GYPROCK™

Ceiling Systems Installation Guide

GYP570 June 2008

CSR

Contents

Introduction

CSR Gyprock has developed a wide range of decorative ceiling systems as well as a large selection of fire and/or acoustic rated ceiling systems to meet specific FRL (Fire Resistance Level), R_W (Weighted Sound Reduction Index) and Sound Absorption requirements.

CSR Gyprock offers both Flush Jointed Ceiling Systems and Panel Ceiling Systems.

Flush Jointed Ceiling Systems

Gyprock™ Flush Jointed Ceiling Systems utilise Gyprock™ plasterboard sheet which is fixed to appropriately prepared framing. Plasterboard joints are 'taped and set' to form a smooth 'flush jointed' continuous ceiling suitable for painting.

Gyprock™ Flush Jointed Ceiling Systems are suitable for virtually all interior domestic and commercial ceiling applications and can be installed under roof or floor framing. Where a level of finish is specified, refer to AS2589.1 for additional framing and fixing requirements.

Specific ceiling systems are available for decorative, acoustic and fire rated applications. Advantages include:

- Flush jointing gives a smooth, seamless, easily decorated finish.
- Systems available for decorative, acoustic rated and fire rated application.
- Suitable for use under a wide range of roof and floor structures.
- Permit flexible location of internal non-loadbearing walls.
- Surface or flush mounted light fittings can be used.
- Fire rated ceilings provide protection for services mounted above the ceiling, and can accommodate air conditioning ducts and dampers, bulkheads and access panels.

Panel Ceiling Systems

Panel Ceiling Systems comprise Gyprock™ Plasterboard Ceiling Panels, CSR Ecophon Panels, USG Ceiling Panels or CSR Fricker Ceiling Tiles. These panels are generally placed in a two-way grid which is suspended below floor or roof framing. Ecophon panels are also available to fix directly to battens or existing plasterboard ceilings.

Gyprock™ Plasterboard Ceiling Panels have a plasterboard core, and are used as decorative linings in commercial applications. They can also be used in systems to reduce the transfer of noise over partitions.

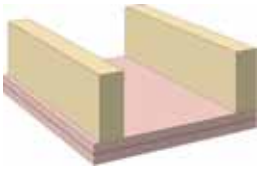
USG Ceiling Panels Panels have a mineral fibre core which provides moderate to high levels of acoustic absorption. They are available in a variety of surface textures and edge details.

CSR Ecophon™ Panels have a glasswool core, and are used where high levels of acoustic absorption are required. They are available in a variety of edge details for exposed, concealed or semi-concealed support grids.

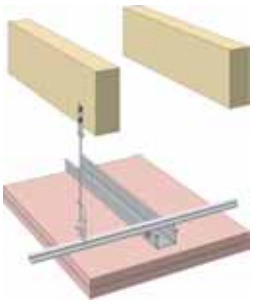
Panel ceiling systems are suitable for non fire rated applications only. Systems detailed in this guide are non-trafficable, although a trafficable ceiling is available from Rondo Building Services.

Overview of Flush Jointed Ceiling Systems

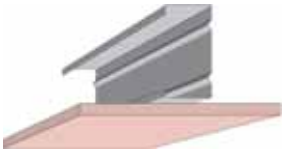
Gyprock™ Flush Jointed Ceiling Systems utilise various framing formats and plasterboard fixing techniques. Gyprock™ plasterboard which is fixed to the underside of the framing is jointed using tape and compounds to CSR Gyprock specifications to form smooth ceiling surfaces for decorative coating.



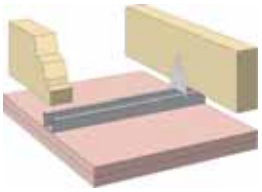
Plasterboard adhesive and/or fastener fixed directly to timber/steel floor/ ceiling joists



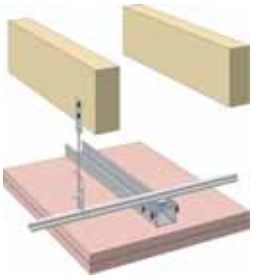
Plasterboard screw fixed to suspended concealed metal grid (without resilient mounts) under floor/ceiling joists



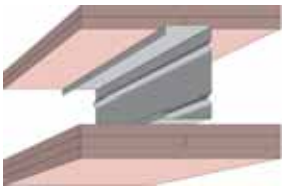
Plasterboard screw fixed below Lipped Steel C-Stud



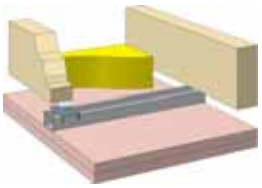
Plasterboard screw fixed to steel furring channel attached with appropriate fixing clips to timber/steel floor/ceiling joists



Plasterboard screw fixed to suspended concealed metal grid (with resilient mounts) under floor/ceiling joists



Plasterboard screw fixed above and below Lipped Steel C-Stud

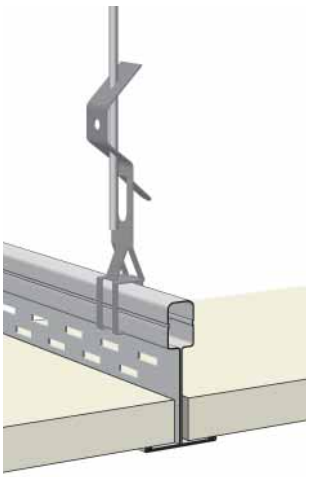


Plasterboard screw fixed to resilient mounted furring channel or resilient furring under timber/steel floor/ceiling joists

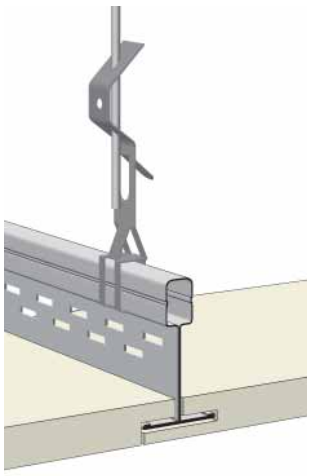
Overview of Panel Ceiling Systems

Gyprock™ Panel Ceiling Systems offer lightweight, decorative and/or acoustic solutions for commercial applications. They are installed with a two-way suspended grid or direct fixed to battens or an existing plasterboard ceiling.

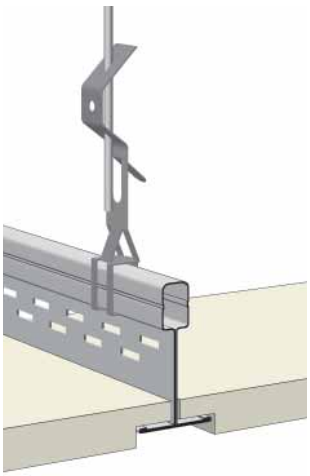
The precoated face of the supporting grid or edge profile of the panels combine with various surface textures to form a decorative feature ceiling.



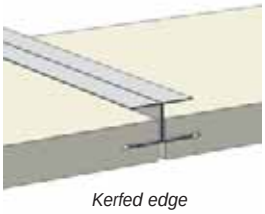
Square edge



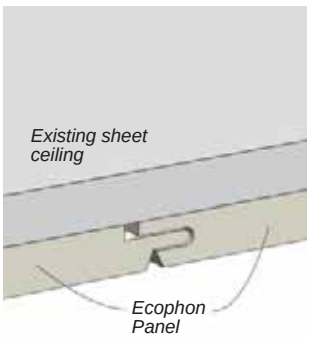
Shiplap edge



Tegular edge



Kerfed edge



Shiplap F

Flush Jointed Ceiling Systems

Components

Plasterboard

CSR GFC manufactures and supplies a diverse range of plasterboard and fibre cement sheets, acoustic panels and accessories to suit a multitude of wall, ceiling and encasement applications.

Gyprock™ Plasterboard CD is composed of a gypsum core encased in a heavy duty linerboard. Available with long edges recessed to assist in producing a smooth, even and continuous surface once jointed, or in square edge (SE) and recessed edge/square edge (RE/SE). Gyprock™ Plasterboard CD is manufactured to AS2588 – 'Gypsum Plasterboard', and incorporates CD (Controlled Density) technology. Gyprock™ Plasterboard CD is suitable for internal walls and ceilings.

Gyprock Supaceil™ is a 10mm thick sheet designed to span up to 600mm in ceiling applications. Gyprock Supaceil™ is composed of a gypsum core encased in a heavy duty linerboard. Long edges are recessed for flush jointing. Gyprock Supaceil™ is manufactured to AS2588 –'Gypsum Plasterboard', and incorporates CD (Controlled Density) technology.

Gyprock Soundchek™ has been designed to provide increased acoustic resistance in wall and ceiling systems. Gyprock Soundchek™ is composed of a high density gypsum core encased in a heavy duty linerboard. Long edges are recessed to assist in producing a smooth, even and continuous surface once jointed. Gyprock Soundchek™ is manufactured to AS2588 – 'Gypsum Plasterboard', and is suitable for internal walls and ceilings.

Gyprock Impactchek™ is high strength plasterboard designed for impact areas. It is composed of a glass fibre reinforced gypsum core plus a fibreglass mesh bonded to the inside of the back face. 13mm IMPACTCHEK is encased in a violet linerboard and may be used in fire rated applications, and 10mm IMPACTCHEK is encased in white linerboard. The long edges of both are recessed for flush jointing.

Gyprock Aquachek™ is designed for use in lining the walls of 'wet areas' of residential and commercial buildings. It is a gypsum plasterboard with a core treated to make it resistant to moisture and humidity. It is manufactured to satisfy the requirements of AS2588 – 'Gypsum Plasterboard', and the water resistant requirements of ASTM C630. It is encased with light blue linerboard and the long edges are recessed.

Gyprock Fyrchek™ can be used in wall and ceiling systems where an FRL is to be achieved, or where acoustic performance is required. Gyprock Fyrchek™ is composed of a specially processed glass fibre reinforced gypsum core encased in a heavy duty pink liner board.

Gyprock Fyrchek MR™ is primarily intended for walls and ceilings in 'wet area rooms' and for soffits and external walls that must achieve fire resistance. Gyprock Fyrchek MR™ is composed of a specially processed glass fibre reinforced gypsum core which is treated in manufacture to withstand the effects of moisture, and encased in a heavy duty light blue liner board.

Gyprock Flamechek MR™ is a fire and moisture resistant high performance 10mm thick plasterboard. Gyprock FlamechekMR™ is a gypsum plasterboard with a treated core to make it resistant to moisture and fire. It is manufactured to satisfy the requirements of AS2588 –'Gypsum Plasterboard', and the water resistant requirements of ASTM C630. It is encased with blue linerboard and the long edges are recessed.

Gyprock™ Shaft Liner Panel is a 25mm thick sheet composed of a glass fibre reinforced gypsum core encased in a heavy duty linerboard. Gyprock Shaft Liner Panel is used to enclose lift shafts, stairwells and service shafts in multistorey construction. Gyprock Shaft Liner Panel can be used to achieve fire resistance in wall and ceiling systems.

Gyprock™ Flexible Plasterboard has been designed for curved wall and ceiling systems and has an enhanced core to enable bending to a small radius. It is composed of a gypsum core encased in a heavy duty linerboard. Long edges are recessed to assist in producing a smooth, even and continuous surface once jointed. Gyprock™ Flexible Plasterboard is 6.5mm thick and is installed in two layers.

Gyprock™ Perforated Plasterboard has been designed for use in ceilings where additional sound absorption is required. It is composed of a gypsum core encased in a heavy duty linerboard and incorporates CD technology. Long edges are recessed for flush jointing. Perforations total 8.2% of the sheet area.

FIG 1: PERFORATION PATTERN

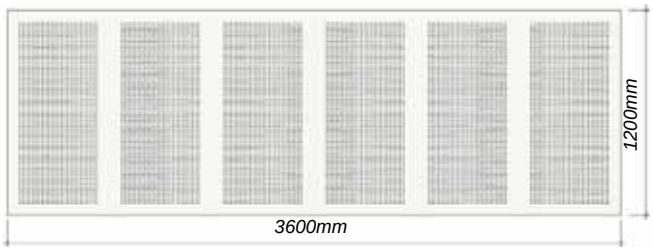
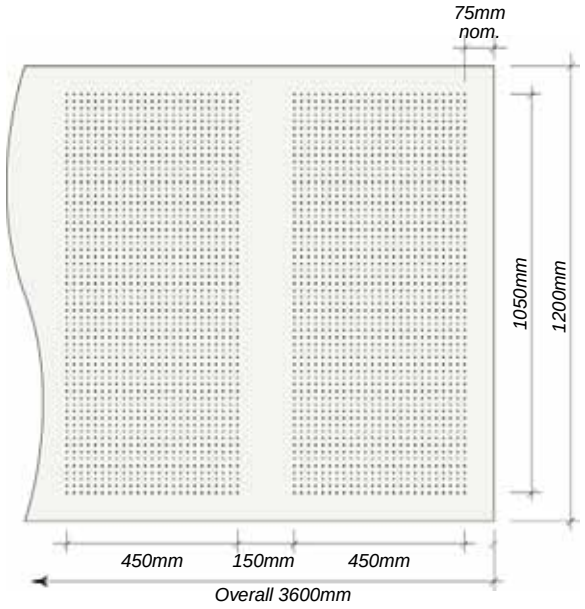


FIG 2: GYPROCK PERFORATED PLASTERBOARD DIMENSIONS



Fire Hazard Properties

The BCA limits the materials used in Class 2 to 9 buildings by controlling the Fire Hazard properties of linings. These properties are assessed using AS/ISO9705 room burn test or AS/NZS3837 the cone calorimeter test. The room burn test is a large scale test to determine $SMOGRA_{RC}$, and the cone calorimeter is a small scale test to determine a Group Number.

TABLE 1: FIRE HAZARD PROPERTIES

CSR GFC Product	$SMOGRA_{RC}$	Group Number
10 – 13mm Plasterboard CD	0	1
10mm SUPACEIL™	0	1
10 - 13mm SOUNDCHEK™	0	1
10 – 13mm AQUACHEK	0	1
6.5mm FLEXIBLE	0	1
13mm Perforated Sheet	0	1
13 – 16mm FYRCHEK™	0	1
13 – 16mm FYRCHEK MR™	0	1
25mm SHAFT LINER PANEL	0	1
10mm FLAMECHEK MR™	0	1

NOTES: $SMOGRA_{RC}$ = Smoke Growth Rate Index.

Gyprock™ Cornice

CSR Gyprock manufactures six popular machine made cornice profiles which cater for many styles and applications. Please refer to Product Availability table in this section for detailed product size and availability information. It is recommended that cornice be attached with Gyprock™ Cornice Cement.

GYPROCK™ COVE CORNICE

GYPROCK™ JAZZ CORNICE

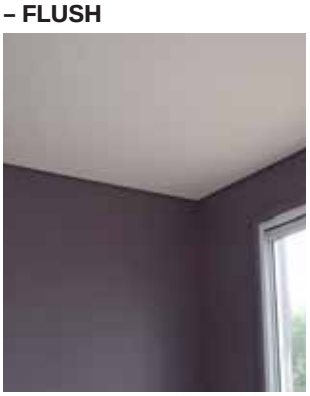
GYPROCK™ SYMPHONY CORNICE

GYPROCK™ CONCERTO CORNICE

GYPROCK™ TEMPO CORNICE

GYPROCK™ CLASSIC CORNICE

GYPROCK™ SHADOWSET – FLUSH



GYPROCK™ SHADOWSET – PLANT-ON

Gyprock™ Plasterboard & Cornice Availability

TABLE 2: GYPROCK™ PRODUCT AVAILABILITY

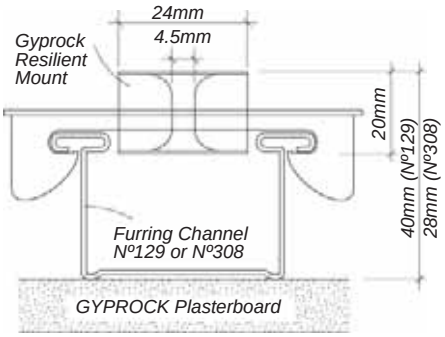
Colour shading behind each product approximates the colour of the product face liner sheets.

Gyprock™ Product	Thickness	Width	Sheet Length (mm)								Mass
	mm	mm	2400	2700	3000	3600	4200	4800	5400	6000	kg/m²
CD RECESSED EDGE	10	1200	✓~~W~~	✓~~W~~	✓~~W~~	✓~~W~~	✓~~W~~	✓~~W~~	✓~~W~~	✓~~W~~	6.5
		1350	✓~~W~~		✓~~W~~	✓~~W~~	✓~~W~~	✓~~W~~		✓~~W~~	
	13	900		*✓~~WSN~~	W	W					8.5
		1200	✓~~SN~~	✓	✓	✓	✓~~W~~	✓	SN	✓~~WSN~~	
		1350			✓	✓	SN	✓~~W~~			
CD SQUARE EDGE	10	1200	~~W~~	SN	~~WSN~~	~~W~~					6.5
	13	1200		SN	SN						8.5
CD RECESSED EDGE/ SQUARE EDGE	10	1200								W	6.5
		1210								✓~~W~~	
		1350								✓	
SUPACEIL™	10	900	W		W	W		W			7.2
		1200	✓~~SN~~	W	✓	✓▲	✓	✓	✓	✓	
		1350	W		✓	✓	✓	✓		✓	
SOUNDCHEK™	10	1350						✓			9.3
	13	1200			✓						13.0
AQUACHEK™	10	1200	✓	✓~~SN~~	✓	✓	✓				8.0
		1350	SN	SN	WSN	✓~~SN~~		✓~~WSN~~			
	13	1200		✓~~W~~	✓	W					10.4
IMPACTCHEK™	10	1350					✓				6.5
	13	1200			✓						10.3
FLEXIBLE	6.5	1200				✓					4.25
FLAMECHEK MR™	10	1350						✓			8.0
FYRCHEK™	13	1200		✓~~W~~	✓	✓					10.5
	16	1200	✓~~SN~~	✓~~W~~	✓	✓					12.5
FYRCHEK™ MR	13	1200		✓~~WSN~~		SN					10.7
	16	1200		✓~~WSN~~	W	SN					13.5
PERFORATED SHEET	13	1200				✓					10.0
SHAFT LINER PANEL	25	600			✓						19.8
COVE CORNICE	–	55			✓	✓	✓	✓			0.7kg/m
	–	75			W	W		✓~~NT~~			0.9kg/m
	–	90			✓	✓	✓	✓	✓		1.3kg/m
CLASSIC™ CORNICE	–	90						✓			1.2kg/m
TEMPO™ CORNICE	–	90						✓			1.8kg/m
SYMPHONY™ CORNICE	–	75						✓			0.9kg/m
CONCERTO™ CORNICE	–	90						✓			1.6kg/m
JAZZ™ CORNICE	–	75						✓			1.8kg/m
SHADOWSET™	–	105					✓				1.0kg/m

Indicates available in: ✓ = All States & Territories; W = Western Aust.; S = South Aust.; N = Northern Territory.
Indicates NOT available in: ~~W~~ = Western Aust.; ~~S~~ = South Aust.; ~~N~~ = Northern Territory.
* = Length is 2740. ▲ = 3300 and 3900mm lengths also available in WA only.
In Western Australia only, additional Recessed Edge/Square Edge products are available.
Additional sizes may be available in some products. Call your state office for details.

Gyprock™ Resilient Mount

The Gyprock™ Resilient Mount is a proprietary component used in conjunction with Rondo steel sections for fastening Gyprock™ plasterboard to a supporting structure while simultaneously isolating it from structure borne vibration.



This significantly reduces the amount of impact noise, speech and low frequency sound filtering through to rooms above, below or alongside the noise generating room. The resilient mount has been design for use on ceilings and can be used on walls provided plasterboard with minimum mass of 13kg/m^2 is fixed on the resilient mount side of the wall. The mount can be used in fire rated and non fire rated systems.

Stud Adhesive

Gyprock™ Acrylic Stud Adhesive is coloured blue for easy identification. It can be used on both timber and steel in temperatures not less than 5ºC.

Contact surfaces must be free of oil, grease or other foreign materials before application. The adhesive is applied with a broad knife to form 25mm diameter by 15mm high walnuts.

This product is suitable for use with pre-painted metal battens and some treated timbers. Always follow directions on packaging when using CSR stud adhesive.

WARNING

- Stud adhesive MUST NOT be relied on in FIRE RATED systems.
- Daubs of adhesive must never coincide with fastener points.
- Stud adhesive does not constitute a fixing system on its own and it must be used in conjunction with nail or screw fasteners.

Fasteners

CSR Gyprock distributes a comprehensive range of ring shank nails, hot-dip galvanised clouts, and screws for use with timber and steel framing to accommodate most installation applications.

Fasteners for Plasterboard Fixing:

- Gyprock™ Clouts. 2.8, 3.15 and 3.75mm dia. (hot-dip galvanised) for fixing to timber.

- Gyprock™ Ring Shanked Nails. 2.8mm dia. for fixing to timber.

- Gyprock™ Type 'W' Screws. #6 and #8 for fixing to timber.

- Gyprock™ Type 'S' Needle Point (NP) Screws. #6 and #8 for fixing to timber, and for lightweight steel studs and furring channel up to 0.8mm thickness.

- Gyprock™ Type 'S' Drill Point (DP) Screws. #6 and #8 for fixing to steel framing 0.8mm to 1.2mm thickness.

- Gyprock™ Plasterboard Laminating Screws. #10 x 40mm. for laminating layers of plasterboard together (where permitted).

Jointing & Finishing

CSR Gyprock has a wide range compounds, cements and accessories for finishing plasterboard installations.

This manual does not provide plasterboard jointing and finishing details.

It should be noted that multi-layered systems only require jointing and finishing of the outer layer.

Information relating to the jointing and finishing of Gyprock™ plasterboard can be found in the Gyprock™ Plasterboard Installation Manual, NºGYP547, or visit the Gyprock™ Web site www.gyprock.com.au

Gyprock™ Mastic & Sealants

Gyprock™ Fire Mastic must be used in fire rated systems where caulking is indicated and is also recommended for caulking acoustic systems. It is available in 600ml sausages.

Gyprock™ Wet Area Acrylic Sealant is recommended for sealing non fire rated wet area systems. It is available in 300ml cartridges.

Vermiculite mixed with plaster is used in some ceiling junction details. It is available in 6kg bags. Refer Caulking in the Plasterboard Fixing section for limitations.

Steel Framing Components

CSR Gyprock recommends steel building elements manufactured by Rondo Building Services Pty Ltd, for our systems. Other brands of equivalent or better performance may be used. It is the responsibility of the manufacturer of the steel component to substantiate equivalent or better performance than the recommended Rondo component.

General information on Rondo steel building components is provided throughout this manual.

Additional information can be obtained from the Rondo Building Services Pty Ltd office in your state, or telephone 1300 367 663.

LIGHTS

Recessed lights must be installed so as to prevent damage from temperature rise and to prevent the risk of fire. Refer to AS/NZS 3000.

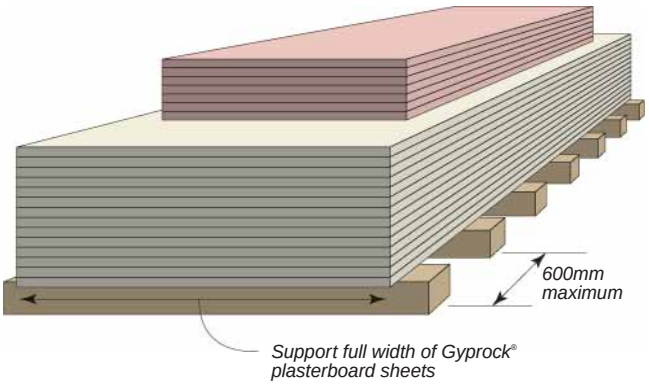
Handling & Storage

All materials must be kept dry, preferably stored inside. Care should be taken to avoid sagging or damage to ends, edges and surfaces of sheets.

All GYPROCK plasterboard must be stacked flat, properly supported on a level platform or on support members which extend the full width of the sheets and which are spaced at a maximum of 600mm centres.

If stored outside, sheets must be stored off the ground, stacked as previously detailed and protected from the weather.

STACKING AND SUPPORT OF PLASTERBOARD SHEETS



Framing

Introduction

Framing requirements detailed in this guide apply to both non fire rated and fire rated installations.

This manual details the minimum requirements for various common timber and steel framing systems, and recommended installation methods.

Framing must comply with the appropriate requirements detailed in this guide and additional requirements detailed in CSR Gyprock or Rondo Building Services literature current at the time of installation.

Timber Framing

- Timber members to which plasterboard will be fixed must:
  - must comply with AS1684 'Residential Timber-Framed Construction' or AS1720.1 'Timber Structures : Design Methods'.
  - be spaced at no more than 600mm centres.
  - have a minimum fixing face width of 35mm.
  - have a timber moisture content at the time of lining of no more than 16%.
- Unseasoned timber framing shall be given sufficient drying time in the construction programme to minimise the possibility of shrinkage after the fixing of linings.
- Kiln-dried timber framing must be protected from wetting during storage and erection.
- CCA or LOSP treated timber classified H1 to H3 may be used subject to specific plasterboard fixing requirements. Refer to 'Plasterboard Fixing' section.

Steel Framing

- Steel framing to which plasterboard will be fixed must:
  - comply with AS/NZS4600, 'Cold Formed Steel Structures'.
  - be spaced at no more than 600mm centres.
  - have a minimum fixing face width of 32mm.
  - be no greater than 1.2mm base metal thickness.

Ceiling Suspension Systems

- Gyprock™ Ceiling Suspension Systems are designed to AS2785 'Suspended Ceilings – Design and Installation'.

  They are not trafficable unless stated, and are designed to carry the weight of the ceiling only.

  Where a trafficable ceiling is required, install a proprietary trafficable ceiling system such as Rondo Walkabout.
- Strengthen suspension systems to support light fittings and access panels as detailed in the appropriate illustrations in this guide and/or other relevant CSR Gyprock or Rondo technical literature.
- Any additional loads are not to be placed upon, or carried by the suspension system.

Corrosion Protection

- For steel components in external environments, in heavy industrial areas or within 1km of the coast, additional coatings may be required. Refer to AS2785 for guidance.

Control Joints

Control joints are to be installed in both fire rated and non-fire rated ceilings:

- To coincide with control joints in the supporting frame.
- In continuous interior ceiling areas, spaced at no more than 12m centres in both directions. Control joints may be positioned to intersect light fixtures, heating vents and air diffusers.
- In exterior ceilings, spaced at not more then 6.0m maximum centres in both directions.
- At changes of framing type.

The continuity of Gyprock™ plasterboard and support framework should be broken at control joints.

Refer to the following details and the additional details on fire rated control joints later in this guide.

FIG 3: CONTROL JOINT DETAILS FOR NON FIRE RATED CEILING

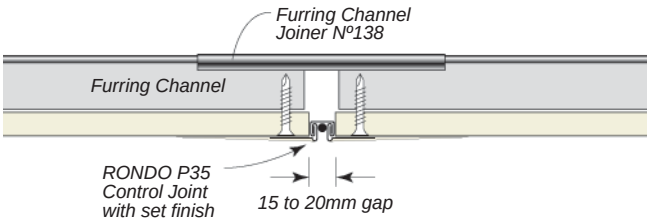


FIG 4: CONTROL JOINT DETAILS FOR NON FIRE RATED CEILING

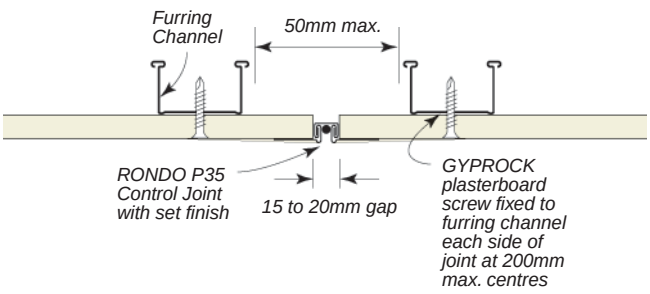


FIG 5: PERIMETER DETAIL FOR NON FIRE RATED CEILINGS

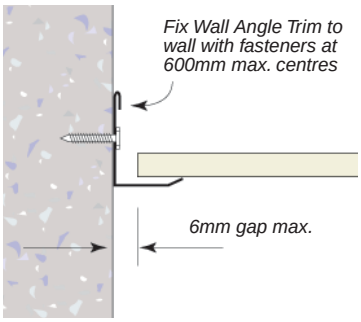


FIG 6: PERIMETER DETAIL FOR NON FIRE RATED CEILINGS

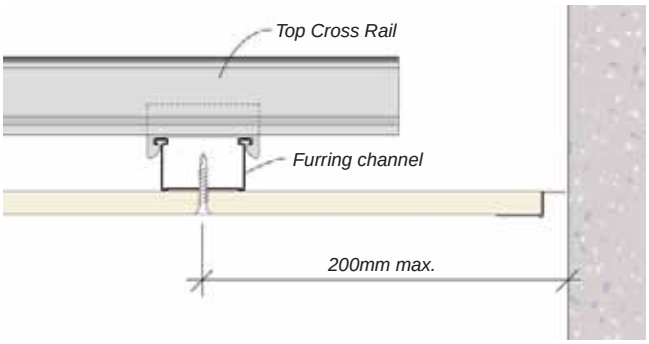


TABLE 3: MAXIMUM SPAN OF PLASTERBOARD IN CEILING APPLICATIONS

GYPROCK Product Thickness	Maximum Spacing of Framing Members	
	General Applications	Areas of High Humidity and External Areas
	(mm)	(mm)
6.5mm Flexible Plasterboard used in two layers	350	NA
10mm GYPROCK Plasterboard CD	450	NA
10mm All types of plasterboard except CD	600	450
13mm plasterboard all types except Perforated	600	450
13mm Perforated Sheet	600	NA
16mm FYRCHEK	600	450

NOTE: NA = Not Applicable

TABLE 4: MAXIMUM SPANS FOR METAL BATTEN/FURRING CHANNEL USED IN CEILINGS

Gyprock Plasterboard Layers x Thickness	Nº581* Resilient Furring		Nº308* Furring Channel		Nº129* Furring Channel	
	Spacing of Furring		Spacing of Furring		Spacing of Furring	
	450	600	450	600	450	600
	Maximum Permissible Spans for Metal Batten/Furring					
1 x 10mm all products except CD and SOUNDCHEK	600	600	1000	900	1550	1400
1 x 10mm Gyprock CD	600	–	1000	–	1550	–
1 x 10mm SOUNDCHEK 1 x 13mm all products	600	600	1100	1000	1550	1400
1 x 16mm FYRCHEK	600	600	1100	1050	1550	1400
2 x 13/16mm FYRCHEK	600	600	1100	900	1400	1300
3 x 16 FYRCHEK	–	–	900	800	1300	1200

NOTE: Furring to be continuous over 2 or more spans. Dead load deflection Span÷360. * Includes Internal UDL of 0.25kPa.

Steel Furring Channel Direct Fixed to Framing

GYPROCK plasterboard may be fixed directly to steel furring which is held by appropriate direct fixing clips attached to a structural support as shown in adjoining details.

Direct fixing clips provide some vertical adjustment to enable accurate levelling of the furring. After levelling, the brackets should be permanently fixed in place by two nails/screws.

Furring channels then snap fit into the clips.

The ceiling drop should be limited to 200mm maximum with these attachment systems.

Install brackets to ensure there is a clearance between joist and furring of 10mm minimum.

A system comprising Nº129 furring channel spaced at 600mm centres and with fixing clips at 1200mm maximum centres can support a maximum of 3 layers x 16mm GYPROCK FYRCHEK and lightweight insulation.

Refer to span tables in this guide and Rondo Building Services specifications for alternative grid span and spacing information.

FIG 7: STEEL FURRING CHANNEL DIRECT FIXING METHODS

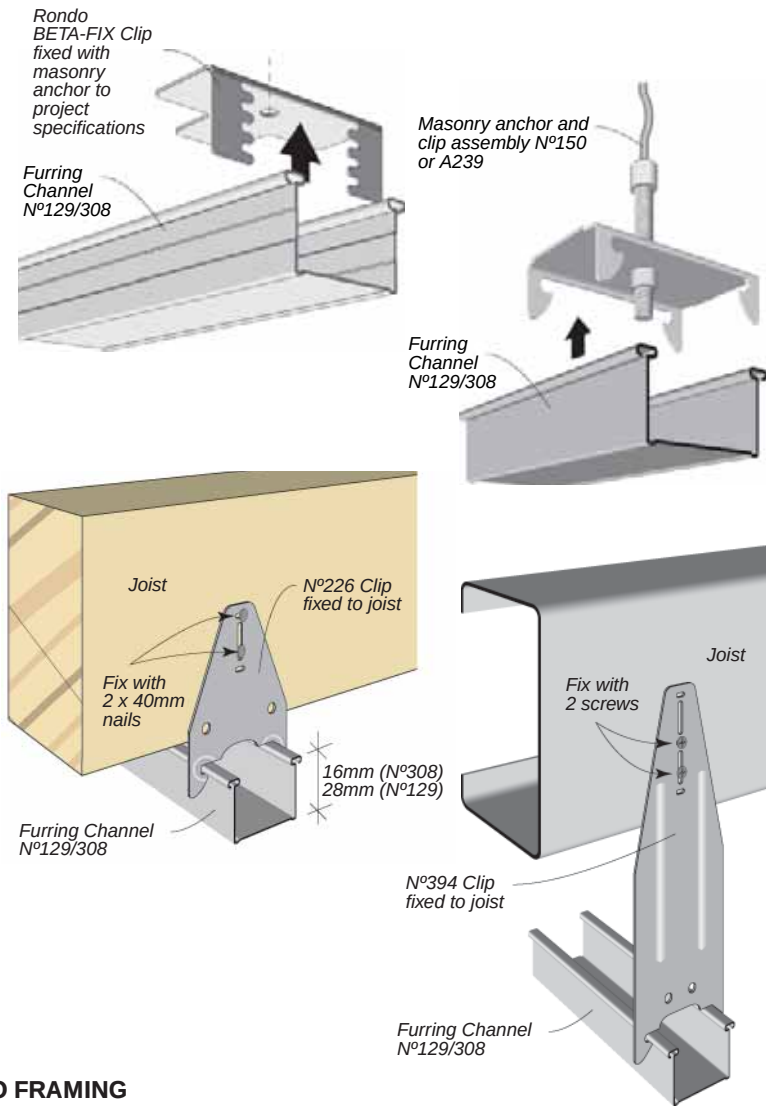
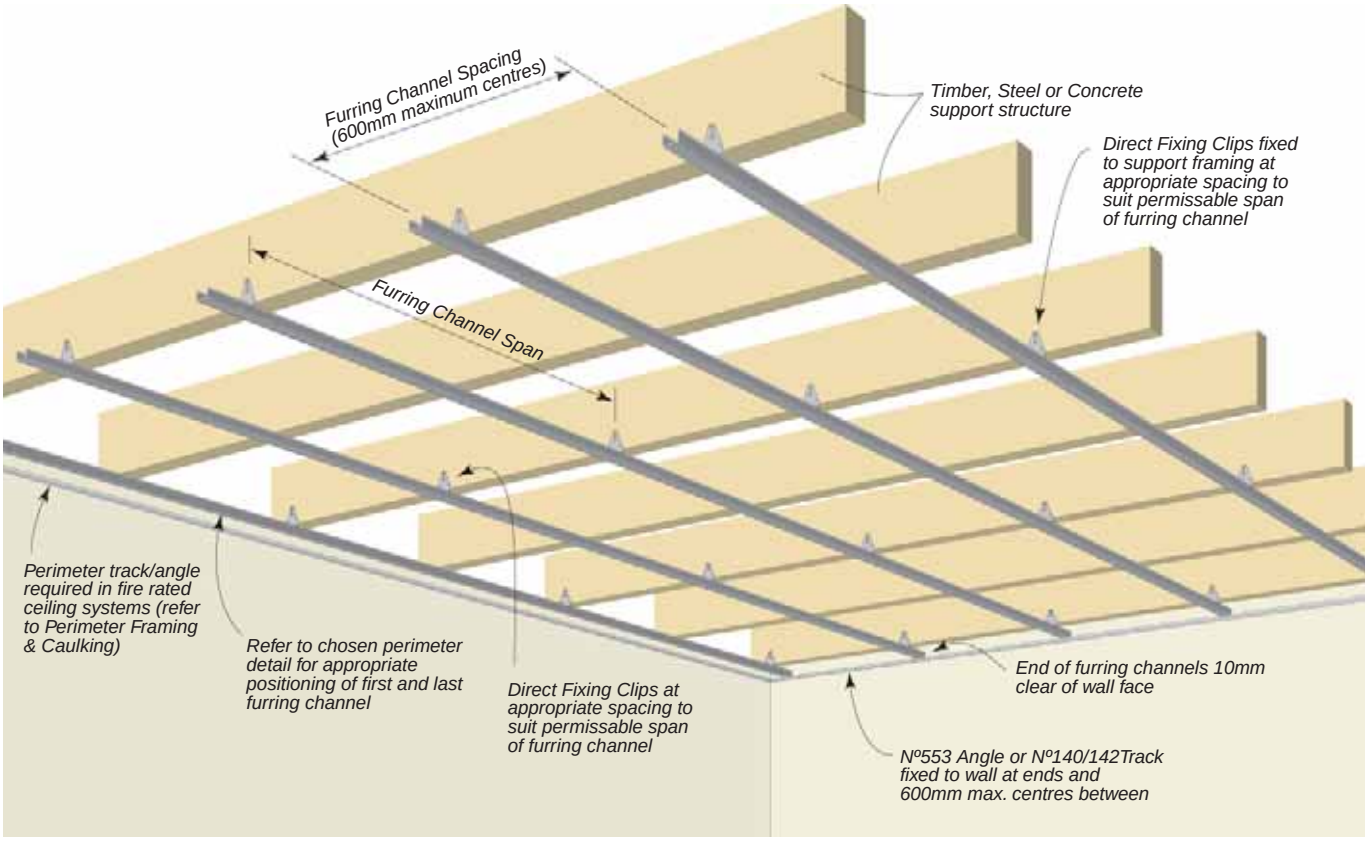


FIG 8: STEEL FURRING CHANNEL DIRECT FIXED TO FRAMING



Steel Furring Channel on Resilient Mounts

The Gyprock™ Resilient Mount may be screw fixed directly to the underside of joists or trusses using (50mm x Nº8 screws for timber) or (30mm x Nº8 screws for steel) as detailed in FIG 8.

Should the joists or trusses be uneven, the adjustable direct-fix bracket (NºCSR4) should be fixed to the side of the framing. This will provide up to 20mm height adjustment for levelling purposes. After levelling, the bracket should be permanently fixed in place with two nails/screws.

The resilient mount may then be screw fixed to the adjustable bracket (NºCSR4) using a 45mm x Nº8 screw.

The furring channels then snap fit into the anchor clips.

The Gyprock™ Resilient Mount is designed to support a maximum ceiling load of 27kg per mount, and must be installed at appropriate centres to suit the chosen ceiling system and total ceiling mass.

A system comprising Nº129 furring channel spaced at 600mm centres fitted with Gyprock™ Resilient Mounts at 1200mm centres maximum along the furring channel, can support a maximum of 3 layers x 16mm GYPROCK FYRCHEK and lightweight insulation.

Refer to span tables in this guide and Rondo Building Services specifications for alternative grid span and spacing information.

FIG 9: GYPROCK RESILIENT MOUNT FIXING

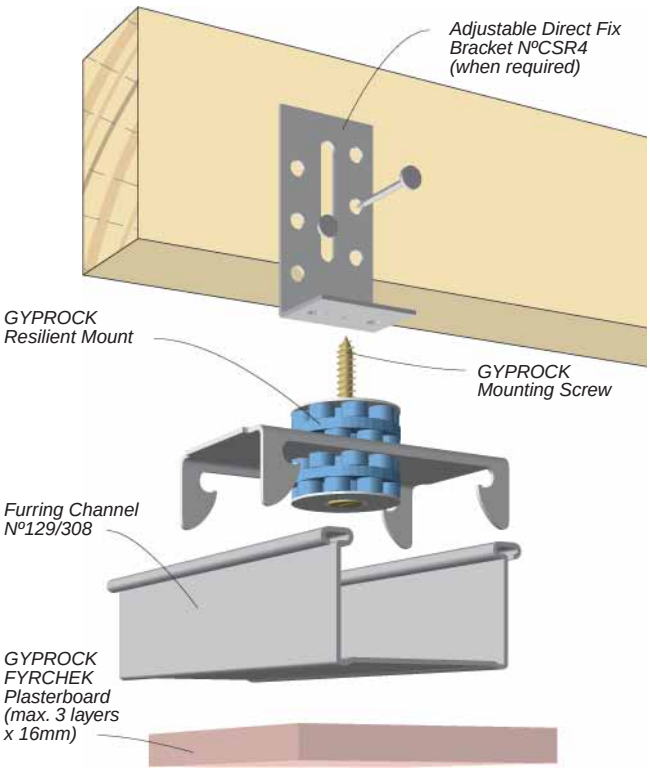
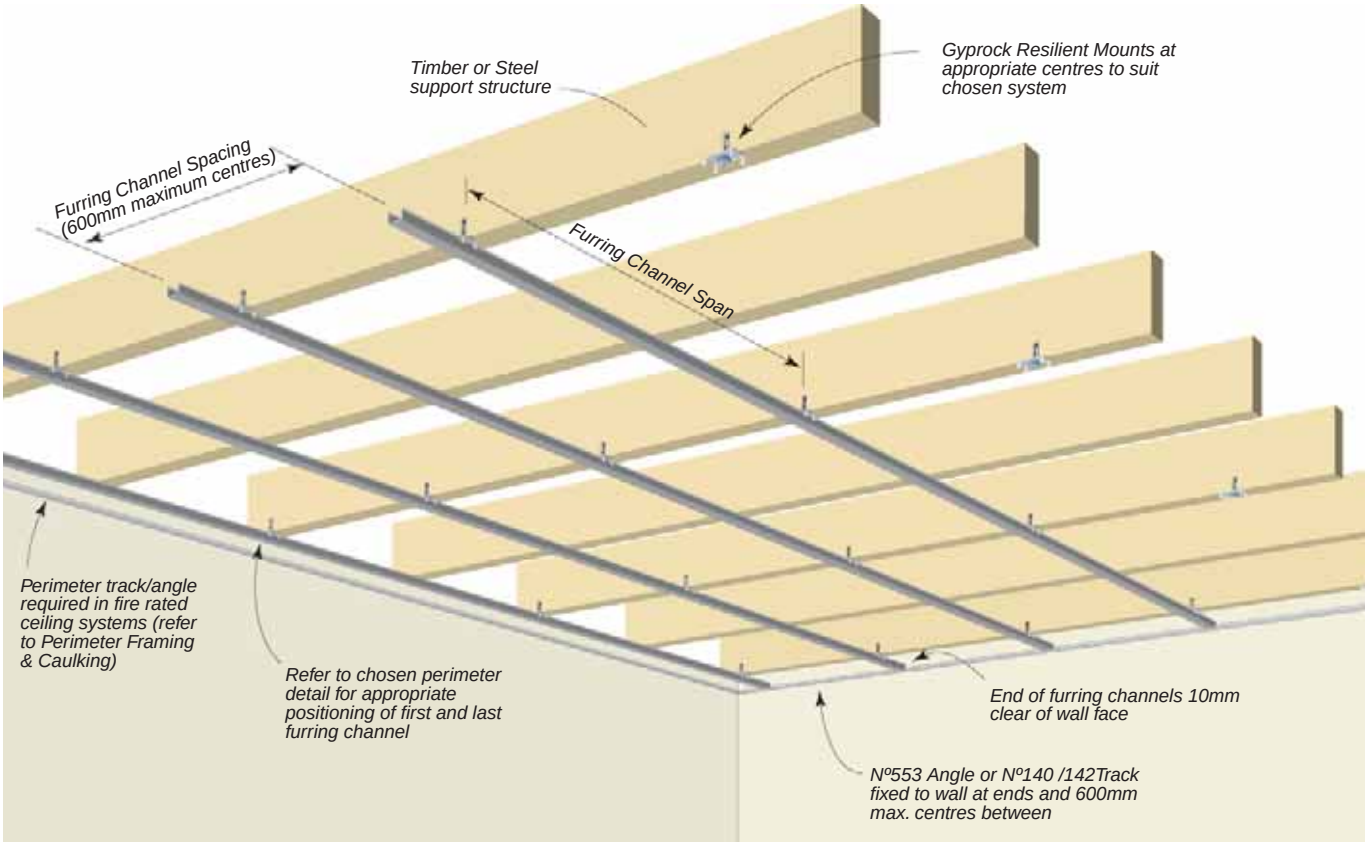


FIG 10: STEEL FURRING CHANNEL FIXED WITH RESILIENT MOUNTS TO FRAMING



Concealed Grid Suspended Ceiling

GYPROCK plasterboard may be fixed directly to steel furring which is part of a concealed grid suspended ceiling frame as detailed in the following illustration.

These systems are NON-TRAFFICABLE and are not designed to resist the weight of foot traffic. Where access to the ceiling area is required, install a Rondo Walkabout Ceiling System.

Gyprock™ Suspended Ceiling Systems comprise suspension brackets fixed to the supporting structure, suspension rods, suspension clips, top cross rails, and a locking key or Gyprock™ Resilient Mount for coupling to the furring channel. Refer to Suspended Ceiling Components.

Where Top Cross Rails are not continuous, they must be joined as shown in the suspended ceiling components details. Joins must be aligned with hanging points.

Where Furring Channels are not continuous, they must be joined as shown in the suspended ceiling components details.

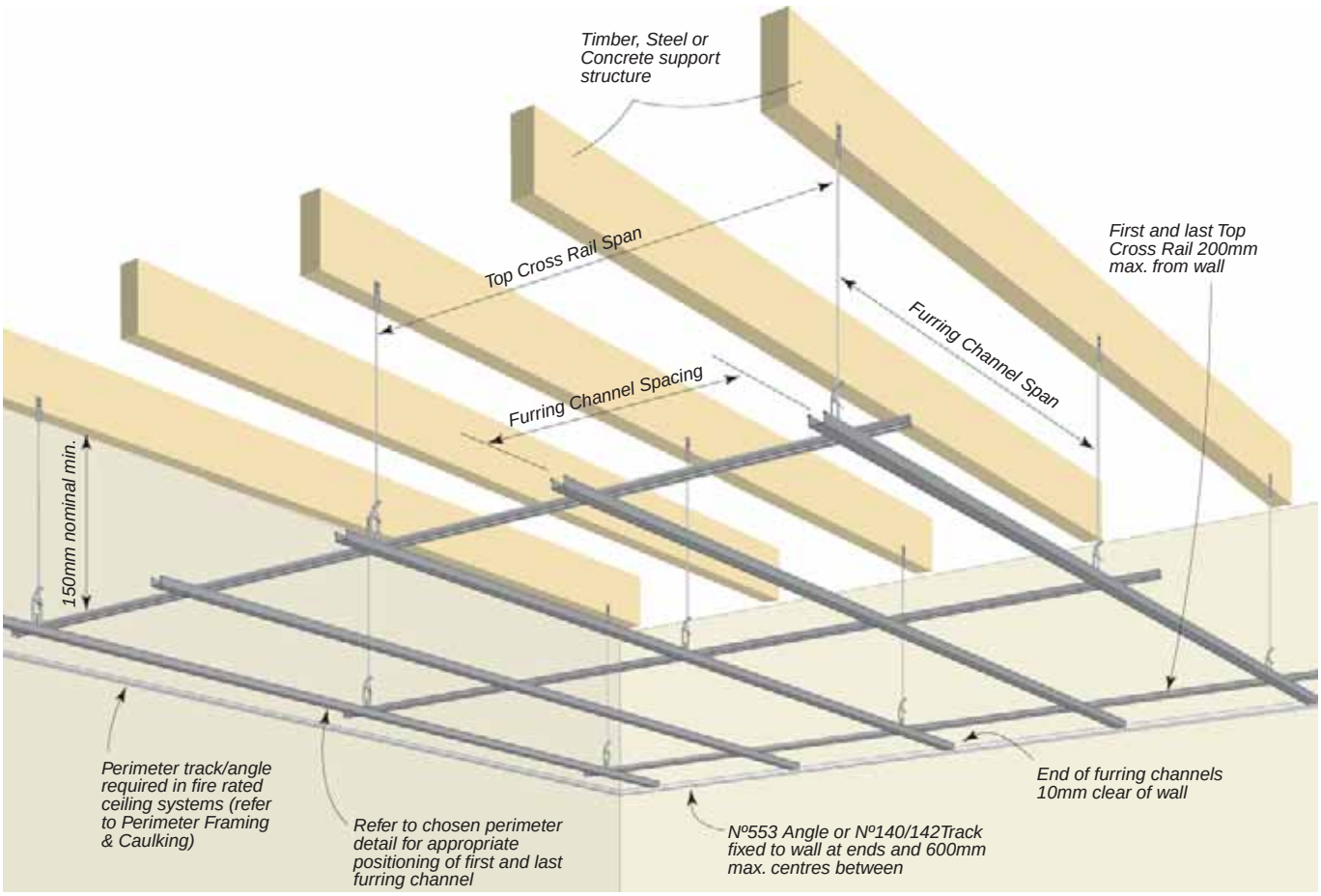
Where the Gyprock™ Resilient Mount is used, it is designed to support a maximum ceiling load of 27kg per mount, and must be installed at appropriate spacing to suit the chosen ceiling system and total ceiling mass.

A system comprising Nº128 Top Cross Rails at 1200mm maximum spacings, suspension points at 1200mm maximum centres, Nº129 furring channel at 600mm maximum spacings (with or without Gyprock™ Resilient Mounts) can support up to 3 layers of 16mm GYPROCK FYRCHEK and lightweight insulation.

No provision has been made for the support of services or lighting systems. Adequate independent or additional support must be provided for services and lighting systems. Refer to Grid Installation in this guide and Rondo Building Services specifications.

Refer to span tables in this guide and Rondo Building Services specifications for alternative grid span and spacing information.

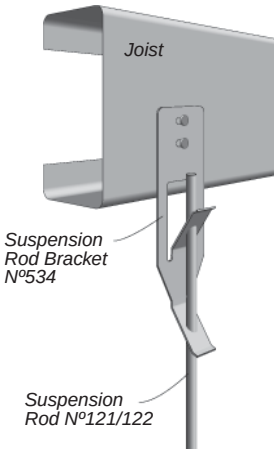
FIG 11: CONCEALED GRID SUSPENDED CEILING

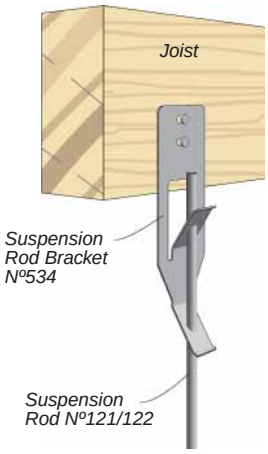


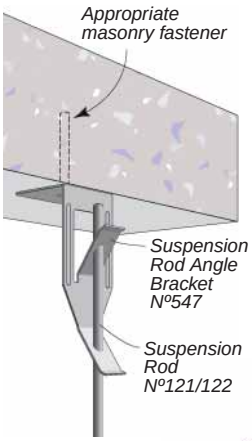
Key-Lock™ Concealed Grid Suspended Ceiling Components

(Refer to Rondo Building Services literature for additional information)

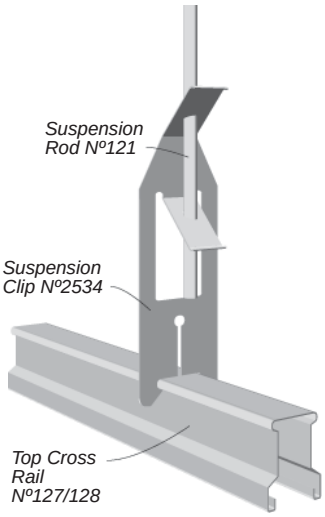
SUSPENSION BRACKETS

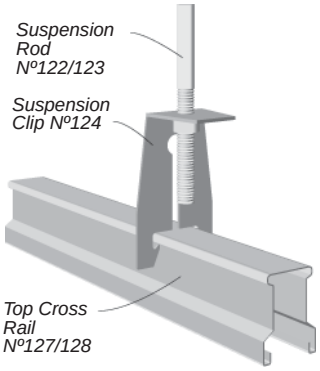


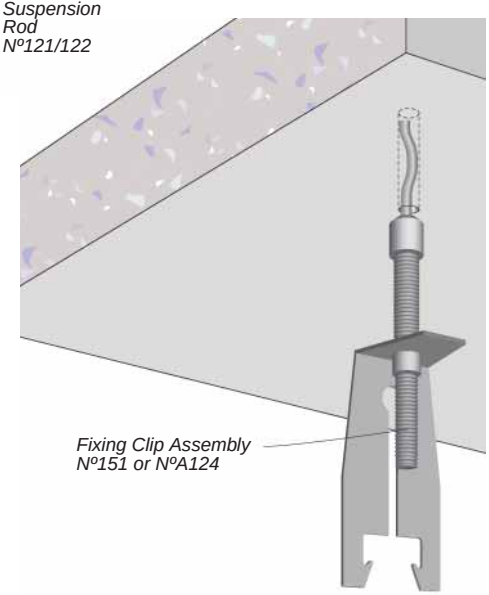




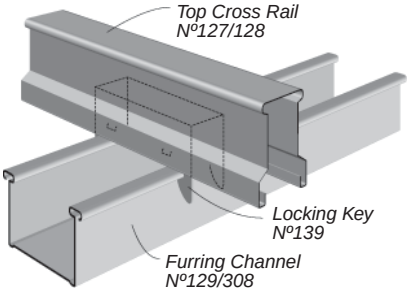
SUSPENSION CLIPS

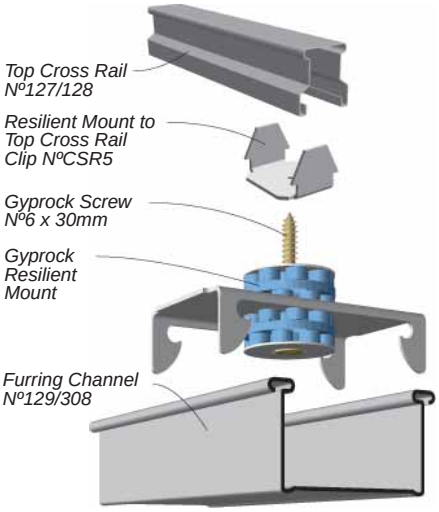




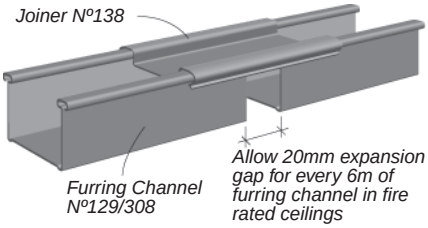


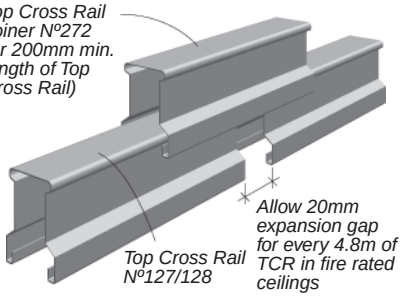
JOINERS





JOINERS





Suspended Bulkheads

Drops up to 450mm – up to 3 layers x 16mm GYPROCK Plasterboard
Drops 450mm to 1200mm – up to 1 layer GYPROCK Plasterboard (8.5kg/m² maximum).

FIG 12:

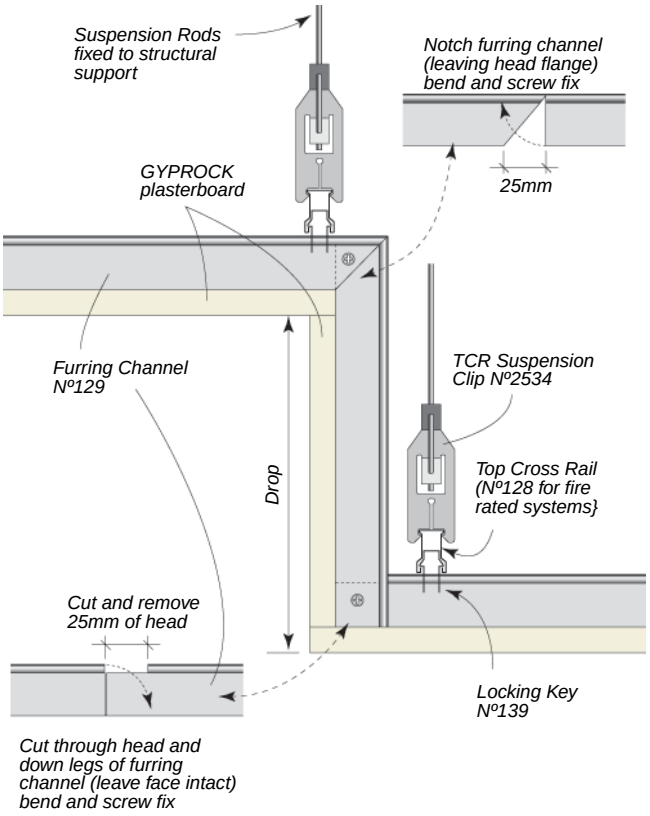


FIG 13:

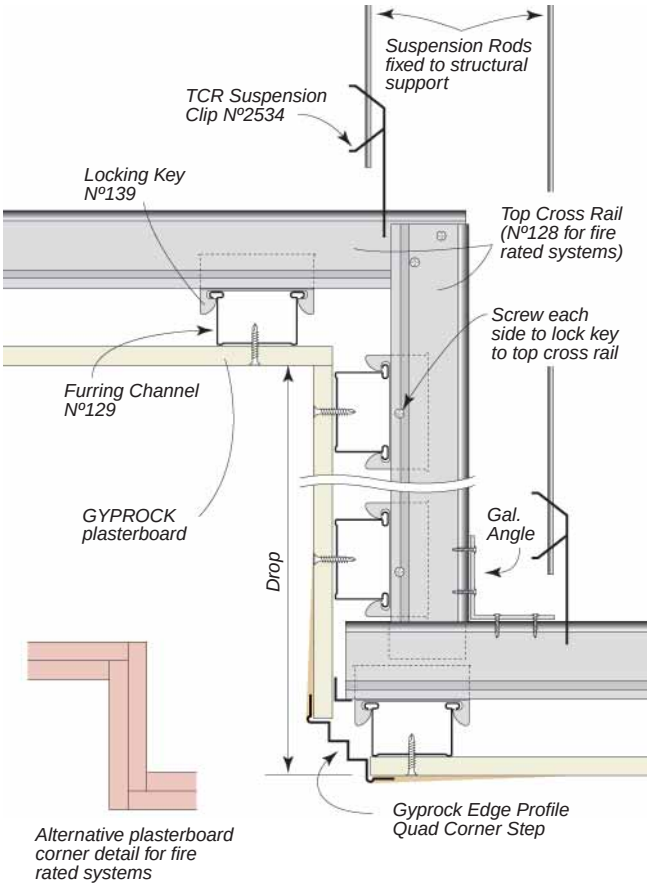
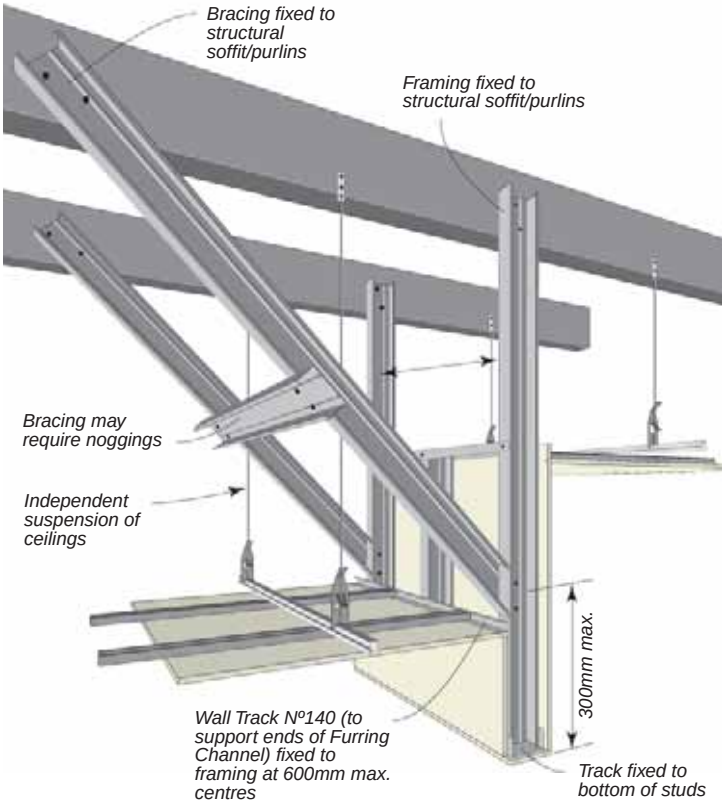


FIG 14: BULKHEAD DETAIL
Drops greater than 450mm – up to 3 layers x 16mm GYPROCK Plasterboard



Bulkheads

Bulkheads require independent support to carry the additional plasterboard and framing members. Depending on the drop and plasterboard mass to be installed, this may be achieved with additional suspension hangers as detailed in FIG 12 and 13, or by fixing framing members directly to the structural supports as detail in FIG 14.

All bulkheads require bracing to provide lateral stability to the framework during incidental loading. This may be achieved by providing stud bracing, fixed diagonally between the bulkhead framework and the structural soffit at regular intervals as shown in FIG 14 or alternatively, by rigidly coupling the ceiling to the bulkhead. If rigid coupling is used, the ceiling must be checked for horizontal loading. Refer to Rondo Building Services for assistance.

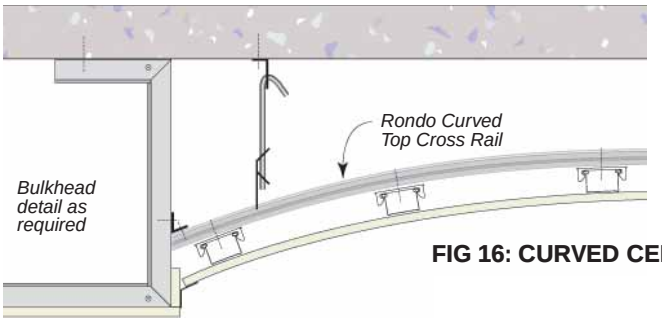
Curved Ceilings

GYPROCK plasterboards may be used on curved installations in accordance with Table 5 and 6.

Where a radius tighter than 900mm is to be used, the framing should be sheeted with GYPROCK Flexible Plasterboard. For detailed fixing information on GYPROCK Flexible Plasterboard, refer to brochure NºGYP544, Gyprock™ Steel Frame Wall Systems Installation Guide'.

Fire rated ceilings MUST NOT be curved to a radius of less than 3000mm.

FIG 15: CURVED CEILING FRAMING



Raked Suspended Ceilings

FIG 17: RAKED SUSPENDED FLUSH JOINTED CEILING

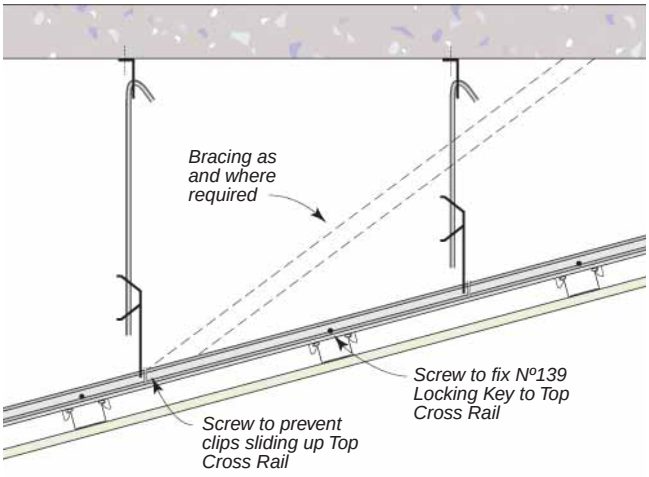


FIG 16: CURVED CEILING FRAMING

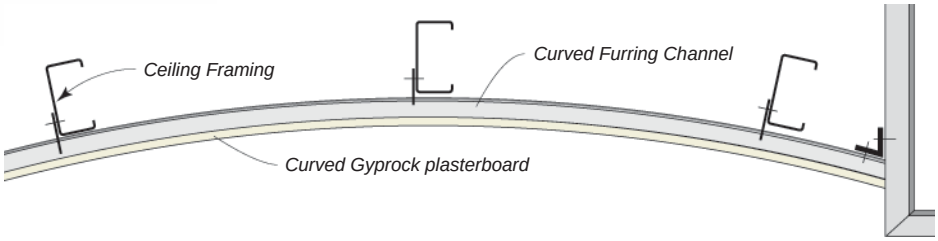


TABLE 5: CURVING RADII AND MAXIMUM FRAME CENTRES FOR 6.5, 10, 13 AND 16MM GYPROCK PLASTERBOARDS

Plasterboard Thickness (mm)	Gyprock™ Flexible Plasterboard	Gyprock™ Plasterboard CD and Flexible Plasterboard ONLY					All Gyprock™ Plasterboards except perforated	
	Curve Radius (mm)							
	<900	900 - 1000	1000 - 1500	1500 - 2000	2000 - 2500	2500 - 3000	3000 - 4000	4000 - Plus
	Maximum Stud Centres (mm)							
6.5	Refer to Table 6	150	200	250	300	350	450	550
10	–	150	200	250	300	350	400	500
13	–	–	150	250	250	300	400	500
16	–	–	–	–	–	–	250	350

TABLE 6: MINIMUM CURVING RADII AND MAXIMUM FRAME SPACING FOR GYPROCK FLEXIBLE PLASTERBOARD

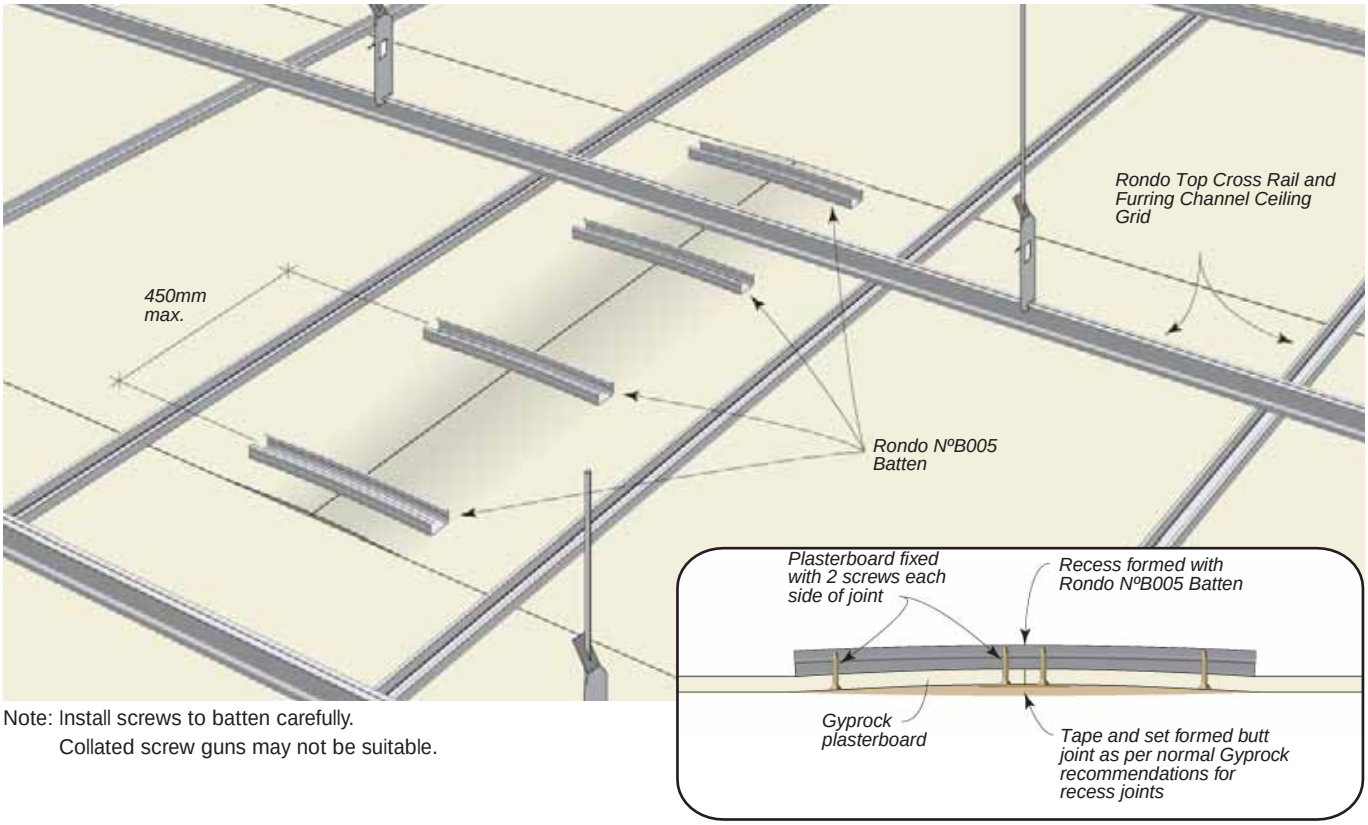
Applications	Sheets Installed Lengthways		Sheets Installed Widthways	
	Minimum Radius	Max Stud Spacing	Minimum Radius	Max Stud Spacing
Concave	450mm	150mm	650mm	200mm
Convex	250mm	125mm	450mm	200mm

Notes – Low temperature and humidity will reduce board flexibility.
Curved Lengthways = where recessed edges are NOT curved.
Curved Widthways = where recessed edges are curved.

Butt Joints in Non Fire Rated Suspended Ceilings

FIG 18 shows suitable details for suspended ceilings in commercial buildings which are not required to be fire rated, are isolated from building movement at the perimeter and have a well controlled air environment such as occupied, air conditioned offices.

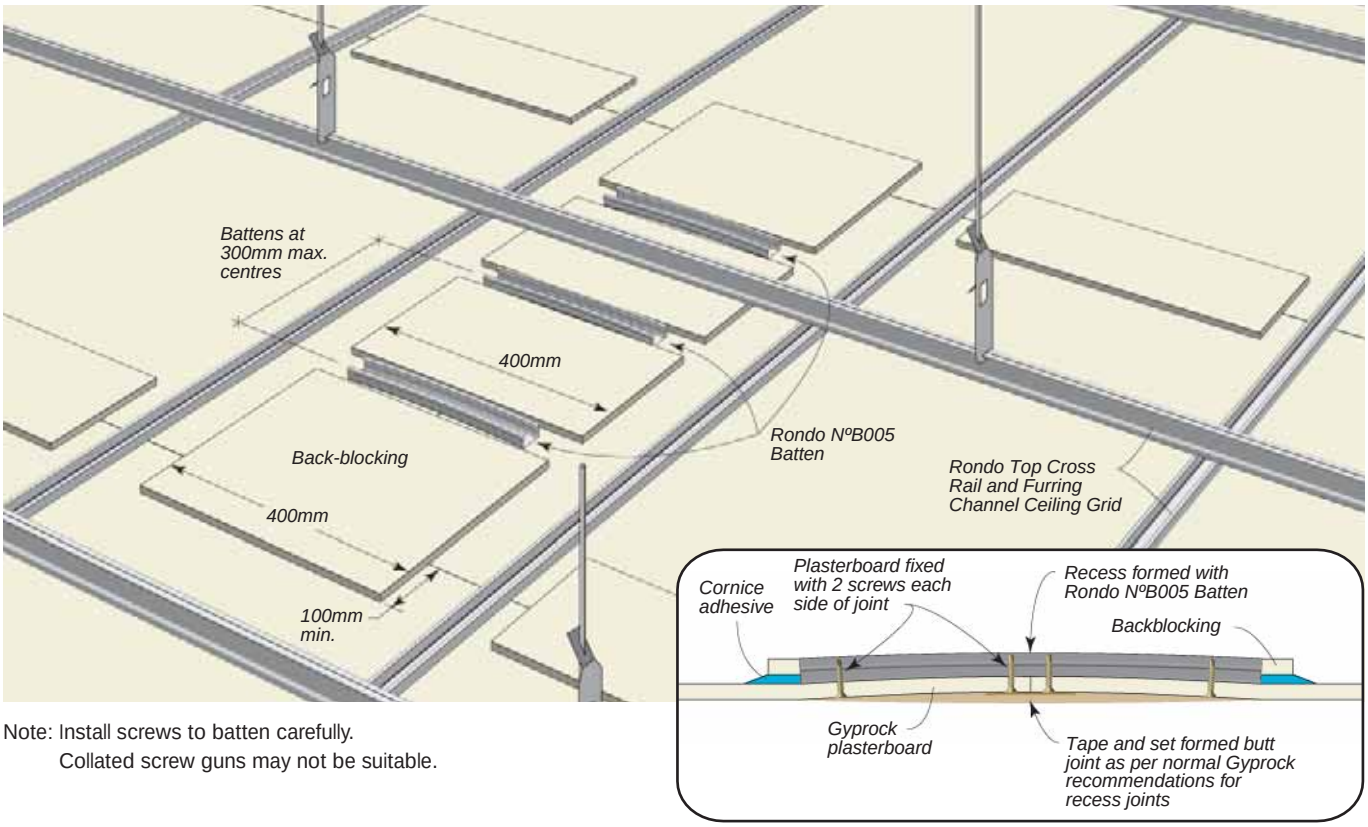
FIG 18: BUTT JOINT CONSTRUCTION USING RONDO NºB005 BATTENS (TOP VIEW)



Note: Install screws to batten carefully.
Collated screw guns may not be suitable.

FIG 19 shows suitable details for suspended ceilings where back-blocking is required.

FIG 19: BUTT JOINT CONSTRUCTION USING RONDO NºB005 BATTENS AND BACK-BLOCKING (TOP VIEW)



Note: Install screws to batten carefully.
Collated screw guns may not be suitable.

Steel Frame Ceiling Systems

Introduction

CSR GFC has developed a wide range of tested fire and/or acoustic ceiling systems utilising steel framing and plasterboard fixed to one or both sides.

These systems are most commonly specified above stairwells and corridors, and under concrete floors where personnel access is not required.

This section also details methods for constructing isolated bulkheads utilising steel furring channel framing.

Frame Requirements

Refer to the Framing section for the general requirements on steel frame construction.

All systems detailed in this section are non-trafficable, and are designed to carry the weight of the ceiling only. The ceiling framing must be strengthened to support light fittings and services.

Ceilings Lined One Side

Joist Selection

Steel joists for ceilings lined one side can be selected based on Table 7, which provides span information for Rondo Lipped Steel Stud sections when used as ceiling joists.

Joist End Support

Refer to following pages for alternative ceiling joist end support configurations and recommended construction methods.

Nogging/Bridging

Where joist span exceeds 2.50m, one row of nogging/bridging is required at mid span.

Where joist span exceeds 4.00m, two rows of nogging/bridging are required at equal spacings.

Control Joints

Control joints are to be installed in both fire rated and non-fire rated continuous interior ceiling areas, spaced at no more than 12m centres in both directions, and as detailed in the Framing section earlier in this guide.

FIG Z900: GENERAL LAYOUT OF CEILING FRAMING FOR SINGLE SPAN

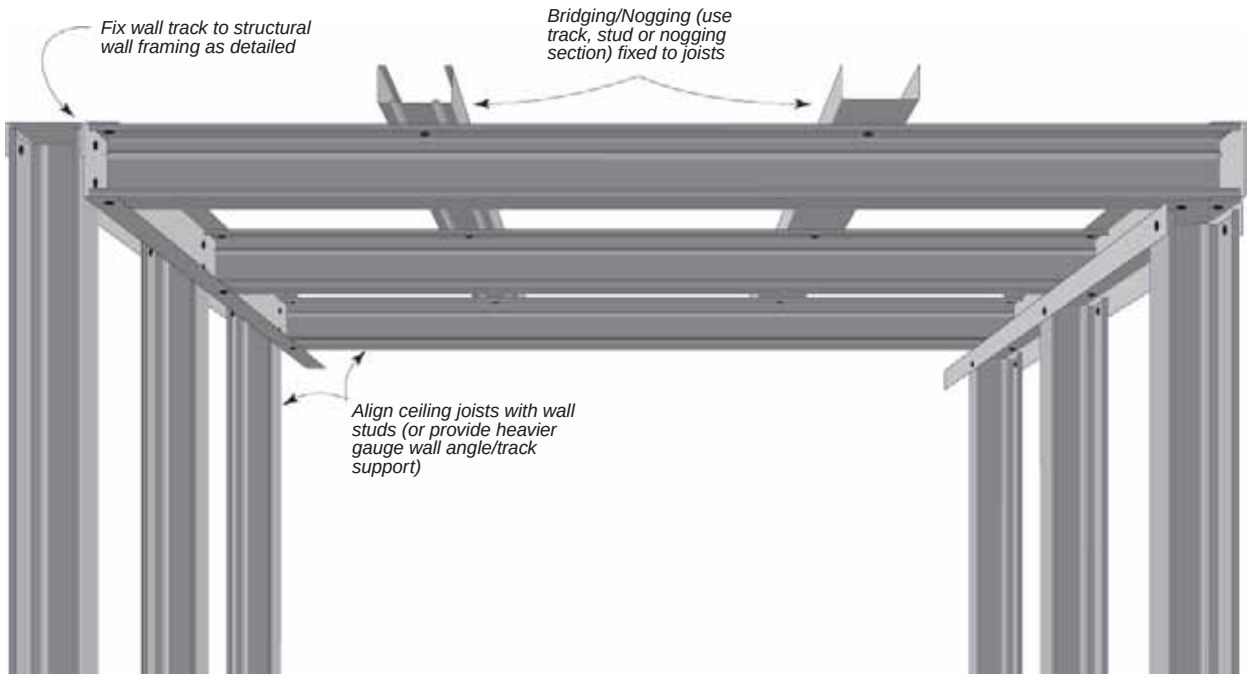


TABLE 7: MAXIMUM SPAN OF JOISTS FOR INTERNAL CEILINGS
SINGLE SPAN – LIPPED STEEL STUD LINED ONE SIDE
Uniform Distributed Load (UDL) = 0.25kPa.

C-Stud Depth mm	51	64			76			92			150	
Stud Gauge BMT (mm)	0.50	0.50	0.75	1.15	0.55	0.75	1.15	0.55	0.75	1.15	0.75	1.15
Plasterboard (Layers x mm)	Maximum Span of Joist (m) – Joist Spacing 300mm											
1 x 10 or 1 x 13	2.05	2.40	2.85	3.10	3.00	3.35	3.50	3.40	3.75	4.10	5.10	5.60
(2 x 16) or (1 x 13 + 1 x 16)	1.80	2.20	2.55	2.75	2.65	3.00	3.10	3.00	3.35	3.90	4.30	4.75
3 x 16	1.65	2.05	2.35	2.60	2.45	2.80	2.90	2.75	3.10	3.40	4.05	4.50
	Maximum Span of Joist (m) – Joist Spacing 450mm											
1 x 10 or 1 x 13	1.80	2.15	2.55	2.75	2.65	3.00	3.10	3.00	3.35	3.65	4.60	5.10
(2 x 16) or (1 x 13 + 1 x 16)	1.60	1.95	2.25	2.45	2.35	2.65	2.75	2.60	2.95	3.20	3.90	4.30
3 x 16	1.45	1.80	2.10	2.25	2.15	2.45	2.55	2.40	2.70	3.00	3.65	4.10
	Maximum Span of Joist (m) – Joist Spacing 600mm											
1 x 10 or 1 x 13	1.65	1.95	2.35	2.55	2.40	2.80	2.85	2.70	3.05	3.35	4.25	4.80
(2 x 16) or (1 x 13 + 1 x 16)	1.45	1.75	2.05	2.25	2.10	2.40	2.50	2.35	2.70	2.90	3.60	4.00
3 x 16	1.35	1.60	1.90	2.05	1.95	2.25	2.30	2.15	2.45	2.70	3.40	3.80

NOTES:
Maximum deflection = Span÷480 or 10mm.
Nogging/bridging required (equally spaced) – 1 row for spans over 2.50m – 2 rows for spans over 4.00m.
For alternative spans using boxed studs or multispan configurations, refer to Rondo Building Services.

Framing Installation

Refer to FIG Z901, Z902, Z903, Z904 and Z905 for alternative frame assembly methods.

- Install steel track with the lower flange aligned at the required ceiling height and fix at ends and at 600mm maximum centres between.

  To masonry, use power driven fasteners, expansion anchors, or easy drive masonry anchors.

  To steel stud framing, use Gyprock type 'S' Screws, toggle bolts or expandable fasteners.

  To timber framing, use Gyprock Clouts or Gyprock type 'W' Screws.

- Cut and install ceiling joists (lipped steel stud) into tracks, leaving a 5 – 10mm gap at each end (8 – 15mm for fire rated ceilings). Fix as indicated for the appropriate installation method.

NOTE: For alternative frame construction methods or for multi-span applications, refer to Rondo literature.

Plasterboard Installation

GYPROCK plasterboard can be installed in any of the methods detailed in this guide which are appropriate for the type of ceiling being constructed. Refer to appropriate details on Plasterboard Fixing.

Caulking

Fire rated ceilings must have all perimeter gaps fully caulked. Refer to Perimeter Framing & Caulking

FIG Z901: JOIST END SUPPORT – FRICTION JOINT
Maximum Joist Span: 2.0m (single span).
Maximum Joist Span: 2.8m (continuous over 2 or 3 spans).

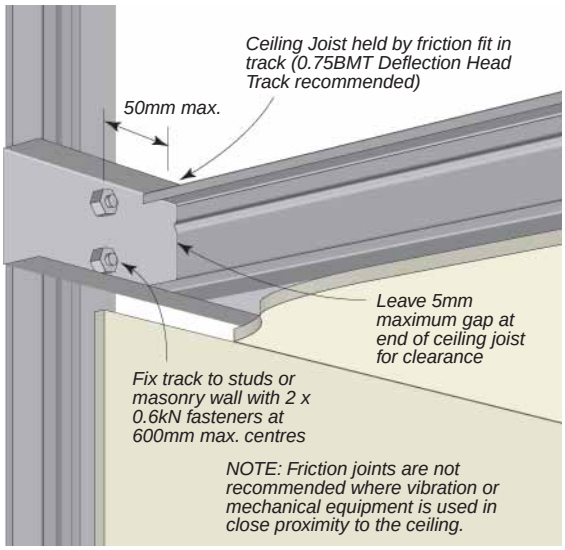


FIG Z902: JOIST END SUPPORT – MECHANICAL JOINT

Maximum Joist Span: 3.0m (single span).
Maximum Joist Span: 4.0m (continuous over 2 or 3 spans).

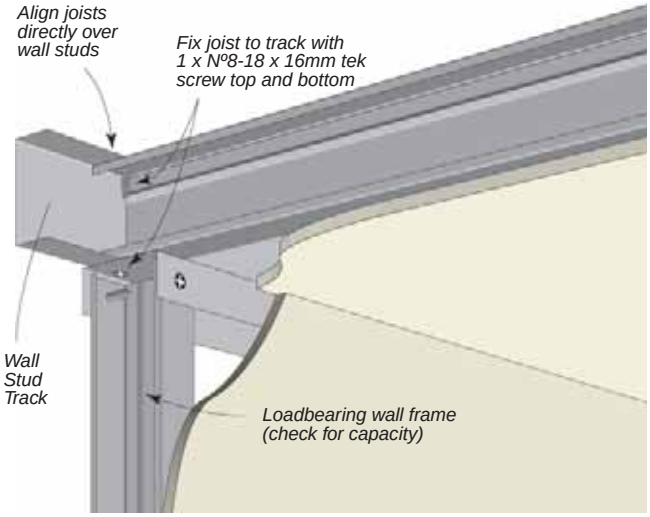


FIG Z903: JOIST END SUPPORT – MECHANICAL JOINT

Maximum Joist Span: 3.0m (single span).
Maximum Joist Span: 4.0m (continuous over 2 or 3 spans).

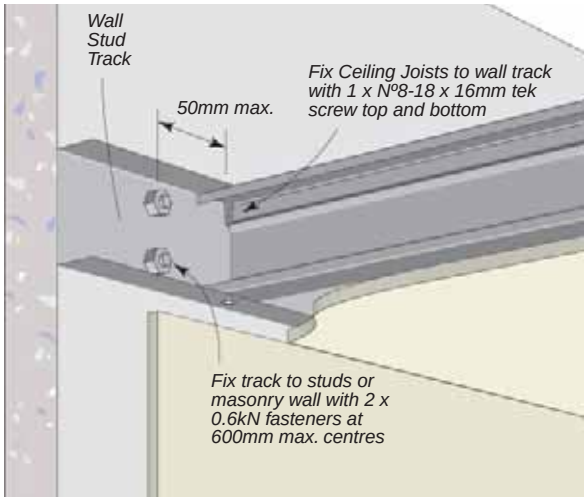


FIG Z904: JOIST END SUPPORT MECHANICAL JOINT

Maximum Joist Span: 6.0m (single span).

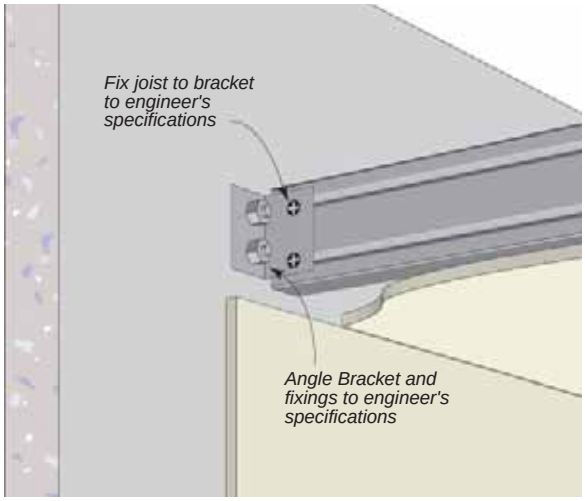


FIG Z905: JOIST END SUPPORT MECHANICAL JOINT

Maximum Joist Span: 6.0m (single span).

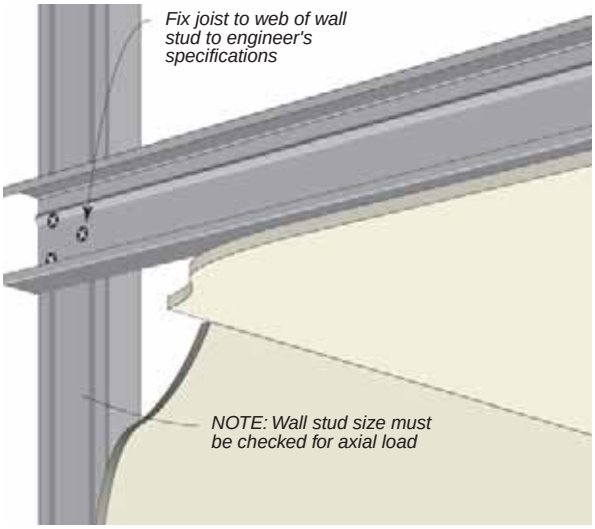


FIG Z910: BULKHEAD CONSTRUCTION

For Maximum SPAN and DROP data, refer to following table.

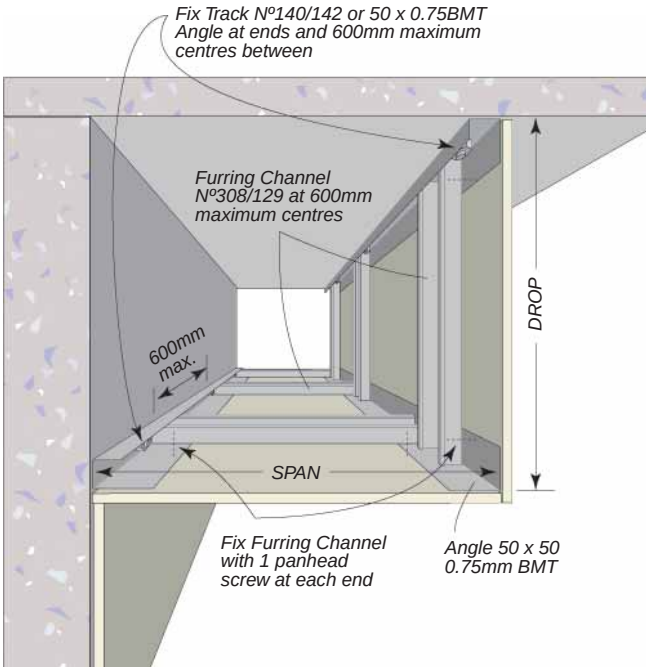


TABLE 8: BULKHEAD DROP & SPAN

Refer FIG Z910.

Plasterboard Lining	Maximum Drop & Span (mm)	
	Furring Nº308	Furring Nº129
1 x 10mm	680	1040
1 x 13mm	770	1080
2 x 16mm	710	1000
3 x 16mm	650	890

Ceilings Lined Two Sides

Joist Selection

Maximum permissible spans for Rondo Lipped Steel Stud (150mm x 0.75BMT) lined on two sides are detailed in Table 9.

Maximum permissible spans for Rondo C-H Stud profiles lined on two sides are detailed in Table 10.

Alternative steel framing methods are permitted and must be designed by the project engineer. Framing must be at 600mm maximum centres, with a maximum material thickness of 1.2mm BMT.

Joist End Support

Refer to the following details for alternative ceiling joist end support configurations and recommended construction methods.

Note the specific requirements for the end support construction detailed where the longer spans are chosen.

1.15mm BMT track and 1.5mm angle are non-standard and may require fabrication.

Nogging

One row of nogging is required mid-span where single lipped C-stud sections are used. Nogging is not required where boxed lipped C-stud sections are used.

Nogging must also be included at all joints in GYPROCK Shaft Liner Panel. Refer to FIG Z913.

Control Joints

Control joints are to be installed in fire rated continuous interior ceiling areas, spaced at no more than 12m centres in both directions, and as detailed in the Framing section earlier in this guide.

Plasterboard Installation

GYPROCK plasterboard must be installed and fixed in accordance with appropriate fire rated system details in this guide. Layers applied to the top of the joists must be fixed to fire rated 2 layer system specifications.

GYPROCK Shaft Liner Panel should be installed into the C-H Stud profile during frame assembly. Cut the panels 15mm short, install and push hard-up one end. Install 22mm IBS Rod at the other end to seal the gap and allow for expansion. Refer FIG Z913.

Caulking

Fire rated ceilings lined two sides must have perimeter gaps fully caulked as detailed in FIG Z912 or Z913.

FIG Z912: GENERAL LAYOUT OF LIPPED C-STUD CEILING FRAMING LINED TWO SIDES

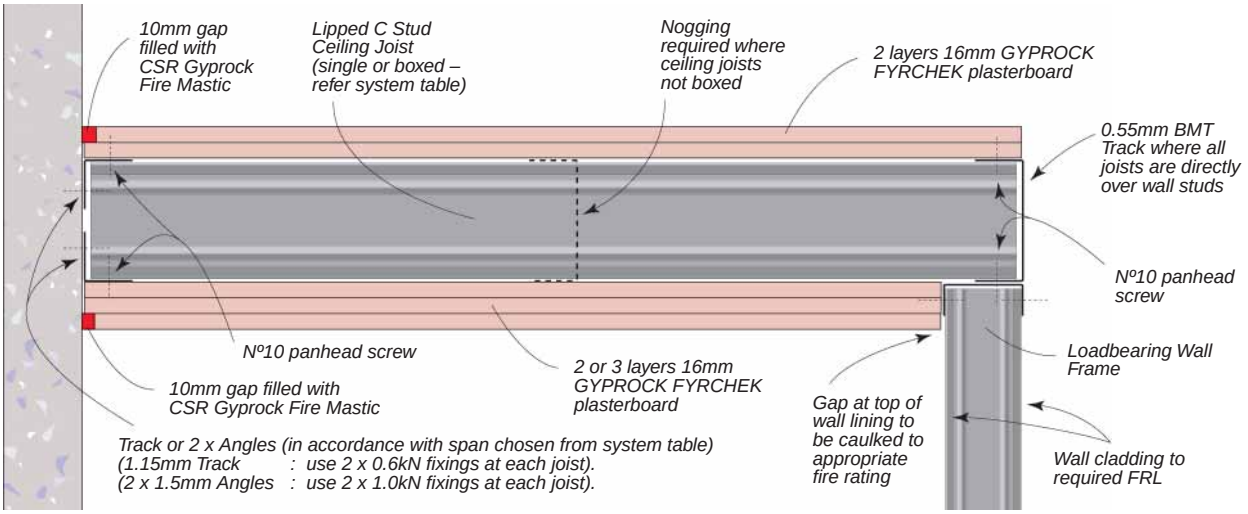


FIG Z913: GENERAL LAYOUT OF C-H STUD CEILING FRAMING LINED TWO SIDES

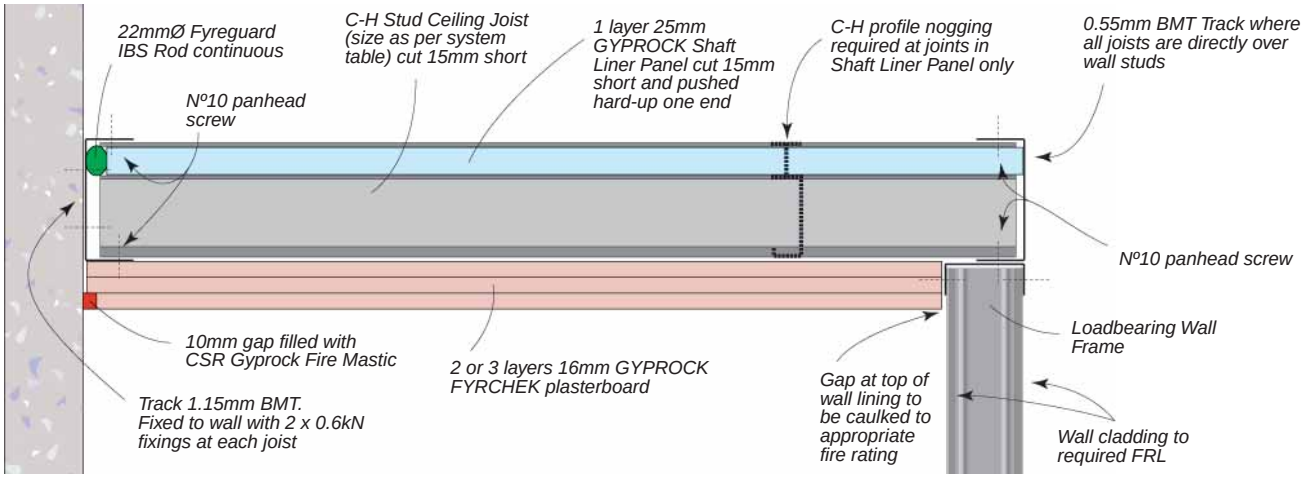


TABLE 9: MAXIMUM SPAN OF CEILING JOISTS – RONDO LIPPED C-STUD (150 X 0.75MM BMT) – LINED TWO SIDES

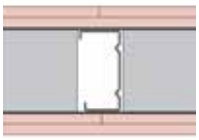
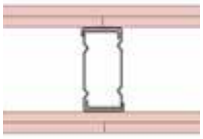
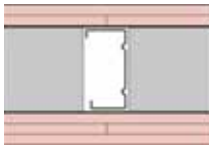
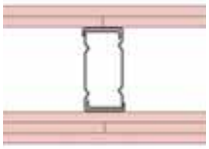
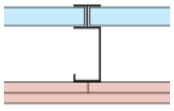
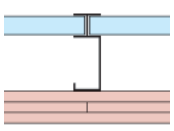
System	Plasterboard Linings	Ceiling Joist – Single Lipped C-Stud with 1 Row Nogging		
CSR 992 	Above: 2 x 16mm GYPROCK FYRCHEK Below: 2 x 16mm GYPROCK FYRCHEK	Ceiling Joist Spacing (mm)	Allowable Span of Joist (mm)	
			End Support (FIG Z914) 1.15mm BMT Track	End Support (FIG Z915) 2 x 1.5mm BMT Angle
		600	2000	3650
		400	2600	4050
		300	3200	4350
System	Plasterboard Linings	Ceiling Joist – Boxed Lipped C-Studs with No Nogging		
CSR 992 	Above: 2 x 16mm GYPROCK FYRCHEK Below: 2 x 16mm GYPROCK FYRCHEK	Ceiling Joist Spacing (mm)	Allowable Span of Joist (mm)	
			End Support (FIG Z914) 1.15mm BMT Track	End Support (FIG Z915) 2 x 1.5mm BMT Angle
		600	2000	4350
		400	2600	4750
		300	3200	5100
System	Plasterboard Linings	Ceiling Joist – Single Lipped C-Stud with 1 Row Nogging		
CSR 993 	Above: 2 x 16mm GYPROCK FYRCHEK Below: 3 x 16mm GYPROCK FYRCHEK	Ceiling Joist Spacing (mm)	Allowable Span of Joist (mm)	
			End Support (FIG Z914) 1.15mm BMT Track	End Support (FIG Z915) 2 x 1.5mm BMT Angle
		600	1800	3500
		400	2300	3900
		300	2700	4150
System	Plasterboard Linings	Ceiling Joist – Boxed Lipped C-Studs with No Nogging		
CSR 993 	Above: 2 x 16mm GYPROCK FYRCHEK Below: 3 x 16mm GYPROCK FYRCHEK	Ceiling Joist Spacing (mm)	Allowable Span of Joist (mm)	
			End Support (FIG Z914) 1.15mm BMT Track	End Support (FIG Z915) 2 x 1.5mm BMT Angle
		600	1800	4150
		400	2300	4600
		300	2700	4900

TABLE 10: MAXIMUM SPAN OF CEILING JOISTS. RONDO C-H STUD PROFILE – LINED TWO SIDES

System	Plasterboard Linings	Ceiling Joist – C-H Profile		
CSR 995 	Above: 1 x 25mm GYPROCK Shaft Liner Below: 2 x 16mm GYPROCK FYRCHEK	Ceiling Joist Spacing (mm)	Allowable Span of Joist (mm)	
			C-H Profile Description	
			64CH55	102CH55
		600	1800	2600
		300	2250	3250
System	Plasterboard Linings	Ceiling Joist – C-H Profile		
CSR 997 	Above: 1 x 25mm GYPROCK Shaft Liner Below: 3 x 16mm GYPROCK FYRCHEK	Ceiling Joist Spacing (mm)	Allowable Span of Joist (mm)	
			C-H Profile Description	
			64CH55	102CH55
		600	1700	2450
		300	2150	3100

NOTES TO TABLE 9 & 10:
Uniform Distributed Load = 0.25kPa. Maximum Deflection = Span÷360 or 10mm.
Single C-stud joist members should be propped prior to fixing of top layers.
Where C-H profile joists are used, a C-H PROFILE nogging is required at joints in GYPROCK Shaft Liner.

FIG Z914: C-STUD JOIST END SUPPORT SIDE FIX USING 1.15mm BMT TRACK

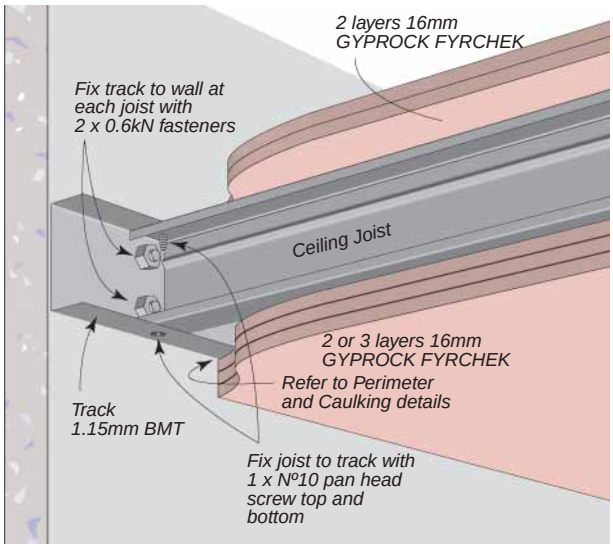


FIG Z915: C-STUD JOIST END SUPPORT SIDE FIX USING 1.50mm BMT ANGLE

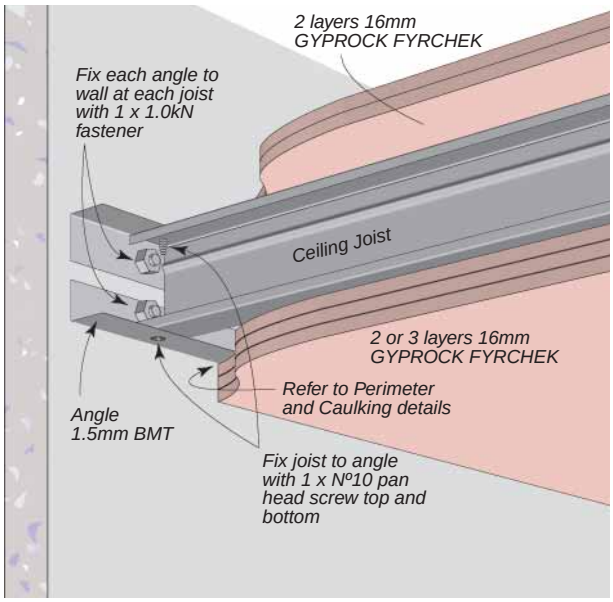


FIG Z916: C-STUD JOIST END SUPPORT TOP FIX USING 0.55mm BMT TRACK

Suitable for all joist spans

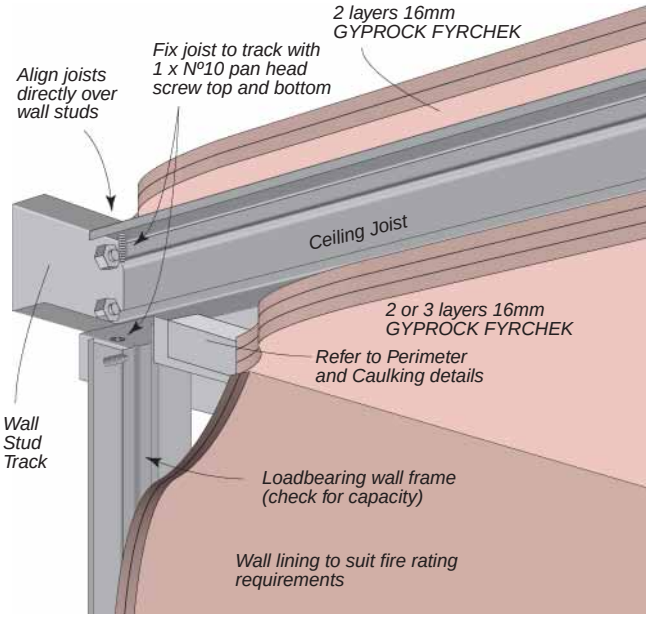


FIG Z917: C-H PROFILE JOIST END SUPPORT SIDE FIX USING 1.15mm BMT TRACK

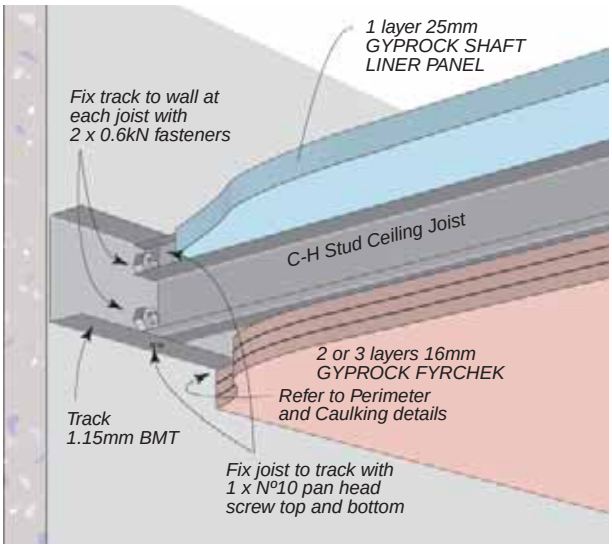
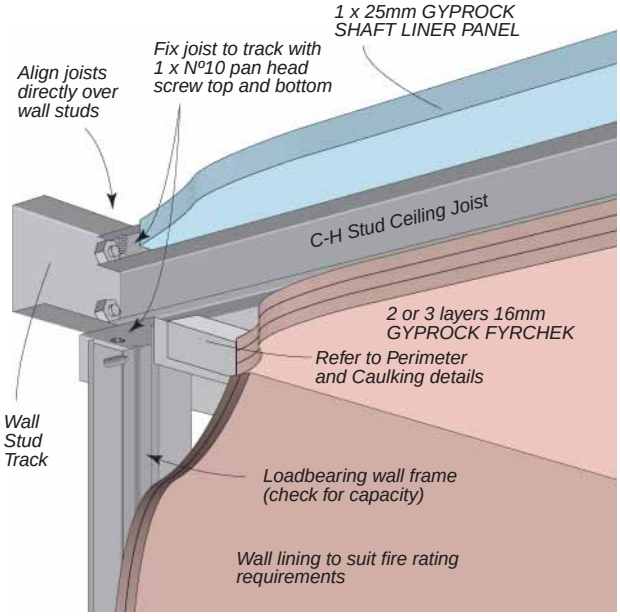


FIG Z918: C-H PROFILE JOIST END SUPPORT TOP FIX USING 0.55mm BMT TRACK



Plasterboard Fixing

- Gyprock™ plasterboard sheets should be installed with the long edge at right angles to the direction of the framing to which they are fixed.
- Fire rated installations must be fastener fixed. Adhesive is not permitted.
- Adhesive does not constitute a fixing system by itself and must be used in conjunction with nails or screws.
- Adhesive daubs must be kept 200mm minimum from fastening points.
- Fasteners are to be installed at 10 - 16mm from sheet edges.
- Sheets are to be held firmly against frame while fasteners are positioned. Wherever possible commence fastening from the centre portion of the sheet, proceeding to the ends and edges. Alternatively, start at one edge and work across the sheet to the other edge.
- Fasteners are to be driven home with the head slightly below the surface of the sheet, but not punched through the face linerboard. Care should be taken to avoid damaging the face or core of the plasterboard.
- Plasterboard must not be fixed directly to steel thicknesses greater than 1.2mm BMT.
- Fixings to CCA treated timbers must be class 3 screws or hot dip galvanised nails.
- For prepainted metal, LOSP or CCA treated timber framing, use 1/3 spacing method or full screw fixing.

Non Fire Rated Ceiling Systems

- When directly fixing a single layer system, the plasterboard sheets may be either all fastener fixed or fastener/adhesive fixed.
- When fixing a two layer system, the first layer must be all fastener fixed. The second layer may be all fastener fixed or adhesive/fastener fixed.

Fire Rated Ceiling Systems

- Plasterboard must be fastener fixed only, adhesive is not permitted.
- Fire rated ceiling systems must be installed strictly in accordance with CSR Gyprock specifications.

Plasterboard Joints

Wherever possible, butt jointing of sheets on ceilings should be avoided.

In non fire rated single layer systems, where butt joints on ceilings are positioned between framing members, the sheet ends must be reinforced (back-blocked), and depressed, forming a recess to enable jointing.

For detailed information, refer to the Gyprock™ Plasterboard Residential Installation Guide, NºGYP547.

In multi-layer systems, butt joints in hidden layers are to be formed on framing members and offset by 450mm minimum in consecutive layers. Butt joints in the final layer are to be formed within 50mm of the centreline between members, offset by a minimum of 450mm from previous layers and in adjoining sheets, and fixed with laminating screws at 200mm maximum centres.

In multi-layer systems recessed joints in consecutive layers must be offset by a minimum of 300mm.

Control Joints

Control joints are to be installed in fire rated continuous interior ceiling areas, spaced at no more than 12m centres in both directions, and as detailed in the Framing section earlier in this guide.

Caulking

To attain the specified FRL, all perimeter gaps and penetrations must be carefully and completely filled with Gyprock™ Fire Mastic. In some cases, vermiculite plaster may be used. (Refer to appropriate details). Vermiculite for caulking is to be mixed 3:2 by volume with cornice cement. Use sufficient water to achieve a stiff workable mix. Vermiculite plaster is not to be used as a general purpose acoustic or fire rated caulking, except where detailed in this manual. Vermiculite has no capacity to accommodate building movement.

In non fire rated systems, to attain the stated acoustic rating, fill all gaps and around penetrations with Gyprock™ Wet Area Acrylic Sealant or Gyprock™ Fire Mastic.

Curved Ceilings

For details on plasterboard fixing to curved ceilings, refer to the ‘Gyprock™ Steel Frame Wall Systems Installation Guide’, NºGYP544.

Plasterboard Jointing & Finishing

Refer to the Gyprock™ Plasterboard Residential Installation Guide, NºGYP547 for detailed jointing and finishing information.

For non fire rated ceilings, information is provided for various ‘Levels of Finish’, including tolerances, back-blocking and fastener spacing.

In multi-layer systems, jointing and finishing is required on the visible outer layer only.

Laminating Screws

In 2 and 3 layer ceiling systems, Gyprock™ Laminating Screws (40mm x Nº10) may be used to laminate layers of plasterboard together at butt joints and control joints formed between framing.

TABLE 11: FIXING PLASTERBOARD TO SOFTWOOD

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm Plasterboard	2.8x40mm Gal Clout or 2.8x25mm Ring Shank Nail or Type S #6-18 x 25mm NP Screw	2.8x40mm Gal Clout or 2.8x30mm Ring Shank Nail or Type S #6-18 x 32mm NP Screw	
10mm Plasterboard	2.8x40mm Gal Clout or 2.8x30mm Ring Shank Nail or Type S #6-18 x 30mm NP Screw	2.8x50mm Gal Clout or Type S #6-18 x 40mm NP Screw	
13mm Plasterboard	2.8x40mm Gal Clout or 2.8x30mm Ring Shank Nail or Type S #6-18 x 32mm NP Screw	2.8x50mm Gal Clout or Type S #6-18 x 45mm NP Screw	3.75x75mm Gal Clout or Type S #8-15 x 65mm NP Screw or #10x40mm Laminating Screw (walls only)
16mm Plasterboard	2.8x50mm Gal Clout or Type S #6-18 x 32mm NP Screw	3.15x65mm Gal Clout or Type S #6-18 x 50mm NP Screw	3.75x75mm Gal Clout or Type S #8-15 x 65mm NP Screw or #10x40mm Laminating Screw (walls only)
13mm + 16mm Plasterboard	2.8x40mm Gal Clout or 2.8x30mm Ring Shank Nail or Type S #6-18 x 32mm NP Screw	2.8x50mm Gal Clout or Type S #6-18 x 45mm NP Screw	

TABLE 12: FIXING PLASTERBOARD TO HARDWOOD

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm Plasterboard	2.8x30mm Gal Clout or 2.8x25mm Ring Shank Nail or Type S #6-18 x 25mm NP Screw	2.8x30mm Gal Clout or 2.8x25mm Ring Shank Nail or Type S #6-18 x 32mm NP Screw	
10mm Plasterboard	2.8x30mm Gal Clout or 2.8x25mm Ring Shank Nail or Type S #6-18 x 30mm NP Screw	2.8x40mm Gal Clout or Type S #6-18 x 32mm NP Screw	
13mm Plasterboard	2.8x30mm Gal Clout or 2.8x25mm Ring Shank Nail or Type S #6-18 x 32mm NP Screw	2.8x40mm Gal Clout or Type S #6-18 x 45mm NP Screw	3.15x65mm Gal Clout or Type S #8-15 x 65mm NP Screw or #10x40mm Laminating Screw (walls only)
16mm Plasterboard	2.8x40mm Gal Clout or Type S #6-18 x 32mm NP Screw	2.8x50mm Gal Clout or Type S #6-18 x 45mm NP Screw	3.15x65mm Gal Clout or Type S #8-15 x 65mm NP Screw or #10x40mm Laminating Screw (walls only)
13mm + 16mm Plasterboard	2.8x30mm Gal Clout or 2.8x25mm Ring Shank Nail or Type S #6-18 x 32mm NP Screw	2.8x50mm Gal Clout or Type S #6-18 x 45mm NP Screw	

TABLE 13: FIXING PLASTERBOARD TO STEEL 0.5 – 0.8mm BMT

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm Plasterboard	Type S #6-18 x 25mm NP Screw	Type S #6-18 x 25mm NP Screw	
10mm Plasterboard	Type S #6-18 x 25mm NP Screw	Type S #6-18 x 40mm NP Screw	
13mm Plasterboard	Type S #6-18 x 25mm NP Screw	Type S #6-18 x 40mm NP Screw	Type S #8-15 x 65mm NP Screw or #10x40mm Laminating Screw (walls only)
16mm Plasterboard	Type S #6-18 x 30mm NP Screw	Type S #6-18 x 45mm NP Screw	Type S #8-15 x 65mm NP Screw or #10x40mm Laminating Screw (walls only)
13mm + 16mm Plasterboard	Type S #6-18 x 25mm NP Screw	Type S #6-18 x 45mm NP Screw	

TABLE 14: FIXING PLASTERBOARD TO STEEL 0.8 – 2.0mm BMT

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
6.5mm Plasterboard	Type S #6-18 x 25mm DP Screw	Type S #6-18 x 25mm DP Screw	
10mm Plasterboard	Type S #6-18 x 25mm DP Screw	Type S #6-18 x 40mm DP Screw	
13mm Plasterboard	Type S #6-18 x 25mm DP Screw	Type S #6-18 x 40mm DP Screw	#10x40mm Laminating Screw (walls only)
16mm Plasterboard	Type S #6-18 x 30mm DP Screw	Type S #6-18 x 45mm DP Screw	#10x40mm Laminating Screw (walls only)
13mm + 16mm Plasterboard	Type S #6-18 x 25mm DP Screw	Type S #6-18 x 45mm DP Screw	

Perforated Plasterboard Installation

Notes On Fixing

- Plan the layout of the sheets prior to application. It is recommended that a border of standard GYPROCK plasterboard at least 150mm wide be provided around the perimeter of the ceiling. Suitable framing must be provided.
- To align perforations, use a stringline or laser.
- Framing members must be positioned at 600mm centres and coincide with non-perforated areas of sheets.
- May be used in curved applications with 2.0m minimum radius.
- Additional details, including information on preparing suspended ceiling systems are provided in a later section of this brochure.

Fixing Procedure – Sheets

- Apply GYPROCK Perforated Plasterboard sheets with paper bound edges at right angles to framing members. Align pattern to previously installed sheets and screw at 300mm maximum centres.
- If butt joints are required, centre joints on framing members and screw at 200mm centres opposed. Butt joints should be staggered.

Joints

Tape and set joints using only approved GYPROCK jointing systems and use as detailed in the Gyprock™ Plasterboard Residential Installation Guide, NºGYP547.

Due to the location of the perforations close to the edge of panels, butt joints are of a narrower width than is normal. Special care should be taken to ensure a good joint finish without filling of perforations.

FIG 20: INSTALLATION DETAIL
PERFORATED PLASTERBOARD SHEETS

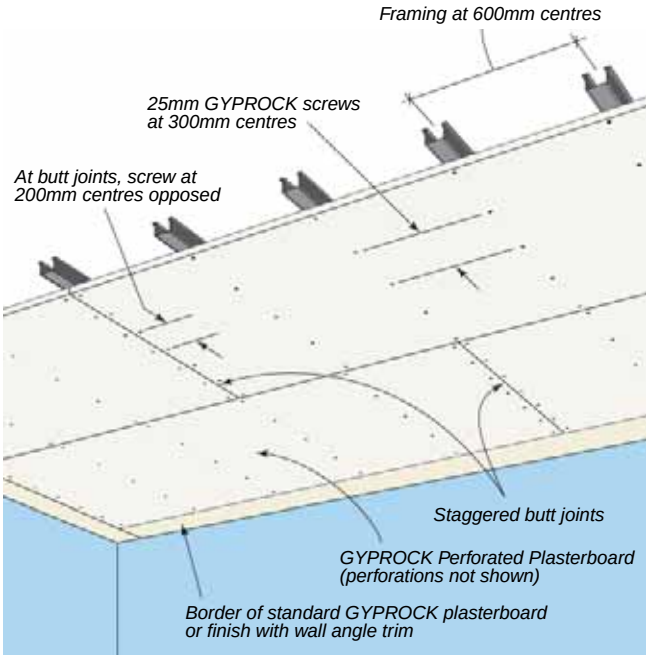
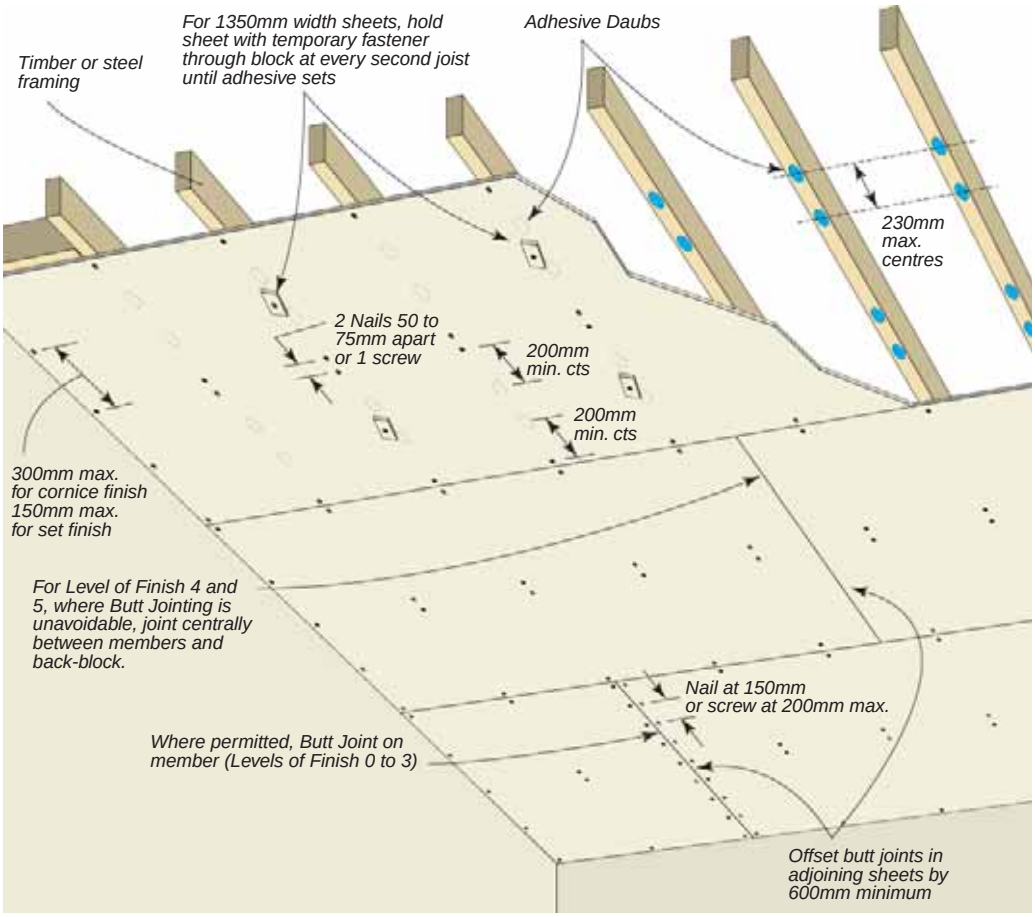


FIG 21: INSTALLATION DETAIL – SINGLE LAYER – ADHESIVE & NAIL/SCREW FIXING



Fixing Specifications	
Fasteners	*Refer to Fastener Details*
Adhesive	*Gyprock Stud Adhesive*
Location	***Fixing & Spacing***
Field	*Adhesive Daubs at 230mm max. centres and 200mm min. from fastener points*
Sheet Width	
900mm	*2 daubs*
1200mm	*4 daubs*
1350mm	*4 daubs*
Recessed Joints	*Nail/screw fix at each frame member*
Centreline of Sheet	*2 nails at 50 to 75mm apart or 1 screw at each frame member*
Butt Joints between framing	*Joint within 50mm of centre line between framing and adhesive fix back-block*
Butt Joints on framing	*Nail fix at 150mm or screw fix at 200mm max. centres*
Openings	*Nail fix at 150mm or screw fix at 200mm max. centres.*
Sheet Ends	*For cornice finish, fasten at 300mm max. cts.*
	For set finish, fasten at 150mm max. cts.

Notes On Fixing

- Install sheets with paper bound edges at right angles to joists/framing to which sheets are being fixed.
- Daubs of adhesive must be 200mm minimum from fastening points.
- Place edge fasteners at 10 to 16mm from sheet edge.

Fixing Procedure

Refer to Plasterboard Fixing for fastener details.

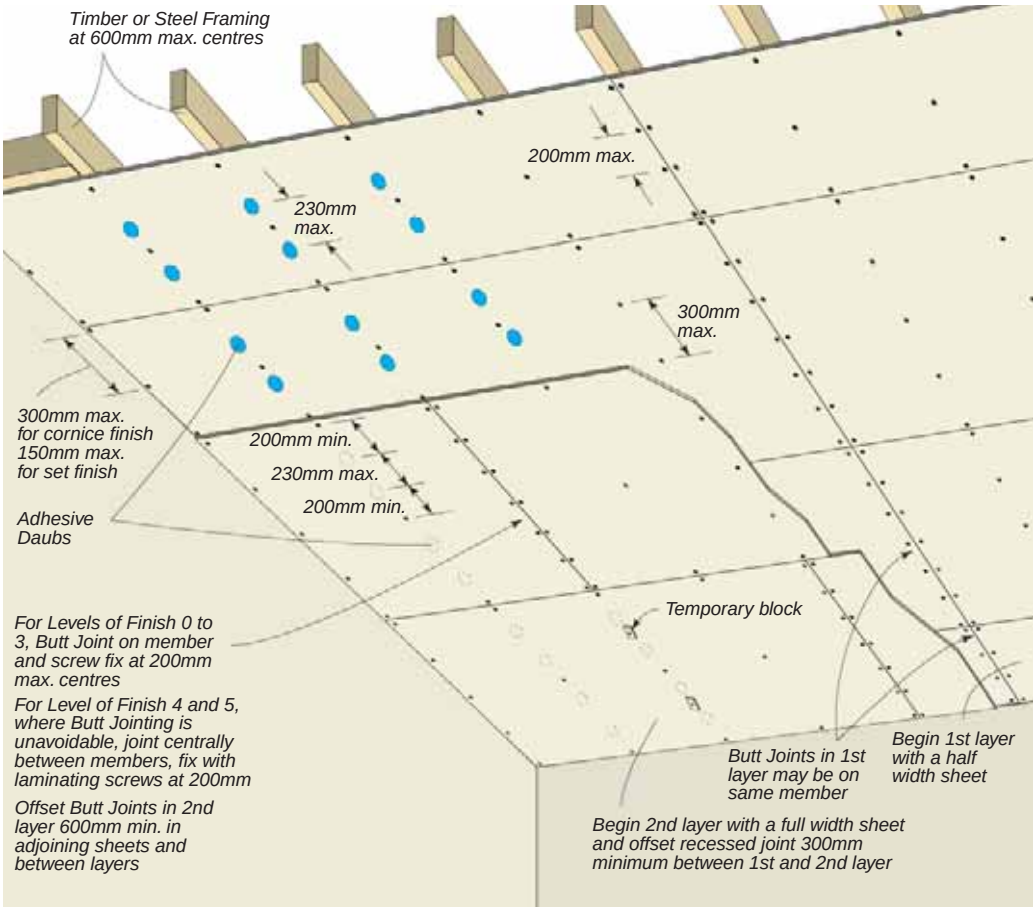
- Apply stud adhesive to framing in accordance with the following table. Using a broadknife, apply daubs 25mm diameter x 15mm high at 230mm maximum centres and at 200mm minimum from fastening points at sheet edges and centreline. Omit daubs at ends of sheets and at butt joints.

Plasterboard Width (mm)	Conventional Spacing	1/3 Spacing
900	F A F/F A F	F A F A F
1200	F A A F/F A A F	F A F A F A F
1350	F A A F/F A A F	F A F A F A F

F = Fastener A = Adhesive Daub
F/F = 1 Screw or 2 Nails at 50 – 75mm apart

- Apply plasterboard and fasten one recessed edge at each framing member.
- Press the sheet firmly against the framing, then fasten along the second recessed edge at each framing member.
- Fasten along the centreline of sheet at each framing member with 2 nails at 50 to 75mm apart or 1 screw.
- Where butt joints are made on framing members, nail fix at 150mm or screw fix at 200mm maximum centres.
- Where butt joints are made between framing, join within 50mm of centreline between framing and back-block joint. Back-block recessed joints where required. Refer to the Gyprock™ Plasterboard Residential Installation Guide, NºGYP547 for full details.
- Offset butt joints in adjoining sheets by 600mm minimum.
- Fasten around service openings with nails at 150mm or screws at 200mm maximum centres.
- Fasten ends of sheets at 300mm maximum centres for a cornice finish, or at 150mm maximum centres for a set finish.
- Under slow drying conditions, hold 1350mm wide sheets against the framing members for at least 48 hours with temporary fasteners driven through plasterboard blocks at every second frame. Refer to installation detail.

FIG 22: INSTALLATION DETAIL – TWO LAYER – SCREW & ADHESIVE FIXING



Fixing Specifications	
1st Layer Screws	*Refer to Fastener Details*
2nd Layer Adhesive Screws	*Gyprock Stud Adhesive* *Gyprock 45'S' for steel* *Gyprock 45'W' for timber*
1st Layer	***Fixing & Spacing***
Body *Sheet Width* *900mm* *1200mm* *1350mm*	*Screw fix to each framing member at 300mm max. centres* *4 screws equally spaced* *5 screws equally spaced* *6 screws equally spaced*
Butt Joints on framing	*Screw fix at 200mm max. centres*
Sheet Ends & Openings	*Screw fix at 300mm max. cts.*
2nd Layer	***Fixing & Spacing***
Body *Sheet Width* *900mm* *1200mm* *1350mm*	*Adhesive Daubs at 230mm max. centres and 200mm min. from fastener points* *2 daubs* *4 daubs* *4 daubs*
Recessed Joints	*Screw fix at each frame member.*
Centreline of Sheet	*Screw fix at each frame member.*
Butt Joints on framing	*Screw fix at 200mm max. centres.*
Butt joints between framing	*Laminating screws at 200mm max. cts.*
Openings	*Screws at 200mm max. centres.*
Sheet Ends	*For cornice finish, screw fix at 300mm max. cts.* *For set finish, screw fix at 150mm max. cts.*

Notes On Fixing

- Install sheets with paper bound edges at right angles to the furring /framing to which sheets are being fixed.
- Place edge fasteners at 10 to 16mm from sheet edge.

Fixing Procedure

Refer to Plasterboard Fixing for fastener details.

First Layer

- Begin with a half width sheet.
- Apply plasterboard and fasten along recessed edges at each framing member.
- Press the sheet firmly against the framing and fasten the body of the board to each framing member at 300mm maximum centres.

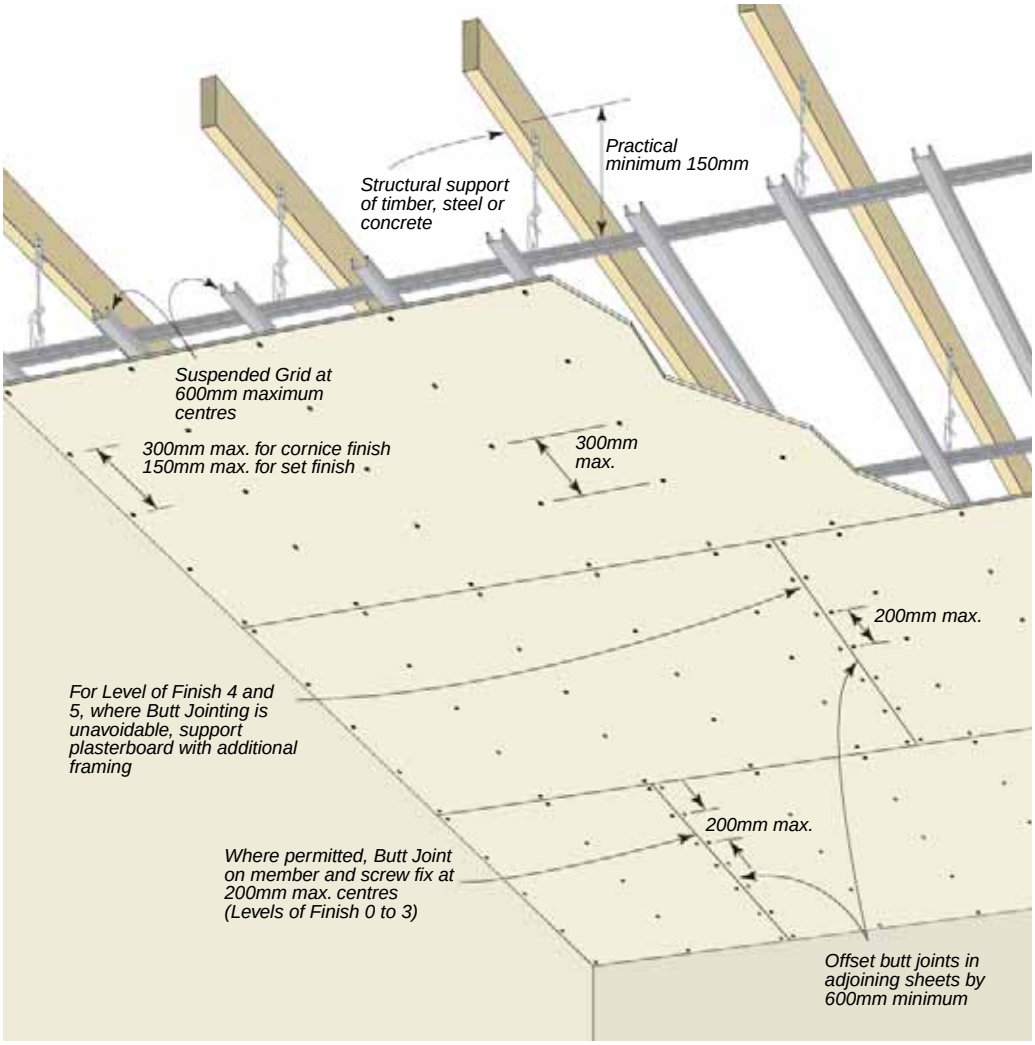
  Use the following at each framing member: 900mm width sheets – 4 screws equally spaced. 1200mm width sheets – 5 screws equally spaced. 1350mm width sheets – 6 screws equally spaced.
- Fasten butt joints centred on framing members at 200mm maximum centres.
- Fasten around service openings at 200mm maximum centres.
- Fasten ends of sheets at 300mm maximum centres.

Second Layer

- Begin with a full width sheet so that recess joints will be offset from first layer by 300mm min.
- Using a broadknife, apply adhesive daubs 25mm diameter x 15mm high at 230mm maximum centres and 200mm minimum from fastening points at the edges and centreline of the sheet. Omit daubs at ends of sheets and at butt joints.

  Use the following daubs at each framing member:
  900mm width sheets – 2 daubs.
  1200mm width sheets – 4 daubs.
  1350mm width sheets – 4 daubs.
- Apply plasterboard and fasten one recessed edge at each framing member.
- Press the sheet firmly against the framing, then fasten along the second recessed edge at each framing member.
- Fasten along the centreline of the sheet with 1 screw at each framing member.
- Offset butt joints in adjoining sheets and between layers by 600mm minimum and fasten at 200mm maximum centres.
- Fasten around service openings at 200mm maximum centres.
- Fasten ends of sheets at 300mm maximum centres for a cornice finish, or at 150mm maximum centres for a set finish.
- Under slow drying conditions, hold 1350mm wide sheets against the framing members for at least 48 hours with temporary fasteners driven through plasterboard blocks at every second frame.

FIG 23: INSTALLATION DETAIL – SINGLE LAYER – SCREW FIXING



Fixing Specifications	
Screws	*Refer to Fastener Details*
Location	***Fixing & Spacing***
Recessed Joints & Body	*Screw fix to each frame at 10 to 16mm from sheet edges and at 300mm max. centres between.*
Sheet Width	
900mm	*4 screws equally spaced*
1200mm	*5 screws equally spaced*
1350mm	*6 screws equally spaced*
Butt Joints between framing	*Joint within 50mm of centre line between framing. Back-block and fix with laminating screws at 200mm max. centres.*
Butt Joints on framing	*Screw fix at 200mm max. centres*
Openings	*Screw fix at 200mm max. centres.*
Sheet Ends	*For cornice finish, screw fix at 300mm max. cts.*
	For set finish, screw fix at 150mm max. cts.

Notes On Fixing

- Install sheets with paper bound edges at right angles to the furring /framing to which sheets are being fixed.
- Place edge fasteners at 10 to 16mm from sheet edge.

Fixing Procedure

Refer to Plasterboard Fixing for fastener details.

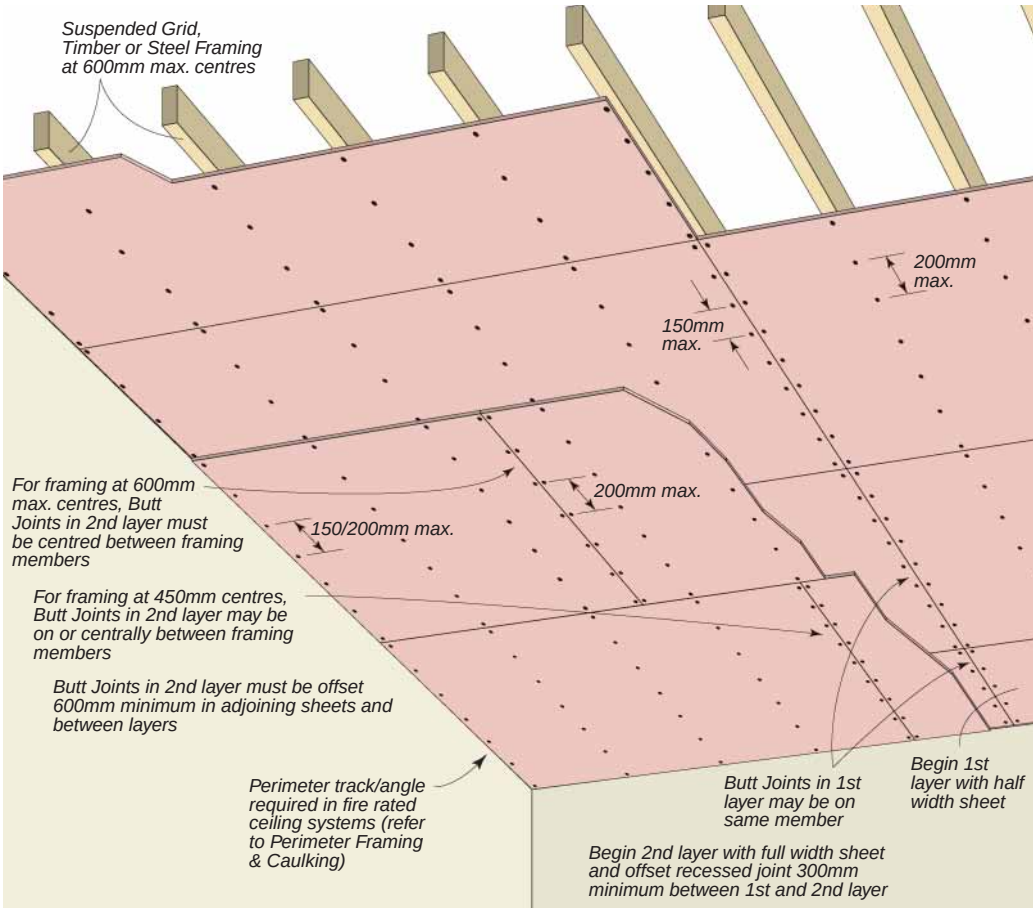
- Apply plasterboard and fasten to each framing member along recessed edges.
- Press the sheet firmly against the framing and fasten the body of the board to each framing member with screws at 300mm maximum centres.

  Use the following at each framing member: 900mm width sheets – 4 screws equally spaced. 1200mm width sheets – 5 screws equally spaced. 1350mm width sheets – 6 screws equally spaced.
- Where butt joints are made on framing members, screw fix at 200mm maximum centres.
- Where butt joints are made between framing, join within 50mm of centreline between framing and back-block joint. Back-block recessed joints where required. Refer to the Gyprock™ Plasterboard Residential Installation Guide, NºGYP547 for full details.
- Offset butt joints in adjoining sheets by 600mm minimum.
- Fasten around service openings with screws at 200mm maximum centres.
- Screw fix ends of sheets at 300mm maximum centres for a cornice finish, or at 150mm maximum centres for a set finish.

Two Layer Systems

- Fix the first layer as detailed for a single layer system, beginning with a half width sheet. Butt joints may be on the same member.
- Begin the second layer with a full width sheet so that the recess joints will be offset from the first layer joints by 300mm minimum.
- Offset butt joints a minimum of 600mm between layers and between adjacent sheets in the second layer.
- Fix the second layer using screws applied to the same specifications as detailed above for a single layer system.

FIG 24: INSTALLATION DETAIL – ONE OR TWO LAYER – NAIL OR SCREW FIXING



Fixing Specifications	
Fasteners Refer to Fastener Details	*Gyprock Nails or Screws*
Location	***Fixing & Spacing***
Body of Sheet 1st & 2nd Layer	*Fasten to each framing member at 10 to 16mm from sheet edges and at 200mm maximum centres*
Sheet Width	
900mm	*6 fasteners equally spaced*
1200mm	*7 fasteners equally spaced*
1350mm	*8 fasteners equally spaced*
Butt Joints 1st layer	*Butt Joint on framing and fasten at 150mm max. centres.*
Butt Joints 2nd layer	*Framing at 450mm max. spacing – Butt Joint on framing and fasten at 150mm max. centres (or as detailed for 600mm frame spacing).* *Framing at 600mm max. spacing – Butt Joint within 50mm of centre line between framing and fix to 1st layer with Laminating Screws at 200mm maximum cts.*
Openings	*Fasten at 150mm max. centres*
Sheet Ends	*Cornice finish – Fasten at 200mm max. centres* *Set finish – Fasten at 150mm max. centres*

Notes On Fixing

- Install sheets with paper bound edges at right angles to the framing to which sheets are being fixed.
- Offset recess joints of 1st and 2nd layers by 300mm min.
- Place edge fasteners at 10 to 16mm from sheet edge.
- Leave a 6mm gap around perimeter and caulk with Gyprock™ Fire Mastic.
- Single layer systems are to be installed as detailed for the second layer. Butt joints are to be formed within 50mm of the centreline between framing, fully back-blocked and fixed with laminating screws at 200mm maximum centres

Fixing Procedure

Refer to Plasterboard Fixing for fastener details.

First Layer

- Begin with a half width sheet.
- Apply plasterboard and fasten along recessed edges at each framing member.
- Press the sheet firmly against the framing and fasten the body of the board to each framing member at 200mm maximum centres.

  Use the following at each framing member: 900mm width sheets – 6 fasteners equally spaced. 1200mm width sheets – 7 fasteners equally spaced. 1350mm width sheets – 8 fasteners equally spaced.
- Form butt joints centred on framing members and fasten at 150mm maximum centres.
- Fasten around openings at 150mm maximum centres.
- Fasten ends of sheets at a 200mm maximum centres.

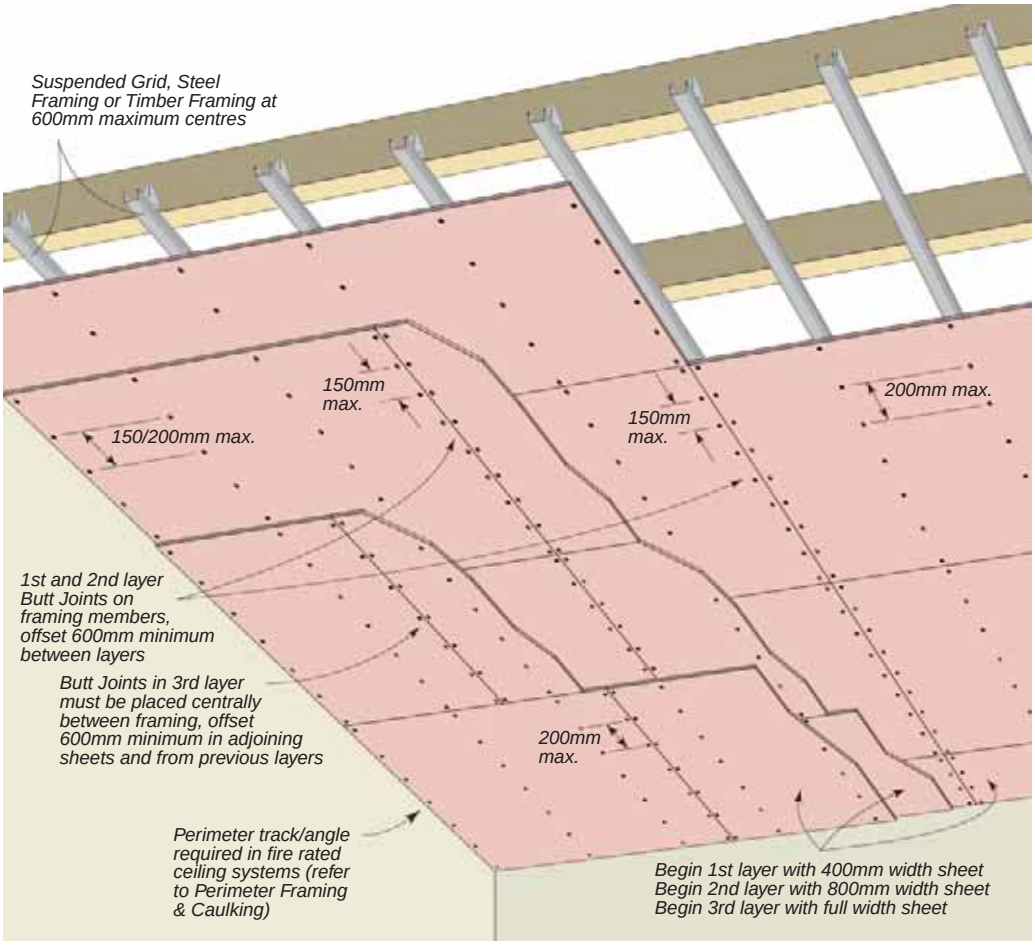
Second Layer.

- Begin with a full width sheet so that recess joints will be offset from first layer by 300mm minimum.
- Apply plasterboard and fasten recessed edges and body of sheets as for the first layer.
- Fasten around openings at 150mm maximum centres.
- Offset butt joints in adjoining sheets by 600mm minimum and fix according to frame spacing –

  Framing at 450mm maximum spacing – Butt joint on framing and fasten at 150mm maximum centres (or as detailed for 600mm frame spacing).

  Framing at 600mm maximum spacing – Butt joint within 50mm of the centreline between framing members and fix to the 1st layer with laminating screws at 200mm maximum centres.
- Fasten ends of sheets at 200mm maximum centres for a cornice finish, or at 150mm maximum centres for a set finish.

FIG 25: INSTALLATION DETAIL – THREE LAYER FIXING TO STEEL OR TIMBER FRAMING – NAIL OR SCREW FIXING



Fixing Specifications	
Fasteners	*Refer to Fastener Details*
Location	***Fixing & Spacing***
Body of Sheet All Layers	*Fasten to each framing member at 10 to 16mm from sheet edges and at 200mm maximum centres*
Sheet Width	
900mm	*6 fasteners equally spaced*
1200mm	*7 fasteners equally spaced*
1350mm	*8 fasteners equally spaced*
Butt Joints 1st & 2nd Layers	*Butt Joint on framing and fasten at 150mm max. centres.*
Butt Joints 3rd layer	*Butt Joint within 50mm of centre line between framing and fix to previous layer with Laminating Screws at 200mm max. centres*
Sheet Ends	*Cornice finish, fasten at 200mm max. centres*
	Set finish, fasten at 150mm max. centres
Openings	*Fasten at 150mm max. centres*

Notes On Fixing

- Install sheets with paper bound edges at right angles to the framing to which sheets are being fixed.
- Offset recess joints between layers by 300mm min.
- Place edge fasteners at 10 to 16mm from sheet edge.
- Leave a 6mm gap around perimeter and caulk with Gyprock™ Fire Mastic.

Fixing Procedure

Refer to Plasterboard Fixing for fastener details.

First Layer

- Begin with a 400mm width sheet so that recess joints will be offset from second layer.
- Apply plasterboard and screw fix along recessed edges at each framing member.
- Press the sheet firmly against the framing and fasten the body of the board to each framing member with screws at 200mm maximum centres.

  Use the following at each framing member: 900mm width sheets – 6 fasteners equally spaced. 1200mm width sheets – 7 fasteners equally spaced. 1350mm width sheets – 8 fasteners equally spaced.

- Form butt joints centred on framing members and fasten at 150mm maximum centres.
- Fasten around openings with at 150mm maximum centres.
- Fasten ends of sheets at a 200mm max. centres.

Second Layer

- Begin with an 800mm width sheet. Offset recess joints 300mm minimum from the previous layer. Offset butt joints between layers by 600mm minimum.
- Fasten 2nd layer sheets as for first layer.

Third Layer

- Begin with a full width sheet. Offset recess joints 300mm minimum from the previous layer. Offset butt joints in adjoining sheets and from previous the layers by 600mm minimum.
- Apply plasterboard and fasten recessed edges, body of sheets and around openings as for previous layers.
- Butt joint within 50mm of the centreline between framing and fix to previous layers with Gyprock™ Laminating Screws (40mm x Nº10) at 200mm maximum centres.
- Fasten ends of sheets at a 200mm maximum centres for a cornice finish, or at a 150mm maximum centres for a set finish.

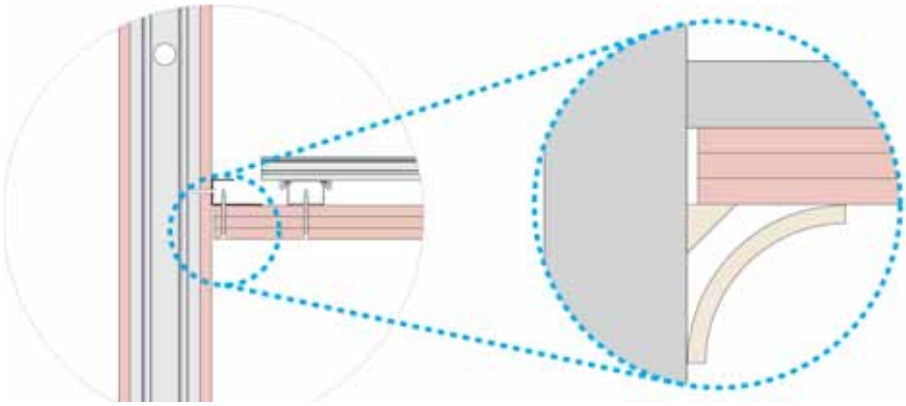
Perimeter Framing & Caulking

At ceiling/wall junctions, ceiling framing is required to support the plasterboard as detailed in FIG Z101 to FIG Z130 To seal the junction between the ceiling and wall, one of the caulking details FIG Z140 to FIG Z147 must be used. The junction detail should be selected with regard to appearance and acoustic integrity.

FIG Z100: CEILING PERIMETER FRAMING AND CAULKING SELECTION

Step 1:

Choose a suitable ceiling perimeter framing detail. Refer to FIG Z101 to FIG Z130.



Step 2:

Choose a suitable perimeter caulking detail. Refer to FIG Z140 to FIG Z147.

CEILING PERIMETER FRAMING AT JUNCTION WITH TIMBER FRAMED WALL

FIG Z101

FIG Z102

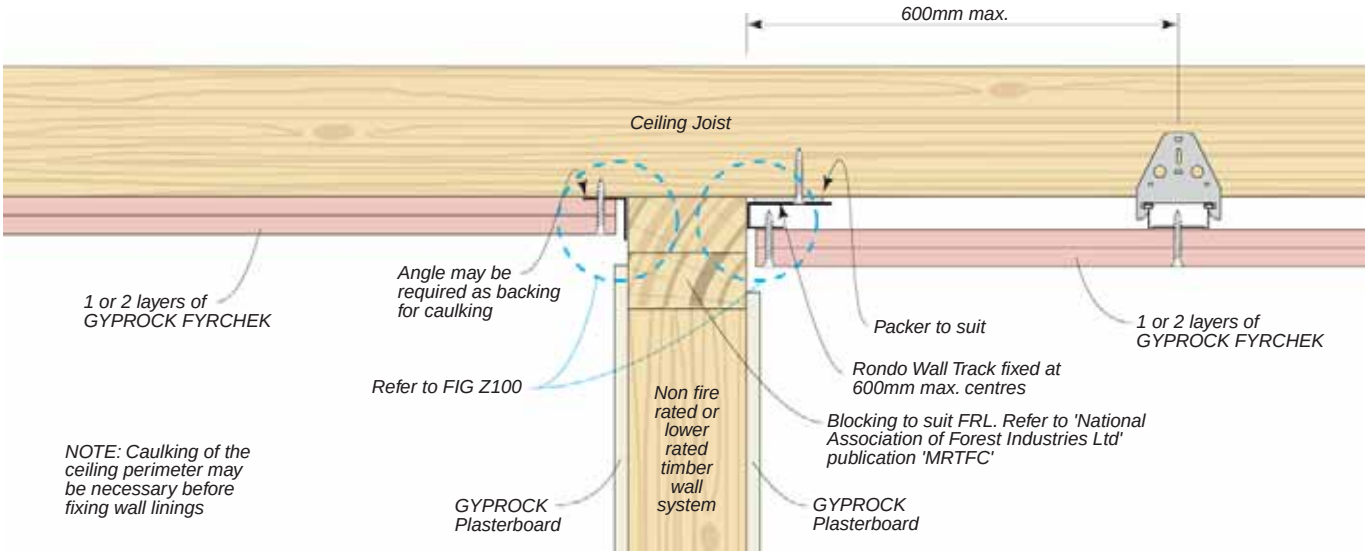
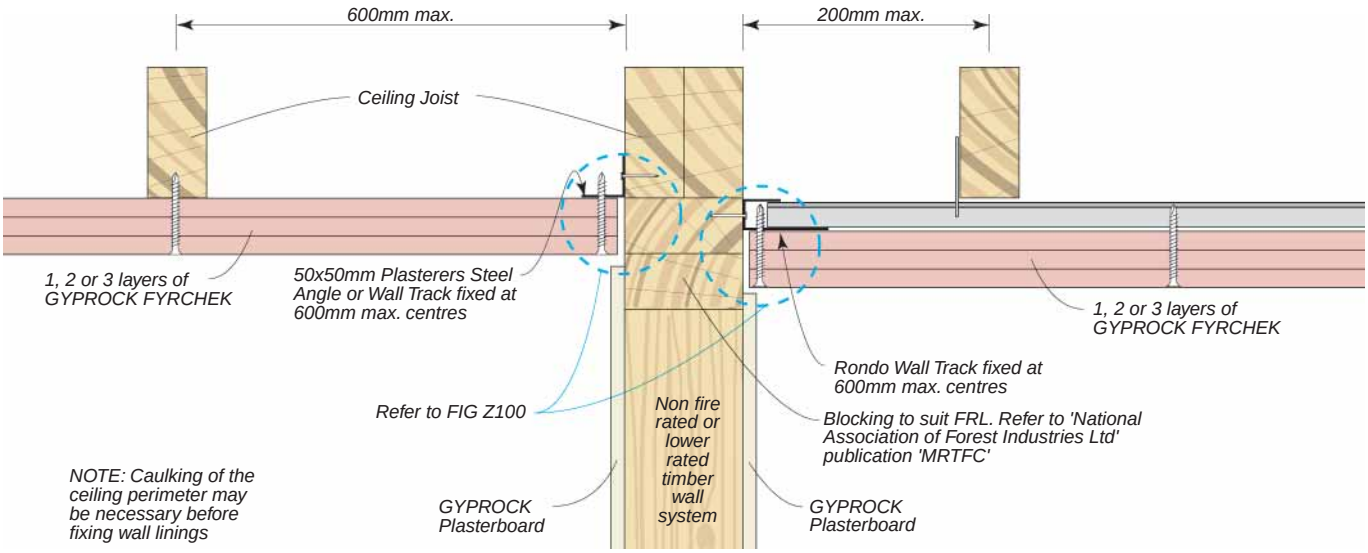


FIG Z103

FIG Z104



CEILING PERIMETER FRAMING AT JUNCTION WITH FIRE RATED STEEL FRAMED WALL

FIG Z111

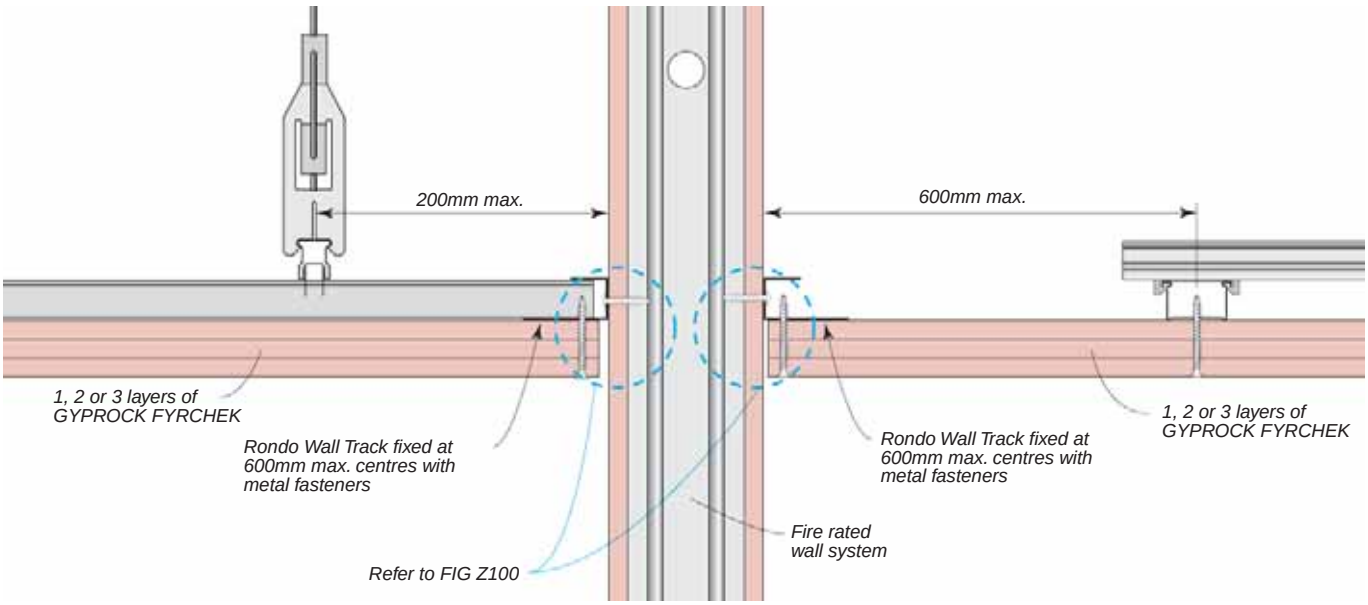


FIG Z112

FIG Z113

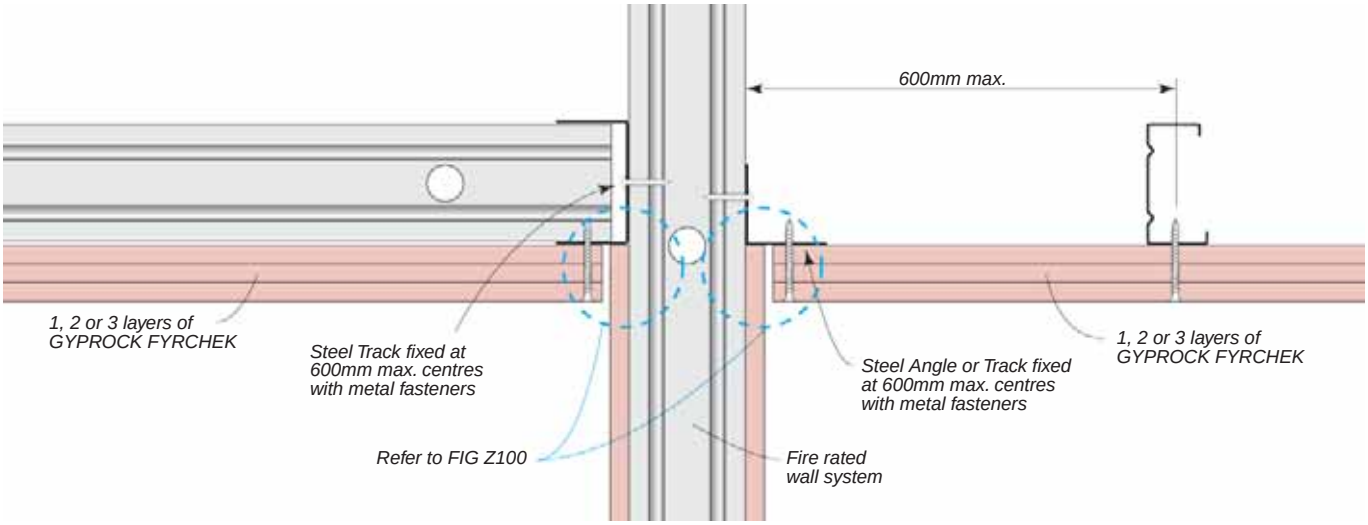


FIG Z114

FIG Z115

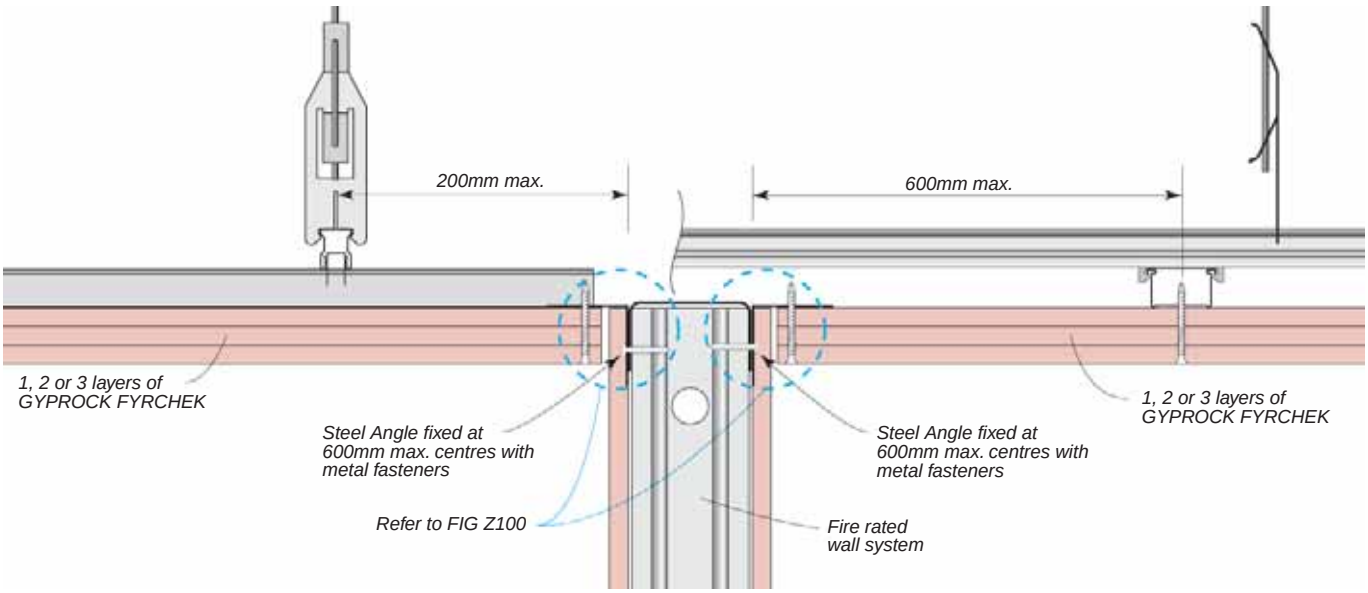


FIG Z116

CEILING PERIMETER FRAMING AT JUNCTION WITH MASONRY WALL

FIG Z121

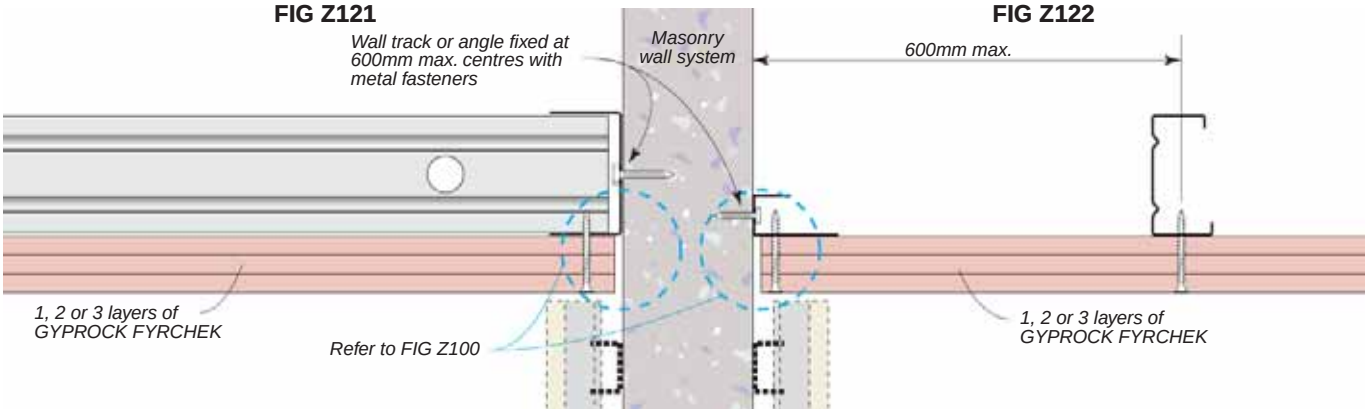


FIG Z122

FIG Z123

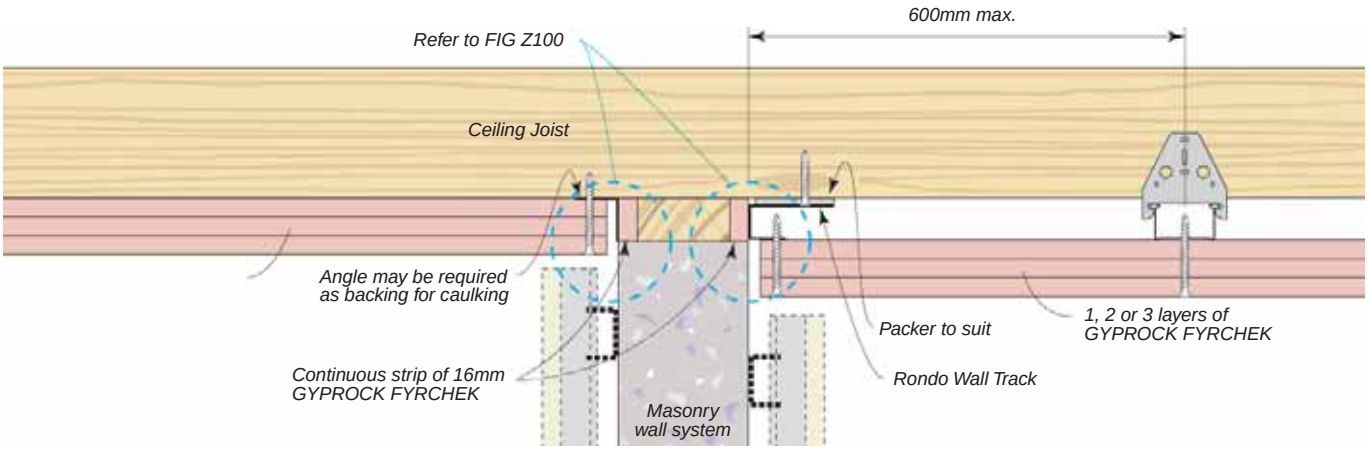


FIG Z124

FIG Z125

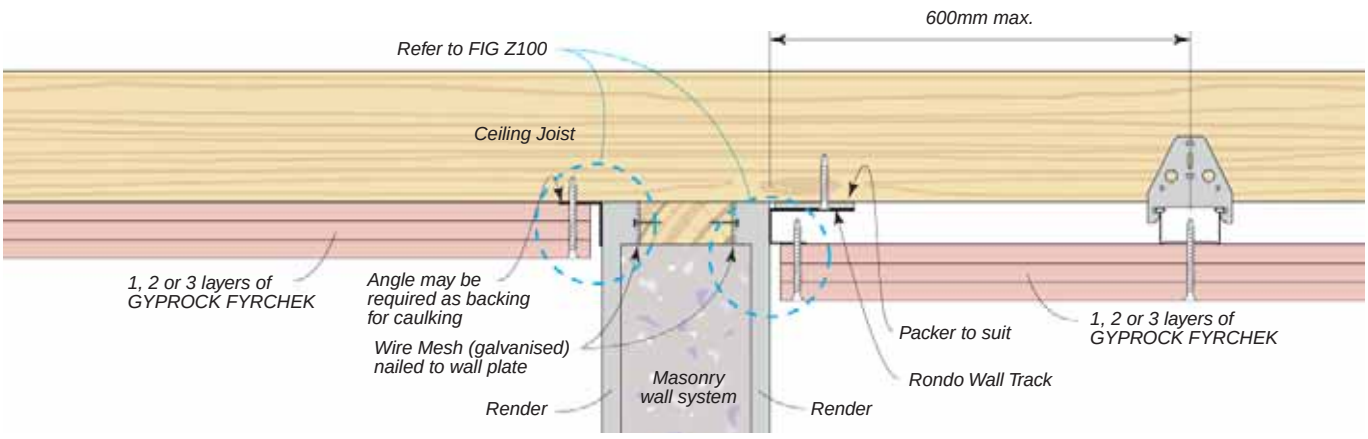


FIG Z126

FIG Z127

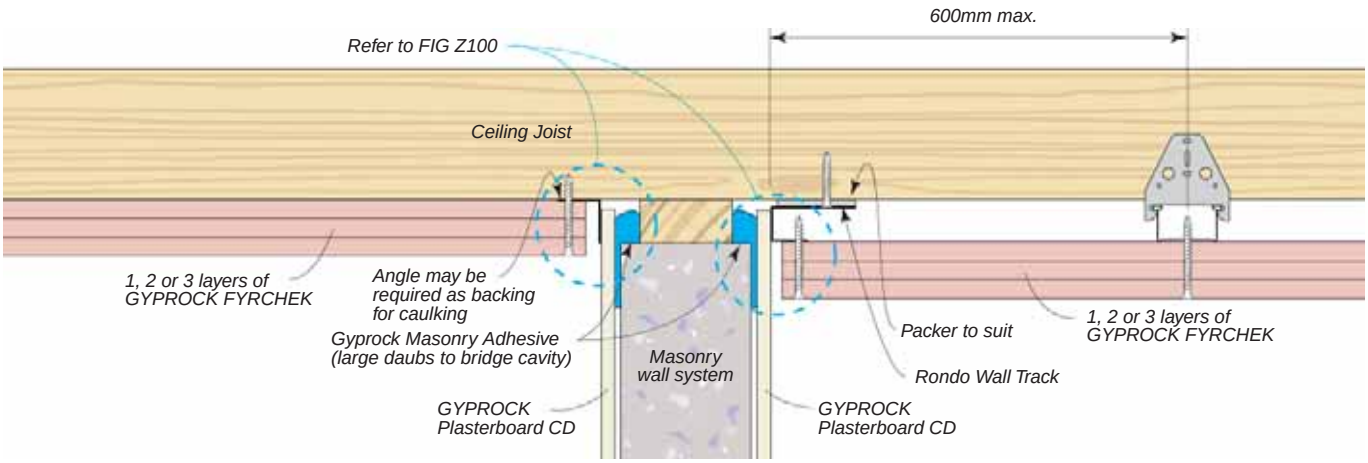
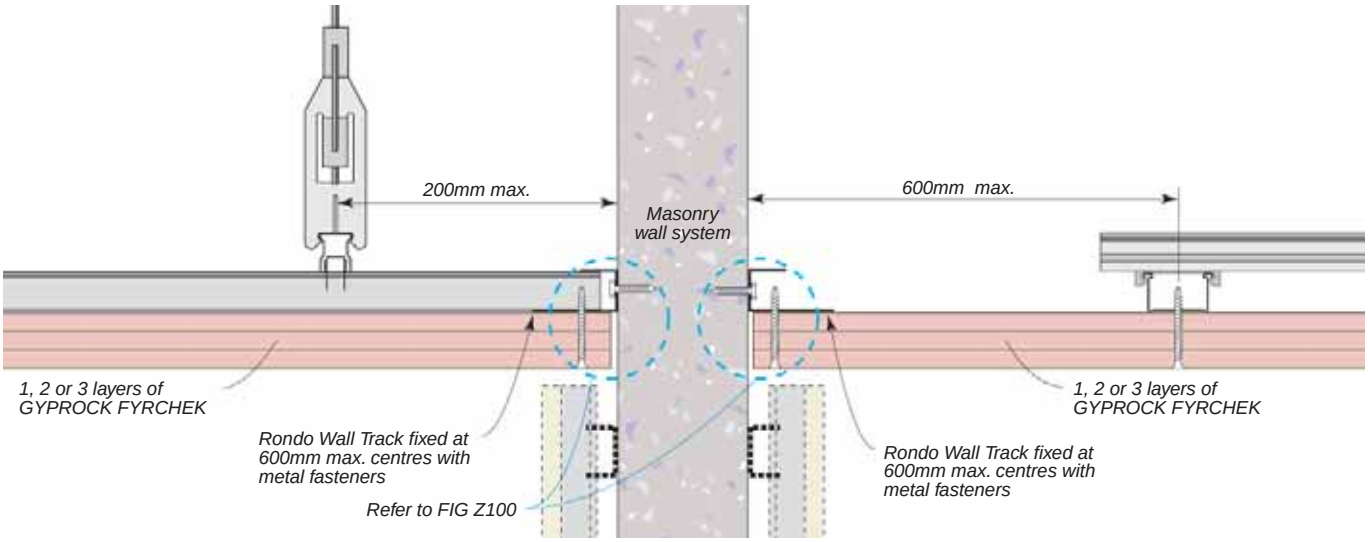


FIG Z128

CEILING PERIMETER FRAMING AT JUNCTION WITH MASONRY WALL

FIG Z129 **FIG Z130**



Caulking Details for Fire Rated Ceilings

Perimeter caulking details Z140 to Z147 will maintain the FRL of the CSR Gyprock ceiling systems in which they are installed. These details (excluding Z146 and Z147) are also suitable where acoustic integrity is required.

FIG Z140
Suitable for 2 and 3 layer plasterboard ceiling systems.

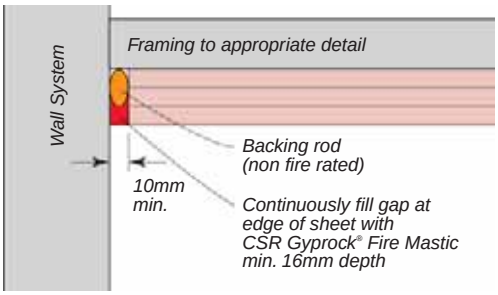


FIG Z141
Suitable for 2 and 3 layer plasterboard ceiling systems.

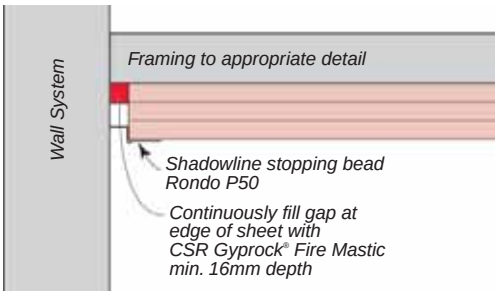


FIG Z142
Suitable for 1, 2 and 3 layer plasterboard ceiling systems.

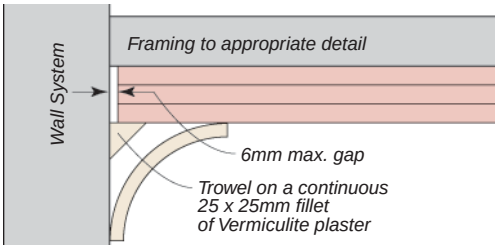


FIG Z143
Suitable for 2 and 3 layer plasterboard ceiling systems.

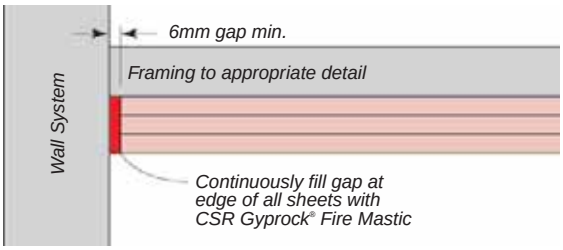


FIG Z144
Suitable for 1, 2 and 3 layer plasterboard ceiling systems.

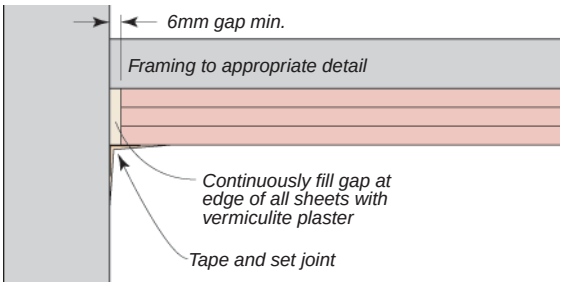


FIG Z145
Suitable for 1, 2 and 3 layer plasterboard ceiling systems.

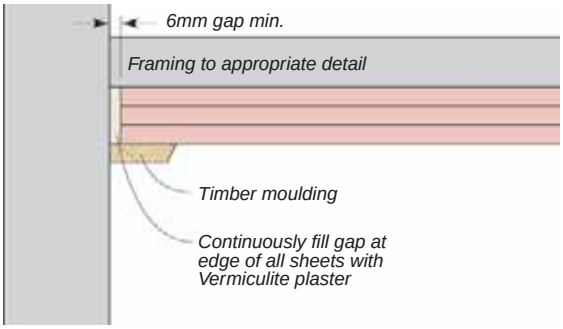


FIG Z146:
Suitable for 1, 2 and 3 layer plasterboard ceiling systems.
NOTE: This detail is not suitable were acoustic integrity is required.

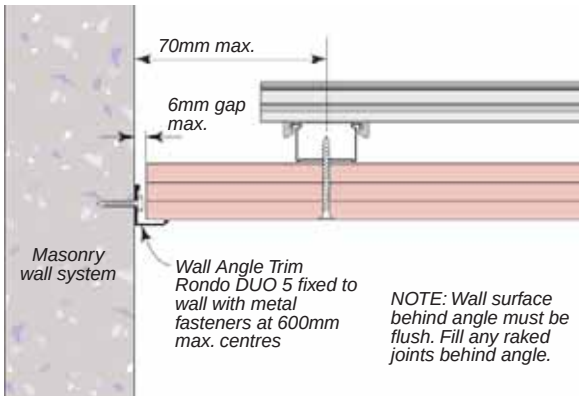
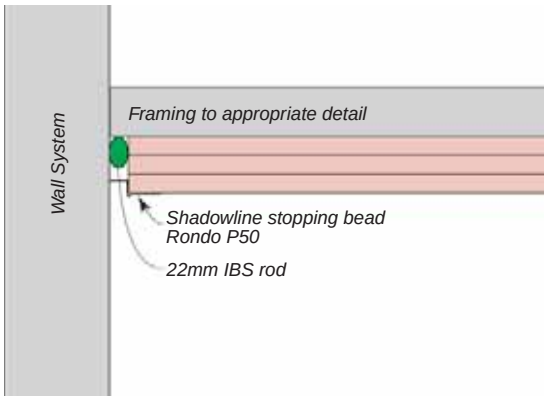


FIG Z147;
Suitable for 2 and 3 layer plasterboard ceiling systems.
NOTE: This detail is not suitable were acoustic integrity is required.



NON FIRE RATED

Ceiling Perimeter Junctions to control Room to Room Noise via Ceiling Space

To achieve stated acoustic isolation (CAC) values for Gyprock™ Ceiling Systems, it is necessary to install one of the following wall to ceiling junction details. The acoustic performance of set plasterboard ceilings can be maintained if there are no penetrations in the ceiling or the penetrations are acoustically treated. Untreated penetrations can result in up to a 10dB loss in integrity.

FIG Z800: WALL/CEILING JUNCTION

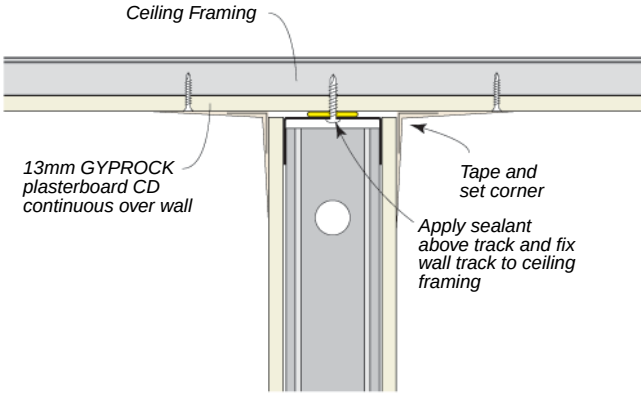


FIG Z803: WALL/CEILING JUNCTION

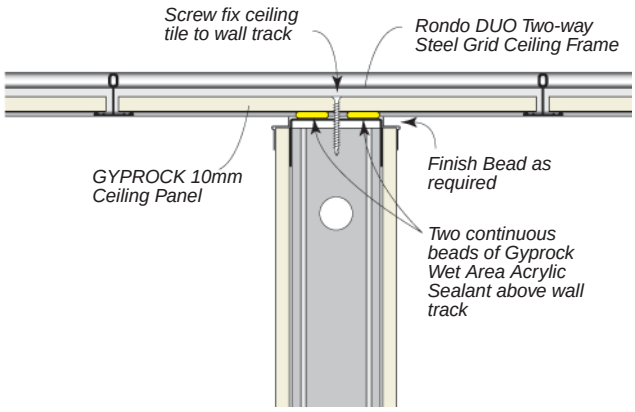


FIG Z801: WALL/CEILING JUNCTION

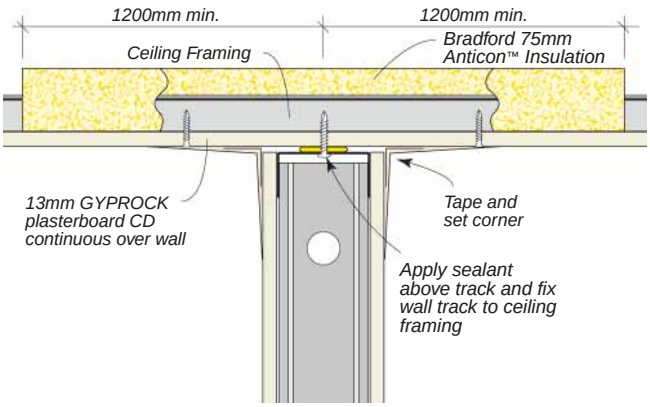
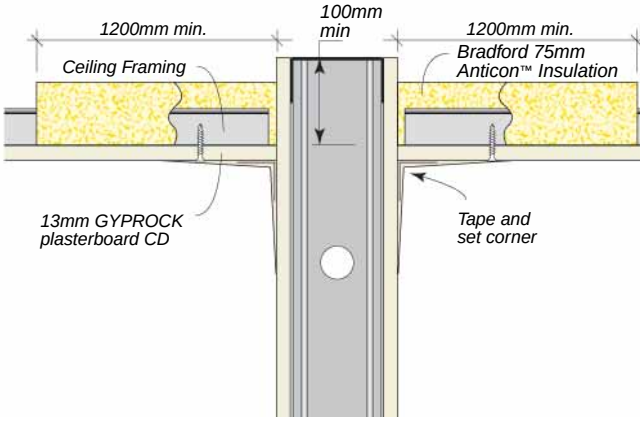


FIG Z802: WALL/CEILING JUNCTION



Fire Rated Ceiling Control Joints

FIG Z073: CONTROL JOINT
PARALLEL TO STEEL FRAMING – 1 LAYER
(Maintains FRL of the ceiling system in which it is installed).

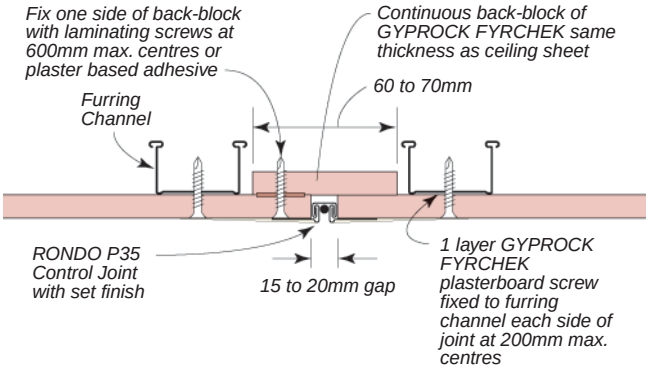


FIG Z074: CONTROL JOINT
PERPENDICULAR TO STEEL FRAMING – 1 LAYER
(Maintains FRL of the ceiling system in which it is installed).

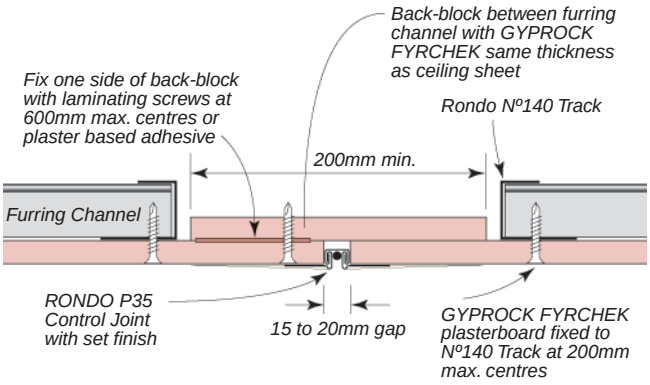


FIG Z034: CONTROL JOINT
PARALLEL TO STEEL FRAMING – 2 LAYERS
(Maintains FRL of the ceiling system in which it is installed).

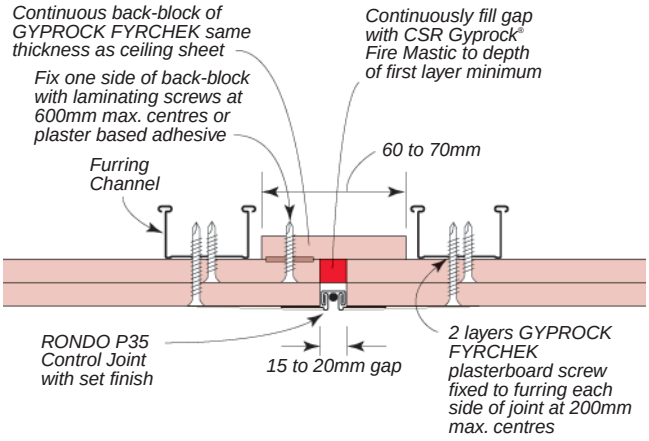


FIG Z035: CONTROL JOINT
PERPENDICULAR TO STEEL FRAMING – 2 LAYERS
(Maintains FRL of the ceiling system in which it is installed).

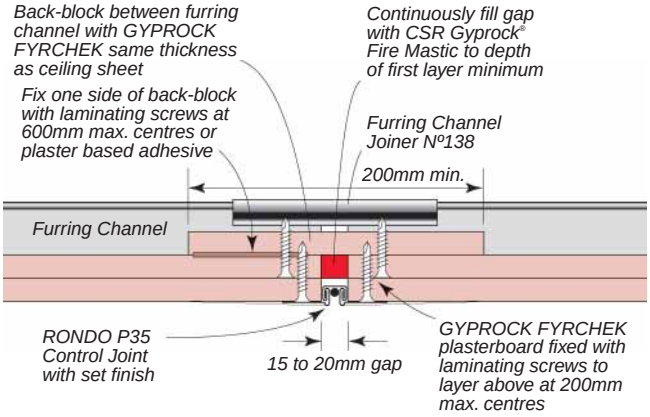


FIG Z037: CONTROL JOINT
PARALLEL TO STEEL FRAMING – 3 LAYERS
(Maintains FRL of the ceiling system in which it is installed).

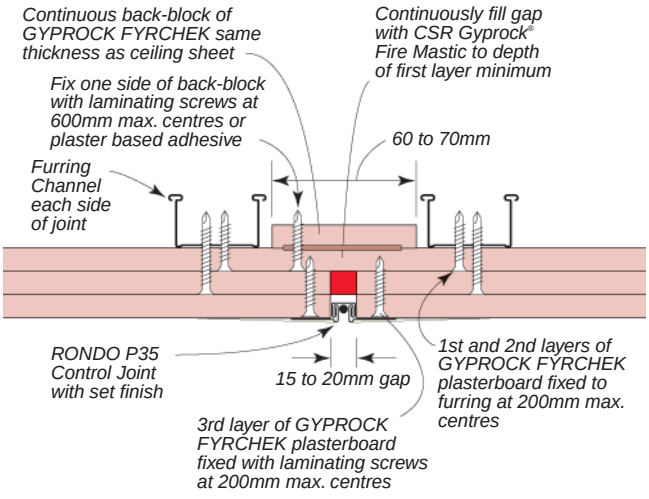


FIG Z038: CONTROL JOINT
PERPENDICULAR TO STEEL FRAMING – 3 LAYERS
(Maintains FRL of the ceiling system in which it is installed).

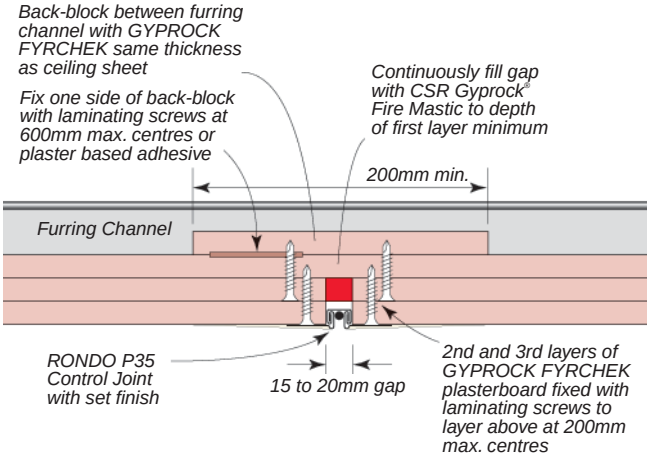


FIG Z042: CONTROL JOINT PARALLEL OR PERPENDICULAR TO TIMBER OR STEEL FRAMING – 2 LAYERS

(Maintains FRL of the ceiling system in which it is installed).

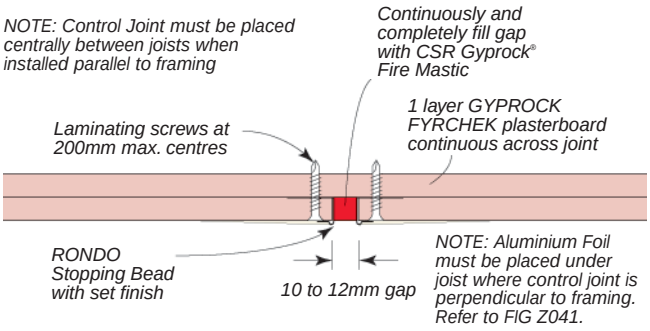


FIG Z045: CONTROL JOINT PARALLEL OR PERPENDICULAR TO TIMBER OR STEEL FRAMING – 3 LAYERS

(Maintains FRL of the ceiling system in which it is installed).

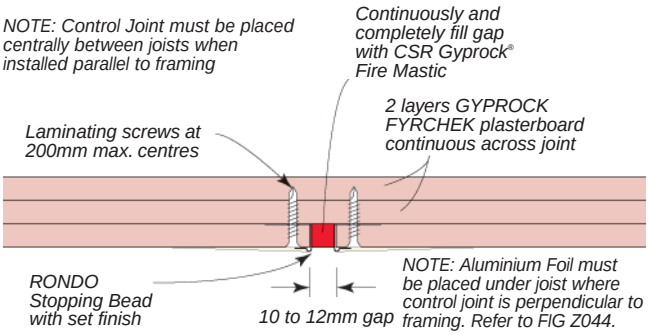


FIG Z040: CONTROL JOINT PARALLEL TO TIMBER FRAMING – 2 LAYERS

(Maintains FRL of the ceiling system in which it is installed).

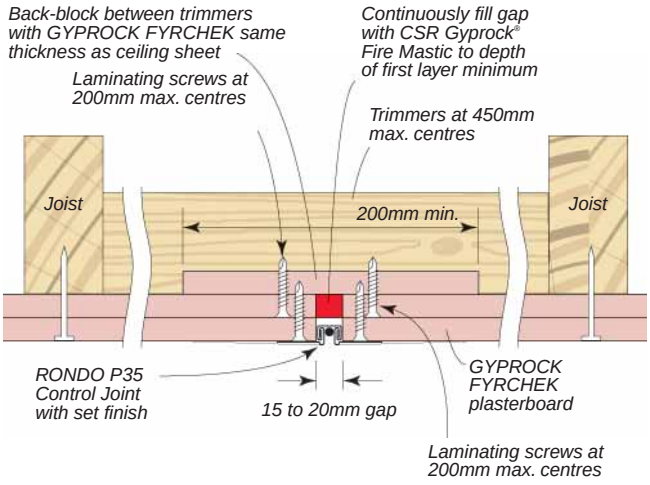


FIG Z041: CONTROL JOINT PERPENDICULAR TO TIMBER FRAMING – 2 LAYERS

(Maintains FRL of the ceiling system in which it is installed).

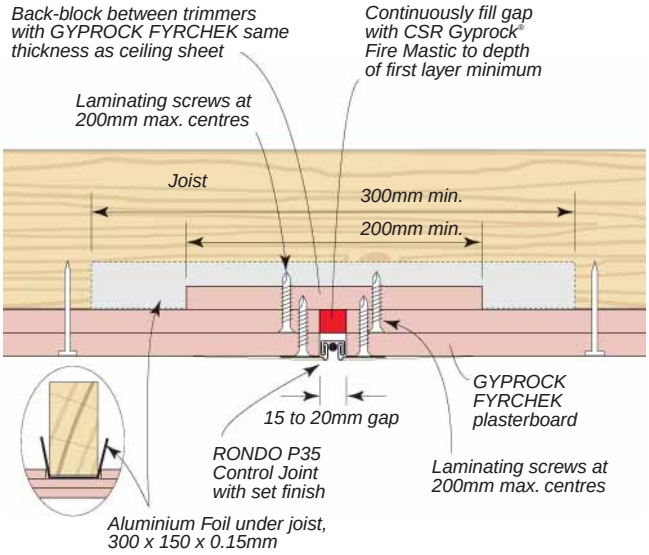


FIG Z043: CONTROL JOINT PARALLEL TO TIMBER FRAMING – 3 LAYERS

(Maintains FRL of the ceiling system in which it is installed).

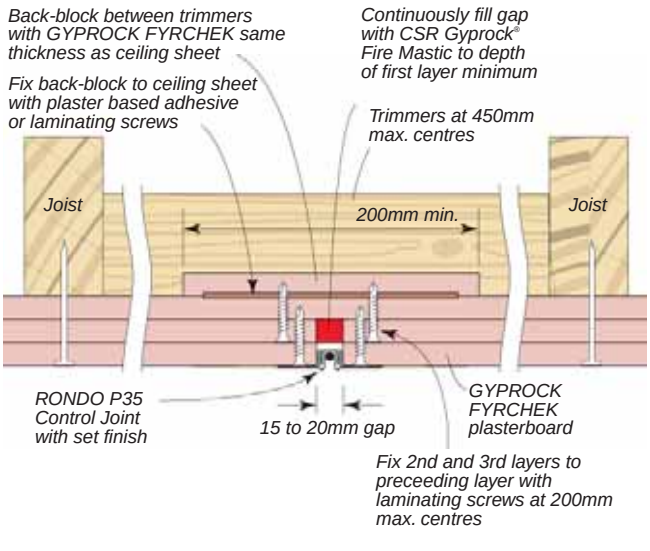
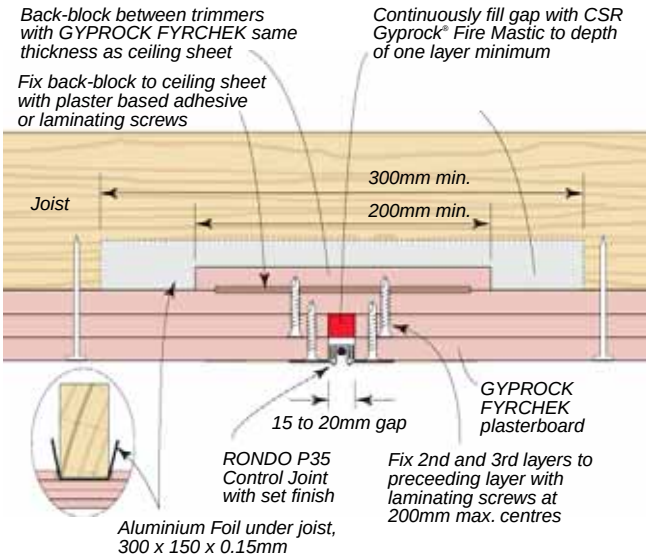


FIG Z044: CONTROL JOINT PERPENDICULAR TO TIMBER FRAMING – 3 LAYERS

(Maintains FRL of the ceiling system in which it is installed).



Access & Air Conditioning Penetrations in Ceilings

Penetrations for Access Panels and Air Conditioning

FIG Z032: FIRE HATCH IN CEILING

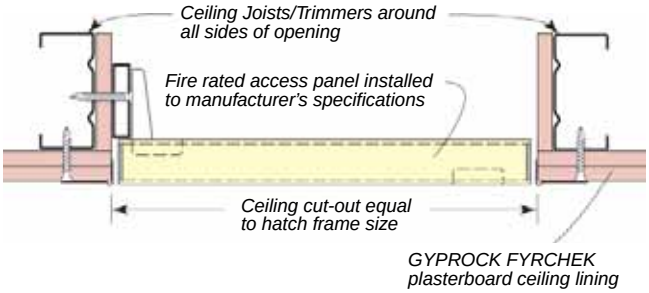
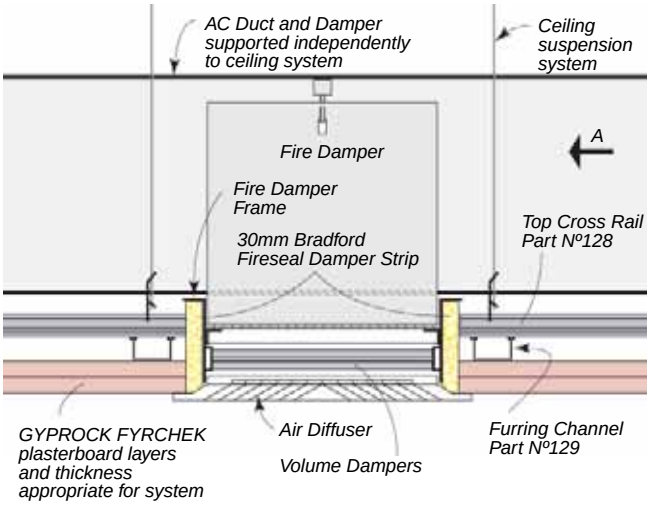
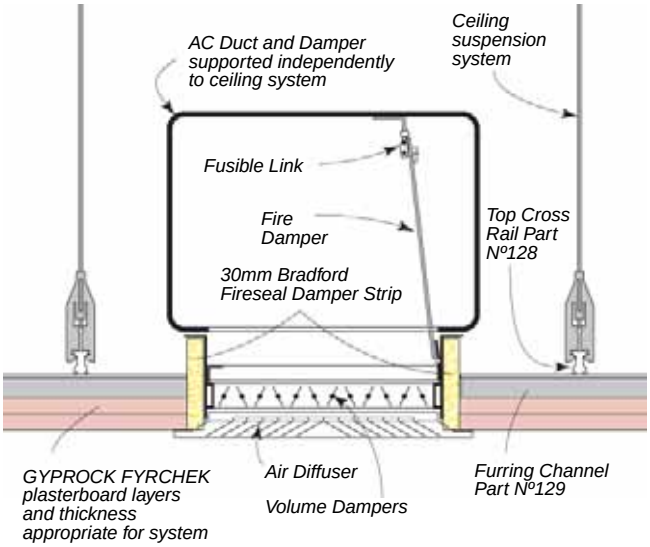


FIG Z033: AIR CONDITIONING DUCT/DAMPER PENETRATION IN CEILING
FRL 60/60/60 – TEST: SI 1585



VIEW FROM 'A'



The system detailed in FIG Z033 incorporates a 600 x 400 x 0.76mm galvanised steel duct incorporating a single blade fire damper with an opening size of 460mm x 460mm (Blendair CFDI 450 x 450mm single blade fire and smoke damper or equivalent).

The design incorporates a 450 x 450mm aluminium volume damper located in the fir damper, and a 600 x 600mm face size by 0.76mm steel diffuser for the air outlet.

Electrical Penetrations

Ceilings – Fire Rated

The Gyprock™ Fire Spring is a steel coil approximately 25mm in diameter and 170mm in length. It is designed to keep power cables away from combustible materials, effectively eliminating the need to 'back-block' the wiring.

The Gyprock™ Fire Spring is used in plasterboard ceiling systems required to be resistant to the incipient spread of fire.

The Gyprock™ Fire Spring can be installed during ceiling construction as shown in FIG Z054, or once the ceiling has been installed as shown in FIG Z055.

FIG Z054: GYPROCK FIRE SPRING FITTED DURING CEILING INSTALLATION TESTED TO AS1530.4

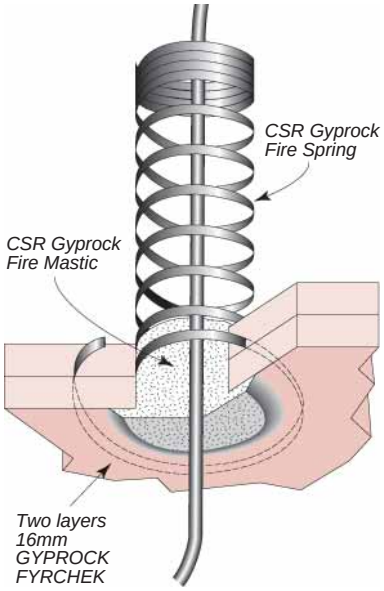
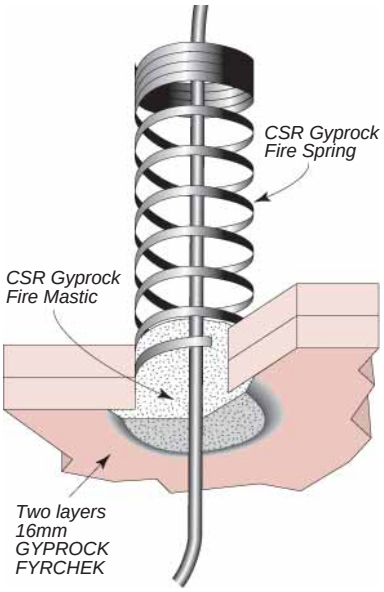


FIG Z055: GYPROCK FIRE SPRING FITTED AFTER CEILING INSTALLATION TESTED TO AS1530.4



Alternately, where electrical wires or conduits penetrate a fire rated ceiling, the penetration must be back-blocked with two 100 x 100mm pieces of 16 mm GYPROCK FYRCHEK.

Recess the lower piece to accommodate the wiring, and fix both blocks in position with Gyprock™ Cornice Cement or Gyprock™ Base Coat 45 or 60.

FIG Z056: BACK-BLOCKING OF ELECTRICAL PENETRATION ON CEILING

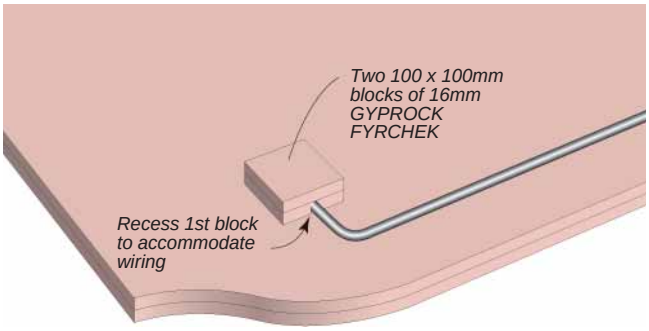
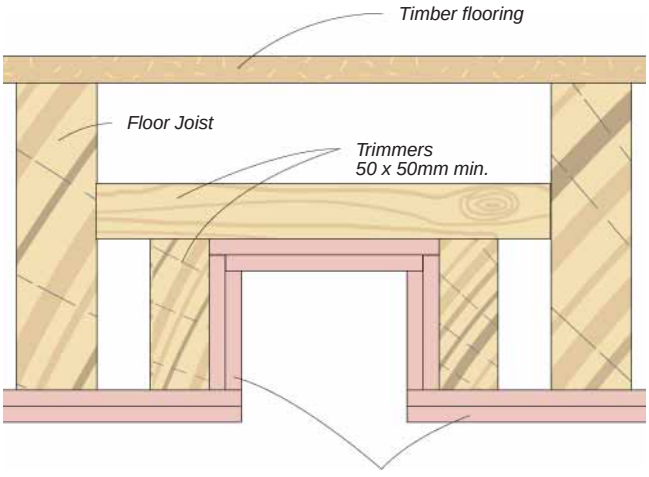


FIG Z057: RECESSED LIGHT CAVITY IN TIMBER FRAME

(Maintains the FRL of the wall system in which it is installed).



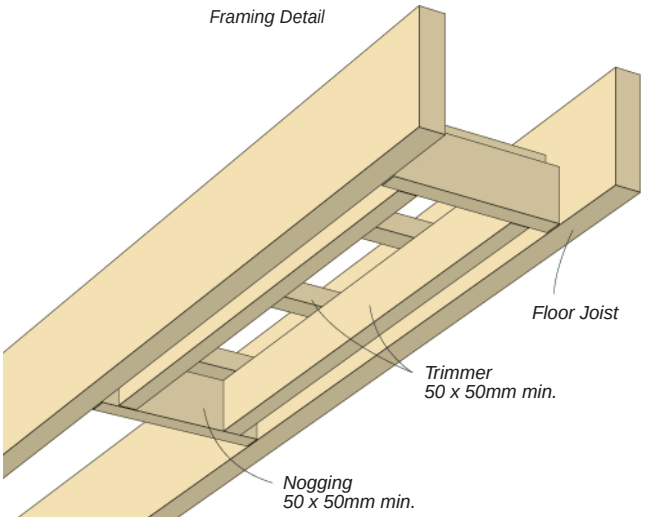
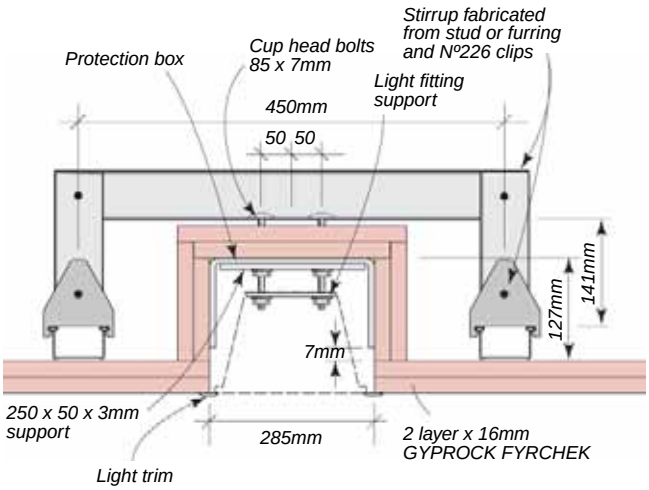
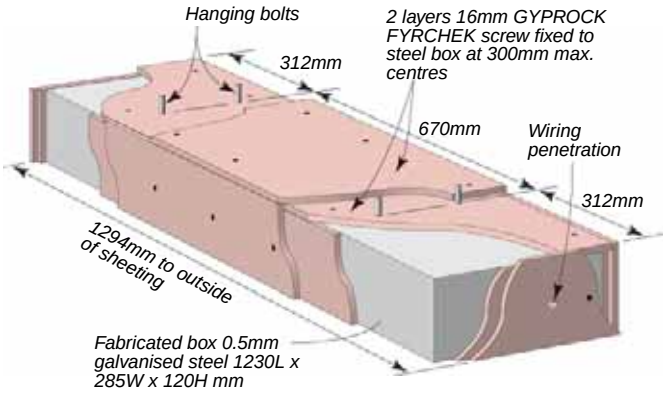


FIG Z058: RECESSED LIGHT BOX IN SUSPENDED STEEL FRAME CEILING

(Maintains the FRL of the wall system in which it is installed)
(Components not supplied by CSR)





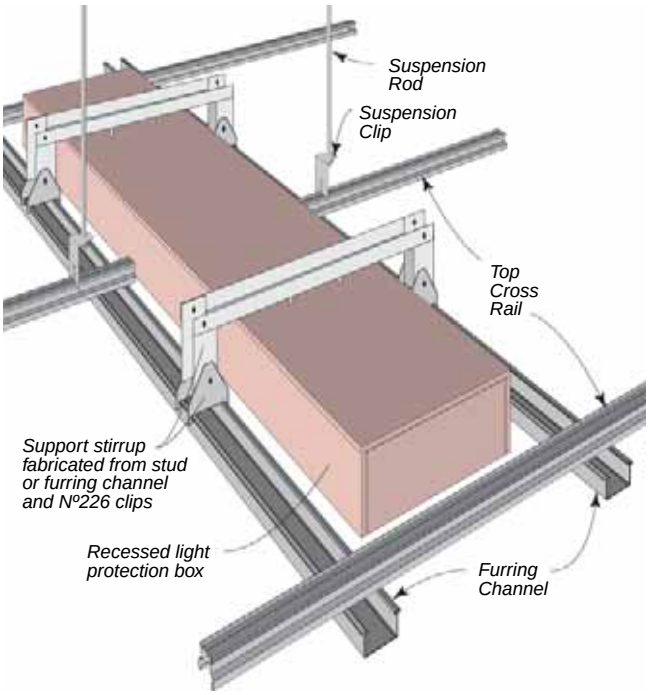


FIG Z059: SURFACE MOUNTED LIGHT PERPENDICULAR TO FURRING CHANNELS

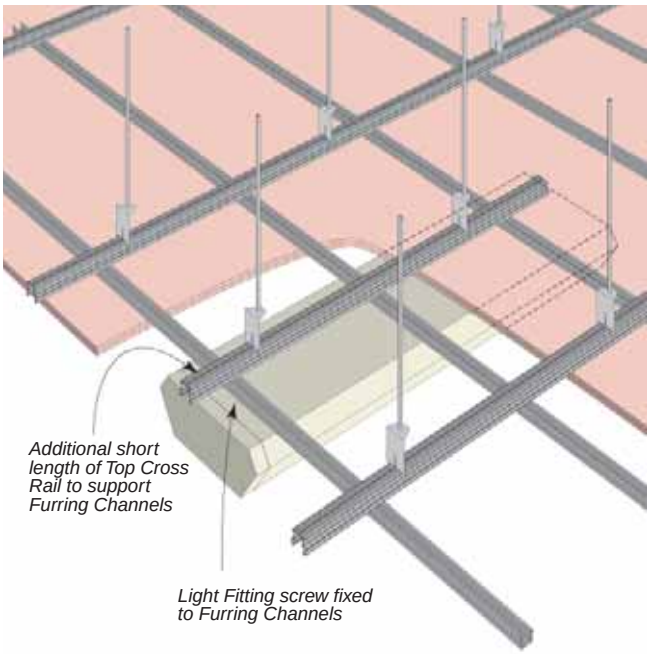


FIG Z060: SURFACE MOUNTED LIGHT PARALLEL TO FURRING CHANNELS

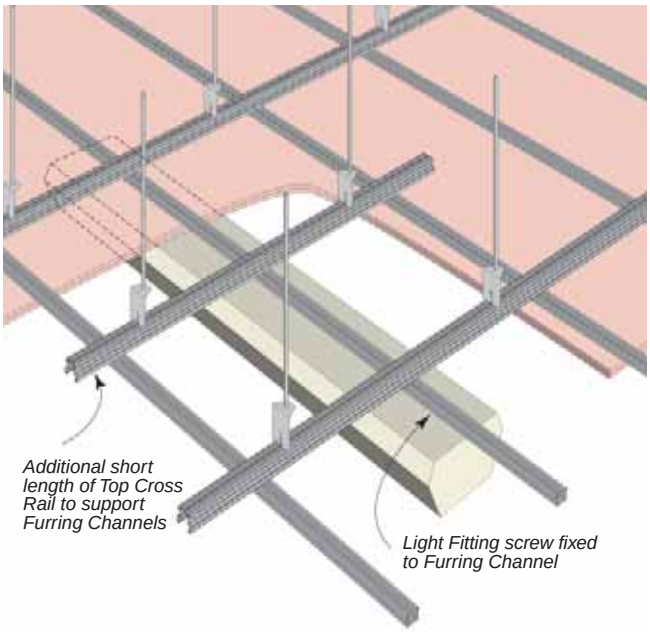


FIG 26: FIRE RATED REGAL HALOGEN DOWNLIGHT

Regal type R1012/FRD downlight is suitable for FRL 60/60/60 and 60 minute RISF.

Plumbing Penetrations

FIG Z069:
COPPER PIPE PENETRATION THROUGH CEILING
(Maintains the FRL of the ceiling system in which it is installed).

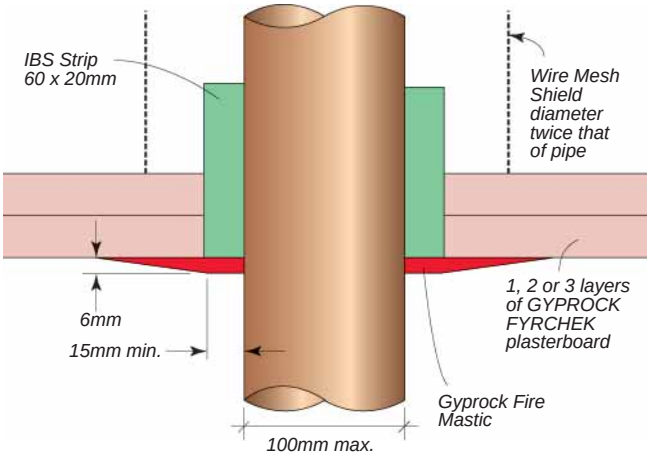
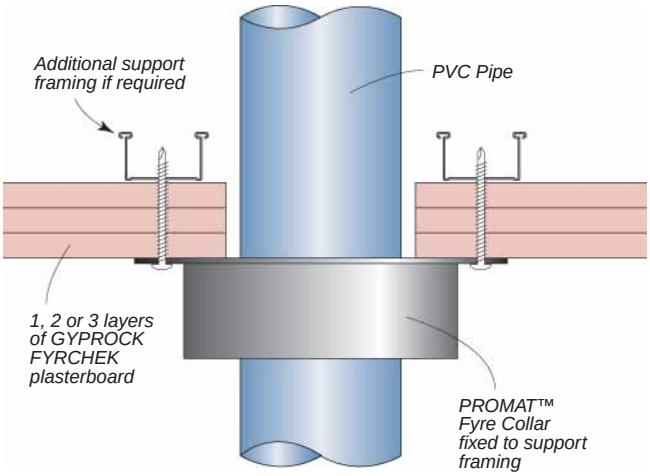


FIG Z070:
PVC PIPE PENETRATION THROUGH CEILING
(Maintains the FRL of the ceiling system in which it is installed).
Installation must be to fire rated collar manufacturer's specifications.



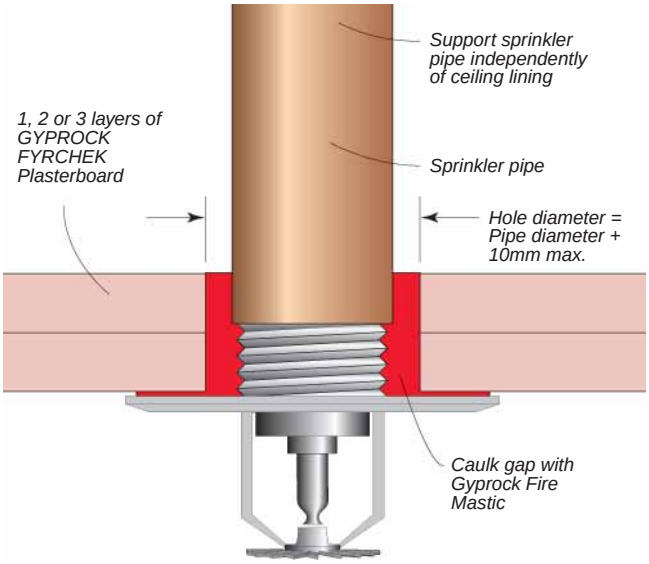
Sprinkler Pipes

The penetration through fire rated ceilings for sprinkler pipes should not exceed the pipe diameter plus 10mm.

The hole must be cut using a hole saw.

Once the pipe is in position caulk around the sprinkler head with Gyprock™ Fire Mastic.

FIG Z071: FIRE SPRINKLER PIPE PENETRATION THROUGH CEILING
(Maintains the FRL of the ceiling system in which it is installed).



Beam Encasement

Introduction

CSR Gyprock™ has developed a series of plasterboard encasement systems which provide up to 180 minutes fire resistance for structural beams.

Gyprock™ systems are available for encasement of beams made from steel or timber.

Caulking

To attain the specified FRL, all perimeter gaps and penetrations must be carefully and completely filled with Gyprock™ Fire Mastic.

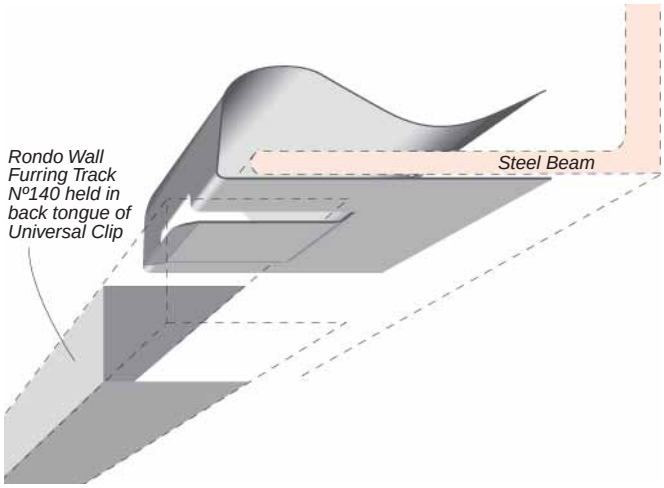
Steel Beams

Universal Encasement Clip

The Gyprock™ Universal Encasement Clip is manufactured from 1mm galvanised steel, and has been designed to suit common steel flange thicknesses between 6 and 28mm.

The clip slides onto the steel beam flange and holds in place via integral punched grips. Rondo Nº140 wall Furring Track is held in the back tongue to form framework for plasterboard fixing.

FIG 27: GYPROCK™ UNIVERSAL ENCASEMENT CLIP



Framing

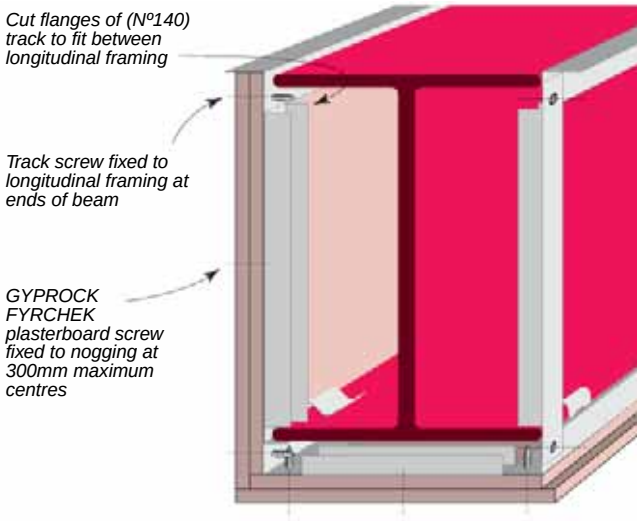
Metal angle must be fixed to the soffit or ceiling framing at 600mm maximum centres and at 100mm maximum from each end, and aligned to provide a framework for plasterboard fixing.

Gyprock™ Universal Encasement Clips are friction fitted to the remaining column/beam flanges at 800mm maximum centres and 150mm maximum from each end of the steel column/beam.

Wall Furring Track (Rondo Nº140) is held in the back tongue of the clip to form a steel framework for plasterboard attachment.

Nogging track must be installed at each end of the column/beam (and behind plasterboard butt joints in single layer systems) to enable plasterboard fixing..

FIG 28: NOGGING TRACK INSTALLATION DETAIL



Plasterboard Fixing

Where the width of plasterboard sheet is greater than 600mm, additional nogging support must be installed at 600mm maximum centres along the beam/column.

Cut flanges of (Nº140) track appropriately to form nogging and screw fix each end to the adjacent longitudinal tracks.

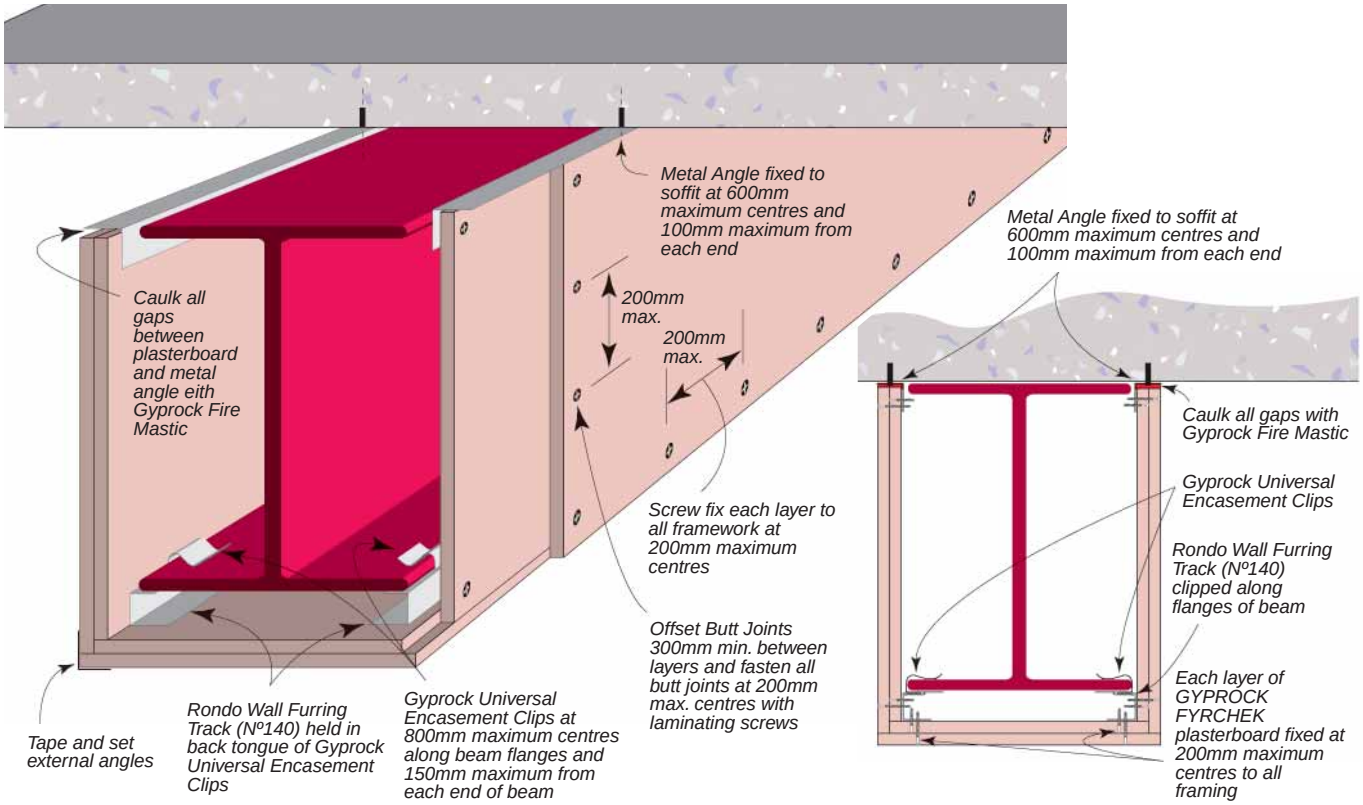
GYPROCK FYRCHEK plasterboard must be screw fixed to all furring and nogging track at 200mm maximum horizontal and vertical centres.

Fix subsequent layer(s) of plasterboard to the same specifications. Ensure plasterboard layers provide a zig-zag corner joint at all corners.

Provide a 6mm gap between sheet ends and abutting walls/ceilings/floors and caulk with Gyprock™ Fire Mastic.

Butt joints in consecutive layers of plasterboard must be staggered a minimum of 300mm. Fix each layer to the adjacent layer along all butt joint edges using Gyprock™ Laminating Screws at 200mm maximum centres.

FIG 29: STEEL BEAM ENCASEMENT SYSTEM – FIRE RATED – THREE SIDED PLASTERBOARD FIXING



Timber Beams

The Gyprock™ Timber Beam Encasement Systems provide up to 120 minutes structural fire resistance to timber beam sections.

All nails must have a minimum penetration into the timber of 20mm.

FIG 30: TIMBER BEAM ENCASEMENT SYSTEM FIRE RATED – SINGLE AND FIRST LAYER FIXING

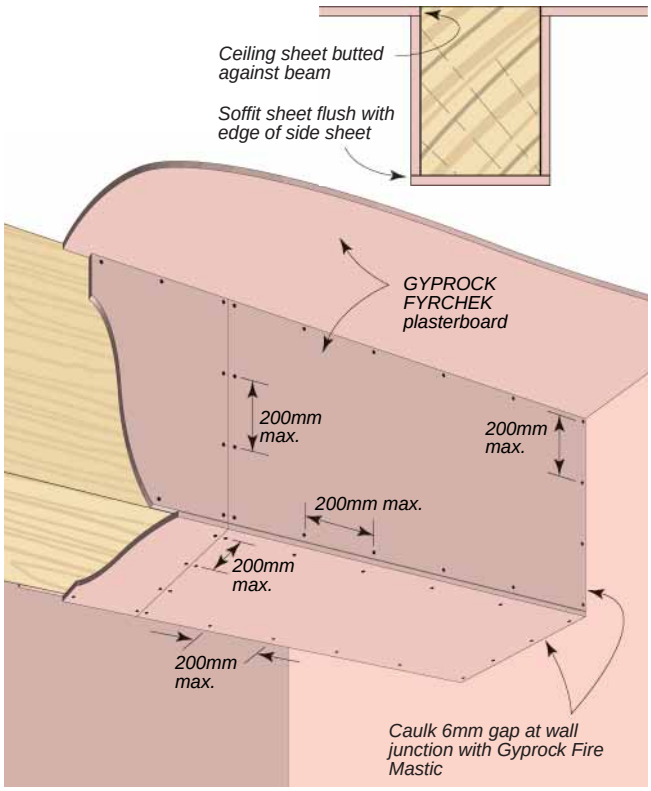
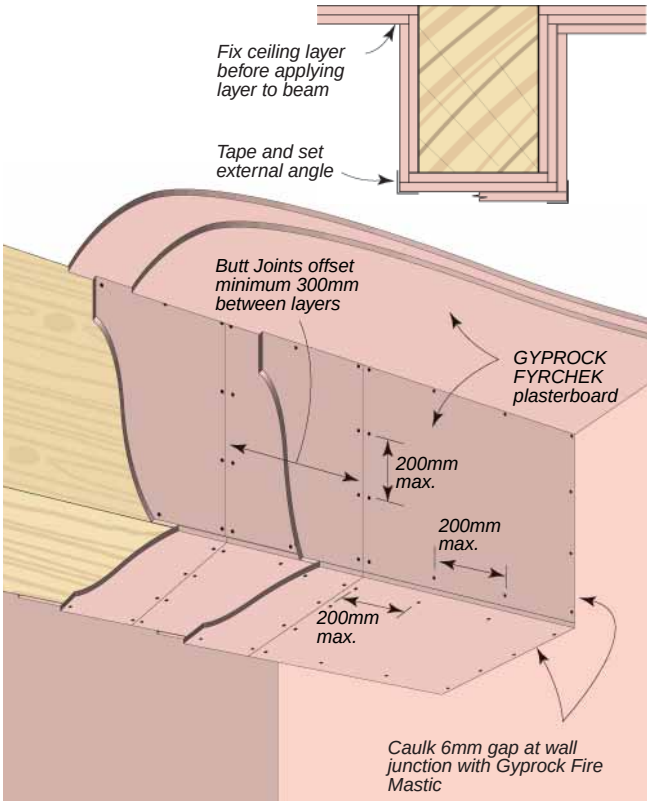


FIG 31: TIMBER BEAM ENCASEMENT SYSTEM FIRE RATED – SECOND/THIRD LAYER FIXING

(Third layer must be fixed to the same specifications).



Panel Ceiling Systems

Introduction

Gyprock™ Panel Ceiling Systems are an attractive, economical and functional solution for commercial and industrial ceilings in offices, shops and shopping centres, hospitals and nursing homes, school and university buildings, clubs, restaurants, function centres and community buildings, warehouse and factory buildings.

There is a range of Gyprock™ Panel Ceiling Systems to suit both decorative and acoustic requirements. Advantages include:

- Fast, easy and inexpensive to install. Panels simply sit in a two-way grid suspended frame.
- Panels in grid systems provide ready access to services located above.
- Dimensionally stable panels that will not buckle, shrink or warp. Under normal usage, deflection is minimal – well within the stringent tolerances set by AS2785.
- Virtually maintenance free.
- Vinyl laminate finished panels simply wipe clean with a damp cloth.
- Systems easily adapt to accept flush mounted lighting systems.
- Panels can be easily cut on-site using a trimming knife or panel saw to fit around columns, sprinklers and to accommodate flush lighting systems, etc.
- Used in conjunction with exposed grid suspension systems.
- Hold down clips are available for areas of fluctuating air pressure.

Gyprock™ Plasterboard Panels

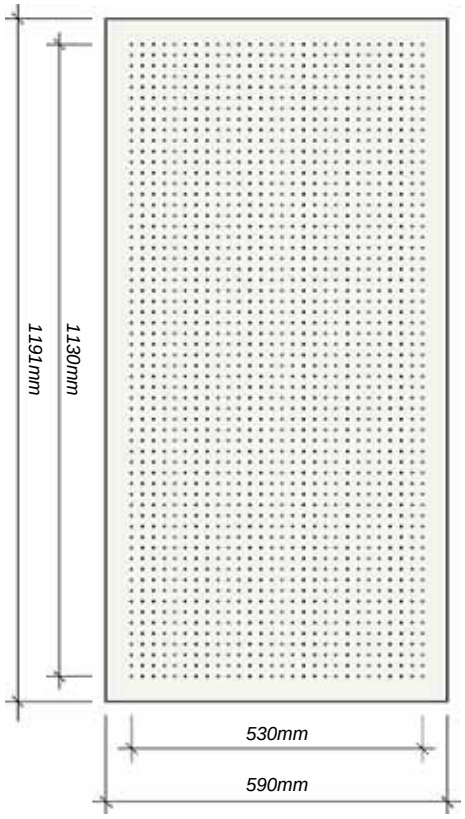
Gyprock™ Plasterboard Panels are machine made with a gypsum core and various face treatments to suit individual applications. Gyprock™ Panels are produced to fit 600 x 1200mm standard grids.

Perforated Panel has a white vinyl face finish, and a regular grid of 6mm full depth holes. Perforations are approximately 10% of the panel area, and combined with suitable insulation, provide a medium level of acoustic absorption.

Supatone™ is a paper faced white ceiling tile suited to basic commercial ceilings. A low maintenance bright white panel, it can be wiped clean with a damp cloth.

Freshtone™ Diamond White has a lightly textured vinyl surface which resists fading and mould growth. With a white finish, it is suitable for shopping centres, factories and offices.

GYPROCK PERFORATED PANEL
(all dimension nominal)



USG Ceiling Panels

USG ceiling panels have a mineral fibre core and offer attractive textured appearance and high acoustic ratings to meet the needs of offices, conference rooms, boardrooms, hospitals, cinemas, education, showrooms, restaurants, and hotels. The range includes:

Eclipse ClimaPlus™

- 19mm thick mineral fibre panels with three edge options.
- High NRC values achieved through patented technology.
- High stain resistance
- Humidity resistant to maximum 95% R.H. at 40°C.
- Non-perforated for a cleaner, lighter appearance.

Impressions ClimaPlus™

- 15mm thick mineral fibre panels with three edge options.
- Micro fissured for a cleaner, whiter appearance.
- Formulated to resist temperature and humidity conditions up to 40ºC and 95% R.H.
- NRC 0.50 - 0.60, CAC 33/35 min for quiet comfort.

Mars ClimaPlus™

- 19mm thick mineral fibre/glasswool panels with three edge options.
- Smooth non-perforated finish.
- Ultra high light reflectance (90%).
- Formulated to resist high temperature and high humidity.
- High combinations of NRC and CAC.

Olympia Micro ClimaPlus™

- 15mm thick mineral fibre panels with three edge options.
- Economical, fine-textured panel.
- Excellent light reflectance reduces the number of light fixtures needed, energy usage and eye strain.
- Humidity resistant to maximum 95% R.H. at 40ºC.

Radar ClimaPlus™

- 15 or 19mm thick mineral fibre panels with three edge options.
- True non-directional texture allows installation in any direction.
- A fresh, clean look adapts to any interior.

Ecophon™ Ceiling Panels

Ecophon™ ceiling panels have a bonded glasswool core for high acoustic performance and the Akutex T finish to provide an attractive easy care surface.

Akutex T

The range includes:

Focus: 20mm thickness panels with a range of edge profiles. Also available for direct fixing to battens or existing ceiling. The Akutex T surface is micro-perforated vinyl paint that can be easily wiped clean.

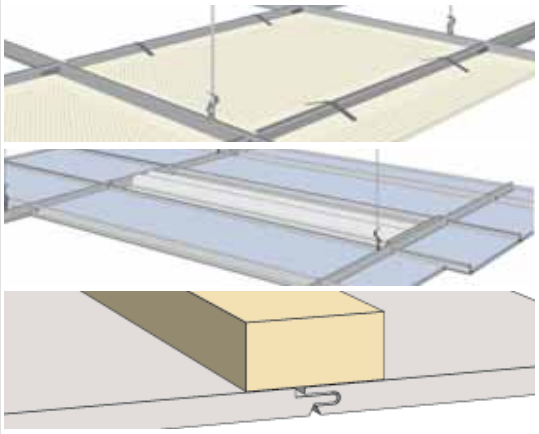
Advantage: 15mm thickness panels with a glass tissue facing to meet general conditions and good acoustic performance.

Master: 40mm thickness panels with the highest acoustic performance plus Akutex T finish.

Hygiene: 20mm thickness panels with a 'cleanroom' classification. Provides excellent acoustic performance and the Akutex T finish is suitable for pressure wash-down situations.

For detailed information, please refer to the 'Ecophon Product Catalogue'.

Acoustic Panel/Tile Ceiling Systems

SYSTEM SPECIFICATION	TYPICAL LAYOUT	ACOUSTIC OPINION OR TEST
• Rondo Duo™ suspended ceiling system with appropriate acoustic ceiling tiles. OR • DONN™ suspended ceiling system with appropriate acoustic ceiling tiles OR • Fricker Easy Access System® with appropriate acoustic ceiling tiles OR • Plasterboard ceiling or timber battens with Ecophon Focus F acoustic ceiling tiles.		**Refer to CSR Fricker**

System **CSR 890** with Acoustic Ceiling Tile Options	Material and Thickness	Edge Details	NRC	CAC dB	Light Reflectance	Recycled Content	Weight kg/m²	R Value
Ecophon Focus A, D, E	Glasswool 20mm	Square	0.85	21	0.8	70%	2.5	0.61
		Shiplap	0.85	25				
		Tegular	0.9	23				
Ecophon Focus F	Glasswool 20mm	Shiplap(F)	0.75	NA	0.84	70%	2.5	0.61
Eclipse ClimaPlus™	Mineral Fibre 19mm	Square	0.65-0.75	35-39	0.84	78%	5	0.46
		Tegular						
		Fineline						
Impressions ClimaPlus™	Mineral Fibre 15mm	Square	0.50-0.60	33	NAV	38%	3.55	0.33
		Tegular		35				
		Fineline		35				
Mars ClimaPlus™	Mineral Fibre & Glasswool 19mm	Square	0.70-0.80	35-39	0.9	72%	4.7	0.46
		Tegular	0.75-0.85					
		Fineline	0.70-0.80					
Olympia Micro ClimaPlus™	Mineral Fibre 15mm	Square	0.5	30	0.88	52%	4.55	0.33
		Tegular		35-39				
		Fineline		35-39				
Radar ClimaPlus™	Mineral Fibre 15mm/19mm	Square	0.50-0.60/0.70	33/40	0.84	38%	3.55	0.33
		Tegular	0.5-0.6	35				
		Fineline	0.5-0.6	35				
Perforated Plasterboard (with Bradford Anticon 55, foil face up)	Plasterboard 13mm	Square	0.49	NA	NA	NA	6.5	0.06

NOTES: NA = Not Applicable NAV = Not Available

CEILING TILE EDGE DETAILS

Square *Tegular* *Fineline* *Shiplap* *Shiplap (F)*

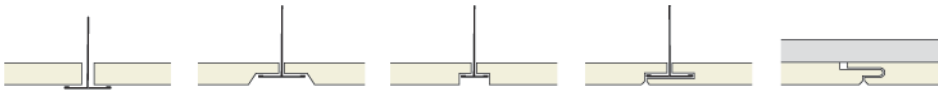


FIG 32: TYPICAL INSTALLATION DETAIL – RONDO DUO EXPOSED GRID SUSPENDED CEILING SYSTEM

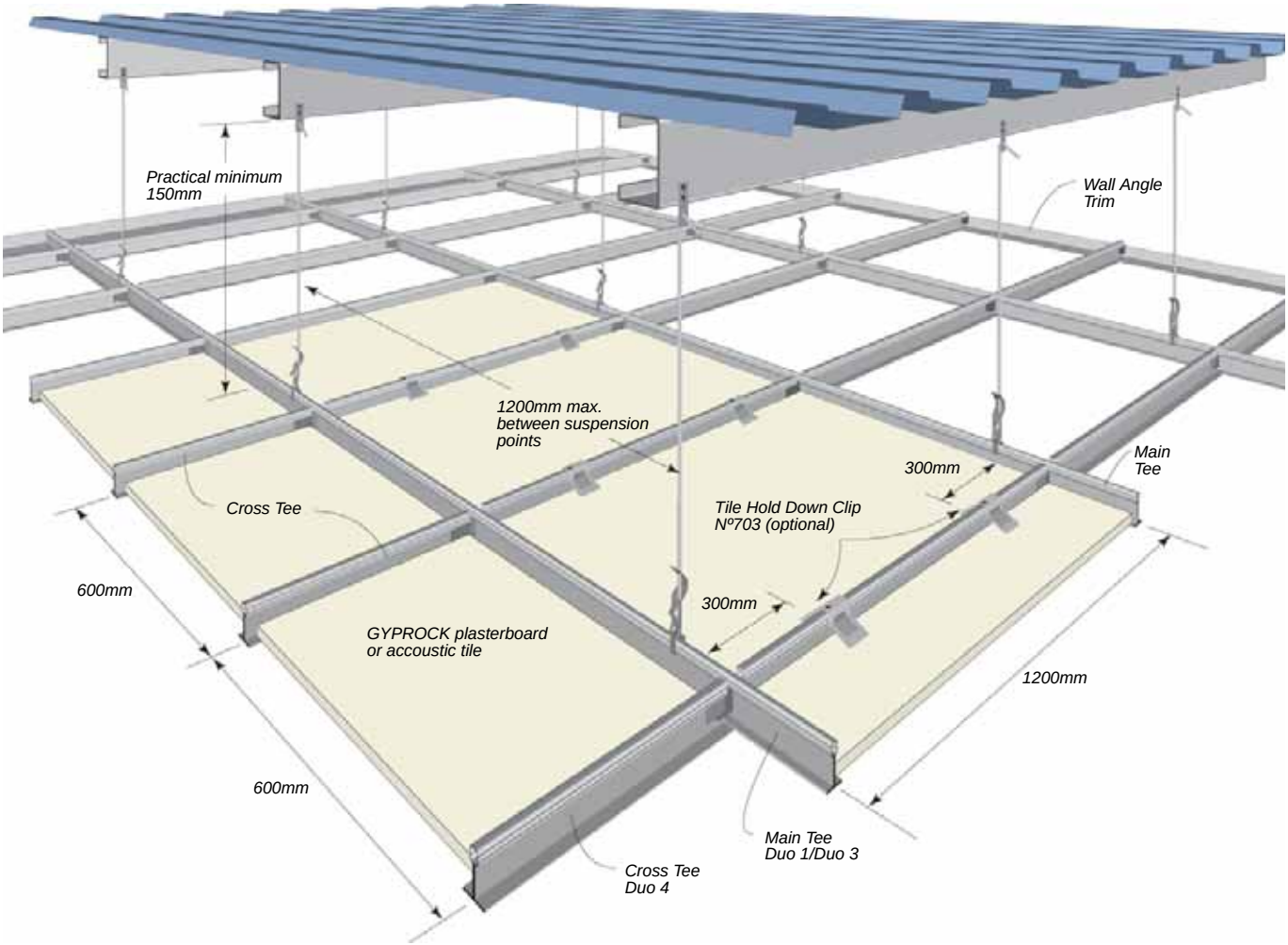


FIG 33: TYPICAL INSTALLATION DETAIL – FRICKER EASY ACCESS SYSTEM® WITH ACOUSTIC CEILING TILES

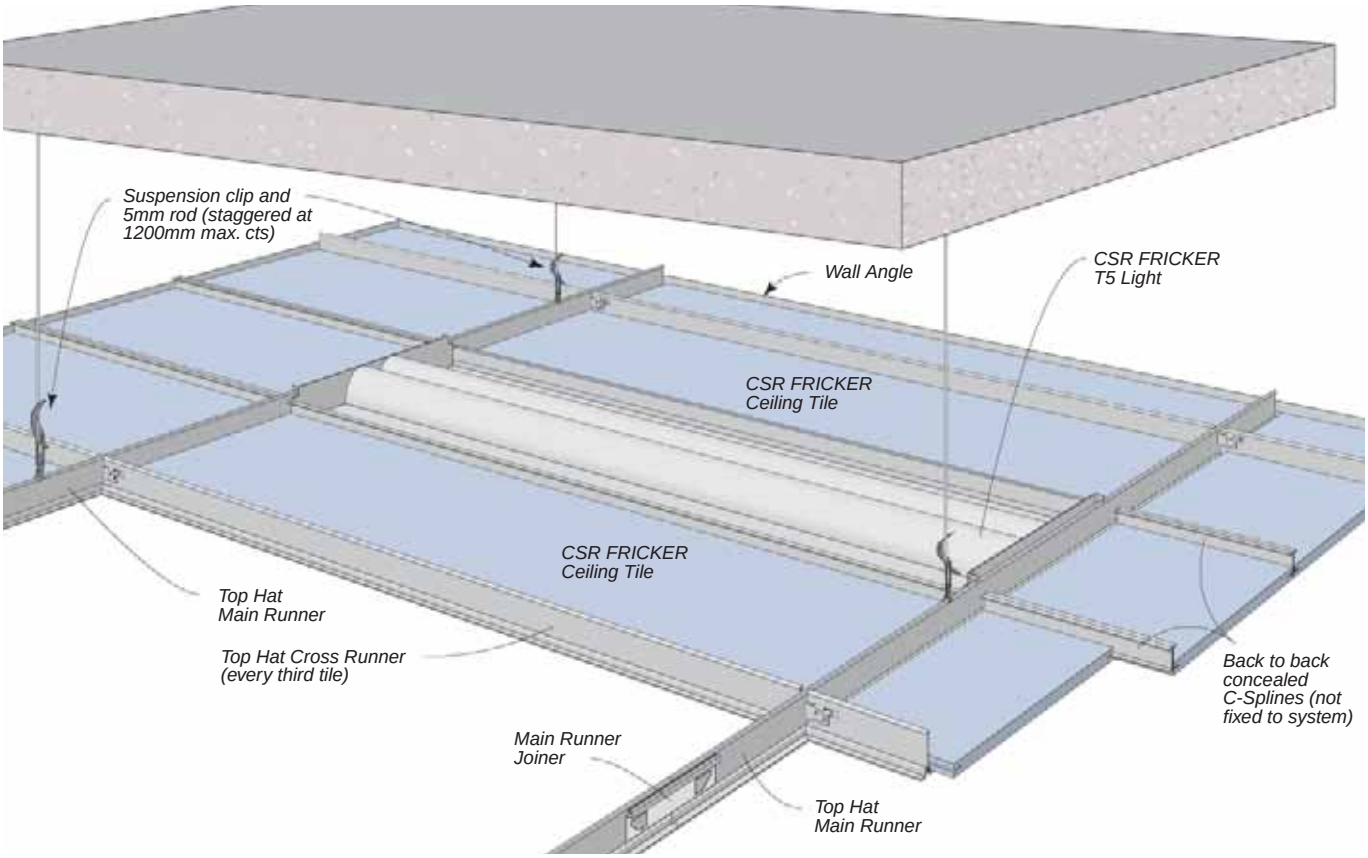


FIG 34: TYPICAL INSTALLATION DETAIL – DONN™ EXPOSED GRID SUSPENDED CEILING SYSTEM

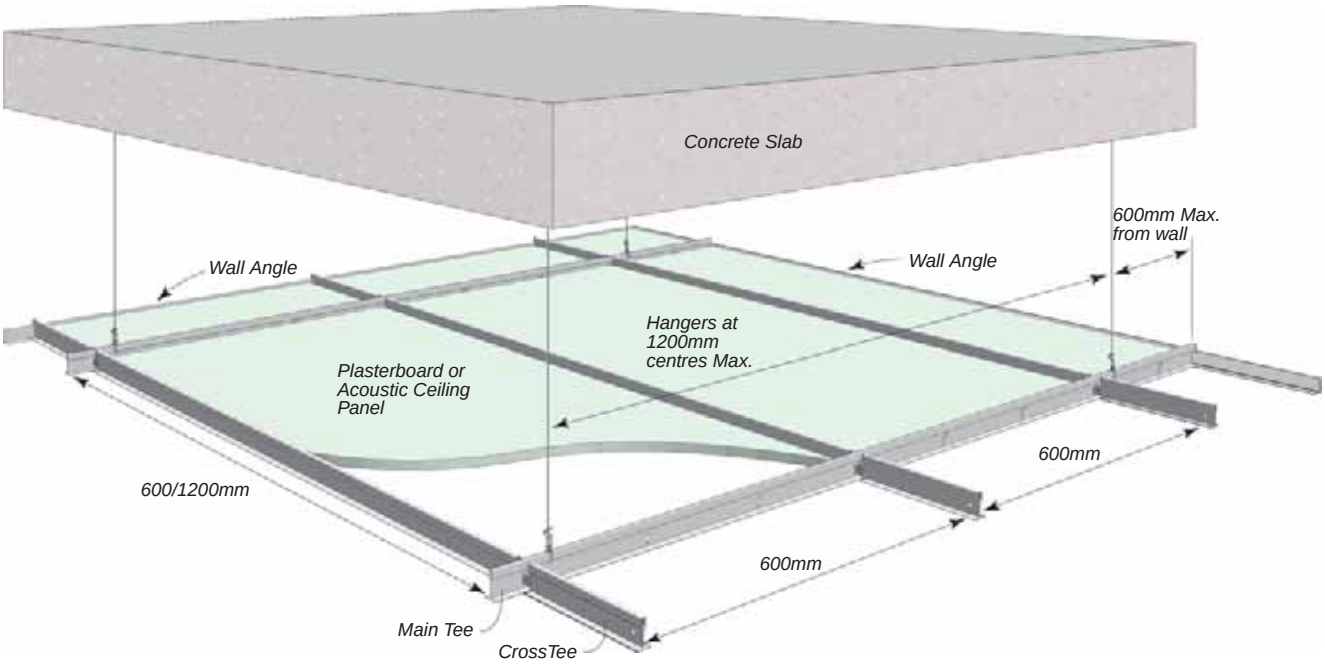


FIG35: DONN™ COMPONENTS

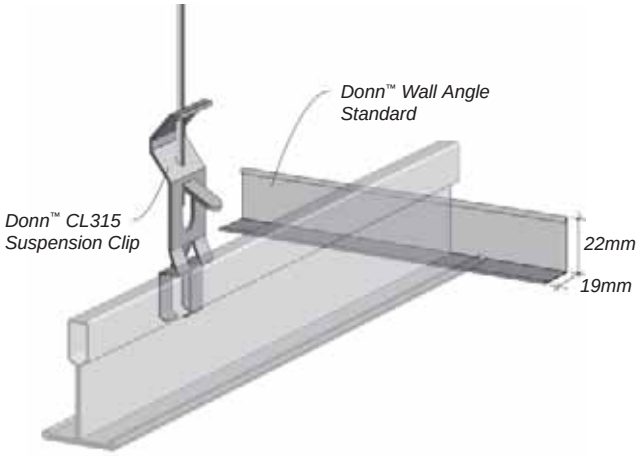
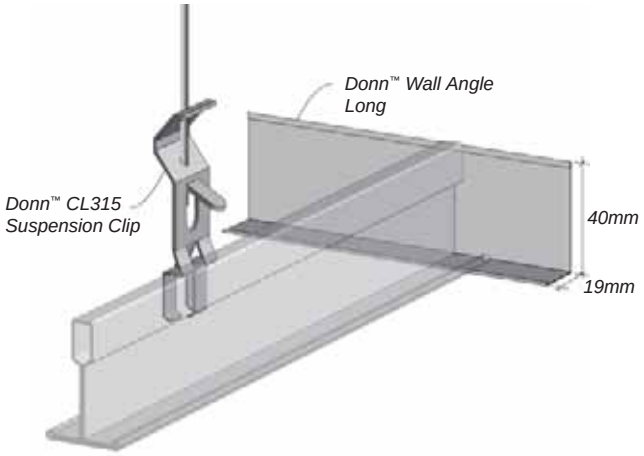


FIG 36: DONN™ COMPONENTS



Design Considerations

Suspension Systems

Gyprock™ Suspended Ceilings incorporate an Exposed Grid Ceiling System (Rondo Duo™, Fricker Easy Access System® or USG Donn™), and are designed to AS/NZS 2785 'Suspended Ceilings – design and installation'.

They are not trafficable unless stated, and are designed to carry the weight of the ceiling only. Where a trafficable ceiling is required, install a proprietary trafficable ceiling system.

Strengthen suspension systems to support light fittings and access panels as shown in the detailing section of this manual and/or Rondo technical literature.

Any additional loads are not to be placed upon, or carried by the suspension system without the approval of Rondo Building Services or CSR Gyprock.

Pressure Equalisation Air Grilles

Rooms which do not have permanently open air ventilation grilles should have grilles fitted in the doors to allow air pressure to equalise during opening/closing.

If no ventilation grilles are fitted to a room or its doors, CSR Gyprock recommends that each panel be held in place with Panel Hold-down Clips (Nº703), to prevent panels lifting under pressure fluctuations.

Fire Resistance

CSR Gyprock ceiling panels have been tested to AS1530.3, 'Simultaneous determination of Ignition, Flame Propagation, Heat Release and Smoke Release.

TABLE 15: FIRE HAZARD PROPERTIES

CSR GFC Product	$SMOGRA_{RC}$	Group Number
13mm Perforated Panels	0	1
10mm FRESHTONE™ Diamond White	0	1
10mm SUPATONE™	0	1
10 – 13mm Unpainted Panel	0	1
USG Eclipse ClimaPlus™	31*	1
USG Impressions ClimaPlus™	7.4*	1
USG Mars ClimaPlus™	149*	1
USG Olympia Micro ClimaPlus™	26*	1
USG Radar ClimaPlus™	7.4*	1
Ecophon ADVANTAGE	0	1
Ecophon FOCUS	0	1

NOTES: $SMOGRA_{RC}$ = Smoke Growth Rate Index.
* Average Specific Extinction Area

Grid Installation

The following information assumes the room is square and the ceiling panels are to be installed in a standard square-on-square pattern. Installation methods will need to be modified to allow for out of square rooms or other grid patterns, such as brick pattern, and to allow for light fittings, etc.

- For best appearance, the panels closest to the walls may need to be cut to size to provide a symmetrical pattern. To determine the position of the grid, determine the number of 1200mm panels that will fit the room dimension. Determine any remainder and add 1200mm. Divide this total by 2. This is the margin along each side of the room. Now determine the number of 600mm panels that will fit the room dimension. Determine any remainder and add 600mm. Divide this total by 2. This is the margin at each end of the room.

Example Grid Calculations:

Main Tee Grid

- 4000 ÷1200 = 3.3 modules

  4000 – 3600 (3 panels) = 400

  400 + 1200 = 1600

  1600 ÷ 2 = 800 margin on each side of the room.

Cross Tee Grid

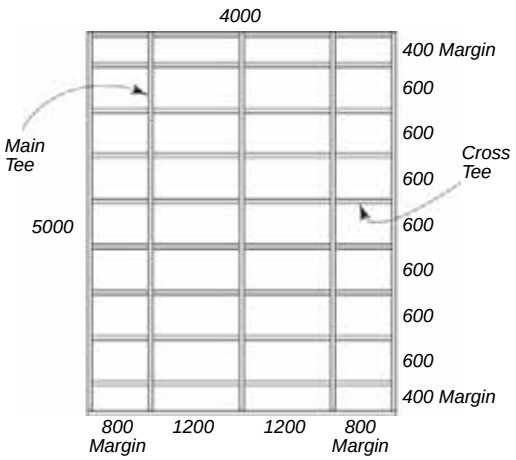
- 5000 ÷ 600 = 8.3 modules

  5000 – 4800 (8 panels) = 200

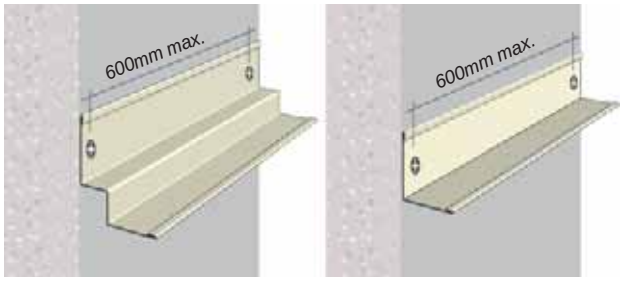
  200 + 600 = 800

  800÷ 2 = 400 margin at each end of the room.

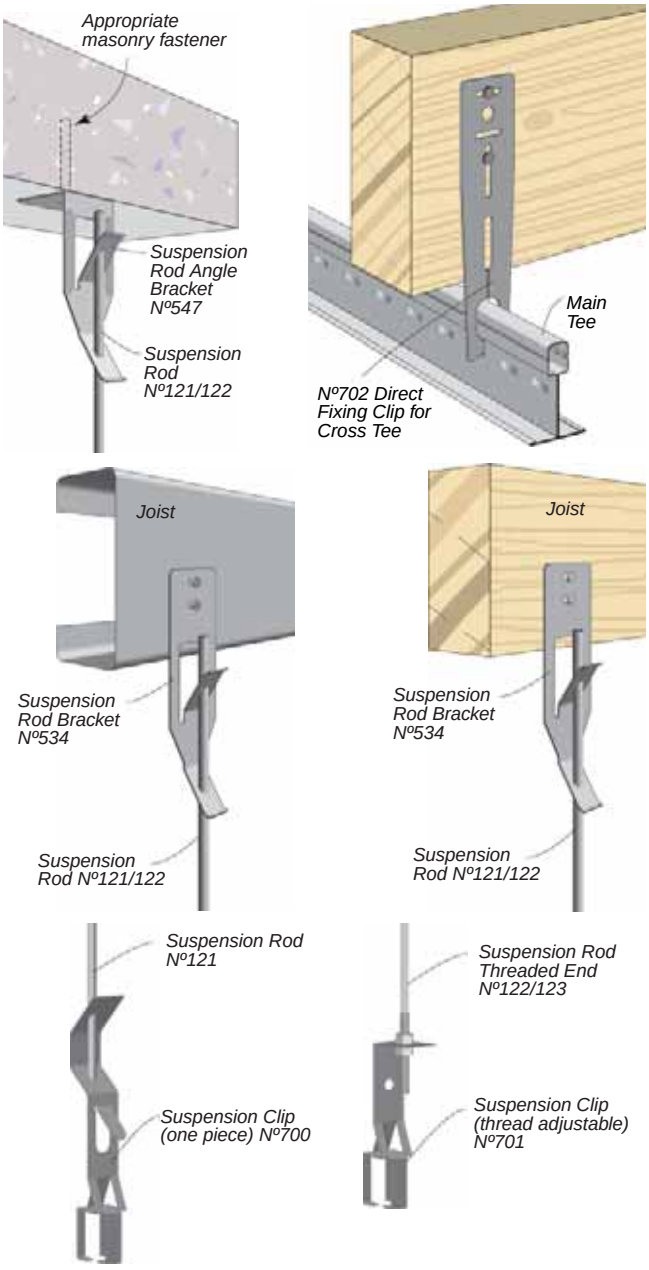
TYPICAL GRID LAYOUT



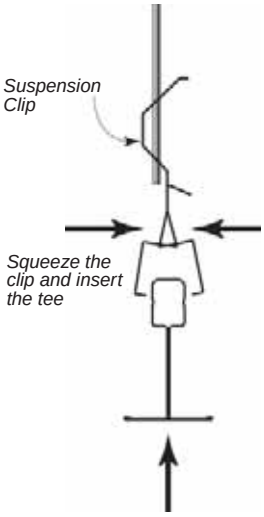
- Install selected wall trim with the bottom flange aligned at the required ceiling level. The ends should be mitre cut for a more attractive finish. Fix trim to the wall framing/ masonry at the ends and at 600mm maximum centres between.

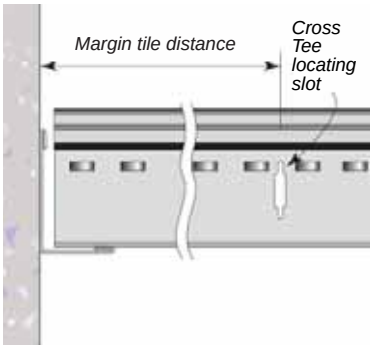


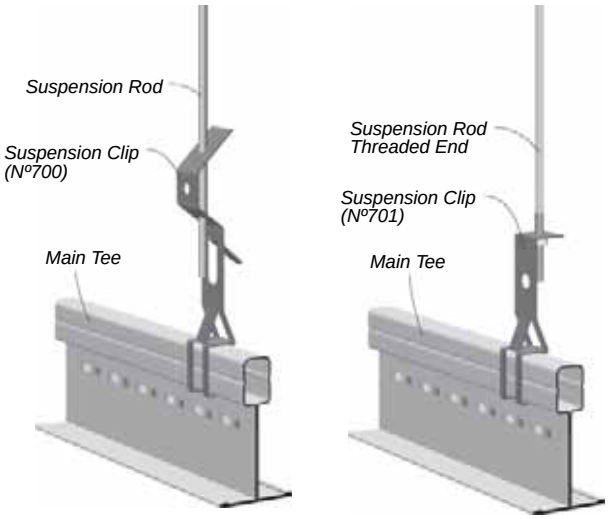
- Accurately position and fix suspension brackets to the floor/roof structure to support Main Tees at 1200mm centres. (Accurate installation is important to ensure that Main Tees will be at 1200mm spacings).



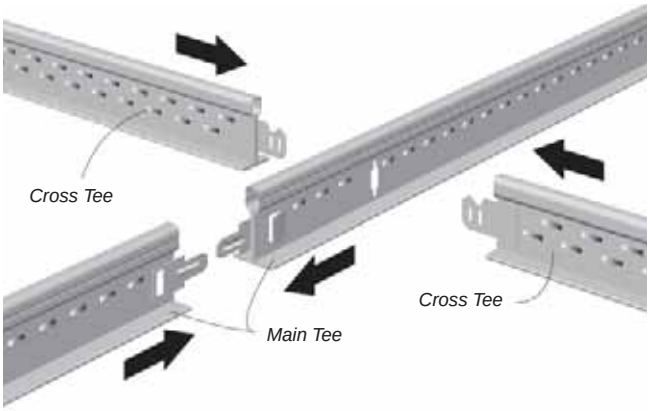
- Position and fix suspension brackets to the floor/roof structure at 1200mm maximum centres along the main tees.
- Insert rod to suspension brackets and clips.
- Cut main tees so that the cross tee slots are appropriately located to suit the margin. Install Main Tees into the suspension brackets by squeezing the clip.

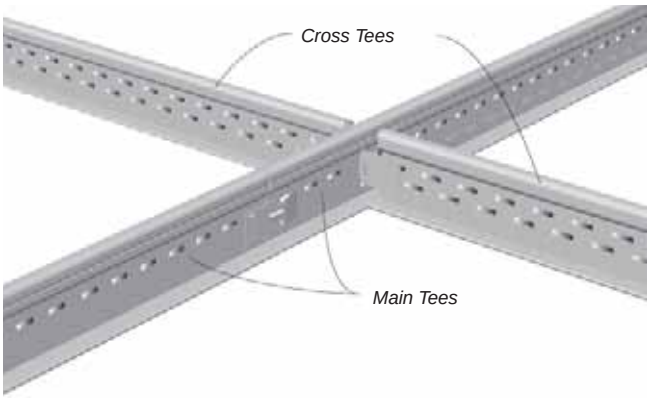




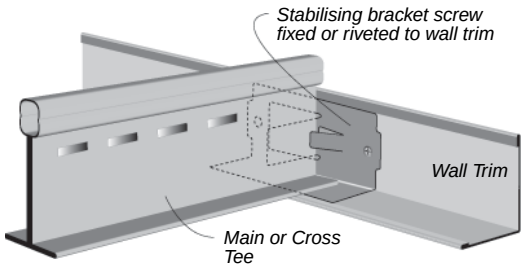


- Join main tees by sliding the self locking end tabs together. Locate the outer ends of the main tees on the wall trim for stability.
- Install the self locking tabs of the cross tees through the pre-punched slots in the main tees and gently push to lock together forming a grid of 1200 x 600mm. Cut and install the outer cross tees on to the wall trim as described for the main tees.

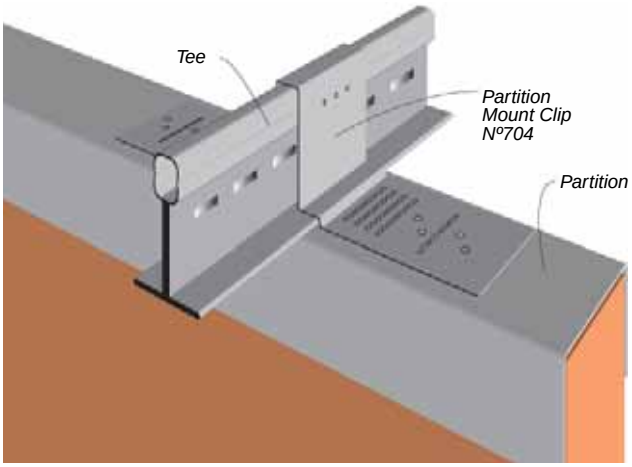




- Accurately align and level the grid. The suspension clips can be adjusted to either a string line or laser.
- To assist with stabilising the grid system in large ceiling areas, the Wall Trim Stabiliser Nº705/706 should be attached to the wall trim at every second or third main and cross tee.

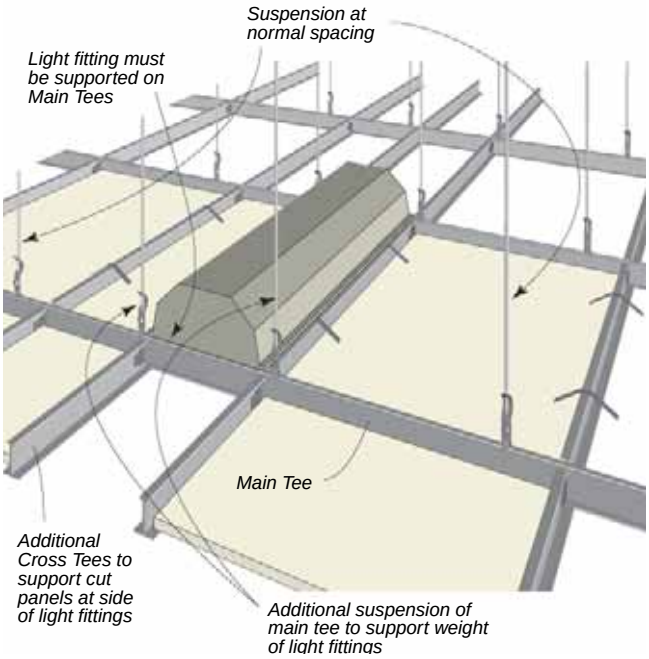


- Rondo Partition Mount Clip Nº704 can be fixed to the top of the partition frame to connect the ceiling system to partitioning.



- Light fittings must always be supported on main tees. **Additional suspension brackets, rods and clips MUST BE INSTALLED to support light fittings**. Refer to Rondo literature for maximum allowable loads for the grid.
- Additional cross tees will need to be installed to support panels at the side of light fittings.

FIG 37: TYPICAL LIGHT FITTING INSTALLATION

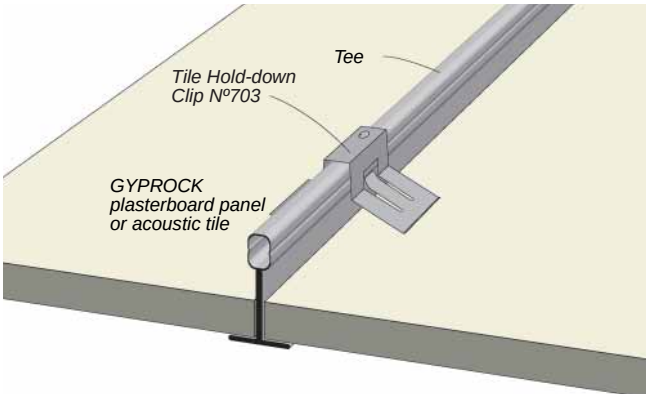


Panel Installation

Clean hands or gloves are essential to prevent soiling of panel face during installation.

- Remove protective plastic cover from panel face.
- Lift the panel through the grid and position face down on the bottom flanges of the grid main/cross tees.
- Fit Hold-down Clips to cross tee top flange, and bend hold-down flanges downward to prevent panels lifting.

FIG 38: PANEL HOLD-DOWN CLIP



Suggested Bulkhead Detail

(Maximum Drop 600mm)

FIG 39: HORIZONTAL EXPOSED GRID/VERTICAL SCREW-UP SYSTEM

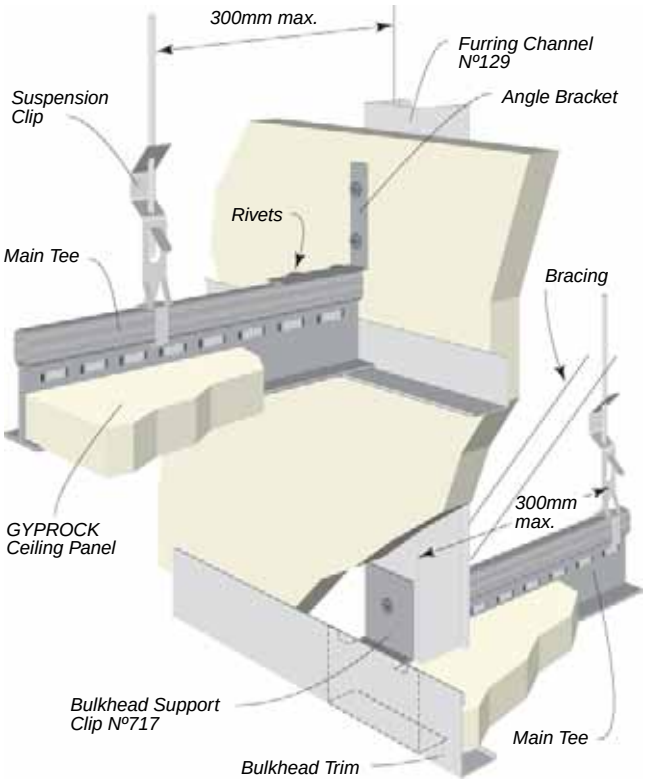
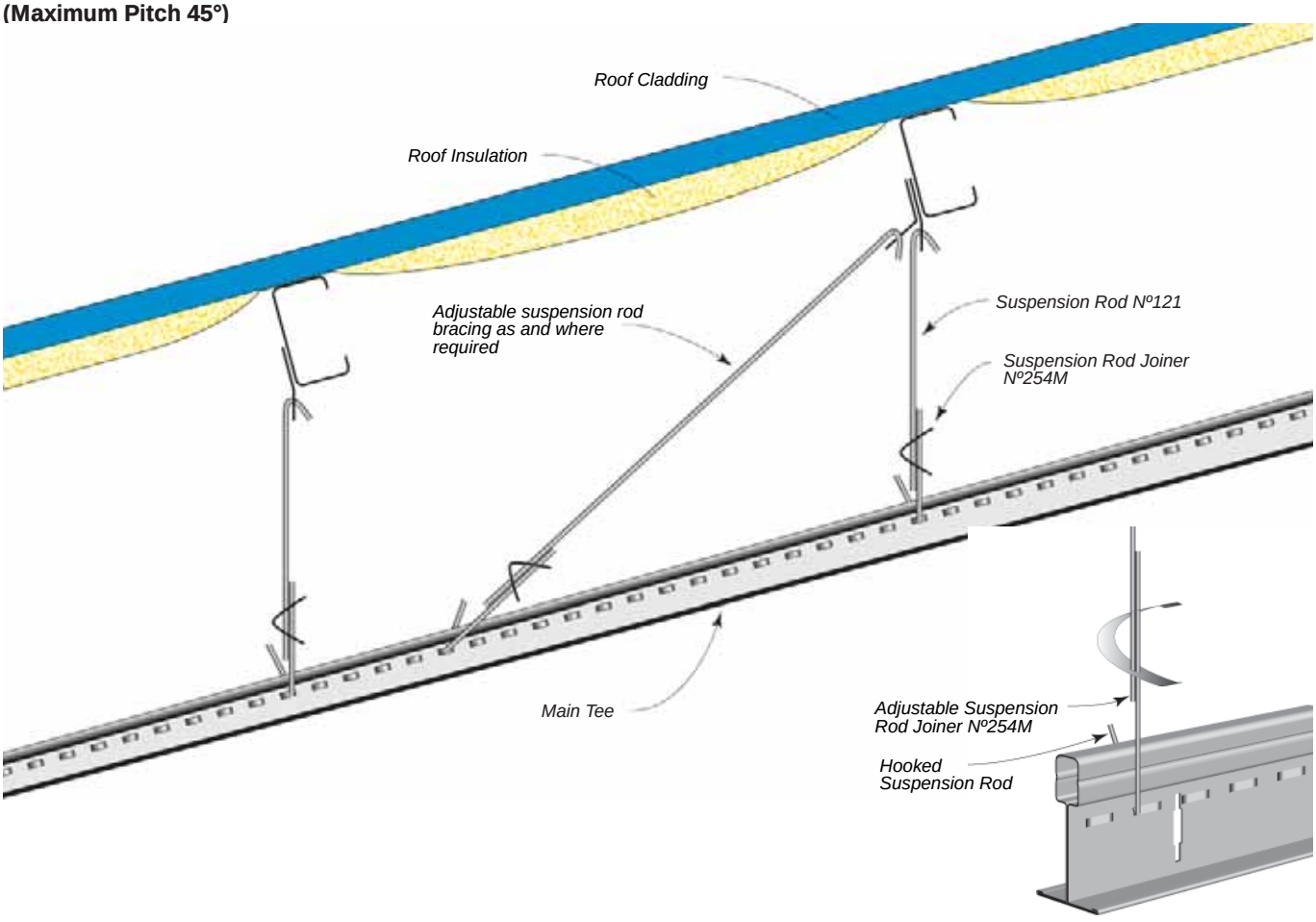


FIG 40: SUGGESTED RAKED CEILING DETAIL
(Maximum Pitch 45°)



Health & Safety

Information on any known health risks of our products and how to handle them safely is on their package and/or the documentation accompanying them.

Additional information is listed in the Material Safety Data sheet.

To obtain a copy, telephone 1800 807 668.

Guarantee

CSR Building Products guarantees its Gyprock™ products to be free of defects in materials and manufacture.

If a CSR product does not meet our standard, we will, at our option, replace or repair it, supply an equivalent product, or pay for doing one of these.

CSR recommends that only products, components and systems recommended by it be used. If this is not done, CSR will need to be satisfied that any defect in its product is attributable to our failure to meet our standard (and not another cause) before this guarantee applies.

This guarantee excludes all other guarantees and liability for damage or loss in connection with defects in CSR's product, other than those imposed by legislation.

Contact Details

Gyprock™ Web Site

www.gyprock.com.au

Gyprock™ Sales Support

Telephone: 13 17 44
Facsimile: 1800 646 364

CSR *design*LINK™ Technical Support Service

Telephone: 1800 621 117

New South Wales and ACT

376 Victoria Street, Wetherill Park NSW 2164

Queensland

768 Boundary Road, Coopers Plains QLD 4108

Victoria

277 Whitehall Street, Yarraville VIC 3013

South Australia

Lot 100 Sharp Court, Mawson Lakes SA 5095

Western Australia

21 Sheffield Road, Welshpool WA 6106

Tasmania

PO Box 61, Glenorchy TAS 7010

Northern Territory

Cnr Stuart Hwy & Angliss St, Berrimah NT 0828

Publication GYP570.BMS8952.0608