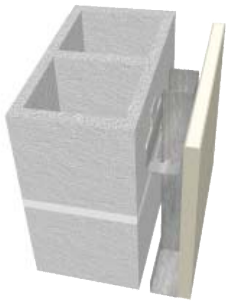
MASONRY: Masonry wall as specified in table. *[Refer to masonry manufacturer for FRL]*

[13mm **MastaShield** can be substituted with 13mm **WaterShield** on the furring channel side]
[13mm **MastaShield** can be substituted with 10mm **SoundShield**]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[13mm **MastaShield** adhered with **MastaBond** Masonry Adhesive can be substituted with 13mm render on one side only]
[140mm core-filled concrete block can be substituted with minimum 125mm solid concrete]
[Insulation thickness must not be greater than cavity size]

Masonry Type	System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)			
			Minimum 30mm cavity with No Insulation	**Minimum 30mm cavity with insulation** 25mm Glasswool min 22 kg/m³ or 30mm Polyester min 14 kg/m³	**Minimum 50mm cavity with insulation** 50mm EarthWool min 11 kg/m³ or 50mm Polyester min 11 kg/m³	
Minimum 140mm unfilled Concrete Block Minimum laid weight 180 kg/m²	KMW15-2C	[Side 2]: 1 layer of 13mm MastaShield	51 (44)	55 (46)	58 (48)	Acoustic Report Day Design 3094-55
	KMW16-2C	[Side 2]: 2 layers of 13mm MastaShield	54 (47)	58 (49)	61 (**51**)	
	KMW28-2C	[Side 2]: 1 layer of 13mm SoundShield	53 (45)	57 (48)	60 (**50**)	
	KMW29-2C	[Side 2]: 2 layers of 13mm SoundShield	55 (48)	59 (**52**)	62 (**53**)	
	KMW68-2C	[Side 2]: 1 layer of 13mm FireShield	52 (44)	56 (47)	59 (49)	
	KMW69-2C	[Side 2]: 2 layers of 13mm FireShield	55 (47)	59 (**50**)	62 (**52**)	
Minimum 140mm core-filled Concrete Block Minimum laid weight 280 kg/m²	KMW15-2D	[Side 2]: 1 layer of 13mm MastaShield	53 (45)	57 (48)	60 (**50**)	
	KMW16-2D	[Side 2]: 2 layers of 13mm MastaShield	56 (48)	60 (**51**)	63 (**53**)	
	KMW28-2D	[Side 2]: 1 layer of 13mm SoundShield	55 (46)	59 (**50**)	62 (**52**)	
	KMW68-2D	[Side 2]: 1 layer of 13mm FireShield	54 (46)	58 (49)	61 (**51**)	
	KMW69-2D	[Side 2]: 2 layers of 13mm FireShield	57 (49)	61 (**52**)	64 (**54**)	
Minimum 190mm unfilled Concrete Block Minimum laid weight 220 kg/m²	KMW15-2E	[Side 2]: 1 layer of 13mm MastaShield	52 (44)	56 (47)	59 (49)	
	KMW16-2E	[Side 2]: 2 layers of 13mm MastaShield	55 (46)	59 (**50**)	62 (**52**)	
	KMW28-2E	[Side 2]: 1 layer of 13mm SoundShield	54 (45)	58 (49)	61 (**51**)	
	KMW68-2E	[Side 2]: 1 layer of 13mm FireShield	53 (45)	57 (48)	60 (**50**)	
	KMW69-2E	[Side 2]: 2 layers of 13mm FireShield	56 (47)	60 (**51**)	63 (**53**)	
Minimum 190mm core-filled Concrete Block Minimum laid weight 380 kg/m²	KMW15-2F	[Side 2]: 1 layer of 13mm MastaShield	55 (46)	59 (**50**)	62 (**52**)	
	KMW28-2F	[Side 2]: 1 layer of 13mm SoundShield	57 (47)	61 (**52**)	64 (**54**)	
	KMW68-2F	[Side 2]: 1 layer of 13mm FireShield	56 (46)	60 (**51**)	63 (**53**)	

For cavity size information refer to Furring Channel Cavity Size Table in the Framing section.

KMW15-8C – KMW68-8 F



WALL LINING: [Side 1] Left bare
[Side 2] Plasterboard as specified in table fixed to furring channels at maximum 600mm centres on wall clip assembly

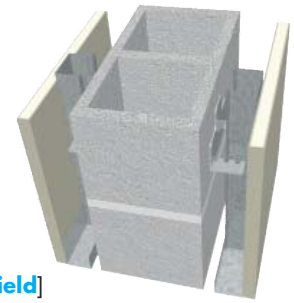
MASONRY: Masonry wall as specified in table. *[Refer to masonry manufacturer for FRL]*

[13mm **MastaShield** can be substituted with 13mm **WaterShield**]
[13mm **MastaShield** can be substituted with 10mm **SoundShield**]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[140mm core-filled concrete block can be substituted with minimum 125mm solid concrete]
[Insulation thickness must not be greater than cavity size]

Masonry Type	System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)			
			Minimum 30mm cavity with No Insulation	**Minimum 30mm cavity with insulation** 25mm Glasswool min 22 kg/m³ or 30mm Polyester min 14 kg/m³	**Minimum 50mm cavity with insulation** 50mm EarthWool min 11 kg/m³ or 50mm Polyester min 11 kg/m³	
Minimum 140mm unfilled Concrete Block Minimum laid weight 180 kg/m²	KMW15-8C	[Side 2]: 1 layer of 13mm MastaShield	50 (43)	54 (45)	57 (47)	Acoustic Report Day Design 4738-13
	KMW16-8C	[Side 2]: 2 layers of 13mm MastaShield	53 (46)	57 (48)	60 (**50**)	
	KMW28-8C	[Side 2]: 1 layer of 13mm SoundShield	52 (44)	56 (47)	59 (49)	
	KMW29-8C	[Side 2]: 2 layers of 13mm SoundShield	54 (47)	58 (**51**)	61 (**52**)	
	KMW68-8C	[Side 2]: 1 layer of 13mm FireShield	51 (43)	55 (46)	58 (48)	
	KMW69-8C	[Side 2]: 2 layers of 13mm FireShield	54 (46)	58 (49)	61 (**51**)	
Minimum 140mm core-filled Concrete Block Minimum laid weight 280 kg/m²	KMW15-8D	[Side 2]: 1 layer of 13mm MastaShield	52 (44)	56 (47)	59 (49)	
	KMW16-8D	[Side 2]: 2 layers of 13mm MastaShield	55 (47)	59 (**50**)	62 (**52**)	
	KMW28-8D	[Side 2]: 1 layer of 13mm SoundShield	54 (45)	58 (49)	61 (**51**)	
	KMW68-8D	[Side 2]: 1 layer of 13mm FireShield	53 (45)	57 (48)	60 (**50**)	
	KMW69-8D	[Side 2]: 2 layers of 13mm FireShield	56 (48)	60 (**51**)	63 (**53**)	
Minimum 190mm unfilled Concrete Block Minimum laid weight 220 kg/m²	KMW15-8E	[Side 2]: 1 layer of 13mm MastaShield	51 (43)	55 (46)	58 (48)	
	KMW16-8E	[Side 2]: 2 layers of 13mm MastaShield	54 (45)	58 (49)	61 (**51**)	
	KMW28-8E	[Side 2]: 1 layer of 13mm SoundShield	53 (44)	57 (48)	60 (**50**)	
	KMW68-8E	[Side 2]: 1 layer of 13mm FireShield	52 (44)	56 (47)	59 (49)	
	KMW69-8E	[Side 2]: 2 layers of 13mm FireShield	55 (46)	59 (**50**)	62 (**52**)	
Minimum 190mm core-filled Concrete Block Minimum laid weight 380 kg/m²	KMW15-8F	[Side 2]: 1 layer of 13mm MastaShield	54 (45)	58 (49)	61 (**51**)	
	KMW28-8F	[Side 2]: 1 layer of 13mm SoundShield	56 (46)	60 (**51**)	63 (**53**)	
	KMW68-8F	[Side 2]: 1 layer of 13mm FireShield	55 (45)	59 (**50**)	62 (**52**)	

For cavity size information refer to Furring Channel Cavity Size Table in the Framing section.

KMW15-3B – KMW60-3F



WALL LINING: [Side 1] Plasterboard as specified in table fixed to furring channels at maximum 600mm centres on wall clip assembly
[Side 2] Plasterboard as specified in table fixed to furring channels at maximum 600mm centres on wall clip assembly

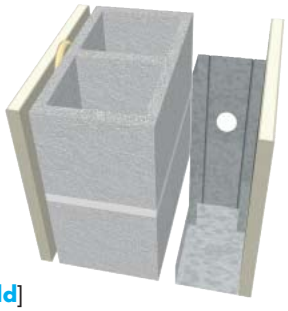
MASONRY: Masonry wall as specified in table. *[Refer to masonry manufacturer for FRL]*

[13mm **MastaShield** can be substituted with 10mm **SoundShield** or 13mm **WaterShield**]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[140mm core-filled concrete block can be substituted with minimum 125mm solid concrete]
[Insulation thickness must not be greater than cavity size]

Masonry Type	System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)		
			Minimum 30mm cavities with insulation in one cavity only 25mm Glasswool min 22 kg/m³ or 30mm Polyester min 14 kg/m³	**Minimum 50mm cavities with insulation in one cavity only** 50mm EarthWool min 11 kg/m³ or 50mm Polyester min 11 kg/m³	
Minimum Double 110mm Brick with minimum 50mm air-gap Minimum laid weight 320 kg/m²	KMW15-3B	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	62 (**52**)	64 (**54**)	
	KMW25-3B	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	64 (**54**)	66 (**56**)	
	KMW60-3B	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	63 (**53**)	65 (**55**)	
Minimum 140mm unfilled Concrete Block Minimum laid weight 180 kg/m²	KMW15-3C	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	54 (45)	57 (47)	
	KMW16-3C	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 2 layers of 13mm MastaShield	57 (48)	60 (**50**)	
	KMW25-3C	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	56 (47)	59 (49)	
	KMW60-3C	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	55 (46)	58 (48)	
	KMW61-3C	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 2 layers of 13mm FireShield	58 (49)	61 (**51**)	
Minimum 140mm core-filled Concrete Block Minimum laid weight 280 kg/m²	KMW15-3D	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	56 (47)	59 (49)	Acoustic Report Day Design 3094-55
	KMW16-3D	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 2 layers of 13mm MastaShield	59 (**50**)	62 (**52**)	
	KMW25-3D	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	58 (49)	61 (**51**)	
	KMW26-3D	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 2 layers of 13mm SoundShield	60 (**52**)	63 (**54**)	
	KMW60-3D	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	57 (48)	60 (**50**)	
	KMW61-3D	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 2 layers of 13mm FireShield	60 (**51**)	63 (**53**)	
Minimum 190mm unfilled Concrete Block Minimum laid weight 220 kg/m²	KMW15-3E	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	55 (46)	58 (48)	
	KMW16-3E	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 2 layers of 13mm MastaShield	58 (49)	61 (**51**)	
	KMW25-3E	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	57 (48)	60 (**50**)	
	KMW60-3E	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	56 (47)	59 (49)	
	KMW61-3E	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 2 layers of 13mm FireShield	59 (49)	62 (**52**)	
Minimum 190mm core-filled Concrete Block Minimum laid weight 380 kg/m²	KMW15-3F	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	58 (49)	61 (**51**)	
	KMW25-3F	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	60 (**51**)	63 (**53**)	
	KMW60-3F	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	59 (**50**)	62 (**52**)	

For cavity size information refer to Furring Channel Cavity Size Table in the Framing section.

KMW15-4A – KMW68-4F



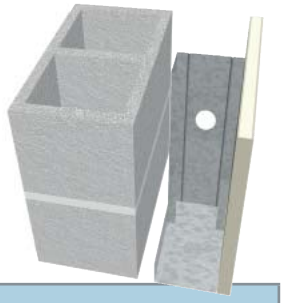
WALL LINING: [Side 1] 13mm **MastaShield** adhered with **MastaBond** Masonry Adhesive
[Side 2] Plasterboard as specified in table fixed to studs at maximum 600mm centres with minimum 20mm air gap

MASONRY: Masonry wall as specified in table. *[Refer to masonry manufacturer for FRL]*

[13mm **MastaShield** can be substituted with 13mm **WaterShield** on the steel stud side]
[13mm **MastaShield** can be substituted with 10mm **SoundShield**]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[13mm **MastaShield** adhered with **MastaBond** Masonry Adhesive can be substituted with 13mm render]
[140mm core-filled concrete block can be substituted with minimum 125mm solid concrete]

Masonry Type	System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)		
			50mm EarthWool, min 11 kg/m³ or, 50mm Polyester, min 11 kg/m³ or, 75mm Polyester, TSB4/ASB4		
			51mm Steel Stud	Min 64mm Steel or 70mm Timber Stud	
Minimum 110mm Brick Minimum laid weight 160 kg/m²	KMW15-4A	[Side 2]: 1 layer of 13mm MastaShield	56 (48)	58 (**50**)	Acoustic Report Day Design 4738-15 Note: Impact Sound Resistant – Discontinuous Construction
	KMW28-4A	[Side 2]: 1 layer of 13mm SoundShield	59 (**50**)	60 (**51**)	
	KMW68-4A	[Side 2]: 1 layer of 13mm FireShield	58 (49)	59 (**50**)	
Minimum 140mm unfilled Concrete Block Minimum laid weight 180 kg/m²	KMW15-4C	[Side 2]: 1 layer of 13mm MastaShield	57 (49)	59 (**51**)	
	KMW28-4C	[Side 2]: 1 layer of 13mm SoundShield	60 (**52**)	61 (**53**)	
	KMW68-4C	[Side 2]: 1 layer of 13mm FireShield	59 (**51**)	60 (**52**)	
Minimum 140mm core-filled Concrete Block Minimum laid weight 280 kg/m²	KMW15-4D	[Side 2]: 1 layer of 13mm MastaShield	60 (**50**)	61 (**52**)	
	KMW28-4D	[Side 2]: 1 layer of 13mm SoundShield	62 (**53**)	63 (**54**)	
	KMW68-4D	[Side 2]: 1 layer of 13mm FireShield	61 (**52**)	62 (**53**)	
Minimum 190mm core-filled Concrete Block Minimum laid weight 380 kg/m²	KMW15-4F	[Side 2]: 1 layer of 13mm MastaShield	62 (**52**)	63 (**53**)	
	KMW28-4F	[Side 2]: 1 layer of 13mm SoundShield	64 (**54**)	65 (**55**)	
	KMW68-4F	[Side 2]: 1 layer of 13mm FireShield	63 (**53**)	64 (**54**)	

KMW18-7D



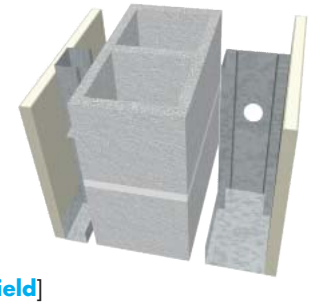
WALL LINING: [Side 1] Left bare
[Side 2] Plasterboard as specified in table fixed to minimum 64mm steel studs or minimum 70mm timber studs at maximum 600mm centres with minimum 20mm air gap

MASONRY: Masonry wall as specified in table. [Refer to masonry manufacturer for FRL]

[13mm **MastaShield** can be substituted with 13mm **WaterShield** or 10mm **SoundShield**]

Masonry Type	System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)		
			No insulation	50mm EarthWool, min 11 kg/m³ or 50mm Polyester, min 11 kg/m³ or 75mm Polyester, TSB4/ASB4	Acoustic Report Day Design 4738-L1
Minimum 140mm unfilled Concrete Block Minimum laid weight 180 kg/m²	KMW18-7D	[Side 2]: 1 layer of 13mm MastaShield	49 (45)	58 (**50**)	Note: Impact Sound Resistant – Discontinuous Construction

KMW15-5A – KMW60-5D



WALL LINING: [Side 1] Plasterboard as specified in table fixed to furring channels at maximum 600mm centres on wall clip assembly with minimum 21mm cavity
[Side 2] Plasterboard as specified in table fixed to studs at maximum 600mm centres with minimum 20mm air gap

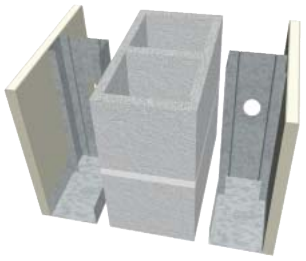
MASONRY: Masonry wall as specified in table. *[Refer to masonry manufacturer for FRL]*

[13mm **MastaShield** can be substituted with 10mm **SoundShield** or 13mm **WaterShield**]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[140mm core-filled concrete block can be substituted with minimum 125mm solid concrete]
[21mm cavity is suitable for minimum 16mm furring channel and wall clip assembly]

Masonry Type	System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)		
			Insulation in stud cavity only 50mm EarthWool, min 11 kg/m³ or, 50mm Polyester, min 11 kg/m³ or, 75mm Polyester, TSB4/ASB4		
			51mm Steel Stud	Min 64mm Steel or 70mm Timber Stud	
Minimum 110mm Brick Minimum laid weight 160 kg/m²	KMW15-5A	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	57 (49)	59 (**51**)	Acoustic Report Day Design 3094-55 4738-15 Note: Impact Sound Resistant – Discontinuous Construction
	KMW25-5A	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	59 (**51**)	60 (**52**)	
	KMW60-5A	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	58 (**50**)	60 (**51**)	
Minimum 140mm unfilled Concrete Block Minimum laid weight 180 kg/m²	KMW15-5C	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	58 (49)	60 (**51**)	
	KMW16-5C	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 2 layers of 13mm MastaShield	61 (**52**)	62 (**53**)	
	KMW25-5C	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	60 (**51**)	61 (**52**)	
	KMW60-5C	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	60 (**50**)	61 (**51**)	
Minimum 140mm core-filled Concrete Block Minimum laid weight 280 kg/m²	KMW15-5D	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	60 (**50**)	61 (**52**)	
	KMW25-5D	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	62 (**53**)	63 (**54**)	
	KMW60-5D	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	61 (**52**)	62 (**53**)	
Minimum 190mm core-filled Concrete Block Minimum laid weight 380 kg/m²	KMW15-5F	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	62 (**53**)	63 (**54**)	
	KMW25-5F	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	64 (**55**)	65 (**56**)	
	KMW60-5F	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	63 (**54**)	64 (**55**)	
	KMW710-5F	[Side 1]: 1 layer of 13mm SonaRock [Side 2]: 1 layer of 13mm SonaRock	65 (**56**)	66 (**57**)	

For cavity size information refer to Furring Channel Cavity Size Table in the Framing section.

KMW15-6A – KMW60-6G



WALL LINING: [Side 1] Plasterboard as specified in table fixed to minimum 64mm steel studs or minimum 70mm timber studs at maximum 600mm centres with minimum 20mm air gap
[Side 2] Plasterboard as specified in table fixed to minimum 64mm steel studs or minimum 70mm timber studs at maximum 600mm centres with minimum 20mm air gap

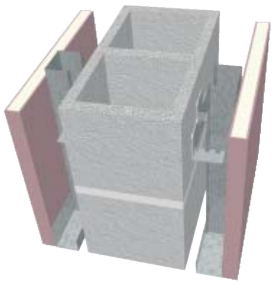
MASONRY: Masonry wall as specified in table. *[Refer to masonry manufacturer for FRL]*

[13mm **MastaShield** can be substituted with 10mm **SoundShield** or 13mm **WaterShield**]
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

Masonry Type	System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)		
			Insulation in one stud cavity 50mm EarthWool min 11 kg/m³ or 65mm Polyester TSB3/ASB3	**Insulation in both stud cavities** 50mm EarthWool min 11 kg/m³ or 65mm Polyester TSB3/ASB3	
Minimum 110mm Brick Minimum laid weight 160 kg/m²	KMW15-6A	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	60 (**50**)	–	Acoustic Report Day Design 3094-55 Note: Impact Sound Resistant – Discontinuous Construction
	KMW25-6A	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	64 (**54**)	–	
	KMW60-6A	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	63 (**53**)	–	
Minimum 140mm unfilled Concrete Block Minimum laid weight 180 kg/m²	KMW15-6C	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	64 (**54**)	–	
	KMW25-6C	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	67 (**55**)	–	
	KMW60-6C	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	67 (**55**)	–	
Minimum 90mm Brick Minimum laid weight 130 kg/m²	KMW15-6G	[Side 1]: 1 layer of 13mm MastaShield [Side 2]: 1 layer of 13mm MastaShield	59 (46)	65 (**57**)	
	KMW25-6G	[Side 1]: 1 layer of 13mm SoundShield [Side 2]: 1 layer of 13mm SoundShield	63 (**50**)	69 (**61**)	
	KMW60-6G	[Side 1]: 1 layer of 13mm FireShield [Side 2]: 1 layer of 13mm FireShield	62 (49)	68 (**60**)	

FIRE RATED UPGRADES

KMW70



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 16mm **FireShield**

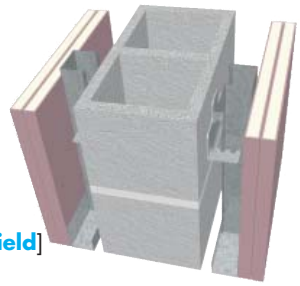
FRAME: Existing masonry wall with furring channels or steel stud at maximum 600mm centres
[Refer to masonry manufacturer for FRL]

[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[This system is designed to upgrade the FRL of the Masonry Wall]
[Total Integrity and total Insulation cannot be greater than total Structural Adequacy]

Additional FRL to Masonry (minutes)
Masonry Structural Adequacy + 30/Masonry Integrity + 60/Masonry Insulation + 60 Rated from both sides Fire Report FAR 2221

For cavity size information refer to Furring Channel Cavity Size Table in the Framing section.

KMW62



WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] 2 layers of 13mm **FireShield**

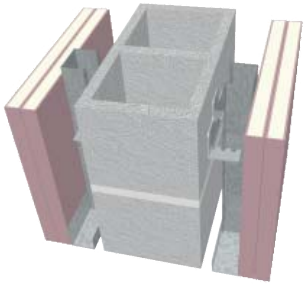
FRAME: Existing masonry wall with furring channels or steel stud at maximum 600mm centres
[Refer to masonry manufacturer for FRL]

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[This system is designed to upgrade the FRL of the Masonry Wall]
[Total Integrity and total Insulation cannot be greater than total Structural Adequacy]

Additional FRL to Masonry (minutes)
Masonry Structural Adequacy + 60/Masonry Integrity + 120/Masonry Insulation + 120 Rated from both sides Fire Report FAR 2221

For cavity size information refer to Furring Channel Cavity Size Table in the Framing section.

KMW72



WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 2 layers of 16mm **FireShield**

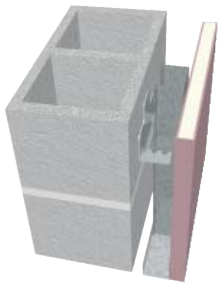
FRAME: Existing masonry wall with furring channels or steel stud at maximum 600mm centres
[Refer to masonry manufacturer for FRL]

[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[This system is designed to upgrade the FRL of the Masonry Wall]
[Total Integrity and total Insulation cannot be greater than total Structural Adequacy]

Additional FRL to Masonry (minutes)
Masonry Structural Adequacy + 90/Masonry Integrity + 180/Masonry Insulation + 180 Rated from both sides Fire Report FAR 2221

For cavity size information refer to Furring Channel Cavity Size Table in the Framing section.

KMW75



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] Optional wall lining

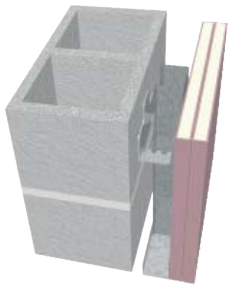
FRAME: Existing masonry wall with furring channels or steel stud at maximum 600mm centres
[Refer to masonry manufacturer for FRL]

[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[This system is designed to upgrade the FRL of the Masonry Wall]
[Total Integrity and total Insulation cannot be greater than total Structural Adequacy]

Additional FRL to Masonry (minutes)	
FireShield on the EXPOSED side to the fire	**Masonry Structural Adequacy + 30/Masonry Integrity + 30/Masonry Insulation + 30** Fire Report FAR 2464
FireShield on the UNEXPOSED side to the fire	**Masonry Structural Adequacy + 0/Masonry Integrity + 30/Masonry Insulation + 30** Fire Report FAR 2464

For cavity size information refer to Furring Channel Cavity Size Table in the Framing section.

KMW66



WALL LINING: [Side 1] 2 layers of 13mm **FireShield**
[Side 2] Optional wall lining

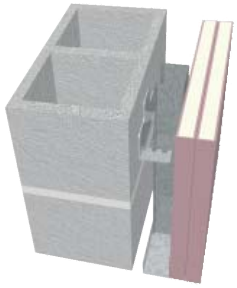
FRAME: Existing masonry wall with furring channels or steel stud at maximum 600mm centres
[Refer to masonry manufacturer for FRL]

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[This system is designed to upgrade the FRL of the Masonry Wall]
[Total Integrity and total Insulation cannot be greater than total Structural Adequacy]

Additional FRL to Masonry (minutes)	
FireShield on the EXPOSED side to the fire	**Masonry Structural Adequacy + 60/Masonry Integrity + 60/Masonry Insulation + 60** Fire Report FAR 2464
FireShield on the UNEXPOSED side to the fire	**Masonry Structural Adequacy + 0/Masonry Integrity + 60/Masonry Insulation + 60** Fire Report FAR 2464

For cavity size information refer to Furring Channel Cavity Size Table in the Framing section.

KMW76



WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] Optional wall lining

FRAME: Existing masonry wall with furring channels or steel stud at maximum 600mm centres
[Refer to masonry manufacturer for FRL]

[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[This system is designed to upgrade the FRL of the Masonry Wall]
[Total Integrity and total Insulation cannot be greater than total Structural Adequacy]

Additional FRL to Masonry (minutes)	
FireShield on the EXPOSED side to the fire	**Masonry Structural Adequacy + 90/Masonry Integrity + 90/Masonry Insulation + 90** Fire Report FAR 2464
FireShield on the UNEXPOSED side to the fire	**Masonry Structural Adequacy + 0/Masonry Integrity + 90/Masonry Insulation + 90** Fire Report FAR 2464

For cavity size information refer to Furring Channel Cavity Size Table in the Framing section.

GENERAL REQUIREMENTS

	Non-Fire Rated	Fire Rated
Install control joints in plasterboard walls: › At 12m maximum intervals › At all control joints in the structure › At any change in the substrate material.	✔	✔
Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and: › Two coats of **MastaBase**/**MastaLongset**, or › Three coats of **MastaLite**. Never joint sheets with fire sealant. *[Refer to Section 4]*		✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.		✔
Pack any gaps between the top of the wall and the underside of the roof covering with mineral fibre or other suitable fire resisting material. This maintains the fire rating of the system. *[Refer to mineral fibre manufacturers specifications for minimum widths required]*		✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.		✔

For acceptable modifications or variations to fire rated systems. *[Refer to Section 2.3 Fire Resistance]*

FRAMING

	Non-Fire Rated	Fire Rated
Fix the furring channel/timber battens at 600mm maximum centres horizontally or vertically. *[Refer to Figure 2 or 3]*	✔	✔

FURRING CHANNEL/TIMBER BATTEN ANCHOR SPACING

Framing Member	Maximum Anchor Spacing
13mm Recessed Furring Channel (Rondo No.333)	900mm
16mm Furring Channel (Rondo No.308)	900mm
28mm Furring Channel (Rondo No.129)	1200mm
Timber Battens	1200mm

Anchors for Furring channel or Timber battens must also be fixed 100mm max from ends.

FURRING CHANNEL CAVITY SIZE TABLE

Framing Member	Leg Position	Cavity Size with 28mm Furring Channel	Cavity Size with 16mm Furring Channel
Beta Fix Clip (Rondo No. BETAFIX)	4	48mm	36mm
	3	41mm	31mm
	2	35mm	–
	1	30mm	–
Beta Fix Clip – Long Leg (Rondo No. LGBETAFIX)	4	69mm	57mm
	3	64mm	52mm
	2	59mm	–
	1	49mm	–
Sliding Adjustable Furring Channel Clip (Rondo No. FCINFIN030)	Maximum	50mm	38mm
	Minimum	34mm	–
Direct Fix Furring Channel Clip (Rondo No. 237)	–	32mm	21mm
Direct Fix Furring Channel Clip for Membrane Insulation (Rondo No. 282)	–	56mm	45mm
Resilient Mount Clip (Rondo No. STWC)	Completely wound in	45mm	32mm

Cavity sizes listed above are intended as a guide only.

- Plumbing and electrical services must not protrude beyond the face of the stud.
- Nylon anchors are not permitted in fire rated systems.
- Resilient mounts or direct fix clips with furring channel do not meet the requirements of 'discontinuous construction' for walls. Resilient mounts only meet the requirements of 'impact sound resistance'.

PLASTERBOARD LAYOUT

	Non-Fire Rated	Fire Rated
Stagger butt joints by 600mm minimum on adjoining sheets and between layers.	✔	✔
Stagger recessed edges by 300mm minimum between layers.	✔	✔
First layer butt joints must be backed by furring channel/timber batten.	✔	✔
Locate vertical joints 200mm minimum from the edge of any opening such as windows and doorways to minimise cracking at the joints.	✔	✔

- Install plasterboard sheets horizontally when practical to reduce the effect of glancing light.
- Minimise butt joints by using long sheets.

PLASTERBOARD FIXING

	Non-Fire Rated	Fire Rated
Drive fasteners to just below the sheet surface, taking care not to break the paper linerboard.	✔	✔
Do not fix plasterboard to steel more than 2mm BMT.	✔	✔
Laminating screws can be used to fix butt joints in the second and third layer.	✔	✔
Masonry Adhesive Method		
Use 'MastaBond Masonry Adhesive Method'	✔	
Fastener and Adhesive Method to Furring Channel/Timber Batten		
Apply MastaGrip Stud Adhesive after the frame is clean, dry, and free from grease, dust and other contaminants.	✔	
Apply MastaGrip daubs 200mm minimum from screws and plasterboard edges.	✔	
Fastener Only Method to Furring Channel/Timber Batten		
Use the 'Fastener Only Method' in tiled or fire rated areas. Stud adhesive is not permitted.	✔	✔
Laminating Screw Only Method		
Use 50mm – 10g laminating screws for Autoclaved Aerated Concrete.	✔	

Do not use the Masonry Adhesive method for:

- Masonry with a glazed surface finish
- Fire rated systems
- Multi-layer systems
- Walls over three metres high
- Pre-cast concrete panels that have a release agent on the surface reducing the effectiveness of the adhesive
- Walls where the surface deviation is above 25mm
- Autoclaved Aerated Concrete
- Walls that may become damp during service
- Walls that will have tiles or vinyl sheeting fixed to plasterboard.

The Fastener and Adhesive Method is recommended for non-fire rated applications. MastaGrip will:

- Minimise fastener popping
- Reduce the number of fastener heads that may show in glancing light
- Assist in compensating for frame irregularities.

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL FURRING CHANNEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm	25mm – 6g S screw	25mm – 6g S screw	–
10mm	25mm – 6g S screw	40mm – 6g S screw*	–
13mm	25mm – 6g S screw	40mm – 6g S screw*	60mm – 6g S screw*
16mm	30mm – 6g S screw	45mm – 6g S screw*	65mm – 6g S screw*

For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.

FASTENER TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO SOFTWOOD TIMBER BATTENS

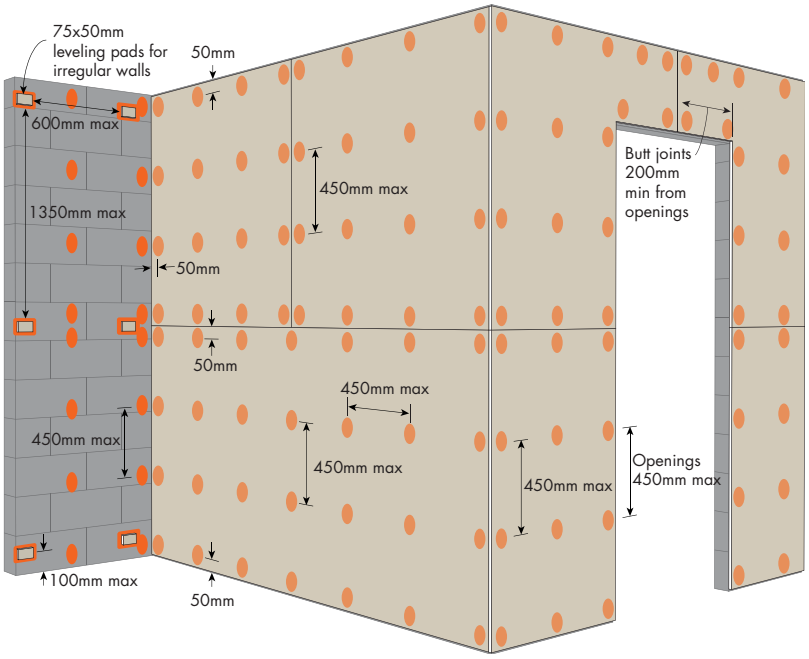
Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm	30mm x 2.8 nail or 25mm x 2.8 ring shank nail or 25mm – 6g W screw	40mm x 2.8 galvanised nail or 30mm x 2.8 ring shank nail or 30mm – 6g W screw	–
10mm	40mm x 2.8 galvanised nail or 30mm x 2.8 ring shank nail or 25mm – 6g W screw for walls or 30mm – 6g W screw for ceilings	50mm x 2.8 galvanised nail or 40mm – 6g W screw*	–
13mm	40mm x 2.8 galvanised nail or 30mm x 2.8 ring shank nail or 30mm – 6g W screw	50mm x 2.8 galvanised nail or 45mm – 6g W screw*	75mm x 3.75 galvanised nail or 65mm – 8g W screw*
16mm	50mm x 2.8 galvanised nail or 45mm – 6g W screw	65mm x 3.15 galvanised nail or 50mm – 6g W screw*	75mm x 3.75 galvanised nail or 65mm – 8g W screw*

For timber use Type 'W' coarse thread needle point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.

NON-FIRE RATED

FIGURE 1 Non-Fire Rated 1 Layer – Horizontal

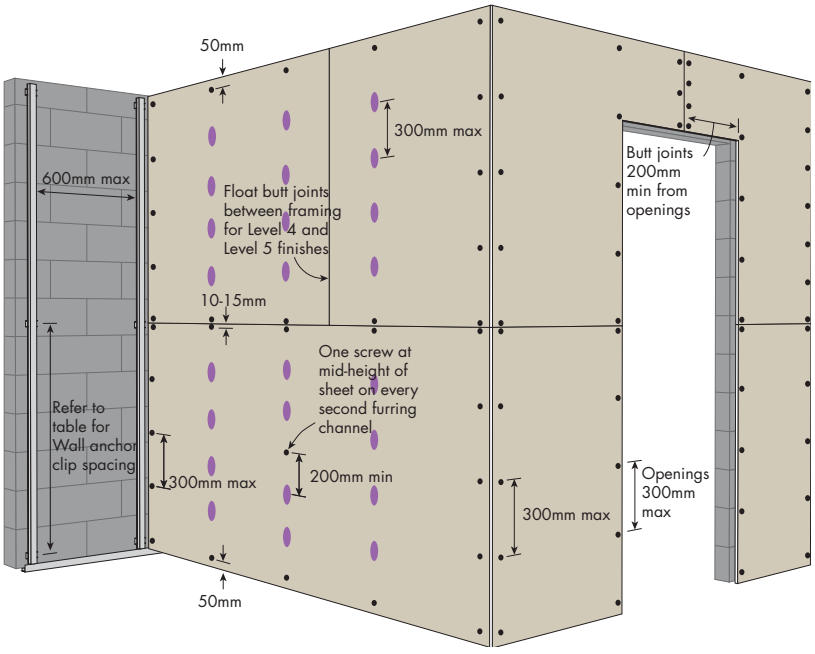
Masonry Adhesive Method



Fixing	Masonry Adhesive Method
Sheet layout	Horizontal (or Vertical)
Masonry adhesive	MastaBond daubs 75mm diameter and 25mm high and 50mm max from sheet edges. Use temporary supports to hold sheets in place until adhesive sets.
Levelling pads	Use MastaBond masonry adhesive with 75x50mm plasterboard levelling pads for irregular walls up to 25mm max deviation.
Field	Adhered at 450mm max centres
Recessed edges	Adhered at 450mm max centres
Butt joints	Adhered at 450mm max centres. Stagger butt joints by 600mm min on adjoining sheets.
Internal and External corners	Adhered at 450mm max centres
Openings	Adhered at 450mm max centres. Use extra daubs around doors and windows for support.
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*
Ventilation	Allow ventilation gap at top and bottom of wall for external walls and other areas where moisture may be an issue.
Wet areas	Do not use this method in wet areas or when wall is above 3m in height. Furring channel must be used.

FIGURE 2 Non-Fire Rated 1 Layer – Horizontal

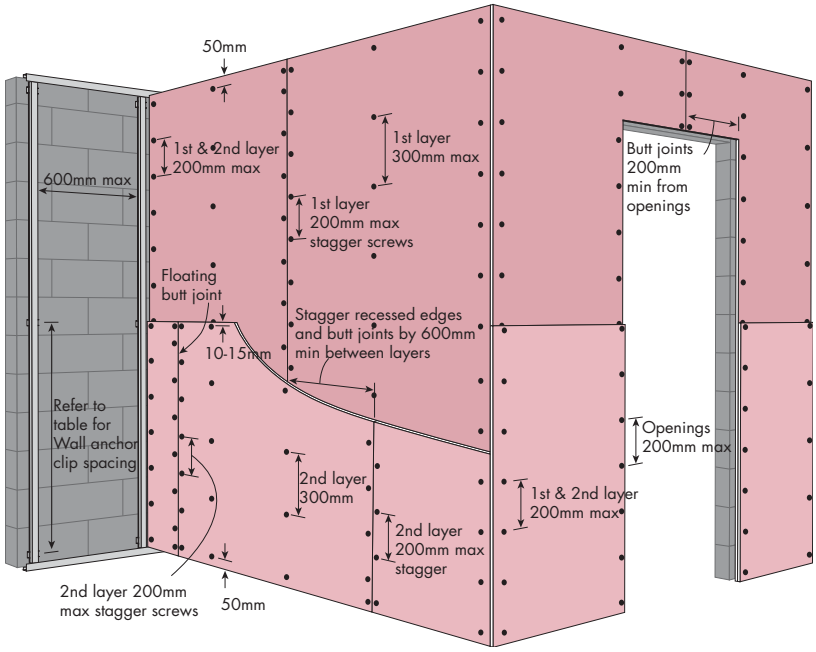
Screw and Adhesive Method on furring channel or battens



Fixing	Screw and Adhesive Method
Sheet layout	Horizontal (or Vertical)
Wall anchor clips	Use direct fix clips or resilient mounts. *[Refer to furring channel/timber batten anchor spacing table]*
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom of wall. Plasterboard must not be fixed to bottom track.
Field	Adhesive daubs 25mm diameter and 15mm high, spaced at 300mm max centres and 200mm min from screw points and plasterboard edges. Fix one screw at mid-height of sheet on every second furring channel/batten.
Recessed edges	Fix on each furring channel/batten.
Butt joints	Float butt joints between furring channel/battens and back-block for Level 4 and Level 5 Finishes. Butt joints permitted on furring channel for a Level 3 Finish. Stagger butt joints by 600mm on adjoining sheets and on opposite sides of the wall.
Internal and External corners	Fix at 300mm max centres
Openings	Fix at 300mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 3 Fire Rated 2 Layers – Vertical + Horizontal

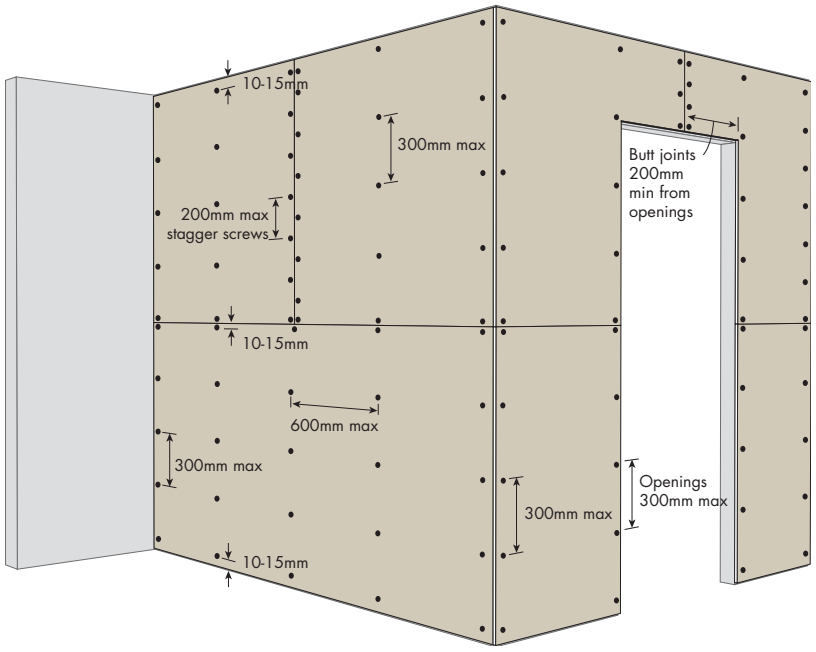
Screw Only Method on furring channel



Fixing	Screw Only Method
Sheet layout	1st layer: Vertical 2nd layer: Horizontal
Wall anchor clips	Use direct fix clips or resilient mounts. *[Refer to furring channel/timber batten anchor spacing table]*
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom of wall. Plasterboard must not be fixed top and bottom tracks.
Field	1st layer: Fix at 300mm max centres 2nd layer: Fix at 300mm max centres
Recessed edges	1st layer: Fix at 200mm max centres and stagger screws. Recessed edges must be backed by furring channel. 2nd layer: Fix on each furring channel.
Butt joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and between layers. 1st layer butt joints must be backed by furring channel. 2nd layer: Fix at 200mm max centres and stagger screws. Alternatively, float butt joints and laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External corners	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing face layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 4 Non-Fire Rated 1 Layer – Horizontal

Laminating Screw Method to autoclaved aerated concrete



Fixing	Laminating Screw Method
Sheet layout	Horizontal (or Vertical)
Perimeter	Screws must be within 10-15mm of sheet edges and from recess joints and butt joints.
Field	Fix at 300mm max centres
Recessed edges	Fix at 600mm max centres
Butt joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets.
Internal and External corners	Fix at 300mm max centres
Openings	Fix at 300mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIRE RATED AND NON-FIRE RATED
WALL HEAD AND BASE FOR MASONRY WALLS – ELEVATION

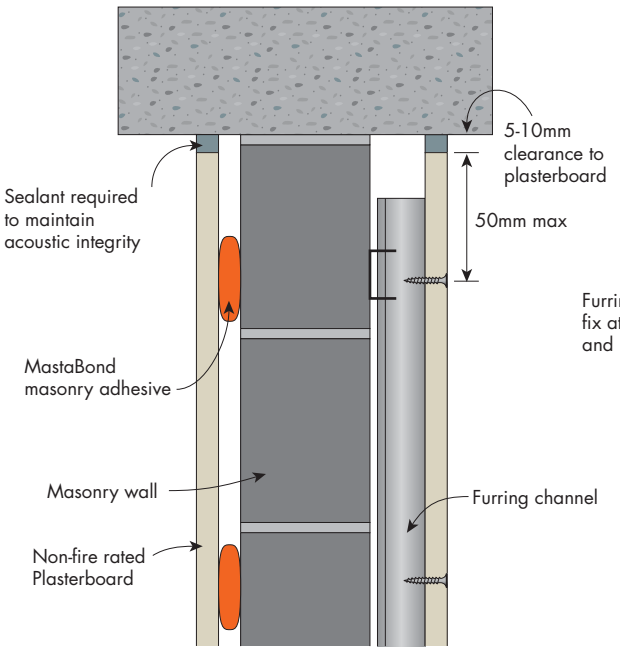


FIGURE 5 Wall Head to Slab

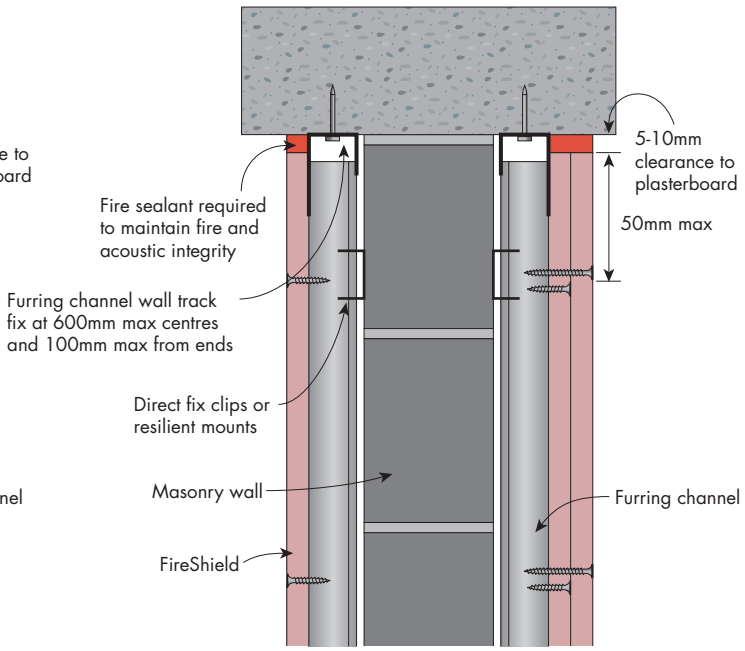


FIGURE 6 Wall Head to Slab

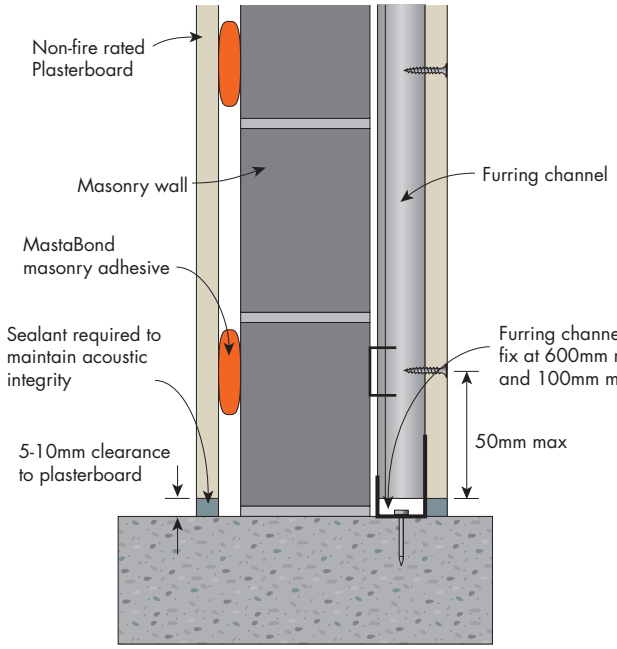


FIGURE 7 Wall Base to Slab

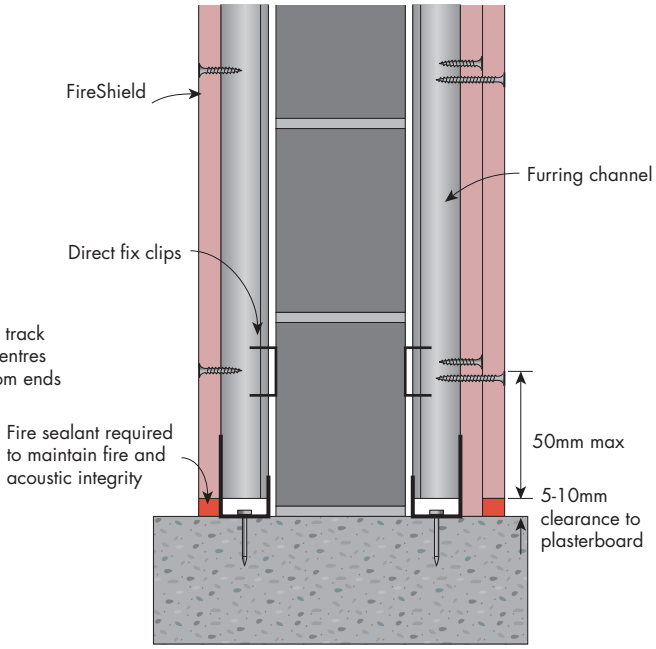


FIGURE 8 Wall Base to Slab

FIRE RATED AND NON-FIRE RATED
WALL JUNCTIONS MASONRY WALLS – PLAN VIEW

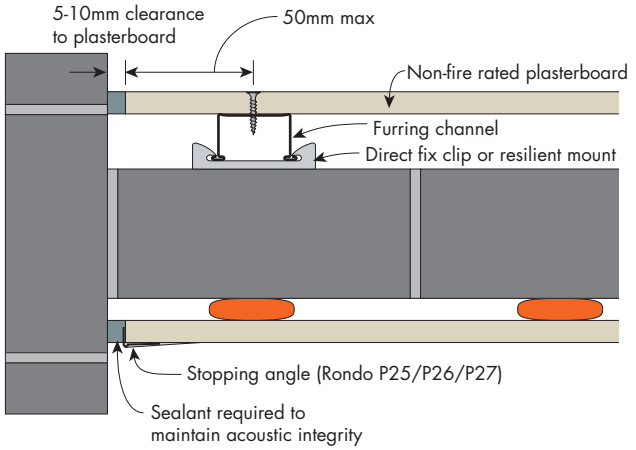


FIGURE 9 Plasterboard to Masonry Intersection Wall

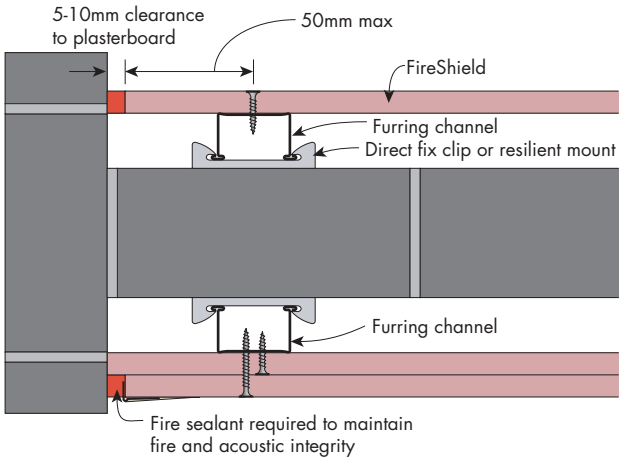


FIGURE 10 Plasterboard to Masonry Intersection Wall

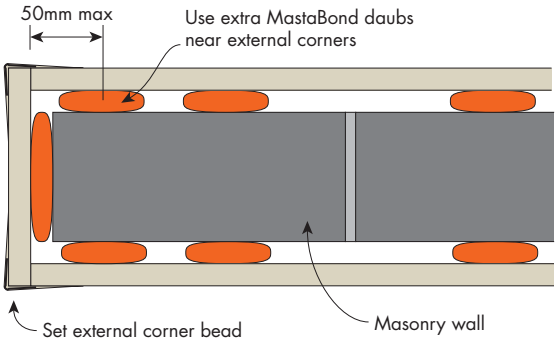


FIGURE 11 Wall End

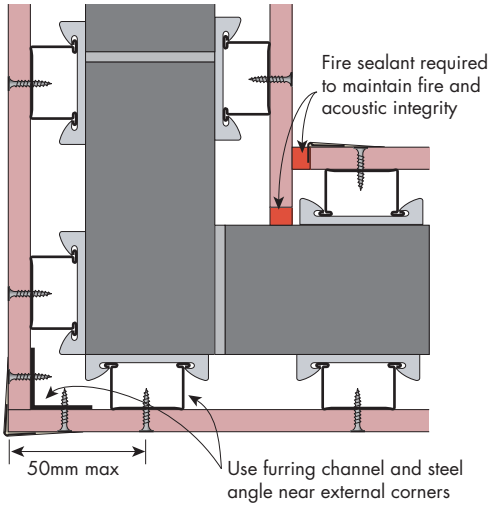


FIGURE 12 Corner

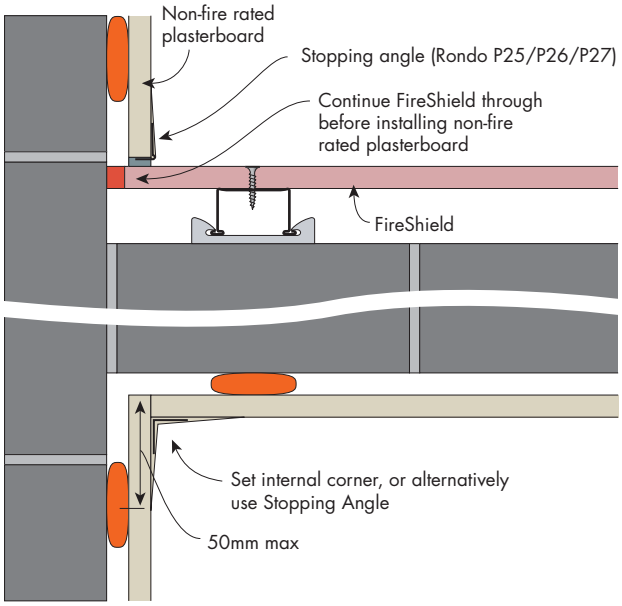


FIGURE 13 Plasterboard to Masonry Intersection Wall

FIRE RATED AND NON-FIRE RATED
WALL CONTROL JOINTS FOR MASONRY WALLS – PLAN VIEW

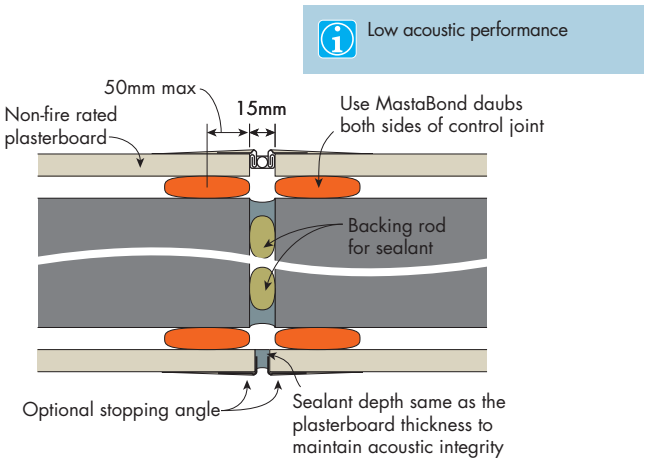


FIGURE 14 Control Joint

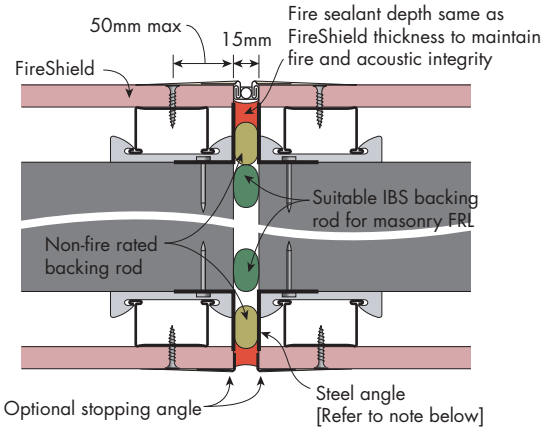


FIGURE 15 Control Joint

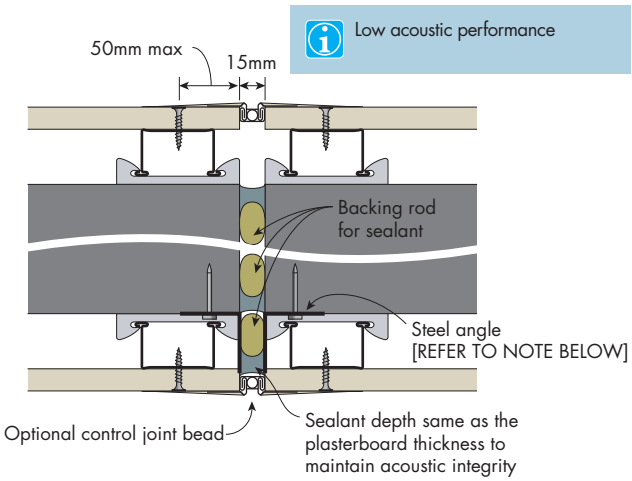


FIGURE 16 Control Joint

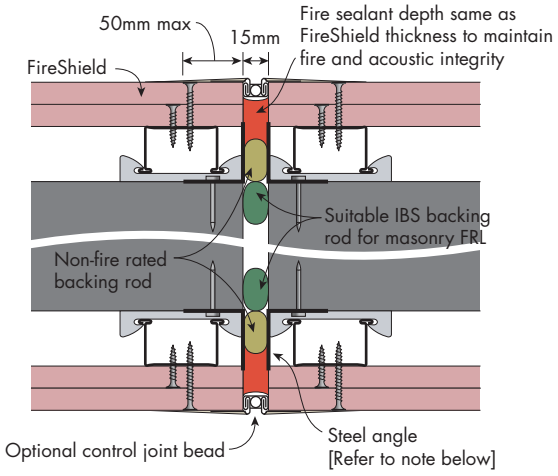


FIGURE 17 Control Joint

- For control joint using either 13mm recessed furring channel, or beta fix clips and furring channel, or direct fix clips and furring channel, or resilient mounts and furring channel, galvanised steel angle must be used to support backing rod and sealant/ fire sealant.
- For 13mm recessed furring channel use 25x25mm angle.
- For Direct fix clip and 16mm furring channel use 25x25mm angle.
- For Direct fix clip and 28mm furring channel use 35x35mm angle.

FIRE RATED AND NON-FIRE RATED
DOORS FOR MASONRY WALLS – PLAN VIEW

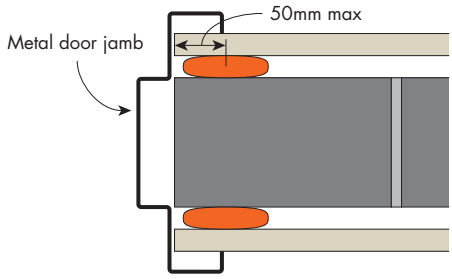


FIGURE 18 Typical Metal Door Jamb

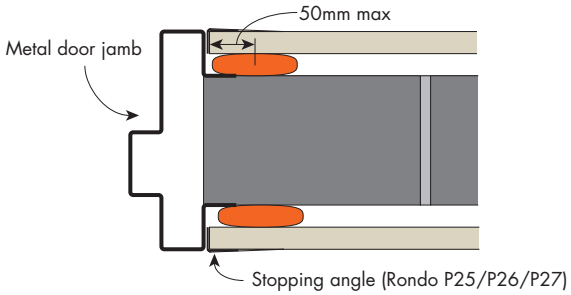


FIGURE 19 Typical Metal Door Jamb
With stopping angle

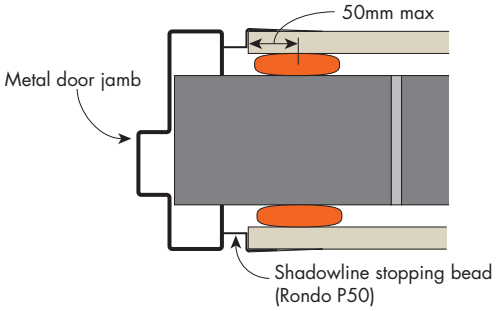


FIGURE 20 Typical Metal Door Jamb
With shadowline stopping bead

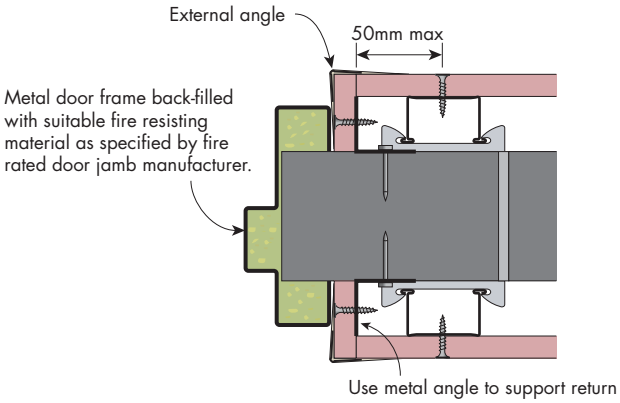


FIGURE 21 Fire Rated Metal Door Jamb
Example only

3.1.4

Wet Areas Using Plasterboard

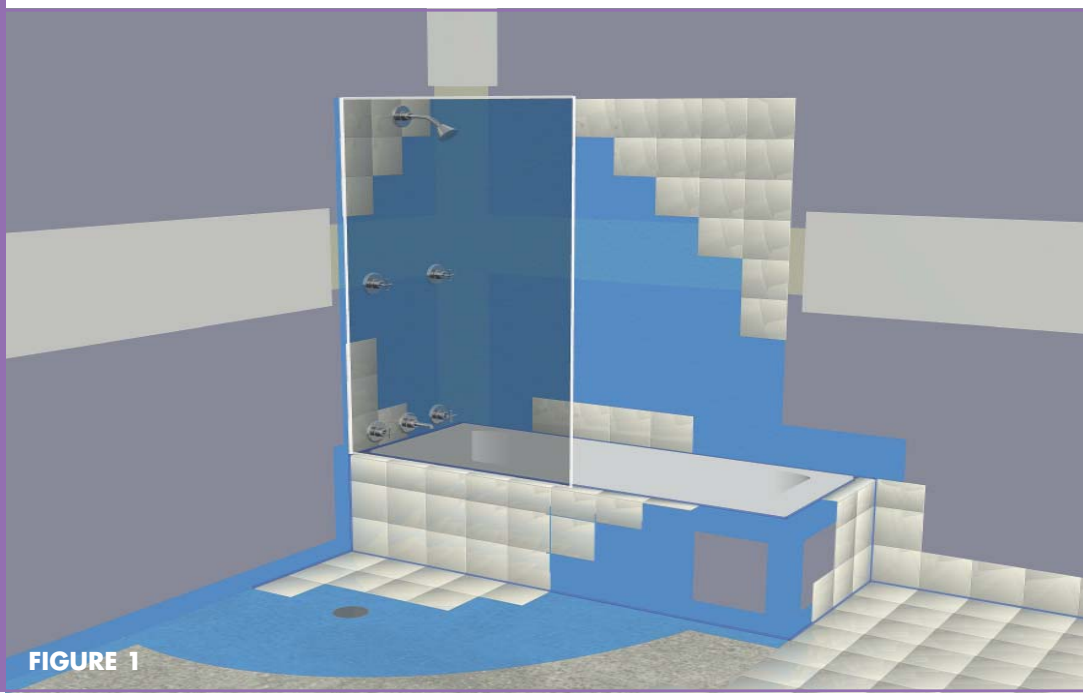


FIGURE 1

INTRODUCTION

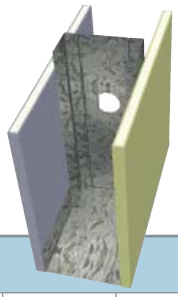
Australian Standard AS 3740 – Waterproofing of Wet Areas within Residential Buildings defines a wet area as 'an area within a building supplied with water from a water supply system and includes bathrooms, showers, laundries and sanitary compartments.'

Waterproofing of wet areas may be achieved by systems using water resistant plasterboards such as WaterShield, MultiShield or QuadShield. This section contains:

- Wall systems incorporating WaterShield *[For MultiShield or QuadShield systems, refer to Section 3.1.1 and 3.1.2, as MultiShield and QuadShield have resistance to both water and fire]*
- Installation instructions for wet area walls. *[For installation on WaterShield ceilings, refer to Section 3.4]*
- Waterproofing treatment methods for WaterShield, QuadShield and MultiShield walls.
- Construction details for wet areas.

Some elements of wet area installation will be carried out by a plasterer, and other elements will be completed by trades such as plumbers and tilers. All waterproofing must be carried out by an approved applicator. *[Refer to Section 2.3 for more information on wet areas]*

KSW130

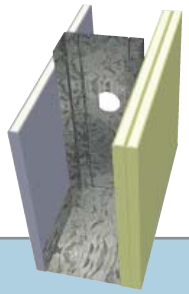


WALL LINING: [Side 1] 1 layer of 10mm **WaterShield** (bathroom side)
[Side 2] 1 layer of 10mm **SoundShield**

FRAME: Steel studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	51	0.5 0.75	2.77 2.91	3.02 3.20	71	33 (26)	41 (32)	40 (32)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.33 3.93 4.17	3.58 4.18 4.46	84	34 (26)	41 (32)	41 (32)	–	
	76	0.55 0.75 1.15	3.70 4.43 4.65	4.02 4.78 5.07	96	35 (27)	42 (33)	42 (33)	42 (33)	
	92	0.55 0.75 1.15	4.54 4.83 5.11	4.85 5.27 5.62	112	35 (27)	43 (33)	43 (33)	43 (33)	
	150	0.75 1.15	6.55 7.22	7.14 7.75	170	37 (27)	45 (36)	45 (36)	45 (36)	

KSW131

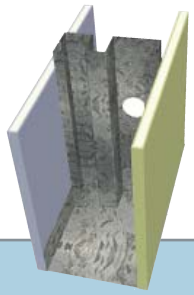


WALL LINING: [Side 1] 1 layer of 10mm **WaterShield** (bathroom side)
[Side 2] 2 layers of 10mm **SoundShield**

FRAME: Steel studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	51	0.5 0.75	2.77 2.91	3.02 3.20	81	39 (31)	45 (36)	45 (36)	–	Acoustic Report Day Design 3094-33
	64	0.5 0.75 1.15	3.33 3.93 4.17	3.58 4.18 4.46	94	40 (31)	47 (37)	46 (37)	–	
	76	0.55 0.75 1.15	3.70 4.43 4.65	4.02 4.78 5.07	106	40 (31)	47 (37)	47 (37)	47 (37)	
	92	0.55 0.75 1.15	4.54 4.83 5.11	4.85 5.27 5.62	122	41 (32)	48 (38)	48 (38)	48 (38)	
	150	0.75 1.15	6.55 7.22	7.14 7.75	180	43 (32)	50 (42)	50 (42)	50 (42)	

KSW150

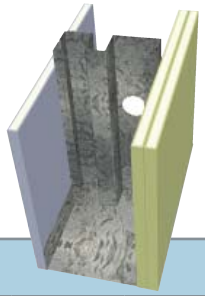


WALL LINING: [Side 1] 1 layer of 10mm **WaterShield** (bathroom side)
[Side 2] 1 layer of 10mm **SoundShield**

FRAME: Rondo QUIET STUDS® at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	92	0.55	3.70 No noggings	4.02 No noggings	112	36 (29)	45 (34)	45 (34)	46 (35)	Acoustic Report Day Design 3094-12

KSW151



WALL LINING: [Side 1] 1 layer of 10mm **WaterShield** (bathroom side)
[Side 2] 2 layers of 10mm **SoundShield**

FRAME: Rondo QUIET STUDS® at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud BMT	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	
– / – / –	92	0.55	3.70 No noggings	4.02 No noggings	122	41 (34)	50 (40)	50 (40)	51 (41)	Acoustic Report Day Design 3094-12

KTW130

WALL LINING: [Side 1] 1 layer of 10mm **WaterShield** (bathroom side)
[Side 2] 1 layer of 10mm **SoundShield**

FRAME: Timber studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-Load Bearing MGP10 Timber Studs at 600mm	Non-Load Bearing MGP10 Timber Studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	35	3.74	3.90	90	34 (27)	41 (31)	–	41 (31)	Acoustic Report Day Design 3094-44
		45	3.88	4.07						
	90	35	4.54	4.77	110	36 (28)	41 (32)	41 (33)	41 (32)	
		45	4.74	5.01						

KTW131

WALL LINING: [Side 1] 1 layer of 10mm **WaterShield** (bathroom side)
[Side 2] 2 layers of 10mm **SoundShield**

FRAME: Timber studs at maximum 600mm centres

FRL	Stud Size (mm)		Max Height UDL 0.25kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)				
	Stud Depth	Stud Width	Non-load bearing MGP10 timber studs at 600mm	Non-load bearing MGP10 timber studs at 450mm		No Insulation	R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	35	3.74	3.90	100	39 (32)	44 (35)	–	44 (35)	Acoustic Report Day Design 3094-44
		45	3.88	4.07						
	90	35	4.54	4.77	120	40 (32)	44 (37)	45 (37)	44 (37)	
		45	4.74	5.01						

DEFINITIONS

WATERPROOF MEMBRANE

Waterproof membranes are a layer of material impervious to water that are usually liquid applied. They must comply with AS/NZS 4858:2004, *Wet Area Membranes* and be applied according to the manufacturer's instructions.

FLASHING

Flashing is a strip or sleeve of impervious material such as metal angle, or a liquid applied product such as a waterproof membrane. It must provide a barrier to moisture movement.

SHOWER AREA

Shower areas consist of enclosed and unenclosed areas:

- Unenclosed shower areas extend 1500mm horizontally from the shower connection on the wall, up to a height of 1800mm from the finished floor.
- Enclosed shower areas are bounded by walls or screens up to a height of 1800mm from the finished floor. Walls or screens include hinged or sliding doors that control the spread of water to within the enclosure

A shower fitted with a frameless glass shower screen or screen over a bath less than 1500mm long is not an enclosed shower.

WET AREA REQUIREMENTS

Different wet areas require different levels of treatment to protect them from moisture.

WET AREA INSTALLATION REQUIREMENTS

Area	Level of Risk	Walls	Junctions	Penetrations+
Shower area	High	Water Resistant	Waterproof	Waterproof
Bathrooms	Medium	–	Waterproof^	–
Areas adjacent to baths and spas	Medium	Water Resistant	Waterproof	Waterproof*
Walls adjoining other vessels	Low	Water Resistant	Waterproof	Waterproof*
Laundries and WCs	Low	–	Waterproof^	–
Bathrooms and laundries requiring a floor waste	High	–	Waterproof^	Waterproof

+ Including mechanical fixings or fasteners.
^ Applies to wall/floor junctions only.
* Horizontal surface waterproof, vertical surface water resistant.

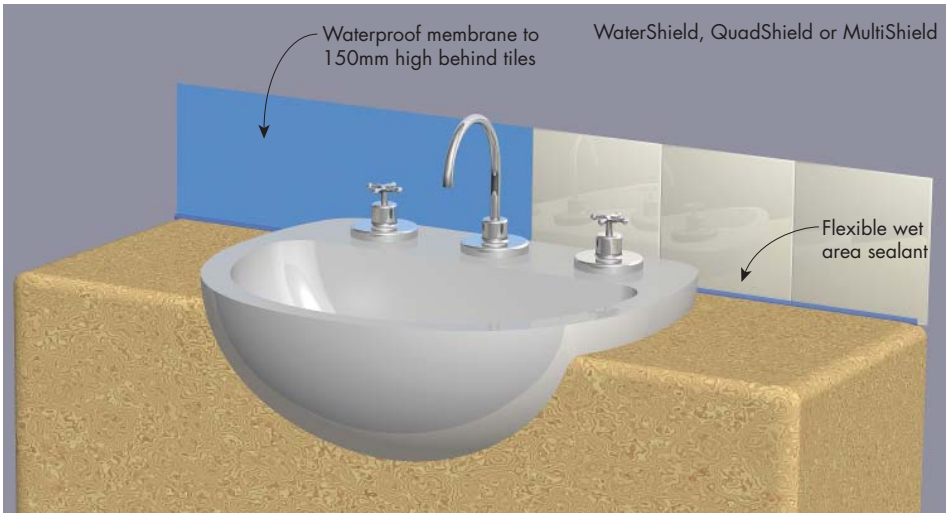


FIGURE 2 Basin

WATERPROOFING REQUIREMENTS BY AREA

Water Resistant Walls
Use **WaterShield**, **MultiShield** or **QuadShield** covered with a waterproof membrane and tiles.
For all plasterboard joints, corners and fastener heads use **MastaBase** or **MastaLongset** and cover with a waterproof membrane.
For long term durability, the application of a waterproof membrane over the entire area is recommended where water resistant walls are required
[Refer to waterproof membrane manufacturer for application instructions]
Walls Adjoining Other Vessels
Ensure walls within 75mm of a vessel such as a sink, basin or laundry tub are water resistant to a height of 150mm minimum above the vessel.
Seal all edges where the vessel is fixed to the wall.
Waterproof Penetrations
Use a waterproof sealant or a proprietary flange system to waterproof penetrations.
Waterproof Vertical Junctions (where required)
Use a waterproof membrane as vertical flashing that has a minimum overlap of 40mm to the wall sheeting for each leg.
Wall/Floor Junctions in Shower Areas and Adjacent to Baths and Spas
Use a waterproof membrane on walls to: › 150mm minimum above the finished shower floor level or lip of bath › And 25mm minimum above the maximum retained water level › And with the horizontal leg width a minimum of 50mm.
Wall/Floor Junctions Outside Shower Areas
Use a waterproof membrane or metal angle as flashing with a vertical leg a minimum of 25mm above the finished floor level with the horizontal leg width a minimum of 50mm.

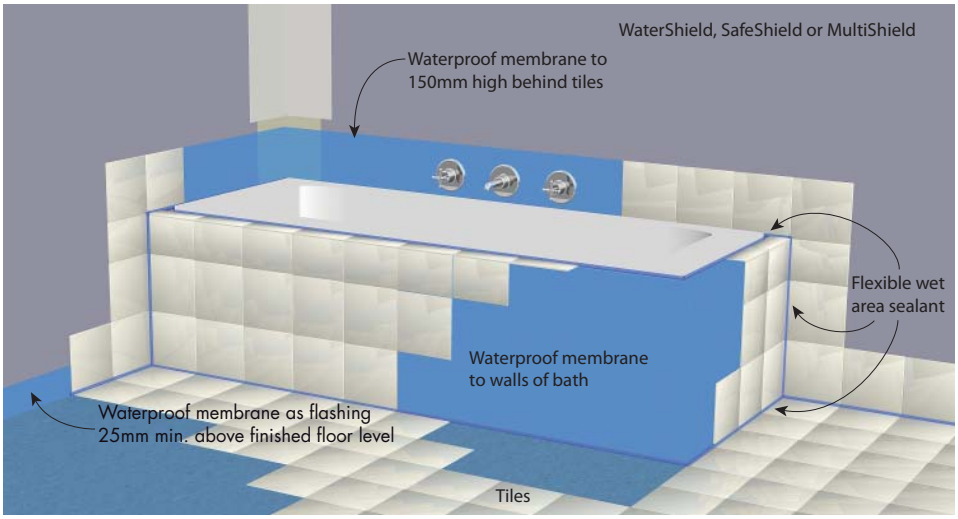


FIGURE 3 **Bath (Without Shower) Installation on Timber Flooring**

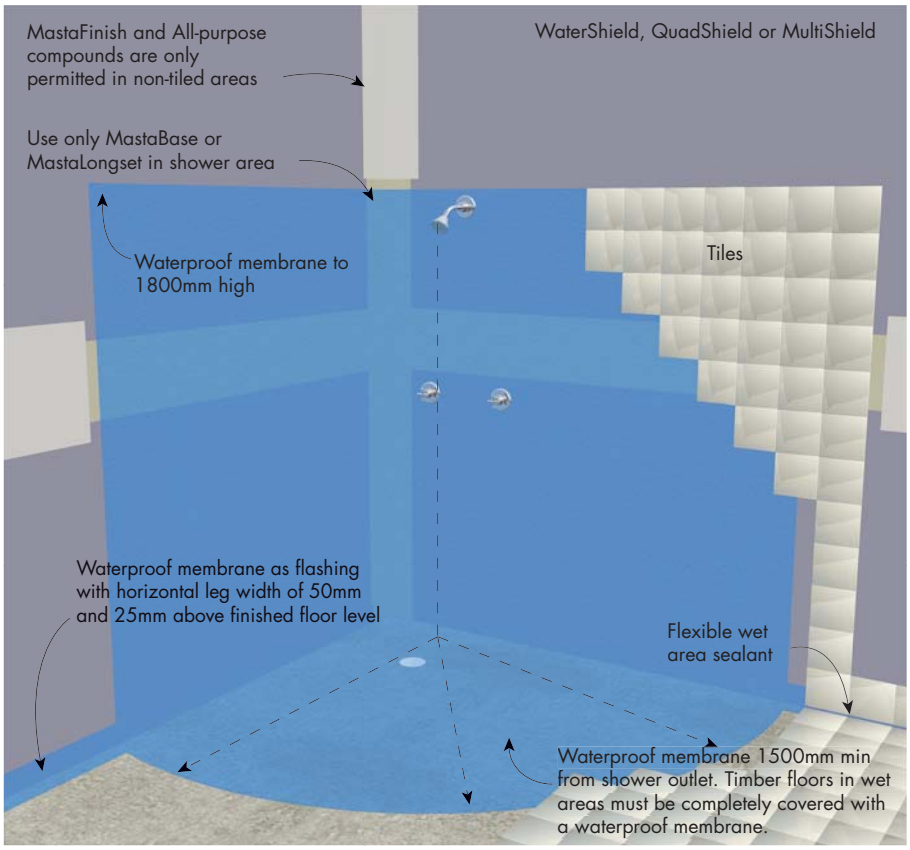


FIGURE 4 **Internal In Situ Tray for Unenclosed Shower on Concrete or Compressed Fibre Cement Floor**

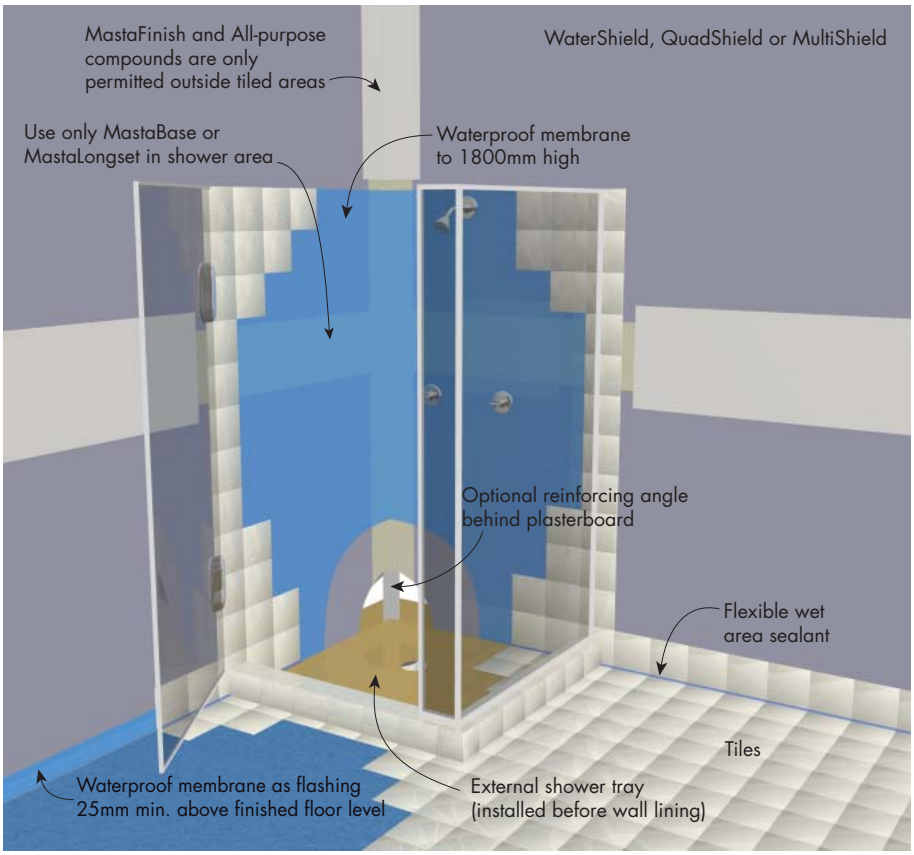


FIGURE 5 **External Tray for Enclosed Shower on Timber Flooring**

GENERAL REQUIREMENTS

For **WaterShield** *[Refer to Section 3.1.1 or 3.1.2 non-fire rated requirements]*
For **MultiShield** or **QuadShield** *[Refer to Section 3.1.1 or 3.1.2 fire rated requirements]*
Waterproof all cut edges of **WaterShield**, **QuadShield** or **MultiShield** that may be affected by moisture, including all penetrations and the bottom edge over a preformed shower base.
Only use paper tape and two coats of **MastaBase** or **MastaLongset** for jointing in tiled areas.
Recess pre-formed shower bases, baths and spas sufficiently into the wall to allow the tiles to pass down the inside perimeter rebate of the shower base *[Refer to Construction Details]*
After the installation of tiles, apply a waterproof sealant to all wall/floor junctions and vertical corner joints.
Attach fixtures to framing members only.
Multi-layer installations of **WaterShield**, **QuadShield** or **MultiShield** must also use these products for the underlying layers.

- Masonry adhesive and stud adhesive are not permitted in tiled areas.
- Frame movement should be limited at junctions in high risk areas such as showers. For this purpose use timber blocking to connect the two corner studs or install a min. 35 x 35 x 0.7mm metal angle fixed to the frame in internal corners.
- To prevent condensation forming, insulation in the wall cavity should not come in contact with plumbing pipes.

FRAMING

For internal steel walls *[Refer to Section 3.1.1]*. For internal timber walls *[Refer to Section 3.1.2]*
Masonry walls lined with tiles on **WaterShield** or **MultiShield** must use the furring channel method. For masonry walls with plasterboard *[Refer to Section 3.1.3]*

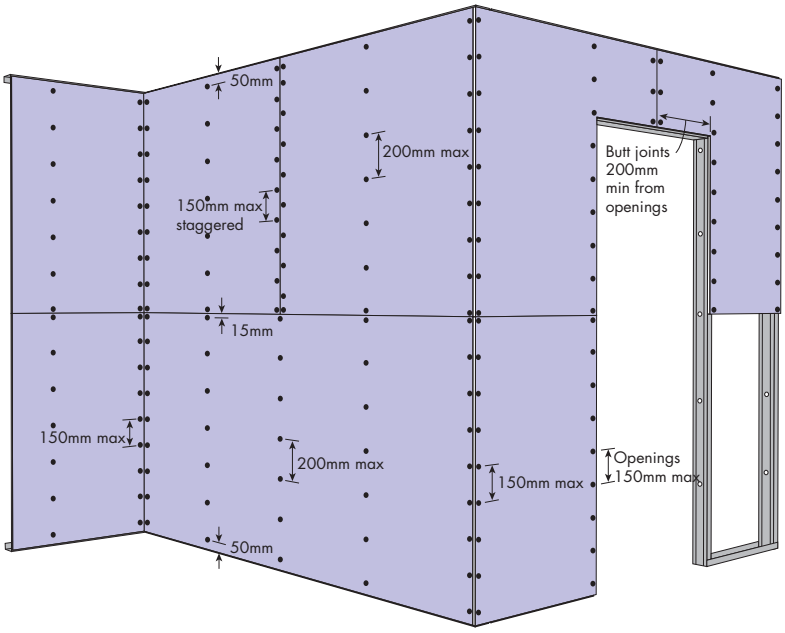
PLASTERBOARD LAYOUT

For **WaterShield** *[Refer to Section 3.1.1 or 3.1.2 non-fire rated requirements]*
For **MultiShield** or **QuadShield** *[Refer to Section 3.1.1 or 3.1.2 fire rated requirements]*

PLASTERBOARD FIXING

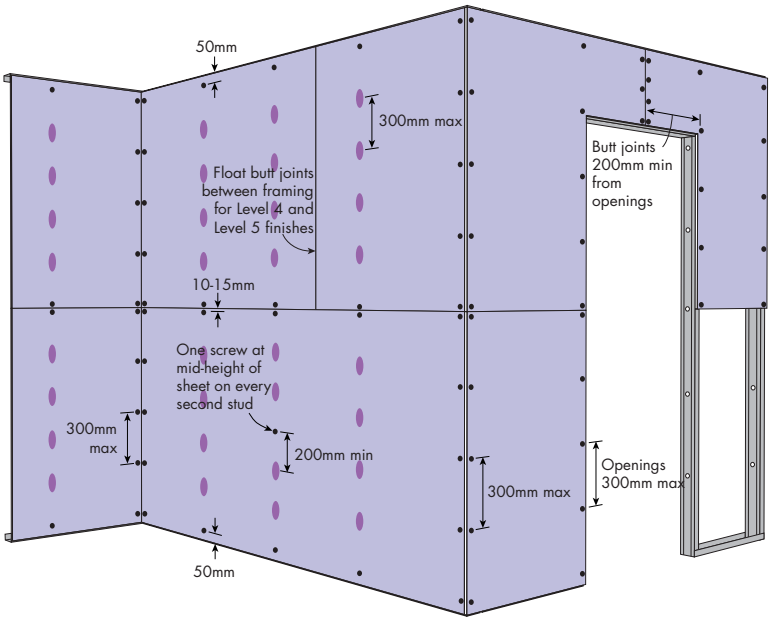
Use the 'Fastener Only Method' in tiled or fire rated areas. Masonry or stud adhesives are not permitted.
Drive fasteners to just below the sheet surface, taking care not to break the paper linerboard.
Laminating screws can be used to fix butt joints in the second and third layer.
Reduce all fastener spacing to 100mm max centres for tiles above 12 kg/m^2 up to a maximum of 30 kg/m^2.

FIGURE 6 WaterShield in Tiled Areas 1 Layer – Horizontal
Screw Only Method to steel frame



Fixing	Screw Only Method
Sheet Layout	Horizontal
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 200mm max centres.
Recessed Edges	Fix on each stud.
Butt Joints	Fix at 150mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall.
Internal and External Corners	Fix at 150mm max centres.
Openings	Fix at 150mm max centres.
Sealant	Use wet area sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*
Tile Weight	Reduce all fastener spacing to 100mm max centres for tiles above 12kg/m² up to a maximum of 30kg/m².

FIGURE 7 WaterShield in Untiled Areas 1 Layer – Horizontal
Screw and Adhesive Method to steel frame



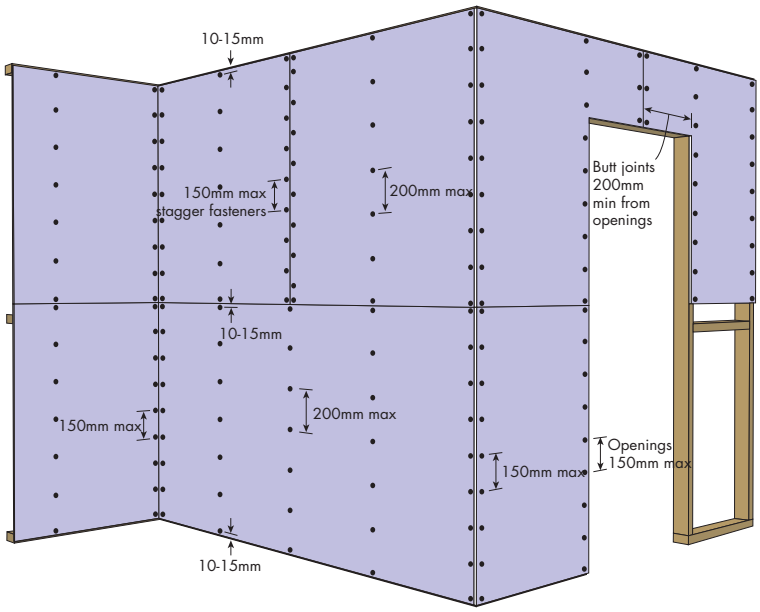
Fixing	Screw and Adhesive Method
Sheet Layout	Horizontal
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Adhesive daubs 25mm diameter and spaced at 300mm max centres and 200mm min from screw points and plasterboard edges. Fix one screw at mid-height of sheet on every second stud.
Recessed Edges	Fix on each stud.
Butt Joints	Float butt joints between studs and back-blocking for Level 4 and Level 5 Finishes. Butt joints permitted on a stud for Level 3 Finishes. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall.
Internal and External Corners	Fix at 300mm max centres.
Openings	Fix at 300mm max centres.
Sealant	Use wet area sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

Plasterboard Width (mm)	Fastener and Adhesive pattern
900	S A A A S
1200	S A A A A S
1350	S A A A A A S

S = Screw
A = Adhesive

FIGURE 8 WaterShield in Tiled Areas 1 Layer – Horizontal

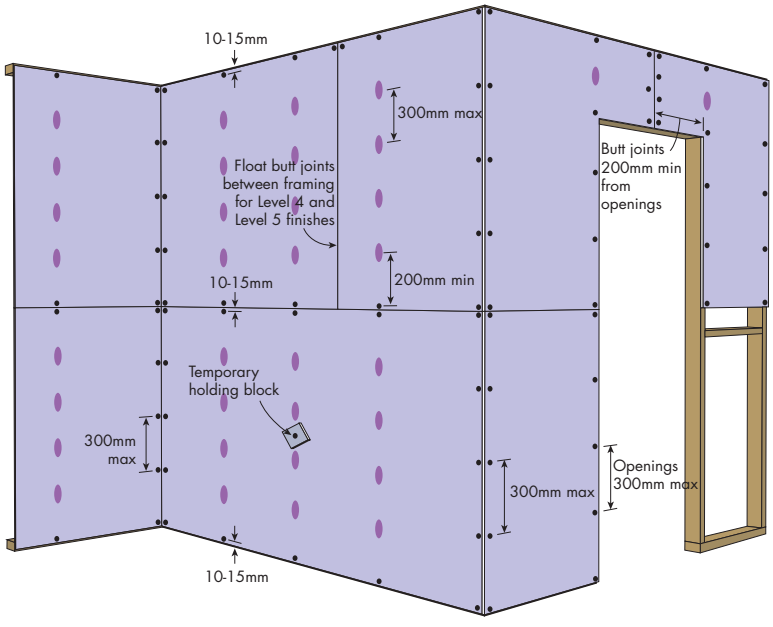
Fastener Only Method to timber frame



Fixing	Fastener Only Method
Sheet Layout	Horizontal
Perimeter	Perimeter fasteners 10-15mm from sheet edges.
Field	Fix at 200mm max centres.
Recessed Edges	Fix on each stud.
Butt Joints	Fix at 150mm max centres and stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a stud or back-blocked.
Internal and External Corners	Fix at 150mm max centres.
Openings	Fix at 150mm max centres.
Sealant	Use wet area sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*
Tile Weight	Reduce all fastener spacing to 100mm max centres for tiles above 12kg/m² up to a maximum of 30kg/m².

FIGURE 9 WaterShield in Untiled Areas 1 Layer – Horizontal

Fastener and Adhesive Method to timber frame



Fixing	Fastener and Adhesive Method
Sheet Layout	Horizontal
Perimeter	Perimeter fasteners 10-15mm from sheet edges.
Field	Adhesive daubs 25mm diameter and 15mm high, spaced at 300mm max centres and 200mm min from fasteners and plasterboard edges. Temporary holding blocks or fastener on every second stud.
Recessed Edges	Fix on each stud.
Butt Joints	Float butt joints between studs and back-blocking for Level 4 and Level 5 Finishes. Butt joints permitted on a stud for Level 3 Finishes. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall.
Internal and External Corners	Fix at 300mm max centres.
Openings	Fix at 300mm max centres.
Sealant	Use wet area sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

Plasterboard Width (mm)	Fastener and Adhesive pattern
900	F A A A F
1200	F A A A A F
1350	F A A A A A F

F = Fastener (Screw or Nail)
A = Adhesive

NON-FIRE RATED
SHOWER WALL BASE IN WET AREAS – ELEVATION

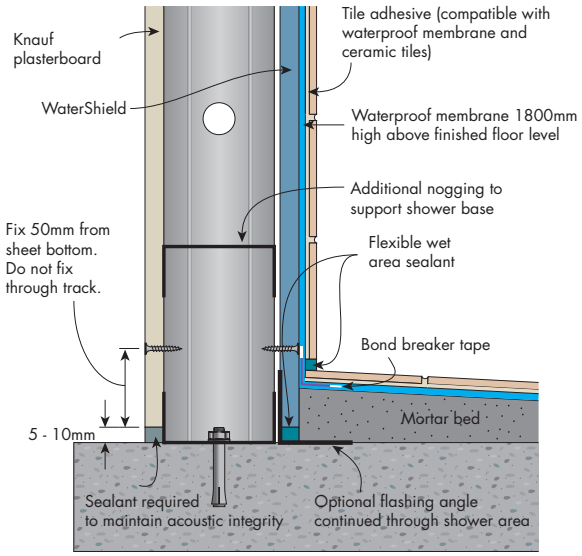


FIGURE 10 Wall Base in Shower Area
Internal insitu shower tray – Class 2 membrane

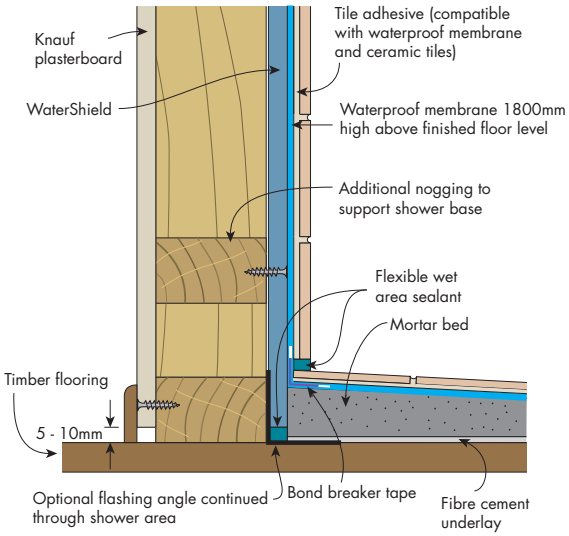


FIGURE 11 Wall Base in Shower Area
Internal insitu shower tray – Class 2 membrane

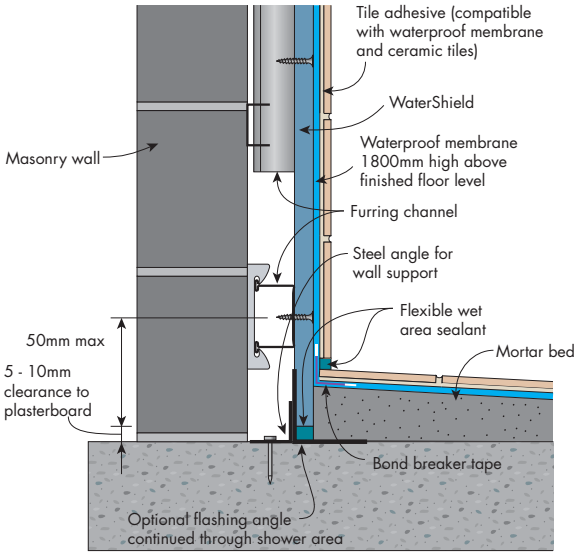


FIGURE 12 Wall Base in Shower Area on Masonry Wall
Internal insitu shower tray – Elevation

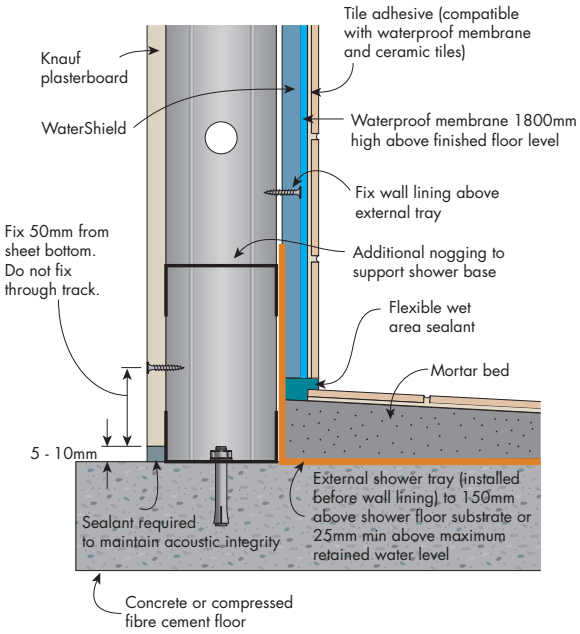


FIGURE 13 Wall Base in Shower Area
External shower tray – Elevation

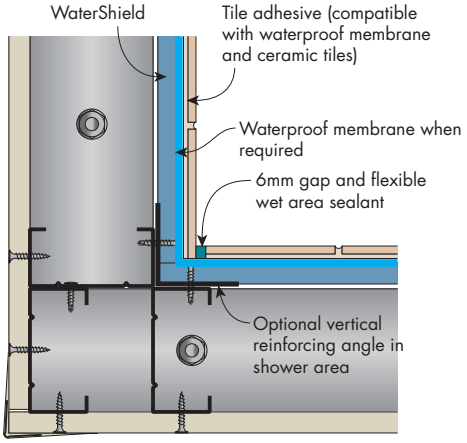
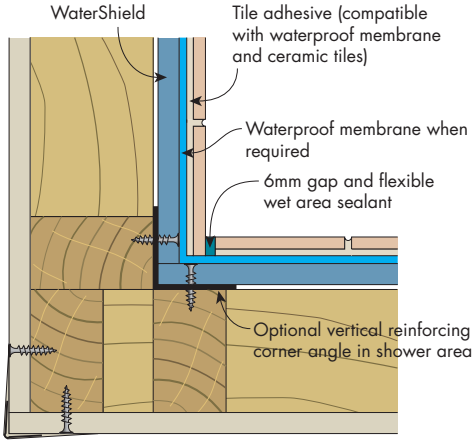


FIGURE 14 Corner Detail in Wet Area
Plan view



Installation of timber blocking or a vertical reinforcing corner angle (minimum 35 x 35 x 0.7mm) is to reduce corner movement which may cause waterproof membrane failure.

FIGURE 15 Corner Detail in Wet Area
Plan view

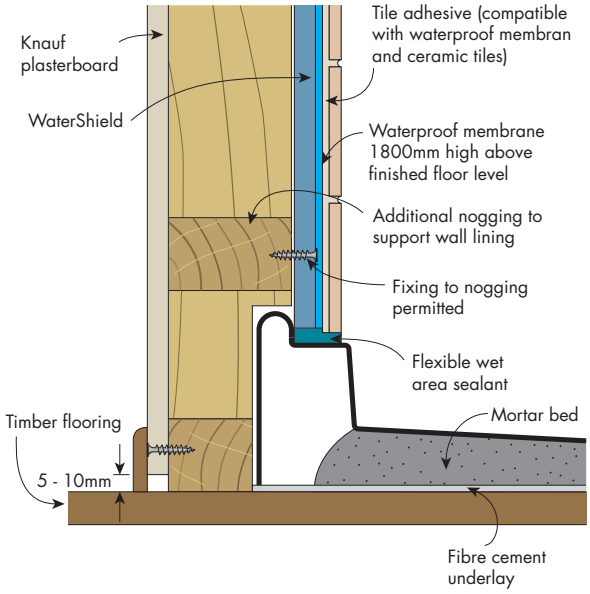


FIGURE 16 Wall Base in Shower Area
Preformed external shower tray – Elevation

NON-FIRE RATED

WALL BASE FOR BATH RECESS IN WET AREAS – ELEVATION

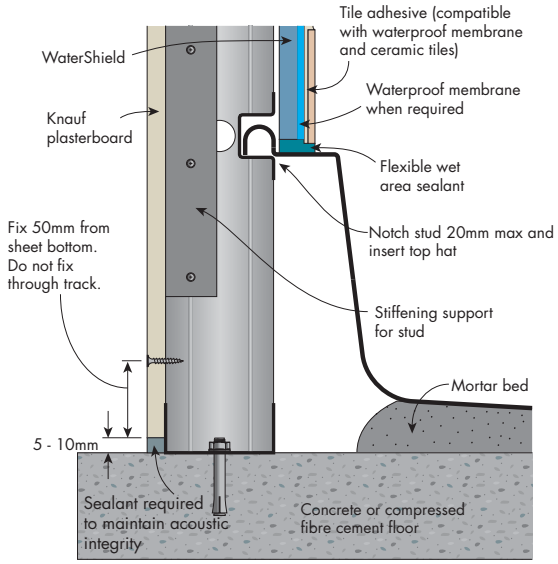


FIGURE 16 Wall Detail for Bath Recess

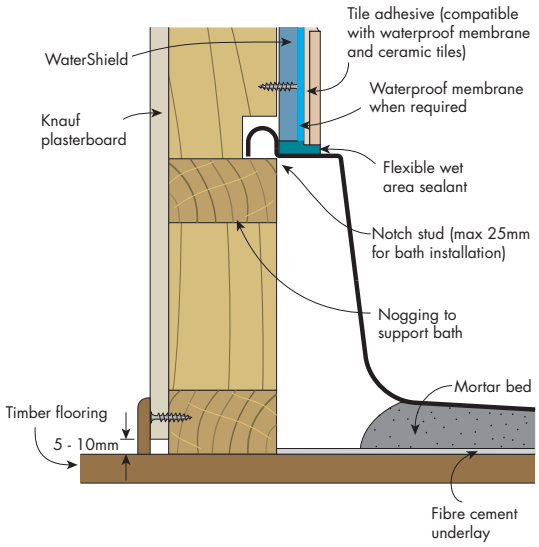


FIGURE 17 Wall Detail for Bath Recess

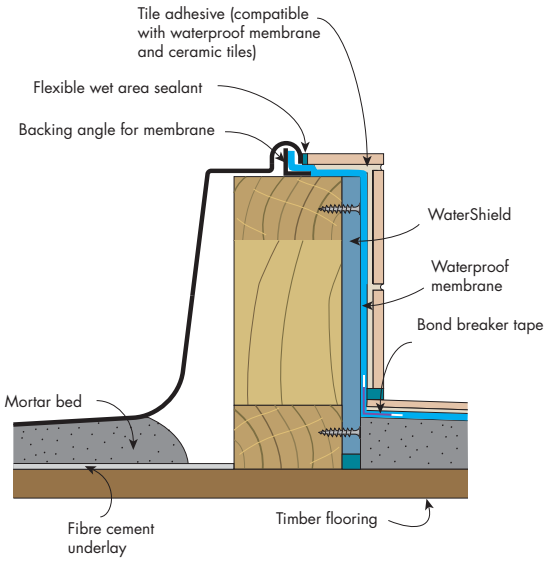


FIGURE 18 Wall Detail for Bath Recess

NON-FIRE RATED
WALL BASE IN WET AREAS — ELEVATION

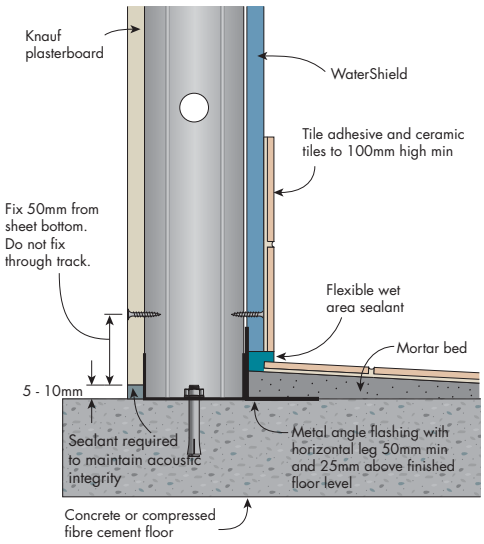


FIGURE 19 Wall Base in Wet Areas (Outside Shower)
With flashing angle

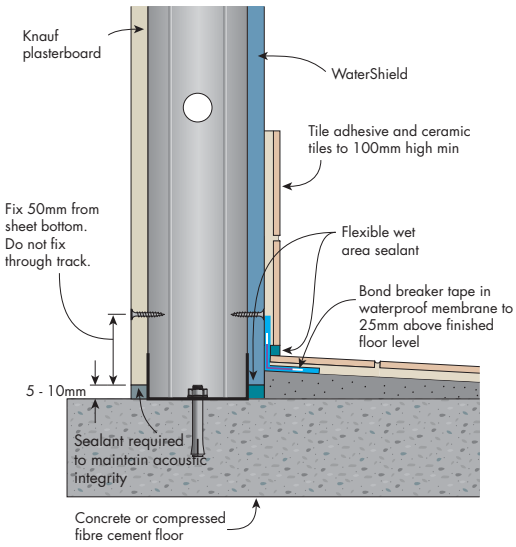


FIGURE 20 Wall Base in Wet Areas (Outside Shower)
With waterproof membrane as flashing

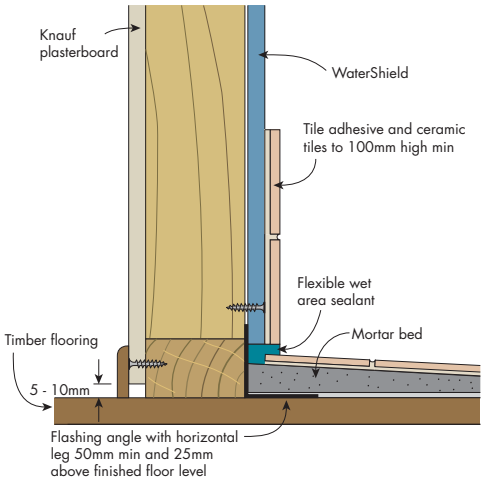


FIGURE 21 Wall Base in Wet Areas (Outside Shower)
With flashing angle

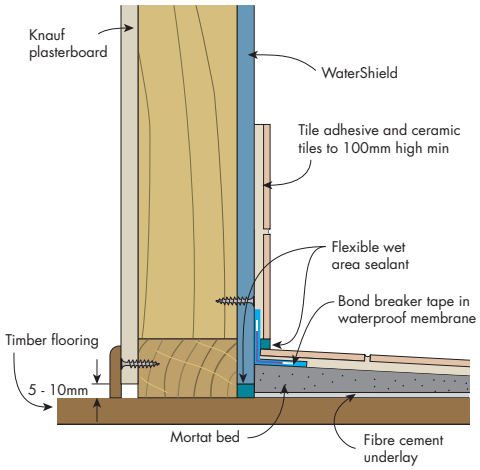


FIGURE 22 Wall Base in Wet Areas (Outside Shower)
With (Class 2) waterproof membrane as flashing

FIRE RATED
SHOWER WALL BASE IN WET AREAS – ELEVATION

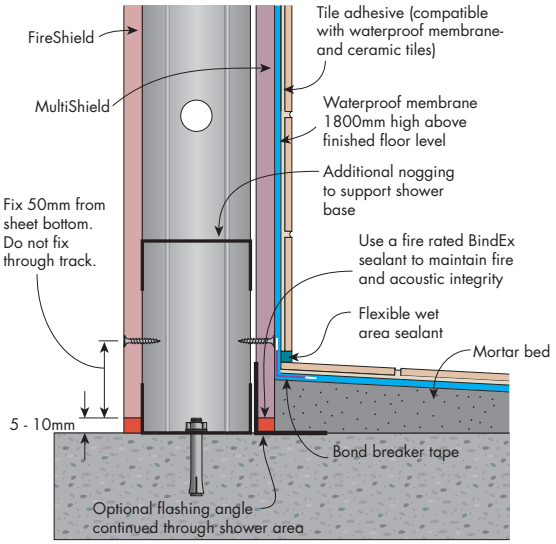


FIGURE 23 Wall Base in Shower Area
Internal insitu shower tray – Single layer

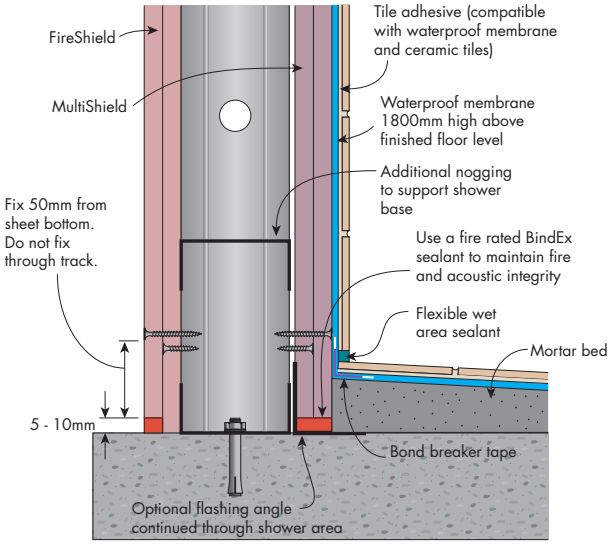


FIGURE 24 Wall Base in Shower Area
Internal insitu shower tray – Multiple layer

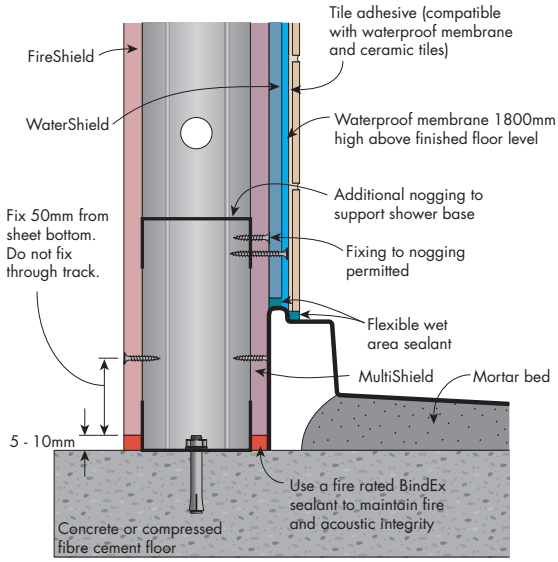


FIGURE 25 Wall Base in Shower Area
Preformed external shower tray – Single layer

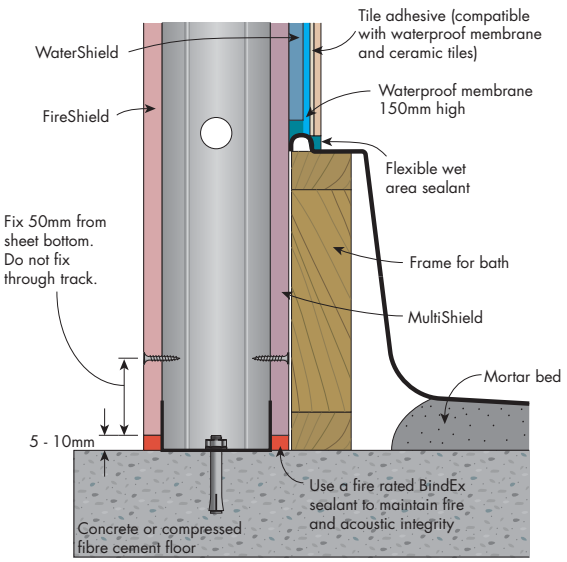


FIGURE 26 Wall Detail for Bath Recess

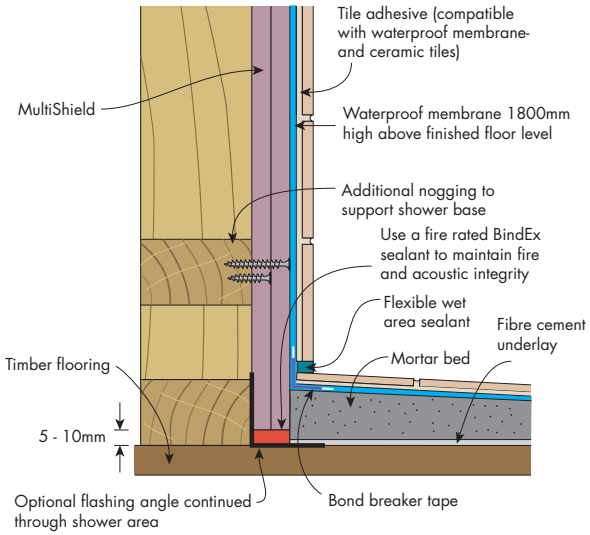


FIGURE 27 Wall Base in Shower Area
Internal insitu shower tray – Single layer

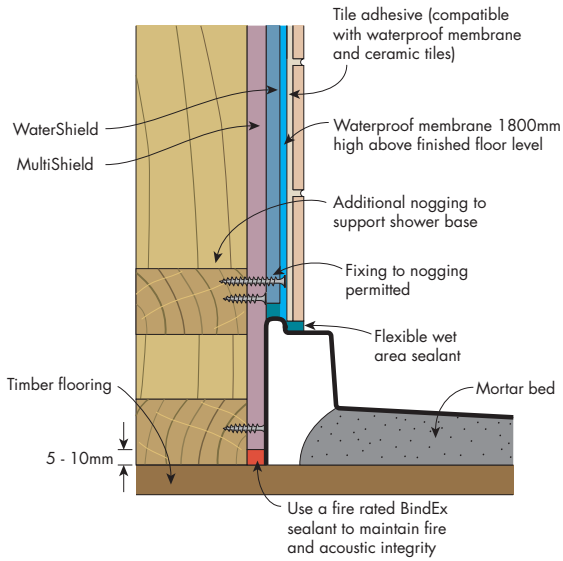


FIGURE 28 Wall Base in Shower Area
Preformed external shower tray

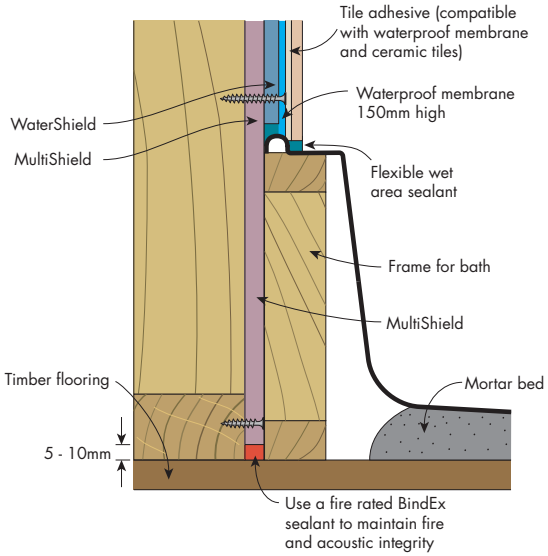


FIGURE 29 Wall Base for Bath Recess

FIRE RATED AND NON-FIRE RATED
PLUMBING PENETRATIONS — PLAN VIEW

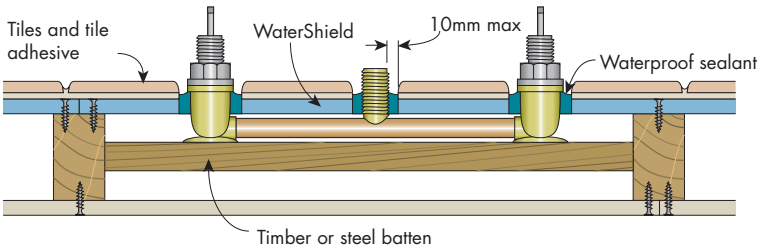


FIGURE 30 Plumbing Penetrations

To prevent condensation forming, insulation in the wall cavity should not come in contact with plumbing pipes.

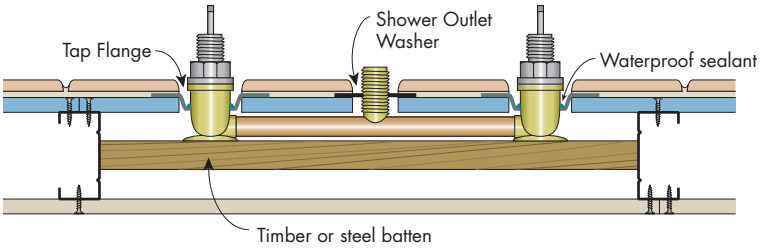


FIGURE 31 Alternating Plumbing Penetrations
Proprietry tap flange and shower outlet washer

Isolate copper and brass fitting from steel framing.

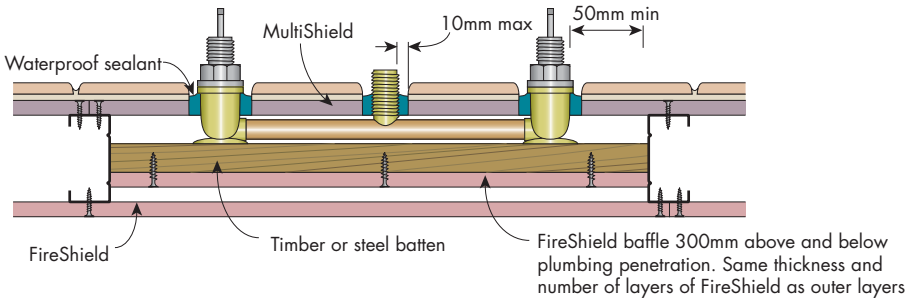


FIGURE 32 Plumbing Penetrations
Fire rated single layer systems

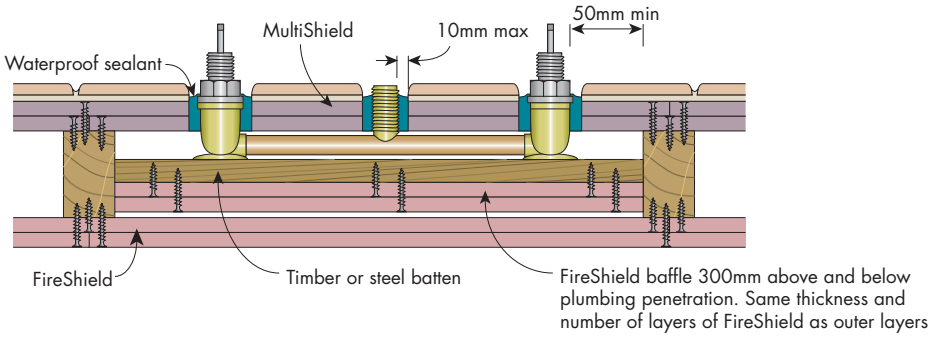
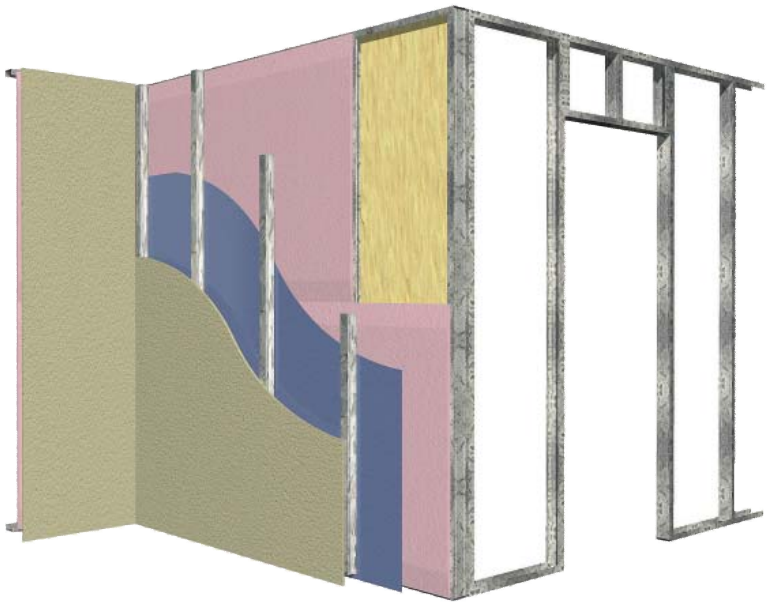


FIGURE 33 Plumbing Penetrations
Fire rated multiple layer systems

3.2.1

External Steel Walls



INTRODUCTION

External steel framed plasterboard walls protect the inside from weather, noise and, when applicable, fire. They must also comply with local energy efficiency provisions.

Fire rated systems in this section are designed to satisfy BCA fire rating requirements for walls built close to a property boundary. These walls are often required to be fire rated from the outside only.

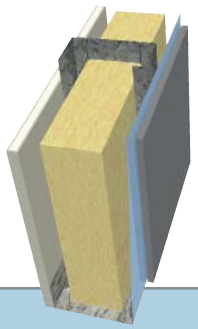
MultiShield forms part of the outer wall and is covered by a moisture barrier and external cladding which provide the weather protection.

This section contains systems, installation instructions and construction details for fire rated and non-fire rated external steel framed walls.

NON-FIRE RATED

KSW73

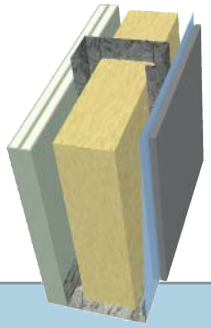
EXTERNAL WALL CLADDING: 1 layer of minimum 6mm fibre cement
MOISTURE BARRIER: Breathable wall wrap
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]



FRL – / – / –	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-24
	70	87mm approximate	41 (32)	40 (31)	

KSW274

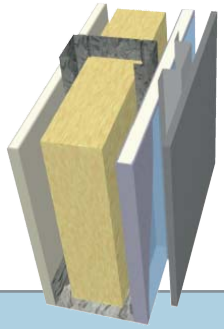
EXTERNAL WALL CLADDING: 1 layer of minimum 6mm fibre cement
MOISTURE BARRIER: Breathable wall wrap
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 10mm **SoundShield**



FRL – / – / –	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-24
	70	97mm approximate	48 (37)	47 (37)	

KSW470

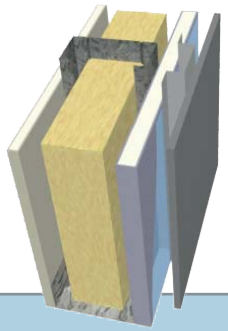
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 30/30/30 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	94mm + external cladding	43 (32)	41 (31)	

KSW473

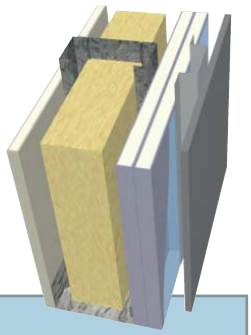
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 16mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 60/60/60 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	97mm + external cladding	44 (33)	42 (32)	

KSW471

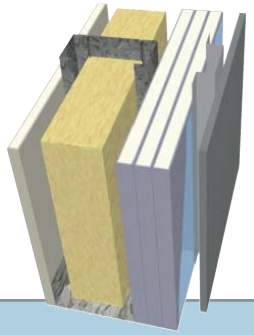
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 90/90/90 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	107mm + external cladding	48 (36)	47 (35)	

KSW472

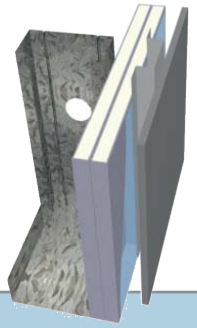
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 3 layers of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 120/120/120 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	120mm + external cladding	51 (39)	50 (38)	

KSW491

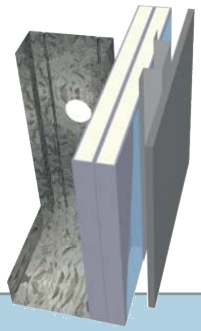
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: Optional
INTERNAL WALL LINING: Optional



FRL 30/30/30 rated from the outside only Fire Report FAR 2827	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		No Insulation	R1.5 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-33
	70	96mm + external cladding	34 (30)	34 (30)	34 (30)	

KSW494

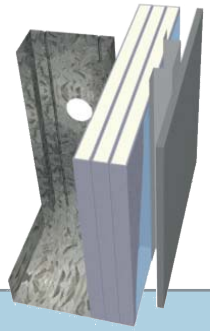
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 16mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: Optional
INTERNAL WALL LINING: Optional



FRL 60/60/60 rated from the outside only Fire Report FAR 2827	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		No Insulation	R1.5 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-33
	70	102mm + external cladding	35 (31)	35 (31)	35 (31)	

KSW492

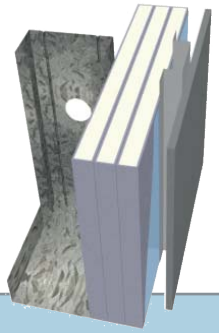
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 3 layers of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: Optional
INTERNAL WALL LINING: Optional



FRL 90/90/90 rated from the outside only Fire Report FAR 2827	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		No Insulation	R1.5 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-33
	70	110mm + external cladding	37 (34)	37 (34)	37 (34)	

KSW495

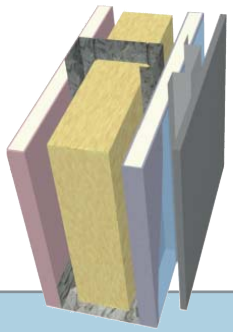
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 3 layers of 16mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: Optional
INTERNAL WALL LINING: Optional



FRL 120/120/120 rated from the outside only Fire Report FAR 2827	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		No Insulation	R1.5 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-33
	70	119mm + external cladding	38 (35)	38 (35)	38 (35)	

KSW476

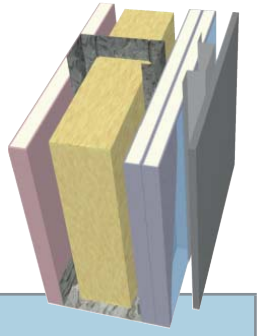
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 16mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 16mm **FireShield** or 16mm **MultiShield**



FRL 60/60/60 rated from both sides Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	104mm + external cladding	47 (37)	46 (36)	

KSW477

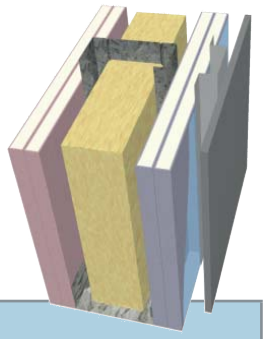
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 16mm **FireShield** or 16mm **MultiShield**



FRL	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	
90/90/90 rated from the outside **60/60/60** rated from the inside Fire Report FAR 3371	70	113mm + external cladding	51 (41)	50 (40)	Acoustic Report Marshall Day

KSW478

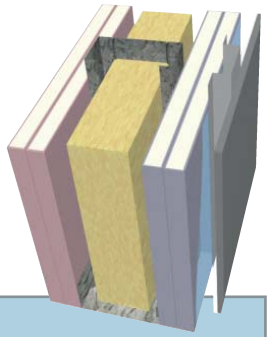
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 13mm **FireShield** or 13mm **MultiShield**



FRL	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	
90/90/90 rated from both sides Fire Report FAR 3371	70	123mm + external cladding	55 (47)	54 (46)	Acoustic Report Marshall Day

KSW479

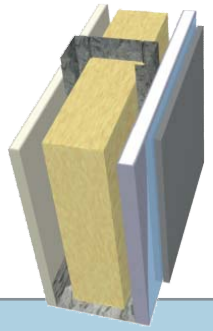
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 16mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 16mm **FireShield** or 16mm **MultiShield**



FRL	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	
120/120/120 rated from both sides Fire Report FAR 3371	70	135mm + external cladding	56 (**50**)	55 (49)	Acoustic Report Marshall Day

KSW480

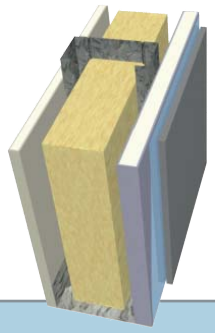
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 30/30/30 rated from the outside only	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
Fire Report FAR 3371	70	102mm approximate	48 (36)	46 (35)	

KSW483

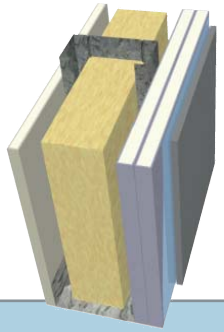
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 16mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 60/60/60 rated from the outside only	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-24
Fire Report FAR 3371	70	105mm approximate	48 (38)	48 (37)	

KSW481

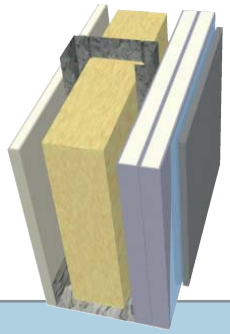
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 90/90/90 rated from the outside only	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
Fire Report FAR 3371	70	115mm approximate	51 (39)	50 (38)	

KSW484

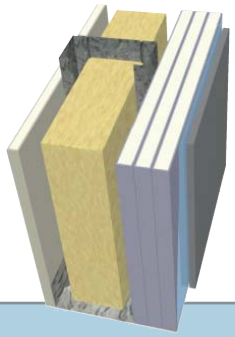
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 16mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 90/90/90 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	121mm approximate	52 (40)	51 (39)	

KSW482

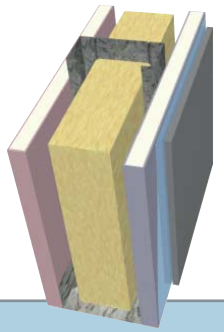
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 3 layers of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 120/120/120 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	128mm approximate	54 (42)	52 (40)	

KSW486

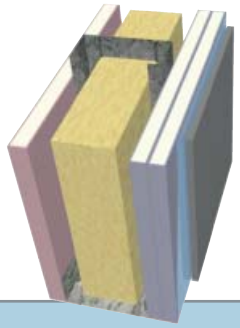
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 16mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 16mm **FireShield** or 16mm **MultiShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]



FRL 60/60/60 rated from both sides Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	111mm approximate	51 (41)	49 (40)	

KSW487

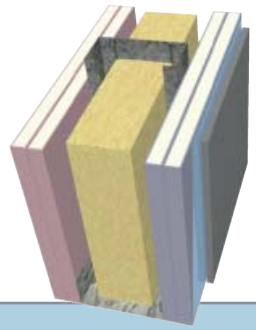
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 16mm **FireShield** or 16mm **MultiShield**



FRL	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
90/90/90 rated from the outside 60/60/60 rated from the inside Fire Report FAR 3371	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	121mm approximate	54 (45)	53 (44)	

KSW488

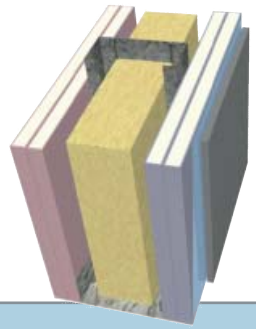
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 13mm **FireShield** or 13mm **MultiShield**



FRL	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
90/90/90 rated from both sides Fire Report FAR 3371	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	131mm approximate	58 (**51**)	57 (49)	

KSW489

EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 16mm **MultiShield**
FRAME: Minimum 70mm steel studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 16mm **FireShield** or 16mm **MultiShield**

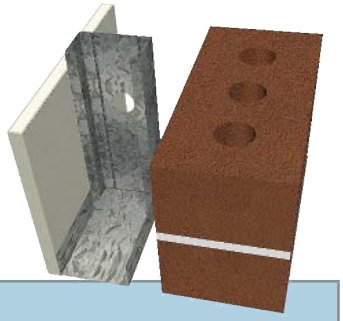


FRL	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
120/120/120 rated from both sides Fire Report FAR 3371	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	143mm approximate	59 (**52**)	58 (**51**)	

BRICK VENEER

KSW70

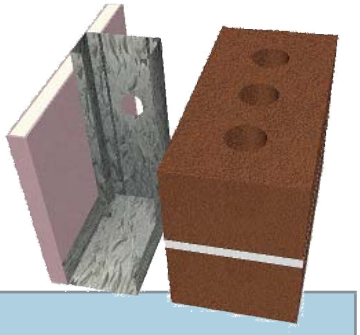
EXTERNAL MASONRY: Minimum 90mm masonry with FRL 60/60/60 (Minimum laid weight 130 kg/m²)
FRAME: Minimum 70mm steel studs at maximum 600mm centres with a minimum 20mm air gap
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]



FRL 60/60/60 rated from the outside only Fire Report FAR 3586	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	190 mm approximate	54 (46)	53 (46)	

KSW373

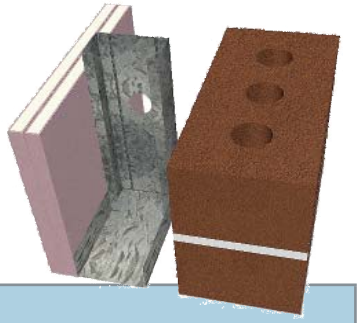
EXTERNAL MASONRY: Minimum 90mm masonry with FRL 60/60/60 (Minimum laid weight 130 kg/m²)
FRAME: Minimum 70mm steel studs at maximum 600mm centres with a minimum 20mm air gap
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 16mm **FireShield**
[16mm **FireShield** can be substituted with 16mm **MultiShield**]



FRL 60/60/60 rated from both sides Fire Report FAR 3586	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	196 mm approximate	54 (49)	54 (49)	

KSW371

EXTERNAL MASONRY: Minimum 90mm masonry with FRL 90/90/90 (Minimum laid weight 130 kg/m²)
FRAME: Minimum 70mm steel studs at maximum 600mm centres with a minimum 20mm air gap
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 13mm **FireShield**
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]



FRL 90/90/90 rated from both sides Fire Report FAR 3586	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	206 mm approximate	54 (**51**)	54 (**51**)	

GENERAL REQUIREMENTS

	Non-Fire Rated	Fire Rated
Install control joints in plasterboard walls: › At 12m maximum intervals › At all control joints in the structure › At any change in the substrate material.	✔	✔
Jointing of the **MultiShield** is not required due to the overlying breathable wall wrap and cladding.		✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.		✔
Use approved fire rated penetration details for systems that use the internal non-fire rated plasterboard wall lining to maintain the FRL.		✔
Pack any gaps between the top of the wall and the underside of the roof covering with mineral fibre or other suitable fire resisting material. This maintains the fire rating of the system. *[Refer to mineral fibre manufacturers specifications for minimum widths required]*		✔
Protect plasterboard from water pooling at ground level.	✔	✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.		✔

For acceptable modifications or variations to fire rated systems *[Refer to Section 2.3 Fire Resistance]*.

FRAMING

	Non-Fire Rated	Fire Rated
Framing members must be spaced at 600mm maximum centres.	✔	✔
Face studs in the same direction if possible, to allow easier fastening of plasterboard. However, installation of some services may require the studs to be positioned in opposite directions.	✔	✔

- Noggings are permitted to assist the fixing of services. Copper Chromium Arsenate (CCA) treated timber must not be used.
- For non-fire rated walls, noggings are not required behind recessed joints when sheeting plasterboard horizontally.

PLASTERBOARD LAYOUT

	Non-Fire Rated	Fire Rated
Alternate from one side of the wall to the other when fixing the plasterboard sheets.	✔	✔
Vertical joints must be 200mm minimum from the edge of any opening such as windows and doorways to minimise cracking at the joints.	✔	✔
Horizontal Layout		
Stagger butt joints by 600mm minimum on adjoining sheets, between layers and on opposite sides of the wall.	✔	✔
First layer butt joints must be backed by a stud or back-blocked.	✔	
First layer butt joints must be backed by a stud.		✔
Stagger recessed edges by 300mm minimum between layers.	✔	✔
Stagger recessed edges by 300mm minimum on opposite sides of the wall or alternatively, back by a nogging.		✔
Vertical Layout		
Stagger butt joints by 600mm minimum on adjoining sheets, between layers and on opposite sides of the wall.	✔	✔
First layer butt joints must be backed by a nogging or back-blocked.	✔	
First layer butt joints must be backed by a nogging.		✔
Stagger recessed edges by 300mm minimum between layers and on opposite sides of the wall.	✔	✔

- Install plasterboard sheets horizontally when practical to minimise stud twisting and reduce the effect of glancing light.
- Minimise butt joints by using long sheets.

PLASTERBOARD FIXING

	Non-Fire Rated	Fire Rated
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✔	✔
Laminating screws can be used to fix butt joints in the second and third layer.	✔	✔
Screw and Adhesive Method		
Apply **MastaGrip** Stud Adhesive after the frame is clean, dry, and free from grease, dust and other contaminants.	✔	
Apply **MastaGrip** daubs 200mm minimum from screws and plasterboard edges.	✔	
Screw Only Method		
Use the 'Screw Only Method' in tiled or fire rated areas. Stud adhesive is not permitted.	✔	✔

The 'Screw and Adhesive Method' is recommended for non-fire rated applications. **MastaGrip** will:

- Minimise screw popping
- Reduce the number of screw heads that may show in glancing light

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
10mm	25mm – 6g S screw	40mm – 6g S screw*	–
13mm	25mm – 6g S screw	40mm – 6g S screw*	60mm – 6g S screw*
16mm	30mm – 6g S screw	45mm – 6g S screw*	65mm – 6g S screw*

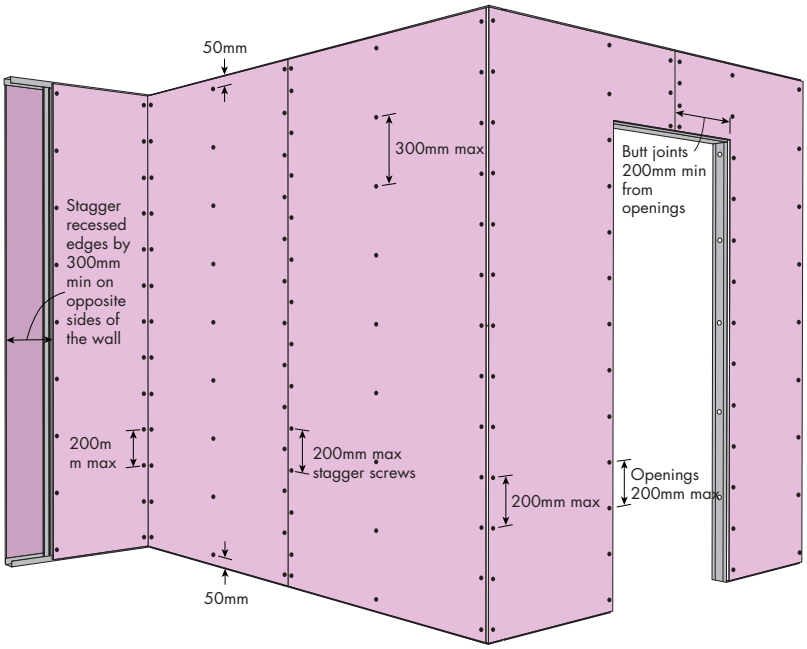
For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.

EXTERIOR CLADDING

	Non-Fire Rated	Fire Rated
Fix cladding or cladding battens to the steel frame through the **MultiShield**.		✔
Extend the external fire rated wall up to the non-combustible roof covering or non-combustible eaves lining. *[Refer to Construction Details]*		✔

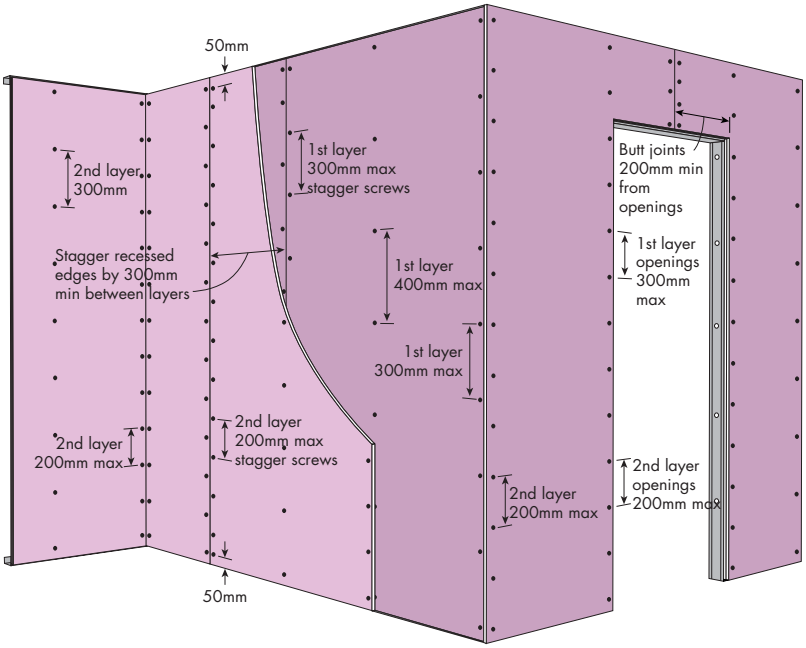
- Exterior cladding and moisture barrier must provide protection from the weather.
- Use construction techniques that direct condensation and rain away from plasterboard.
- When using external cladding other than 7.5mm fibre cement texture base sheet, Knauf recommends systems that include a drained cavity between the external cladding and the **MultiShield**.
- Battens between external cladding and external plasterboard may be used without degrading the fire and acoustic performance.

FIGURE 1 Fire Rated 1 Layer – Vertical
Screw Only Method



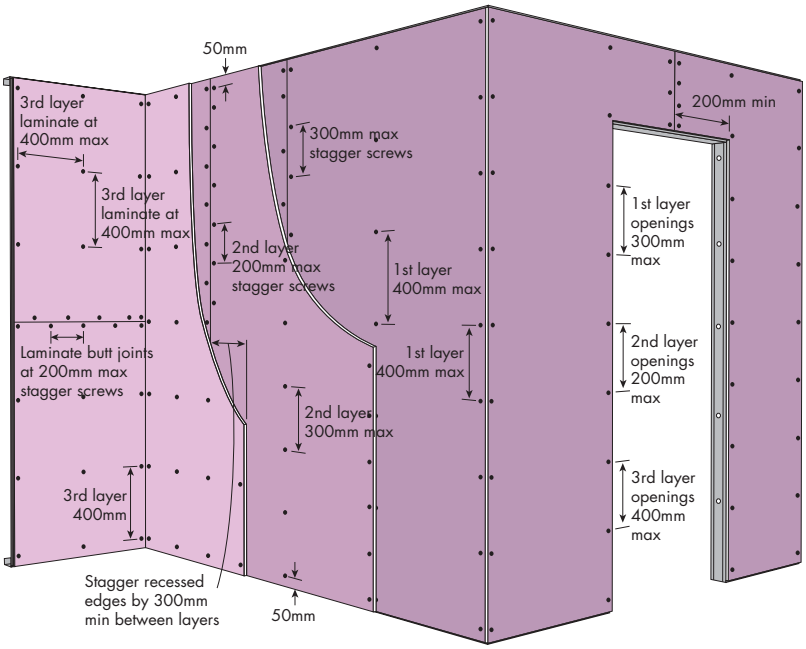
Fixing	Screw Only Method
Sheet Layout	Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 300mm max centres
Recessed Edges	Fix at 200mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a stud.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging.
Internal and External Corners	Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	Jointing of the face layer is not required if a moisture barrier is used over the plasterboard.

FIGURE 2 Fire Rated 2 Layers – Vertical + Vertical
Screw Only Method



Fixing	Screw Only Method
Sheet Layout	1st layer: Vertical 2nd layer: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 400mm max centres 2nd layer: Fix at 300mm max centres
Recessed Edges	1st layer: Fix at 300mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a stud. 2nd layer: Fix at 200mm max centres and stagger screws. Recessed edges must be backed by a stud.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joint must be backed by a nogging. 2nd layer: Fix at 200mm max centres and stagger screws. Alternatively, laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	Jointing of the face layer is not required if a moisture barrier is used over the plasterboard.

FIGURE 3 Fire Rated 3 Layers – All Vertical
Screw Only Method



Fixing	Screw Only Method
Sheet Layout	1st, 2nd and 3rd layers: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 400mm max centres 2nd layer: Fix at 300mm max centres 3rd layer: Fix at 400mm max centres or alternatively, laminate to 2nd layer at 400x400mm max centres.
Recessed Edges	1st layer: Fix at 300mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a stud. 2nd layer: Fix at 200mm max centres and stagger screws. Recessed edges must be backed by a stud. 3rd layer: Fix at 400mm max centres and stagger screws.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joint must be backed by a nogging. 2nd and 3rd layers: Fix at 200mm max centres and stagger screws. Alternatively, laminate to previous layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres 3rd layer: Fix at 400mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres 3rd layer: Fix at 400mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	Jointing of the face layer is not required if a moisture barrier is used over the plasterboard.

FIRE RATED

EXTERNAL WALL HEAD AND BASE – ELEVATION

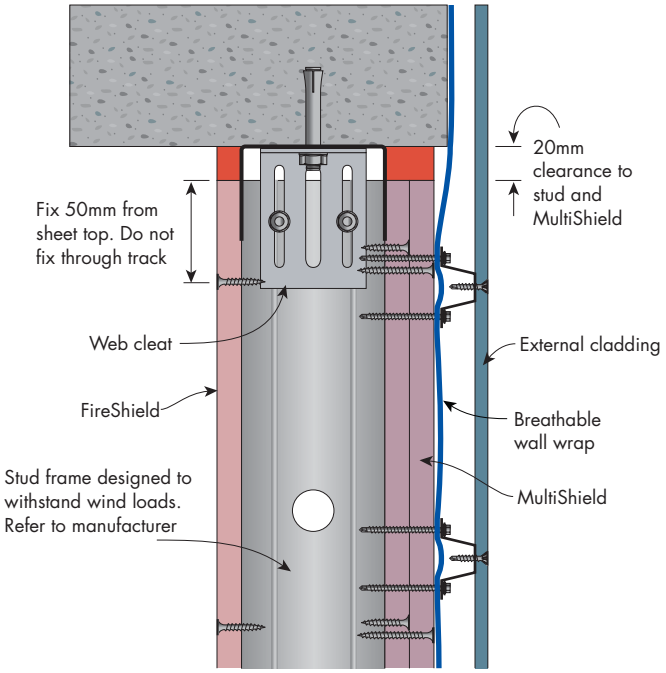


FIGURE 4 Fire Rated External Wall

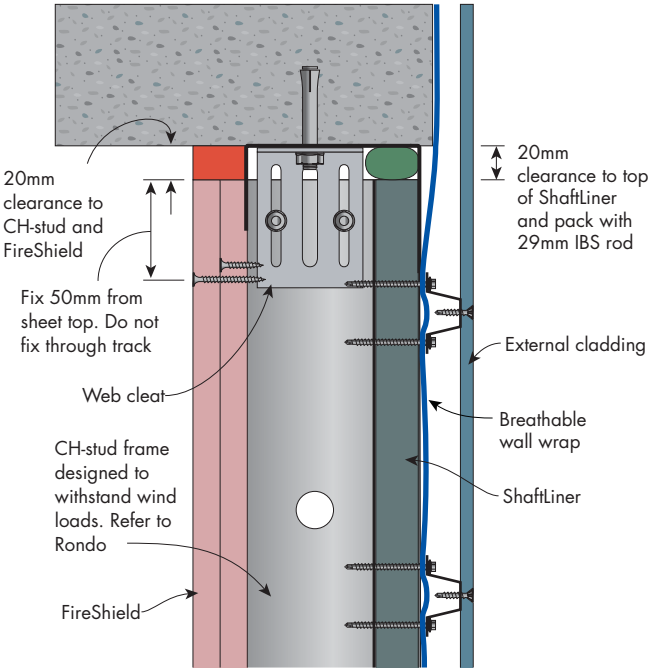


FIGURE 5 Fire Rated External Wall
Shaft Wall System

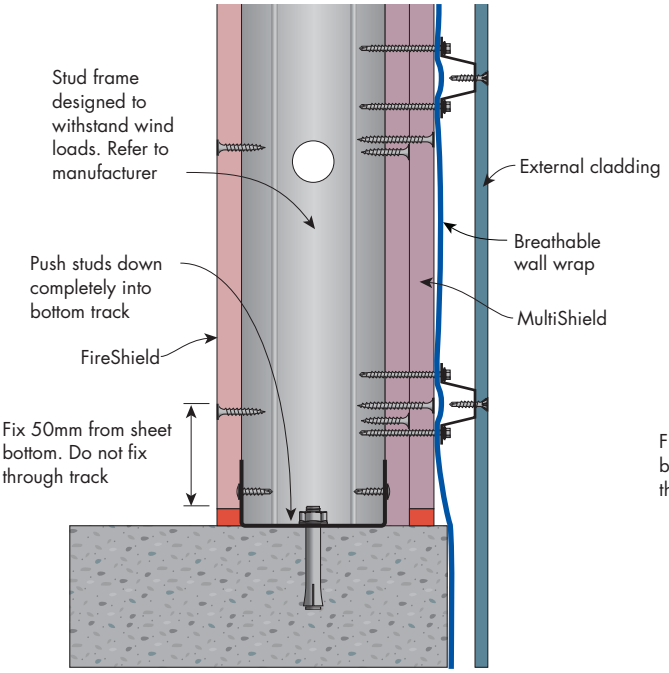


FIGURE 6 Fire Rated External Wall

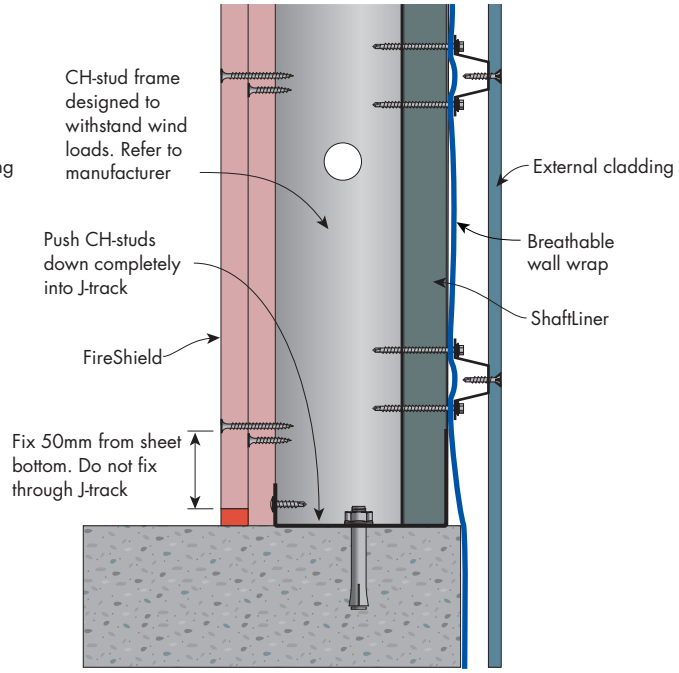


FIGURE 7 Fire Rated External Wall
Shaft Wall System

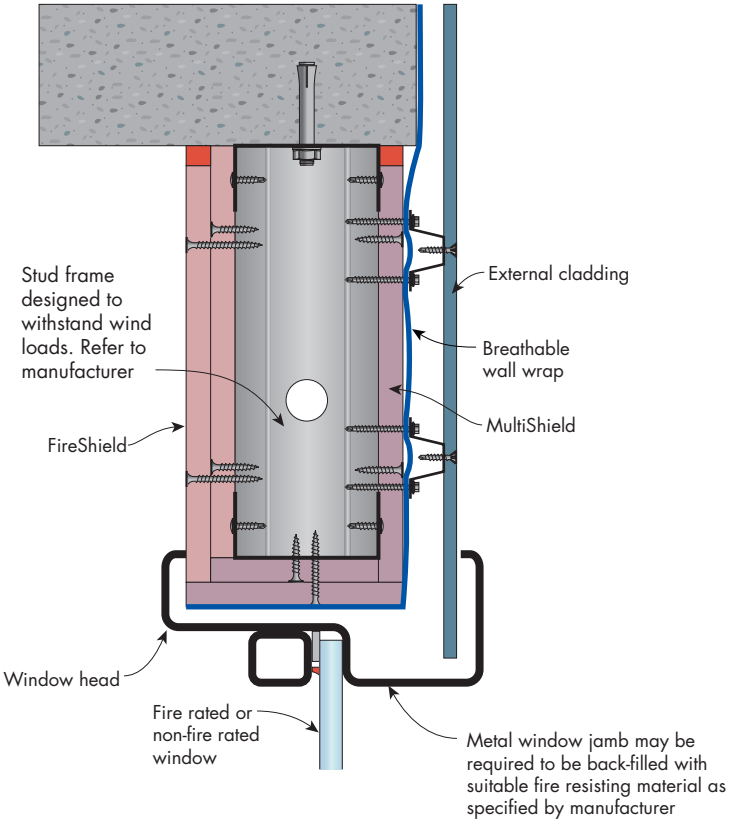


FIGURE 8 Fire Rated Spandrel Wall
Example only

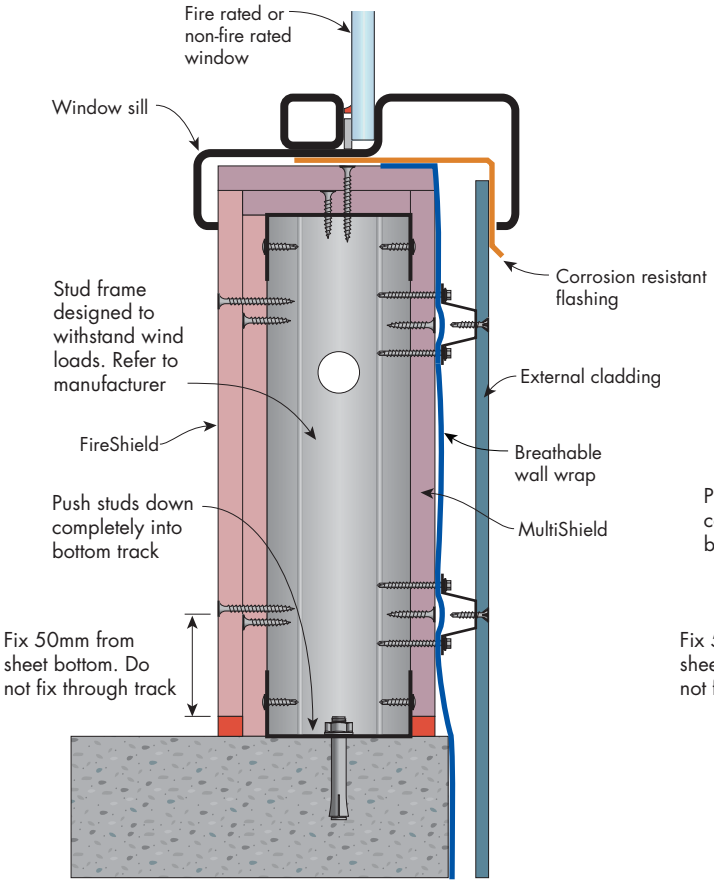


FIGURE 9 Fire Rated Spandrel Wall
Example only

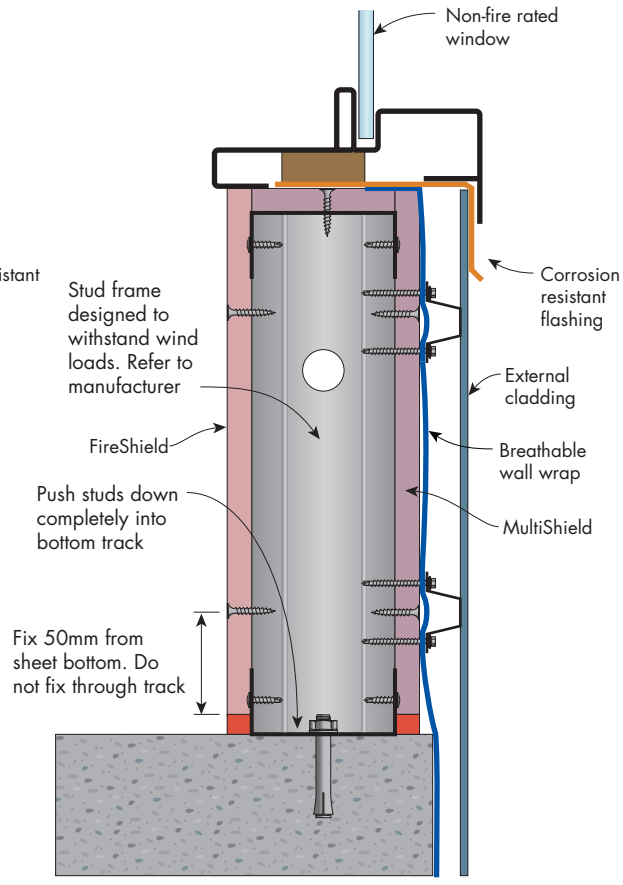


FIGURE 10 Fire Rated Spandrel Wall
Example only

EXTERNAL WALLS JUNCTION TO COLUMN AND CONTROL JOINTS – PLAN VIEW

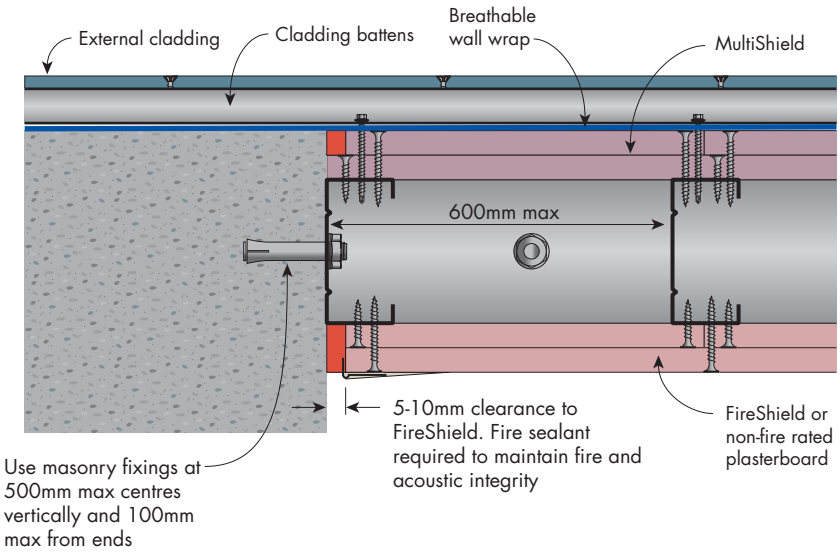


FIGURE 11 Fire Rated External Wall to Concrete Column

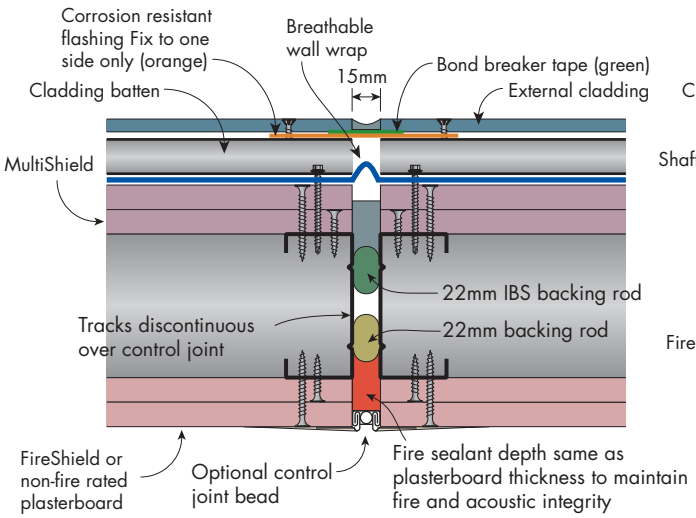


FIGURE 12 Fire Rated External Wall Control Joint

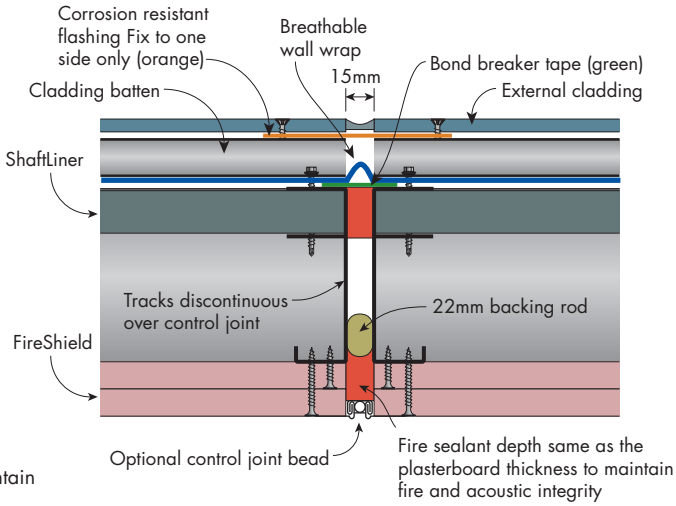
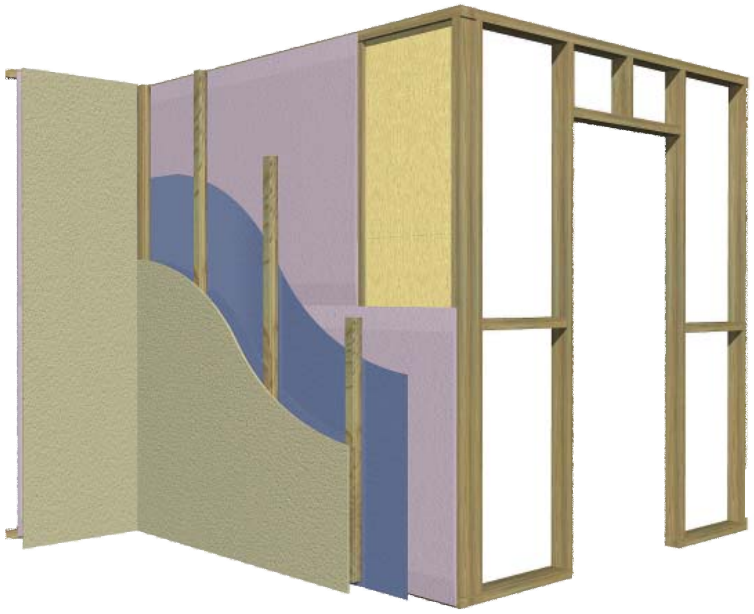


FIGURE 13 Fire Rated External Wall Control Joint
Shaft Wall System

3.2.2

External Timber Walls



INTRODUCTION

External timber framed plasterboard walls protect the inside from weather, noise and, when applicable, fire. They must also comply with local energy efficiency provisions.

Fire rated systems in this section are designed to satisfy BCA fire rating requirements for walls built close to a property boundary. These walls are usually required to be fire rated from the outside only.

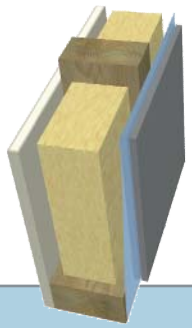
MultiShield forms part of the outer wall and are covered by a moisture barrier and external cladding which provide the weather protection.

This section contains systems, installation instructions and construction details for fire rated and non-fire rated external timber framed walls.

NON-FIRE RATED

KTW73

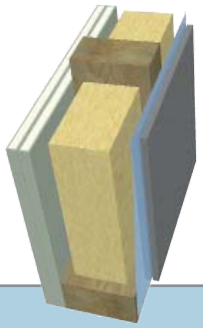
EXTERNAL WALL CLADDING: 1 layer of minimum 6mm fibre cement
MOISTURE BARRIER: Breathable wall wrap
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]



FRL	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	87mm approximate	39 (30)	–	39 (30)	Acoustic Report Marshall Day
	90	107mm approximate	40 (31)	40 (31)	40 (31)	

KTW274

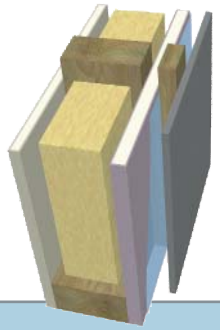
EXTERNAL WALL CLADDING: 1 layer of minimum 6mm fibre cement
MOISTURE BARRIER: Breathable wall wrap
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 10mm **SoundShield**



FRL	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
– / – / –	70	97mm approximate	44 (35)	–	44 (35)	Acoustic Report Day Design 3094-43
	90	117mm approximate	44 (37)	45 (38)	44 (37)	

KTW470

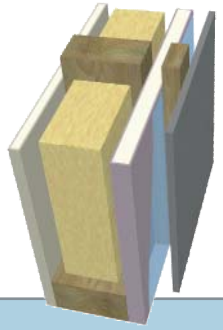
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 30/30/30 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	94mm + external cladding	39 (31)	–	39 (31)	Acoustic Report Marshall Day
	90	114mm + external cladding	39 (32)	40 (32)	39 (31)	

KTW473

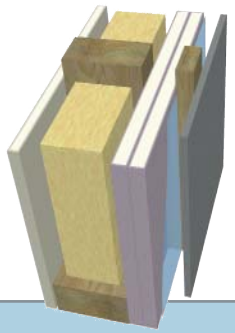
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 16mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 60/60/60 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	97mm + external cladding	39 (31)	–	39 (37)	Acoustic Report Marshall Day
	90	117mm + external cladding	39 (32)	40 (33)	39 (32)	

KTW471

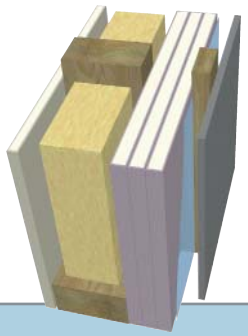
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 90/90/90 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	107mm + external cladding	44 (36)	–	44 (36)	Acoustic Report Marshall Day
	90	127mm + external cladding	45 (37)	45 (38)	45 (37)	

KTW472

EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 3 layers of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 120/120/120 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	120mm + external cladding	47 (38)	–	47 (38)	Acoustic Report Marshall Day
	90	140mm + external cladding	48 (40)	48 (41)	48 (40)	

KTW491

EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: Optional
INTERNAL WALL LINING: Optional

FRL 30/30/30 rated from the outside only Fire Report FAR 3348	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		No Insulation	R1.5 EarthWool	R1.5 Polyester	
	70	97mm + external cladding	34 (31)	34 (31)	34 (31)	Acoustic Report Day Design 3094-45
	90	117mm + external cladding	34 (31)	34 (31)	34 (31)	

KTW494

EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 16mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: Optional
INTERNAL WALL LINING: Optional

FRL 60/60/60 rated from the outside only Fire Report FAR 3348	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		No Insulation	R1.5 EarthWool	R1.5 Polyester	
	70	103mm + external cladding	35 (32)	35 (32)	35 (32)	Acoustic Report Day Design 3094-45
	90	123mm + external cladding	35 (32)	35 (32)	35 (32)	

KTW492

EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 3 layers of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: Optional
INTERNAL WALL LINING: Optional

FRL 90/90/90 rated from the outside only Fire Report FAR 3348	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		No Insulation	R1.5 EarthWool	R1.5 Polyester	
	70	110mm + external cladding	37 (35)	37 (35)	37 (35)	Acoustic Report Day Design 3094-45
	90	130mm + external cladding	37 (35)	37 (35)	37 (35)	

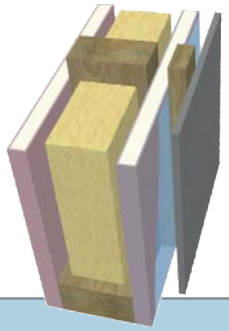
KTW495

EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 3 layers of 16mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: Optional
INTERNAL WALL LINING: Optional

FRL 120/120/120 rated from the outside only Fire Report FAR 3348	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		No Insulation	R1.5 EarthWool	R1.5 Polyester	
	70	119mm + external cladding	38 (36)	38 (36)	38 (36)	Acoustic Report Day Design 3094-45
	90	139mm + external cladding	38 (36)	38 (36)	38 (36)	

KTW476

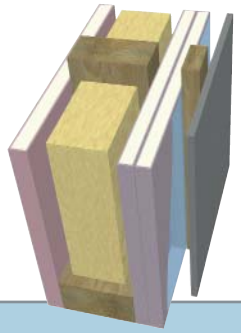
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 16mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 16mm **FireShield** or 16mm **MultiShield**



FRL 60/60/60 rated from both sides Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	103mm + external cladding	41 (33)	–	41 (33)	Acoustic Report Day Design 3094-45
	90	123mm + external cladding	42 (34)	42 (36)	42 (34)	

KTW477

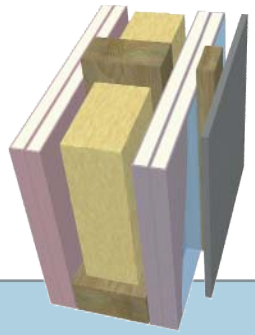
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 16mm **FireShield** or 16mm **MultiShield**



FRL	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
90/90/90 rated from the outside 60/60/60 rated from the inside Fire Report FAR 3371	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
	70	113mm + external cladding	44 (37)	–	44 (37)	
	90	133mm + external cladding	44 (38)	45 (39)	44 (38)	

KTW478

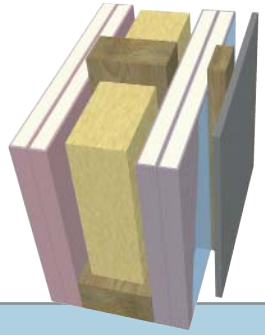
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 13mm **FireShield** or 13m **MultiShield**



FRL	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
90/90/90 rated from both sides Fire Report FAR 3371	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
	70	123mm + external cladding	47 (41)	–	47 (41)	
	90	143mm + external cladding	47 (42)	48 (43)	47 (42)	

KTW479

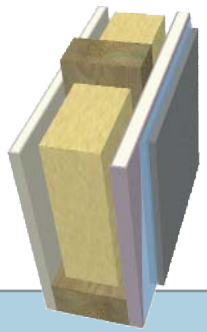
EXTERNAL WALL CLADDING: Any cladding
EXTERNAL CLADDING FRAME: Timber or steel battens
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 16mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 16mm **FireShield** or 16mm **MultiShield**



FRL	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
120/120/120 rated from both sides Fire Report FAR 3371	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	Acoustic Report Day Design 3094-45
	70	135mm + external cladding	47 (42)	–	47 (42)	
	90	155mm + external cladding	47 (43)	48 (44)	47 (43)	

KTW480

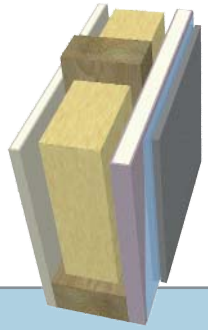
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 30/30/30 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	102mm approximate	45 (35)	–	44 (35)	Acoustic Report Marshall Day
	90	122mm approximate	45 (37)	45 (38)	45 (37)	

KTW483

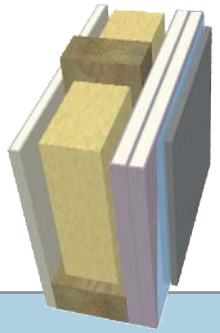
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 16mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 60/60/60 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	105mm approximate	47 (38)	–	46 (38)	Acoustic Report Day Design 3094-43
	90	125mm approximate	47 (39)	47 (39)	47 (39)	

KTW481

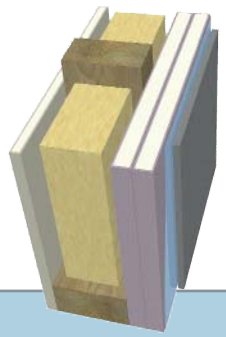
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable foil
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 90/90/90 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	115mm approximate	47 (38)	–	47 (38)	Acoustic Report Marshall Day
	90	135mm approximate	48 (41)	48 (41)	48 (41)	

KTW484

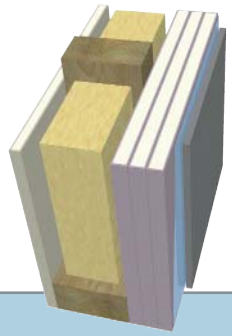
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable foil
EXTERNAL WALL LINING: 2 layers of 16mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 90/90/90 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	121mm approximate	49 (40)	–	49 (40)	Acoustic Report Day Design 3094-43
	90	141mm approximate	50 (42)	50 (42)	50 (42)	

KTW482

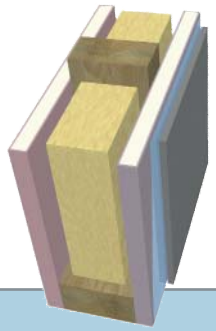
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 3 layers of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified intable below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]
[Use approved fire rated penetration details in the non-fire rated internal lining to maintain FRL]



FRL 120/120/120 rated from the outside only Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	128mm approximate	49 (41)	–	49 (41)	Acoustic Report Marshall Day
	90	148mm approximate	50 (44)	50 (44)	50 (44)	

KTW486

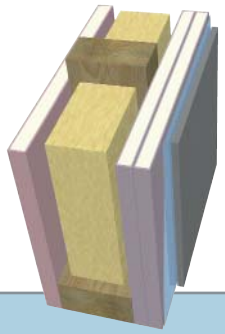
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 1 layer of 16mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified intable below
INTERNAL WALL LINING: 1 layer of 16mm **FireShield** or 16mm **MultiShield**



FRL 60/60/60 rated from both sides Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	111mm approximate	47 (40)	–	47 (39)	Acoustic Report Day Design 3094-43
	90	131mm approximate	47 (41)	47 (41)	47 (41)	

KTW487

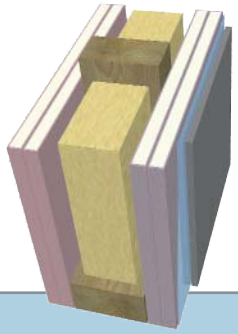
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 16mm **FireShield** or 16mm **MultiShield**



FRL 90/90/90 rated from the outside 60/60/60 rated from the inside Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	121mm approximate	47 (42)	–	47 (42)	Acoustic Report Marshall Day
	90	141mm approximate	48 (43)	48 (44)	48 (43)	

KTW488

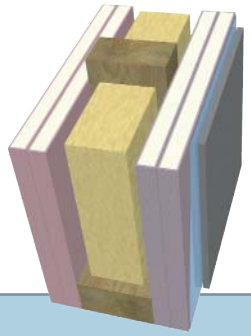
EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 13mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 13mm **FireShield** or 13mm **MultiShield**



FRL 90/90/90 rated from both sides Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	131mm approximate	48 (45)	–	48 (45)	Acoustic Report Marshall Day
	90	151mm approximate	49 (46)	49 (46)	49 (46)	

KTW489

EXTERNAL WALL CLADDING: 1 layer of 7.5mm fibre cement monolithic texture base sheet
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 16mm **MultiShield**
FRAME: Minimum 70mm timber studs at maximum 600mm centres
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 16mm **FireShield** or 16mm **MultiShield**

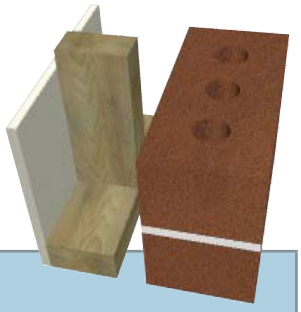


FRL 120/120/120 rated from both sides Fire Report FAR 3371	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth		R1.5 EarthWool	R2.0 EarthWool	R1.5 Polyester	
	70	143mm approximate	50 (47)	–	50 (47)	Acoustic Report Marshall Day
	90	163mm approximate	50 (47)	50 (47)	50 (47)	

BRICK VENEER

KTW70

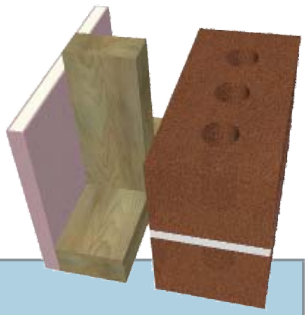
EXTERNAL MASONRY: Minimum 90mm masonry with FRL 60/60/60 (Minimum laid weight 130 kg/m²)
FRAME: Minimum 70mm timber studs at maximum 600mm centres with a minimum 20mm air gap
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 10mm **MastaShield**
[10mm **MastaShield** can be substituted with 10mm **WaterShield** or 10mm **SoundShield**]



FRL 60/60/60 rated from the outside only Fire Report FAR 3586	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	190 mm approximate	54 (46)	53 (46)	

KTW373

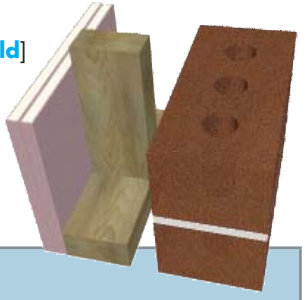
EXTERNAL MASONRY: Minimum 90mm masonry with FRL 60/60/60 (Minimum laid weight 130 kg/m²)
FRAME: Minimum 70mm timber studs at maximum 600mm centres with a minimum 20mm air gap
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 1 layer of 16mm **FireShield**
[16mm **FireShield** can be substituted with 16mm **MultiShield**]



FRL 60/60/60 rated from both sides Fire Report FAR 3586	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	196 mm approximate	54 (49)	54 (49)	

KTW371

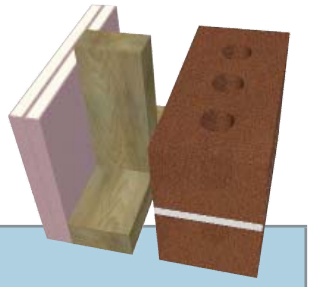
EXTERNAL MASONRY: Minimum 90mm masonry with FRL 90/90/90 (Minimum laid weight 130 kg/m²)
FRAME: Minimum 70mm timber studs at maximum 600mm centres with a minimum 20mm air gap
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 13mm **FireShield**
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]



FRL 90/90/90 rated from both sides Fire Report FAR 3586	Stud Size (mm)	Width (mm)	Acoustics Rw (Rw + Ctr)		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	206 mm approximate	54 (**51**)	54 (**51**)	

KTW374

EXTERNAL MASONRY: Minimum 90mm masonry with FRL 120/120/120 (Minimum laid weight 130 kg/m²)
FRAME: Minimum 70mm timber studs at maximum 600mm centres with a minimum 20mm air gap
WALL INSULATION: As specified in table below
INTERNAL WALL LINING: 2 layers of 16mm **FireShield**
[16mm **FireShield** can be substituted with 16mm **MultiShield**]



FRL 120/120/120 rated from both sides Fire Report FAR 3586	**Stud Size (mm)**	**Width (mm)**	**Acoustics Rw (Rw + Ctr)**		
	Stud Depth		R1.5 EarthWool	R1.5 Polyester	Acoustic Report Marshall Day
	70	212 mm approximate	55 (**51**)	55 (**51**)	

GENERAL REQUIREMENTS

	Non-Fire Rated	Fire Rated
Install control joints in plasterboard walls: › At 12m maximum intervals › At all control joints in the structure › At any change in the substrate material	✔	✔
Jointing of **MultiShield** is not required due to the overlying breathable wall wrap and external cladding.		✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.		✔
Use approved fire rated penetration details for systems that use the internal non-fire rated plasterboard wall lining to maintain the FRL.		✔
Pack any gaps between the top of the wall and the underside of the roof covering with mineral fibre or other suitable fire resisting material. This maintains the fire rating of the system. [*Refer to mineral fibre manufacturers specifications for minimum widths required]*		✔
Protect plasterboard from water pooling at ground level.	✔	✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.		✔

For acceptable modifications or variations to fire rated systems. *[Refer to Section 2.3 Fire Resistance]*

FRAMING

	Non-Fire Rated	Fire Rated
Framing members must be spaced at 600mm maximum centres	✔	✔
For load bearing walls use timber studs with minimum dimensions 70x45mm or 90x35mm.	✔	✔

- Noggings are permitted to assist the fixing of services.
- For non-fire rated walls, noggings are not required behind recessed joints when sheeting plasterboard horizontally.
- Plumbing and electrical services must not protrude beyond the face of the stud.

PLASTERBOARD LAYOUT

	Non-Fire Rated	Fire Rated
Alternate from one side of the wall to the other when fixing the plasterboard sheets.	✔	✔
Vertical joints must be 200mm minimum from the edge of any opening such as windows and doorways to minimise cracking at the joints.	✔	✔
Horizontal Layout		
Stagger butt joints by 600mm minimum on adjoining sheets, between layers and on opposite sides of the wall.	✔	✔
First layer butt joints must be backed by a stud or back-blocked.	✔	
First layer butt joints must be backed by a stud.		✔
Stagger recessed edges by 300mm minimum between layers.	✔	✔
Stagger recessed edges by 300mm minimum on opposite sides of the wall or alternatively, back by a nogging.		✔
Vertical Layout		
Stagger butt joints by 600mm minimum on adjoining sheets, between layers and on opposite sides of the wall.	✔	✔
First layer butt joints must be backed by a nogging or back-blocked.	✔	
First layer butt joints must be backed by a nogging.		✔
Stagger recessed edges by 300mm minimum between layers and on opposite sides of the wall.	✔	✔

- Install plasterboard sheets horizontally when practical to reduce the effect of glancing light.
- Minimise butt joints by using long sheets.

PLASTERBOARD FIXING

	Non-Fire Rated	Fire Rated
Drive fasteners to just below the sheet surface, taking care not to break the paper linerboard.	✔	✔
Laminating screws can be used to fix butt joints in the second and third layer.	✔	✔
Fastener and Adhesive Method		
Apply MastaGrip Stud Adhesive after the frame is clean, dry, and free from grease, dust and other contaminants.	✔	
Apply MastaGrip daubs 200mm minimum from screws and plasterboard edges.	✔	
Screw Only Method		
Use the 'Fastener Only Method' in tiled or fire rated areas. Stud adhesive is not permitted.	✔	✔

The 'Screw and Adhesive Method' is recommended for non-fire rated applications. MastaGrip will:

- Minimise screw popping
- Reduce the number of screw heads that may show in glancing light
- Assist in compensating for frame irregularities

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
10mm	25mm – 6g S screw	40mm – 6g S screw*	–
13mm	25mm – 6g S screw	40mm – 6g S screw*	60mm – 6g S screw*
16mm	30mm – 6g S screw	45mm – 6g S screw*	65mm – 6g S screw*

For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.

FASTENER TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO SOFTWOOD TIMBER

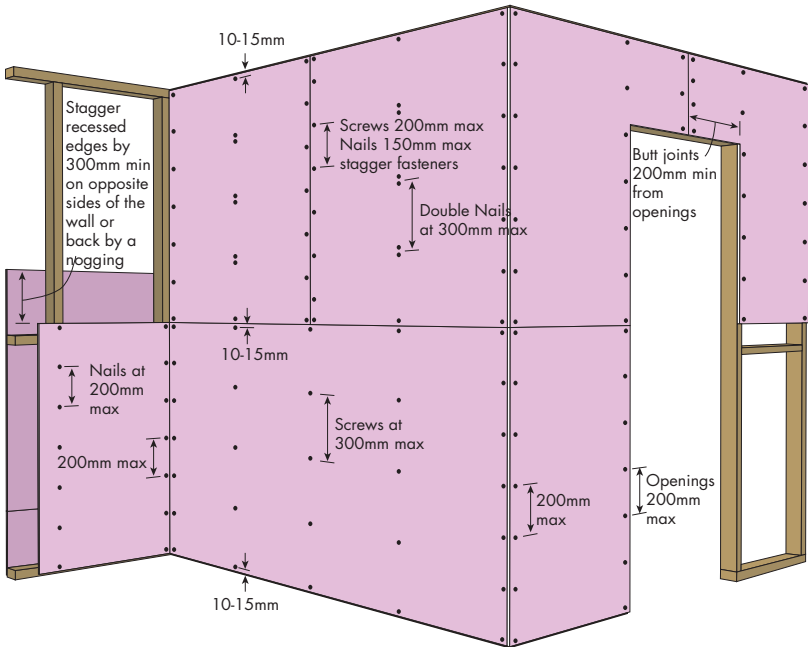
Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm	30mm x 2.8 galvanised nail or 25mm x 2.8 ring shank nail or 25mm – 6g W screw	40mm x 2.8 galvanised nail or 30mm x 2.8 ring shank nail or 30mm – 6g W screw	–
10mm	40mm x 2.8 galvanised nail or 30mm x 2.8 ring shank nail or 25mm – 6g W screw for walls or 30mm – 6g W screw for ceilings	50mm x 2.8 galvanised nail or 40mm – 6g W screw*	–
13mm	40mm x 2.8 galvanised nail or 30mm x 2.8 ring shank nail or 30mm – 6g Type W screw	50mm x 2.8 galvanised nail or 45mm – 6g W screw*	75mm x 3.75 galvanised nail or 65mm – 8g W screw*
16mm	50mm x 2.8 galvanised nail or 45mm – 6g W screw	65mm x 3.15 galvanised nail or 50mm – 6g W screw*	75mm x 3.75 galvanised nail or 65mm – 8g W screw*

For timber use Type 'W' coarse thread needle point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.

	Non-Fire Rated	Fire Rated
Fix cladding or cladding battens to the timber frame through the **MultiShield**		✔
Extend the external fire rated wall up to the non-combustible roof covering or non-combustible eaves lining *[Refer to Construction Details]*.		✔

- Exterior cladding and breathable wall wrap must provide protection from the weather.
- Use construction techniques that direct condensation and rain away from plasterboard.
- When using external cladding other than 7.5mm fibre cement texture base sheet, Knauf recommends systems that include a drained cavity between the external cladding and the **MultiShield**.
- Battens between external cladding and external plasterboard may be used without degrading the fire and acoustic performance.

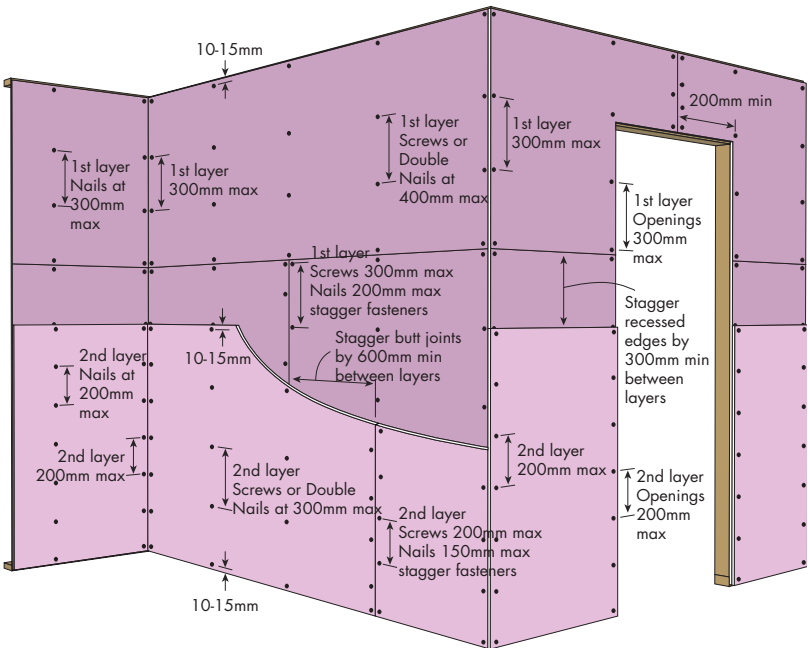
FIGURE 1 Fire Rated 1 Layer – Horizontal
Fastener Only Method



Fixing	Fastener Only Method
Sheet Layout	Horizontal
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Fix screws or double nails at 300mm max centres. Fix nails at 200mm max centres.
Recessed Edges	Fix on each stud. Stagger recessed edges by 300mm min on opposite sides of the wall or back by a nogging.
Butt Joints	Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a stud.
Internal and External Corners	Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	Jointing of the face layer is not required if a breathable wall wrap is used over the plasterboard.

FIGURE 2 Fire Rated 2 Layers – Horizontal + Horizontal

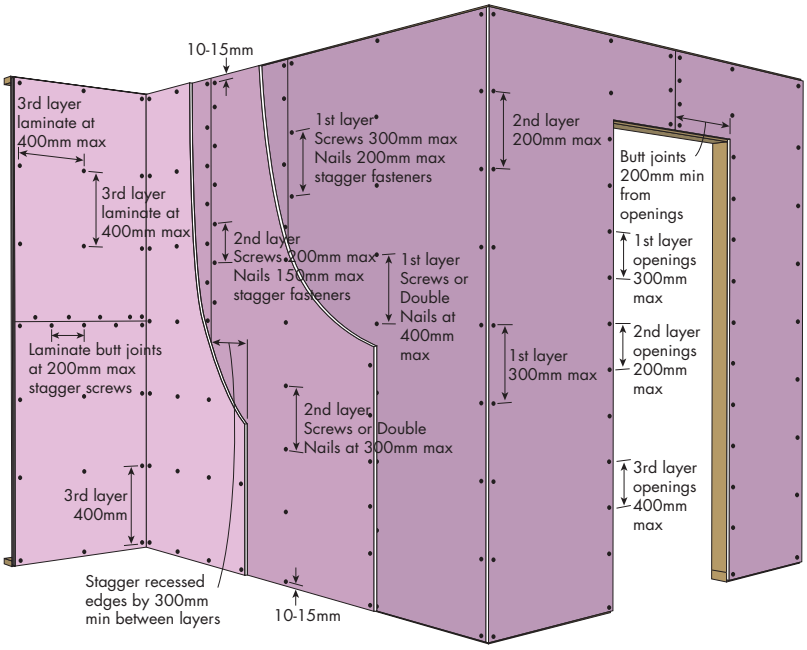
Fastener Only Method



Fixing	Fastener Only Method
Sheet Layout	1st and 2nd layer: Horizontal
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	1st layer: Fix screws or double nails at 400mm max centres. Fix nails at 300mm max centres. 2nd layer: Fix screws or double nails at 300mm max centres. Fix nails at 200mm max centres.
Recessed Edges	1st layer: Fix on each stud. Stagger recessed edges by 300mm min between layers and on opposite sides of the wall, or back by a nogging. 2nd layer: Fix on each stud.
Butt Joints	1st layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by a stud. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Alternately, float butt joints and laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	Jointing of the face layer is not required if a breathable wall wrap is used over the plasterboard.

FIGURE 3 Fire Rated 3 Layers – All Vertical

Fastener Only Method



Fixing	Fastener Only Method
Sheet Layout	1st, 2nd and 3rd layers: Vertical
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	1st layer: Fix screws or double nails at 400mm max centres. Fix nails at 300mm max centres. 2nd layer: Fix screws or double nails at 300mm max centres. Fix nails at 200mm max centres. 3rd layer: Fix screws or double nails at 400mm max centres. Fix nails at 300mm max centres. Alternately, laminate to 2nd layer at 400x400mm max centres.
Recessed Edges	1st layer: Fix screws at 300mm max centres. Fix nails at 200mm max centres. Stagger fasteners. Stagger recessed edges by 300mm min between layers and on opposite sides of the wall. Recessed edges must be back by a stud. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Recessed edges must be backed by a stud. 3rd layer: Fix screws at 400mm max centres. Fix nails at 300mm max centres.Stagger fasteners.
Butt Joints	1st layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging. 2nd layer: Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Alternately, laminate to 1st layer using laminating screws at 200mm max centres and stagger screws. 3rd layer: Laminate to 2nd layer at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres 3rd layer: Fix at 400mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres 3rd layer: Fix at 400mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. [*Refer to Construction Details*]
Jointing Face Layer	Jointing of the face layer is not required if a breathable wall wrap is used over the plasterboard.

FIRE RATED FROM THE OUTSIDE ONLY

EXTERNAL WALL BASE – ELEVATION

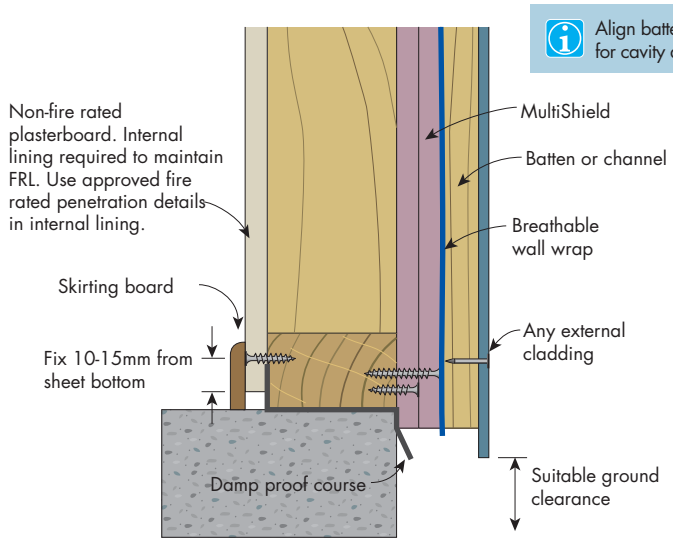


FIGURE 4 Wall Base to Slab

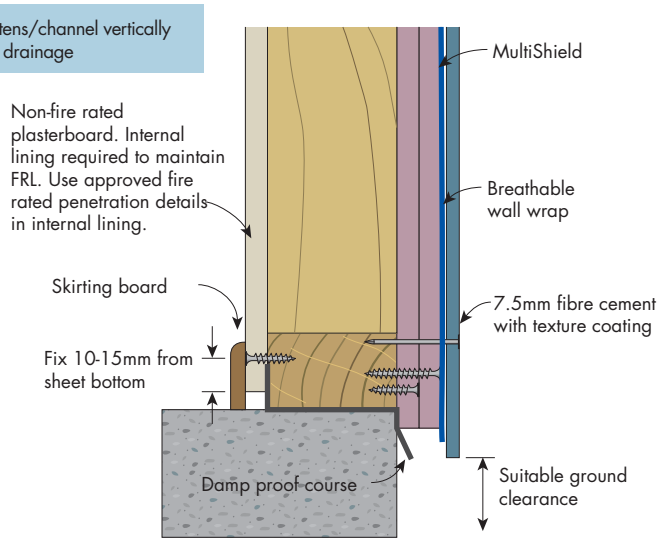


FIGURE 5 Wall Base to Slab

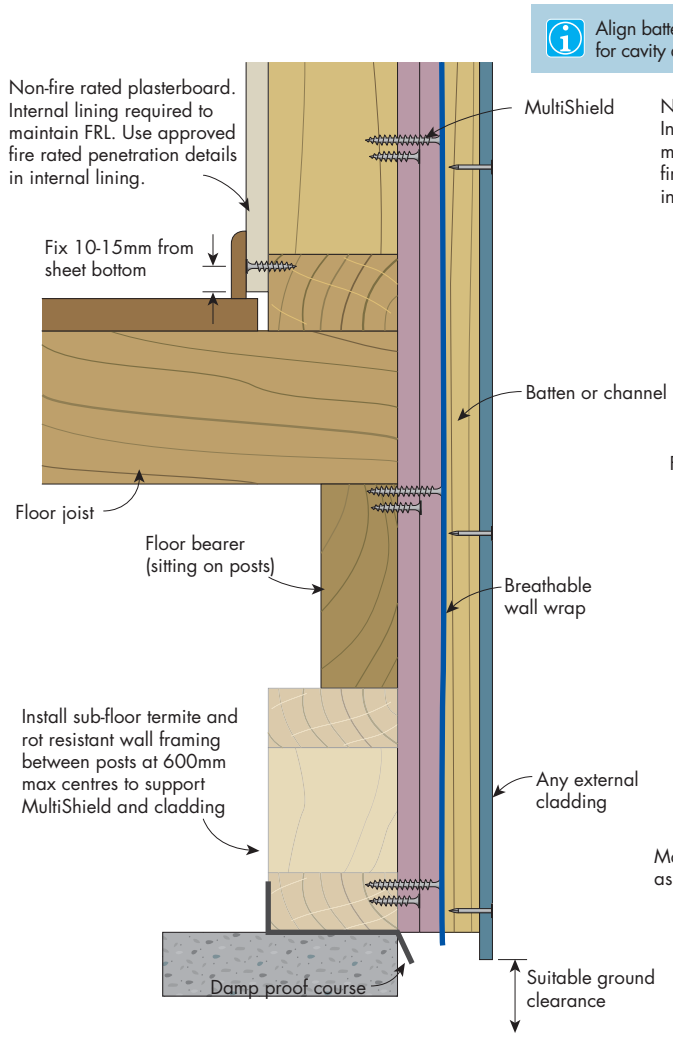


FIGURE 6 Wall to Suspended Ground Floor

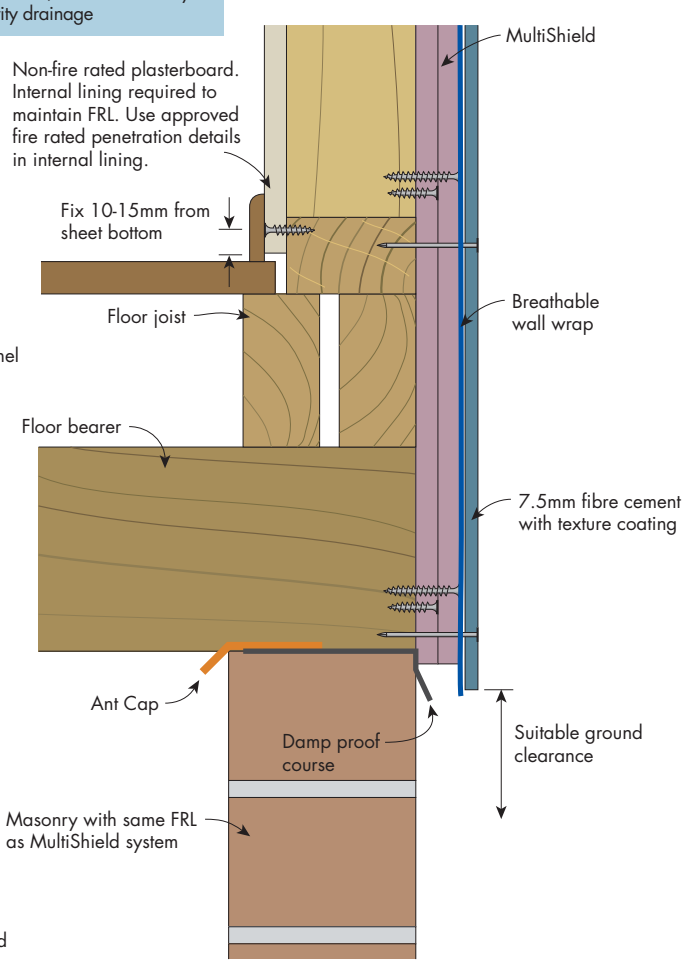


FIGURE 7 Wall to Suspended Ground Floor

FIRE RATED FROM THE OUTSIDE ONLY

EXTERNAL WALL UPPER STOREY FLOOR AND FIRE RATED WINDOW – ELEVATION

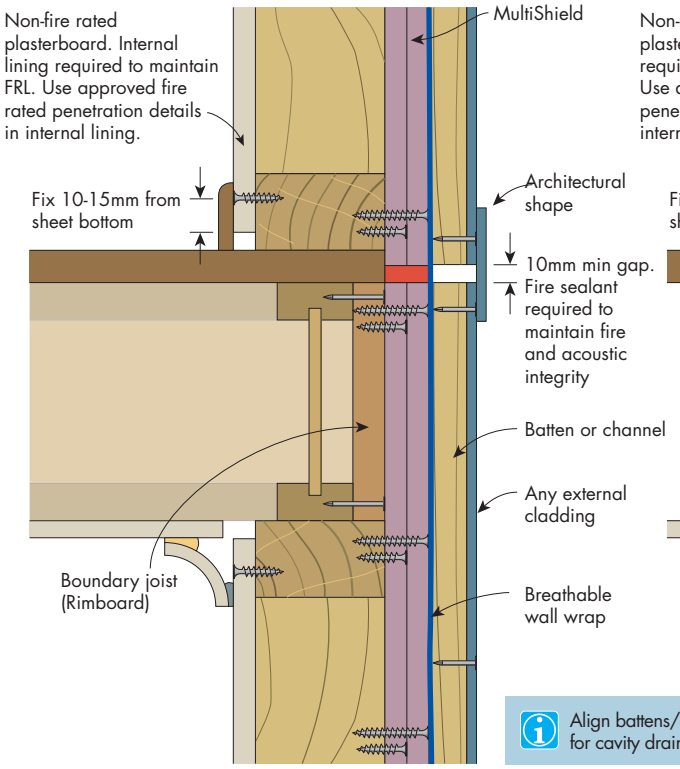


FIGURE 8 Wall of Upper Storey Floor

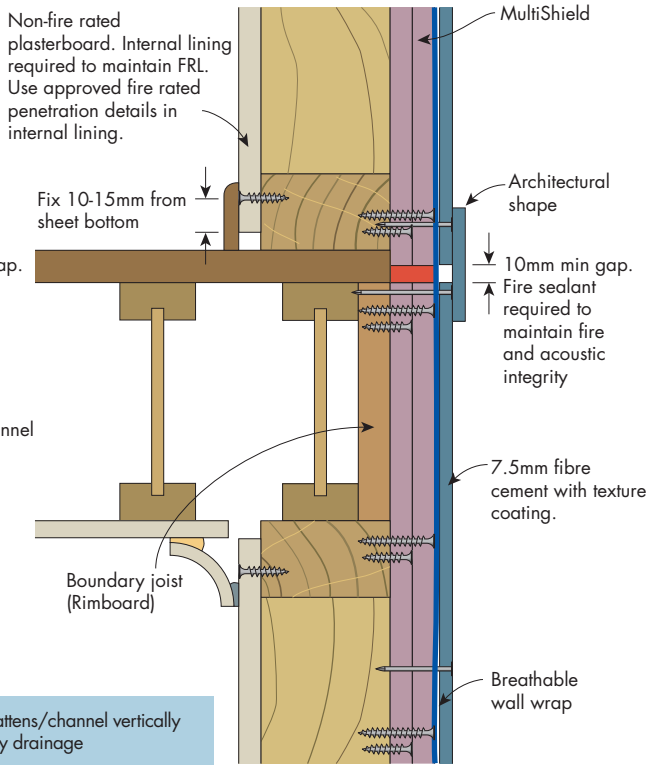


FIGURE 9 Wall of Upper Storey Floor

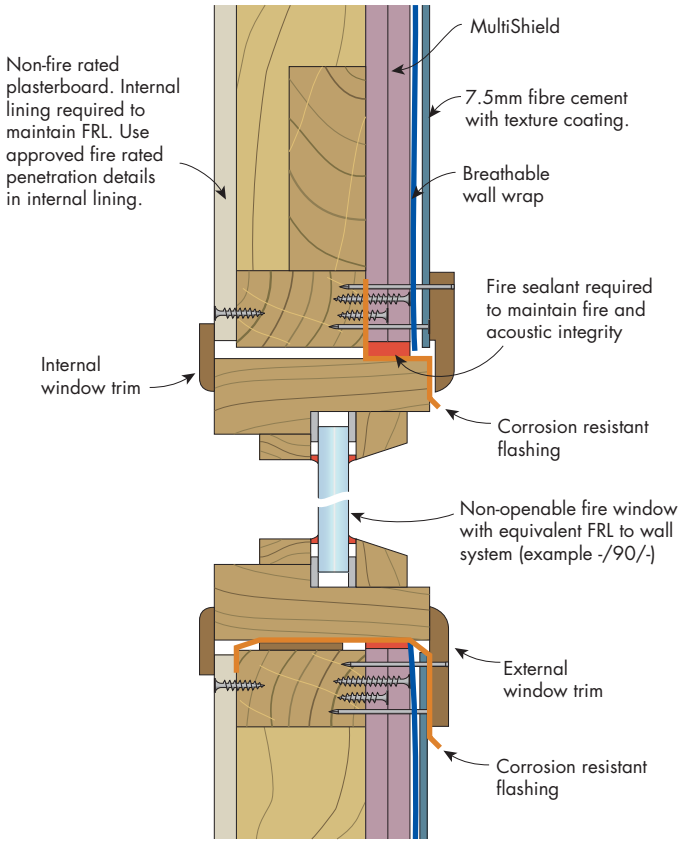


FIGURE 10 Fire Rated External Window
Example only

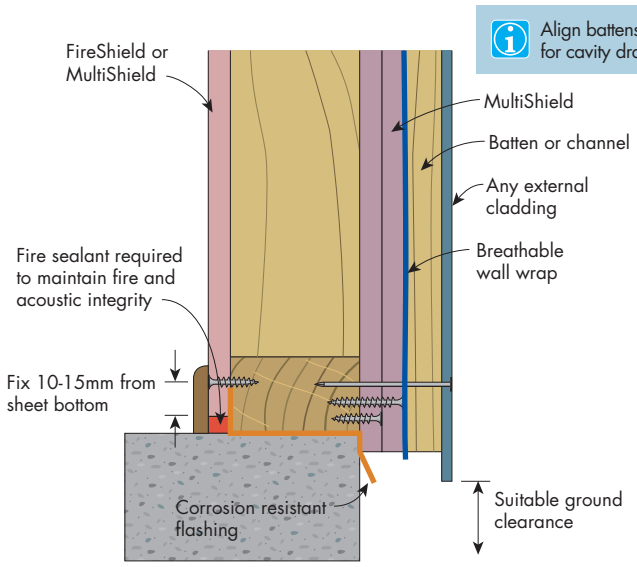


FIGURE 11 Wall Base to Slab

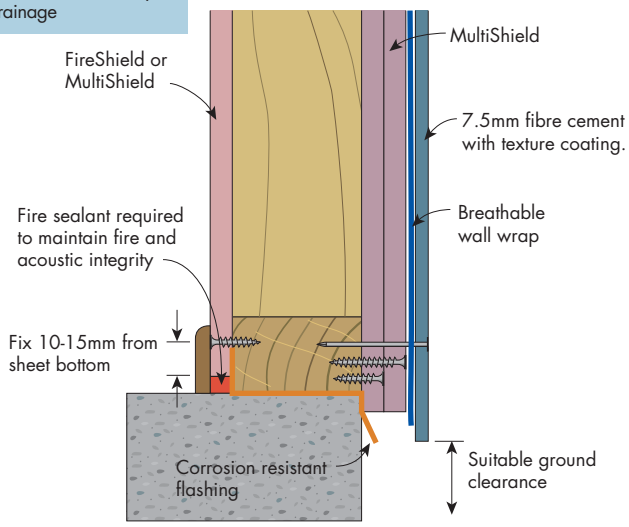


FIGURE 12 Wall Base to Slab

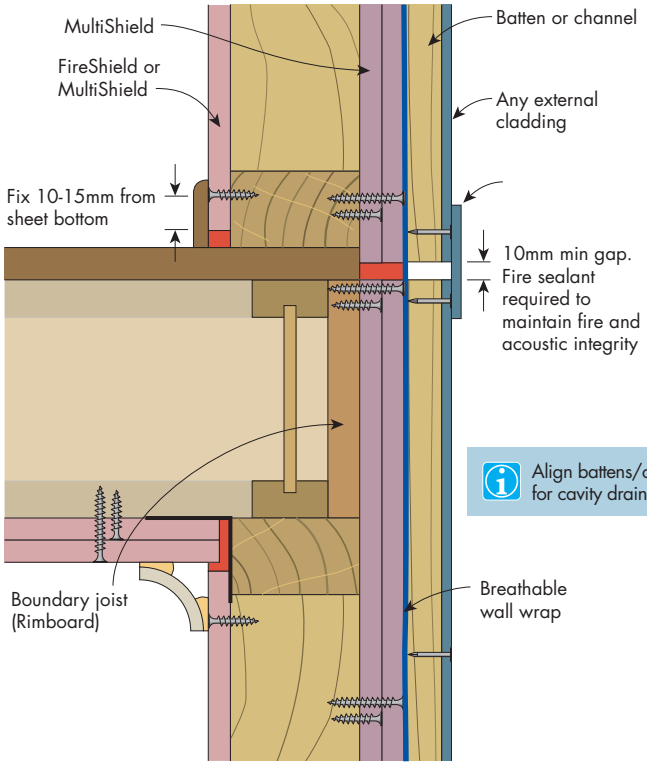


FIGURE 13 Wall of Upper Storey Floor

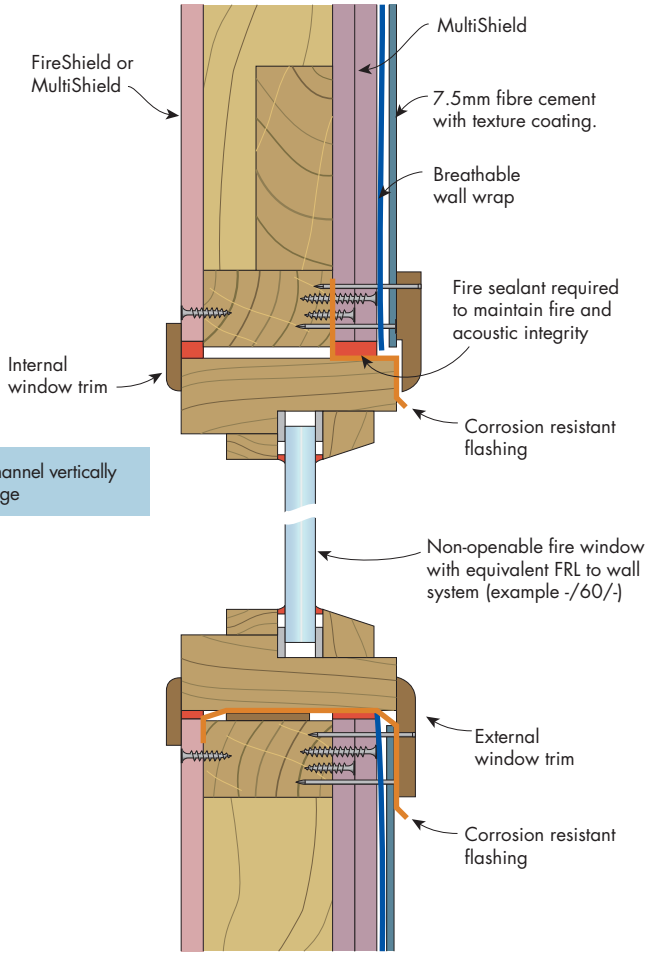


FIGURE 14 Fire Rated External Window
Example only

FIGURE 15 External Wall to Non-Combustible Eave Lining

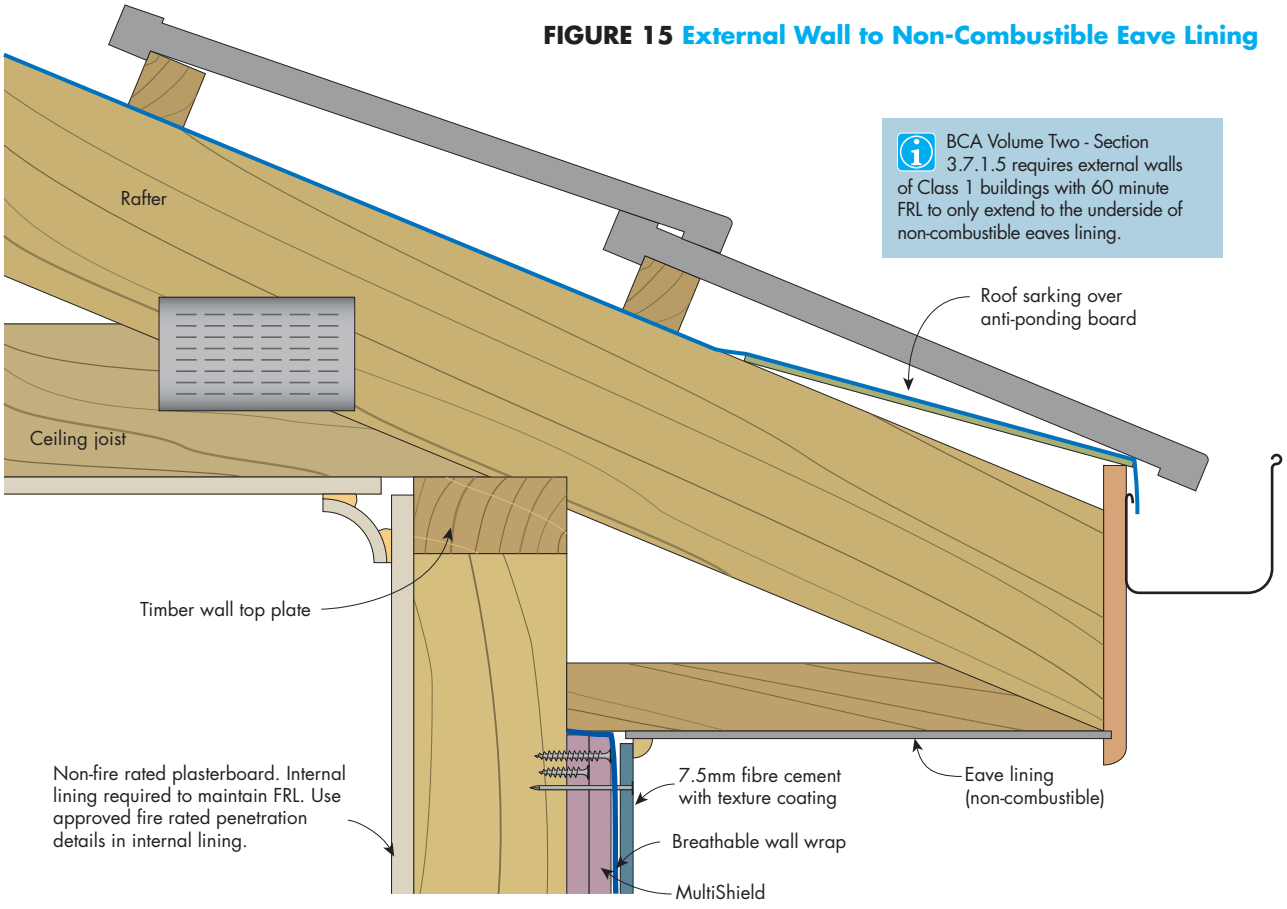
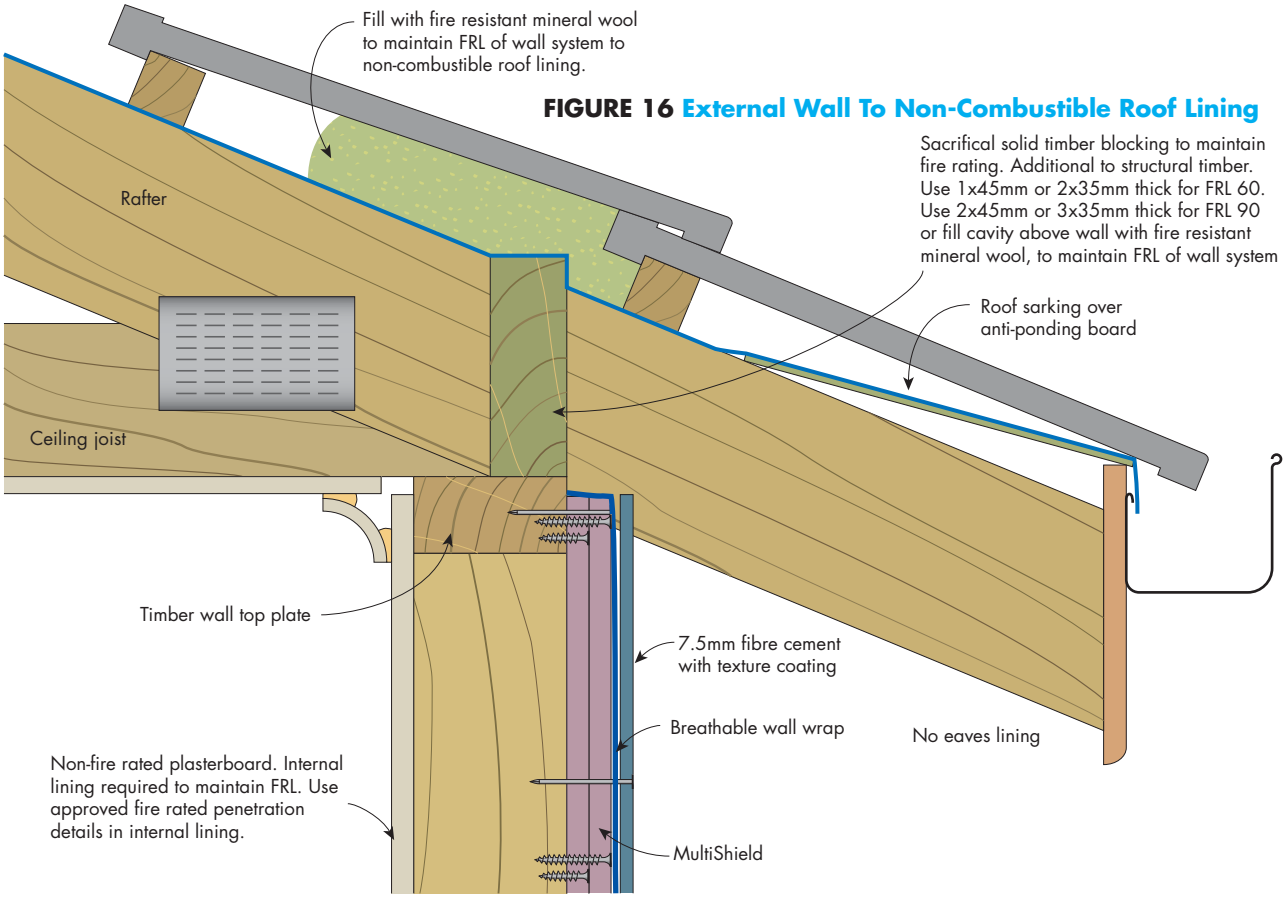


FIGURE 16 External Wall To Non-Combustible Roof Lining



EXTERNAL WALL TO ROOF – ELEVATION

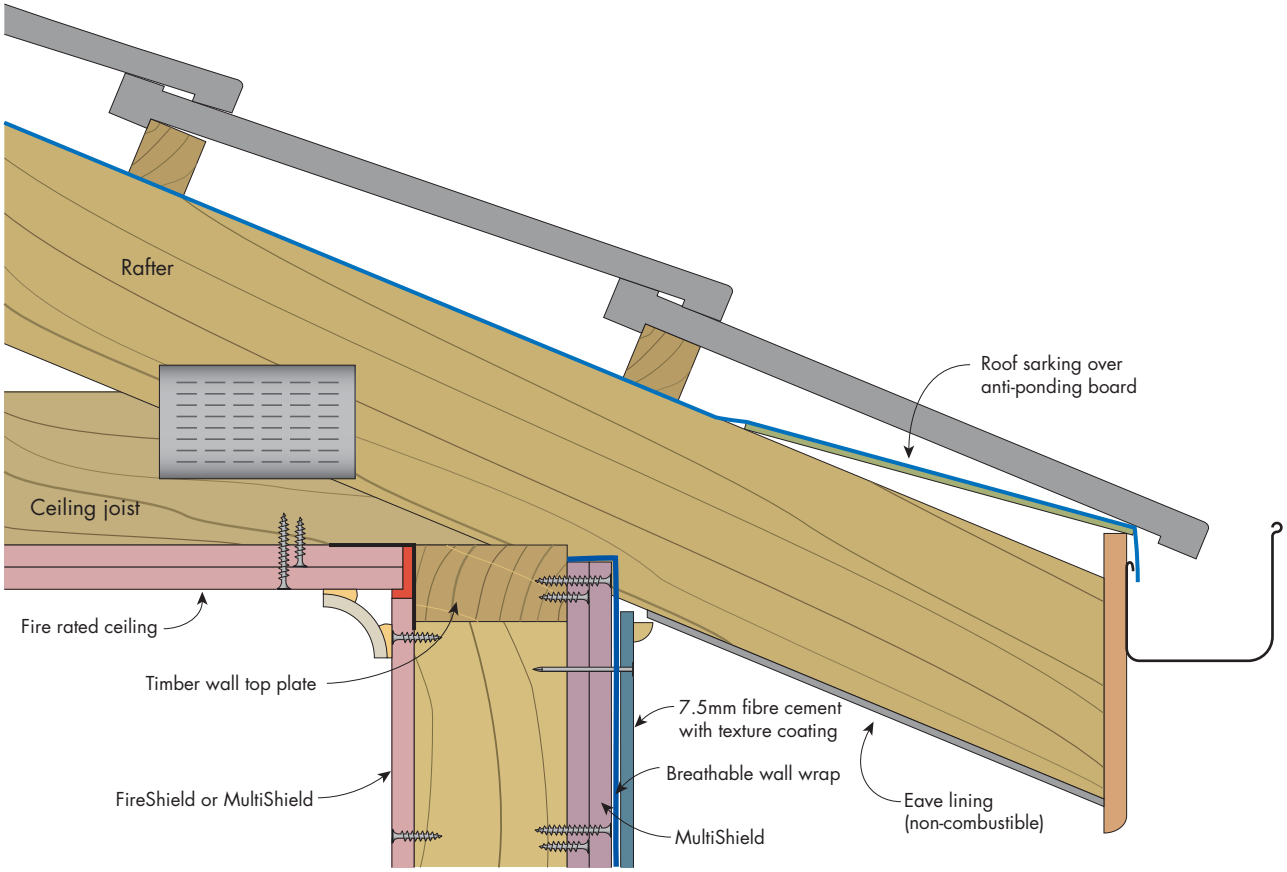


FIGURE 17 External Wall to Non-Combustible Roof Lining

FIRE RATED

EXTERNAL WALL TO PARAPET ROOF – ELEVATION

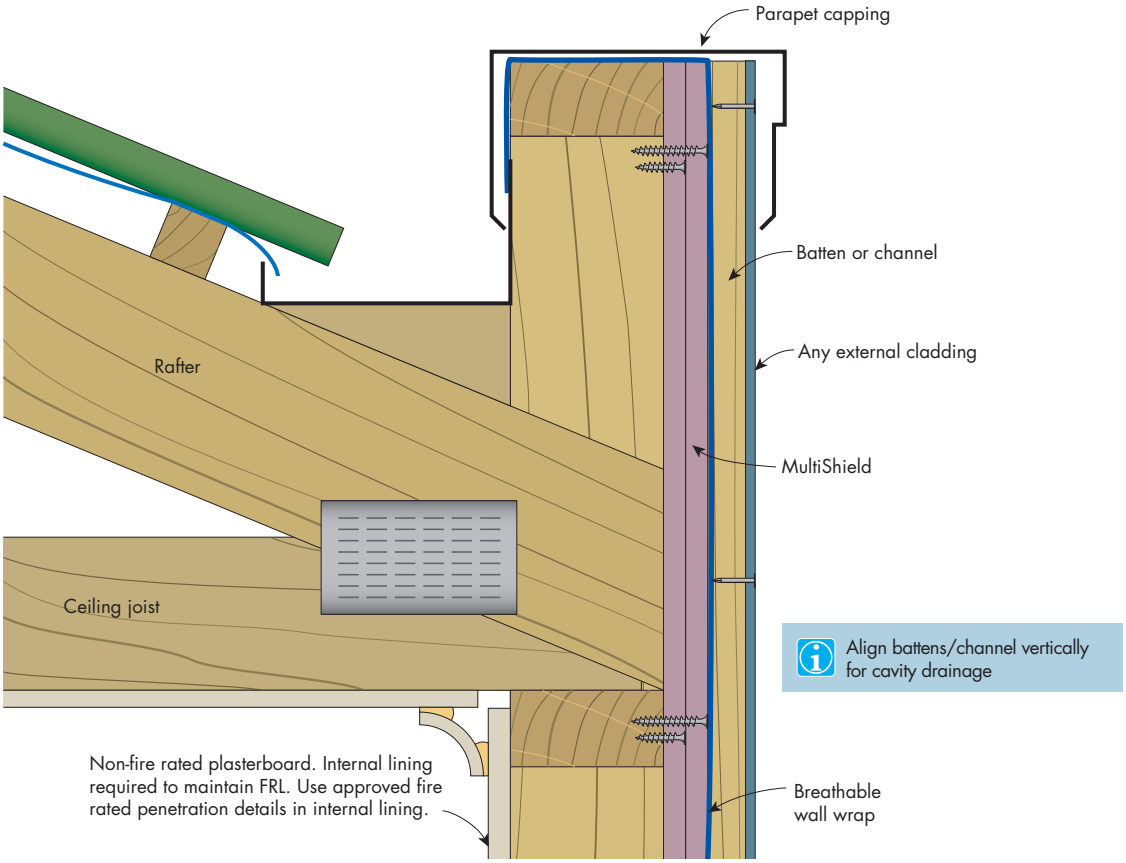


FIGURE 18 External Wall to Parapet Roof

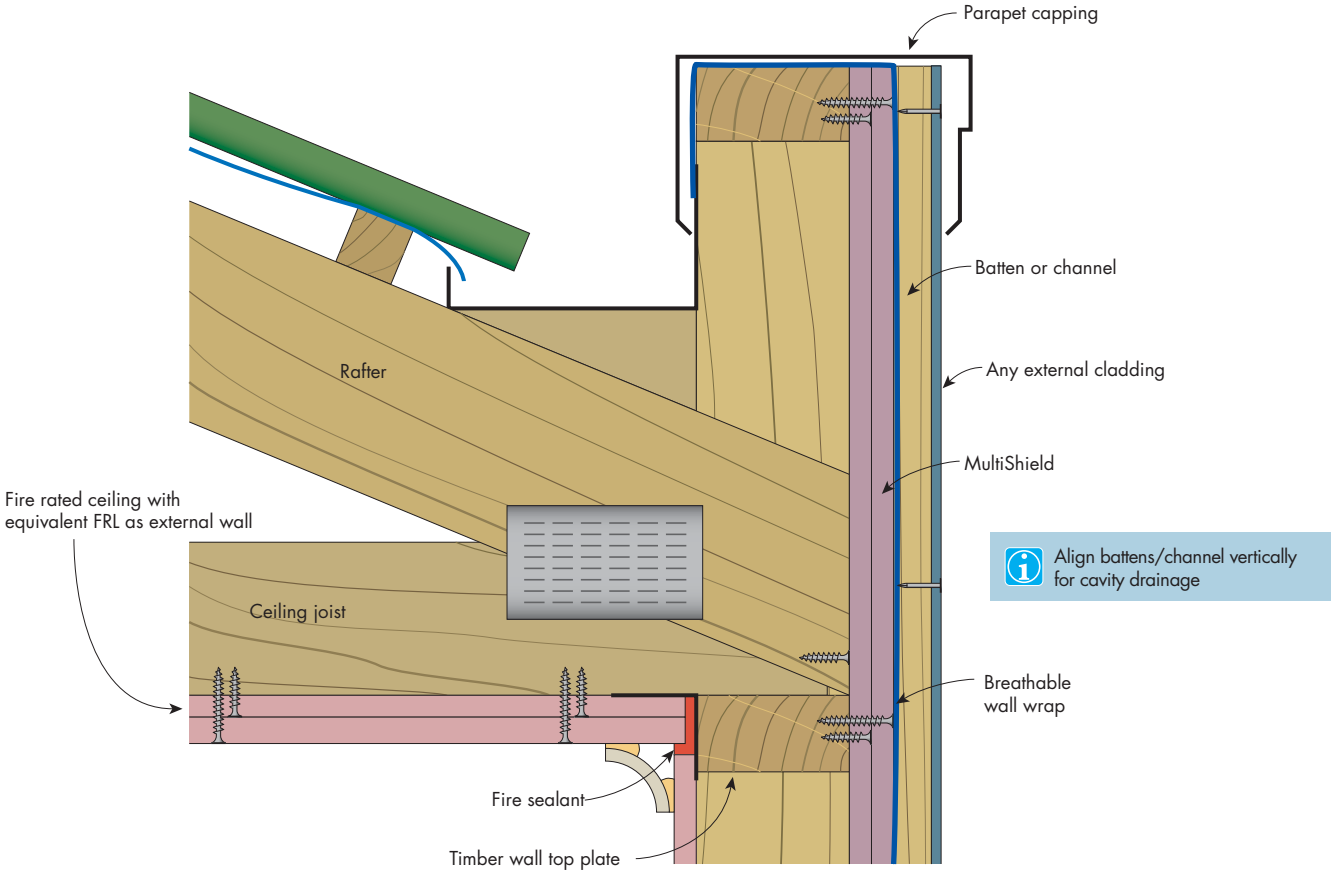


FIGURE 19 External Wall to Parapet Roof

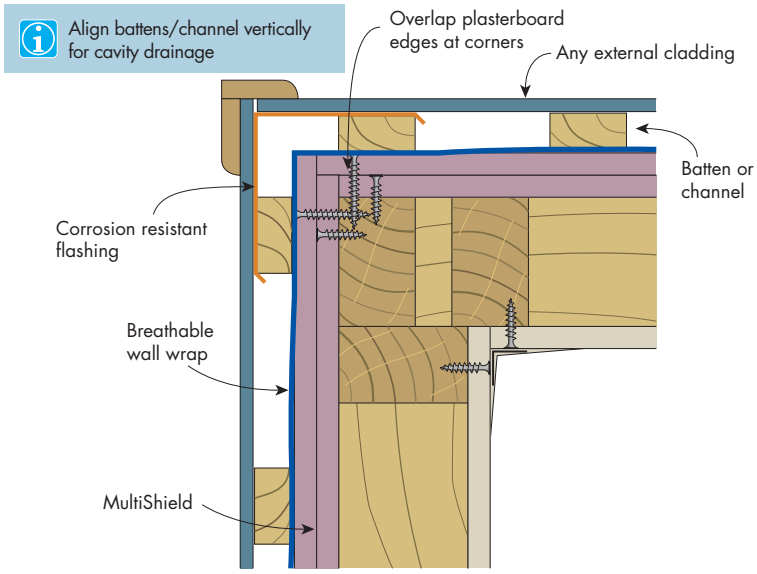


FIGURE 20 External Corner

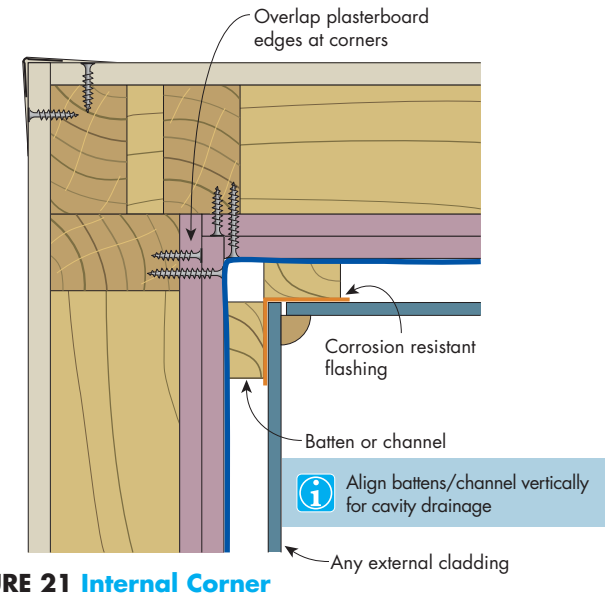


FIGURE 21 Internal Corner

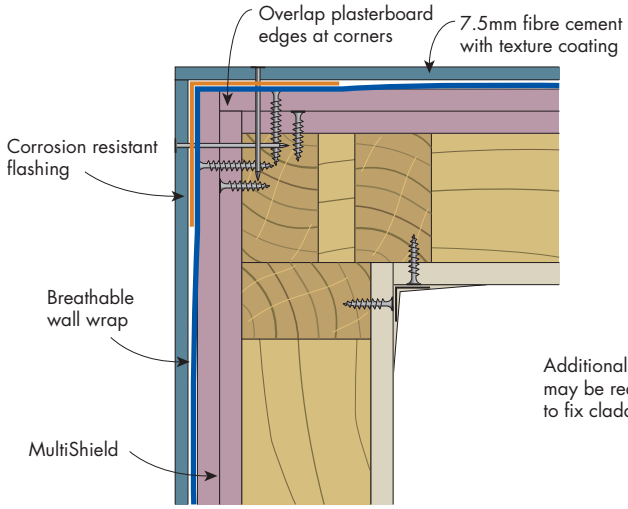


FIGURE 22 External Corner

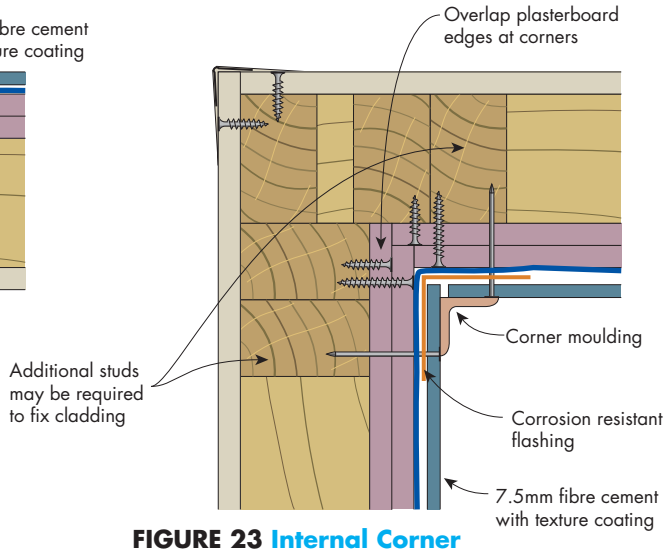


FIGURE 23 Internal Corner

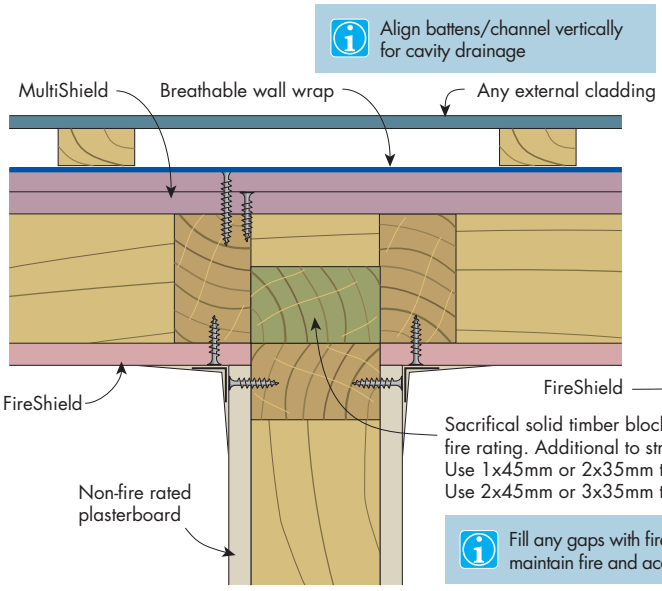


FIGURE 24 Non-Fire Rated Intersecting Wall

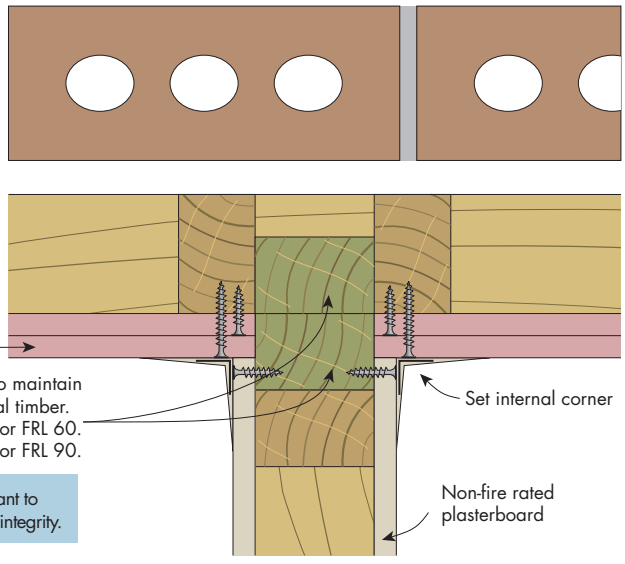


FIGURE 23 Intersecting Wall to External Brick Veneer Wall

FIRE RATED

EXTERNAL WALL CONTROL JOINTS – PLAN VIEW

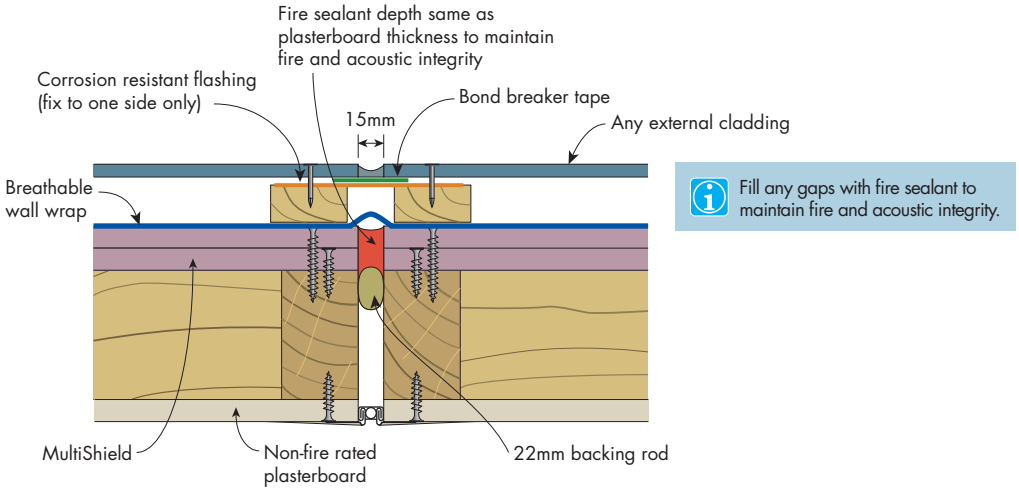


FIGURE 26 Fire Rated External Wall Control Joint

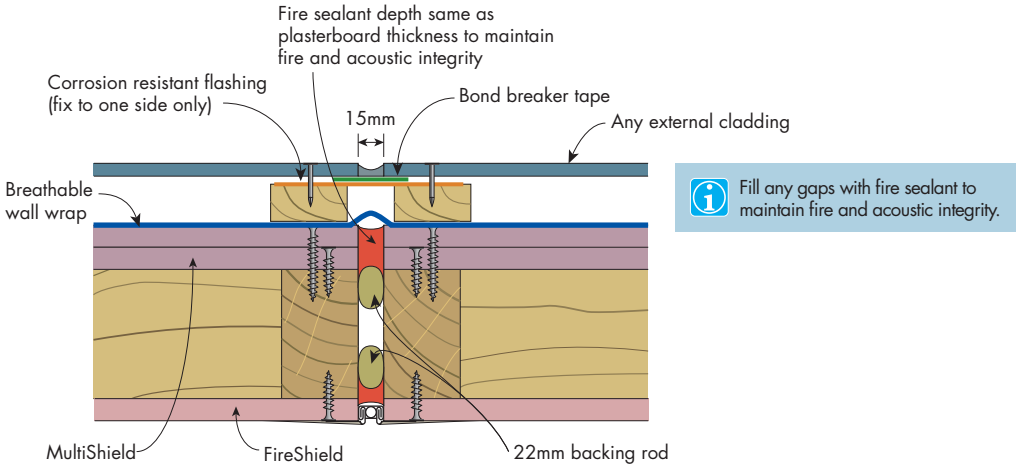


FIGURE 27 Fire Rated External Wall Control Joint

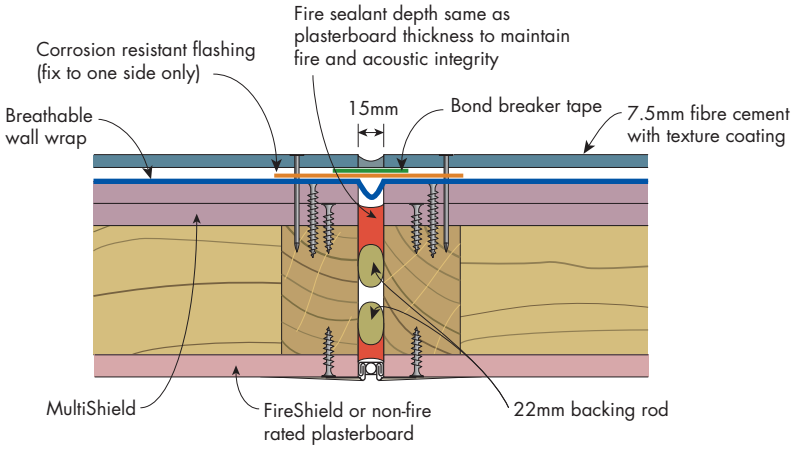
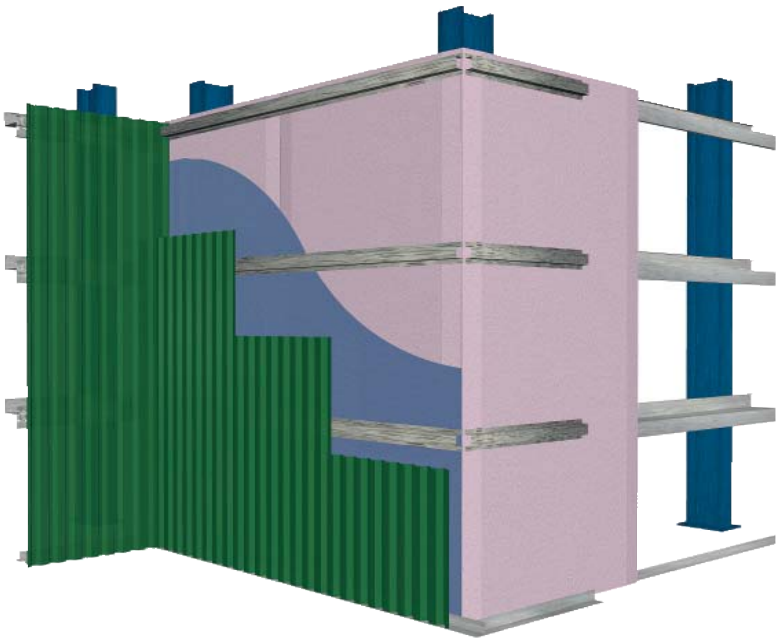


FIGURE 28 Fire Rated External Wall Control Joint

3.2.3

External Structural Walls

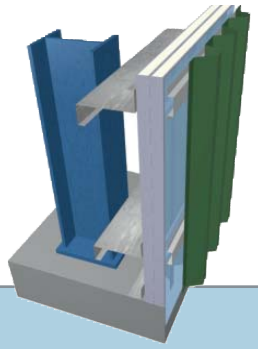


INTRODUCTION

Steel framed external structural walls are used in buildings such as car parks, factories and workshops. If these walls are built close to property boundaries, they often require fire protection from the outside.

Systems in this section provide fire protection from the outside for up to 120 minutes. MultiShield forms part of the wall, which is covered by a moisture barrier and external cladding to provide protection from the weather.

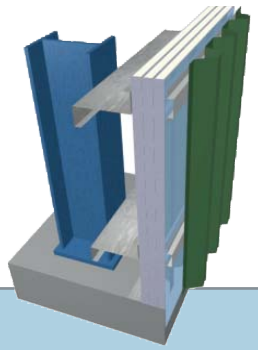
KSSW1



EXTERNAL WALL CLADDING: Suitable external cladding
EXTERNAL CLADDING FRAME: Galvanised battens fixed to Z or C girts
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 2 layers of 16mm **MultiShield**
FRAME: Z or C girts attached to structural frame

FRL 60/60/60 rated from the outside only Fire Report FAR 1612	Maximum Girt Spacing (mm)	Plasterboard Thickness (mm)	Acoustics Rw (Rw + Ctr)	
	600	32	35 (31)	Acoustic Report Day Design 3094-33

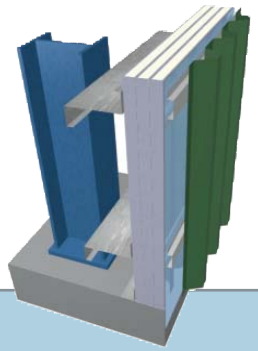
KSSW2



EXTERNAL WALL CLADDING: Suitable external cladding
EXTERNAL CLADDING FRAME: Galvanised battens fixed to Z or C girts
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 3 layers of 13mm **MultiShield**
FRAME: Z or C girts attached to structural frame

FRL 90/90/90 rated from the outside only Fire Report FAR 1612	Maximum Girt Spacing (mm)	Plasterboard Thickness (mm)	Acoustics Rw (Rw + Ctr)	
	900	39	37 (34)	Acoustic Report Day Design 3094-33

KSSW3



EXTERNAL WALL CLADDING: Suitable external cladding
EXTERNAL CLADDING FRAME: Galvanised battens fixed to Z or C girts
MOISTURE BARRIER: Breathable wall wrap
EXTERNAL WALL LINING: 3 layers of 16mm **MultiShield**
FRAME: Z or C girts attached to structural frame

FRL 120/120/120 rated from the outside only Fire Report FAR 2203	Maximum Girt Spacing (mm)	Plasterboard Thickness (mm)	Acoustics Rw (Rw + Ctr)	
	1200	48	38 (35)	Acoustic Report Day Design 3094-33

GENERAL REQUIREMENTS

	Fire Rated
Install control joints in plasterboard walls: › At 12m maximum intervals › At all control joints in the structure › At any change in the substrate material.	✔
Jointing of **MultiShield** is not required due to the overlying breathable wall wrap and external cladding.	✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.	✔
Pack any gaps between the top of the wall and the underside of the roof covering with mineral fibre or other suitable fire resisting material. This maintains the fire rating of the system. *[Refer to mineral fibre manufacturers specifications for minimum widths required].*	✔
Protect plasterboard from water pooling at ground level.	✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.	✔

For acceptable modifications or variations to fire rated systems *[Refer to Section 2.3 Fire Resistance].*

FRAMING

	Fire Rated
Fix 50 x 50 x 0.7mm BMT galvanised steel angle to: › Concrete at the base to act as skirting › Girts at all corners › Control joints.	✔
Install an anti-splash board at the base of the external wall to protect the plasterboard from water damage. *[Refer to Construction Details Figures 3 – 5]*	✔
Use girt support rods or equivalent where required to avoid sagging of girts under the weight of plasterboard.	✔

Plumbing and electrical services must not protrude beyond the face of the stud.

PLASTERBOARD LAYOUT

	Fire Rated
Install plasterboard sheets vertically and perpendicular to girts.	✔
Stagger butt joints by 600mm minimum on adjoining sheets and between layers.	✔
First layer butt joints must be backed by a girt.	✔
Stagger recessed edges by 300mm minimum between layers.	✔

If a jointed finish on the interior of the wall is desired, face the first layer inwards.

PLASTERBOARD FIXING

	Fire Rated
Use the 'Screw Only Method'. Stud adhesive is not permitted.	✔
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✔
Do not fix plasterboard to steel more than 2mm BMT.	✔
Laminating screws can be used to fix butt joints in the second and third layer.	✔

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
13mm	25mm – 6g S screw	40mm – 6g S screw*	60mm – 6g S screw*
16mm	30mm – 6g S screw	45mm – 6g S screw*	65mm – 6g S screw*

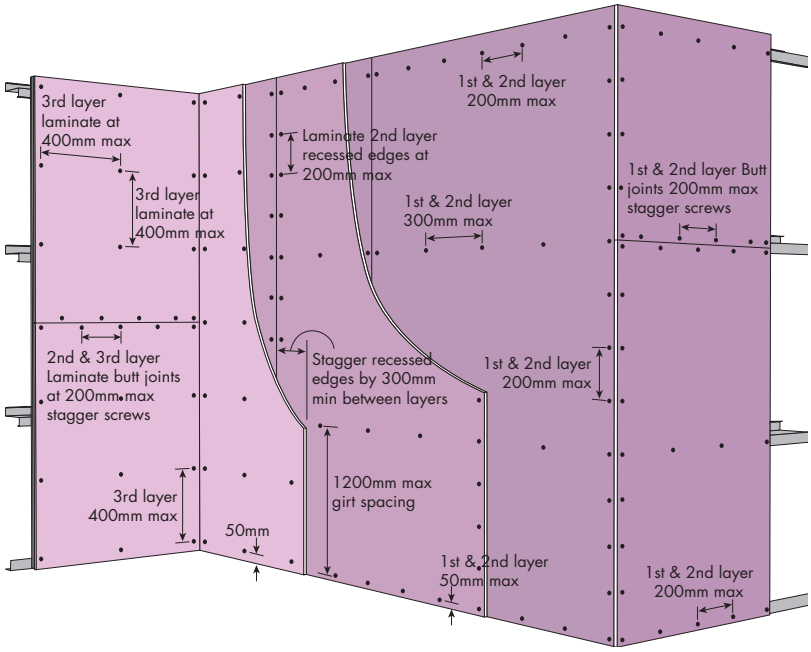
For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.
*40mm - 10g Laminating screws may be used as detailed in installation diagrams.

EXTERIOR CLADDING

	Fire Rated
External cladding must be non-combustible or not contribute to the fire intensity.	✔
Fix cladding battens through plasterboard to girts.	✔
Protect plasterboard from water pooling at ground level.	✔
Extend the external fire rated wall up to the non-combustible roof covering or non-combustible eaves lining. *[Refer to Construction Details]*	✔

- Exterior cladding and moisture barrier must provide protection from the weather.
- Use construction techniques that direct condensation and rain away from plasterboard.

FIGURE 1 Fire Rated 3 Layers – All Vertical
Screw Only Method



Fixing	Screw Only Method
Sheet Layout	1st, 2nd and 3rd layers: Vertical
Perimeter	1st and 2nd layer: Perimeter screws 10-15mm from sheet edges. 3rd layer: Perimeter screws 50mm max from sheet edges.
Field	1st layer: Fix at 300mm max centres 2nd layer: Fix at 300mm max centres 3rd layer: Laminate to 2nd layer at 400x400mm max centres
Recessed Edges	1st layer: Fix to each girt. 2nd layer: Fix to each girt. Stagger recessed edges by 300mm min between layers. 3rd layer: Laminate to 2nd layer at 400mm max centres.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and between layers of the wall. 1st layer butt joint must be backed by a girt. 2nd layer: Fix at 200mm max centres and stagger screws. Alternatively, laminate to 1st layer using laminating screws at 200mm max centres and stagger screws. 3rd layer: Laminate to 2nd layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres 3rd layer: Fix at 400mm max centres
Openings	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres 3rd layer: Fix at 400mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	Jointing of the face layer is not required if a moisture barrier is used over the plasterboard.

FIRE RATED
EXTERNAL STRUCTURAL WALL ELEVATION

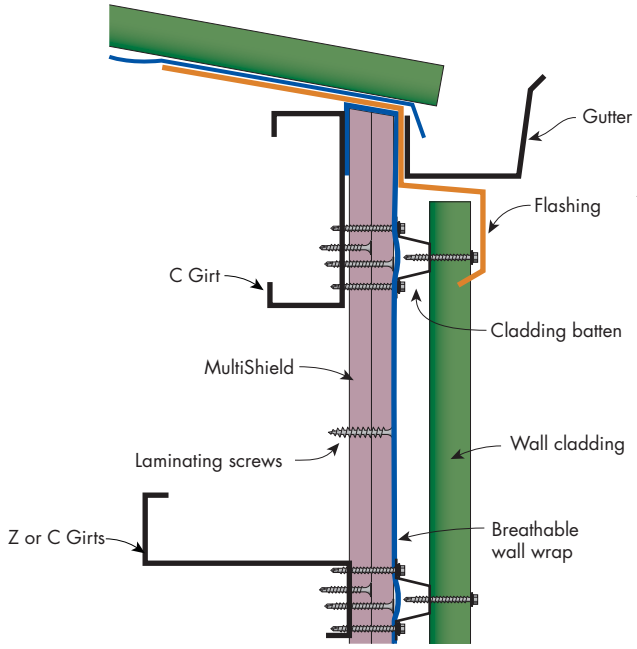


FIGURE 2 Wall Head to Roof

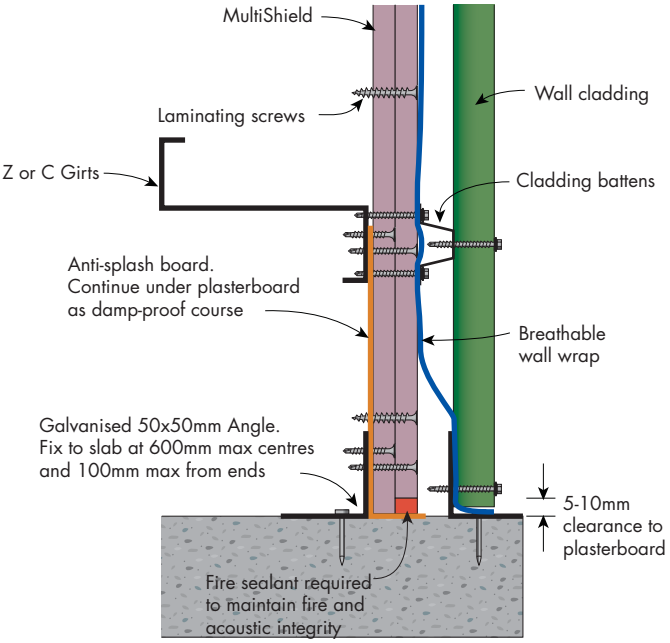


FIGURE 3 Wall Base to Slab

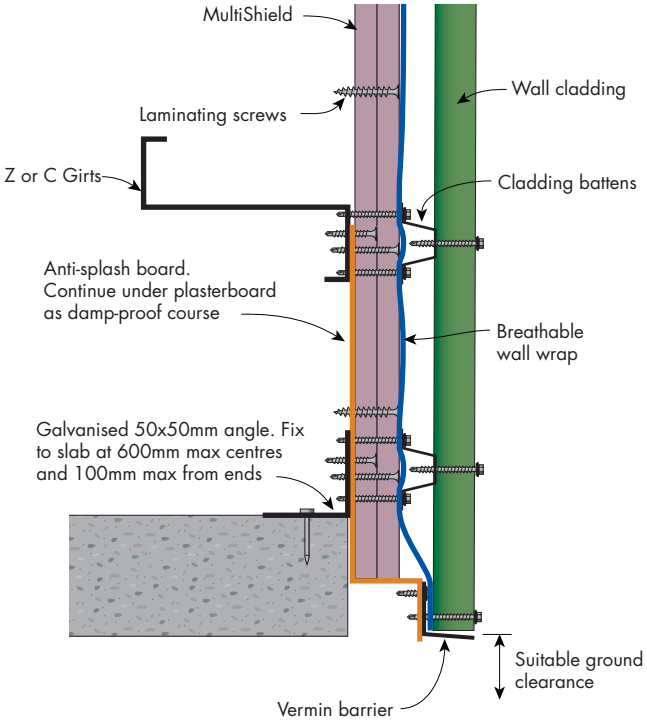


FIGURE 4 Wall Base Around Slab

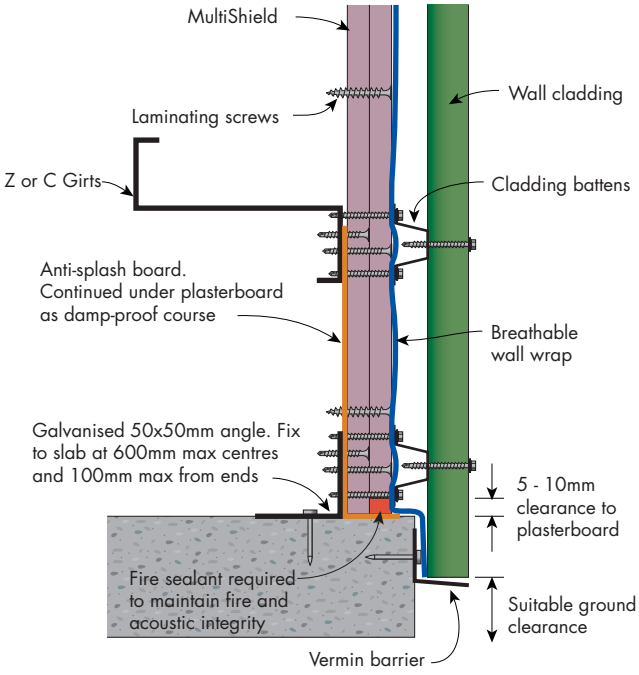


FIGURE 5 Wall Base on Edge of Slab

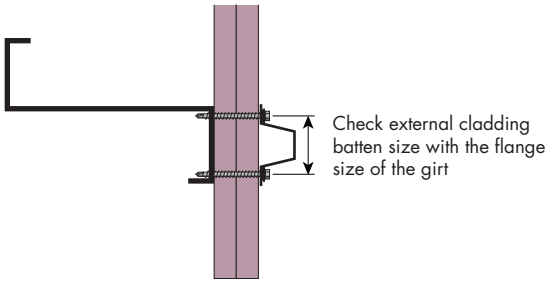


FIGURE 6 External Cladding Size Detail
Elevation

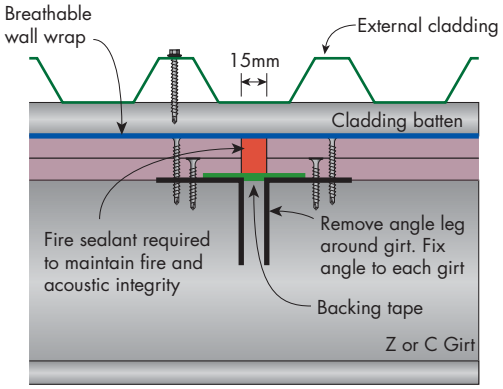


FIGURE 7 Control Joint Detail
Plan view

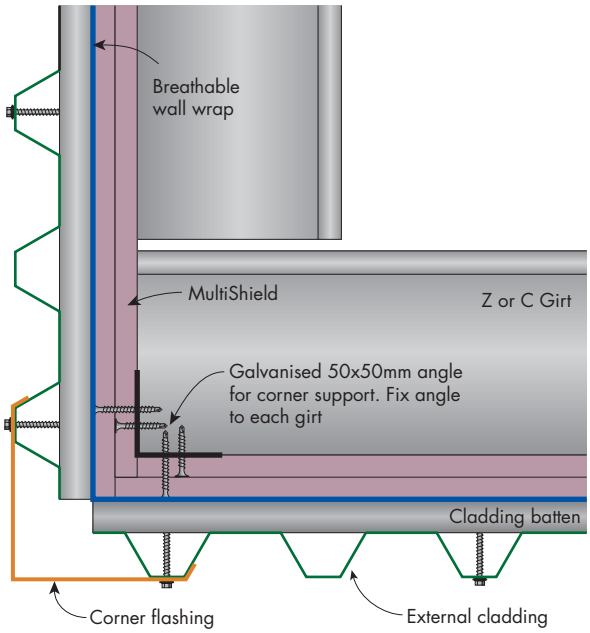


FIGURE 8 Typical External Corner Detail
Plan view

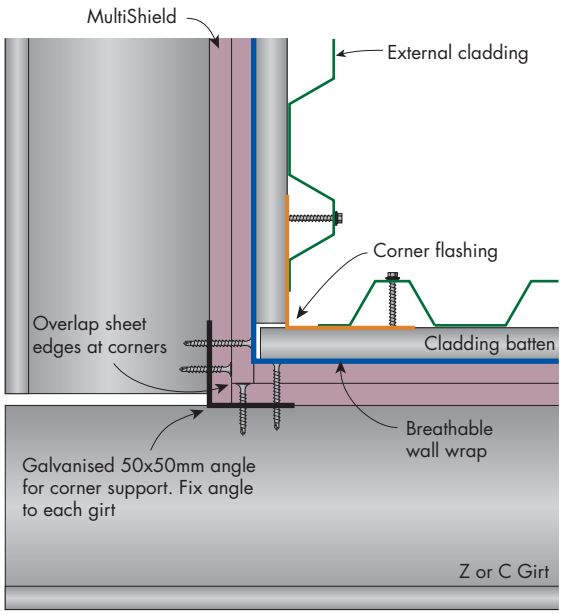
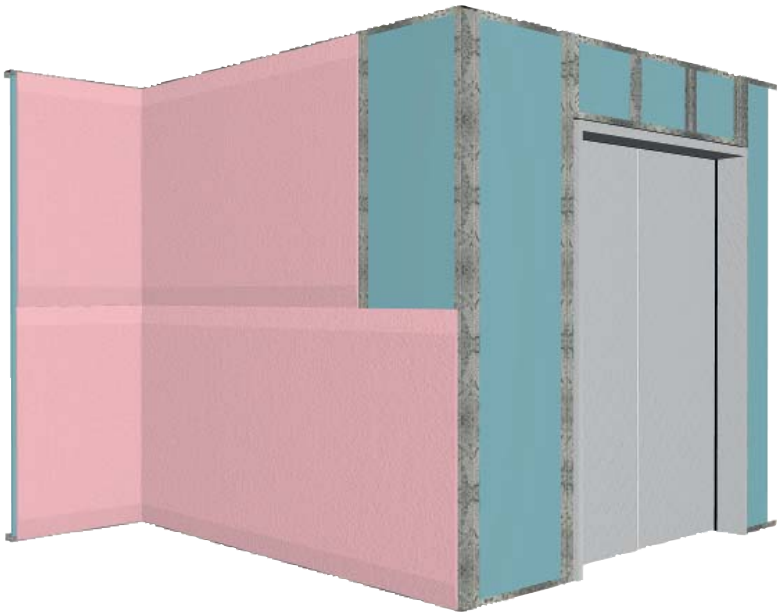


FIGURE 9 Typical Internal Corner Detail
Plan view

3.3.1

Shaft Wall



INTRODUCTION

Shaft Wall systems are fire rated non-load bearing walls used for lift shafts, service ducts, stairwells and fire isolated passageways.

Shaft Wall systems are ideal when constructing a wall where access is only possible from one side. This side is referred to as the storey side.

Shaft Wall has advantages compared with masonry construction:

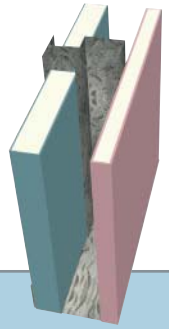
- 75% lighter
- Thinner – typically less than 100mm wide using 64mm CH-Studs
- No wet trades required
- Faster installation – no scaffolding is required inside the shaft.

Shaft Wall systems meet the necessary performance requirements of the BCA for lift shafts:

- Fire resistance requirements
- Structural requirements under Specification C1.8 for lift shafts.

Shaft Wall systems can resist positive and negative air pressure surges up to 0.7 kPa, and can resist positive and negative sustained air pressures up to 0.5 kPa. If the sustained air pressure exceeds 0.5 kPa the air handling should be contained within a metal duct.

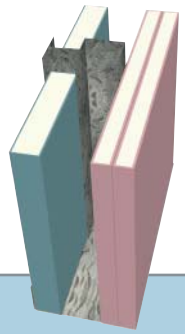
KSHW1



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 25mm **ShaftLiner** encased in CH-studs
FRAME: Shaft Wall CH-steel studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL – /60/60 rated from both sides Fire Report FAR 2863 FAR2817	CH-Stud Size (mm)		Max Height (m)		Width (mm)	Acoustics Rw (Rw + Ctr)			
	CH-Stud Depth	CH-Stud BMT	Non-Load Bearing Studs at 600mm UDL 0.25kPa	Non-Load Bearing Studs at 600mm UDL 0.35kPa		No Insulation	50mm EarthWool 11 kg/m³	50mm Polyester ASB2/TSB2	
	64	0.55 0.9	2.95 3.46	2.64 3.09	80	39 (32)	46 (39)	46 (38)	Acoustic Report Day Design 3094-18
	102	0.55 0.9	3.73 4.98	2.66 4.19	118	42 (33)	48 (41)	48 (41)	

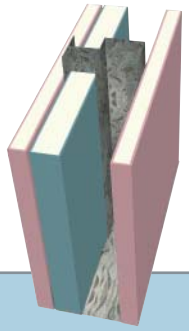
KSHW2



WALL LINING: [Side 1] 2 layers of 16mm **FireShield**
[Side 2] 1 layer of 25mm **ShaftLiner** encased in CH-studs
FRAME: Shaft Wall CH-steel studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL – /120/120 rated from both sides Fire Report FAR 2863 FAR 2817	CH-Stud Size (mm)		Max Height (m)		Width (mm)	Acoustics Rw (Rw + Ctr)			
	CH-Stud Depth	CH-Stud BMT	Non-Load Bearing Studs at 600mm UDL 0.25kPa	Non-Load Bearing Studs at 600mm UDL 0.35kPa		No Insulation	50mm EarthWool 11 kg/m³	50mm Polyester ASB2/TSB2	
	64	0.55 0.9	3.73 4.38	2.66 3.89	96	44 (36)	50 (42)	50 (42)	Acoustic Report Day Design 3094-18
	102	0.55 0.9	3.73 5.51	2.66 4.19	134	46 (37)	52 (46)	52 (46)	

KSHW3



WALL LINING: [Side 1] 1 layer of 16mm **FireShield**
[Side 2] 1 layer of 25mm **ShaftLiner** encased in CH-studs and 1 layer of 16mm **FireShield**
FRAME: Shaft Wall CH-steel studs at maximum 600mm centres
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL – /120/120 rated from both sides Fire Report FAR 2863 FAR 2817	CH-Stud Size (mm)		Max Height (m)		Width (mm)	Acoustics Rw (Rw + Ctr)			
	CH-Stud Depth	CH-Stud BMT	Non-Load Bearing Studs at 600mm UDL 0.25kPa	Non-Load Bearing Studs at 600mm UDL 0.35kPa		No Insulation	50mm EarthWool 11 kg/m³	50mm Polyester ASB2/TSB2	
	64	0.55 0.9	2.95 3.46	2.64 3.09	96	42 (35)	50 (42)	50 (42)	Acoustic Report Day Design 3094-18
	102	0.55 0.9	3.73 4.98	2.66 4.19	134	45 (36)	52 (45)	52 (45)	

GENERAL REQUIREMENTS

	Fire Rated
Install control joints in plasterboard walls: › At 10m maximum intervals › At all control joints in the structure › At any change in the substrate material.	✔
Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and: › Two coats of **MastaBase**/**MastaLongset**, or › Three coats of **MastaLite**. Never joint sheets with fire sealant. *[Refer to Section 4]*	✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.	✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.	✔
Mount lift operating equipment on structural members independent from the Shaft Wall system. *[Refer to Construction Details for lift call button indicator boxes, figures 39 and 40]*	✔

For acceptable modifications or variations to fire rated systems. *[Refer to Section 2.3 Fire Resistance]*

	Fire Rated
Fix the bottom track and top track or deflection head at 600mm maximum centres and 100mm maximum from each end.	✔
Use a deflection head if: › Wall heights are 4800mm or greater › Ceiling, roof or floor movement is expected.	✔
Space CH-Studs at 600mm centres maximum.	✔
Push CH-Studs down completely into bottom track.	✔
Friction fit all CH-Studs. They must not be screwed to the top and bottom tracks.	✔

Plumbing and electrical services must not protrude beyond the face of the stud.

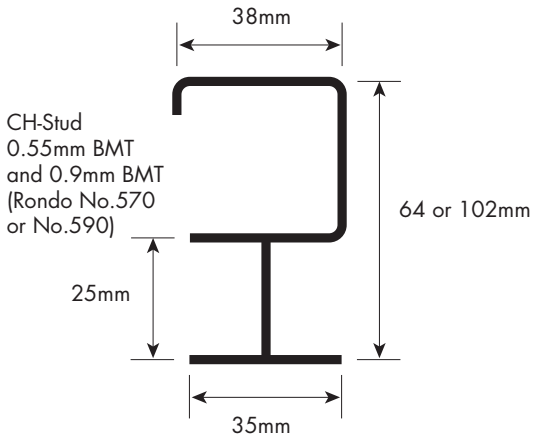


FIGURE 1 Shaft Wall Framing Components
Shaft Wall CH-Stud

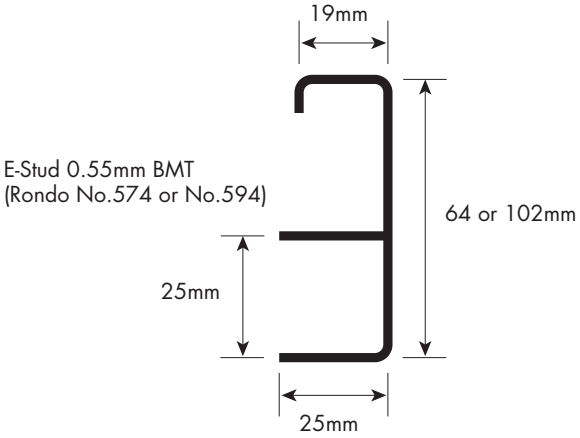


FIGURE 2 Shaft Wall Framing Components
Shaft Wall E-Stud

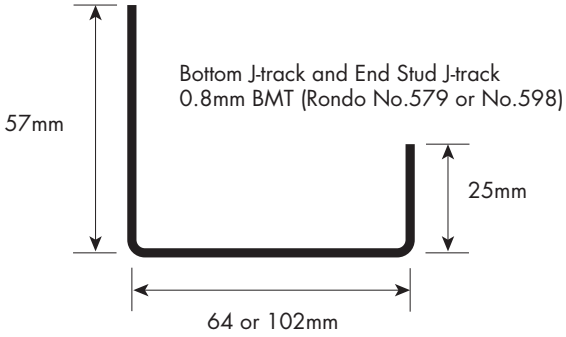


FIGURE 3 Shaft Wall Framing Components
J-Track

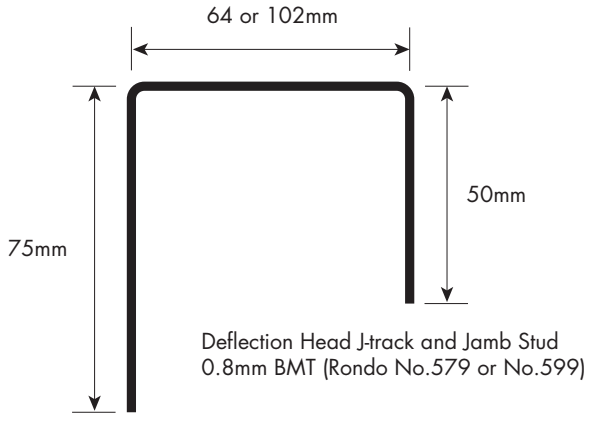


FIGURE 4 Shaft Wall Framing Components
Deflection Head J-Track and Jamb Stud

PLASTERBOARD LAYOUT

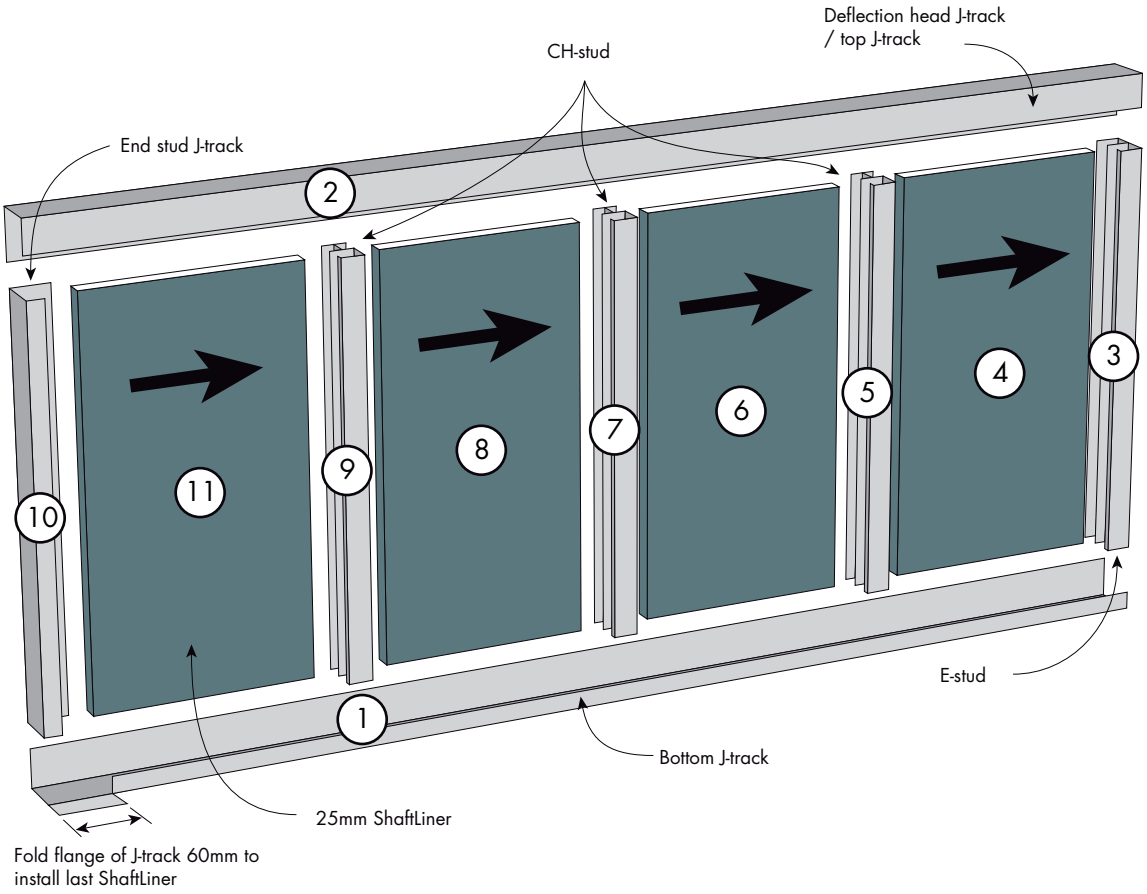


FIGURE 5 **Shaft Wall Construction Sequence**

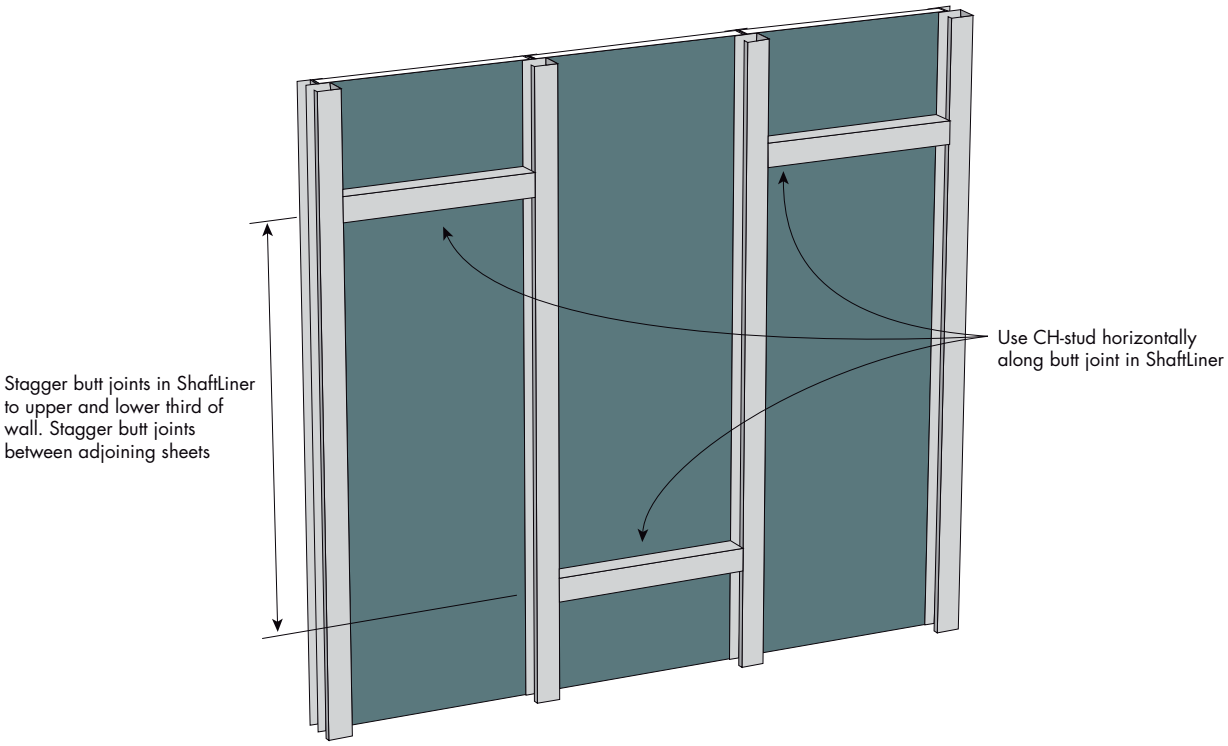


FIGURE 6 **ShaftLiner Butt Joint Layout**

PLASTERBOARD LAYOUT

	Fire Rated
FireShield Horizontal Layout	
Stagger butt joints by 600mm minimum on adjoining sheets and between layers.	✔
Stagger recessed edges by 300mm minimum between layers.	✔
First layer butt joints must be backed by a CH-stud.	✔
FireShield Vertical Layout	
Stagger butt joints by 600mm minimum on adjoining sheets and between layers.	✔
Stagger recessed edges by 300mm minimum between layers.	✔
First layer butt joints must be backed by a CH-nogging.	✔
ShaftLiner Layout	
If the wall height exceeds the length of **ShaftLiner**, position the ShaftLiner butt joints within the upper and lower third of the wall. *[Refer to Figure 6]*	✔
Stagger **ShaftLiner** butt joints for adjacent panels and reinforce with horizontal CH-stud cut to fit between the vertical studs. *[Refer to Figure 6]*	✔

- Install **FireShield** horizontally when practical to reduce the effect of glancing light.
- Minimise butt joints by using long sheets.

PLASTERBOARD FIXING

	Fire Rated
Use the 'Screw Only Method'. Stud adhesive is not permitted.	✔
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✔
Do not fix plasterboard to steel more than 2mm BMT.	✔
Laminating screws can be used to fix butt joints in the second and third layer.	✔

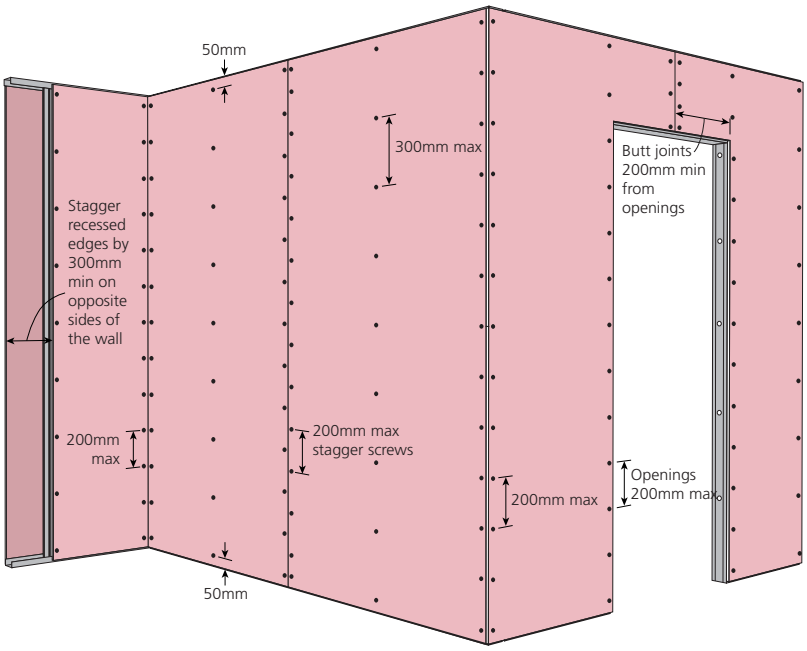
SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
16mm **FireShield**	30mm – 6g S screw	45mm – 6g S screw*	65mm – 6g S screw*
25mm **ShaftLiner**	45mm – 6g S screw+	–	–

For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.
+ Use for securing ShaftLiner to J-track when the J-track is being used as an end stud.

FIGURE 7 Fire Rated 1 Layer – Vertical

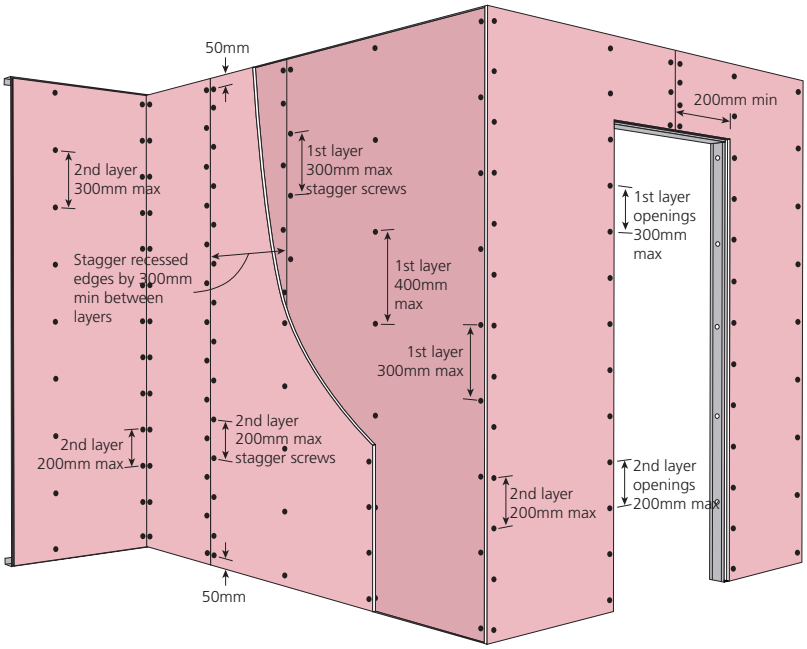
Screw Only Method



Fixing	Screw Only Method
Sheet Layout	Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 300mm max centres
Recessed Edges	Fix at 200mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a stud.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging.
Internal and External Corners	Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 8 Fire Rated 2 Layers – Vertical + Vertical

Screw Only Method



Fixing	Screw Only Method
Sheet Layout	1st layer: Vertical 2nd layer: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 400mm max centres 2nd layer: Fix at 300mm max centres
Recessed Edges	1st layer: Fix at 300mm max centres and stagger screws. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a stud. 2nd layer: Fix at 200mm max centres and stagger screws. Recessed edges must be backed by a stud.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. 1st layer butt joint must be backed by a nogging. 2nd layer: Fix at 200mm max centres and stagger screws. Alternatively, laminate to 1st layer using laminating screws at 200mm max centres and stagger screws.
Internal and External Corners	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 300mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

SHAFT WALL HEAD AND BASE – ELEVATION

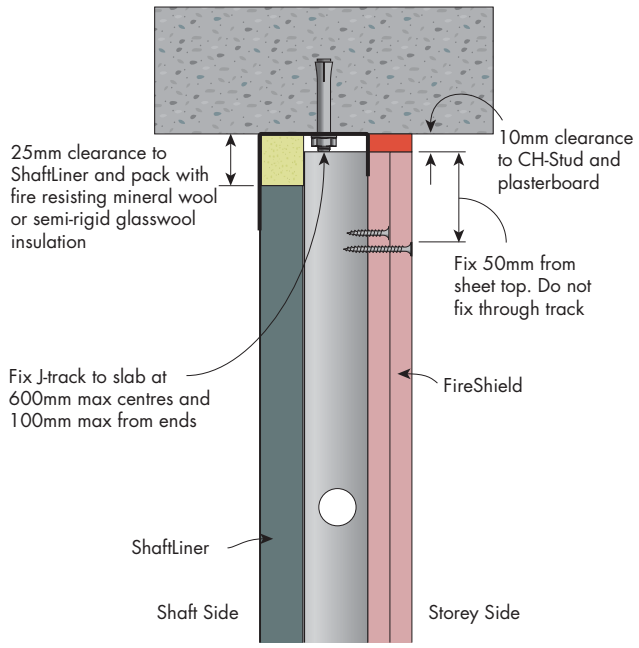


FIGURE 9 Shaft Wall Head to Slab
System KSHW2

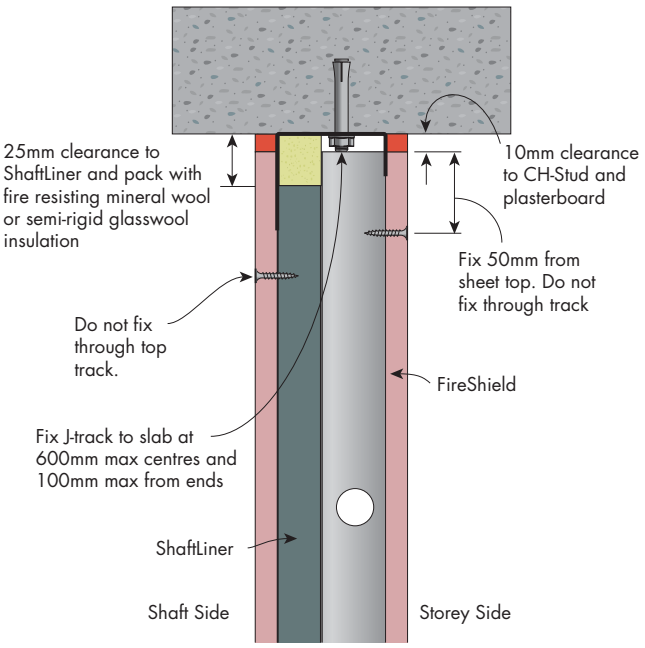


FIGURE 10 Shaft Wall Head to Slab
System KSHW1/3

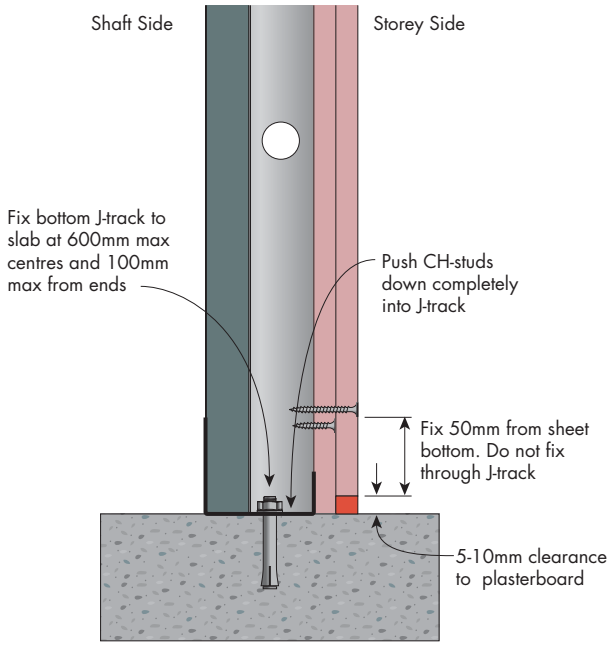


FIGURE 11 Shaft Wall Base to Slab
System KSHW2

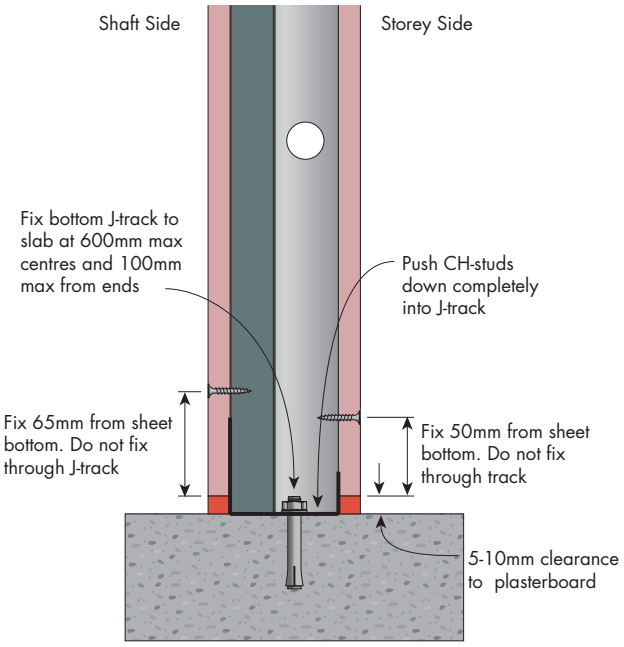


FIGURE 12 Shaft Wall Base to Slab
System KSHW1/3

SHAFT WALL HEAD AND BASE DETAIL AND BUTT JOINT – ELEVATIONS

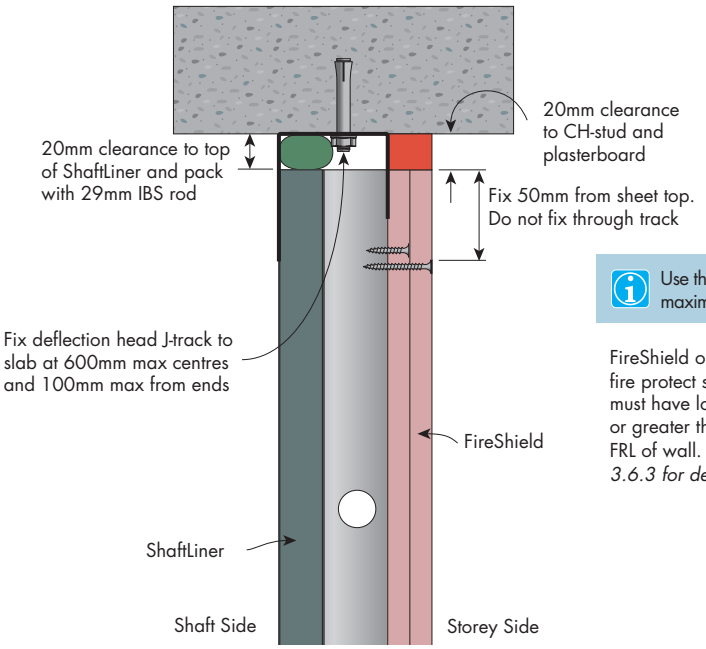


FIGURE 13 Shaft Wall Deflection Head
Elevation

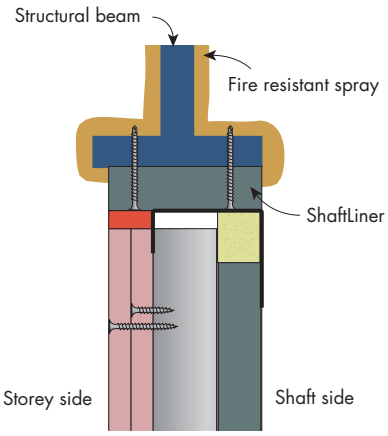


FIGURE 15 Shaft Wall to Structural Beam
Elevation

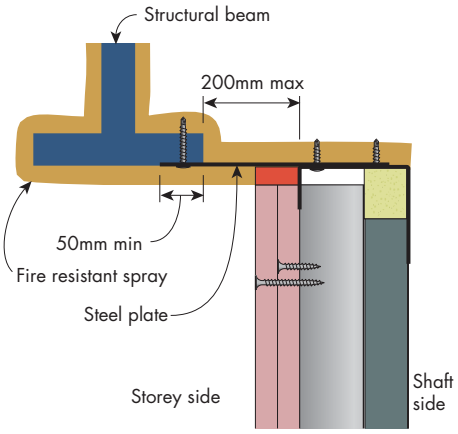


FIGURE 16 Shaft Wall to Structural Beam
Elevation

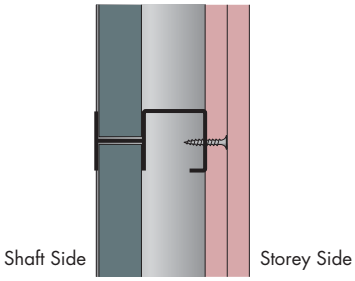


FIGURE 17 Butt Joint in ShaftLiner
Elevation

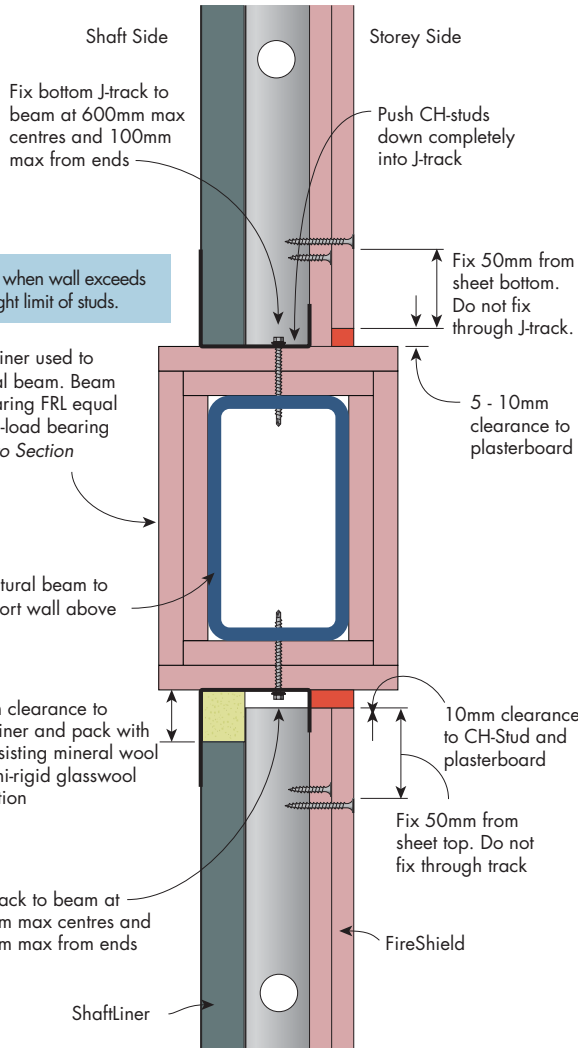


FIGURE 14 Shaft Wall to Supporting Beam
Elevation

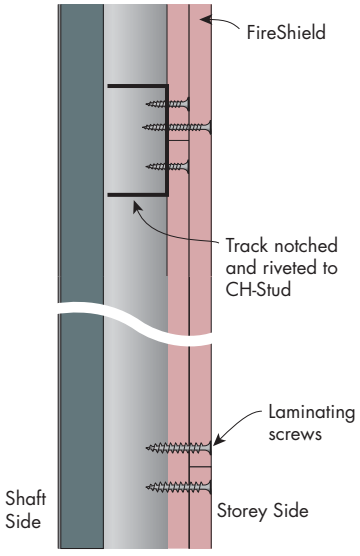


FIGURE 18 Alternate Butt Joint Detail in FireShield
Elevation

SHAFT WALL JUNCTIONS – PLAN VIEW

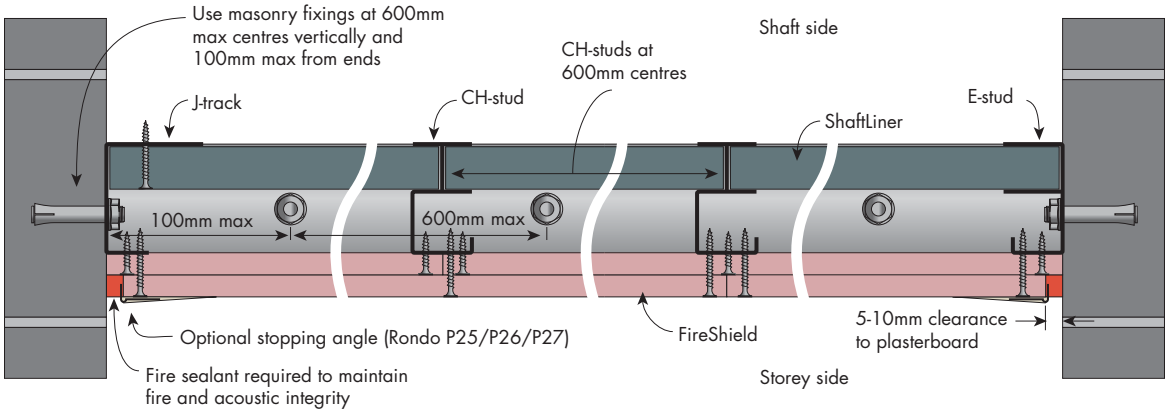


FIGURE 19 Shaft Wall
Detail

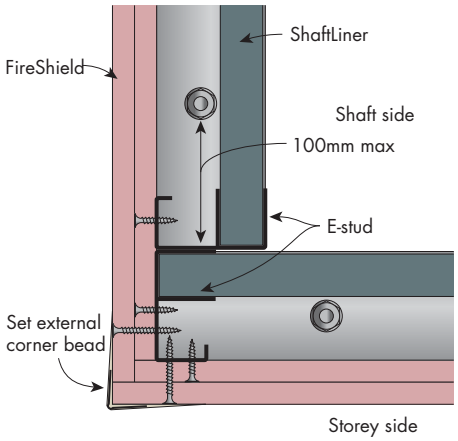


FIGURE 20 Shaft Wall External
Corner Detail

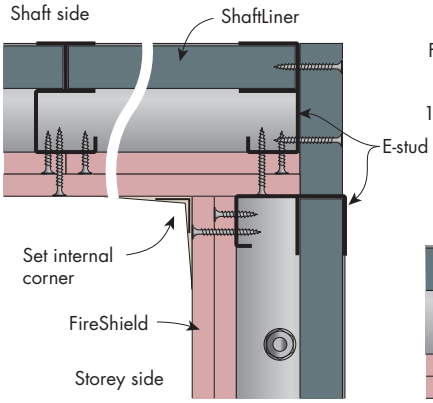


FIGURE 21 Shaft Wall Internal
Corner Detail

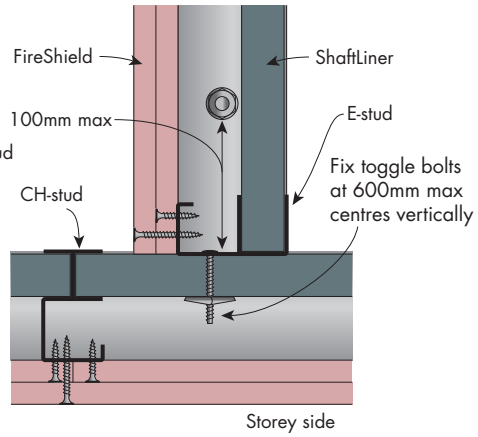


FIGURE 22 Shaft Wall Intersecting Wall
Detail

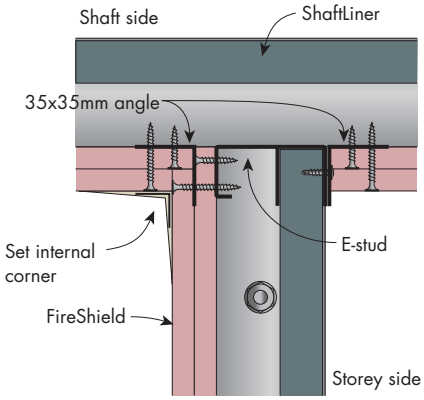


FIGURE 23 Shaft Wall Intersecting Wall
Detail

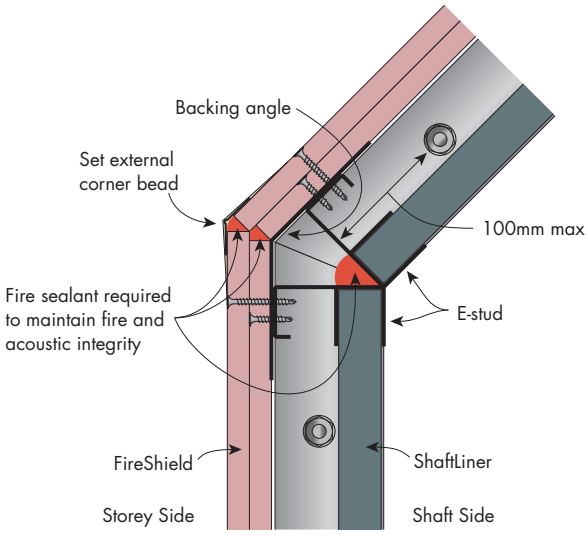


FIGURE 24 Shaft Wall Angled Corner
Plan view

SHAFT WALL JUNCTIONS WITH STRUCTURAL MEMBERS AND CONTROL JOINT – PLAN VIEW

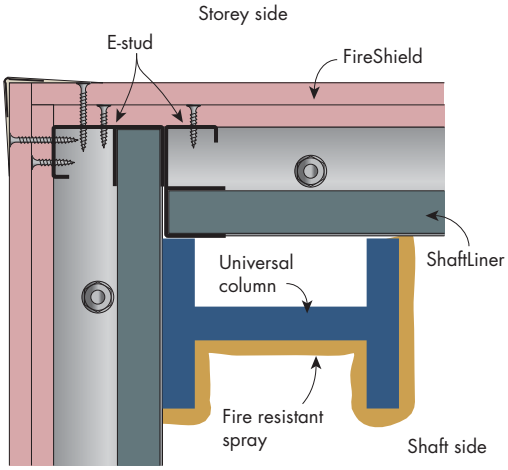


FIGURE 25 Shaft Wall Intersecting Column Detail
Plan view

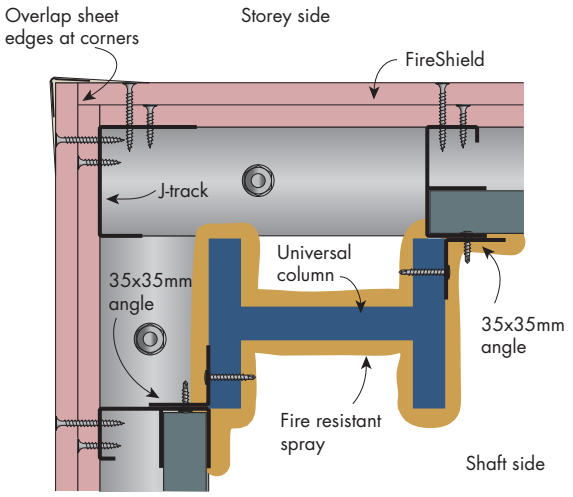


FIGURE 26 Shaft Wall Intersecting Column Detail
Plan view

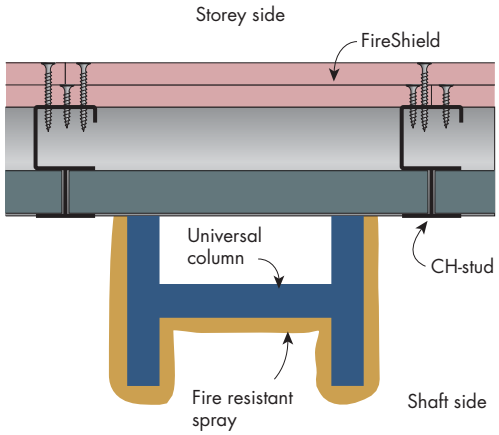


FIGURE 27 Shaft Wall Junction Column Detail
Plan view

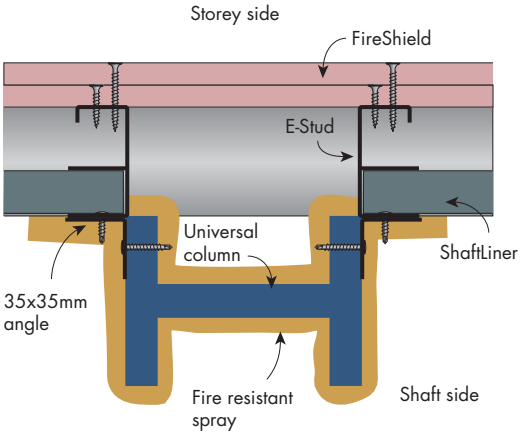


FIGURE 28 Shaft Wall Junction Column Detail
Plan view

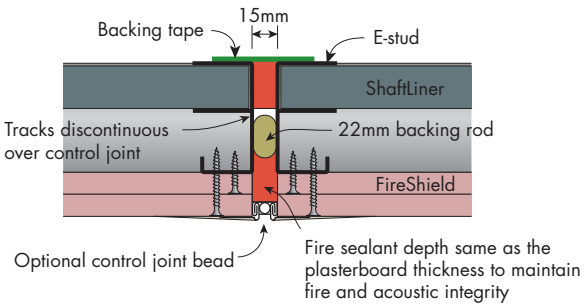


FIGURE 29 Shaft Wall Control Joint
Plan view

SHAFT WALL DOORS – ELEVATION AND PLAN VIEWS

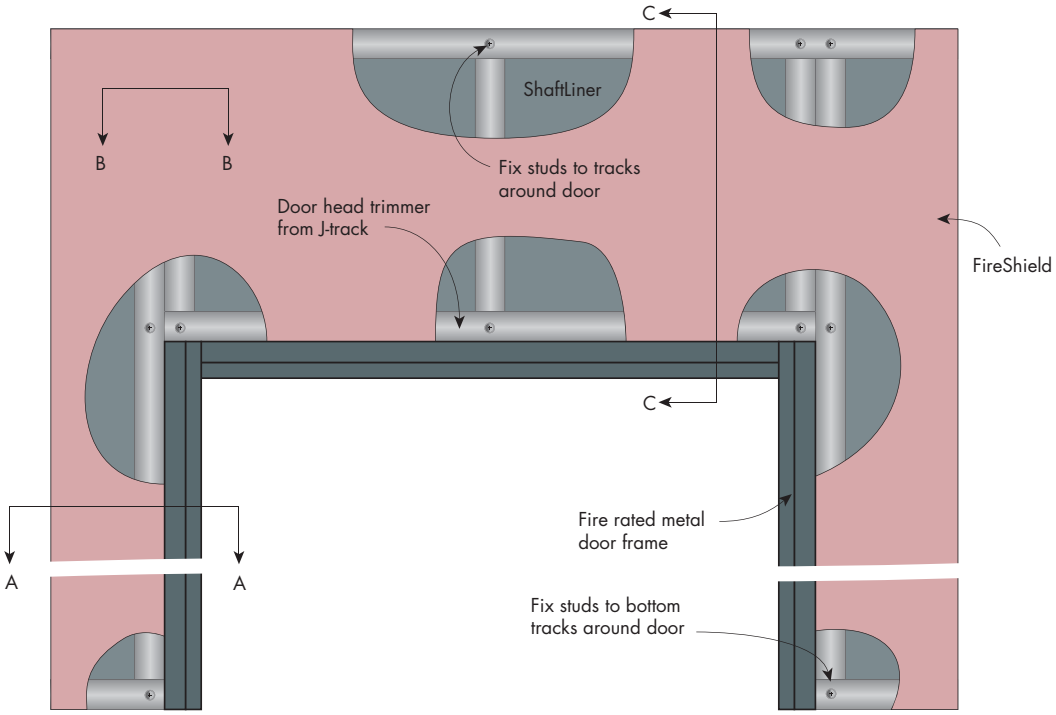


FIGURE 30 Shaft Wall Door
Elevation

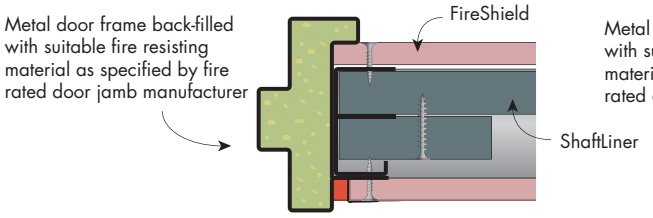


FIGURE 31 Section A-A System KSHW2
Example only – Plan view

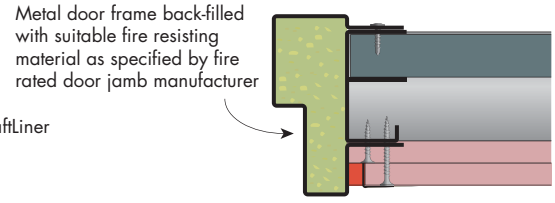


FIGURE 32 Section A-A System KSHW1/3
Example only – Plan view

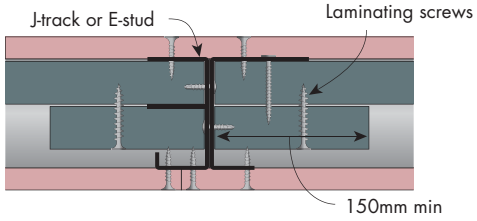


FIGURE 33 Section B-B System KSHW2
Plan view

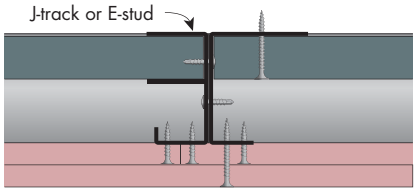


FIGURE 34 Section B-B System KSHW1/3
Example only – Plan view

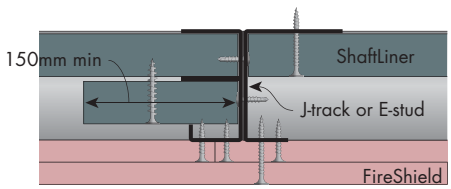


FIGURE 35 Section B-B Lift Landing Door
Example Only – Plan view

SHAFT WALL DOORS – ELEVATIONS

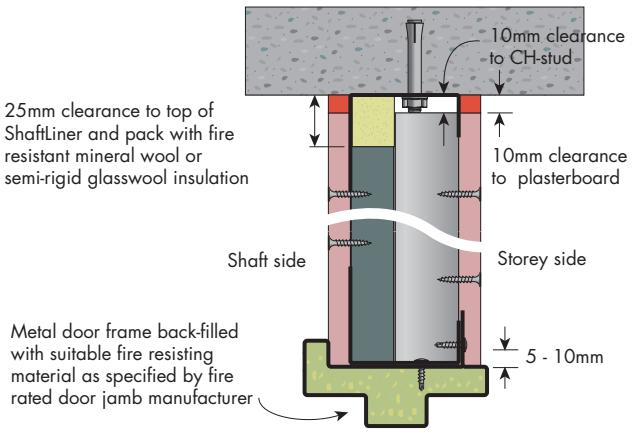


FIGURE 36 Section C-C System KSHW2
Example only

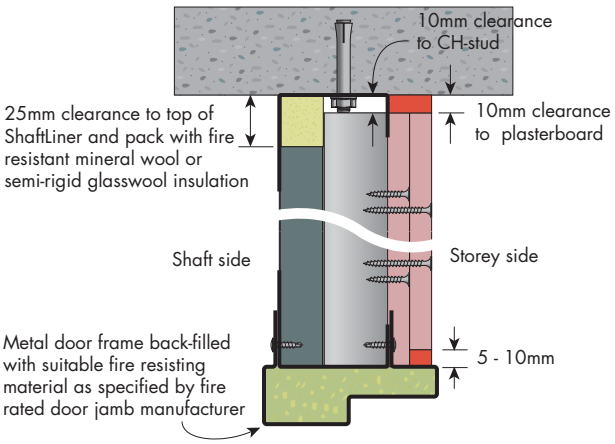


FIGURE 37 Section C-C System KSHW1/3
Example only

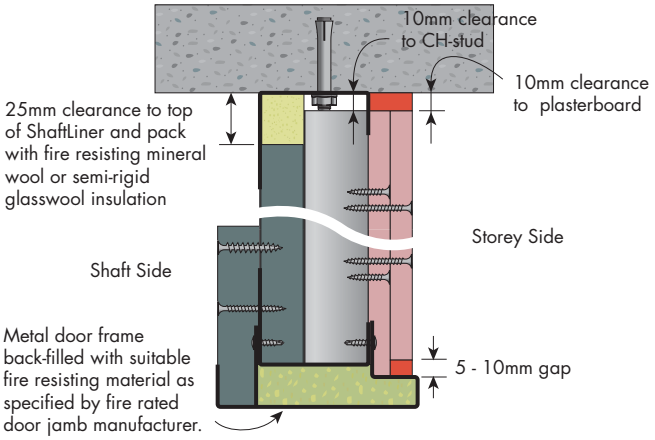


FIGURE 38 Section C-C Lift Landing Door
Example only

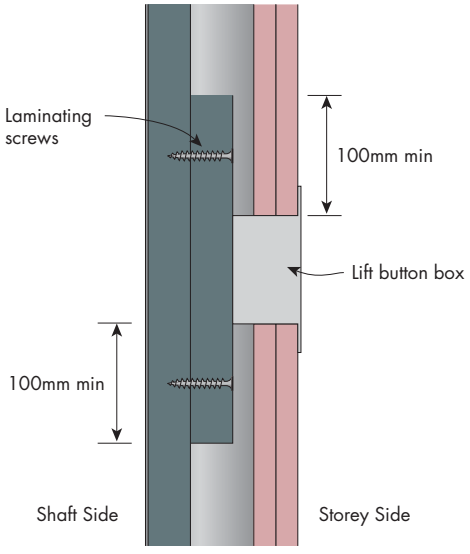


FIGURE 39 Lift Button Box Detail 1

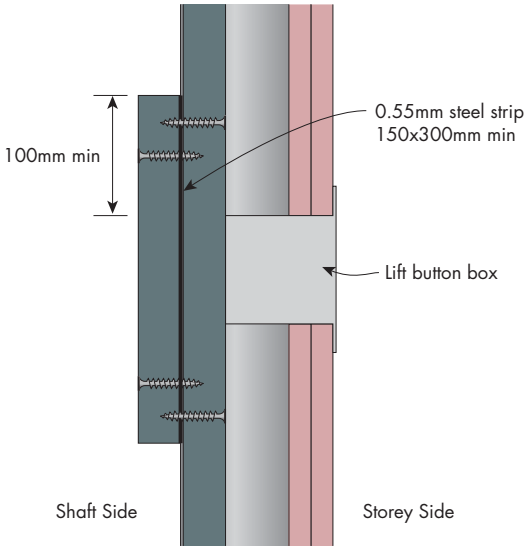
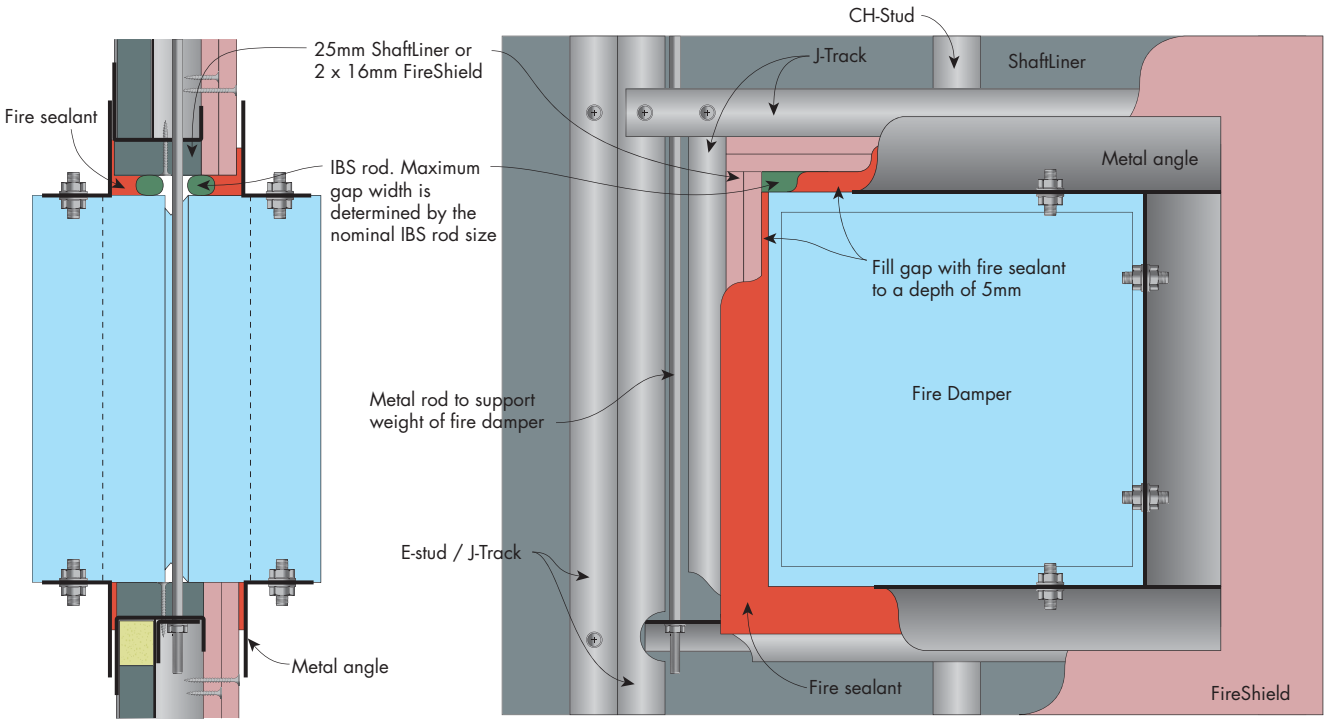


FIGURE 40 Lift Button Box Detail 2

FIRE PENETRATIONS – ELEVATION

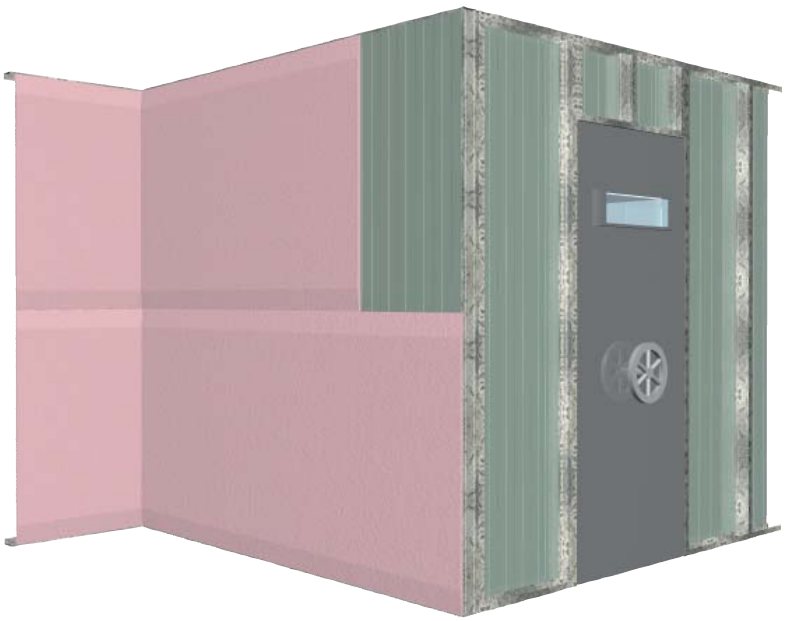


Refer to fire damper manufacturer for specific installation detail.

FIGURE 41 Fire Damper
Example only

3.3.2

Security Walls



INTRODUCTION

Security wall is an upgrade solution to improve security for any wall system. Applications for security wall can include common walls in multi-residential apartments and hotels, partitioning in shopping centres and retail outlets such as pharmacies.

The system uses a sheet metal barrier that is installed as part of the framing construction. The construction is cost-effective as it allows simple and quick assembly.

The security wall upgrade may be applied to any Knauf single, staggered or double stud wall system without reducing fire and acoustic performance.

INSTALLATION

[For General Requirements, Framing, Plasterboard Layout and Plasterboard Fixing refer to Section 3.1.1]
Use expanded mesh or metal sheeting with a low corrugation profile. This will allow easy fixing to the stud and room for insulation.
Fix metal sheets vertically.
Install additional studs to coincide with corrugations as required. *[Refer to Construction Details]*
Cut neat penetrations in the sheet metal panel where access to services is required.
Fix metal sheeting to the studs using screws or rivets at 500mm centres. Keep the flatter side of the sheet metal facing towards the plasterboard.

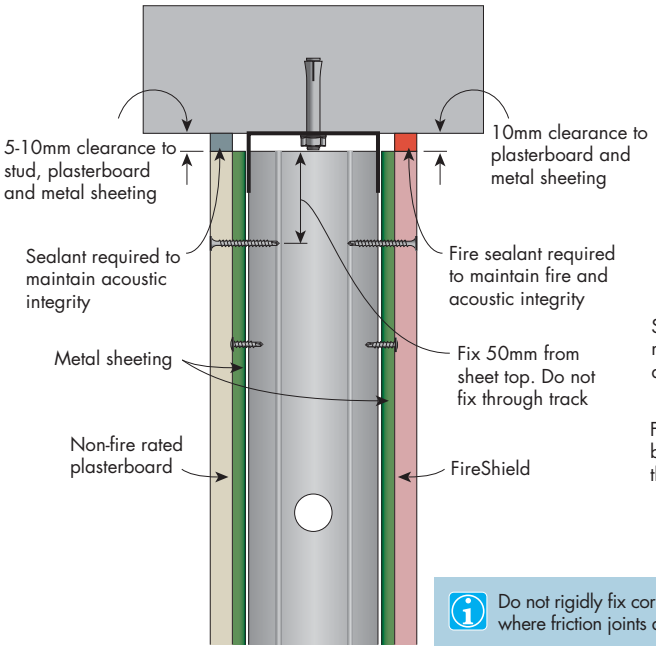


FIGURE 1 Wall Head to Slab
With metal sheeting – Elevation

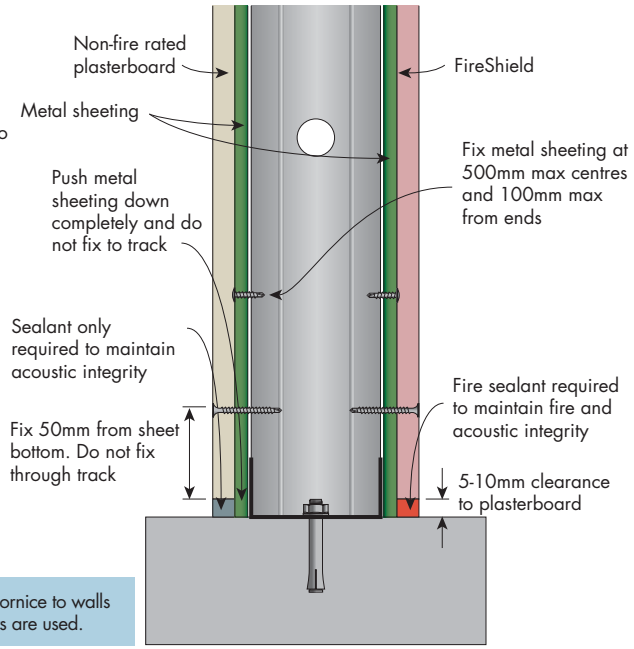


FIGURE 2 Wall Base to Slab
With metal sheeting – Elevation

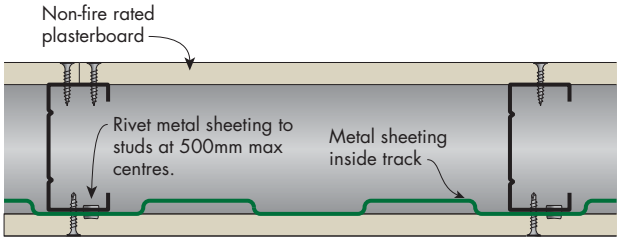


FIGURE 3 Metal Sheeting Inside Track
Plan view

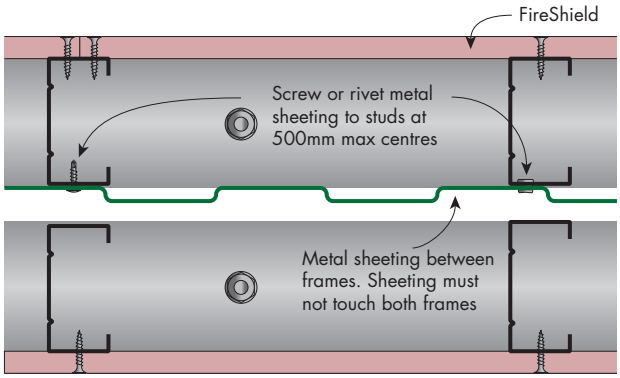


FIGURE 4 Metal Sheeting Double Stud Wall
Plan view

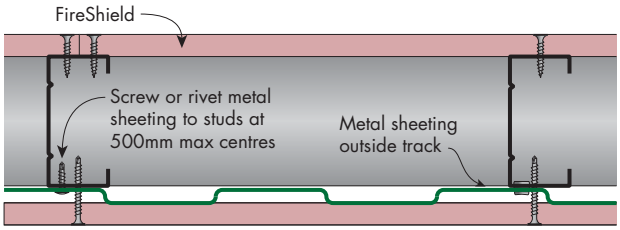


FIGURE 5 Metal Sheeting Outside Track
Plan view

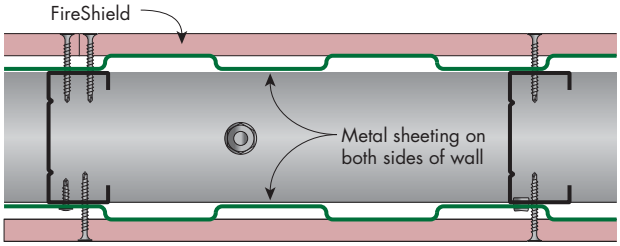


FIGURE 6 Metal Sheeting Two Layers
Plan view

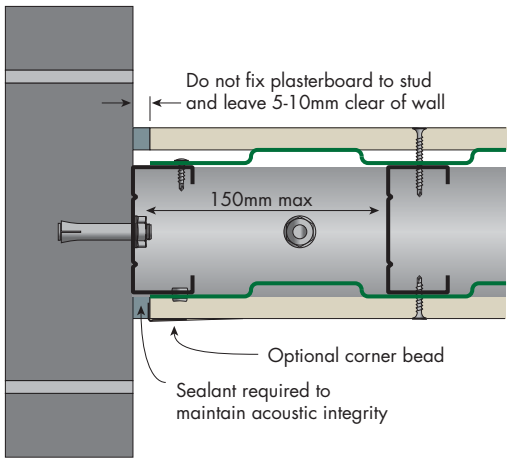


FIGURE 7 Control Joint at Masonry Wall
Plan view

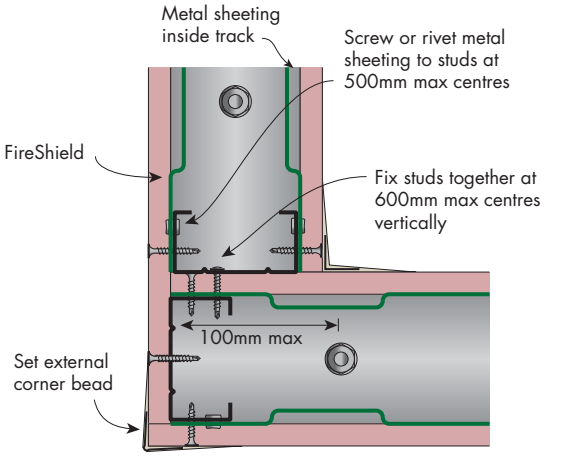


FIGURE 8 Corner Detail

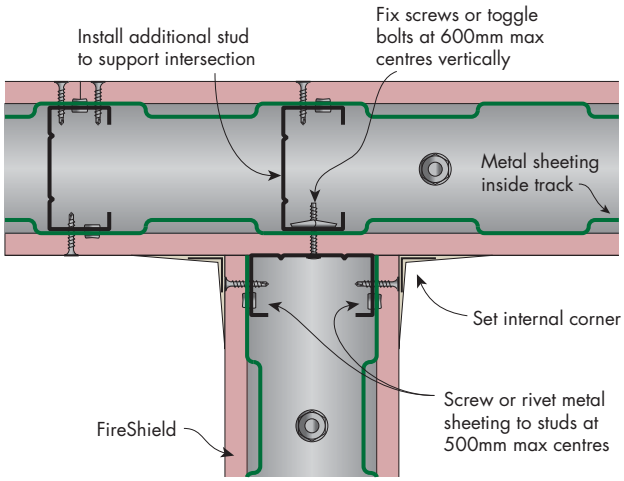


FIGURE 9 Intersecting Wall Detail

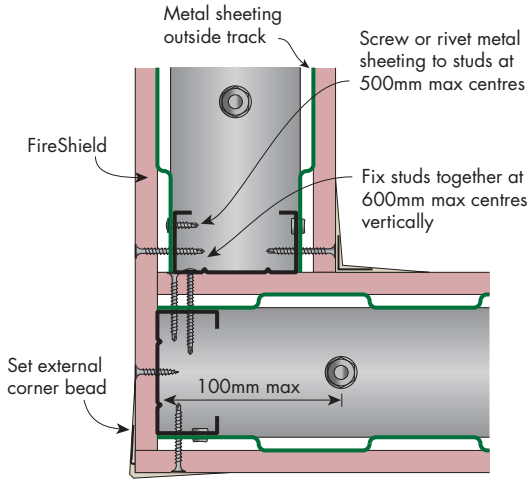


FIGURE 10 Corner Detail

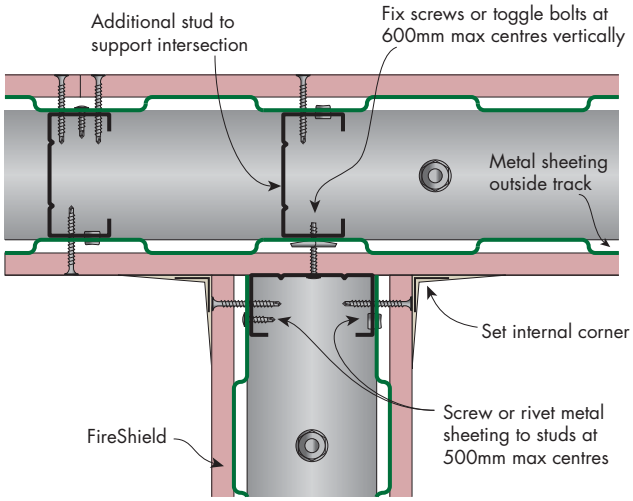


FIGURE 11 Intersecting Wall Detail

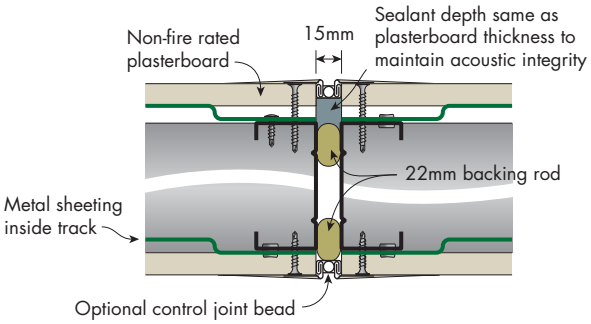


FIGURE 12 Control Joint

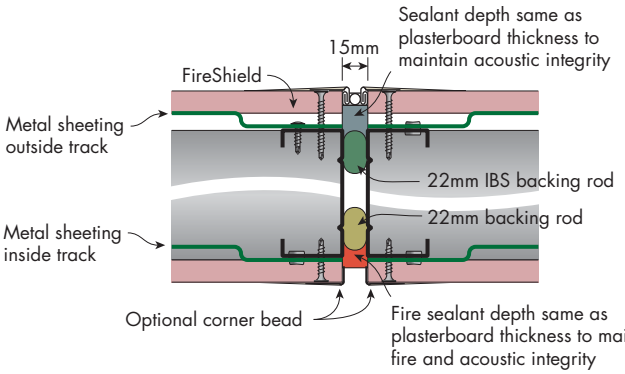


FIGURE 13 Fire-Rated Control Joint

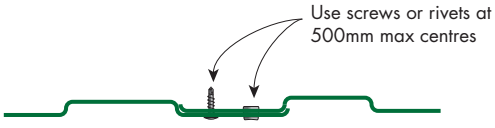


FIGURE 14 Metal Sheeting Overlap

3.3.3

Timber Separating Walls

INTRODUCTION

Timber double stud walls are commonly used as separating walls, providing fire safety and acoustic separation between dwellings.

This section only contains construction details for separating walls between dwellings. *[For systems and installation, refer to Section 3.1.2]*

For an alternative separating wall system, use the innovative Knauf InterHome system. *[Refer to the latest InterHome brochure on the website]*

FIRE RATED

TIMBER SEPARATING WALL BASE AND SUSPENDED GROUND FLOOR – ELEVATION

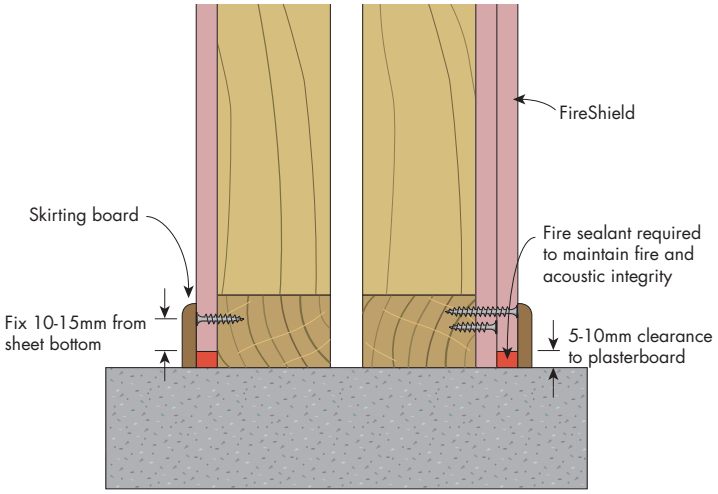


FIGURE 1 Separating Wall Base to Slab

Fill any gaps with fire sealant to maintain fire and acoustic integrity.

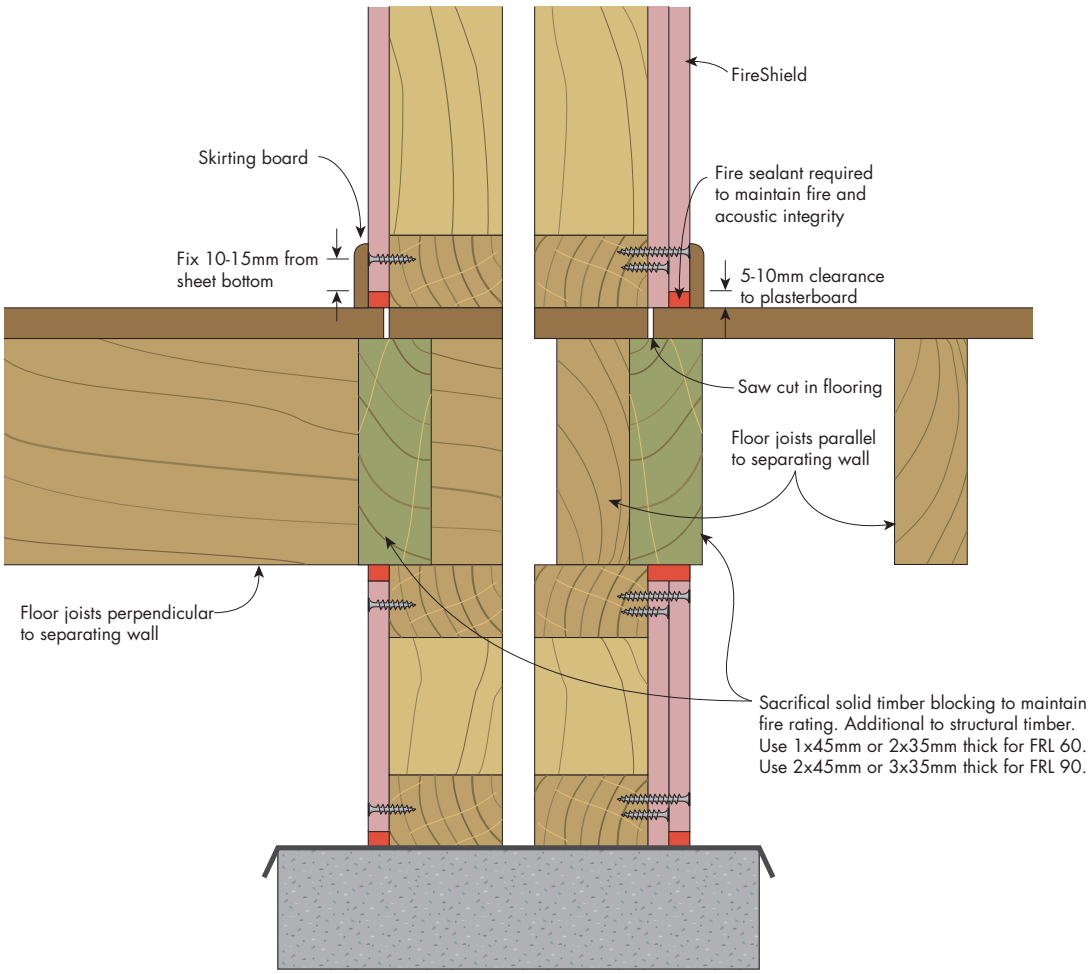


FIGURE 2 Separating Wall with Suspended Ground Floor

TIMBER SEPARATING WALL WITH UPPER STOREY FLOOR – ELEVATION

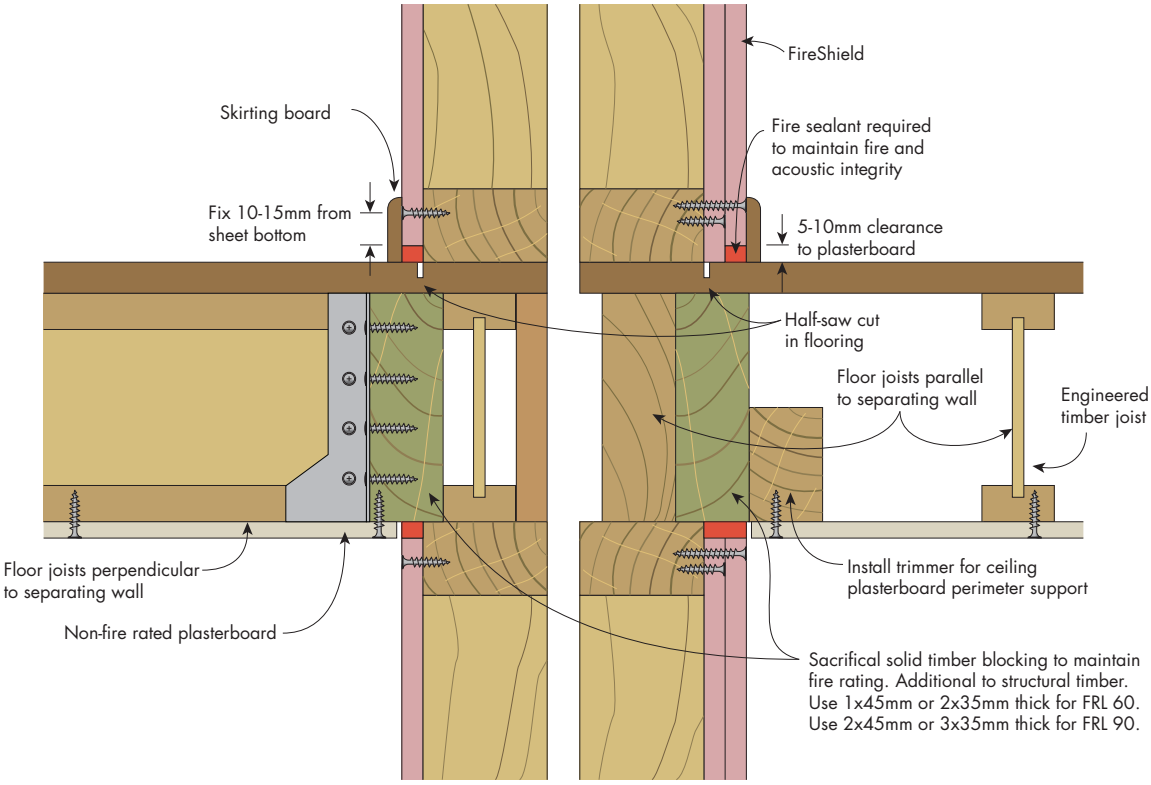


FIGURE 3 Separating Wall with Upper Storey Floor

Fill any gaps with fire sealant to maintain fire and acoustic integrity.

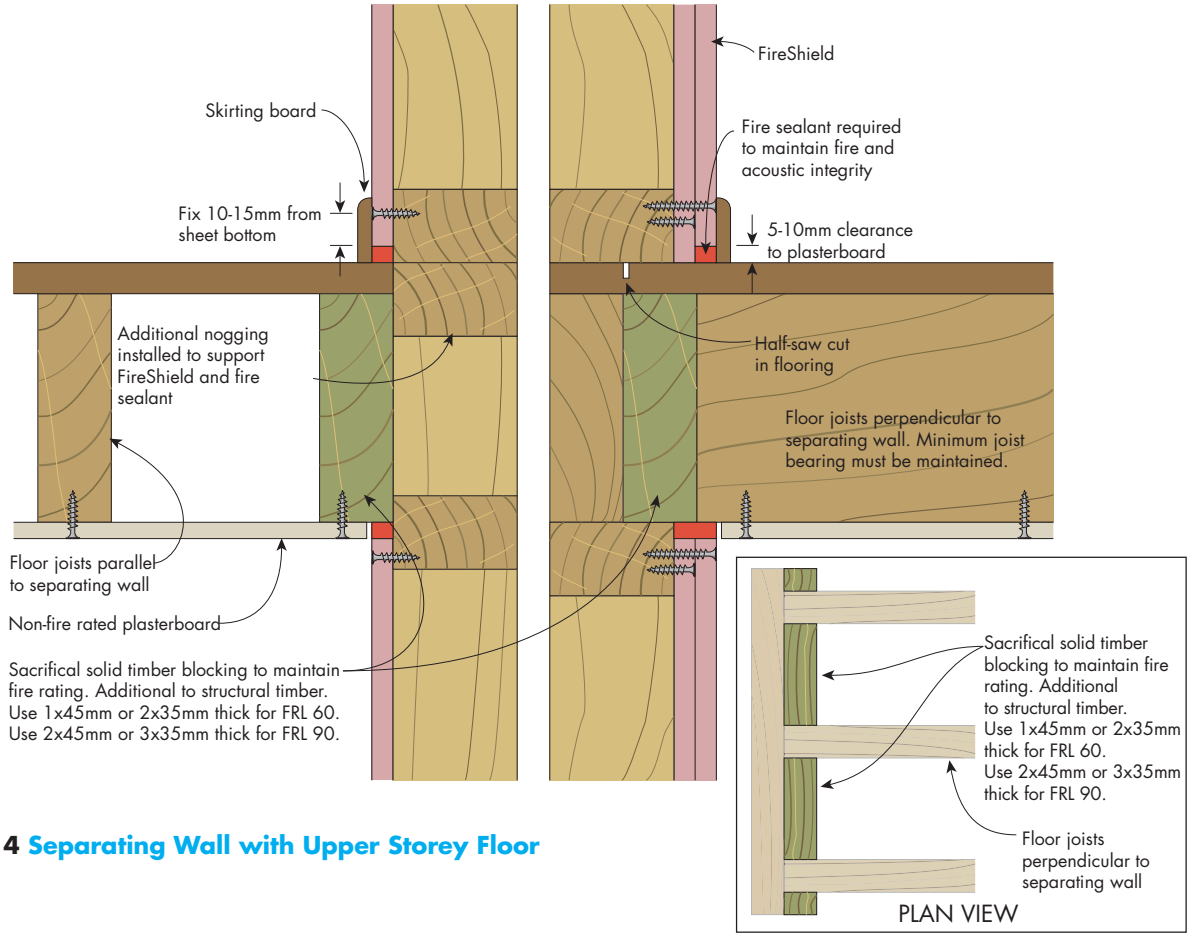


FIGURE 4 Separating Wall with Upper Storey Floor

TIMBER SEPARATING WALL ROOF DETAIL – ELEVATION

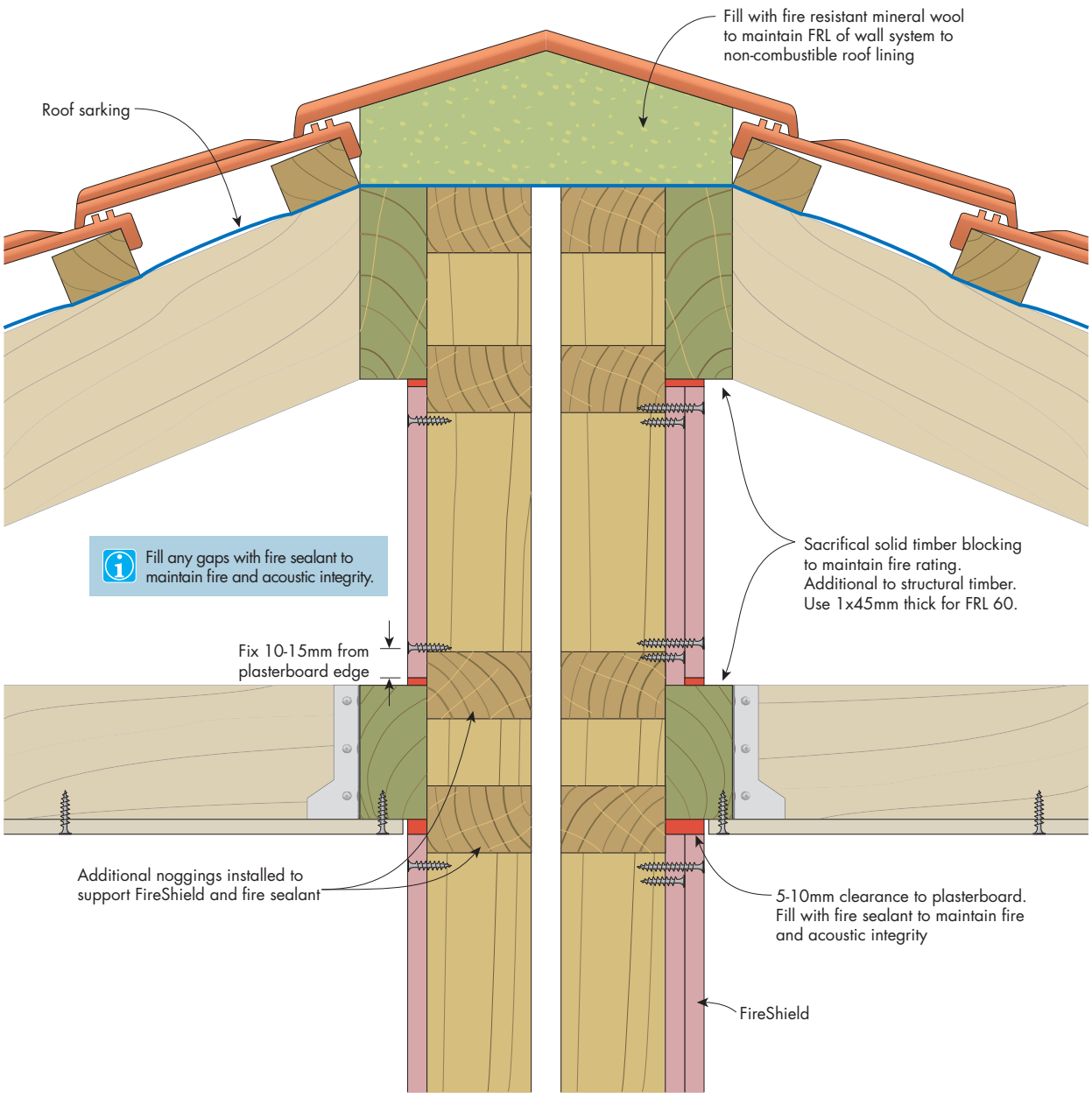


FIGURE 5 Separating Wall with Perpendicular Roof Trusses

TIMBER SEPARATING WALL ROOF DETAIL – ELEVATION

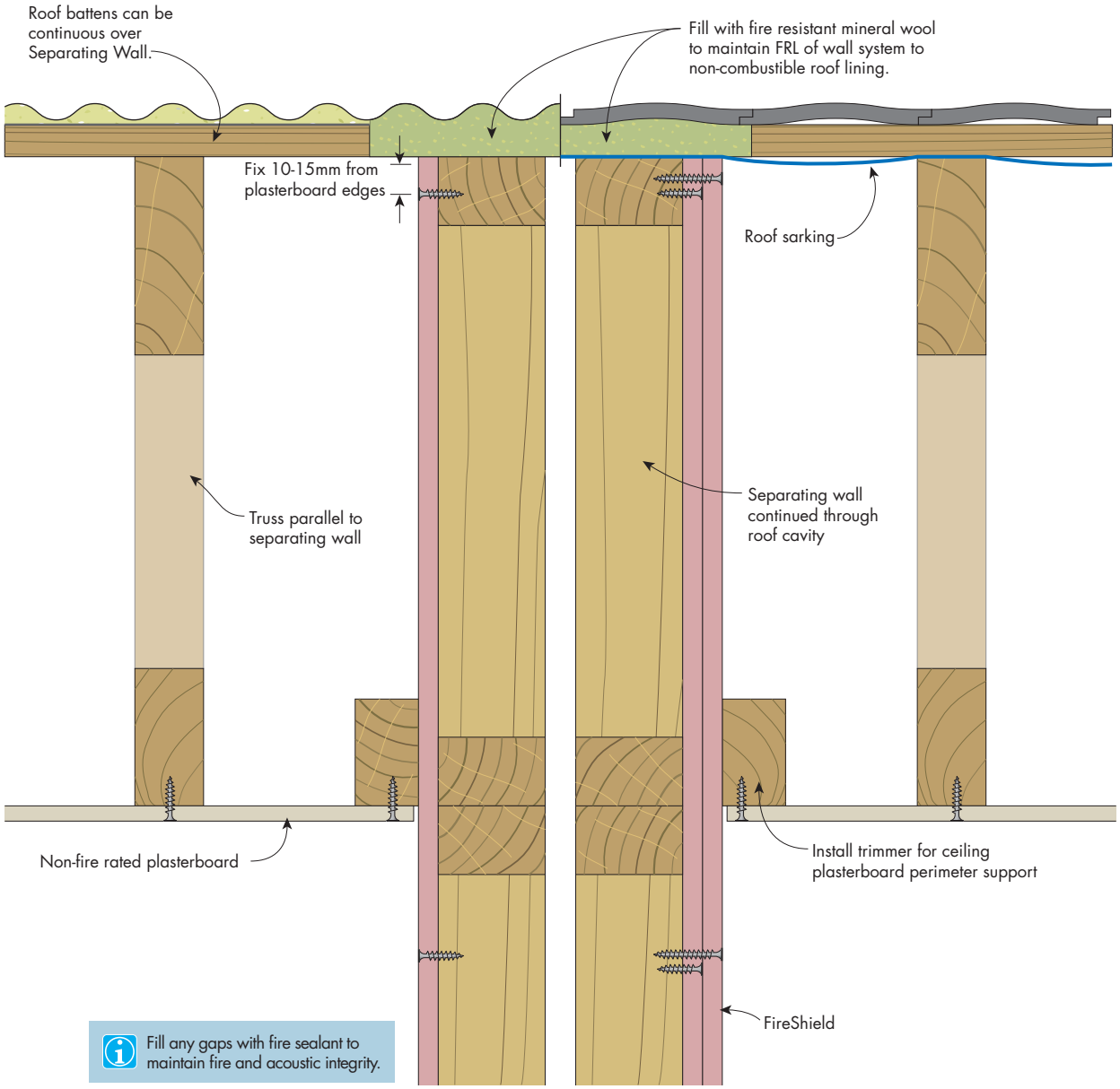


FIGURE 6 Separating Wall with Parallel Roof Trusses

TIMBER SEPARATING WALL ROOF DETAIL – ELEVATION

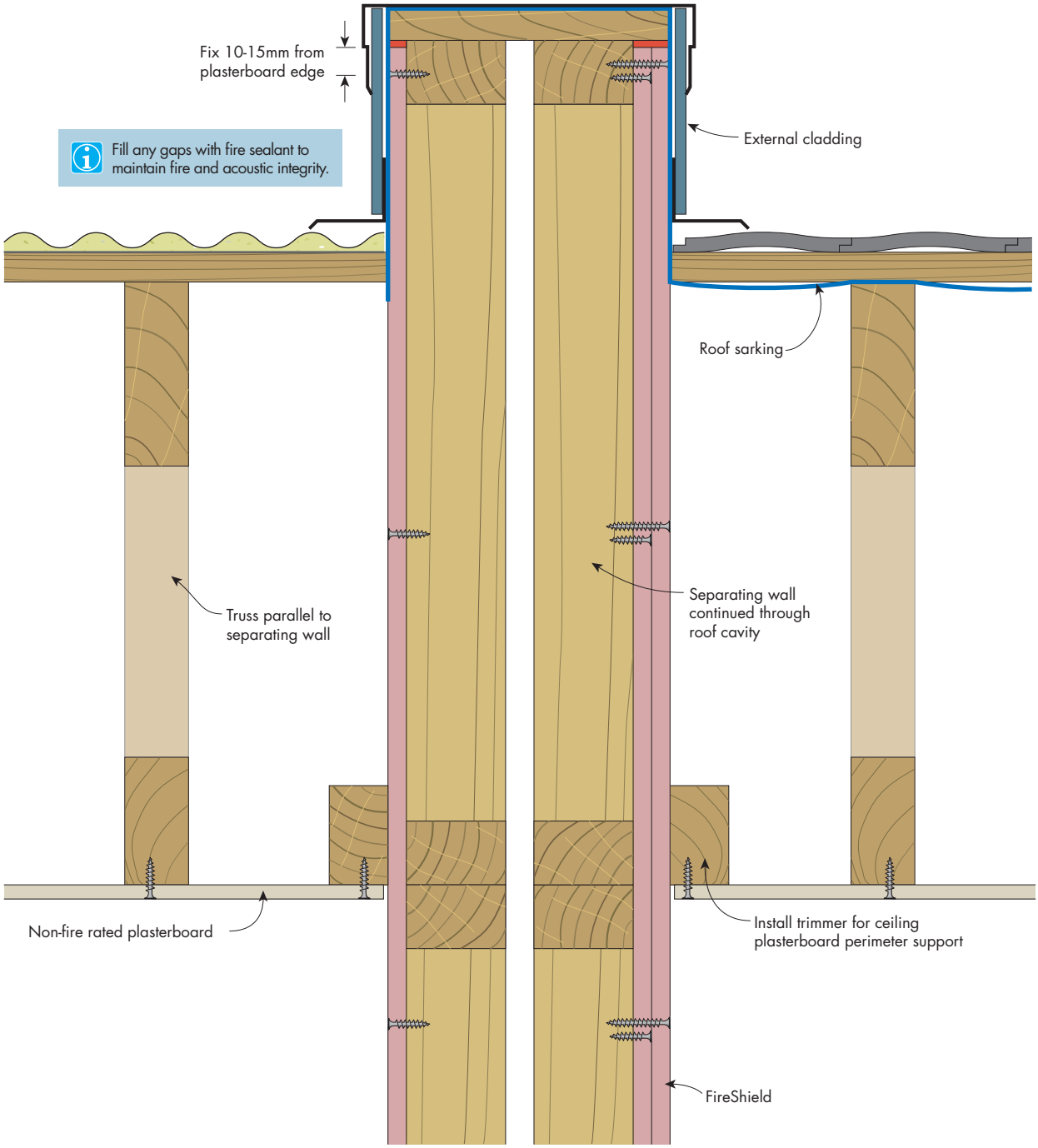


FIGURE 7 Separating Wall to Parapet Roof with Parallel Roof Trusses

TIMBER SEPARATING WALL ROOF DETAIL WITH EXTERNAL WALL – ELEVATION

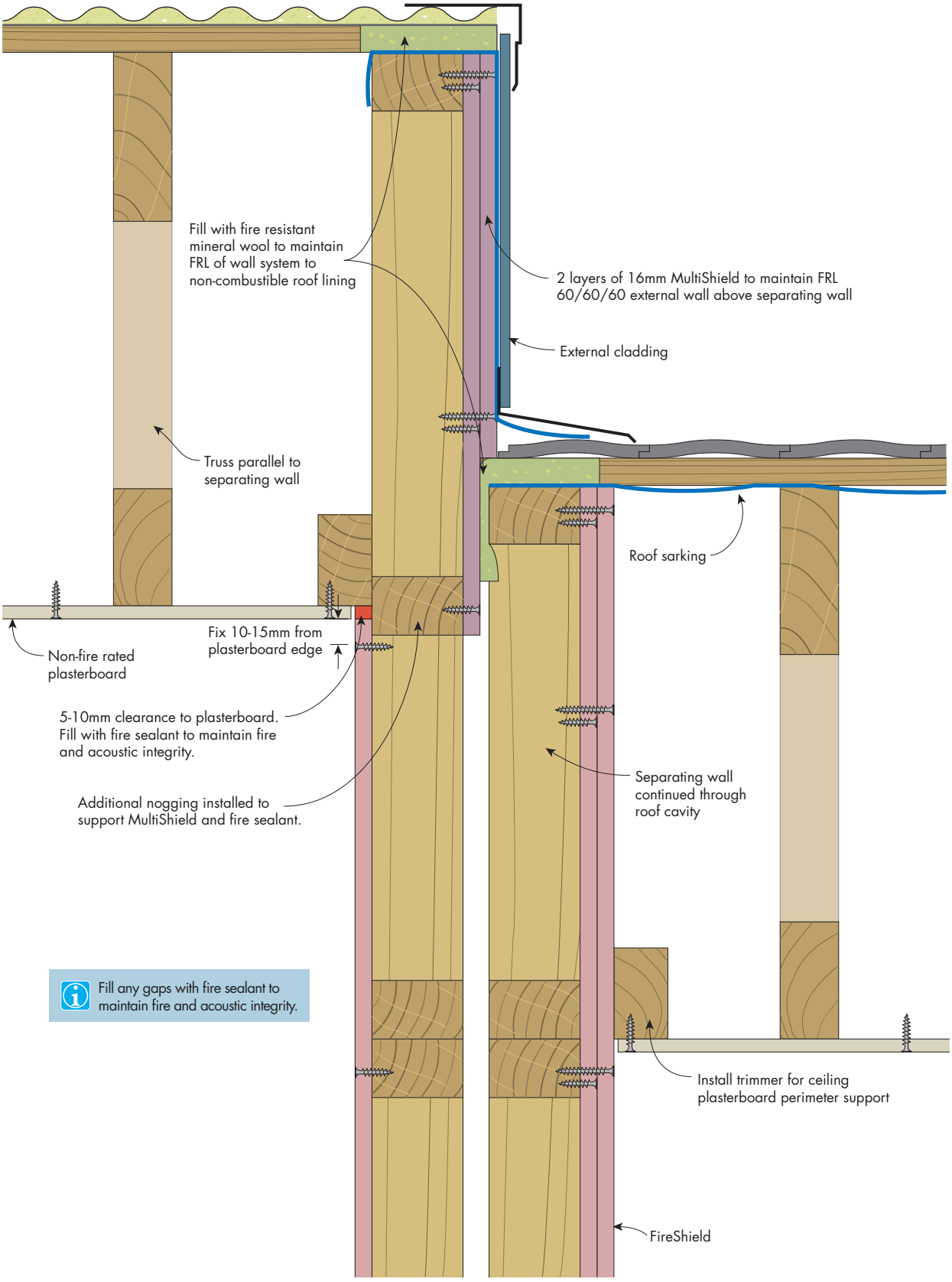


FIGURE 8 Separating Wall with External Wall Above

TIMBER SEPARATING WALL ROOF DETAIL – ELEVATION

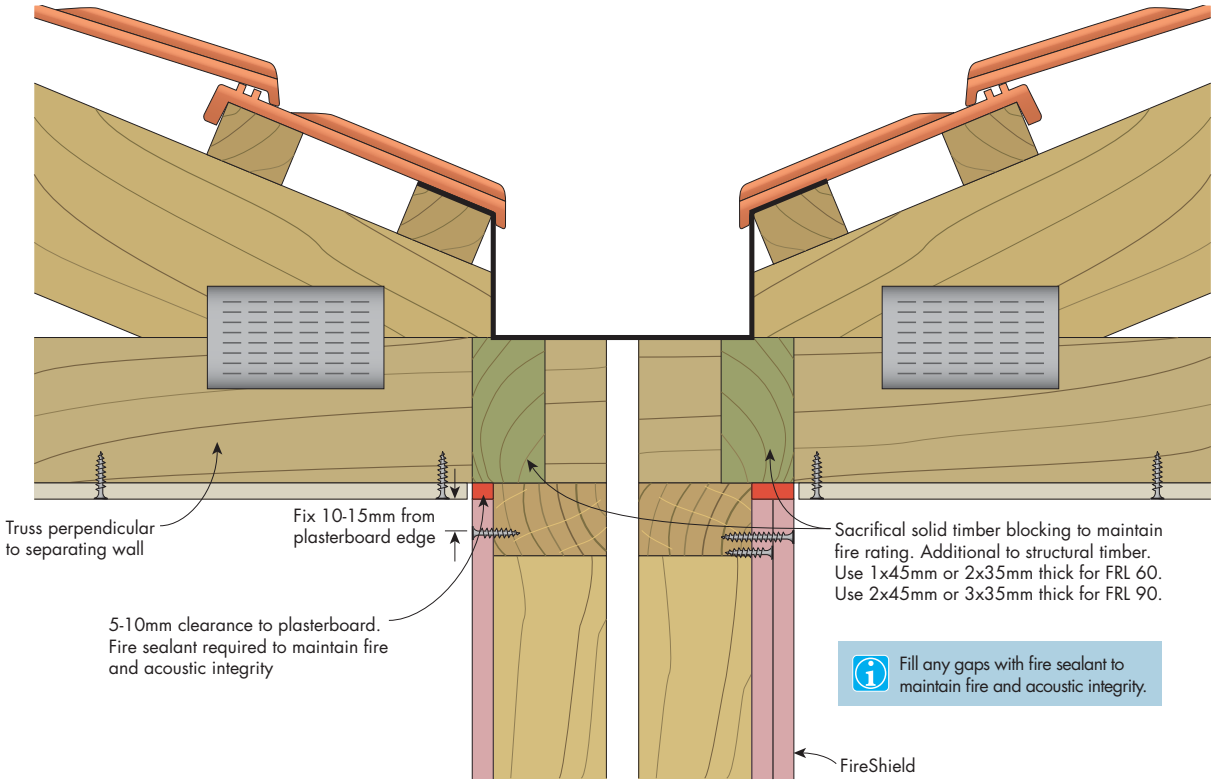


FIGURE 9 Separating Wall to Box Gutter with Perpendicular Roof Trusses

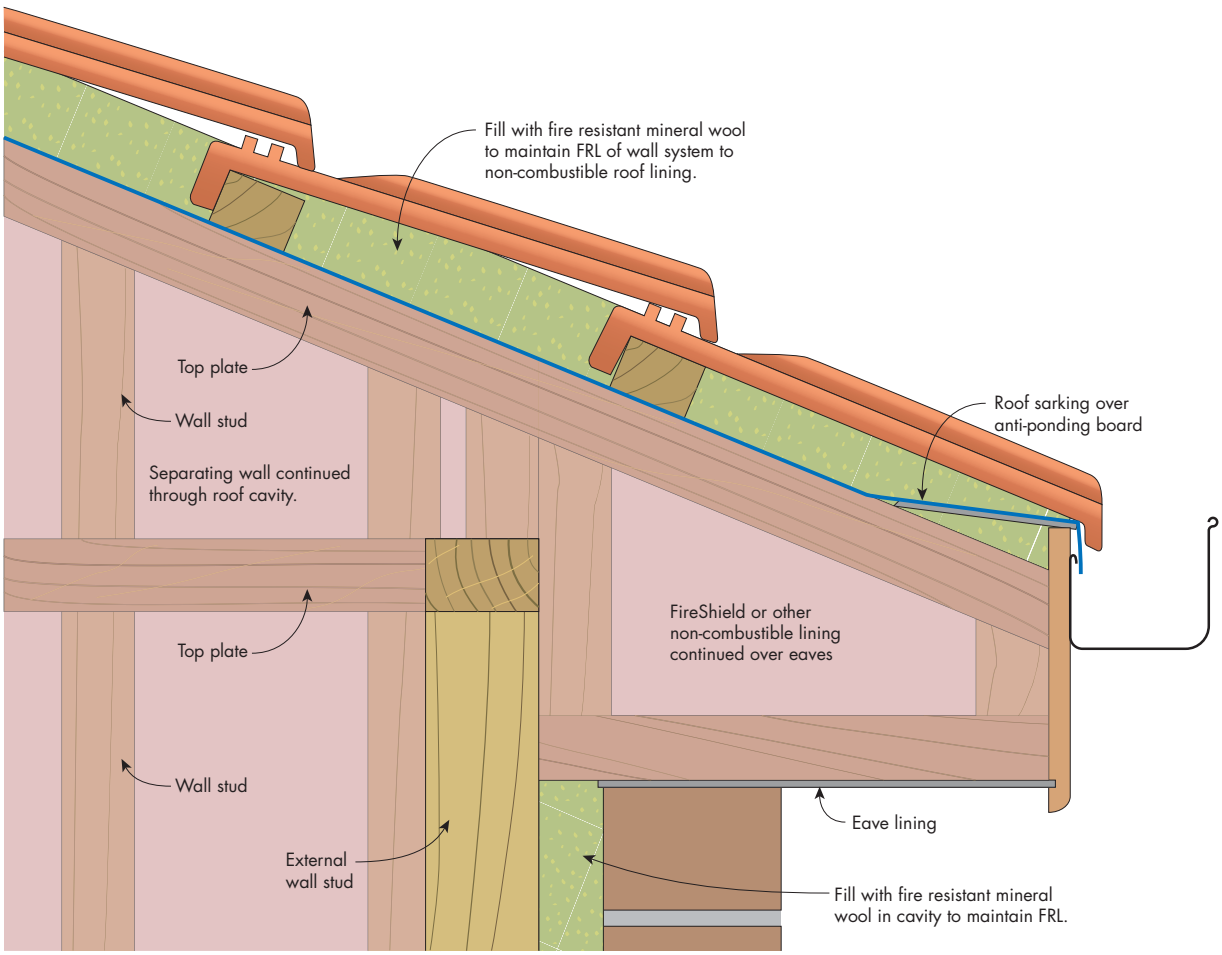


FIGURE 10 Separating Wall Over Eaves Lining

TIMBER SEPARATING WALL TO EXTERNAL WALL – ELEVATION

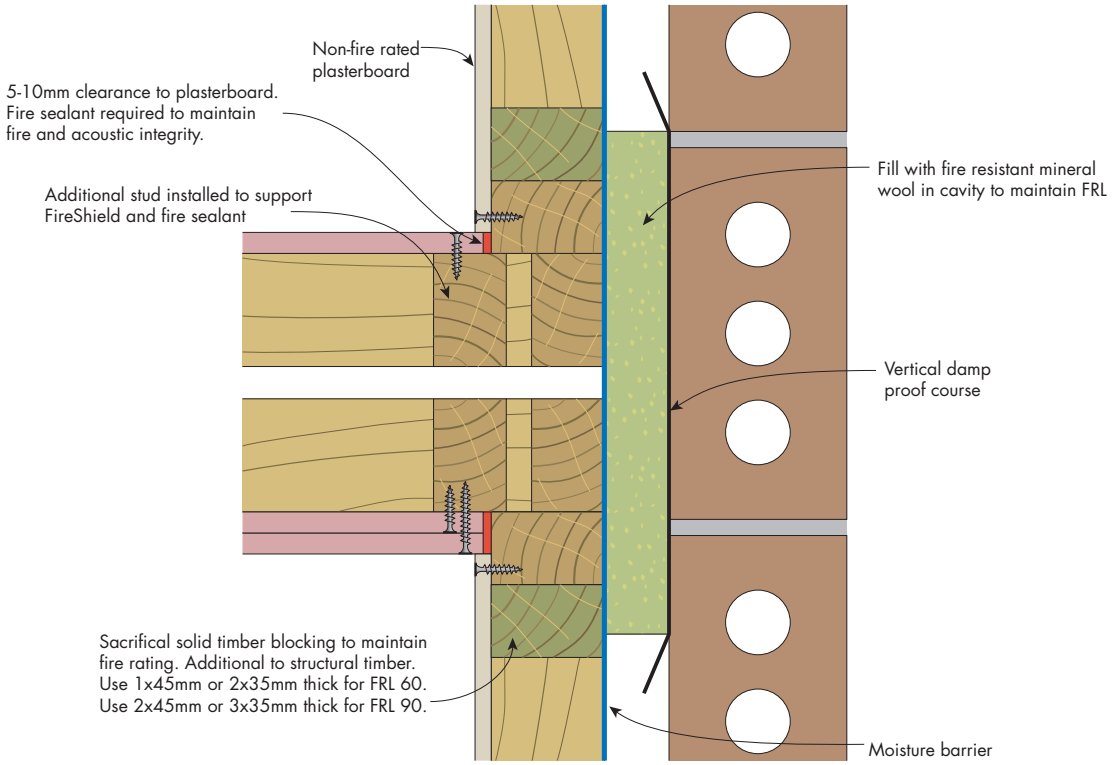


FIGURE 11 Separating Wall to External Brick Wall

Fill any gaps with fire sealant to maintain fire and acoustic integrity.

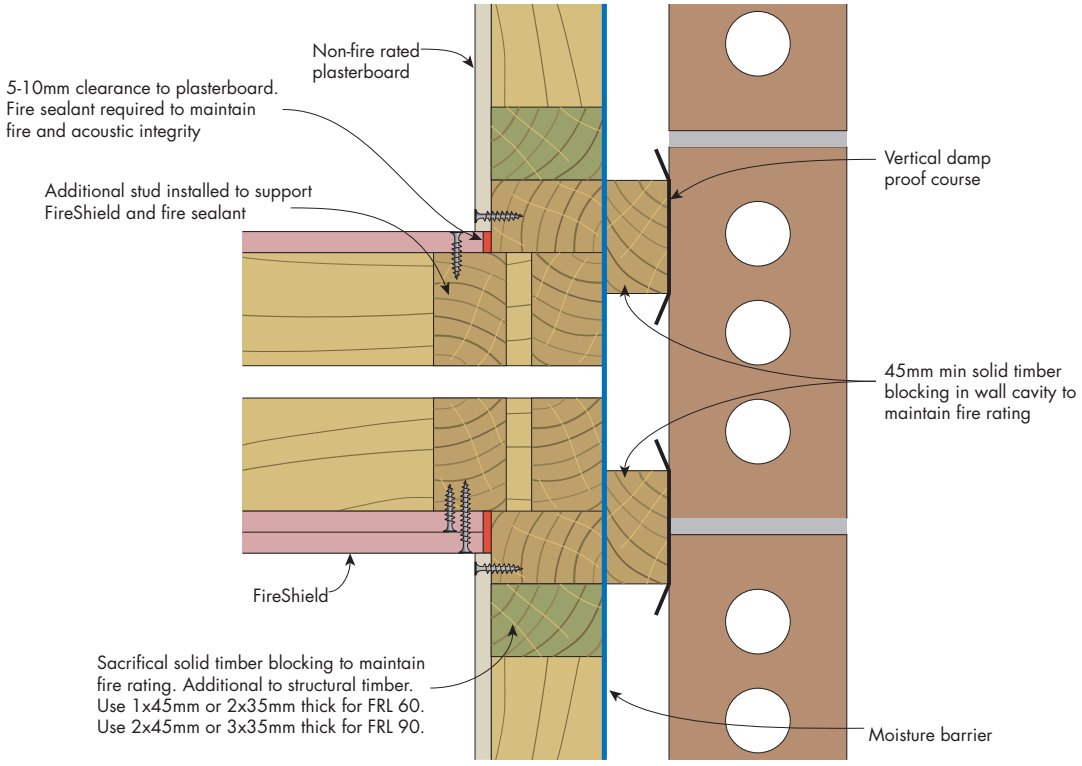


FIGURE 12 Separating Wall to External Brick Wall

TIMBER SEPARATING WALL TO EXTERNAL WALL – ELEVATION

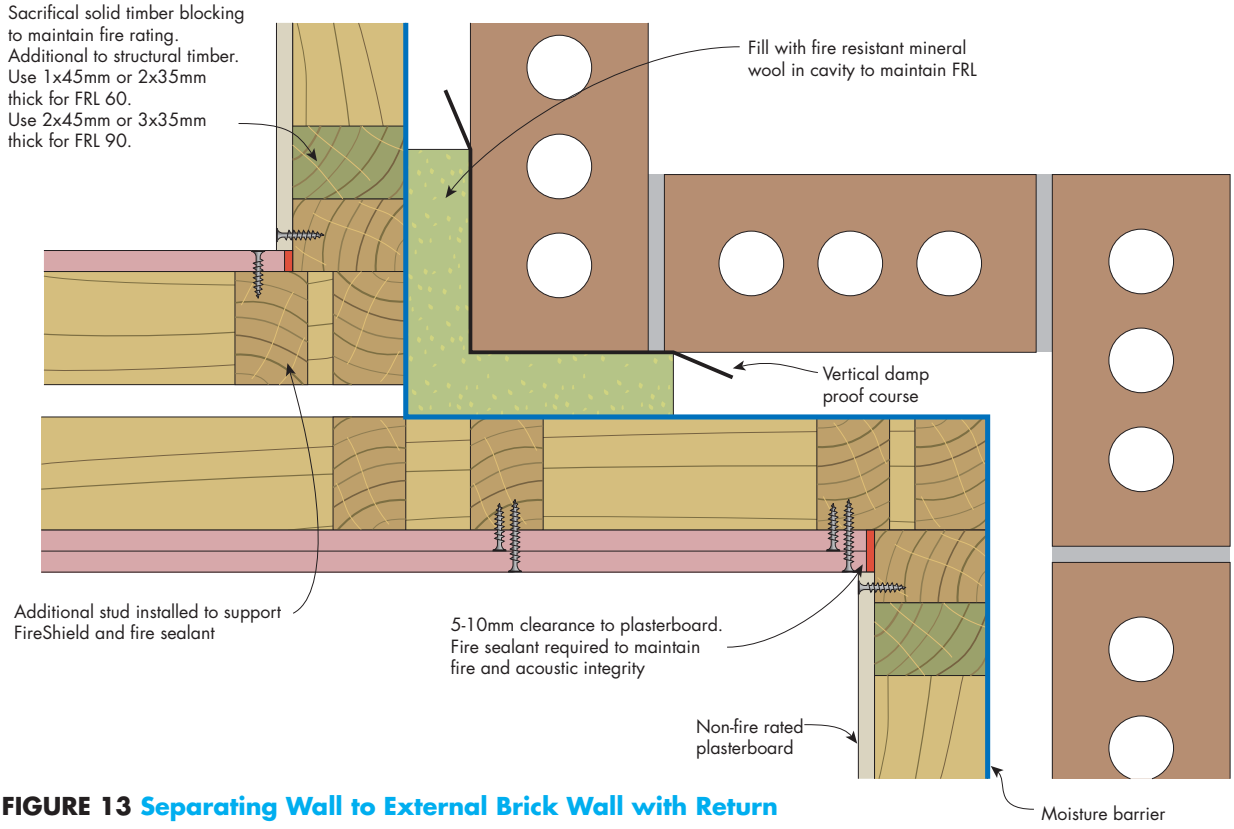


FIGURE 13 Separating Wall to External Brick Wall with Return

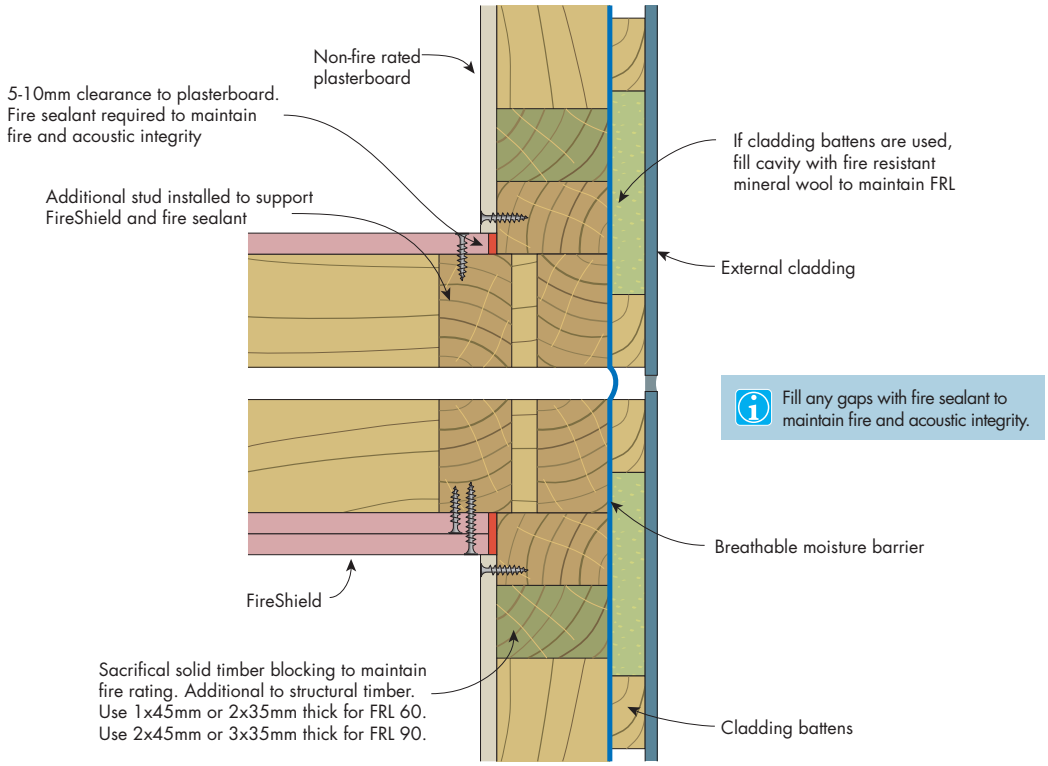
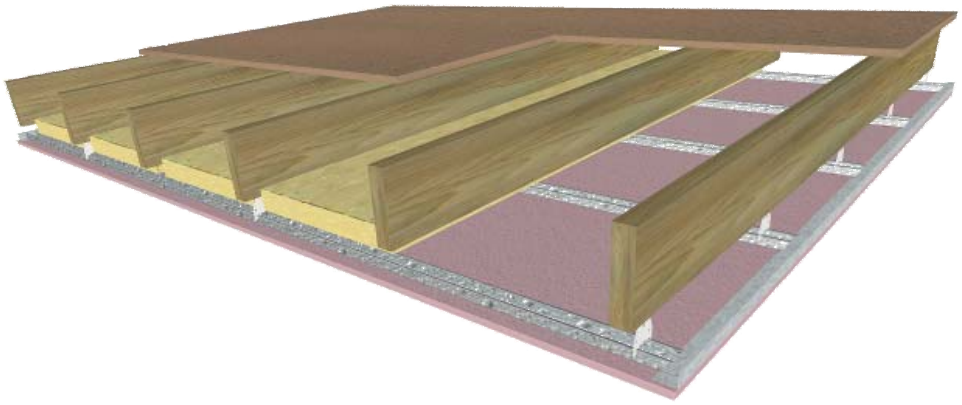


FIGURE 14 Separating Wall to External Clad Wall

3.4.1

Ceilings Under a Floor and Under a Roof



INTRODUCTION

This section contains a wide range of ceiling solutions that can meet aesthetic, sound insulation and fire protection requirements. These ceiling solutions are for applications under a floor and under a roof. They are either directly fixed to joists or are installed to a concealed suspended steel frame.

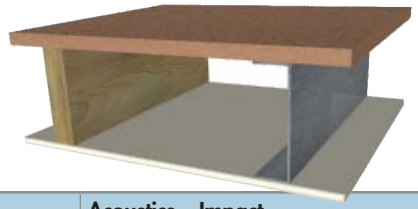
Most fire rated ceilings as per Building Code of Australia (BCA) requirements are rated from below only. *[For ceilings fire rated from above, or fire rated from above and below refer to Sections 3.5.1 and 3.5.2]*

Exterior ceiling applications have additional requirements *[Refer to Section 2.2 External ceilings]*. Installation instructions for curved ceilings are in Section 3.6.6.

This section includes systems, installation instructions and construction details for general and fire rated ceilings.

NON-FIRE RATED

KF10-KF19



FLOORING: 19mm min particleboard flooring or timber flooring with either carpet, tiles or left bare

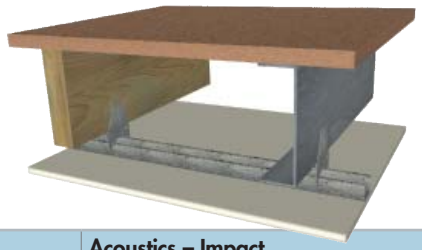
FRAME: 140mm min deep timber or steel joists

[Carpet requires an underlay and tiles require a fibre cement underlay]

[Impact acoustic values determined using insulation]

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF10	1 layer of 10mm MastaShield or SpanShield	44 (37)	46 (40)	45 (39)	39 (41)	78 (76)	Acoustic Report Day Design 3094-26
KF11	2 layers of 10mm MastaShield or SpanShield	47 (41)	48 (43)	47 (42)	38 (40)	76 (74)	
KF14	1 layer of 13mm MastaShield	44 (38)	46 (41)	45 (39)	38 (40)	77 (75)	
KF16	1 layer of 10mm SoundShield	44 (38)	46 (41)	45 (40)	38 (40)	77 (75)	
KF17	2 layers of 10mm SoundShield	48 (42)	49 (44)	48 (43)	37 (39)	75 (73)	
KF18	1 layer of 13mm SoundShield	45 (40)	46 (41)	45 (40)	38 (40)	76 (74)	
KF19	2 layers of 13mm SoundShield	49 (44)	49 (45)	48 (44)	37 (39)	73 (71)	

KF20-KF29



FLOORING: 19mm min particleboard flooring or timber flooring with either carpet, tiles or left bare

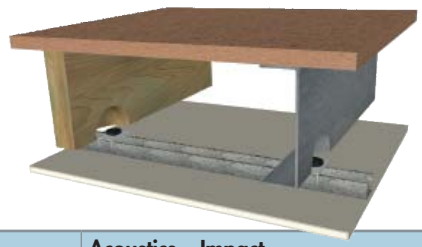
FRAME: 140mm min deep timber or steel joists with A-clips and furring channel

[Carpet requires an underlay and tiles require a fibre cement underlay]

[Impact acoustic values determined using insulation]

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF20	1 layer of 10mm MastaShield or SpanShield	47 (41)	53 (46)	52 (45)	39 (41)	71 (70)	Acoustic Report Day Design 3094-26
KF21	2 layers of 10mm MastaShield or SpanShield	50 (44)	55 (49)	54 (48)	38 (40)	68 (68)	
KF24	1 layer of 13mm MastaShield	48 (42)	53 (46)	52 (45)	38 (40)	69 (69)	
KF26	1 layer of 10mm SoundShield	48 (42)	53 (46)	52 (45)	38 (40)	69 (69)	
KF27	2 layers of 10mm SoundShield	51 (46)	56 (49)	55 (48)	37 (39)	67 (67)	
KF28	1 layer of 13mm SoundShield	49 (43)	53 (47)	52 (46)	38 (40)	68 (68)	
KF29	2 layers of 13mm SoundShield	52 (47)	56 (50)	55 (49)	37 (39)	65 (65)	

KF30-KF39



FLOORING: 19mm min particleboard flooring or timber flooring with either carpet, tiles or left bare

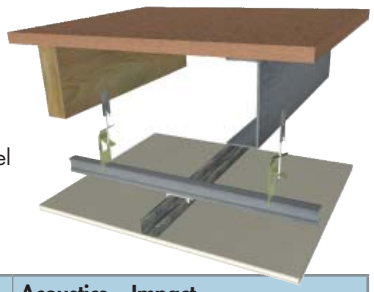
FRAME: 140mm min deep timber or steel joists with resilient mounts and furring channel

[Carpet requires an underlay and tiles require a fibre cement underlay]

[Impact acoustic values determined using insulation]

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF30	1 layer of 10mm MastaShield or SpanShield	45 (40)	50 (42)	50 (42)	28 (32)	68 (67)	Acoustic Report Day Design 3094-26
KF31	2 layers of 10mm MastaShield or SpanShield	49 (44)	54 (48)	54 (47)	27 (31)	66 (65)	
KF34	1 layer of 13mm MastaShield	46 (41)	51 (44)	51 (44)	27 (31)	67 (66)	
KF36	1 layer of 10mm SoundShield	46 (41)	51 (44)	51 (44)	27 (31)	67 (66)	
KF37	2 layers of 10mm SoundShield	51 (45)	56 (50)	55 (49)	26 (30)	64 (63)	
KF38	1 layer of 13mm SoundShield	48 (43)	53 (47)	52 (47)	27 (31)	66 (65)	
KF39	2 layers of 13mm SoundShield	53 (48)	57 (52)	57 (52)	26 (30)	63 (62)	

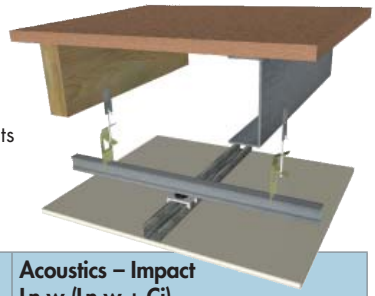
KF40-KF49



FLOORING: 19mm min particleboard flooring or timber flooring with either carpet, tiles or left bare
FRAME: 140mm min deep timber or steel joists with suspended ceiling frame and furring channel
[Carpet requires an underlay and tiles require a fibre cement underlay]
[Impact acoustic values determined using insulation]

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF40	1 layer of 10mm MastaShield or SpanShield	45 (37)	52 (45)	51 (45)	28 (32)	67 (66)	Acoustic Report Day Design 3094-26
KF41	2 layers of 10mm MastaShield or SpanShield	50 (41)	55 (51)	55 (51)	27 (31)	65 (64)	
KF44	1 layer of 13mm MastaShield	47 (38)	52 (47)	52 (47)	27 (31)	66 (65)	
KF46	1 layer of 10mm SoundShield	47 (38)	52 (47)	52 (47)	27 (31)	66 (65)	
KF47	2 layers of 10mm SoundShield	51 (43)	56 (51)	56 (51)	26 (30)	63 (62)	
KF48	1 layer of 13mm SoundShield	48 (40)	53 (49)	53 (48)	27 (31)	65 (64)	
KF49	2 layers of 13mm SoundShield	53 (45)	57 (53)	57 (53)	26 (30)	62 (61)	

KF50-KF59



FLOORING: 19mm min particleboard flooring or timber flooring with either carpet, tiles or left bare
FRAME: 140mm min deep timber or steel joists with suspended ceiling frame with resilient mounts and furring channel
[Carpet requires an underlay and tiles require a fibre cement underlay]
[Impact acoustic values determined using insulation]

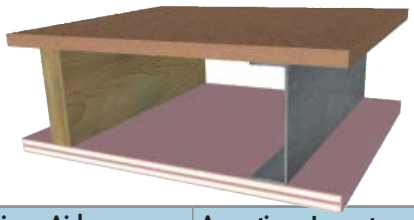
System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF50	1 layer of 10mm MastaShield or SpanShield	46 (38)	54 (48)	53 (47)	28 (32)	67 (66)	Acoustic Report Day Design 3094-26
KF51	2 layers of 10mm MastaShield or SpanShield	50 (42)	58 (53)	58 (52)	27 (31)	65 (64)	
KF54	1 layer of 13mm MastaShield	47 (40)	55 (49)	54 (49)	27 (31)	66 (65)	
KF56	1 layer of 10mm SoundShield	47 (40)	55 (49)	54 (49)	27 (31)	66 (65)	
KF57	2 layers of 10mm SoundShield	52 (44)	59 (54)	59 (54)	26 (30)	63 (62)	
KF58	1 layer of 13mm SoundShield	50 (42)	56 (52)	56 (51)	27 (31)	65 (64)	
KF59	2 layers of 13mm SoundShield	55 (47)	60 (57)	60 (56)	26 (30)	62 (61)	

KF210-KF218

FLOORING: 19mm min particleboard flooring or timber flooring with either carpet, tiles or left bare

FRAME: 140mm min deep timber or steel joists

[Use **MultiShield** in place of **FireShield** for external fire rated ceilings]
[Carpet requires an underlay and tiles require a fibre cement underlay]
[Impact acoustic values determined using insulation]



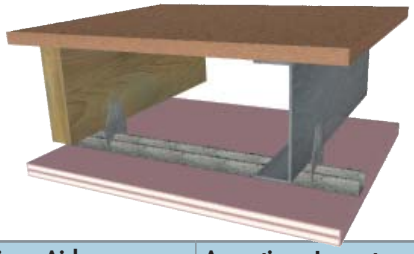
System	FRL Rated from below only	RISF	Plasterboard Ceiling Lining	Max Framing Centres (mm)	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
	Fire Report FAR 2879				No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF210	**30/30/30**	–	1 layer of 13mm FireShield	600	45 (39)	46 (41)	45 (40)	38 (**40**)	77 (75)	Acoustic Report Day Design 3094-26 3094-50
KF211	**60/60/60**	30	2 layers of 13mm FireShield	450	48 (43)	49 (45)	48 (44)	37 (**39**)	75 (73)	
KF212	**60/60/60**	–	1 layer of 16mm FireShield	450	45 (40)	46 (41)	45 (40)	38 (**40**)	76 (74)	
KF213	**60/60/60**	60	1 layer of 13mm FireShield (applied first) plus 1 layer of 16mm FireShield	600	49 (43)	49 (45)	49 (44)	37 (**39**)	75 (73)	
KF214	**60/60/60**	60	2 layers of 16mm FireShield	600	50 (44)	51 (46)	50 (45)	37 (**39**)	73 (71)	
KF215	**90/90/90**	60	2 layers of 16mm FireShield	450	50 (44)	51 (46)	50 (45)	37 (**39**)	73 (71)	
KF216	**90/90/90**	60	3 layers of 13mm FireShield	450	51 (46)	51 (47)	51 (46)	36 (**38**)	72 (70)	
KF217	**120/120/120**	60	1 layer of 13mm FireShield (applied first) plus 2 layers of 16mm FireShield	450	52 (46)	52 (48)	52 (47)	36 (**38**)	72 (70)	
KF218	**120/120/120**	60	3 layers of 16mm FireShield	450	52 (47)	52 (48)	52 (47)	35 (**37**)	72 (70)	

KF220-KF228

FLOORING: 19mm min particleboard flooring or timber flooring with either carpet, tiles or left bare

FRAME: 140mm min deep timber or steel joists with A-clips and furring channel or, concrete slab with direct fixing clips and furring channel

[Use **MultiShield** in place of **FireShield** for external fire rated ceilings]
[Carpet requires an underlay and tiles require a fibre cement underlay]
[Impact acoustic values determined using insulation]



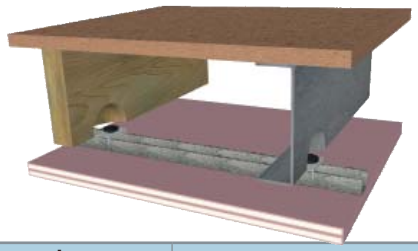
System	FRL Rated from below only	RISF	Plasterboard Ceiling Lining	Max Framing Centres (mm)	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
	Fire Report FAR 2879				No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF220	**30/30/30**	–	1 layer of 13mm FireShield	600	47 (42)	51 (45)	51 (44)	38 (**40**)	69 (69)	Acoustic Report Day Design 3094-26 3094-50
KF221	**60/60/60**	30	2 layers of 13mm FireShield	450	52 (46)	57 (**50**)	56 (49)	37 (**39**)	66 (66)	
KF222	**60/60/60**	–	1 layer of 16mm FireShield	450	49 (43)	54 (48)	53 (46)	38 (**40**)	68 (68)	
KF223	**60/60/60**	60	1 layer of 13mm FireShield (applied first) plus 1 layer of 16mm FireShield	600	53 (47)	56 (**51**)	56 (**50**)	37 (**39**)	66 (66)	
KF224	**60/60/60**	60	2 layers of 16mm FireShield	600	53 (48)	56 (**51**)	56 (**51**)	37 (**39**)	66 (66)	
KF225	**90/90/90**	60	2 layers of 16mm FireShield	450	53 (48)	56 (**51**)	56 (**51**)	37 (**39**)	66 (66)	
KF226	**90/90/90**	60	3 layers of 13mm FireShield	450	55 (**50**)	58 (**53**)	58 (**52**)	36 (**38**)	65 (65)	
KF227	**120/120/120**	60	1 layer of 13mm FireShield (applied first) plus 2 layers of 16mm FireShield	450	56 (**50**)	59 (**54**)	59 (**53**)	36 (**38**)	64 (64)	
KF228	**120/120/120**	60	3 layers of 16mm FireShield	450	56 (**51**)	59 (**54**)	59 (**53**)	36 (**38**)	64 (64)	

KF230-KF238

FLOORING: 19mm min particleboard flooring or timber flooring with either carpet, tiles or left bare

FRAME: 140mm min deep timber or steel joists or concrete slab, with resilient mounts and furring channel

[Use **MultiShield** in place of **FireShield** for external fire rated ceilings]
[Carpet requires an underlay and tiles require a fibre cement underlay]
[Impact acoustic values determined using insulation]



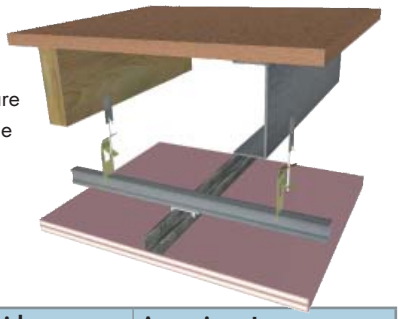
System	FRL Rated from below only	RISF	Plasterboard Ceiling Lining	Max Framing Centres (mm)	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
	Fire Report FAR 2879				No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF230	**30/30/30**	–	1 layer of 13mm FireShield	600	47 (42)	51 (45)	51 (44)	27 (**31**)	65 (64)	Acoustic Report Day Design 3094-26 3094-50
KF231	**60/60/60**	30	2 layers of 13mm FireShield	450	51 (46)	56 (**50**)	55 (49)	26 (**30**)	63 (**62**)	
KF232	**60/60/60**	–	1 layer of 16mm FireShield	450	48 (43)	53 (47)	52 (47)	27 (**31**)	65 (64)	
KF233	**60/60/60**	60	1 layer of 13mm FireShield (applied first) plus 1 layer of 16mm FireShield	600	53 (48)	56 (**51**)	56 (**50**)	26 (**30**)	62 (**61**)	
KF234	**60/60/60**	60	2 layers of 16mm FireShield	600	54 (48)	56 (**51**)	56 (**51**)	26 (**30**)	62 (**61**)	
KF235	**90/90/90**	60	2 layers of 16mm FireShield	450	54 (48)	56 (**51**)	56 (**51**)	26 (**30**)	62 (**61**)	
KF236	**90/90/90**	60	3 layers of 13mm FireShield	450	55 (**50**)	59 (**53**)	58 (**53**)	26 (**30**)	61 (**60**)	
KF237	**120/120/120**	60	1 layer of 13mm FireShield (applied first) plus 2 layers of 16mm FireShield	450	56 (**51**)	59 (**54**)	59 (**54**)	26 (**30**)	60 (**59**)	
KF238	**120/120/120**	60	3 layers of 16mm FireShield	450	57 (**51**)	59 (**54**)	59 (**54**)	26 (**30**)	60 (**59**)	

KF240-KF248

FLOORING: 19mm min particleboard flooring or timber flooring with either carpet, tiles or left bare

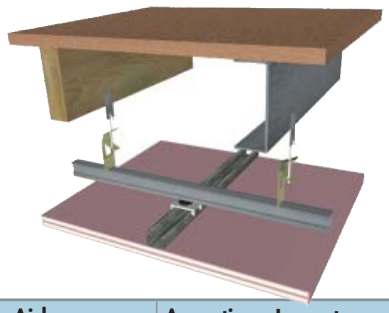
FRAME: 140mm min deep timber or steel joists or concrete slab, with suspended ceiling frame and furring channel

[Use **MultiShield** in place of **FireShield** for external fire rated ceilings]
[Carpet requires an underlay and tiles require a fibre cement underlay]
[Impact acoustic values determined using insulation]



System	FRL Rated from below only	RISF	Plasterboard Ceiling Lining	Max Framing Centres (mm)	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
	Fire Report FAR 2879				No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF240	**30/30/30**	–	1 layer of 13mm FireShield	600	48 (40)	53 (48)	53 (48)	27 (**31**)	65 (64)	Acoustic Report Day Design 3094-26 3094-50
KF241	**60/60/60**	30	2 layers of 13mm FireShield	450	52 (44)	57 (**52**)	57 (**52**)	26 (**30**)	63 (**62**)	
KF242	**60/60/60**	–	1 layer of 16mm FireShield	450	48 (40)	53 (49)	53 (48)	27 (**31**)	65 (64)	
KF243	**60/60/60**	60	1 layer of 13mm FireShield (applied first) plus 1 layer of 16mm FireShield	600	53 (45)	57 (**53**)	57 (**53**)	26 (**30**)	62 (**61**)	
KF244	**60/60/60**	60	2 layers of 16mm FireShield	600	54 (46)	58 (**54**)	58 (**54**)	26 (**30**)	62 (**61**)	
KF245	**90/90/90**	60	2 layers of 16mm FireShield	450	54 (46)	58 (**54**)	58 (**54**)	26 (**30**)	62 (**61**)	
KF246	**90/90/90**	60	3 layers of 13mm FireShield	450	55 (47)	59 (**55**)	59 (**55**)	26 (**30**)	61 (**60**)	
KF247	**120/120/120**	60	1 layer of 13mm FireShield (applied first) plus 2 layers of 16mm FireShield	450	56 (48)	59 (**56**)	59 (**56**)	26 (**30**)	60 (**59**)	
KF248	**120/120/120**	60	3 layers of 16mm FireShield	450	56 (48)	60 (**56**)	60 (**56**)	26 (**30**)	60 (**59**)	

KF250-KF258



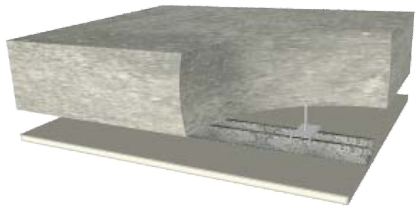
FLOORING: 19mm min particleboard flooring or timber flooring with either carpet, tiles or left bare

FRAME: 140mm min deep timber or steel joists or concrete slab, with suspended ceiling frame with resilient mounts and furring channel

[Use **MultiShield** in place of **FireShield** for external fire rated ceilings]
[Carpet requires an underlay and tiles require a fibre cement underlay]
[Impact acoustic values determined using insulation]

System	FRL Rated from below only	RISF	Plasterboard Ceiling Lining	Max Framing Centres (mm)	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
	Fire Report FAR 2879				No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF250	**30/30/30**	–	1 layer of 13mm FireShield	600	49 (41)	55 (**51**)	55 (48)	27 (**31**)	64 (63)	Acoustic Report Day Design 3094-26
KF251	**60/60/60**	30	2 layers of 13mm FireShield	450	53 (45)	60 (**55**)	60 (**55**)	26 (**30**)	63 (**62**)	
KF252	**60/60/60**	–	1 layer of 16mm FireShield	450	50 (42)	56 (**52**)	56 (**51**)	27 (**31**)	64 (63)	
KF253	**60/60/60**	60	1 layer of 13mm FireShield (applied first) plus 1 layer of 16mm FireShield	600	54 (46)	60 (**56**)	60 (**56**)	26 (**30**)	62 (**61**)	
KF254	**60/60/60**	60	2 layers of 16mm FireShield	600	55 (47)	61 (**57**)	60 (**57**)	26 (**30**)	62 (**61**)	
KF255	**90/90/90**	60	2 layers of 16mm FireShield	450	55 (47)	61 (**57**)	60 (**57**)	26 (**30**)	62 (**61**)	
KF256	**90/90/90**	60	3 layers of 13mm FireShield	450	57 (49)	62 (**59**)	62 (**58**)	26 (**30**)	61 (**60**)	
KF257	**120/120/120**	60	1 layer of 13mm FireShield (applied first) plus 2 layers of 16mm FireShield	450	58 (**50**)	63 (**59**)	63 (**59**)	26 (**30**)	60 (**59**)	
KF258	**120/120/120**	60	3 layers of 16mm FireShield	450	58 (**50**)	63 (**60**)	63 (**60**)	26 (**30**)	60 (**59**)	

KF120-KF129



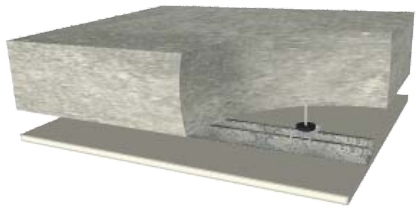
FLOORING: 125mm concrete slab with either carpet, tiles or left bare
[Refer to concrete manufacturer for FRL]

FRAME: Direct fix clips and furring channel

[Carpet requires an underlay]
[Impact acoustic values determined using insulation]
[Minimum cavity size is 50mm]

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF120	1 layer of 10mm MastaShield or SpanShield	53 (48)	54 (**50**)	54 (**50**)	33 (**31**)	67 (63)	Acoustic Report Day Design 3094-26
KF121	2 layers of 10mm MastaShield or SpanShield	55 (48)	54 (**52**)	54 (**52**)	32 (**30**)	64 (**60**)	
KF124	1 layer of 13mm MastaShield	53 (48)	54 (**50**)	54 (**50**)	32 (**30**)	64 (**62**)	
KF126	1 layer of 10mm SoundShield	53 (48)	54 (**50**)	54 (**50**)	32 (**30**)	64 (**60**)	
KF127	2 layers of 10mm SoundShield	56 (49)	55 (**52**)	55 (**52**)	31 (**29**)	63 (**59**)	
KF128	1 layer of 13mm SoundShield	54 (48)	54 (**50**)	54 (**50**)	32 (**30**)	64 (**60**)	
KF129	2 layers of 13mm SoundShield	56 (**50**)	56 (**52**)	56 (**52**)	31 (**28**)	63 (**59**)	

KF130-KF139



FLOORING: 125mm concrete slab with either carpet, tiles or left bare
[Refer to concrete manufacturer for FRL]

FRAME: Resilient mounts and furring channel

[Carpet requires an underlay]
[Impact acoustic values determined using insulation]
[Minimum cavity size is 50mm]

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)			Acoustics – Impact Ln,w (Ln,w + Ci)		
		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester ASB3/TSB3	Carpet and Underlay	Tiled or Left Bare	
KF130	1 layer of 10mm MastaShield or SpanShield	54 (48)	57 (**52**)	57 (**52**)	31 (**29**)	64 (**60**)	Acoustic Report Day Design 3094-26
KF131	2 layers of 10mm MastaShield or SpanShield	56 (49)	62 (**56**)	62 (**56**)	30 (**28**)	61 (**59**)	
KF134	1 layer of 13mm MastaShield	54 (49)	59 (**54**)	59 (**53**)	31 (**29**)	61 (**59**)	
KF136	1 layer of 10mm SoundShield	54 (49)	59 (**54**)	59 (**53**)	31 (**29**)	61 (**59**)	
KF137	2 layers of 10mm SoundShield	57 (**50**)	64 (**58**)	64 (**58**)	29 (**27**)	60 (**58**)	
KF138	1 layer of 13mm SoundShield	56 (49)	61 (**56**)	61 (**56**)	30 (**28**)	61 (**59**)	
KF139	2 layers of 13mm SoundShield	59 (**52**)	65 (**61**)	65 (**61**)	28 (**26**)	59 (**58**)	

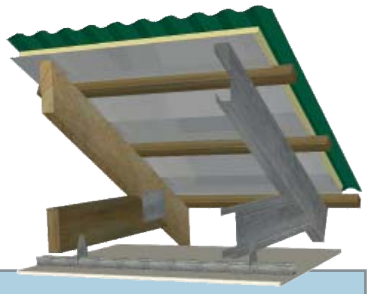
NON-FIRE RATED

KR10-KR19

ROOF LINING: Sheet metal
ROOF INSULATION: 60mm light duty reflective foil faced EarthWool blanket
CEILING INSULATION: As per table
FRAME: 140mm min deep timber or steel, rafters or trusses

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)				
		R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR10	1 layer of 10mm MastaShield or SpanShield	42 (38)	42 (38)	42 (36)	43 (37)	Acoustic Report Day Design 3094-25
KR11	2 layers of 10mm MastaShield or SpanShield	44 (41)	44 (41)	44 (40)	45 (41)	
KR14	1 layer of 13mm MastaShield	44 (40)	44 (40)	44 (38)	45 (39)	
KR16	1 layer of 10mm SoundShield	44 (40)	44 (40)	44 (38)	45 (39)	
KR17	2 layers of 10mm SoundShield	45 (42)	45 (42)	45 (41)	46 (42)	
KR18	1 layer of 13mm SoundShield	44 (41)	44 (41)	44 (39)	45 (40)	
KR19	2 layers of 13mm SoundShield	47 (45)	47 (45)	48 (44)	49 (45)	

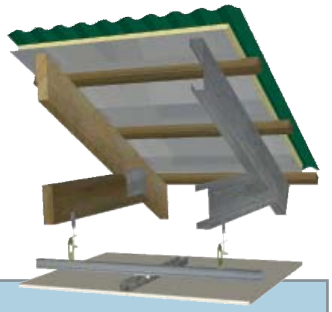
KR20-KR29



ROOF LINING: Sheet metal
ROOF INSULATION: 60mm light duty reflective foil faced EarthWool blanket
CEILING INSULATION: As per table
FRAME: Timber or steel, rafters or trusses with A-clips and furring channel

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)				
		R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR20	1 layer of 10mm MastaShield or SpanShield	52 (43)	52 (43)	51 (41)	52 (42)	Acoustic Report Day Design 3094-25
KR21	2 layers of 10mm MastaShield or SpanShield	54 (46)	54 (46)	53 (44)	54 (45)	
KR24	1 layer of 13mm MastaShield	54 (45)	54 (45)	53 (43)	54 (44)	
KR26	1 layer of 10mm SoundShield	54 (45)	54 (45)	53 (43)	54 (44)	
KR27	2 layers of 10mm SoundShield	55 (48)	55 (48)	55 (46)	56 (47)	
KR28	1 layer of 13mm SoundShield	55 (46)	55 (46)	54 (44)	55 (45)	
KR29	2 layers of 13mm SoundShield	58 (51)	58 (51)	58 (49)	59 (50)	

KR40-KR49



ROOF LINING: Sheet metal
ROOF INSULATION: 60mm light duty reflective foil faced EarthWool blanket
CEILING INSULATION: As per table
FRAME: Timber or steel, rafters or trusses with suspended ceiling frame and furring channel

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)				
		R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR40	1 layer of 10mm MastaShield or SpanShield	52 (43)	52 (43)	51 (41)	52 (42)	Acoustic Report Day Design 3094-25
KR41	2 layers of 10mm MastaShield or SpanShield	54 (46)	54 (46)	53 (45)	54 (46)	
KR44	1 layer of 13mm MastaShield	54 (45)	54 (45)	53 (43)	54 (44)	
KR46	1 layer of 10mm SoundShield	54 (45)	54 (45)	53 (43)	54 (44)	
KR47	2 layers of 10mm SoundShield	55 (48)	55 (48)	55 (46)	56 (47)	
KR48	1 layer of 13mm SoundShield	55 (46)	55 (46)	54 (44)	55 (45)	
KR49	2 layers of 13mm SoundShield	58 (51)	58 (51)	58 (49)	59 (50)	

KR60-KR69

ROOF LINING: Sheet metal
ROOF SARKING: Medium duty reflective foil
CEILING INSULATION: As per table
FRAME: 140mm min deep timber or steel, rafters or trusses

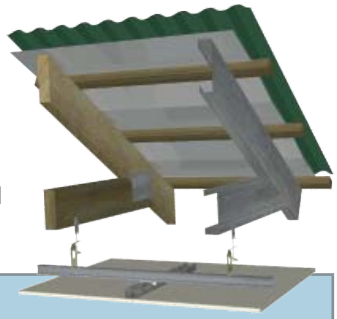
System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)				
		R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR60	1 layer of 10mm MastaShield or SpanShield	40 (37)	40 (37)	40 (35)	41 (36)	Acoustic Report Day Design 3094-46
KR61	2 layers of 10mm MastaShield or SpanShield	42 (40)	42 (40)	42 (39)	43 (40)	
KR64	1 layer of 13mm MastaShield	42 (39)	42 (39)	42 (37)	43 (38)	
KR66	1 layer of 10mm SoundShield	42 (39)	42 (39)	42 (37)	43 (38)	
KR67	2 layers of 10mm SoundShield	43 (41)	43 (41)	43 (40)	44 (41)	
KR68	1 layer of 13mm SoundShield	42 (40)	42 (40)	42 (38)	43 (39)	
KR69	2 layers of 13mm SoundShield	45 (44)	45 (44)	46 (43)	47 (44)	

KR70-KR79

ROOF LINING: Sheet metal
ROOF SARKING: Medium duty reflective foil
CEILING INSULATION: As per table
FRAME: Timber or steel, rafters or trusses with A-clips and furring channel

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)				
		R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR70	1 layer of 10mm MastaShield or SpanShield	50 (42)	50 (42)	49 (40)	50 (41)	Acoustic Report Day Design 3094-46
KR71	2 layers of 10mm MastaShield or SpanShield	52 (45)	52 (45)	51 (43)	52 (44)	
KR74	1 layer of 13mm MastaShield	52 (44)	52 (44)	51 (42)	52 (43)	
KR76	1 layer of 10mm SoundShield	52 (44)	52 (44)	51 (42)	52 (43)	
KR77	2 layers of 10mm SoundShield	53 (47)	53 (47)	53 (45)	54 (46)	
KR78	1 layer of 13mm SoundShield	53 (45)	53 (45)	52 (43)	53 (44)	
KR79	2 layers of 13mm SoundShield	56 (50)	56 (50)	56 (48)	57 (49)	

KR90-KR99



ROOF LINING: Sheet metal
ROOF SARKING: Medium duty reflective foil
CEILING INSULATION: As per table
FRAME: Timber or steel, rafters or trusses with suspended ceiling frame and furring channel

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)				
		R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR90	1 layer of 10mm MastaShield or SpanShield	50 (42)	50 (42)	49 (40)	50 (41)	Acoustic Report Day Design 3094-46
KR91	2 layers of 10mm MastaShield or SpanShield	52 (45)	52 (45)	51 (44)	52 (45)	
KR94	1 layer of 13mm MastaShield	52 (44)	52 (44)	51 (42)	52 (43)	
KR96	1 layer of 10mm SoundShield	52 (44)	52 (44)	51 (42)	52 (43)	
KR97	2 layers of 10mm SoundShield	53 (47)	53 (47)	53 (45)	54 (46)	
KR98	1 layer of 13mm SoundShield	53 (45)	53 (45)	52 (43)	53 (44)	
KR99	2 layers of 13mm SoundShield	56 (50)	56 (50)	56 (48)	57 (49)	

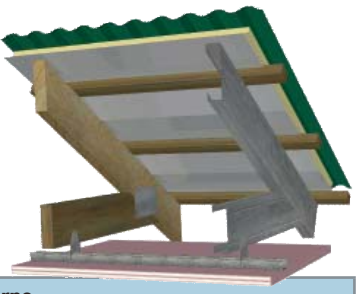
KR210-KR218

ROOF LINING: Sheet metal
ROOF INSULATION: 60mm light duty reflective foil faced EarthWool blanket
CEILING INSULATION: As per table
FRAME: 140mm min deep timber or steel, rafters or trusses
[Use **MultiShield** in place of **FireShield** for external fire rated ceilings]

System	FRL Rated from below only	RISF	Plasterboard Ceiling Lining	Max Framing Centres (mm)	Acoustics – Airborne Rw (Rw + Ctr)				
	Fire Report FAR 2879				R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR210	**30/30/30**	–	1 layer of 13mm FireShield	600	43 (39)	43 (39)	43 (38)	44 (39)	Acoustic Report Day Design 3094-25 3094-50
KR211	**60/60/60**	30	2 layers of 13mm FireShield	450	45 (44)	45 (44)	44 (43)	45 (44)	
KR212	**60/60/60**	–	1 layer of 16mm FireShield	450	44 (41)	44 (41)	43 (39)	44 (40)	
KR213	**60/60/60**	60	1 layer of 13mm FireShield (applied first) plus 1 layer of 16mm FireShield	600	46 (45)	46 (45)	47 (44)	48 (45)	
KR214	**60/60/60**	60	2 layers of 16mm FireShield	600	48 (46)	48 (46)	48 (45)	49 (46)	
KR215	**90/90/90**	60	2 layers of 16mm FireShield	450	48 (46)	48 (46)	48 (45)	49 (46)	
KR216	**90/90/90**	60	3 layers of 13mm FireShield	450	49 (48)	49 (48)	50 (46)	51 (47)	
KR217	**120/120/120**	60	1 layer of 13mm FireShield (applied first) plus 2 layers of 16mm FireShield	450	50 (49)	50 (49)	51 (47)	52 (48)	
KR218	**120/120/120**	60	3 layers of 16mm FireShield	450	51 (49)	51 (49)	51 (48)	52 (49)	

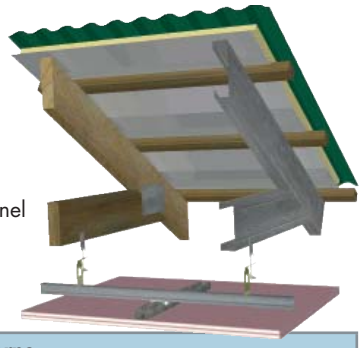
KR220-KR228

ROOF LINING: Sheet metal
ROOF INSULATION: 60mm light duty reflective foil faced EarthWool blanket
CEILING INSULATION: As per table
FRAME: Timber or steel, rafters or trusses with A-clips and furring channel
[Use **MultiShield** in place of **FireShield** for external fire rated ceilings]



System	FRL Rated from below only	RISF	Plasterboard Ceiling Lining	Max Framing Centres (mm)	Acoustics – Airborne Rw (Rw + Ctr)				
	Fire Report FAR 2879				R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR220	**30/30/30**	–	1 layer of 13mm FireShield	600	51 (42)	51 (42)	50 (41)	51 (42)	Acoustic Report Day Design 3094-25 3094-50
KR221	**60/60/60**	30	2 layers of 13mm FireShield	450	55 (48)	55 (48)	55 (46)	56 (47)	
KR222	**60/60/60**	–	1 layer of 16mm FireShield	450	52 (43)	52 (43)	51 (42)	52 (43)	
KR223	**60/60/60**	60	1 layer of 13mm FireShield (applied first) plus 1 layer of 16mm FireShield	600	56 (49)	56 (49)	55 (47)	56 (48)	
KR224	**60/60/60**	60	2 layers of 16mm FireShield	600	57 (**50**)	57 (**50**)	56 (48)	57 (49)	
KR225	**90/90/90**	60	2 layers of 16mm FireShield	450	57 (**50**)	57 (**50**)	56 (48)	57 (49)	
KR226	**90/90/90**	60	3 layers of 13mm FireShield	450	58 (**52**)	58 (**52**)	58 (**50**)	59 (**51**)	
KR227	**120/120/120**	60	1 layer of 13mm FireShield (applied first) plus 2 layers of 16mm FireShield	450	59 (**53**)	59 (**53**)	59 (**51**)	60 (**52**)	
KR228	**120/120/120**	60	3 layers of 16mm FireShield	450	60 (**54**)	60 (**54**)	60 (**52**)	61 (**53**)	

KR240-KR248



ROOF LINING: Sheet metal
ROOF INSULATION: 60mm light duty reflective foil faced EarthWool blanket
CEILING INSULATION: As per table
FRAME: Timber or steel, rafters or trusses with suspended ceiling frame and furring channel
[Use **MultiShield** in place of **FireShield** for external fire rated ceilings]

System	FRL Rated from below only	RISF	Plasterboard Ceiling Lining	Max Framing Centres (mm)	Acoustics – Airborne Rw (Rw + Ctr)				
	Fire Report FAR 2879				R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR240	**30/30/30**	–	1 layer of 13mm FireShield	600	50 (43)	50 (43)	49 (41)	50 (42)	Acoustic Report Day Design 3094-25 3094-50
KR241	**60/60/60**	30	2 layers of 13mm FireShield	450	54 (47)	54 (47)	53 (46)	54 (47)	
KR242	**60/60/60**	–	1 layer of 16mm FireShield	450	51 (43)	51 (43)	50 (42)	52 (45)	
KR243	**60/60/60**	60	1 layer of 13mm FireShield (applied first) plus 1 layer of 16mm FireShield	600	55 (49)	55 (49)	54 (48)	55 (49)	
KR244	**60/60/60**	60	2 layers of 16mm FireShield	600	56 (**50**)	56 (**50**)	55 (48)	56 (49)	
KR245	**90/90/90**	60	2 layers of 16mm FireShield	450	56 (**50**)	56 (**50**)	55 (48)	56 (49)	
KR246	**90/90/90**	60	3 layers of 13mm FireShield	450	57 (**52**)	57 (**52**)	57 (**50**)	58 (**51**)	
KR247	**120/120/120**	60	1 layer of 13mm FireShield (applied first) plus 2 layers of 16mm FireShield	450	59 (**53**)	59 (**53**)	58 (**51**)	59 (**52**)	
KR248	**120/120/120**	60	3 layers of 16mm FireShield	450	59 (**54**)	59 (**54**)	59 (**52**)	60 (**53**)	

NON-FIRE RATED

KR110-KR119

ROOF LINING: Concrete or terracotta tiles
ROOF SARKING: Heavy duty reflective foil (optional)
CEILING INSULATION: As per table
FRAME: 140mm min deep timber or steel, rafters or trusses

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)				
		R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR110	1 layer of 10mm MastaShield or SpanShield	50 (43)	50 (43)	50 (43)	50 (43)	Acoustic Report Day Design 3094-25
KR111	2 layers of 10mm MastaShield or SpanShield	51 (44)	51 (44)	51 (44)	51 (44)	
KR114	1 layer of 13mm MastaShield	51 (43)	51 (43)	51 (42)	51 (42)	
KR116	1 layer of 10mm SoundShield	51 (43)	51 (43)	51 (42)	51 (42)	
KR117	2 layers of 10mm SoundShield	51 (44)	51 (44)	51 (44)	51 (44)	
KR118	1 layer of 13mm SoundShield	51 (42)	51 (42)	51 (42)	51 (42)	
KR119	2 layers of 13mm SoundShield	52 (44)	52 (44)	52 (44)	52 (44)	

KR120-KR129

ROOF LINING: Concrete or terracotta tiles
ROOF SARKING: Heavy duty reflective foil (optional)
CEILING INSULATION: As per table
FRAME: Timber or steel, rafters or trusses with A-clips and furring channel

System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)				
		R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR120	1 layer of 10mm MastaShield or SpanShield	51 (45)	51 (45)	50 (44)	50 (44)	Acoustic Report Day Design 3094-25
KR121	2 layers of 10mm MastaShield or SpanShield	52 (47)	52 (47)	52 (47)	52 (47)	
KR124	1 layer of 13mm MastaShield	52 (46)	52 (46)	51 (45)	51 (45)	
KR126	1 layer of 10mm SoundShield	52 (46)	52 (46)	51 (45)	51 (45)	
KR127	2 layers of 10mm SoundShield	52 (47)	52 (47)	52 (48)	52 (48)	
KR128	1 layer of 13mm SoundShield	52 (46)	52 (46)	52 (45)	52 (45)	
KR129	2 layers of 13mm SoundShield	53 (49)	53 (49)	53 (48)	53 (48)	

KR310-KR318

ROOF LINING: Concrete or terracotta tiles
ROOF SARKING: Heavy duty reflective foil (optional)
CEILING INSULATION: As per table
FRAME: 140mm min deep timber or steel, rafters or trusses
[Use **MultiShield** in place of **FireShield** for external fire rated ceilings]

System	FRL Rated from below only	RISF	Plasterboard Ceiling Lining	Max Framing Centres (mm)	Acoustics – Airborne Rw (Rw + Ctr)				
	Fire Report FAR 2879				R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR310	**30/30/30**	–	1 layer of 13mm FireShield	600	48 (42)	48 (42)	48 (42)	48 (42)	Acoustic Report Day Design 3094-25 3094-50
KR311	**60/60/60**	30	2 layers of 13mm FireShield	450	50 (44)	50 (44)	50 (44)	50 (44)	
KR312	**60/60/60**	–	1 layer of 16mm FireShield	450	48 (43)	48 (43)	48 (42)	48 (42)	
KR313	**60/60/60**	60	1 layer of 13mm FireShield (applied first) plus 1 layer of 16mm FireShield	600	50 (44)	50 (44)	50 (44)	50 (44)	
KR314	**60/60/60**	60	2 layers of 16mm FireShield	600	51 (45)	51 (45)	51 (45)	51 (45)	
KR315	**90/90/90**	60	2 layers of 16mm FireShield	450	51 (45)	51 (45)	51 (45)	51 (45)	
KR316	**90/90/90**	60	3 layers of 13mm FireShield	450	52 (46)	52 (46)	52 (46)	52 (46)	
KR317	**120/120/120**	60	1 layer of 13mm FireShield (applied first) plus 2 layers of 16mm FireShield	450	52 (46)	52 (46)	52 (46)	52 (46)	
KR318	**120/120/120**	60	3 layers of 16mm FireShield	450	52 (46)	52 (49)	52 (46)	52 (46)	

KR320-KR328

ROOF LINING: Concrete or terracotta tiles
ROOF SARKING: Heavy duty reflective foil (optional)
CEILING INSULATION: As per table
FRAME: Timber or steel, rafters or trusses with A-clips and furring channel
[Use **MultiShield** in place of **FireShield** for external fire rated ceilings]

System	FRL Rated from below only	RISF	Plasterboard Ceiling Lining	Max Framing Centres (mm)	Acoustics – Airborne Rw (Rw + Ctr)				
	Fire Report FAR 2879				R2.5 EarthWool	R3.0 EarthWool	R2.5 Polyester	R3.0 Polyester	
KR320	**30/30/30**	–	1 layer of 13mm FireShield	600	51 (45)	51 (45)	51 (44)	51 (44)	Acoustic Report Day Design 3094-25 3094-50
KR321	**60/60/60**	30	2 layers of 13mm FireShield	450	52 (47)	52 (47)	52 (47)	52 (47)	
KR322	**60/60/60**	–	1 layer of 16mm FireShield	450	51 (46)	51 (46)	51 (45)	51 (45)	
KR323	**60/60/60**	60	1 layer of 13mm FireShield (applied first) plus 1 layer of 16mm FireShield	600	53 (48)	53 (48)	53 (47)	53 (47)	
KR324	**60/60/60**	60	2 layers of 16mm FireShield	600	54 (49)	54 (49)	54 (48)	54 (48)	
KR325	**90/90/90**	60	2 layers of 16mm FireShield	450	54 (49)	54 (49)	54 (48)	54 (48)	
KR326	**90/90/90**	60	3 layers of 13mm FireShield	450	55 (49)	55 (49)	55 (49)	55 (49)	
KR327	**120/120/120**	60	1 layer of 13mm FireShield (applied first) plus 2 layers of 16mm FireShield	450	55 (49)	55 (49)	55 (49)	55 (49)	
KR328	**120/120/120**	60	3 layers of 16mm FireShield	450	55 (49)	55 (49)	55 (49)	55 (49)	

GENERAL REQUIREMENTS

	Non-Fire Rated	Fire Rated
Install control joints in plasterboard ceilings at: › 12m maximum intervals › All control joints in the structure › Any change in the substrate material › At the junction of a large room and passageway.	✔	✔
All ceilings in this section are non-trafficable. Do not walk on plasterboard ceilings!	✔	✔
Limit dead loads on plasterboard ceilings to 2 kg/m² for plasterboard spanning 600mm framing centres.	✔	✔
Limit dead loads on plasterboard ceilings to 2.5 kg/m² for plasterboard spanning 450mm framing centres where the plasterboard can usually span 600mm centres.	✔	✔
Attach ceiling fixtures to framing members only. Ensure the framing is designed to carry any additional load.	✔	✔
Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and: › Two coats of **MastaBase**/**MastaLongset**, or › Three coats of **MastaLite** Never joint sheets with fire sealant. *[Refer to Section 4]*		✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.		✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.		✔

- All structures supporting fire rated ceilings must have an equal or greater FRL than the ceiling they support eg, a ceiling with FRL of 90/90/90 must be supported by a load bearing wall or column with FRL of at least 90 minutes.
- Structural beams enclosed by a fire rated ceiling are given the same structural protection rating as the ceiling eg, a structural beam located above a ceiling rated to FRL 90/90/90 would have FRL of 90/–/–.
- Compensate for uneven framing by attaching a furring channel system with adjustable direct fix clips.
- Timber trusses may settle or move with changing seasons. Reduce occurrence of plasterboard cracking due to this movement by fixing plasterboard to furring channel or battens.
- For acceptable modifications or variations to fire rated systems. *[Refer to Section 2.3 Fire Resistance]*
- The FRL and RISF will not be reduced if a fire rated ceiling is built on an angle eg, a raked ceiling.
- Consider the corrosive effect of sea spray on steel components, select framing and fasteners accordingly.
- The FRL will not be reduced if the insulation directly above plasterboard is omitted.

FRAMING

	Non-Fire Rated	Fire Rated
Cut Top Cross Rail (TCR) and furring channel to leave 20mm expansion gaps at each wall.		✔
Stagger joints in TCR and furring channel by 1200mm.		✔
Install additional framing members around openings.	✔	✔
Maximum load permitted on a Rondo resilient mount is 15 kg.	✔	✔

- Timber battens are not permitted in fire rated ceilings.
- Steel framed ceiling systems must be designed by an engineer according to the relevant Australian Standard.
- Framing members in this section are designed using either steel or timber joists, Lipped C type steel studs or a furring channel system.

MAXIMUM SPAN (FRAMING CENTRES) FOR PLASTERBOARD

Plasterboard Type	For General Areas	For Areas of Intermittent High Humidity eg. Bathrooms and External Ceilings
10mm MastaShield	450mm	300mm
13mm MastaShield	600mm	450mm
10mm SpanShield	600mm	450mm
10 and 13mm MastaDeco	600mm	450mm
10 and 13mm SoundShield	600mm	450mm
10mm WaterShield	600mm	450mm
13mm WaterShield	600mm	450mm
13 and 16mm FireShield	600mm	450mm
13 and 16mm MultiShield	600mm	450mm
13mm AcoustiShield	600mm	–

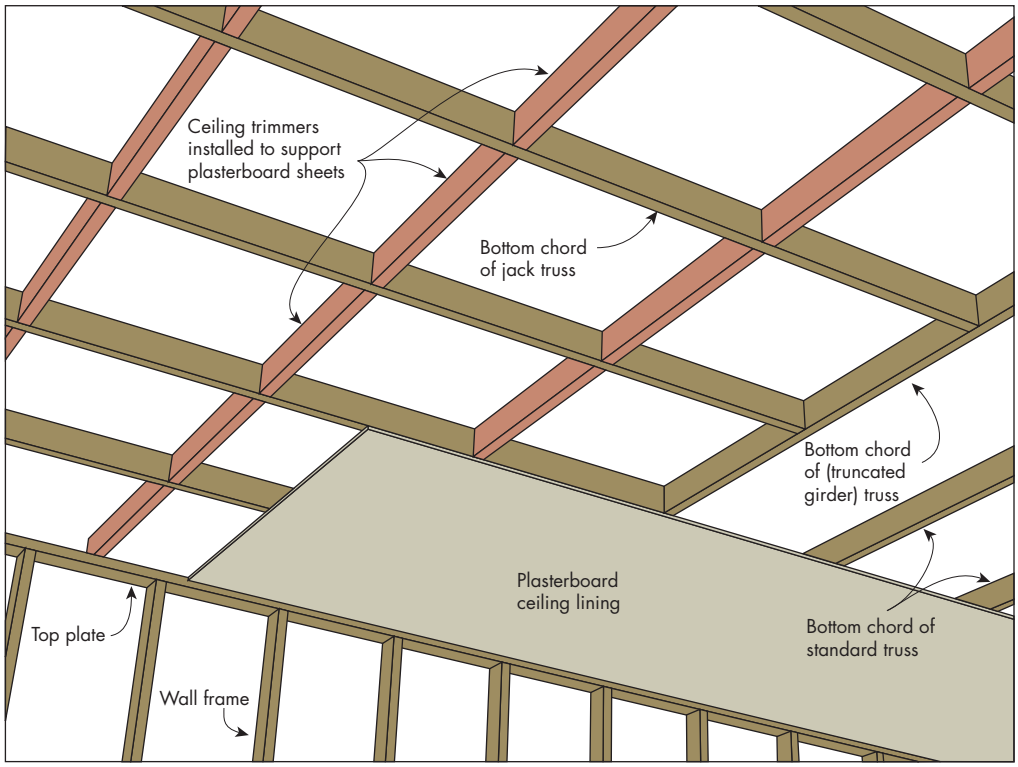


FIGURE 1 **Install Ceiling Trimmers to Support Plasterboard at The Change of Direction of Roof Framing. Install Plasterboard Perpendicular To Main Roof Frame**

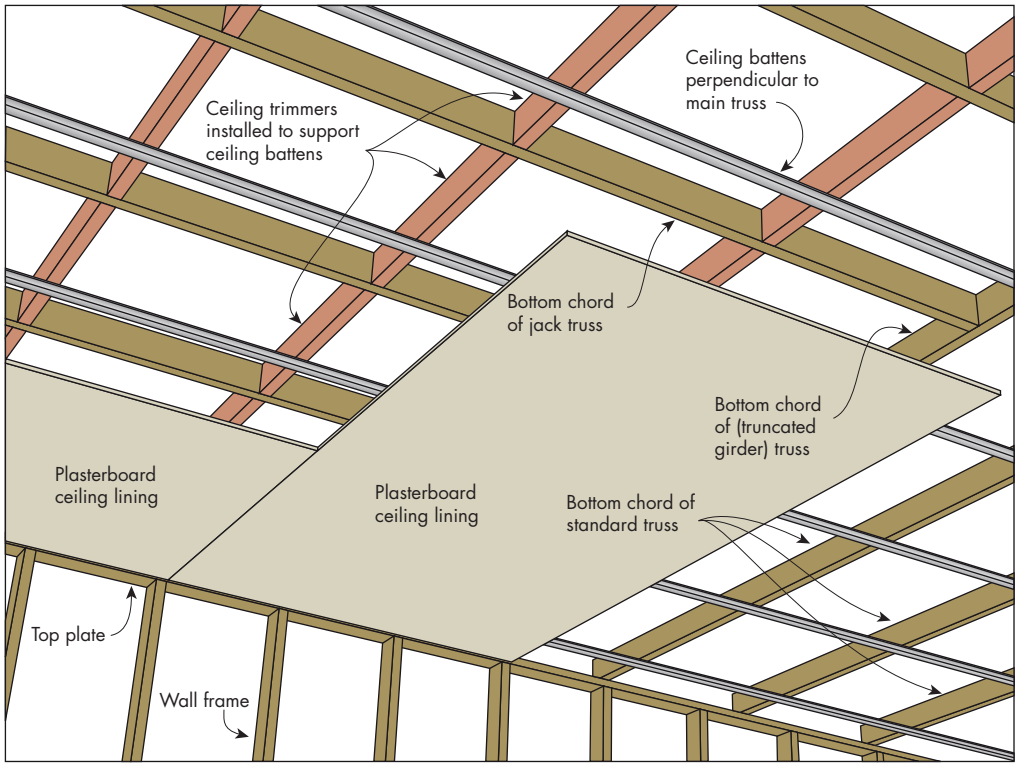


FIGURE 2 **Install Ceiling Trimmers for Ceiling Batten Systems. Install Plasterboard Perpendicular to Ceiling Battens**

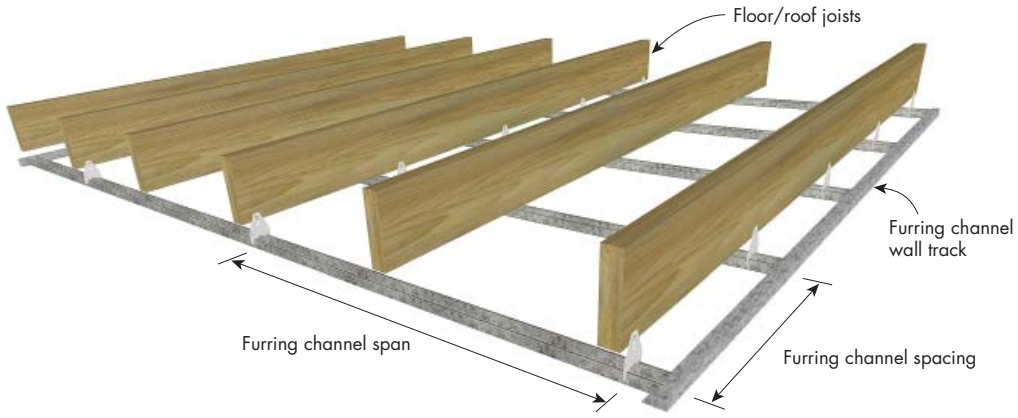


FIGURE 3 **Furring Channel Span and Spacing**

MAXIMUM SPAN OF FURRING CHANNEL

Plasterboard	28mm Furring Channel Rondo No.129				16mm Furring Channel Rondo No.308			
	Single Span (mm)		Continuous Span (mm)		Single Span (mm)		Continuous Span (mm)	
	450mm spacing	600mm spacing	450mm spacing	600mm spacing	450mm spacing	600mm spacing	450mm spacing	600mm spacing
1 layer of 10mm	1400	1280	1740	1570	900	820	1120	1020
2 layers of 10mm	1330	1210	1650	1470	860	780	1060	970
1 layer of 13mm	1420	1300	1740	1540	990	920	1200	1040
2 layers of 13mm	1330	1210	1620	1420	920	860	1110	960
3 layers of 13mm	1170	1080	1450	1320	800	750	1010	900
1 layer of 16mm	1400	1270	1710	1480	1000	930	1160	1010
2 layers of 16mm	1220	1130	1510	1340	860	810	1040	910
3 layers of 16mm	1060	980	1310	1220	750	700	930	830

1 Decrease span at both ends of the furring channel to the Single Span distance.
2 If furring channel track is not used, the furring channel must be supported 200mm from ends.
3 W ultimate = 0.5 kPa, Strength Load Case: 1.2G + Wu
4 W serviceability = 0.325 kPa, Serviceability Load Case 1: G [Limit is L/600], Serviceability Load Case 2:G + Ws [Limit is L/200].
5 Strength check of unrestrained flange in compression.
6 Connections to be independently checked.

The framing tables in this section apply to Rondo steel components.

Alternative components may only be used:

- In accordance with the manufacturer's literature, or
- If their performance is equivalent or better and they comply with the relevant standard.

More ceiling framing combinations are available than those described in this section. *[Refer to Rondo Building Services literature or equivalent]*

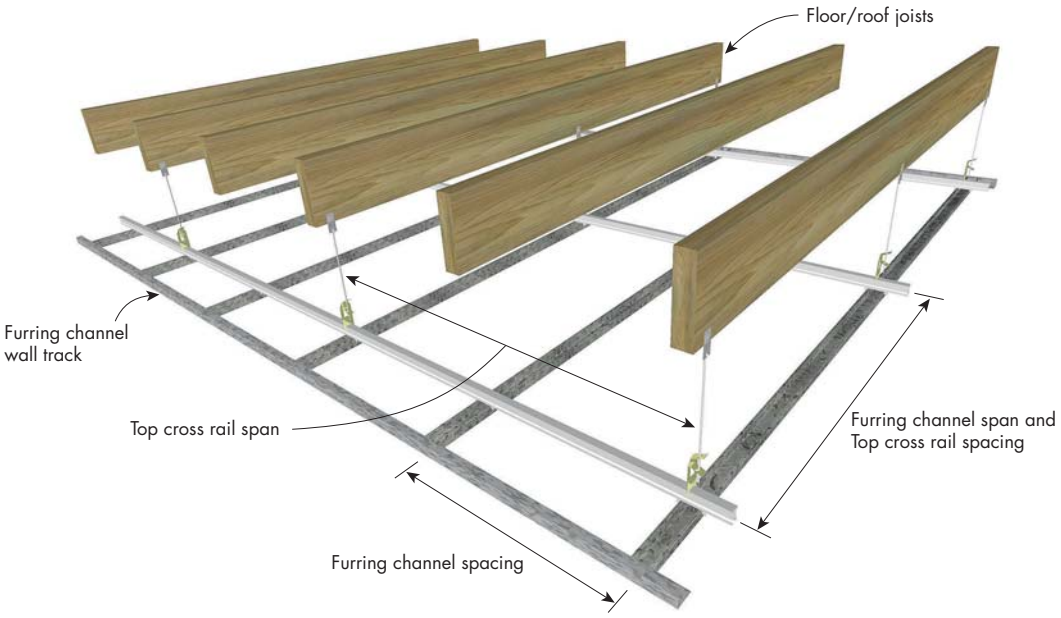


FIGURE 4 Top Cross Rail and Furring Channel Span and Spacing

SELECTED TOP CROSS RAIL (TCR) AND FURRING CHANNEL FRAMING OPTIONS – NON-FIRE RATED

Plasterboard Type	TCR Rondo No.	TCR Span	TCR Spacing	Furring Channel Rondo No.
1 layer of 10mm MastaShield or SpanShield	125	1200	900	308
1 layer of 10mm MastaShield or SpanShield	125	1200	1200	129
2 layers of 10mm MastaShield or SpanShield	127	1200	1200	129
1 layer of 13mm MastaShield	125	1200	1200	129
1 layer of 10mm SoundShield	125	1200	1200	129
2 layers of 10mm SoundShield	128	1200	1200	129
1 layer of 13mm SoundShield	128	1200	1200	129
2 layers of 13mm SoundShield	128	1200	1200	129

SELECTED TOP CROSS RAIL (TCR) AND FURRING CHANNEL FRAMING OPTIONS – FIRE RATED

Plasterboard Type	TCR Rondo No.	TCR Span	TCR Spacing	Furring Channel Rondo No.
1 layer of 13mm FireShield	125	1200	1200	129
1 layer of 16mm FireShield	127	1200	1200	129
2 layers of 13mm FireShield	128	1200	1200	129
1 layer of 13mm FireShield applied first plus 1 layer of 16mm FireShield	128	1200	1200	129
2 layers of 16mm FireShield	128	1200	1200	129
3 layers of 13mm FireShield	128	1200	1200	129
1 layer of 13mm FireShield applied first plus 1 layer of 16mm FireShield	128	1200	1200	129
3 layers of 16mm FireShield	128	1200	1200	129

1 Decrease span at both ends of the furring channel to the Single Span distance.
2 If furring channel track is not used, the furring channel must be supported 200mm from ends.
3 W ultimate = 0.5 kPa, Strength Load Case: 1.2G + Wu
4 W serviceability = 0.325 kPa, Serviceability Load Case 1: G [Limit is L/600], Serviceability Load Case 2: G + Ws [Limit is L/200].
5 Strength check of unrestrained flange in compression.
6 Connections to be independently checked.

PLASTERBOARD LAYOUT

	Non-Fire Rated	Fire Rated
Sheet ceilings perpendicular to framing members.	✔	✔
First layer butt joints must be over a framing member.		✔
Float face layer butt joints between framing members for: › Three layer systems › Two layer systems on 600mm centres.		✔
Stagger face layer butt joints by 600mm minimum on adjoining sheets and between layers.	✔	✔
Stagger recessed edges by 300mm minimum between layers.	✔	✔
Follow the back-blocking requirements and butt joint placement for the level of finish selected. *[Refer To Section 4]*	✔	✔

- Sheet ceilings parallel to the light source to reduce the effect of glancing light.
- Minimise butt joints by using the longest sheet possible.
- Butt joints on underlying layers (not face layer) may be made on the same framing member.
- For 2 layer systems at 450mm centres, face layer butt joints may be fixed to framing members.

PLASTERBOARD FIXING

	Non-Fire Rated	Fire Rated
Drive fasteners to just below the sheet surface, taking care not to break the paper linerboard.	✔	✔
Do not fix plasterboard to steel more than 2mm BMT.	✔	✔
Use laminating screws to fix floating butt joints in the second and third layer.	✔	✔
Fastener and Adhesive Method		
Apply MastaGrip Stud Adhesive after the frame is clean, dry, and free from grease, dust and other contaminants.	✔	
Apply MastaGrip daubs 200mm minimum from fasteners and plasterboard edges.	✔	
Fastener Only Method		
Use the 'Fastener Only Method' in tiled or fire rated areas. Stud adhesive is not permitted.	✔	✔

The 'Fastener and Adhesive Method' is recommended for non-fire rated applications. MastaGrip will:

- Minimise fastener popping
- Reduce the number of fastener heads that may show in glancing light
- Assist in compensating for frame irregularities.

All joints not made on a framing member should be back-blocked in single layer ceiling systems. External ceilings and garage ceilings have special requirements. *[Refer to Section 2.2]*

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm	25mm – 6g S screw	25mm – 6g S screw	–
10mm	25mm – 6g S screw	40mm – 6g S screw*	–
13mm	25mm – 6g S screw	40mm – 6g S screw*	60mm – 6g S screw*
16mm	30mm – 6g S screw	45mm – 6g S screw*	65mm – 6g S screw*

For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.

FASTENER TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO SOFTWOOD TIMBER

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm	30mm x 2.8 galvanised nail or 25mm x 2.8 ring shank nail or 25mm – 6g W screw	40mm x 2.8 galvanised nail or 30mm x 2.8 ring shank nail or 30mm – 6g W screw	–
10mm	40mm x 2.8 galvanised nail or 30mm x 2.8 ring shank nail or 25mm – 6g W screw for walls or 30mm – 6g W screw for ceilings	50mm x 2.8 galvanised nail or 40mm – 6g W screw*	–
13mm	40mm x 2.8 galvanised nail or 30mm x 2.8 ring shank nail or 30mm – 6g Type W screw	50mm x 2.8 galvanised nail or 45mm – 6g W screw*	75mm x 3.75 galvanised nail or 65mm – 8g W screw*
16mm	50mm x 2.8 galvanised nail or 45mm – 6g W screw	65mm x 3.15 galvanised nail or 50mm – 6g W screw*	75mm x 3.75 galvanised nail or 65mm – 8g W screw*

For timber use Type 'W' coarse thread needle point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.

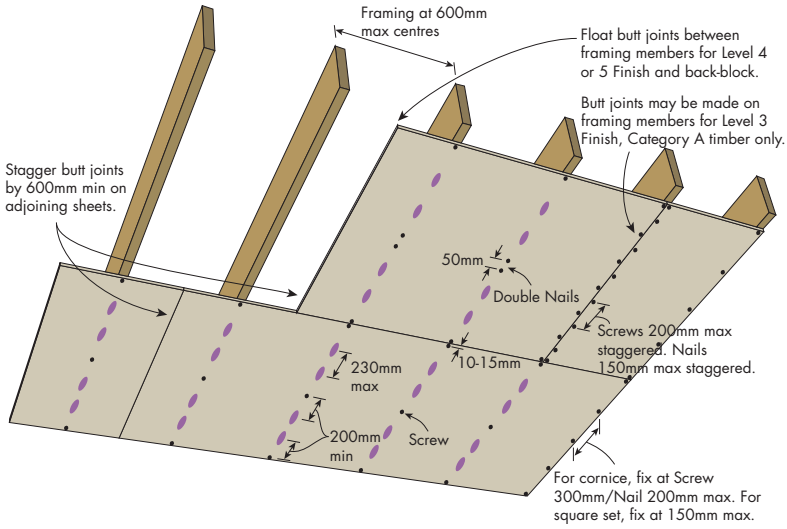
FASTENER TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO HARDWOOD TIMBER

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm	30mm x 2.8 galvanised nail or 25mm x 2.8 ring shank nail or 25mm – 6g W screw	30mm x 2.8 galvanised nail or 25mm x 2.8 ring shank nail or 30mm – 6g W screw	–
10mm	30mm x 2.8 galvanised nail or 25mm x 2.8 ring shank nail or 25mm – 6g W screw for walls or 30mm – 6g W screw for ceilings	40mm x 2.8 galvanised nail or 35mm – 6g W screw*	–
13mm	30mm x 2.8 galvanised nail or 25mm x 2.8 ring shank nail or 25mm – 6g W screw for walls or 30mm – 6g W screw for ceilings	40mm x 2.8 galvanised nail or 40mm – 6g W screw*	65mm x 3.15 galvanised nail or 65mm – 8g W screw*
16mm	40mm x 2.8 galvanised nail or 30mm – 6g W screw	50mm x 2.8 galvanised nail or 45mm – 6g W screw*	65mm x 3.15 galvanised nail or 65mm – 8g W screw*

For timber use Type 'W' coarse thread needle point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.

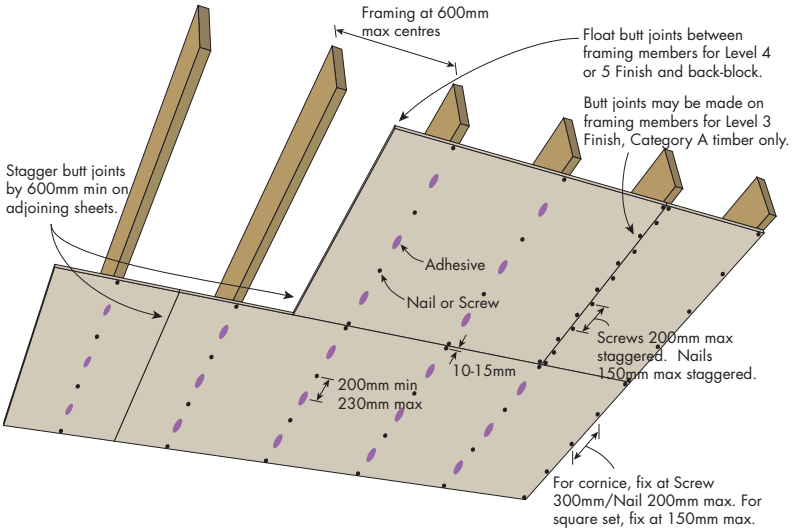
NON-FIRE RATED

FIGURE 5 Non-Fire Rated 1 Layer
Fastener and Adhesive Method



Framing	Timber or Steel Joists or Steel Furring Channel
Fixing	Fastener and Adhesive Method Nails must not be used on metal framing members.
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Adhesive daubs 25mm diameter and 15mm high, spaced at 230mm max centres and 200mm min from fastener points and plasterboard edges. 600mm wide sheet: 2 daubs 900mm wide sheet: 3 daubs 1200mm wide sheet: 4 daubs 1350mm wide sheet: 4 daubs *[On 1350mm wide sheets use temporary fasteners until adhesive sets]*
Centreline of sheets	Screw or Double Nail at centreline of sheet on each framing member.
Recessed Edges	Fix on each framing member
Butt joints on framing members	Screws: Fix at 200mm max centres and stagger screws. Nails: Fix at 150mm max centres and stagger nails. Stagger butt joints by 600mm min on adjoining sheets.
Floating butt joints	Locate centrally between framing members and back-block. Stagger butt joints by 600mm min on adjoining sheets.
Wall abutment	Cornice: Screw fix at 300mm max centres or Nail fix at 200mm max centres. Square Set: Fix at 150mm max centres.
Openings and control joints	Screws: Fix at 200mm max centres Nails: Fix at 150mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer To Construction Details]*

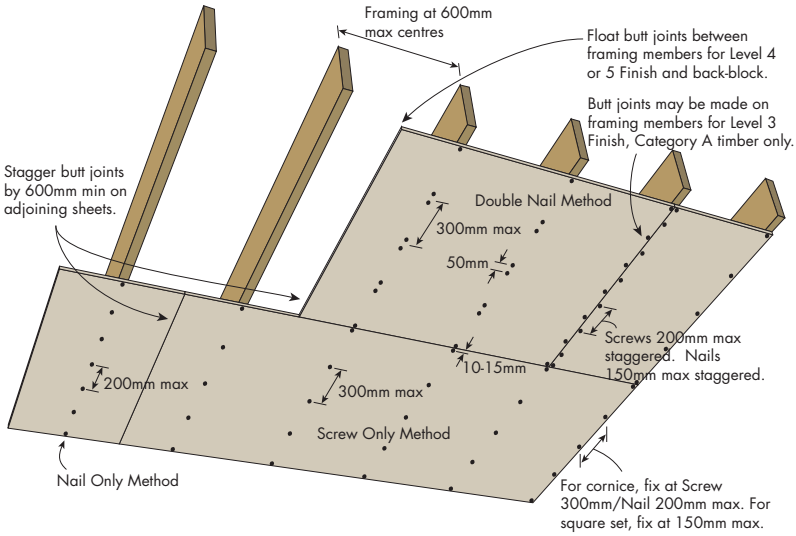
FIGURE 6 Non-Fire Rated 1 Layer
1/3 Fastener and Adhesive Method



Framing	Timber or Steel Joists or Steel Furring Channel
Fixing	1/3 Fastener and Adhesive Method. Nails must not be used on metal framing members.
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Adhesive daubs 25mm diameter and 15mm high, and 200mm min to 230mm max from fastener points and plasterboard edges. 600mm wide sheet: 2 daubs 900mm wide sheet: 2 daubs 1200mm wide sheet: 3 daubs 1350mm wide sheet: 3 daubs
Recessed Edges	Fix on each framing member
Butt joints on framing members	Screws: Fix at 200mm max centres and stagger screws. Nails: Fix at 150mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets.
Floating butt joints	Locate centrally between framing members and back-block. Stagger butt joints by 600mm min on adjoining sheets.
Wall abutment	Cornice: Screw fix at 300mm max centres or Nail fix at 200mm max centres. Square Set: Fix at 150mm max centres.
Openings and control joints	Screws: Fix at 200mm max centres Nails: Fix at 150mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 7 Non-Fire Rated 1 Layer

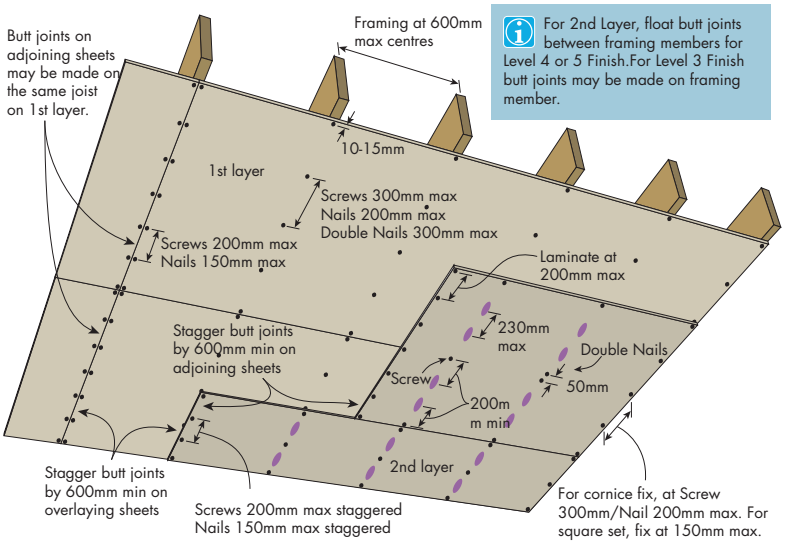
Fastener Only Method



Framing	Timber or Steel Joists or Steel Furring Channel
Fixing	Fastener Only Method. Nails must not be used on metal framing members.
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Screws: Fix at 300mm max centres. Nails: Fix at 200mm max centres. Double Nails: Fix at 300mm max centres.
Recessed Edges	Fix on each framing member
Butt joints on framing members	Screws: Fix at 200mm max centres and stagger screws. Nails: Fix at 150mm max centres and stagger nails. Stagger butt joints by 600mm min on adjoining sheets.
Floating butt joints	Locate centrally between framing members and back-block. Stagger butt joints by 600mm min on adjoining sheets.
Wall abutment	Cornice: Screw fix at 300mm max centres or Nail fix at 200mm max centres. Square Set: Fix at 150mm max centres.
Openings and control joints	Screws: Fix at 200mm max centres Nails: Fix at 150mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 8 Non-Fire Rated 2 Layers

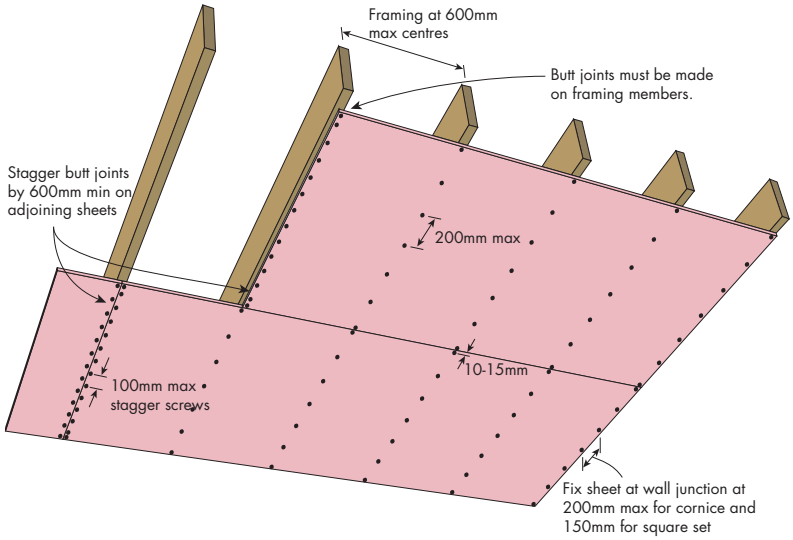
Fastener Only Method + Fastener and Adhesive Method



Framing	Timber or Steel Joists or Steel Furring Channel
Fixing	1st layer: Fastener Only Method. 2nd layer: Fastener and Adhesive Method. Nails must not be used on metal framing members.
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field 1st layer	Screws: Fix at 300mm max centres. Nails: Fix at 200mm max centres. Double Nails: Fix at 300mm max centres.
Field 2nd layer	Adhesive daubs 25mm diameter and 15mm high, spaced at 230mm max centres and 200mm min from fastener points and plasterboard edges. 600mm wide sheet: 2 daubs 900mm wide sheet: 3 daubs 1200mm wide sheet: 4 daubs 1350mm wide sheet: 4 daubs *[On 1350mm wide sheets use temporary fasteners until adhesive sets]*
Centreline of sheets 2nd layer	Screw or Double Nail at centreline of sheet on each framing member.
Recessed Edges	Fix on each framing member
Butt joints on framing members	Screws: Fix at 200mm max centres. Nails: Fix at 150mm max centres. Stagger butt joints by 600mm min between layers.
Floating butt joints on 2nd layer	Locate centrally between framing members and laminate to 2nd layer at 200mm max centres. Stagger butt joints by 600mm min on adjoining sheets.
Wall abutment	Cornice: Screw fix at 300mm max centres or Nail fix at 200mm max centres. Square Set: Fix at 150mm max centres.
Openings and control joints	Screws: Fix at 200mm max centres Nails: Fix at 150mm max centres
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 9 Fire Rated 1 Layer

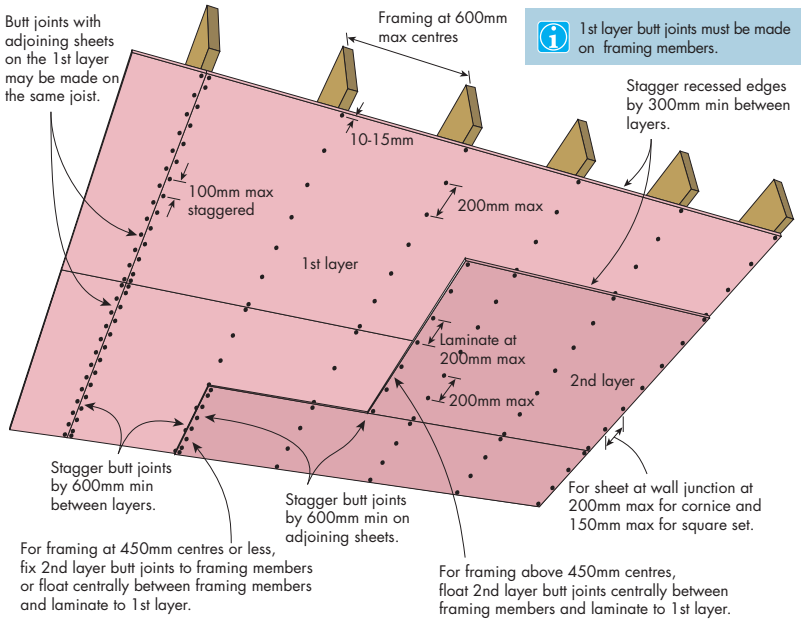
Fastener Only Method



Framing	Timber or Steel Joists or Steel Furring Channel
Fixing	Fastener Only Method. Nails must not be used on metal framing members.
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Fix at 200mm max centres
Recessed Edges	Fix on each framing member
Butt joints on framing members	Fix at 100mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets.
Wall abutment	Cornice: Fix at 200mm max centres Square Set: Fix at 150mm max centres
Openings and control joints	Screws: Fix at 200mm max centres Nails: Fix at 150mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

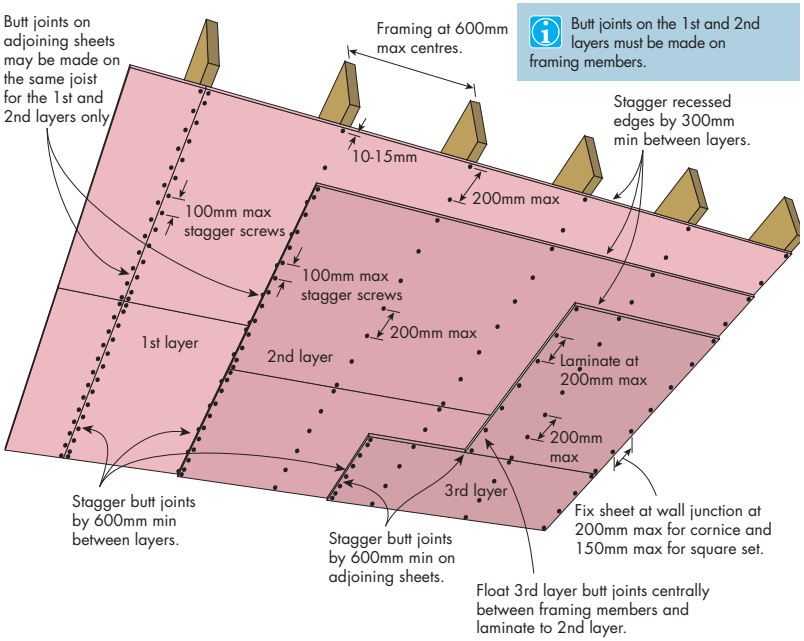
FIGURE 10 Fire Rated 2 Layers

Fastener Only Method



Framing	Timber or Steel Joists or Steel Furring Channel
Fixing	Fastener Only Method. Nails must not be used on metal framing members.
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Fix at 200mm max centres
Recessed Edges	Fix on each framing member. Stagger recessed edges by 300mm min between layers.
Butt joints on framing members	Fix at 100mm max centres and stagger screws. Butt joints on the 1st layer may be made on the same joist. Stagger butt joints by 600mm min between layers.
Floating butt joints on 2nd layer	Locate centrally between framing members and laminate to 1st layer at 200mm max centres. Stagger butt joints by 600mm min on adjoining sheets.
Wall abutment	Cornice: Fix at 200mm max centres Square Set: Fix at 150mm max centres
Openings and control joints	Screws: Fix at 200mm max centres Nails: Fix at 150mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 11 Fire Rated 3 Layers
Fastener Only Method



Framing	Timber or Steel Joists or Steel Furring Channel
Fixing	Fastener Only Method. Nails must not be used on metal framing members.
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Fix at 200mm max centres
Recessed Edges	Fix on each frame member. Stagger recessed edges by 300mm min between layers.
Butt joints on framing members	Fix at 100mm max centres and stagger screws. Butt joints on 1st and 2nd layers may be made on same joist. Stagger butt joints by 600mm min between layers.
Floating butt joints on 3rd layer	Locate centrally between framing members and laminate to 3rd layer at 200mm max centres. Stagger butt joints by 600mm min on adjoining sheets.
Wall abutment	Cornice: Fix at 200mm max centres Square Set: Fix at 150mm max centres
Openings and control joints	Screws: Fix at 200mm max centres Nails: Fix at 150mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

NON-FIRE RATED
CEILING TO WALL JUNCTION – ELEVATION

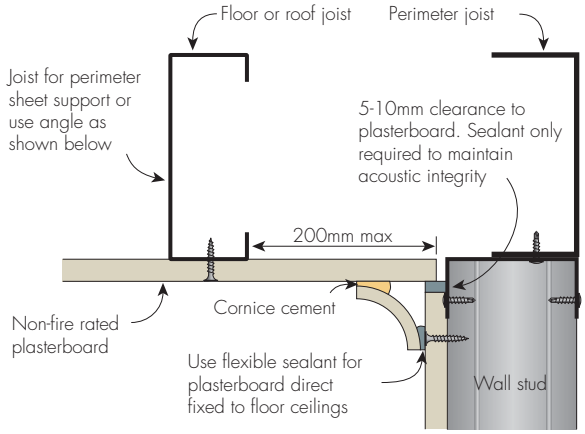


FIGURE 12 Floor Joist Support For Ceiling to Wall
Direct fixed to joist

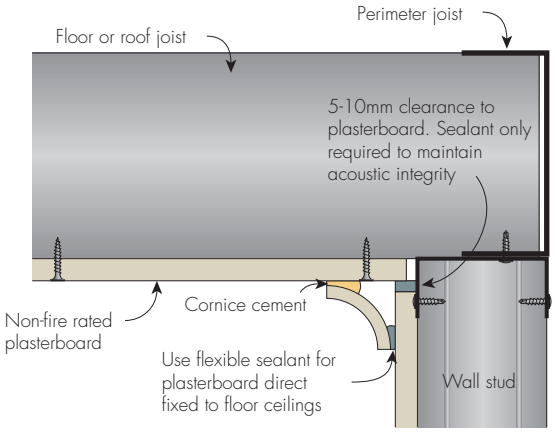


FIGURE 13 Ceiling to Wall
Direct fixed to joist

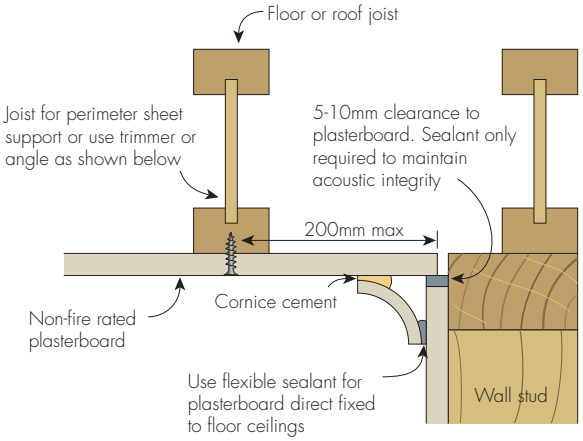


FIGURE 14 Floor Joist Support For Ceiling to Wall
Direct fixed to joist

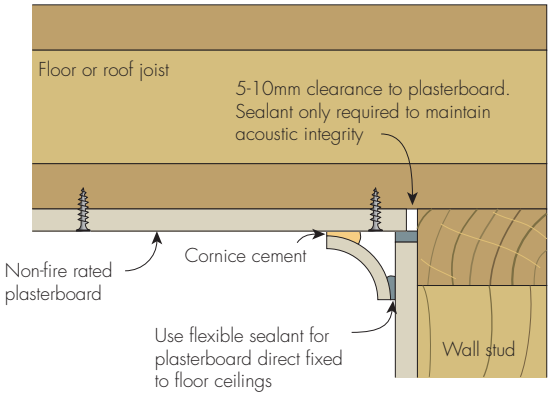


FIGURE 15 Ceiling to Wall
Direct fixed to joist

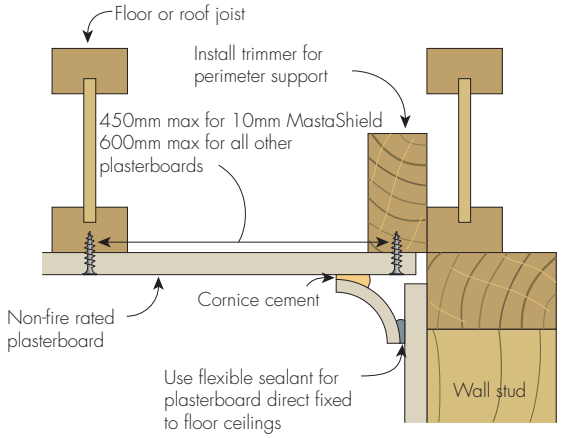


FIGURE 16 Trimmer Support For Ceiling to Wall
Direct fixed to joist

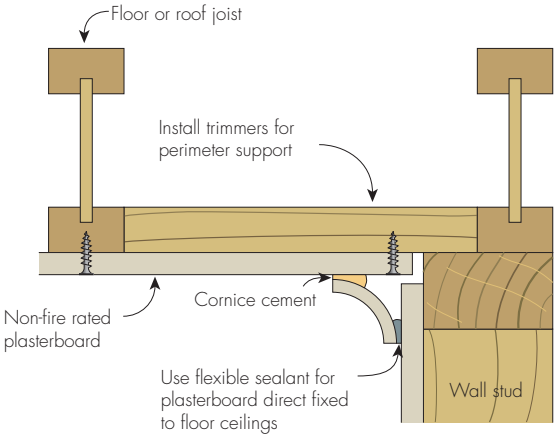


FIGURE 17 Trimmer Support For Ceiling to Wall
Direct fixed to joist

NON-FIRE RATED
CEILING TO WALL JUNCTION – ELEVATION

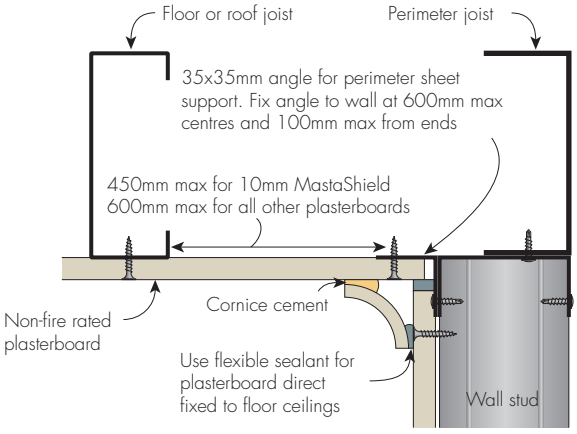


FIGURE 18 Angle Support For Ceiling to Wall
Direct fixed to joist

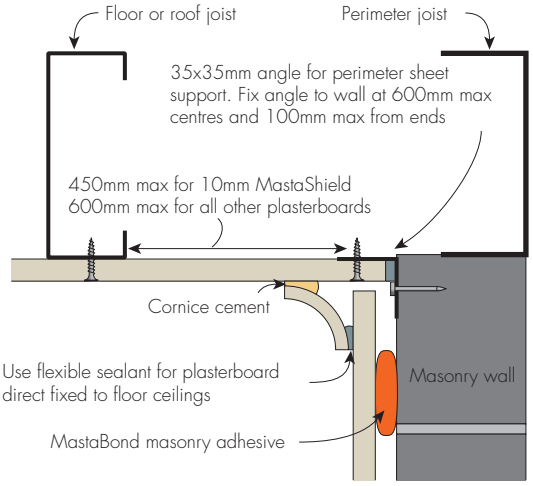


FIGURE 19 Ceiling to Masonry Wall
Direct fixed to joist

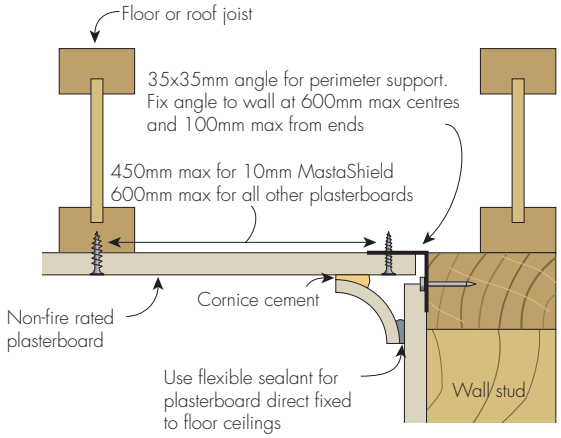


FIGURE 20 Angle Support For Ceiling to Wall
Direct fixed to joist

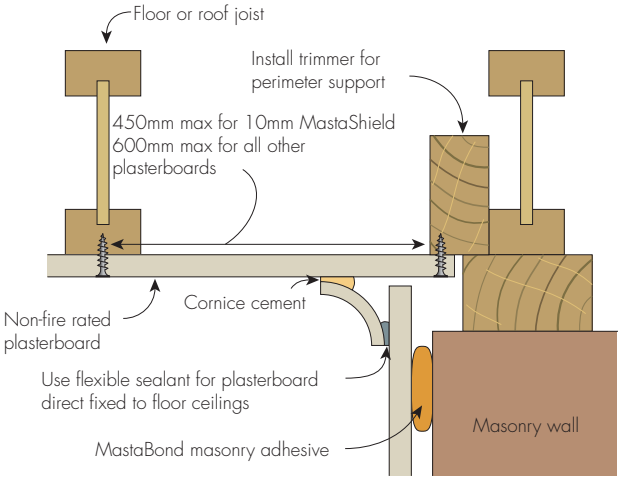


FIGURE 21 Ceiling to Masonry Wall
Direct fixed to joist

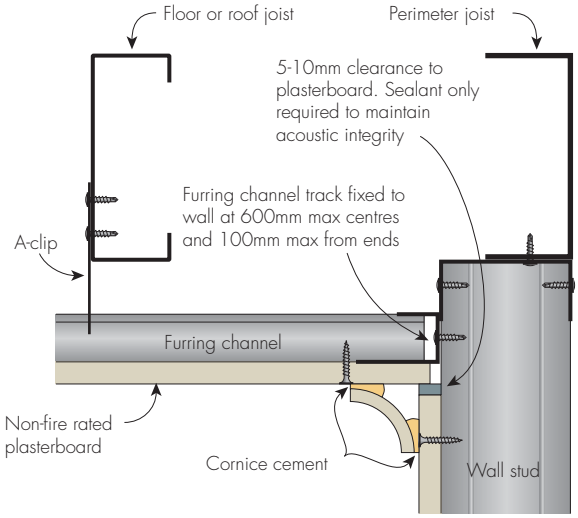


FIGURE 22 Ceiling to Wall
A-clip and furring channel

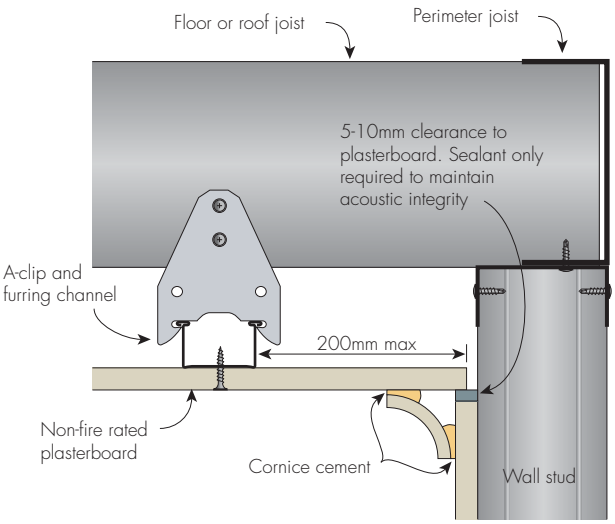


FIGURE 23 Ceiling to Wall
A-clip and furring channel

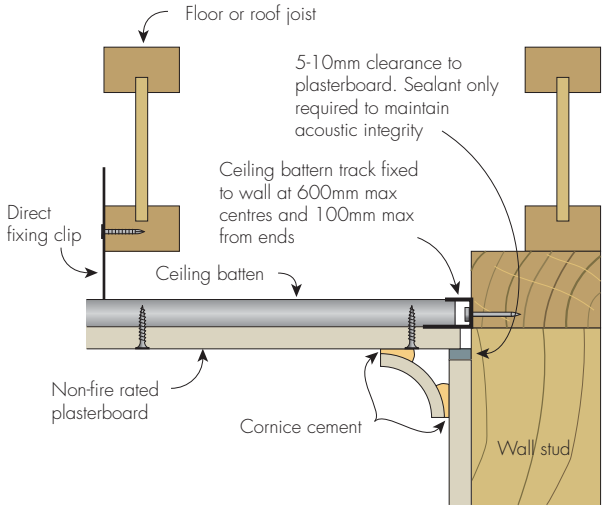


FIGURE 24 Ceiling to Wall
Direct fixing clip and ceiling battern

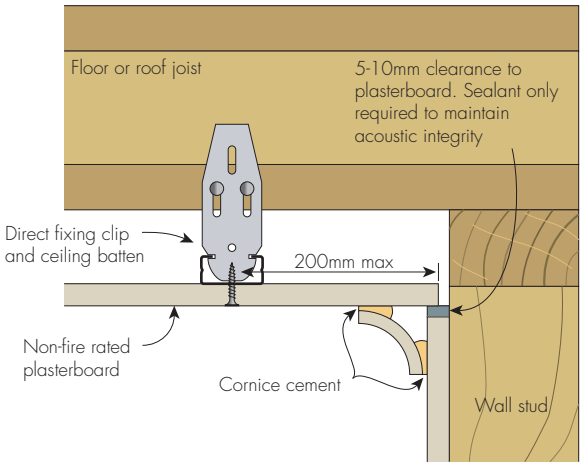


FIGURE 25 Ceiling to Wall
Direct fixing clip and ceiling battern

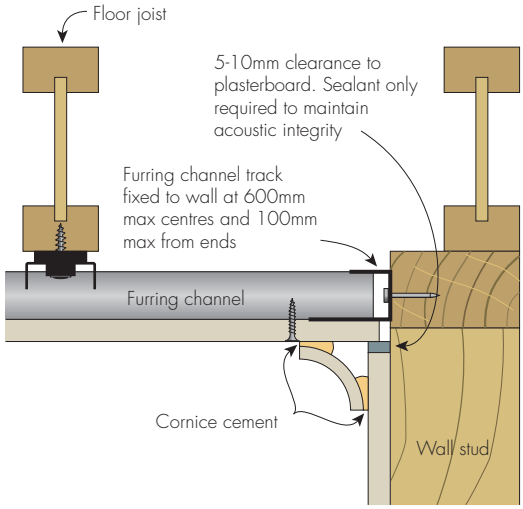


FIGURE 26 Ceiling to Wall
Resilient mount and furring channel

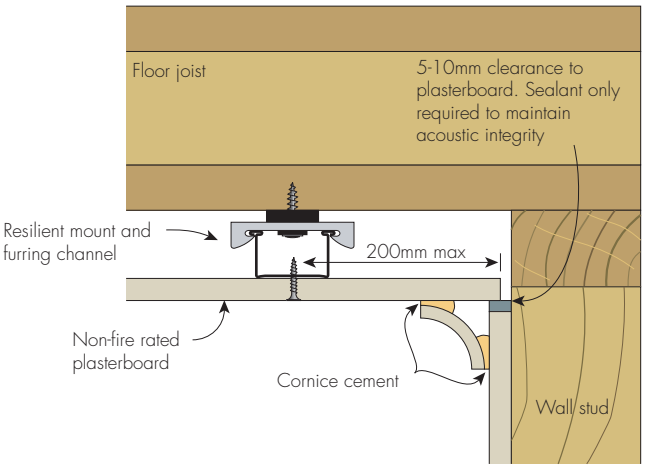


FIGURE 27 Ceiling to Wall
Resilient mount and furring channel

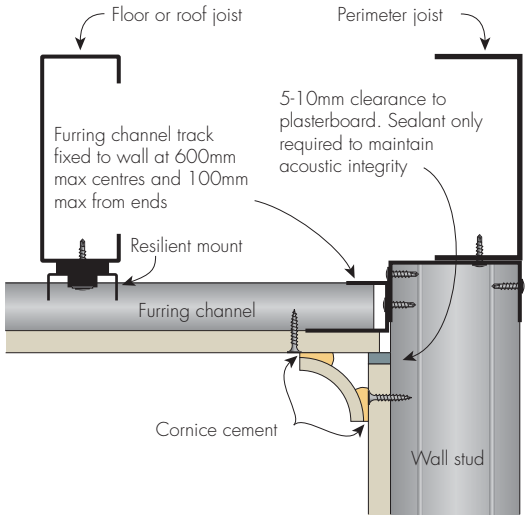


FIGURE 28 Ceiling to Wall
Resilient mount and furring channel

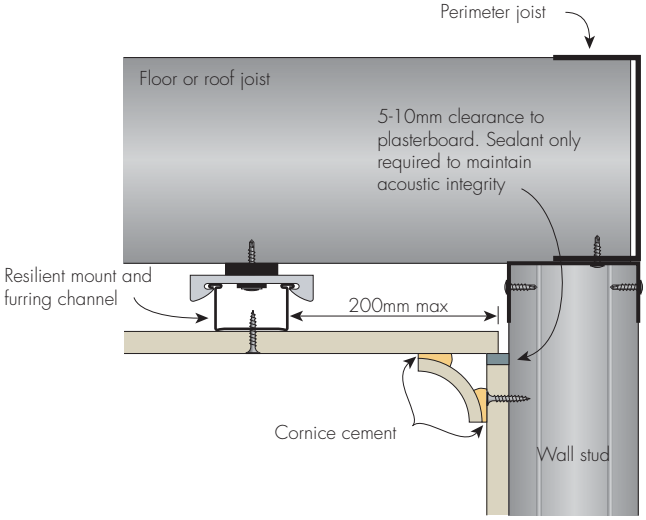


FIGURE 29 Ceiling to Wall
Resilient mount and furring channel

CEILING TO WALL JUNCTION – ELEVATION

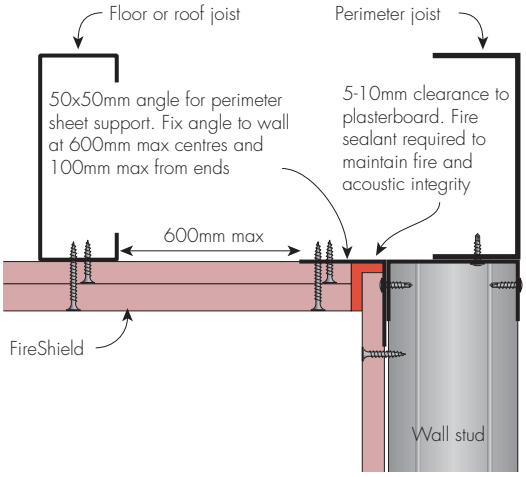


FIGURE 30 Fire Rated Ceiling to Wall
Direct fixed to joist

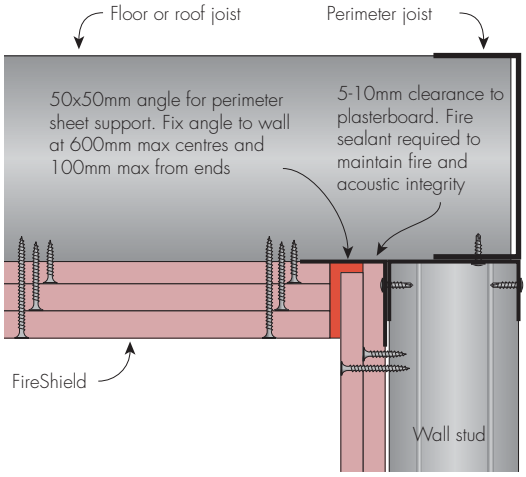


FIGURE 31 Fire Rated Ceiling to Wall
Direct fixed to joist

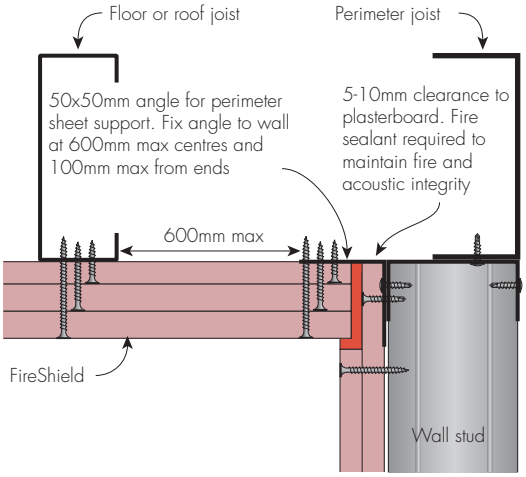


FIGURE 32 Fire Rated Ceiling to Wall
Direct fixed to joist

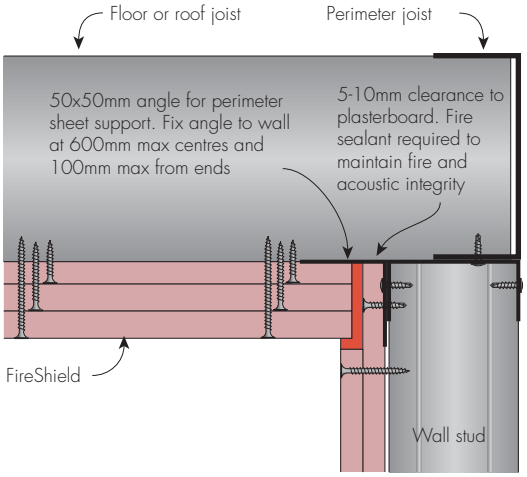


FIGURE 33 Fire Rated Ceiling to Wall – Alternate Detail
Direct fixed to joist

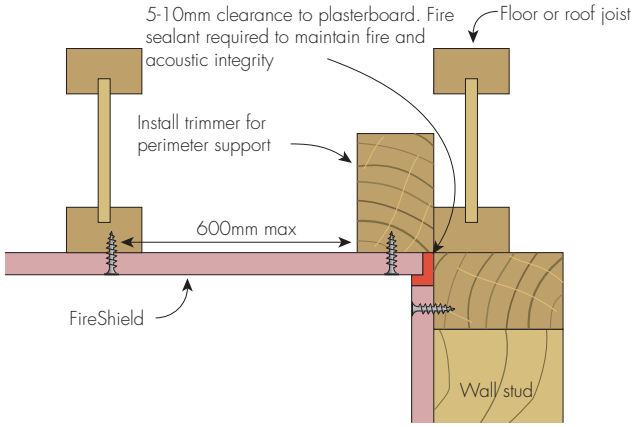


FIGURE 34 Fire Rated Ceiling to Wall
Direct fixed to joist

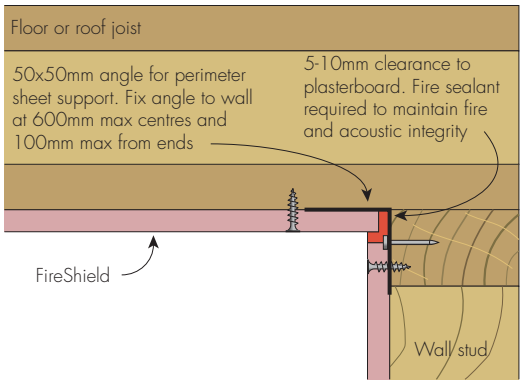


FIGURE 35 Fire Rated Ceiling to Wall
Direct fixed to joist

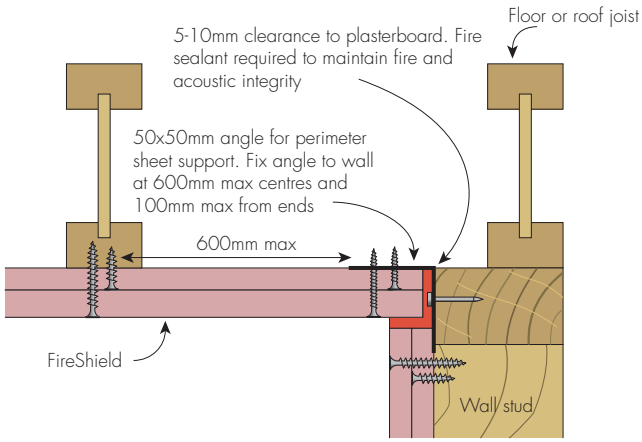


FIGURE 36 Fire Rated Ceiling to Wall
Direct fixed to joist

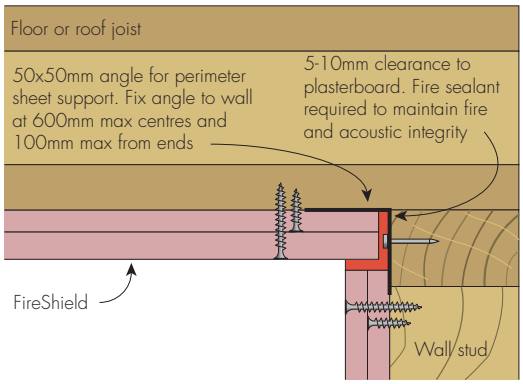


FIGURE 37 Fire Rated Ceiling to Wall
Direct fixed to joist

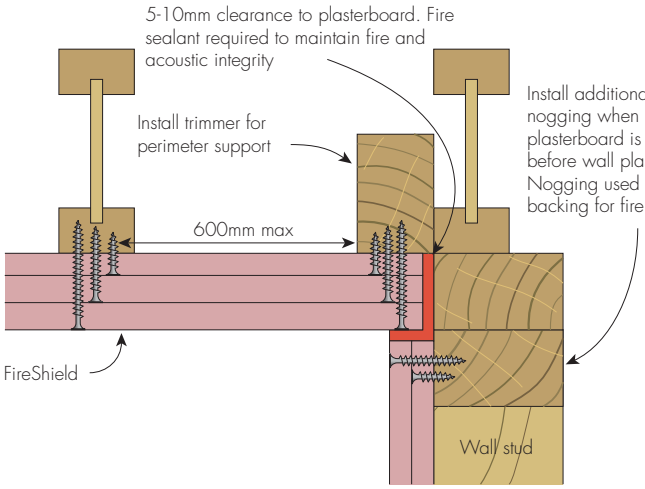


FIGURE 38 Fire Rated Ceiling to Wall
Direct fixed to joist

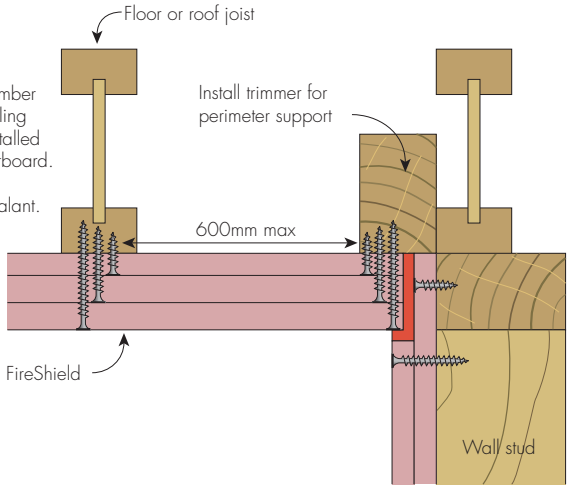


FIGURE 39 Fire Rated Ceiling to Wall – Alternate Detail
Direct fixed to joist

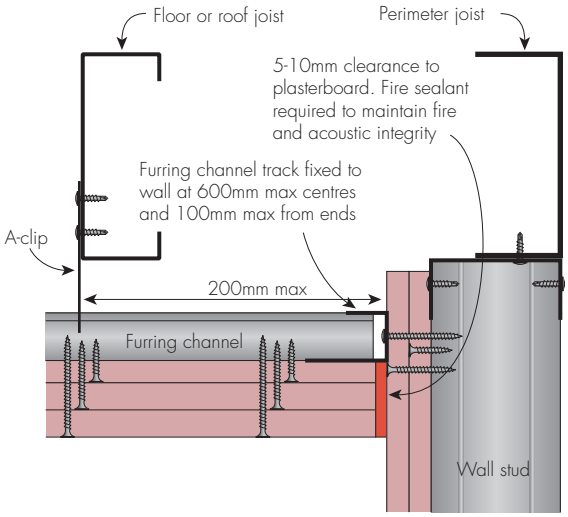


FIGURE 40 Fire Rated Ceiling to Wall
A-clip and furring channel

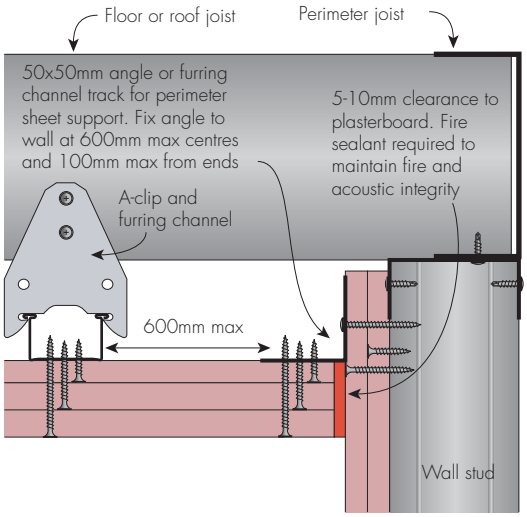


FIGURE 41 Fire Rated Ceiling to Wall
A-clip and furring channel

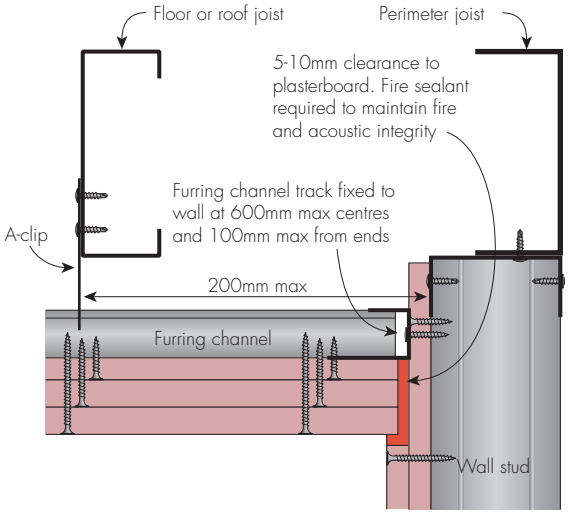


FIGURE 42 Fire Rated Ceiling to Wall – Alternate Detail
A-clip and furring channel

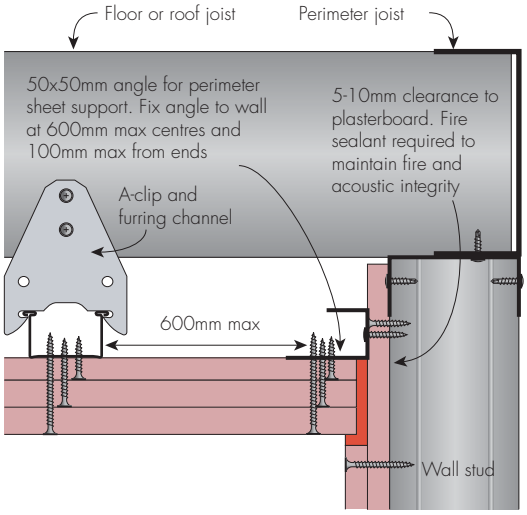


FIGURE 43 Fire Rated Ceiling to Wall – Alternate Detail
A-clip and furring channel

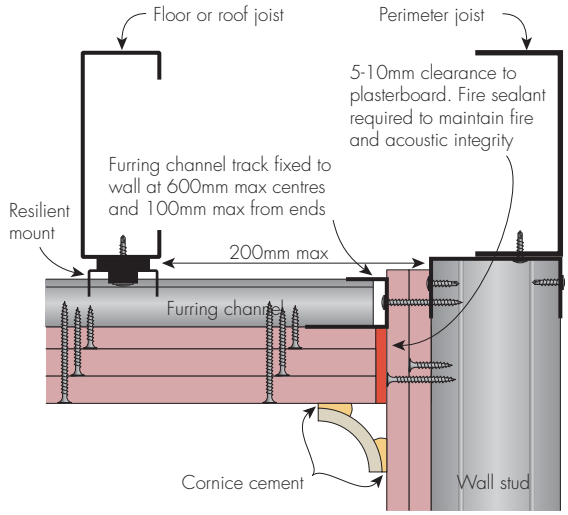


FIGURE 44 Fire Rated Ceiling to Wall
Resilient mount and furring channel

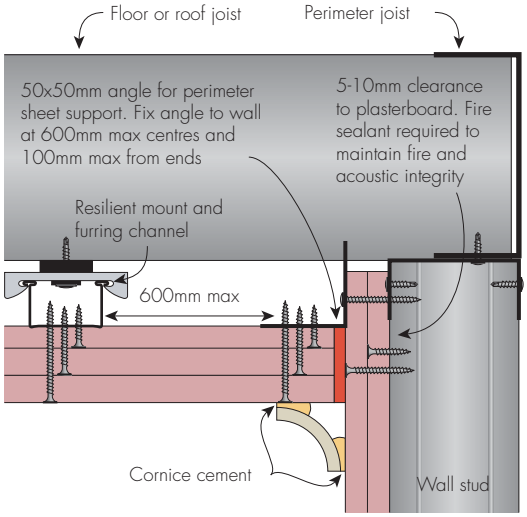


FIGURE 45 Fire Rated Ceiling to Wall
Resilient mount and furring channel

CEILING TO WALL JUNCTION – ELEVATION

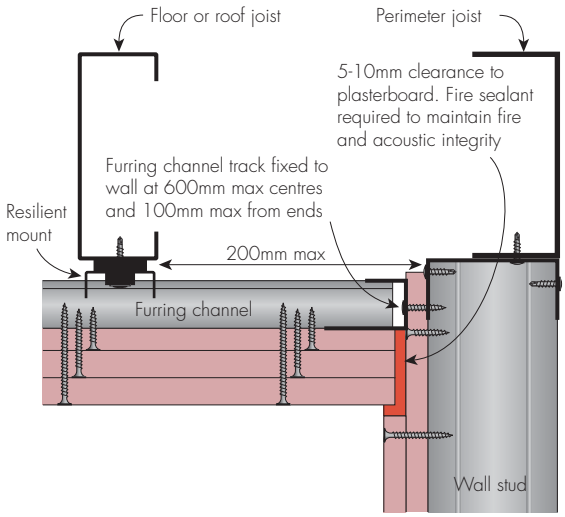


FIGURE 46 Fire Rated Ceiling to Wall – Alternate Detail
Resilient mount and furring channel

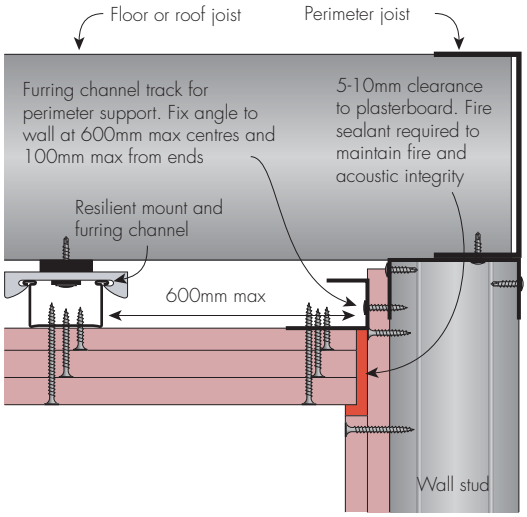


FIGURE 47 Fire Rated Ceiling to Wall – Alternate Detail
Resilient mount and furring channel

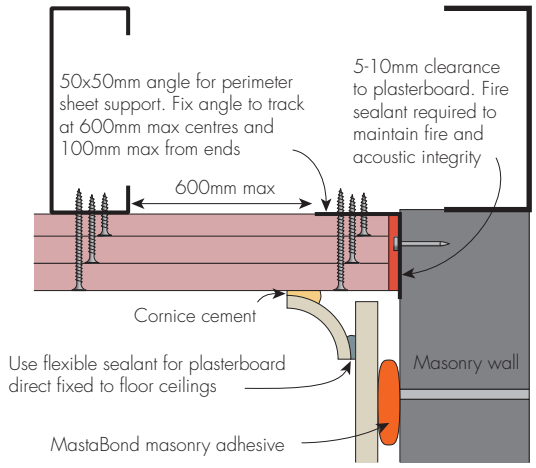


FIGURE 48 Fire Rated Ceiling to Masonry Wall
Direct fixed to joist

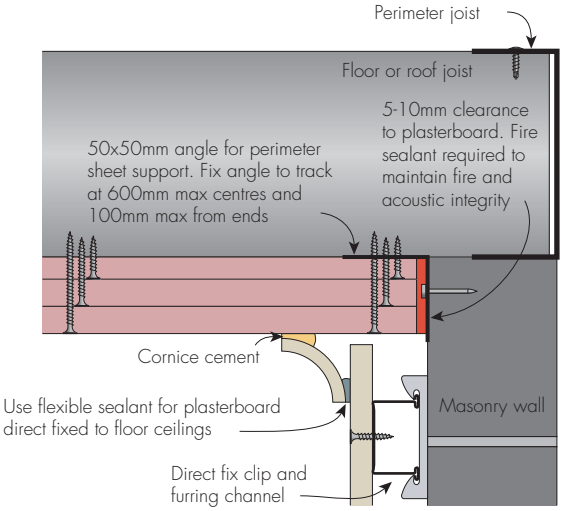


FIGURE 49 Fire Rated Ceiling to Masonry Wall
Direct fixed to joist

CEILING TO WALL JUNCTION – ELEVATION

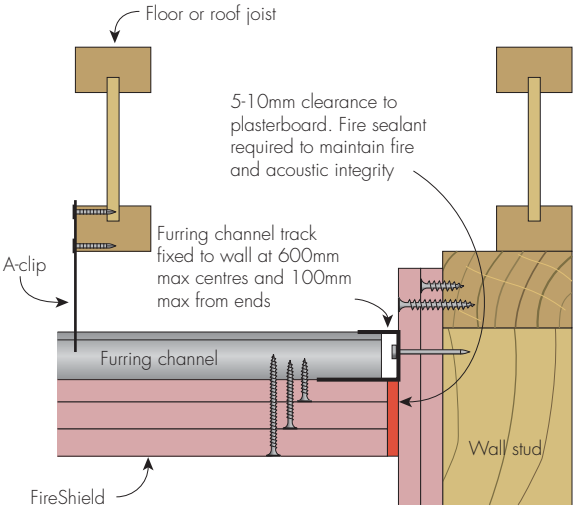


FIGURE 50 Fire Rated Ceiling to Wall
A-clip and furring channel

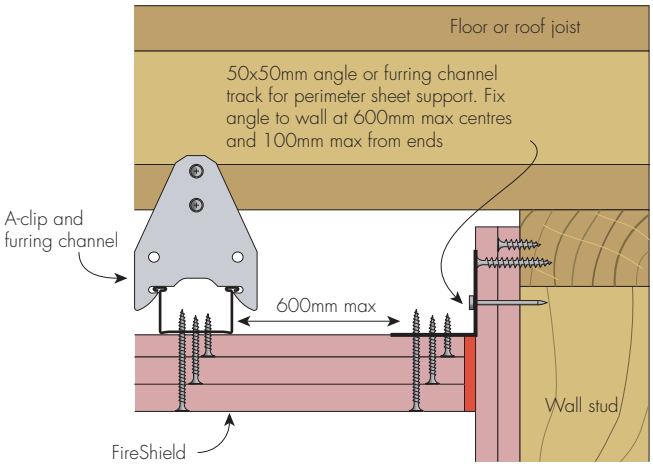


FIGURE 51 Fire Rated Ceiling to Wall
A-clip and furring channel

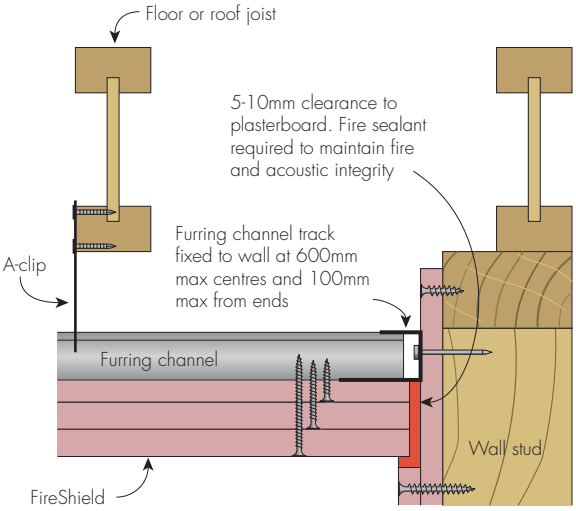


FIGURE 52 Fire Rated Ceiling to Wall – Alternate Detail
A-clip and furring channel

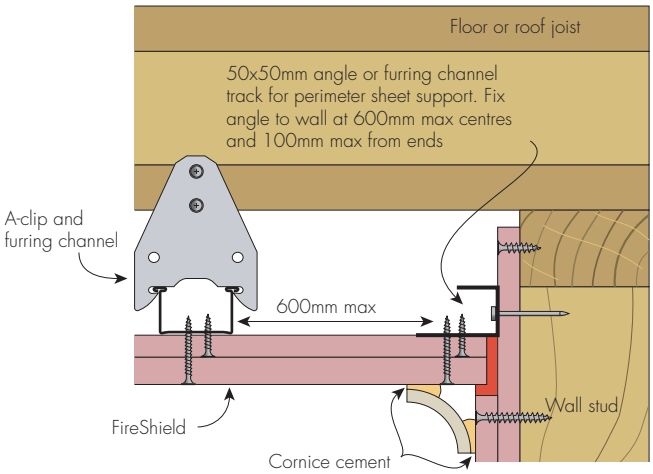


FIGURE 53 Fire Rated Ceiling to Wall – Alternate Detail
A-clip and furring channel

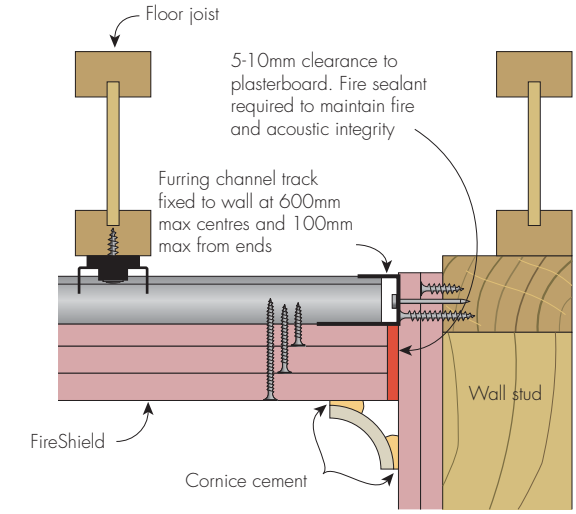


FIGURE 54 Fire Rated Ceiling to Wall
Resilient mount and furring channel

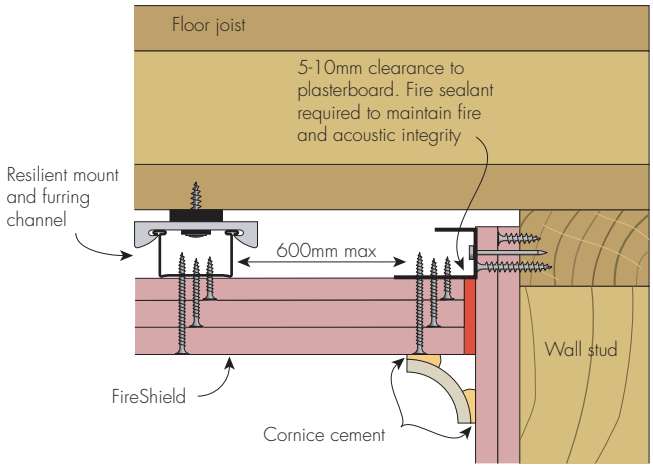


FIGURE 55 Fire Rated Ceiling to Wall
Resilient mount and furring channel

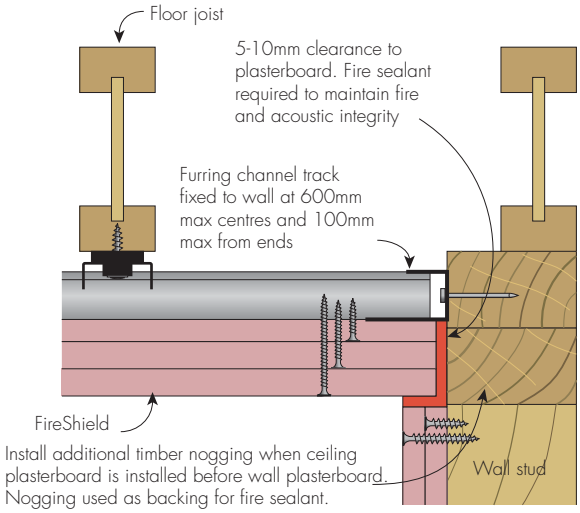


FIGURE 56 Fire Rated Ceiling to Wall – Alternate Detail
Resilient mount and furring channel

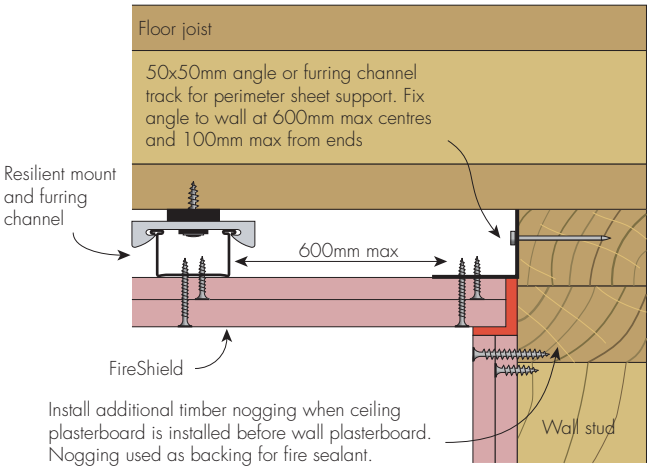


FIGURE 57 Fire Rated Ceiling to Wall – Alternate Detail
Resilient mount and furring channel

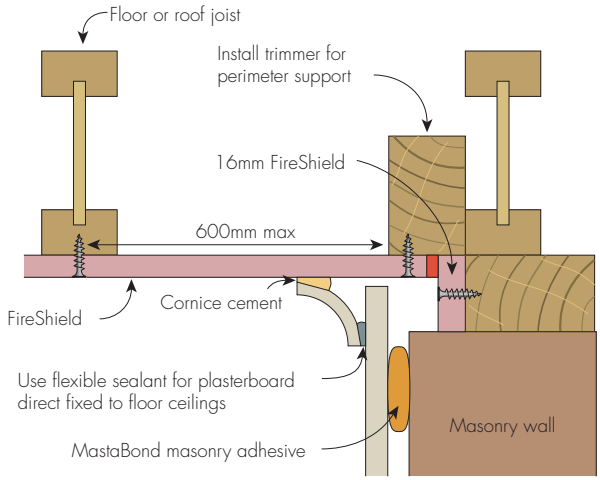


FIGURE 58 Fire Rated Ceiling to Masonry Wall
Direct fixed to joist

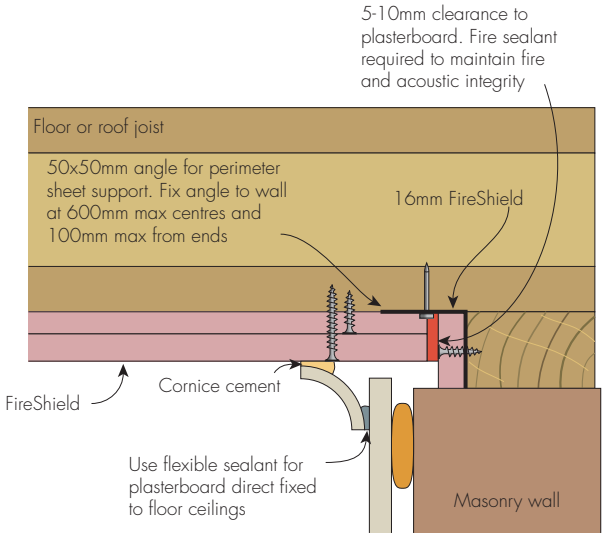


FIGURE 59 Fire Rated Ceiling to Masonry Wall
Direct fixed to joist

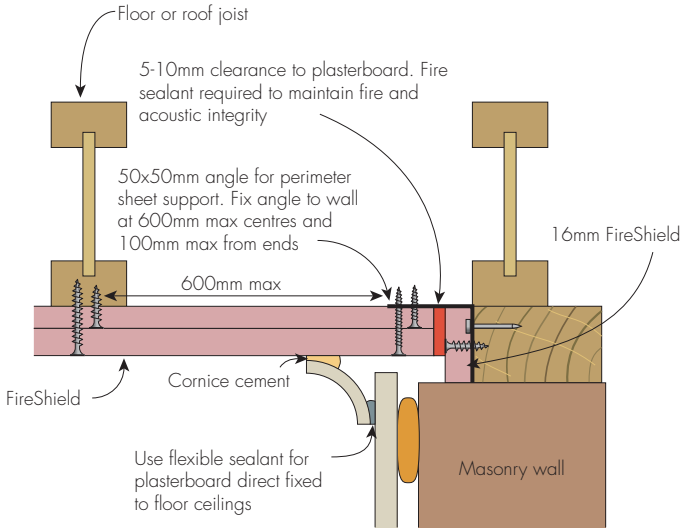


FIGURE 60 Fire Rated Ceiling to Masonry Wall – Alternate Detail
Direct fixed to joist

NON-FIRE RATED

SUSPENDED CEILING TO WALL JUNCTION – ELEVATION

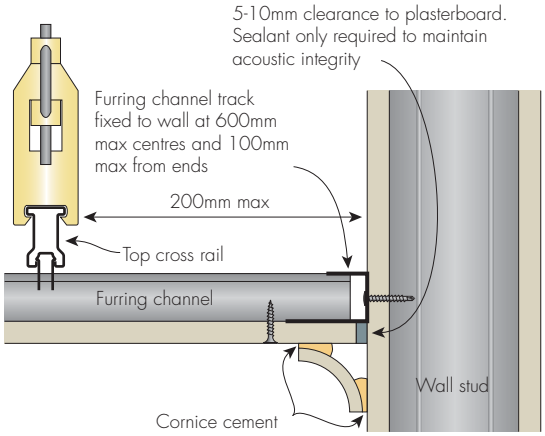


FIGURE 61 Suspended Ceiling to Wall

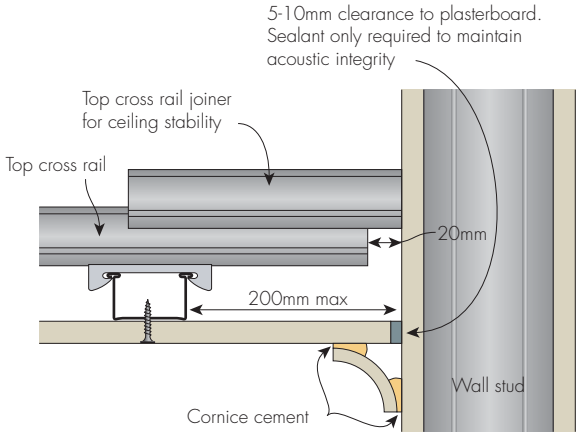


FIGURE 62 Suspended Ceiling to Wall

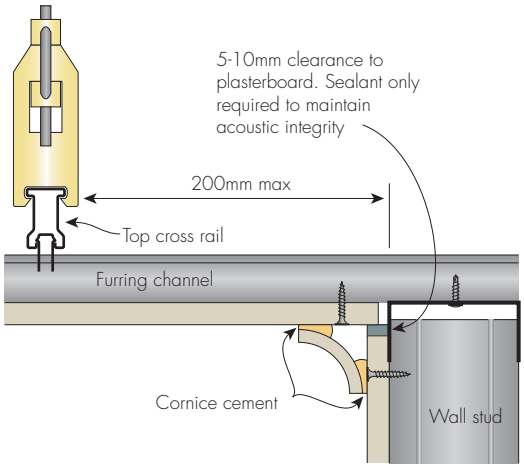


FIGURE 63 Suspended Ceiling to Wall

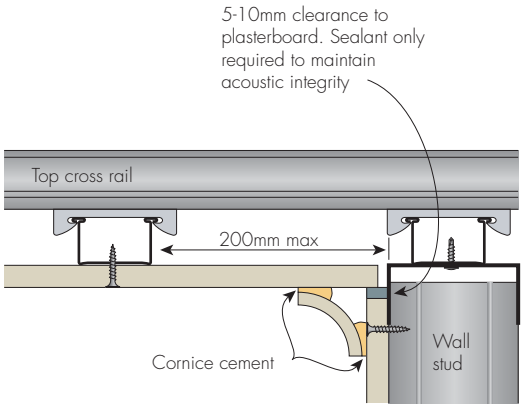


FIGURE 64 Suspended Ceiling to Wall

SUSPENDED CEILING TO WALL JUNCTION – ELEVATION

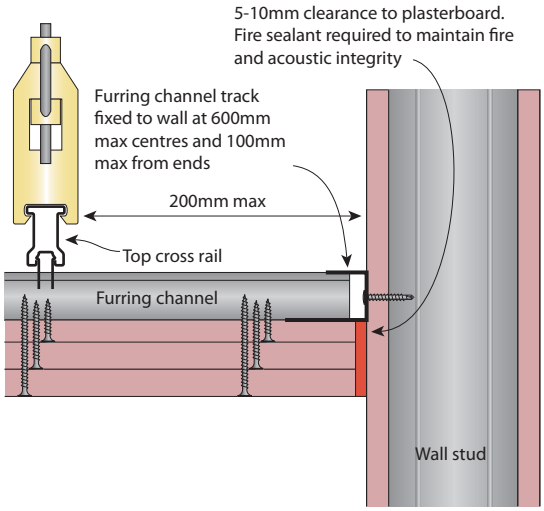


FIGURE 65 Suspended Ceiling to Wall

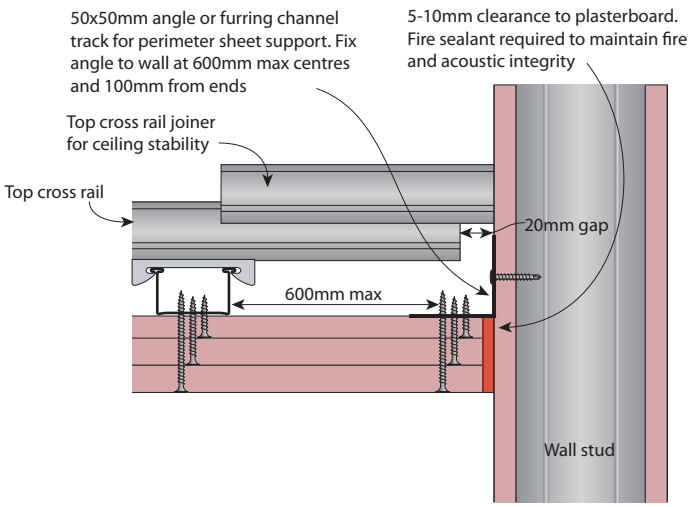


FIGURE 66 Suspended Ceiling to Wall

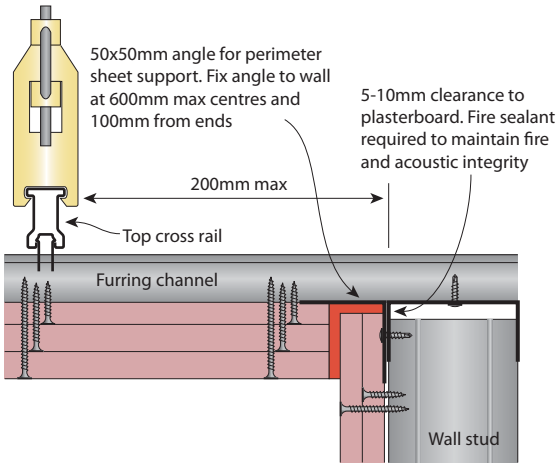


FIGURE 67 Suspended Ceiling to Wall

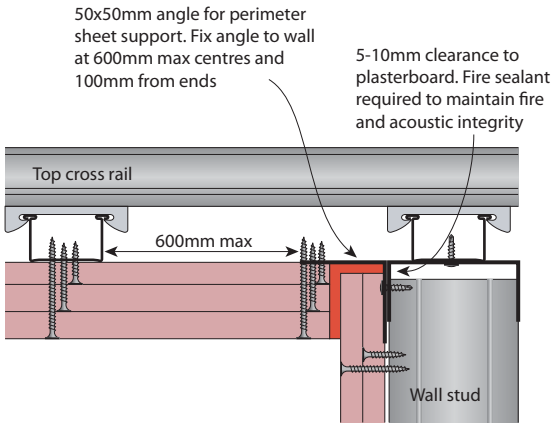


FIGURE 68 Suspended Ceiling to Wall

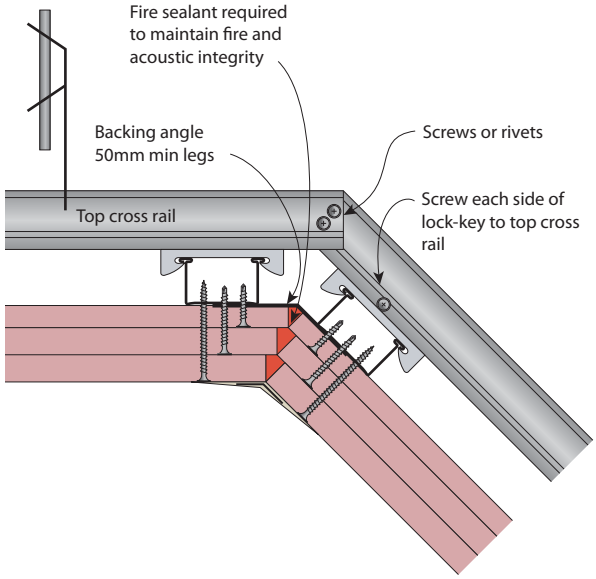


FIGURE 69 Suspended Angled Ceiling

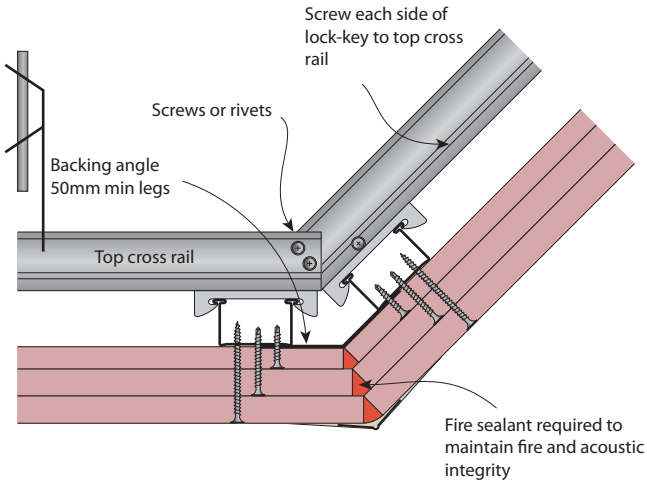


FIGURE 70 Suspended Angled Ceiling

FIRE RATED
SUSPENDED CEILING BULKHEAD – ELEVATION

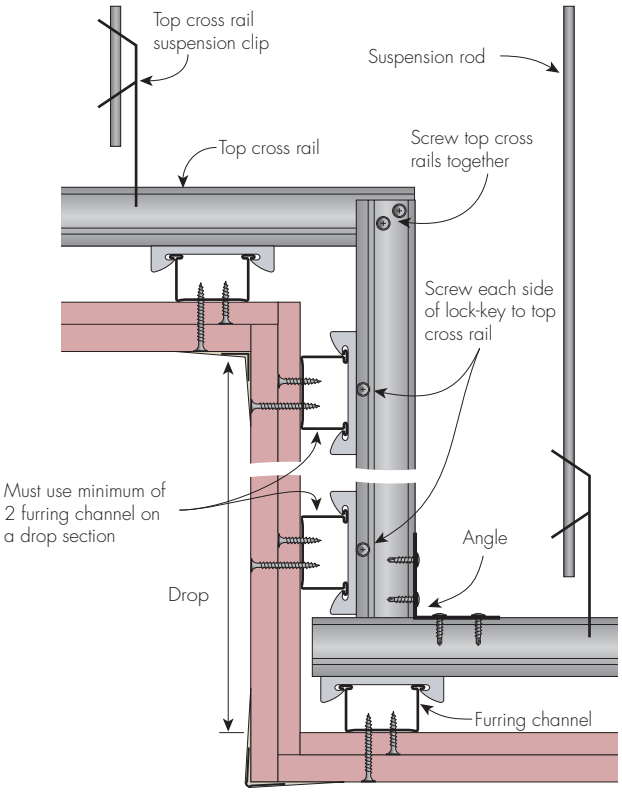


FIGURE 71 Suspended Ceiling Bulkhead – Elevation

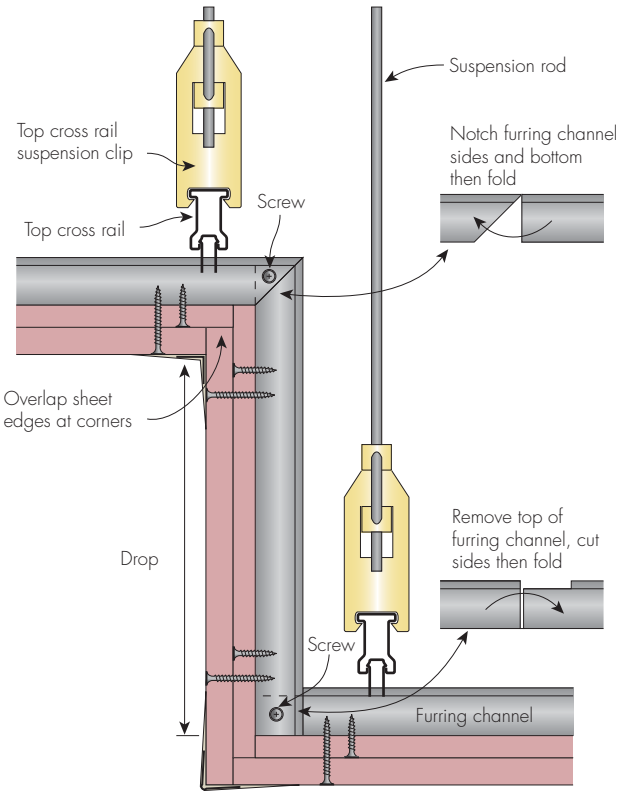


FIGURE 72 Suspended Ceiling Bulkhead – Elevation

FIRE RATED AND NON-FIRE RATED
FURRING CHANNEL BULKHEAD – ELEVATION

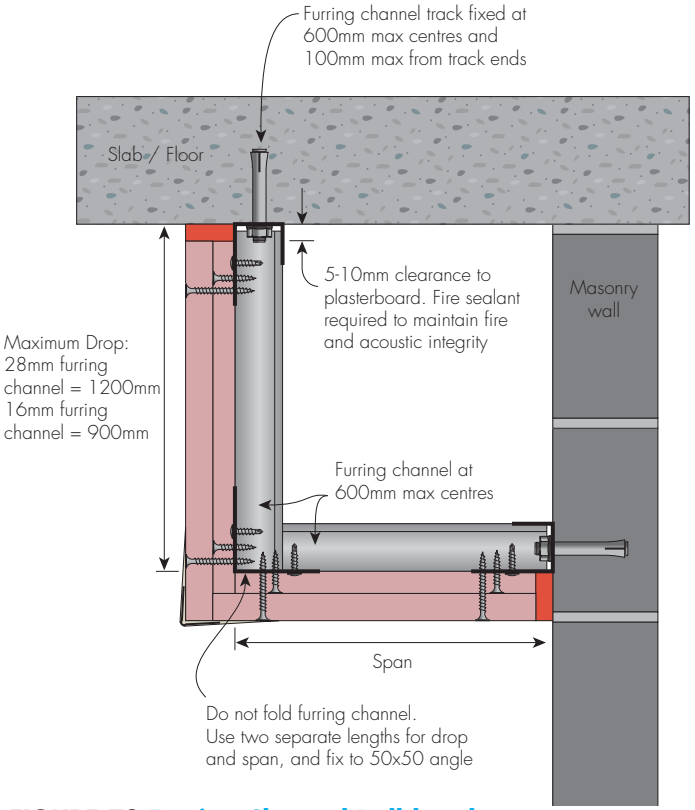


FIGURE 73 Furring Channel Bulkhead

Furring Channel Bulkhead Framing

Maximum Bulkhead Span Table (mm) Steel Furring Channel at 600mm Maximum Centres					
Furring channel	1 x 10mm	1 x 13mm	2 x 13mm	1 x 16mm	2 x 16mm
28mm (No.129)	1120	1170	1080	1150	1040
16mm (No.308)	–	880	810	890	800

1 Strength check: 1.2G + Wu using Wu = 0.375 kPa.
2 Serviceability check: G + Ws using Deflection Limit: L/360 or 12mm.
3 Maximum Rondo No.129 Furring Channel drop = 1200mm.
4 Maximum Rondo No.129 Furring Channel spacing = 600mm.
5 Maximum Rondo No.308 Furring Channel drop = 900mm.
6 Maximum Rondo No.308 Furring Channel spacing = 450mm.
7 No span given for Rondo No.308 Furring Channel with 1x10mm plasterboard as Furring Channel is not adequate as dropper.

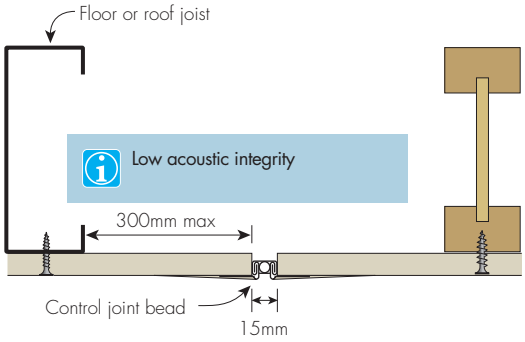


FIGURE 74 Non-Fire Rated Control Joint
Parallel to joist

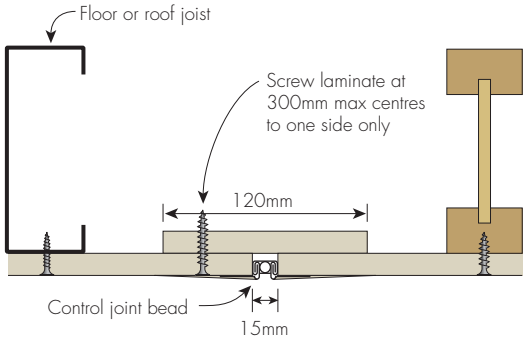


FIGURE 75 Non-Fire Rated Control Joint
Parallel to joist

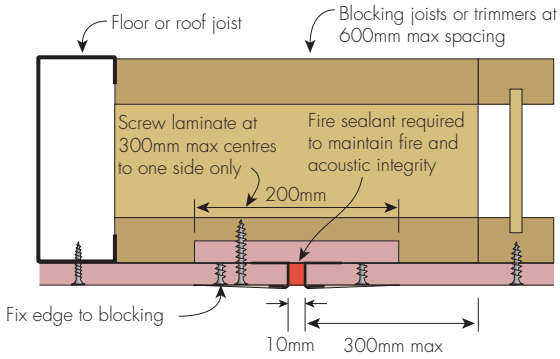


FIGURE 76 Non-Fire Rated and Fire Rated Control Joint
Parallel to joist

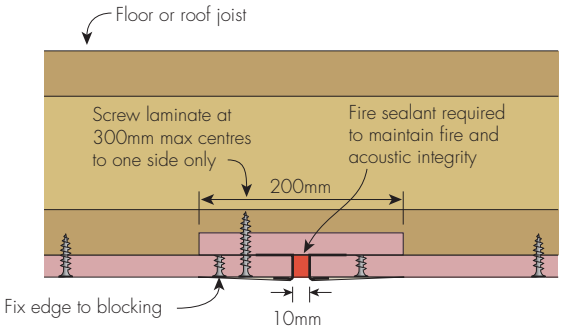


FIGURE 77 Non-Fire Rated and Fire Rated Control Joint
Perpendicular to joist

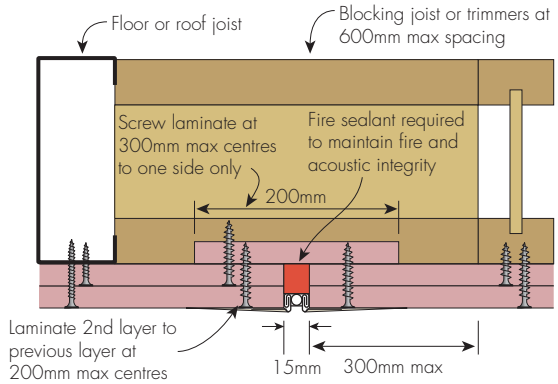


FIGURE 78 Non-Fire Rated and Fire Rated Control Joint
Parallel to joist

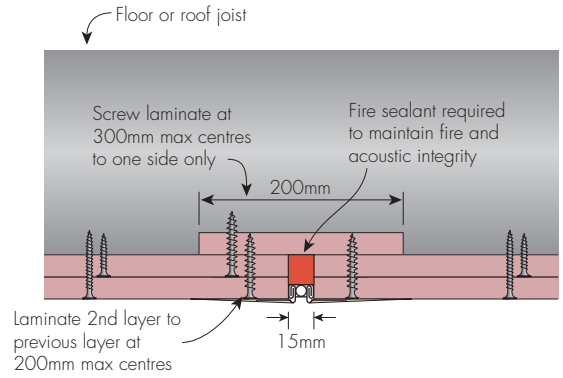


FIGURE 79 Non-Fire Rated and Fire Rated Control Joint
Perpendicular to joist

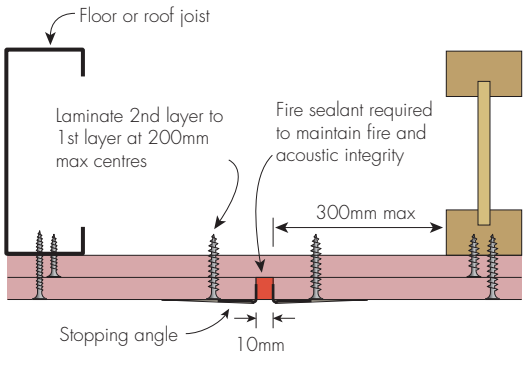


FIGURE 80 Non-Fire Rated and Fire Rated Control Joint
Parallel or perpendicular to joist

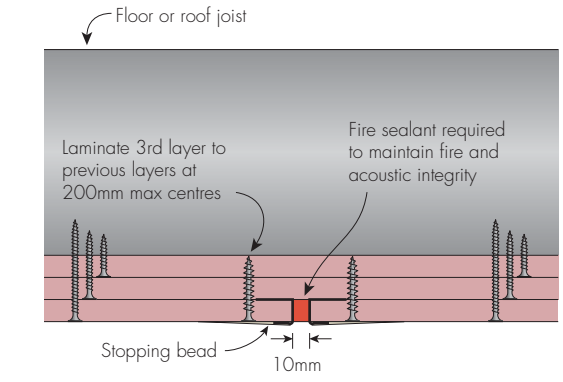


FIGURE 81 Non-Fire Rated and Fire Rated Control Joint
Parallel or perpendicular to joist

FIRE RATED AND NON-FIRE RATED
CEILING CONTROL JOINTS – ELEVATION

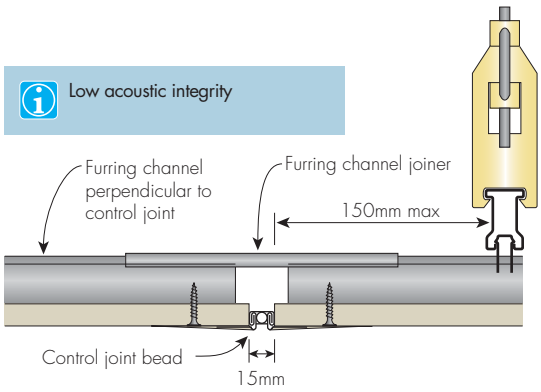


FIGURE 82 Non-Fire Rated Control Joint
Perpendicular to furring channel

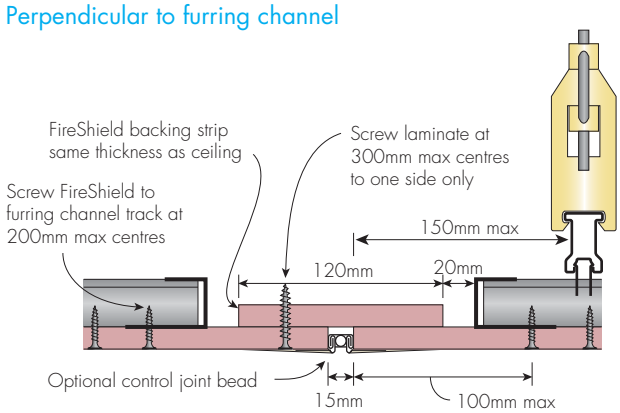


FIGURE 85 Fire Rated Control Joint
Perpendicular to furring channel

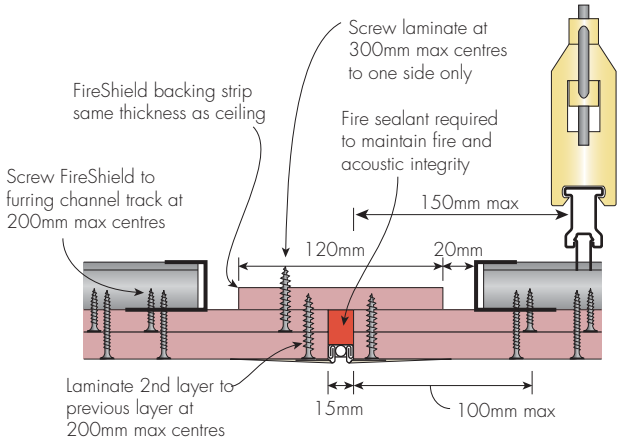


FIGURE 87 Fire Rated Control Joint
Perpendicular to furring channel

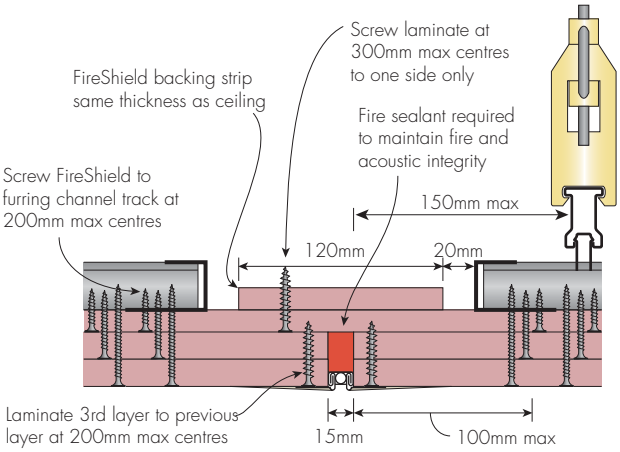


FIGURE 89 Fire Rated Control Joint
Perpendicular to furring channel

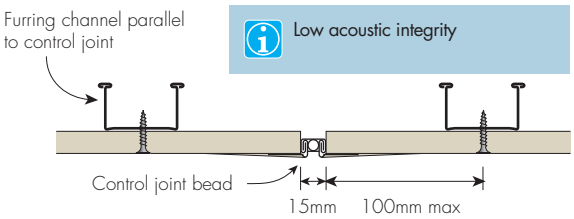


FIGURE 83 Non-Fire Rated Control Joint
Parallel to furring channel

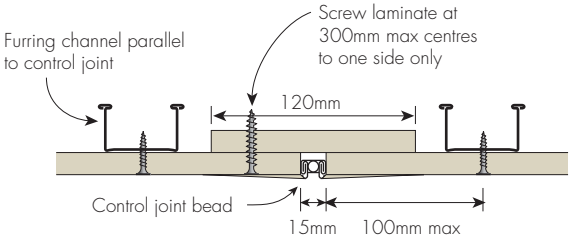


FIGURE 84 Non-Fire Rated Control Joint
Parallel to furring channel

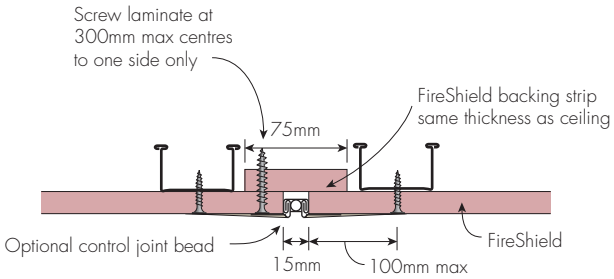


FIGURE 86 Fire Rated Control Joint
Parallel to furring channel

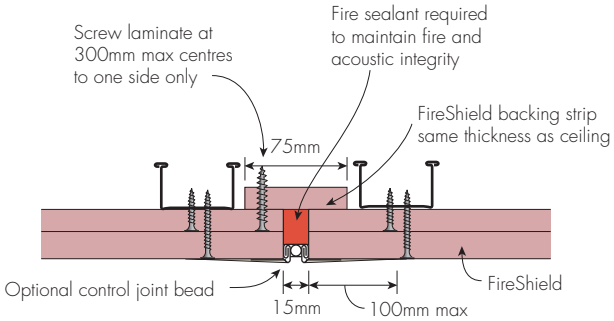


FIGURE 88 Fire Rated Control Joint
Parallel to furring channel

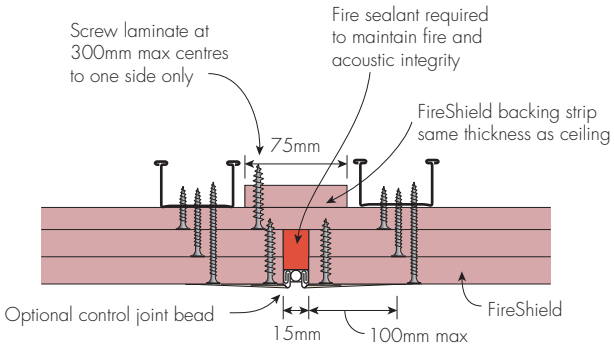


FIGURE 90 Fire Rated Control Joint
Parallel to furring channel

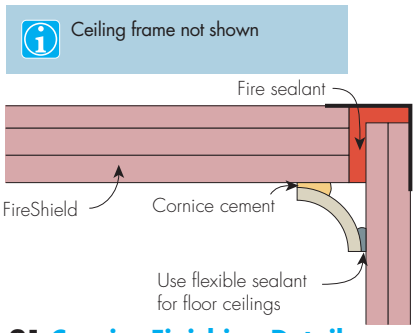


FIGURE 91 Cornice Finishing Detail
Valid for 1, 2 and 3 layer ceilings

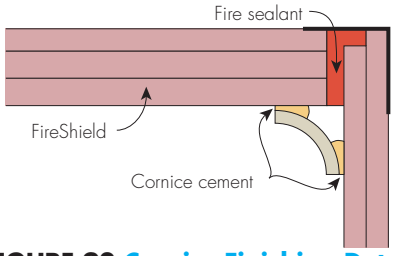


FIGURE 92 Cornice Finishing Detail
Valid for 1, 2 and 3 layer ceilings

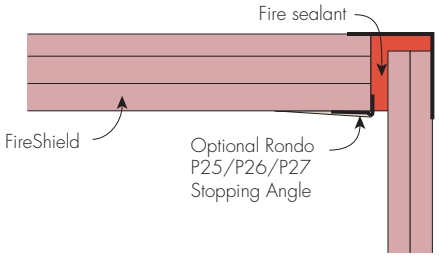


FIGURE 93 Ceiling Finishing Detail
Valid for 1, 2 and 3 layer ceilings

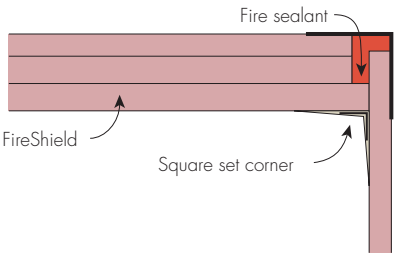


FIGURE 94 Square Set Finishing Detail
Valid for 2 and 3 layer ceilings

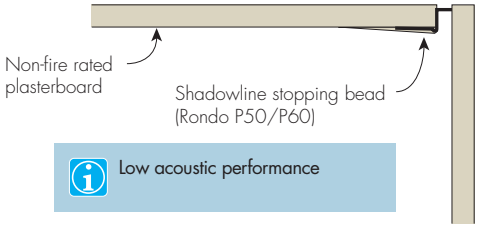


FIGURE 95 Shadowline Finishing Detail
Valid for 1, 2 and 3 layer ceilings

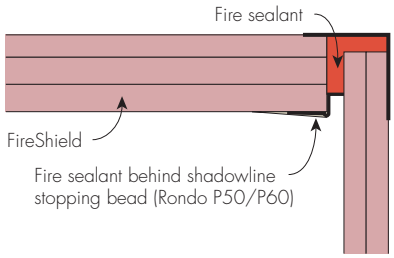


FIGURE 96 Shadowline Finishing Detail
Valid for 2 and 3 layer ceilings

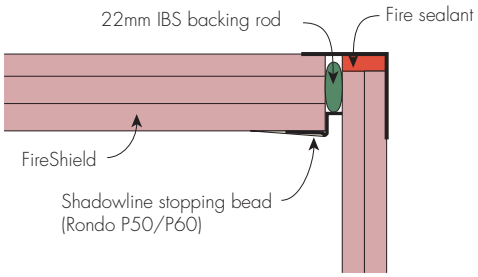


FIGURE 97 Shadowline Finishing Detail
Valid for 2 and 3 layer ceilings

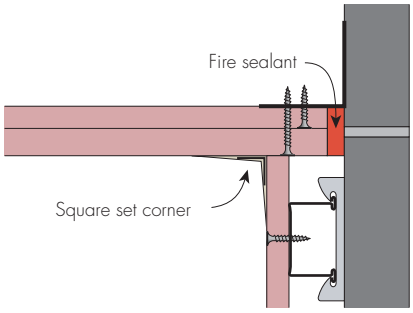


FIGURE 98 Square Set Finishing Detail
Valid for 1, 2 and 3 layer ceilings

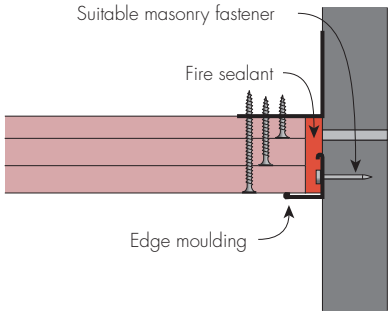


FIGURE 99 Edge Moulding Finishing Detail
Valid for 1, 2 and 3 layer ceilings

FIRE RATED AND NON-FIRE RATED
FIRE PENETRATIONS FOR CEILINGS – ELEVATION

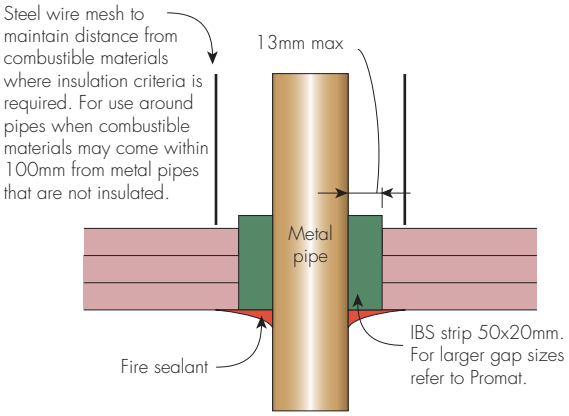


FIGURE 100 Typical Metal Pipe Penetration
Maintains FRL – Valid for 1, 2 and 3 layer ceilings
Example only

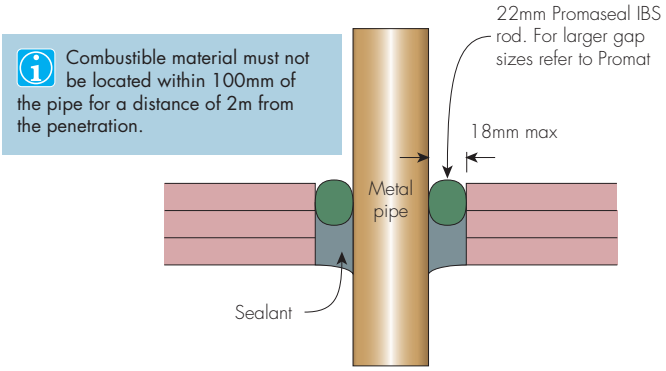


FIGURE 101 Typical Metal Pipe Penetration
Maintains FRL – Valid for 1, 2 and 3 layer ceilings
Example only

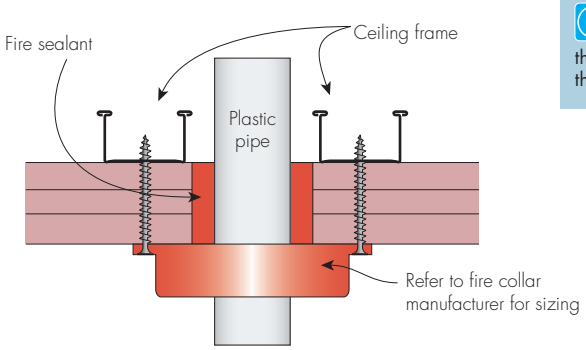


FIGURE 102 Typical Fire Collar
Maintains FRL – Valid for 1, 2 and 3 layer ceilings
Example only

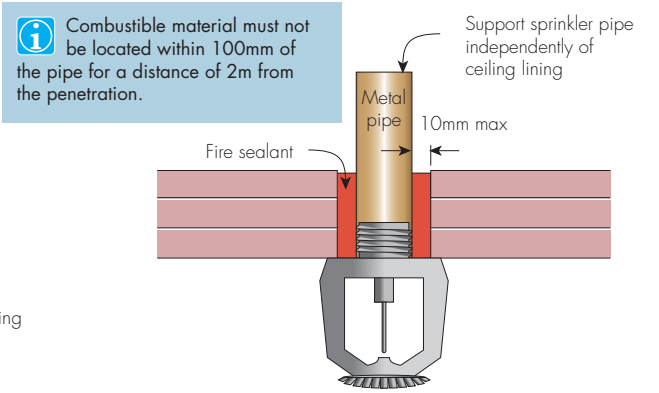


FIGURE 103 Typical Sprinkler Penetration
Maintains FRL – Valid for 1, 2 and 3 layer ceilings
Example only

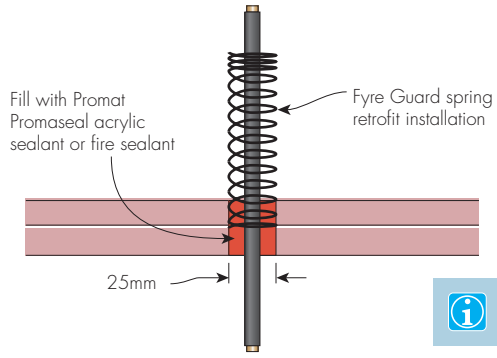
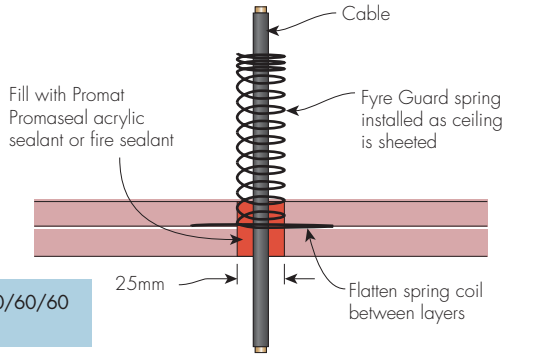


FIGURE 104 Typical Fire Spring
FRL 60/60/60 ceilings



For systems up to FRL 60/60/60

FIGURE 105 Typical Fire Spring
FRL 60/60/60 ceilings

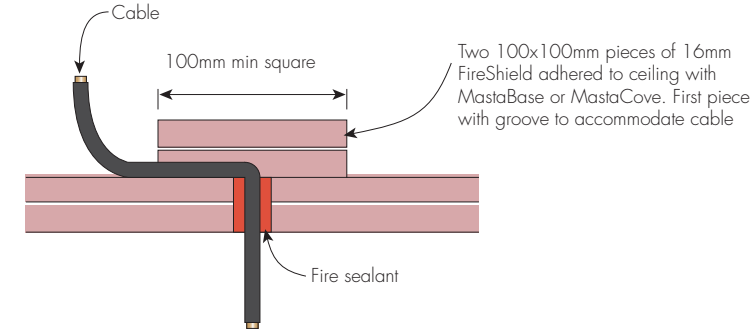


FIGURE 106 Cable Penetration
Maintains FRL – Valid for 1, 2 and 3 layer ceilings

These fire rated penetration details may follow the proprietry installation requirements from particular fire protection product manufacturers. Installation instructions and product performance must be verified by the fire protection product manufacturer.

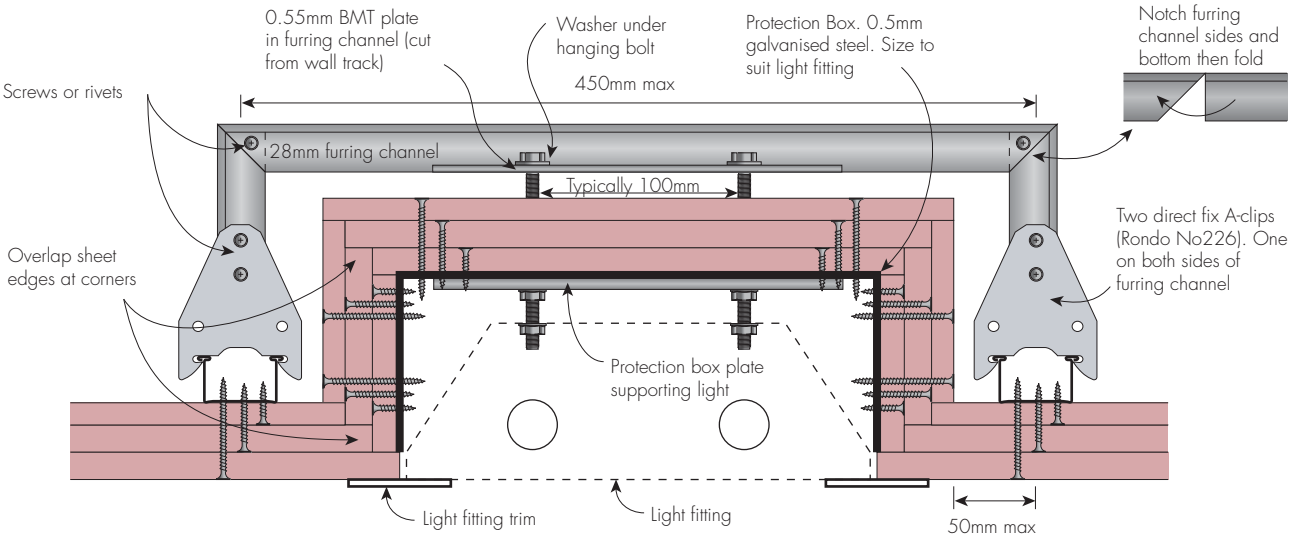


FIGURE 107 Typical Recessed Light Fitting
Maintains FRL of ceiling – Elevation

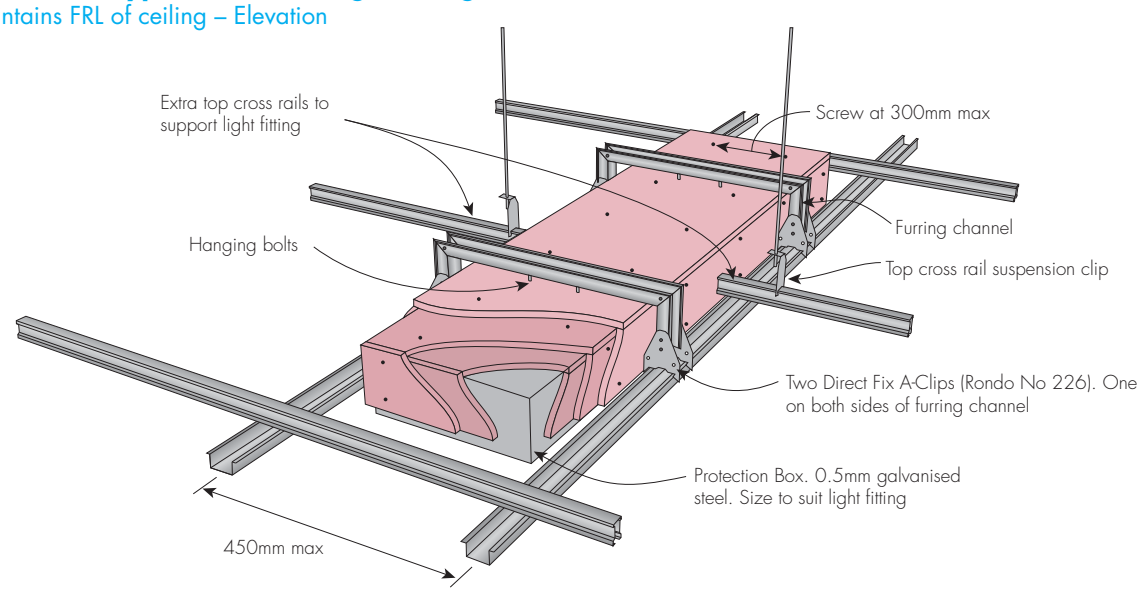


FIGURE 108 Typical Recessed Light Fitting
Maintains FRL of ceiling – Perspective

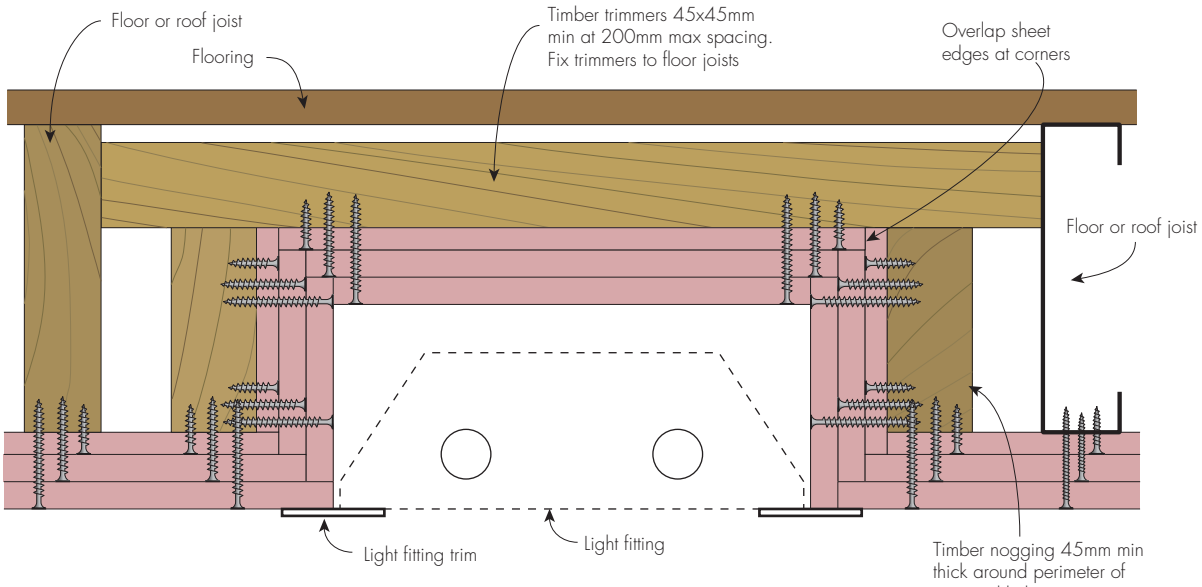


FIGURE 109 Typical Recessed Light Fitting
Maintains FRL of ceiling – Elevation

For systems up to 3 layers of FireShield

FIRE RATED AND NON-FIRE RATED
LIGHT FITTINGS FOR CEILINGS – ELEVATION

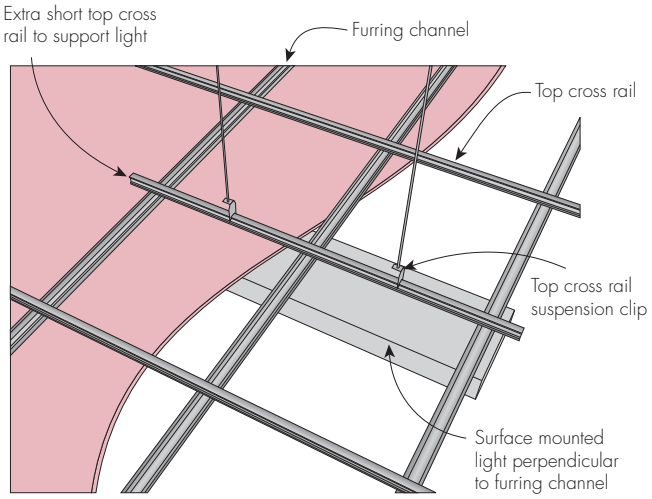


FIGURE 110 Surface Light Fitting
Perspective

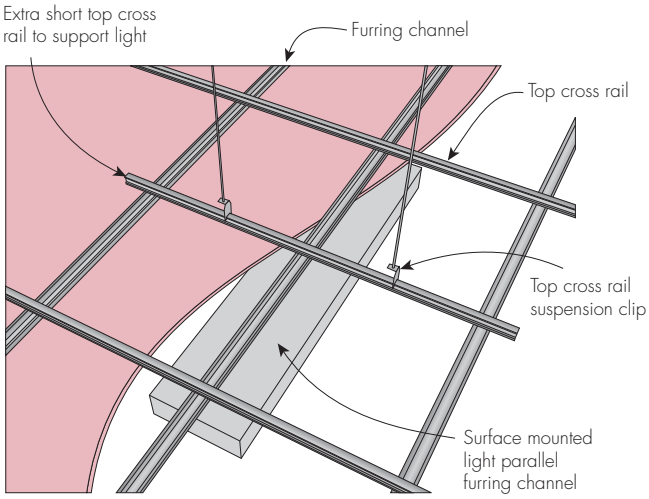
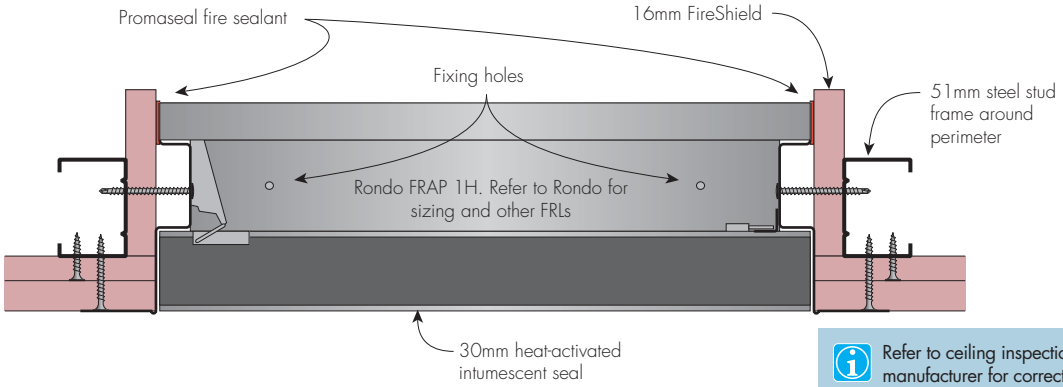


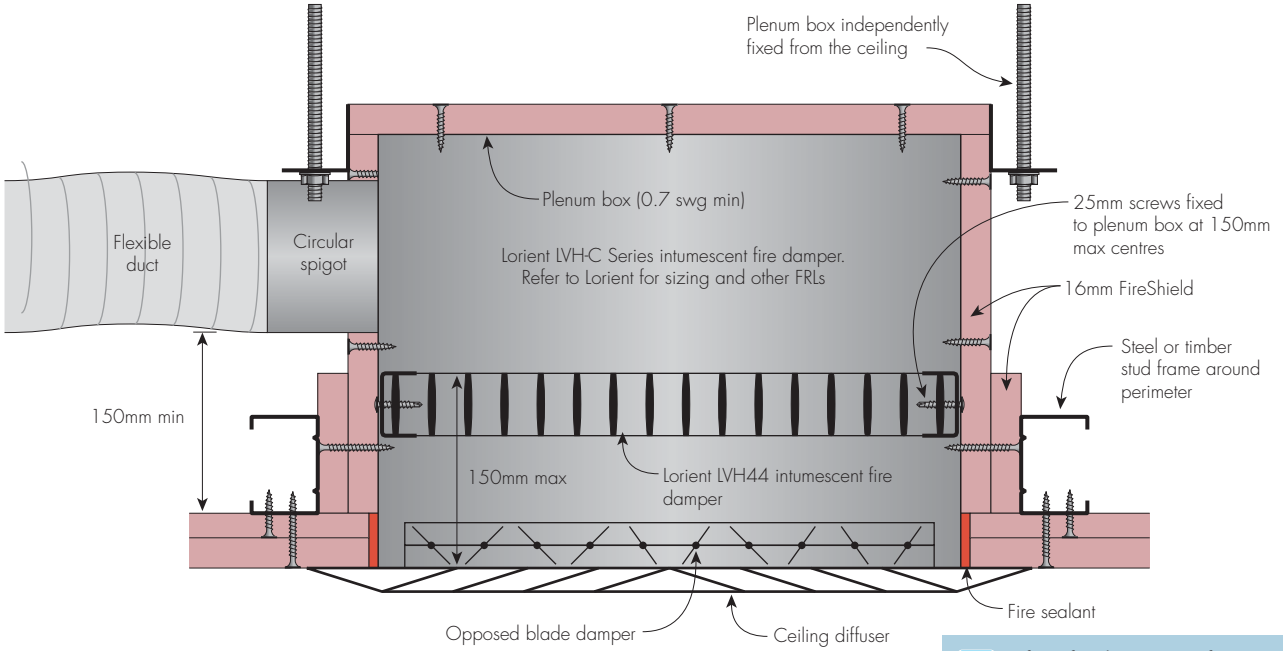
FIGURE 111 Surface Light Fitting
Perspective

FIRE RATED AND NON-FIRE RATED
CEILING INSPECTION HATCH AND FIRE DAMPER – ELEVATION



Refer to ceiling inspection hatch manufacturer for correct installation if using another brand.

FIGURE 112 Typical FRL –/60/60 Ceiling Inspection Hatch
Example only

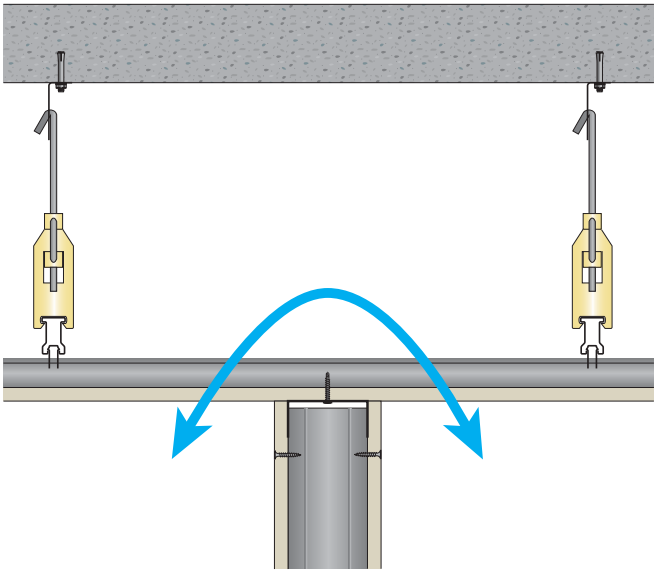


Refer to fire damper manufacturer for correct installation if using another brand.

FIGURE 113 FRL –/60/60 + RISF Ceiling Fire Damper
Example only

3.4.2

Ceiling Attenuation Class Systems



INTRODUCTION

Ceiling Attenuation Class (CAC) ceiling systems display resistance to sound passing up and over a wall. The acoustic rating given for the ceiling system indicates the sound reduction from one room to the next via the two ceilings and the above-ceiling plenum.

Rather than introduce another term to building designers such as CAC, the more familiar terms Rw and Rw + Ctr are used.

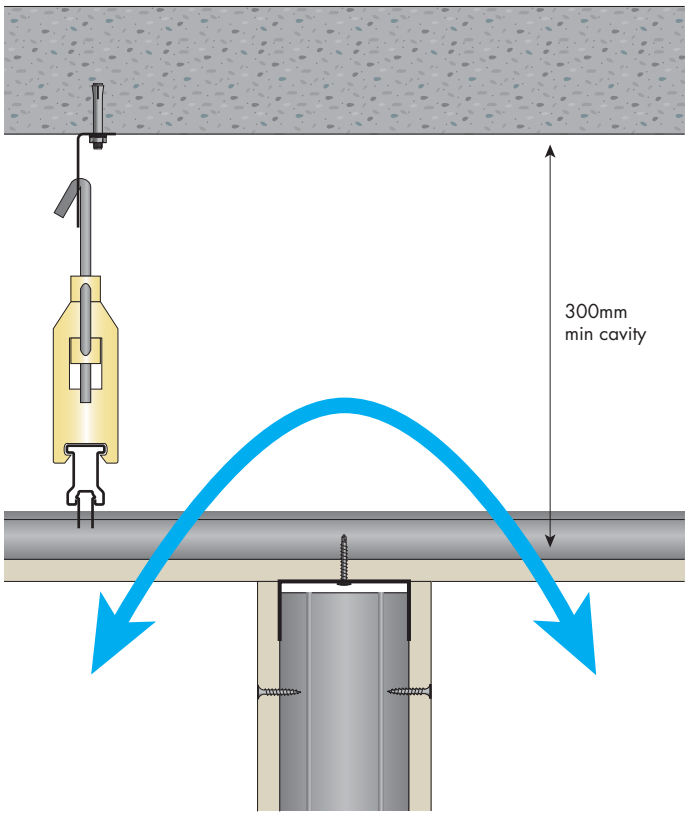
When sound isolation is important, the Rw of the CAC ceiling system should equal the Rw rating of the dividing wall plus 5.

[Refer to Section 3.1.1 Construction Details for wall to ceiling finishing details]

KCAC1-KCAC28

CEILING: [Option 1] Suspended ceiling frame with set plasterboard ceiling
[Option 2] T-bar exposed grid frame with ceiling tiles for system KCAC1

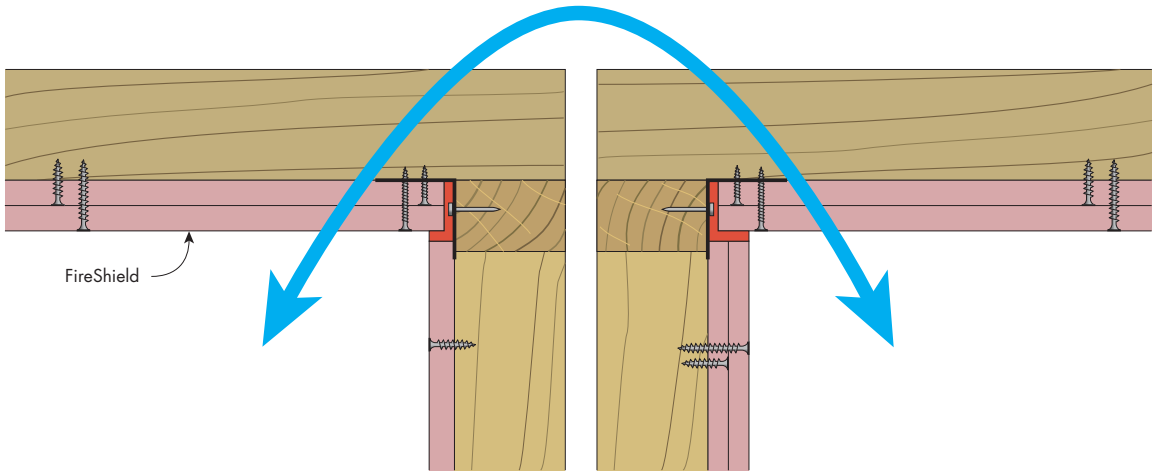
[All systems are suitable under a concrete slab, timber roof framing or steel roof framing]
[Acoustic numbers based on minimum 300mm cavity]
[Penetrations in ceiling lining may degrade acoustic performance]
[Wall to have equal or higher acoustic rating than CAC ceiling]



System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)			
		No Insulation	50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3 insulation above ceiling to 1200mm both sides of wall	50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3 insulation over entire ceiling	
KCAC1	1 layer of 10mm SpanGrid ceiling tiles in exposed grid	36 (30)	41 (35)	43 (37)	Acoustic Report Day Design 4738-5
KCAC2	1 layer of 13mm SpanGrid ceiling tiles in exposed grid	-	-	45	
KCAC10	1 layer of 10mm MastaShield or SpanShield	38 (32)	43 (36)	45 (38)	
KCAC11	2 layers of 10mm MastaShield or SpanShield	43 (37)	47 (41)	48 (42)	
KCAC14	1 layer of 13mm MastaShield	41 (34)	45 (38)	47 (40)	
KCAC16	1 layer of 10mm SoundShield	41 (34)	45 (38)	47 (40)	
KCAC17	2 layers of 10mm SoundShield	44 (38)	48 (42)	49 (43)	
KCAC18	1 layer of 13mm SoundShield	43 (36)	47 (40)	48 (41)	
KCAC19	2 layers of 13mm SoundShield	49 (42)	52 (45)	52 (45)	
KCAC20	1 layer of 13mm FireShield	43 (36)	47 (40)	48 (41)	
KCAC22	1 layer of 16mm FireShield	43 (36)	47 (40)	48 (41)	
KCAC23	1 layer of 13mm FireShield plus 1 layer of 16mm FireShield	49 (42)	52 (45)	52 (45)	
KCAC24	2 layers of 16mm FireShield	49 (42)	52 (45)	52 (45)	
KCAC26	3 layers of 13mm FireShield	51 (44)	53 (46)	53 (46)	
KCAC27	1 layer of 13mm FireShield plus 2 layers of 16mm FireShield	51 (44)	53 (46)	53 (46)	
KCAC28	3 layers of 16mm FireShield	51 (44)	53 (46)	53 (46)	

KCAC120-KCAC128

CEILING: Set plasterboard ceiling divided by discontinuous wall frames
[Double stud wall frame with minimum 20mm air-gap]
[All systems are suitable under roof or floor with timber or steel framing]
[Acoustic numbers based on minimum 300mm cavity]
[Penetrations in ceiling lining may degrade acoustic performance]
[Wall to have equal or higher acoustic rating than CAC ceiling]



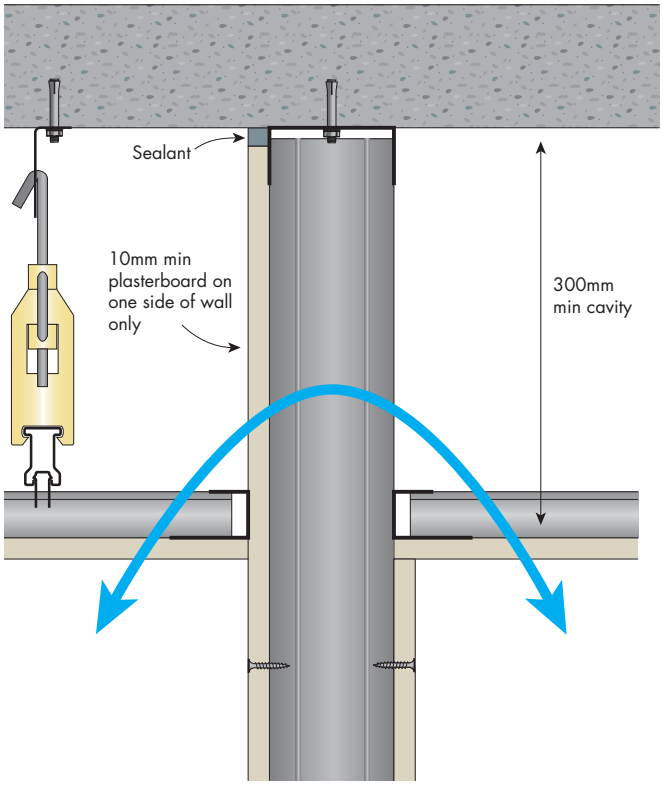
System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)			
		No Insulation	50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3 insulation above ceiling to 1200mm both sides of wall	50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3 insulation over entire ceiling	
KCAC120	1 layer of 13mm FireShield	49 (43)	54 (46)	56 (48)	Acoustic Report Day Design 4738-5
KCAC121	2 layers of 13mm FireShield	52 (45)	58 (48)	59 (**50**)	
KCAC122	1 layer of 16mm FireShield	42 (43)	55 (46)	56 (48)	
KCAC123	1 layer of 13mm FireShield plus 1 layer of 16mm FireShield	52 (45)	58 (48)	59 (**50**)	
KCAC124	2 layers of 16mm FireShield	52 (45)	58 (48)	59 (**50**)	
KCAC126	3 layers of 13mm FireShield	51 (46)	59 (49)	60 (**50**)	
KCAC127	1 layer of 13mm FireShield plus 2 layers of 16mm FireShield	56 (47)	59 (**50**)	60 (**50**)	
KCAC128	3 layers of 16mm FireShield	56 (48)	59 (**51**)	60 (**50**)	

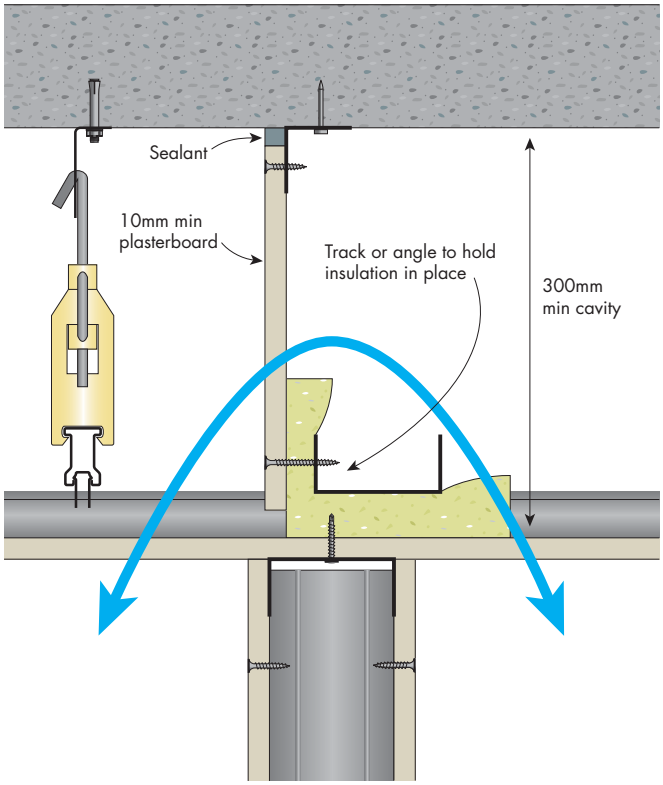
KCAC3-KCAC48

CEILING: [Option 1] Suspended ceiling frame with set plasterboard ceiling
[Option 2] T-bar exposed grid frame with ceiling tiles for system KCAC3

ABOVE CEILING: [Option 1] 10mm minimum plasterboard on one side of stud only, continued up to concrete slab or roof lining
[Option 2] 10mm minimum plasterboard fixed to concrete slab or roof lining with track or angle. Insulation placed above ceiling lining and held in place using track or angle.

[All systems are suitable under a concrete slab, timber roof framing or steel roof framing]
[Acoustic numbers based on minimum 300mm cavity]
[Penetrations in ceiling lining may degrade acoustic performance]
[Wall to have equal or higher acoustic rating than CAC ceiling]





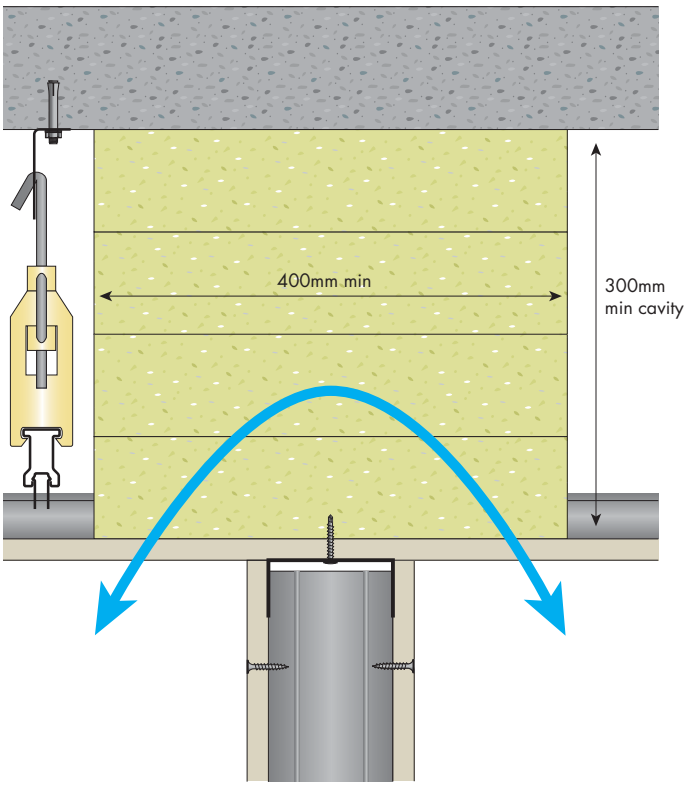
System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)			
		No Insulation	50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3 insulation above ceiling to 1200mm both sides of wall	50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3 insulation over entire ceiling	
KCAC3	1 layer of 10mm SpanGrid ceiling tiles in exposed grid	41 (35)	46 (40)	48 (42)	Acoustic Report Day Design 4738-5
KCAC30	1 layer of 10mm MastaShield or SpanShield	45 (37)	50 (42)	52 (44)	
KCAC31	2 layers of 10mm MastaShield or SpanShield	51 (41)	54 (44)	56 (46)	
KCAC34	1 layer of 13mm MastaShield	47 (37)	52 (42)	54 (44)	
KCAC36	1 layer of 10mm SoundShield	48 (38)	52 (42)	54 (44)	
KCAC37	2 layers of 10mm SoundShield	52 (42)	55 (45)	57 (47)	
KCAC38	1 layer of 13mm SoundShield	49 (39)	53 (43)	55 (45)	
KCAC39	2 layers of 13mm SoundShield	53 (43)	56 (46)	57 (47)	
KCAC40	1 layer of 13mm FireShield	49 (39)	53 (43)	55 (45)	
KCAC42	1 layer of 16mm FireShield	50 (40)	54 (44)	56 (46)	
KCAC43	1 layer of 13mm FireShield plus 1 layer of 16mm FireShield	53 (43)	56 (46)	57 (47)	
KCAC44	2 layers of 16mm FireShield	53 (43)	56 (46)	57 (47)	
KCAC46	3 layers of 13mm FireShield	55 (45)	57 (47)	58 (48)	
KCAC47	1 layer of 13mm FireShield plus 2 layers of 16mm FireShield	55 (45)	57 (47)	58 (48)	
KCAC48	3 layers of 16mm FireShield	55 (45)	57 (47)	58 (48)	

KCAC5-KCAC68

CEILING: [Option 1] Suspended ceiling frame with set plasterboard ceiling
[Option 2] T-bar exposed grid frame with ceiling tiles for system KCAC5

ABOVE CEILING: EarthWool or Polyester (minimum density 14 kg/m³) insulation baffle in 400mm wide strips to extend from ceiling to concrete slab or roof lining with no gaps or holes.

[All systems are suitable under a concrete slab, timber roof framing or steel roof framing]
[Acoustic numbers based on minimum 300mm cavity]
[Penetrations in ceiling lining may degrade acoustic performance]
[Wall to have equal or higher acoustic rating than CAC ceiling]



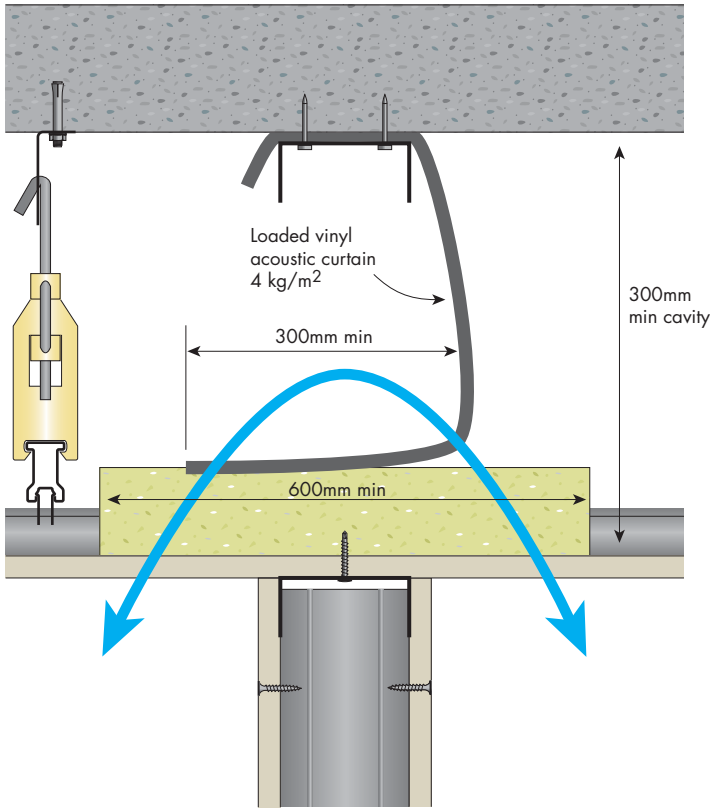
System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)	
		EarthWool or Polyester insulation (minimum density 14 kg/m³) above ceiling lining in 400mm minimum wide strips continued up to concrete slab or roof lining	
KCAC5	1 layer of 10mm SpanGrid ceiling tiles in exposed grid	43 (36)	Acoustic Report Day Design 4738-5
KCAC50	1 layer of 10mm MastaShield or SpanShield	45 (38)	
KCAC51	2 layers of 10mm MastaShield or SpanShield	52 (42)	
KCAC54	1 layer of 13mm MastaShield	50 (40)	
KCAC56	1 layer of 10mm SoundShield	50 (40)	
KCAC57	2 layers of 10mm SoundShield	53 (43)	
KCAC58	1 layer of 13mm SoundShield	51 (41)	
KCAC59	2 layers of 13mm SoundShield	53 (43)	
KCAC60	1 layer of 13mm FireShield	51 (41)	
KCAC62	1 layer of 16mm FireShield	51 (41)	
KCAC63	1 layer of 13mm FireShield plus 1 layer of 16mm FireShield	53 (43)	
KCAC64	2 layers of 16mm FireShield	53 (43)	
KCAC66	3 layers of 13mm FireShield	54 (44)	
KCAC67	1 layer of 13mm FireShield plus 2 layers of 16mm FireShield	54 (44)	
KCAC68	3 layers of 16mm FireShield	54 (44)	

KCAC7-KCAC88

CEILING: [Option 1] Suspended ceiling frame with set plasterboard ceiling
[Option 2] T-bar exposed grid frame with ceiling tiles for system KCAC7

ABOVE CEILING: Loaded vinyl acoustic curtain (4 kg/m²) above wall to extend from ceiling to concrete slab or roof with no gaps or holes. 50mm EarthWool (minimum density 11 kg/m³) or 65mm Polyester ISB3 insulation placed above ceiling lining

[All systems are suitable under a concrete slab, timber roof framing or steel roof framing]
[Acoustic numbers based on minimum 300mm cavity]
[Penetrations in ceiling lining may degrade acoustic performance]
[Wall to have equal or higher acoustic rating than CAC ceiling]

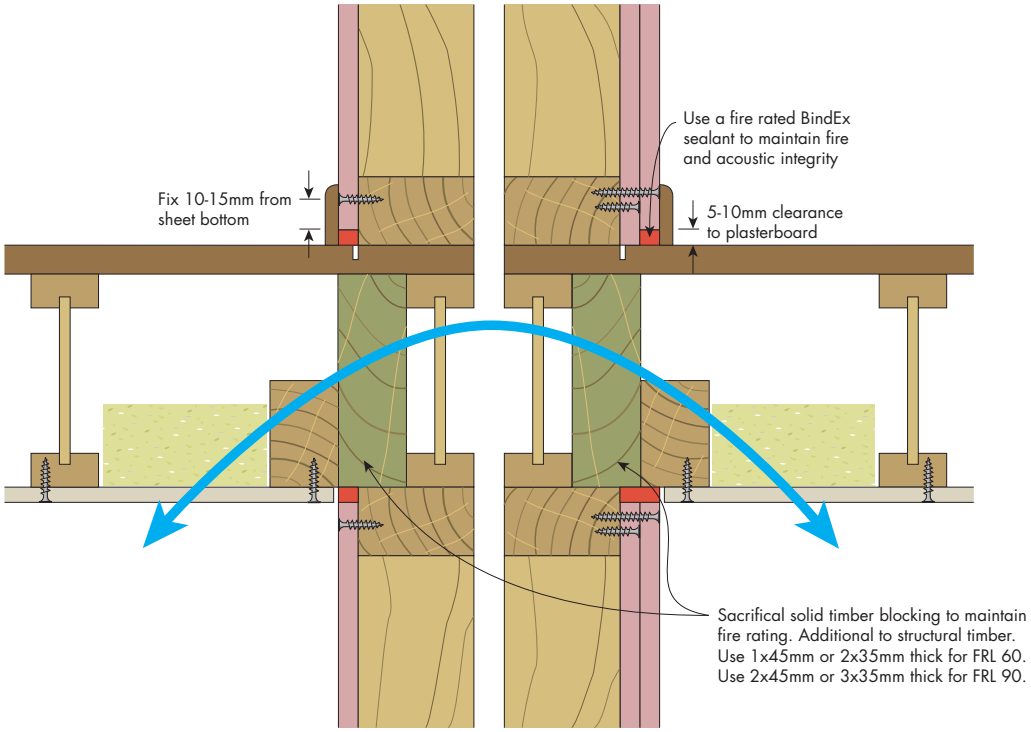


System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)	
		Loaded vinyl acoustic curtain 4 kg/m² with 50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3 insulation above ceiling lining in a 600mm min wide strip	
KCAC7	1 layer of 10mm SpanGrid ceiling tiles in exposed grid	44 (38)	Acoustic Report Day Design 3094-40
KCAC70	1 layer of 10mm MastaShield or SpanShield	47 (40)	
KCAC71	2 layers of 10mm MastaShield or SpanShield	52 (42)	
KCAC74	1 layer of 13mm MastaShield	50 (40)	
KCAC76	1 layer of 10mm SoundShield	50 (40)	
KCAC77	2 layers of 10mm SoundShield	53 (43)	
KCAC78	1 layer of 13mm SoundShield	51 (41)	
KCAC79	2 layers of 13mm SoundShield	54 (44)	
KCAC80	1 layer of 13mm FireShield	51 (41)	
KCAC82	1 layer of 16mm FireShield	52 (42)	
KCAC83	1 layer of 13mm FireShield plus 1 layer of 16mm FireShield	54 (44)	
KCAC84	2 layers of 16mm FireShield	54 (44)	
KCAC86	3 layers of 13mm FireShield	55 (45)	
KCAC87	1 layer of 13mm FireShield plus 2 layers of 16mm FireShield	55 (45)	
KCAC88	3 layers of 16mm FireShield	55 (45)	

KCAC130

CEILING: 10mm minimum plasterboard

[Acoustic numbers based on minimum 200mm cavity]
[Wall to ceiling junction must be square set or finished with cornice to achieve acoustic rating]
[Non-acoustic penetrations in ceiling lining may degrade acoustic performance]

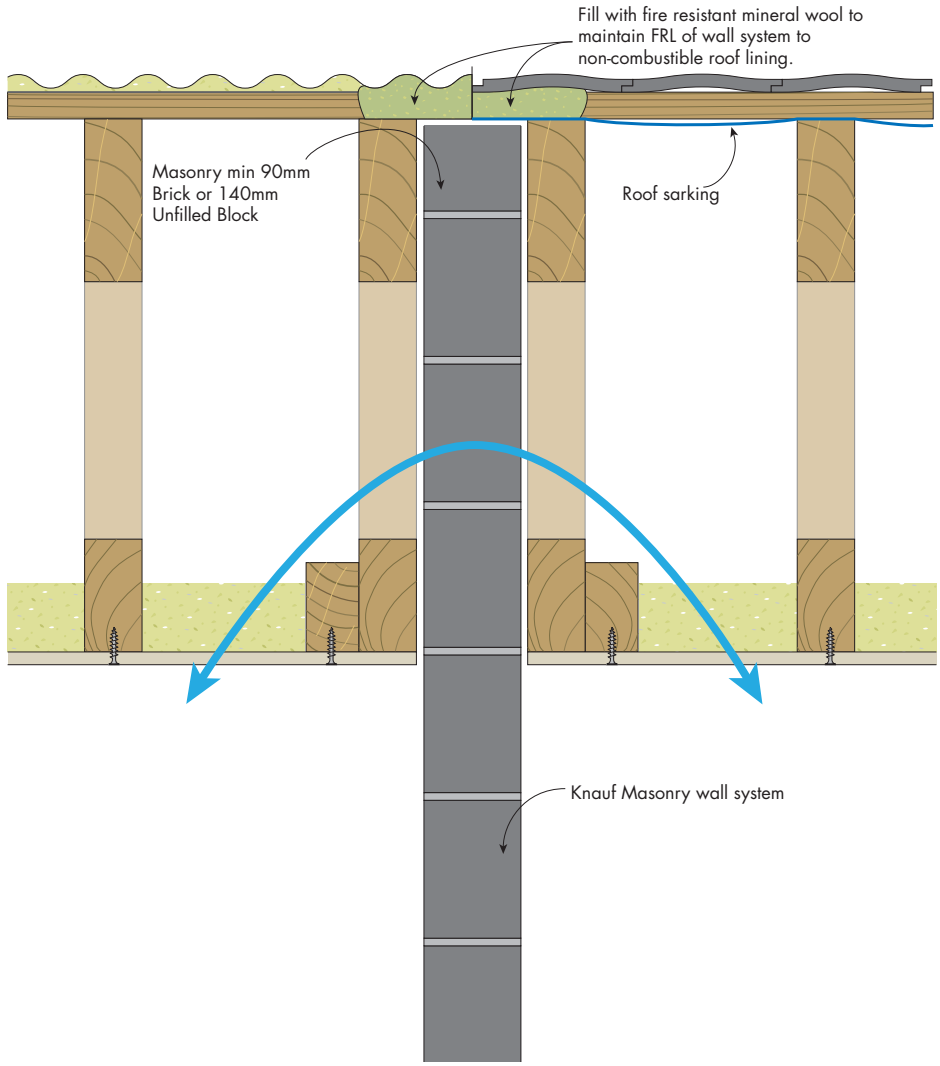


System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)		
		No Insulation	Minimum R1.5 EarthWool over the ceiling in adjacent cavities	Acoustic Report Day Design 4738-16
KCAC130	1 layer of 10mm MastaShield or SpanShield	60 (50)	64 (54)	

KCAC140

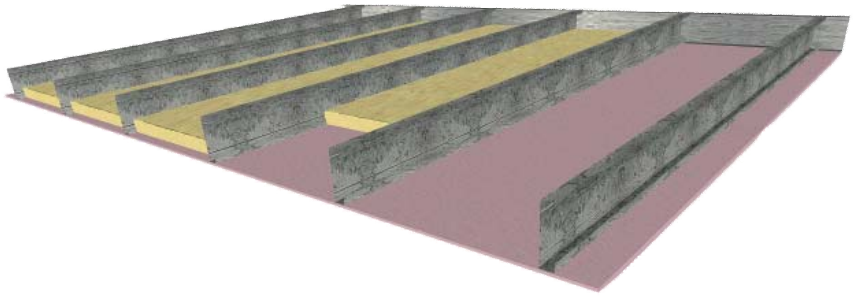
CEILING: 10mm minimum plasterboard

[Masonry minimum 90mm brick or 140mm unfilled concrete block]
[Acoustic numbers based on minimum 200mm cavity]
[Wall to ceiling junction must be square set or finished with cornice to achieve acoustic rating]
[Non-acoustic penetrations in ceiling lining may degrade acoustic performance]



System	Plasterboard Ceiling Lining	Acoustics – Airborne Rw (Rw + Ctr)		
		No Insulation	Minimum R1.5 EarthWool over the ceiling in adjacent cavities	Acoustic Report Day Design 4738-16
KCAC140	1 layer of 10mm MastaShield or SpanShield	58 (48)	60 (50)	

3.5.1 Steel Stud Ceilings



INTRODUCTION

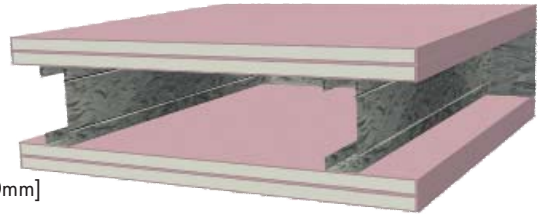
The ceilings in this section are constructed using steel studs as the ceiling joists.

Common applications for these ceilings include corridors, above stairwells, and under concrete floors, where unsupported spans are required.

This section contains systems for fire rated ceilings, including fire rated from above only, and fire rated from above and below. If access is from below only, and the ceiling is required to be fire rated from above, an alternative system for use is a Horizontal Shaft Wall. *[Refer to Section 3.5.2]*

For acoustic ceiling systems using steel stud framing to control soil and waste pipe noise. *[Refer to Section 3.6.1]*

KSC2



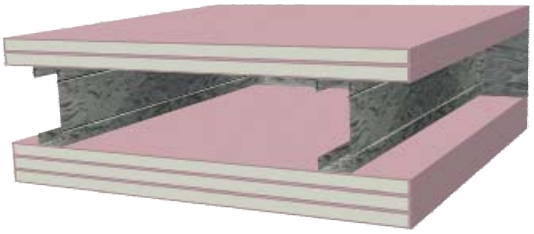
CEILING LINING: [Above side] 2 layers of 16mm **FireShield**
[Below side] 2 layers of 16mm **FireShield**

FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
[Ceiling joists are lipped C studs]
[Ceiling is non-trafficable]

FRL 120/120/120 rated from above 90/90/90 rated from below +60min RISF Fire Report FAR 2888	Stud Size (mm)		Span UDL 0.35 kPa (mm)				Ceiling Thickness (mm)	Acoustics Rw (Rw + Ctr)		
			STUDS + 1 ROW OF NOGGINGS		BOXED STUDS					
	Stud Depth	Stud BMT	300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing		No Insulation	50mm EarthWool 11 kg/m³	
	92	0.75	3850	3550	4150	3830	156	49 (42)	55 (49)	Acoustic Report Day Design 3094-23
		1.15	4000	3710	–	–				
	150	0.75	4630	4310	5210	4800	214	51 (44)	55 (**51**)	
		1.15	4950	4580	–	–				

KSC3



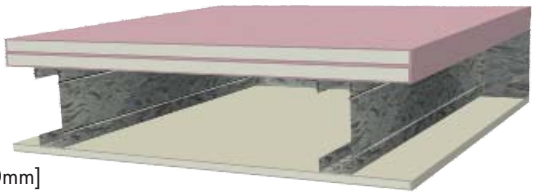
CEILING LINING: [Above side] 2 layers of 16mm **FireShield**
[Below side] 3 layers of 16mm **FireShield**

FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
[Ceiling joists are lipped C studs]
[Ceiling is non-trafficable]

FRL 120/120/120 rated from above and below +60min RISF Fire Report 97/1140	Stud Size (mm)		Span UDL 0.35 kPa (mm)				Ceiling Thickness (mm)	Acoustics Rw (Rw + Ctr)		
			STUDS + 1 ROW OF NOGGINGS		BOXED STUDS					
	Stud Depth	Stud BMT	300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing		No Insulation	50mm EarthWool 11 kg/m³	
	92	0.75	3720	3310	4020	3700	172	52 (45)	57 (**52**)	Acoustic Report Day Design 3094–23
		1.15	3870	3570	–	–				
	150	0.75	4490	4180	5060	4660	230	54 (47)	57 (**53**)	
		1.15	4810	4440	–	–				

KSC5



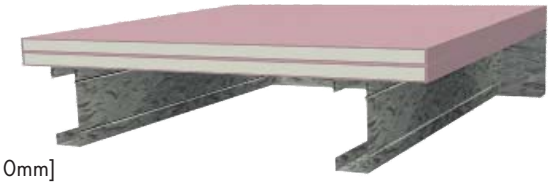
CEILING LINING: [Above side] 2 layers of 16mm **FireShield**
[Below side] 1 layer of 10mm **MastaShield**

FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
[Ceiling joists are lipped C studs]
[Ceiling is non-trafficable]

FRL 90/90/90 rated from above only Fire Report FAR 2888	Stud Size (mm)		Span UDL 0.35 kPa (mm)				Ceiling Thickness (mm)	Acoustics Rw (Rw + Ctr)		
			STUDS + 1 ROW OF NOGGINGS		BOXED STUDS					
	Stud Depth	Stud BMT	300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing		No Insulation	50mm EarthWool 11 kg/m³	
	92	0.75	3900	3580	4310	3920	134	43 (33)	50 (41)	Acoustic Report Day Design 3094-23
		1.15	4110	3760	–	–				
	150	0.75	4900	4510	5570	5110	192	45 (34)	51 (44)	
		1.15	5270	4850	–	–				

KSC6



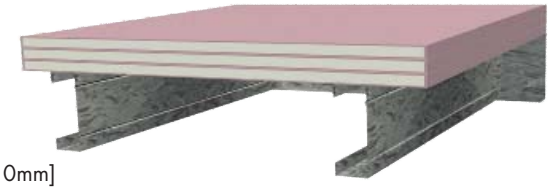
CEILING LINING: [Above side] 2 layers of 16mm FireShield
[Below side] Lining optional

FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
[Ceiling joists are lipped C studs]
[Ceiling is non-trafficable]

FRL 60/60/60 rated from above only Fire Report FAR 2888	Stud Size (mm)		Span UDL 0.35 kPa (mm)				Ceiling Thickness (mm)	Acoustics Rw (Rw + Ctr)	
			STUDS + 1 ROW OF NOGGINGS		BOXED STUDS				
	Stud Depth	Stud BMT	300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing		No Insulation	Acoustic Report Day Design 3094-23
	92	0.75	3600	3170	4140	3770	124	35 (32)	
		1.15	3890	3490	–	–			
	150	0.75	4680	4260	5460	5000	182	35 (32)	
		1.15	5130	4680	–	–			

KSC7



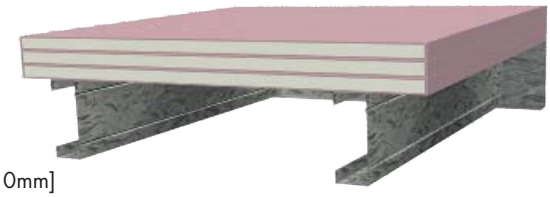
CEILING LINING: [Above side] 3 layers of 13mm FireShield
[Below side] Lining optional

FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
[Ceiling joists are lipped C studs]
[Ceiling is non-trafficable]

FRL 90/90/90 rated from above only Fire Report FAR 2888	Stud Size (mm)		Span UDL 0.35 kPa (mm)				Ceiling Thickness (mm)	Acoustics Rw (Rw + Ctr)	
			STUDS + 1 ROW OF NOGGINGS		BOXED STUDS				
	Stud Depth	Stud BMT	300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing		No Insulation	Acoustic Report Day Design 3094-23
	92	0.75	3550	3120	4110	3750	131	37 (35)	
		1.15	3860	3460	–	–			
	150	0.75	4650	4230	5430	4960	189	37 (35)	
		1.15	5090	4650	–	–			

KSC8



CEILING LINING: [Above side] 3 layers of 16mm FireShield
[Below side] Lining optional

FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
[Ceiling joists are lipped C studs]
[Ceiling is non-trafficable]

FRL 120/120/120 rated from above only Fire Report FAR 2888	Stud Size (mm)		Span UDL 0.35 kPa (mm)				Ceiling Thickness (mm)	Acoustics Rw (Rw + Ctr)	
			STUDS + 1 ROW OF NOGGINGS		BOXED STUDS				
	Stud Depth	Stud BMT	300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing		No Insulation	Acoustic Report Day Design 3094-23
	92	0.75	3340	2930	3930	3580	140	38 (36)	
		1.15	3680	3250	–	–			
	150	0.75	4440	4030	5200	4750	198	38 (36)	
		1.15	4880	4440	–	–			

FRAMING

MAXIMUM CEILING SPAN TABLE – SINGLE SPAN ONLY LINED WITH PLASTERBOARD ON UNDERSIDE

Joist Depth (mm)	Joist BMT (mm)	1 x 10mm	2 x 10mm	1 x 13mm	2 x 13mm	3 x 13mm	1 x 16mm	2 x 16mm	3 x 16mm
Steel Studs at 600mm maximum centres									
51	0.5	1835	1720	1800	1665	1565	1740	1580	1465
	0.75	2060	1935	2020	1880	1765	1960	1780	1655
64	0.5	2145	2010	2100	1945	1830	2095	1860	1730
	0.75	2460	2305	2530	2335	2190	2470	2235	2065
	1.15	2775	2605	2785	2575	2415	2705	2450	2265
76	0.55	2535	2375	2580	2365	2200	2500	2235	2045
	0.75	2820	2645	3005	2770	2590	2945	2650	2445
	1.15	3185	2990	3125	2900	2730	3025	2760	2565
92	0.55	2935	2745	2870	2660	2500	2780	2525	2350
	0.75	3255	3055	3290	3030	2835	3195	2875	2645
	1.15	3680	3460	3615	3355	3160	3495	3190	2970
150	0.75	4750	4460	4660	4325	4075	4510	4115	3635
	1.15	5380	5060	5285	4915	4630	5120	4675	4355
Steel Studs at 450mm maximum centres									
51	0.5	2010	1885	1975	1830	1720	1910	1735	1615
	0.75	2260	2125	2220	2060	1940	2150	1950	1820
64	0.5	2350	2205	2305	2140	2010	2305	2080	1910
	0.75	2695	2530	2760	2550	2395	2690	2440	2260
	1.15	3035	2850	3045	2820	2650	2960	2690	2490
76	0.55	2780	2605	2845	2615	2440	2760	2480	2280
	0.75	3090	2900	3265	3015	2825	3200	2895	2675
	1.15	3480	3275	3415	3175	2990	3310	3020	2815
92	0.55	3210	3015	3165	2920	2745	3050	2775	2580
	0.75	3565	3350	3605	3330	3120	3505	3170	2930
	1.15	4020	3780	3975	3680	3460	3845	3495	3255
150	0.75	5190	4880	5095	4740	4465	4935	4505	4195
	1.15	5860	5525	5760	5370	5065	5585	5115	4770
Steel Studs at 400mm maximum centres									
51	0.5	2090	1960	2050	1900	1785	1985	1805	1675
	0.75	2350	2205	2300	2140	2015	2230	2030	1890
64	0.5	2445	2290	2395	2220	2090	2395	2160	1980
	0.75	2800	2625	2855	2645	2480	2785	2530	2345
	1.15	3145	2960	3150	2925	2750	3065	2790	2590
76	0.55	2885	2705	2955	2720	2540	2870	2585	2380
	0.75	3205	3010	3375	3120	2925	3310	2995	2770
	1.15	3605	3395	3540	3295	3105	3430	3135	2930
92	0.55	3335	3130	3300	3035	2855	3185	2880	2680
	0.75	3700	3475	3740	3460	3245	3635	3295	3045
	1.15	4165	3920	4125	3825	3590	3995	3630	3375
150	0.75	5380	5065	5285	4915	4630	5120	4675	4355
	1.15	6065	5720	5960	5560	5250	5785	5300	4945
Steel Studs at 300mm maximum centres									
51	0.5	2290	2150	2250	2085	1960	2175	1980	1840
	0.75	2570	2415	2520	2340	2210	2440	2230	2075
64	0.5	2675	2515	2625	2435	2295	2620	2375	2200
	0.75	3060	2875	3105	2880	2705	3030	2755	2560
	1.15	3430	3230	3430	3190	3005	3340	3045	2835
76	0.55	3160	2965	3230	2980	2795	3145	2845	2625
	0.75	3505	3295	3655	3390	3185	3585	3255	3020
	1.15	3930	3705	3860	3600	3395	3745	3430	3195
92	0.55	3650	3425	3635	3355	3140	3520	3175	2940
	0.75	4040	3800	4075	3780	3550	3970	3605	3345
	1.15	4535	4275	4500	4185	3940	4370	3985	3705
150	0.75	5865	5525	5760	5370	5065	5585	5115	4770
	1.15	6580	6220	6475	6055	5725	6285	5775	5400

MINIMUM NUMBER OF NOGGINGS REQUIRED IN STEEL STUD CEILINGS

	Stud Lined With Plasterboard on One Side Only			
Ceiling Span (m)	0 – 2	2 – 4	4 – 6	6 – 7
Minimum Number of Noggings	0	1	2	3

1 W ultimate = 0.375 kPa, Strength Load Case: 1.2G + Wu
2 W serviceability = 0.25 kPa, Serviceability Load Case 1: G [Limit is /600], Serviceability Load Case 2: G + Ws [Limit is L/360] or 12mm.
3 Support walls and connections to be independently checked.
4 The live load in accordance with AS1170:2002 Clause 3.5.2 has not been applied to the ceiling joists. Accordingly, personnel are not permitted to traffic the ceiling joists.
5 Maximum span tables assume noggings are equally spaced along studs.
6 For Continuous Spans refer to Rondo Building Services latest literature.

FIRE RATED AND NON-FIRE RATED
STEEL STUD CEILING FRAME DETAIL – ELEVATION

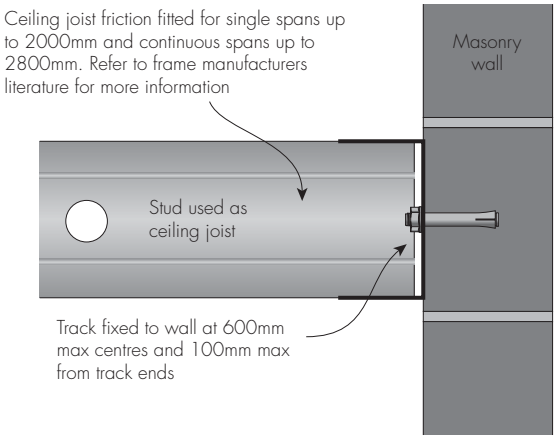


FIGURE 1 Ceiling Joist to Masonry Detail

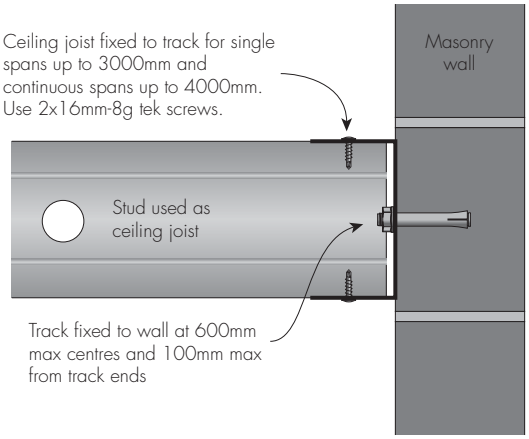


FIGURE 2 Ceiling Joist To Masonry Detail

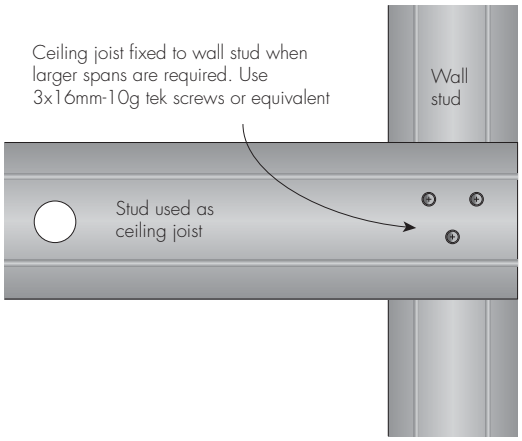


FIGURE 3 Ceiling Joist to Steel Stud Detail

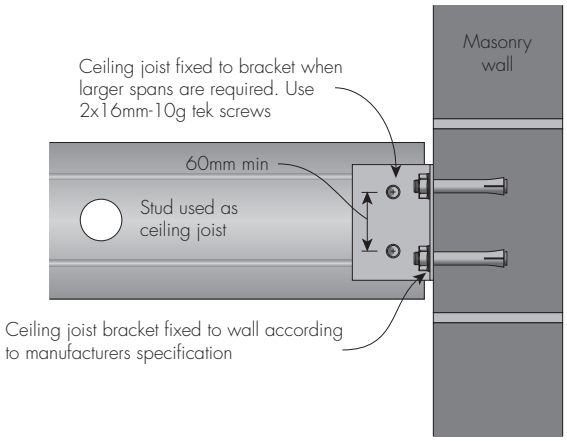


FIGURE 4 Ceiling Joist to Masonry Detail

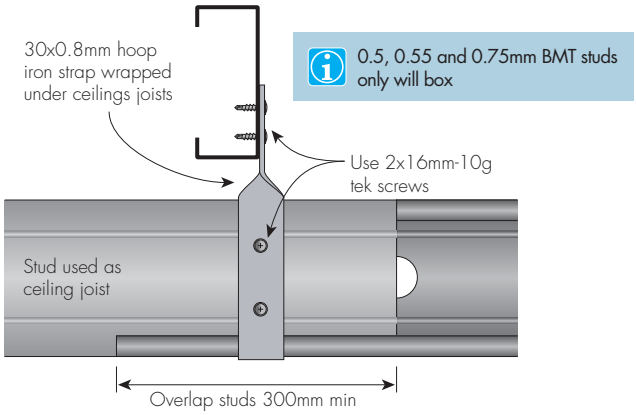


FIGURE 5 Ceiling Continuous Joist to Hoop Iron Strap

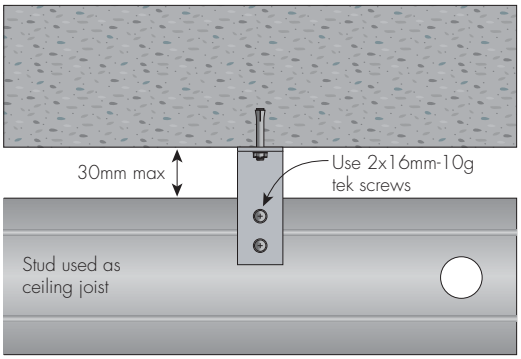


FIGURE 6 Ceiling Continuous Joist to Angle Bracket

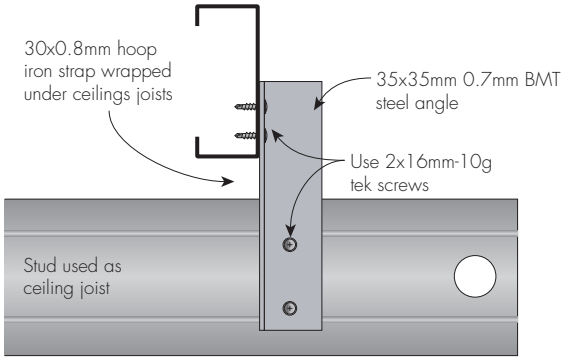


FIGURE 7 Ceiling Continuous Joist to Hoop Iron Strap

FIRE RATED AND NON-FIRE RATED

STEEL STUD CEILING TO WALL DETAIL – ELEVATION

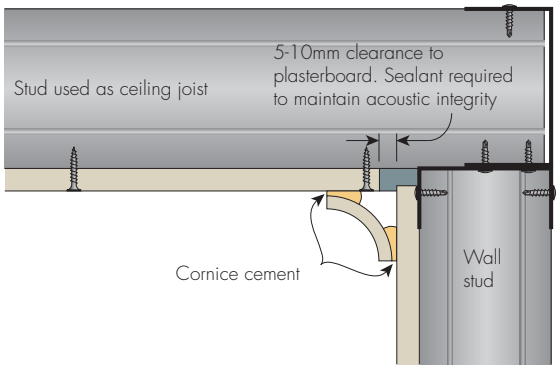


FIGURE 8 Non-Trafficable Ceiling to Plasterboard Wall

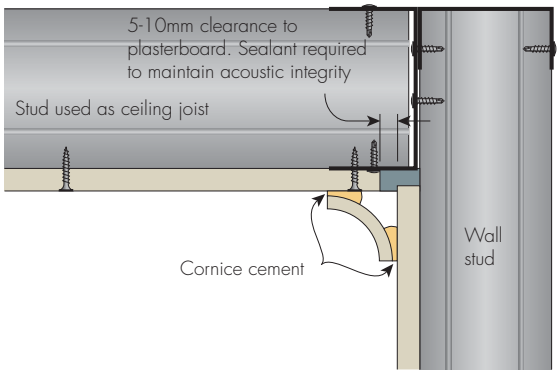


FIGURE 9 Non-Trafficable Ceiling to Plasterboard Wall

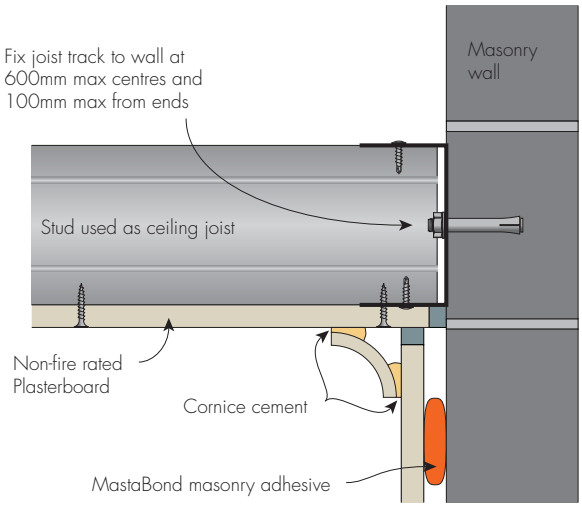


FIGURE 10 Non-Trafficable Ceiling to Masonry Wall

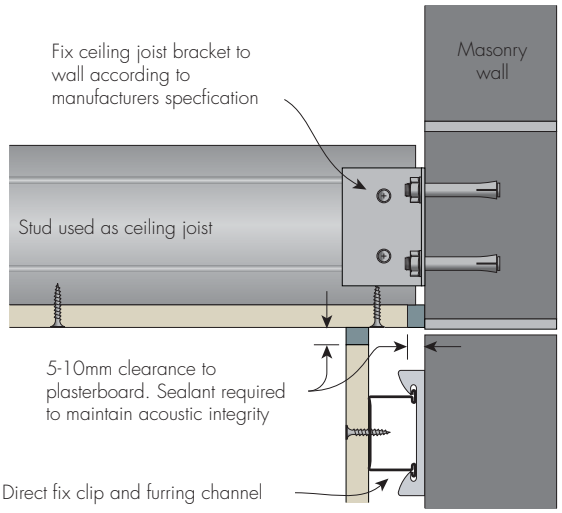


FIGURE 11 Non-Trafficable Ceiling to Masonry Wall

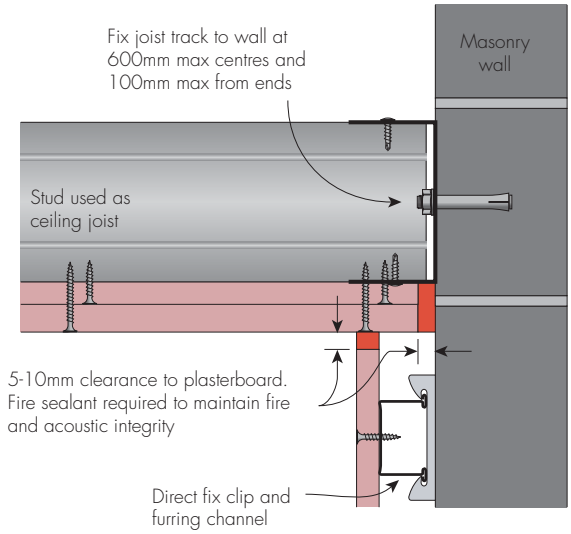


FIGURE 12 Non-Trafficable Ceiling to Masonry Wall

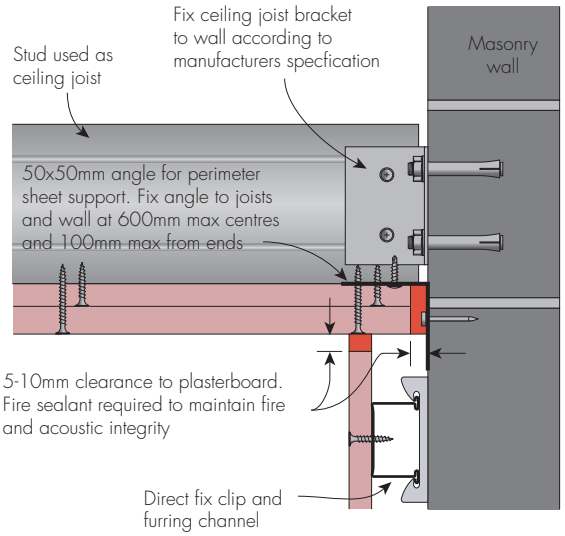


FIGURE 13 Non-Trafficable Ceiling to Masonry Wall

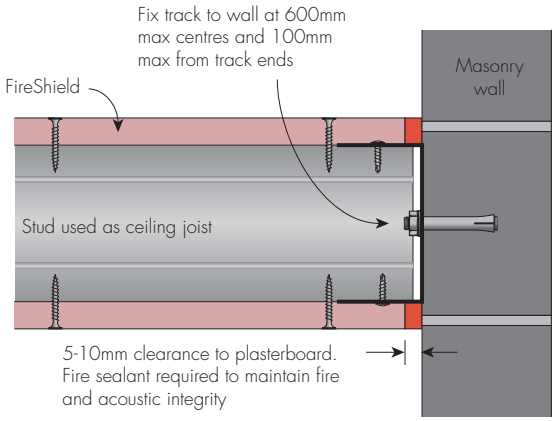


FIGURE 14 Non-Trafficable Ceiling to Masonry Wall

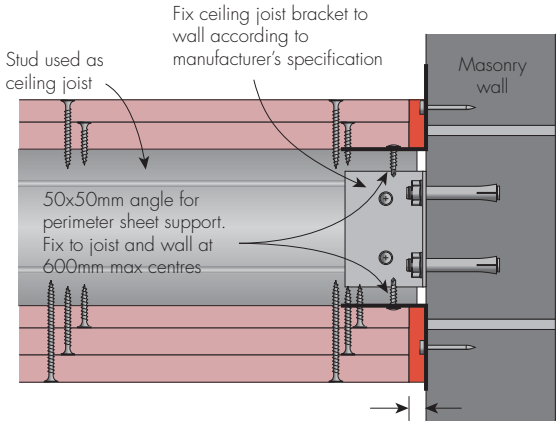


FIGURE 15 Non-Trafficable Ceiling to Masonry Wall

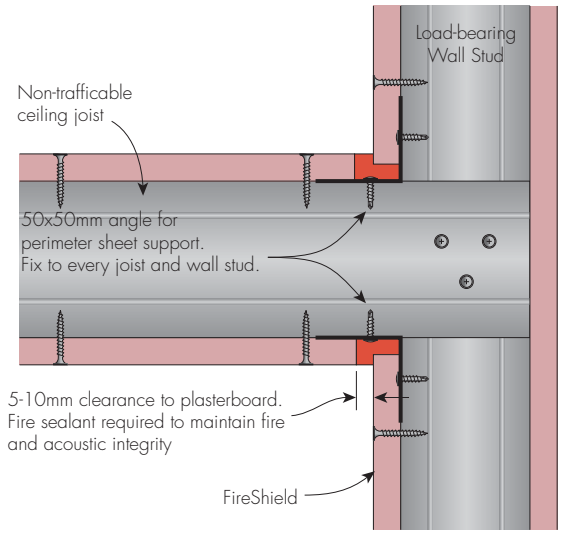


FIGURE 16 Non-Trafficable Ceiling to Plasterboard Wall

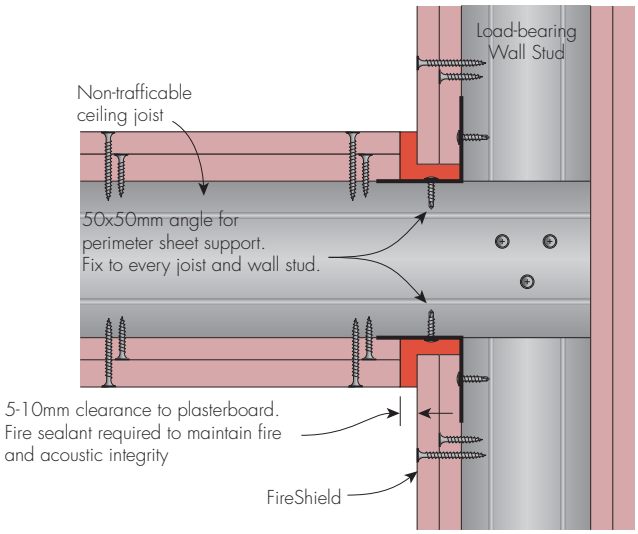


FIGURE 17 Non-Trafficable Ceiling to Plasterboard Wall

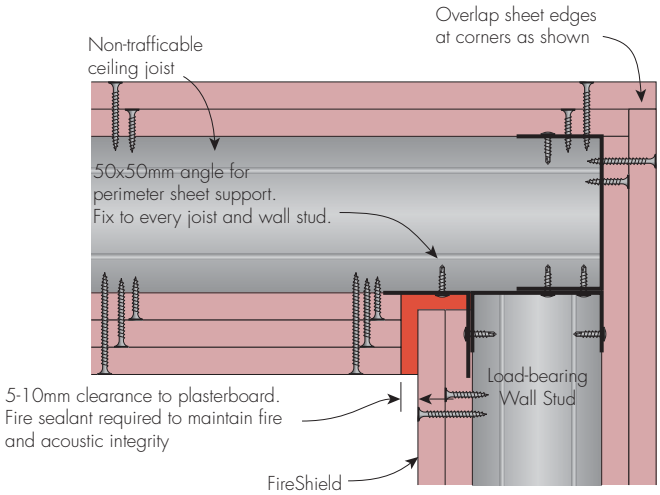


FIGURE 18 Non-Trafficable Ceiling to Plasterboard Wall

STEEL STUD CEILING BUILT FROM UNDERSIDE ONLY – ELEVATION VIEW

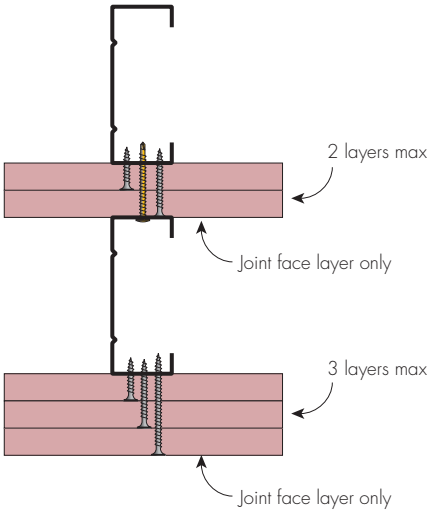


FIGURE 19 Fire Rated Ceiling Configuration
Fire rated from above and below
(Built from underside only)

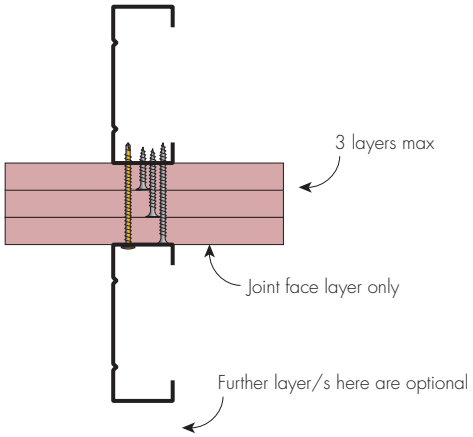


FIGURE 20 Fire Rated Ceiling Configuration
Fire rated from above
(Built from underside only)

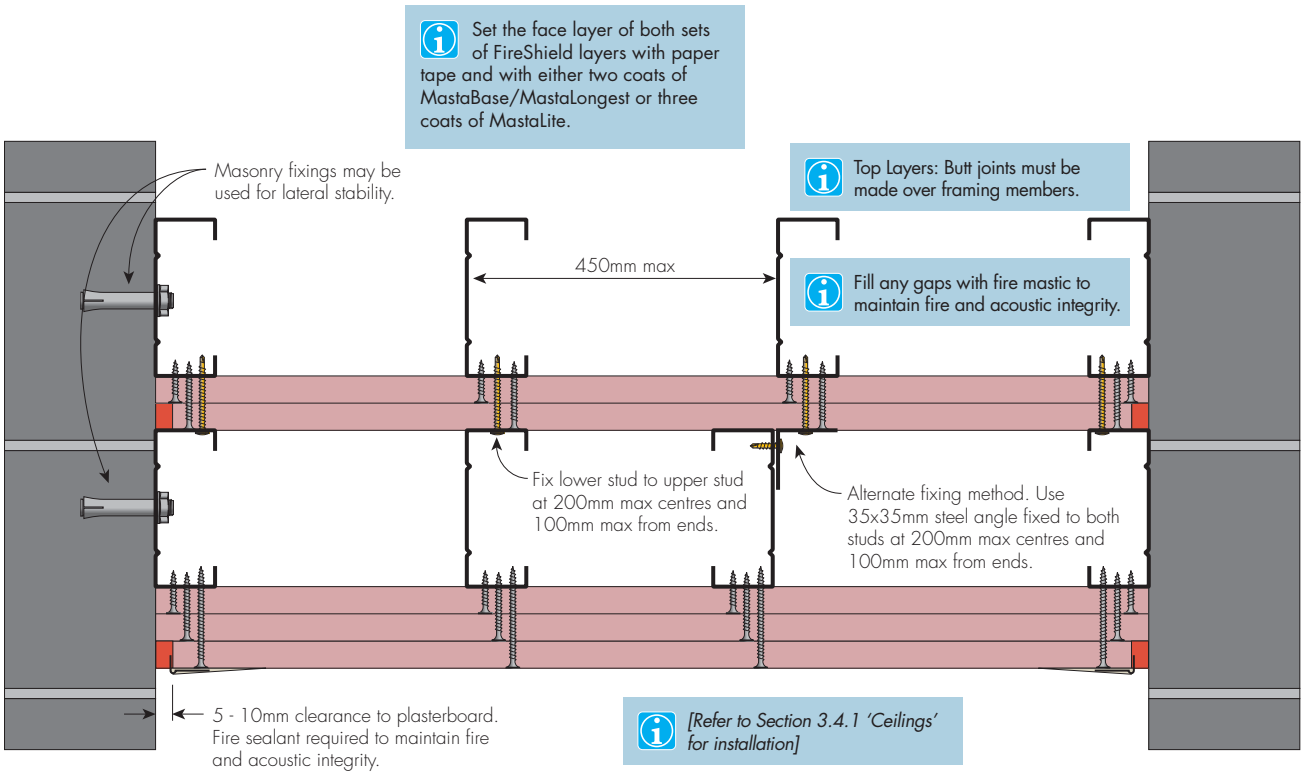


FIGURE 21 Fire Rated Ceiling to Masonry
Fire rated from above and below
(Built from underside only)

FIRE RATED AND NON-FIRE RATED
STEEL STUD BULKHEAD DETAIL – ELEVATION

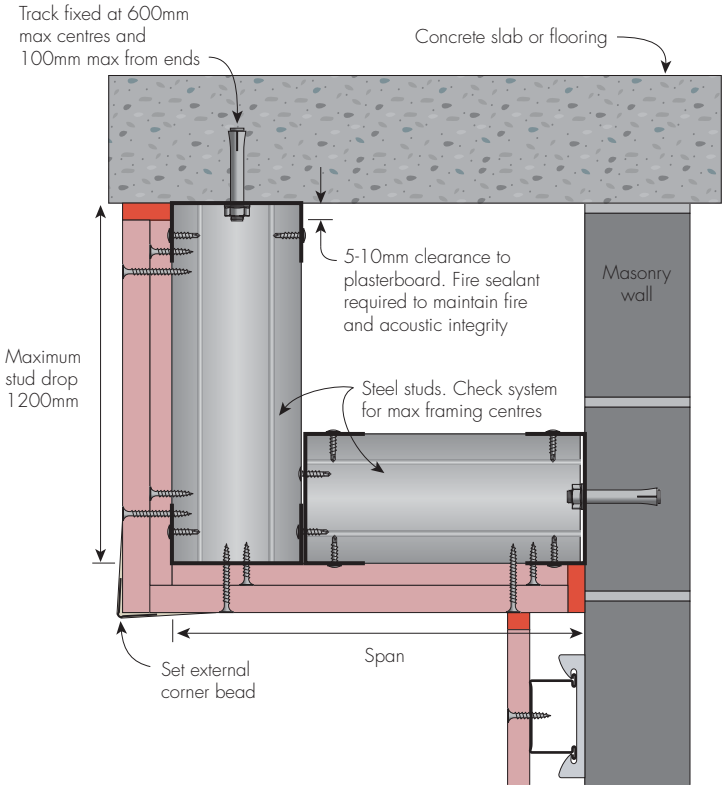


FIGURE 22 Steel Stud Bulkhead

MAXIMUM BULKHEAD SPAN TABLE – STEEL STUDS AT 600MM MAXIMUM CENTRES

		No Use of Washers					75 x 3mm Washer Used				
Stud Depth (mm)	Stud BMT (mm)	1 x 10mm	1 x 13mm	1 x 16mm	2 x 13mm	2 x 16mm	1 x 10mm	1 x 13mm	1 x 16mm	2 x 13mm	2 x 16mm
Steel Studs at 600mm Maximum Centres											
51	0.5	1835	1800	1740	1665	1195	–	–	–	–	–
	0.75	2060	2020	1960	1880	1780	–	–	–	–	–
64	0.5	2085	1890	1545	1220	755	–	–	–	–	–
	0.75	2460	2530	2470	2335	2235	–	–	–	–	–
	1.15	2775	2785	2705	2575	2450	–	–	–	–	–
76	0.55	2130	1935	1585	1255	790	2535	2580	2500	2365	2200
	0.75	2820	3005	2945	2770	2295	2820	3005	2945	2770	2650
	1.15	3185	3125	3025	2900	2760	3185	3125	3025	2900	2760
92	0.55	1700	1520	1205	910	485	2935	2870	2750	2520	2200
	0.75	3255	3210	2760	2335	1730	3255	3290	3195	3030	2875
	1.15	3680	3615	3495	3355	3190	3680	3615	3495	3355	3190
150	0.75	1985	1795	1460	1140	685	4330	4040	3520	3035	2335
	1.15	5155	4825	4245	3700	2915	5380	5285	5120	4915	4675

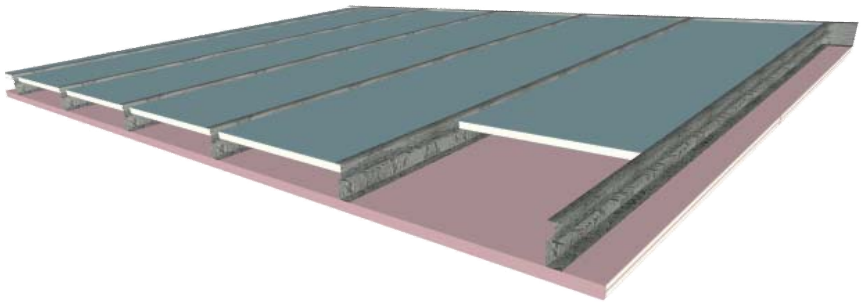
MINIMUM NUMBER OF NOGGINGS REQUIRED IN STEEL STUD BULKHEADS

	Bulkhead Lined With Plasterboard on Underside Only		
Span (m)	0 – 2	2 – 4	4 – 6
Minimum Number of Noggings	0	1	2

1 W ultimate = 0.375 kPa, Strength Load Case: 1.2G + Wu
2 W serviceability = 0.25 kPa, Serviceability Load Case: G + Ws [Limit is L/360] or 12mm.
3 1200mm max stud drop.
4 600mm max stud spacing.
5 Bulkhead is non-trafficable.

3.5.2

Horizontal Shaft Wall

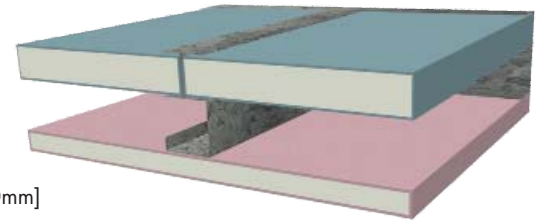


INTRODUCTION

Horizontal Shaft Wall is constructed in a similar way to a standard Shaft Wall and uses the same components. It is constructed using steel CH-studs as the ceiling joists.

Horizontal Shaft Wall systems are ideal for constructing a ceiling when access is only possible from below and a fire rating is required from above.

KSHWC1



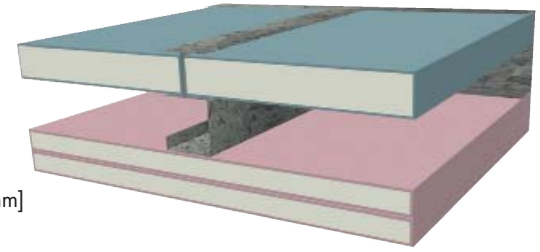
FRAME: 1 layer of 25mm **ShaftLiner** encased in CH-studs at either 300mm or 600mm spacing

CEILING LINING: 1 layer of 16mm **FireShield**

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
[Ceiling joists are CH-studs screw fixed to perimeter track]
[Ceiling is non-trafficable]

FRL 60/60/60 rated from above only Fire Report FAR 2891	CH-Stud Size (mm)		Span UDL 0.35 kPa (mm)		Ceiling Thickness (mm)	Acoustics Rw (Rw + Ctr)				
	CH-stud Depth	CH-stud BMT	300mm CH-stud Spacing	600mm CH-stud Spacing		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	Acoustic Report Day Design 3094-17
	64	0.55 0.9	2330 2730	1850 2170	80	39 (32)	46 (39)	46 (38)	–	
	102	0.55 0.9	3400 3880	1960 3160	118	42 (33)	48 (41)	48 (41)	48 (41)	

KSHWC2



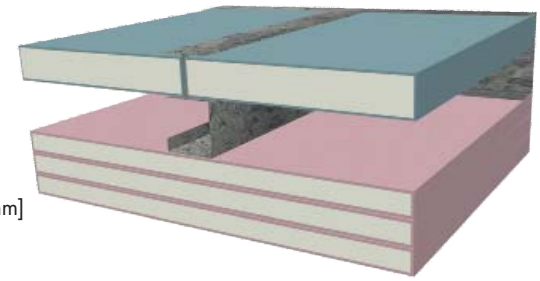
FRAME: 1 layer of 25mm **ShaftLiner** encased in CH-studs at either 300mm or 600mm spacing

CEILING LINING: 2 layers of 16mm **FireShield**

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
[Ceiling joists are CH-studs screw fixed to perimeter track]
[Ceiling is non-trafficable]

FRL 60/60/60 rated from above and below +60min RISF Fire Report FAR 2817 FAR 2036	CH-Stud Size (mm)		Span UDL 0.35 kPa (mm)		Ceiling Thickness (mm)	Acoustics Rw (Rw + Ctr)				
	CH-stud Depth	CH-stud BMT	300mm CH-stud Spacing	600mm CH-stud Spacing		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	Acoustic Report Day Design 3094-17
	64	0.55 0.9	2740 3000	1650 2570	96	44 (36)	50 (42)	50 (42)	–	
	102	0.55 0.9	3290 3920	1650 3090	134	46 (37)	52 (46)	52 (46)	52 (46)	

KSHWC3



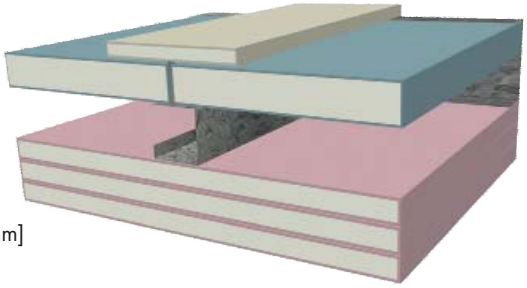
FRAME: 1 layer of 25mm **ShaftLiner** encased in CH-studs at either 300mm or 600mm spacing

CEILING LINING: 3 layers of 16mm **FireShield**

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
[Ceiling joists are CH-studs screw fixed to perimeter track]
[Ceiling is non-trafficable]

FRL 90/90/90 rated from above and below +60min RISF Fire Report FAR 2817 FAR 2036	CH-Stud Size (mm)		Span UDL 0.35 kPa (mm)		Ceiling Thickness (mm)	Acoustics Rw (Rw + Ctr)				
	CH-stud Depth	CH-stud BMT	300mm CH-stud Spacing	600mm CH-stud Spacing		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	Acoustic Report Day Design 3094-17
	64	0.55 0.9	2600 2850	1420 2440	112	46 (37)	53 (45)	53 (45)	–	
	102	0.55 0.9	2840 3790	1420 2660	150	49 (40)	55 (49)	55 (49)	55 (49)	

KSHWC4



FRAME: 100mm wide strip of 10mm min plasterboard above exposed flange of CH-studs with 1 layer of 25mm **ShaftLiner** encased in CH-studs at either 300mm or 600mm spacing

CEILING LINING: 3 layers of 16mm **FireShield**

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
[Ceiling joists are CH-studs screw fixed to perimeter track]
[Ceiling is non-trafficable]

FRL 120/120/120 rated from above and below **+60min RISF** Fire Report FAR 2817 FAR 2036	**CH-Stud Size (mm)**		**Span UDL 0.35 kPa (mm)**		**Ceiling Thickness (mm)**	**Acoustics Rw (Rw + Ctr)**				
	CH-stud Depth	CH-stud BMT	300mm CH-stud Spacing	600mm CH-stud Spacing		No Insulation	50mm EarthWool 11 kg/m³	65mm Polyester TSB3/ASB3	75mm Polyester 14 kg/m³	Acoustic Report Day Design 3094-17
	64	0.55 0.9	2600 2850	1420 2440	122	46 (37)	53 (45)	53 (45)	–	
	102	0.55 0.9	2840 3790	1420 2660	160	49 (40)	55 (49)	55 (49)	55 (49)	

GENERAL REQUIREMENTS

	Fire Rated
Install control joints in Horizontal Shaft Wall at: › 10m maximum intervals › All control joints in the structure › Any change in the substrate material.	✔
All ceilings in this section are non-trafficable. Do not walk on plasterboard ceilings!	✔
Limit dead loads on plasterboard ceilings to 2 kg/m^2.	✔
Attach ceiling fixtures to framing members only. Ensure the framing is designed to carry any additional load.	✔
Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and: › Two coats of **MastaBase**/**MastaLongset**, or › Three coats of **MastaLite**. Never joint sheets with fire sealant. *[Refer to Section 4]*	✔
Use approved fire rated penetration details suitable for the Shaft Wall system.	✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.	✔

FRAMING

	Fire Rated
Fix the perimeter track at 600mm maximum centres and 100mm maximum from each end.	✔
Space CH-studs according to the joist spacing specified in the system table.	✔
Screw CH-studs to the perimeter track.	✔
For Shaft Wall framing components and construction sequence. *[Refer to Section 3.3.1]*	✔
Install additional framing members around openings.	✔

Check the availability of Rondo CH-stud size 102mm.

PLASTERBOARD LAYOUT

	Fire Rated
FireShield Layout	
Install **FireShield** perpendicular to the framing members.	✔
Stagger face layer butt joints by 600mm minimum on adjoining sheets and between layers.	✔
First layer butt joints must be backed by a CH-stud joist.	✔
Stagger recessed edges by 300mm minimum between layers.	✔
ShaftLiner Layout	
If the ceiling exceeds the length of **ShaftLiner**, the butt joints must be positioned towards the edge of the ceiling, away from the centre. *[Refer to Section 3.3.1]*	✔
Stagger **ShaftLiner** butt joints for adjacent panels and reinforce with horizontal CH-stud cut to fit between the horizontal CH-studs. *[Refer to Section 3.3.1]*	✔

- Butt joints on underlying layers (not face layer) of **FireShield** may be made on the same framing member.
- Minimise butt joints by using long sheets.

PLASTERBOARD FIXING

	Fire Rated
Use the 'Screw Only Method'. Stud adhesive is not permitted.	✔
For installation of **FireShield** to CH-stud joists. *[Refer to Section 3.4.1]*	✔
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✔
Laminating screws can be used to fix butt joints in the second and third layer.	✔

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
16mm **FireShield**	30mm – 6g S screw	45mm – 6g S screw*	65mm – 6g S screw*
25mm **ShaftLiner**	45mm – 6g S screw+	–	–

For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.
*40mm – 10g Laminating screws may be used as detailed in installation diagrams.
+ Use for securing ShaftLiner to J-track when the J-track is being used as an end stud.

HORIZONTAL SHAFT WALL JUNCTIONS – ELEVATION

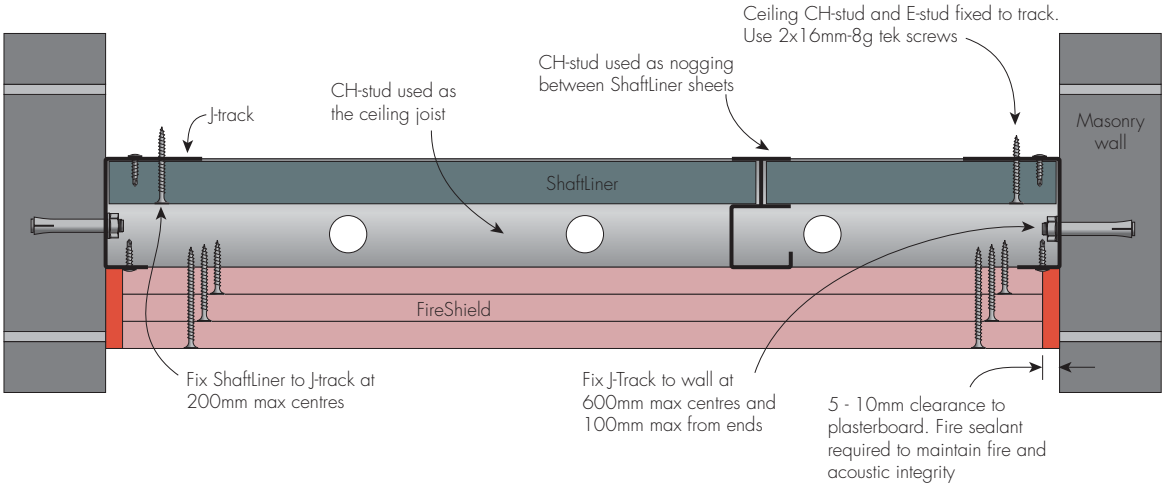


FIGURE 1 Horizontal Shaft Wall Non-Trafficable Ceiling to Masonry Wall

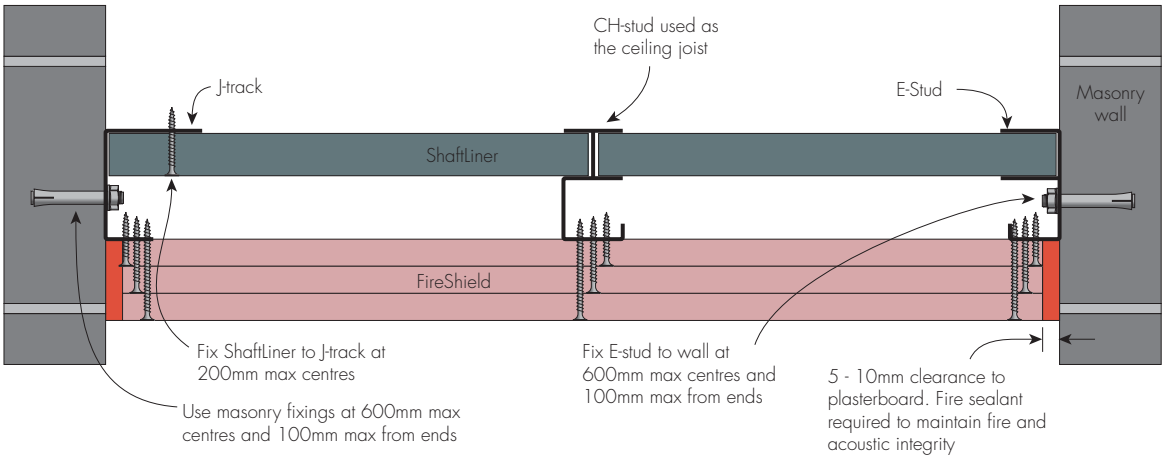


FIGURE 2 Horizontal Shaft Wall Non-Trafficable Ceiling to Masonry Wall

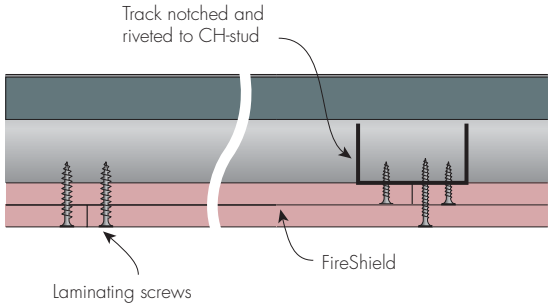


FIGURE 3 Alternate Butt Joint in FireShield

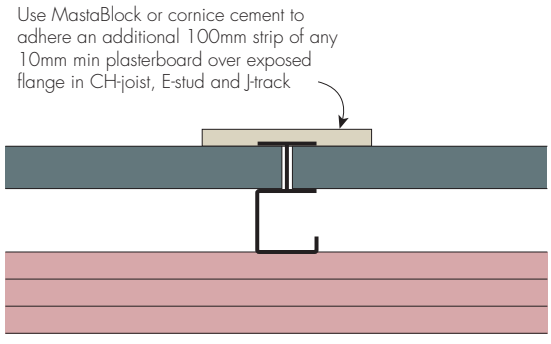
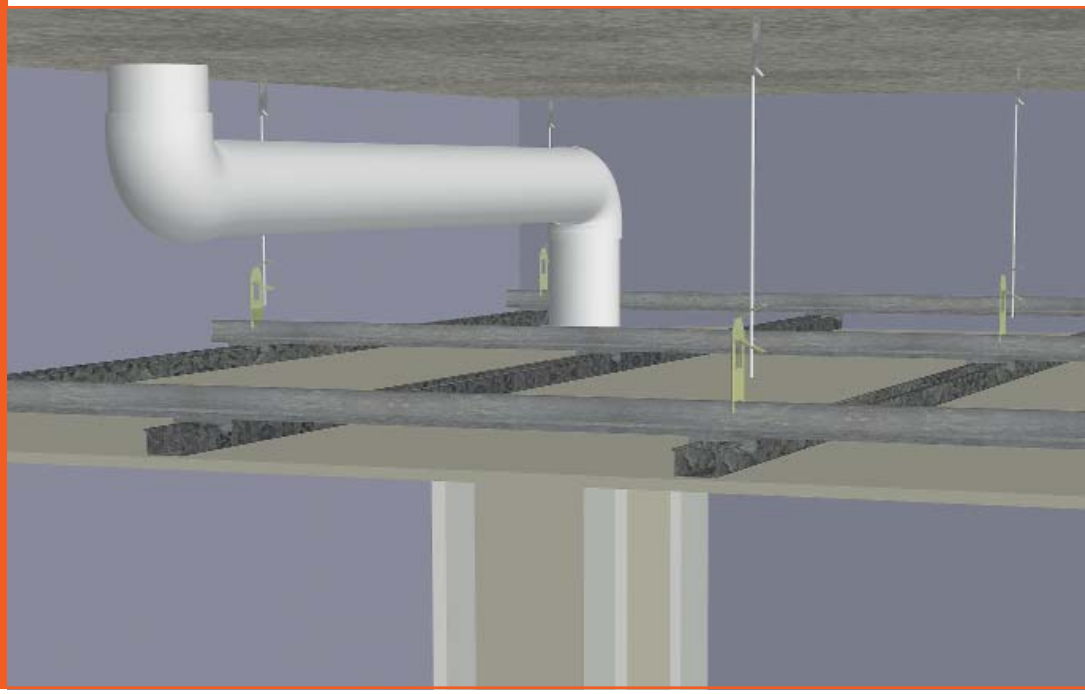


FIGURE 4 Shaft Wall Ceiling Detail
System KSHWC4 only

3.6.1

Soil and Waste Pipe Acoustic Systems



INTRODUCTION

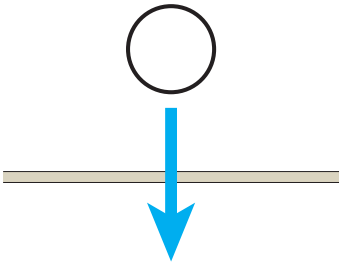
Soil and waste pipe systems provide sound insulation ratings for hydraulic services in a ceiling cavity, bulkhead or a duct. These systems have been designed to comply with Building Code of Australia (BCA) requirements for each state.

The soil and waste pipe systems cover a range of situations including bathroom ceilings, bedroom or habitable room ceilings, as well as ducts. Certain systems may require the pipes to be wrapped but alternative systems exist that include covering the pipes in plasterboard or the use of a false ceiling when wrapping is not practical.

This section includes only the system tables for soil and waste pipe acoustic systems. For installation requirements, refer to the relevant wall or ceiling section.

KAS2-KAS15

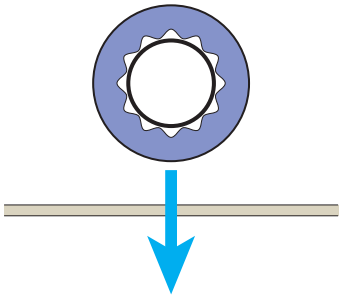
[Soil and waste pipe systems can be a ceiling, wall, bulkhead or duct]
[Number of downlights per 5 m² area]
[Downlights should be evenly distributed and no closer than 900mm apart]



System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)				
		No insulation		With either 50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3		
KAS2	2 layers of 10mm MastaShield	32 (27)	28 (25) with 2 downlights	35 (30)	27 (26) with 4 downlights	Acoustic Report Day Design 3094-35 Note: Pipes must not be in contact with insulation or plasterboard
KAS3	1 layer of 13mm MastaShield	29 (25)	–	32 (28)	26 (25) with 3 downlights	
KAS5	1 layer of 10mm SpanShield	28 (24)	–	31 (27)	27 (25) with 2 downlights	
KAS6	2 layers of 10mm SpanShield	32 (28)	26 (25) with 3 downlights	35 (31)	27 (27) with 4 downlights	
KAS8	2 layers of 10mm SoundShield	33 (30)	25 (25) with 4 downlights	36 (33)	28 (28) with 4 downlights	
KAS9	1 layer of 13mm SoundShield	30 (27)	26 (25) with 2 downlights	33 (30)	25 (25) with 4 downlights	
KAS12	2 layers of 10mm WaterShield	32 (28)	26 (25) with 3 downlights	35 (31)	27 (27) with 4 downlights	
KAS13	1 layer of 13mm WaterShield	29 (26)	27 (25) with 1 downlight	32 (29)	26 (26) with 3 downlights	
KAS15	1 layer of 13mm FireShield	30 (26)	28 (25) with 1 downlight	33 (29)	25 (25) with 4 downlights	

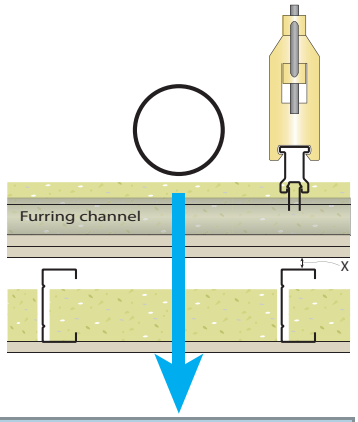
KAS20-KAS35

PIPE WRAPPING: Pyrotek Soundlagg 4525C (5 kg/m²) or equivalent
[Soil and waste pipe systems can be a ceiling, wall, bulkhead or duct]
[Number of downlights per 5 m² area]
[Downlights should be evenly distributed and no closer than 900mm apart]



System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)			
		No insulation	With either 50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3		
KAS20	1 layer of 10mm MastaShield	45 (35)	(40)*		Soundlagg 4525C Brochure Acoustic Report Day Design 3094-35 3094-38 Note: Pipes must not be in contact with insulation or plasterboard * with R1.8 insulation
KAS21	2 layers of 10mm MastaShield	48 (38)	51 (41)	49 (40) with 1 downlight	
KAS24	1 layer of 10mm SpanShield	44 (35)	47 (38)	–	
KAS25	2 layers of 10mm SpanShield	48 (39)	51 (42)	47 (40) with 2 downlights	
KAS28	1 layer of 13mm SoundShield	46 (38)	49 (41)	47 (40) with 1 downlight	
KAS31	2 layers of 10mm WaterShield	48 (39)	51 (42)	47 (40) with 2 downlights	
KAS32	1 layer of 13mm WaterShield	45 (37)	48 (40)	–	
KAS34	1 layer of 13mm FireShield	46 (37)	49 (40)	–	
KAS35	1 layer of 16mm FireShield	–	50 (41)	–	

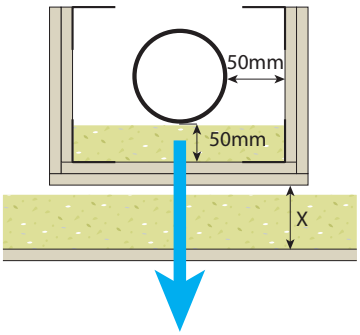
KAS143-KAS151



INNER LINING: 2 layers of 10mm Span**Shield** attached to a concealed frame
FRAME: 64mm steel stud minimum fixed to concealed frame
INSULATION: 50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3
[Soil and waste pipe systems can be a ceiling, wall, bulkhead or duct]
[Number of downlights per 5 m² area]
[Downlights should be evenly distributed and no closer than 900mm apart]

System	Outer Plasterboard Lining	Acoustics Rw (Rw + Ctr)		
		X = 0mm with downlights (target Rw+Ctr 40 dB)	X = 10mm with downlights (target Rw+Ctr 40 dB)	Acoustic Report Day Design 5008-1
KAS143	2 layer of 13mm MastaShield	54 (41) with 4 downlights	55 (42) with 4 downlights	Note: Pipes must not be in contact with insulation or plasterboard
KAS145	2 layers of 10mm SpanShield	54 (40)	55 (40) with 4 downlights	
KAS148	1 layer of 13mm SoundShield	51 (39)	54 (40)	
KAS151	2 layers of 10mm WaterShield	54 (40)	55 (40) with 4 downlights	

KAS163-KAS174



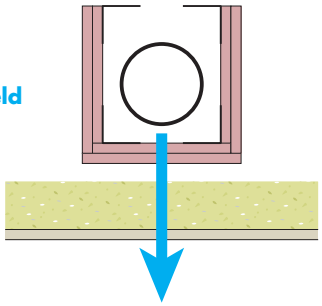
PLASTERBOARD BOX ENCASING PIPE: One layer of 13mm MastaShield when X=100mm
Two layers of 13mm MastaShield when X=50mm
INSULATION: 50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3
[Soil and waste pipe systems can be a ceiling, wall, bulkhead or duct with not less than 75mm gap between inner and outer plasterboard layers]
[Number of downlights per 5 m² area]
[Insulation to minimum 1200mm either side of pipe in both cavities]

System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)		
		X = 50mm with downlights	X = 100mm with downlights	Acoustic Report Day Design 5008-1
KAS163	2 layers of 13mm MastaShield	53 (40) with 4 downlights	54 (41) with 4 downlights	Note: Pipes must not be in contact with insulation or plasterboard
KAS165	2 layers of 10mm SpanShield	53 (39)	54 (40)	
KAS168	1 layer of 13mm SoundShield	51 (37)	53 (39)*	
KAS174	1 layer of 13mm FireShield	51 (36)	51 (38)*	

* Rw + Ctr 40 will be achieved with 1 layer of 13mm SoundShield, WaterShield or FireShield instead of 1 layer of 13mm MastaShield for the plasterboard box

KAS83-KAS95

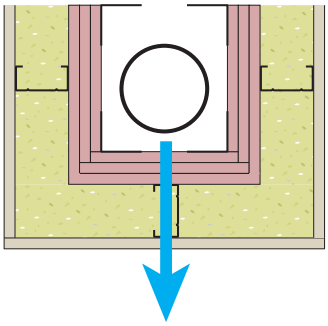
PLASTERBOARD BOX ENCASING PIPE: 2 layers of 13mm WaterShield, FireShield or SoundShield
INSULATION: 50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3
[Soil and waste pipe systems can be a ceiling, wall, bulkhead or duct]
[Number of downlights per 5 m² area]
[Downlights should be evenly distributed and no closer than 900mm apart]
[Insulation to minimum 1200mm either side of box]



System	Plasterboard Lining	Cavity (mm)	Acoustics Rw (Rw + Ctr)		
			With either 50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3		Acoustic Report Day Design 5008-1 Note: Pipes must not be in contact with insulation or plasterboard
KAS83	2 layers of 13mm MastaShield	75	55 (43)	49 (40) with 3 downlights	
KAS85	2 layers of 10mm SpanShield	75	53 (42)	49 (40) with 2 downlights	
KAS88	1 layer of 13mm SoundShield	100	55 (45)	53 (43) with 4 downlights	
KAS91	2 layers of 10mm WaterShield	100	51 (40)	49 (40) with 1 downlights	
KAS95	2 layers of 13mm FireShield	100	52 (41)	50 (40) with 4 downlights	

KAS182-KAS194

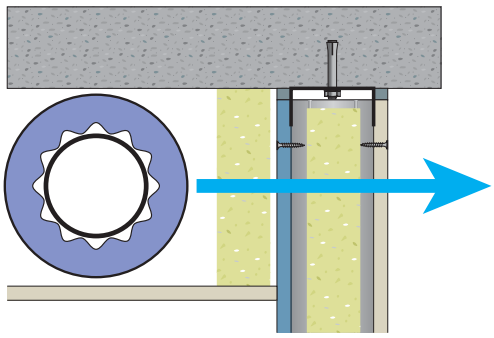
PLASTERBOARD BOX ENCASING PIPE: 3 layers of 13mm FireShield
[Minimum 51mm steel stud]
[Number of downlights per 5 m² area]
[Downlights should be evenly distributed and no closer than 900mm apart]



System	Plasterboard Lining	Acoustics Rw (Rw + Ctr)		
		With either 50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3		Acoustic Report Day Design 5008-1 Note: Pipes must not be in contact with plasterboard
KAS182	1 layers of 13mm MastaShield	49 (40)	47 (39) with 4 downlights	
KAS194	1 layer of 13mm FireShield	50 (41)	48 (40) with 4 downlights	

KAS120

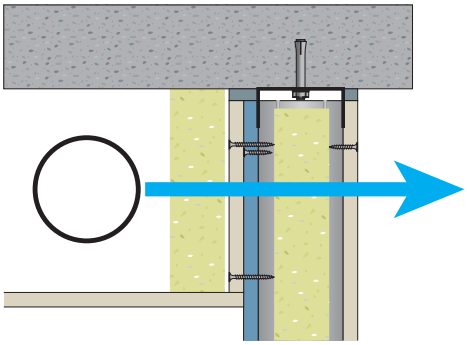
PIPE WRAPPING: Pyrotek Soundlagg 4525C (5 kg/m²) or equivalent
INNER LINING: [Habitable Room Side] 1 layer of 10mm **MastaShield**
[Bathroom Room Side] 1 layer of 10mm **WaterShield**
FRAME: 64mm minimum steel stud
WALL INSULATION: 50mm EarthWool or 65mm Polyester ISB3 to minimum 500mm below ceiling



System	Acoustics Rw (Rw + Ctr)		
	With no insulation along wall above ceiling	With either 50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3 along wall above ceiling	Acoustic Report Day Design 3094-35 Note: Pipes must not be in contact with insulation or plasterboard
KAS120	57 (43)	59 (44)	

KAS101-KAS114

INNER LINING: [Habitable Room Side] 1 layer of 10mm **MastaShield**
[Bathroom Side] 1 layer of 10mm **WaterShield** or 13mm **MastaShield**
FRAME: 64mm minimum steel stud
WALL INSULATION: 50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3 to minimum 500mm below ceiling

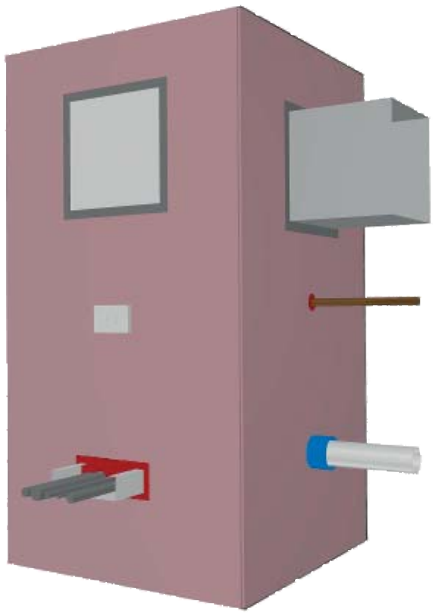


System	Additional Plasterboard Strip Along Wall Above Ceiling Only	Acoustics Rw (Rw + Ctr)	
		With either 50mm EarthWool 11 kg/m³ or 65mm Polyester ASB3/TSB3 along wall above ceiling	Acoustic Report Day Design 5008-1 Note: Pipes must not be in contact with insulation or plasterboard
KAS101	2 layers of 10mm MastaShield	50 (39)	
KAS103	2 layers of 13mm MastaShield	50 (40)	
KAS107	2 layers of 10mm SoundShield	51 (40)	
KAS108	1 layer of 13mm SoundShield	49 (39)*	
KAS111	2 layers of 10mm WaterShield	50 (40)	
KAS114	1 layer of 13mm FireShield	48 (38)*	

* Rw+Ctr = 40 dB can be achieved with 92mm steel studs

3.6.2

Fire Rated Vertical Laminated Duct



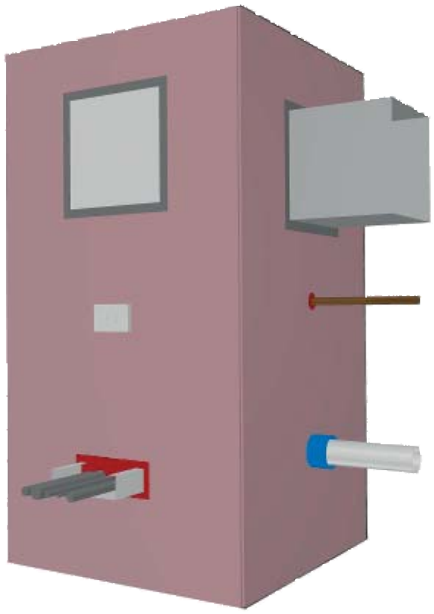
INTRODUCTION

Laminated duct systems are fire rated laminated plasterboard enclosures for building services. They are designed to provide fire and acoustic isolation for electrical, plumbing and air-handling services. The laminated duct systems are constructed from three layers of either 13mm or 16mm FireShield and metal angle framing.

Laminated duct systems are suitable for use with fire rated penetrations including access panels, cable trays and power points. They cannot be used for services containing combustible liquids or gases.

Laminated ducts can form one up to four sides of a fire rated enclosure. They can be easily joined to other plasterboard, masonry or concrete walls with an equivalent or higher fire rating.

Unless otherwise stated, laminated duct systems are non-load bearing and must not support roof, ceiling or floor loads.



KLVD1-KLVD2

FRAME: 25x50mm or 50x50mm, x 0.7mm BMT steel angles
DUCT LINING: 3 layers of 13mm or 16mm **FireShield** laminated together
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[16mm **FireShield** can be substituted with 16mm **MultiShield**]
[Laminated Vertical Duct can be 1, 2, 3 or 4 sided]
[Refer to 'Framing' for Maximum Height and Maximum Width dimensions]

FRL (Minutes)	System	Plasterboard Lining	Plasterboard Thickness (mm)	Acoustics Rw (Rw + Ctr)
– /90/90 rated from both sides Fire Report FR 2340 97/1037 97/1104 98/1341 FAR 1660	KLVD1	3 layers of 13mm FireShield	39	37 (34)
– /120/120 rated from both sides Fire Report FR 2340 97/1037 97/1104 98/1341 FAR 1660	KLVD2	3 layers of 16mm FireShield	48	38 (35)

GENERAL REQUIREMENTS

	Fire Rated
Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and: › Two coats of **MastaBase**/**MastaLongset**, or › Three coats of MastaLite. Never joint sheets with fire sealant. *[Refer to section 4]*	✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.	✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.	✔

For acceptable modifications or variations to fire rated systems. *[Refer To Section 2.3 Fire Resistance]*

MAXIMUM HEIGHT AND WIDTH DIMENSIONS

Max Duct Width (m)	Max Duct Height (m)
Unlimited	3.0
3.0	3.6
2.4	4.2
1.8	4.8
1.2	5.4

1 Dimensions apply to both KLVD1 and KLVD2 systems

PLASTERBOARD LAYOUT

	Fire Rated
Vertical Layout	
Stagger butt joints by 600mm minimum on adjoining sheets and between layers.	✔
First layer butt joints must be backed by a steel angle of minimum 50mm width.	✔
Stagger recessed edges by 300mm minimum between layers.	✔

Minimise butt joints by using long sheets.

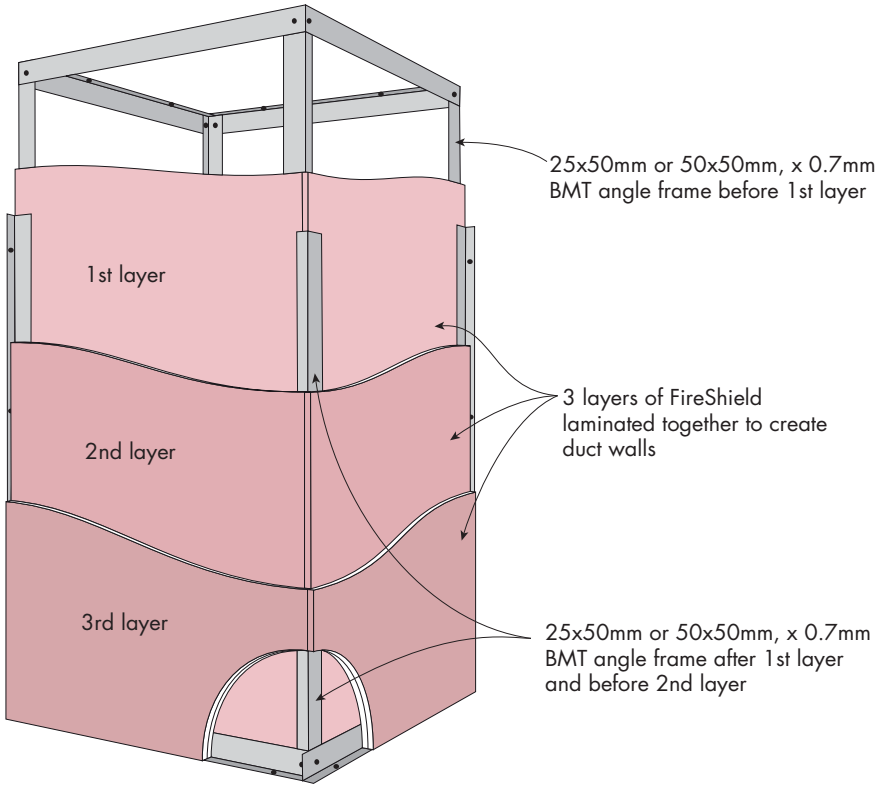


FIGURE 1 **Framing and Plasterboard Layout**

PLASTERBOARD FIXING

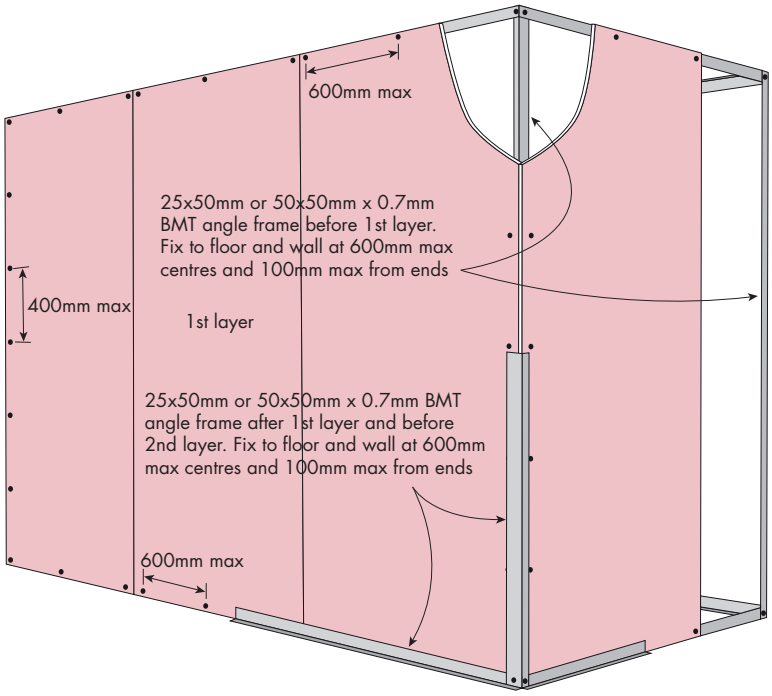
	Fire Rated
Use the 'Screw Only Method'. Stud adhesive is not permitted.	✔
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✔
Laminating screws can be used to fix butt joints in the second and third layer.	✔

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL FURRING CHANNEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
13mm	25mm – 6g S screw	40mm – 6g S screw*	60mm – 6g S screw*
16mm	30mm – 6g S screw	45mm – 6g S screw*	65mm – 6g S screw*

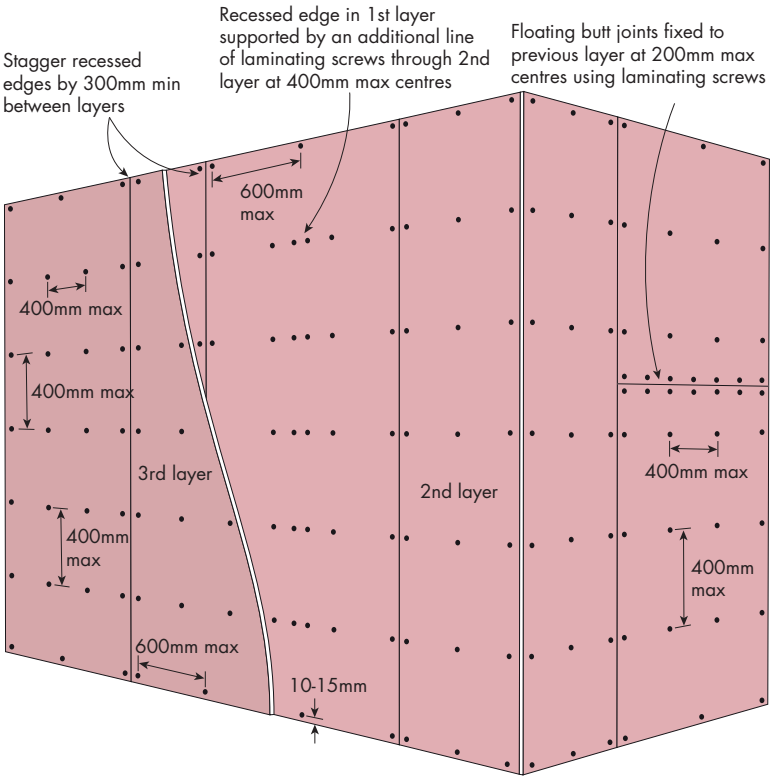
For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.
*40mm –10g Laminating screws may be used as detailed in installation diagrams.

FIGURE 2 Steel Angle Frames and 1st Layer



Fixing	Screw Only Method
Frame 1	Steel Angle 25x50 or 50x50mm x 0.7mm BMT. Installed before 1st layer
Frame 2	Steel Angle 25x50 or 50x50mm x 0.7mm BMT. Installed between 1st and 2nd layers.
Sheet Layout	1st, 2nd and 3rd layers: All Vertical
Fasteners	Perimeter screws 10-15mm from sheet edges.
Sheet Perimeter	Screw fix to steel angle at 400mm max centres vertically and 600mm max horizontally.
Field	2nd layer: Laminate to 1st layer at 400mm max centres vertically and horizontally. 3rd layer: Laminate to 2nd layer at 400mm max centres vertically and horizontally.
Recessed Edges	1st layer: Once 2nd layer is installed, support the recessed edge in the 1st layer with an additional line of laminating screws through 2nd layer at 400mm max centres. Stagger recessed edges by 300mm min between layers. 2nd layer: Laminate to 1st layer at 400mm max centres. 3rd layer: Laminate to 2nd layer at 400mm max centres.
Butt Joints	1st layer: Fix at 200mm max centres to additional horizontal steel angle. Stagger butt joints by 600mm min on adjoining sheets and between layers. 2nd layer: Laminate to 1st layer at 200mm max centres. 3rd layer: Laminate to 2nd layer at 200mm max centres
Internal and External corners	All layers: Fix to angle at 400mm max centres vertically
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase / MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 3 2nd and 3rd Layers



FIRE RATED
LAMINATED VERTICAL DUCT

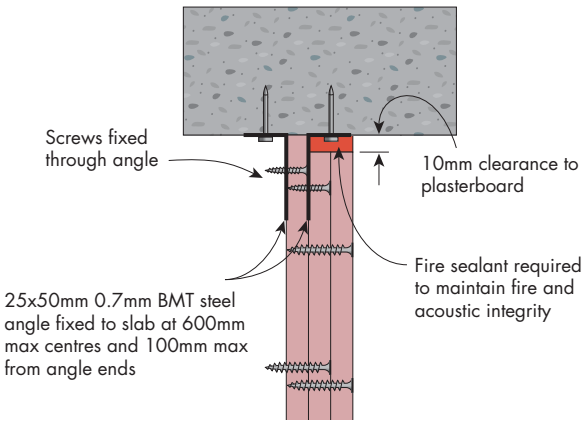


FIGURE 4 Laminated Duct Head to Slab
Elevation

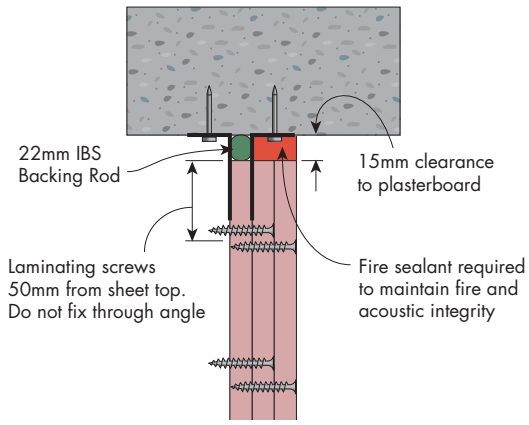


FIGURE 5 Laminated Duct Deflection Head to Slab
Elevation

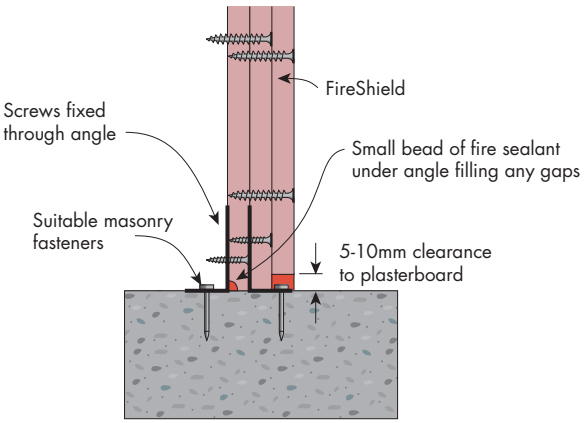


FIGURE 6 Laminated Duct Base to Slab
Elevation

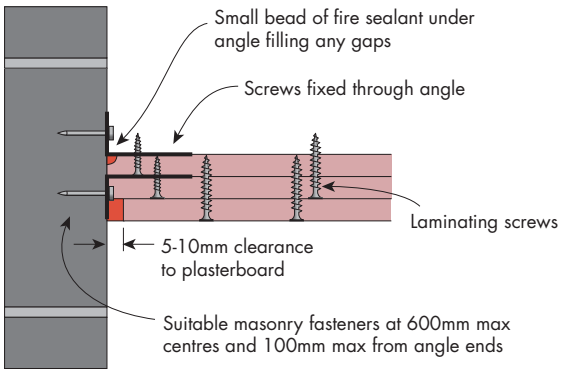


FIGURE 7 Laminated Duct to Masonry Wall
Plan view

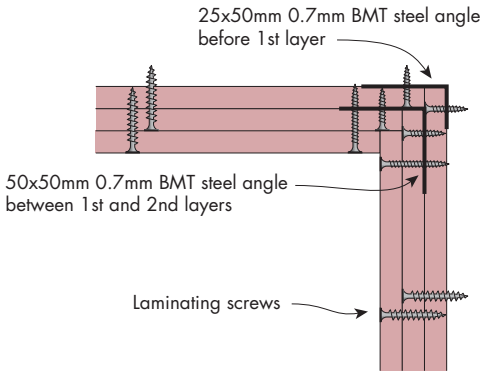


FIGURE 8 Laminated Duct Internal Corner
Plan view

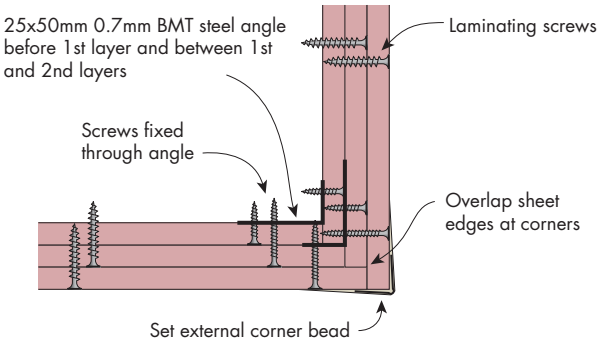


FIGURE 9 Laminated Duct External Corner
Plan view

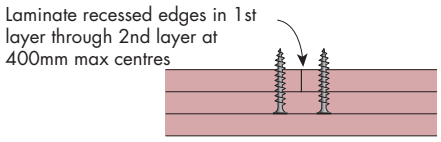


FIGURE 10 Laminated Duct Recessed Edge in 1st Layer
Plan view

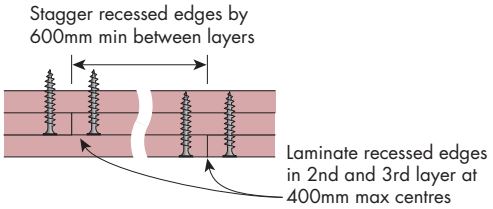


FIGURE 11 Laminated Duct Recessed Edge in 2nd and 3rd Layer
Plan view

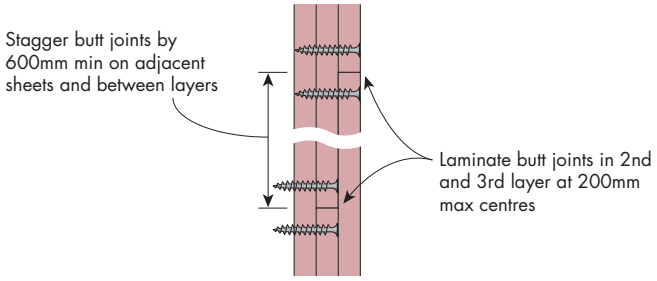


FIGURE 12 Laminated Duct Butt Joint in 2nd and 3rd Layer

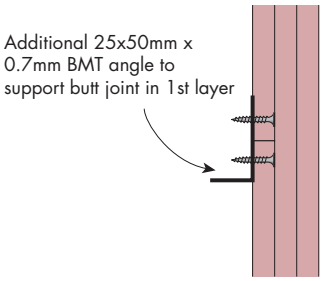


FIGURE 13 Laminated Duct Butt Joint in 1st Layer

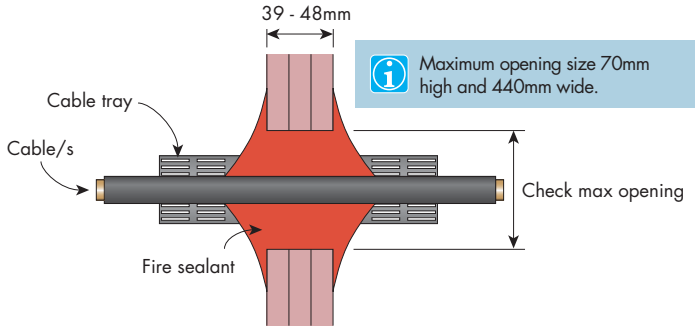


FIGURE 14 Typical Cable Tray Penetration
Up to 2 hours FRL
Example Only

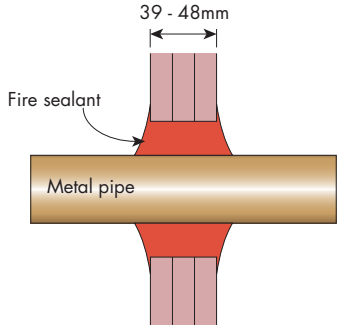


FIGURE 15 Typical Metal Pipe Penetration
Up to 2 hours FRL
Example Only

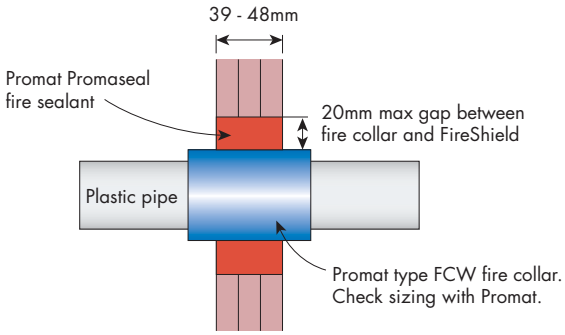
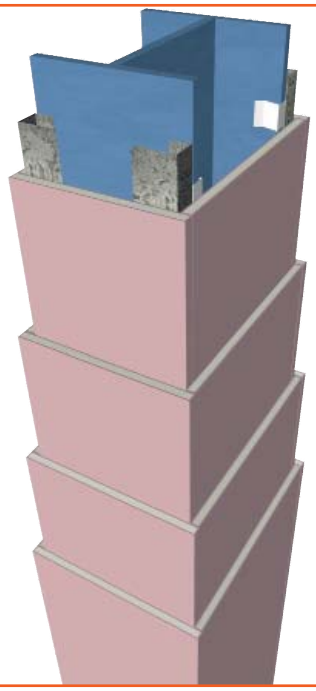


FIGURE 16 Typical Fire Collar Penetration
Up to 2 Hours FRL

3.6.3

Column and Beam Fire Protection



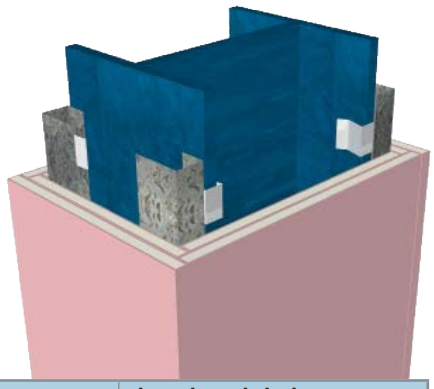
INTRODUCTION

Column and beam protection systems consist of FireShield and ShaftLiner layers protecting structural timber, steel or concrete. This enables the structural members to maintain their load carrying capacity in the event of a fire.

This section details the most common methods to encase timber, steel or concrete columns and beams to achieve a structural fire resistance level.

The FRL (Fire Resistance Level) for structural protection systems do not require the Integrity and Insulation ratings. They are expressed with only first number for structural adequacy and two dashes, for example 90/–/–. *[For more information, refer to Section 2.3 Fire Resistance]*

KSFP1-KSFP9



STRUCTURAL FRAME: Steel column or beam encased in either **FireShield** or **ShaftLiner**

PLASTERBOARD FRAME: [Option 1] Furring channel track with Encasement Clips at 600mm max centres friction fitted to structural frame flanges
[Option 2] Plasterboard directly fixed to structural steel

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	System	Plasterboard Lining	Plasterboard Thickness (mm)
30/ – / – Fire Report FAR 2519	KSFP1	1 layer of 13mm FireShield	13
60/ – / – Fire Report FAR 1613	KSFP2	1 layer of 16mm FireShield	16
60/ – / – Fire Report FAR 3124	KSFP3	2 layers of 13mm FireShield	26
60/ – / – Fire Report FAR 3124	KSFP4	1 layer of 25mm ShaftLiner	25
90/ – / – Fire Report FAR 1613	KSFP5	2 layers of 16mm FireShield	32
120/ – / – Fire Report FAR 1613	KSFP6	3 layers of 13mm FireShield	39
120/ – / – Fire Report FAR 3124	KSFP7	1 layer of 13mm FireShield plus 1 layer of 25mm ShaftLiner	38
180/ – / – Fire Report FAR 1613	KSFP8	4 layers of 16mm FireShield	64
180/ – / – Fire Report FAR 3124	KSFP9	1 layer of 13mm FireShield plus 2 layers of 25mm ShaftLiner	63

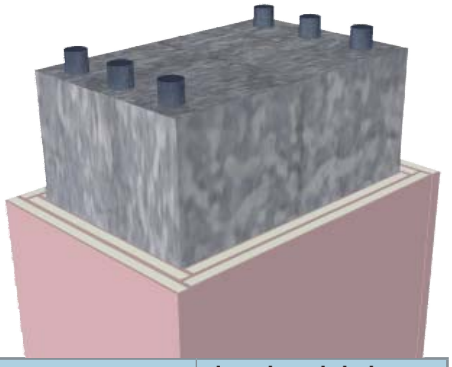
KSFP10-KSFP16

STRUCTURAL FRAME: Timber column or beam (minimum dimension 100x100mm) encased in either **FireShield** or **ShaftLiner**

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	System	Plasterboard Lining	Plasterboard Thickness (mm)
30/ – / – Fire Report FAR 1718	KSFP10	1 layer of 13mm FireShield	13
60/ – / – Fire Report FAR 1718	KSFP11	2 layers of 13mm FireShield	26
60/ – / – Fire Report FAR 3124	KSFP12	1 layer of 25mm ShaftLiner	25
90/ – / – Fire Report FAR 1718	KSFP13	3 layers of 13mm FireShield	39
90/ – / – Fire Report FAR 3124	KSFP14	1 layer of 13mm FireShield plus 1 layer of 25mm ShaftLiner	38
120/ – / – Fire Report FAR 1718	KSFP15	3 layers of 16mm FireShield	48
180/ – / – Fire Report FAR 1718	KSFP16	4 layers of 16mm FireShield	64

KSFP20-KSFP24



STRUCTURAL FRAME: Concrete column encased in **FireShield**

PLASTERBOARD FRAME: [Option 1] Plasterboard fixed to furring channels at 600mm max spacing
[Option 2] Plasterboard fixed to concrete directly with tapcon countersunk head screws

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[16mm **FireShield** can be substituted with 16mm **MultiShield**]

FRL	System	Plasterboard Lining	Plasterboard Thickness (mm)
Concrete Structural Adequacy + 30/ – / – Fire Report FAR 3221	KSFP20	1 layer of 13mm FireShield	13
Concrete Structural Adequacy + 60/ – / – Fire Report FAR 3221	KSFP21	1 layer of 16mm FireShield	16
Concrete Structural Adequacy + 90/ – / – Fire Report FAR 3221	KSFP22	2 layers of 16mm FireShield	32
Concrete Structural Adequacy + 120/ – / – Fire Report FAR 3221	KSFP23	3 layers of 13mm FireShield	39
Concrete Structural Adequacy + 180/ – / – Fire Report FAR 3221	KSFP24	4 layers of 16mm FireShield	64

GENERAL REQUIREMENTS

	Fire Rated
Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and: › Two coats of **MastaBase**/**MastaLongset**, or › Three coats of **MastaLite**. Never joint sheets with fire sealant. *[Refer to Section 4]*	✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.	✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.	✔
Check the BCA C1.8 for additional requirements for columns such as filling with concrete or surrounding column with steel casing up to 1.2m high.	✔

FRAMING

	Fire Rated
Install framing at maximum 450mm centres.	✔
Install furring channel track at each end of the column/beam and behind first layer butt joints.	✔

FURRING CHANNEL ANCHOR SPACING

Framing Member	Columns
13mm Recessed Furring Channel – Rondo No.333	900mm
16mm Furring Channel – Rondo No.308	900mm
28mm Furring Channel – Rondo No.129	1200mm

Anchors for furring channel must also be fixed 100mm max from ends.

PLASTERBOARD LAYOUT

	Fire Rated
Stagger butt joints by 600mm minimum on adjoining sheets and between layers.	✔
Stagger recessed edges by 300mm minimum between layers.	✔

Minimise butt joints by using long sheets.

PLASTERBOARD FIXING

	Fire Rated
Use the 'Screw Only Method'. Stud adhesive is not permitted.	✔
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✔
Do not fix plasterboard to steel more than 2mm BMT.	✔
Laminating screws can be used to fix butt joints in the second, third and fourth layers.	✔

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer	4th Layer
13mm	25mm – 6g S screw	40mm – 6g S screw	50mm – 6g S screw*	–
16mm	30mm – 6g S screw	45mm – 6g S screw	60mm – 6g S screw*	40mm – 10g laminating screws
25mm	40mm – 6g S screw	–	–	–
13mm + 25mm + 25mm	25mm – 6g S screw	50mm – 6g S screw	40mm – 10g laminating screws	–

For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.
* 40mm – 10g Laminating screws may be used as detailed in installation diagrams.

FASTENER TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO SOFTWOOD TIMBER

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer	4th Layer
13mm	30mm – 6g W screw	40mm – 6g W screw	60mm – 6g W screw*	–
16mm	30mm – 6g W screw	45mm – 6g W screw	65mm – 6g W screw*	40mm – 10g laminating screws
25mm	45mm – 6g W screw	–	–	–
13mm + 25mm	30mm – 6g W screw	60mm – 6g W screw	–	–

For timber use Type 'W' coarse thread needle point screws.
* 40mm – 10g Laminating screws may be used as detailed in installation diagrams.

FASTENER TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO HARDWOOD TIMBER

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer	4th Layer
13mm	25mm – 6g W screw	40mm – 6g W screw	60mm – 6g W screw*	–
16mm	30mm – 6g W screw	45mm – 6g W screw	60mm – 6g W screw*	40mm – 10g laminating screws
25mm	40mm – 6g W screw	–	–	–
13mm + 25mm	30mm – 6g W screw	50mm – 6g W screw	–	–

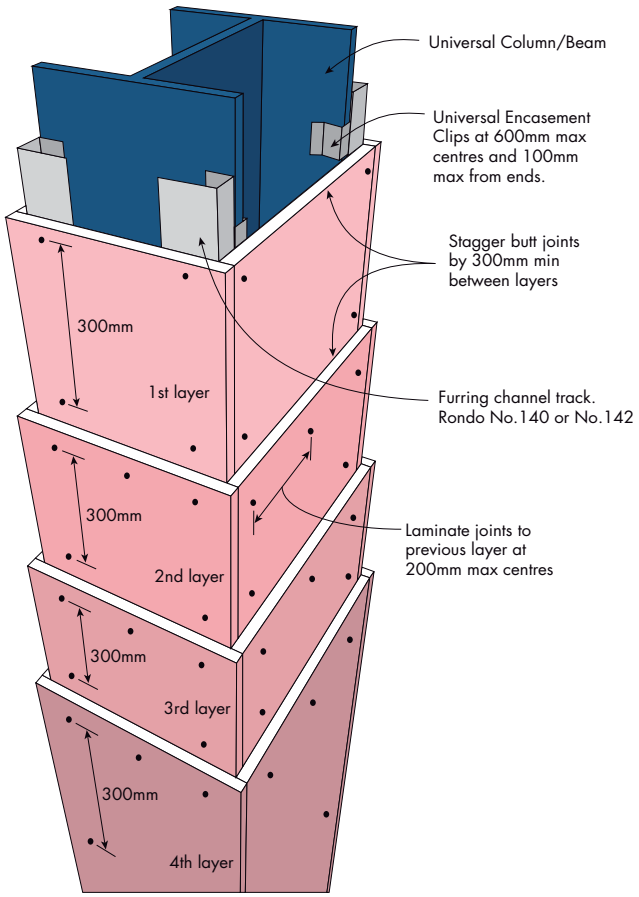
For timber use Type 'W' coarse thread needle point screws.
* 40mm – 10g Laminating screws may be used as detailed in installation diagrams.

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO CONCRETE

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
13mm	32mm – 10g tapcon screw	45mm – 10g tapcon screw	40mm – 10g laminating screws
16mm	32mm – 10g tapcon screw	45mm – 10g tapcon screw	40mm – 10g laminating screws

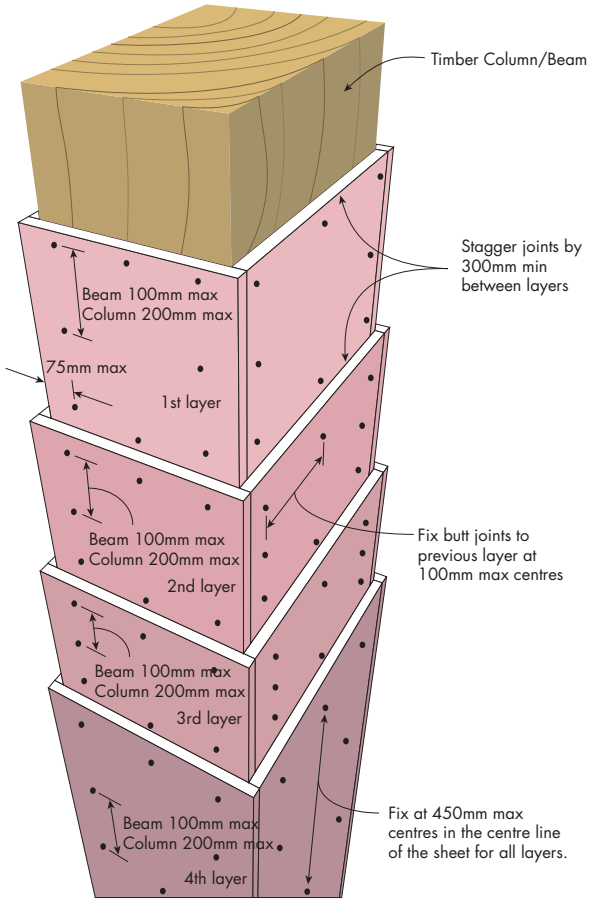
For concrete use tapcon screws with countersunk head.

FIGURE 1 Steel Column/Beam



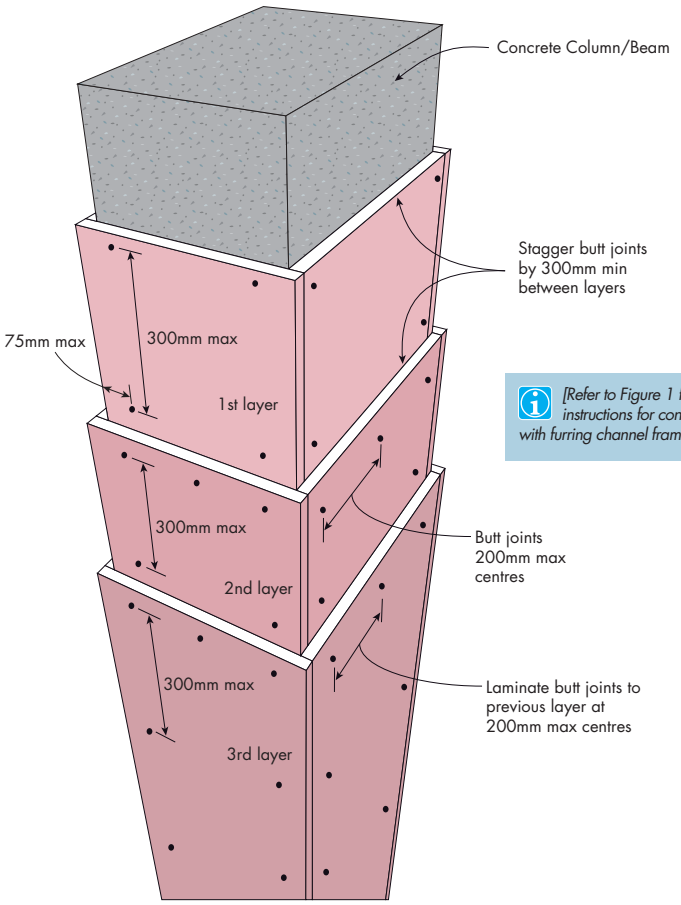
Fixing	Screw Only Method
Fasteners	All screws 50mm max from sheet edges
Edges along length	All layers: Fix at 300mm max centres. 3rd layer: Either screw to furring channel track or use laminating screws. 4th layer: Use 40mm-10g laminating screws.
Butt joints	Single Layer System: Install furring channel track behind sheet joints and fix at 200mm max centres. Multiple Layer Systems: Laminate to previous layer at 200mm max centres. Stagger butt joints by 300mm min between layers.

FIGURE 2 Timber Column/Beam



Fixing	Screw Only Method
Fasteners	All screws 75mm max from sheet edges.
Beam – Edges Along Length	All layers: Fix at 100mm max centres. Also fix at 450mm max centres in the centreline of the sheet for all layers. 3rd layer: Either screw to timber beam or use laminating screws. 4th layer: Use 40mm-10g laminating screws.
Column - Edges Along Length	All layers: Fix at 200mm max centres. 3rd layer: Either screw to timber column or use laminating screws. 4th layer: Use 40mm-10g laminating screws.
Butt Joints	Either screw to column/beam or laminate to previous layer at 200mm max centres. Stagger butt joints by 300mm min between layers.

FIGURE 3 Concrete Column



[Refer to Figure 1 for installation instructions for concrete columns with furring channel framing]

Fixing	Screw Only Method
Fasteners	All screws 75mm max from sheet edges.
Edges along length	All layers: Fix at 300mm max centres. 3rd layer: Either screw to concrete or use 40mm-10g laminating screws.
Butt joints	Single Layer System: Fix at 200mm max centres. Multiple Layer Systems: Either screw to concrete or use 40mm-10g laminating screws at 200mm max centres to previous layer. Stagger butt joints by 300mm min between layers.

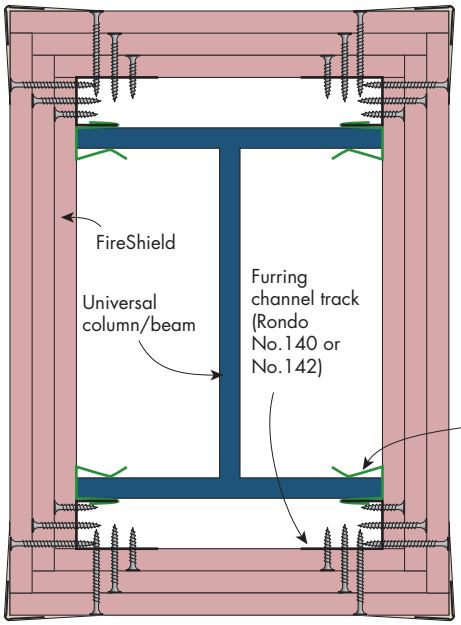


FIGURE 4 4 Sided Protection For I-Beam/Column
Elevation or plan view

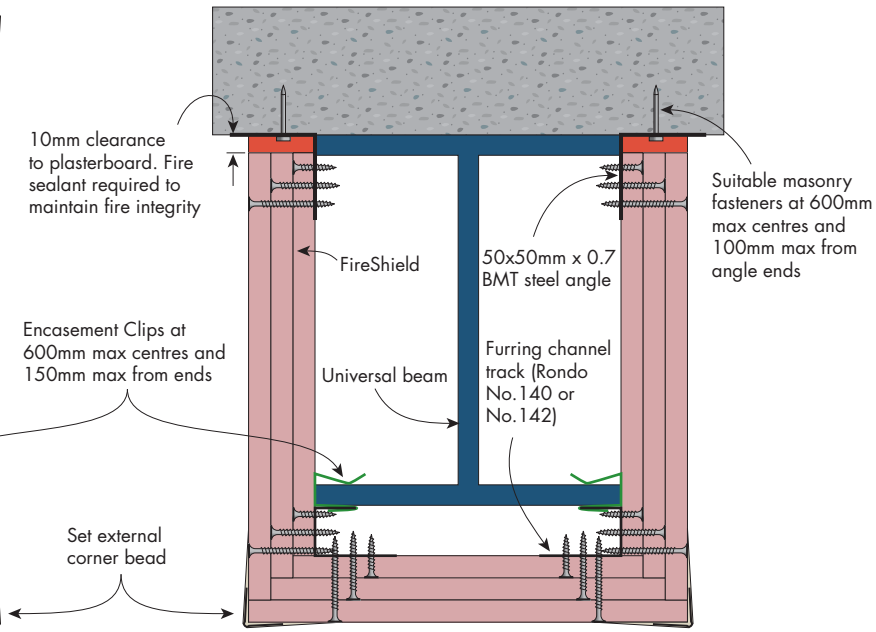


FIGURE 5 3 Sided Protection For I-Beam
Elevation

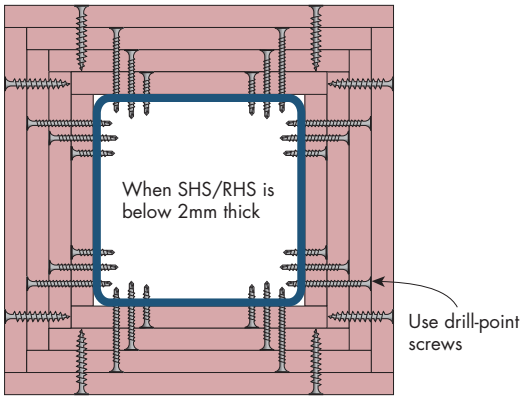


FIGURE 6 4 Sided Protection for SHS/RHS
Elevation or plan view

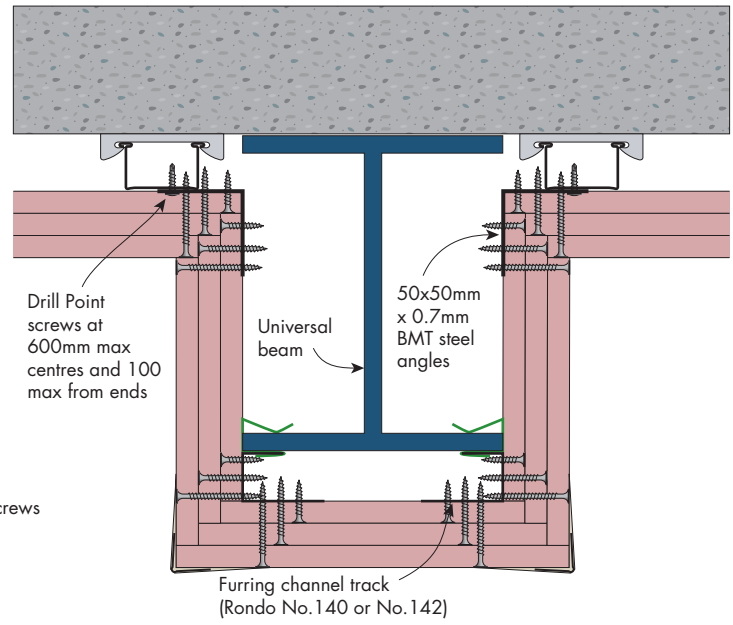


FIGURE 7 3 Sided Protection for I-Beam to Ceiling
Elevation

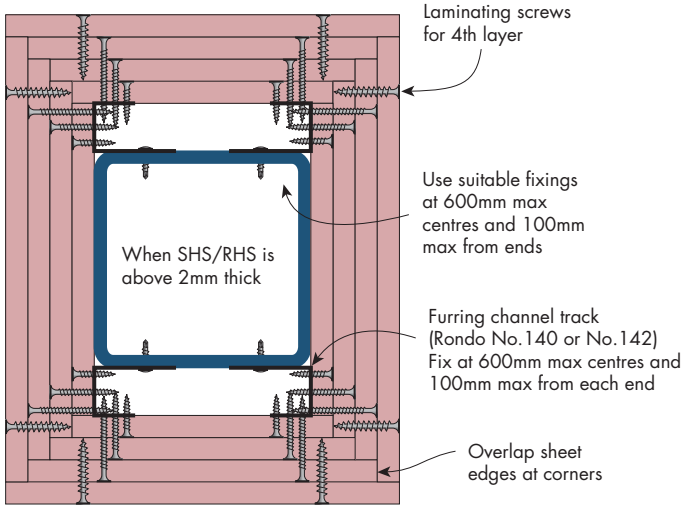


FIGURE 8 4 Sided Protection For SHS/RHS
Elevation or plan view

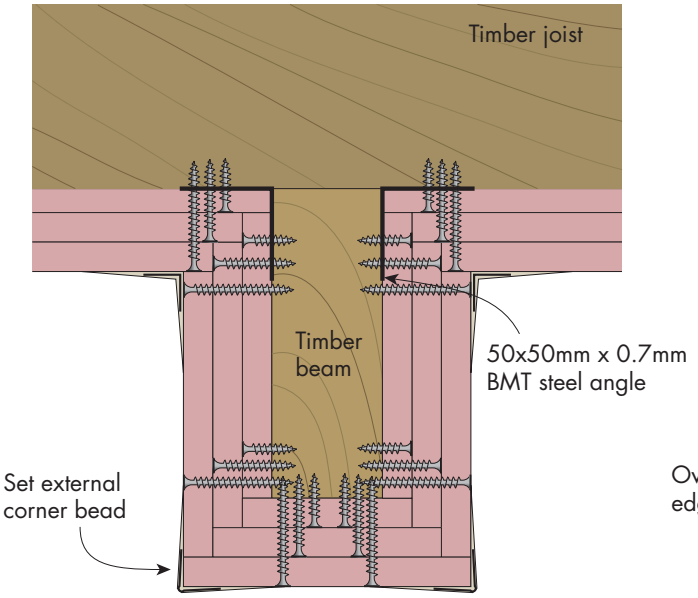


FIGURE 9 3 Sided Protection Timber Beam
Elevation

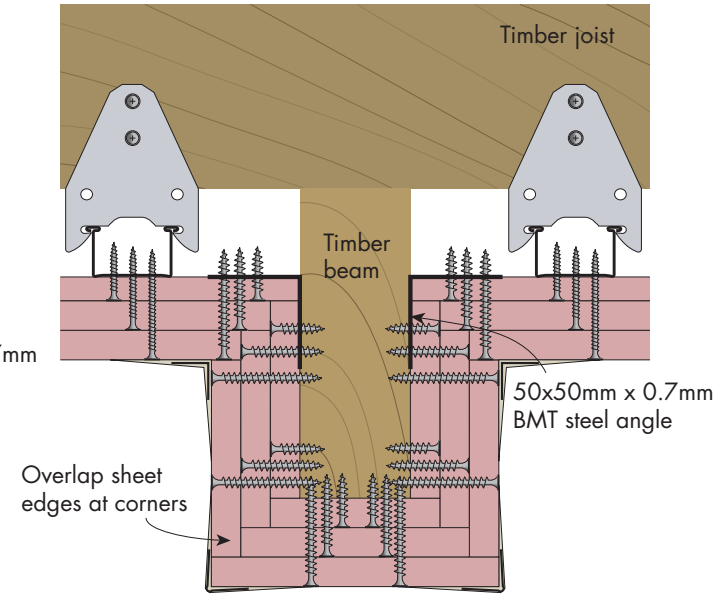


FIGURE 10 3 Sided Protection Timber Beam
Elevation

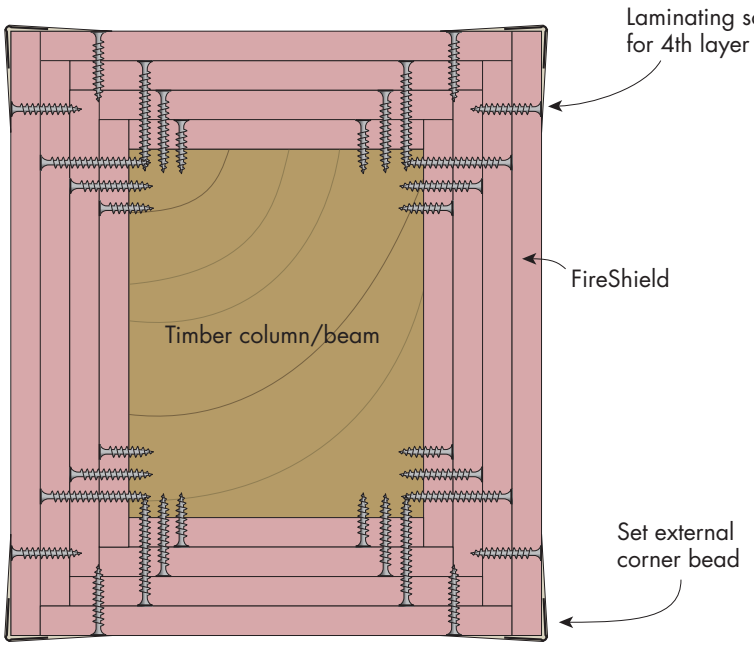


FIGURE 11 4 Sided Protection Timber Column/Beam
Elevation or plan view

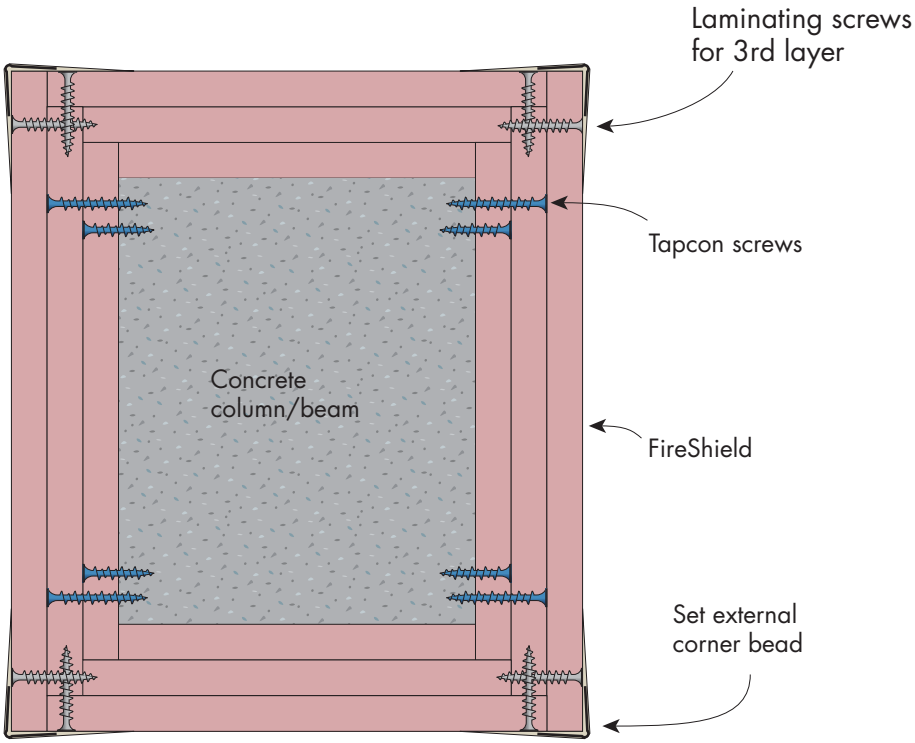


FIGURE 12 4 Sided Protection Concrete Column
Elevation or plan view

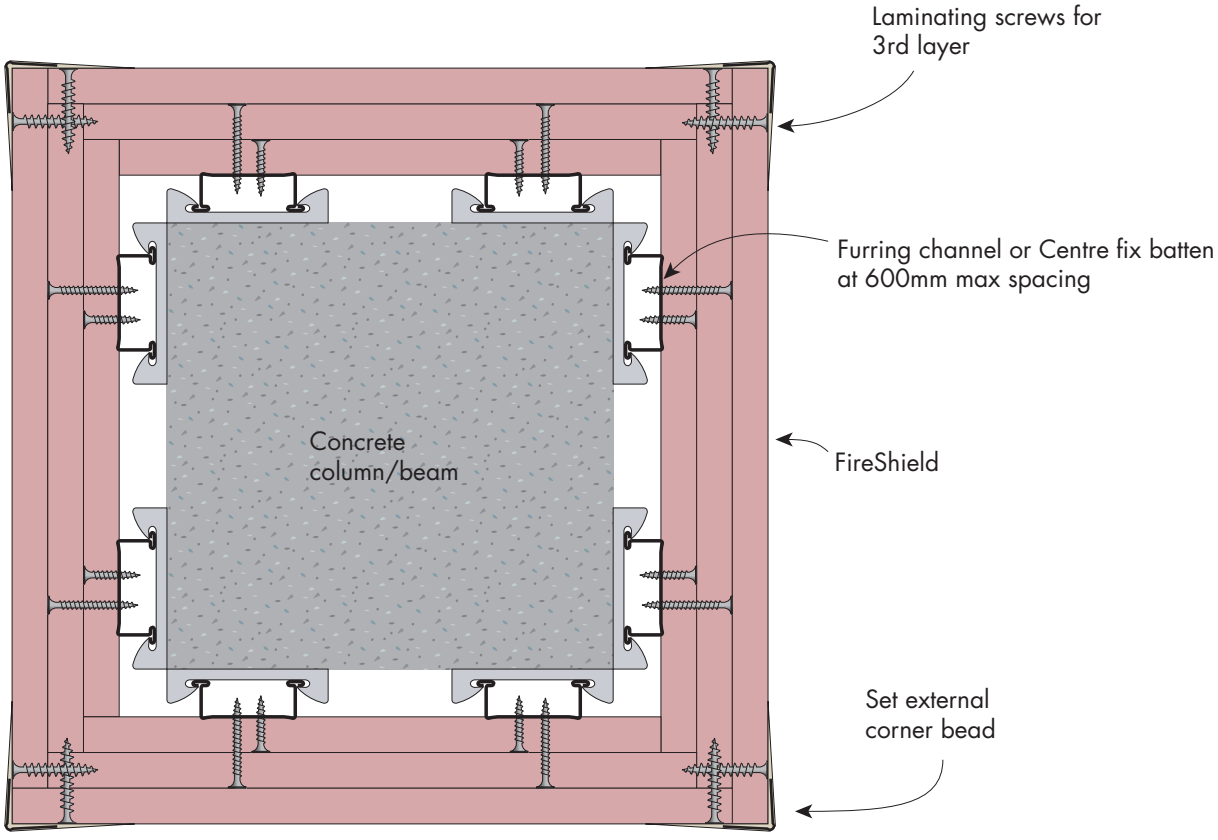
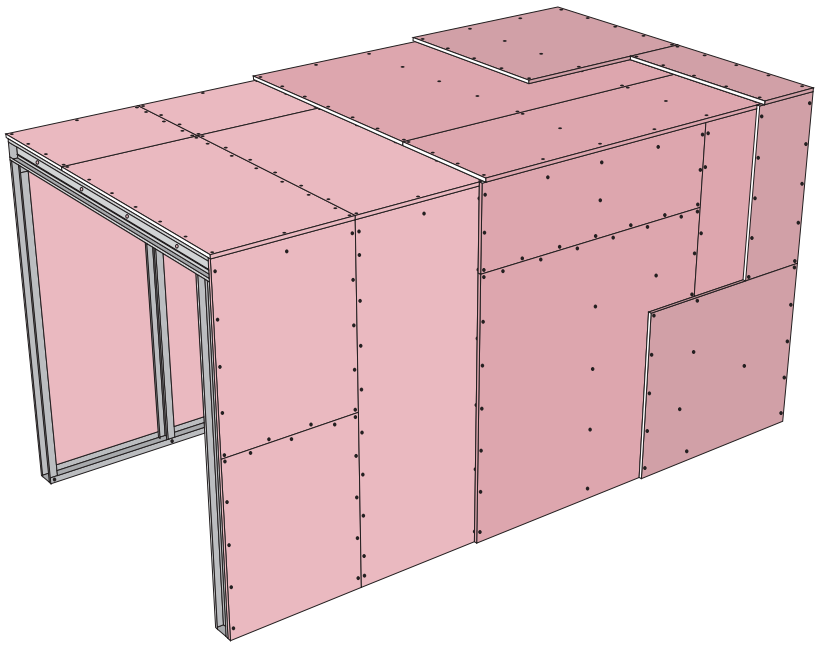


FIGURE 13 4 Sided Protection Concrete Column
Elevation or plan view

3.6.4

Fire Escape Tunnel



INTRODUCTION

Fire escape tunnel systems are designed to provide building occupants with an escape route protected from fire.

They comply with the Building Code of Australia requirements for 'Fire Isolated Passageways' and achieve fire protection from the outside up to FRL of 120/120/120.

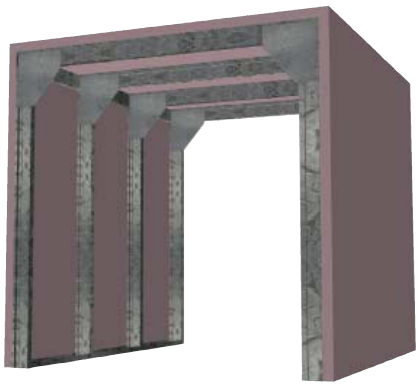
This section provides systems as well as installation instructions and construction details for the framing and external plasterboard layers. For the installation of plasterboard to the interior of the fire escape tunnel. *[Refer to Section 3.1.1 for walls and 3.4.1 for ceilings]*

KFET1-KFET3

EXTERNAL LINING: [Option 1] 2 layers of 16mm **FireShield**
[Option 2] 3 layers of 13mm **FireShield**
[Option 3] 3 layers of 16mm **FireShield**

INTERNAL LINING: [Ceiling] 1 layer of 10mm **SpanShield**
[Wall] 1 layer of 10mm **MastaShield** (optional)

FRAME: Wall studs and ceiling joists at 600mm max centres
[Use 150x0.75mm steel studs with Cleat 1]
[Use 150x1.15mm steel studs with Cleat 2]
[Maximum Height and Width apply to all systems]



FRL rated from outside only	System	External Plasterboard Lining	Plasterboard Thickness (mm)
60/60/60 Fire Report FAR 2869	KFET1	2 layers of 16mm FireShield	32
90/90/90 Fire Report FAR 2869	KFET2	3 layers of 13mm FireShield	39
120/120/120 Fire Report FAR 2869	KFET3	3 layers of 16mm FireShield	48

GENERAL REQUIREMENTS

	Fire Rated
Install control joints in plasterboard walls at: › 12m maximum intervals › All control joints in the structure › Any change in the substrate material	✔
All ceilings in this section are non-trafficable. Do not walk on plasterboard ceilings!	✔
Attach ceiling fixtures to framing members only. Ensure the framing is designed to carry any additional load.	✔
Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and: › Two coats of **MastaBase**/**MastaLongset**, or › Three coats of **MastaLite** Never joint sheets with fire sealant. *[Refer to Section 4]*	✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.	✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.	✔

For acceptable modifications or variations to fire rated systems *[Refer to Section 2.3 Fire Resistance]*.

FRAMING

	Fire Rated
Fix the bottom track at 600mm maximum centres and 100mm maximum from each end.	✔
Space studs at maximum 600mm centres.	✔
Push studs down completely into bottom track.	✔
Fix studs to top and bottom tracks. Fix joists to perimeter tracks. *[Refer to Construction Details]*	✔

Noggings are permitted to assist the fixing of services. Copper Chromium Arsenate (CCA) treated timber must not be used.

Plumbing and electrical services must not protrude beyond the face of the stud.

FIRE ESCAPE TUNNEL MAXIMUM HEIGHT AND WIDTH TABLE

Stud Size (mm)		Maximum Height (m)	Maximum Width (m)
Stud and Joist Depth	Stud and Joist BMT		
150	0.75	2.4	2.0
150	1.15	3.0	2.0

1 Deflection Limit is Height/240 to a maximum of 30mm at 0.35 kPa, in accordance with BCA Specification C1.8 for walls of shafts and fire isolated exits generally.
2 Tabulated heights are not for axial loads but do include self weight and lateral pressures.
3 Shelf loading is not permitted on these tabulated wall heights.
4 Loadings: Pultimate = 0.525 kPa, Pservice = 0.35 kPa.
5 These walls are not for external applications.
6 All loadings in accordance with AS1170.
7 Walls analysed in accordance with AS4600.
8 Noggings in accordance with relevant table.

PLASTERBOARD LAYOUT

	Fire Rated
Walls	
Stagger butt joints by 600mm minimum on adjoining sheets and between layers.	✔
First layer butt joints must be backed by a nogging.	✔
Stagger recessed edges by 300mm minimum between layers.	✔
Fix all underlying plasterboard sheets vertically. The face layer may be fixed either horizontally or vertically.	✔
Ceilings	
Sheets must be perpendicular to the framing members.	✔
Stagger face layer butt joints by 600mm minimum on adjoining sheets and between layers.	✔
Stagger recessed edges by 300mm minimum between layers.	✔
First layer butt joints must be over a framing member.	✔

Ceiling butt joints on underlying layers (not face layer) may be made on the same framing member.

PLASTERBOARD FIXING

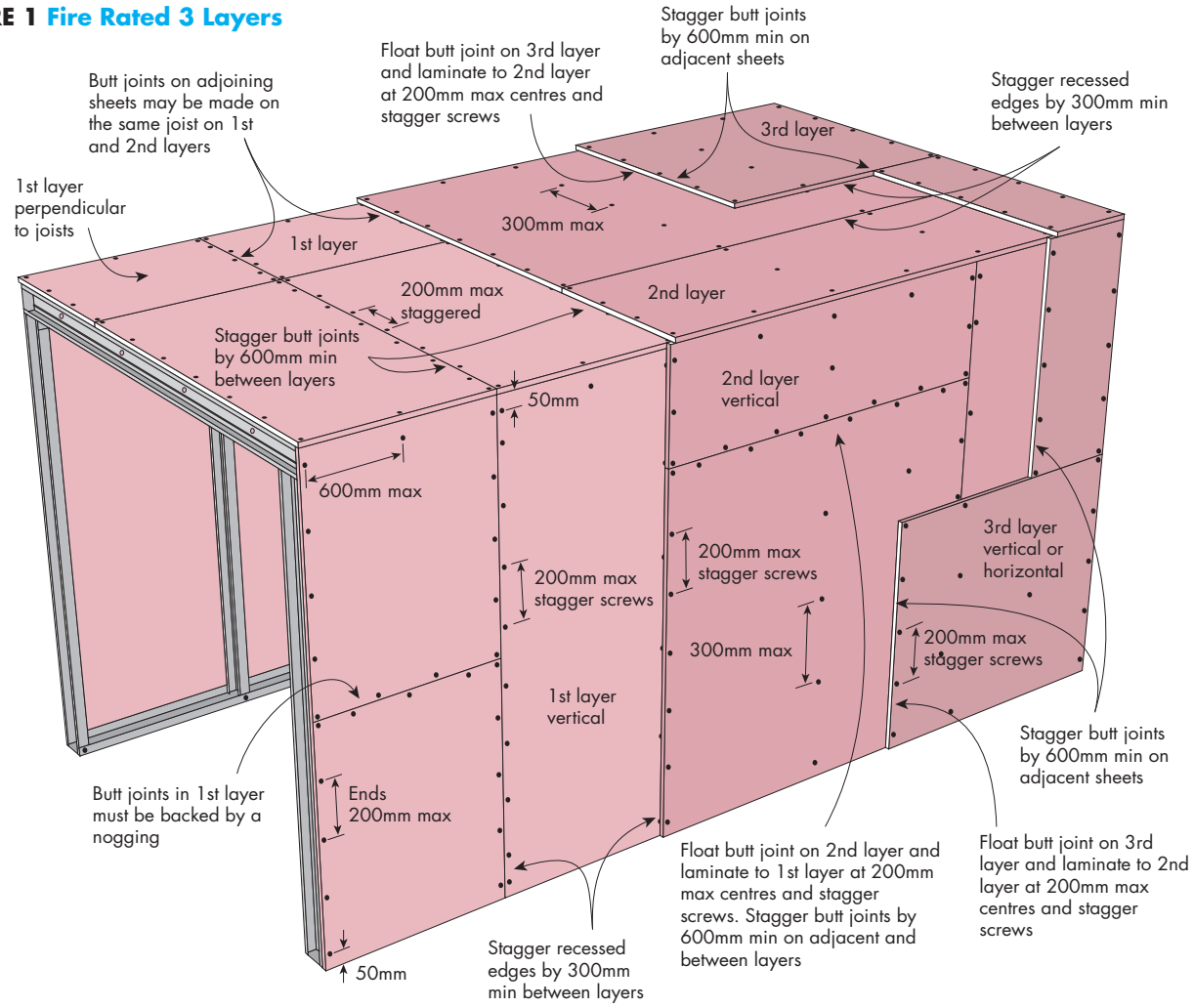
	Fire Rated
Use the 'Screw Only Method'. Stud adhesive is not permitted.	✔
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✔
Laminating screws can be used to fix butt joints in the second and third layer on the wall.	✔
Laminating screws can be used to fix butt joints in the third layer on the ceiling.	✔

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL FURRING CHANNEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
13mm	25mm – 6g S screw	40mm – 6g S screw*	60mm – 6g S screw*
16mm	30mm – 6g S screw	45mm – 6g S screw*	65mm – 6g S screw*

For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.
*40mm - 10g Laminating screws may be used as detailed in installation diagrams.

FIGURE 1 Fire Rated 3 Layers



Ceilings	
Fixing	Screw Only Method
Fasteners	Perimeter fasteners 10-15mm from sheet edges. Nails must not be used on metal framing members.
Field	Fix at 300mm max centres
Recessed Edges	Fix on each frame member. Stagger recessed edges by 300mm min between layers.
Butt Joints on Framing Members	Fix at 100mm max centres and stagger screws. Butt joints on 1st and 2nd layers may be made on same joist. Stagger butt joints by 600mm min between layers.
Floating Butt Joints on 3rd Layer	Locate centrally between framing members and laminate to 2nd layer at 200mm max centres. Stagger butt joints by 600mm min on adjoining sheets.
Openings and Control Joints	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

Walls	
Fixing	Screw Only Method
Fasteners	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 300mm max centres 2nd layer: Fix at 300mm max centres 3rd layer: Laminate to 2nd layer at 400mm max centres
Recessed Edges	1st and 2nd layers: Fix at 200mm max centres and stagger screws. Stagger recessed edges by 300mm min between layers and on opposite sides of the wall. Recessed edges must be backed by a stud. 3rd layer Horizontal: Fix on each stud. 3rd layer Vertical: Laminate to 2nd layer at 400mm max centres and stagger screws.
Butt Joints	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. Butt joints must be backed by a nogging. 2nd layer: Same as 1st layer or laminate to 1st layer using laminating screws at 200mm max centres and stagger screws. 3rd layer: Laminate to 2nd layer at 200mm max centres and stagger screws.
Openings and Control Joints	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIRE RATED Fire Escape Tunnel – Elevation

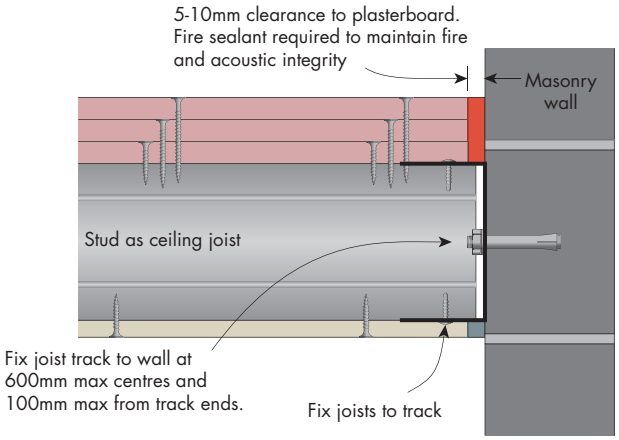


FIGURE 2 Fire Escape Tunnel Ceiling to Masonry Wall

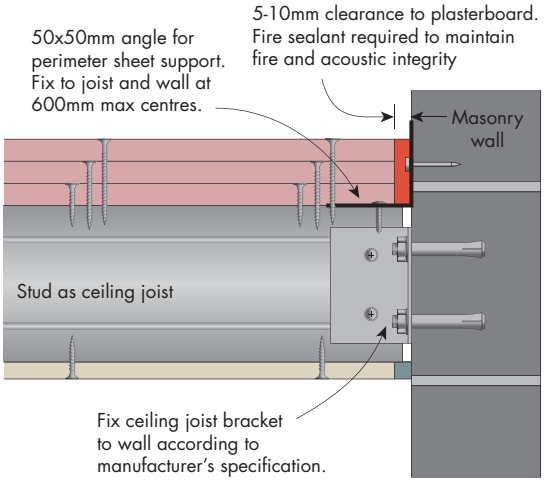


FIGURE 3 Fire Escape Tunnel Ceiling to Masonry Wall

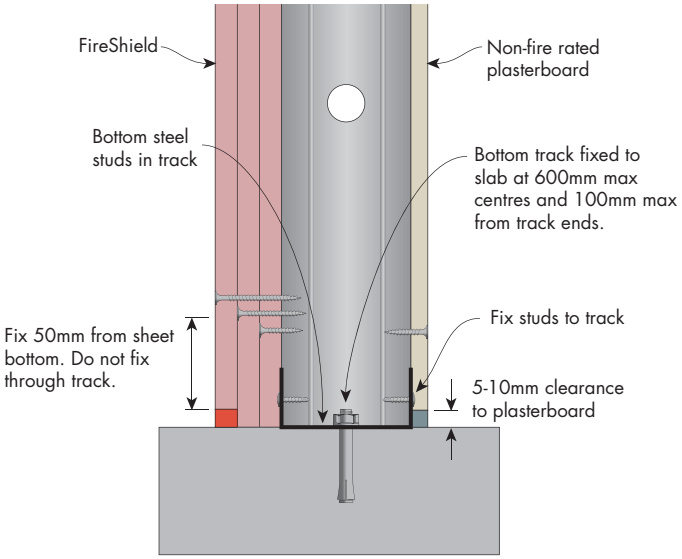


FIGURE 4 Fire Escape Tunnel Base to Slab

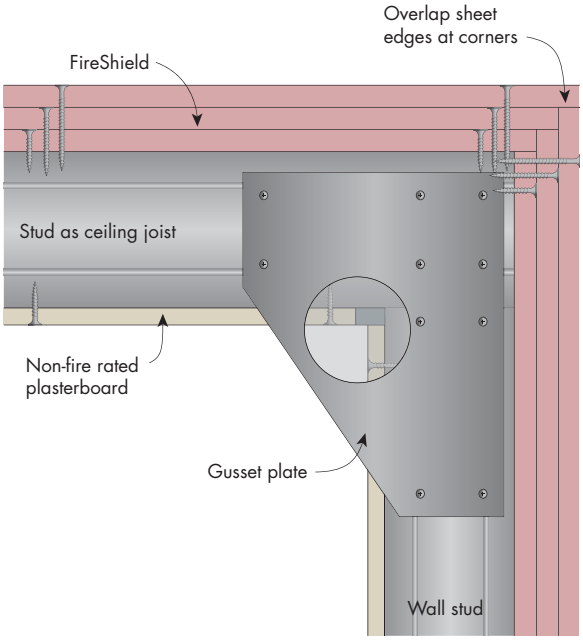
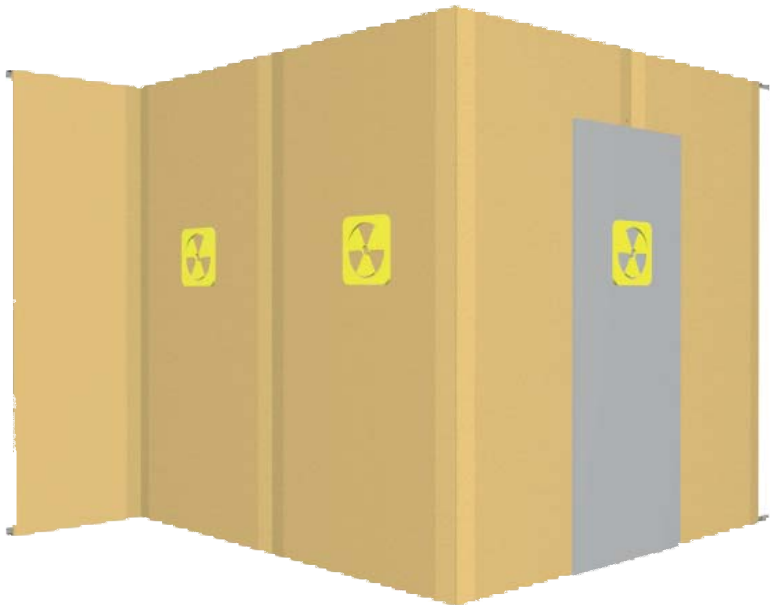


FIGURE 5 Fire Escape Tunnel Wall to Ceiling

3.6.5

X-Ray Shielding Walls and Ceilings



INTRODUCTION

GIB X-Block® is a lead free plasterboard system used as an effective radiation barrier. Barium Sulphate in the GIB X-Block plasterboard and compound provide protection against X-rays.

X-ray shielding requirements are usually specified as a thickness of lead. The lead equivalence of GIB X-Block systems depend on the energy level of the radiation. Tables 1 and 2 state the lead equivalence of GIB X-Block systems at various X-ray energy levels. Always seek advice from a Health Physicist to ensure that the requirements for radiation shielding are met.

This section contains radiation test results, shielding requirements, systems, installation instructions and construction details for GIB X-Block systems. *[Refer to Section 2.3 for more information on X-ray resistance]*

RADIATION TEST RESULTS

TABLE 1 GIB X-Block® Millimeters of Lead Equivalence for Different X-Ray Energies

13mm GIB X-Block® Lead Equivalence (mm)				
X-ray Energy (kVp)	**1 Layer**	**2 Layers**	**3 Layers**	**4 Layers**
80	0.8	1.6	2.4	–
100	0.75	1.5	2.25	2.9
125	0.5	1.0	1.4	1.9
150	0.4	0.7	1.0	1.3

Uncertainites ± 0.1mm

Source: National Radiation Laboratory Reports 24062003/1, 24062008, 20022009.

*Quote from Report 20022009: 'Determination of lead equivalence for 4 layers of X-Block Plasterboard at 80kVp was not feasible owing to the extremely low transmission of the X-rays through this sample thickness'.

kVp - kilovolts peak. Maximum voltage applied across the X-ray tube. The kVp controls the maximum energy of the emitted X-rays.

TABLE 2 GIB X-Block® Mass of Lead Equivalence for Different X-Ray Energies

13mm GIB X-BLOCK® Lead Equivalence (kg/m²)				
X-ray energy (kVp)	**1 Layer**	**2 Layers**	**3 Layers**	**4 Layers**
80	9.1	18.1	27.2	–
100	8.5	17.0	25.5	32.9
125	5.7	11.3	15.9	21.5
150	4.5	7.9	12.5	14.7

Source: Calculated from Table 1 using the density of lead (11340 kg/m³)

X-RAY RESISTANCE ENERGY LEVELS

X-ray radiation is measured in kilovolts peak (kVp). Depending on the type of radiation equipment used in the room, diagnostic facilities will have different requirements for shielding:

- CT 120-140 kVp
- General radiographic rooms 60-90 kVp
- Dental 60-80 kVp
- Mammography 25-35 kVp

NON-FIRE RATED

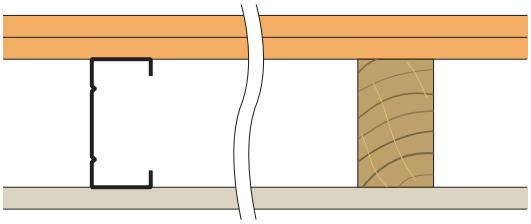
KX1

WALL LINING: [Side 1] 2 layers of 13mm **GIB X-Block**
[Side 2] 1 layer of 13mm **MastaShield**

FRAME: Steel or timber studs at maximum 600mm centres

[13mm **MastaShield** can be substituted with 13mm **WaterShield**]

[Timber wall heights calculated using MGP10]



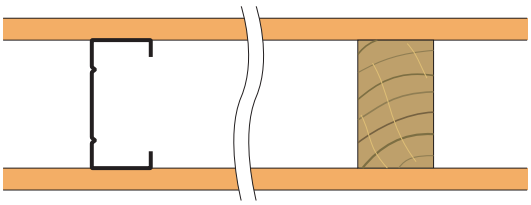
FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth	Stud BMT/ Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 EarthWool	65mm Polyester ASB3/TSB3	
– / – / –	Steel 64	0.5	3.72	3.93	103	44 (38)	51 (42)	51 (42)	Acoustic Report Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.01	4.16	109	42 (37)	46 (41)	–	
		45	4.14	4.31					

KX2

WALL LINING: [Side 1] 1 layer of 13mm **GIB X-Block**
[Side 2] 1 layer of 13mm **GIB X-Block**

FRAME: Steel or timber studs at maximum 600mm centres

[Timber wall heights calculated using MGP10]



FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth	Stud BMT/ Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 EarthWool	65mm Polyester ASB3/TSB3	
– / – / –	Steel 64	0.5	3.72	3.93	90	40 (35)	49 (40)	48 (40)	Acoustic Report Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.61	4.72	96	38 (33)	42 (38)	–	
		45	4.70	4.84					

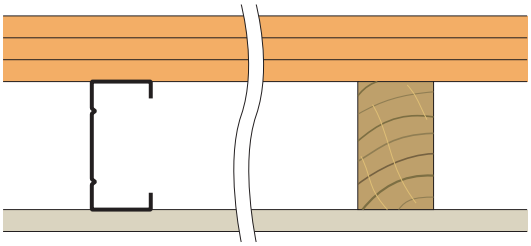
KX3

WALL LINING: [Side 1] 3 layers of 13mm **GIB X-Block**
[Side 2] 1 layer of 13mm **MastaShield**

FRAME: Steel or timber studs at maximum 600mm centres

[13mm **MastaShield** can be substituted with 13mm **WaterShield**]

[Timber wall heights calculated using MGP10]

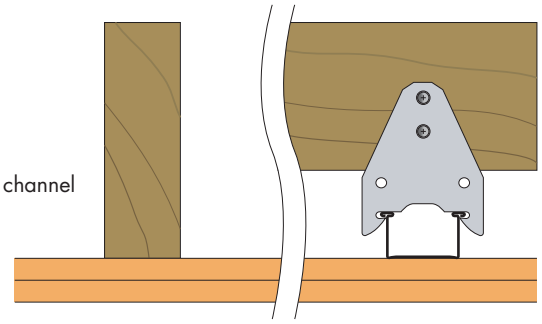


FRL	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth	Stud BMT/ Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 EarthWool	65mm Polyester ASB3/TSB3	
– / – / –	Steel 64	0.5	3.72	3.93	116	47 (41)	55 (45)	54 (45)	Acoustic Report Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.01	4.16	124	45 (40)	49 (44)	–	
		45	4.14	4.31					

NON-FIRE RATED

KX4

CEILING LINING: 2 layers of 13mm **GIB X-Block**
FRAME: [Option 1] Steel or timber ceiling joists
[Option 2] Steel or timber joists with with A-clips and furring channel



FRL – / – / –	Max Framing Centres (mm)	Acoustics Rw (Rw + Ctr)	
	600	35 (33)	Acoustic Report Day Design 3094-4

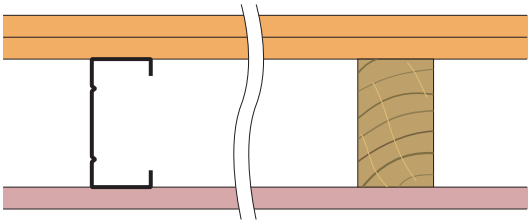
KX5

WALL LINING: [Side 1] 2 layers of 13mm **GIB X-Block**
[Side 2] 1 layer of 13mm **FireShield**

FRAME: Steel or timber studs at maximum 600mm centres

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

[Timber wall heights calculated using MGP10]



FRL – /60/60 rated from both sides Fire Report FAR 2320	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth	Stud BMT/ Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 EarthWool	65mm Polyester ASB3/TSB3	
	Steel 64	0.5	3.72	3.93	103	45 (39)	52 (43)	52 (43)	Acoustic Report Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.61	4.72	109	43 (37)	46 (41)	–	
		45	4.70	4.84					

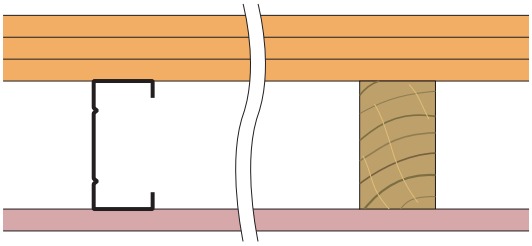
KX6

WALL LINING: [Side 1] 3 layers of 13mm **GIB X-Block**
[Side 2] 1 layer of 13mm **FireShield**

FRAME: Steel or timber studs at maximum 600mm centres

[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]

[Timber wall heights calculated using MGP10]



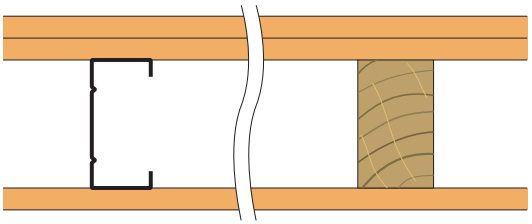
FRL – /60/60 rated from both sides Fire Report FAR 2320	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth	Stud BMT/ Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 EarthWool	65mm Polyester ASB3/TSB3	
	Steel 64	0.5	3.72	3.93	116	47 (41)	55 (47)	55 (47)	Acoustic Report Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.61	4.72	124	46 (40)	49 (45)	–	
		45	4.70	4.84					

KX7

WALL LINING: [Side 1] 2 layers of 13mm **GIB X-Block**
[Side 2] 1 layer of 13mm **GIB X-Block**

FRAME: Steel or timber studs at maximum 600mm centres

[Timber wall heights calculated using MGP10]



FRL – /60/60 rated from both sides Fire Report FAR 2320	Stud Size (mm)		Max Height UDL 0.25 kPa (m)		Width (mm)	Acoustics Rw (Rw + Ctr)			
	Stud Depth	Stud BMT/ Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 EarthWool	65mm Polyester ASB3/TSB3	
	Steel 64	0.5	3.72	3.93	103	44 (39)	53 (46)	53 (46)	Acoustic Report Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.61	4.72	109	43 (38)	46 (42)	–	
		45	4.70	4.84					

GENERAL REQUIREMENTS

	Non-Fire Rated	Fire Rated
Install control joints in plasterboard walls at: › 12m maximum intervals › All control joints in the structure › Any change in the substrate material	✔	✔
Use **GIB X-Block** jointing compound: › In the gap between the sheets › To fill the recessed joints on every layer › As the bedding coat with paper tape and as the second coat for the face layer. For the finish coat use **MastaFinish** or **MastaLite**. › To fill any other gaps and to cover all face layer fastener heads. Never joint sheets with fire sealant. *[Refer to Section 4]*	✔	✔
Treat all penetrations as shown in the construction details to maintain radiation protection or use lead of the appropriate thickness.	✔	✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.		✔
Pack any gaps between the top of the wall and the underside of the roof covering with mineral fibre or other suitable fire resisting material. This maintains the fire rating of the system. *[Refer to mineral fibre manufacturers specifications for minimum widths required]*		✔
Use fire sealant around perimeter, vermiculite plaster is not permitted.		✔

For acceptable modifications or variations to fire rated systems. *[Refer to Section 2.3 Fire Resistance]*

FRAMING

	Non-Fire Rated	Fire Rated
Framing members must be spaced at 600mm maximum centres.	✔	✔

- Noggings are permitted to assist the fixing of services.
- Plumbing and electrical services must not protrude beyond the face of the stud.

PLASTERBOARD LAYOUT

	Non-Fire Rated	Fire Rated
Vertical Layout Only		
Sit **GIB X-Block** directly on the floor, leave no gap at the base of the sheet.	✔	✔
All recessed and butt joints must be backed by a framing member.	✔	✔
Leave a gap of 2mm between **GIB X-Block** sheets to allow **GIB X-Block** jointing compound to fill any gaps between and behind the sheets. *[Figure 1]*	✔	✔
Vertical joints must be 200mm minimum from the edge of any opening such as windows and doorways to minimise cracking at the joints.	✔	✔
Stagger recessed edges by 600mm minimum between layers and on opposite sides of the wall.	✔	✔
Stagger butt joints by 600mm minimum on adjoining sheets, between layers and on opposite sides of the wall.	✔	✔

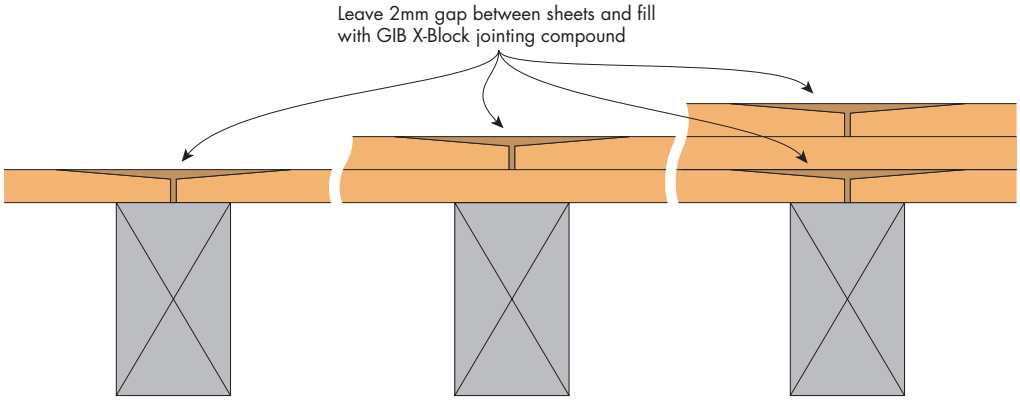


FIGURE 1 **Completely Filling All Gaps and Recessed Joints**

PLASTERBOARD FIXING

	Non-Fire Rated	Fire Rated
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✔	✔
Do not fix plasterboard to steel more than 2mm BMT.	✔	✔
Use the 'Screw Only Method'.	✔	✔

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
13mm	25mm – 6g S screw	40mm – 6g S screw	60mm – 6g S screw

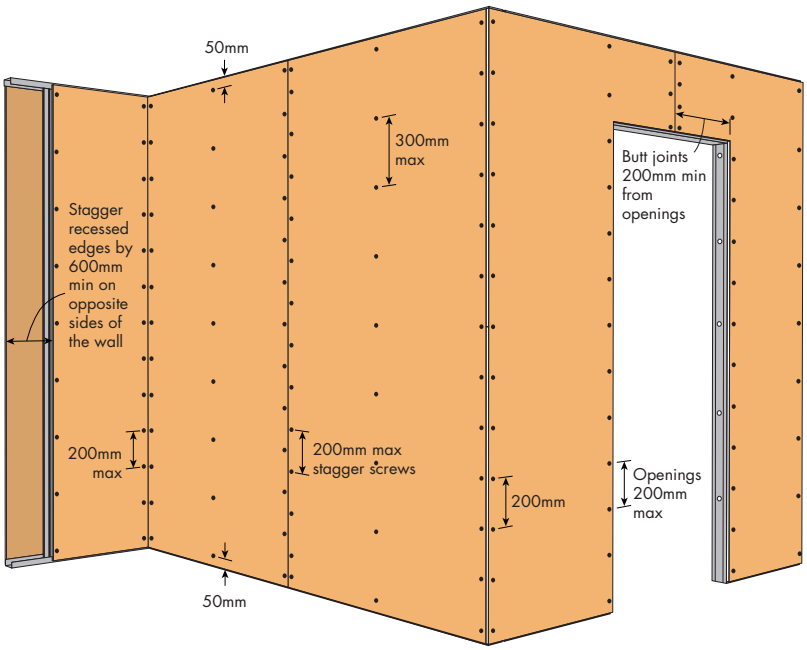
For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO SOFTWOOD TIMBER

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
13mm	30mm – 6g W screw	45mm – 6g W screw	65mm – 8g W screw

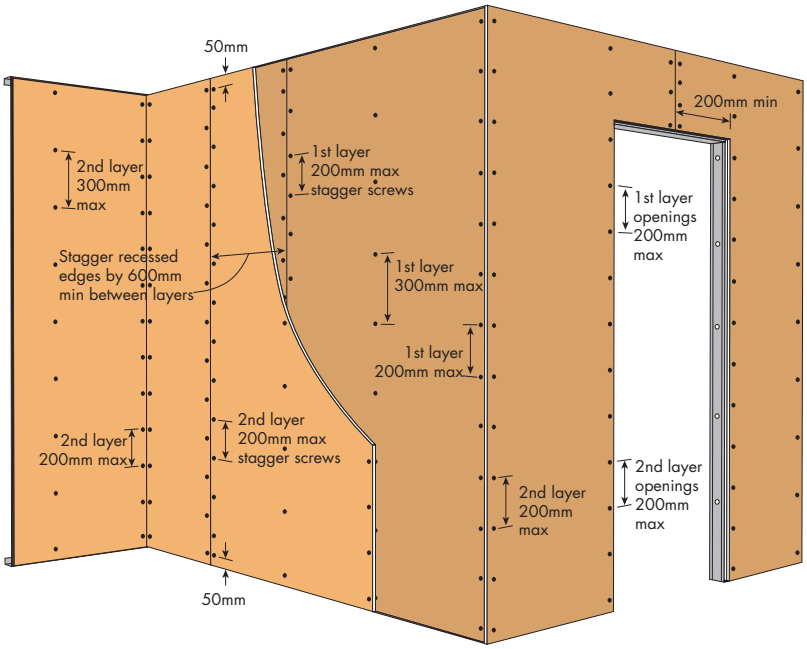
For timber use Type 'W' coarse thread needle point screws.

FIGURE 2 X-Block 1 Layer – Vertical on Steel Studs
Screw Only Method



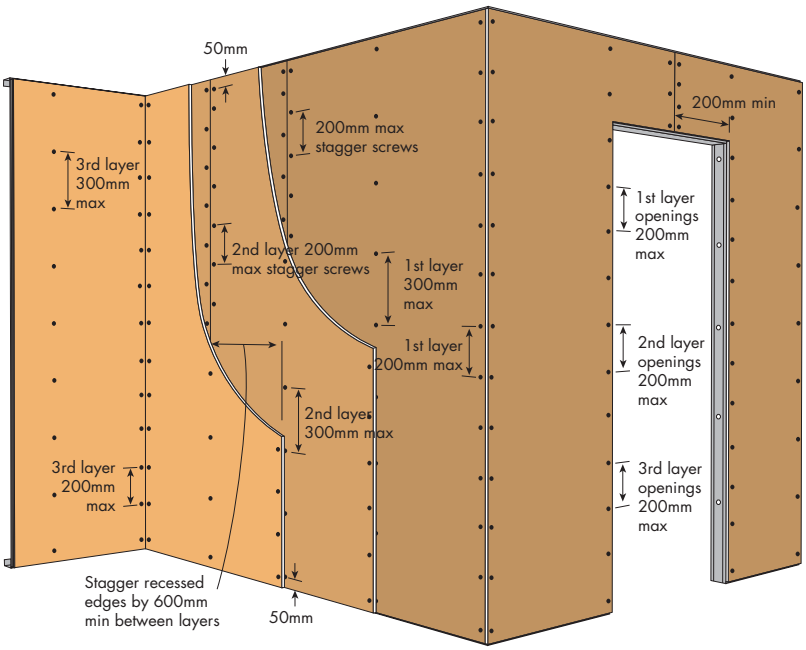
Fixing	Screw Only Method
Sheet Layout	Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 300mm max centres
Recessed Edges	Fix at 200mm max centres and stagger screws. Stagger recessed edges by 600mm min on opposite sides of the wall. Recessed edges must be backed by a stud.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. Butt joints must be backed by a nogging.
Internal and External Corners	Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 3 X-Block 2 Layers – Vertical + Vertical on Steel Studs
Screw Only Method



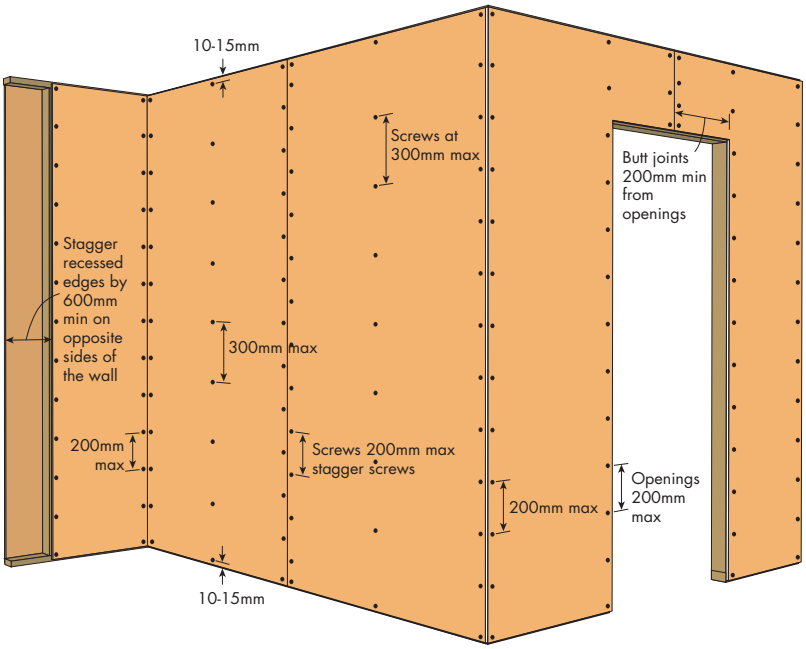
Fixing	Screw Only Method
Sheet Layout	1st layer: Vertical 2nd layer: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 300mm max centres 2nd layer: Fix at 300mm max centres
Recessed Edges	1st and 2nd layers: Fix at 200mm max centres and stagger screws. Stagger recessed edges by 600mm min between layers and on opposite sides of the wall. All recessed edges must be backed by a stud.
Butt Joints	1st and 2nd layers: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. All butt joints must be backed by a nogging.
Internal and External Corners	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing 1st Layer	Completely fill recess joints and any gaps with GIB X-Block jointing compound. Paper tape is not required.
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 4 X-Block 3 Layers – All Vertical on Steel Studs
Screw Only Method



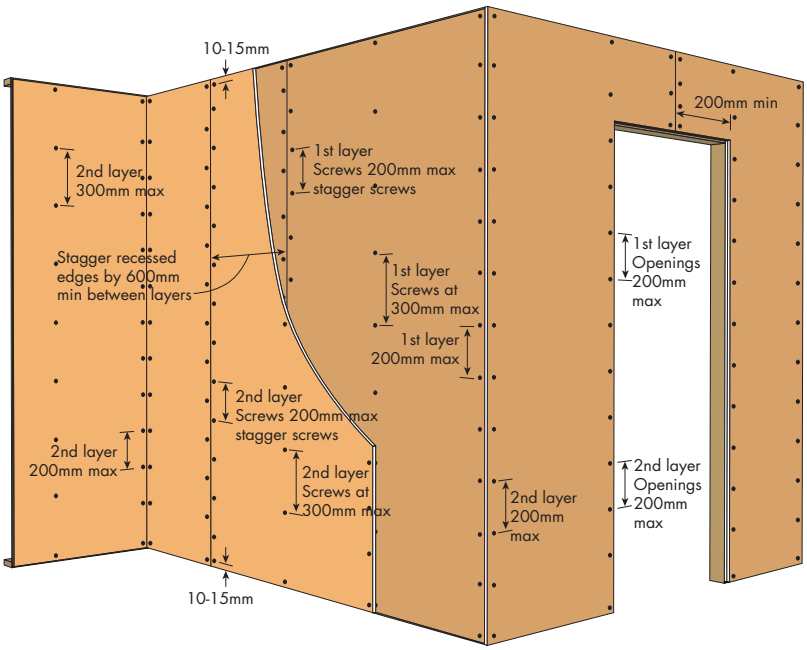
Fixing	Screw Only Method
Sheet Layout	1st, 2nd and 3rd layers: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st, 2nd and 3rd layers: Fix at 300mm max centres
Recessed Edges	1st, 2nd and 3rd layers: Fix at 200mm max centres and stagger screws. Stagger recessed edges by 600mm min between layers and on opposite sides of the wall. All recessed edges must be backed by a stud.
Butt Joints	1st, 2nd and 3rd layers: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. All butt joints must be backed by a nogging.
Internal and External Corners	1st, 2nd and 3rd layers: Fix at 200mm max centres
Openings	1st, 2nd and 3rd layers: Fix at 200mm max centres
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity *[Refer to Construction Details]*
Jointing 1st and 2nd Layers	Completely fill recess joints and any gaps with GIB X-Block jointing compound. Paper tape is not required.
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 5 X-Block 1 Layer – Vertical on Timber Studs
Screw Only Method



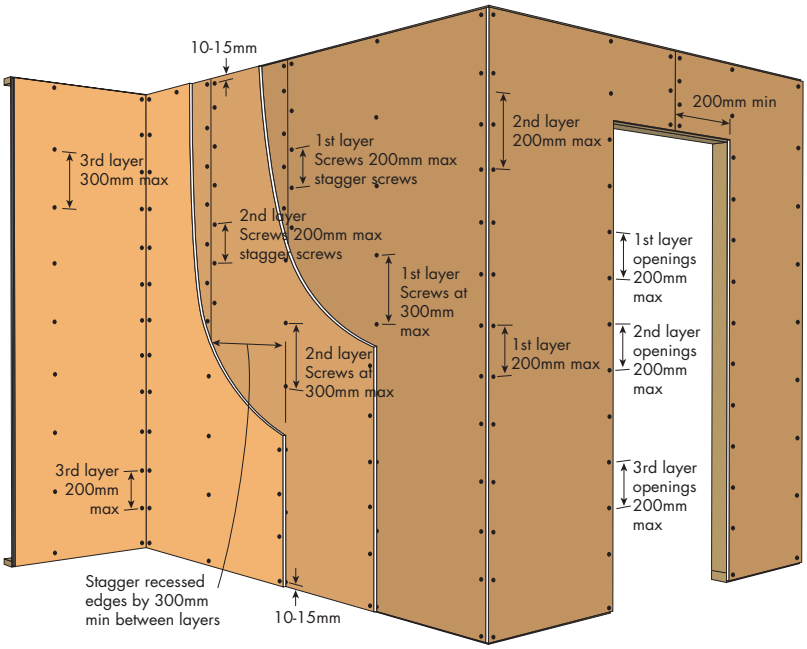
Fixing	Screw Only Method
Sheet Layout	Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges
Field	Fix screws at 300mm max centres
Recessed Edges	Fix screws at 200mm max centres and stagger screws. Stagger recessed edges by 600mm min on opposite sides of the wall. Recessed edges must be backed by a stud.
Butt Joints	Fix screws at 200mm max centres and stagger scerws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. Butt joints must be backed by a nogging.
Internal and External Corners	Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 6 X-Block 2 Layers – Vertical + Vertical on Timber Studs
Screw Only Method



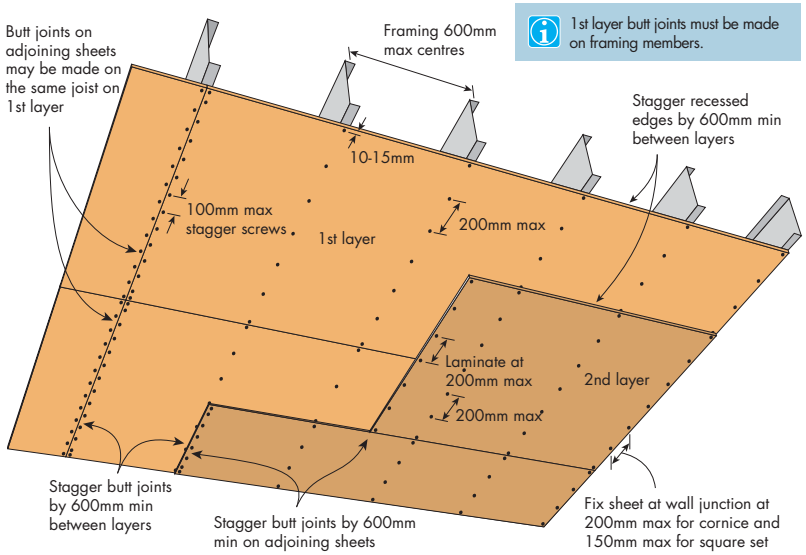
Fixing	Screw Only Method
Sheet Layout	1st layer: Vertical 2nd layer: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges
Field	1st and 2nd layers: Fix screws at 300mm max centres
Recessed Edges	1st and 2nd layers: Fix screws at 200mm max centres and stagger screws. Stagger recessed edges by 600mm min between layers, and on opposite sides of the wall. All recessed edges must be backed by a stud.
Butt Joints	1st and 2nd layers: Fix screws at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. All butt joints must be backed by a nogging.
Internal and External Corners	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Openings	1st layer: Fix at 200mm max centres 2nd layer: Fix at 200mm max centres
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing 1st Layer	Completely fill recess joints and any gaps with GIB X-Block jointing compound. Paper tape is not required.
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 7 X-Block 3 Layers – All Vertical on Timber Studs
Screw Only Method



Fixing	Screw Only Method
Sheet Layout	1st, 2nd and 3rd layers: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges
Field	1st, 2nd and 3rd layers: Fix screws at 300mm max centres.
Recessed Edges	1st, 2nd and 3rd layers: Fix screws at 200mm max centres and sagger screws. Stagger recessed edges by 600mm min between layers, and on opposite sides of the wall. All recessed edges must be back by a stud.
Butt Joints	1st, 2nd and 3rd layers: Fix screws at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. All butt joints must be backed by a nogging.
Internal and External Corners	1st, 2nd and 3rd layers: Fix at 200mm max centres
Openings	1st, 2nd and 3rd layers: Fix at 200mm max centres
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing 1st and 2nd Layers	Completely fill recess joints and any gaps with GIB X-Block jointing compound. Paper tape is not required.
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 8 X-Block 2 Layers
Screw Only Method



Framing	Timber or Steel Joists or Steel Furring Channel
Fixing	Screw Only Method
Perimeter	Perimeter screws 10-15mm from sheet edges.
Field	Fix at 200mm max centres
Recessed Edges	Fix on each framing member. Stagger recessed edges by 600mm min between layers.
Butt joints on framing members	Fix at 100mm max centres and stagger screws. Butt joints on the 1st layer may be made on the same joist. Stagger butt joints by 600mm min between layers.
Floating butt joints on 2nd layer	Locate centrally between framing members and laminate to 1st layer at 200mm max centres. Stagger butt joints by 600mm min on adjoining sheets.
Wall Abutment	Cornice: Fix at 200mm max centres Square Set: Fix at 150mm max centres
Openings and Control Joints	Fix at 200mm max centres
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing 1st Layer	Completely fill recess joints and any gaps with GIB X-Block jointing compound. Paper tape is not required
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIRE RATED AND NON-FIRE RATED

WALL JUNCTIONS, DOORS AND WINDOWS – PLAN VIEW

Systems KX1 and KX5 only

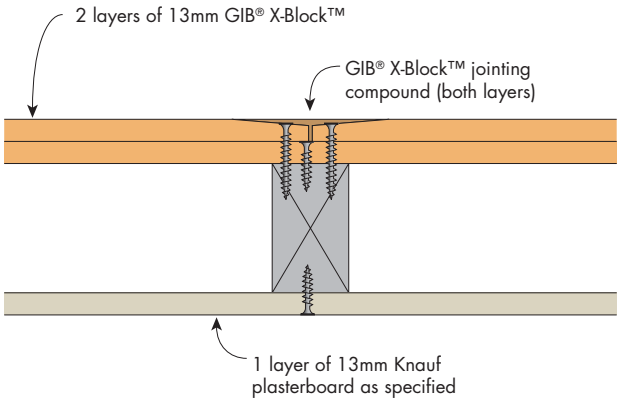


FIGURE 9 Typical Section

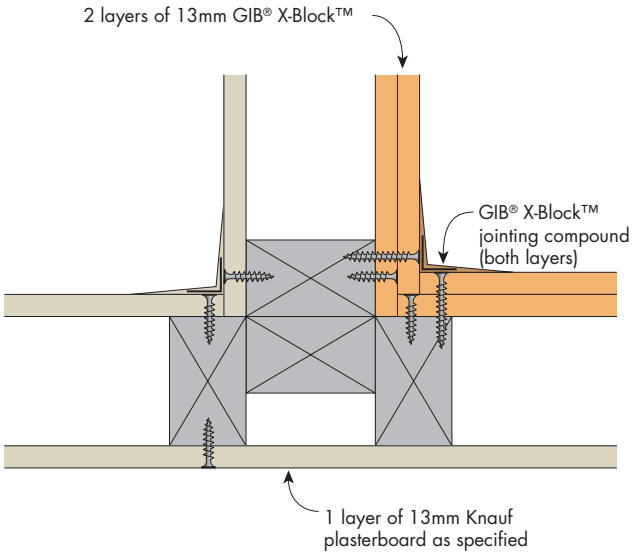


FIGURE 10 T Junction

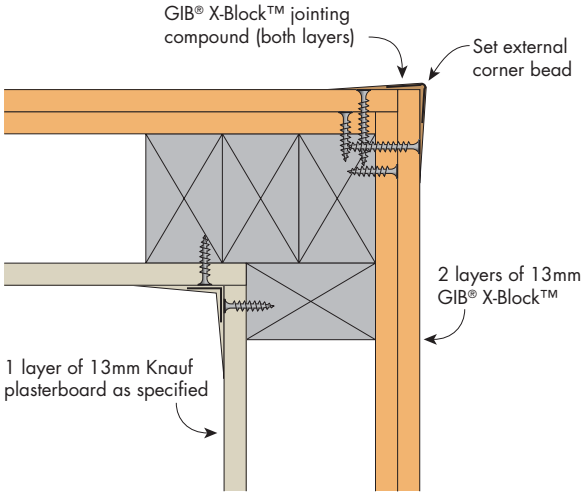


FIGURE 11 External Corner

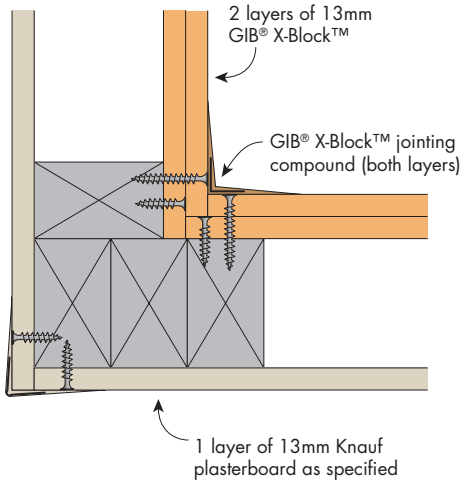


FIGURE 12 Internal Corner

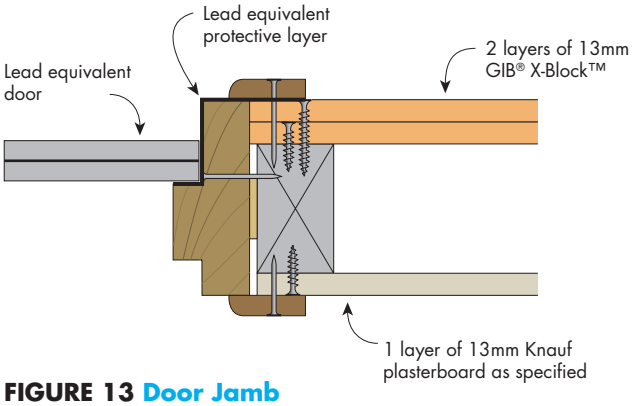


FIGURE 13 Door Jamb

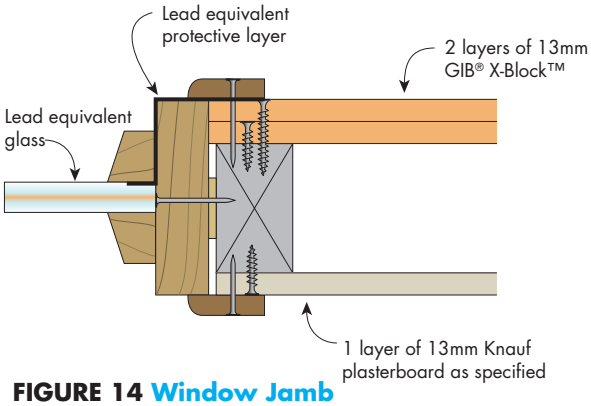


FIGURE 14 Window Jamb

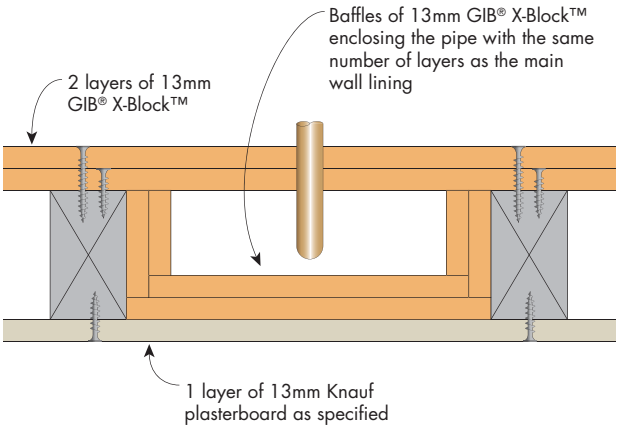


FIGURE 15 Pipe Penetration
Plan view

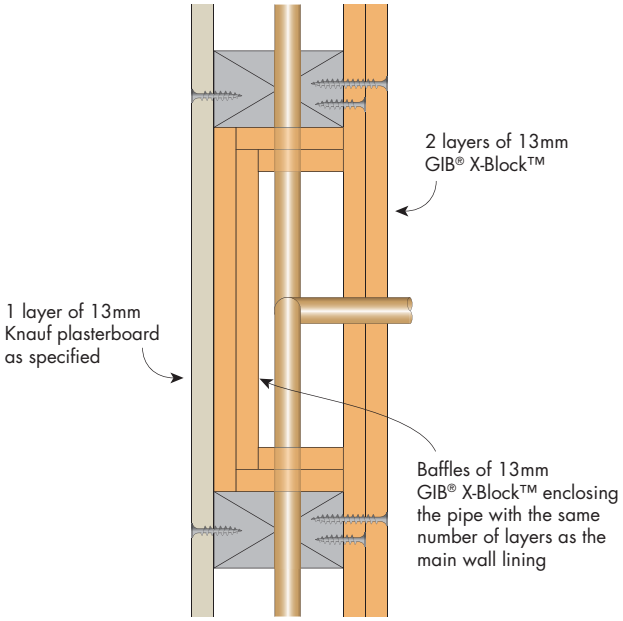


FIGURE 16 Pipe Penetration
Elevation

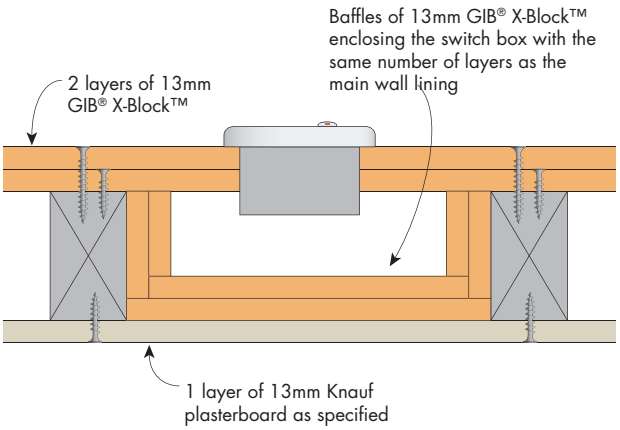


FIGURE 17 Switch Boxes
Plan view

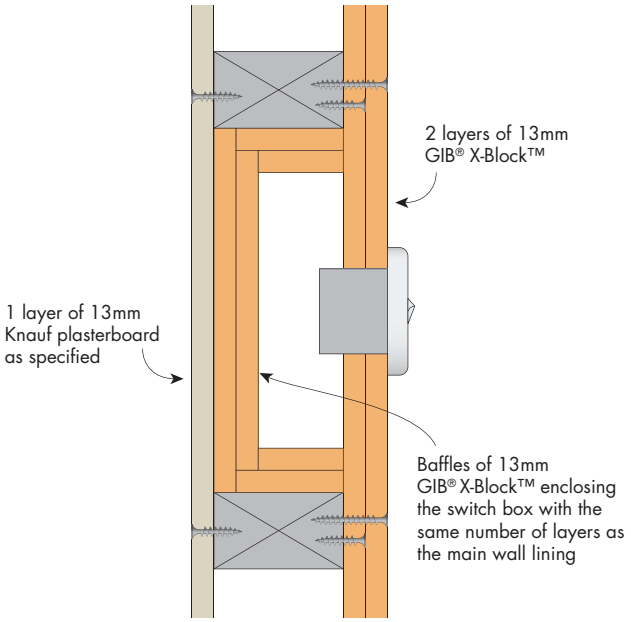


FIGURE 18 Switch Boxes
Elevation

NON-FIRE RATED

WALL JUNCTIONS, DOORS AND WINDOWS – PLAN VIEW

System KX2 only

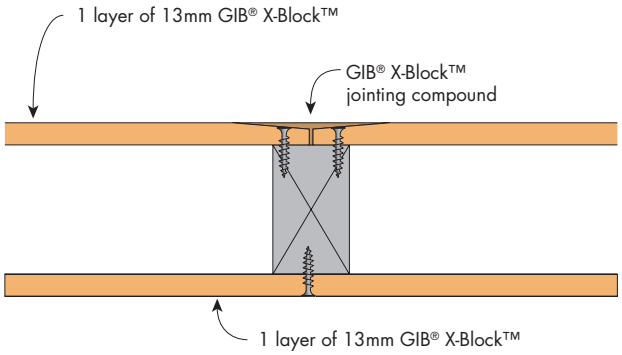


FIGURE 19 Typical Section

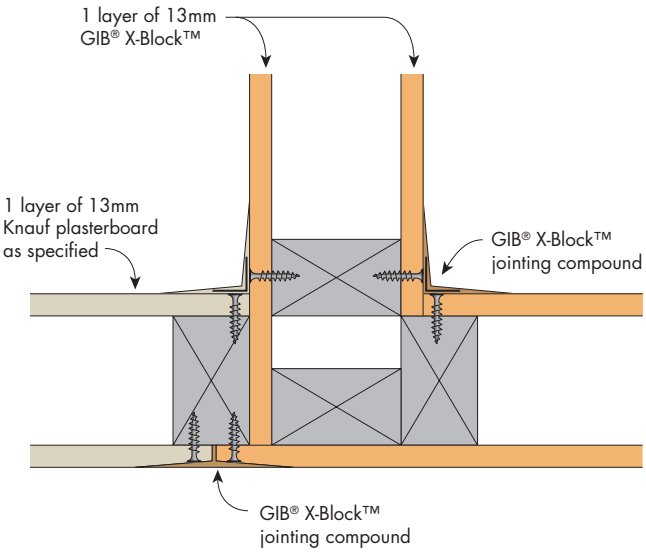


FIGURE 20 T Junction

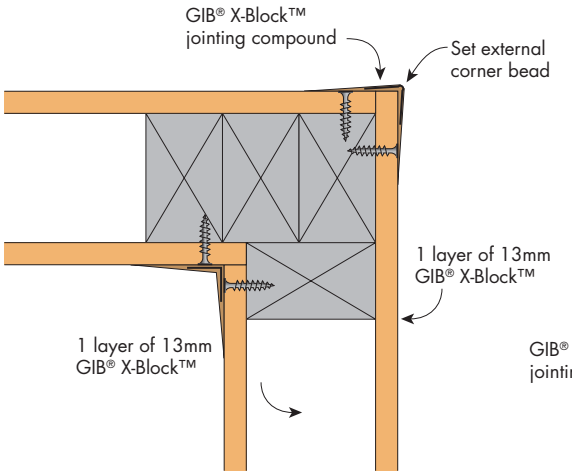


FIGURE 21 External Corner

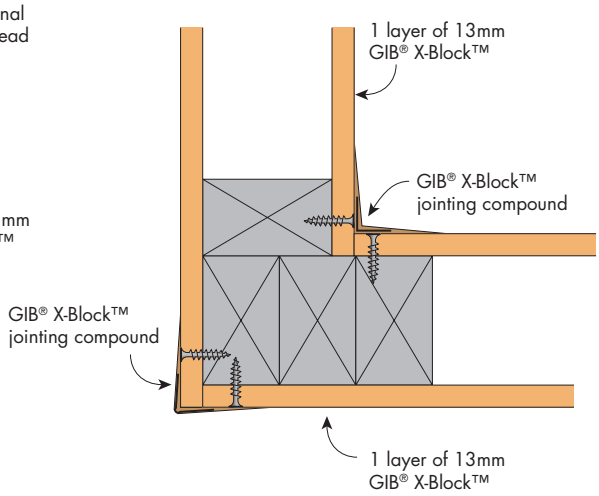


FIGURE 22 Internal Corner

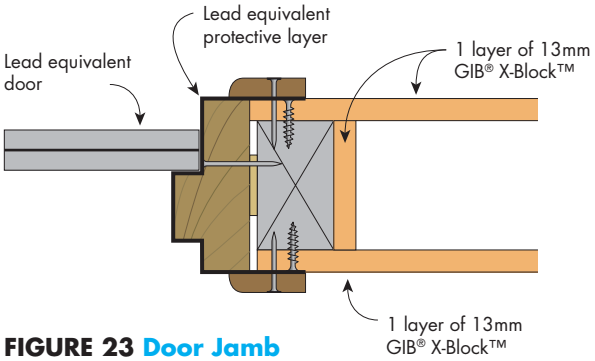


FIGURE 23 Door Jamb

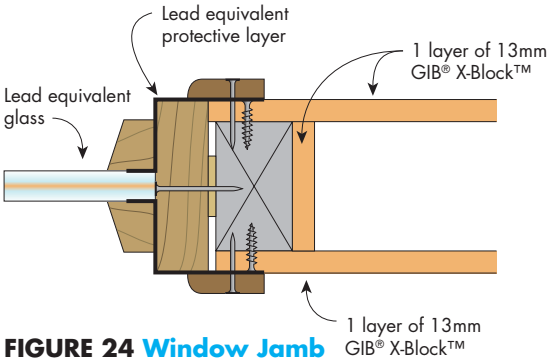


FIGURE 24 Window Jamb

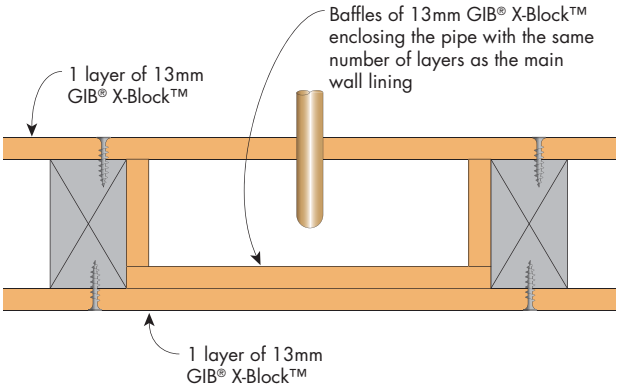


FIGURE 25 Pipe Penetration
Plan view

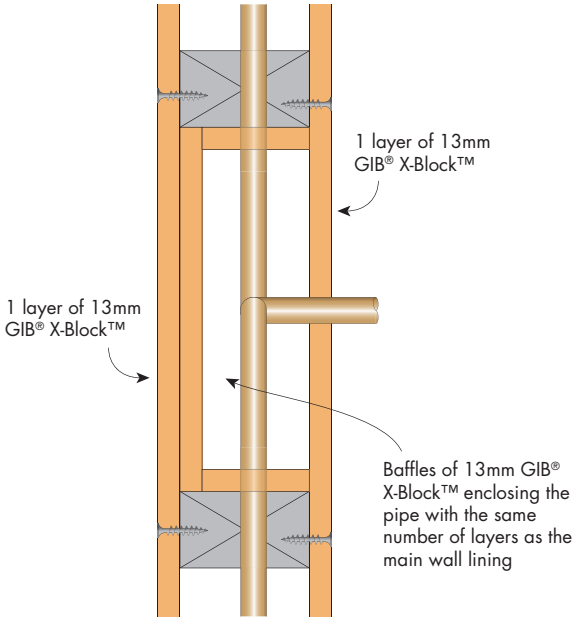


FIGURE 26 Pipe Penetration
Elevation

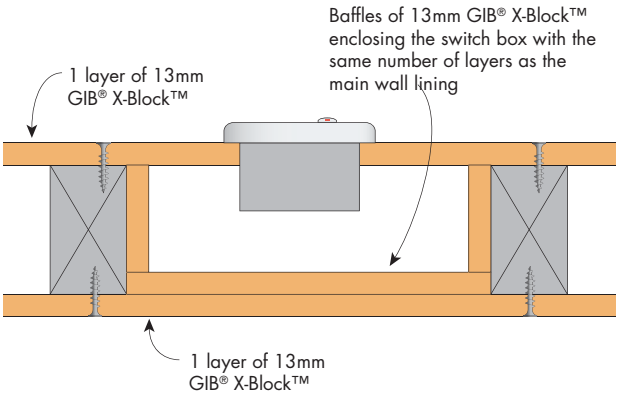


FIGURE 27 Switch Boxes
Plan view

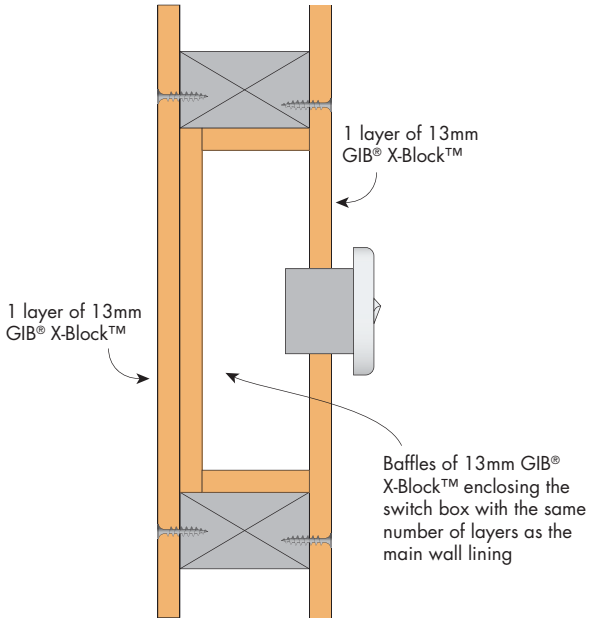


FIGURE 28 Switch Boxes
Elevation

FIRE RATED AND NON-FIRE RATED

WALL JUNCTIONS, DOORS AND WINDOWS - PLAN VIEW

Systems KX3 and KX6 only

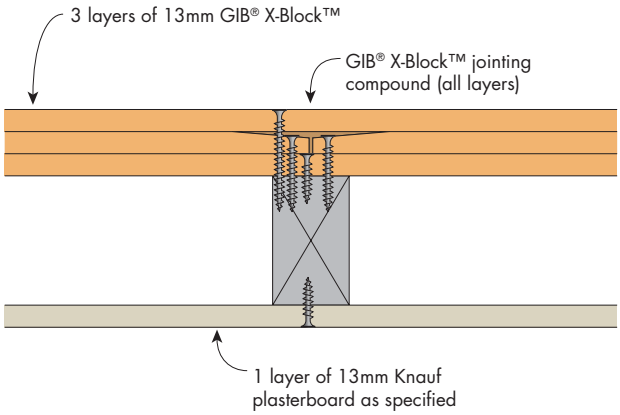


FIGURE 29 Typical Section

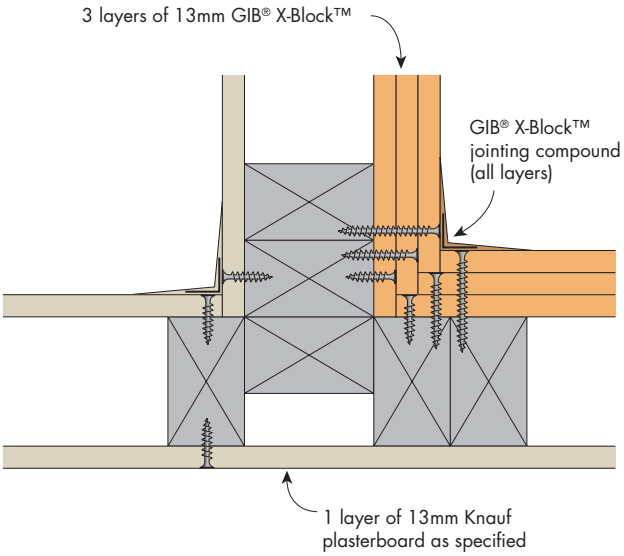


FIGURE 30 T Junction

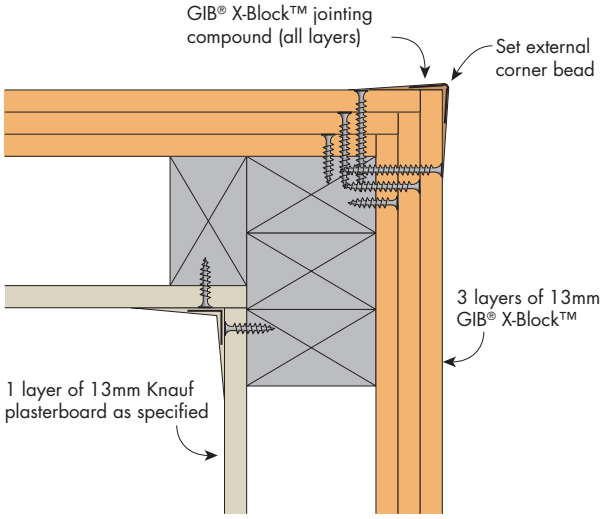


FIGURE 31 External Corner

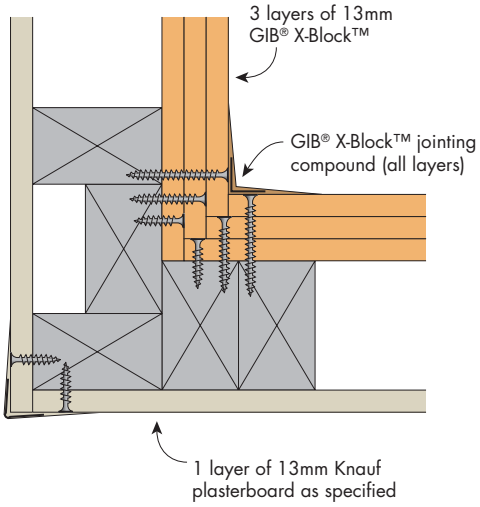


FIGURE 32 Internal Corner

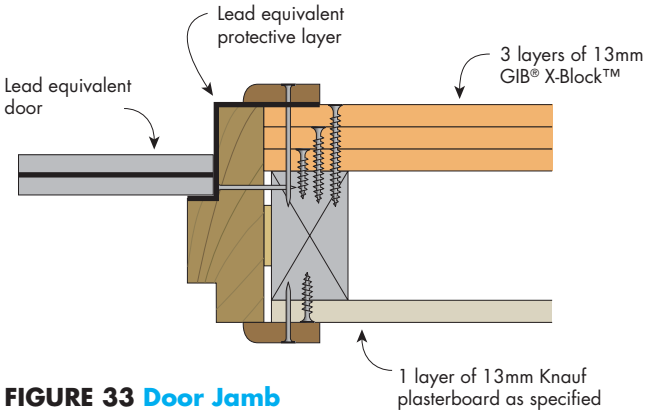


FIGURE 33 Door Jamb

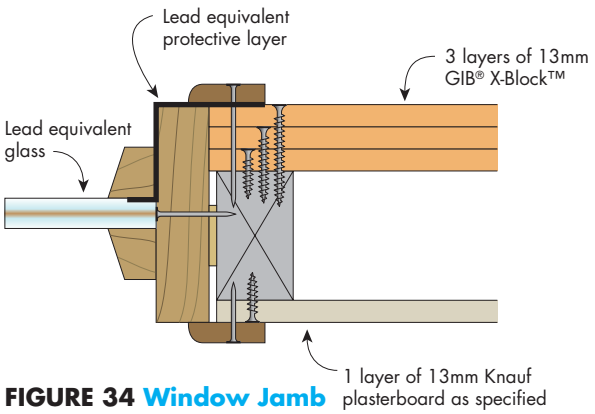


FIGURE 34 Window Jamb

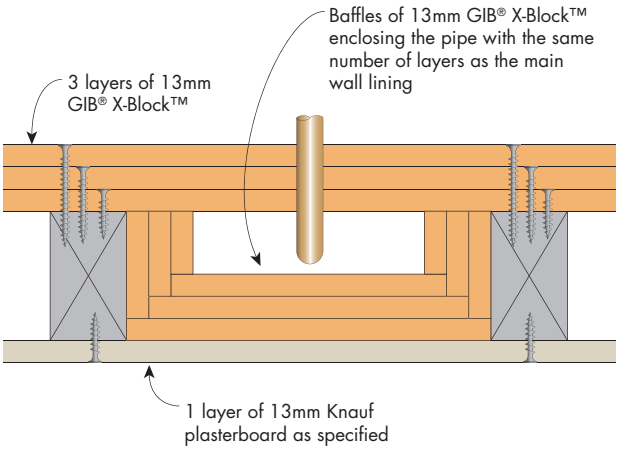


FIGURE 35 Pipe Penetration
Plan view

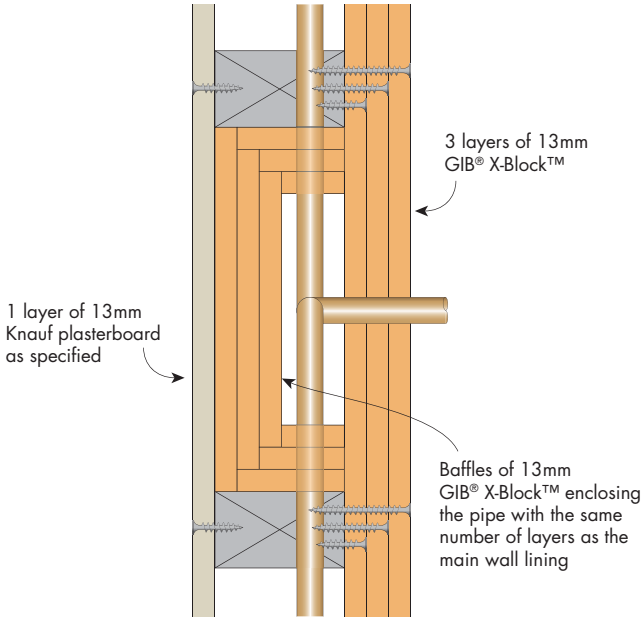


FIGURE 36 Pipe Penetration
Elevation

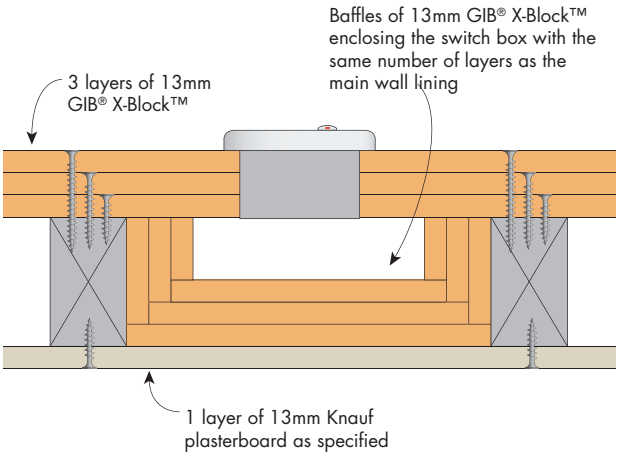


FIGURE 37 Switch Boxes
Plan view

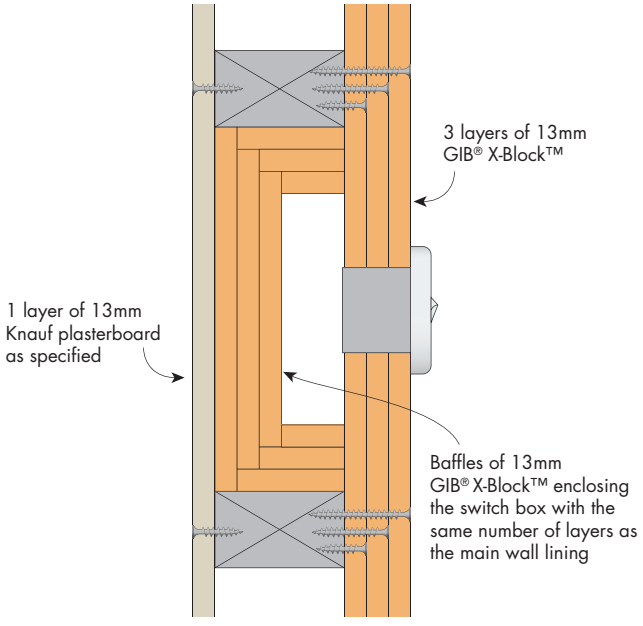


FIGURE 38 Switch Boxes
Elevation

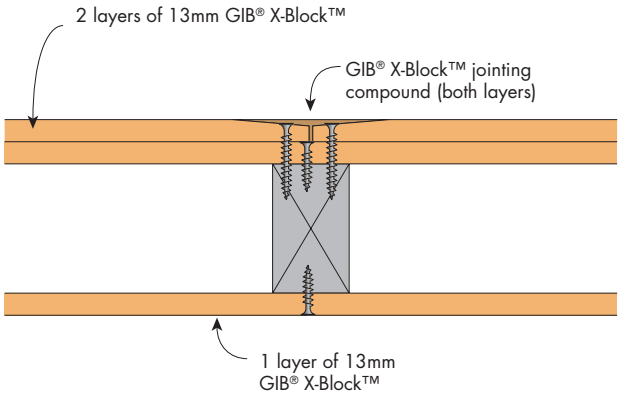


FIGURE 39 Typical Section

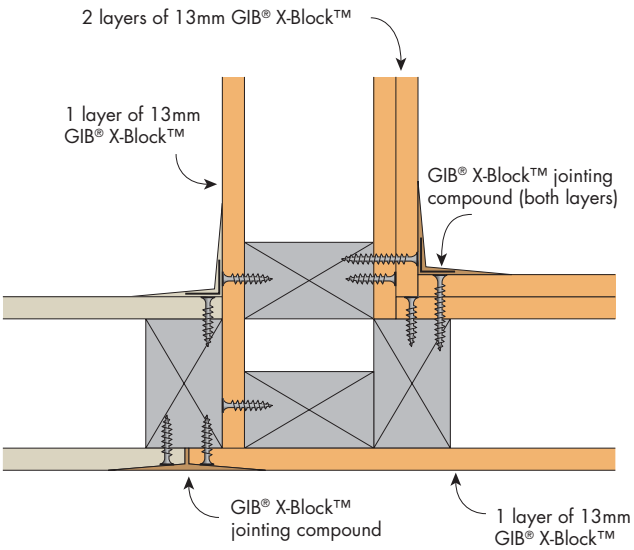


FIGURE 40 T-Junction

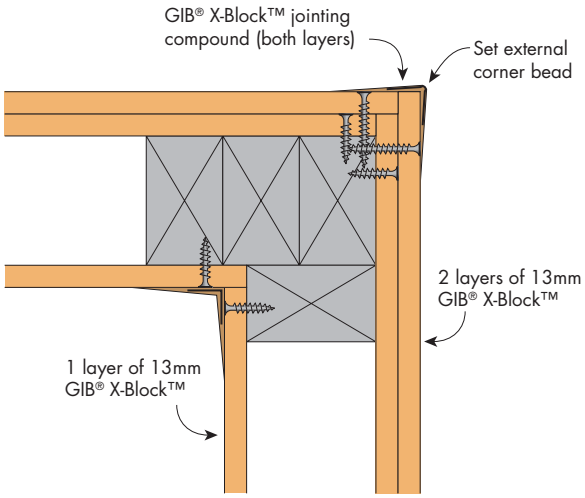


FIGURE 41 External Corner

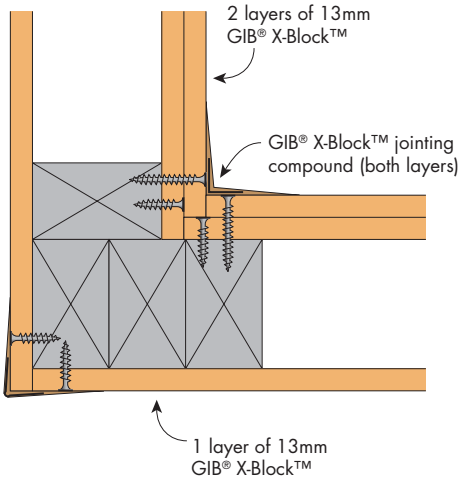


FIGURE 42 Internal Corner

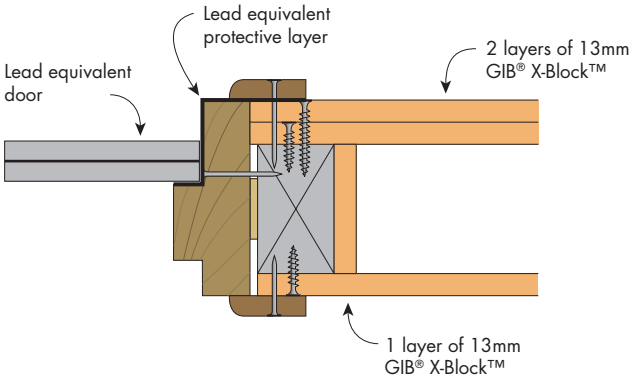


FIGURE 43 Door Jamb

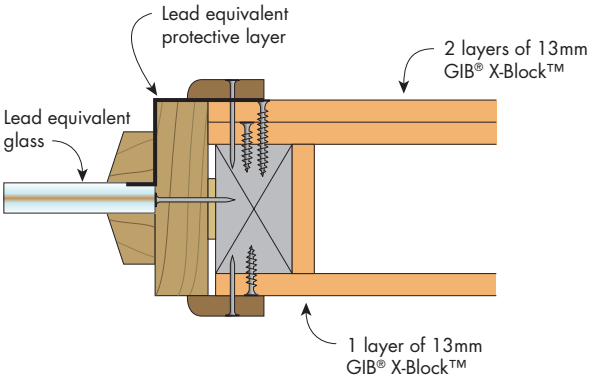


FIGURE 44 Window Jamb

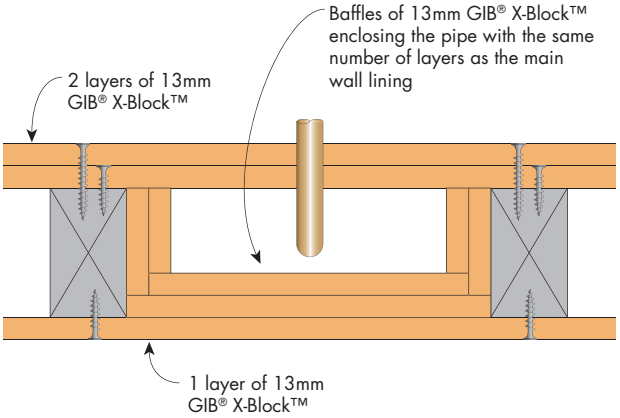


FIGURE 45 Pipe Penetration
Pipe penetration – Plan view

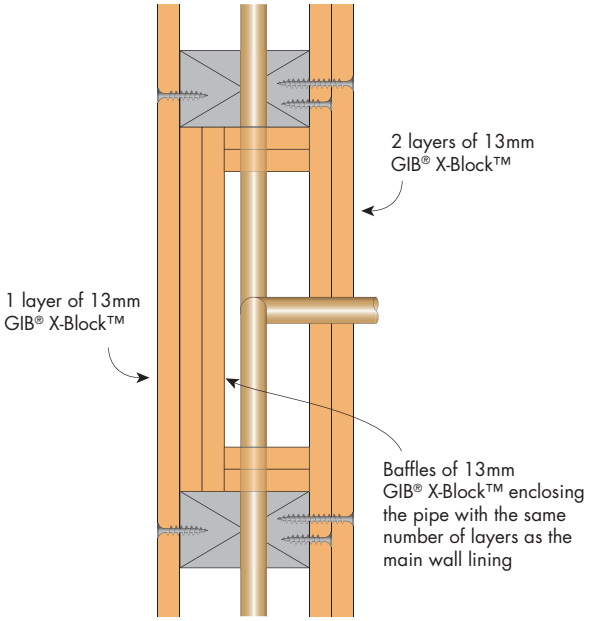


FIGURE 46 Pipe Penetration
Elevation

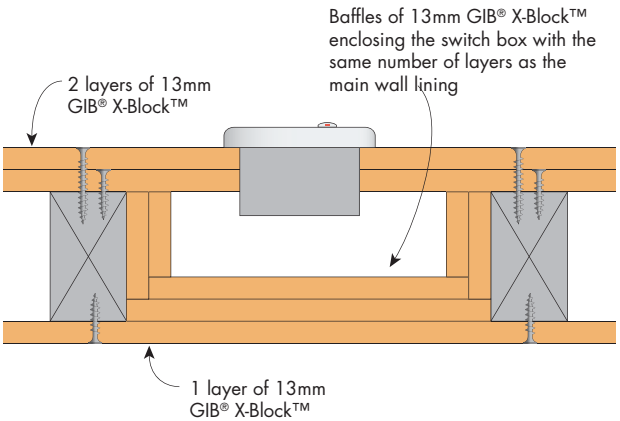


FIGURE 47 Switch Boxes
Plan view

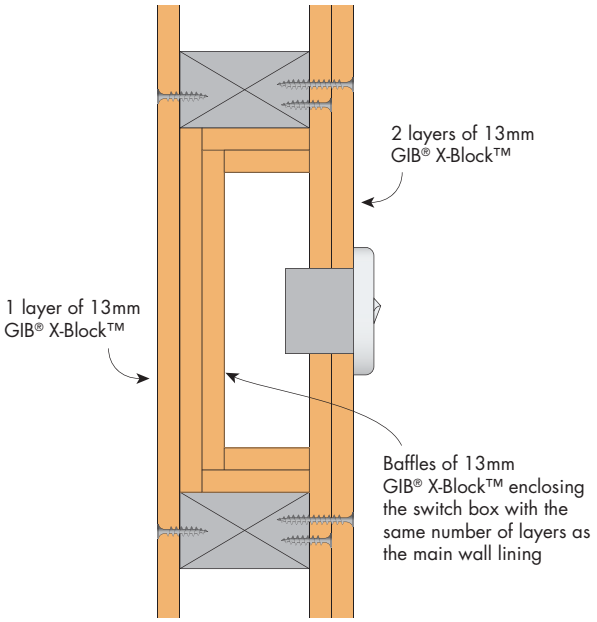
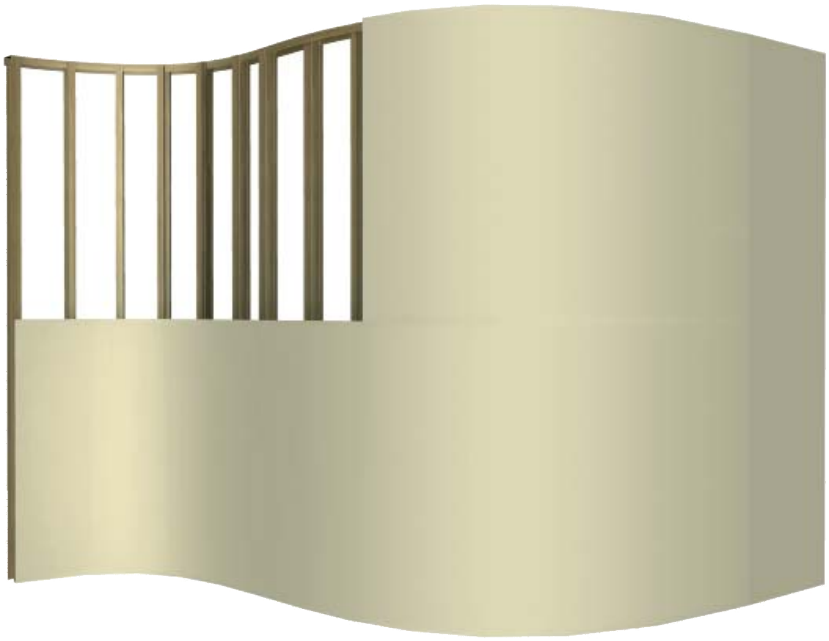


FIGURE 48 Switch Boxes
Elevation

3.6.6

Curved Walls and Ceilings



INTRODUCTION

Plasterboard can be curved to create imaginative architectural effects.

With careful installation and proper framing methods, tightly curved walls and ceilings are possible. CurveShield is designed for this purpose and will achieve the tightest curves. All of the Knauf plasterboard product range can be curved if required.

This section provides details on how to bend plasterboard, including installation, framing geometry and bend radius information.

GENERAL REQUIREMENTS

Only use **CurveShield** for applications where the radius is less than 900mm.
Fix ceiling framing at 300mm maximum centres for installation of **CurveShield**.
Ensure that the radius on the convex side is not too tight for the corresponding concave side.
Stagger recessed edges and butt joints by 200mm minimum between layers.
Curve plasterboard along the short edge (widthways) for tighter radii and easier jointing.
Curve fire rated walls and ceilings to a minimum radius of 3000mm.

WETTING CURVED PLASTERBOARD

Hot, humid conditions are ideal for curving plasterboard. In cold, low-humidity conditions or if very tight curves are required, prepare the plasterboard as follows:

- Use a clean paint roller or sponge to apply a small amount of water to the plasterboard surface that will be in compression. Add a small amount of detergent to the water in very dry conditions to act as a wetting agent.
- Allow at least 15 minutes for the water to soak in before bending the plasterboard.

- A Rondo Flexi-Track and stud system is recommended for framing curved walls or ceilings.
- Avoid joints parallel to studs in the curved section.
- Only the face layer needs to be jointed.
- The minimum curve radius is determined by the concave side.
- A minimum of two layers of **CurveShield** is recommended.

FRAMING

MAXIMUM FRAME SPACING AND MINIMUM CURVE RADIUS FOR CURVESHIELD

	Curve Radius (mm)									
	250-450	450-650	650-900	900-1000	1000-1500	1500-2000	2000-2500	2500-3000	3000-4000	> 4000
	Maximum Framing Centres (mm)									
Concave **CurveShield** Curved along length	–	–	200	200	200	250	300	350	450	550
Convex **CurveShield** Curved along length	–	200	200	200	200	250	300	350	450	550
Concave **CurveShield** Curved along width	–	150	150	150	200	250	300	350	450	550
Convex **CurveShield** Curved along width	125	150	150	150	200	250	300	350	450	550

MAXIMUM FRAME SPACING AND MINIMUM CURVE RADIUS FOR OTHER PLASTERBOARD

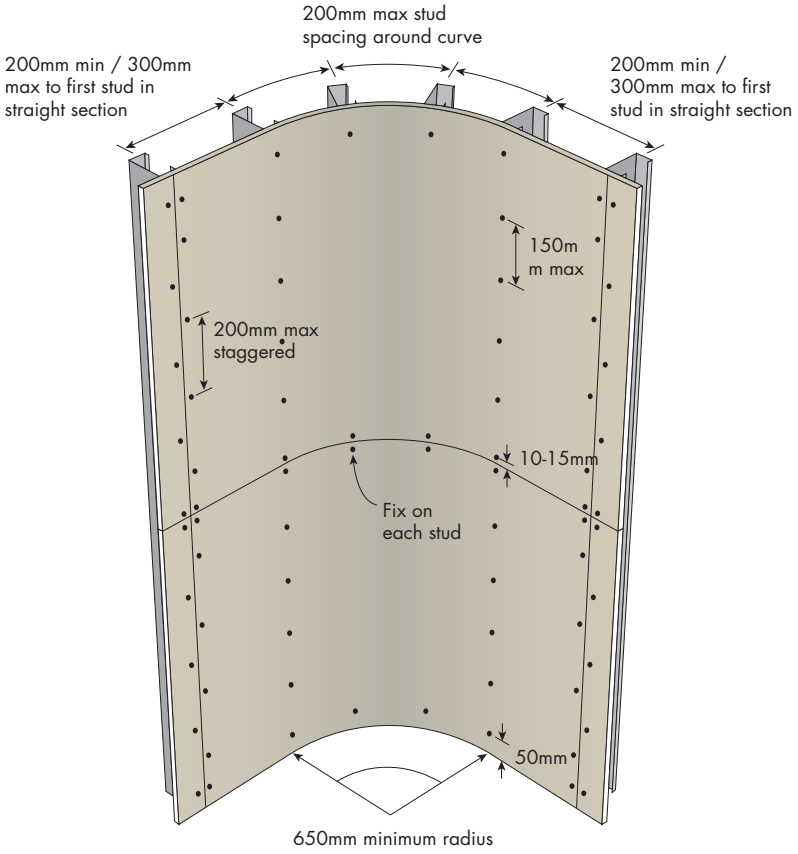
	MastaShield only				All plasterboard except **AcoustiShield***		
	Curve Radius (mm)						
	900-1000	1000-1500	1500-2000	2000-2500	2500-3000	3000-4000	> 4000
Plasterboard Thickness	Maximum Framing Centres (mm)						
10mm	150	200	250	300	350	400	500
13mm	–	150	200	250	300	400	500
16mm	–	–	–	–	200	250	350

*AcoustiShield has a minimum curve radius of 5000mm

PLASTERBOARD FIXING

FIGURE 1 Concave Wall – Horizontal

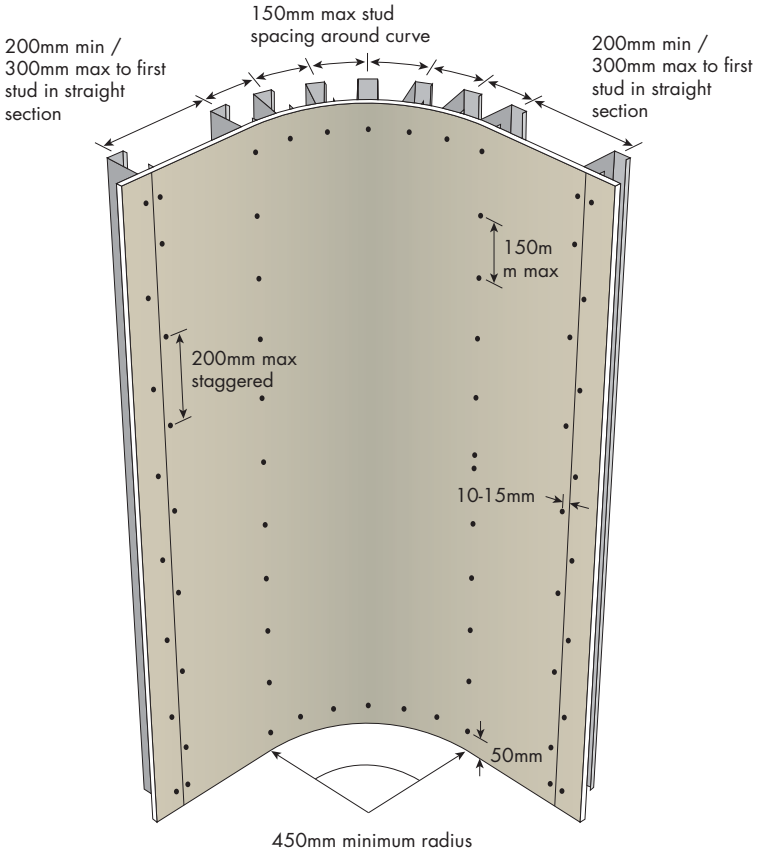
Curved lengthways



Fixing	Screw Only Method
Sheet Layout	Horizontal
Fasteners	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 150mm max centres on straight sections. Do not fix screws on the field of the plasterboard in the curved section.
Recessed Edges	Fix on each stud. Stagger recessed edges by 300mm min between layers.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 300mm between layers and on opposite sides of the wall.
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 2 Concave Wall – Vertical

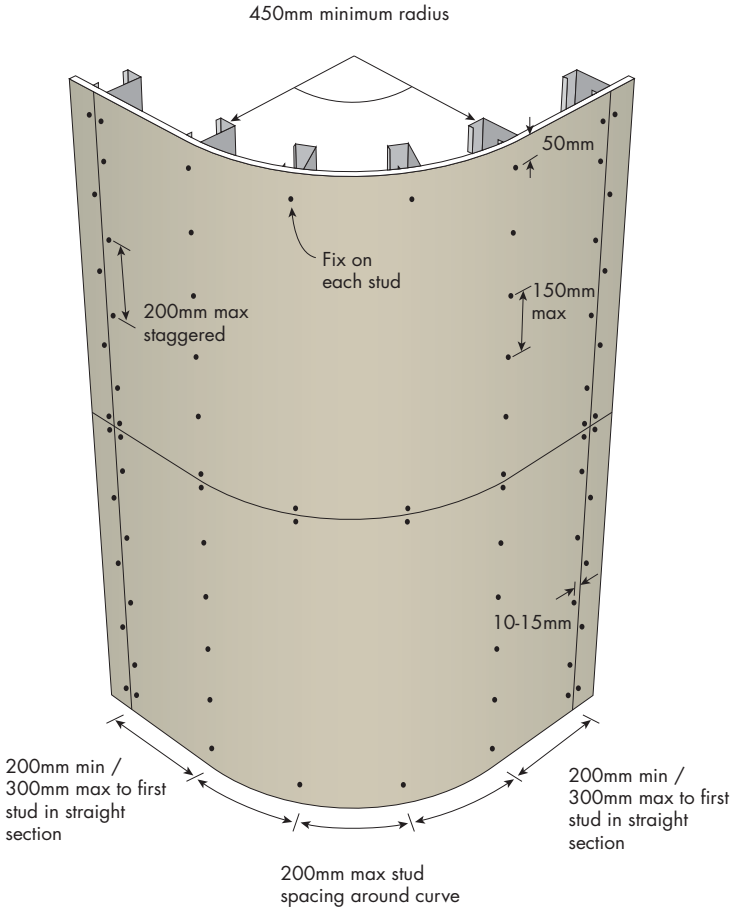
Curved widthways



Fixing	Fastener Only Method
Sheet Layout	Vertical
Perimeter	Perimeter fasteners 10-15mm from sheet edges
Field	Fix screws or double nails at 300mm max centres. Fix nails at 200mm max centres.
Recessed Edges	Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger recessed edges by 300mm min on opposite sides of the wall. Recessed edges must be backed by a stud.
Butt Joints	Fix screws at 200mm max centres. Fix nails at 150mm max centres. Stagger fasteners. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging.
Internal and External Corners	Fix at 200mm max centres
Openings	Fix at 200mm max centres
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 3 Convex Wall – Horizontal

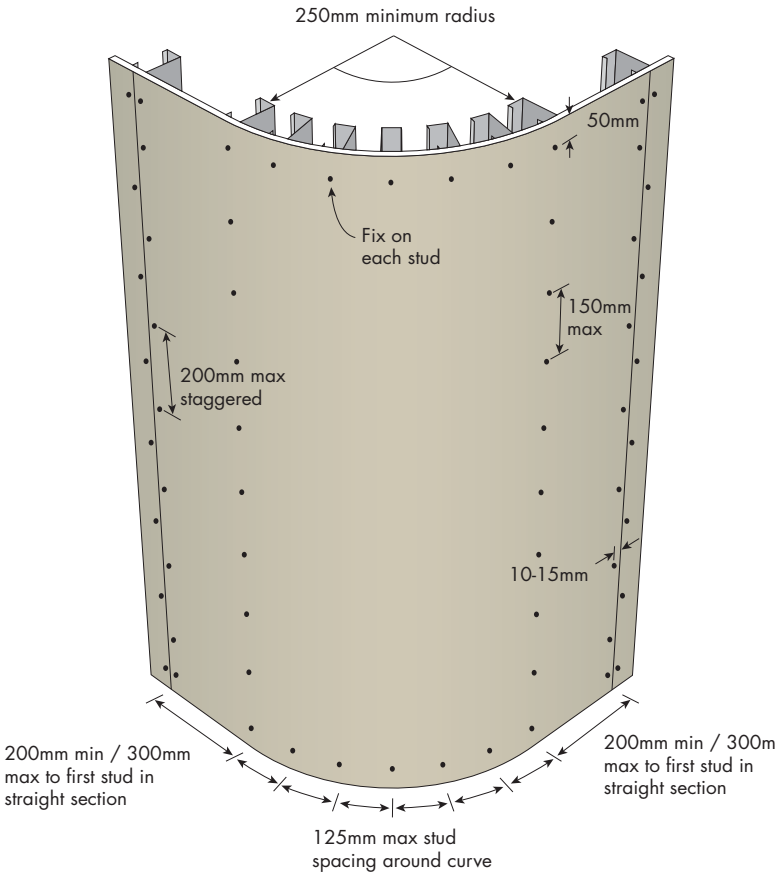
Curved lengthways



Fixing	Screw Only Method
Sheet Layout	Horizontal
Fasteners	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 150mm max centres on straight sections. Do not fix screws on the field of the plasterboard in the curved section.
Recessed Edges	Fix on each stud. Stagger recessed edges by 300mm min between layers.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 300mm between layers and on opposite sides of the wall.
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

FIGURE 4 Convex Wall – Vertical

Curved widthways



Fixing	Screw Only Method
Sheet Layout	Vertical
Fasteners	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 150mm max centres on straight sections. Do not fix screws on the field of the plasterboard in the curved section.
Recessed Edges	Fix at 200mm max centres and stagger screws. Stagger recessed edges by 300mm min between layers and on opposite sides of the wall.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min between layers, on adjoining sheets and on opposite sides of the wall. 1st layer butt joints must be backed by a nogging or back-blocked.
Sealant	Use sealant on all gaps and around perimeter to maintain acoustic integrity. *[Refer to Construction Details]*

NON-FIRE RATED
CURVED WALL AND CEILING DETAIL

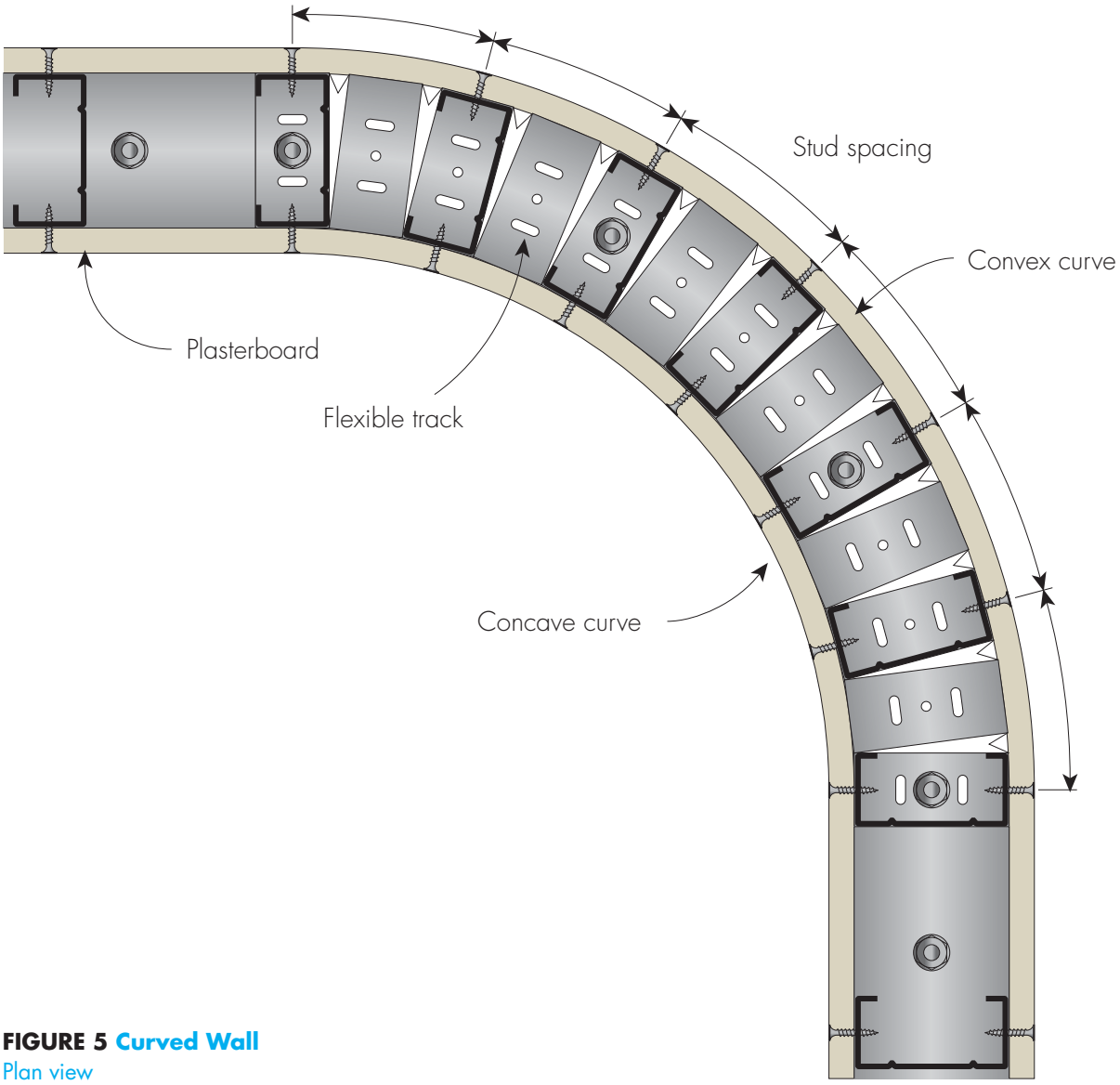


FIGURE 5 Curved Wall
Plan view

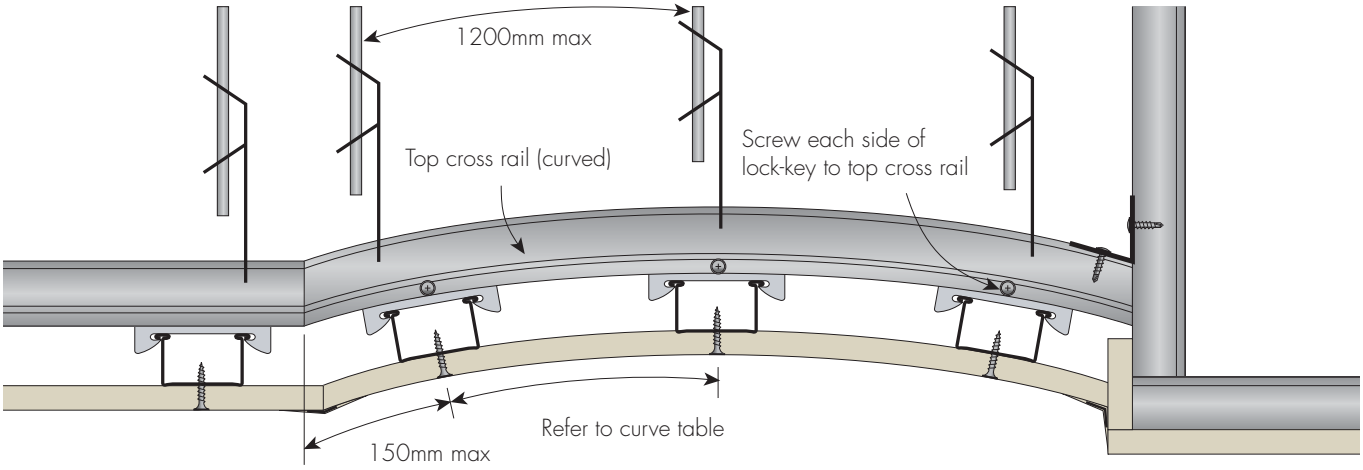


FIGURE 6 Curved Suspended Ceiling
Elevation

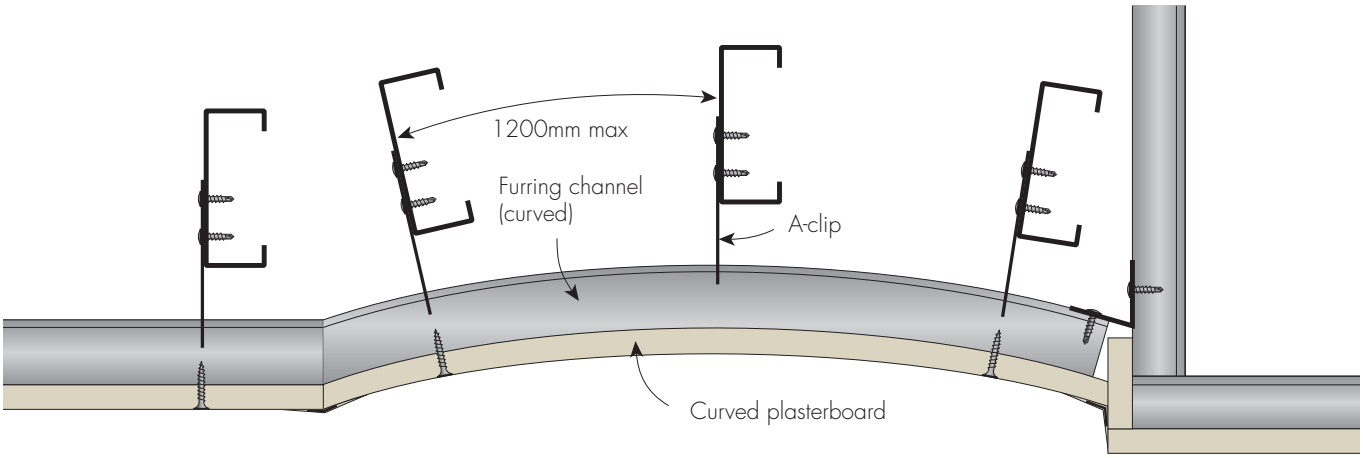
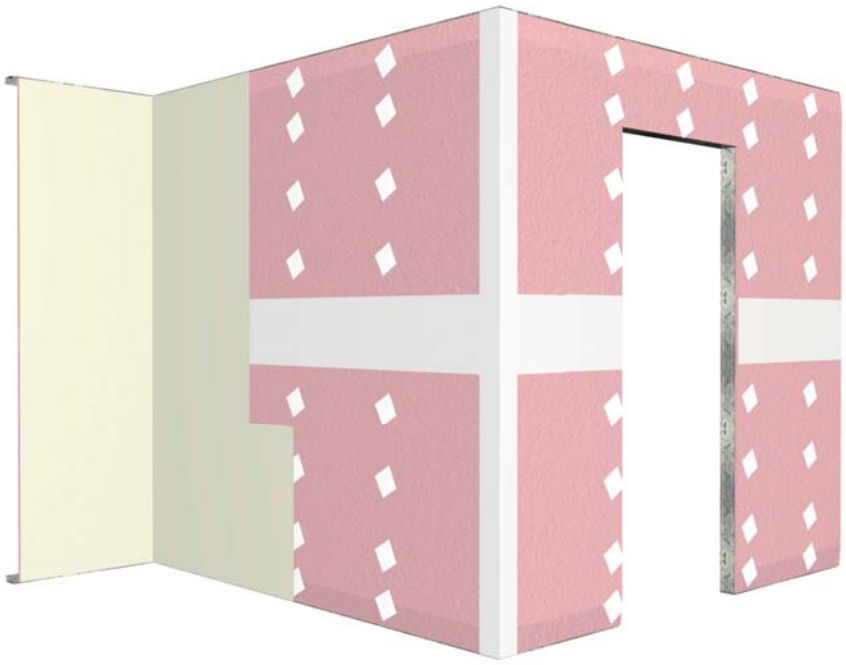


FIGURE 7 Curved Ceiling
Elevation

4 FINISHING PLASTERBOARD

4.1

Levels of Finish



Plasterboard is finished using plaster jointing compounds, which are sanded and then finally painted to achieve a smooth and even appearance.

No building lining system has a surface that is perfectly flat and totally free of imperfections. By paying attention to framing, plasterboard sheet orientation, paint finishes and lighting conditions, it is possible to attain the perception of flatness.

Careful workmanship is required at each stage of construction to achieve a high quality finish. If faults are not corrected at the earliest opportunity it may be impossible to disguise them afterwards. In addition, there are some key design principles that should be followed to avoid conditions known to highlight imperfections.

AUSTRALIAN STANDARD REQUIREMENTS

The plasterboard installation standard AS 2589:2007, *Gypsum linings – Application and finishing*, refers to three 'Levels of Finish' (Levels 3, 4 and 5). The standard nominates Level 4 as the default finish unless otherwise specified. Installation in accordance with Knauf instructions will achieve a Level 4 Finish.

FRAMING REQUIREMENTS FOR EACH LEVEL OF FINISH

AS 2589 defines allowable deviations in the flatness of the framing surface to achieve the required level of finish. Framing members must have a minimum fixing face width of 32mm for screw fixing and 35mm for nail fixing. Framing should be true, plumb and level. Before installing plasterboard, the frame must be flat enough for the required level of finish. Over a 1.8m straight edge the frame must not deviate more than the values listed in Table 1.

LEVEL 3 FINISH

A Level 3 Finish is recommended where no decoration is required such as walls above ceilings and concealed storage areas. The requirements for a Level 3 Finish are:

- Framing as per the requirements in Table 1
- A bedding coat and second coat on all face layer joints and corners.

LEVEL 4 FINISH

Level 4 is the default finish and is recommended for most applications when lighting is favourable and light tone, flat or low sheen paints are used. The requirements for a Level 4 Finish are:

- Framing and back-blocking as per the requirements in Table 1
- Face layer joints finished as detailed in Section 4.3 Three Coat Jointing System
- A quality three coat paint system as detailed in Section 4.5 Painting Plasterboard.

LEVEL 5 FINISH

A Level 5 Finish is the highest level of finish defined in the Australian Standard. Installation of the frame and plasterboard, finishing with compounds and the correct application of paint all contribute to a Level 5 Finish. Even if completed correctly, a Level 5 Finish may not result in all surface deviations being concealed, only minimised.

A Level 5 Finish is recommended where gloss, semi-gloss or deep tone paints are used, or in harsh or critical lighting conditions which are referred to as glancing light. Higher standards are required for frame flatness, jointing and back-blocking. It involves skim coating the entire wall or ceiling to provide an even surface texture and porosity, as well as to conceal joints and fixing points. The skim coat would not normally exceed 1mm in thickness.

The requirements for a Level 5 Finish are:

- Framing as per requirements in Table 1
- Back-blocking of all ceiling joints and wall butt joints
- Joints finished as detailed in Section 4.3 Three Coat Jointing System
- Application of a skim coat over the entire surface to provide uniform texture and porosity
- A quality three coat paint system as detailed in Section 4.5 Painting Plasterboard.

For a premium Level 4 Finish use **MastaDeco**. *[Refer to the latest **MastaDeco** brochure on the website]*

TABLE 1 **Level of Finish Requirements for Non-Fire Rated Systems**

	Level 3	Level 4	Level 5
Back-block recessed joints on ceilings with 3 or more recessed joints	Optional	✔[1]	✔
Back-block recessed joints on ceilings with less than 3 recessed joints	Optional	Optional[1]	✔
Ceiling butt joints permitted on framing members	✔	✗[2]	✗[2]
Wall butt joints permitted on framing members	✔	✗[2]	✗[2]
Minimum number of coats for jointing	2	3	3 and Skim Coat
Maximum frame deviation of 90% of area (mm)[3]	4	4	3
Maximum frame deviation of remaining area (mm)[3]	5	5	4

1 Back-blocking not required for recessed joints on suspended ceiling with no rigid connection at wall/ceiling junction.
2 Back-blocking is required on these joints. *[For more information, Refer to Section 4.2]*
3 Over a 1.8m straight edge the frame must not deviate by more than these values.

4.2

Back-Blocking

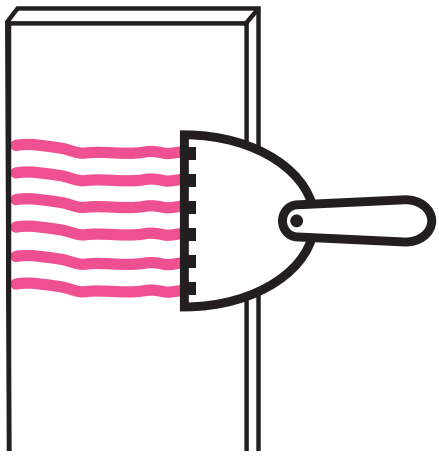


FIGURE 1 Spreading MastaBlock on the Back of a Back-Blocking Strip

BACK-BLOCKING REQUIREMENTS

Back-blocking is a method for reinforcing plasterboard joints to minimise joint cracking and peaking.

Back-blocked joints use strips of plasterboard adhered to the back of the joint between the framing members. Back-blocking adhesive must be set before commencing jointing.

Each level of finish has specific joint location and back-blocking requirements. *[Refer to Table 1 Section 4.1]*

TABLE 2 Back-Blocking Requirements

	Back-Blocking Required
Butt joints not made on a framing member	✔
Ceiling joints in balconies and breezeways	✔
Joints using MastaLite or MastaCoat3 for all three coats except those made over a framing member	✔
Joints using self-adhesive fibreglass tape except those made over a framing member	✔
Joints made over a framing member	✗
Multi-layer systems	✗
Wall butt joints less than 400mm in length and more than 2 metres above the floor	✗

BACK-BLOCKING CEILING RECESSED JOINTS

It is strongly recommended to back-block all ceiling recessed joints.

Method

- Ensure the back of the plasterboard is free of dust and dirt.
- Cut back-blocking strips 200mm minimum wide and long enough to fit loosely between the framing members with a gap not greater than 30mm at each end.
- Use a notched spreader to apply MastaBlock to the back-blocking strips to form 6mm beads at right angles to the joint.
- Apply back-blocking strips firmly to the back of the joint.
- Where there is no access to the back of the ceiling, fix the first ceiling sheet, apply MastaBlock to the back-blocking strip and place it midway on the board, then fix the next board.
- Allow MastaBlock to set before commencing any jointing.

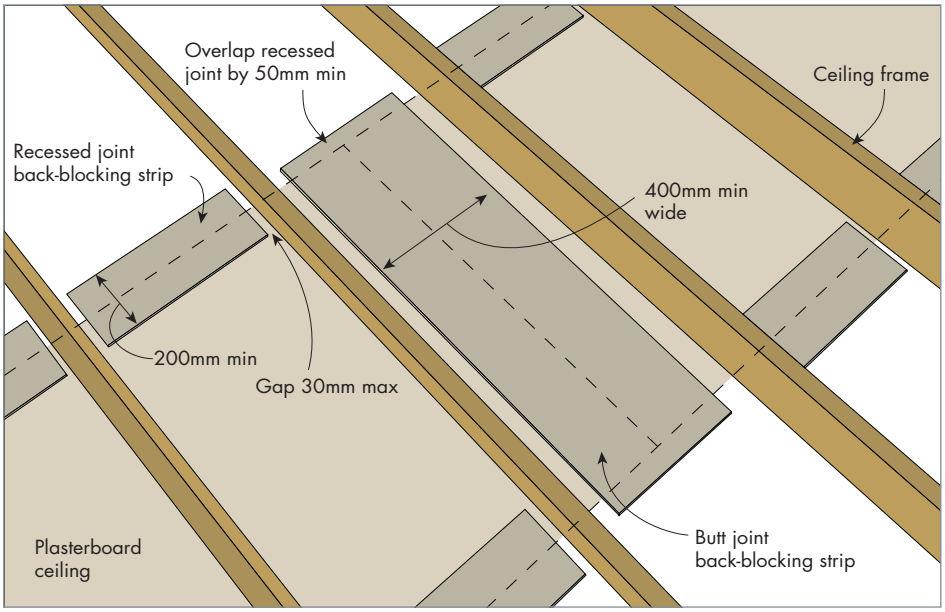


FIGURE 2 Placement of Back-Blocking Strips For Recessed and Butt Joints

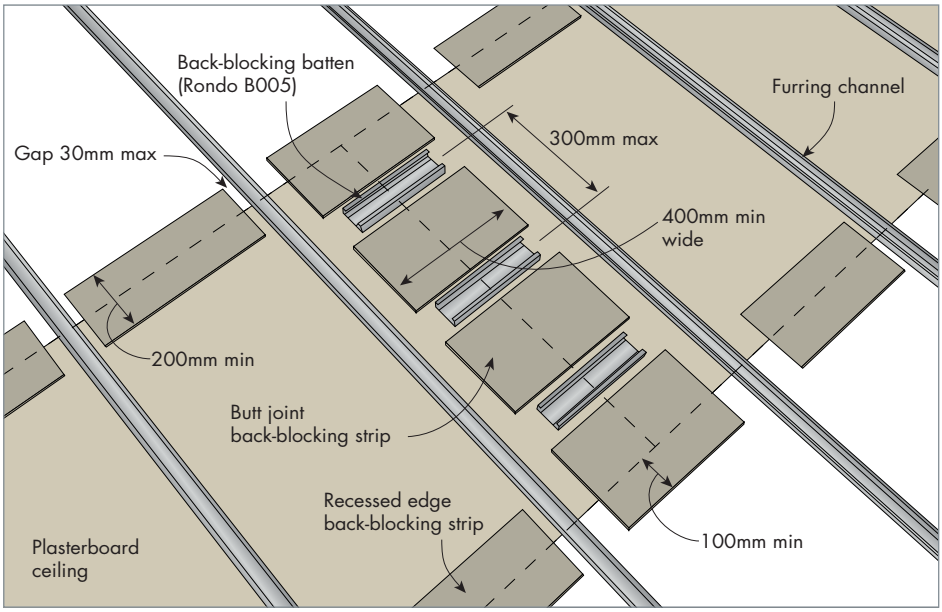


FIGURE 3 Placement of Back-Blocking Batten and Back-Blocking Strips for Recessed and Butt Joints

BACK-BLOCKING BUTT JOINTS ON CEILINGS AND WALLS

Butt joints are more difficult to conceal than recessed joints so they should be minimised. If butt joints are unavoidable, concealing them can be made easier by creating the joint mid-way between framing members, forming a recess and back-blocking.
Butt joint requirements differ for each level of finish. *[Refer to Table 1 Section 4.1]*

METHOD

- Create a recess by using either back-blocking battens as shown in Figure 4 or packers as shown in Figure 5 and 6.
- Ensure the back of the plasterboard is free of dust and dirt.
- Cut back-blocking strips 400mm minimun wide and long enough to fit loosely between the framing members. Back-blocking strips are to overlap recessed joints by 50mm minimum.
- Wall butt joints need support for the back-blocking strips as shown in Figure 6.
- Use a notched spreader to apply MastaBlock to the back-blocking strips to form 6mm beads at right angles to the joint.
- Apply back-blocking strips firmly to the back of the joint.
- Where there is no access to the back of the ceiling, fix the first ceiling sheet. Apply MastaBlock to the back-blocking strip and place it midway on the board, then fix the next board.
- Allow MastaBlock to set before commencing any jointing.
- Where possible, avoid wall butt joints over single doors and cavity sliding doors to minimise joint cracking from vibration.

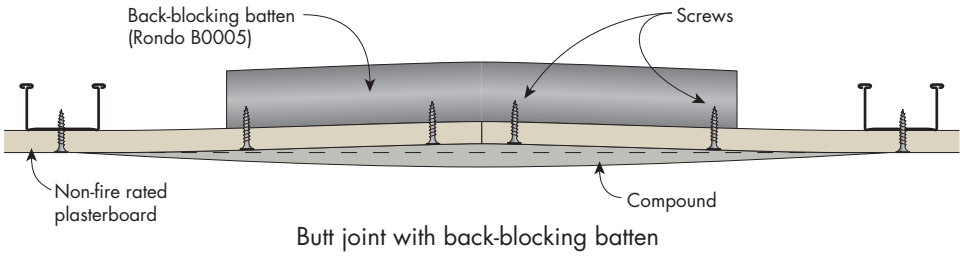


FIGURE 4 Creating a Recess at Butt Joints Using Back-Blocking Battens – Elevation

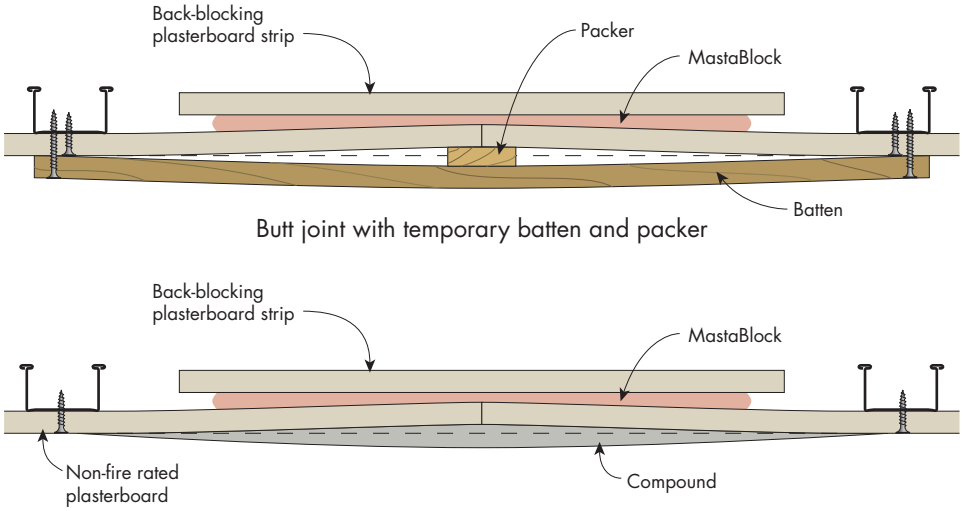


FIGURE 5 Creating a Recess at a Butt Joint – Elevation

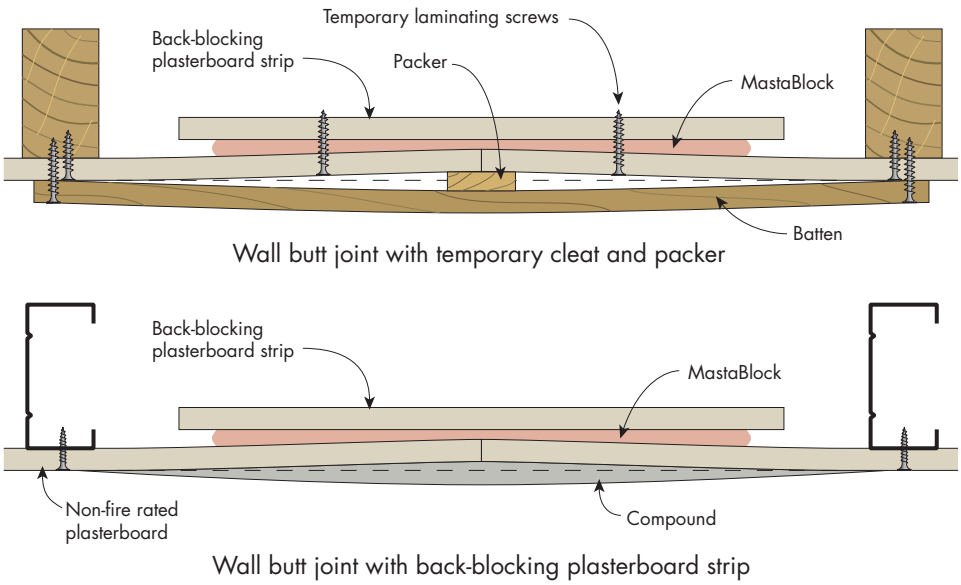


FIGURE 6 Creating a Recess at a Wall Butt Joint Using Laminating Screws – Plan View

4.3

Jointing Plasterboard

FIGURE 1 Knauf Compounds

Plasterboard walls and ceilings are jointed using compounds and reinforced with paper tape or corner beads.

All joints, internal and external corners and fastener heads must be evenly finished with compounds and lightly sanded to remove tool marks and ridges prior to decoration.

COMPOUNDS

Knauf compounds must be used with Knauf systems. Performance of all systems in this guide rely on using nominated Knauf compounds. Use of non-Knauf compounds may reduce a system's fire and acoustic rating, appearance or other aspects of performance.

To achieve the FRL, fire rated systems require as a minimum paper tape and two coats of MastaBase/MastaLongset or three coats of MastaLite. External fire rated wall systems with a moisture barrier wall wrap and non-combustible cladding covering the plasterboard do not require jointing.

Joints in wet areas must use paper tape. Areas to be tiled must only use MastaBase or MastaLongset.

Multi-layer systems only require face layer joints to be set, except GIB X-Block systems where all layers must be set.

There are two types of products used for jointing plasterboard: setting cements and air-drying compounds.

SETTING CEMENTS

Setting cements are plaster based, supplied in powder form and when combined with water harden by chemical reaction. They create the strongest joint.

Setting cements can be completely set but still damp. In cold and humid conditions, additional coats of setting cement can be applied to the joints when the cement is hard but before it is completely dry.

Hot and dry conditions may dry out the cement before it sets resulting in reduced strength and tape adhesion issues. Accelerating and retarding additives must not be used as they can also reduce strength.

Setting cements must not be applied over air-drying compounds.

AIR-DRYING COMPOUNDS

Air-drying compounds are generally premixed and harden by drying out. They are softer than setting cements, and are designed for easy sanding.

Previous coats of air-drying compound or setting cement must be completely dry before applying the next coat and before sanding.

In cold and humid conditions air-drying compounds may take longer to dry. Ventilation such as open windows or an exhaust fan may be required. Air-drying compounds must not be used in temperatures lower than 10°C.

TABLE 3 Type and Use of Compounds

Compounds	Type	Possible Compound Applications			Wet Areas Under Tiles	Fire Rated Systems
		Bedding	Second	Finish		
Bedding Cements						
MastaBase	Setting powder	✔	✔		✔	✔
MastaLongset	Setting powder	✔	✔		✔	✔
Finishing Compounds						
MastaFinish	Air-drying premixed			✔	✗	✔
MastaGlide	Air-drying premixed			✔	✗	✔
All Purpose Compounds						
MastaLite	Air-drying premixed	✔	✔	✔	✗	✔
MastaCoat3	Air-drying premixed	✔	✔	✔	✗	✗

THREE COAT JOINTING SYSTEM

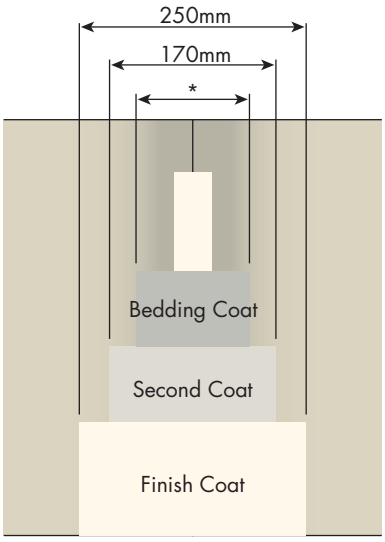
The Three Coat Jointing System consists of a Bedding Coat, a Second Coat and a Finish Coat of compound. Level 4 Finish and Level 5 Finish must use the Three Coat Jointing System for all joints and external corners. Internal corners only require a Bedding Coat and a Finish Coat.

- Paper tape is strongly recommended for all joints.
- Joints made using paper tape are stronger and more durable than those made with fibreglass tape. For the strongest joint, paper tape is recommended with two coats of **MastaBase** or **MastaLongset** and a final coat of **MastaFinish** or **MastaLite**.
- If fibreglass tape is used, all joints must be back-blocked. Fibreglass tape is not permitted for use in wet areas or fire rated systems.

BEDDING COAT (FIRST COAT)
Method

- Fill any gaps more than 4mm at the joint and allow compound to set or dry.
- Using a 150mm broadknife, evenly fill the recess with compound. *[Refer to Figure 7 for minimum coat widths]*
- Place tape along the joint and bed it into the compound, removing excess compound and any air bubbles from behind the tape. *[Refer to Figure 8]*
- Apply a skim coat of compound over the tape.

Use curved trowels for recessed joints and flat trowels for butt joints.



Recessed Joint and back-blocked Butt Joints
* Fill recess completely

FIGURE 7 Minimum Coat Widths After Sanding

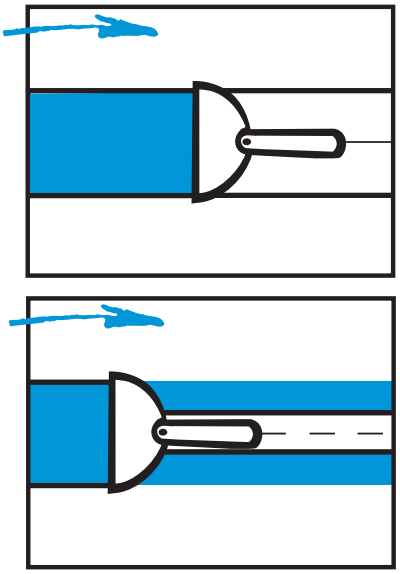


FIGURE 8 Bedding Coat

SECOND COAT
Method

- Allow the first coat of compound to set or dry.
- Use a 200mm trowel to apply a second coat of compound. *[Refer to Figure 9] [Refer to Figure 7 for minimum coat widths]*
- Feather the joint edges to remove excess.

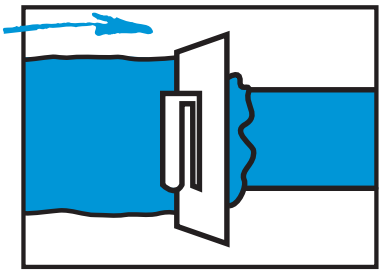
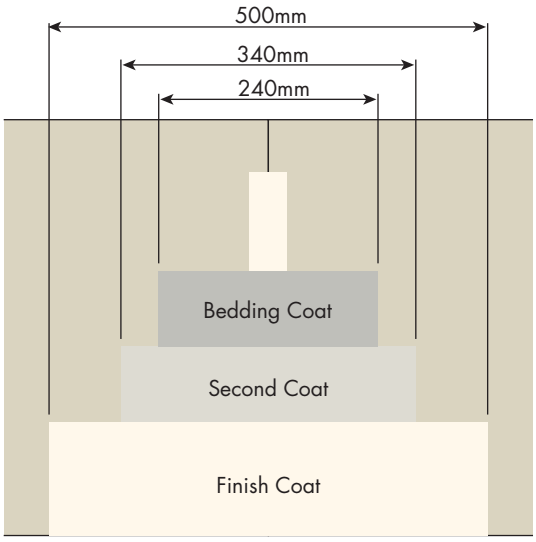


FIGURE 9 Second Coat



Butt Joint made over a framing member

FINISH COAT (THIRD COAT)

Method

- Allow the second coat to set and dry. Lightly scrape off any lumps and high spots of compound.
- Use a 280mm trowel to apply a third coat of compound. *[Refer to Figure 10] [Refer to Figure 7 for minimum coat widths]*
- Feather the joint edges to a smooth even surface, removing any excess.
- Allow the compound to dry before sanding.

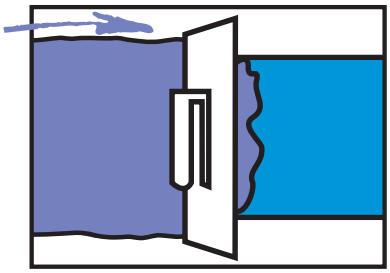


FIGURE 10 Finish Coat

FASTENERS

Method

- Cover fastener heads with three coats of compound in a similar way to the joints. Apply each coat in a different direction.

SANDING

Method

- Lightly sand to a smooth even surface using a sanding float and 180 grit paper or 220 sanding mesh. Use finer paper for MastaLite (e.g. 220 paper). *[Refer to Figure 11]*
- Do not expose or scuff the paper linerboard while sanding.
- Use power sanders with care as they can easily over sand the joint.
- A finished joint should have a slight crown.

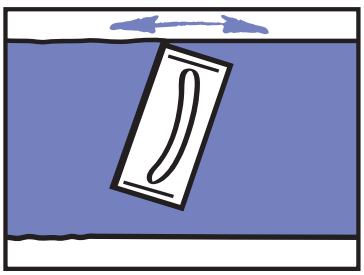


FIGURE 11 Sanding

INTERNAL CORNERS

Method

- Use a 75mm broadknife to apply compound to the corner.
- Fold paper tape in half and bed it into the compound using a corner taping tool.
- Cover the tape with a thin coat of bedding compound and remove any excess. Allow to set or dry.
- Apply a finish coat with a 100mm broadknife to both sides of the angle.
- Feather the edges and finish the joint with an internal angle finishing tool. Allow to dry.
- Lightly sand to a smooth finish before painting.

EXTERNAL CORNERS

Method

- Position a corner bead ensuring that it is plumb and straight. *[Refer to Figure 12]*
- Fix the bead in place using fasteners or staples at 300mm centres on both sides.

Treat external corner beads with the three coat jointing system as described previously. The minimum width of the three coats on both sides of the external corner is:

- Bedding coat 200mm
- Second coat 230mm
- Finish coat 250mm.

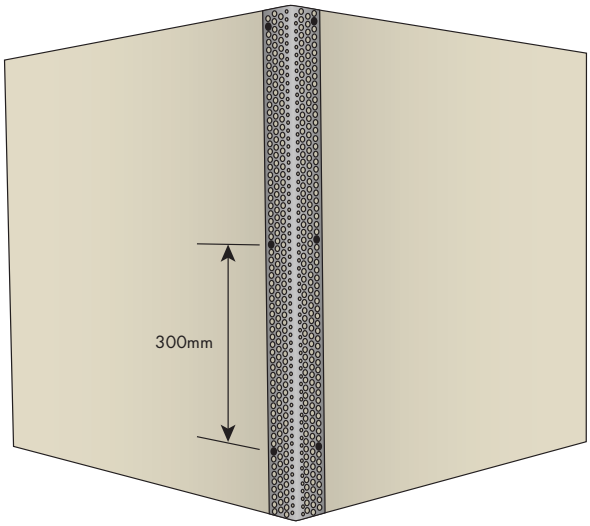


FIGURE 12 Corner Bead on External Corner

4.4

Cornice Installation

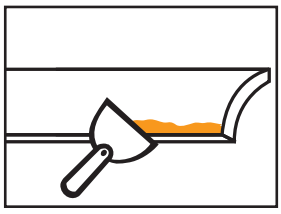


FIGURE 13
Butter Up

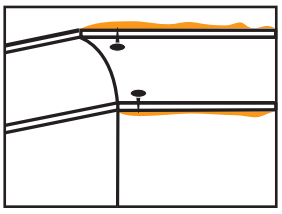


FIGURE 14
Position Cornice

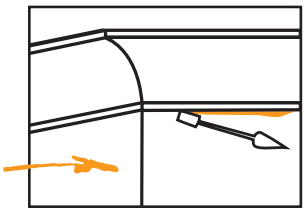


FIGURE 15
Clean Off Excess

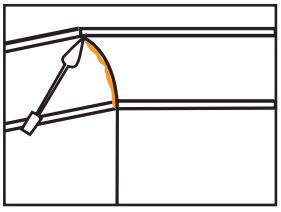


FIGURE 16
Mitres

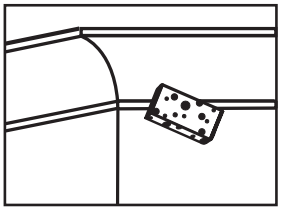


FIGURE 17
Wipe Down

Cornice is used to complete the decoration of the building. Cornice is fixed to walls and ceilings using cornice cements, which are setting cement adhesives available in powder form.

Cornice cements are selected depending on the length and stability of the setting time, as well as their features for practical application, such as the ability to work back the cornice cement, polish mitres and the strength of the bond.

TABLE 4 Type and Use of Compounds – Cornice Cements

Compounds	Type	Setting Time	Applications		
		Minutes	Cornicing	Patching	Jointing (1st and 2nd Coat)
Cornice Cements					
MastaCove45	Setting Powder	45	✔	✔	
MastaCove75	Setting Powder	75	✔	✔	
MastaSmooth	Setting Powder	45	✔	✔	
3-in-1 Specialty Cement					
MastaFix20	Setting Powder	20	✔	✔	✔

Method

- Ensure that wall and ceiling surfaces are free of dust and dirt.
- Measure and cut all cornices to the required lengths. Cut internal and external mitres using a mitre box.
- Avoid joints in straight runs where possible. If necessary, mitred joints are recommended.
- Measure and mark cornice projection on wall and ceiling to ensure accurate placement.
- Mix only the quantity of cornice cement that can be used within the setting time.
- Spread a 10mm continuous bead of cement along both back edges and the mitred end of the cornice. *[Figure 13]*
- Press the cornice into place and if necessary hold with temporary nails in the wall and ceiling along the edges of the cornice. *[Figure 14]*
- Clean off excess and remove nails when cement has partially set. *[Figure 15]*
- Straight stop along cornice edge at wall and ceiling. Finish mitres using a small cornice tool. *[Figure 16]*
- Wipe down the cornice with a wet sponge. *[Figure 17]*

4.5

Painting Plasterboard

AUSTRALIAN STANDARD REQUIREMENTS

Painting systems and methods are detailed in Australian Standard AS/NZS 2311, *Guide to the painting of buildings*.

If painting plasterboard, a **Three Coat Paint System** must be applied. This consists of a sealer undercoat followed by two top coats. Both the quality of the paint and how it is applied have a large effect on the finished appearance of the plasterboard.

Two coat paint systems are not recommended by AS/NZS 2311 as they often do not meet the customer's expectations by showing up joints through texture and sheen variations.

To achieve a good quality painted finish, the following recommendations in addition to the three coat paint system should be followed:

- Apply paint according to the manufacturer's recommendations.
- Avoid spraying or brushing which require advanced application techniques.
- Choose white or light colours and flat or low sheen paints.
- Select a Level 5 Finish when using medium to high gloss paints and dark colours, especially in areas of glancing light. These paints highlight any minor imperfections in the plasterboard and make the joints more visible.

SEALER UNDERCOAT APPLICATION

RECOMMENDATIONS

- Ensure surfaces are set and dry.
- Lightly sand any minor surface defects and brush down surfaces to remove dust.
- Apply a sealer undercoat suitable for plasterboard, preferably with a roller. Plasterboard that has been exposed to sunlight and/or is discoloured will require a stain sealer undercoat.
- Ensure that the sealer undercoat is applied such that the plasterboard paper fibres remain flat.
- Check for any unsuitable surface imperfections and repair.
- Lightly sand with fine to medium grade paper before applying top coats.
- Avoid overworking sealer undercoat on plasterboard joints to avoid paint lifting.

PAINT APPLICATION

RECOMMENDATIONS

- Ensure surfaces are dry.
- Lightly sand any minor surface defects and brush down surfaces to remove dust.
- Cut in edges with a brush.
- Apply paint to the broad areas with an appropriate 10mm nap roller. The roller nap gives a slight texture that improves the overall evenness of finish.
- Ensure each paint film is dry before applying the next coat.

If plasterboard is to be spray painted, the paint must not be diluted more than the manufacturer recommends. While the sealer undercoat is still wet, the surface should be back rolled to leave a 'roller finish'. This helps to equalise the surface texture between the plasterboard and the set joints. For best results also back roll 2nd and 3rd coats. Any minor paint touch-ups can then be done with a roller rather than having to re-spray.

INSPECTION

The final inspection of a plasterboard wall or ceiling occurs after painting. AS/NZS 2311 recommends that visual inspection of finished surfaces of plasterboard be carried out in ordinary lighting, sighting from a distance of 1.5 to 2 metres from the surface. If differences of appearance are not clearly discernable the finish is usually considered acceptable.

For more information on glancing light, painting and other subjects affecting the appearance of plasterboard walls and ceilings, refer to:

- www.awci.org.au (Association of Wall and Ceiling Industries – Australia and New Zealand).
- www.apmf.asn.au (Australian Paint Manufacturers Association).

4.6 Glancing Light

Glancing light is natural or artificial light that is cast along a surface.

The glancing light condition can occur even when the wall or ceiling has been built according to AS/NZS 2589. Glancing light effects are directly linked to the type and placement of light sources relative to ceilings and walls.

Glancing light can highlight the following surface conditions:

- Sheet joints
- Surface irregularities
- Patches
- Variations in paint application technique.

Attention can also be drawn to minor deviations inherent in the manufacture and installation of plasterboard.

MINIMISING GLANCING LIGHT

INTERIOR DESIGN

The following are recommendations to reduce the effect of glancing light:

- Avoid full length windows in direct sunlight
- Avoid locating windows close to perpendicular wall and ceiling surfaces during design phase
- Diffuse light entering a room by using curtains, blinds or other window treatments
- Introduce curtains or blinds where windows are close to wall and ceiling surfaces
- Use low gloss, light coloured paints applied with a brush or roller.

FRAMING

Framing members should be straight and aligned.

SHEET ORIENTATION

Plasterboard sheets should be fixed parallel to the light source. Also arrange the sheets to minimise the number of joints.

LIGHTING

Glancing light caused by artificial lighting can be addressed by changing the type and/or positioning of the light fittings. Natural lighting problems are normally caused by building geometry. An example is running windows right to the edge of the ceiling or wall line.

The following are recommendations for design of light fittings:

- Use recessed downlights and recessed fluorescent tubes
- Shade batten-fixed bulbs on the ceiling and table lamps
- Avoid designs that will create glancing light conditions where possible
- Position downlights so that they do not shine down the surface of a wall.

For a premium Level 4 Finish use **Masta**Deco *[Refer to the latest* **Masta**Deco *brochure on the website]*

LEVEL 5 FINISH

A Level 5 Finish is the highest level of finish possible and can assist in reducing the effect of glancing light. By covering the entire surface, the skim coat of a Level 5 Finish fills any slight impressions in the surface, and removes the difference in texture and paint absorption between plasterboard and the joints. The framer, plasterer and painter all need to cooperate and contribute to providing a Level 5 Finish. Even when applied correctly, a Level 5 Finish is no guarantee that all surface deviations will be invisible, only minimised. *[Refer to Section 4.1 for details on Level 5 Finish]*

System Index

Knauf Plasterboard Pty Ltd
ABN 61 003 621 010
31 Military Road
Matraville NSW 2036

Customer Service 1300 724 505
knaufplasterboard.com.au