RONDO PROFESSIONAL DESIGN MANUAL 2015

RONDO®

We want you to know that we've rallied the best, most experienced experts at Rondo together in the making of this book so that we can offer professionals like yourself a detailed technical reference to use.

Despite our efforts however, products, systems and Building Codes do change over time, and interpretations may also vary, which means we cannot accept any liability for any of the information (or lack of information) in this manual, or any consequences which happen as a result.

We also recommend you check that you are referring to the latest edition. You can do this by comparing your book to the one currently available on our website at *www.rondo.com.au.*

Finally, and only because we've invested so much pride and resources into producing this information for you, we kindly ask that you help us protect the quality and exclusivity of this book by not reproducing any of our images or information for commercial purposes without our written agreement, as per the copyright laws which apply.

Thank you

RONDO®

INTRODUCTION

The Rondo Professional Design Manual has been developed for industry professionals such as yourself that require detailed technical information for design or installation of Rondo wall and ceiling systems, as well as our complementary accessories.

We're dedicated to providing you with the systems you need to realise your vision effectively and in the most economical way possible. This is achieved by providing market-leading technical design and engineering expertise, innovative, quality product and system solutions and by maintaining supportive relationships with our customers and distribution channels.

Being at the forefront of innovation, service and quality for almost 50 years, Rondo products have been used in major building projects, predominately throughout Australasia, Asia and the Middle East – including Australia's tallest building, Q1, the World's tallest tower, Burj Khalifa in Dubai and the world's largest casino, the Venetian in Macau.

In this Design Manual you'll find information on all of our systems, including the components within each system, typical application details, installation information, design tables and other important material.

In addition, Rondo can provide professional engineering services and advice in the design of non-standard ceiling and wall framing systems where specific wind pressure or seismic design is to be accommodated for, as well as design assistance with difficult bulkhead construction or curved walls or ceilings. Similarly, assistance can be provided in situations where particular internal static pressures, lateral point loads, shelf loads, deflection or load bearing requirements must be catered for in walls and ceilings.

All of the information contained in the Rondo Professional Design Manual has been formulated in accordance with Australian and New Zealand Standards. For your convenience, we have listed all of the Standards relevant to each of our product systems on page 256.

Should you have trouble finding a particular Rondo product within our systems, you can use the index at the back of this manual for guidance.

INSIDE:

GENERAL INFORMATION

RONDO WARRANTY

All of Rondo's products are guaranteed by the Rondo Warranty. We guarantee that our products are made from the highest grade quality materials, are totally code compliant, and will perform to our exacting specifications. Every Rondo product not only meets, and often exceeds, all relevant Australian and New Zealand Standards; it also complies with all of the necessary Building Codes.

You can read more about our Rondo Warranty and download a sample copy at www.rondo.com.au

QUALITY CONTROL

As market leader, we have a reputation for uncompromising quality and total code compliance. Certification to Lloyd's Register Quality Assurance ISO 9001 is evidence of this. An internationally recognised quality management system standard, Rondo has been certified to ISO 9001 through thorough analysis and assessment by internal reviews and externally by Lloyd's Register since June 1993.

Having a certified quality management system provides Rondo with a competitive advantage against uncertified companies and is a clear demonstration of our commitment to quality.

You can even view our product testing process in action at www.rondo.com.au

LEADING ENVIRONMENTAL PERFORMANCE

Our dedication to identifying, controlling and continually improving the environmental impacts of our business operations has granted us certification to ISO14001 for our Environmental Management System, which we have held since January 2011.

Choosing our products can also earn our customers a green point. We've committed ourselves to all 10 of the environmental improvement points outlined in the Environmental Sustainability Charter (ESC) to gain eligibility to the scheme, which offers Contractors one Green Point if 60% or more of the steel used in a project is supplied by an ESC approved member.

That's just the beginning; to read more about our goals and achievements, see our page on sustainability at www.rondo.com.au

DESIGN SOLUTIONS

Every Rondo customer has access to the very best technical advice from our own engineering and design experts, who offer a comprehensive design service to assist from beginning concepts all the way through to the building completion.
Such designs include but are not limited to:

- Acoustic Wall and Ceiling Systems
- External Wall and Ceiling Systems
- Load Bearing Walls
- Non Load Bearing Walls
- Fire-rated Wall and Ceiling Systems
- Non Fire-rated Wall and Ceiling Systems
- Seismic Solutions

Through the use of current Standards, testing and latest seismic developments, our Engineers are able to provide seismic designs for Rondo wall and ceiling systems, tailored to your project seismic requirements.

Check out our website to view projects we have provided design assistance to, or to submit your own technical enquiry.

RONDO PRODUCT TRAINING

Rondo offers all of our customers' access to complimentary training with Rondo Learning Online, Skills 1 for Beginners and Skills 2 for Intermediates.
You can complete Rondo Learning Online by visiting www.rondolearning.com (username and password is 'rondo') which covers six of our major product groups.
Both Skills 1 for Beginners and Skills 2 for Intermediates are one-day face-to-face courses run by our National Product Trainer in all regions of Australia and New Zealand.

To find out when the next Rondo Skills Product Training course is on near you, and to register your seat, visit www.rondo.com.au today.

RONDO WEBSITE

We've taken the time to develop a website that is a user-friendly resource for accessing product information, CAD drawings, installation videos, company news – as well as using our market-leading design calculators, Rondo wizards. Additionally, you can access the Rondo Wizards and Distributor Locator using Rondo's handy iPhone/iPad App which you can download from the Apple Store.
Channel R is also a subscription service for registering to our monthly Enews and print publication, insideR – so you can be the first to hear about new products, promotions, and other company news before the rest of the industry.
Visit the website by going to *www.rondo.com.au*

YOU CAN ALSO JOIN US ON;

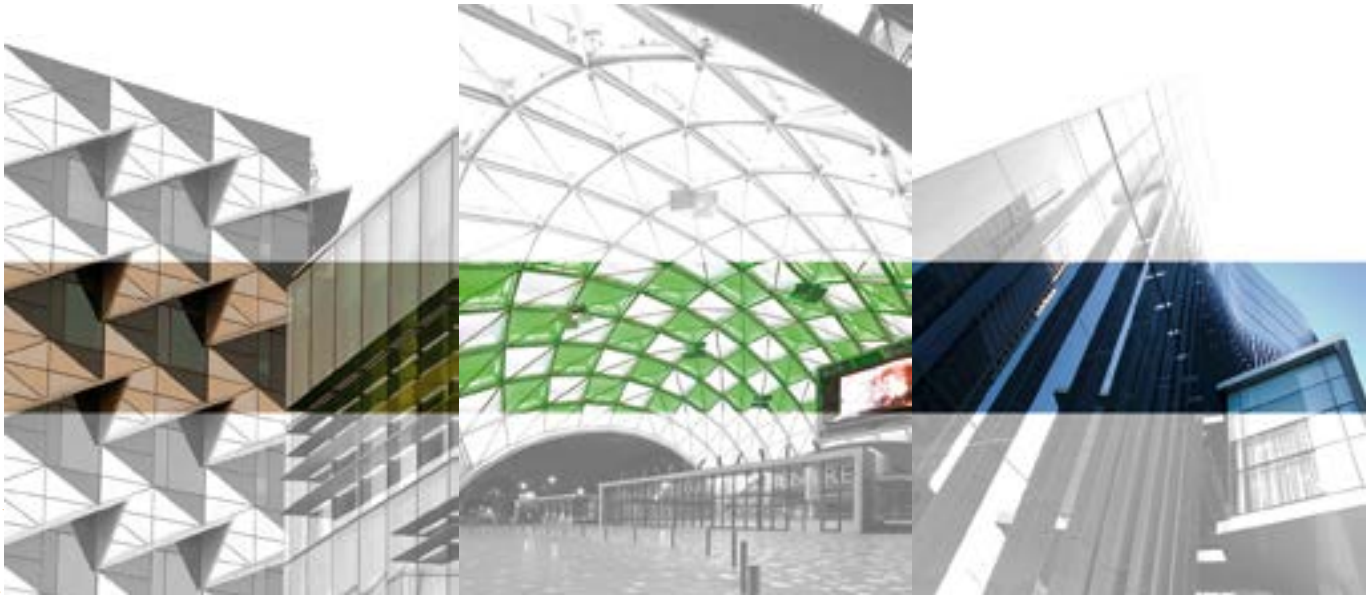
Facebook *– www.facebook.com/rondobuildingservices*
You Tube *– www.youtube.com/rondobuildingservice*
Linked in *- www.linkedin.com/company/rondo-building-services*

THE RONDO WARRANTY

DESIGN SOLUTIONS

RONDO PRODUCT TRAINING

RONDO WEBSITE



CEILINGS

KEY-LOCK® >

DUO® >

WALK-ABOUT™ >

STEEL STUD DRYWALL >

RONDO®

RONDO KEY-LOCK® CONCEALED SUSPENDED CEILING SYSTEM

SUMMARY

Whether you're looking to direct fix or fully suspend your plasterboard ceiling, the Rondo KEY-LOCK® Concealed Suspended Ceiling System is designed to produce high quality structure for a flawless, flush or featured finish. The KEY-LOCK® system can also be used as a framework to line virtually any existing wall or substrate.

SUITABLE FOR:

- Flush plasterboard ceilings
- Direct Fix or Fully Suspended applications
- Non-Fire Rated systems
- Fire Rated systems
- Acoustic Designs available
- Seismic Designs available*

SPECIAL FEATURES

- Able to be designed for external use, e.g. External Soffits
- Base Material Engineered from G2 BlueScope Steel for Strength and reliability
- Primary and secondary profiles available in custom lengths or radiusses

IN PRACTICE

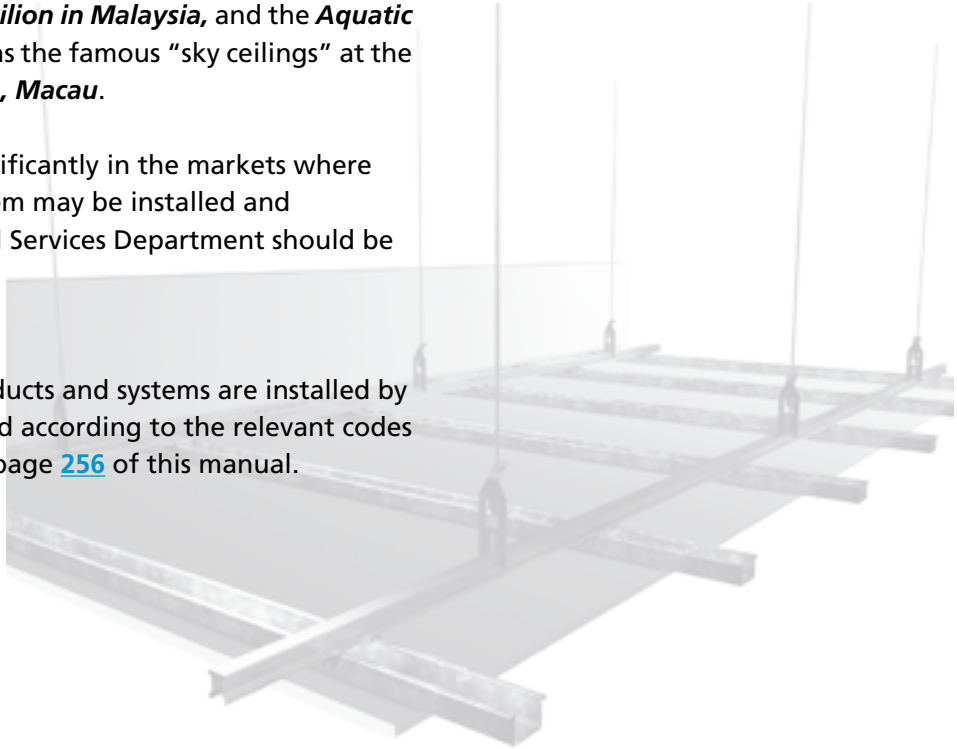
Since its initial introduction over 50 years ago, the design simplicity of the Rondo KEY-LOCK® system has seen its use around the world in some remarkable projects from the ***Setia City Mall in Malaysia***, to the ***Crown Metropol in Melbourne***.

Some KEY-LOCK® components have also been manufactured with a specific radius to produce vaulted ceilings or curved walls, such as in the ***Pod Pavilion in Malaysia,*** and the ***Aquatic Centre in Adelaide***, as well as the famous "sky ceilings" at the ***Venetian Resort and Casino, Macau***.

* Seismic activity varies significantly in the markets where the Rondo KEY-LOCK® System may be installed and therefore Rondo's Technical Services Department should be contacted for assistance.

IMPORTANT NOTE:
Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page 256 of this manual.

CONTENTS:



RONDO KEY-LOCK® COMPONENTS

PRIMARY SECTIONS

125	25mm Top Cross Rail 0.55bmt
127	25mm Top Cross Rail 0.75bmt
128	38mm Top Cross Rail 0.75bmt

FURRING/BATTEN SECTIONS

129	28mm Furring Channel
155	Wide Furring Channel with 10mm Express Joint
308	16mm Furring Channel
301	16mm Ceiling Batten
303	24mm Cyclonic Ceiling Batten
310	35mm Ceiling Batten
333	13mm Recessed Furring Channel
581	Resilient Channel
B005	Back Blocking Batten

SECTION JOINERS

138	Furring Channel 129-308
272	Top Cross Rail 125-127-128
312	Joiner 310
315	Nail-up Batten 301

PRIMARY TO SECONDARY JOINERS

119	Rondo U Clip
139	129-308 to 127-128
159	155 to 127-128

BULKHEAD TRIM

321	Aluminium Direct Fix-TW – 13mm PB

WALL TRIMS

140	Furring Channel Wall Track to suit 129
142	Wall Track to suit 308
340	Wall Track to suit 310
DUO5	Wall Angle 25 x 19mm Steel
DUO6	Wall Angle 19 x 9 x 9 x15mm Aluminium Shadowline
P51	Shadowline Combination Set Bead for 10mm Board
P52	Shadowline Combination Set Bead for 13mm Board
P53	Shadowline Combination Set Bead for 16mm Board

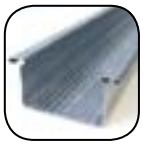
PRIMARY SECTIONS


125/127


128

FURRING/BATTEN SECTIONS


129


155


308

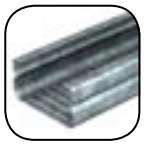

303


301


310


333


581


B005

SECTION JOINERS


138


312


272


315

PRIMARY TO SECONDARY JOINERS


119


139


159

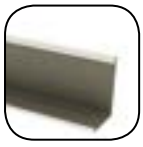
BULKHEAD TRIM


321

WALL TRIMS


140/340


142


DUO 5


DUO 6


P51/P52/P53

DIRECT FIXING CLIPS

156	Direct Fix Clip Timber/Steel for 155
157	Direct Fix Clip Masonry for 155
166	125-127-128 to Timber/Steel
226	129-308 to Timber/Steel
237	129-308 to Concrete
239	129-308 to Concrete-Screw Fix
282	Direct Fix FC Clip for Membrane Insulation
305	301 to Timber/Steel 150mm long
307	301 to Timber 90° DFC
311D	Direct fixing clip 310
313	Extended direct fixing clip for 310
314	DFC with positioning tab for 301 Batten to Timber/Steel 92mm
390	301 Batten Swivel Clip
394	129-308 to Timber/Steel
A124	TCR Assembly Clip with adj. through bolt
A239	FC Assembly Clip with adj. through bolt
BG01	BETAGRIP1 Standard Clip
BG02	BETAGRIP2 Long Clip
BG05	BETAFIL Double Membrane Insulation Clip
FC-INFIN0030	Sliding Adjustable Furring Channel Clip
FC-INFIN0080	Long Sliding Adjustable Furring Channel Clip
TCR-INFIN090	Sliding Adjustable Top Cross Rail Clip

SUSPENSION BRACKETS FOR RODS

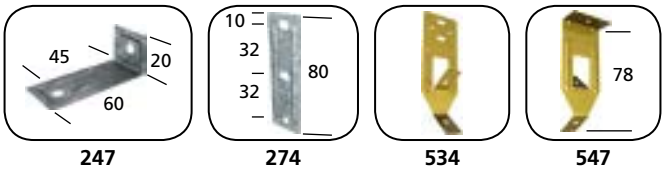
247	121 to Concrete
274	121 to Timber/Steel Joist
534	Adjustable Suspension Hanger (Purlins)
547	Adjustable Suspension Hanger (Concrete)

SUSPENSION CLIPS

124	125-127-128 Thread Adj.
124N	124 with threaded nut 127–128
167	Side mounted TCR Suspension Clip
2534	TCR Suspension Clip
254	121/121 or 121/122 Joiner Spring Adj.

DIRECT FIXING CLIPS

SUSPENSION BRACKETS FOR RODS



SUSPENSION CLIPS

RONDO KEY-LOCK® COMPONENTS (continued)

SUSPENSION RODS & NUTS

121	5mm soft galv. rod: plain
122	5.3mm soft galv. rod: M6 threaded one end
826	M6 nut to suit threaded rod

ACCESSORIES

130	Rod Bender
545	L Bracket 75 x 75 x 1.50bmt
709	Joiner – DUO5
717	Bulkhead clip – screw fix

RADIUSSED WALL TRIMS

242D	Shadowline Aluminium Column Trim
242R	Shadowline Aluminium Wall Angle
243D	'L' Column Trim
243R	'L' Wall Angle

SUSPENSION RODS & NUTS

121

122

826

ACCESSORIES

130

545

709

717

INSTALLATION DETAILS

Suspended Ceilings for Internal Applications

Note:
The work shall comply with the requirements of the Standards listed in this manual on page 256, and undertaken by qualified trades persons.

STEP ONE

Fix Furring Channel Track along both walls and at 90° to the direction of the Furring Channel.

STEP TWO

Cut Suspension Rod to length. Attach Direct Fixing Clip (534 or 547) to one end and TCR clip 2534 to the other. Fix assembly to one side of the truss, purlin or concrete slab with appropriate fixings (*as in Figures 1 & 2*) and at required centres *(see span tables, page 31)*.
Refer to Figures 3 & 7 for information on positioning of Hangers, Top Cross Rail and Wall Track.

STEP THREE

Adjust all Hangers to correct drop using string line or laser.

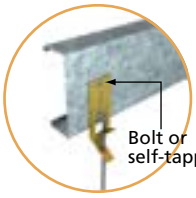
STEP FOUR

Attach Top Cross Rails to suspension clips. Join primary rails end to end using Joiner 272. Also using Joiner 272 on each end of the Top Cross Rail run, tap joiner up against the walls to stabilise the system *(refer Figures 3 & 4.)*

NOTE:
For fire rated systems, leave a 20mm gap at the end of each Top Cross Rail.

1

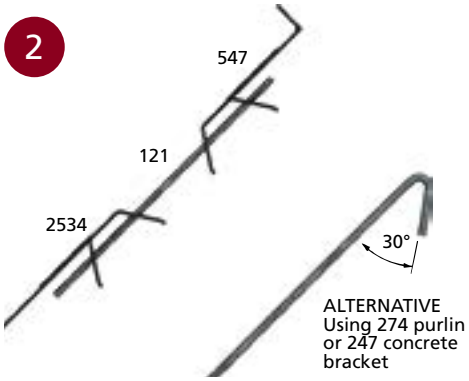
Suspension rod bracket Part No 534



Suspension rod bracket Part No 547

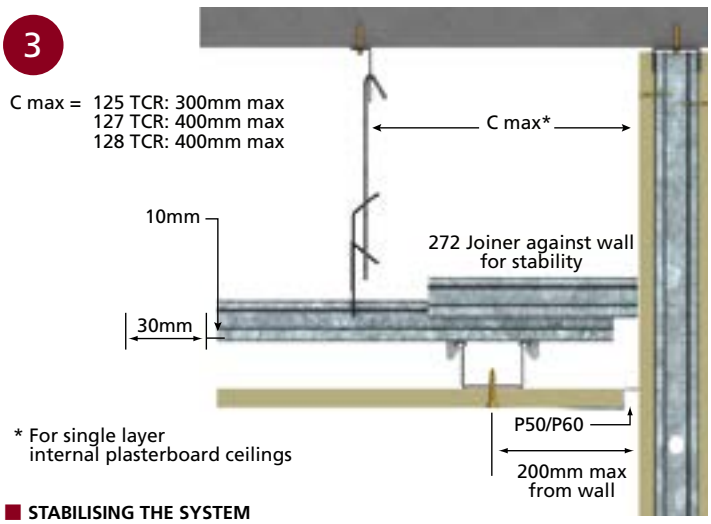
SUSPENSION BRACKETS FOR RODS

2



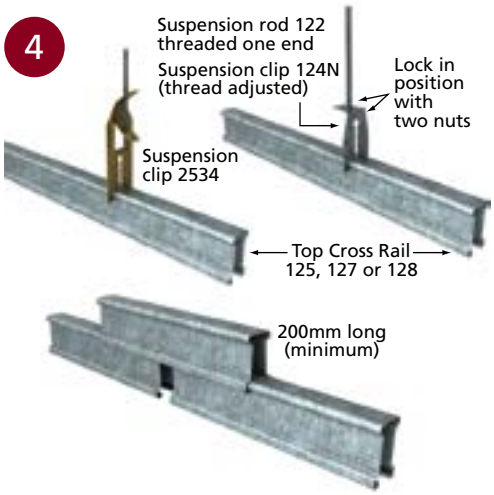
SUSPENSION ROD ASSEMBLY

3



STABILISING THE SYSTEM

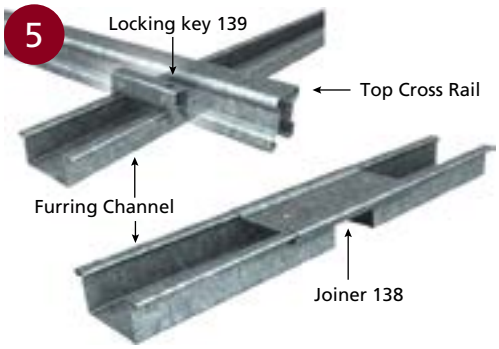
4



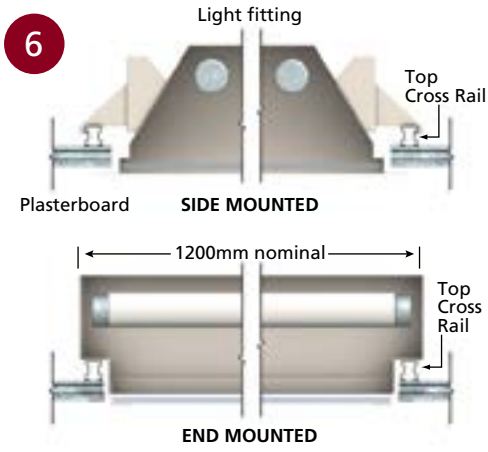
TOP CROSS RAIL ATTACHMENT

INSTALLATION DETAILS (continued)

Suspended Ceilings (continued)



■ **CONNECTING TO FURRING CHANNEL**



■ **LIGHT FITTINGS (nominal 1200x600mm)**
Note: Additional suspension is required to carry light fittings or other ceiling attachments.

STEP FIVE

Use the 139 Locking Key to connect both the Top Cross Rail and Furring Channel together. Space the Furring Channel at the building board manufacturers specifications and our tables on pages 36–38.

Join the Furring Channels end to end using 138 Joiners *(see Figure 5)*. Ensure that the ends of the Furring Channel are connected into the Furring Channel Track.

NOTE:

For fire rated systems, leave a 20mm gap at the end of each Furring Channel and TCR.

Joints in the Furring Channels and Top Cross Rails should be staggered throughout the ceiling grid *(refer to building board manufacturer for recommended spacing).*

STEP SIX

Install lining sheet as per the building board manufacturer's recommendations. Light fittings and air conditioning grills can also be installed *(refer Figure 6).*

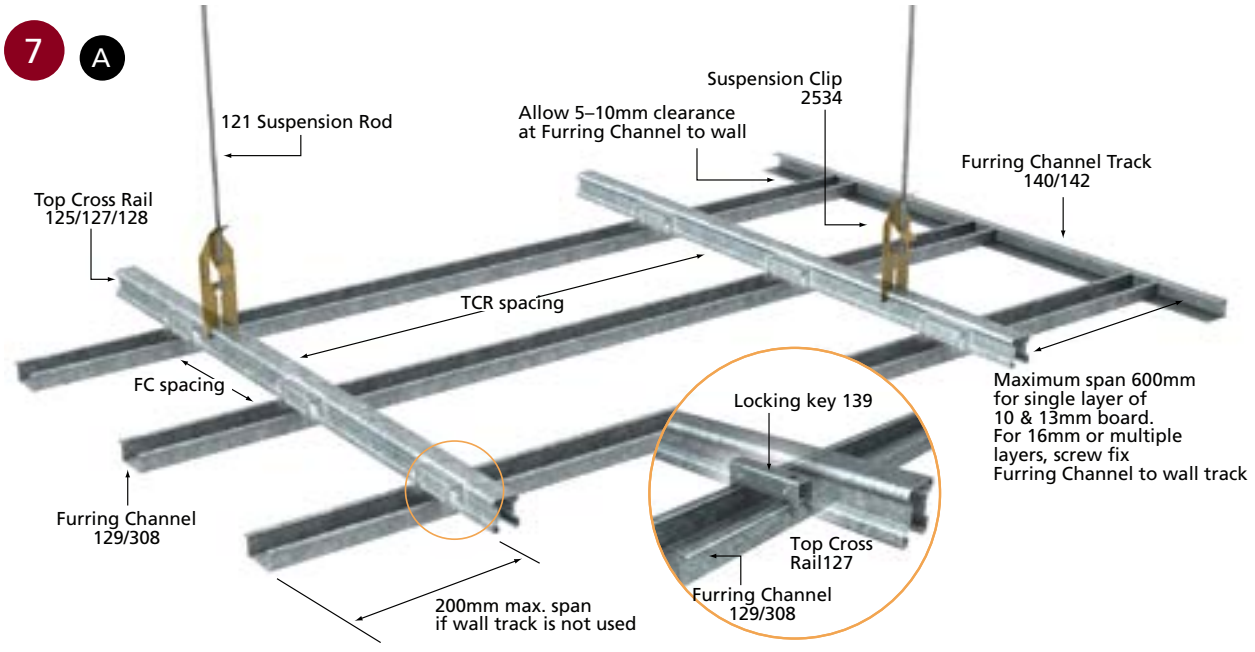
NOTE:

As referenced in AS2785/2000, the ceiling grid is only designed to accept a distributed service load of 3 kg/m^2.

For additional loads, consult the maximum load tables on pages 36–38.

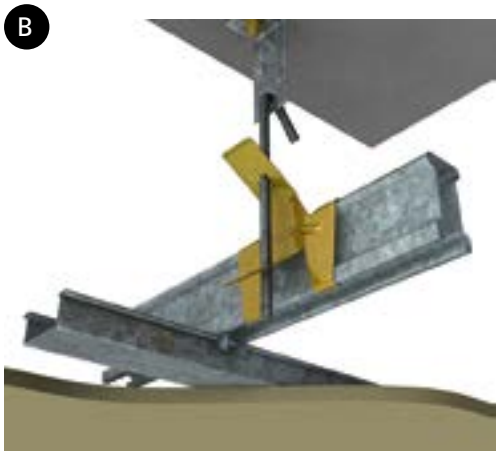
STEP SEVEN

For examples of typical perimeter finishing methods, refer Figures 3 & 8.



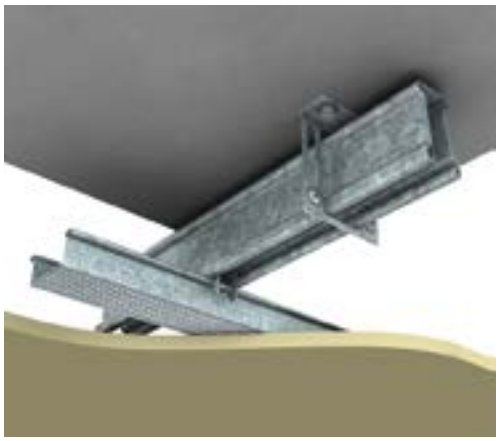
■ **KEY-LOCK® SUSPENDED CEILING**

B



■ TCR SIDE MOUNT CLIP 167

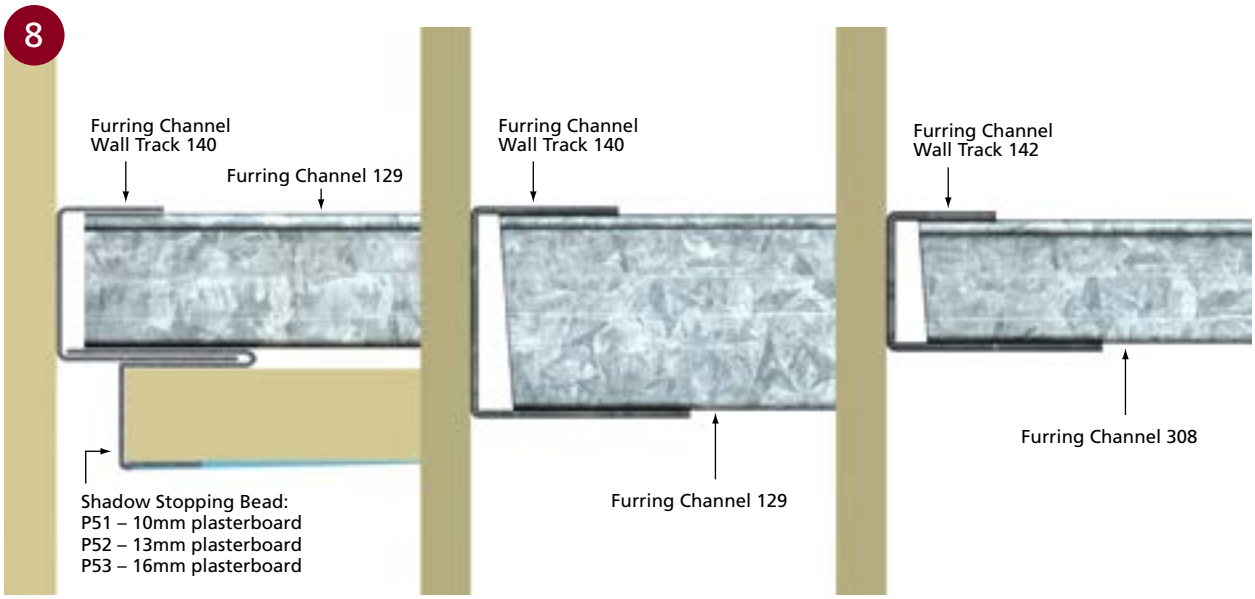
C



■ INFINITI SLIDING ADJUSTABLE CLIP TO TCR

NOTE:
167 Top Cross Rail Side Mount Clip is only suitable for a single layer of board.

8



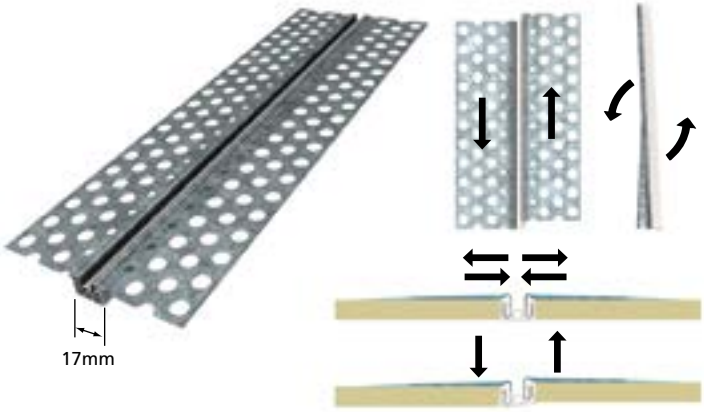
■ **FURRING CHANNEL WALL TRACKS**
Note: Leave a minimum gap of 5-10mm between Furring Channel and wall track

INSTALLATION DETAILS (continued)

Control Joints for Internal Applications

Control joints allow for expansion and contraction movements in buildings.

Rondo P35 Control Joint section should also be used when a building board surface abuts a dissimilar wall assembly. It is also recommended by the building board manufacturers that Rondo P35 Control Joints are installed when continuous ceiling lengths exceed 12m in any direction.



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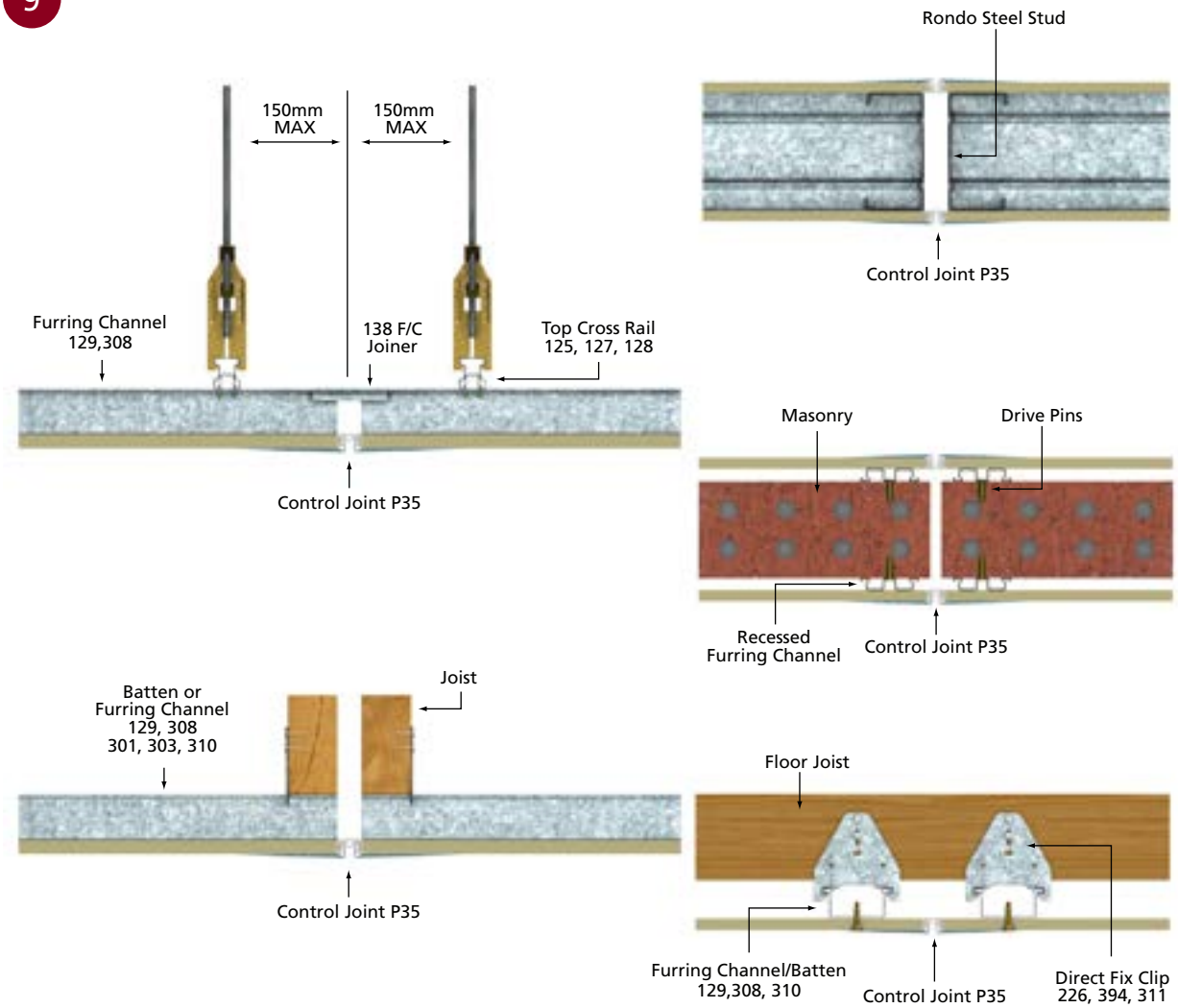


Suspended Ceiling System for External Applications

When installing the Rondo KEY-LOCK® suspended ceiling system in external applications, consideration should be given to wind pressure which may occur. For Downstrut details, refer to Figure 10.

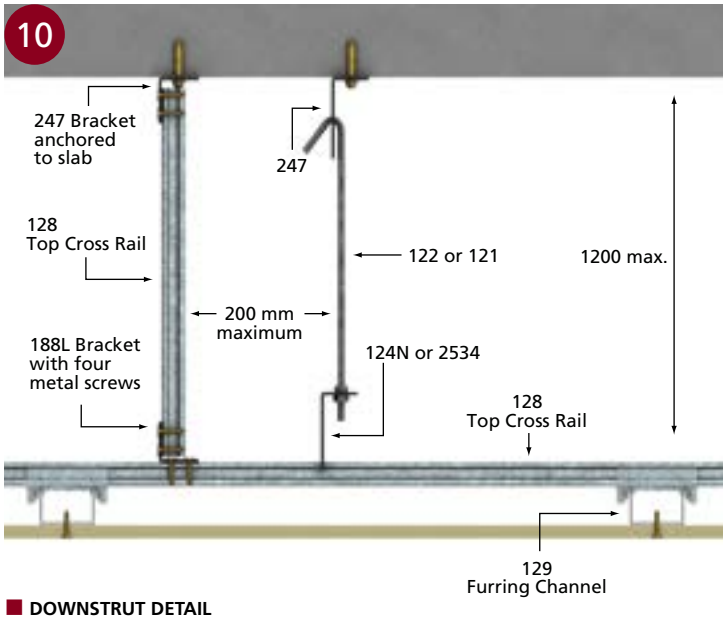
WIND LOADING TABLE

The accompanying table shows the maximum spacing for part number 128 Top Cross Rail and maximum suspension point spacing along the Top Cross Rail for the wind pressures indicated. The limit state loading needs to be determined in accordance with AS/NZS1170.2 and the load combinations specified in AS/NZS 2785.

The downstrut acts in compression under an upward wind load and therefore nominal fixings are required at either end.

NOTE:

Check with the building board manufacturer for correct spacing of Furring Channels (part number 129).



DOWNSTRUT DETAIL

TABLE 1: ULTIMATE LOAD CAPACITY FOR 128 TOP CROSS RAIL

SUPPORT CONFIGURATION		LIMIT STATES	
TCR SPACING (mm)	**TCR SUPPORT CENTRES** (mm)	**ULTIMATE LIMIT STATE** (kPa)	**SERVICABILITY LIMIT STATE** (kPa)
1200	1200	0.24	0.24
900	1200	0.32	0.32
900	900	0.79	0.79
900	600	1.19	1.19
600	600	2.60*	2.60*

NOTES: 1. The above table gives the limit state load capacity for various ceiling configurations. The direction of loading may be upward or downward, provided the ceiling is installed with downstrutting as per Figure 10.
2. Slab connections to be independently checked.
3. Serviceability limit state deflection limited to L/250.
4. Lining contribution has been ignored in analysis.
5. Number 129 Furring Channels to be installed at 600 ctrs for TCR span=1200mm and 450 ctrs for TCR span=900mm or less.
6. Limit state load combinations to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 2785.
*7. * Capacity controlled by connections.*

INSTALLATION DETAILS (continued)

Direct Fixing of Furring Channel Battens for Internal Applications

Direct fixing of Furring Channels and battens to either concrete, steel or timber wall or ceiling structures can be done using one of the many direct fixing clips as shown in Figure 11.

The maximum drop for direct fixing should be limited to 200mm. Any drop greater than 200mm requires a full Rondo suspension system.

Direct fixing clips need to be fixed along the sections in accordance with the relevant maximum span tables.

Furring channels should be spaced in accordance with the building board manufacturers recommendations.

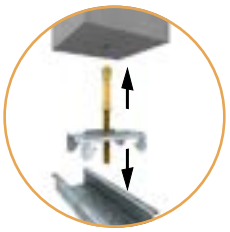
IMPORTANT NOTES:

It is not recommended to screw or nail fix battens or Furring Channels directly to timber joist supporting a trafficable floor due to deflection of the joist occurring and possible subsequent interaction with the ceiling batten. Use only direct fixing clips as shown on page 9.

The BETAGRIP BG01/02 when used for Ceilings should only be secured with One Centre Fixing (i.e. Use Centre Hole Only).

11

BETAGRIP BG01/02 to Furring Channel
NOTE: Centre fixing Only



A239 to Furring Channel

Long INFINITI clip to Furring Channel

394 clip nailed to joist
Furring Channel

226 clip nailed to joist
Furring Channel

305 clip nailed to joist
Ceiling Batten

314 clip nailed to joist
Ceiling Batten

390 Swivel Clip nailed to joist
Ceiling Batten

166 clip nailed to joist
Top Cross Rail

A124 to Top Cross Rail

DIRECT FIXING CLIPS

Bulkhead Installation for Internal Applications

The Rondo Square Line Bulkhead System allows easy, economical and true bulkhead corner finishes to be achieved by using concealed support clips and fixings.

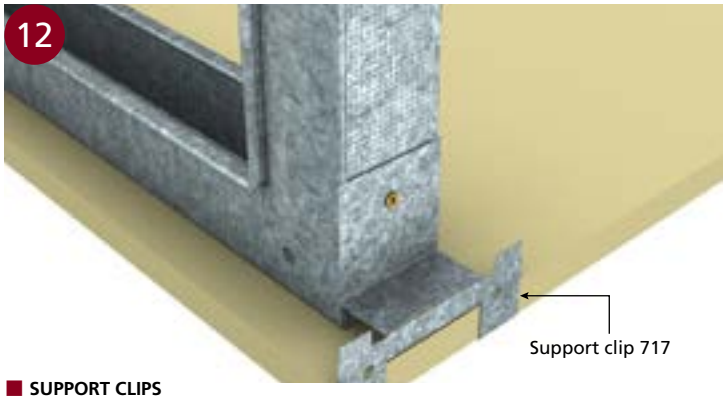
STEP ONE
Install the metal framework and fix the building board to the horizontal surface.

STEP TWO
Attach Support Clip 717 to the framework, with the bottom leg hard up against the building board. A string line can be used to assist if required *(refer Figure 12).*

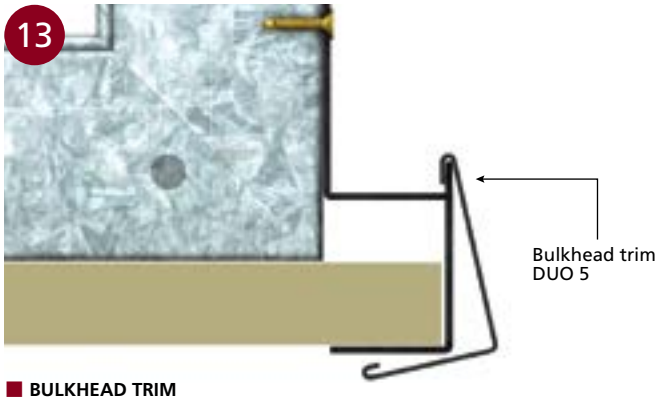
STEP THREE
Introduce the Bulkhead Trim DUO 5 to the support clips *(refer Figure 13).*

STEP FOUR
Join Bulkhead Trim end to end using Joiner 709 to give a flush finish *(refer Figure 14).*

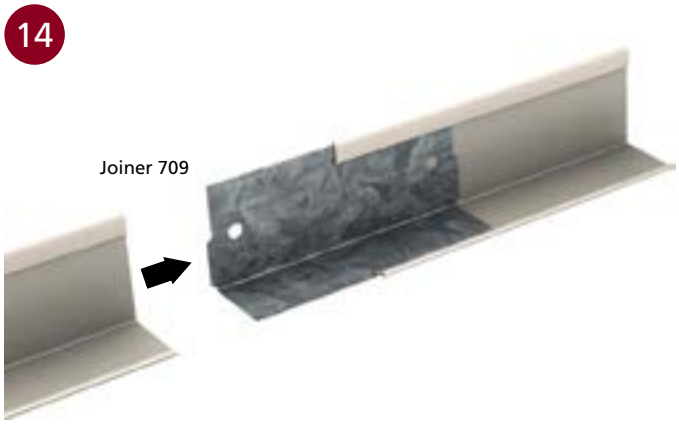
STEP FIVE
Introduce the vertical building board as shown below, and screw fix to the framework *(refer Figure 15).*



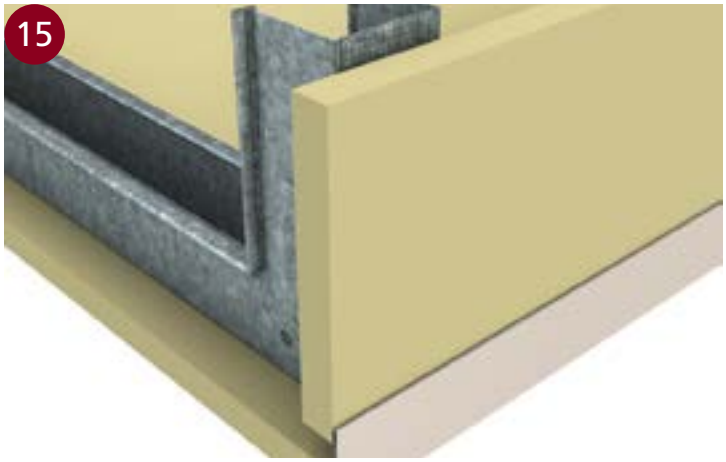
■ SUPPORT CLIPS



■ BULKHEAD TRIM



■ BULKHEAD DETAILS



■ VERTICAL MEMBERS

TYPICAL APPLICATION DETAILS

Bulkheads for Internal Applications

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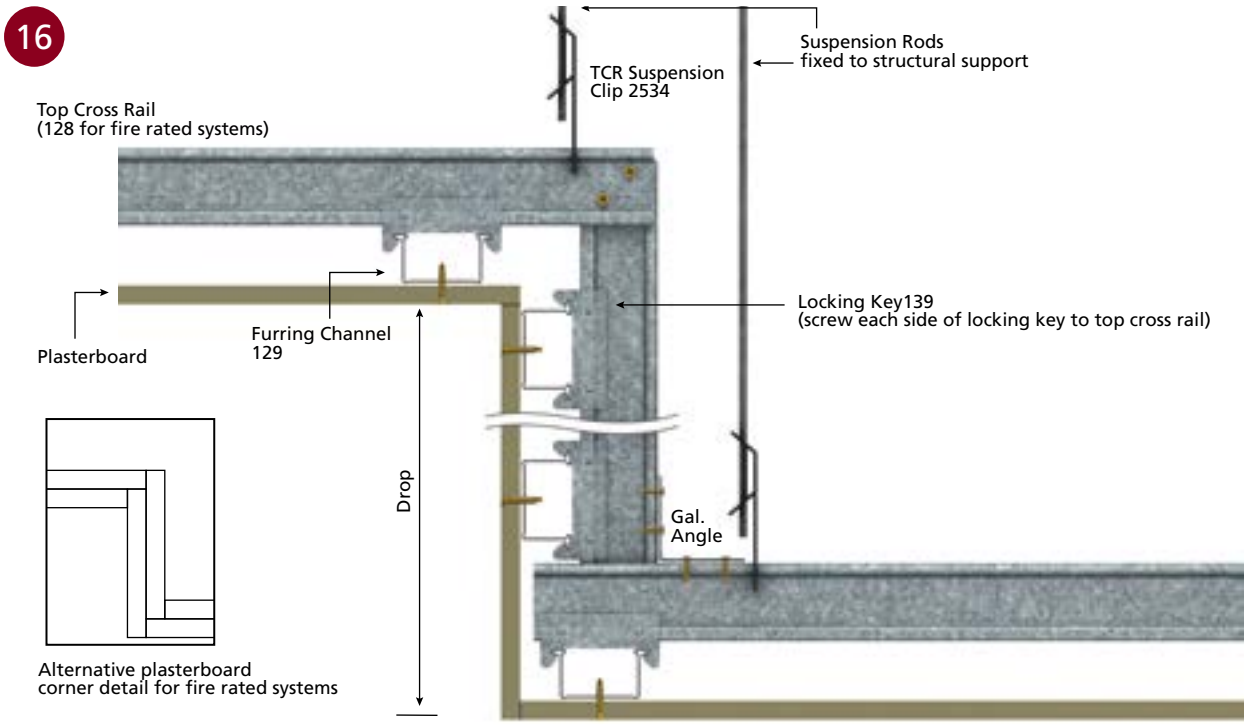
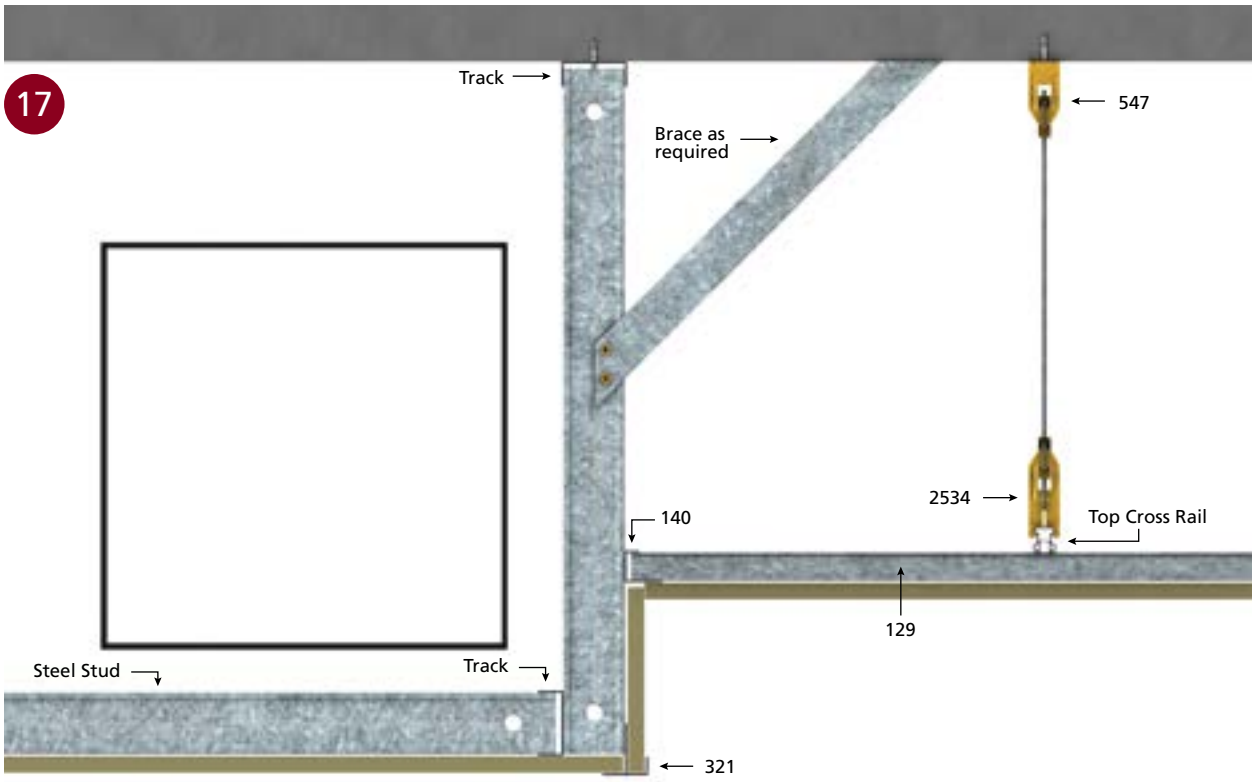


■ **FRAMED BULKHEAD 'A'**

17



■ **FRAMED BULKHEAD 'B'**

NOTE:

The maximum drop of bulkheads is not to exceed 1200mm for suspended bulkheads.

Curved Ceilings for Internal Applications

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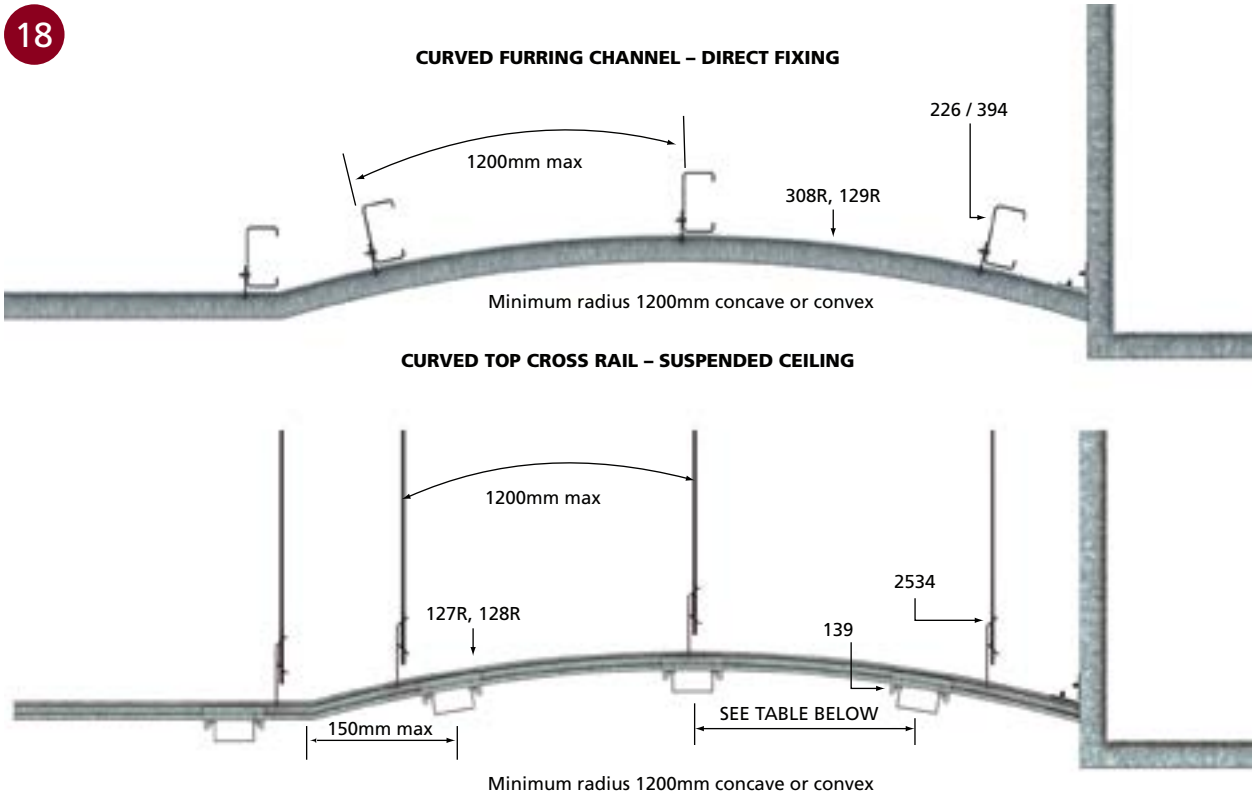

■ CURVED CEILING DETAILS

TABLE 2: MAXIMUM FURRING CHANNEL CENTRES FOR CURVED CEILINGS

PLASTERBOARD THICKNESS (mm)	**CEILING CURVE RADIUS** (mm)						
	900–1000	**1000–1500**	**1500–2000**	**2000–2500**	**2500–3000`**	**3000–4000**	**4000+**
	MAXIMUM FURRING CHANNEL CENTRES (mm)						
6.5	150	200	250	300	350	450	550
10	150	200	250	300	350	400	500
13	–	150	200	250	300	400	500
16	–	–	–	–	–	250	350

TYPICAL APPLICATION DETAILS (continued)

Raked & Cantilevered Ceilings for Internal Applications

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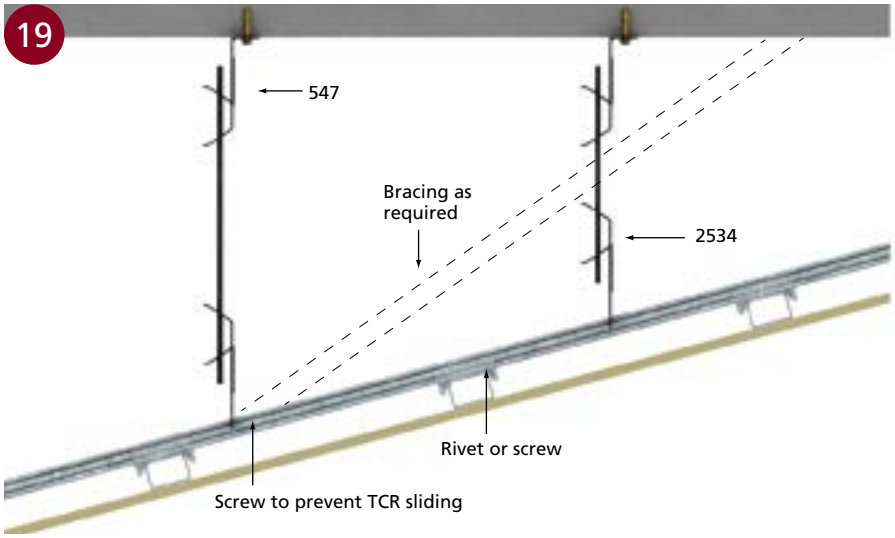
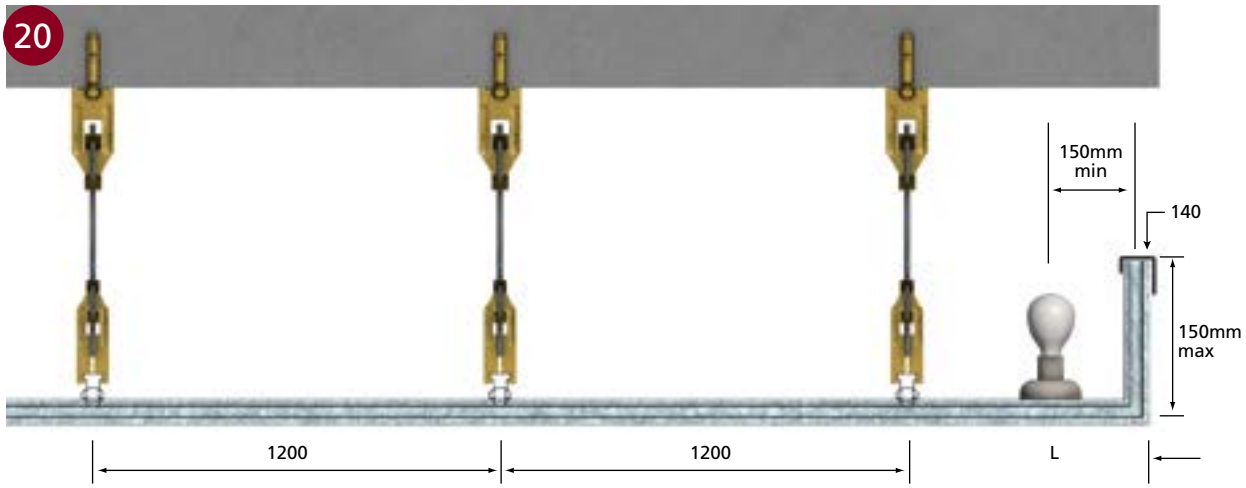


■ FOR RAKING AND CURVED CEILINGS

20



■ FURRING CHANNEL–TOP CROSS RAIL: CANTILEVER DETAILS

TABLE 3: MAXIMUM CANTILEVER (L) FOR ONE LAYER 10/13/16mm PLASTERBOARD

MEMBER (mm)	CENTRES (mm)	L (mm)
129 FURRING CHANNEL	600 450`	350 380
308 FURRING CHANNEL	600 450	250 270
125 TOP CROSS RAIL	1200 900	250 260
127 TOP CROSS RAIL	1200 900	260 280
128 TOP CROSS RAIL	1200 900	370 420

NOTE: 1. Maximum upstand to cantilever not to exceed 150mm.
2. Maximum weight of light fitting not to exceed 5kg/m.
3. Deflection limited to L/600
4. Ceiling to be constructed in accordance with the Rondo KEY-LOCK® installation guide
5. Minimum backspan as shown – reducing the suspension hangers to 900 ctrs does not increase the cantilever.

METAL CEILING BATTENS

Domestic for Internal Applications

Metal ceiling batten systems cut back on the cost of call-back maintenance when board is fixed directly to roof trusses.

Rondo have a range of metal ceiling batten systems which are suitable for truss spacings from 600mm to 1200mm and for use in cyclonic and high wind areas. Refer to maximum span and spacing tables for the various ceiling Battens *(see page 33–35)*.

314 DIRECT FIXING CLIP

To accommodate the increasing use of timber "I" beams, the 314 Direct Fixing Clip has been designed with two extra nail or screw slots placed lower down on the clip, with an additional temporary holding tab to assist installation.

The temporary holding tab is tapped into the timber beam when the clip is at the required level, therefore freeing up both hands to permanently secure the clip with nails or screws through the two adjacent fixing slots.

390 BATTEN SWIVEL CLIP

With the ability to rotate 360°, the 390 Batten Swivel Clip can easily turn the ceiling batten on an angle that suits the change in roof truss direction.

It also incorporates the temporary holding tab for quick and easy installation

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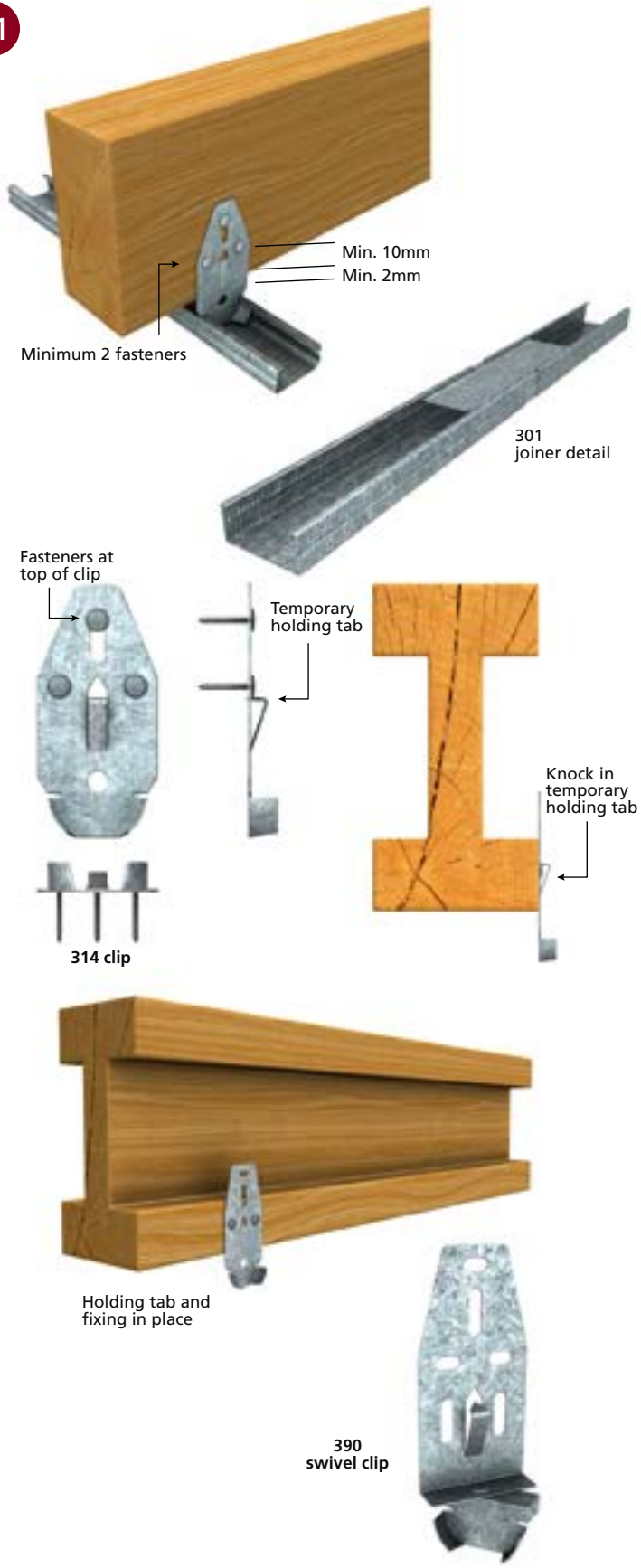

■ METAL CEILING BATTEN DETAILS

METAL CEILING BATTENS (continued)

Domestic for Internal Applications (continued)

CEILING BATTENS AND DIAPHRAGM ACTION

Ceiling battens that are clipped or suspended are not designed or tested to provide the necessary ceiling diaphragm action required by the code to enable wind forces to be transferred to bracing walls *(refer AS 1684 7.3.3-1 Parts 2-3)*.

Tests have been conducted on Rondo ceiling batten part number 303 by James Cook University to provide a satisfactory diaphragm system when direct fixed.

Contact Rondo state offices for further information.

IMPORTANT NOTE

Green timber should not come into contact with galvanised steel due to certain acidic substances in the timber which have a corrosive effect on the metallic coating. Some preservative treatments for wood can also have an adverse effect on metallic coated steel with which it is in contact. Timber treated with acidic preservatives of copper chromium arsenic (CCA) can be severely corrosive to the majority of metallic building components. Other timber treatments using Tanalith 'E' (Tanalised Ecowood) may cause pitting of the metal coating.

If any of the above timber is likely to come into contact with metallic coatings, the steel should be painted for protection.

The use of kiln-dried or appropriate dried timber is therefore recommended when metallic coated products are likely to be in contact.

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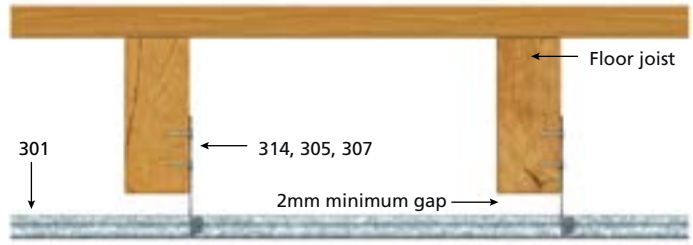
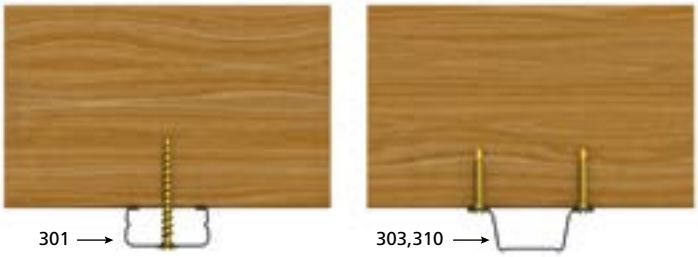


TRAFFICABLE FLOOR INSTALLATION DETAIL



STANDARD TIMBER TRUSS INSTALLATION DETAIL

See Table 4 for nail or screw fixing information

■ CEILING BATTENS

TABLE 4: FASTENER RECOMMENDATIONS

BATTEN PART NO	NAIL LENGTH & DIAMETER					
	HARDWOOD			SOFTWOOD		
	LENGTH (mm)	DIA (mm)	TYPE	LENGTH (mm)	DIA (mm)	TYPE
301	40	2.8	Annular Ring Shanked	50	2.8	Annular Ring Shanked
303	30	2.8	Annular Ring Shanked	40	2.8	Annular Ring Shanked
310	30	2.8	Annular Ring Shanked	40	2.8	Annular Ring Shanked

BATTEN PART NO	SCREW LENGTH & SIZE		
	STEEL	HARDWOOD	SOFTWOOD
301	Wafer Head 10 x 24 x 16 Drill Point	Wafer Head 10 x 35 Type 17	Wafer Head 10 x 45 Type 17
303/310	Wafer Head 10 x 24 x 16 Drill Point	Pan Head 8 x 25 Type 17 10 x 25 Wafer	Wafer Head 10 x 45 Type 17

NOTE: Minimum three threads penetration into substrate.

BUTT JOINT STITCHING BATTEN

B005 Butt Joint Stitching Batten developed with the plasterboard industry provides a constant recess shape for finishing when installed as per the plasterboard manufacturer's recommendations.

A faster, more cost-effective joint with greater strength is therefore achieved.

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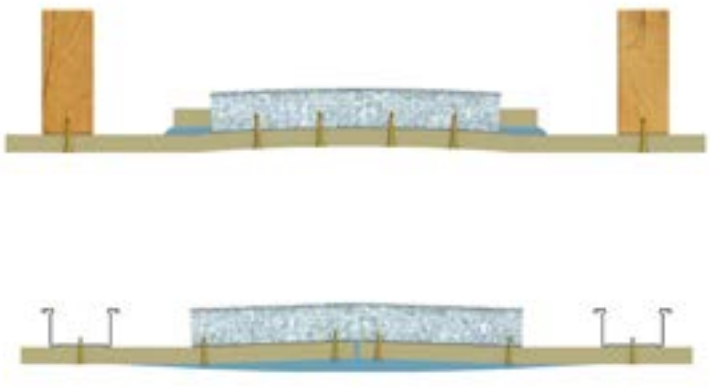

STITCHING BATTENS

RONDO 119 U CLIP™

For Internal Applications

The Rondo U Clip™ adds a new dimension to the role of Top Cross Rails (TCR) in our KEY-LOCK® Ceiling System as it allows the carrying capacity of the 127 and 128 TCR profiles to provide support for a variety of applications, when used in conjunction with threaded M6 suspension rod.

The U Clip™ is simply snapped into the underside of the TCR and then the threaded rod is screwed into the clip, using either 122 (threaded one end) or 123 (threaded both ends) Suspension Rods. The standard 121 Rod can be accommodated by joining it to the threaded rods with the 254 Joiner (also known as the 'Banana Clip').

The design tables *(Table 5)* enables a range of applications, including but not limited to :

- Suspension of signage
- Suspension of additional KEY-LOCK® framing to allow lining board to form feature soffites at varying levels beneath either blacked out voids or an existing ceiling.
- Lighting, both single light boxes and continuous lighting.
- Services not requiring stabilising.
- Fixing Furring Channel at varying angles beneath the TCR (when coupled with the 239 clip)
- Support for bridging beneath ducting, beams, etc. *(see Figure 24)*
- Suspending another ceiling beneath an existing KEY-LOCK® ceiling such as the Duo exposed grid system.

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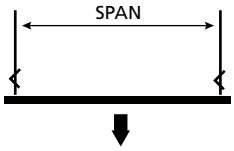
■ **SUPPORT FOR BRIDGING BENEATH DUCTING**

TABLE 5: U CLIP DESIGN TABLES

SINGLE SPAN WITH SINGLE POINT LOAD

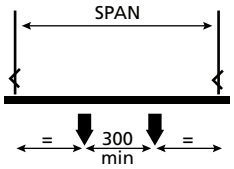
	ALLOWABLE POINT LOAD (kg)			
	127 TCR spacing		128 TCR spacing	
SPAN	**900**	**1200**	**900**	**1200**
900	16	16	47	47
1200	8	7	25	24
1500	3	–	14	13
1800	–	–	8	7



Allowable Load 'P'

SINGLE SPAN WITH TWO EQUALLY SPACED POINT LOADS

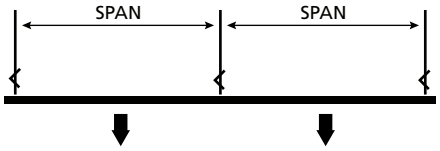
	ALLOWABLE POINT LOAD – EACH (kg)			
	127 TCR spacing		128 TCR spacing	
SPAN	**900**	**1200**	**900**	**1200**
900	10	9	28	27
1200	4	4	14	13
1500	2	–	7	7
1800	–	–	4	4



Allowable Individual Point Load 'P'

DOUBLE SPAN WITH EQUAL POINT LOADS IN BOTH SPANS

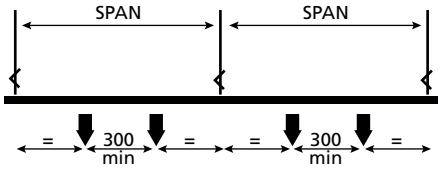
	ALLOWABLE POINT LOAD (kg)			
	127 TCR spacing		128 TCR spacing	
SPAN	**900**	**1200**	**900**	**1200**
900	32	32	50	50
1200	21	21	38	37
1500	12	11	24	23
1800	–	–	14	13



Allowable Load 'P'

DOUBLE SPAN WITH TWO EQUALLY SPACED POINT LOADS IN BOTH SPANS

	ALLOWABLE POINT LOAD (kg)			
	127 TCR spacing		128 TCR spacing	
SPAN	**900**	**1200**	**900**	**1200**
900	18	18	29	29
1200	12	11	20	19
1500	6	6	13	12
1800	–	–	7	7



Allowable Individual Point Load 'P'

NOTES:
1. *Allowable point load is specified in kg. Point loading considered as dead load only.*
2. *Deflection limited to L / 360 under service load, for other limits adjust load accordingly.*
3. *The above tables assume construction in accordance with the Rondo Keylock Manual.*
4. *The above tables are only valid for the Rondo 119 U Clip installation.*

EXPRESS JOINT: CEILINGS

Rondo 155 Express Joint Furring Channel for Internal Applications

The 155 Express Joint Furring Channel is a 48mm face width profile with a 10mm wide central strip which can be used together with complimentary clips from the KEY-LOCK® System for internal ceilings or wall finishes *(see Figure 25)*.
The profile's width allows the use of building boards requiring up to a 12mm edge distance for screwing whilst offering a 10mm wide express joint which is easily followed when sheeting the framing *(see Figure 27)*.
The complimentary clips allow the 155 Express Joint Furring Channel to be direct fixed to timber joists or steel purlins and clipped into standard Top Cross Rail for a fully suspended ceiling *(see Figure 28)*.
This product is specified for use with particular specialised building boards by the manufacturers.
This is a special, made-to-order product and therefore it is important to check availability with an Authorised Rondo Distributor, or Rondo Sales Office.
Rondo 155 Express Joint can also be used in wall finishes by directly fixing to wall substrates (see Figures 26,27 & 28).

IMPORTANT NOTE:

The Rondo Express Joint Furring Channel is for internal use only. Rondo does not recommend it for exterior use.

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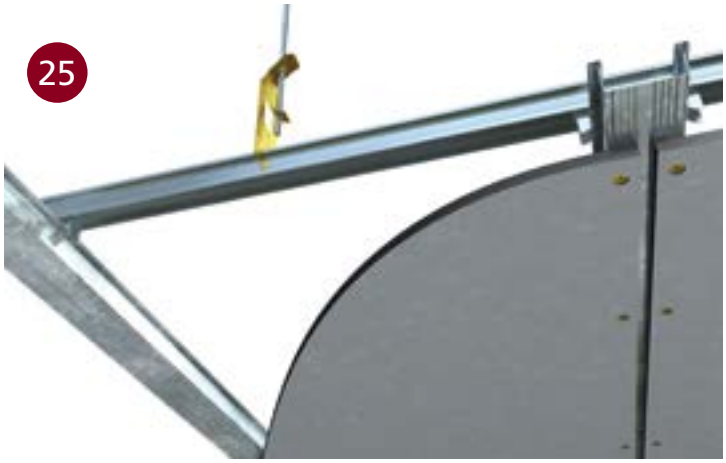
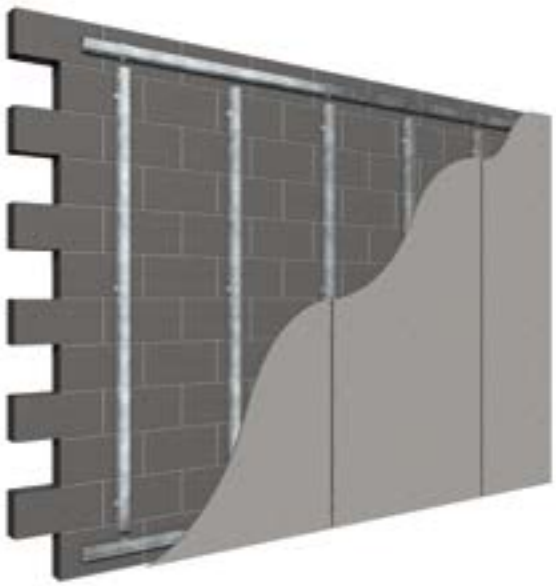


155 USED IN INTERNAL CEILING

26



155 USED IN INTERNAL WALL

27

155 DETAIL

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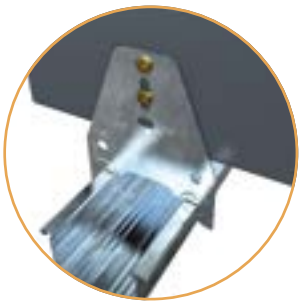
155 Furring Channel clipped to TCR

155 Furring Channel Fixed to Timber Joist



155 Furring Channel Fixed to Steel Purlins

155 Furring Channel Fixed to Wall

TABLE 6: 155 FURRING CHANNEL DIRECT FIX

N2 (W33) WIND LOADING

CLADDING DETAILS (Plasterboard)	FURRING CHANNEL SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	1740	1600	2160	1960
1 x 13mm	1620	1480	2000	1840
1 x 16mm	1460	1330	1810	1650
2 x 13mm	1310	1190	1620	1480
2 x 16mm	1170	1070	1450	1320

N3 (W41) WIND LOADING

CLADDING DETAILS (Plasterboard)	FURRING CHANNEL SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	1690	1530	1890	1590
1 x 13mm	1620	1480	1830	1540
1 x 16mm	1460	1330	1770	1480
2 x 13mm	1310	1190	1620	1360
2 x 16mm	1170	1070	1450	1280

NOTES:

I. Wind loading to AS4055 as follows: ***N2****:* V_{hu} *= 40m/s* V_{hs} *= 26m/s* C_{pi} *= -0.3*
N3*:* V_{hu} *= 50m/s* V_{hs} *= 32m/s* C_{pi} *= -0.3*

2. Ultimate limit state: ***LC I****: 1.2G + Wu*

3. Serviceability limit state: ***LC2****: G - Limit L/600*
LC3*: G + Ws - Limit L/200 to AS 1170.0*

4. N2 wind loading was previously W33, and N3 wind loading was previously W41.

5.The above tables are for internal ceilings in non-cyclonic regions.

TABLE 7: CEILING INSTALLATION WITH KEY-LOCK TCR

MAXIMUM CEILING LOAD: TCR SPAN 1200mm

SPACING OF 127 STANDARD TCR	FURRING CHANNEL SPACING	
	450	600
	ALLOWABLE CEILING WEIGHT (kg/m²)	
	155 FURRING CHANNEL	
900	27	27
1200	19	19
1500	15	15
1800	9.1	5.9

SPACING OF 128 HEAVY DUTY TCR	FURRING CHANNEL SPACING	
	450	600
	ALLOWABLE CEILING WEIGHT (kg/m²)	
	155 FURRING CHANNEL	
900	50	50
1200	37	37
1500	21	15
1800	9.1	5.9

NOTES:

I. The above tables give the allowable dead load for the various ceiling configurations. The calculated ceiling weight therefore does not have to be factored in accordance with ASINZS 2785.

2. Connections to be independently checked.

3. Deflection limited to L/360.

4. Lining contribution has been ignored in analysis.

5. Refer to details on Page 15 for external suspended ceiling systems.

6. Ultimate limit state: 1.4G + 1.7U. Serviceability limit state: G + U.

IMPORTANT FIXING INFORMATION

Suspending Ceilings from Purlins

Rondo does not produce a suspension clip for attachment to the lip of steel purlins ('C' or 'Z' purlins, etc.) for the following reasons:

AS/NZS 2785:2000 Suspended Ceilings – Design and Installation details the following in respect to this issue:

- Section 4 Installation – Part 4.4: "In the case of purlins, the top fixing shall be made to the web of the purlin unless specifically designed otherwise"
- APPENDIX G Fixing (Informative): G2 Top Fixing, G2.1 Purlin Fixings:
  "Purlin fixings should be as follows:

A) Connections should be made to the web of the purlin, unless specifically designed otherwise

B) Where flange connections are necessary, they should be made as close as possible to the web of the purlin

C) Purlin manufacturers do not recommend attaching the top fixing to the lip of the purlin

D) Fixings should be selected and installed in accordance with the manufacturers specifications."

PRODUCT DATA SPECIFICATIONS

Furring Channels/Battens

MATERIAL SPECIFICATIONS

The sections are cold roll formed from steel strip manufactured to AS1397.

PART NO'S: 129/308/333/310

Steel Grade: G2
Yield Strength: Fy = 270 MPa (typical)
Coating Grade: Z275 – 275g/m² zinc

PART NO'S: 301/303

Steel Grade: G550
Yield Strength: Fy = 550 MPa
Coating Grade: zincalume AZ150 – 150g/m² alum/zinc
Base Metal Thickness: As specified

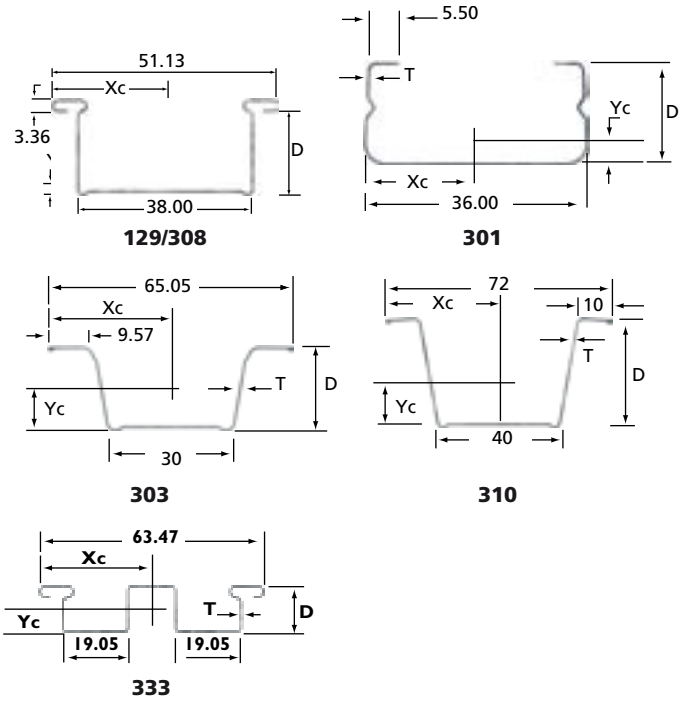


TABLE 8: FURRING CHANNELS & BATTENS – SECTION DIMENSIONS

BATTEN PART NO	AREA (mm²)	D (mm)	T (BMT) (mm)	Xc (mm)	Yc (mm)	YIELD STRESS (MPa)	SELF-WEIGHT (kg/m)
129	59.6	27.3	0.50	25.56	13.04	270	0.468
308	48.2	16.0	0.50	25.56	7.70	270	0.378
333	63.2	12.7	0.50	31.74	6.44	270	0.496
301	33.2	16.3	0.42	18.00	5.81	550	0.261
303	45.1	23.5	0.42	32.52	11.48	550	0.354
310	66.0	35.0	0.55	36.00	15.97	270	0.518

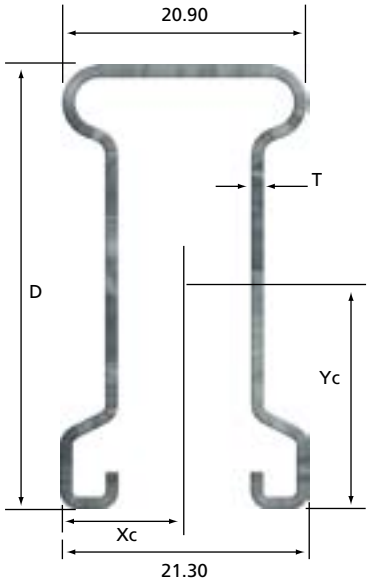
PRODUCT DATA SPECIFICATIONS (continued)

Top Cross Rails

MATERIAL SPECIFICATIONS

The sections are cold roll formed from zinc coated steel strip, which is manufactured to AS1397.

Steel Grade: G2
Yield Strength: Fy = 270 MPa (typical)
Coating Grade: Z275 – 275g/m^2 zinc
Base Metal Thickness: As specified



125/127/128

TABLE 9: TOP CROSS RAILS – SECTION DIMENSIONS

BATTEN PART NO	AREA (mm^2)	D (mm)	T (BMT) (mm)	Xc (mm)	Yc (mm)	YIELD STRESS (MPa)	SELF-WEIGHT (kg/m)
125	48.2	26.35	0.55	10.65	14.18	270	0.378
127	65.7	26.35	0.75	10.65	14.20	270	0.516
128	84.2	38.65	0.75	10.65	20.41	270	0.661

SPAN TABLES

129 Furring Channel: Direct Fix

MAXIMUM SPANS: WIND LOADS N2 (0.29kPa ULT)

CLADDING DETAILS (Plasterboard)	FURRING CHANNEL SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	1245	1148	1713	1580
1 x 13mm	1213	1119	1670	1540
1 x 16mm	1184	1092	1630	1503
2 x 13mm	1128	1041	1552	1432
2 x 16mm	1088	1004	1498	1381

MAXIMUM SPANS: WIND LOADS N3 (0.45 kPa Ult)

CLADDING DETAILS (Plasterboard)	FURRING CHANNEL SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	1125	1037	1547	1428
1 x 13mm	1105	1018	1519	1401
1 x 16mm	1085	1001	1494	1378
2 x 13mm	1047	965	1440	1328
2 x 16mm	1018	938	1400	1292

NOTES: 1. Wind loading to AS4055 as follows: ***N2****:* V_{hu} *= 40m/s* V_{hs} *= 26m/s* C_{pi} *= -0.3* ***N3****:* V_{hu} *= 50m/s* V_{hs} *= 32m/s* C_{pi} *= -0.3*
2. Ultimate limit state: ***LC I****: 1.2G + Wu*
3. Serviceability limit state: ***LC2****: G - Limit L/600* ***LC3****: G + Ws - Limit L/200 to AS 1170.0*
4. N2 wind loading was previously W33, and N3 wind loading was previously W41.
5.The above tables are for internal ceilings in non-cyclonic regions.

MAXIMUM SPANS: WIND LOADS 0.50 kPa – 1.00 kPa

CLADDING DETAILS (Plasterboard)	FURRING CHANNEL SPACING							
	0.50 kPa				0.60 kPa			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
1 x 10mm	1097	1011	1510	1392	1049	967	1443	1331
1 x 13mm	1078	995	1484	1369	1034	954	1423	1312
1 x 16mm	1062	979	1461	1347	1020	941	1403	1295
2 x 13mm	1026	946	1412	1302	990	913	1362	1256
2 x 16mm	999	922	1375	1269	967	892	1331	1228

CLADDING DETAILS (Plasterboard)	FURRING CHANNEL SPACING							
	0.70 kPa				0.80 kPa			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
1 x 10mm	1009	931	1389	1281	976	900	1343	1239
1 x 13mm	997	919	1372	1265	965	890	1328	1225
1 x 16mm	985	908	1355	1250	955	880	1314	1212
2 x 13mm	959	885	1320	1217	932	860	1283	1183
2 x 16mm	940	866	1293	1192	915	844	1259	1161

CLADDING DETAILS (Plasterboard)	FURRING CHANNEL SPACING							
	0.90 kPa				1.00 kPa			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
1 x 10mm	947	873	1302	1202	922	850	1268	1170
1 x 13mm	937	865	1290	1190	913	842	1257	1159
1 x 16mm	928	856	1278	1178	905	835	1246	1149
2 x 13mm	908	838	1250	1153	887	818	1221	1126
2 x 16mm	893	824	1229	1133	873	806	1202	1108

NOTES: 1. Stated pressure is the ultimate design wind load, including all local factors.
2. Deflection limited to the lesser of L/600 under dead load, or L/200 under dead plus service wind load.
3. Service wind load checked at 0.65 times the ultimate pressure.
4. Strength check of unrestrained flange in compression.
5. Connections to be independently checked.

SPAN TABLES (continued)

308 Furring Channel: Direct Fix

MAXIMUM SPANS: WIND LOADS N2 (0.29kPa ULT)

CLADDING DETAILS (Plasterboard)	FURRING CHANNEL SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	1018	933	1384	1269
1 x 13mm	990	907	1359	1245
1 x 16mm	965	885	1324	1215
2 x 13mm	915	840	1170	1095
2 x 16mm	881	808	1094	1027

MAXIMUM SPANS: WIND LOADS N3 (0.45 kPa Ult)

CLADDING DETAILS (Plasterboard)	FURRING CHANNEL SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	913	837	1253	1149
1 x 13mm	895	821	1228	1126
1 x 16mm	878	806	1206	1106
2 x 13mm	845	775	1160	1064
2 x 16mm	820	752	1094	1027

NOTES: 1. Wind loading to AS4055 as follows: ***N2****:V_{hu} = 40m/s V_{hs} = 26m/s C_{pi} = -0.3* ***N3****:V_{hu} = 50m/s V_{hs} = 32m/s C_{pi} = -0.3*
2. Ultimate limit state: ***LC 1****: 1.2G + Wu*
3. Serviceability limit state: ***LC2****: G - Limit L/600* ***LC3****: G + Ws - Limit L/200 to AS 1170.0*
4. N2 wind loading was previously W33, and N3 wind loading was previously W41.
5.The above tables are for internal ceilings in non-cyclonic regions.

MAXIMUM SPANS: WIND LOADS 0.20 kPa – 0.50 kPa

CLADDING DETAILS (Plasterboard)	FURRING CHANNEL SPACING							
	0.20 kPa				0.30 kPa			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
1 x 10mm	1104	1012	1444	1317	1008	925	1320	1202
1 x 13mm	1065	976	1460	1340	981	900	1347	1235
1 x 16mm	1031	946	1415	1298	958	877	1313	1205
2 x 13mm	968	888	1328	1218	909	835	1249	1145
2 x 16mm	925	848	1268	1163	876	803	1202	1102

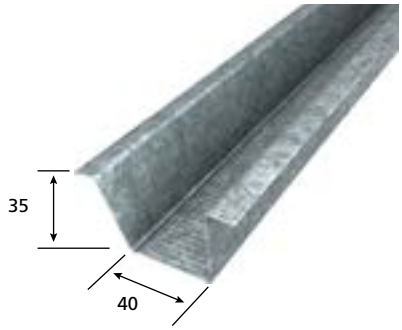
CLADDING DETAILS (Plasterboard)	FURRING CHANNEL SPACING							
	0.40 kPa				0.50 kPa			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
1 x 10mm	940	863	1229	1119	888	815	1160	1055
1 x 13mm	920	844	1263	1158	872	800	1198	1098
1 x 16mm	901	827	1238	1135	858	787	1177	1080
2 x 13mm	864	792	1185	1088	827	758	1135	1042
2 x 16mm	837	767	1149	1053	805	738	1105	1003

NOTES: 1. Stated pressure is the ultimate design wind load, including all local factors.
2. Deflection limited to the lesser of L/600 under dead load, or L/200 under dead plus service wind load.
3. Service wind load checked at 0.65 times the ultimate pressure.
4. Strength check of unrestrained flange in compression.
5. Connections to be independently checked.

310 Batten: Direct Fix

MAXIMUM SPANS: WIND LOADS N2 (0.29kPa ULT)

CLADDING DETAILS (Plasterboard)	BATTEN SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	1197	1101	1645	1513
1 x 13mm	1166	1072	1602	1473
1 x 16mm	1137	1046	1563	1438
2 x 13mm	1081	995	1486	1368
2 x 16mm	1042	959	1432	1318



MAXIMUM SPANS: WIND LOADS N3 (0.45 kPa Ult)

CLADDING DETAILS (Plasterboard)	BATTEN SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	1078	992	1482	1363
1 x 13mm	1058	973	1454	1337
1 x 16mm	1039	956	1428	1314
2 x 13mm	1001	921	1375	1265
2 x 16mm	972	894	1337	1230

NOTES: 1. Wind loading to AS4055 as follows: ***N2****:* V_{hu} *= 40m/s* V_{hs} *= 26m/s* C_{pi} *= -0.3* ***N3****:* V_{hu} *= 50m/s* V_{hs} *= 32m/s* C_{pi} *= -0.3*
2. Ultimate limit state: ***LC I****: 1.2G + Wu*
3. Serviceability limit state: ***LC2****: G - Limit L/600* ***LC3****: G + Ws - Limit L/200 to AS 1170.0*
4. N2 wind loading was previously W33, and N3 wind loading was previously W41.
5.The above tables are for internal ceilings in non-cyclonic regions.

MAXIMUM SPANS: WIND LOADS 0.50 kPa – 1.00 kPa

CLADDING DETAILS (Plasterboard)	BATTEN SPACING							
	0.50 kPa				0.60 kPa			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
1 x 10mm	1050	966	1443	1328	1003	923	1379	1268
1 x 13mm	1032	949	1419	1305	988	909	1359	1249
1 x 16mm	1015	934	1396	1284	975	896	1339	1232
2 x 13mm	980	902	1347	1240	945	869	1299	1195
2 x 16mm	954	878	1312	1207	923	849	1268	1167

CLADDING DETAILS (Plasterboard)	BATTEN SPACING							
	0.70 kPa				0.80 kPa			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
1 x 10mm	964	887	1325	1219	931	857	1280	1178
1 x 13mm	952	875	1308	1204	921	847	1265	1164
1 x 16mm	940	865	1292	1189	911	837	1250	1151
2 x 13mm	915	841	1257	1156	888	817	1220	1123
2 x 16mm	895	824	1231	1132	871	802	1197	1102

CLADDING DETAILS (Plasterboard)	BATTEN SPACING							
	0.90 kPa				1.00 kPa			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
1 x 10mm	903	830	1240	1141	878	807	1206	1110
1 x 13mm	893	822	1228	1130	869	800	1195	1099
1 x 16mm	885	814	1215	1119	860	793	1184	1089
2 x 13mm	865	796	1189	1094	844	777	1160	1067
2 x 16mm	850	782	1168	1075	830	764	1141	1050

NOTES: 1. Stated pressure is the ultimate design wind load, including all local factors.
2. Deflection limited to the lesser of L/600 under dead load, or L/200 under dead plus service wind load.
3. Service wind load checked at 0.65 times the ultimate pressure.
4. Strength check of unrestrained flange in compression.
5. Connections to be independently checked.

SPAN TABLES (continued)

301 Batten: Direct Fix

MAXIMUM SPANS: WIND LOADS N2 (0.29kPa ULT)

CLADDING DETAILS (Plasterboard)	BATTEN SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	950	900	1200	1200
1 x 13mm	950	900	1200	1200

MAXIMUM SPANS: WIND LOADS N3 (0.45 kPa Ult)

CLADDING DETAILS (Plasterboard)	BATTEN SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	900	800	1200	1120
1 x 13mm	900	800	1200	1100

NOTES:

I. Wind loading to AS4055 as follows: ***N2***:V_{hu} = 40m/s V_{hs} = 26m/s C_{pi} = -0.3
N3:V_{hu} = 50m/s V_{hs} = 32m/s C_{pi} = -0.3

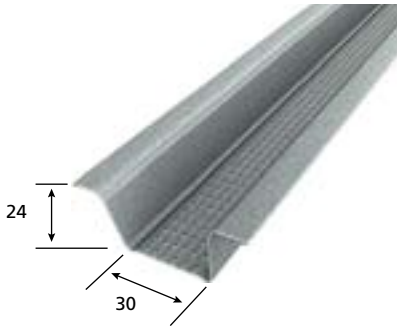
2. Ultimate limit state: ***LC I****: 1.2G + Wu*

3. Serviceability limit state: ***LC2****: G - Limit L/600*
LC3*: G + Ws - Limit L/200 to AS 1170.0*

303 Cyclonic Batten: Direct Fix

MAXIMUM SPANS: WIND LOADS N2 (0.29kPa ULT)

CLADDING DETAILS (Plasterboard)	BATTEN SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	945	871	1300	1200
1 x 13mm	920	850	1267	1168
1 x 16mm	900	830	1237	1141
2 x 13mm	856	790	1179	1087
2 x 16mm	826	762	1137	1049



MAXIMUM SPANS: WIND LOADS N3 (0.45 kPa Ult)

CLADDING DETAILS (Plasterboard)	BATTEN SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
1 x 10mm	854	787	1175	1084
1 x 13mm	838	773	1154	1064
1 x 16mm	824	760	1134	1046
2 x 13mm	795	733	1093	1009
2 x 16mm	773	713	1063	981

NOTES: I. Wind loading to AS4055 as follows: ***N2***:V_{hu} = 40m/s V_{hs} = 26m/s C_{pi} = -0.3
N3:V_{hu} = 50m/s V_{hs} = 32m/s C_{pi} = -0.3
2. Ultimate limit state: ***LC I***: 1.2G + Wu
3. Serviceability limit state: ***LC2***: G - Limit L/600 ***LC3***: G + Ws - Limit L/200 to AS 1170.0

MAXIMUM SPANS: WIND LOADS 0.50 kPa – 1.00 kPa

CLADDING DETAILS (Plasterboard)	BATTEN SPACING							
	0.50 kPa				0.60 kPa			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
1 x 10mm	833	767	1145	1057	796	735	1095	1010
1 x 13mm	819	755	1128	1039	784	724	1081	996
1 x 16mm	805	743	1109	1022	774	714	1066	983
2 x 13mm	779	719	1073	989	752	694	1035	955
2 x 16mm	759	700	1045	963	735	678	1010	933

CLADDING DETAILS (Plasterboard)	BATTEN SPACING							
	0.70 kPa				0.80 kPa			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
1 x 10mm	766	707	1055	973	741	684	1020	941
1 x 13mm	756	699	1042	961	733	676	1009	931
1 x 16mm	747	690	1030	950	725	669	998	920
2 x 13mm	729	672	1003	925	708	653	975	899
2 x 16mm	714	658	982	906	695	641	956	883

CLADDING DETAILS (Plasterboard)	BATTEN SPACING							
	0.90 kPa				1.00 kPa			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
1 x 10mm	719	664	990	913	700	646	963	888
1 x 13mm	712	657	980	904	694	640	955	881
1 x 16mm	705	650	970	895	687	634	946	873
2 x 13mm	690	637	950	877	674	622	927	856
2 x 16mm	679	626	933	862	664	612	913	842

NOTES: 1. Stated pressure is the ultimate design wind load, including all local factors.
2. Deflection limited to the lesser of L/600 under dead load, or L/200 under dead plus service wind load.
3. Service wind load checked at 0.65 times the ultimate pressure.
4. Strength check of unrestrained flange in compression.
5. Connections to be independently checked.

LOAD TABLES

125 Top Cross Rail x 0.55bmt

MAXIMUM CEILING LOAD: TCR SPAN 900mm

SPACING OF TOP CROSS RAIL	FURRING CHANNEL SPACING			
	450		600	
	ALLOWABLE CEILING WEIGHT (kg/m²)			
	129	308	129	308
900	49	41	49	30
1200	36	15	36	11
1500	21	6.4	15	4.1
1800	9.1	–	5.9	–

MAXIMUM CEILING LOAD: TCR SPAN 1200mm

SPACING OF TOP CROSS RAIL	FURRING CHANNEL SPACING			
	450		600	
	ALLOWABLE CEILING WEIGHT (kg/m²)			
	129	308	129	308
900	19	19	19	19
1200	13	13	13	11
1500	10	6.4	10	4.1
1800	7.9	–	5.9	–

MAXIMUM CEILING LOAD: TCR SPAN 1500mm

SPACING OF TOP CROSS RAIL	FURRING CHANNEL SPACING			
	450		600	
	ALLOWABLE CEILING WEIGHT (kg/m²)			
	129	308	129	308
900	8.1	8.1	8.1	8.1
1200	5.2	5.2	5.2	5.2
1500	3.4	3.4	3.4	3.4
1800	–	–	–	–

NOTES:
1. *The above tables give the allowable dead load for the various ceiling configurations. The calculated ceiling weight therefore does not have to be factored in accordance with AS/NZS 2785.*
2. *Connections to be independently checked.*
3. *Deflection limited to L/360.*
4. *Lining contribution has been ignored in analysis.*
5. *Refer to details on Page 15 for external suspended ceiling systems.*
6. *Ultimate limit state: 1.4G + 1.7U. Serviceability limit state: G + U.*

127 Top Cross Rail x 0.75bmt

MAXIMUM CEILING LOAD: TCR SPAN 900mm

SPACING OF TOP CROSS RAIL	FURRING CHANNEL SPACING			
	450		600	
	ALLOWABLE CEILING WEIGHT (kg/m²)			
	129	308	129	308
900	67	41	67	30
1200	50	15	37	11
1500	21	6.4	15	4.1
1800	9.1	–	5.9	–

MAXIMUM CEILING LOAD: TCR SPAN 1200mm

SPACING OF TOP CROSS RAIL	FURRING CHANNEL SPACING			
	450		600	
	ALLOWABLE CEILING WEIGHT (kg/m²)			
	129	308	129	308
900	27	27	27	27
1200	19	15	19	11
1500	15	6.4	15	4.1
1800	9.1	–	5.9	–

MAXIMUM CEILING LOAD: TCR SPAN 1500mm

SPACING OF TOP CROSS RAIL	FURRING CHANNEL SPACING			
	450		600	
	ALLOWABLE CEILING WEIGHT (kg/m²)			
	129	308	129	308
900	12	12	12	12
1200	8.4	8.4	8.4	8.4
1500	6.1	6.1	6.1	4.1
1800	4.6	–	4.6	–

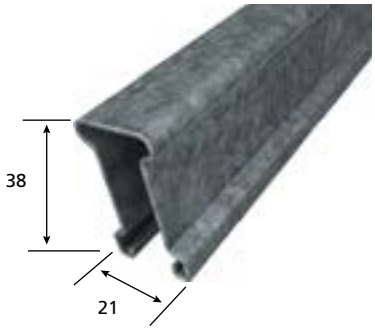
NOTES:
1. *The above tables give the allowable dead load for the various ceiling configurations. The calculated ceiling weight therefore does not have to be factored in accordance with AS/NZS 2785.*
2. *Connections to be independently checked.*
3. *Deflection limited to L/360.*
4. *Lining contribution has been ignored in analysis.*
5. *Refer to details on Page 15 for external suspended ceiling systems.*
6. *Ultimate limit state: 1.4G + 1.7U. Serviceability limit state: G + U.*

LOAD TABLES (continued)

128 Top Cross Rail x 0.75bmt

MAXIMUM CEILING LOAD: TCR SPAN 1200mm

SPACING OF TOP CROSS RAIL	FURRING CHANNEL SPACING			
	450		600	
	ALLOWABLE CEILING WEIGHT (kg/m²)			
	129	308	129	308
900	50	41	50	30
1200	37	15	37	11
1500	21	6.4	15	4.1
1800	9.1	–	5.9	–



MAXIMUM CEILING LOAD: TCR SPAN 1500mm

SPACING OF TOP CROSS RAIL	FURRING CHANNEL SPACING			
	450		600	
	ALLOWABLE CEILING WEIGHT (kg/m²)			
	129	308	129	308
900	22	22	22	22
1200	16	15	16	11
1500	12	6.4	15	4.1
1800	9.1	–	5.9	–

MAXIMUM CEILING LOAD: TCR SPAN 1800mm

SPACING OF TOP CROSS RAIL	FURRING CHANNEL SPACING			
	450		600	
	ALLOWABLE CEILING WEIGHT (kg/m²)			
	129	308	129	308
900	10	10	10	10
1200	7	7	7	7
1500	5	5	5	5
1800	3	–	3	–

NOTES:
1. *The above tables give the allowable dead load for the various ceiling configurations. The calculated ceiling weight therefore does not have to be factored in accordance with AS/NZS 2785.*
2. *Connections to be independently checked.*
3. *Deflection limited to L/360.*
4. *Lining contribution has been ignored in analysis.*
5. *Refer to details on Page 15 for external suspended ceiling systems.*
6. *Ultimate limit state: 1.4G + 1.7U. Serviceability limit state: G + U.*

RONDO DUO® EXPOSED GRID CEILING SYSTEM

SUMMARY

Rondo DUO® is a practical ceiling system which has a complete range of main sections and complementary parts so that you can adapt the modules to suit your design needs.

Expertly engineered for fast assembly on site, Cross Tees will positively lock into each other through the Main Tee with a gentle push, to create a sturdy structure for your ceiling requirements.

SUITABLE FOR:

- Steel Ceiling Grid Systems
- Aluminium Ceiling Grid Systems
- Drop-in Configurations
- One-way semi-concealed configurations
- Seismic Designs*
- Bulkhead designs
- Lineal diffusers

SPECIAL FEATURES

- Available in pre-finished steel
- Double rows of embossed stitching on tees to increase torsional strength
- Able to be removed/reinstalled without damage
- Main tee slots every 100mm for Cross Tees gives extra layout flexibility
- Unique “Zipper” box, better protects and stores product

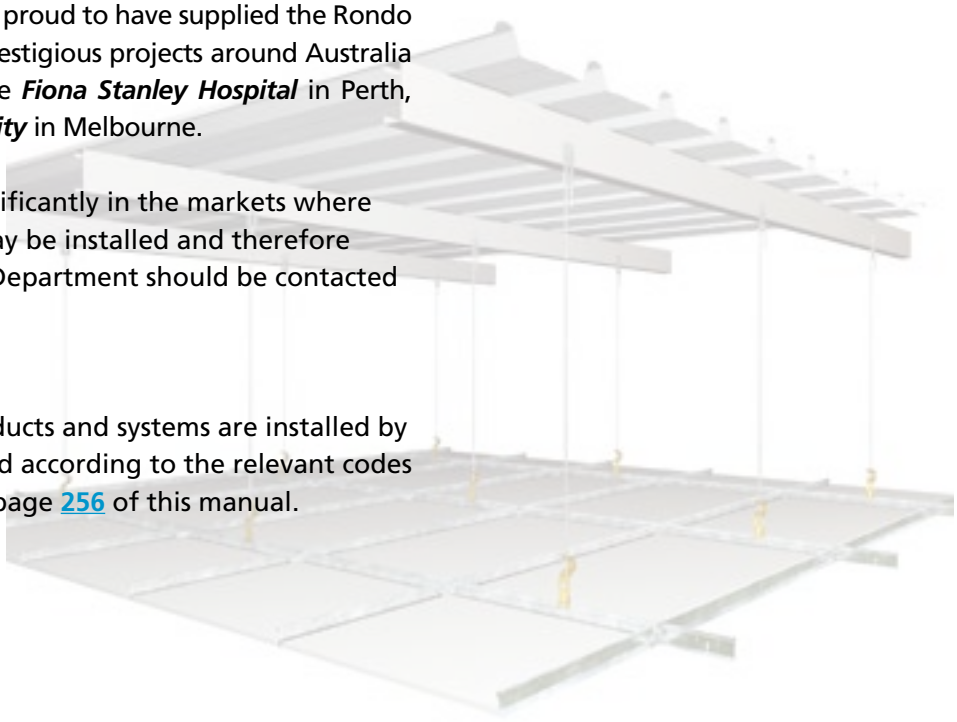
IN PRACTICE

Since the early 2000s, we’re proud to have supplied the Rondo DUO® system to countless prestigious projects around Australia and the world, including the ***Fiona Stanley Hospital*** in Perth, and ***RMIT Swanston University*** in Melbourne.

* Seismic activity varies significantly in the markets where the Rondo DUO® System may be installed and therefore Rondo's Technical Services Department should be contacted for assistance.

IMPORTANT NOTE:
Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page 256 of this manual.

CONTENTS:



RONDO DUO® COMPONENTS

PRIMARY SECTIONS

DUO 1	Main Tee: 24 x 38mm
DUO 2	Cross Tee: 24 x 34mm
DUO H	Cross Tee: 24 x 34mm Heavy Duty

SPLINES

371	22mm T Spline
743	T Spline Yoke for DUO 1

WALL ANGLES & BULKHEAD TRIM

DUO 5	Rolled Edge Wall Angle: Steel 25 x 19mm
DUO 6	Shadowline Wall Angle: Steel 19 x 9 x 9 x 15mm
DUO 7	Shadowline Wall Angle: Aluminium 19 x 9 x 9 x 15mm
DUO 8	Aluminium Wall Angle: 32 x 19mm
321	Aluminium Bulkhead Clip

JOINERS

708	Tee Bar Bulkhead Clip
709	Joiner: DUO 5
716	Joiner: DUO 6 and 7
717	DUO 5 Bulkhead Clip

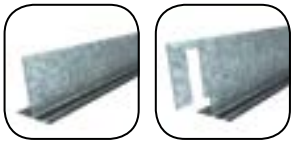
SUSPENSION CLIPS & BRACKETS

700	Spring adjustable clip for 5mm soft galv suspension rod
701	Thread adjustable clip for M6 threaded rod (with lock nut)
719	Hooked adjustable suspension clip
254	Suspension rod joiner
247	Suspension rod Angle Bracket
274	Suspension rod bracket
534	Suspension rod bracket: Timber – Steel
547	Suspension rod bracket: Concrete

PRIMARY SECTIONS

DUO 1 DUO 2 DUO H

SPLINES



371 743

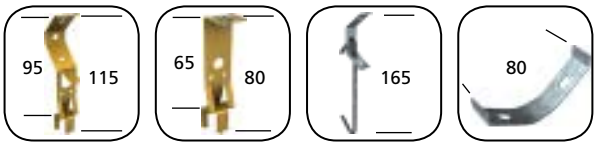
WALL ANGLES & BULKHEAD TRIM

DUO 5 DUO 6 DUO 7 DUO 8 321

JOINERS

708 709 716 717

SUSPENSION CLIPS & BRACKETS



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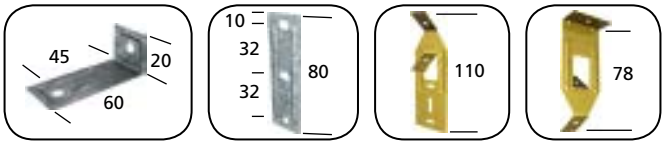


247 274 534 547

DIRECT FIXING CLIP

702	127mm direct fixing hanger to timber/steel

SUSPENSION RODS & NUTS

121	5mm soft galv. rod: plain
122	5.3mm soft galv. rod: M6 threaded one end
826	M6 nut to suit threaded rod

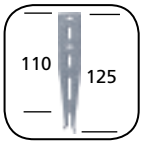
ACCESSORIES

703	Tile holddown clip for 10mm to 16mm tiles
704	Partition mounting clip: 51–64–76–92–150 stud walls
705	Stabiliser clip to suit DUO 5 and DUO 8 main/Cross Tees
706	Stabiliser clip to suit DUO 6 and DUO 7 main/Cross Tees
707	Interchange clip: 127/DUO 1

AIR DIFFUSER CLIP

713	3–Tee Bar: 50mm centres

DIRECT FIXING CLIP



702

SUSPENSION RODS & NUTS

121

122

826

ACCESSORIES

703

704

705

706

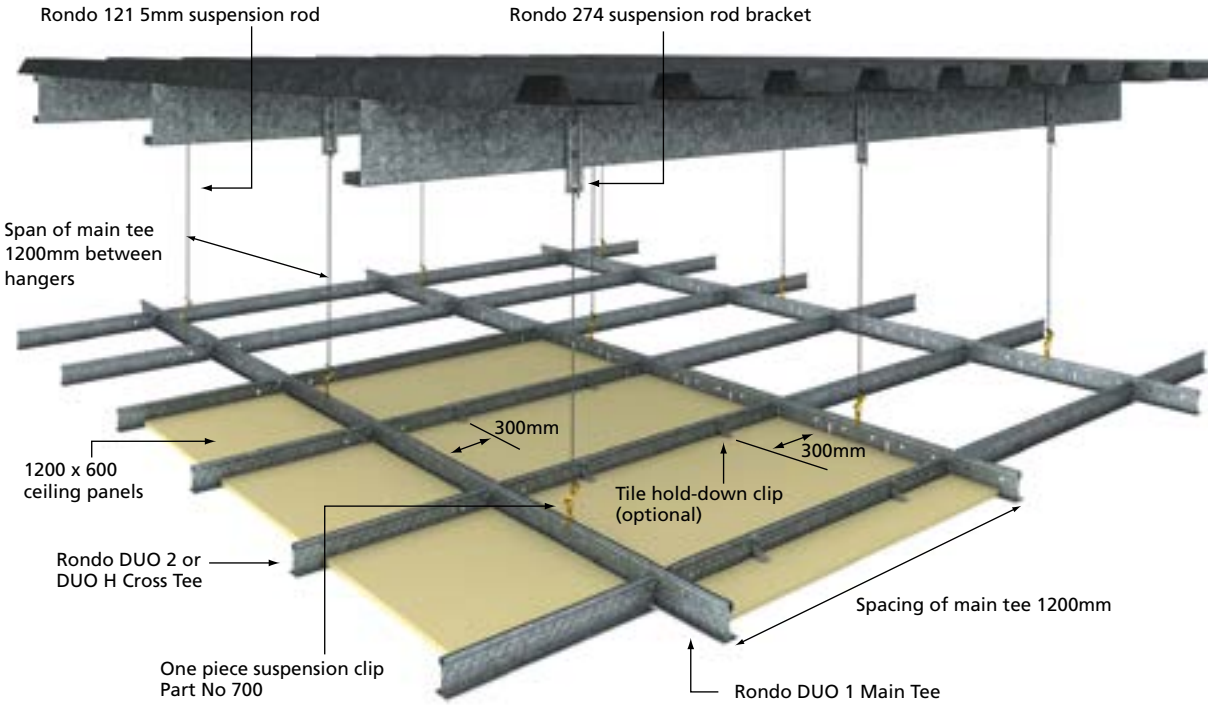
707

LINEAR AIR DIFFUSER CLIP

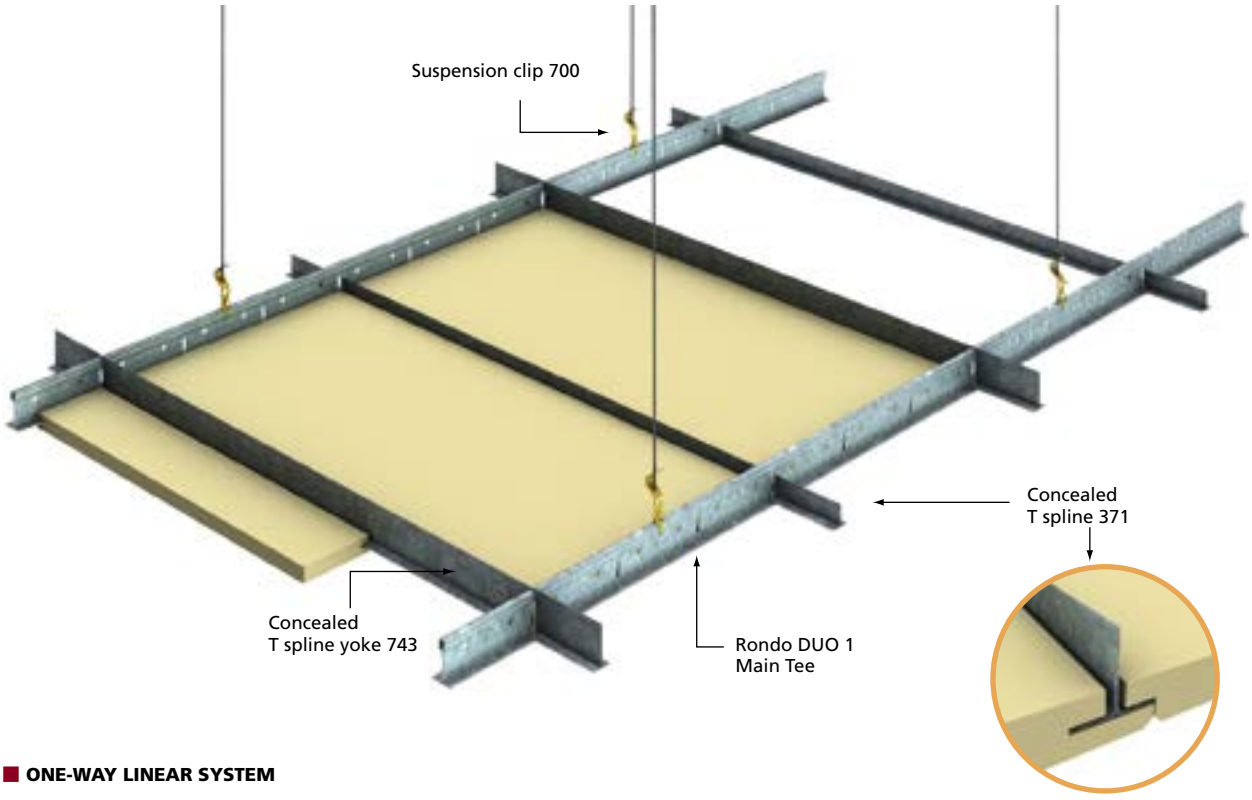
713

The details shown herein are generic in nature and do not specifically consider seismic design. For Seismic compliance refer to the Rondo "Introduction to Rondo Seismic Wall and Ceiling Systems" manual

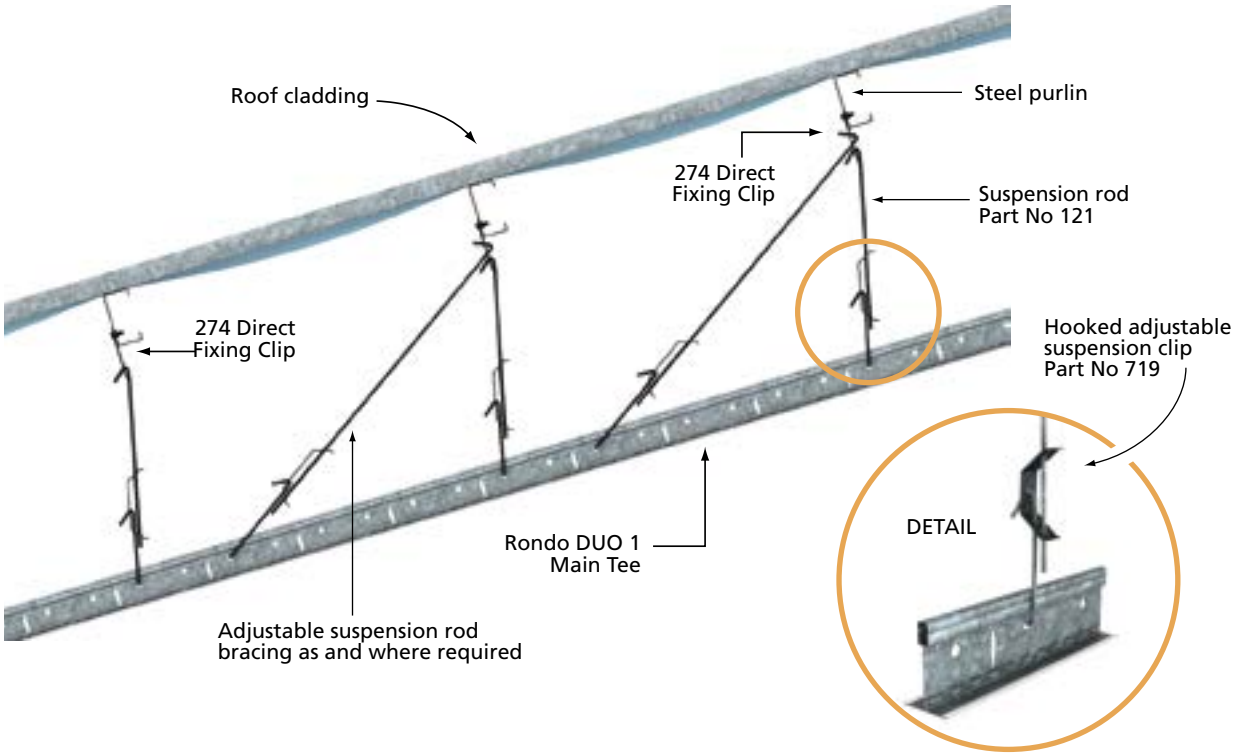
TYPICAL APPLICATION DETAILS



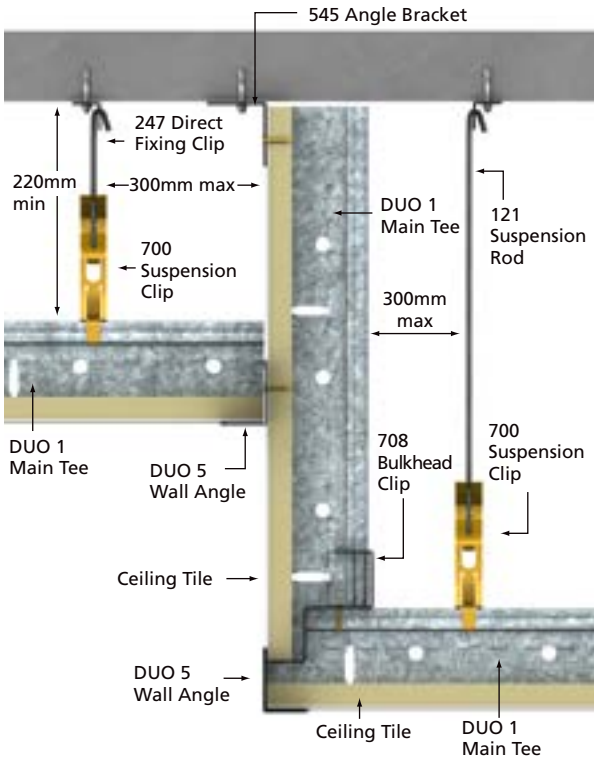
TWO-WAY EXPOSED CEILING SYSTEM DETAIL



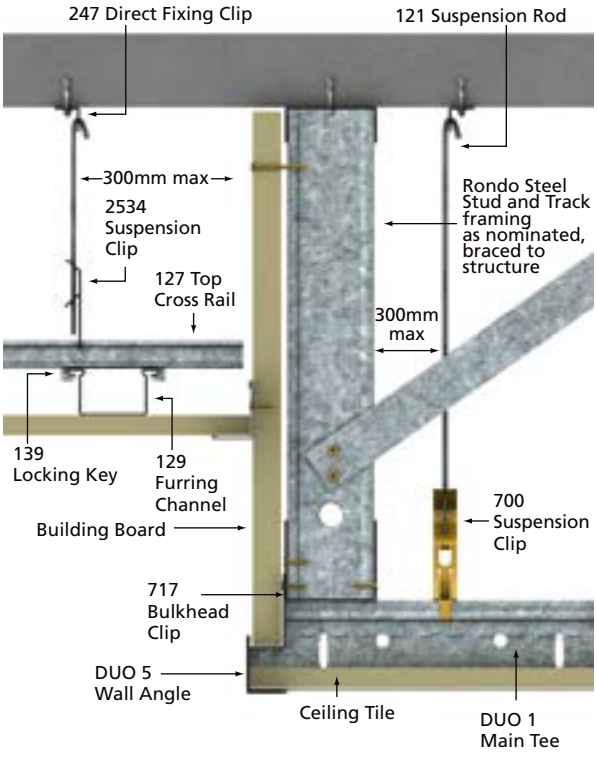
ONE-WAY LINEAR SYSTEM



SUGGESTED RAKING CEILING DETAIL (maximum pitch: 45°)

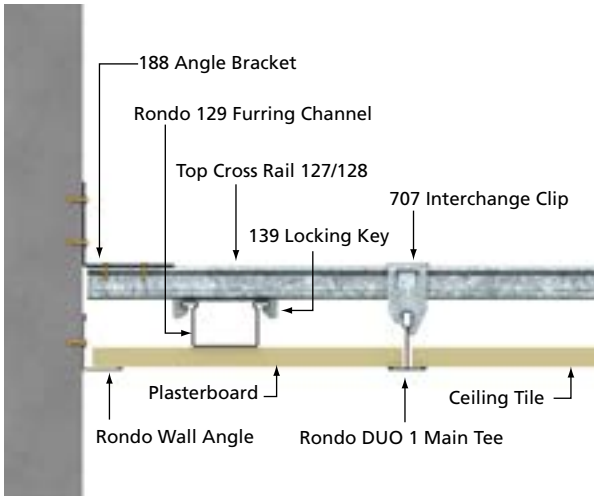


SQUARELINE BULKHEAD DETAIL (Vertical Exposed Grid)

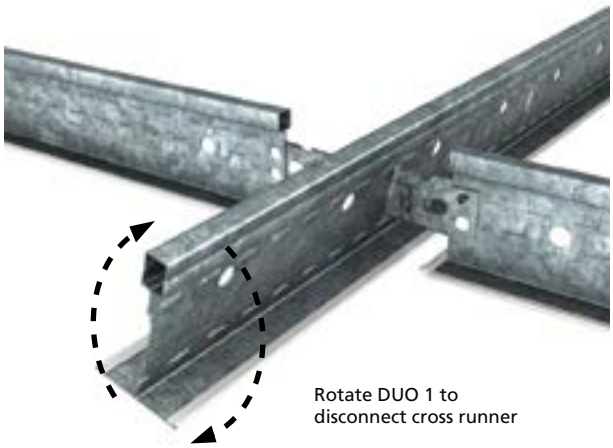


SQUARELINE BULKHEAD DETAIL
(Vertical KEY-LOCK®/Steel Stud System)

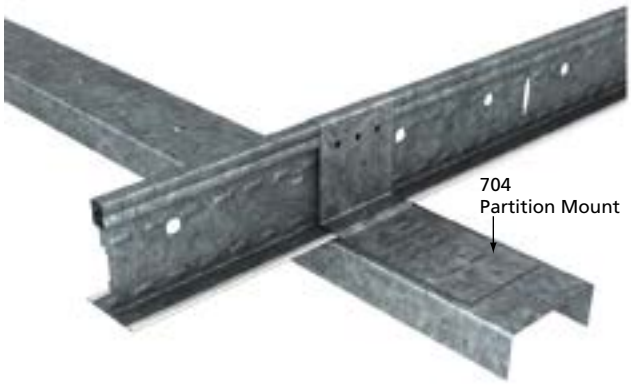
TYPICAL APPLICATION DETAILS (continued)

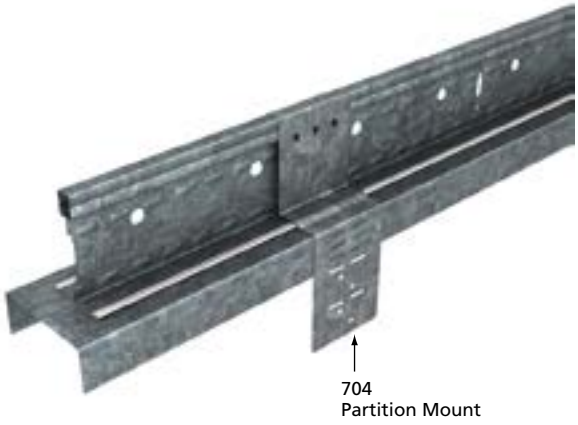


■ **ALTERNATIVE PERIMETER DETAIL**

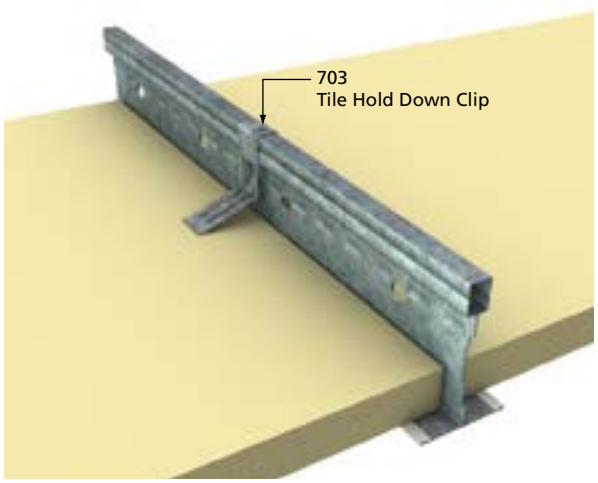


■ **CROSS TEE REMOVAL**

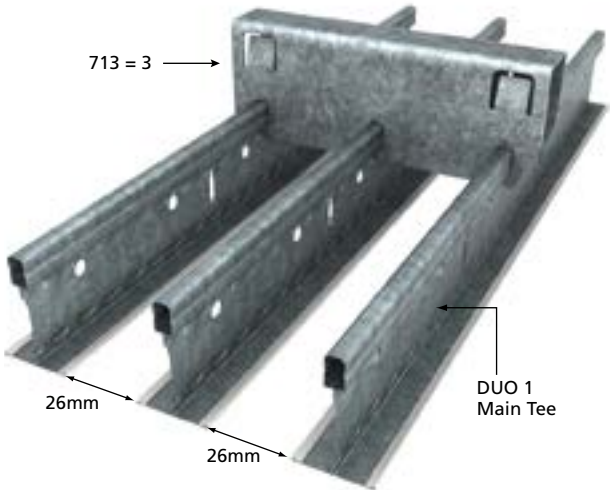




■ **PARTITION MOUNTING DETAILS**



■ **TILE HOLDDOWN CLIP**



■ **AIR DIFFUSER DETAIL**

INSTALLATION DETAILS

Two-way Exposed Grid System

STEP ONE

The room must be checked on site to determine if it is out of square. Using the 3/4/5 method *(Figure 1)* will assist in squaring up the room before installation.

Layout ceiling grid module to datum shown on architects drawing, or give equal cut tiles at perimeter walls *(refer Figure 1).*

Work out an even margin along the sides and at both ends.

EXAMPLE *(refer Figure 2):*

Main Tee

4m divided by tile length (1.2m) = 3.3 tile modules.
4m less 3.6m (i.e. 3 full tile lengths) = 400mm.
400mm plus one tile length (1.2m) = 1.6m.
Divide 1.6m by 2 = 800mm margin along each side.

Cross Tee:

5m divided by tile width (600mm) = 8.3 tile modules.
5m less 4.8m (i.e. 8 full tile widths) = 200mm.
200mm plus one full tile width (600mm) = 800mm.
Divide 800mm by 2 = 400mm margin at each side

STEP TWO

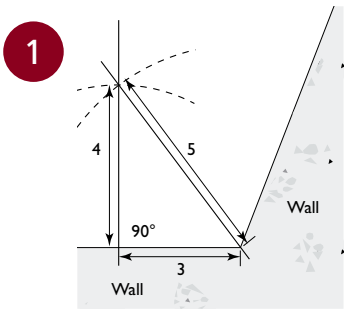
Mark each wall to the correct height of the ceiling.

Cut the Perimeter wall angle trim to length, and fix to wall with suitable fasteners at 600mm maximum centres. *(Refer Figure 3.)*

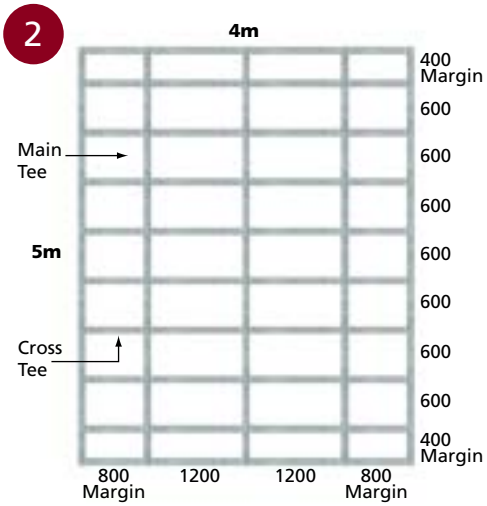
The Wall Angle should be mitred at corner intersections and supported at all joints by appropriate joiners. This will provide a more secure and aesthetic appearance.

(Refer Figure 4.)

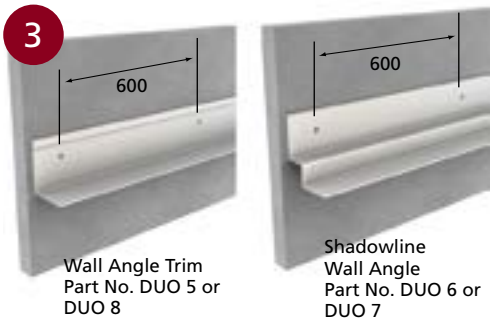
NOTE:
The perimeter wall angle fixings shall be made to the framing members only, not to the wall linings.



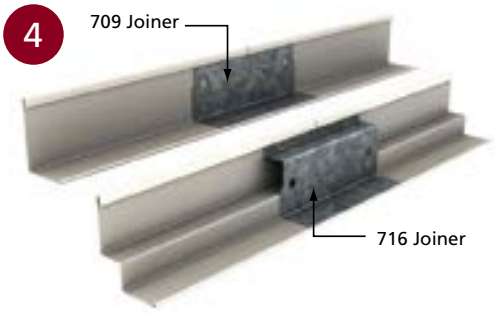
USING THE 3/4/5 METHOD TO SQUARE UP A ROOM



WORKING OUT EVEN MARGINS (as per example shown)



PERIMETER WALL ANGLE TRIM



WALL ANGLE JOINERS FOR STEEL AND ALUMINIUM

INSTALLATION DETAILS (continued)

Two-way Exposed Grid System (continued)

STEP THREE

Install the Main Tee suspension hanger brackets to the supporting structure to match the spacing of the Main Tees and such that the Main Tee span does not exceed 1200mm.

NOTE:

Ensure the hanger points are set out so that hangers adjacent to the perimeter walls are no more than 300mm from the wall unless otherwise specified.

STEP FOUR

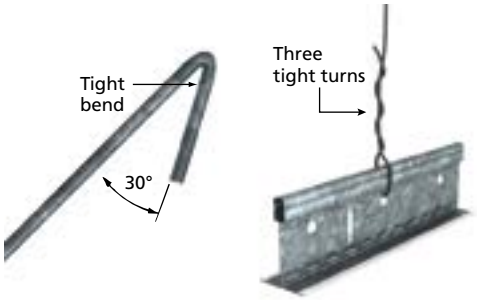
Assemble the suspension clips on suspension rods cut to pre-determined lengths. For the 274 or 247 suspension brackets, bend a hook on one end to 30° as shown *(refer Figure 5).*

Install all rods or Main Tees into the suspension brackets previously installed, as appropriate *(refer Figure 6).* If using tie–wire, ensure wire has at least three tight turns *(refer Figure 5)*.

STEP FIVE

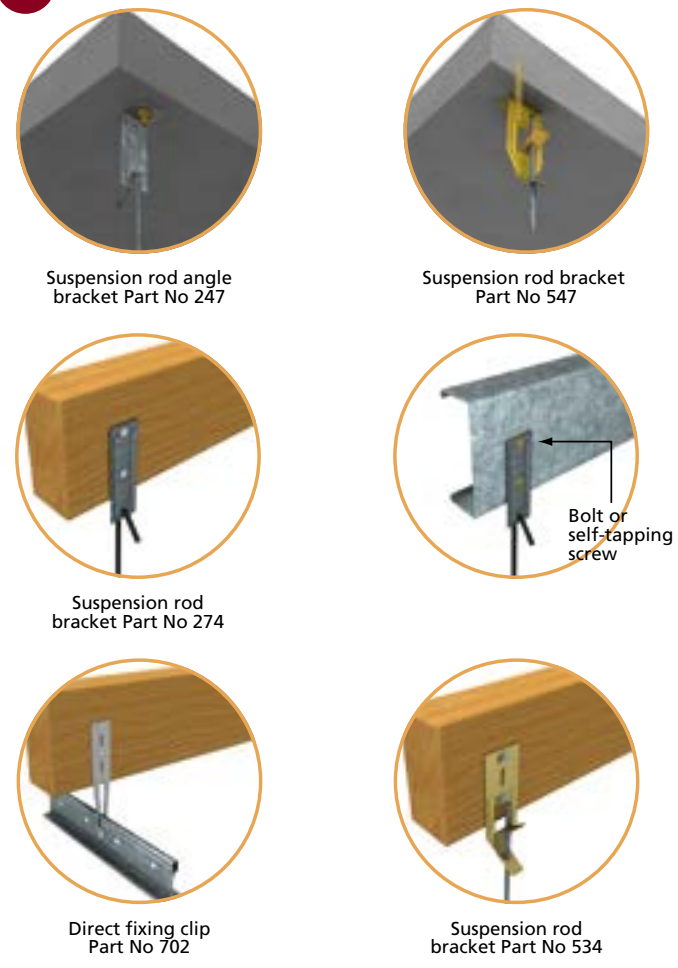
Cut Main Tee to length so that the first pre-punched Cross Tee slot is on module as determined in Step One.

5



SUSPENSION CLIP SHOWING IDEAL BEND AND TIE–WIRE DETAIL

6



SUSPENSION ROD BRACKETS

STEP SIX

Install the Main Tee into the Suspension Clips *(refer Figures 5 & 7).*

The self locking joiners are then pushed together to lock the Main Tees, leaving a hairline connection as detailed *(refer Figure 9).*

The cut end is held in position using the stabiliser clips. *(Refer Figure 8. If using tie–wire, refer Step Four and Figure 5.)*

NOTE:

Stagger the Main Tee joints throughout the ceiling.

Keep suspension points within 5° of vertical when using suspension clips 700 & 701 *(refer Figure 8).*

STEP SEVEN

With a gentle push, install the Cross Tees at the module centres through pre-punched slots in the Main Tees.

Ensure positive locking of both Cross Tee end tags into each other *(refer Figure 9).*

STEP EIGHT

Level and align the ceiling grid prior to installing the ceiling tiles.

The suspension points can be adjusted to either a string line or laser.

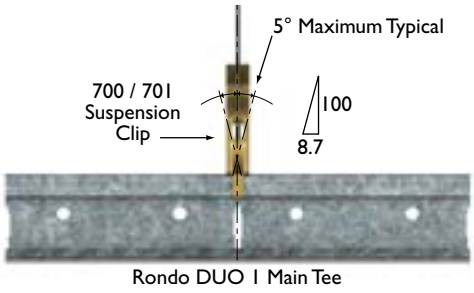
STEP NINE

In large areas to assist in stabilising the grid system, Rondo 705 or 706 Stabiliser Clip should be attached to the perimeter trim at every second or third Main and Cross Tee.

The clips are to be fixed in place with pop rivets or wafer-head self-drilling screws.

7

8



INSTALLING THE MAIN TEE INTO SUSPENSION CLIPS

9

STABILISER CLIPS

INSTALLATION DETAILS (continued)

Two-way Exposed Grid System (continued)

STEP TEN

The grid should now be ready for the light fittings to be installed and supported on the Main Tee only.
Air conditioning grilles and ceiling tiles can also be installed. Additional suspension points must be used where specified to carry light fittings or ceiling attachments. *(Refer Figure 11 and maximum allowable loads on Page 54.)*

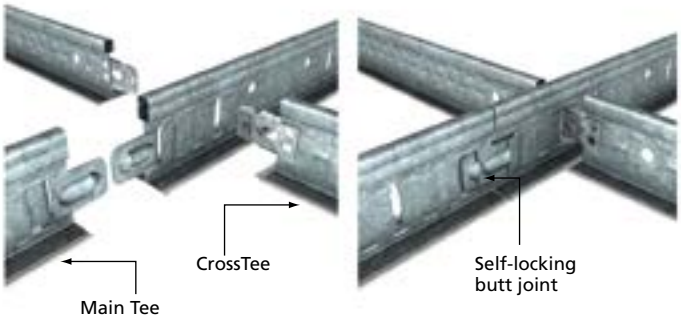
600 X 600 GRID MODULES

Install the ceiling grid as described in the previous installation details for a 1200 x 600mm grid module.
Space the Main Tee at 1200mm centres, and 1200mm long Cross Tees at 600mm centres, with additional 600mm long Cross Tee locked in between the 1200mm long Cross Tee to form a 600 x 600mm grid. *(Refer Grid Type D on Page 53.)*

SPANS GREATER THAN 1200mm

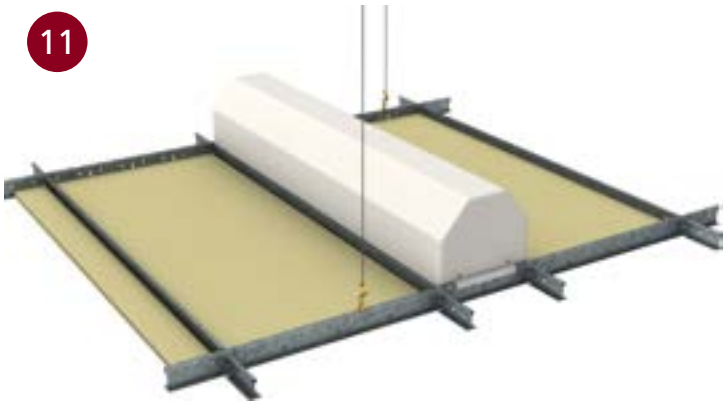
If the span to support the Main Tee is more than 1200mm, the suspension may be inclined using either tie wire or the 719 hooked clips. The angle of suspension should not exceed 15° without further checking by Rondo *(refer Figure 12).*
NOTE: For alternative grid modules, refer to the Grid Selection Guide on page 54.

10



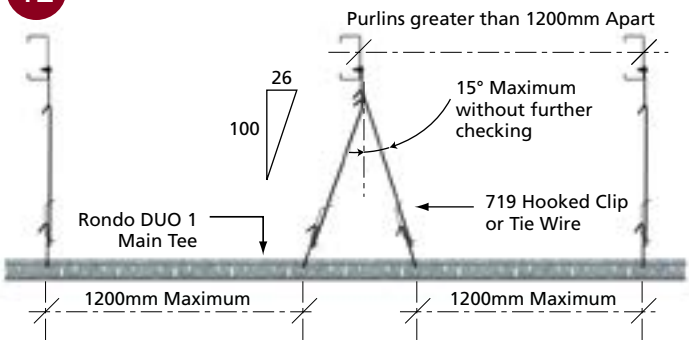
TEE JOINTING DETAILS

11



LIGHT FITTING DETAIL (WITH ADDITIONAL HANGERS IF REQUIRED)

12



SPANS GREATER THAN 1200MM

Exposed Grid Bulkhead System

The Rondo Square Line Bulkhead System allows for easy, economical and true bulkhead corner finishes to be achieved by using concealed support clips and fixings.

STEP ONE
Prepare the ends of the horizontal framing members as shown *(refer Figure 13).*

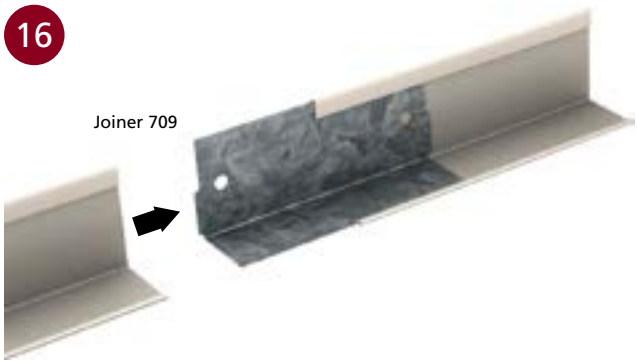
STEP TWO
Position Support Clips 708 on the ends of the Main Tees ensuring that the heads are central to the head cut-outs for the vertical members *(refer Figure 14).*

Drill through the clip into the head and pop rivet.

STEP THREE
Introduce the Bulkhead Trim DUO 5 to the support clips *(refer Figure 15).*

STEP FOUR
Join Bulkhead Trim end to end using Joiner 709 to give a flush finish. *(refer Figure 16).*

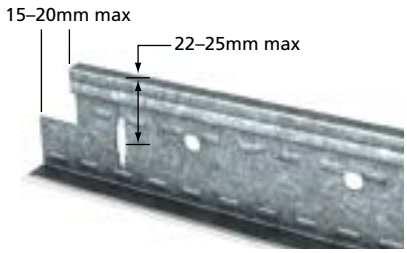
16



BULKHEAD JOINER DETAILS

STEP FIVE
Prepare the ends of the vertical members as shown, and introduce into the profiled cut-outs in the Support Clips *(refer Figures 17 & 18).*

13



HORIZONTAL FRAMING MEMBERS

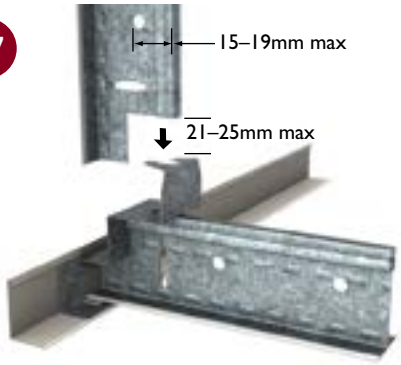
14

SUPPORT CLIPS

15

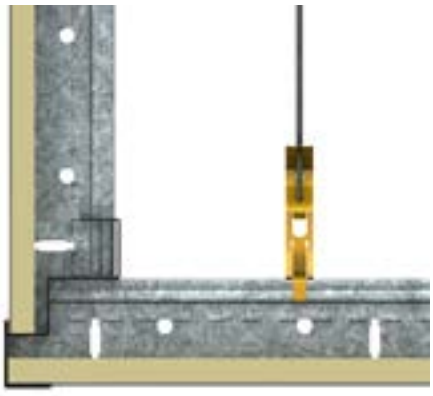
INTRODUCING TRIM TO THE SUPPORT CLIPS

17



VERTICAL MEMBERS

18



BULKHEAD SYSTEM DETAIL

INSTALLATION DETAILS (continued)

Concealed Vertical Bulkhead System

STEP ONE

Install the metal framework using Rondo Steel Studs and Tracks and braced to engineer's specifications.

STEP TWO

Attach Support Clips 717 to the framework so as to line up with the plane of the exposed grid *(refer Figure 19).*

STEP THREE

Introduce the DUO 5 Bulkhead Trim to the Support Clips *(refer Figure 20).*

STEP FOUR

Join the Bulkhead Trim end to end using Joiners 709 to give a flush finish. Join the Bulkhead Trim at the corners using Internal Corner Joiner 711 and External Corner Joiner 710 *(refer Figure 16 on Page 49).*

STEP FIVE

Introduce the vertical building board and screw-fix to the framework *(refer Figure 21).*

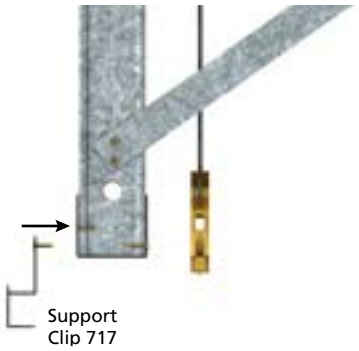
STEP SIX

Assemble and install the exposed grid, with the ends of the framing members prepared to fit into the Support Clips as shown.
Provide suspension to the Main Tees within 300mm of the bulkhead framing *(refer Figure 22).*

STEP SEVEN

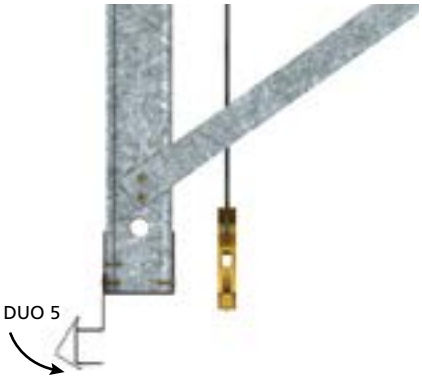
Install ceiling panels *(refer Figure 23).*

19



■ **SUPPORT CLIPS**

20

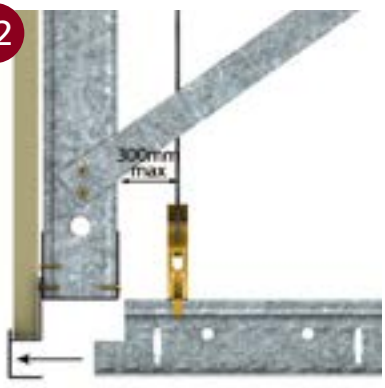


■ **BULKHEAD TRIMS**

21

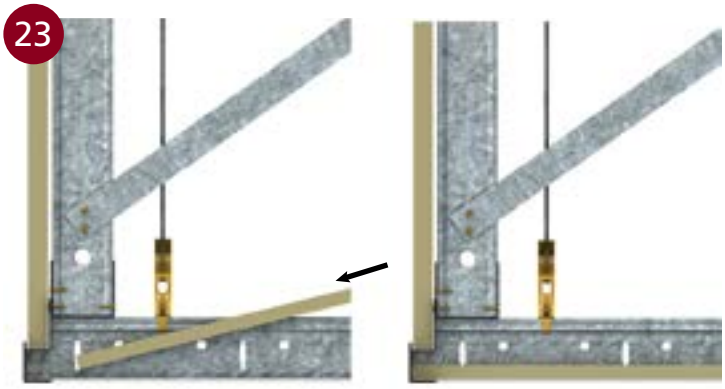
■ **ASSEMBLY OF GRID**

22



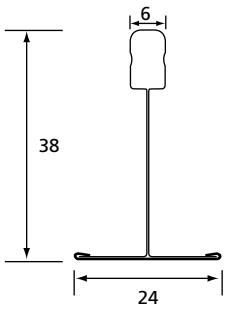
■ **VERTICAL SCREW-FIX SYSTEM DETAIL**

23

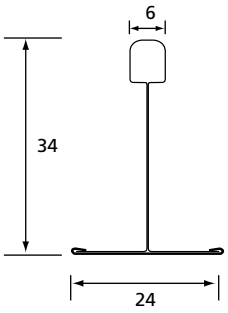


■ **CEILING PANEL INSTALLATION**

PRODUCT DATA SPECIFICATIONS



Rondo DUO 1
24mm MAIN TEE



Rondo DUO 2/DUO H
24mm CROSS TEE

MATERIAL SPECIFICATIONS

The Rondo DUO 2 Cross Tee base section is double-web cold rollformed from hot-dipped, zinc-coated galvanised steel strip. Rondo DUO 1 and DUO H sections are hot-dipped steel with a zinc or zinc-aluminium alloy coating.

The exposed capping face is cold rollformed onto the base section from hot-dipped, zinc-coated galvanised steel strip with a factory-applied polyester paint finish.

MASS

MAIN TEE

24 x 38mm DUO 1: 0.30kg per lineal metre.

CROSS TEE

24 x 34mm DUO 2: 0.24kg per lineal metre.

24 x 34mm DUO H: 0.30kg per lineal metre.

ADDITIONAL LOADS

The suspension system is designed to carry the weight of the ceiling only. Additional loads are not to be placed upon or carried by the suspension system without prior reference to Rondo Technical Services.

NOTE:

See page 54 for the maximum load tables for each module design.

TABLE 1: SECTION DIMENSIONS

RONDO PART NO	**AREA** mm^2	**T (BMT)** mm	**Xc** mm	**Yc** mm	**SELF-WEIGHT** kg/m
DUO 1 24mm MAIN TEE	31.7	0.30	11.8	21.4	0.30
DUO 2 24mm CROSS TEE	24.4	0.25	11.9	19.3	0.24
DUO H 24mm CROSS TEE	27.6	0.30	12.0	14.48	0.30

PRODUCT DATA SPECIFICATIONS (continued)

Colour Matching

If wishing to colour match light fittings or air registers etc to the Rondo DUO® Exposed Grid Ceiling System, we recommend that items be powder coated using Interpon MA 289 Cool White powder.

As powder coating compounds can vary from batch to batch, Rondo is not responsible for the ultimate colour match and recommends that a sample piece of Rondo DUO® Exposed Grid Ceiling System from the project be provided to the powder coater to assist his colour matching process.

This is particularly important as there can be slight variations in the colour of batches of the pre-painted capping Rondo rolls its grid components, including its colour matched perimeter trims.

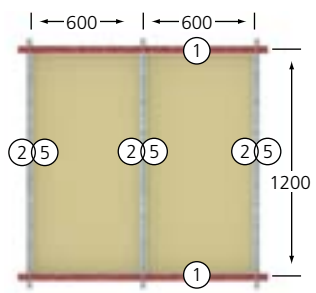
It should further be recognised that there is often a difference in colour rendition when applying paint to different base materials.

IMPORTANT THINGS TO KNOW:

- When cutting ceiling grid to finish at the perimeter trim, it is recommended that a gap of no more than 5mm between the inside of the trim and the end of the grid component is allowed for movement, whether or not stabiliser clips are being used.
- The Rondo DUO 8 long leg aluminium perimeter angle trim should be used when finishing a ceiling to a concrete "Tilt-Up" wall construction. The trim should be fixed through the 19mm leg so that the grid is resting on the 32mm leg, and therefore provides a wider landing surface to counter the effects of thermal movement. The Rondo 705 stabiliser clip can be used with this trim no matter which way around it is fixed.
- **Curved Walls & Columns:** Rondo is able to provide radiussed aluminium shadowline and angle wall trims as well as column trims. There are limitations to the radii achievable and reference should be made to your Rondo Technical representative or Authorised Rondo Distributor for further information if uncertain.
- Rondo manufacture and supply all components ready for use. There should be no requirement to manipulate the products unless specifically designed otherwise. Should you find the components do not readily assemble as detailed, please contact your local Rondo representative before proceeding.

STANDARD GRIDS

A



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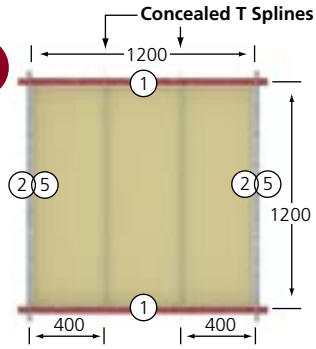

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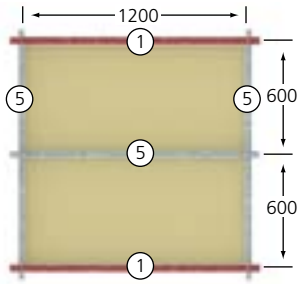

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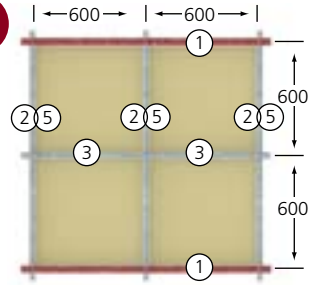

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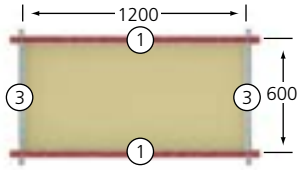

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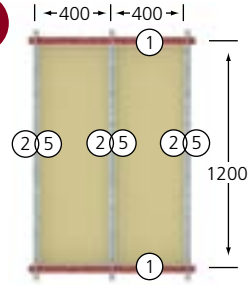

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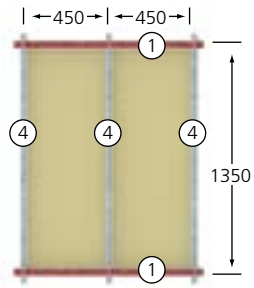

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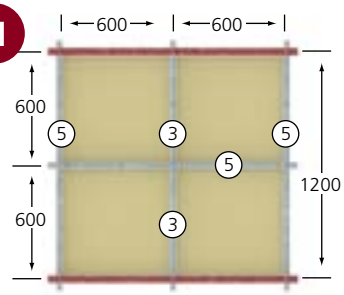

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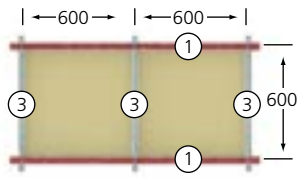


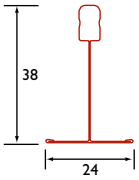
KEY

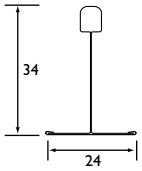
Indicates Main tee

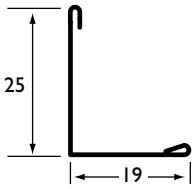
(2) (5)

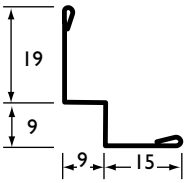
Indicates alternative: either 2 or 5

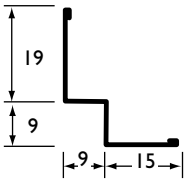
NOTE:
All light fittings are to be supported on Main Tee and extra hangers fitted where required.
Main Tee suspension is 1200mm along its length. Refer to Rondo for further information regarding suspension at other centres.

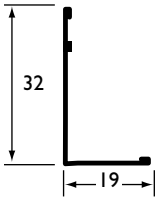
MAIN TEE	REF	PART NO	LENGTH
	1	DUO 1	3600

CROSS TEE	REF	PART NO	LENGTH
	2	DUO 2	1200
	3	DUO 2	600
	4	DUO H	1350
	5	DUO H	1200

STEEL WALL ANGLE	PART NO	LENGTH
	DUO 5	3600

STEEL SHADOWLINE	PART NO	LENGTH
	DUO 6	3600

ALUMINIUM SHADOWLINE	PART NO	LENGTH
	DUO 7	3600

ALUMINIUM WALL ANGLE	PART NO	LENGTH
	DUO 8	3600

GRID SELECTION GUIDE

TABLE 3: TEE SPACING/MAX. ALLOWABLE LOADS

SYSTEM		FACE SIZE mm	SPACING OF M/TS mm	SPACING OF X/TS mm	ALLOWABLE LOAD kg/m²
A	DUO 1–H	24	1200	600	14.2
	DUO 1–2	24	1200	600	12.4
B	DUO 1–H	24	1200	1200	19.8
	DUO 1–2	24	1200	1200	19.8
C	DUO 1–H	24	1200	600	8.4
D	DUO 1–H	24	1200	600	14.2
	DUO 1–2	24	1200	600	12.4
E	DUO 1–2	24	600	1200	26.0
F	DUO 1–H	24	1200	400	19.8
	DUO 1–2	24	1200	400	19.8
G	DUO 1–H	24	1350	450	11.4
H	DUO 1–H	24	1200	1200	8.4
J	DUO 1–2	24	600	600	26.0

NOTE:
Allowable loads are based on suspension points at 1200 centres along the Main Tee.
All light fittings are to be supported on Main Tees with additional hangers fitted, as required.
All maximum allowable load values stated assume the Main Tees are continuously spanned over three (3) or more suspension points.

IMPORTANT FIXING INFORMATION

Suspending Ceilings from Purlins

Rondo does not produce a suspension clip for attachment to the lip of steel purlins ('C' or 'Z' purlins, etc.) for the following reasons:

AS/NZS 2785:2000 Suspended Ceilings – Design and Installation details the following in respect to this issue:

- Section 4 Installation – Part 4.4: "In the case of purlins, the top fixing shall be made to the web of the purlin unless specifically designed otherwise"
- APPENDIX G Fixing (Informative): G2 Top Fixing, G2.1 Purlin Fixings:
  "Purlin fixings should be as follows:

A) Connections should be made to the web of the purlin, unless specifically designed otherwise

B) Where flange connections are necessary, they should be made as close as possible to the web of the purlin

C) Purlin manufacturers do not recommend attaching the top fixing to the lip of the purlin

D) Fixings should be selected and installed in accordance with the manufacturers specifications."

RONDO ALUMINIUM COMPONENTS

The Rondo Aluminium Ceiling System is an alternative to the Rondo DUO Exposed Grid Ceiling System. Unlike the DUO system, the Aluminium Main Tee to Cross Tee intersection is a butt joint which provides a flat, ghost free surface into which the ceiling panel fits.
The Cross tees have integrated locking tags enabling them to snap together positively at intersections whilst the Main Tee has a separate splicing plate to join lengths of the Main Tee together.

PRIMARY SECTIONS

357	24mm Face x 38mm Aluminium Cross Tee
359	24mm Face x 38mm Aluminium Lightweight Main Tee

PRIMARY SECTION JOINER

358	359 Main Tee Joiner

WALL ANGLES

DUO 7	Shadowline Wall Angle: Aluminium 19 x 9 x 9 x 15mm
DUO 8	Aluminium Wall Angle: 32 x 19mm

BULKHEAD TRIM

321	Aluminium Direct Fix – 13mm PB

PRIMARY SUSPENSION CLIP

356	Spring Adjusted to suit 359

SUSPENSION ROD BRACKETS

247	Suspension rod Angle Bracket
274	Suspension rod bracket
534	Suspension rod bracket: Timber – Steel
547	Suspension rod bracket: Concrete

SUSPENSION ROD

121	5mm Soft Gal. Susp. Rod

ANGLE BRACKET

188	Angle Bracket

TOUCH-UP PAINT

772	For steel and aluminium grid (150g can)

ACCESSORIES

705	Stabiliser Clip DUO5/DUO8 – Main Tee/Cross Tee
706	Stabiliser Clip DUO6 /DUO7– Main Tee/Cross Tee

PRIMARY SECTIONS

357

359

PRIMARY SECTION JOINER

358

WALL ANGLES

DUO 7

DUO 8

BULKHEAD TRIM

321

PRIMARY SUSPENSION CLIP

356

SUSPENSION ROD BRACKETS

247

274

534

547

SUSPENSION ROD

121

ANGLE BRACKET

188

TOUCH-UP PAINT

772

ACCESSORIES

705

706

TYPICAL APPLICATION & INSTALLATION DETAILS

The typical application and installation details for Rondo's Aluminium Ceiling System are the same as for Rondo's DUO Exposed Grid Ceiling System, ***except for the following differences***:

356 SUSPENSION CLIP

The 356 Suspension Clip slips over the upstand of the 359 Main Tee so that its locating lug 'clicks' into the pre-drilled hole in the tee section. The ceiling is leveled by squeezing the prongs of the clip together and sliding the assembly up or down the suspension rod until the required level is achieved then releasing the clip *(see Figure 1).*

1

■ **356 CLIP AND 359 MAIN TEE**

JOINING 357 AND 359 TEES

When the Main 359 and Cross 357 Tees are joined, the sections 'butt' together forming a smooth 'ghost' free intersection *(see Figure 2).*

2

■ **357 & 359 TEES JOINED**

TYPICAL APPLICATION & INSTALLATION DETAILS (continued)

358 JOINER PLATE

The 359 Main Tees are joined by the 358 Joiner Plate and secured to form a tight junction by bending the tabs closed once positioned through the pre-formed slots in the Main Tee *(see Figures 3 & 4).*

3

4

■ **358 PRIMARY SECTION JOINER**

DUO7 & DUO 8

The same aluminium perimeter trims used with the DUO® system are colour matched to this aluminium system.

Both the DUO7 Shadowline and DUO8 Angle can be used with DUO Perimeter Trim Stabiliser Clips, Rondo 705 *(for DUO8)* and 706 *(for DUO7) (see Figures 5 & 6)*

The standard perimeter finish is to rest the abutting tee sections onto the perimeter trim. "Cutting" the tee sections into the perimeter trim is an impractical exercise as movement in the ceiling or the perimeter walls will result in unsightly gaps between grid and trim at perimeters.

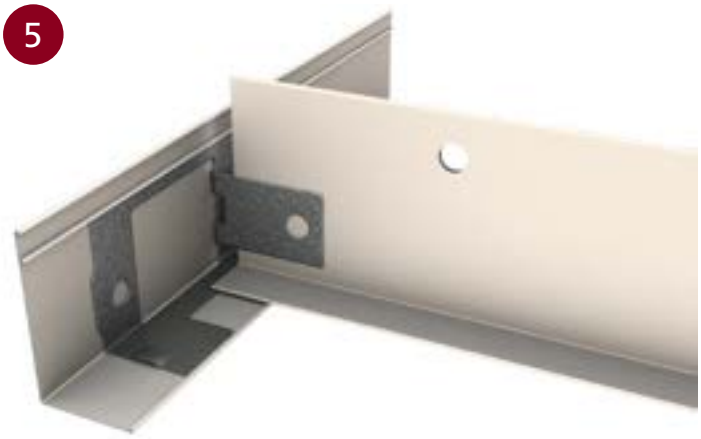
188 ANGLE BRACKET

If for any reason, such as bulkhead trimming, it is necessary to join the grid and trim permanently the 188 Angle Bracket can be used with self tapping screws or pop rivets through its pre-drilled holes.

321 BULKHEAD TRIM

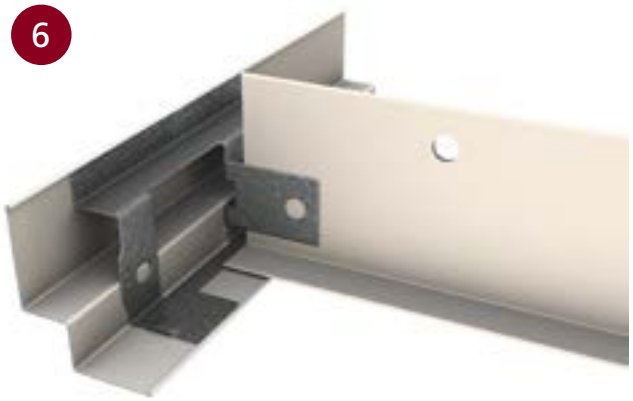
The 321 pre-finished aluminium bulkhead trim provides a matching element between plasterboard bulkheads and the aluminium grid ceiling.

5



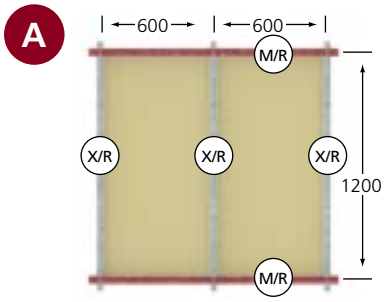
DUO8 WITH 705 CLIP

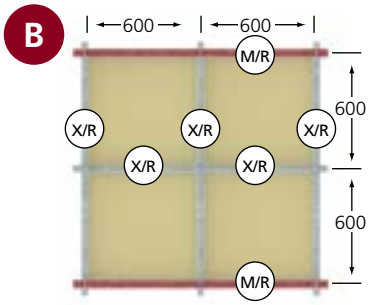
6

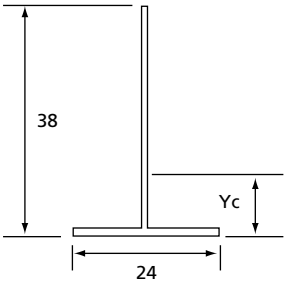


DUO7 WITH 706 CLIP

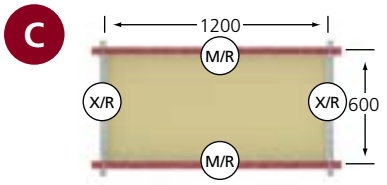
ALUMINIUM STANDARD GRIDS

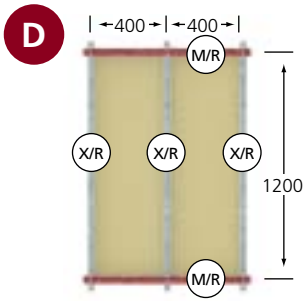


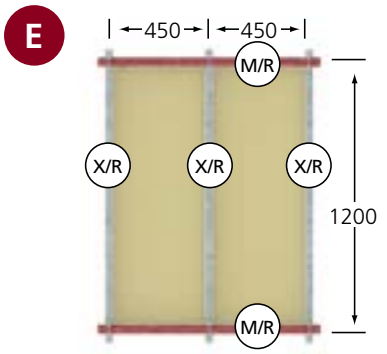




357/359







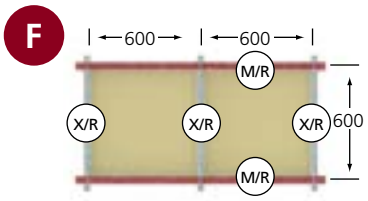


TABLE 4: SECTION DIMENSIONS

RONDO PART NO	D mm	AREA mm^2	Xc mm	Yc mm	WEIGHT kg/m
357/359	38.10	75.47	12.0	12.16	0.204

ALUMINIUM GRID SELECTION GUIDE

TABLE 5: TEE SPACING/MAX. ALLOWABLE LOADS

SYSTEM	M/R SPAN mm	M/R TYPE	X/R TYPE	ALLOWABLE LOAD kg/m²
A	1200	359	357	7.0
B	1200	359	357	7.2
C	1200	359	357	10.4
D	1200	359	357	10.1
E	1200	359	357	9.5
F	1200	359	357	10.4

NOTE:
Allowable loads are based on suspension points at 1200mm centres along the Main Tee.
All light fittings are to be supported on Main Tees with additional hangers fitted, as required.
All maximum allowable load values stated assume the Main Tees are continuously spanned over three (3) or more suspension points.

RONDO WALK-ABOUT™ TRAFFICABLE CEILING SYSTEM

SUMMARY

The Rondo WALK-ABOUT™ System provides a framework onto which a trafficable platform can be installed in the plenum area above ceilings for servicing mechanical and electrical services. Using standard Rondo steel stud profiles with purpose made joiners and clips, the WALK-ABOUT system is suspended from the structure above to provide a safe and secure access to services whilst simultaneously providing a support for the ceiling beneath.

SUITABLE FOR:

- Steel Ceiling Grid Systems
- Supporting a Walking Platform in the Ceiling Plenum
- Seismic Designs*
- Supporting of direct fixed or fully suspended ceilings beneath

SPECIAL FEATURES

- Seamlessly integrates with Rondo KEY-LOCK® and Rondo DUO® Ceiling Systems
- Basic system design will accept a 1.1kN point load with a deflection limit of L/360

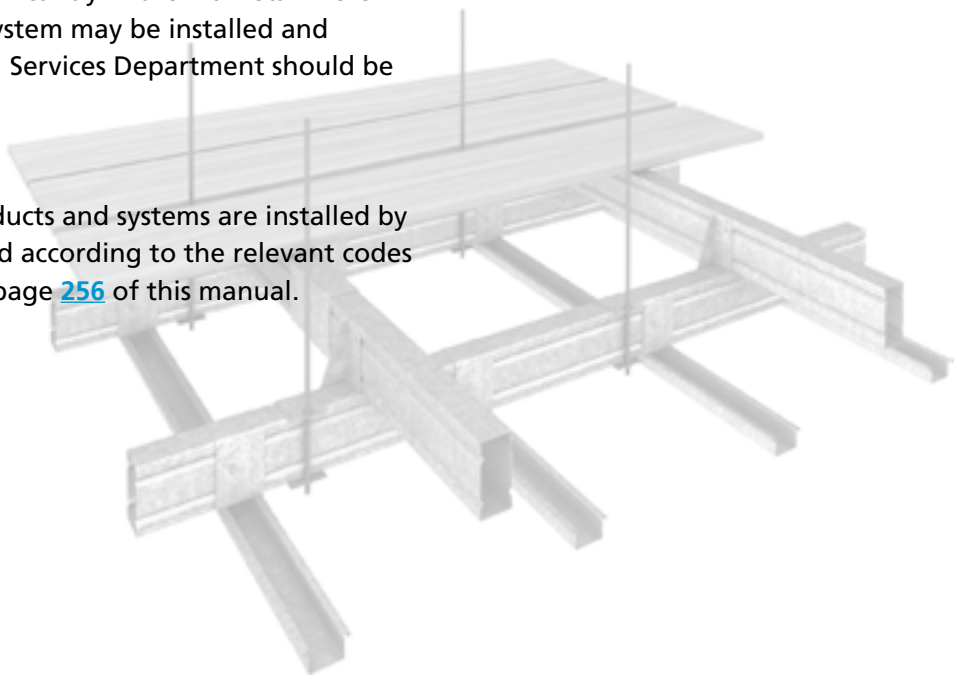
IN PRACTICE

As the second largest air conditioned footprint on earth (after NASA), the ***Venetian Resort and Casino, Macau*** is possibly one of the finest examples of the Rondo WALK-ABOUT system in situ, utilizing over 30,000m^2 of WALK-ABOUT ceiling to access their extensive services above ceiling level. The system also acted as a structure to support the curved KEY-LOCK® ceiling, forming the famous "sky" ceiling of the resort.

* Seismic activity varies significantly in the markets where the Rondo WALK-ABOUT System may be installed and therefore Rondo's Technical Services Department should be contacted for assistance.

IMPORTANT NOTE:
Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page 256 of this manual.

CONTENTS:



RONDO WALK-ABOUT™ COMPONENTS

PRIMARY SECTIONS

112	64mm x 0.50bmt Stud

FURRING CHANNELS

129	28mm Furring Channel
308	16mm Furring Channel

WALL TRIM

111	64mm x 28mm x 0.50bmt with hem

SECTION JOINERS

224	Stud to Furring Channel Joiner
270	90° Stud to Stud Joiner

SUSPENSION ROD & BRACKET

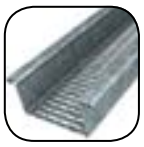
271	Bracket to suit 8mm rod
Not Supplied	8mm Threaded rod

PRIMARY SECTION

112

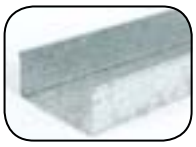
FURRING CHANNELS

129



308

WALL TRIM



111

SECTION JOINERS

224

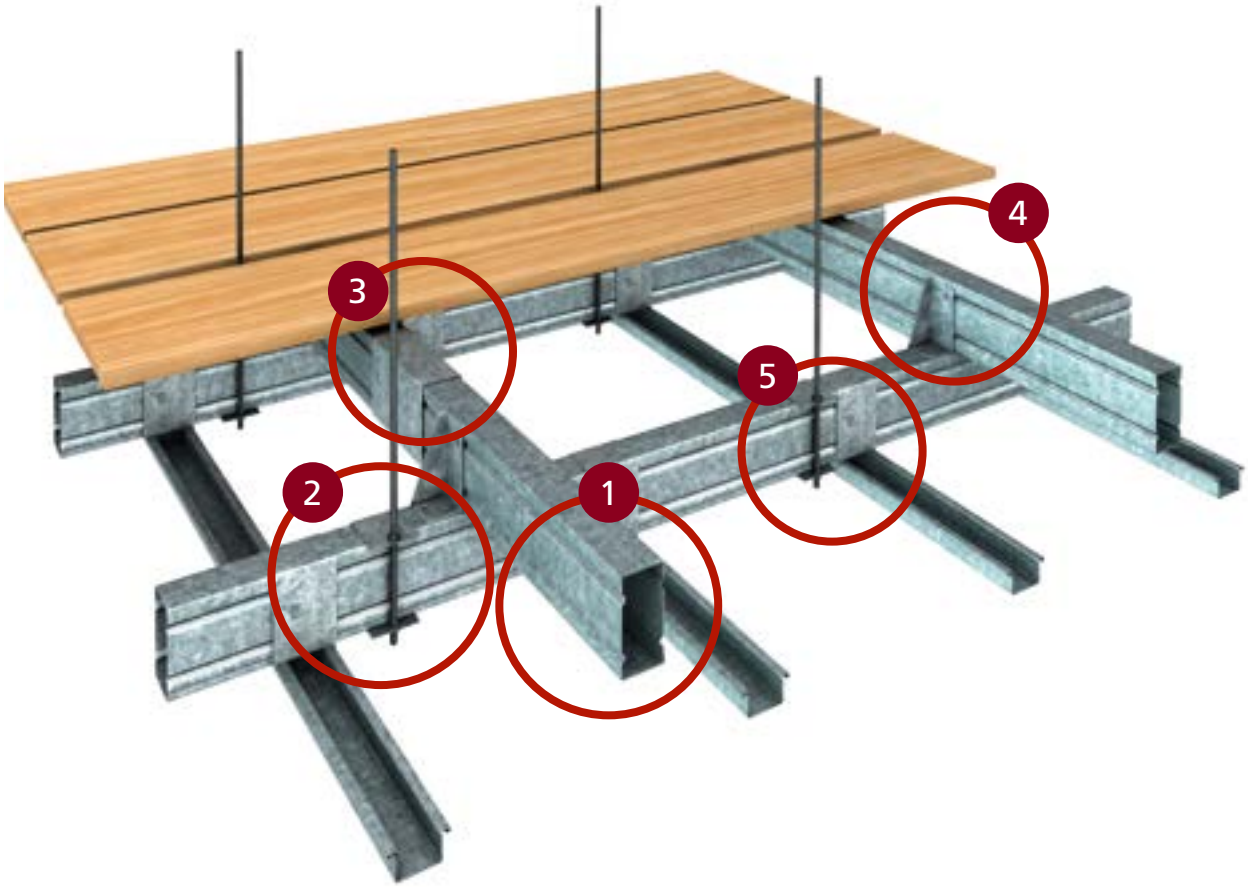
270

SUSPENSION ROD & BRACKET

271

THREADED ROD

TYPICAL APPLICATION DETAILS



Circled areas on the drawing refer to figures shown in more detail on the following pages.

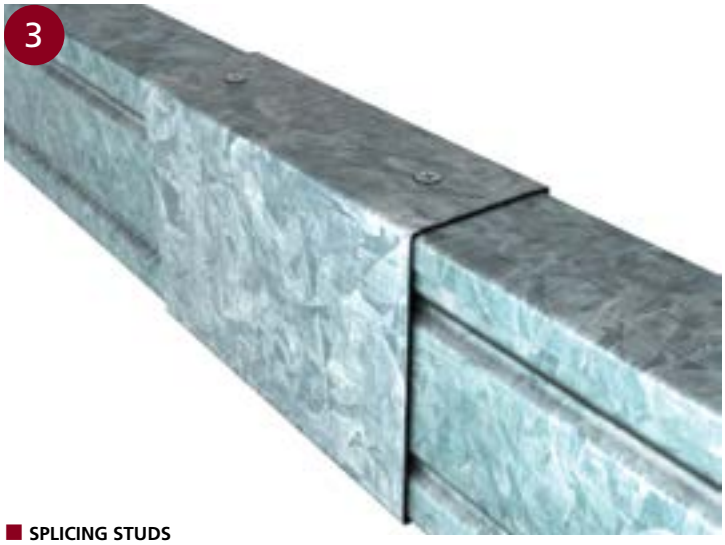
Once the framework is constructed, a walking platform can be installed in accordance with AS 1657-1992, the current *"Design, Construction and Installation Code"* for *"Fixed Platforms, Walkways, Stairs and Ladders"*.

Although Rondo does not manufacture or supply systems or components for the construction of walking platforms, our Technical Services Department can assist customers in determining their requirements.

INSTALLATION DETAILS

BOXED STUDS

ATTACHING STUDS TO THE ROD



SPLICING STUDS

The following installation details are based on using the Rondo 112 Stud 64 x 0.50BMT profile.

STEP ONE

The Rondo steel stud sections will require boxing.

Looking at the end profile, note that one flange leg is 2mm longer than the other. In order to box the studs, position them so that the shorter flange leg of one stud fits inside the longer leg of the other. Then squeeze the studs together starting at one end and working along the full length of the studs. The studs now form a box section as shown in Figure 1.

STEP TWO

The structural suspension fixings should now be installed and set out in a 1200 x 1200mm grid pattern.

The 8mm threaded rod hangers, once cut to the appropriate length, are then secured to your structural fixings. One M8 nut should then be spun onto the end of each threaded rod hanger at a distance of 90mm.

STEP THREE

Place the Rondo Part # 271 'U' Brackets onto the boxed stud section and attach to the threaded hanger rods with another M8 nut beneath the bracket. The primary studs are then secured to the threaded rod hangers as in Figure 2.

STEP FOUR

If joining studs is required, they should be spliced end to end with short pieces of Rondo 111 64mm Track screwed into each end of the stud top and bottom as in Figure 3.

STEP FIVE

When the full primary stud assembly has been completed it will be necessary to level the system using a suitable leveling device such as a laser. Adjusting the two nuts on each hanger 'U' Bracket will ensure the system is leveled and the nuts should be secured tightly.

STEP SIX

The secondary boxed stud assembly should now be installed at 90° to the primary studs and spaced 1200mm apart on top of the primary stud assembly. The secondary stud assembly is secured to the primary studs with the Rondo 270 Angle Bracket using two screws through the bracket to each stud as shown in Figure 4.

STEP SEVEN

Rondo Furring Channel can now be attached to the underside of the system by placing the Rondo 224 Furring Channel Clip over the lower primary stud assembly and clipping the Furring Channel into place as shown in Figure 5. Once the Furring Channel is installed the clip cannot be removed.

Similarly, a full Rondo KEY-LOCK® Concealed Ceiling System for building board can be installed using either direct fix or suspension methods as detailed on pages 11 and 16 of this Design Manual, where the primary stud assembly is used as a purlin.

The same applies to the installation of a Rondo DUO® Exposed Grid Ceiling System.

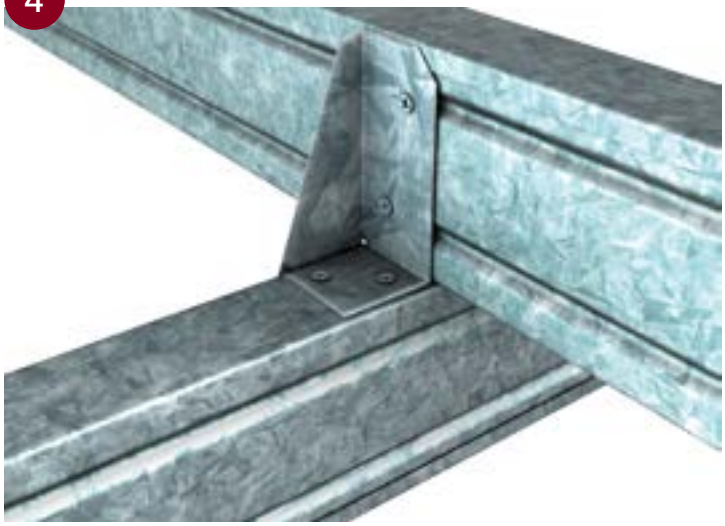
STEP EIGHT

The system is now ready for the installation of the platform or walkway to be positioned onto the primary stud framework to both coincide with any personnel access panels and adjacent to any mechanical or electrical equipment.

STEP NINE

Once the platforms are in place and properly secured and after a final check of the level the ceiling board can be attached to the Furring Channel in accordance with the board manufacturers recommendations.

4



INSTALLATION OF THE SECONDARY PRIMARY SYSTEM

5

ATTACHING THE FURRING CHANNELS

PLEASE NOTE:

If access panels are to be installed in the ceiling, these must be the type of panel that allow safe access into the plenum space by service personnel. The standard Access Panels in Rondo's PANTHER® range are not designed as personnel access panels.

STEEL STUD DRYWALL CEILING SYSTEMS

Steel studs may be used as ceiling joists, especially in situations where it is difficult to install a suspended ceiling.

Typical applications would be corridors, bathrooms or open roof areas. The tables starting on page 75 set out the maximum spans for Rondo steel studs.

They also show the minimum rows of bridging. Bridging in a ceiling serves the same purpose as Noggings in a wall.

The maximum ceiling span tables have been formulated using dead load plus 0.25kPa negative internal pressure.

Deflection has been checked to Span/480. The studs have been checked for bending and shear over the supports.

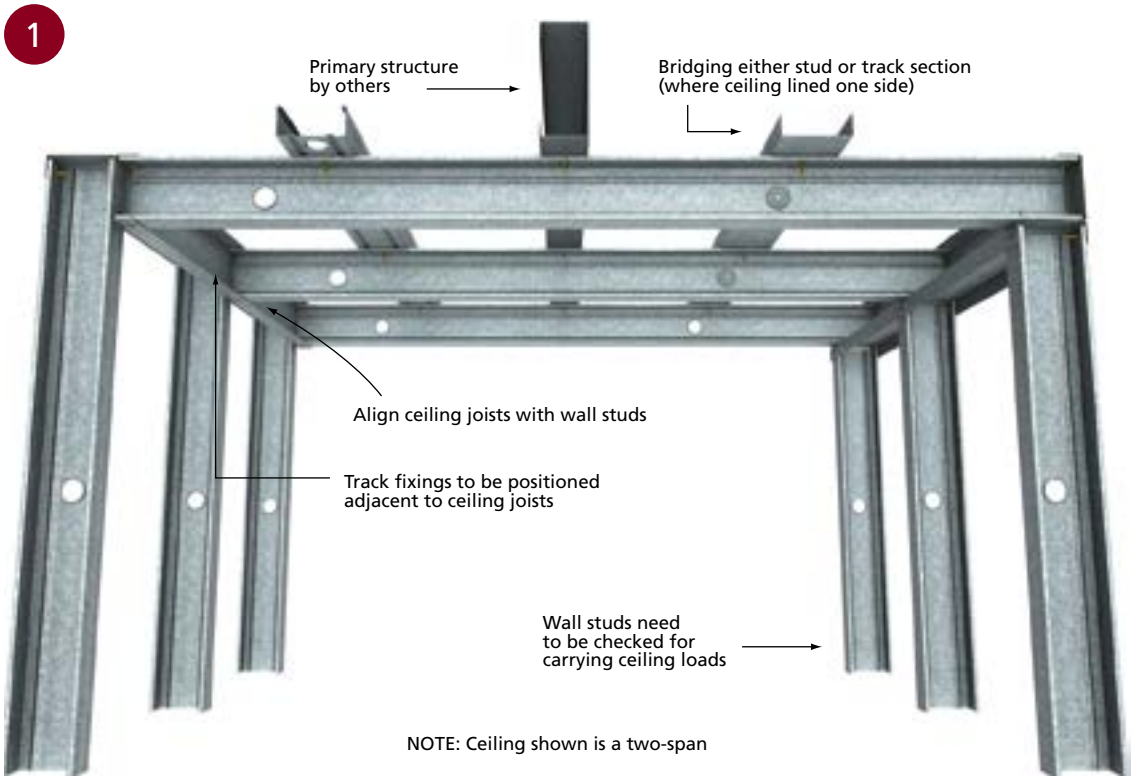
Where Access Panels are placed in the ceiling, the joists supporting the Access Panel must be strengthened to allow for maintenance loads.

The ceiling span tables are applicable for internal non-trafficable ceilings only.

Where ceilings are external or subject to wind loads they should be checked by Rondo, or a structural engineer prior to commencement of work.

CONTENTS:

1



TYPICAL CEILING APPLICATION

INSTALLATION GUIDE

STEP ONE
Set out the track locations in accordance with the ceiling levels, as shown on the architectural drawings.

STEP TWO
Secure the perimeter tracks in position using appropriate fasteners at not more than 600mm centres.
The track fixings should be no more than 50mm from the stud locations.

STEP THREE
Cut the studs to length – this will be 10mm shorter than the span length.
NOTE: Heavier gauge studs can be cut using abrasive wheels fitted to circular saws.

STEP FOUR
Fit the studs into the perimeter tracks, then with a twisting action rotate the studs into position.
Ideally, the studs should be orientated in the same direction to make fitting the lining board easier.

STEP FIVE
Fit the bridging members at the centres specified.
Ensure the stud spacing is maintained when fitting the bridging members.

STEP SIX
Fit intermediate connections for multiple span ceiling joists. Ensure the fixings are tight and any deflection of the studs is taken up at this time.

STEP SEVEN
Fit the lining board to the studs. The lining board should be fitted such that the board is screwed to the open side of the stud first. This will prevent any misalignment of the board along the ceiling.

STEP EIGHT
Set the joints in the lining board and fit the cornice.

INSTALLATION DETAILS

Stud & Track Joints: Mechanical Joints

Mechanical joints are required where the maximum spans of the ceiling exceeds those allowable for friction joints, or where a more positive connection is required *(see Figure 2)*.

Mechanical joint Type 1 is suitable for single span ceilings up to 3000mm or two or three span ceilings up to 4000mm span.

A fastener should be used to the top and bottom of the stud and track where possible.

Mechanical joints Type 2 and 3 are used where larger spans are necessary *(see Figures 3 & 4)*.

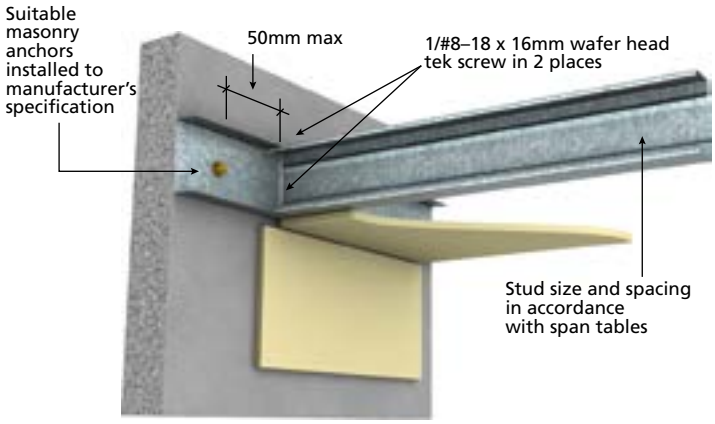
Where doubt exists, we suggest your local Rondo Technical Sales Representative be consulted for further design advice.

NOTES:

a) Where the ceiling intersects a stud wall, the wall must be checked for the ceiling load.

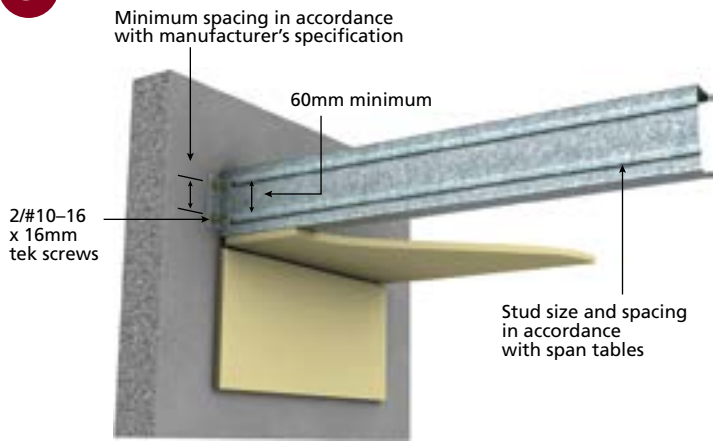
b) The plasterboard manufacturers recommend a continuous backing angle should be installed behind the wall/ceiling joint.

2



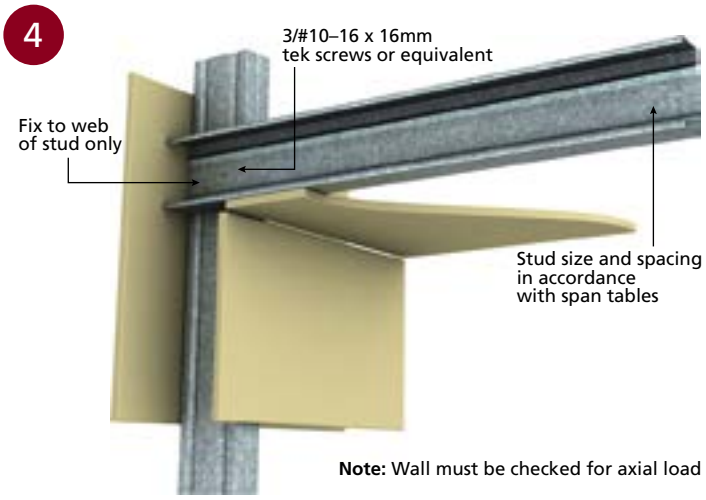
MECHANICAL JOINT TYPE 1

3



MECHANICAL JOINT TYPE 2

4



Note: Wall must be checked for axial load

MECHANICAL JOINT TYPE 3

INSTALLATION DETAILS (continued)

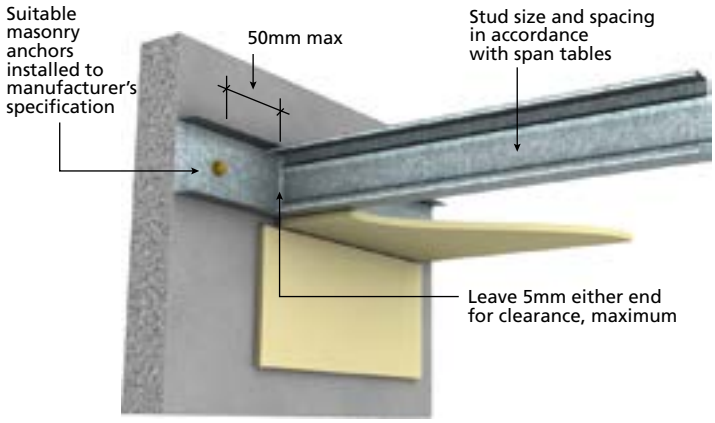
Stud & Track Joints: Friction Joints

Friction joints provide allowance for movement of building elements. These joints rely on the friction between the stud and track sections to secure the ceiling joists.

It is not recommended to use this type of joint where vibration or mechanical equipment is used in close proximity to the ceiling. The maximum span for these ceilings is 2000mm for single spans and 2800mm for two or more spans.

Studs supporting access panels and in the local vicinity must be mechanically fastened.

5



FRICTION JOINT

When two span or three span continuous studs are used it is necessary to provide additional fixing points within the span of the studs *(refer to Installation Details on page 70)*.

SUSPENSION JOINTS

These fixing points may be constructed using hoop iron strapping wrapped around the underside of the stud and fixed to the web. This strap is then fixed to the web of the roof purlin as shown in Figure 6, Suspension Joint Type 1.

To be effective, the strapping must be pulled tight before fixing off the loose end of the strap.

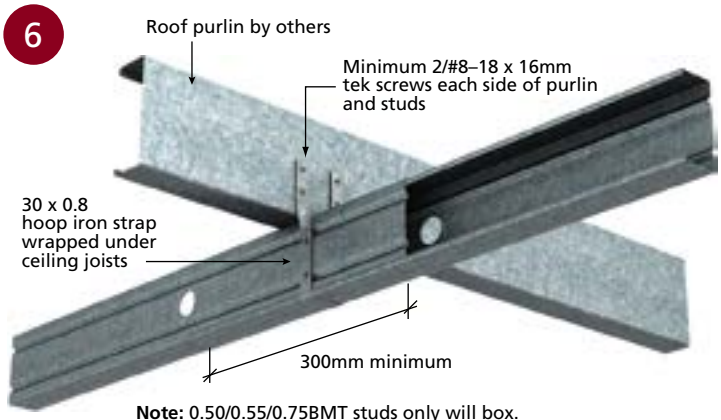
Alternatively, Angle Brackets, typically Rondo 553 Angle, may be used to connect to the studs as shown in Figure 7, Suspension Joint Type 2.

When connecting to concrete soffits, angle connectors can be used to make the stud connections as shown in Figure 8, Suspension Joint Type 3.

SPLICE DETAILS

Studs should be spliced/joined over a supporting member. Splicing of the studs should be over a minimum of 300mm for the 0.50. 0.55 and 0.75bmt sections. The 1.15bmt studs cannot be spliced in ceiling systems as the ceiling setout changes.

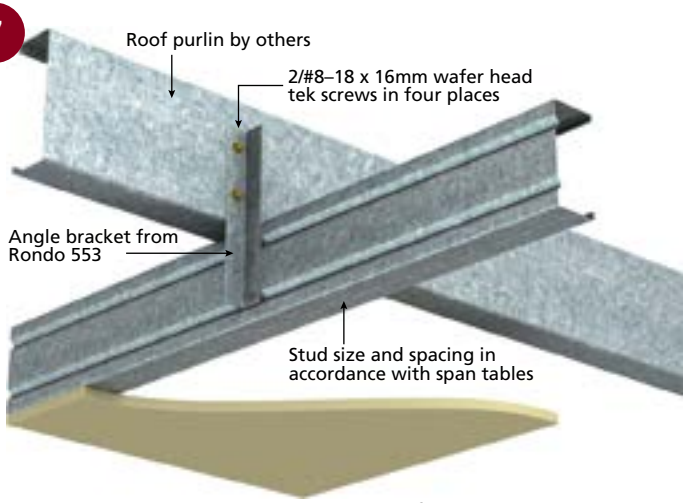
6



Note: 0.50/0.55/0.75BMT studs only will box.
4/#8–18 x 16mm tek screws top and bottom either end of spline.

SUSPENSION JOINT TYPE 1

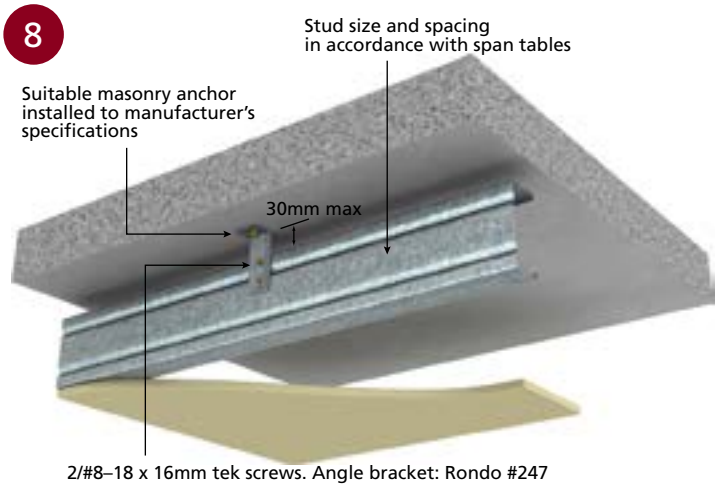
7



Note: Fixings should be made to web of purlins unless approved by the project engineer

SUSPENSION JOINT TYPE 2

8



SUSPENSION JOINT TYPE 3

BULKHEADS

Where the bulkhead drop exceeds 600mm it starts to become difficult to use Furring Channels to form the bulkheads, and when the drop exceeds 1200mm steel studs are recommended.

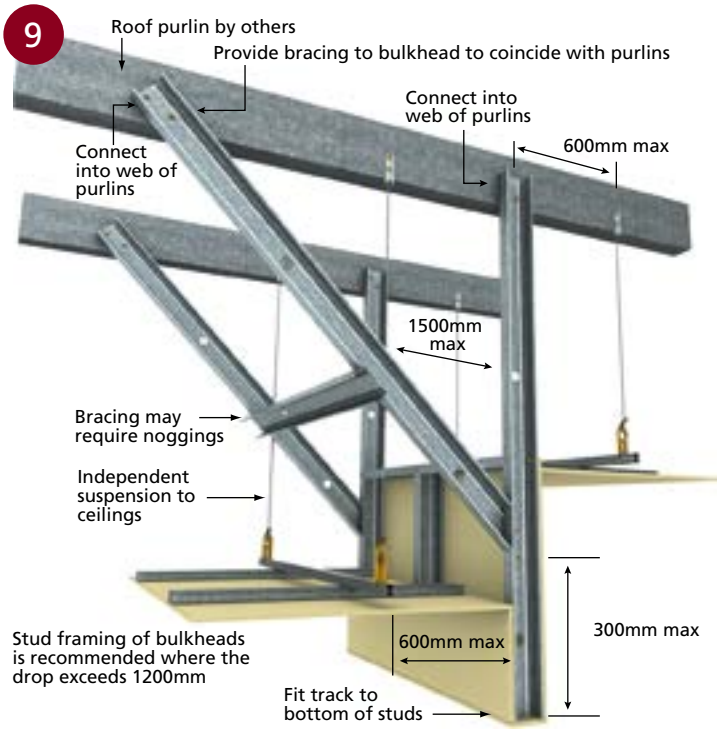
Bulkheads require independent suspension to carry the additional plasterboard and framing members. This may be achieved by fixing the framing members directly to the structural soffit or alternatively, providing additional suspension hangers to the bulkhead.

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, or alternatively, by rigidly coupling the ceiling to the bulkhead.

Where the ceiling is coupled to the bulkhead, the termination points require special detailing and the ceiling must be checked for the horizontal load. Details of this may be sought from Rondo.

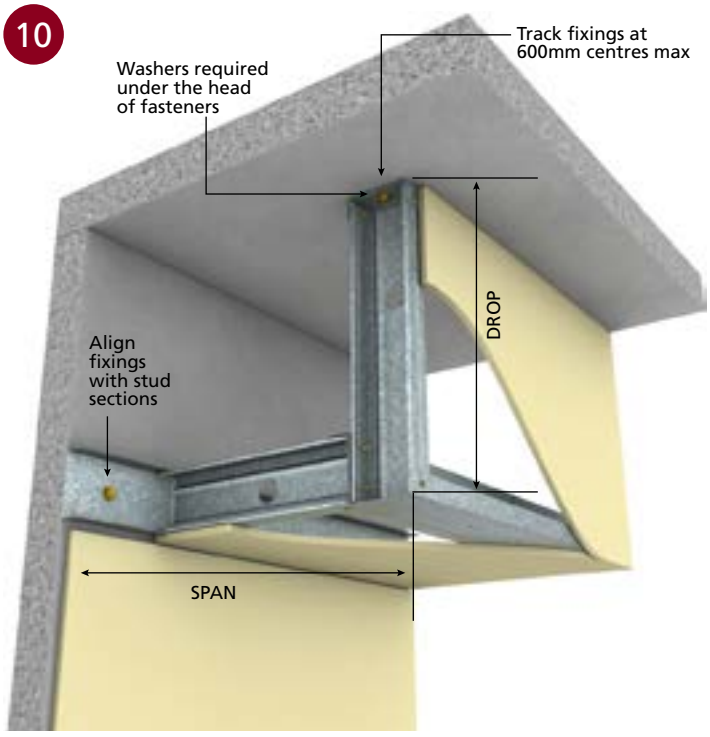
For the 'box type' bulkheads *(refer Figure 10)*, the stud size and spacing depends on the span and drop. Details of specific configurations may be sought from Rondo.

9



PROJECTION BULKHEAD

10



BOX-TYPE BULKHEAD

SPAN TABLES: STEEL STUD CEILING SYSTEMS

Single Span

TABLE 10: SINGLE SPAN CEILING JOISTS

STUD WIDTH	51mm		64mm			76mm			92mm			150mm	
BMT	0.50	0.75	0.50	0.75	1.15	0.55	0.75	1.15	0.55	0.75	1.15	0.75	1.15
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 600mm CENTRES / BOXED OR BACK TO BACK @ 1200mm CENTRES**												
1 x 10mm	1835	2060	2145	2460	2775	2535	2820	3185	2935	3255	3680	4750	5380
1 x 13mm	1800	2020	2100	2530	2785	2580	3005	3125	2870	3290	3615	4660	5285
1 x 16mm	1740	1960	2095	2470	2705	2500	2945	3025	2780	3195	3495	4510	5120
2 x 13mm	1665	1880	1945	2335	2575	2365	2770	2900	2660	3030	3355	4325	4915
2 x 16mm	1580	1780	1860	2235	2450	2235	2650	2760	2525	2875	3190	4115	4675
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 450mm CENTRES**												
1 x 10mm	2010	2260	2350	2695	3035	2780	3090	3480	3210	3565	4020	5190	5860
1 x 13mm	1975	2220	2305	2760	3045	2845	3265	3415	3165	3605	3975	5095	5760
1 x 16mm	1910	2150	2305	2690	2960	2760	3200	3310	3050	3505	3845	4935	5585
2 x 13mm	1830	2060	2140	2550	2820	2615	3015	3175	2920	3330	3680	4740	5370
2 x 16mm	1735	1950	2080	2440	2690	2480	2895	3020	2775	3170	3495	4505	5115
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 400mm CENTRES**												
1 x 10mm	2090	2350	2445	2800	3145	2885	3205	3605	3335	3700	4165	5380	6065
1 x 13mm	2050	2300	2395	2855	3150	2955	3375	3540	3300	3740	4125	5285	5960
1 x 16mm	1985	2230	2395	2785	3065	2870	3310	3430	3185	3635	3995	5120	5785
2 x 13mm	1900	2140	2220	2645	2925	2720	3120	3295	3035	3460	3825	4915	5560
2 x 16mm	1805	2030	2160	2530	2790	2585	2995	3135	2880	3295	3630	4675	5300
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 300mm / BOXED OR BACK TO BACK @ 600mm CENTRES**												
1 x 10mm	2290	2570	2675	3060	3430	3160	3505	3930	3650	4040	4535	5865	6580
1 x 13mm	2250	2520	2625	3105	3430	3230	3655	3860	3635	4075	4500	5760	6475
1 x 16mm	2175	2440	2620	3030	3340	3145	3585	3745	3520	3970	4370	5585	6285
2 x 13mm	2085	2340	2435	2880	3190	2980	3390	3600	3355	3780	4185	5370	6055
2 x 16mm	1980	2230	2375	2755	3045	2845	3255	3430	3175	3605	3985	5115	5775
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 1200mm CENTRES**												
1 x 10mm	1460	1650	1695	1965	2225	2020	2255	2555	2310	2605	2955	3530	4335
1 x 13mm	1430	1610	1665	1925	2180	1980	2210	2505	2255	2555	2900	3480	4255
1 x 16mm	1385	1560	1615	1865	2110	1815	2135	2420	2160	2470	2805	3375	4115
2 x 13mm	1325	1490	1545	1785	2020	1755	2045	2320	1895	2365	2685	3240	3730
2 x 16mm	1255	1420	1450	1695	1915	1675	1935	2205	1820	2245	2550	3075	3590

MINIUM BRIDGING REQUIREMENTS		
CEILING SPAN (m)	**LINING CONDITION**	**NO. BRIDGING**
0 – 2.0	Lined one side	0
2.0 – 4.0		1
4.0 – 6.0		2
6.0 – 7.0		3

NOTES:

1. Strength check: 1.2G + Wu, using Wu = 0.375kPa

2. Serviceability check: G + Ws Limit L / 360 or 12mm, G Limit LI600

3. Support walls and connections to be independently checked.

4. The live load in accordance with AS/NZS1170.1:2002 Clause 3.5.2 has not been applied to the ceiling joists. Accordingly, personnel are not permitted to traffic the ceiling joists.

5. Maximum span tables assume Noggings are equally spaced along studs.

SPAN TABLES: STEEL STUD CEILING SYSTEMS (continued)

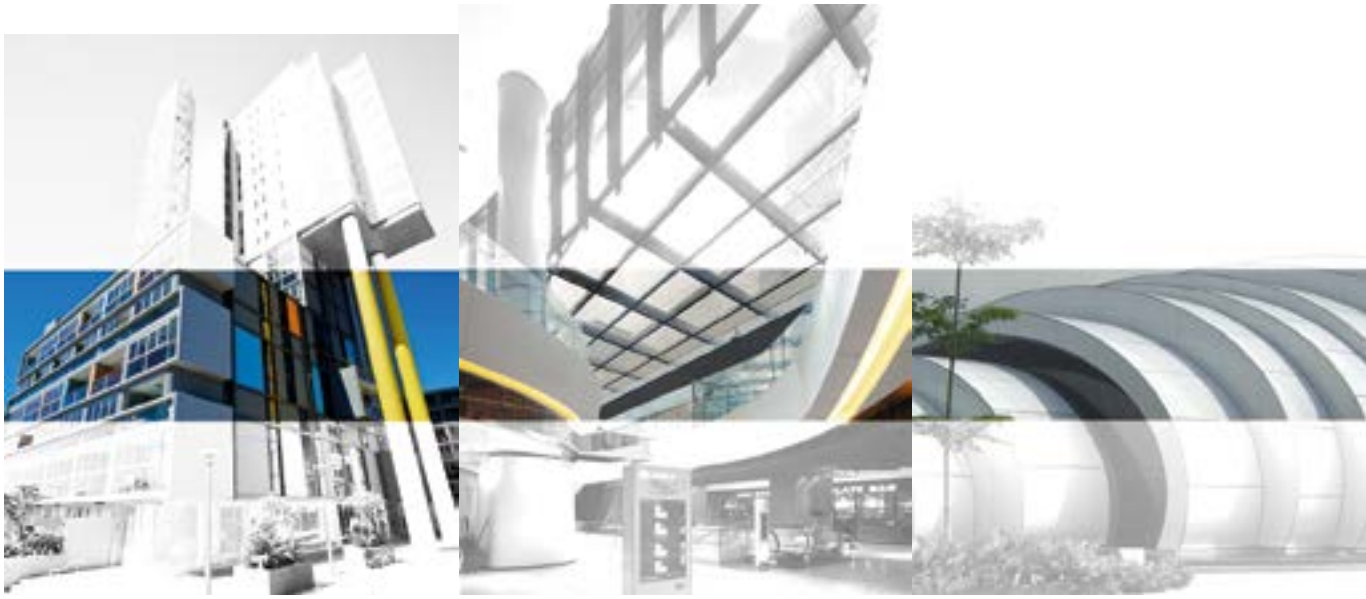
Continuous Span

TABLE 11: CONTINUOUS SPAN CEILING JOISTS

STUD WIDTH	51mm		64mm			76mm			92mm			150mm	
BMT	0.50	0.75	0.50	0.75	1.15	0.55	0.75	1.15	0.55	0.75	1.15	0.75	1.15
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 600mm CENTRES / BOXED OR BACK TO BACK @ 1200mm CENTRES**												
1 x 10mm	2380	2770	2480	3290	3710	2920	3780	4260	3240	4220	4930	5390	7200
1 x 13mm	2330	2710	2420	3240	3650	2850	3710	4180	3170	4120	4840	5260	7040
1 x 16mm	2230	2620	2310	3130	3530	2730	3550	4050	3030	3950	4690	5050	6760
2 x 13mm	2110	2510	2190	3000	3380	2590	3360	3890	2870	3730	4500	4780	6410
2 x 16mm	1960	2390	2040	2840	3210	2410	3140	3690	2680	3490	4270	4470	6000
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 450mm CENTRES**												
1 x 10mm	2690	3030	2850	3610	4070	3360	4140	4670	3730	4770	5390	6170	7850
1 x 13mm	2640	2970	2780	3580	3990	3280	4150	4580	3640	4690	5290	6030	7710
1 x 16mm	2560	2880	2660	3460	3860	3140	4020	4430	3490	4530	5120	5730	7480
2 x 13mm	2420	2760	2520	3300	3710	2980	3820	4250	3300	4290	4920	5480	7190
2 x 16mm	2260	2620	2350	3120	3520	2780	3600	4050	3080	4010	4680	5130	6850
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 400mm CENTRES**												
1 x 10mm	2800	3150	3020	3750	4210	3560	4290	4830	3950	4950	5580	6520	8120
1 x 13mm	2750	3090	2950	3720	4140	3470	4320	4740	3850	4860	5480	6370	7990
1 x 16mm	2650	2990	2820	3600	4010	3330	4180	4600	3690	4710	5310	6110	7750
2 x 13mm	2540	2870	2670	3440	3850	3150	3980	4410	3490	4520	5100	5740	7450
2 x 16mm	2400	2720	2490	3250	3660	2940	3760	4200	3260	4240	4850	5420	7100
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 300mm / BOXED OR BACK TO BACK @ 600mm CENTRES**												
1 x 10mm	3070	3440	3470	4100	4590	4080	4700	5270	4520	5410	6070	7340	8770
1 x 13mm	3010	3380	3380	4080	4510	3990	4730	5170	4420	5310	5970	7200	8660
1 x 16mm	2910	3270	3240	3950	4370	3820	4600	5010	4240	5150	5790	6970	8480
2 x 13mm	2790	3140	3070	3780	4200	3620	4370	4820	4010	4940	5570	6620	8240
2 x 16mm	2650	2990	2870	3590	4000	3380	4160	4590	3750	4700	5300	6210	7910
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 1200mm CENTRES**												
1 x 10mm	1690	2020	1760	2450	2980	2080	2710	3420	2310	3010	3910	3860	5200
1 x 13mm	1650	1980	1720	2390	2920	2030	2640	3350	2250	2940	3830	3770	5080
1 x 16mm	1580	1910	1640	2290	2820	1940	2530	3240	2160	2810	3700	3610	4860
2 x 13mm	1490	1830	1550	2160	2700	1840	2390	3110	2040	2660	3510	3380	4600
2 x 16mm	1390	1730	1450	2020	2570	1710	2230	2930	1890	2480	3280	3110	4300

MINIUM BRIDGING REQUIREMENTS		
CEILING SPAN (m)	**LINING CONDITION**	**NO. BRIDGING**
0 – 2.0	Lined one side	0
2.0 – 4.0		1
4.0 – 6.0		2
6.0 – 7.0		3

NOTES:
1. Strength check: 1.2G + Wu, using Wu = 0.375kPa
2. Serviceability check: G + Ws Limit L / 360 or 12mm, G Limit L/600
3. Support walls and connections to be independently checked.
4. The live load in accordance with AS/NZS1170.1:2002 Clause 3.5.2 has not been applied to the ceiling joists. Accordingly, personnel are not permitted to traffic the ceiling joists.
5. Refer to Rondo for splice details where multiple span length exceeds single stud length. The above table assumes continuity.
6. Maximum span tables assume Noggings are equally spaced along studs.



WALLS

STEEL STUD >
MAXIFRAME® >
QUIET STUD® >
MASONRY WALL >

RONDO®

RONDO STEEL STUD DRYWALL FRAMING SYSTEM

SUMMARY

The Rondo Steel Stud Drywall Framing System provides a durable, practical and lightweight structure for internal plasterboard walls and for specific external wall systems. The availability of various sizes, complimentary components such as noggin tracks, curved tracks and special cleats ensure Rondo Stud and Track wall systems are available to suit almost all situations.

SUITABLE FOR:

- Non-load bearing partition walls
- Load Bearing Walls by design
- Steel Stud Ceiling Systems
- Window and Door Jambs
- Non-Fire Rated Systems
- Fire Rated Systems
- Acoustic Wall Systems by design
- External Wall systems by design
- Light Weight Floor Joists
- Bulkheads

SPECIAL FEATURES

- Available in custom lengths
- Majority of Stud and Track is hemmed for safety and increased strength
- Bell mouthed service holes to mitigate damages to services
- Flexible Track available for curved walls
- Manufactured with a minimum coating of Z275
- Profiles widths range from 51 to 150mm, and gauges from 0.50 to 1.15BMT.
- MAXIframe External Wall Framing System made from 1.2BMT G500 steel
- Includes unique QUIET STUD® profile for better acoustic performance

IN PRACTICE

Rondo's Stud and Track Systems have been used all over the world, including in the ***Mumbai International Airport development in India*** and Australia's largest tertiary institution and award-winning project, ***RMIT University in Melbourne***. For the high-profile ***Fiona Stanley Hospital project in Perth***, its design required special length products – therefore, Rondo produced large quantities of the non-standard Stud and Track sizes to ensure the project could progress rapidly.

IMPORTANT NOTE:
Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page 256 of this manual.

CONTENTS:

RONDO STEEL STUD & TRACK SECTIONS

LIPPED WALL STUDS

401	51mm x 0.50bmt Stud with Hem
112	64mm x 0.50bmt Stud with Hem
403	76mm x 0.55bmt Stud with Hem
251	92mm x 0.55bmt Stud with Hem
489	51mm x 0.75bmt Stud
491	64mm x 0.75bmt Stud
493	76mm x 0.75bmt Stud
495	92mm x 0.75bmt Stud
511	150mm x 0.75bmt Stud
661	64mm x 1.15bmt Stud
671	76mm x 1.15bmt Stud
681	92mm x 1.15bmt Stud
691	150mm x 1.15bmt Stud

QUIET STUD

RQST	92mm x 0.55bmt

FLEXIBLE TRACK

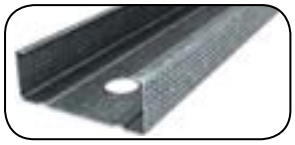
103	51mm Flexible Track
104	64mm Flexible Track
105	76mm Flexible Track
106	92mm Flexible Track
107	64mm Deflection Head Flexible Track
108	76mm Deflection Head Flexible Track
109	92mm Deflection Head Flexible Track
110	150mm Deflection Head Flexible Track

WALL TRACKS

400	51mm x 28mm x 0.50bmt with hem
111	64mm x 28mm x 0.50bmt with hem
402	76mm x 28mm x 0.50bmt with hem
250	92mm x 28mm x 0.50bmt with hem
490	51mm x 28mm x 0.70bmt with hem
492	64mm x 28mm x 0.70bmt with hem
494	76mm x 28mm x 0.70bmt with hem
496	92mm x 28mm x 0.70bmt with hem
660	64mm x 32mm x 1.15bmt Track
670	76mm x 32mm x 1.15bmt Track
680	92mm x 32mm x 1.15bmt Track

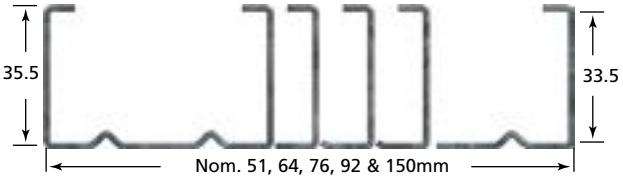
LIPPED WALL STUDS — FIRE TESTED

401/112/403/251/489/491/ 493/495//511

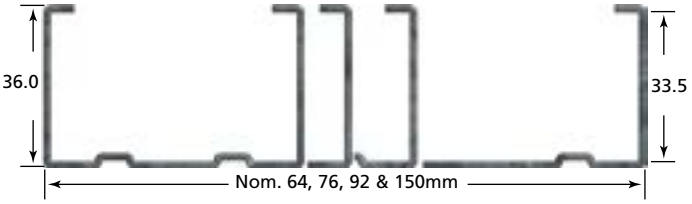


661/671/681/691

0.50/0.55 BMT



0.75 BMT



1.15 BMT

QUIET STUD

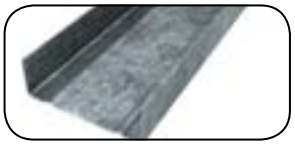
RQST

FLEXIBLE TRACK

103/104/105/106/ 107/108/109/110

WALL TRACKS

0.50/0.70 BMT



1.15 BMT

DEFLECTION HEAD TRACKS

480	64mm x 50mm x 0.50bmt Deflection Head Track
482	76mm x 50mm x 0.50bmt Deflection Head Track
483	92mm x 50mm x 0.50bmt Deflection Head Track
488	51mm x 50mm x 0.70bmt Deflection Head Track
497	64mm x 50mm x 0.70bmt Deflection Head Track
498	76mm x 50mm x 0.70bmt Deflection Head Track
499	92mm x 50mm x 0.70bmt Deflection Head Track
510	150mm x 50mm x 0.75bmt Deflection Head Track
663	64mm x 50mm x 1.15bmt Deflection Head Track
673	76mm x 50mm x 1.15bmt Deflection Head Track
683	92mm x 50mm x 1.15bmt Deflection Head Track
690	150mm x 50mm x 1.15bmt Deflection Head Track

SLOTTED DEFLECTION HEAD TRACK

S499	92mm x 0.70 bmt Slotted Deflection Head Track
S510	150mm x 0.75 bmt Slotted Deflection Head Track
S683	92mm x 1.15 bmt Slotted Deflection Head Track
S690	150mm x 1.15 bmt Slotted Deflection Head Track

NOGGING TRACKS

501	Continuous Nogging Bracket
503	51mm x 0.70bmt Nogging Track
504	64mm x 0.70bmt Nogging Track
505	76mm x 0.70bmt Nogging Track
506	92mm x 0.70bmt Nogging Track
507	150mm x 0.75bmt Nogging Track

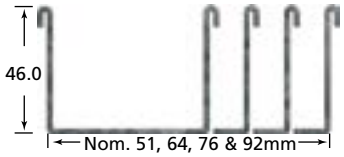
CLIPS

126	Staggered Stud Clip (Acoustic)
704	Partition mounting cip

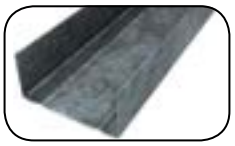
CONTROL JOINT

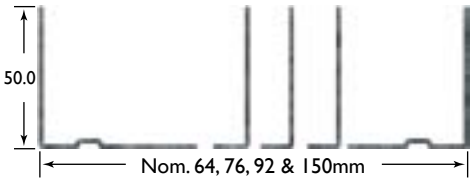
P35	Flexible Control Joint

DEFLECTION HEAD TRACKS



0.50/0.70 BMT



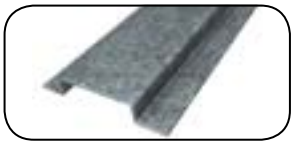


0.75/1.15 BMT

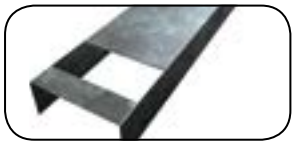
SLOTTED DEFLECTION HEAD TRACK

MAXITRACK

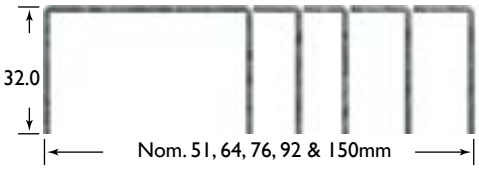
NOGGING TRACKS



NOGGING BRACKET



NOGGING TRACK



CLIPS

126

704

CONTROL JOINT

P35

INSTALLATION INFORMATION: WALLS

Tracks

Track sections provide a friction fit for the studs, which not only holds the studs in position until the lining board is fitted, but also provides a slip joint to allow for movement in the structure. For this reason do not screw the lining board to the track sections unless specifically stated.

Track sections 0.50bmt and 0.70bmt have hemmed flanges with nominal heights of 29mm and 46mm for standard and deflection head track respectively. 1.15 bmt track sections are not hemmed and have nominal flange heights of 32 and 50mm.

In general, where walls are lined both sides, standard tracks are used unless the project engineer has indicated that deflection heads are required; for example, under a concrete slab or where the wall height is 4800mm or greater. For stud framing unlined or only lined one side, see notes accompanying Nogging Tables within this document.

There is no requirement to isolate the track sections from slabs, unless specifically stated.

Track sections are nominally 3000mm long and should be fixed at not more than 600mm centres. Fixings should be placed within 100mm from either end of the track sections.*

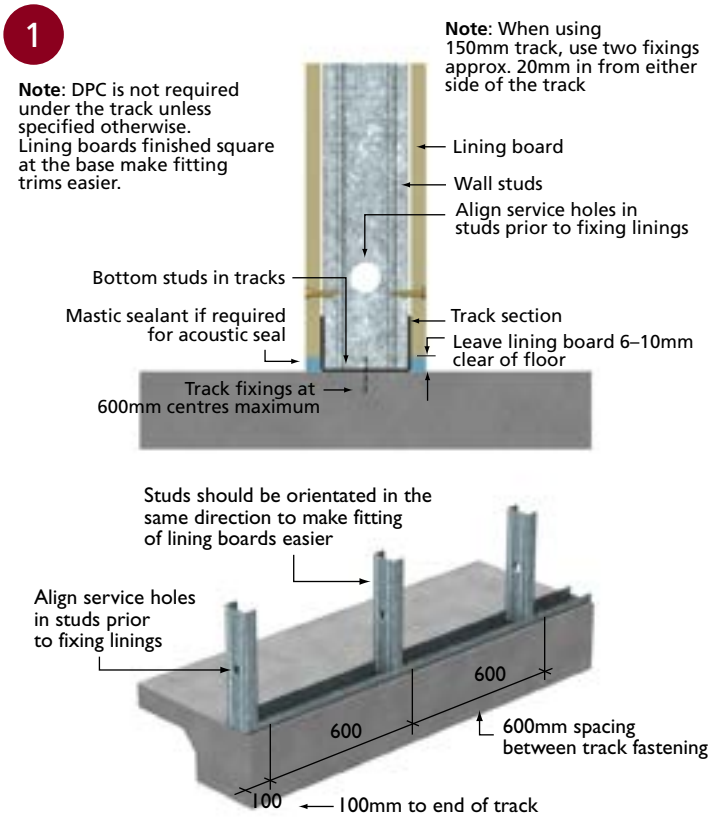
FRICTION JOINTS

Friction fit and deflection heads require special detailing to achieve their design capacity (*refer to Figure 2 for specific details).*

The maximum wall height tables have been checked assuming a friction joint between the stud and track*.

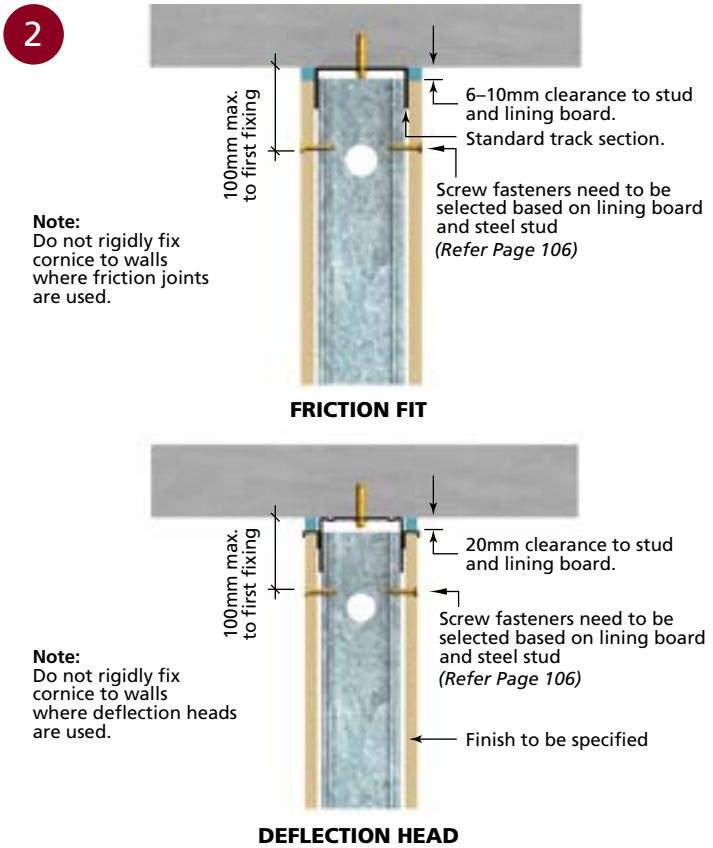
* In some seismic areas these connection details may not be valid. Please check with your nearest Rondo Office prior to commencing installation.

1



TRACK FIXING DETAILS

2



FRICTION FIT/DEFLECTION HEAD

Slotted Deflection Head Track (MAXItrack®)

The MAXItrack® is slotted along the flanges to provide a positive connection between the stud and the track as shown in Fig 3 by the use of 2 #10 screws, one each side, to greatly increase the connection capacity of the stud to head track connection.

By using MAXItrack®, it is no longer necessary to install Nogging track 100mm below the head track. Currently, MAXItrack® is available in 92 & 150 mm sizes.

FIXING TO CONCRETE:

The standard clearance between the top of the stud and the slab soffit is 20mm, which accommodates up to 15mm incremental slab deflection, with tolerance.

FIXING TO STEELWORK:

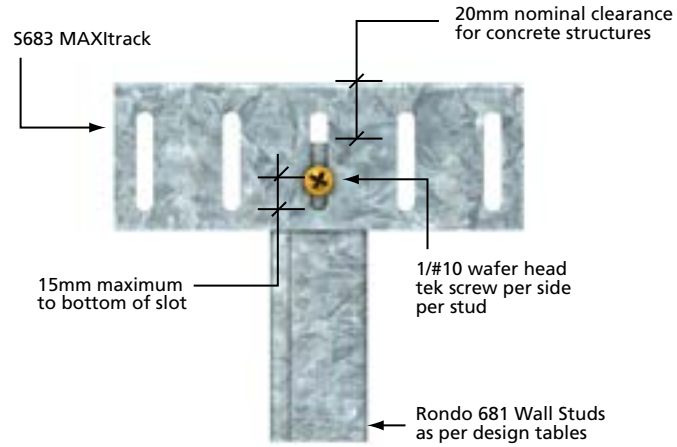
Where the steelwork carries roof or floor loads a deflection head will be required. Where the steelwork is in place only as a lateral support to the stud framing a deflection head is not required.

For roof uplift the MAXItrack® can be installed with an initial stud clearance of 5mm which will give an allowance of up to 15mm for uplift.

NOTE:

The allowance for structural movement should always be confirmed by the project engineer prior to commencing sitework.

3



TYPICAL MAXITRACK CONNECTION DETAIL

INSTALLATION INFORMATION: WALLS (continued)

Wall Studs

The Rondo 0.50, 0.55 and 0.75bmt wall studs have standard 25mm bell-mouthed service holes. Being bell-mouthed with no protruding sharp edges eliminates the need for fitting grommets for electrical cabling.

Punched round holes are processed at designated centres along the 1.15bmt studs.

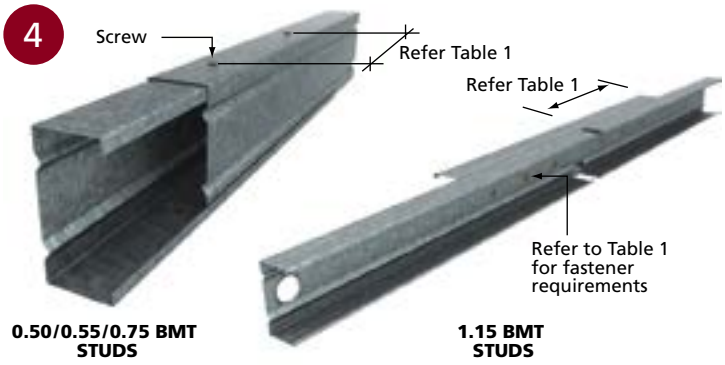
Mountain knurling along the flanges of the studs are designed to provide the screw point with a positive location during fitting of the lining board.

In situations where the stud length is shorter than that required, the 0.50, 0.55 and 0.75bmt studs may be spliced to extend the overall stud length. Studs of 1.15bmt or greater may be spliced back to back. *Refer to Table 1 for splicing details.*

Boxing Studs of 0.50, 0.55 and 0.75bmt and fixing Studs of 1.15bmt back to back provides greater rigidity at window and door openings and also at points where extra load carrying capacity is required – such as shelf loads.

The maximum wall height and ceiling span tables have been formulated in accordance with the requirements of the Building Code of Australia (BCA) Specification C1.8 "Structural Tests for Lightweight Construction".

4



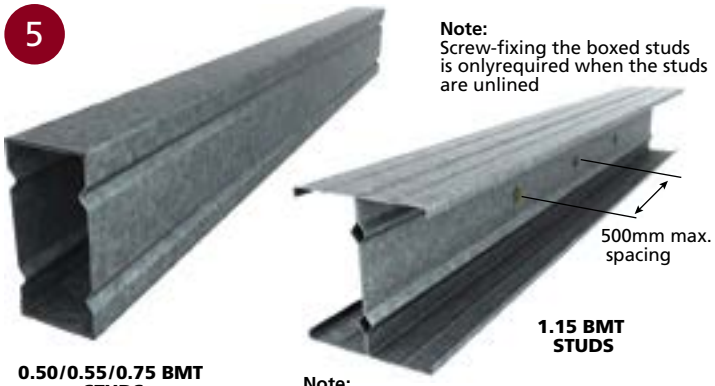
■ SPLICED STUDS

TABLE 1: FIXING GUIDE FOR SPLICED STUDS

STUD GAUGE (BMT)	WALL HEIGHT (m)	SPLICE LOCATION (%)	SPLICE LENGTH (mm)	NO. OF FASTENERS
0.50/0.55	0 – 4	10	330	2
		25	690	3
	4 – 6	10	740	3
		25	1540	4
0.75	0 – 4	10	250	2
		25	520	2
	4 – 6	10	560	2
		25	1160	3
1.15	0 – 4	10	300	3
		25	300	3
	4 – 6	10	450	3
		25	540	4

NOTES:
1. *Splices to be alternated top and bottom along wall.*
2. *Splicing of studs shall not be undertaken for load bearing (axial) walls*
3. *Do not splice studs between 25% – 75% of the wall height*
4. *All fasteners shall be #8 tek screws, or equivalent.*
5. *Walls may be lined both sides or one side.*
6. *Maximum stud spacing 600mm centres.*

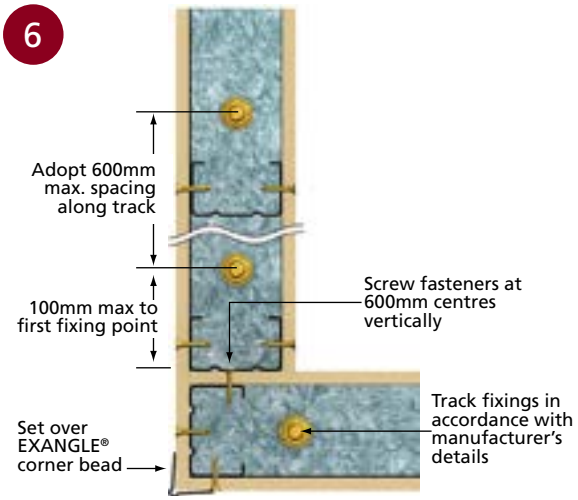
5



■ BOXED/BACK-TO-BACK STUDS

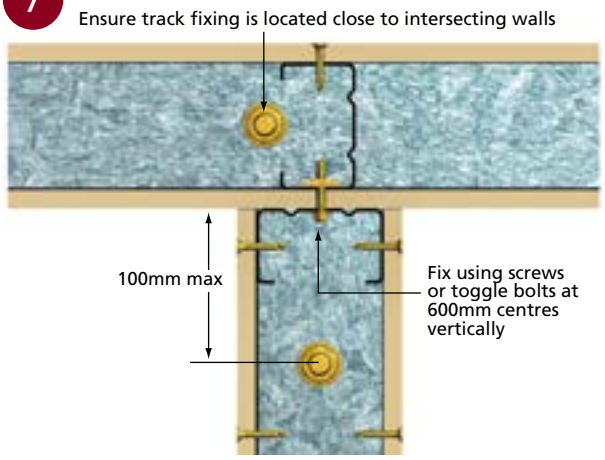
Wall Studs: Typical Applications

6



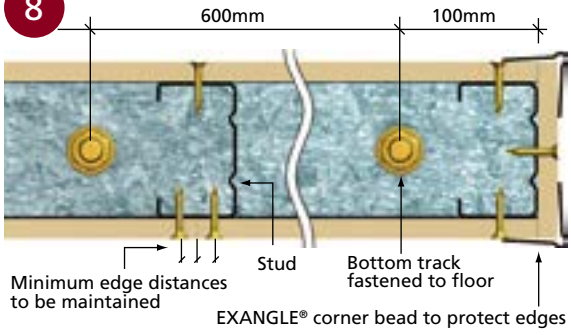
CORNER – SINGLE LAYER APPLICATION

7



INTERSECTION – SINGLE LAYER APPLICATION

8



WALL END

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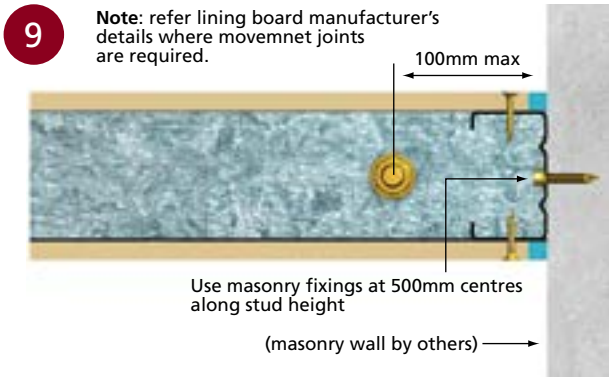

INTERSECTION – MASONRY

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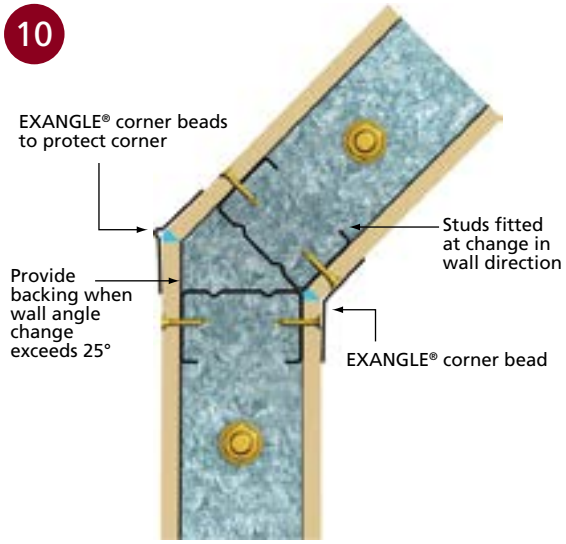


ANGLED WALL

NOTE:
Fixing and finishing of lining boards to be in accordance with manufacturer's recommendations.

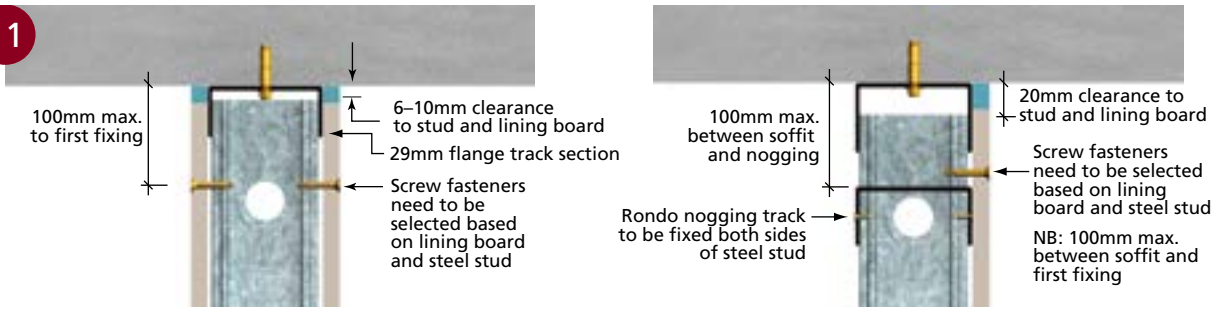
INSTALLATION INFORMATION: WALLS (continued)

Wall to Ceiling Junctions

NOTE:

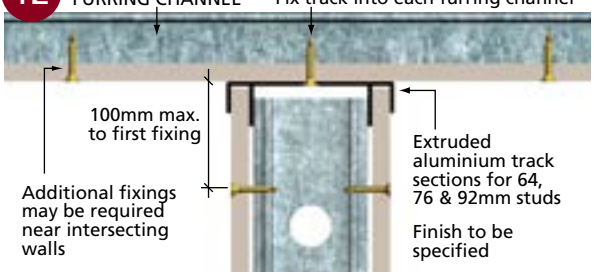
- Wall and ceiling intersection details require specific checking under seismic loads. These details should be checked with your nearest Rondo branch prior to installation.
- Drill point screws are not recommended for sections less than 0.75bmt.

11



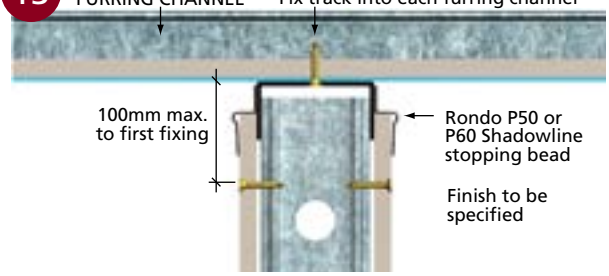
■ **A: CONCRETE SLAB – STUD WALL LINED BOTH SIDES B: CONCRETE SLAB (DEFLECTION HEAD) – STUD WALL LINED ONE SIDE ONLY**

12



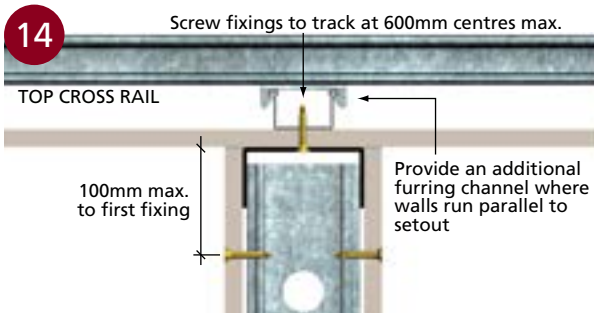
■ **KEY-LOCK® CEILING**

13



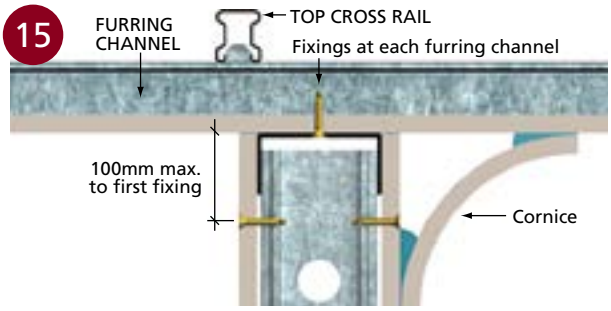
■ **KEY-LOCK® CEILING**

14



■ **KEY-LOCK® CEILING**

15



■ **KEY-LOCK® CEILING**

16

■ **PARTITION MOUNTING DETAILS – DUO® EXPOSED CEILING GRID**

Noggings: Steel

Noggings are designed to provide support to the wall studs and prevent twisting of the studs when fitting the lining boards. Noggings should be screwed, or crimped to both flanges of the studs.

Rondo produces a continuous Nogging track *(see Figure 17),* which can be fitted to the stud framing in one length, or individual Noggings may be cut from the track. Nogging track is produced in 0.70bmt to suit all stud framed wall installations, with the exception of 150mm stud framing which is 0.75bmt.

Noggings of 0.70bmt have been checked and approved for use with 1.15bmt studs.

Where services are to be fitted and a recessed Nogging is required this may be cut from stud or track.

Heavy fixtures may be fitted to the wall framing by fabricating custom Nogging.

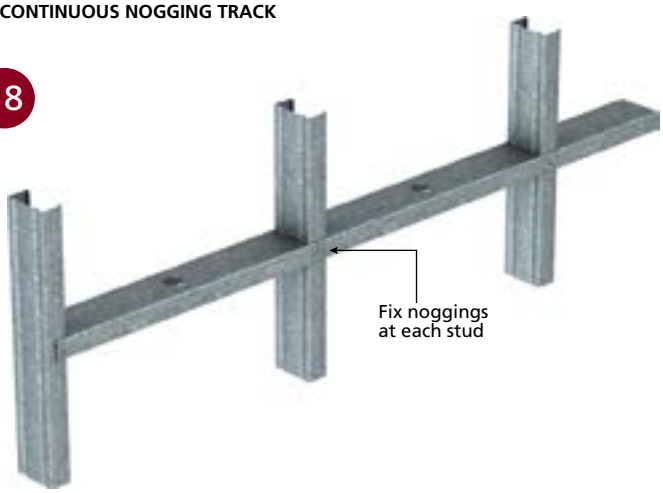
The minimum number of Noggings required may be determined from Table 2, however it should be noted that in some instances a more economical design may be achieved using more Noggings. Table 2 is applicable for internal partitioning subjected to 0.25kPa service load.

Additional wall Noggings may be required in walls subject to elevated pressures.

17

CONTINUOUS NOGGING TRACK

18



NOGGING DETAILS

TABLE 2: MINIMUM NUMBER OF NOGGINGS

WALL HEIGHT (m)	LINING CONDITION	NUMBER OF NOGGINGS
0 – 4.4	Both sides	0
4.4 – 8.8		1
0 – 3	Lined one side	1
3 – 6		2
6 – 8		3
8+		4

NOTE: Walls connected to the underside of a concrete slab must be installed with deflection head track and an additional row of Noggings 100mm down if unlined, or lined one side only. This does not apply if using Rondo Slotted Deflection Head Track (MAXItrack), see page 83.

INSTALLATION INFORMATION: WALLS (continued)

Noggings: Timber

Timber or plywood Noggings are often installed in a steel stud wall to provide support for a variety of additional fittings, such as heavy cupboards, hand rails, flat screen television units etc. Rondo offers a choice of methods to install these Noggings.

Noggings can be fixed between the stud webs and notched out at one end to fit *(see Figure 19 a & b)*. Either screw fixed through the web of the stud (a), or with the addition of a 35 x 35 x 0.70 Rondo steel angle, and similarly, fixed to the stud web if additional support required (b).

Rondo 501 Continuous Nogging Bracket can also be used, which removes the need to notch timber Noggings around the stud flange or sourcing already notched out and cut to size Noggings.

The Nogging bracket is supplied in 2400mm lengths to accommodate a variety of Nogging widths and can be cut to size on site. To install, the bracket is screw fixed to the face of the stud and then screw fix the Nogging to the bracket *(see Figures 20 a & b)*.

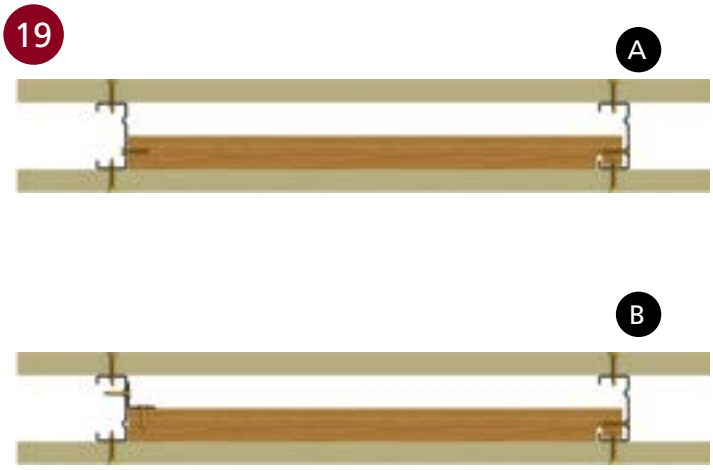
As both the Nogging bracket and continuous Nogging track are 0.75bmt thick, it is unlikely that there will be "show-through" problems when the wall is sheeted.

The Nogging bracket is sized to suit the use of 17mm plywood, therefore ensuring a flush finish with the face of the stud. Plywood Noggings can be simply cut on site to suit size requirements.

It should be noted that plywood thickness tolerances can vary depending on the manufacturer. And is important to remember that CCA treated timber should not be used with Rondo steel stud systems.

Reference should be made to a Rondo representative if unsure of the appropriate Nogging to use due to the weight of the fixtures to be supported.

19



■ TIMBER NOGGINGS NOTCHED TO FIT BETWEEN STUD WEBS

20

■ TIMBER NOGGINGS FITTED USING RONDO CONTINUOUS NOGGING BRACKET

Lining Board

Unless specifically checked, framing should not exceed 600mm centres, and in higher wind loads this should be reduced according to the lining board manufacturers specified data.

Sheets may be installed horizontally or vertically with joints in the lining boards being staggered between sides of the framing.

Internal and external corners may be set using a perforated metal corner bead fixed to the linings at not more than 500mm centres. *(Refer to the Finishing Section in this manual for details.)*

Plasterboard may be fixed to studs using 'bugle' head self drilling needle point screws. Cement based sheeting can be fixed using self drilling self embedding head type screws. *(Refer to fastener details on pages 106–107).*

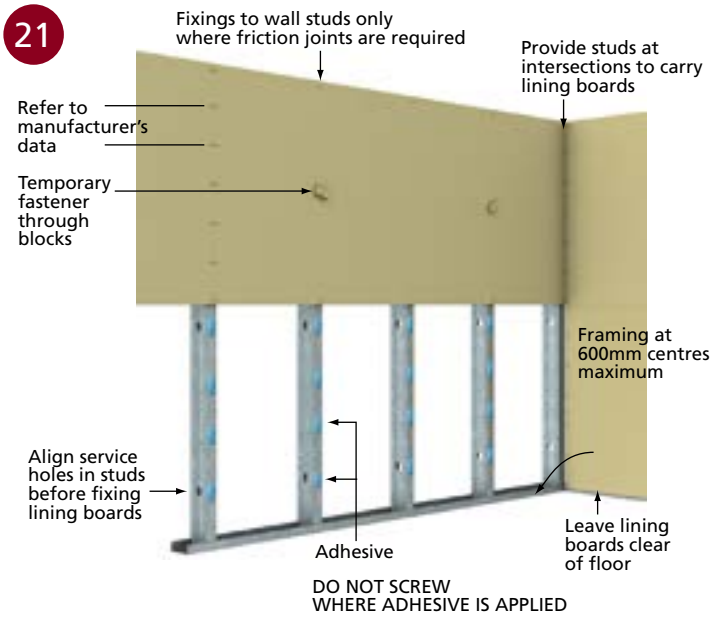
The lining boards should be fitted to the framing using adjustable automatic clutch and depth control screw guns. Minimum edge distance to fasteners of 10 to 16mm must be maintained.

CONTROL JOINTS

Control joints are required in long continuous runs of walling, or where there are articulated or construction joints in the primary structure. Control joints should be spaced at not more than 12m centres in continuous plasterboard walls, and 9m in cement based lining material.

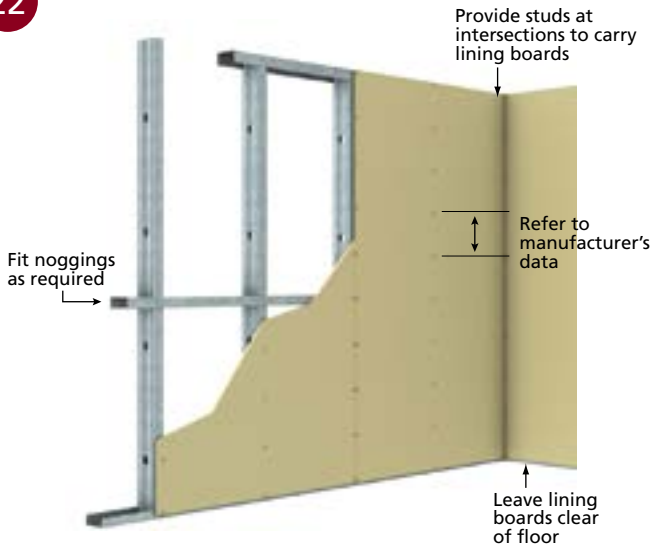
Fit the Rondo P35 Control Joint as per Figure 23.

21



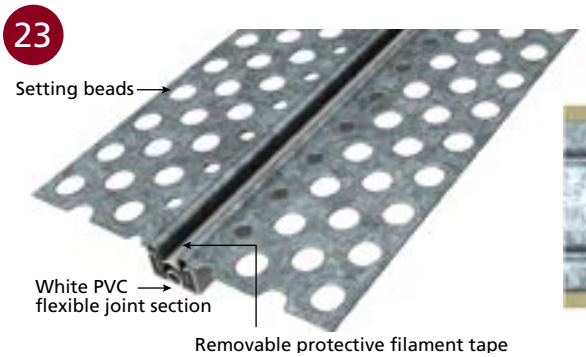
HORIZONTAL APPLICATION

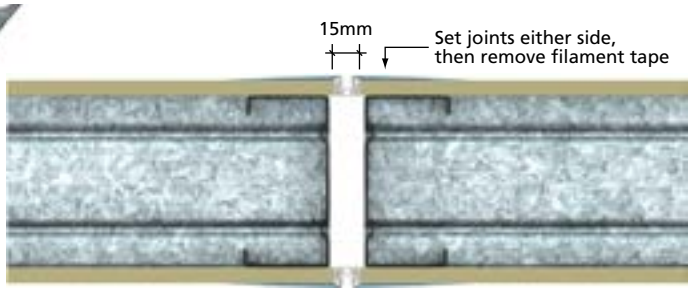
22



VERTICAL APPLICATION

23





CONTROL JOINTS

INSTALLATION INFORMATION: WALLS (continued)

Staggered Stud System

Staggered Steel Stud Wall Framing Systems are designed to provide effective resistance to sound transmission and acoustic impact when lining boards are attached in various configurations.

Typically, staggered stud walls are constructed using Rondo 64mm x 0.75bmt studs staggered at 300mm centres inside Rondo 92mm x 0.70bmt track. However, please refer to Table 3 for maximum wall heights of other sections.

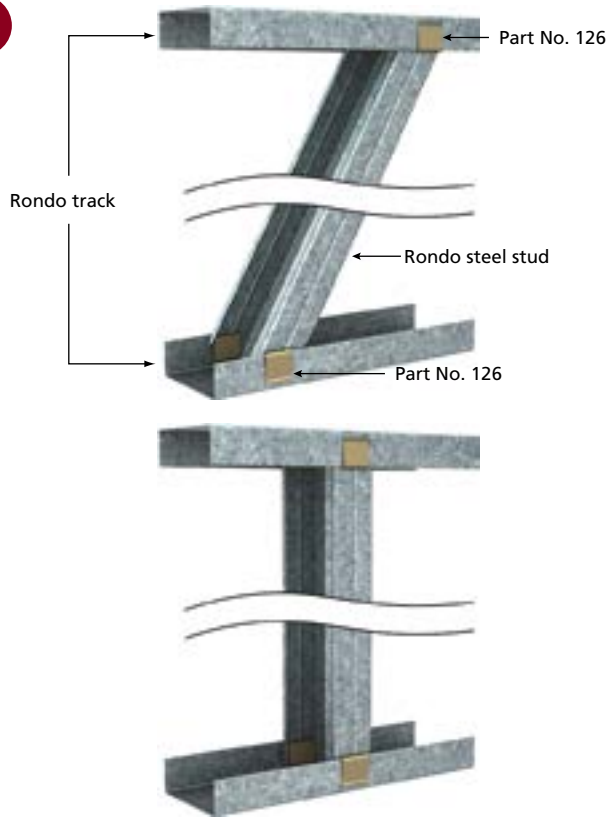
Studs are held in place using Rondo 126 stud/track holding clips at top and bottom.

For ease of installation, place holding clips at the top and bottom of each stud then slide the studs and clips onto the tracks *(see Figure 24).*

Alternate staggered stud installation methods are shown in Figures 25 & 26.

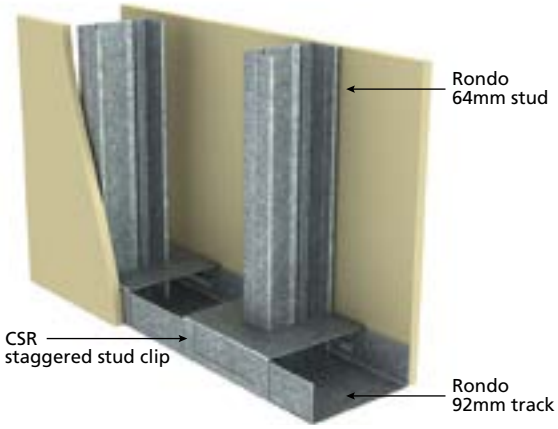
NOTE:
An alternative acoustic solution to staggered stud wall systems is the Rondo QUIET STUD®. In some cases, the Rondo QUIET STUD® system will achieve similar results to staggered stud wall systems yet is generally much easier to install and will achieve greater wall heights. (Refer to page 99.)

24



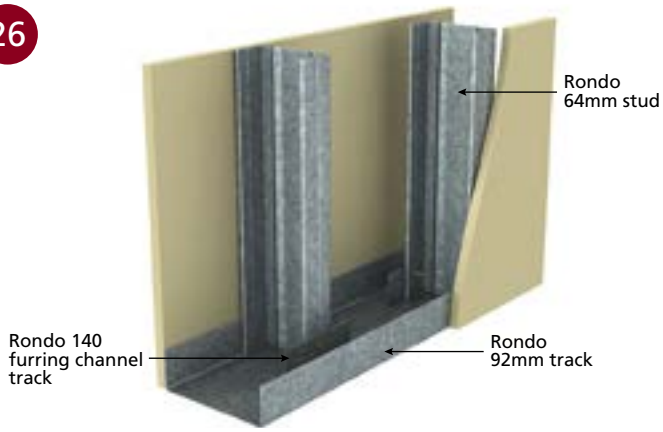
■ INSTALLATION OF STUDS

25



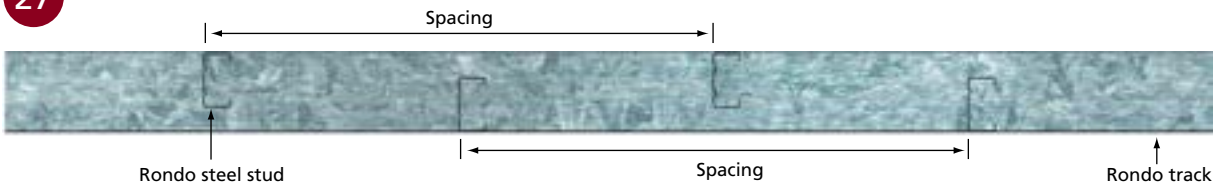
■ CSR GYPROCK STAGGERED STUD METHOD

26



■ BORAL PLASTERBOARD STAGGERED STUD METHOD

27



STAGGERED STUD SPACING

TABLE 3: MAXIMUM STAGGERED STUD WALL HEIGHTS – SPAN/240

STUD WIDTH	**51mm**		**64mm**			**76mm**			**92mm**			**150mm**	
BMT	**0.50**	**0.75**	**0.50**	**0.75**	**1.15**	**0.55**	**0.75**	**1.15**	**0.55**	**0.75**	**1.15**	**0.75**	**1.15**
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 600mm CENTRES**												
1x10mm	2320	2600	2375	2830	3510	2610	3000	3600	2740	3190	3750	3660	4150
1x13mm	2320	2600	2375	2830	3510	2610	3000	3600	2740	3190	3750	3660	4150
1x16mm	2320	2600	2375	2830	3510	2610	3000	3600	2740	3190	3750	3660	4150
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 450mm CENTRES**												
1x10mm	2520	2860	2590	3190	3870	2800	3320	4000	2990	3480	4120	3970	4550
1x13mm	2520	2860	2650	3270	3930	2840	3380	4080	3030	3530	4190	4000	4600
1x16mm	2520	2860	2700	3350	3950	2920	3450	4170	3060	3590	4260	4040	4640
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 400mm CENTRES**												
1x10mm	2630	2970	2690	3310	4020	2900	3440	4150	3100	3610	4270	4090	4710
1x13mm	2630	2970	2740	3390	4090	2950	3500	4230	3140	3660	4340	4130	4760
1x16mm	2630	2970	2800	3480	4100	3000	3570	4330	3180	3710	4420	4170	4800
PLASTERBOARD LININGS (mm)	**SINGLE STUDS @ 300mm CENTRES**												
1X10MM	2890	3270	2930	3610	4430	3180	3740	4560	3390	3910	4680	4420	5130
1X13MM	2890	3270	2990	3700	4490	3230	3810	4660	3430	3970	4760	4460	5180
1X16MM	2890	3270	3060	3790	4510	3280	3890	4760	3480	4040	4840	4500	5230

NOTES: 1. Deflection Limit is span/240 to a maximum of 30mm at 0.25 kPa, in accordance with the BCA Specification C1.8 – 2005.

2. Maximum wall heights refer to the structural wall heights only. Maximum wall heights may be reduced from those in the table for fire rated walls, refer to your plasterboard manufacturer for this information.

3. The tabulated heights are not for axial loads but do include self weight and lateral pressures.

4. Shelf loading is not permitted on the tabulated wall heights.

5. Loadings: a. Pultimate = 0.375 kPa
b. Pservice = 0.25 kPa

6. These walls are not for external applications.

7. All loading in accordance with AS1170:2002.

8. Walls analysed in accordance with AS4600:2005.

9. No Noggings are used in staggered stud walls.

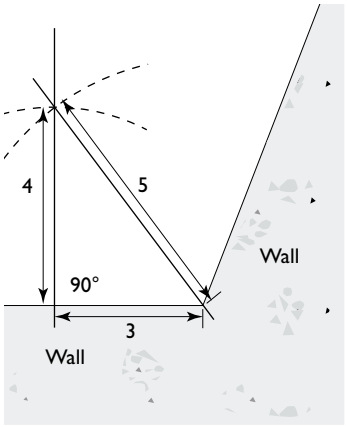
10. BMT = Base Metal Thickness.

11. Where single studs are shown in the above table spaced @600mm centres, this means staggering the studs @ every 300mm centres. For single studs shown spaced @400mm centres, this means staggering the studs @ every 200mm centres, etc.

12. If proposing to use 126 clips for a staggered stud wall, refer to Rondo Technical Services for advice on maximum wall heights.

INSTALLATION GUIDE: WALLS

STEP ONE
Set out the track locations in accordance with the floor plans. Ensure internal walls are perpendicular to the external walls, by using the 3 4 5 triangle method.

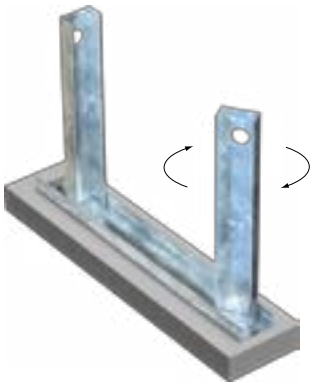


STEP TWO
Secure the top and bottom tracks in position using appropriate fasteners, at not more than 600mm centres. The first fastener should be no more than 100mm from the start or finish of each track or any opening. Deflection head tracks should be used for walls 4.8m and higher.

STEP THREE
Cut the studs to length - for friction fit this is 6mm shorter than the wall height and for deflection heads this is 20mm shorter than the wall height.

STEP FOUR (A)
(Where Noggings are specified)
Refer to Nogging tables for number of Noggings required. If Noggings are required, use Rondo Nogging track with pre-punched holes at nominated centres. Nogging track should be installed with flanges facing the floor.
Fit studs into the pre-punched holes and into both the top and bottom tracks with the service holes starting from the bottom. Then, with a twisting action, rotate the studs into position. Ideally, the studs should be orientated in the same direction to make fitting the lining board easier. Nogging track section should then be lifted to required height and fixed to each steel stud.

STEP FOUR (B)
(Where Noggings are not required)
Fit the stud into both the top and bottom tracks with the service holes starting from the bottom, then with a twisting action rotate the stud into position. Ideally, the studs should be orientated in the same direction to make fitting the lining board easier.



STEP FIVE
Fit the lining board to one side of the wall first. The lining board should be fitted such that the board is screwed to the open side of the stud first. This will prevent any misalignment of the board along the wall.

STEP SIX
Allow the services to be run in the wall cavity.

STEP SEVEN
Line the second side of the wall, using the same method as the first, except that the joints in the lining board should be staggered. This is achieved by starting with a half sheet.

STEP EIGHT
Fit the EXANGLE® corner beads and set the wall joints.

INSTALLATION DETAILS: WALLS

Rondo Web Cleats

There are occasions when it is necessary to allow for higher than standard lateral wall pressures, including both in external wall framing situations and some internal wall systems in high-rise buildings.
In such situations Rondo or the Project Engineer may specify the use of special heavy duty cleats (brackets) to transfer loads at the stud/ track connection to meet the higher load requirement.
Rondo produces two special cleats, 201 and 203, which are both manufactured from 3.0mm G2 steel with a Z275 coating. These cleats are part of the Rondo MAXI-frame® External Wall Framing System but are suitable for use with standard heavy duty stud/track connections.

A: 201 92mm x 3.0mm BASE BRACKET

Connection A shows an installation with 1.15bmt 92 mm Stud and Track using 2 x #10 hex head tek screws per cleat to the stud and a 10mm expanding anchor securing the cleat through the Track into the concrete structure. If installing onto structural steel, a M10 Grade 4.6 Bolt and washer is recommended *(see Figure 28)*.

B: 203 92mm x 3.0mm SLOTTED HEAD BRACKET

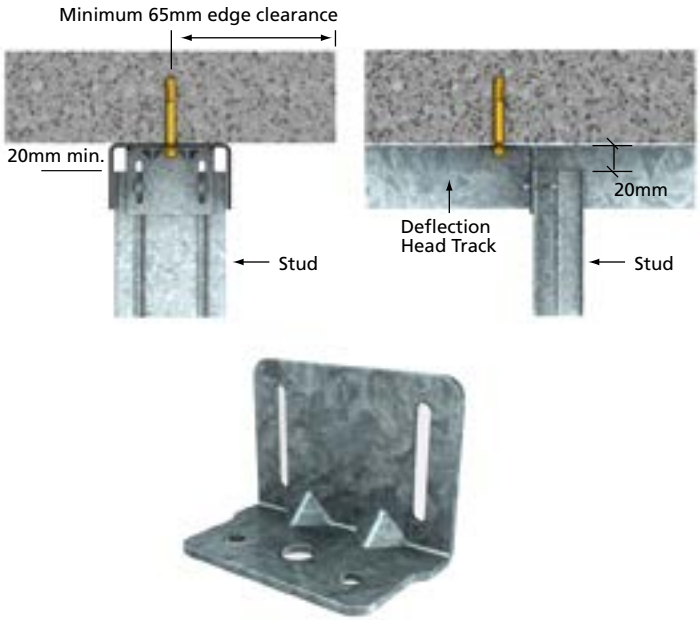
Connection B shows an illustration with 1.15bmt 92mm Stud and Deflection Head Track using 2 x #10 hex head tek screws per cleat to the Stud and a 10mm expanding anchor securing the cleat through the Track into the concrete structure *(see Figure 29)*.

NOTE: If securing into structural steel, a slotted head cleat may not be necessary, check with the Project Engineer on the deflection aspects of the structural steel and consult your Rondo Representative.

28

CONNECTION METHOD A

29



CONNECTION METHOD B

INSTALLATION DETAILS: WALLS (continued)

Curved Walls

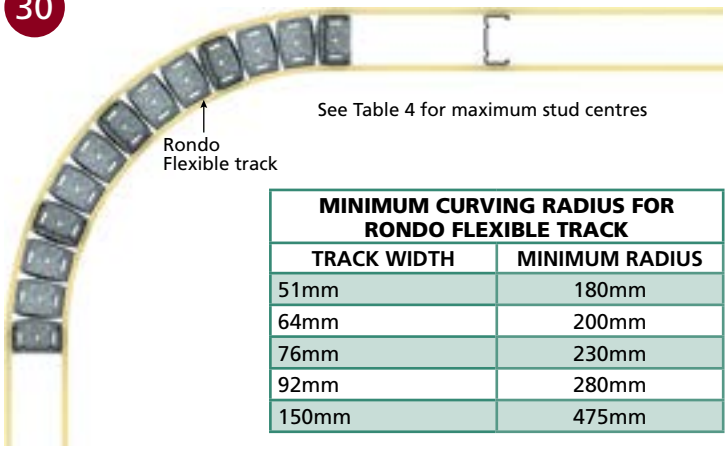
When constructing curved walls, stud centres should be reduced to suit the lining board manufacturer's recommendations *(see Table 4).*

Rondo Flexible Tracks at top and bottom should be curved to match the specified radius and fastened to the structure through the holes provided in the web. Each fixing should be as near as possible to the stud point.

Studs must be fixed both sides through the holes provided in both flanges *(refer to Figure 30).*

Care should be taken when tracks span between purlins and in some instances, strengthening may be required.

30



MINIMUM CURVING RADIUS FOR RONDO FLEXIBLE TRACK	
TRACK WIDTH	MINIMUM RADIUS
51mm	180mm
64mm	200mm
76mm	230mm
92mm	280mm
150mm	475mm

FRAMING PREPARATION FOR CURVED WALLS

TABLE 4: STUD CENTRES FOR CURVED WALLS

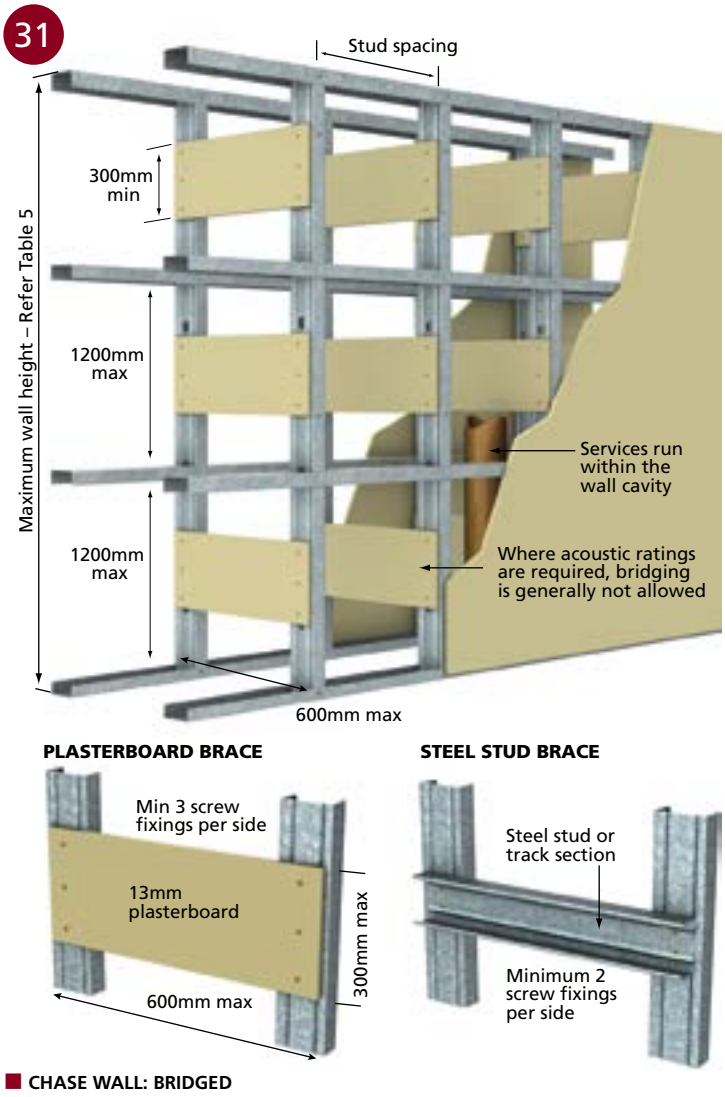
LINING BOARD THICKNESS (mm)	RADIUS (mm)						
	900–1000	1000–1500	1500–2000	2000–2500	2500–3000	3000–4000	4000+
	MAXIMUM STUD CENTRES (mm)						
6.0 – 6.5	150	200	250	300	350	450	550
10	150	200	250	300	350	400	500
13	–	150	200	250	300	400	500
16	–	–	–	–	–	250	350

Bridged Chase Walls

Chase walls are required where it is necessary to accommodate large bore pipes, air conditioning ducts or similar services.

The walls are constructed using two parallel runs of stud and track, which can then be cross braced at regular intervals.

The cross bracing may be either plasterboard, stud or track section *(refer to Figure 31 for details).*



■ CHASE WALL: BRIDGED

TABLE 5: LIMITING HEIGHT: BRIDGED CHASE WALLS

STUD WIDTH (mm)	GAUGE (mm)	SPACING (mm)	MAXIMUM WALL HEIGHT		NO. OF NOGGINGS
			H/240	H/360	
64	0.50	600	3390	2960	2
		450	3730	3260	2
		400	3870	3380	2
76	0.55	600	4210	3790	2
		450	4645	4145	2
		400	4820	4290	2
92	0.55	600	4655	4230	2
		450	5120	4665	2
		400	5270	4840	2

NOTES: 1. Bridging to be installed in accordance with Figure 31.
2. Linings assumed to 1 x 13mm plasterboard minimum.
3. Noggings to be equally spaced over wall height.
4. Deflection limited to either H / 240 or H / 360 at 0.25kPa, in accordance with the BCA Specification C1.8.
5. Strength (ultimate) checked at 0.375kPa static pressure.

INSTALLATION DETAILS: WALLS (continued)

Acoustic Chase Walls

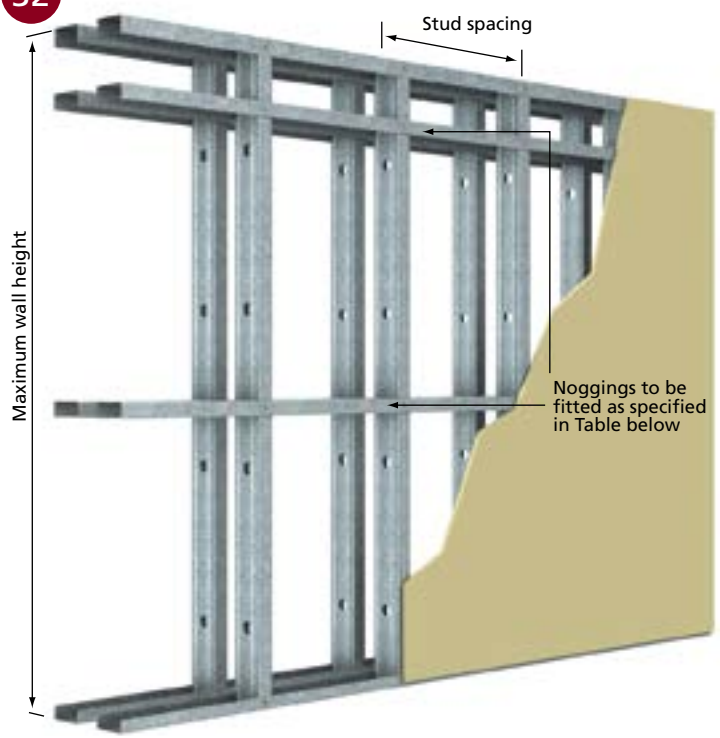
Where chase walls are constructed for acoustic purposes no cross bracing between the walls is permitted. These walls use in-plane Noggings for rigidity, and the wall heights are significantly lower.

The maximum wall heights may be determined from the wall heights given in Tables 6 & 7 (refer walls lined one side only).

The number of Noggings required may be determined from the table shown below.

This type of wall construction is also known as 'discontinuous construction' *(see Figure 32)*.

32



CHASE WALL: UNBRIDGED ACOUSTIC WALL

Minimum Number of Noggings: Acoustic Chase Wall

WALL HEIGHT (m)	LINING CONDITION	NO.OF NOGGINGS
0 – 3	Lined one side	1
3 – 6		2
6 – 8		3
8+		4

NOTE: Walls connected to the underside of a concrete slab must be installed with deflection head track and an additional row of Noggings 100mm down if unlined, or lined one side only.

Window & Door Framing

Window and door framing require special detailing to prevent long term serviceability problems. This detailing is in the form of additional fixings and framing members which carry the extra loadings in these areas.

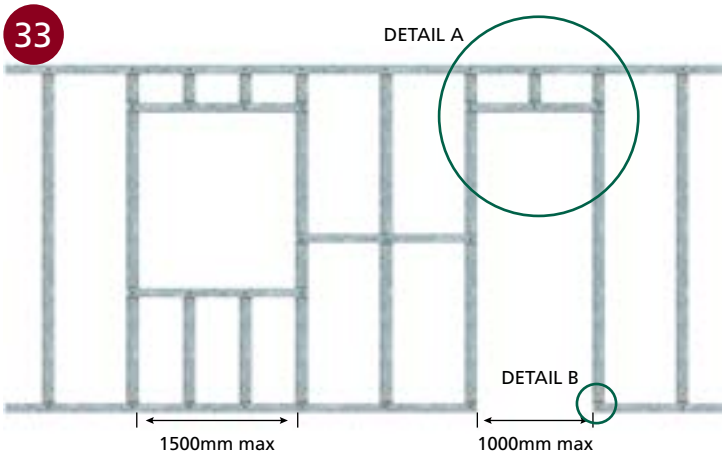
Typically, track sections can be cut and fabricated to frame window and door openings. For internal partitioning, the standard details as shown in Figure 33 would be acceptable for window openings up to 1500mm and standard door openings. Configurations outside of these limits, and external wall framing, should be checked prior to commencement of work.

Studs adjacent to window and door openings should be boxed and screw fastened to the wall tracks and should be taken through to the structural soffit.

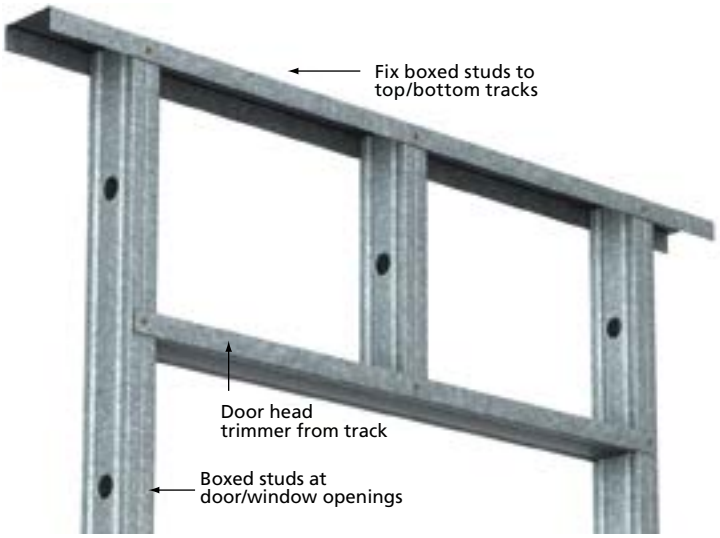
Allow approximately 100mm each end of the track to facilitate a suitable connection. Studs, cut to length, should be fitted above and below the window openings and above the door openings.

The stud spacing of the short studs should match the standard wall stud spacing.

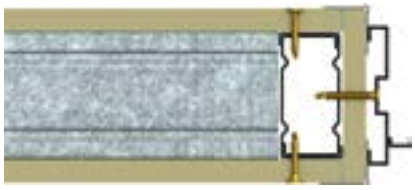
33



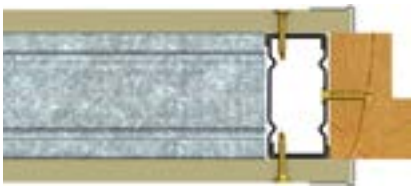
■ **INTERNAL WALL FRAMING**



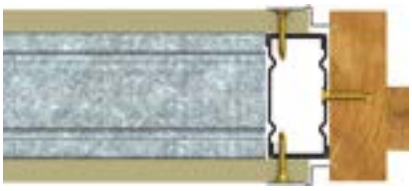
■ **DETAIL A: DOOR/WINDOW HEAD DETAIL**



■ **DETAIL B: EXTRUDED ALUMINIUM DOOR JAMB PROFILE**



■ **DETAIL B: TIMBER DOOR JAMB WITH STOPPING BEAD TO LINING BOARD**



■ **DETAIL B: TIMBER DOOR JAMB WITH SHADOWLINE DETAIL**

INSTALLATION DETAILS: WALLS (continued)

Plumbing/Electrical Services

Copper or brass piping and fittings should be isolated from direct contact with the steel framing. This can be achieved by insulating the piping with neoprene sheeting or tape, or by lagging the pipe. Where the piping is run through the service holes of the studs, plastic grommets should be used to isolate the pipe, and prevent water hammer.

Similar care, in isolating the framing, should be taken when contact with dissimilar metals is possible – typically where lead flashing is used in the construction.

Electrical services can be run through the service holes of the 0.50, 0.55 and 0.75bmt studs without requiring grommets, due to the unique flaring of the service holes. Grommets should be used for 1.15bmt studs or greater as service holes are punched and do not have any flaring around the holes.

Generally, services are run through the pre-punched service holes. In brick veneer construction, services may be run through the wall cavity, and fixed to the flanges of the studs, using appropriate saddle clamps.

DRILLING

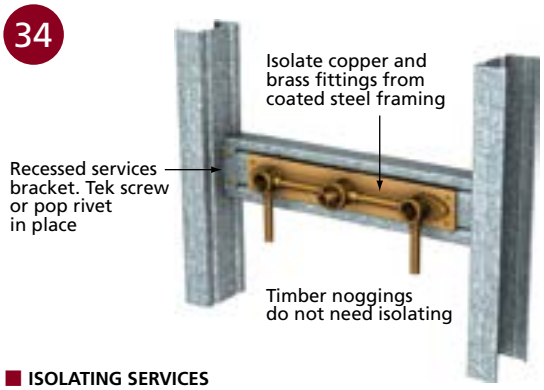
Where extra service holes are required they may be positioned using a hole saw or similar, and grommets should be fitted. Additional service holes should be positioned as close as practical to the centreline of the stud *(refer Figure 35).*
NOTE: The maximum hole diameter should not exceed 50mm for a 92mm stud without checking.

NOTCHING

Notching of the studs should not exceed 35mm under any circumstances.

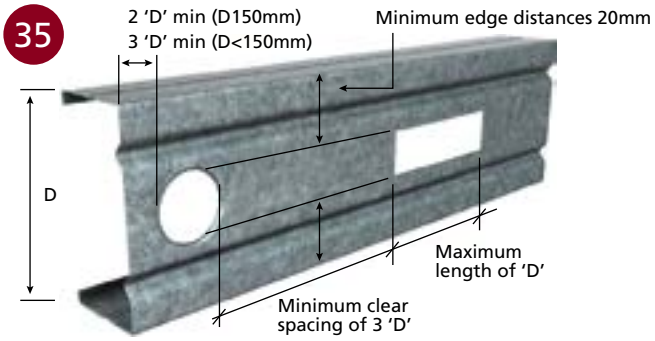
Notching of the studs should be in accordance with the details shown in Figure 36.

34



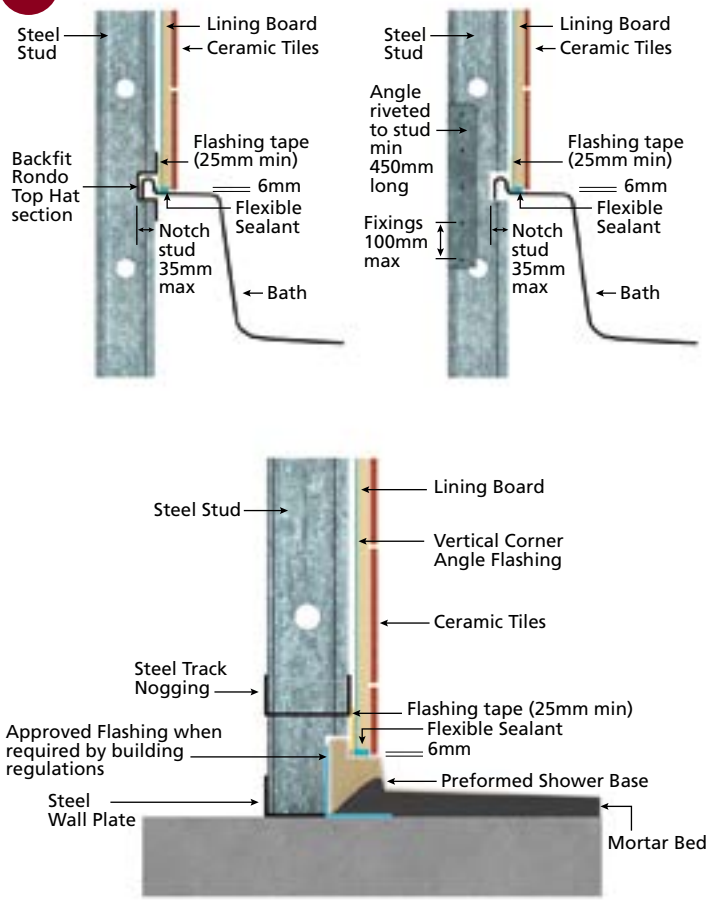
ISOLATING SERVICES

35



HOLE DRILLING

36



NOTCHING

MAXIMUM WALL HEIGHTS

TABLE 6: INTERNAL NON-LOAD BEARING WALLS – L/240 PLASTERBOARD INCLUDING FIRE RATED

STUD WIDTH		51mm		64mm			76mm			92mm			150mm	
BMT		0.50	0.75	0.50	0.75	1.15	0.55	0.75	1.15	0.55	0.75	1.15	0.75	1.15
PLASTERBOARD LININGS (mm)		**SINGLE STUDS @ 600mm CENTRES**												
LINED BOTH SIDES	1x10mm	2770	2910	3330	3930	4170	3700	4430	4650	4540	4830	5110	6550	7220
	1x13mm	3200	3320	3720	4220	4430	4130	5020	5220	4940	5500	5750	6990	7540
	1x16mm	3380	3520	3910	4350	4520	4300	5250	5420	5180	5710	5920	7190	7650
LINED ONE SIDE	1x10mm	2320	2600	2720	3130	3530	3200	3580	4050	3610	4130	4690	5330	6810
	1x13mm	2320	2600	2720	3250	3580	3240	3820	4050	3610	4180	4690	5370	6810
	1x16mm	2320	2600	2750	3280	3590	3250	3870	4050	3610	4200	4690	5370	6810
PLASTERBOARD LININGS (mm)		**SINGLE STUDS @ 450mm CENTRES**												
LINED BOTH SIDES	1x10mm	3020	3200	3580	4180	4460	4020	4780	5070	4850	5270	5620	7140	7750
	1x13mm	3420	3570	3930	4430	4690	4410	5330	5570	5210	5890	6190	7520	8040
	1x16mm	3550	3710	4130	4600	4820	4580	5580	5790	5450	6120	6390	7620	8130
LINED ONE SIDE	1x10mm	2520	2860	2930	3410	3870	3500	3910	4450	4050	4520	5150	6510	7400
	1x13mm	2520	2860	2930	3530	3930	3580	4170	4450	4050	4610	5150	6510	7400
	1x16mm	2520	2860	3020	3560	3950	3600	4220	4450	4050	4630	5150	6510	7400
PLASTERBOARD LININGS (mm)		**SINGLE STUDS @ 400mm CENTRES**												
LINED BOTH SIDES	1x10mm	3130	3320	3690	4280	4590	4160	4930	5240	4990	5460	5840	7340	7970
	1x13mm	3510	3680	4020	4530	4810	4530	5450	5720	5330	6050	6380	7610	8190
	1x16mm	3620	3750	4220	4710	4950	4700	5710	5950	5560	6280	6580	7750	8300
LINED ONE SIDE	1x10mm	2630	2970	3070	3540	4020	3640	4070	4620	4210	4700	5360	6740	7650
	1x13mm	2630	2970	3070	3660	4090	3740	4320	4620	4210	4800	5360	6740	7650
	1x16mm	2630	2970	3140	3700	4100	3760	4380	4620	4210	4820	5360	6740	7650
PLASTERBOARD LININGS (mm)		**SINGLE STUDS @ 300mm CENTRES**												
LINED BOTH SIDES	1x10mm	3390	3620	3960	4570	4930	4510	5310	5690	5340	5930	6390	7840	8570
	1x13mm	3730	3940	4260	4780	5120	4830	5770	6110	5640	6450	6860	8110	8740
	1x16mm	3800	4020	4450	4980	5270	5010	6030	6330	5860	6690	7070	8230	8850
LINED ONE SIDE	1x10mm	2890	3270	3380	3900	4430	4010	4480	5090	4630	5180	5900	7350	8290
	1x13mm	2890	3270	3380	4010	4490	4130	4730	5090	4640	5290	5920	7350	8290
	1x16mm	2890	3270	3460	4050	4510	4150	4790	5090	4640	5310	5930	7350	8290

NOTES:

1. *Deflection Limit is span/240 (or span/360 as applicable) to a maximum of 30mm at 0.25 kPa, in accordance with the BCA Specification C1.8 – 2005.*
2. *Maximum wall heights refer to the structural wall heights only. Maximum wall heights may be reduced from those in the table for fire rated walls, refer to your plasterboard manufacturer for this information.*
3. *The tabulated heights are not for axial loads but do include self weight and lateral pressures.*
4. *Shelf loading is not permitted on the tabulated wall heights.*
5. *Loadings: a. Pultimate = 0.375 kPa*
   b. Pservice = 0.25 kPa
6. *These walls are not for external applications.*
7. *All loading in accordance with AS1170:2002.*
8. *Walls analysed in accordance with AS4600:2005.*
9. *Noggings in accordance with table shown on facing page.*
10. *BMT = Base Metal Thickness.*
11. *The above wall heights are suitable for up to two layers of the nominated thickness.*
12. *See table on Page 100 for Nogging requirement.*
13. *Table assumes the same or like gauge is used for both Stud and Track sections. The above wall heights may change if using dissimilar gauge product*

MAXIMUM WALL HEIGHTS (continued)

TABLE 7: INTERNAL NON-LOAD BEARING WALLS – L/360 BRITTLE SUBSTRATES – CFC etc.

STUD WIDTH		51mm		64mm			76mm			92mm			150mm	
BMT		0.50	0.75	0.50	0.75	1.15	0.55	0.75	1.15	0.55	0.75	1.15	0.75	1.15
PLASTERBOARD LININGS (mm)		**SINGLE STUDS @ 600mm CENTRES**												
LINED BOTH SIDES	1x10mm	2540	2660	2990	3480	3680	3340	4010	4210	4030	4410	4650	5830	6420
	1x13mm	2900	3010	3320	3720	3900	3700	4510	4680	4370	4970	5180	6190	6740
	1x16mm	3000	3120	3500	3890	4040	3870	4740	4890	4590	5190	5370	6380	6890
LINED ONE SIDE	1x10mm	2000	2270	2340	2700	3070	2780	3100	3530	3210	3590	4090	5260	6030
	1x13mm	2000	2270	2340	2850	3160	2930	3400	3530	3240	3730	4130	5260	6030
	1x16mm	2000	2270	2450	2890	3180	2960	3460	3530	3250	3760	4150	5260	6030
PLASTERBOARD LININGS (mm)		**SINGLE STUDS @ 450mm CENTRES**												
LINED BOTH SIDES	1x10mm	2740	2890	3190	3680	3930	3600	4300	4550	4290	4770	5070	6320	7000
	1x13mm	3070	3210	3490	3900	4120	3920	4750	4970	4590	5270	5540	6630	7270
	1x16mm	3130	3280	3670	4090	4280	4100	5000	5180	4810	5510	5740	6810	7410
LINED ONE SIDE	1x10mm	2210	2500	2580	2980	3380	3060	3420	3880	3540	3950	4500	5790	6630
	1x13mm	2210	2500	2580	3110	3470	3220	3700	3880	3610	4100	4570	5790	6630
	1x16mm	2210	2500	2690	3150	3490	3260	3770	3880	3620	4130	4580	5790	6630
PLASTERBOARD LININGS (mm)		**SINGLE STUDS @ 400mm CENTRES**												
LINED BOTH SIDES	1x10mm	2820	2990	3280	3770	4040	3720	4420	4690	4400	4920	5250	6530	7260
	1x13mm	3140	3290	3560	3980	4220	4020	4850	5090	4690	5400	5700	6820	7510
	1x16mm	3190	3350	3750	4180	4380	4190	5100	5310	4900	5640	5900	6990	7650
LINED ONE SIDE	1x10mm	2290	2600	2680	3090	3510	3180	3550	4040	3680	4110	4680	6020	6900
	1x13mm	2290	2600	2680	3230	3600	3350	3840	4040	3760	4260	4750	6020	6900
	1x16mm	2290	2600	2800	3270	3620	3390	3900	4040	3780	4290	4770	6020	6900
PLASTERBOARD LININGS (mm)		**SINGLE STUDS @ 300mm CENTRES**												
LINED BOTH SIDES	1x10mm	3030	3240	3510	4010	4330	4000	4720	5050	4700	5300	5700	7090	7920
	1x13mm	3320	3510	3760	4200	4490	4270	5110	5410	4960	5730	6090	7330	8130
	1x16mm	3340	3540	3940	4400	4660	4440	5360	5620	5160	5960	6290	7490	8260
LINED ONE SIDE	1x10mm	2520	2860	2950	3410	3870	3500	3910	4450	4050	4520	5150	6630	7590
	1x13mm	2520	2860	2950	3530	3950	3670	4180	4450	4150	4670	5230	6630	7590
	1x16mm	2520	2860	3070	3570	3970	3710	4240	4450	4180	4710	5250	6630	7590

MINIMUM NUMBER OF NOGGINGS

WALL HEIGHT (m)	LINING CONDITION	NUMBER OF NOGGINGS
0 – 4.4	Both sides	0
4.4 – 8.8		1
0 – 3.0	Lined one side	1
3.0 – 6.0		2
6.0 – 8.0		3
8.0+		4

NOTE: Walls connected to the underside of a concrete slab must be installed with deflection head track and an additional row of Noggings 100mm down if unlined, or lined one side only.

SHELF LOAD TABLES

Permissible Shelf Loadings for Steel Stud Walls

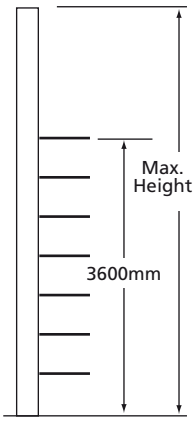
TABLE 6: MAXIMUM ALLOWABLE LOADS

(2400mm – 3600mm wall height. Walls lined both sides with 1x13mm plasterboard)

MAXIMUM ALLOWABLE LOAD IN KG PER METRE RUN OF SHELF (for fasteners designed by structural engineer)																
WALL HEIGHT (mm)		**2400**			**2700**			**3000**			**3300**			**3600**		
STUD SIZE		**64 x 0.50 BMT**			**64 x 0.50 BMT**			**76 x 0.55 BMT**			**76 x 0.55 BMT**			**92 x 0.55 BMT**		
SHELF WIDTH (mm)		**200**	**300**	**400**	**200**	**300**	**400**	**200**	**300**	**400**	**200**	**300**	**400**	**200**	**300**	**400**
Number of shelves equally spaced over full height	1	127	95	77	58	43	33	140	107	87	62	45	38	73	57	47
	2	102	80	65	58	43	33	120	93	77	58	45	38	73	57	47
	3	63	47	38	28	22	17	70	53	43	30	23	18	37	28	23
	4	53	40	33	27	20	17	60	47	38	30	23	18	35	27	22
	5	42	32	25	18	13	12	47	35	28	20	15	12	23	18	15
	6	37	27	22	17	13	10	42	32	25	18	15	12	23	18	15
LOAD MULTIPLICATION FACTOR FOR ALTERNATIVE STUD SIZES																
64 x 0.75 BMT		1.75	1.75	1.75	1.75	1.75	1.75	1.20	1.20	1.20	1.20	1.20	1.20	—	—	—
76 x 0.55 BMT		1.40	1.40	1.40	1.40	1.40	1.40	1.00	1.00	1.00	1.00	1.00	1.00	—	—	—
76 x 0.75 BMT		2.20	2.20	2.20	2.20	2.20	2.20	1.55	1.55	1.55	1.55	1.55	1.55	—	—	—
92 x 0.55 BMT		1.60	1.60	1.60	1.65	1.65	1.65	1.15	1.15	1.15	1.15	1.15	1.15	1.00	1.00	1.00
92 x 0.75 BMT		2.75	2.75	2.75	2.80	2.80	2.80	1.95	1.95	1.95	1.95	1.95	1.95	1.65	1.65	1.65

TABLE 7: MAXIMUM ALLOWABLE LOADS (4200mm – 6000mm wall height)

MAXIMUM ALLOWABLE LOAD IN KG PER METRE RUN OF SHELF (for fasteners designed by structural engineer)													
WALL HEIGHT (mm)		**4200**			**4800**			**5400**			**6000**		
STUD SIZE		**150 x 0.75 BMT**			**150 x 0.75 BMT**			**150 x 0.75 BMT**			**150 x 1.15 BMT**		
SHELF WIDTH (mm)		**200**	**300**	**400**	**200**	**300**	**400**	**200**	**300**	**400**	**200**	**300**	**400**
Number of shelves equally spaced over bottom 3600mm as shown	1	658	550	483	500	433	367	367	300	233	383	283	217
	2	375	325	283	267	233	200	183	158	133	200	150	117
	3	283	242	217	183	167	150	125	108	92	133	100	82
	4	225	200	175	158	133	117	100	83	72	100	78	63
	5	192	158	142	125	108	100	82	72	57	83	63	52
	6	158	133	123	108	100	83	70	62	47	72	53	43



DESIGN ASSUMPTIONS:

1. *Stud spacing = 600mm*
2. *Deflection checked to the lesser of H/480 under shelf loads (G) or H/360 under shelf loads with combined internal pressure (G + Ws)*
3. *Internal pressure checked at 0.375kPa (Wu) ultimate and 0.25kPa (Ws) service*
4. *Walls are lined both sides with 13mm plasterboard*
5. *Studs are continuous in length and no splicing is allowed*
6. *All calculations are based on Rondo sections*
7. *Shelving is attached to one side of the wall only*
8. *BMT = Base Metal Thickness*
9. *To obtain kg per stud per shelf, multiply the values in the above table by 0.6*

SHELF LOAD TABLES (continued)

Non-Fire Rated Steel Stud Systems

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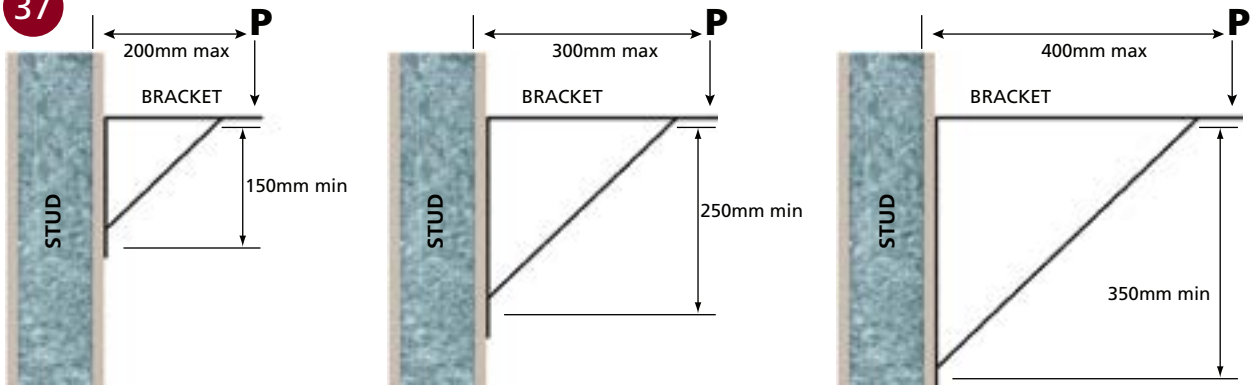

■ **BRACKETS**

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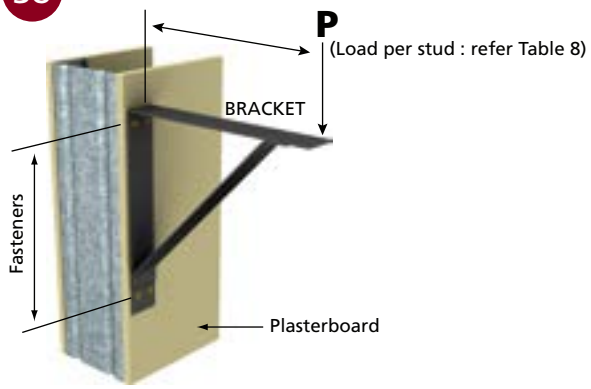


■ **FASTENERS**

TABLE 8: MAXIMUM LOADINGS FOR BRACKETS

STUD GAUGE (BMT)	MAXIMUM LOADING 'P' PER STUD (KG) (where fasteners consist of 2# 10 gauge fasteners at each location)		
	TYPE 1 BRACKET	TYPE 2 BRACKET	TYPE 3 BRACKET
0.50	25	30	33
0.55	27	33	36
0.75	36	44	49
1.15	57	70	76

NOTES: 1. Fixings shown in Figure 3 consist of 2# 10 gauge fasteners at each fixing location
2. Design is for bracket connection only – bracket and shelf design by others
3. Loads greater than those listed above must be independently designed for
4. Fasteners used must be 10 gauge and have the properties listed in Table 15

TABLE 9: FASTENER PROPERTIES (10 GAUGE)

STUD GAUGE BMT (mm)	PULLOUT FORCE kN ($\varnothing N_{ou}$)	SHEAR STRENGTH KN ($\varnothing V_b$)
0.50	0.34	0.54
0.55	0.37	0.62
0.75	0.50	0.99
1.15	0.77	1.87

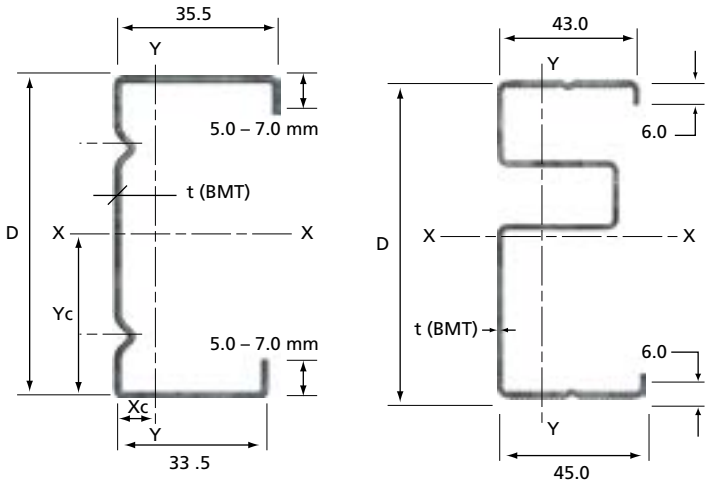
NOTE: Pullout and shear capacity based on Grade 300 steel brackets of minimum thickness 1.50mm

SECTION PROPERTIES

Lipped Studs

MATERIAL SPECIFICATIONS

Steel Grade: G2 Z275 to AS1397
Yield Strength: Fy – 270 MPa
Coating Grade: Z275 – 275g/m² zinc
Ultimate: Fu = 330 MPa



WALL STUD **QUIET STUD**

TABLE 12: SECTION PROPERTIES FOR LIPPED STUDS

BMT	PART NO	DIMENSIONS				GROSS AREA	MOMENT OF AREA		SECTION MODULUS		TORSION Constant	WARPING Constant
		D mm	t mm	Xc mm	Yc mm	mm²	Ixx 10^3 mm⁴	Iyy 10^3 mm⁴	Zxx mm³	Zyy mm³	J mm⁴	Iw mm⁶
0.50	401	50.8	0.50	12.0	26.3	64.1	29.1	9.88	1148	428	5.35	5.23E6
	112	63.5	0.50	10.3	33.1	70.5	47.6	10.3	1493	422	5.96	7.78E6
0.55	403	76.2	0.55	9.40	39.5	84.7	79.4	12.0	2076	475	8.64	12.78E6
	251	92.1	0.55	8.60	47.5	93.3	123.1	12.7	2662	486	9.52	19.55E6
0.75	489	50.8	0.75	11.1	26.8	94.6	42.3	13.9	1659	582	18.07	6.62E6
	491	63.5	0.75	10.4	30.7	108.0	72.3	15.9	2281	656	20.24	12.22E6
	493	76.2	0.75	9.50	37.2	117.0	109.0	16.5	2872	650	21.93	17.75E6
	495	92.1	0.75	8.60	45.1	129.0	168.9	17.5	3685	667	24.18	27.26E6
	511	150.0	0.75	6.50	74.1	167.6	533.4	19.9	7144	701	32.28	82.56E6
1.15	661	63.5	1.15	10.5	31.2	154.9	102.7	23.5	3239	972	70.47	16.2E6
	671	76.2	1.15	9.60	37.5	169.5	157.1	25.0	4121	997	76.91	24.67E6
	681	92.1	1.15	8.70	45.4	187.8	245.2	26.5	5315	1021	84.97	38.35E6
	691	150.0	1.15	6.50	74.2	254.5	788.9	30.3	10490	1073	114.3	120.4E6
RONDO QUIET STUD®												
0.55	RQST	92.0	0.55	16.5	48.9	139.2	149.8	30.6	3067	1097	14.1	59.8E6

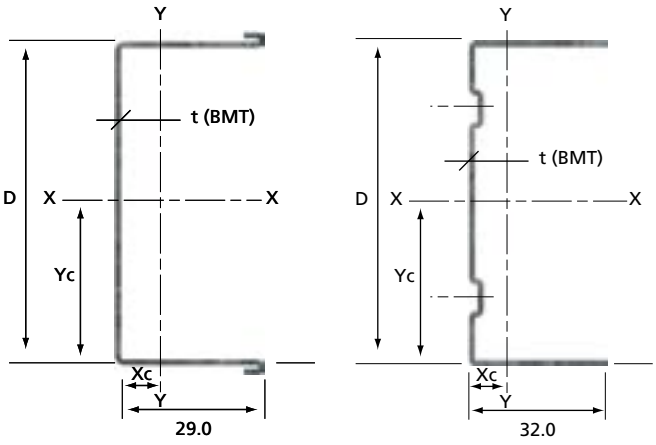
NOTE: Section properties are approximate only and may be subject to revision

SECTION PROPERTIES (continued)

Wall Stud Track

MATERIAL SPECIFICATIONS

Steel Grade: G2 Z275 to AS1397
Yield Strength: Fy – 270 MPa
Coating Grade: Z275 – 275g/m^2 zinc
Ultimate: Fu = 330 MPa



0.50/0.70 BMT HEMMED **0.75/1.15 BMT**

TABLE 13: SECTION PROPERTIES FOR WALL TRACKS

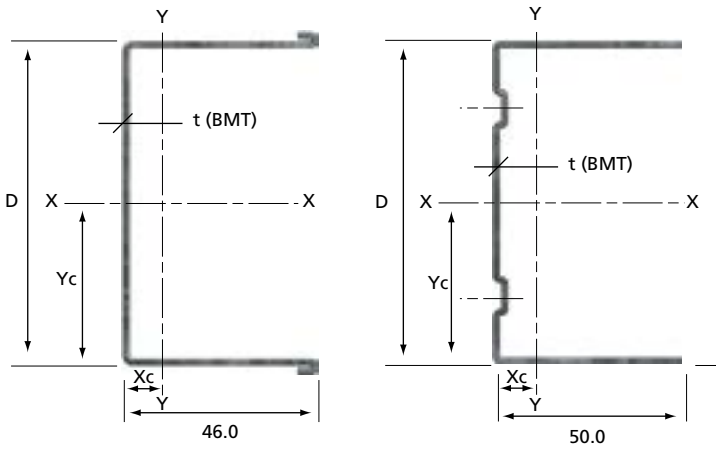
BMT	PART NO	DIMENSIONS				GROSS AREA	MOMENT OF AREA		SECTION MODULUS		TORSION Constant	WARPING Constant
		D mm	t mm	Xc mm	Yc mm	mm^2	Ixx 10^3 mm^4	Iyy 10^3 mm^4	Zxx mm^3	Zyy mm^3	J mm^4	Iw mm^6
0.50	400	52.5	0.50	8.91	26.3	56.7	26.5	6.12	1020	313	4.85	2.84E6
	111	65.2	0.50	8.04	32.6	63.1	43.6	6.57	1348	322	5.38	4.73E6
	402	77.9	0.50	7.32	39.0	69.4	65.9	6.95	1703	329	5.91	7.20E6
	250	93.75	0.50	6.58	46.9	77.0	101.8	7.33	2185	335	6.57	11.2E6
0.70	490	53.1	0.70	8.79	26.6	79.4	37.4	8.40	1430	432	13.3	3.97E6
	492	65.5	0.70	7.94	32.8	88.3	60.7	9.01	1876	443	14.7	6.51E6
	494	78.1	0.70	7.23	39.1	97.2	91.5	9.51	2367	453	16.2	9.86E6
	496	94.5	0.70	6.48	47.3	107.8	143.5	10.1	3061	462	18.0	15.5E6
1.15	660	65.9	1.15	7.53	33.0	142.4	96.1	13.50	2973	589	63.3	9.70E6
	670	78.6	1.15	6.84	39.3	157.0	145.4	14.30	3757	604	69.7	14.8E6
	680	94.5	1.15	6.13	47.3	176.0	225.2	15.00	4826	618	77.8	22.9E6

NOTE: Section properties are approximate only and may be subject to revision

Deflection Head Track

MATERIAL SPECIFICATIONS

Steel Grade: G2 Z275 to AS1397
Yield Strength: Fy – 270 MPa
Coating Grade: Z275 – 275g/m^2 zinc
Ultimate: Fu = 330 MPa



0.70 BMT HEMMED **1.15 BMT sections**

TABLE 14: SECTION PROPERTIES FOR DEFLECTION HEAD TRACK

BMT	PART NO	DIMENSIONS				GROSS AREA	MOMENT OF AREA		SECTION MODULUS		TORSION Constant	WARPING Constant
		D mm	t mm	Xc mm	Yc mm	mm^2	Ixx 10^3 mm^4	Iyy 10^3 mm^4	Zxx mm^3	Zyy mm^3	J mm^4	Iw mm^6
0.70	488	53.1	0.70	15.9	26.6	105.7	51.0	26.7	1947	920	17.1	13.5E6
	497	65.5	0.70	14.7	32.8	113.7	82.1	28.7	2537	950	18.5	21.7E6
	498	78.1	0.70	13.6	39.1	120.4	122.7	30.4	3174	974	20.0	32.5E6
	499	94.5	0.70	12.4	47.3	133.4	190.2	32.4	4058	999	21.8	50.4E6
0.75	510	152.4	0.75	9.58	76.2	175.0	627.4	40.4	8277	1034	34.9	164.7E6
1.15	663	65.9	1.15	14.7	33	187.8	137.7	47.2	4257	1400	81.5	34.7E6
	673	78.6	1.15	13.6	39.3	204.7	205.3	50.1	5304	1440	88.0	52.3E6
	683	94.5	1.15	12.4	47.3	220.8	312.6	53.2	6701	1480	96.0	80.5E6
	690	152.4	1.15	9.53	76.2	287.5	953.4	61.1	12610	1573	125.4	248.3E6

NOTE: Section properties are approximate only and may be subject to revision

TABLE 15: SCREW FIXING DATA

APPLICATION	RECOMMENDED SCREW	SIZE
FLOORING Joists to Bearers Bearers to Posts Bracketing & Cleats **FRAMING** Tracks to Steel Members Wall Studs to Steel Columns Bracketing & Cleats External Face Connections Plumbing/Electrical Brackets **ROOFING** Trusses to Top Plates Roof Battens to Trusses Bracketing & Cleats Roof Sheeting to Battens Roof Battens to Trusses	**HEXAGON HEAD DRILL POINT**  FOR STEEL UP TO 4mm THICK	8–18 x 12mm 8–18 x 20mm 10–16 x 16mm 10–16 x 22mm 12–14 x 20mm 12–14 x 35mm 14–10 x 20mm 14–10 x 42mm
	 FOR STEEL UP TO 6mm THICK	10–24 x 16mm 10–24 x 25mm 12–24 x 20mm 14–20 x 20mm 14–20 x 22mm 14–20 x 30mm 14–20 x 40mm
FRAMING Studs to Tracks Studs to Studs Bracketing & Cleats Internal Face Connections Plumbing/Electrical Brackets Bracing Straps Noggings to Studs Tracks to Studs **CEILING/ROOFING** Ceiling Battens to Joists Roof Battens to Trusses Bracketing & Cleats	**BUTTON HEAD NEEDLE POINT**  FOR STEEL UP TO 0.8mm THICK	8 x 14mm 8 x 25mm 8 x 32mm
	WAFER HEAD DRILL POINT  FOR STEEL UP TO 4mm THICK	10–16 x 16mm 10–16 x 22mm 10–24 x 16mm 10–24 x 22mm 10–24 x 30mm 10–24 x 40mm
INTERNAL LININGS Plasterboard Wall & Ceilings	**BUGLE HEAD S-POINT/NEEDLE POINT**  FOR STEEL UP TO 0.8mm THICK	6–18 x 25mm 6–18 x 30mm 6–18 x 42mm 7–16 x 50mm 8–15 x 60mm 8–15 x 75mm
	BUGLE HEAD DRILL POINT  FOR STEEL UP TO 6mm THICK	6–20 x 25mm 6–20 x 30mm 6–20 x 45mm

NOTE: Screws should comply with AS/NZS 3566-2 2002 Corrosion Resistance.

APPLICATION	RECOMMENDED SCREW	SIZE
INTERNAL LININGS Fibre cement linings in wet areas	 FOR STEEL UP TO 0.8mm THICK	8–18 x 20mm
	 FOR STEEL UP TO 4mm THICK	8–18 x 25mm
Compressed sheeting to steel studs	 MINIMUM STUD GAUGE ≥ 1.0mm	8–18 x 33mm 8–18 x 38mm 10–24 x 30mm 10–24 x 45mm

TABLE 16: OTHER FASTENERS

APPLICATION	RECOMMENDED SCREW	SIZE
Stud or track fixing to concrete and masonry	 NOTE: TWO FIXINGS FOR TRACKS ≥ 100MM. CHECK BEFORE USING ON FIRE RATED APPLICATIONS	Refer manufacturer's data
Stud or track fixing to steel	 NOTE: TWO FIXINGS FOR TRACKS ≥ 100MM. CHECK BEFORE USING ON FIRE RATED APPLICATIONS	Refer manufacturer's data
Stud or track fixing to concrete and masonry		Refer manufacturer's data

NOTE: Screw fixing information provided by ITW Buildex. Specific details should be checked with the screw manufacturer before commencing work.

GLOSSARY OF TERMS

BCA REQUIREMENTS

The BCA requirements only relate to lightweight fire rated construction, not to partitions in general. There is currently no Australian Standard which covers non-fire rated partition framing specifically. The main presumption is that there is no reason why a fire rated partition should be constructed any differently (in terms of loading and serviceability criteria) than a normal non-fire rated partition.

DEAD LOAD (G)

That part of structure, which is not readily moveable, such as flooring, linings etc. Most dead loads applicable for building materials are detailed in AS1170.1.

As dead loads are present at all times the deflection limits applicable when checking serviceability for dead load only cases are generally more stringent.

DEFLECTION LIMIT

A criterion applied to check the "serviceability" of a partition or ceiling system.

For a non-load bearing partition with "flexible linings" (i.e. plasterboard) the BCA requirements for lightweight partitions H/240 (where H = wall height) provides acceptable serviceability.

Example: if wall height is 2700mm calculation is 2700/240 = 11.25mm max. lateral deflection at mid height of wall.

Normally where brittle finishes (i.e. tiled bathroom) are applied to the partition the deflection limit is increased to H/360. For shelf loaded walls, the deflection limit is generally increased to H/480 to reduce the secondary effects of the shelf load.

Deflection limits can and do vary depending on the use and function of the building, and there are no prescribed limits for non-fire rated partitions.

SINGLE, DOUBLE AND CONTINUOUS SPAN

Single Span:

Where a single member is supported at at each end only.

Double Span:

Where a single member is supported at three points along its length.

Continuous Span:

Where a single member is supported at four or more points along its length i.e. a 6m length of Furring Channel suspended from a Top Cross Rail Grid system.

Where double span and continuous span values are stated, the design assumes that all the spans are equal.

INTERNAL PRESSURE

The design load applied to the soffit of the ceiling, either upward (uplift) or downward.

Sometimes this pressure may be due to the ceiling being used as a pressurised plenum for mechanical services.

The design load may vary in certain parts of buildings depending upon the exposure the ceiling has to the exterior, such as in factories with large roller doors etc. In these situations the contract specification should be consulted or clarification sought from the project coordinators. The direction of the design load is important so the ceiling requirements for "downstrutting" may be determined. Normally the deflection criteria are relaxed for ceilings subjected to wind loads.

LATERAL PRESSURE

The design load applied to the face of the wall.

The BCA requirements for lightweight partitions are sufficient for internal partitions in an effectively sealed building – 0.25kPa.

The design load may vary in certain parts of buildings (i.e. lift shafts, etc.) and for certain building classes (i.e. Class 9B buildings). Also, the design load may vary due to external wind load exposure, such as in factories with large roller doors etc. In these situations the contract specification should be consulted or clarification sought from the project coordinators.

LATERAL PRESSURE TYPE — PERMISSIBLE vs ULTIMATE

As the current design code for Cold-Formed Steel Sections (ASNZS4600) is in Limit State Format it is appropriate that all loads are specified as Ultimate values.

In terms of wind loading the Ultimate wind pressure is 1.5 times higher than the permissible pressure.

LIVE LOAD (Q)

The load resultant from occupancy or use of the building, such as persons walking (floor live loads), storage loads, impact loads etc. Live loads are detailed in AS1170.1, and may vary depending on the use and function of the building.
As live loads are removable or intermittent the deflection limits applicable when checking serviceability for live load cases are generally relaxed, as opposed to dead load.

SERVICEABILITY

A criterion that defines acceptable in-service performance of a partition or ceiling. The criterion is usually specified as a deflection limit, but may also be specified as an acoustic rating.

WIND DOWN (Wd)

The resultant forces from the wind load, which tends to generate compression load in the stud framing. Wind downwards may not occur on every project.
As wind loads are intermittent (i.e. the wind tends to gust) the deflection limits applicable when checking serviceability for wind load cases are generally relaxed, as opposed to dead load.
It is important for the wind up and wind down cases that the wind load is clearly described, and the loading is calculated in accordance with AS1170.2 or AS4055 as applicable.
AS1170.2 Wind Loads is applicable for all normal structures, both low rise and high rise.
AS4055 Wind Loads for Housing is only applicable for buildings with an eaves height of 6.0m and/or a maximum height at any point of 8.5m. In general terms the code applies up to two storey domestic structures or similar.

WIND UP (Wu)

The resultant force from the wind load, particularly on roofs sheeted with metal decking, which tends to generate a tension load in the stud framing. Wind uplift may not occur on every project, such as a tiled roof subjected to an N2 (W33) wind load, under serviceability.
It is important for the wind up and wind down cases that the wind load is clearly described, and the loading is calculated in accordance with AS1170.2 or AS4055 as applicable.

RONDO MAXIFRAME® EXTERNAL WALL FRAMING SYSTEM

SUMMARY

The Rondo MAXIframe® External Wall Framing system is paving the way for light-weight steel framing in external wall construction. The system has been expertly engineered to offer builders a more efficient, versatile and cost effective design option than traditional external wall framing construction methods.

The system incorporates standard Rondo 92mm Studs as the main framing, with the inclusion of two new major profiles, MAXIjamb® and MAXItrack®, and three complementary cleats to provide a simple, yet solid structure.

SUITABLE FOR:

- External Wall Systems
- Vented External Walls
- Non-Vented External Walls
- Load Bearing Walls by design
- Window and Door Jambs
- Non-Fire Rated Systems
- Fire Rated Systems
- Dual exterior cladding and interior linings support
- Insulation in wall cavity
- Access for services within outer walls

SPECIAL FEATURES

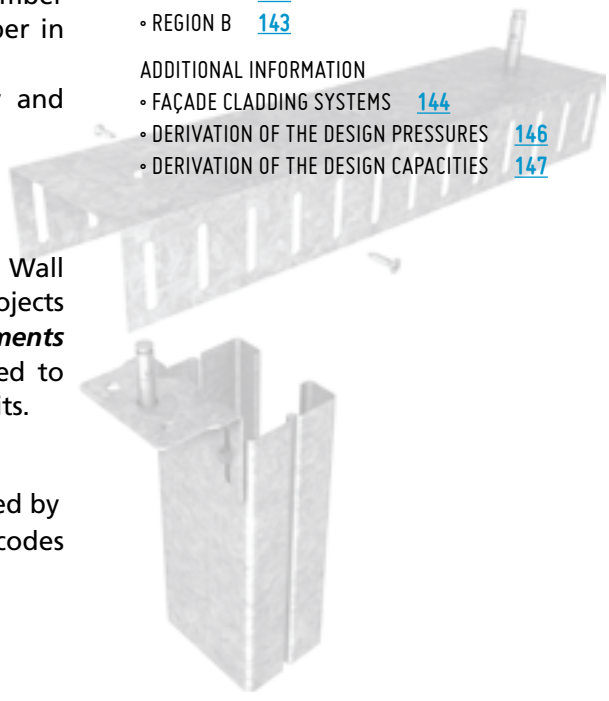
- MAXIjamb can support and carry greater load than regular wall studs, therefore removing the need for boxed or back to back stud configurations
- MAXItrack provides a positive connection between stud and deflection head which has allowed the Nogging track normally located 100mm below the head track to be removed
- Greater performance capacities than traditional external wall framing construction methods
- Available in custom lengths
- MAXIjamb is made from hi tensile steel, 1.2BMT G500
- MAXIjamb can be used as both a vertical jamb member around openings, or horizontal head and sill member in window openings.
- Majority of Stud and Track is hemmed for safety and increased strength
- Manufactured with a minimum coating of Z275

IN PRACTICE

Since its release in 2011, Rondo's MAXIframe External Wall Framing System has already been used in significant projects across Australia and New Zealand. In the ***Century Apartments project in Queensland***, the MAXIframe system was used to create a solid framing foundation in all 76 residential units.

IMPORTANT NOTE:
Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page 256 of this manual.

CONTENTS:



MAXIFRAME® COMPONENTS

CLEATS

201	92mm x 2.9mm Base Bracket
202	92mm x 1.5mm Sill Bracket
203	92mm x 2.9mm Slotted Head Bracket

JAMB STUD

200	MAXIjamb Stud 92mm x 1.20bmt

SLOTTED DEFLECTION HEAD TRACK

S683	MAXItrack 92mm x 1.15 bmt

WALL TRACK

680	92mm x 32mm x 1.15bmt

NOGGING TRACK

506	92mm x 0.70bmt

WALL STUD

681	92mm x 1.15bmt

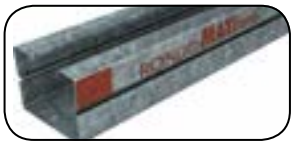
CLEATS

201

202

203

JAMB STUD



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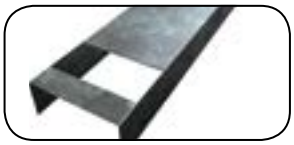
SLOTTED DEFLECTION HEAD TRACK

S683

WALL TRACK

680

NOGGING TRACK



506

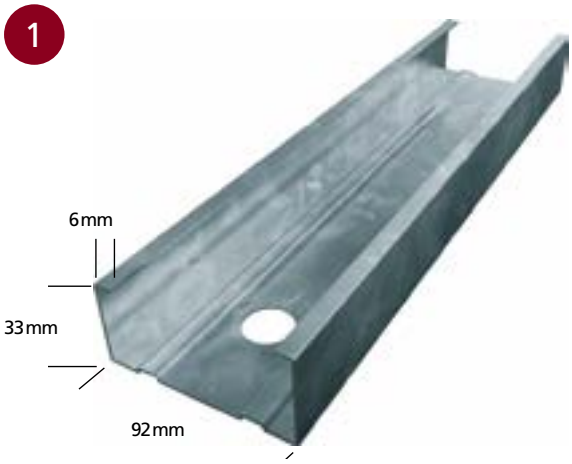
WALL STUD

681

SECTION PROPERTIES

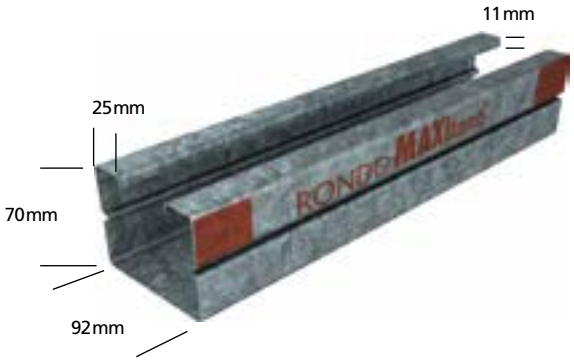
Wall Stud & MAXIjamb

1



■ 681 WALL STUD

2



■ 200 MAXIJAMB

TABLE 1: SECTION PROPERTIES

RONDO PART NO	DEPTH (mm)	GAUGE t (mm)	AREA GROSS A (mm^2)	WEIGHT (kg/m)
681	92.1	1.15	187.8	1.52
200	92.1	1.20	350.6	2.83

RONDO PART NO	MOMENT OF INERTIA (10^3 mm^4)		RADIUS OF GYRATION (mm)		CENTROID (mm)		SHEAR CENTRE (mm)	MONO-SYMMETRY CONSTANT (mm)	TORSION CONSTANT (mm^4)	WARPING CONSTANT (10^6 mm^6)
	Ixx	Iyy	Rxx	Ryy	Xc	Yc	Xo	ßy	J	Iw
681	242.1	25.8	35.9	11.7	8.70	46.0	-22.6	101.2	83.4	40.5
200	492.8	258	37.4	27.1	30.4	46.0	-71.9	156.3	168.3	820

NOTE: Section properties are gross, based on the centerline of the section. Gauge (t) is specified as Base Metal Thickness (BMT).

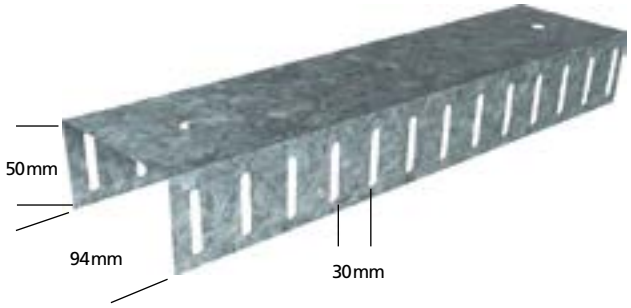
TABLE 2: DESIGN VALUES

RONDO PART NO	SECTION CAPACITY ϕM_{sx} (kNm)	MEMBER MOMENT CAPACITY ϕM_{bx} (kNm)	DISTORTIONAL MOMENT CAPACITY ϕM_{bdx} (kNm)	SHEAR CAPACITY ϕV_v (kN)	FULL LATERAL RESTRAINT FLR (mm)
681	1.256	Varies	1.1241	12.9	830
200	5.027	Varies	4.129	18.0	1580

SECTION PROPERTIES (continued)

Deflection Head & Wall Track

3



■ S683 MAXITRACK SLOTTED DEFLECTION HEAD TRACK

4

■ 680 WALL TRACK

TABLE 3: SECTION PROPERTIES

RONDO PART NO	DEPTH (mm)	GAUGE t (mm)	AREA GROSS A (mm^2)	WEIGHT (kg/m)
S683	94.5	1.15	221	1.61
680	94.5	1.15	176	1.42

RONDO PART NO	MOMENT OF INERTIA (10^3 mm^4)		RADIUS OF GYRATION (mm)		CENTROID (mm)		SHEAR CENTRE (mm)	MONO-SYMMETRY CONSTANT (mm)	TORSION CONSTANT (mm^4)	WARPING CONSTANT (10^6 mm^6)
	Ixx	Iyy	Rxx	Ryy	Xc	Yc	Xo	ßy	J	Iw
S683	318.9	56.3	38.2	16.0	12.9	47.2	-32.0	113.7	96.1	83.8
680	227.2	16.0	35.6	8.9	5.8	47.2	-15.7	108.6	75.8	20.8

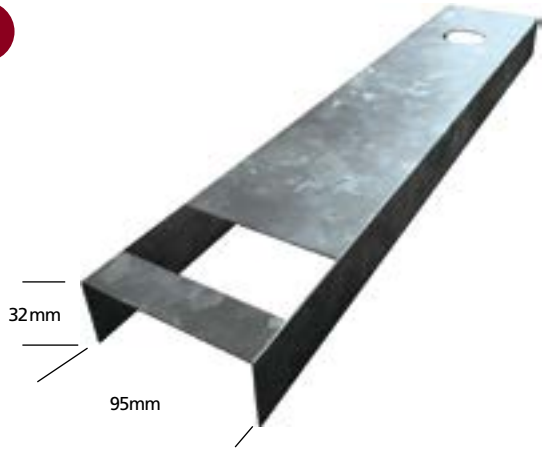
NOTE: Section properties are gross, based on the centerline of the section. Gauge (t) is specified as Base Metal Thickness (BMT).

TABLE 4: DESIGN VALUES

RONDO PART NO	SECTION CAPACITY ϕM_{sx} (kNm)	MEMBER MOMENT CAPACITY ϕM_{bx} (kNm)	DISTORTIONAL MOMENT CAPACITY ϕM_{bdx} (kNm)	SHEAR CAPACITY ϕV_v (kN)	FULL LATERAL RESTRAINT FLR (mm)
S683	1.080	Varies	–	12.9	1090
680	0.9823	Varies	–	12.9	690

Nogging Track & Cleats

5

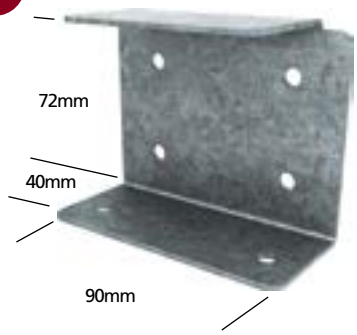


■ 506 NOGGING TRACK

6

■ 201 JAMB BASE BRACKET

7



■ 202 SILL/HEADER BRACKET

8

■ 203 SLOTTED JAMB HEAD BRACKET

TABLE 5: SECTION PROPERTIES

RONDO PART NO	DEPTH (mm)	GAUGE t (mm)	AREA GROSS A (mm^2)	WEIGHT (kg/m)
506	94.5	0.70	107.8	0.86

RONDO PART NO	MOMENT OF INERTIA (10^3 mm^4)		RADIUS OF GYRATION (mm)		CENTROID (mm)		SHEAR CENTRE (mm)	MONO-SYMMETRY CONSTANT (mm)	TORSION CONSTANT (mm^4)	WARPING CONSTANT (10^6 mm^6)
	Ixx	Iyy	Rxx	Ryy	Xc	Yc	Xo	ßy	J	Iw
506	129.8	7.08	35.5	8.2	5.20	47.2	-14.2	110.4	16.8	10.9

NOTE: Section properties are gross, based on the centerline of the section. Gauge (t) is specified as Base Metal Thickness (BMT).

RONDO PART NO	GAUGE t (mm)
201	2.9
202	1.5
203	2.9

DESIGN DATA

Wind Loading & Serviceability

The wind loading presented in this manual has been calculated in accordance with AS/NZS1170.2.
A more detailed evaluation of the wind loading may be found on Page 146. Some of the assumptions used in the determination of the design pressures are summarised below:

BUILDING IMPORTANCE LEVEL

The designer is responsible for checking the building importance level in accordance with the Building Code of Australia (BCA) Section B. The design pressures have been determined based on a Building Importance Level 3, in accordance with the BCA, using a V1000 wind speed.

REGIONS A & B

The design tables are suitable for checking the MAXIframe systems located within Wind Regions A & B of Australia and New Zealand.

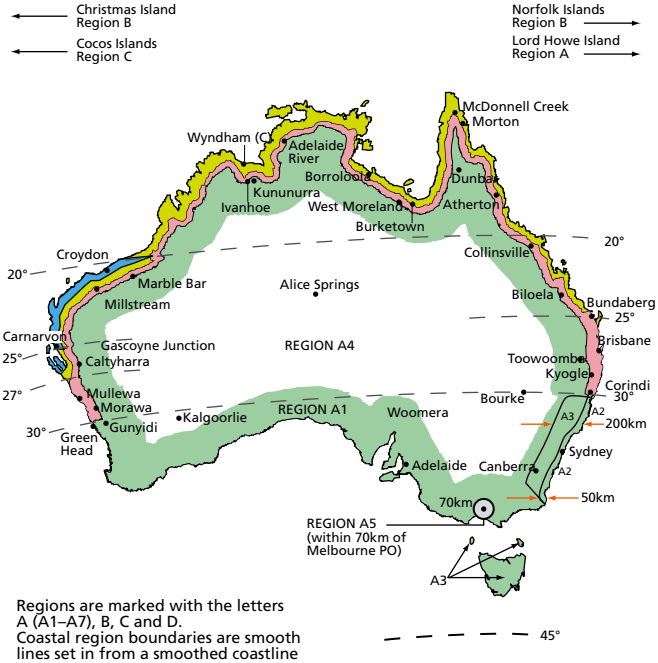
For Australia, Regions A & B cover the vast majority of the country, with the exception of the coastal regions above 25° latitude on the East Coast and 27° latitude on the west coast. (*Refer to Figure 9.)*

The excluded areas are classified as cyclonic and require significantly higher wind loading to be applied to the framing.

For New Zealand, Region W and the alpine regions are excluded due to the higher wind loading required in these areas. These areas are located between the red contour lines and shading on the map in Figure 9.

In these locations, specific designs will be required and we recommend that you discuss your requirements with your Rondo Technical Representative.

9



WIND REGIONS A & B FOR AUSTRALIA & NEW ZEALAND

TERRAIN CATEGORIES

The design tables are suitable for checking the MAXIframe systems located in Terrain Categories 3 and 2.5.

Terrain Category 2 has not been considered due to possible differences in terrain categories between ultimate and serviceability and designs for these locations should be referred to your Rondo Technical Representative.

For clarification of Terrain Categories refer to Figure 10.

The design tables for Terrain Category 3 can be used for Terrain Category 4, although this may be conservative

SERVICEABILITY

The design tables have been prepared for H/240 and H/360 deflection limits, to accommodate both flexible and "brittle" cladding types. Rondo recommends using, as a minimum, the H/360 tables for all brick veneer construction.

The design tables do not consider the wall linings for serviceability, except for lateral restraint (i.e. there is no composite action assumed).

10

Category 2.5
Terrain with few trees and isolated obstructions.
This is an intermediate classification between Category 2 and 3.

Category 3
Terrain with numerous closely-spaced obstructions such as areas of suburban housing. (3 metres to 5 metres high)

TERRAIN CATEGORIES

DESIGN DATA (continued)

Loading Assumptions

WALL STUDS

The wall stud framing solutions presented in this manual have been determined assuming the unrestrained flange (i.e. unlined flange) is in compression, for both the positive and negative wind pressures. The contributory wall load width has been taken as shown in Figure 11.

NOGGINGS

Noggings are assumed to provide lateral and torsional restraint to the studs. At the Nogging location, rotation in a plane perpendicular to the plane of loading (ie; through the minor axis) is assumed to be fixed.

The following Nogging configurations are assumed in the tables:

1 row mid height:

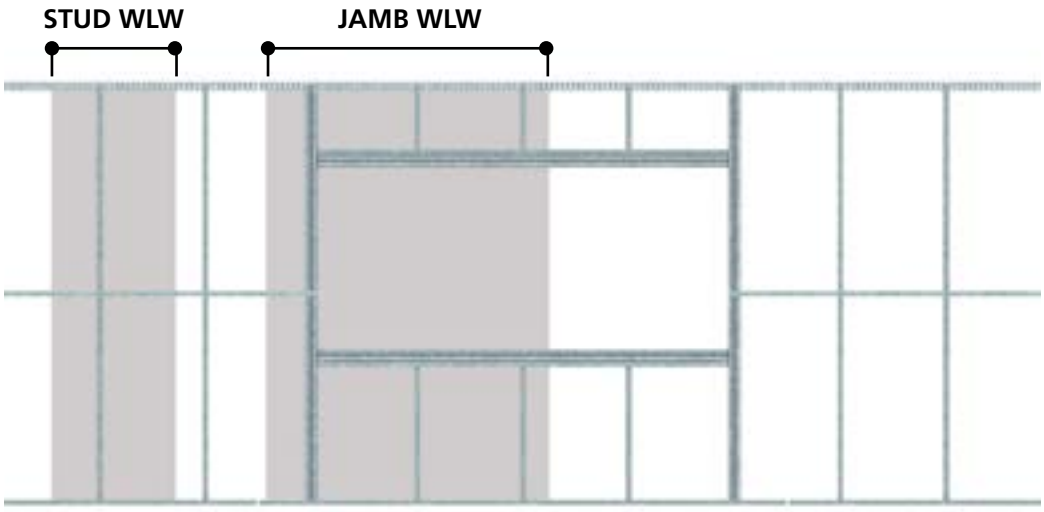
Walls up to and including 3000mm high

2 rows equispaced:

Walls greater than 3000mm high.

Rondo does not recommend attaching top hats vertically, to the pre-punched 0.70bmt Noggings. Due to the punch out configuration, the Noggings do not have sufficient capacity or rigidity to accommodate laterally imposed loads. Where top hats are required to be installed vertically, Rondo recommends the introduction of a secondary horizontal top hat member.

11



■ ASSUMED WALL LOAD WIDTH (WLW)

WALL LININGS

Where the wall linings are fixed to one flange, it is assumed to provide lateral restraint only. Where the wall linings are fixed to both flanges, it is assumed to provide lateral and torsional restraint. The linings may be fixed either vertically or horizontally to the studs; however, the joints in the linings should always be staggered, and the linings should always be installed in accordance with the manufacturer's recommendations.

FASTENERS

The use of mechanical fasteners, such as self drilling screws, provide a fast and effective means of securing the framing. The design tables assume a certain degree of restraint at the member intersection and connection points, and this can be achieved by screw fastening. Table 6 provides the screw shear capacity, based on tilting and bearing, along with the pullout (tension) capacity, for both #8 and 10# gauge screws.

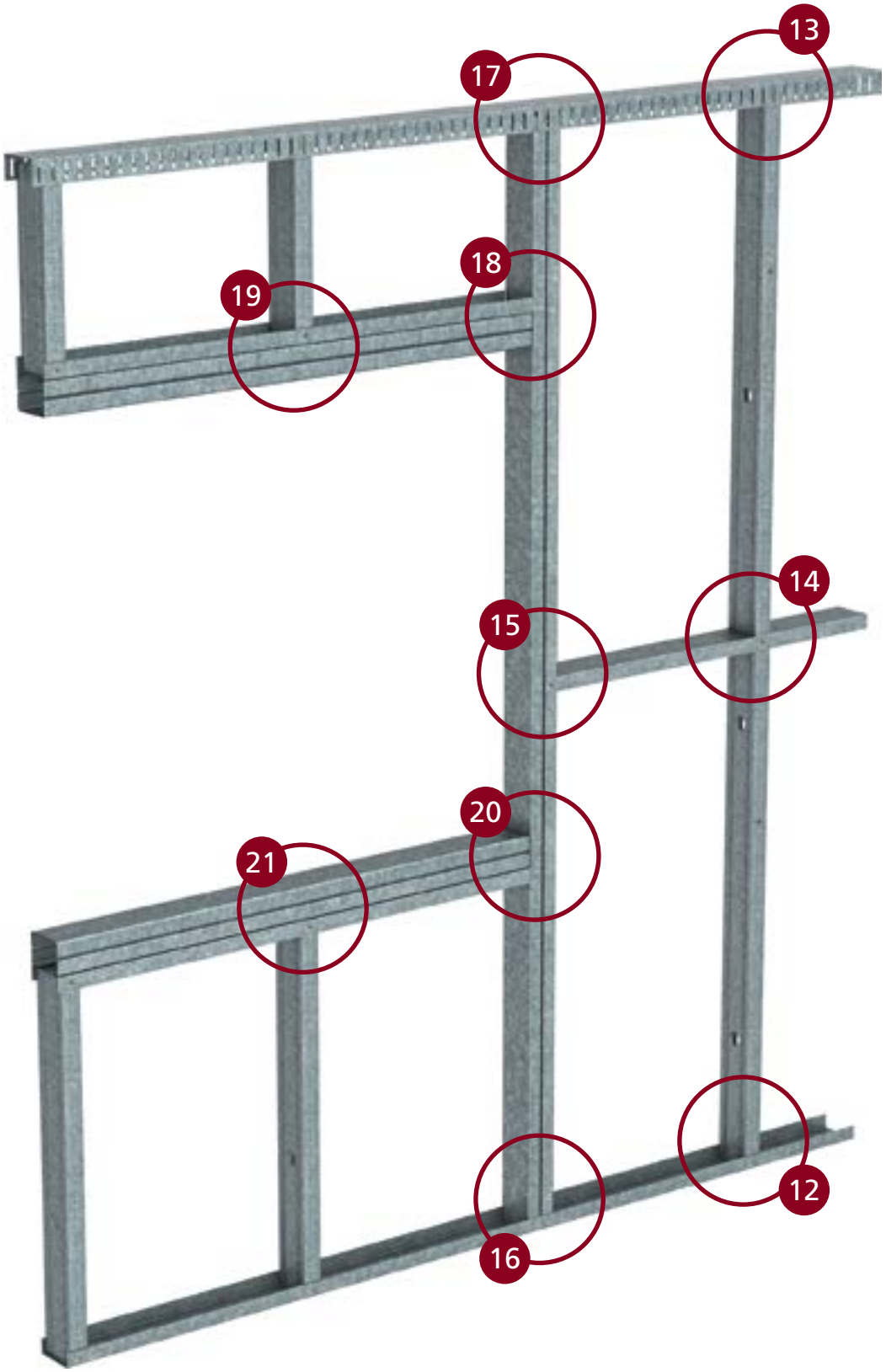
TABLE 6: SCREW SHEAR AND PULLOUT CAPACITY

SCREW GAUGE	8	10	8	10
MINIMUM STEEL THICKNESS	SHEAR CAPACITY ϕV_b kN		PULLOUT CAPACITY ϕN_{ou} kN	
1.15mm	1.75	1.87	0.68	0.77
1.20mm*	2.94	3.14	1.11	1.27

NOTES:
*1. * t = 1.20mm Fu = 520MPa, all other steel thicknesses Fu = 330MPa.*
2. Screw fasteners to be in accordance with AS3566.
3. Screw coating to be selected in accordance with the manufacturer's recommendations.

INSTALLATION DETAILS

Typical MAXIframe System



Circled areas on the drawing refer to figures shown in more detail on the following pages.

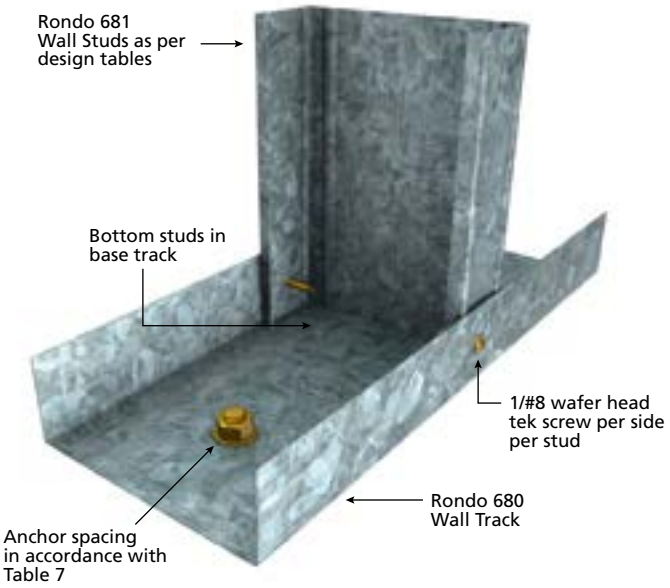
Base Track

The base track anchor is required to withstand the shear forces resulting from the wind loading onto the face of the wall. The base track anchor is to be independently checked for the minimum capacity specified below.

All Rondo tracks are pre-punched, with a 10.5mm diameter hole at 150mm centres, along their centerline to allow easier installation of the track fasteners. Rondo recommends the maximum spacing of the base track anchors as shown in Table 7.

The fixing between the stud and track is to be a single #8 wafer head tek screw, minimum, per side.

12



TYPICAL BASE TRACK FIXING DETAILS

TABLE 7: MAXIMUM ANCHOR SPACING

ANCHOR SIZE (mm)	**ADOPTED SPACING** (mm)	**MAXIMUM DESIGN PRESSURE** (kPa)
8	600	2.50
	450	3.40
	300	5.10

NOTES:
1. The above table is based on a maximum wall height of 3.2m.
2. Anchor to be checked for minimum shear capacity of 3.10kN.
3. Anchors to be selected and installed in accordance with manufacturer's recommendations.
4. Minimum edge distance to concrete to be 50mm.
5. Dynabolts to be installed with washers in place.

INSTALLATION DETAILS (continued)

Slotted Deflection Head Track

The MAXItrack deflection head track anchors are the same as the base track anchors.

The new MAXItrack is slotted along the flanges, to provide allowance for building vertical movements, and provides a positive connection between the stud and deflection head.This has allowed the Nogging 100mm below the head track to be removed. Consideration of the connection capacity has been accounted for in the wall framing tables.

The MAXItrack slotted deflection head connection has greater capacity than the traditional deflection head connection, therefore the wall framing tables in this manual are exclusively for use with the MAXItrack product and system components.

CONNECTIONS

Connection between the stud and MAXItrack is via 1/#10 wafer head tek screw per side, per stud, as shown.

TO CONCRETE:

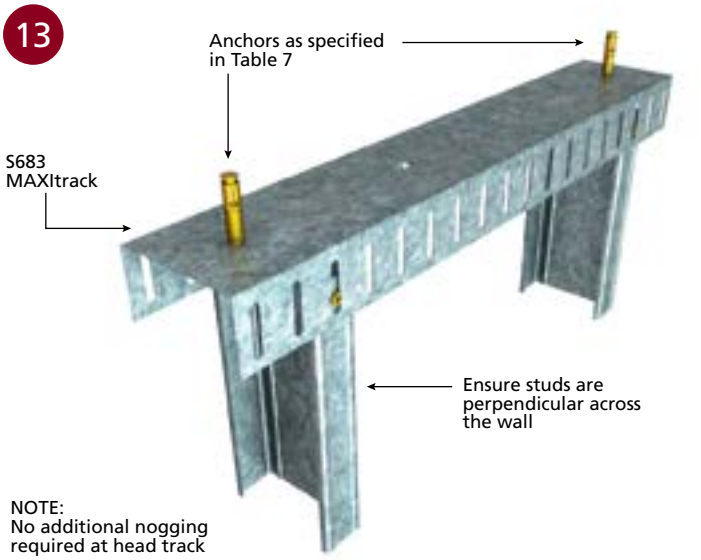
The standard clearance between the top of the stud and the slab soffit is 20mm, which accommodates up to 15mm incremental slab deflection, with tolerance.

TO STEELWORK:

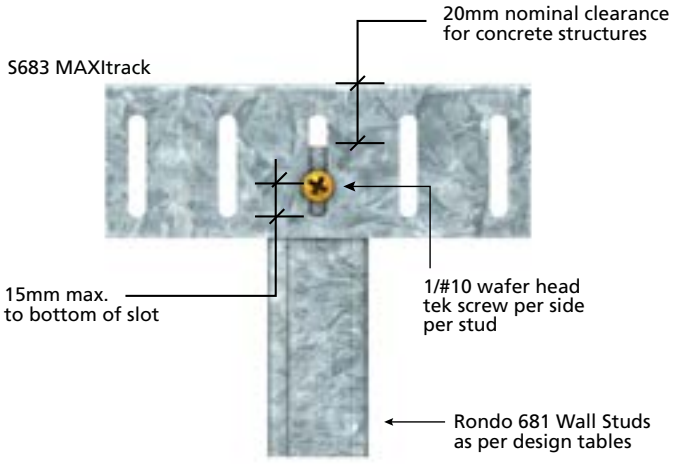
Where the steelwork carries roof or floor loads, a deflection head will be required. Where the steelwork is in place only as lateral support to the stud framing a deflection head is not required.

For roof uplift, the MAXItrack can be installed with an initial stud clearance of 5mm, which will give an allowance of up to 15mm for roof uplift.

NOTE:
The allowance for structural movement is to be confirmed by the project engineer prior to commencing work on site.



TYPICAL MAXITRACK CONNECTION DETAILS



TYPICAL MAXITRACK FIXING DETAIL

Noggings

Noggings are a very important part of the overall stud framing system as they provide lateral and torsional restraint to the wall studs, thereby increasing the load that can be carried by the studs. However, Noggings do not improve the deflection of the framing.

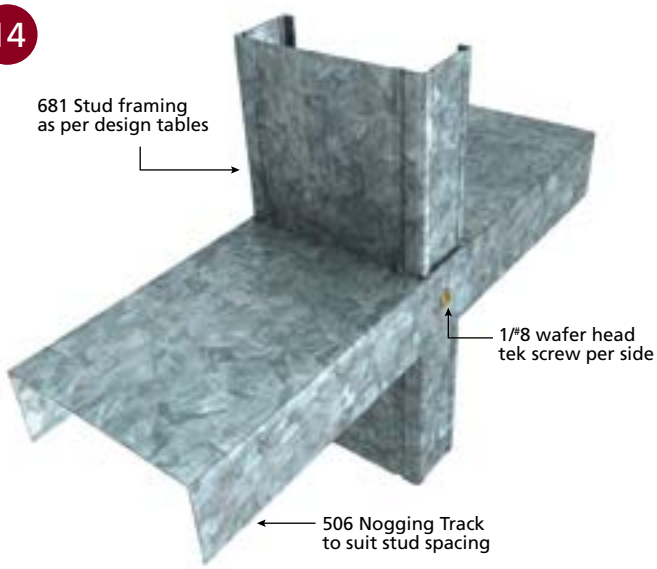
Rondo produces continuous Nogging track, which has pre-punched slots as standard at 450mm and 600mm centres. Other sizes can be ordered as a special.

The Nogging track can be laid over the base track, and after the studs are positioned, slid up the wall and secured in place. Alternatively, individual Noggings may be cut from the continuous track and installed separately.

The Nogging is required to be fastened to each stud using 1/#8 wafer head tek screw.

Noggings are to be installed as noted in Table 8.

14



■ TYPICAL NOGGING DETAIL

TABLE 8: NOGGING REQUIREMENTS

WALL HEIGHT (mm)	**NOGGINGS REQUIRED**
UP TO 3000	1 row mid height
> 3001	2 rows equispaced

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■ NOGGING TRACK FIXING DETAIL AT MAXIJAMB

INSTALLATION DETAILS (continued)

Jamb Studs

MAXIJAMB BASE CONNECTION

The MAXIjamb base cleats have strengthening gussets in the corners, and have been profiled to match the MAXIjamb and other Rondo products. The cleat capacity has been derived from load testing of the connection.

The design charts for the MAXIjamb, have been prepared based on the typical connection shown here.

FIXING DETAILS

TO THE MAXIJAMB SECTION:

Set the face with the two holes against the web of the MAXIjamb, and install using 2/#10 hexagon head tek screws.

Note: The MAXIjamb base bracket is to be fitted to the MAXIjamb web, unless noted otherwise.

TO CONCRETE:

Use the central hole, in the base of the bracket with a 10mm Expanding Type Anchor, and washer.

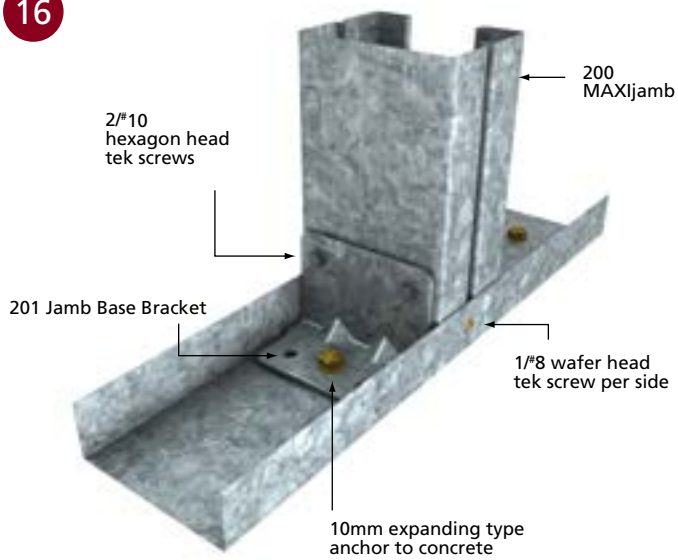
TO STEELWORK:

Use the central hole with an M10 Grade 4.6 Bolt, and washer under the head.

Alternatively:

Use the two outer fixing holes with #12 Series 500 Hexagon Head tek screws.

16



TYPICAL MAXIJAMB BASE FIXING DETAILS

MAXIJAMB HEAD CONNECTION

The MAXIjamb head cleats have strengthening gussets in their corner, and have been profiled to match the MAXIjamb and other Rondo products. The cleat capacity has been derived from actual load testing of the connection.

The design charts for the MAXIjamb, have been prepared based on the typical connection shown here.

FIXING DETAILS

TO THE MAXIJAMB SECTION:

Set the face with the two vertical slots against the web of the MAXIjamb, and install using 2/#10 hexagon head tek screws.

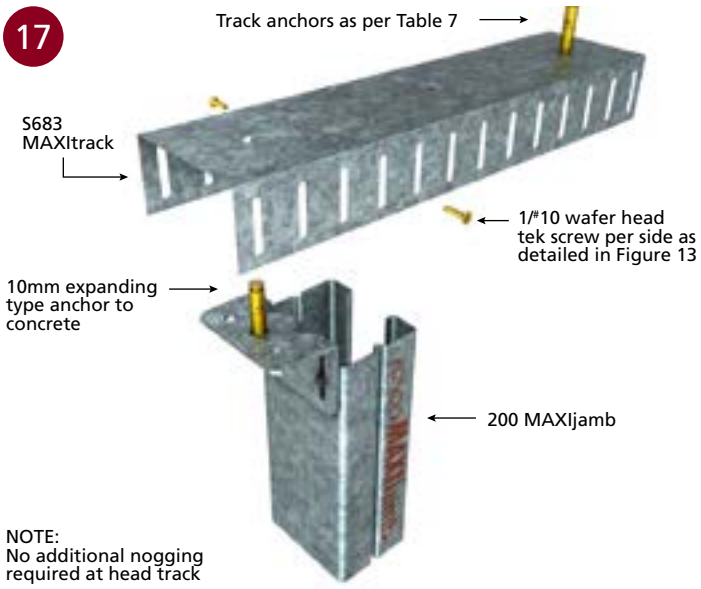
Note: The MAXIjamb head bracket is to be fitted to the MAXIjamb web, unless noted otherwise.

TO THE STRUCTURE:

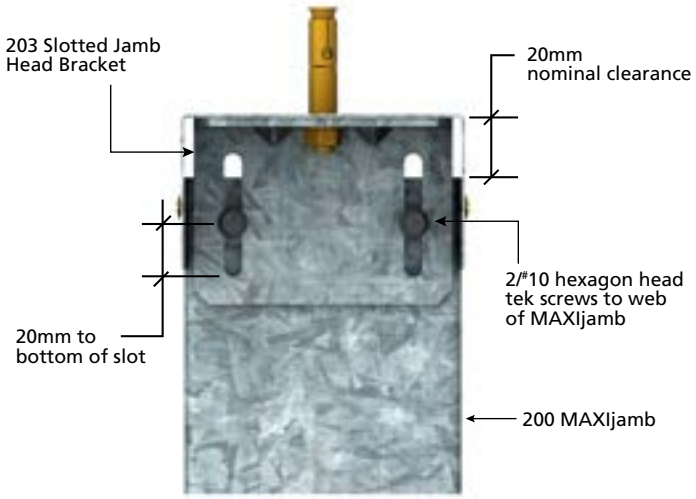
The fixing requirements for the MAXIjamb head bracket are the same as for the base bracket on Page 121.

TO THE MAXITRACK:

To the MAXIjamb stud, install 1/#10 wafer head tek screw per side.



EXPLODED VIEW OF MAXIJAMB HEAD CONNECTION



FIXING DETAILS FOR MAXIJAMB HEAD

INSTALLATION DETAILS (continued)

Jamb Studs (continued)

MAXIJAMB 202 SILL & HEADER CONNECTION

The 202 bracket design means one fixing flange is visible and the other invisible. Once the bracket is installed against the web of the MAXIjamb using 4/#10 wafer head tek screws, the MAXIjamb section has to be 'rolled' into place as illustrated *(Figures* Ⓐ, Ⓑ, Ⓒ*).*

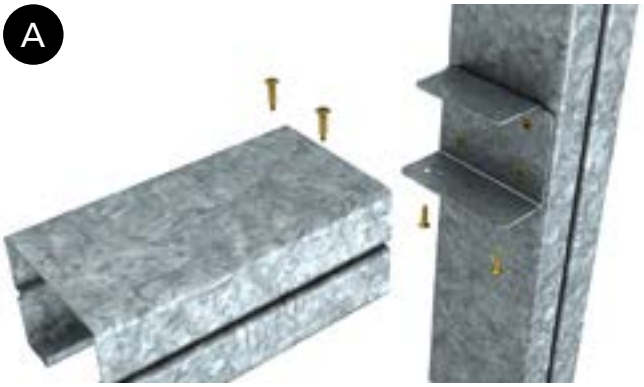
The exposed flange has two pre-drilled holes for fixing to the MAXIjamb, whilst the flange that is now inside the MAXIjamb should be secured by fixing the screws through the top, 25mm in from the inside jamb face and 25mm from the outer edge of the section *(Figure* Ⓓ*)*.

This bracket is fixed to the MAXIjamb with the shorter internal flange facing the opening.

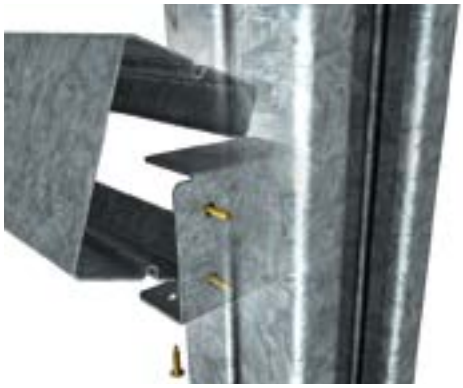
For example: when securing the sill member the short flange faces up and when securing the header, it faces down. *(For your convenience, the Rondo 202 Sill/Header Bracket is stamped accordingly on its inner face.)*

Once finally secured into place, the outer face of the 202 Sill/Header Bracket will align neatly with the face of the MAXIjamb section, both internally and externally as shown in Figures 18 & 19.

A

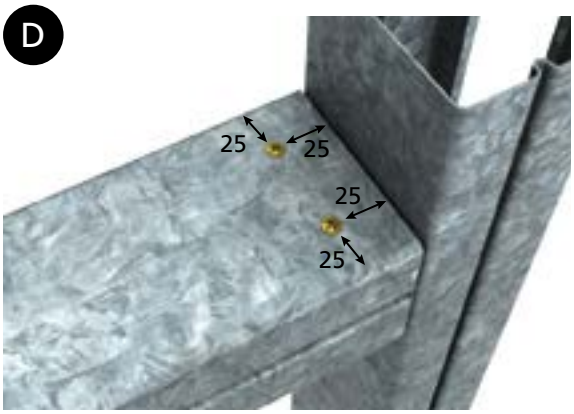


B



C

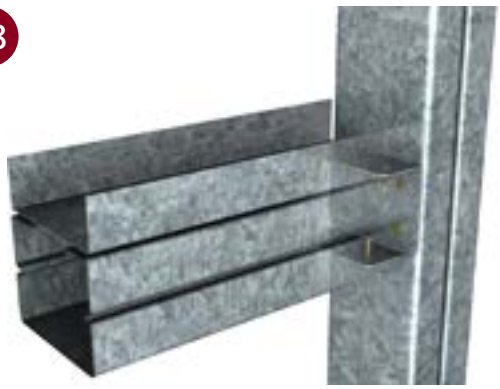
D



MAXIJAMB HEAD & SILL MEMBER DETAILS

Above and/or below openings formed with the MAXIjamb profile, whether it is used as a head or sill member, require securing to the MAXIjamb with standard 92mm track screwed to it and "jack" studs screwed off appropriately *(see Figures 18-21)*.

18



19

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21

INSTALLATION DETAILS (continued)

Jamb Studs (continued)

The jamb studs are located immediately adjacent to the window or door opening, such that they support and carry the wind loading applied across the width of the wall opening. The load carried by the jamb stud is significantly greater than that carried by the wall studs, which accordingly requires strengthening of the jamb.

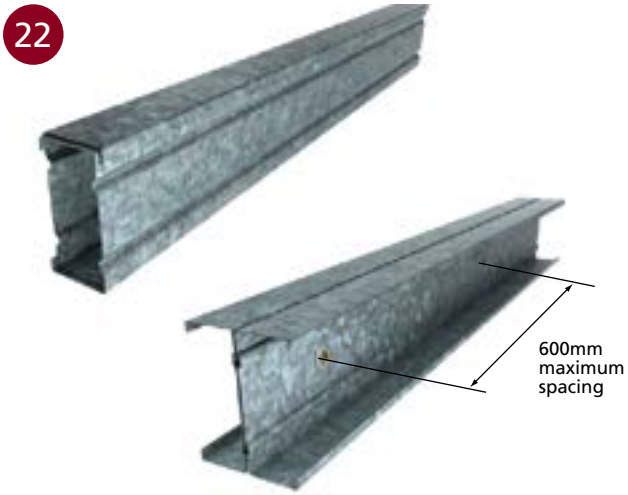
MULTIPLE STUD SECTIONS

Whilst the MAXIframe system will provide a faster and more cost-effective construction solution, the multiple stud method may still apply from time to time and is shown for comparative purposes.
Typically, strengthening of the jamb studs was achieved by using multiple stud sections, either boxed together or fixed back-to-back *(refer Figure 22)*.
The MAXIjamb uses a similar mass of steel as a double 92 x 1.15bmt lipped stud section, however, the section performance has been improved by using high tensile steel (G500) and carefully redistributing the steel within the profile *(refer Figures 23 & 24).*

MAXIMUM OPENING WIDTHS

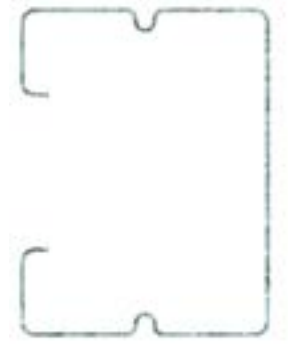
When using multiple studs to frame openings, the number of jamb studs required can be determined based on the number of studs in the adjoining wall section. Table 9 may be used to determine the number of stud sections, either side of a wall opening, based on the maximum spacing of the studs in the adjoining wall framing.

22



BOXED AND BACK-TO-BACK STUD SECTIONS

23



MAXIJAMB

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TYPICAL STUD FRAMING SECTIONS

TABLE 9: MULTIPLE STUDS TO OPENINGS (WHEN NOT USING MAXIJAMB)

STUD SPACING (mm)	NUMBER OF WALL STUDS EITHER SIDE OF OPENING												
	OPENING WIDTH (MM)												
	600	900	1200	1500	1800	2100	2400	2700	3000	3300	3600	3900	4200
300	2	2	3	3	4	4	–	–	–	–	–	–	–
400	2	2	2	3	3	4	4	4	–	–	–	–	–
450	2	2	2	3	3	3	4	4	4	–	–	–	–
600	1	2	2	2	2	3	3	3	3	4	4	4	4

NOTES:
1. The specified studs are the Rondo 92 x 1.15bmt lipped studs.
2. Where more than two (2) studs are specified, they shall be configured as boxed studs plus one stud back to back or double boxed studs.
3. Back to back studs are to be fixed together at 600mm maximum centres using #10 tek screws.

WALL STUD DESIGN TABLES

How to read the tables

The wall stud framing tables are configured as shown in Figure 25.

EXAMPLE:
Using the data below, refer to Figure 26.

DATA:
Region A Terrain Category 3
Brick veneer construction so adopt H/360 deflection limits
Slab thickness allowance = 200mm
Check the stud framing for the second floor

1. Overall building height: 18m
   (less than 21m therefore OK)
2. Check ground level: RL 19.00
   In terms of the tables RL 19.00 equals 0 height
3. Check second floor height: This can be done simply by summing the floor heights, which gives:
   z = (3 x 3) + (3 / 2) = 10.5m (above ground level)
   Round this up to 11m
4. Check wall height:
   Floor to floor = 3m
   slab thickness = 200m
   Wall height = 2.8m
5. Check Framing in General Areas:
   Refer to Table 12 on page 132 and, using the 11m height (Gen), the frame can be checked as follows:

   Stud Framing:
   92 x 1.15bmt lipped studs
   600mm centres generally.
   1 row of Nogging as the wall height is less than 3.0m.

   Head Track:
   92 x 50 x 1.15bmt Slotted Deflection Head Track.

   Base Track:
   92 x 30 x 1.15bmt Wall Track standard.
6. Check Framing in Corner Zone
   Overall Building Height: 18m
   Refer to Table 12 on page 132 using 18m (CnrA) the frame can be checked as follows:

   Stud Framing:
   92x1.15bmt Lipped Studs
   450 centres maximum
   Head & Base Tracks as specified above.

25

		11	
ZONE		**Gen**	**Cnr A**
Pult		**1.17**	**1.35**
Pser		**0.76**	**0.87**
STUD HEIGHT (m)	**2.5**	600	600
	2.6	600	600
	2.7	600	600
	2.8	600	450
	2.9	450	450

Height to centre of wall above ground level. Reference Z_H

Location on Building. Reference WA1 & SA2 respectively

Ultimate and Serviceability Design Pressures

Maximum height of stud framing in m

■ EXTRACT OF CONFIGURATION OF WALL STUD FRAMING TABLES, FROM PAGES 130 ON

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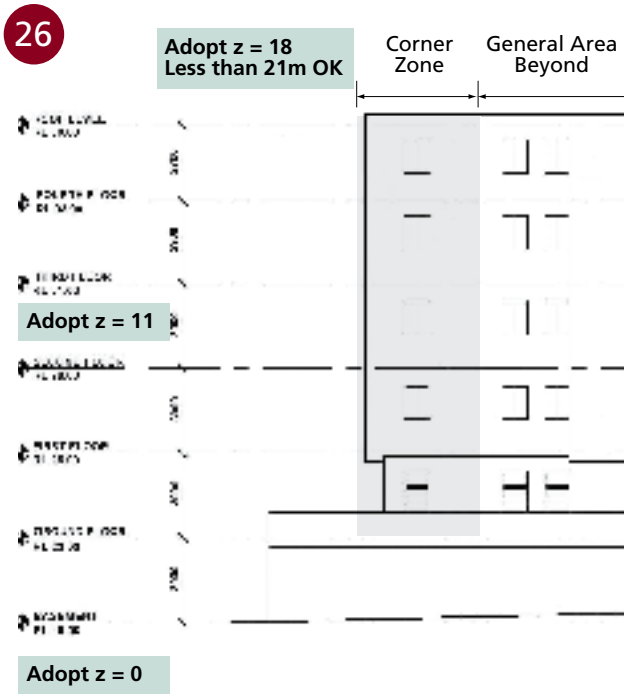

■ EXAMPLE

WALL STUD DESIGN TABLES

Region A

TABLE 10: REGION A: TERRAIN CATEGORY 3 — H/240

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		10		11		12		13		14		15	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		1.14	1.31	1.17	1.35	1.20	1.39	1.24	1.43	1.27	1.47	1.31	1.51
Pser		0.74	0.85	0.76	0.87	0.78	0.90	0.80	0.92	0.82	0.95	0.85	0.98
STUD HEIGHT (m)	2.5	600	600	600	600	600	600	600	600	600	600	600	600
	2.6	600	600	600	600	600	600	600	600	600	600	600	600
	2.7	600	600	600	600	600	600	600	600	600	600	600	600
	2.8	600	600	600	600	600	600	600	600	600	600	600	600
	2.9	600	600	600	600	600	600	600	600	600	600	600	600
	3.0	600	600	600	600	600	600	600	600	600	450	600	450
	3.1	600	600	600	600	600	450	600	450	600	450	600	450
	3.2	600	450	600	450	600	450	600	450	450	450	450	450

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		16		17		18		19		20		21	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		1.34	1.54	1.37	1.58	1.40	1.61	1.43	1.65	1.46	1.68	1.48	1.70
Pser		0.86	1.00	0.88	1.02	0.90	1.04	0.92	1.07	0.94	1.09	0.96	1.10
STUD HEIGHT (m)	2.5	600	600	600	600	600	600	600	600	600	600	600	600
	2.6	600	600	600	600	600	600	600	600	600	600	600	600
	2.7	600	600	600	600	600	600	600	600	600	600	600	600
	2.8	600	600	600	600	600	600	600	600	600	600	600	600
	2.9	600	600	600	450	600	450	600	450	600	450	600	450
	3.0	600	450	600	450	600	450	600	450	450	450	450	450
	3.1	600	450	600	450	450	450	450	450	450	450	450	450
	3.2	450	450	450	450	450	450	450	450	450	400	450	400

NOTES:
1. *Where the Stud spacing is specified as "N/A", contact a Rondo Technical Sales Representative.*
2. *One (1) row of Nogging for wall heights up to and including 3.0m, two (2) rows of Nogging for wall heights over 3.0m high.*

RONDO DESIGN PARAMETERS:
• 92 x 1.15mm BMT G2 Lipped Studs • Standard studs and tracks, with Slotted Deflection Head Tracks • Overall Building Height must be less than 21m.

WIND LOADING PARAMETERS:
V_R = 46 m/s
Cpe = 0.8, -0.65
Cpi=-0.3, 0.2
Kl=1.5 for General Wall areas in accordance with AS/NZS1170.2:2011 Cl 5.4.4
Kl for Corner Zones as appropriate T5.6 (AS/NZS1170.2:2011)
Mz,cat assumed to vary with height

TABLE 11: REGION A: TERRAIN CATEGORY 2.5 — H/240

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		10		11		12		13		14		15	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		1.38	1.59	1.42	1.63	1.45	1.67	1.48	1.71	1.52	1.75	1.55	1.79
Pser		0.89	1.03	0.92	1.06	0.94	1.08	0.96	1.11	0.98	1.13	1.00	1.16
STUD HEIGHT (m)	2.5	600	600	600	600	600	600	600	600	600	600	600	600
	2.6	600	600	600	600	600	600	600	600	600	600	600	600
	2.7	600	600	600	600	600	600	600	600	600	600	600	600
	2.8	600	600	600	600	600	600	600	600	600	450	600	450
	2.9	600	450	600	450	600	450	600	450	600	450	600	450
	3.0	600	450	600	450	450	450	450	450	450	450	450	450
	3.1	450	450	450	450	450	450	450	450	450	450	450	450
	3.2	450	450	450	450	450	400	450	400	450	400	450	400

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		16		17		18		19		20		21	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		1.58	1.82	1.60	1.85	1.63	1.88	1.66	1.91	1.68	1.94	1.70	1.96
Pser		1.02	1.18	1.04	1.20	1.06	1.22	1.07	1.24	1.09	1.26	1.10	1.27
STUD HEIGHT (m)	2.5	600	600	600	600	600	600	600	600	600	600	600	600
	2.6	600	600	600	600	600	600	600	600	600	600	600	600
	2.7	600	600	600	600	600	600	600	450	600	450	600	450
	2.8	600	450	600	450	600	450	600	450	600	450	600	450
	2.9	450	450	450	450	450	450	450	450	450	450	450	450
	3.0	450	450	450	450	450	450	450	400	450	400	450	400
	3.1	450	450	450	400	450	400	450	400	450	400	450	400
	3.2	450	400	450	400	450	300	450	300	400	300	400	300

NOTES:
1. *Where the Stud spacing is specified as "N/A", contact a Rondo Technical Sales Representative.*
2. *One (1) row of Nogging for wall heights up to and including 3.0m, two (2) rows of Nogging for wall heights over 3.0m high.*

RONDO DESIGN PARAMETERS:
• 92 x 1.15mm BMT G2 Lipped Studs • Standard studs and tracks, with Slotted Deflection Head Tracks • Overall Building Height must be less than 21m.

WIND LOADING PARAMETERS:
V_R = 46 m/s
Cpe = 0.8, -0.65
Cpi=-0.3, 0.2
Kl=1.5 for General Wall areas in accordance with AS/NZS1170.2:2011 Cl 5.4.4
Kl for Corner Zones as appropriate T5.6 (AS/NZS1170.2:2011)
Mz,cat assumed to vary with height

WALL STUD DESIGN TABLES

Region A (continued)

TABLE 12: REGION A: TERRAIN CATEGORY 3 — H/360

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		10		11		12		13		14		15	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		1.14	1.31	1.17	1.35	1.20	1.39	1.24	1.43	1.27	1.47	1.31	1.51
Pser		0.74	0.85	0.76	0.87	0.78	0.90	0.80	0.92	0.82	0.95	0.85	0.98
STUD HEIGHT (m)	2.5	600	600	600	600	600	600	600	600	600	600	600	600
	2.6	600	600	600	600	600	600	600	600	600	600	600	600
	2.7	600	600	600	600	600	450	600	450	600	450	600	450
	2.8	600	450	600	450	600	450	600	450	450	450	450	450
	2.9	450	450	450	450	450	450	450	450	450	450	450	400
	3.0	450	450	450	400	450	400	450	400	450	400	450	400
	3.1	450	400	450	400	450	300	400	300	400	300	400	300
	3.2	400	300	400	300	400	300	400	300	300	300	300	300

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		16		17		18		19		20		21	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		1.34	1.54	1.37	1.58	1.40	1.61	1.43	1.65	1.46	1.68	1.48	1.70
Pser		0.86	1.00	0.88	1.02	0.90	1.04	0.92	1.07	0.94	1.09	0.96	1.10
STUD HEIGHT (m)	2.5	600	600	600	600	600	600	600	600	600	600	600	600
	2.6	600	600	600	450	600	450	600	450	600	450	600	450
	2.7	600	450	600	450	450	450	450	450	450	450	450	450
	2.8	450	450	450	450	450	450	450	450	450	400	450	400
	2.9	450	400	450	400	450	400	450	400	450	300	450	300
	3.0	450	300	400	300	400	300	400	300	400	300	400	300
	3.1	400	300	400	300	300	300	300	300	300	300	300	300
	3.2	300	300	300	300	300	300	300	300	300	N/A	300	N/A

NOTES:

1. *Where the Stud spacing is specified as "N/A", contact a Rondo Technical Sales Representative.*
2. *One (1) row of Nogging for wall heights up to and including 3.0m, two (2) rows of Nogging for wall heights over 3.0m high.*

RONDO DESIGN PARAMETERS:

• 92 x 1.15mm BMT G2 Lipped Studs • Standard studs and tracks, with Slotted Deflection Head Tracks • Overall Building Height must be less than 21m.

WIND LOADING PARAMETERS:

V_R = 46 m/s
Cpe = 0.8, -0.65
Cpi=-0.3, 0.2
Kl=1.5 for General Wall areas in accordance with AS/NZS1170.2:2011 Cl 5.4.4
Kl for Corner Zones as appropriate T5.6 (AS/NZS1170.2:2011)
Mz,cat assumed to vary with heightKl=1.25 for General Wall areas in accordance with AS/NZS1170.2:2002 Cl 5.4.4

TABLE 13: REGION A: TERRAIN CATEGORY 2.5 — H/360

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		10		11		12		13		14		15	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		1.38	1.59	1.42	1.63	1.45	1.67	1.48	1.71	1.52	1.75	1.55	1.79
Pser		0.89	1.03	0.92	1.06	0.94	1.08	0.96	1.11	0.98	1.13	1.00	1.16
STUD HEIGHT (m)	2.5	600	600	600	600	600	600	600	600	600	450	600	450
	2.6	600	450	600	450	600	450	600	450	600	450	450	450
	2.7	600	450	450	450	450	450	450	450	450	450	450	450
	2.8	450	450	450	450	450	400	450	400	450	400	450	400
	2.9	450	400	450	400	450	400	450	300	400	300	400	300
	3.0	400	300	400	300	400	300	400	300	300	300	300	300
	3.1	300	300	300	300	300	300	300	300	300	300	300	300
	3.2	300	300	300	300	300	N/A	300	N/A	300	N/A	300	N/A

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		16		17		18		19		20		21	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		1.58	1.82	1.60	1.85	1.63	1.88	1.66	1.91	1.68	1.94	1.70	1.96
Pser		1.02	1.18	1.04	1.20	1.06	1.22	1.07	1.24	1.09	1.26	1.10	1.27
STUD HEIGHT (m)	2.5	600	450	600	450	600	450	600	450	600	450	600	450
	2.6	450	450	450	450	450	450	450	450	450	450	450	450
	2.7	450	450	450	400	450	400	450	400	450	400	450	400
	2.8	450	400	450	400	450	300	400	300	400	300	400	300
	2.9	400	300	400	300	400	300	400	300	300	300	300	300
	3.0	300	300	300	300	300	300	300	300	300	300	300	300
	3.1	300	300	300	N/A	300	N/A	300	N/A	300	N/A	300	N/A
	3.2	300	N/A	300	N/A	300	N/A	300	N/A	N/A	N/A	N/A	N/A

NOTES:
1. *Where the Stud spacing is specified as "N/A", contact a Rondo Technical Sales Representative.*
2. *One (1) row of Nogging for wall heights up to and including 3.0m, two (2) rows of Nogging for wall heights over 3.0m high.*

RONDO DESIGN PARAMETERS:
• 92 x 1.15mm BMT G2 Lipped Studs • Standard studs and tracks, with Slotted Deflection Head Tracks • Overall Building Height must be less than 21m.

WIND LOADING PARAMETERS:
VR = 46 m/s
Cpe = 0.8, -0.65
Cpi=-0.3, 0.2
Kl=1.5 for General Wall areas in accordance with AS/NZS1170.2:2011 Cl 5.4.4
Kl for Corner Zones as appropriate T5.6 (AS/NZS1170.2:2011)
Mz,cat assumed to vary with height

WALL STUD DESIGN TABLES

Region B

TABLE 14: REGION B: TERRAIN CATEGORY 3 — H/240

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		10		11		12		13		14		15	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		1.93	2.23	1.99	2.30	2.05	2.36	2.11	2.43	2.16	2.50	2.22	2.57
Pser		0.78	0.90	0.80	0.92	0.82	0.95	0.84	0.97	0.87	1.00	0.89	1.03
STUD HEIGHT (m)	2.5	600	600	600	450	600	450	600	450	600	450	600	450
	2.6	600	450	600	450	600	450	450	450	450	450	450	450
	2.7	450	450	450	450	450	450	450	450	450	450	450	400
	2.8	450	450	450	450	450	400	450	400	450	400	450	400
	2.9	450	400	450	400	450	300	400	300	400	300	400	300
	3.0	400	300	400	300	400	300	400	300	300	300	300	300
	3.1	450	400	450	400	450	300	400	300	400	300	400	300
	3.2	450	300	400	300	400	300	400	300	400	300	300	300

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		16		17		18		19		20		21	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		2.27	2.62	2.33	2.68	2.38	2.74	2.43	2.80	2.48	2.86	2.51	2.90
Pser		0.91	1.05	0.93	1.08	0.95	1.10	0.97	1.12	1.00	1.15	1.01	1.16
STUD HEIGHT (m)	2.5	600	450	450	450	450	450	450	450	450	450	450	450
	2.6	450	450	450	450	450	450	450	400	450	400	450	400
	2.7	450	400	450	400	450	400	450	400	450	300	450	300
	2.8	450	300	400	300	400	300	400	300	400	300	400	300
	2.9	400	300	400	300	300	300	300	300	300	300	300	300
	3.0	300	300	300	300	300	300	300	300	300	N/A	300	N/A
	3.1	400	300	400	300	300	300	300	300	300	300	300	300
	3.2	300	300	300	300	300	300	300	300	300	300	300	300

NOTES:
1. *Where the Stud spacing is specified as "N/A", contact a Rondo Technical Sales Representative.*
2. *One (1) row of Nogging for wall heights up to and including 3.0m, two (2) rows of Nogging for wall heights over 3.0m high.*

RONDO DESIGN PARAMETERS:
• 92 x 1.15mm BMT G2 Lipped Studs • Standard studs and tracks, with Slotted Deflection Head Tracks • Overall Building Height must be less than 21m.

WIND LOADING PARAMETERS:
VR = 60 m/s
Cpe = 0.8, -0.65
Cpi=-0.3, 0.2
Kl=1.5 for General Wall areas in accordance with AS/NZS1170.2:2011 Cl 5.4.4
Kl for Corner Zones as appropriate T5.6 (AS/NZS1170.2:2011)
Mz,cat assumed to vary with height

TABLE 15: REGION B: TERRAIN CATEGORY 2.5 — H/240

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		10		11		12		13		14		15	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		2.35	2.71	2.41	2.78	2.47	2.84	2.52	2.91	2.58	2.98	2.64	3.05
Pser		0.94	1.09	0.97	1.11	0.99	1.14	1.01	1.17	1.04	1.20	1.06	1.22
STUD HEIGHT (m)	2.5	450	450	450	450	450	450	450	450	450	450	450	450
	2.6	450	450	450	400	450	400	450	400	450	400	450	400
	2.7	450	400	450	400	450	400	450	300	400	300	400	300
	2.8	400	300	400	300	400	300	400	300	400	300	300	300
	2.9	300	300	300	300	300	300	300	300	300	300	300	300
	3.0	300	300	300	300	300	300	300	N/A	300	N/A	300	N/A
	3.1	300	300	300	300	300	300	300	300	300	300	300	300
	3.2	300	300	300	300	300	300	300	300	300	N/A	300	N/A

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		16		17		18		19		20		21	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		2.69	3.10	2.73	3.15	2.77	3.20	2.82	3.25	2.86	3.31	2.89	3.34
Pser		1.08	1.24	1.10	1.26	1.11	1.28	1.13	1.30	1.15	1.33	1.16	1.34
STUD HEIGHT (m)	2.5	450	400	450	400	450	400	450	400	450	400	450	400
	2.6	450	400	450	300	450	300	400	300	400	300	400	300
	2.7	400	300	400	300	400	300	400	300	300	300	300	300
	2.8	300	300	300	300	300	300	300	300	300	300	300	300
	2.9	300	300	300	N/A	300	N/A	300	N/A	300	N/A	300	N/A
	3.0	300	N/A	300	N/A	300	N/A	300	N/A	N/A	N/A	N/A	N/A
	3.1	300	300	300	N/A	300	N/A	300	N/A	300	N/A	300	N/A
	3.2	300	N/A	300	N/A	300	N/A	300	N/A	300	N/A	300	N/A

NOTES:
1. *Where the Stud spacing is specified as "N/A", contact a Rondo Technical Sales Representative.*
2. *One (1) row of Nogging for wall heights up to and including 3.0m, two (2) rows of Nogging for wall heights over 3.0m high.*

RONDO DESIGN PARAMETERS:
• 92 x 1.15mm BMT G2 Lipped Studs • Standard studs and tracks, with Slotted Deflection Head Tracks • Overall Building Height must be less than 21m.

WIND LOADING PARAMETERS:
VR = 60 m/s
Cpe = 0.8, -0.65
Cpi=-0.3, 0.2
Kl=1.5 for General Wall areas in accordance with AS/NZS1170.2:2011 Cl 5.4.4
Kl for Corner Zones as appropriate T5.6 (AS/NZS1170.2:2011)
Mz,cat assumed to vary with height

WALL STUD DESIGN TABLES

Region B (continued)

TABLE 16: REGION B: TERRAIN CATEGORY 3 — H/360

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		10		11		12		13		14		15	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		1.93	2.23	1.99	2.30	2.05	2.36	2.11	2.43	2.16	2.50	2.22	2.57
Pser		0.78	0.90	0.80	0.92	0.82	0.95	0.84	0.97	0.87	1.00	0.89	1.03
STUD HEIGHT (m)	2.5	600	600	600	450	600	450	600	450	600	450	600	450
	2.6	600	450	600	450	600	450	450	450	450	450	450	450
	2.7	450	450	450	450	450	450	450	450	450	450	450	400
	2.8	450	450	450	450	450	400	450	400	450	400	450	400
	2.9	450	400	450	400	450	300	400	300	400	300	400	300
	3.0	400	300	400	300	400	300	400	300	300	300	300	300
	3.1	450	300	400	300	400	300	400	300	400	300	300	300
	3.2	400	300	400	300	300	300	300	300	300	300	300	300

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		16		17		18		19		20		21	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		2.27	2.62	2.33	2.68	2.38	2.74	2.43	2.80	2.48	2.86	2.51	2.90
Pser		0.91	1.05	0.93	1.08	0.95	1.10	0.97	1.12	1.00	1.15	1.01	1.16
STUD HEIGHT (m)	2.5	600	450	450	450	450	450	450	450	450	450	450	450
	2.6	450	450	450	450	450	450	450	400	450	400	450	400
	2.7	450	400	450	400	450	400	450	400	450	300	450	300
	2.8	450	300	400	300	400	300	400	300	400	300	400	300
	2.9	400	300	400	300	300	300	300	300	300	300	300	300
	3.0	300	300	300	300	300	300	300	300	300	N/A	300	N/A
	3.1	300	300	300	300	300	300	300	300	300	300	300	300
	3.2	300	300	300	N/A	300	N/A	300	N/A	300	N/A	300	N/A

NOTES:

1. *Where the Stud spacing is specified as "N/A", contact a Rondo Technical Sales Representative.*
2. *One (1) row of Nogging for wall heights up to and including 3.0m, two (2) rows of Nogging for wall heights over 3.0m high.*

RONDO DESIGN PARAMETERS:

• 92 x 1.15mm BMT G2 Lipped Studs • Standard studs and tracks, with Slotted Deflection Head Tracks • Overall Building Height must be less than 21m.

WIND LOADING PARAMETERS:

VR = 60 m/s
Cpe = 0.8, -0.65
Cpi=-0.3, 0.2
Kl=1.5 for General Wall areas in accordance with AS/NZS1170.2:2011 Cl 5.4.4
Kl for Corner Zones as appropriate T5.6 (AS/NZS1170.2:2011)
Mz,cat assumed to vary with height

TABLE 17: REGION B: TERRAIN CATEGORY 2.5 — H/360

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		10		11		12		13		14		15	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		2.35	2.71	2.41	2.78	2.47	2.84	2.52	2.91	2.58	2.98	2.64	3.05
Pser		0.94	1.09	0.97	1.11	0.99	1.14	1.01	1.17	1.04	1.20	1.06	1.22
STUD HEIGHT (m)	2.5	450	450	450	450	450	450	450	450	450	450	450	450
	2.6	450	450	450	400	450	400	450	400	450	400	450	400
	2.7	450	400	450	400	450	400	450	300	400	300	400	300
	2.8	400	300	400	300	400	300	400	300	400	300	300	300
	2.9	300	300	300	300	300	300	300	300	300	300	300	300
	3.0	300	300	300	300	300	300	300	N/A	300	N/A	300	N/A
	3.1	300	300	300	300	300	300	300	300	300	N/A	300	N/A
	3.2	300	N/A	300	N/A	300	N/A	300	N/A	300	N/A	300	N/A

		HEIGHT TO CENTRE OF WALL ABOVE "GROUND LEVEL" (m)											
		16		17		18		19		20		21	
ZONE		Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A	Gen	Cnr A
Pult		2.69	3.10	2.73	3.15	2.77	3.20	2.82	3.25	2.86	3.31	2.89	3.34
Pser		1.08	1.24	1.10	1.26	1.11	1.28	1.13	1.30	1.15	1.33	1.16	1.34
STUD HEIGHT (m)	2.5	450	400	450	400	450	400	450	400	450	400	450	400
	2.6	450	400	450	300	450	300	400	300	400	300	400	300
	2.7	400	300	400	300	400	300	400	300	300	300	300	300
	2.8	300	300	300	300	300	300	300	300	300	300	300	300
	2.9	300	300	300	N/A	300	N/A	300	N/A	300	N/A	300	N/A
	3.0	300	N/A	300	N/A	300	N/A	300	N/A	N/A	N/A	N/A	N/A
	3.1	300	N/A	300	N/A	300	N/A	300	N/A	300	N/A	300	N/A
	3.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTES:
1. *Where the Stud spacing is specified as "N/A", contact a Rondo Technical Sales Representative.*
2. *One (1) row of Nogging for wall heights up to and including 3.0m, two (2) rows of Nogging for wall heights over 3.0m high.*

RONDO DESIGN PARAMETERS:
• 92 x 1.15mm BMT G2 Lipped Studs • Standard studs and tracks, with Slotted Deflection Head Tracks • Overall Building Height must be less than 21m.

WIND LOADING PARAMETERS:
VR = 60 m/s
Cpe = 0.8, -0.65
Cpi=-0.3, 0.2
Kl=1.5 for General Wall areas in accordance with AS/NZS1170.2:2011 Cl 5.4.4
Kl for Corner Zones as appropriate T5.6 (AS/NZS1170.2:2011)
Mz,cat assumed to vary with height

MAXIJAMB DESIGN CHARTS

How to use the charts

The MAXIjamb design charts have been presented in a graphical format, with coloured pressure lines providing the envelope within which the MAXIjamb is suitable. The opening framing requirements for each pressure may be determined by running a vertical line up the graph at the required wall height, then where it bisects the relevant coloured pressure line run a horizontal line left to determine the maximum opening.

The required coloured pressure line may be determined from the Wall Stud Design Tables.

Where an acceptable solution cannot be found within the table you will need to refer this back to your engineer, or alternatively to your Rondo Technical Representative.

COMPARISON:

As a comparison between the MAXIjamb and using multiple studs, in the example shown the MAXIjamb stud may be used to frame a maximum window opening of say, 1950mm *(see Figure 27).*

Checking this against Table 9 on page 128 would require a minimum of three (3) 92 x 1.15bmt Lipped Studs to frame the opening.

Note that the stud spacing from the Wall Design Table indicates studs at 600mm centres are suitable. The MAXIjamb provides a considerable advantage over conventional framing.

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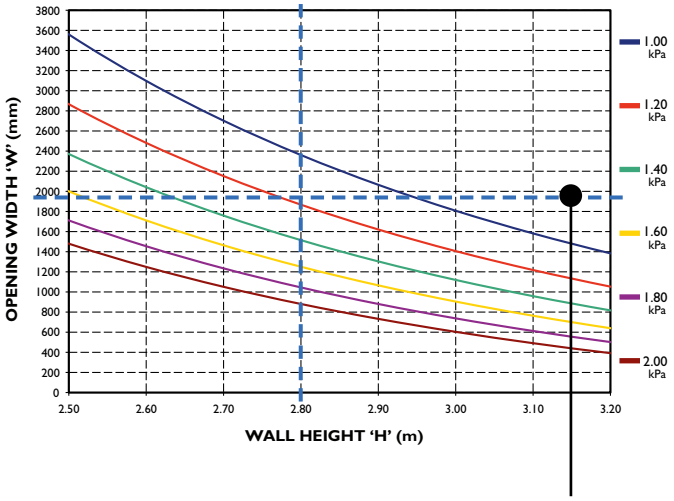
		11	
ZONE		**Gen**	**Cnr A**
Pult		**1.17**	**1.35**
Pser		**0.76**	**0.87**
STUD HEIGHT (m)	**2.5**	600	600
	2.6	600	600
	2.7	600	600
	2.8	600	450
	2.9	450	450

1. Check the required pressure from the Wall Stud Design Tables to identify the appropriate coloured pressure line to use in the graph. *(1.17kPa Pressure in this example)*

2. Run a vertical line through at the required wall height.



3. Run a horizontal line across where the vertical line bisects the required coloured pressure line.
Hint: Interpolate between pressure lines as required.

4. Read off the maximum window opening at vertical axis intersection.
Say, 1950mm Maximum Opening.

■ USING THE DEEIGN GRAPHS

Jamb Stud Design: Region A

CHART J1: DESIGN REGION A — H/240

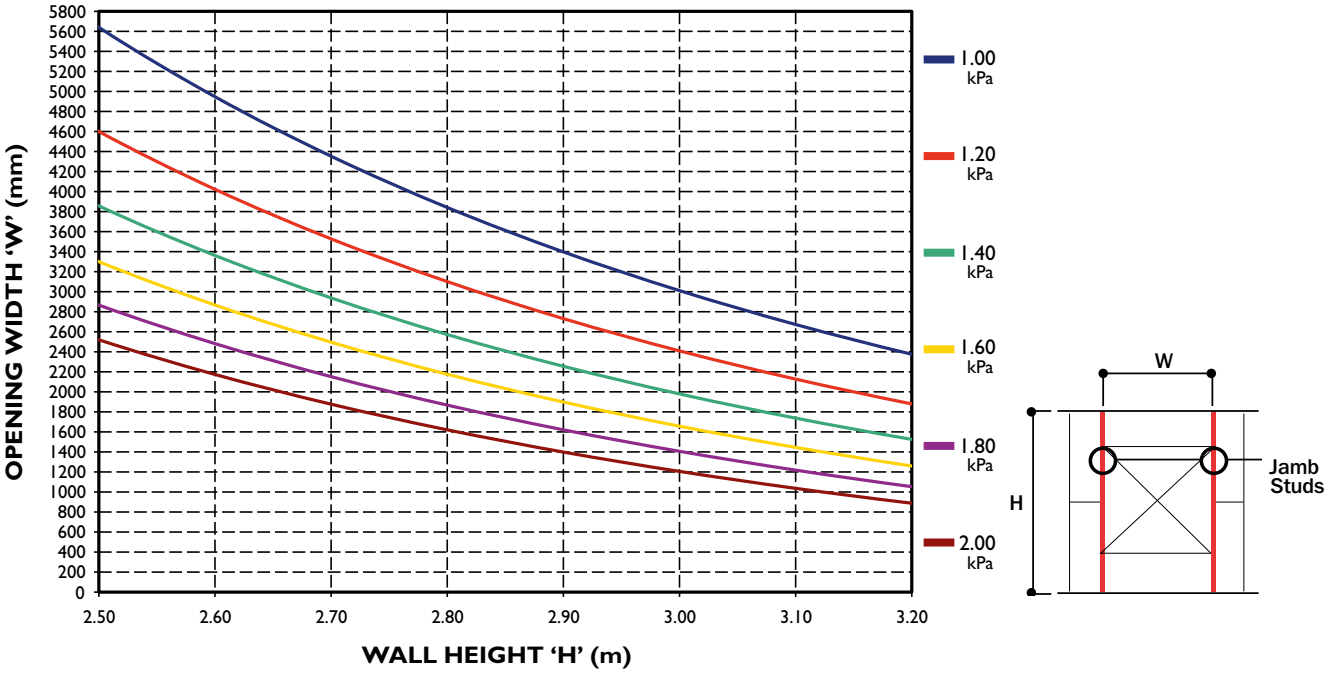
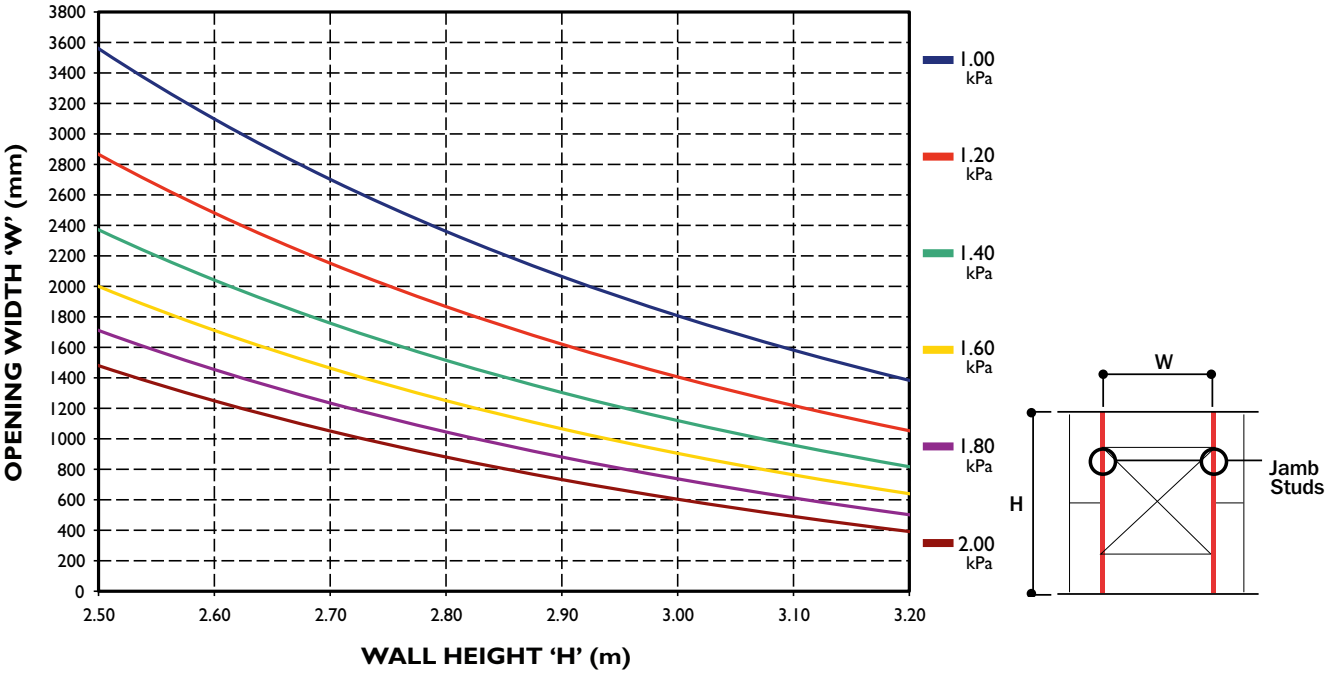


CHART J2: DESIGN REGION A — H/360



MAXIJAMB DESIGN CHARTS (continued)

Jamb Stud Design: Region B

CHART J3: DESIGN REGION B — H/240

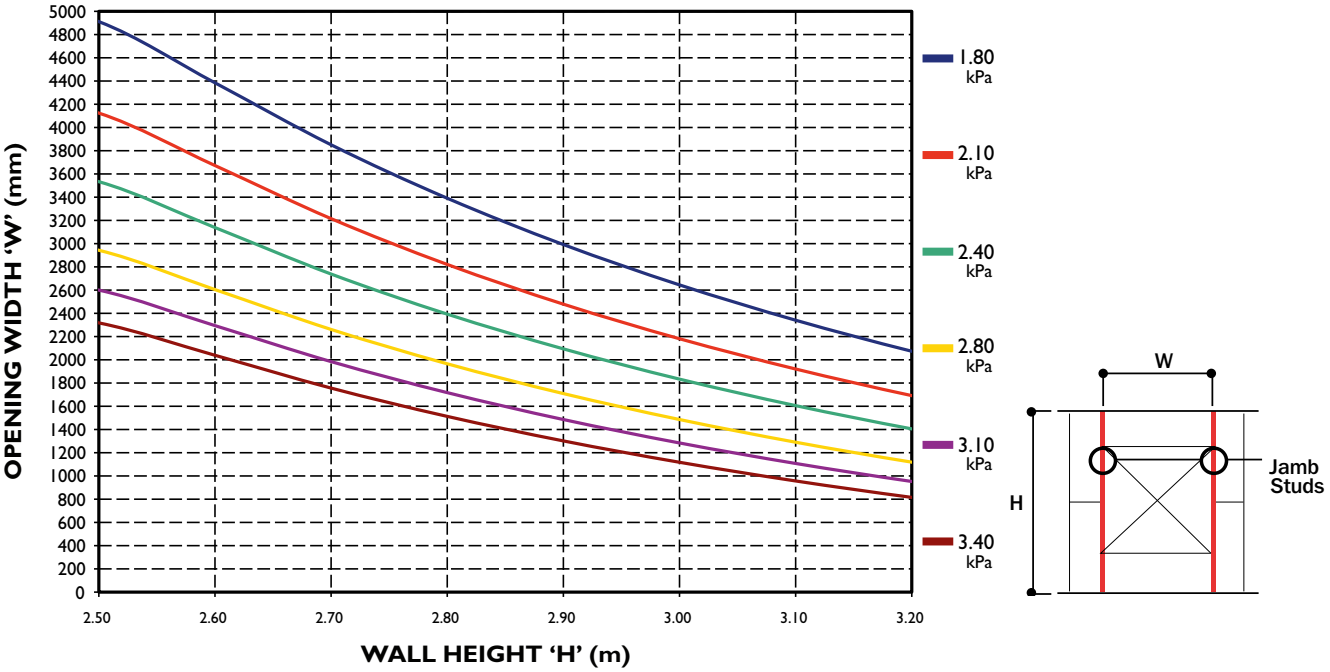
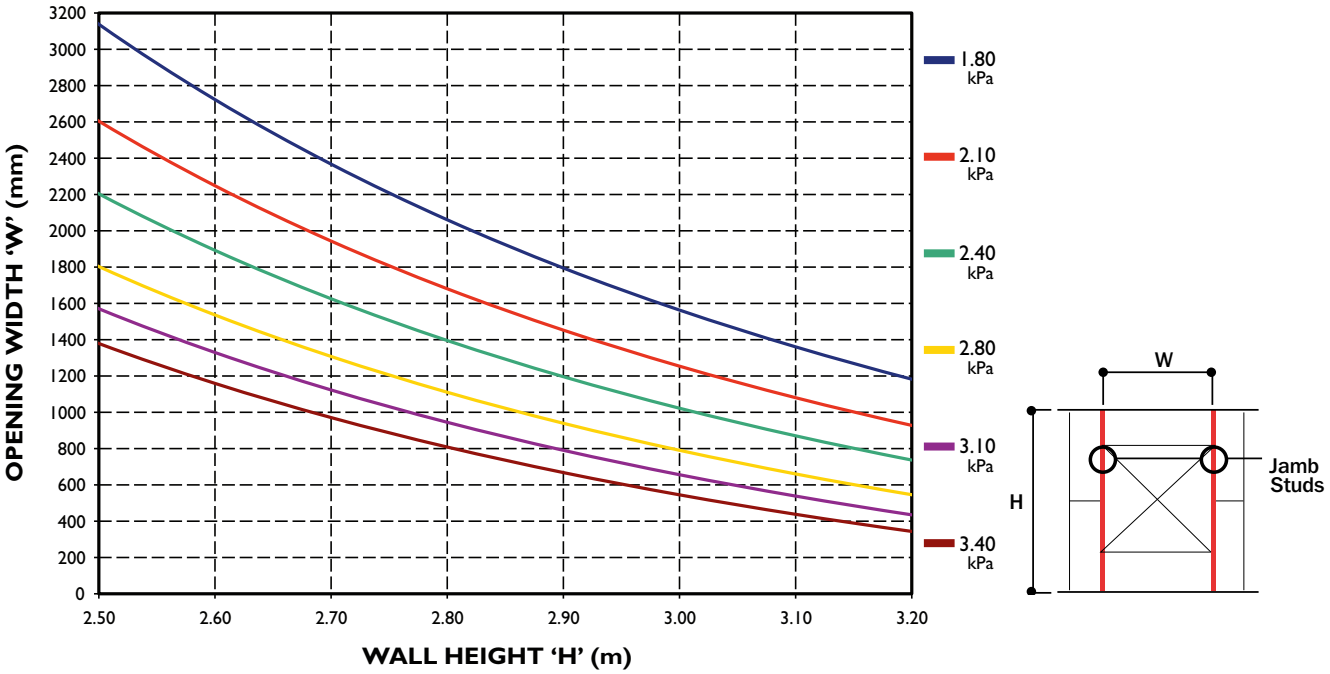


CHART J4: DESIGN REGION B — H/360



MAXIJAMB SILL & HEADER FRAMING

The sill and header members are used to frame the window opening, such that they support and carry the wind loading applied across the window opening. The load carried by the sill and header member is significantly greater than that carried by the wall studs, as indicated by Figure 28.

The sill and header framing can be made up of a single wall track section or combination track and MAXIjamb horizontally. The combination framing is shown in Figure 29.

The tables and charts presented for the sill and header consider the above two framing options. Table 18 may be used for the single track section, and Charts SH1 to SH4 may be used to determine the maximum span for the MAXIjamb/track combination shown.

WALL LOAD WIDTH (WLW)

Wall Track: WLW = 1200mm

MAXIjamb: WLW = $\frac{\text{Wall Height (H)}}{2}$

INTERPOLATION

Where the Wall Load Width (WLW) of the sill or header is other than specified, the maximum span of the track section may be estimated using a squared function interpolation as follows:

New Span (mm) =

$$\left\{\frac{(\text{Tabulated span})^2 \times \text{WLW}}{\text{New WLW}}\right\}^{0.5}$$

EXAMPLE:

Checking a wall track sill in Region A, for L/240 deflection limit, at 1.60kPa with a WLW = 1500mm

New Span =

$\{[1950]^2 \times 1200/1500\}^{0.5} = 1740\text{mm}$

Refer to Table 18 for span.

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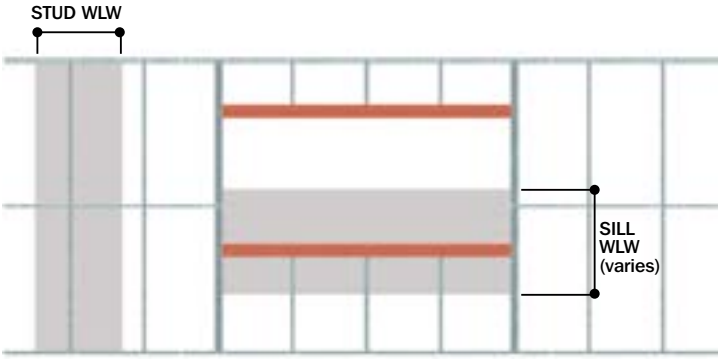

■ SILL & HEADER FRAMING DETAILS

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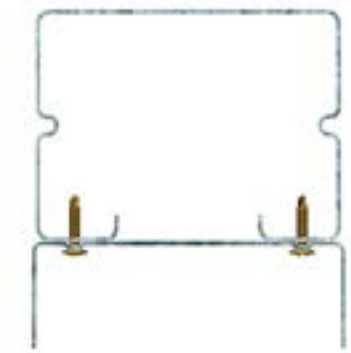


■ MAXIJAMB & TRACK COMBINATION SECTIONS

TABLE 18: MAXIMUM SPAN OF WALL TRACK (mm)

		ULTIMATE DESIGN PRESSURE (kPa)					
LOCATION	**DEFLECTION LIMIT**	**1.00**	**1.20**	**1.40**	**1.60**	**1.80**	**2.00**
REGION A	L/240	2500	2250	2100	1950	1850	1750
	L/360	2300	2150	2050	1950	1850	1750
		1.80	2.10	2.40	2.70	3.00	3.40
REGION B	L/240 & L/360	1850	1700	1600	1450	1300	1150

NOTES:

1. The above table is based on a wall load width (WLW) of 1200mm.

2. The above table assumes a screwed stud and track fixing either end, similar to a wall stud base track connection.

MAXIJAMB SILL & HEADER DESIGN

Region A

CHART SH1: H/240 (MAXIJAMB + 92 x 32 x 1.15BMT TRACK)

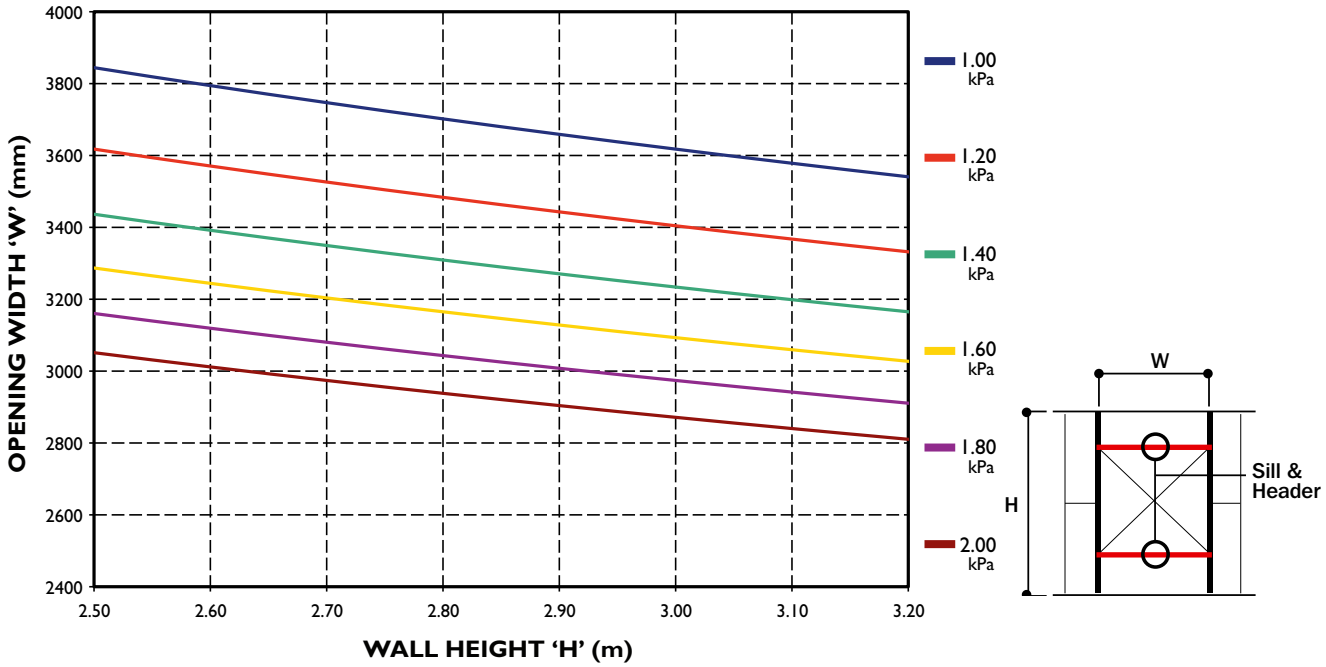
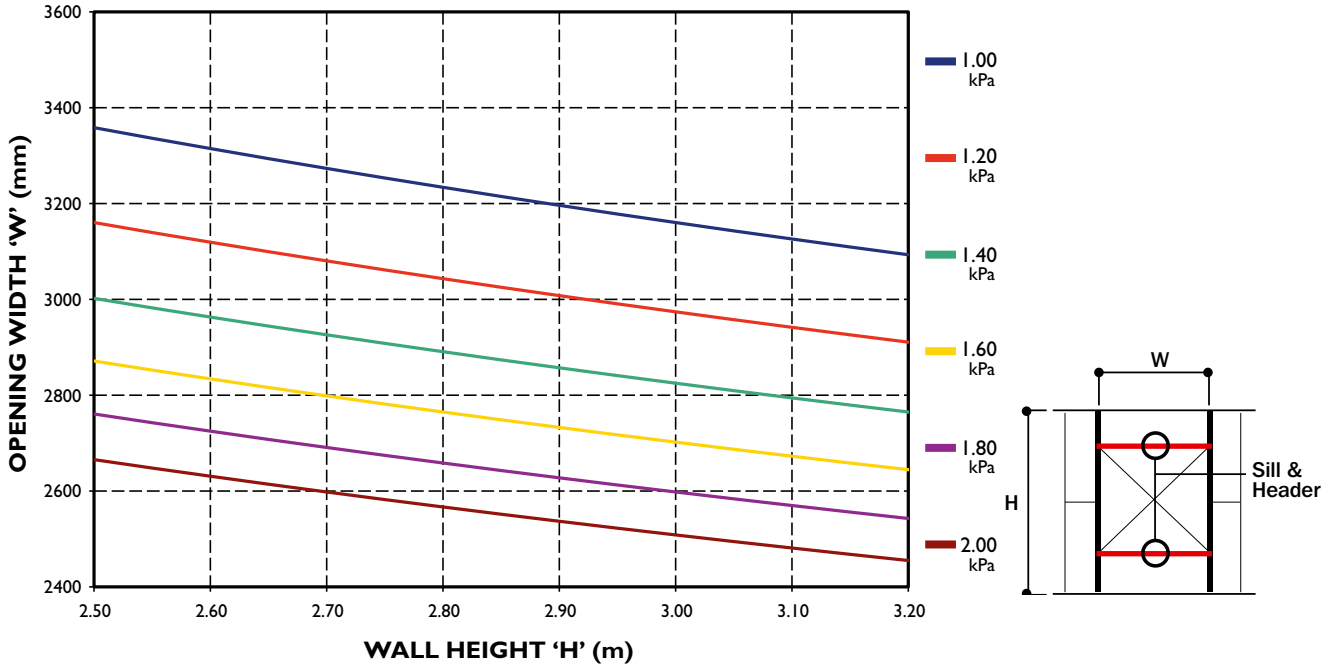


CHART SH2: H/360 (MAXIJAMB + 92 x 32 x 1.15BMT TRACK)



Region B

CHART SH3: H/240 (MAXIJAMB + 92 x 32 x 1.15BMT TRACK)

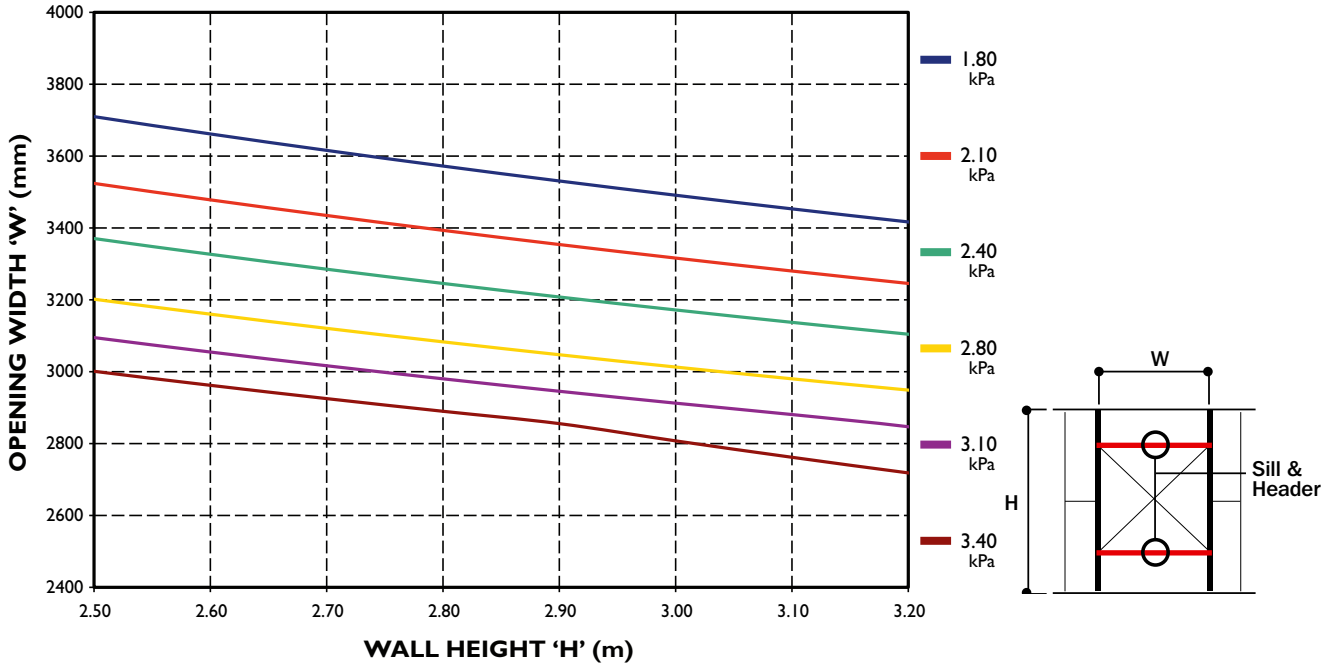
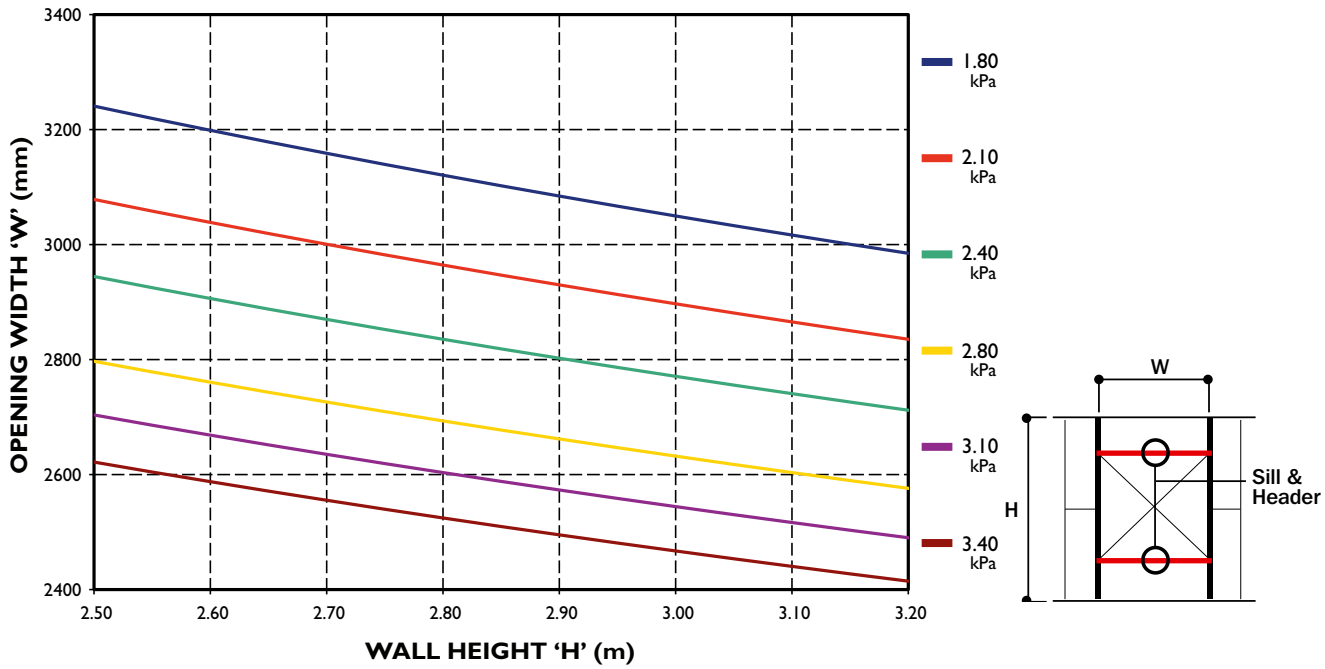


CHART SH4: H/360 (MAXIJAMB + 92 x 32 x 1.15BMT TRACK)



TOP HATS

The use of top hat sections over steel stud framing frequently occurs, in particular for Metal Deck, CFC and Composite panel cladding systems. When the top hat is installed horizontally, across the face of the studs, Table 19 can be used to check the adequacy of the proposed top hat.

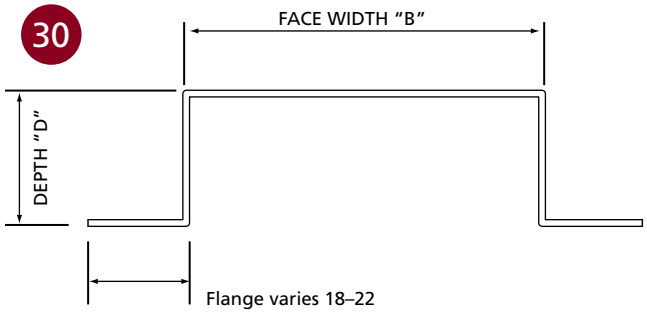
AUTOCLAVED AERATED CONCRETE PANELS

The stud framing design tables and charts presented in this manual have been prepared on the basis of a vented façade, with both internal and external pressures considered. Accordingly, the design data may be used for the design of stud framing clad with AAC Panels.

For AAC Panels construction Rondo recommends that the AAC Panels bear on either the floor slab or a shelf angle. The stud framing has not been checked to support the weight of the AAC panels.

METAL DECK CLADDING

The stud framing design tables and charts presented in this manual can be used to check framing supporting metal deck cladding. Rondo recommends using the H/240 span tables for these applications, as the cladding is flexible enough to tolerate the reduced deflection limits.



Part No.	H515
H	Indicates thickness = 1.15bmt gauge
5	Indicates face width B = 50mm face width
15	Indicates section depth D = 15mm depth

■ TOP HAT SECTION

TABLE 19: TOP HAT ULTIMATE CAPACITY (kPa)

TOP HAT SECTION	600mm SPACING SINGLE SPAN	600mm SPACING CONTINUOUS
H515	2.15	3.40*
H525	7.60	3.40*
H535	8.50*	3.40*
H550	8.50*	3.40*
H715	2.50	3.40*
H725	8.50*	3.40*
H735	8.50*	3.40*
H750	8.50*	3.40*

NOTES:
1. Maximum span of top hats not to exceed 600mm typical.
2. Deflection: L / 360 or better.
3. Fixing 1/#10 tek screw per leg per stud typical. Pullout capacity ϕNou = 1.54kN, based on 1.15bmt G2 grade steel.
4. "" indicates connection capacity controls.*

BRICK VENEER

Brick veneer is probably the most common form of construction, and the H/360 tables in this manual can be used to check the stud framing. Whilst many people use higher deflection than H/360, over many years, this has been found to be sufficient for this form of construction.

Quite often the external wall will be "wrapped" to improve the thermal efficiency of the wall, and this will necessitate a face fixing of the brick tie. Face fixing of the brick ties results in the screw fixing being pulled out of the stud framing under negative pressures on the wall. Table 20 provides the maximum design pressures for the given brick tie setout.

When stainless steel brick ties are used, they are to be electrolytically isolated from the galvanized steel framing members. The screw fasteners shall be selected in accordance with the manufacturer's recommendations; however Rondo does not recommend the use of stainless steel fasteners in direct contact with the frame.

Brick ties should be installed to minimise the eccentricity, by ensuring the brick tie is screw fixed as close as possible to the web of the stud.

TABLE 20: DESIGN PRESSURES

	DESIGN PRESSURE (kPa)	
	STUD SPACING (mm)	
VERTICAL TIE SPACING (mm)	**450**	**600**
450	3.82	2.86
600	2.86	2.15

NOTES:
1. Screw fastener: 1/#8 tek screw.
2. Design pressure is based on a single #8 tek screw fastener. Capacity may be increased for multiple fasteners.

DERIVATION OF THE DESIGN PRESSURES

The design pressures used in these tables have been determined in accordance with AS/NZS1170.2:2002 as follows:

BUILDING IMPORTANCE LEVEL

The designer is responsible for checking the building importance level in accordance with the Building Code of Australia (BCA) Section B. The building importance level dictates the annual probability of exceedance and subsequently the appropriate Regional Wind Speed (V_R).

For the design tables, a Regional Wind Speed of V_{1000} has been used, which equates to a Building Importance Level 3. This will be conservative for a building of Importance Level 2, with about a 4.5% and 8% difference in the Ultimate design pressure for Regions A and B respectively.

For buildings of Importance Level 4 a specific design will be required, and this should be discussed with your Rondo Technical Representative.

DESIGN WIND SPEED

The Design Site Wind Speed is determined as follows:

$V_{sit,\beta} = V_R M_d (M_{z,cat} M_s M_t)$ **... 2.2**

Where:

M_d = 1 Directionality has not been considered
For Region A, the value of M_d can vary between 0.8 to 1.0 depending on the orientation of the building. In Region B, the value of M_d is 1.0. Accordingly, the use of M_d = 1 will be correct in Region B, or potentially conservative in Region A.

M_s = 1 Shielding has not been considered

M_t = 1 Topography has not been considered
The designer should be aware that an assumption of M_t = 1 is not necessarily a conservative solution. Accordingly, the designer should check the topographical multiplier M_t in accordance with AS/NZS1170.2 before using the design tables.

$M_{z,cat}$ Varies with Terrain category and building height

The design site wind speed is therefore taken as:

$V_{des,\theta} = V_R M_{z,cat}$

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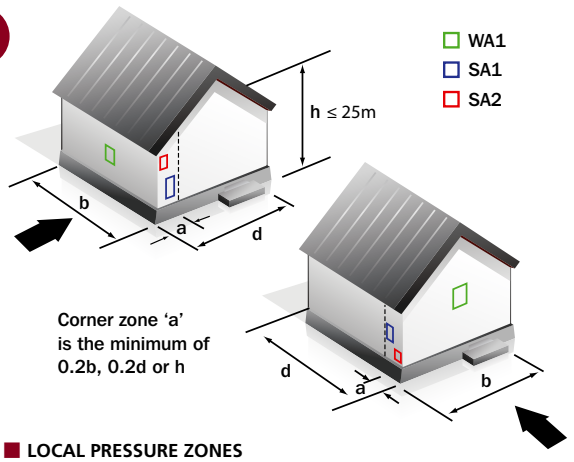


■ LOCAL PRESSURE ZONES

DESIGN WIND PRESSURE

The Design Wind Pressure (p) is determined as follows:

$p = (0.5 \rho_{air}) [V_{des.\theta}]^2 C_{fig} C_{dyn}$ **....2.4(1)**

Where:

ρ_{air} = 1.2kg/m³

C_{dyn} = 1

C_{fig} = Varies depending on location on building

Thus equation 2.4(1) can be simplified to:

$p = 0.6 [V_{des.\theta}]^2 C_{fig}$

The tables have been presented in terms of General Areas (Gen) and Corner A (Cnr A) which relate to the following locations on the building:

Gen = Windward wall location beyond the corner zones
WA1 wall areas per Figure 21

Cnr A = Zone within 0.5a of the building corner, for buildings less than 25m high
SA2 wall areas per Figure 21

C_{fig} – General Areas

For the General Areas, C_{fig} has been determined as follows:

$C_{fig} = [C_{pe} K_{/} - C_{pi}]$

Where:

C_{pe} = +0.8 AS/NZS1170.2 Table 5.2(A) Wind speed varies with height

$K_{/}$ = 1.5 AS/NZS1170.2 Table 5.6 for WA1

C_{pi} = -0.3 AS/NZS1170.2 Table 5.1(A) Windward wall permeable, or all walls equally permeable.

Façade permeability has been considered for the building internal pressures. The tables may not be valid for buildings containing dominant openings, which should be independently considered by the designer.

For the windward wall case, C_{fig} = **1.5**

C_{fig} – Corner Zone A

For the Corner Zone A, C_{fig} has been determined as follows:

$C_{fig} = [C_{pe} K_{/} - C_{pi}]$

Where:

C_{pe} = -0.65 AS/NZS1170.2 Table 5.2(C)

K = 2.00 AS/NZS1170.2 Table 5.6 for SA2, corresponding to Cnr A table

C_{pi} = +0.2 AS/NZS1170.2 Table 5.1(A) Windward wall permeable, or all walls equally permeable.

Façade permeability has been considered for the building internal pressures. The tables may not be valid for buildings containing dominant openings, which should be independently considered by the designer.

For the Cnr A wall case, C_{fig} = **1.50**

DERIVATION OF THE DESIGN CAPACITIES

SECTION MOMENT CAPACITY

$\phi_b M_{sx} = \phi_b Z_{ex} f_y$ **...3.3.2.2**

Where:

ϕ_b = 0.95

Z_{ex} = the effective section modulus with the extreme compression or tension fibre at f_y

f_y = yield stress of the steel

MEMBER MOMENT CAPACITY

$\phi_b M_{bx} = \phi_b Z_c f_c$ **...3.3.3.2(1) or 3.3.3.3(1) respectively**

Where:

ϕ_b = 0.90

Z_c = the effective section modulus with the extreme compression fibre at f_c

$f_c = M_c / Z_f$

M_c = the critical moment

Z_f = the full unreduced section modulus for the extreme compression fibre.

Member Moment Capacity – Flexural Torsional Buckling

$\phi_b M_b = \phi_b Z_c f_c$ **3.3.3.2(1)**

The critical moment M_c is calculated as follows:

For $\lambda_b \le 0.60$: $M_c = M_y$

For $0.60 < \lambda_b < 1.336$ $M_c = 1.11 M_y [1 - (10 \lambda_b^2 / 36)$

For $\lambda_b \le 1.336$ $M_c = M_y (1 / \lambda_b^2)$

λ_b = Non-dimensional slenderness ratio used to determine M_c

$= \sqrt{My/Mo}$

M_o = elastic buckling moment Calculated by the flexural torsional buckling analysis software

Member Moment Capacity – Distortional Buckling

$\phi_b M_b = \phi_b Z_c f_c$ **...3.3.3.3(1)**

The critical moment M_c is calculated as follows:

For $\lambda_d \le 0.674$: $M_c = M_y$

For $\lambda_d > 0.674$: $M_c = M_y / \lambda_d [1 - (0.22 / \lambda_d)]$

λ_d = Non-dimensional slenderness ratio used to determine M_c

$= \sqrt{M_y / M_{od}}$

M_{od} = distortional buckling moment $= Z_f f_{od}$

f_{od} = elastic distortional buckling stress Calculated in accordance with AS/NZS4600 Appendix D or Thinwall

SHEAR CAPACITY

$\phi_v V_v = \phi_v \, 0.64 \, t_w^2 \sqrt{E \, k_v f_y}$ **...3.3.4(2)**

for the wall stud sections

$= \phi_v \dfrac{0.905E \, k_v \, t_w^3}{d_1}$ **...3.3.4(3)**

for the MAXIjamb sections

Where:

ϕ_v = 0.90

k_v = 5.34

d_1/t_w = 73.93 for the 92 x1.15 BMT sections

= 69.75 for the MAXIjamb section

The web ribbing has been ignored in the shear capacity determination, and d_1 has been taken as the width of the stud less material thickness and internal bend radii.

COMBINED MOMENT & SHEAR CAPACITY

$$\left(\frac{M^*}{\phi M_s}\right)^2 + \left(\frac{V^*}{\phi V_v}\right)^2 \le 1.0$$

Bending and shear is checked at all points along the stud.

RONDO QUIET STUD® ACOUSTIC STUD SYSTEM

SUMMARY

Rondo QUIET STUD® is a major breakthrough in acoustic control. Its unique design, combined with appropriate lining board systems, forms an effective buffer against unwanted noise and a cost-effective solution to Australia's acoustic control provisions.

Fast and simple to install, it leaves more usable floor space in a similar footprint and is almost exactly the same as standard drywall construction, resulting in lower installation costs and virtual fail-safe acoustic wall system.

SUITABLE FOR:

- Acoustic control provisions
- Acoustic wall system
- Non-Fire Rated Systems
- Fire Rated Systems
- Inter-tenancy walls

SPECIAL FEATURES

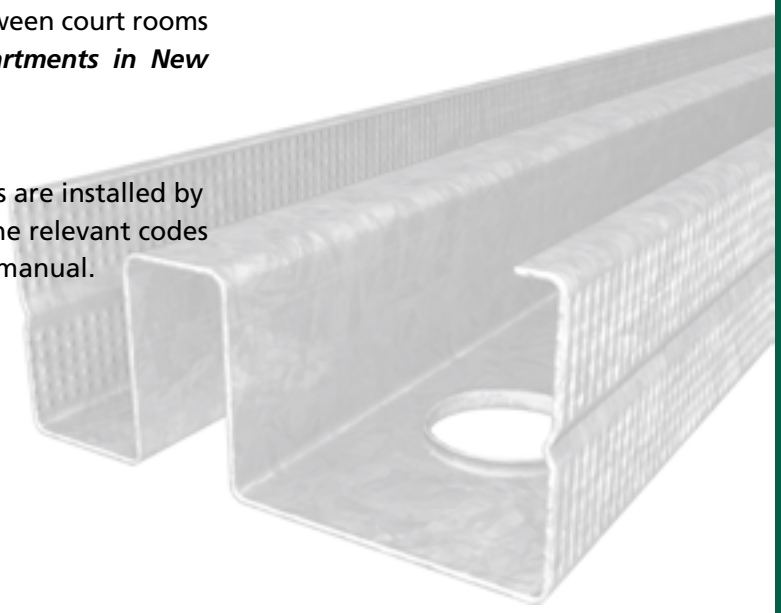
- Achieves superior performance in a smaller footprint, leaving more floor space
- Quick installation as it is virtually the same as standard drywall construction, resulting in lower labour costs
- Single profile; no need for staggered stud method of installation
- Utilises standard Rondo 92mm top and bottom wall tracks
- Bell-mouthed service holes for electrical cabling
- Studs are designed for a friction fit into top & bottom wall track
- Manufactured with a minimum coating of Z275

IN PRACTICE

The Rondo QUIET STUD® system has been used in a range of projects, including apartments, hotel refurbishments, schools, universities, hospitals and offices. At the ***District Law Court in Western Australia***, Rondo QUIET STUD® was used as an effective buffer against unwanted noise between court rooms and at the recent ***Clyde Quay Wharf Apartments in New Zealand***, between the inter-tenancy walls.

IMPORTANT NOTE:
Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page 256 of this manual.

CONTENTS:



RONDO QUIET STUD® COMPONENTS

QUIET STUD

RQST	92mm x 45mm x 0.55bmt

WALL TRACK

250	92mm x 28mm x 0.50bmt with hem

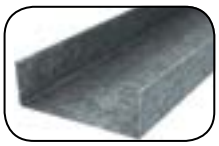
DEFLECTION HEAD TRACK

499	92mm x 50mm x 0.70bmt Deflection Head Track

QUIET STUD

RQST

WALL TRACK



250

DEFLECTION HEAD TRACK

499

SOUND ISOLATION DESIGN FOR WALLS

Good acoustic control begins with good acoustic design.

In the case of adjoining dwellings that have a common inter-tenancy wall, noise intrusion can be limited by considering a range of factors including:

- Plan quiet areas in one unit adjacent to quiet areas in the adjoining unit.
- Plan quiet areas that are not immediately adjacent to plumbing, sanitary services or similar.
- Design walls to be full-height, to underside of soffit or roof above.
- Use high quality acoustic-grade insulation in the wall cavity.
- Use high quality, durable acoustic sealant at wall, floor or ceiling intersections and around penetrations.
- Minimise penetrations in sound-rated walls and ensure that power outlets and light switches are not installed back-to-back.
- Minimise the incidents of other flanking paths (ie; doors next to other doors etc).
- Use quieter pipe constructions to reduce noise generated by pipes and other services.
- Use Rondo QUIET STUD®

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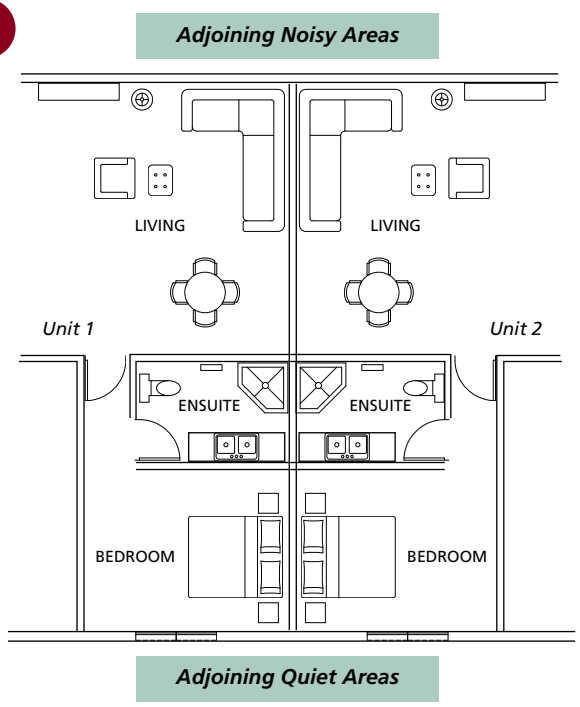

■ EXAMPLE OF GOOD ACOUSTIC DESIGN PRACTICE

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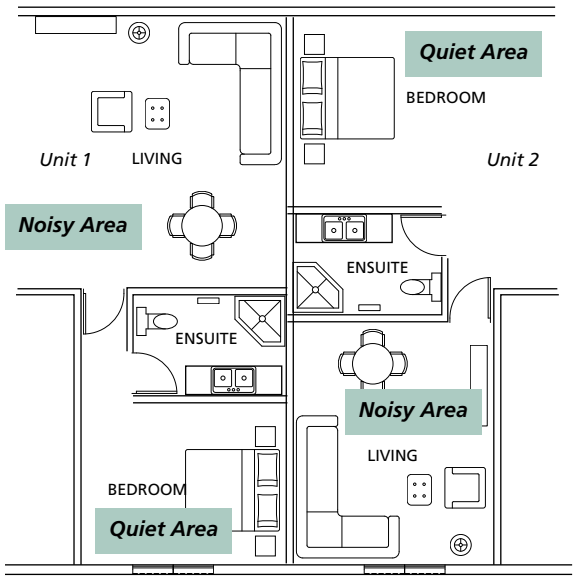

■ EXAMPLE OF BAD ACOUSTIC DESIGN PRACTICE

SOUND ISOLATION DESIGN FOR WALLS (continued)

Good acoustic design practice takes into account the noise generated in a building space and ensures that, where possible, like areas in adjacent units are designed and constructed back-to-back *(refer Figure 1)*.

Noisy areas should be grouped together and sharing common walls where possible, i.e. wet areas, toilets, etc. in adjacent units should be designed and constructed back-to-back. This can also assist with reducing the ultimate construction cost of the building.

Another good acoustic design practice is to maximise the distance between access doors or external windows of adjoining units. This will limit potential flanking paths.

There are many other design issues that need to be taken into consideration to ensure good acoustic performance in walls and ceilings, including design of penetrations, plumbing and waste pipe services, hydraulic and mechanical services, acoustic sealants, door and window openings to name just a few. Rondo recommends that the user examine various publications such as those provided by the leading plasterboard manufacturers as well as the ABCB Sound Insulation 2004 Guideline available from the Australian Building Codes Board.

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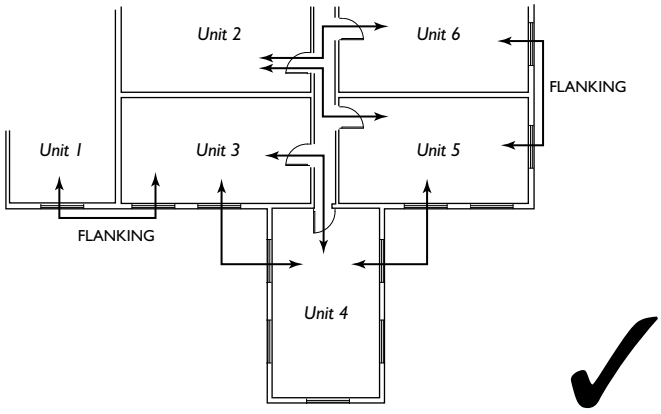
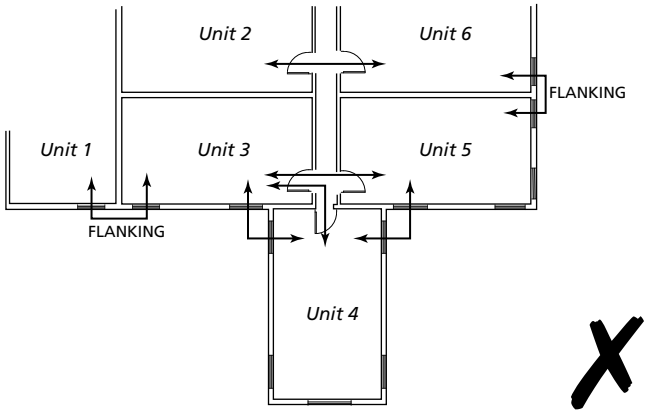


EXAMPLE OF GOOD ACOUSTIC DESIGN PRACTICE TO MINIMISE FLANKING PATHS

4



EXAMPLE OF BAD ACOUSTIC DESIGN PRACTICE AS FLANKING PATHS ARE DIRECTLY ADJACENT TO ONE ANOTHER

SOUND ISOLATION PROVISIONS

BUILDING CLASSES

Way back in 2004 the Building Code of Australia (BCA) was amended in response to mounting evidence that the existing sound insulation code was not meeting community expectations.

The purpose of these amendments was to reduce noise transmission between attached dwellings (high-rise and multi residential apartments etc) and between dwellings and units and other areas within a building such as common amenities, corridors and stairwells.

Table 1 refers to the classes of building covered by these amendments as categorised by the BCA.

PROVISIONS

The BCA deals only with sound insulation between dwellings and does not address issues such as external noises or noise transfer from within a unit to outside of the building.

The provisions deal with both wall & floor/ceiling requirements but it is only wall requirements that we are concerned with in this specific document.

To meet the new code requirements, manufacturers have three basic ways to satisfy the BCA sound insulation requirements:

- *Prescriptive Approach* – Laboratory Tested Systems
- *Performance Approach* – Conduct a Field Test specified in the Verification Method of the BCA
- *Performance Approach* – Use Expert Judgement or Opinion that the systems meet Deemed-to-Satisfy levels.

The current BCA minimum requirements for sound insulation are as shown in Table 2.

TABLE 1: BUILDING CLASSES

CLASS 1*	One or more attached dwellings separated by a fire-resisting wall (ie; terrace, villa, row house etc) or a small boarding house, guest house, hostel or similar less than 300m^2 and one which more than 12 persons would not ordinarily be resident.
CLASS 2	A building containing two or more sole-occupancy units each being a separate dwelling (ie; flats, apartments, units etc).
CLASS 3	A residential building other than Class 1 or 2 such as a large boarding house, back-packers accommodation, residential part of a hotel/school/detention centre or health-care building etc.
CLASS 9C	Aged care building.

*NOTE: * The BCA sound insulation provisions Volume One, Part F5 only apply to Building Classes 2, 3 & 9c. The provisions of Volume Two, Parts 2.4 & 3.8.6 apply to Class 1 buildings. Refer to the BCA for exact definitions.*

TABLE 2: SOUND INSULATION PROVISIONS OF THE BCA

CLASS	WALLS SEPARATING	R_w & C_{tr}	R_w	DISCONTINUOUS CONSTRUCTION
1	Habitable rooms (other than kitchens) of one building from a bathroom, laundry, kitchen, etc in another Class 1 building	50	–	Yes
	Rooms between Class 1 buildings other than above	50	–	No
2&3	Habitable rooms (other than kitchens) of one SOU from a bathroom, laundry, kitchen etc in another SOU	50	–	Yes
	Rooms between SOU's other than above	50		No
	SOU's from public corridor, stairway etc	–	50	No
	SOU's from plant room or lift shaft	–	50	Yes
9C	SOU's from a kitchen or laundry	–	45	Yes
	SOU's from other SOU's (other than above), or from a sanitary compartment, bathroom, plant room etc.	–	45	No

NOTE: SOU = Sole-occupancy Unit

SOUND ISOLATION PROVISIONS (continued)

Definitions

IMPACT NOISE

At the same time as sound insulation requirements were modified, the BCA also made changes to the provisions dealing with impact noise.

Impact noise occurs in adjoining tenancies and occurs on the floor or wall of that tenancy. In the case of walls, a typical source of impact is the slamming of doors on cupboards mounted on the common wall between tenancies.

The amendments also try and deal with audible noise which is generated by vibrations in the structure (structure-borne noise) which could come from mechanical equipment or vibrations from plumbing services or similar.

To deal with this particular issue of impact noise the BCA added further detail in relation to walls which separate:

(a) a bathroom, sanitary compartment, laundry or kitchen in one SOU from a habitable room (other than a kitchen) in an adjoining unit; or

(b) a SOU from a plant room or lift shaft.

The Clause states that a wall in a building required to have an impact sound insulation rating must-

(i) for a Class 2 or 3 building be of discontinuous construction; and

(ii) for a Class 9c aged care building, must-

(a) for other than masonry, be two or more separate leaves without rigid mechanical connection except at the periphery; or

(b) be identical with a prototype that is no less resistant to the transmission of impact sound when tested in accordance with… *(various specifications referred to further in the BCA)*.

IMPORTANT:

As potentially alterations to these provisions can be made from year to year reference should always be made to the current BCA Volume One Part 5 Sound Transmission and Insulation "Deemed-to-Satisfy Provisions" for up to date information.

GLOSSARY OF TERMS

R_w

The Weighted Sound Reduction Index refers to the airborne sound insulating rating of a particular building element. This value is measured in a laboratory environment and is applied to walls, ceilings/floors, ceilings/roofs as well as to doors and windows.

The higher the numerical rating the greater the sound insulating value of the relevant building element.

$R_w + C_{tr}$

The addition of the C_{tr} refers to a spectrum adaptation term for a rating which adds a correction for the effects of low frequency sound. The use of the term $R_w + C_{tr}$ has been necessary due to the increase in low frequency sound sources such as surround sound systems, traffic and aircraft noise as well as some musical instruments, the "doof, doof" factor if you will?

Two walls might have the same R_w rating but not the same resistance to low frequency sound therefore it may be necessary to adjust the design of the wall which is likely to be affected by the low frequency sound

Discontinuous Construction

The BCA states that discontinuous construction means having a 20mm cavity between 2 separate leaves, i.e. a double steel stud wall or similar with a 20mm cavity between the studs.

Sources and further recommended reading:

It is important to keep up with current guidelines in respect to the important issue of sound insulation. Rondo recommends that if unsure reference should be made to the major plasterboard manufacturer's literature as well as to current ACBC – Australian Building Code Board publications.

NOTE:
The result of the impact sound insulation requirements is that the Rondo QUIET STUD® cannot be used as a single leaf construction where impact sound insulation is required. However, this should only be in isolated cases in apartments as good design practice will ensure mirrored image layouts where habitable rooms are immediately adjacent to one another and non-habitable rooms likewise *(see page 151)*.

RONDO QUIET STUD® ACOUSTIC SYSTEM

PERFORMANCE COMPARISON

To fully understand how innovative the Rondo QUIET STUD® performs as an acoustic solution, comparison tests were conducted using the exact same configuration of plasterboard lining, insulation, sealants and installation details on both a standard Rondo 92mm x 0.55bmt lipped C Steel Stud and the Rondo 92mm x 0.55bmt QUIET STUD® to compare performance.

As can be seen from the results shown in Table 3, the Rondo QUIET STUD® had a significant increase in performance both in the R_w value (5dB better performance) and the combined $R_w + C_{tr}$ value (8dB better performance) when compared to the standard Rondo lipped C Steel Stud section. Even better performance can be expected when compared to timber stud framing of equal width.

Comparison tests were also performed using the exact same plasterboard, insulation and sealant configuration, but using staggered 64mm x 32mm x 0.50bmt lipped C steel studs in a 92mm track.
The Rondo QUIET STUD® system achieved the same $R_w + C_{tr}$ performance as the staggered stud systems, yet is a much simpler system to install.

TABLE 3: PERFORMANCE COMPARISON WITH TRADITIONAL LIPPED C STUD

STUD	BOARD LININGS	INSULATION	R_W	C_{TR}	R_W+C_{TR}	CSIRO TEST NO.	
Rondo 92mm x 0.55bmt lipped steel stud	2x13mm Fire-Rated plasterboard (mass 21kg/m²) both sides	TAC100	52	(-9)	43	TL434a	
Rondo 92mm x 0.55bmt QUIET STUD®	2x13mm Fire-Rated plasterboard (mass 21kg/m²) both sides	TAC100	57	(-6)	51	TL434d	

NOTES: 1. Insulation used was 100mm polyester infill, 14 kg/m3 manufactured by Tontine Fibres.
2. Tests conducted and verified at CSIRO laboratories, Highett, Melbourne in February/March 2005.

ACOUSTIC PERFORMANCE

Rondo QUIET STUD® has been subject to rigorous acoustic testing at both CSIRO Acoustic Laboratory in Melbourne and Auckland University Acoustic Laboratory using a variety of plasterboard linings. The suggested Noise Control Systems listed on the following page are the results of such testing. However, the respective plasterboard manufacturer should be contacted to determine the final acoustic specification as they may hold more recent test data than those suggested systems listed. They can also determine fire resistance of the nominated system where this is applicable.

FIRE RATING

QUIET STUD® will behave in a similar way to traditional lipped steel studs in a fire*.
For full fire rating information contact your respective plasterboard manufacturer.
**NB: QUIET STUD® has been the subject of BRANZ Report FAR 2521 to determine fire resistance.*

PLASTERBOARD (AND OTHER LINING BOARDS)

Rondo QUIET STUD® has been developed in conjunction with Australasia's leading plasterboard manufacturers. These manufacturers each make a range of Fire-Rated and Sound-Rated plasterboard linings and they can quickly determine the optimum configuration to achieve the desired level of performance using the Rondo QUIET STUD® .
Test certifications or expert opinions based on the original test results can be supplied. Rondo recommends that prior to specifying or installing QUIET STUD®, your respective plasterboard manufacturer be contacted to provide the final, optimal design.
Rondo QUIET STUD® could be installed using other wallboard linings (fibre cement sheet etc) but it is best to contact the lining board manufacturer for an opinion on acoustic performance.

INSULATION (SOUND CONTROL INFILL)

Insulation or sound control infill plays an integral part in the performance of the acoustic wall system. It is therefore most important that the insulation used on your project is of equal or better acoustic performance to that used in our various tested systems on the following page. The respective insulation or plasterboard system manufacturer can easily and quickly verify acoustic performance.

FIRE/ACOUSTIC SEALANT

Acoustic performance of a stud wall system is severely degraded by the presence of gaps in the constructed system. These can occur around penetrations or perimeters. To maintain acoustic performance, it is therefore critical to ensure that all perimeters and penetration gaps are carefully sealed using high-quality acoustic sealant to make construction virtually air-tight. Please refer to the respective plasterboard manufacturer for their acoustic sealant specification. If the system is required to be fire-rated, then the sealant will also need to be fire-rated.

DIFFERENCE BETWEEN LABORATORY & ON-SITE RESULTS

The ratings and values stated on the following page have been achieved through testing and calculation with precise techniques and equipment under ideal controlled conditions.
To attain optimum performance on-site, careful attention to detail in the design and construction is paramount. If the basic principles of good acoustic design and construction practice are ignored, the performance of the system can be jeopardised. It is therefore most important that the specifications of the plasterboard manufacturers are strictly followed on site.
Based on industry advice, the BCA allows a concession of up to 5dB in performance when tested on-site where measurement sometimes is not ideal *(i.e. background noise or the size/volume of the tested room can affect results, etc.).*
As a consequence, Rondo cannot guarantee that the results on the following page will be matched on-site but with careful attention to detail during the erection of the stud wall system, and by strictly following the installation details of the plasterboard manufacturers, the assembly should produce a result closely comparable with the tested or estimated values.

SUGGESTED NOISE CONTROL SYSTEMS (WHERE C_{TR} VALUE NOT TAKEN INTO CONSIDERATION)

It must be noted that some Australian states have not yet adopted current BCA sound provisions for Class 1, 2, 3 & 9c buildings. In some cases, only an R_w rating value is required.
This is equally so for non-residential buildings which are not so affected by the low bass-type frequencies from electronic sound equipment. Rondo QUIET STUD® is just as effective in helping reduce noise transmission from room to room in non-residential buildings *(i.e. offices, schools, universities, hospitals, etc.).* Table 5 shows indicative R_w values only using QUIET STUD® and various plasterboard configurations.

TABLE 4: QUIET STUD ACOUSTIC SYSTEMS – CLASS 1, 2, 3 & 9C RESIDENTIAL BUILDINGS

STUD	BOARD LININGS	INSULATION	R_W	C_{TR}	R_W+C_{TR}	CSIRO TEST NO.	
Rondo 92mm x 0.55bmt QUIET STUD®	10mm Sound-Rated plasterboard (mass 8.2kg/m²) + 13mm Fire-rated plasterboard (mass 10.5kg/m2) 1 side 1 x 13mm Fire-rated plasterboard (mass 10.5kg/m²) other side	TAC100 100mm polyester 14kg/m³	53	(-9)	44	TL434e	
Rondo 92mm x 0.55bmt QUIET STUD®	2x13mm Fire-Rated plasterboard (mass 21kg/m²) 1 side 1 x 13mm Fire-rated plasterboard (mass 10.5kg/m²) other side	100NCB 100mm glass wool 14kg/m³	55	(-7)	48	TL434c	
Rondo 92mm x 0.55bmt QUIET STUD®	2x13mm Fire-Rated plasterboard (mass 21kg/m²) both sides	TAC100 100mm polyester 14kg/m³	57	(-6)	51	TL434d	
Rondo 92mm x 0.55bmt QUIET STUD®	2x13mm Fire-Rated plasterboard (mass 21kg/m²) both sides	100NCB 100mm glass wool 14kg/m³	57	(-5)	52	TL434b	

NOTES: 1. Insulation: TAC100 = 100mm polyester infill, 14 kg/m³ manufactured by Tontine Fibres or equal equivalent.
100NCB = 100mm glass wool Noise Control Batts, 14 kg/m³ manufactured by Insulation Solutions or equal equivalent.
2. Rondo 92mm x 0.55bmt QUIET STUD® friction fit to track @ 600mm centres.
3. Tests conducted and verified at CSIRO laboratories, Highett, Melbourne in February/March 2005.
4. Consult with your plasterboard manufacturer/supplier to verify their particular brand of plasterboard and accompanying system will achieve at least equal results to those above.

TABLE 5: QUIET STUD NOISE CONTROL SYSTEMS – NON-RESIDENTIAL BUILDINGS

STUD	BOARD LININGS	INSULATION	R_W RATING	
Rondo 92mm x 0.55bmt QUIET STUD®	1x13mm Fire-Rated plasterboard (mass 10.5kg/m²) both sides.	Either TAC100 or 100NCB (14kg/m3)	50 ± 1 dB	
Rondo 92mm x 0.55bmt QUIET STUD®	2x13mm Fire-Rated plasterboard (mass 21kg/m²) 1 side 1 x 13mm Fire-rated plasterboard (mass 10.5kg/m²) other side	Either TAC100 or 100NCB (14kg/m3)	55 (CSIRO test TL434c with glass wool)	
Rondo 92mm x 0.55bmt QUIET STUD®	2x13mm Fire-Rated plasterboard (mass 21kg/m²) 1 side, 3x13mm Fire-Rated plasterboard (mass 31.5kg/m²) other side.	Either TAC100 or 100NCB (14kg/m3)	60 ± 1 dB	

NOTES: 1. Calculations based on systems tested at CSIRO laboratories, Highett, Melbourne.
2. Insulation: TAC100 = 100mm polyester infill, 14 kg/m3 manufactured by Tontine Fibres or equal equivalent.
100NCB = 100mm glass wool Noise Control Batts, 14 kg/m³ manufactured by Insulation Solutions or equal equivalent.
3. Consult with your plasterboard manufacturer/supplier to verify their particular brand of plasterboard and accompanying system will achieve at least equal results to those above.

INSTALLATION DETAILS

STRUCTURAL DESIGN

• All walls in this brochure using QUIET STUD® have been designed as internal, non-loadbearing walls.
• These walls have been designed for lateral loads only using the composite action of the studs and sheeting.
• The walls have been designed to meet the design pressure of ultimate 0.375kPa and serviceability 0.25kPa. Deflection has been limited to height/240 *(based on BCA Specification C1.8 – Structural Tests for Lightweight Construction)*.
• For walls with higher wind loadings or for enquiries outside the scope of this document, please contact your specialist Rondo Technical Representative.

FRAMING

• Rondo 92mmx32mmx0.55bmt steel top & bottom wall track nominally fixed at 600mm centre maximum spacings to floor and ceiling and within 100mm of end of track section or,
• If a Deflection Head is required or the wall is above 4800mm in height, install Rondo 92mmx50mmx0.70bmt deflection head track at top of frame.
• QUIET STUD® 92mmx45mmx0.55bmt nominal with a 6mm return installed @ 600mm maximum centre spacings *(or as specified – refer to Table 6 Maximum Wall Heights on Page 159)*.
• Studs should be a friction fit installation to track section to allow an approx 15mm expansion gap at the top of the frame (20mm where a deflection head detail is required or as nominated by the structural engineer).
• First and end studs may be fixed to the track section with #8g Metal Tek screws for extra rigidity.
• Ensure studs are aligned in the same direction except for end stud.
• Studs may be boxed around door or window openings for added rigidity.
• No Noggings are required in QUIET STUD® applications providing walls are lined both sides of the stud frame in accordance with plasterboard manufacturers' specifications.
• To maintain the integrity of the acoustic wall system, try and avoid heavyweight fixtures from being attached to the stud wall frame. Where this is unavoidable, Rondo can provide specialist advice through our Technical Representatives *(phone 1300 367 663)*.
For lightweight fixtures such as towel rails, taps, etc., a timber Nogging/batten may be installed between the studs with one of the studs being installed the reverse way so that the web of the two studs are facing each other. Ensure that acoustic or fire sealant, as recommended by the lining board manufacturer, is used around any penetrations to maintain integrity of the wall frame.

LINING BOARD: INSTALLATION, FIXING, FINISHING & JOINTING

• Please refer to the respective plasterboard or other lining board manufacturer for their complete lining and finishing specifications.
• Rondo recommends that the lining board be installed as per the requirements of Australia/New Zealand Standard AS/NZS 2589.1:2007
– *"Gypsum linings in residential and light commercial construction – application and finishing"*

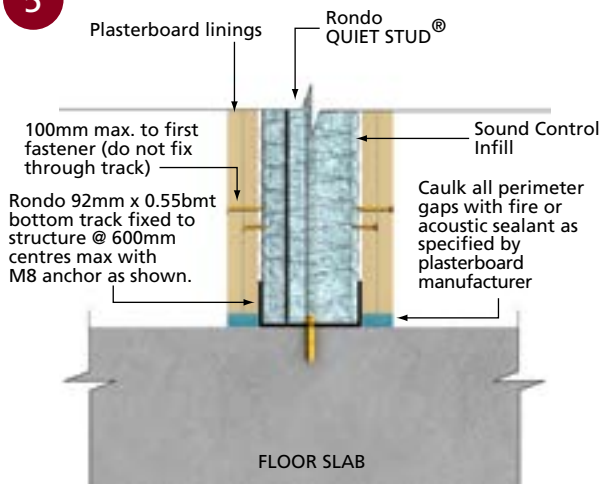
SOUND CONTROL INFILL

• Rondo has conducted thorough acoustic testing of various QUIET STUD® wall systems using several insulation types. To ensure a fail-safe acoustic control system Rondo recommends using high quality acoustic insulation either as per our Noise Control Systems listed on page 157 or that equal in performance through verification from the insulation manufacturer or the plasterboard system manufacturer.
• Fit insulation between QUIET STUD® at nominated centres.

ACOUSTIC SEALANT & CAULKING

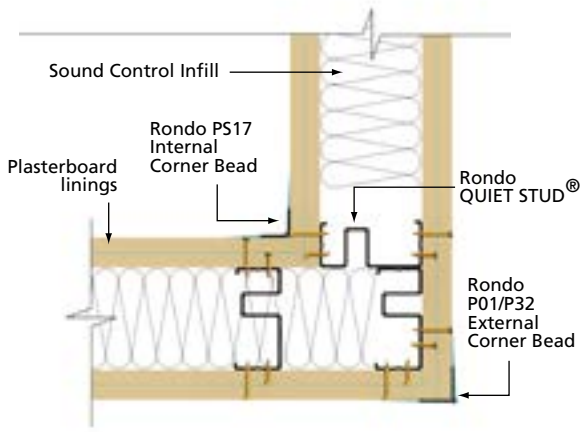
• To attain specified acoustic performance (and FRL performance where nominated) it is essential that high quality fire and acoustic rated sealant be used at all perimeter gaps and around all penetrations.
• Please refer to the respective plasterboard or other lining board manufacturer for their complete specifications on the installation of acoustic sealant and caulking.

5



■ **WALL BASE DETAIL**

6



■ **CORNER DETAIL**

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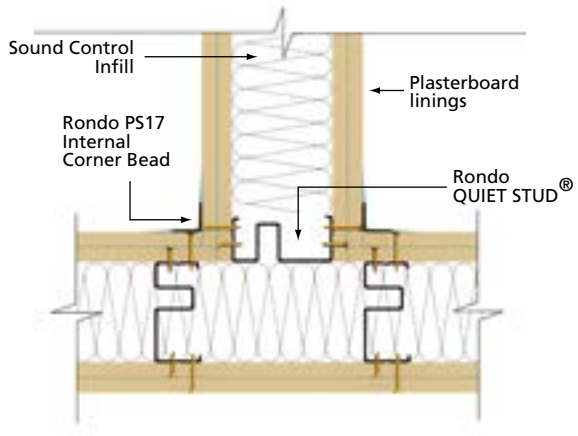

■ **'T' INTERSECTION DETAIL**

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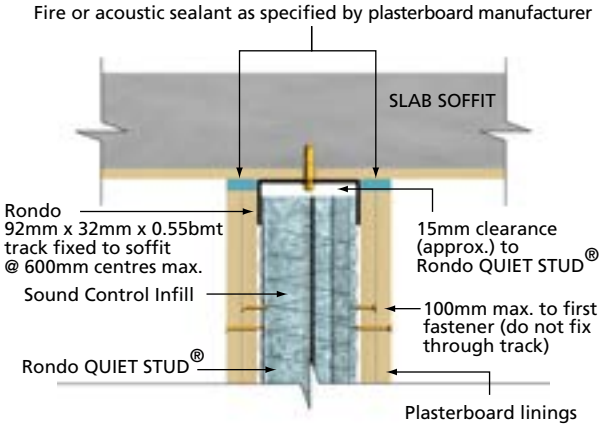


■ **WALL HEAD DETAIL (FRICTION FIT HEAD)**

TABLE 6: MAXIMUM WALL HEIGHTS

PLASTERBOARD	STUD CENTRES	
	600	450
1 x 10mm Both Sides	3700	4020
1 x 13mm Both Sides	4130	4410
1 x 16mm Both Sides	4300	4580
2 x 10mm Both Sides	3700	4020
2 x 13mm Both Sides	4130	4410
2 x 16mm Both Sides	4300	4580

NOTES:
1. Lateral pressure is 0.25kPa in accordance with the BCA Specification C1.8.
2. Deflection limited to span/240
3. All walls above contain NO Nogging

IMPORTANT
It is critical that the correct size fastener is chosen when fixing plasterboard sheets to Rondo QUIET STUD®.
The screws must NOT penetrate through the stud flange into the return leg of Rondo QUIET STUD® which is 24mm from the stud flange in one direction.
Typically, a 25mm long 'Type S' needle point screw is ideal for fixing the first layer of plasterboard. Clarification should be sought from the respective plasterboard manufacturer for fixing subsequent layers of plasterboard.

MASONRY WALL BATTENS

For Internal Applications

Rondo Furring Channels and adjustable clips are the ideal combination for battening out irregular walls, ready for the fixing of building boards. Furring Channels with an adjustable clip will correct irregular surfaces of 25mm *(refer Figure 1).*

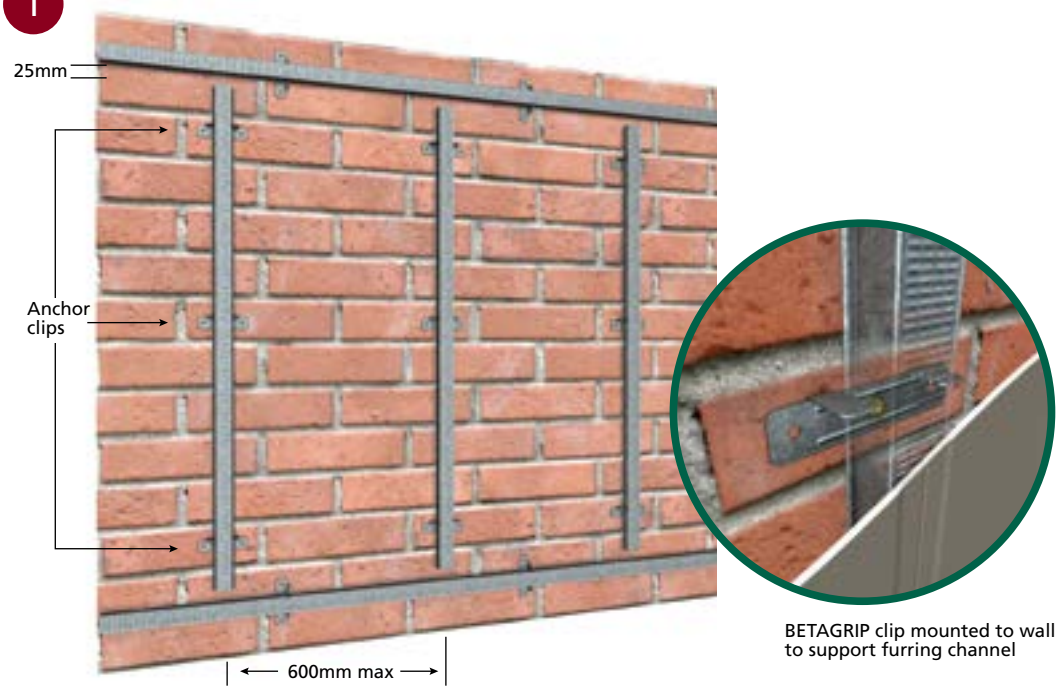
For surfaces which do not require any alignment but require a cavity for cables or plumbing, Rondo Batten 333 can be used.

Clips should be spaced in accordance with Table 1.

Clips may be of the adjustable or acoustic type as shown previously, depending on the application.

Masonry fasteners should be selected in accordance with the manufacturer's recommendations.

1



BETAGRIP clip mounted to wall to support furring channel

MASONRY WALL BATTENS

TABLE 1: MAXIMUM ANCHOR SPACING

FURRING CHANNEL	CLIP SPACING (mm)
333	900
308	900
129`	1200

NOTE: The above spacings are the maximum recommended installation requirements. This may not be suitable for high traffic areas or external applications.

MASONRY WALL INSTALLATION WITH MEMBRANE INSULATION

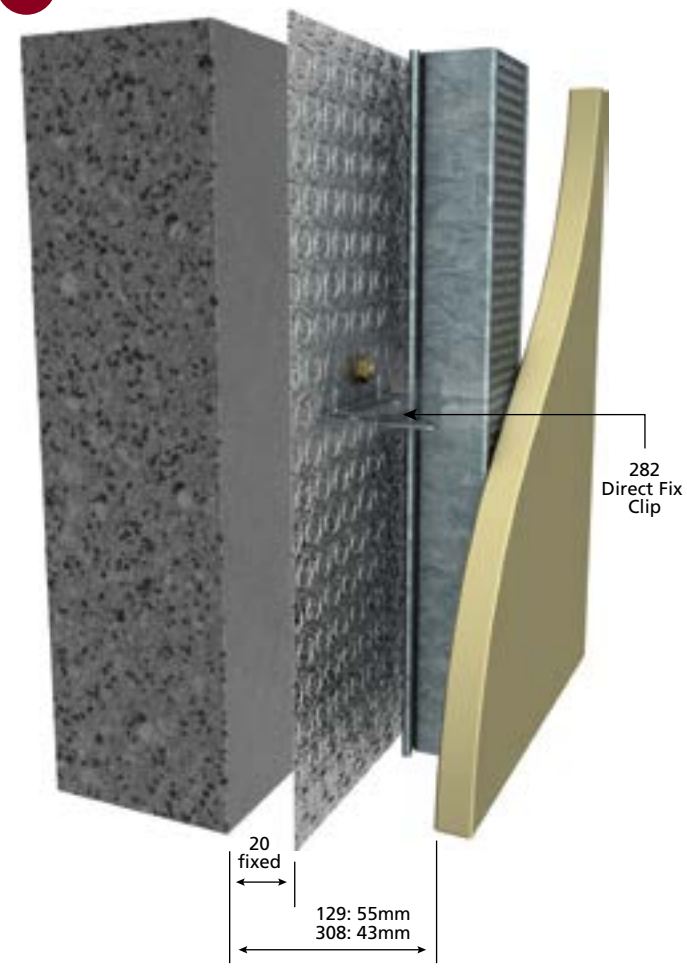
Direct Fix Furring Channel Clips for Internal Applications

Rondo produces two clips to assist the application of single or double layer reflective membrane insulation on masonry or concrete walls which are to be lined with building board that is fixed to Furring Channel.

282 DIRECT FIX CLIP

This clip suits single membrane applications, which require a 20mm air space between the inside face of the structure and the membrane.
The 129 or 308 Furring Channel is then installed by clipping into the 282 Direct Fix Clip *(see Figure2)*.
This then provides a second air space between the inside of the board and the insulation.
The 282 Direct Fix Clip is non-adjustable and therefore more suited to tilt-up panel construction.
If adjustment is required, the clip must be 'packed out'. An alternative would be to use either Rondo BG01 or BG02 BETAGRIP® clips which offer adjustment of the Furring Channel but do not facilitate the air space which would have to be achieved by the use of plastic spacers provided by the insulation manufacturer.

2



282 DIRECT FIX CLIP IN SITU

BG05 BETAFIL® CLIP

The introduction of more stringent thermal insulation standards has resulted in the use of double layers of reflective insulation being specified on some projects.

The Rondo BETAFIL® Clip effectively provides the three air spaces; structure to insulation, between insulation layers and then between the outer insulation layer and board *(see Figure3).*

It should be noted that the space between the two layers of insulation is produced by the installer fixing plastic spacer blocks, as illustrated, onto the clip. The spacers are supplied by the insulation manufacturer.

Unlike the 282 clip, Furring Channel can be adjusted so that it is secured plumb by utilising the appropriate fixing teeth on the clip.

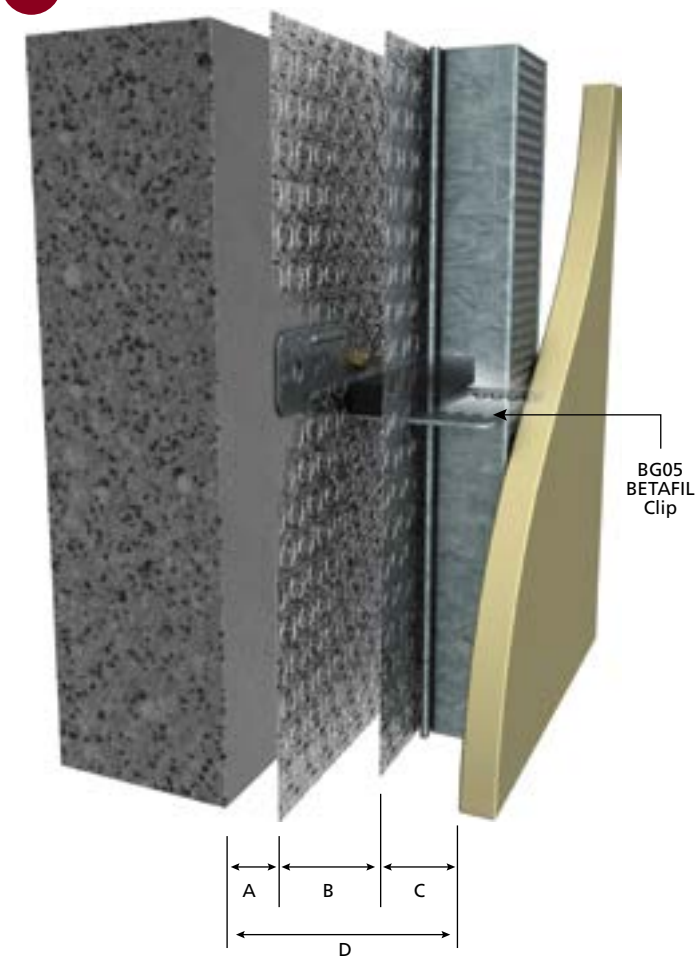
FIXING

The installer should consult the fixings supplier for the appropriate product to use depending on the structure.

Rondo 282 and BETAFIL® clips are designed for internal use only and should be spaced at no more than 1200mm apart using 129 Furring Channel. These centres suit Furring Channel spaced at 600mm centres.

The insulation supplier can provide more information on insulation properties when using these clips.

3



Nominal Dimensions:
A = 18mm
B = 32mm
C = 28mm – 48mm (in 5mm increments)
D = 78mm – 98mm

BG05 DIRECT FIX CLIP IN SITU

FINISHING SECTIONS

EXANGLE® >
EXANGLE® RT >
EXTREME® >

RONDO®

RONDO EXANGLE® DRYWALL FINISHING SECTIONS

SUMMARY

The EXANGLE® range of building board finishing profiles are designed to give plasterers a clean, defined edge on straight or curved details for internal building board applications.

SUITABLE FOR:

- Internal and External Corners
- Shadowline applications
- Flashing in wet areas
- Archways
- Control Joints
- Edge capping
- Bullnose corners

SPECIAL FEATURES

- Choice of perforated or Expanded profiles
- Nail holes on selected profiles for easy installation
- Minimum coating of Z200
- Made from 0.30-0.50BMT Galvabond or Zincanneal Steel to provide ideal stiffness

IN PRACTICE

The Rondo EXANGLE® range of profiles are used in many leading projects to complete the wall and ceiling linings. This includes ***City Square in Perth*** where our P50 Shadowline Stopping Angle was installed on 45 levels of the building and the ***Royal Children's Hospital in Melbourne*** where 440,000 metres of EXANGLE® finishing sections were used to construct this world-class project.

IMPORTANT NOTE:
Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page 256 of this manual.

CONTENTS:

RONDO EXANGLE FINISHING SECTIONS

EXTERNAL CORNER BEADS

PO1	90° Mini Bead Perforated 30mm
PO1A	135° Mini Bead Perforated 30mm
P32	90° Expanded Corner Bead 32mm

INTERNAL CORNER BEADS

PS17	90° Mini Bead Internal
PS1A	135° Mini Bead Internal

ARCH BEADS

P10	Perforated arch bead

PLASTER STOPPING BEADS

P11	6mm Board Stopping Bead
P12	10mm Board Stopping Bead
P13	13mm Board Stopping Bead
P14	16mm Board Stopping Bead

PLASTER STOPPING ANGLES

P25	10mm Long Leg
P26	13mm Long Leg
P27	16mm Long Leg
P28	32mm Long Leg

SHADOWLINE STOPPING ANGLES

P50	10mm Shadowline Stopping Angle for 10/13/16mm Board
P60	10mm Shadowline Stopping Angle for 6mm Board
P50R	10mm Shadowline Stopping Angle for 10/13/16mm Board Radiussed
P51	Shadowline Combination Set Bead for 10mm Board
P52	Shadowline Combination Set Bead for 13mm Board
P53	Shadowline Combination Set Bead for 16mm Board

PLASTER INTERNAL ANGLES

P18	28 x 28mm Internal Angle
P40	40 x 40mm Internal Angle

SHADOWLINE CASING BEADS

P06	10mm Shadowline Casing Bead for 10mm Board
P09	10mm Shadowline Casing Bead for 13mm Board

EXTERNAL CORNER BEADS

P01/P01A

P32

INTERNAL CORNER BEADS

PS17/PSIA

ARCH BEADS

P10

PLASTER STOPPING BEADS

P11/P12/P13/P14

PLASTER STOPPING ANGLES

P25/P26/P27

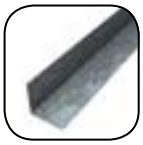
P28

SHADOWLINE STOPPING ANGLES

P50/P60

P51/P52/P53

PLASTER INTERNAL ANGLES



P18

P40

SHADOWLINE CASING BEADS

P06/P09

PLASTER CASING BEADS

P03	6mm board casing bead
P05	10mm board casing bead
P07	13mm board casing bead
P08	16mm board casing bead

EXPANSION JOINT

P35	Plasterboard Expansion Joint for Board Thicknesses more than 10mm

BULLNOSE SECTIONS

R05	10mm Radius Bullnose Corner Bead
R06	22mm Radius Bullnose Corner Bead

PLASTER CASING BEADS

P03/P05/P07/P08

EXPANSION JOINT

P35

BULLNOSE SECTIONS

R05/R06

TYPICAL APPLICATION DETAILS

Corner Beads

P01 90° & P01A 135° (EXTERNAL)

A lower profile nib on the P01 bead reduces the compound build up on the corner and assists in reducing skirting board or reveal kick-out. The Rondo EXANGLE® P01 corner bead has perforated metal wings angled at 84° to allow the setting compound to penetrate through and under the bead.

P32 90° (EXTERNAL)

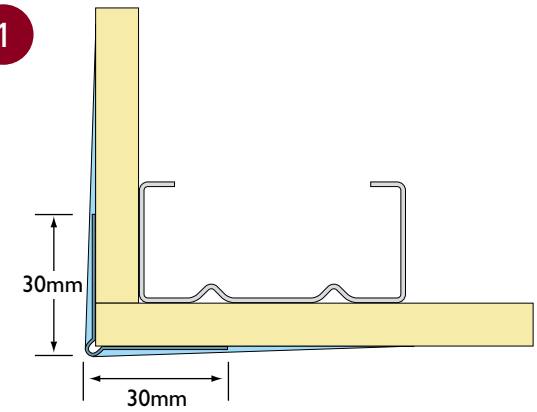
Rondo P32 expanded corner bead has a slightly larger nib than the P01 at 3mm and the expanded metal wings allow more compound penetration for situations where a stronger, more stable corner treatment is required.

PS17 90° & PS1A 135° (INTERNAL)

The original Rondo EXANGLE® internal corner bead was designed for use with fibrous plaster sheets to enable the internal corner to be straightened and neatly finished, ready for painting.

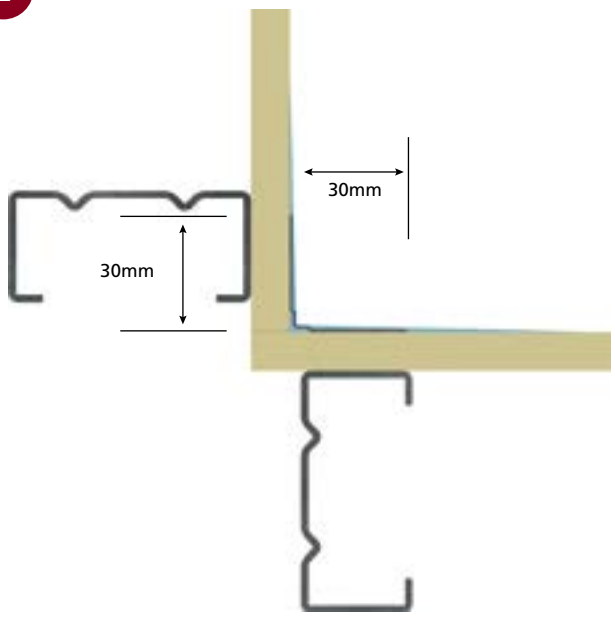
The redesign of this product to suit modern building boards has resulted in stronger, straighter, crack–free internal corners being produced ready for painting. The flat surface at the centre of the bead which is raised up at 90° from the perforated section, provides a guide for the setting trowel. The small holes along the inner edge of the 90° raised section allows the setting compound to bond to both the internal and external surface of the bead, reducing the potential for cracking in both horizontal and vertical applications.

1



EXTERNAL CORNER BEAD DETAIL

2



INTERNAL CORNER BEAD DETAIL

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
PO1	0.116	0.40	2.4, 2.7, 3.0, 3.6	**G2 GALVABOND Z200**
PO1A	0.116	0.40	3.0	
PS17/PS1A	0.116	0.40	3.0	

Arch Beads & Stopping Beads

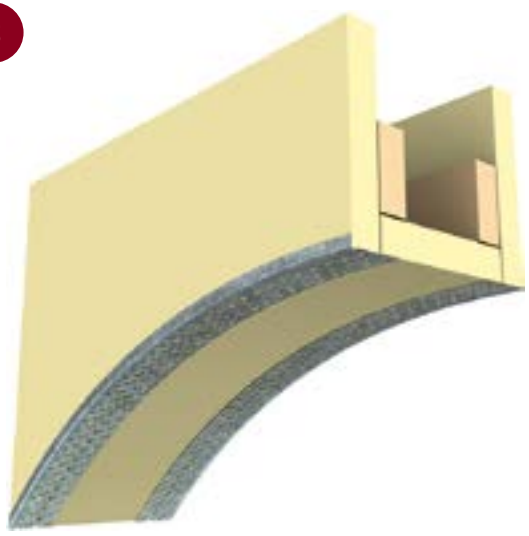
P10 ARCH BEAD

Designed for use with the P01 corner beads, as it has the same nib profile and leg length.

When installing arch beads, care should be taken not to bend it into a radius too quickly. It should be a gradual process starting at one end, gradually bending around the building board finished frame.

The long leg of the arch bead is fixed to the inside of the arch profile.for painting. The flat raised surface at the centre of the bead which is raised up at 90° from the perforated section, provides a guide for the setting trowel. The small holes along the inner edge of the 90° raised section allows the setting compound to bond to both the internal and external surface of the bead, reducing the potential for cracking in both horizontal and vertical applications.

3

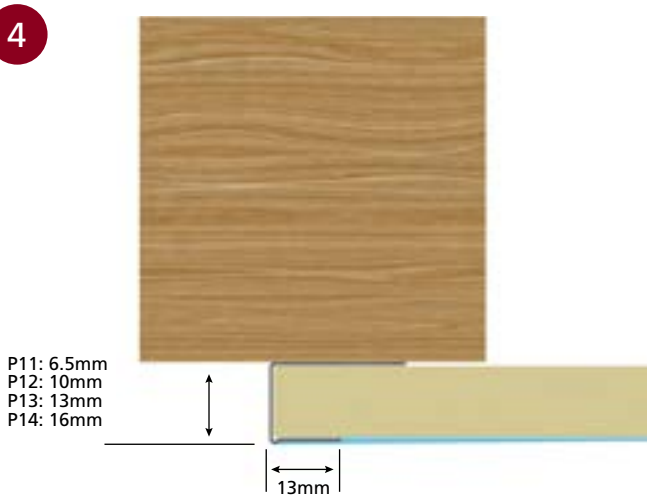


ARCH BEAD: TYPICAL APPLICATION

P11/P12/P13/P14 STOPPING BEADS

The Rondo stopping beads are suitable for building boards of 6mm to 16mm thickness. The finishing coats are applied up to the nib, which is blended back into the sheet.

4



STOPPING BEAD DETAIL

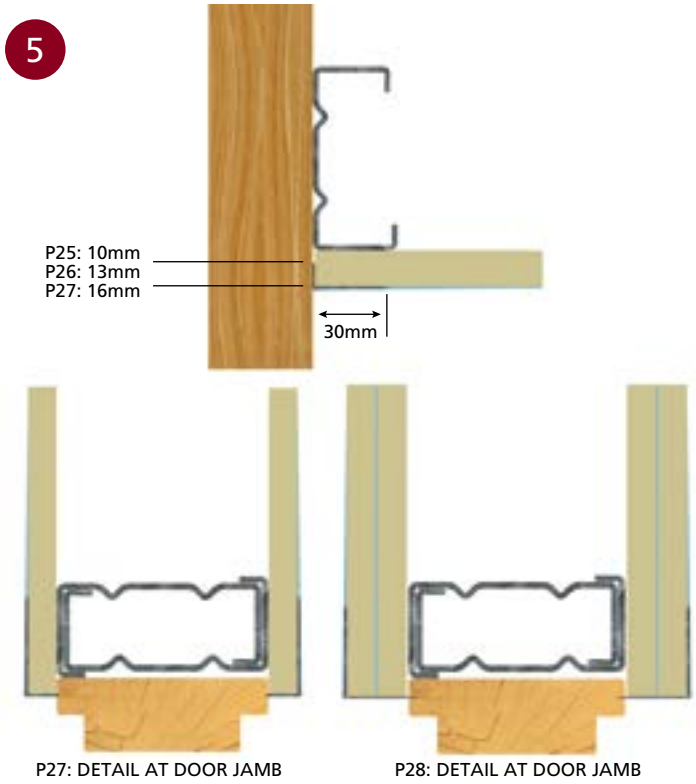
	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
P10	0.080	0.35	3.0	**G2 GALVABOND Z200**
P11	0.133	0.40	3.0	
P12	0.133	0.40	3.0	
P13	0.133	0.40	3.0	
P14	0.173	0.40	3.0	

TYPICAL APPLICATION DETAILS (continued)

Stopping Angles

P25/P26/P27/P28

Plaster Stopping Angles have a perforated, recessed edge and are used where the edge of the building board is not exposed and where the fitting of a Stopping Bead would be difficult. The Stopping Angle is fixed to the sheet of building board with an adhesive or staples, with the finishing coats bonding into the building board and feathering up to the bead nib. Ideal for use around door jambs, however, in this application it is recommended that when using building board up to 10mm thick, a P26 should be used so that the leg will slot into the door jamb as shown. Similarly, when using 13mm board, P27 should be used.

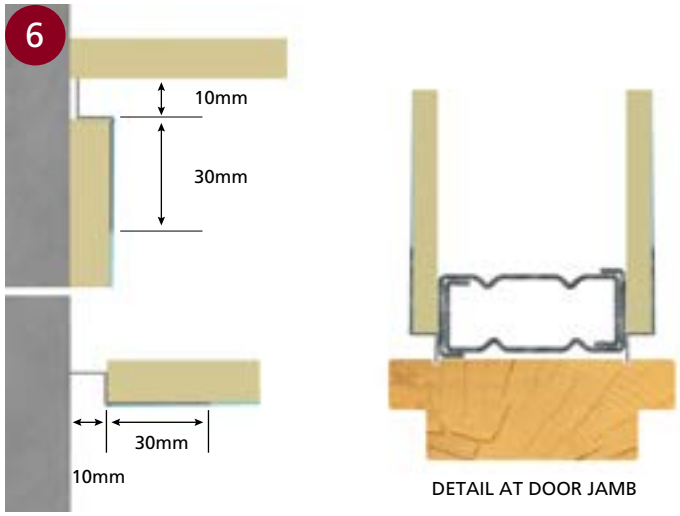


■ STOPPING ANGLE DETAIL

P50/P60

Shadowline Stopping Angles are the professional section for minimising the appearance of 'out of align' walls and ceilings by giving a clean, straight, shadow edge after setting.

Shadowline stopping angles are suitable for vertical, horizontal and curved applications and are ideal for use around ceiling perimeters, door jambs, windows and lift openings.



■ SHADOWLINE STOPPING ANGLE DETAIL

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
P25	0.010	0.40	3.0	**G2 GALVABOND Z200**
P26	0.124	0.40	3.0	
P27	0.133	0.40	3.0	
P28	0.175	0.40	3.0	
P50	0.138	0.40	3.0	
P60	0.124	0.40	3.0	

Shadowline Combination Set Bead

P51/P52/P53

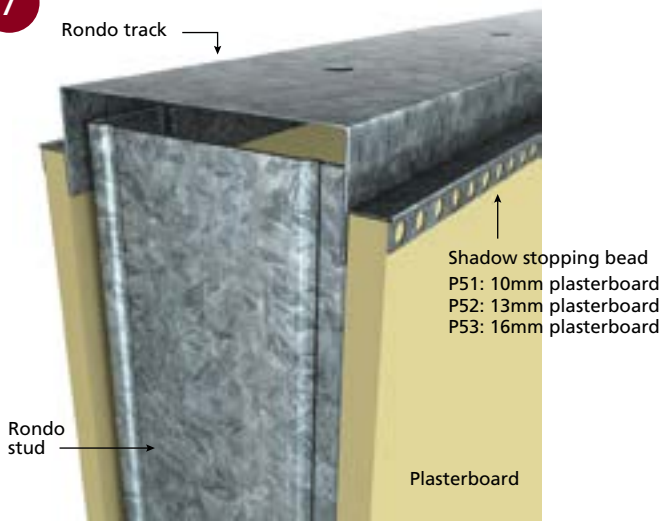
Shadowline stopping beads enable negative details to be easily formed around the perimeter of ceilings when used in combination with Rondo 140 Furring Channel Track. The shadow detail creates the impression of greater ceiling heights whilst helping to hide imperfections in the abutting walls.

It is also an ideal product for forming shadow details at the top of steel stud partition walls by slipping the bead onto the legs of the wall track before inserting the plasterboard.

Slipping the shadow bead onto the edge of the plasterboard sheets enables clean negative details to be produced around door jambs, window frames, lift openings or where other negative details would enhance the appearance of a junction or opening.

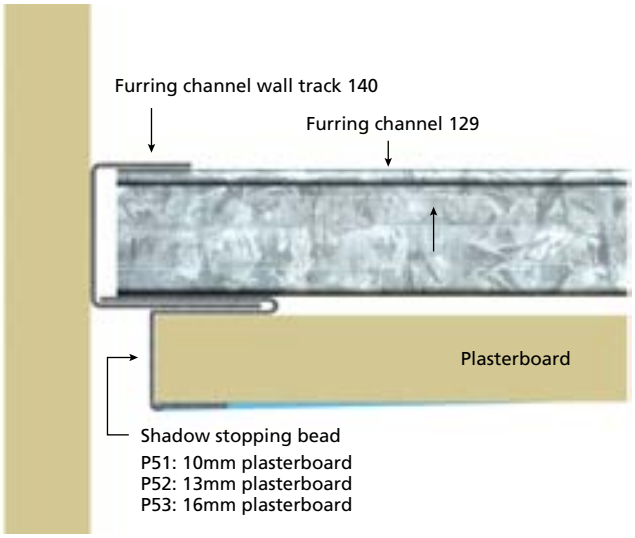
The P51 is designed for use with 10mm plasterboard, while the P52 is designed for 13mm plasterboard and P53 suits 16mm plasterboard. The profiled nib and perforated leg enable a good bonding key between the compound and plasterboard.

7



SHADOW STOPPING BEAD: TYPICAL APPLICATION

8



SHADOW SET DETAIL

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
P51	0.276	0.40	3.0	**G2 GALVABOND Z200**
P52	0.283	0.40	3.0	
P53	0.300	0.40	3.0	

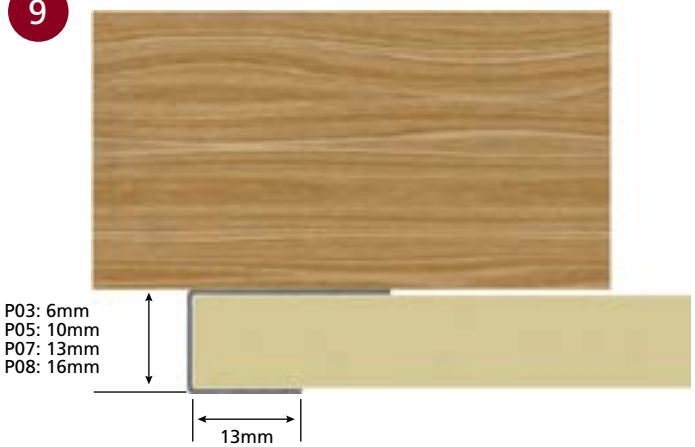
TYPICAL APPLICATION DETAILS (continued)

Casing Beads

P03/P05/P07/P08

Casing beads are square cornered metal beads that fit snugly over the edge of the building board for protection at abutments, no setting is required. Rondo casing beads are manufactured from 0.5mm ZINCANNEAL™ material, and are easily painted on site.

9

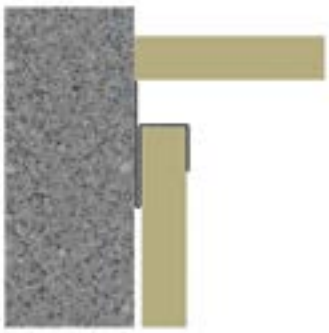


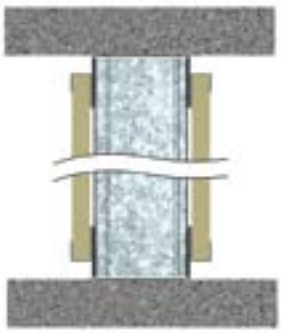
■ CASING BEAD DETAIL

P06/P09

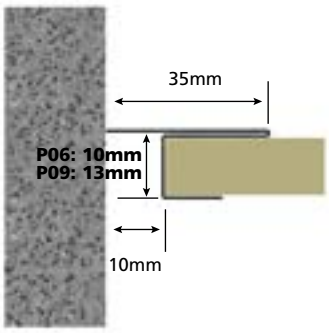
When the Rondo EXANGLE® Shadowline casing bead is fitted to the edge of building boards, a neat shadowline is achieved as the bead comes into contact with the other abutments. The shadow that is created assists in hiding imperfections in the wall alignment, and also gives a very pleasing result around door jambs. No setting is required.
Both the P06 and P09 are manufactured from ZINCANNEAL™ and are easily painted on site.

10





PARTITION FLOOR/HEAD TRACK DETAIL



DETAIL AT DOOR JAMB

■ SHADOWLINE CASING BEAD DETAIL

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
P03	0.202	0.50	3.0	**ZINCANNEAL**
P05/P07	0.202	0.50	3.0, 3.6	
P08	0.327	0.50	3.0	
P06	0.216	0.55	3.0	
P09	0.382	0.55	3.0	

Control Joints

P35

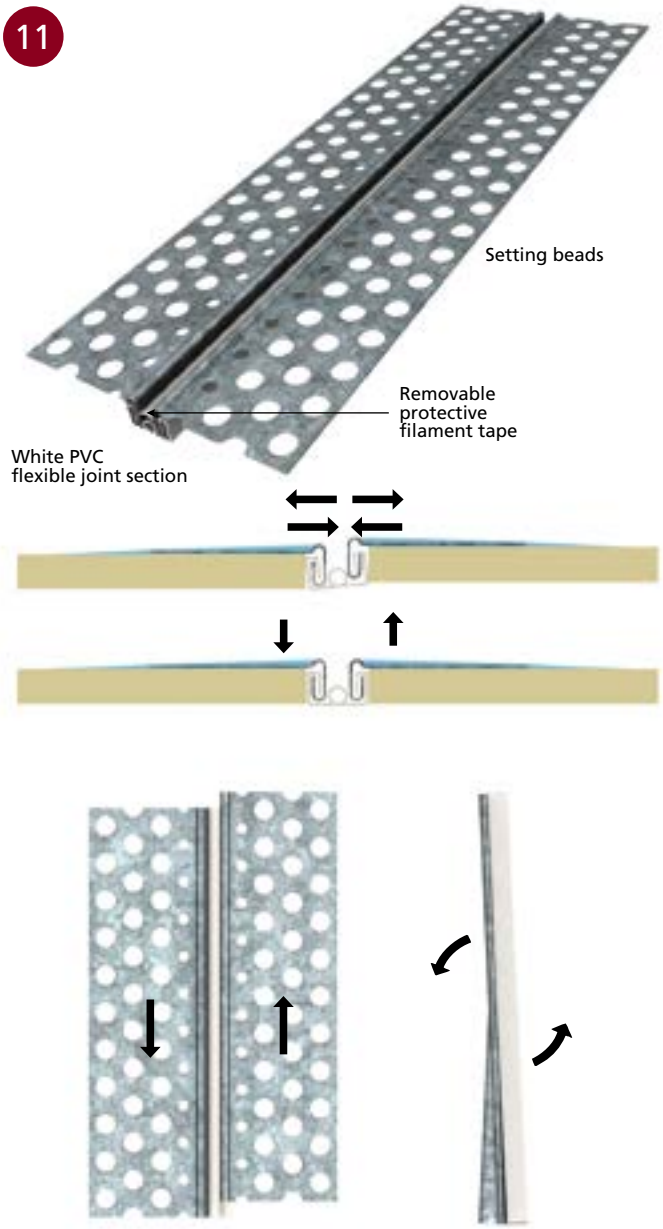
The Rondo EXANGLE® P35 Control Joint has a specially designed PVC rubber flexible joint which locks onto two galvanised (Z200) setting beads.

A protective filament tape is attached to the flexible joint section to keep it clean when applying the setting compound, and is removed on completion. Used in both stud walls and flush building board ceilings, the P35 has been designed for movement of up to 5mm in each direction.

PVC is inherently flame resistant in the sense that if the source of the flame is removed, it will self-extinguish. The P35 has been approved for use in fire rated walls and ceilings. *(See building board manufacturer's installation details.)*

This pre-assembled, ready to use Control Joint has been designed for interior use only and when finished leaves a straight, low profile reveal.

Control joints should be placed as recommended by the building board manufacturer for both ceilings and walls, or where Control Joints occur in the building structure. Control joints should also be used where dissimilar building materials are joined to allow for differential movement in the materials.



■ P35 CONTROL JOINT

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
P35	0.345	0.40	3.0	**G2 GALVABOND Z200**

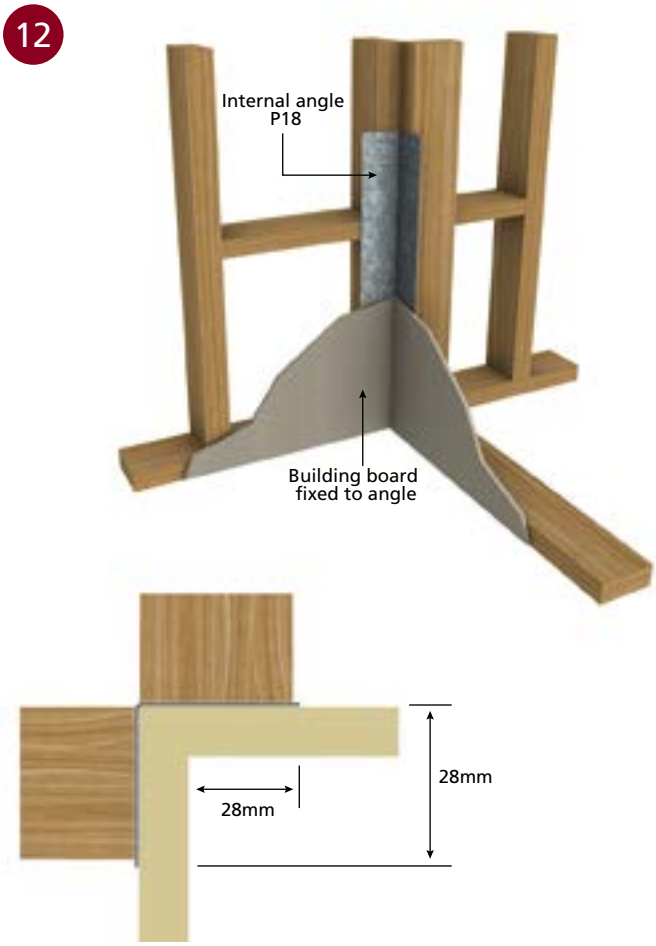
TYPICAL APPLICATION DETAILS (continued)

Internal Angles

P18

The Rondo EXANGLE® internal corner angle is used behind the building board at the intersection of timber walls (*see Figure 12*) to add strength and eliminate the cracking of the internal corner. The light gauge of the material makes it easy to nail to timber studs.

12

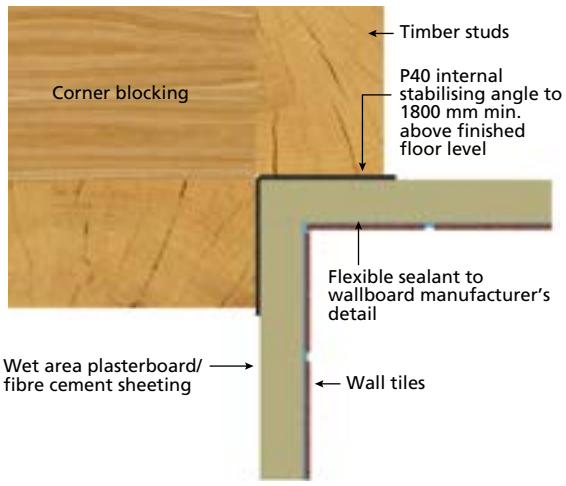


■ **P18 TYPICAL APPLICATION**

P40

Australian Standard AS3740–2010 (*Waterproofing of Wet Areas within Residential Buildings*), requires an internal corner section with a minimum 40mm width either side of a board junction in wet areas.The Rondo EXANGLE® P40 Internal Stabilising Angle should be fixed to timber framed junctions in wet areas at a minimum of 1800mm above the floor level to provide support behind the lining board corner junction (*see Figure 13*).

13



■ **P40 DETAIL**

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
P18	0.121	0.30	2.4	**ZINCALUME**
P40	0.163	0.30	1.8	

Bullnose Sections

R05/R06

Bullnose corner beads were designed for the commercial building trade for use in high traffic areas such as hospitals, schools, and public buildings. In recent times, designers of quality homes have found it useful where a softer look is required.

Bullnose sections are manufactured from ZINCANNEAL™ steel, and are easily painted on site.

INSTALLATION: SINGLE LAYER

STEP ONE

Fix 10 or 13mm plasterboard 7mm back from the corner.

STEP 2.

Fix the Bullnose Section onto the corner ensuring that the stopping edges bear on the plasterboard *(see Figure 14)*.

INSTALLATION: DOUBLE LAYER

STEP ONE

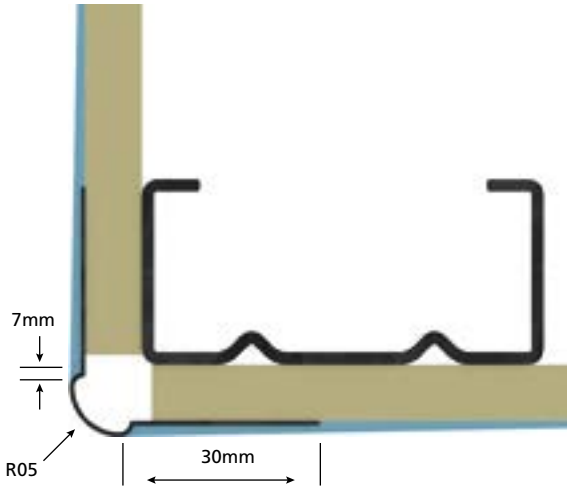
Fix 10 or 13mm plasterboard in line with the corner.

STEP 2.

Fix the Bullnose Section onto the corner ensuring that the stopping edges bear on the plasterboard.

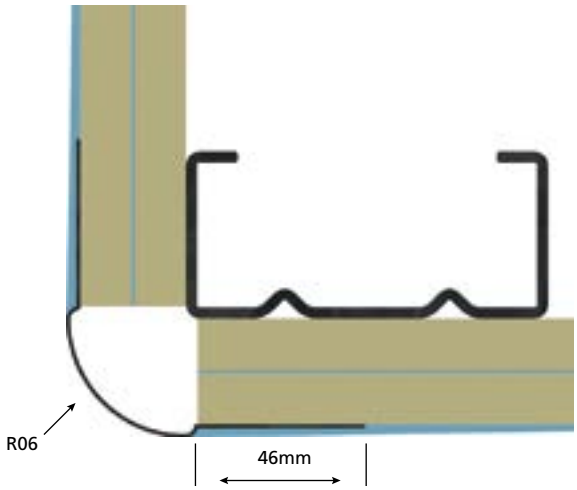
For 16mm plasterboard, fix as per double layer application (see Figure 15).

14



■ R05 INSTALLATION DETAIL

15



■ R06 INSTALLATION DETAIL

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
R05	0.228	0.55	3.0	**ZINCANNEAL**
R06	0.412	0.55	3.0	

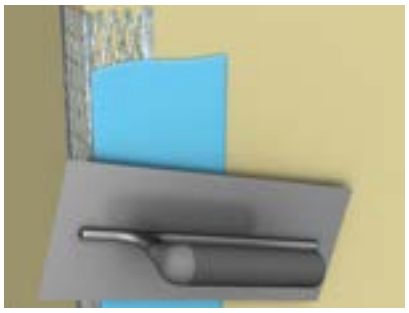
INSTALLATION DETAILS

Finishing Sections

STEP ONE

Beads can be attached by nails or a staple gun at not more than 500mm centres down the legs of the bead, and not more than 100mm from each end.

STEP TWO

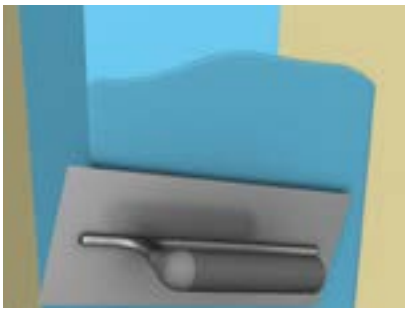


Using a 100mm broad knife, apply setting compound to the bead to a width of approximately 100mm each side of the corner, filling all perforations. Allow to dry, then remove any excess and lightly sand if necessary.

STEP THREE

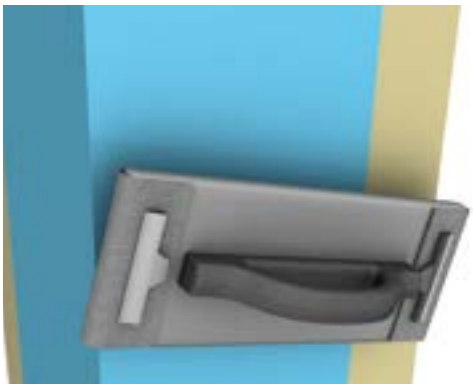
Apply second coat to a width of approximately 120mm. Allow to dry, then remove any excess and lightly sand if necessary.

STEP FOUR



Apply third coat with a 200mm broad knife. Feather edges with a wet paint brush. Allow to dry.

STEP FIVE



Using sandpaper and sanding float, gently sand the dry joints to a smooth even finish. Hold the float diagonally across the joint, taking care not to scuff the paper face of the building board where it meets the setting compound.

NOTE:
The Australian Standard for the application and finishing of Gypsum Linings, AS/NZS 2589:2007 stipulates a Level 4 finish to comply with the requirements of the standard, with certain exceptions, therefore 3 separate applications of setting compounds, sanded as necessary, are required to comply. Reference should be made to the lining board manufacturer for further details.

Arch Beads

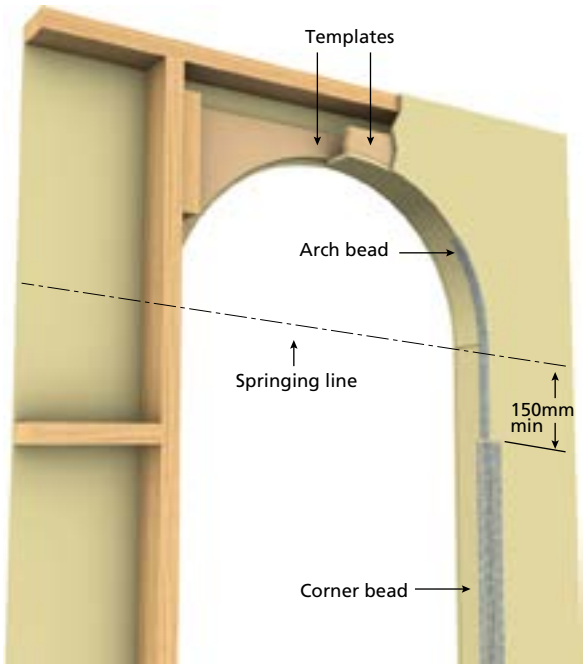
STEP ONE
Position the bead so that the short perforated leg is to the face of the wall and the longer perforated leg is to the arch soffit.

STEP TWO
Fix one end of the arch bead 150mm below the springing line.

STEP THREE
Carefully bend the bead to the profile of the arch, fixing it at 300 mm centres along its length, allowing the bead to finish 150mm below the springing line.

STEP FOUR
Fix the Rondo external corner bead to the vertical edges of the wall to "bond" into the arch bead.

16



■ ARCH BEAD INSTALLATION

P35 Control Joint

STEP ONE
Ensure there is a complete break in the framing behind the Control Joint.

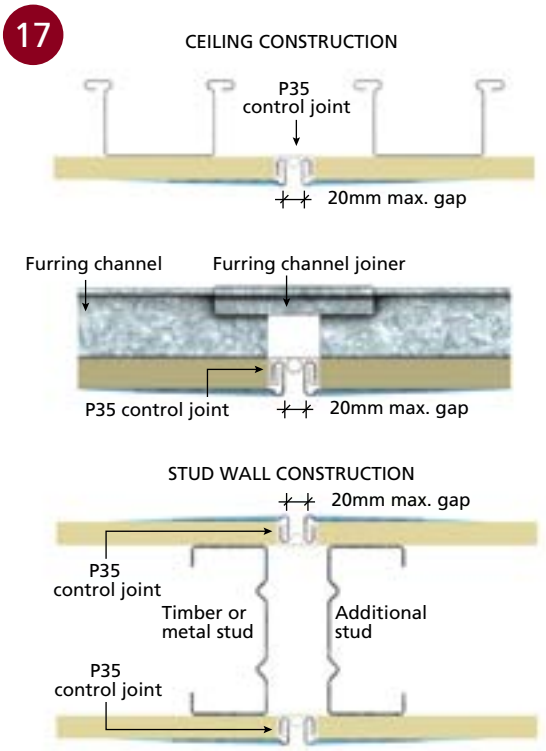
STEP TWO
Allow a 20mm gap between the plasterboard sheets.

STEP THREE
Locate the Rondo P35 Control Joint centrally in the gap. Fasten the flanges to the building board sheets at a maximum of 150mm centres.

STEP FOUR
Set over the bead as for normal joint application using the centre channel nibs as screeding guides.

STEP FIVE
Finish the joint in the normal manner.
When the joint is dry, remove the protective filament tape.

17



■ P35 INSTALLATION

RONDO EXANGLE® RENDER & TEXTURE FINISHING SECTIONS

SUMMARY

The EXANGLE® RT range of profiles are designed to give plasterers a clean, defined edge on straight or curved details for render and texture applications.

SUITABLE FOR:

- External Corners
- Exterior applications (specified products only)
- Shadowline
- Edge Capping
- Control Joints

SPECIAL FEATURES

- Stainless Steel SR02 for outdoor render applications
- 7-year warranty
- Selected products are zinc coated and powdercoated for maximum protection

IN PRACTICE

The EXANGLE® RT Finishing Sections range has been developed over 40 years by Rondo's team of experienced R&D engineers and has been used in many commercial and high-rise residential projects.

IMPORTANT NOTE:
Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page 256 of this manual.

CONTENTS:

RONDO EXANGLE® RENDER & TEXTURE SECTIONS

RENDER CORNER BEADS

R01	4.5mm Radius Render Corner Bead
R02	2.5mm Radius Render Corner Bead

RENDER STOPPING BEADS

R11	Render Stopping Bead suit 10mm Render
R50	Shadowline Render Stopping Bead suit 10mm Render

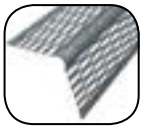
BULLNOSE SECTIONS

R05	10mm Radius Bullnose Corner Bead
R06	22mm Radius Bullnose Corner Bead

EXTERNAL RENDER & TEXTURE BEADS

EP32	Expanded External Corner Bead Z200 Powdercoated
ER11	Render Stopping Bead Z200 Powdercoated
EP50	Shadowline Angle Z200 Powdercoated
EP17	'Blueboard' Stopping Bead Z200 Powdercoated
SR02	2.5mm radius Render Bead Stainless Steel

RENDER CORNER BEADS



R01

R02

RENDER STOPPING BEADS

R11

R50

BULLNOSE SECTIONS

R05/R06

EXTERNAL RENDER BEADS

EP32

ER11

EP50

EP17

SR02

TYPICAL APPLICATION DETAILS

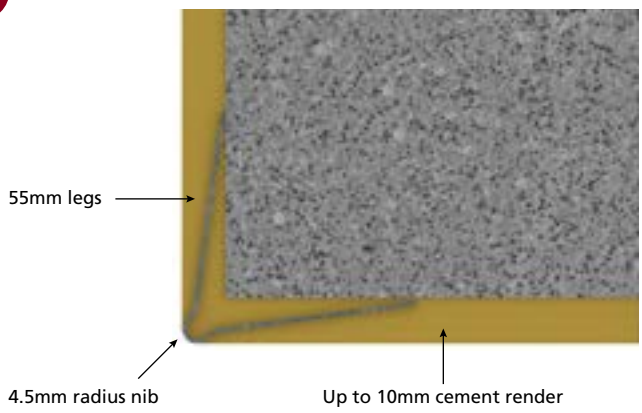
Internal Render Corner Beads

R01

The expanded 55mm long wings enable the cement render to form a strong bond between the base wall and bead allowing for up to 10mm of cement render to be applied.

The wing is expanded up to the nib of the bead, which has a 4.5mm radius, providing a smooth strong knock–resistant corner.

1

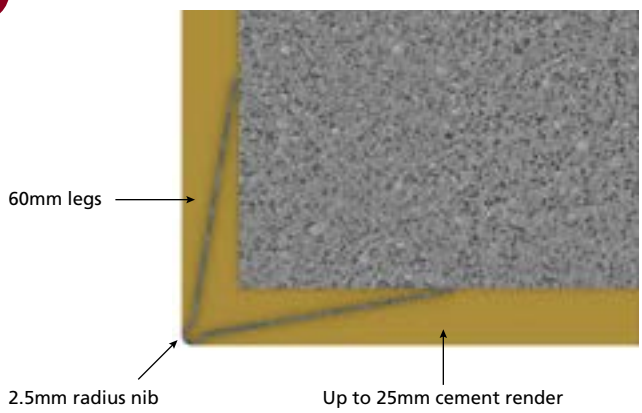


R01 CORNER BEAD DETAIL

R02

A larger section than the R01 which allows for up to 25mm of cement render to be applied due to its longer wing length of 60mm. It is especially suited for use on pre-stressed concrete, and where pre-formed corners require realignment. A smaller 2.5mm radius at the nib provides a sharp strong knock resistant corner.

2



R02 CORNER BEAD DETAIL

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
R01	0.352	0.50	3.0	**Z275 GALVABOND**
R02	0.352	0.50	2.4, 2.8, 3.0	

NOTE: R01 & R02 ARE RECOMMENDED FOR INTERNAL USE ONLY

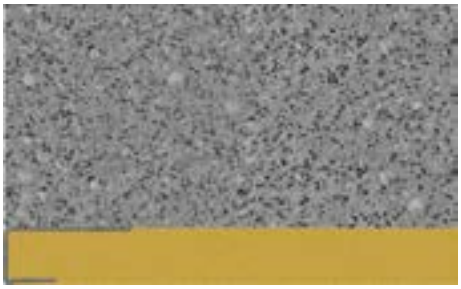
TYPICAL APPLICATION DETAILS (continued)

Render Stopping Beads

R11

Stopping beads are perforated on both the short leg and longer leg. This allows the cement render to bond tightly to the bead as well as the masonry substrate.

3



■ R11 DETAIL

R50

A time-saving method of creating a straight and true 10mm shadowline effect, the R50 bead is ideal for adding a shadowline architectural feature around door jambs, window openings, wall/ceiling and wall/floor junctions.

4

■ R50 DETAIL

5

■ DOOR JAMB WITH SHADOW EFFECT USING R50

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
R11	0.170	0.40	2.4, 2.8, 3.0	**Z200 GALVABOND**
R50	0.286	0.40	3.0	

NOTE: R11 & R50 ARE RECOMMENDED FOR INTERNAL USE ONLY

Bullnose Sections

R05/R06

Bullnose corner beads were designed for the commercial building trade for use in high traffic areas such as hospitals, schools, and public buildings.

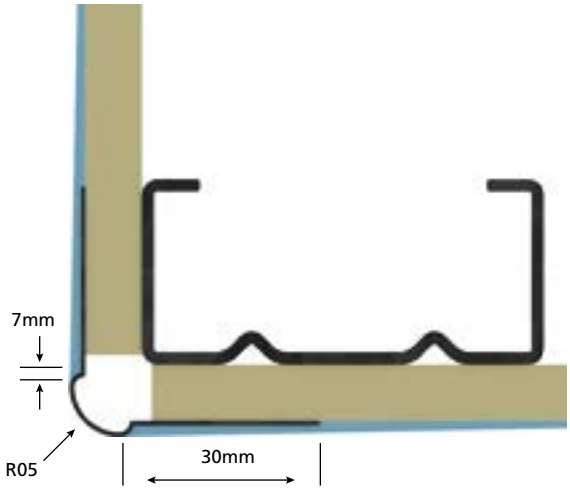
In recent times, designers of quality homes have found it useful where a softer look is required. The beads are primarily for use externally for `Blueboard' Texture coated applications as well as similar fibre cement cladding systems which are finished with stucco weatherproof coatings.

Bullnose sections are manufactured from ZINCANNEAL™ steel, and are easily painted on site.

INSTALLATION

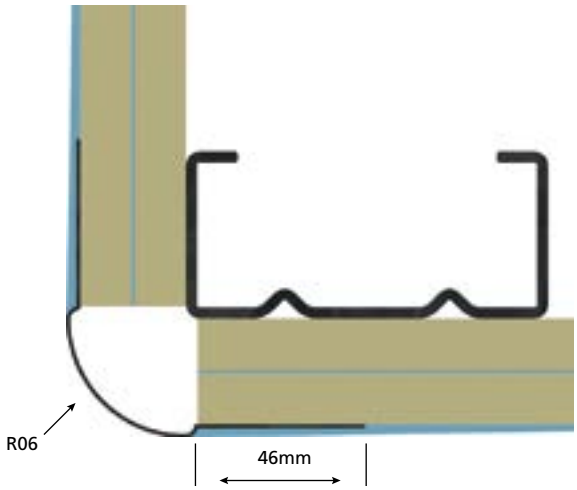
As shown in Figures 6 & 7, whether using one or two layers of board it is important to ensure the board is 'cutback' at the corner to avoid interfering with the radiused nib of the section.

6



■ R05 INSTALLATION DETAIL

7



■ R06 INSTALLATION DETAIL

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
R05	0.228	0.55	3.0	**ZINCANNEAL**
R06	0.412	0.55	3.0	

NOTE: R05 & R06 ARE RECOMMENDED FOR INTERNAL USE ONLY

TYPICAL APPLICATION DETAILS (continued)

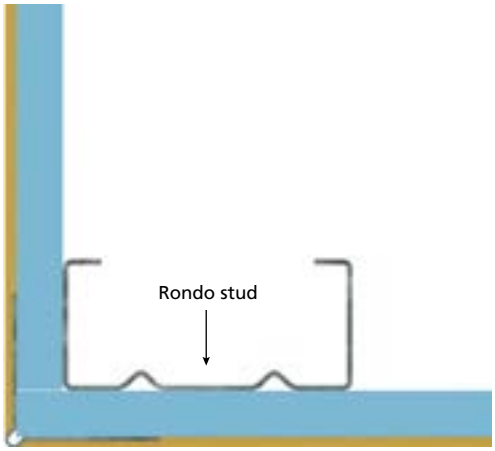
External Render & Texture Beads

EP32

For use on exterior facades of buildings and not recommended for use with cement render, the EP32 expanded corner bead enables a straight, strong, knock-resistant corner to be produced.

The diamond hole profile on the 32mm long legs provides good penetration of the finishing texture coat allowing a strong bond with the substrate to be achieved *(see Figure 8).*

8



EP32 DETAIL

ER11

The ER11 Stopping Bead is suitable for use with 6mm fibre cement sheeting to allow a clean finish to the texture coating application *(see Figure 9).*

9

ER11 DETAIL

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
EP32	0.164	0.40	3.0	**Z200 GALVABOND POWDERCOATED**
ER11	0.194	0.40	3.0	**Z200 GALVABOND POWDERCOATED**

EP17

The EP17 profile is used as a bottom edge capping to suit texture coated 7.5mm `Blueboard' type applications but can also be used in vertical applications *(see Figure 10).*

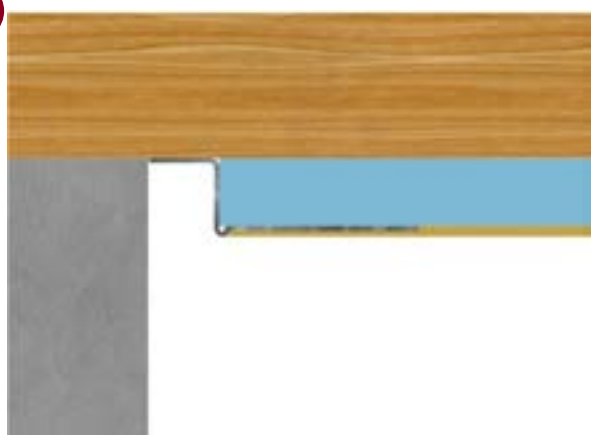
10

EP17 DETAIL

EP50

Particularly in wet area applications with fibre cement sheeting, the EP50 will produce a shadow effect at either wall/ceiling or wall/door frame details *(see Figure11).*

11



EP50 DETAIL

IMPORTANT NOTE FOR ENVIRONMENTAL CONDITIONS

Although the Rondo E-Beads range is intended for outdoor use and is produced using the most effective corrosion-resistant materials and coatings, there are limitations to the product's applications.

It is therefore important that all Performance Applications and Conditions outlined on Page 191 & 192 are followed.

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
EP17	0.268	0.50	3.0	**Z200 GALVABOND POWDERCOATED**
EP50	0.149	0.40	3.0	**Z200 GALVABOND POWDERCOATED**

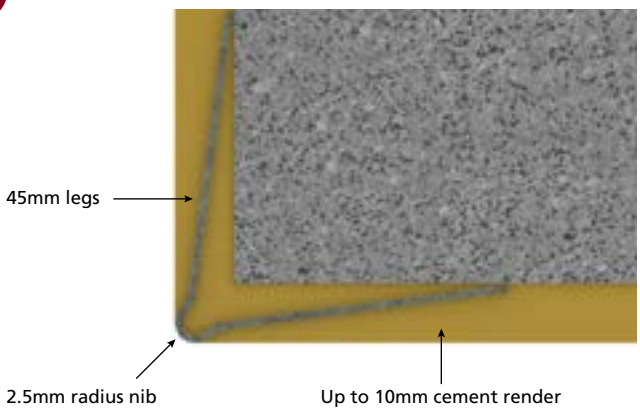
TYPICAL APPLICATION DETAILS (continued)

External Render & Texture Beads

SR02

The Rondo SR02 Stainless Steel Render Corner Bead combines the popular R02 profile with an exceptionally corrosion resistant high polish 304 grade stainless steel.The bead has a 2.5mm nib to produce sharp well defined edges and its 60mm wings will comfortably accept up to 25mm of render depth. The nailing strip enables quick and easy fastening which must always be with 316 grade Stainless Steel Clouts. Refer to the 'Product Applications' table on page 192 for the appropriate use of this product. If in doubt please contact your local Rondo Sales Office for advice.

12



■ SR02 CORNER BEAD DETAIL

IMPORTANT INFORMATION:

The highly corrosion resistant 304 BA Grade Stainless Steel from which the SR02 bead is manufactured belongs to the "Austinitic" group of stainless steels and is therefore non-magnetic.It is important that when offered a stainless steel bead the correct grade is specified, just referring to stainless steel as "Marine Grade" can be misleading and certainly the "magnet test" is often irrelevant.

	APPROX WEIGHT PER LINEAL METRE (kg)	MATERIAL THICKNESS (BMT)	STD LENGTHS (metres)	MATERIAL SPECIFICATIONS
SR02	0.293	0.45	3.0	**304BA STAINLESS**

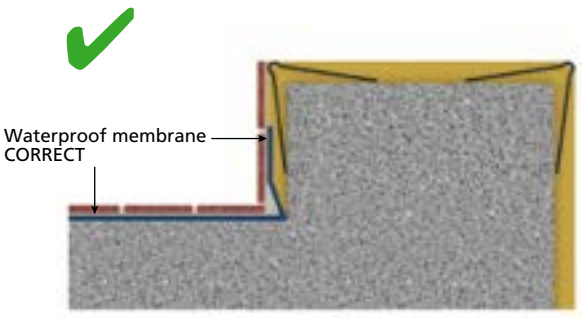
CORRECT APPLICATION OF WATER PROOFING MEMBRANE

When the SRO2 is used in areas which are exposed to a constant presence of moisture, such as hobs to balconies and retaining walls, it is important to ensure that the correct waterproofing procedure is used.

To prevent a wicking effect taking place, where the moisture is drawn up by the render and trapped between the substrate and the bead, it is essential that a waterproofing membrane is applied after the Render application. This seals the render from potential ingress of moisture and protects the bead from possible corrosion due to the wicking effect.

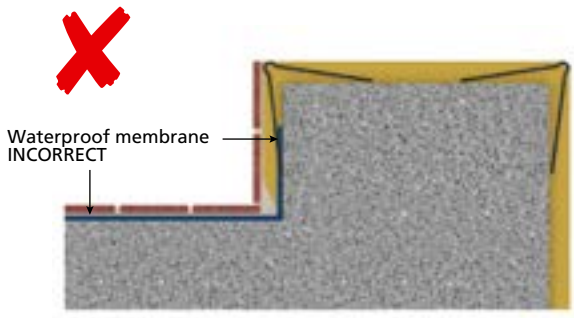
Refer to Figures 13 & 14 for correct and incorrect application of waterproofing membranes.

13



■ CORRECT APPLICATION OF WATERPROOFING

14



■ INCORRECT APPLICATION OF WATERPROOFING

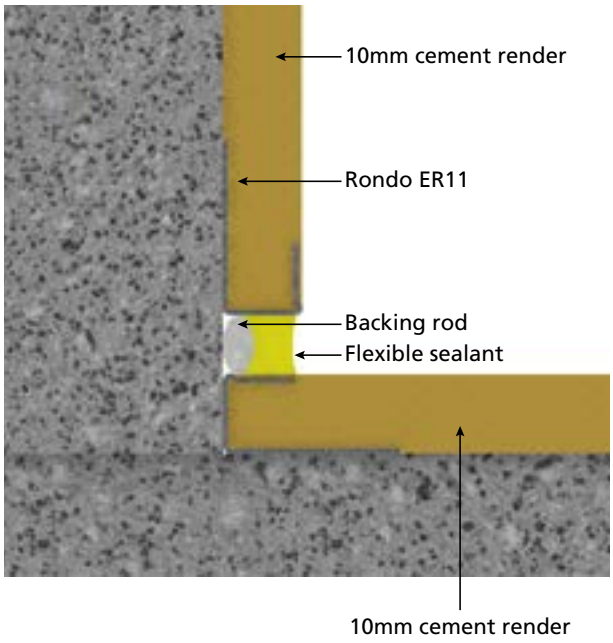
TYPICAL APPLICATION DETAILS (continued)

Control Joint

USING ER11

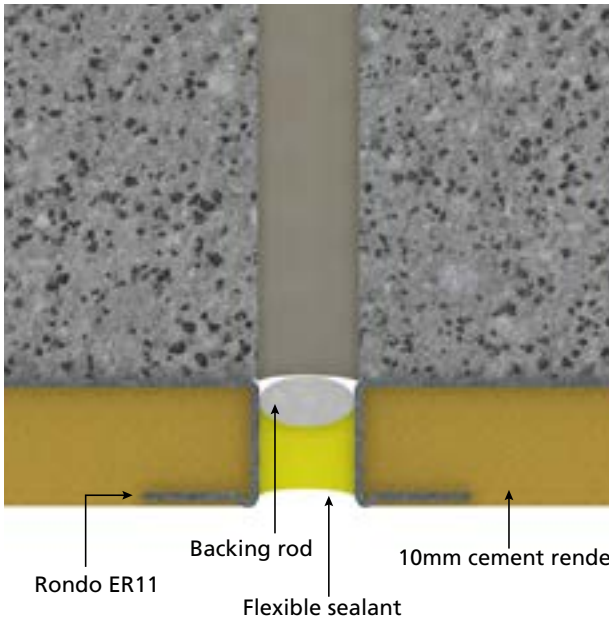
Both vertical and horizontal Control Joints are designed to accommodate differential movement between various elements. The details here demonstrate how a Control Joint can be constructed using Rondo render bead ER11 for exterior construction. These details are for 10mm thick render or plasterboard. For other thicknesses contact your local Rondo technical representative.

15



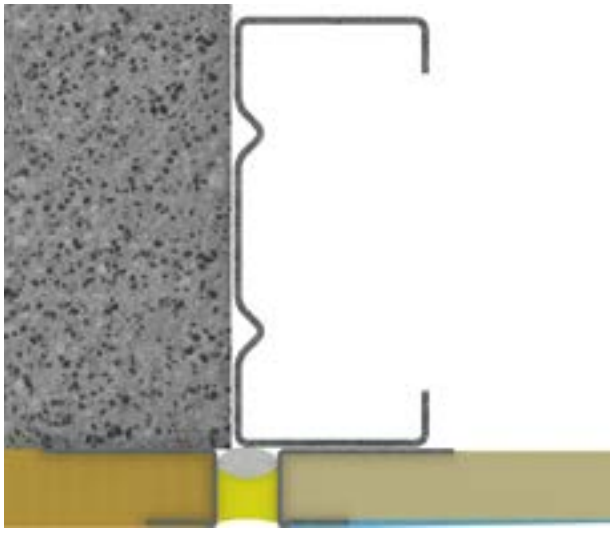
■ CORNER DETAIL

16



■ RENDER CONTROL JOINT

17



INSTALLATION DETAILS

Render Corner Beads

STEP ONE

Before applying render beads, ensure that the substrate that the bead will be attached to is completely dry and free from contaminants such as acid cleaning chemicals. If brick or concrete cleaning solution has been used to wash the walls, they must be air dried before the bead is applied.

STEP TWO

It is important the correct bead is selected for exterior applications. For exterior applications, use the Rondo E-Bead range or the stainless steel SRO2 bead detailed in this brochure.

STEP THREE

To ensure a plumb, straight corner is achieved, a temporary fixing at the top of the bead should be applied. The bead should then be aligned with a spirit level, allowing for a minimum 10mm of render before securely fixing in place. 20mm hardened galvanised masonry nails nailed into the mortar, or into the brick or block-work if using a power gun, will achieve the desired result.

ENSUIRING THE BEAD IS PLUMB AND STRAIGHT

NAILING INTO THE MORTAR ON MASONRY WALLS

STEP FOUR

In exterior applications, if the beads have been installed several days prior to rendering, they should be washed down with clean tap water and left to air dry to ensure any contaminants such as salt spray are removed.

STEP FIVE

Cement render should only be mixed with clean tap water using screened salt-free sand only. Ensure any mixing additives that help in the mixing process do not contain chemicals that may affect the metal finishing beads.

STEP SIX

After rendering and before applying a texture or paint finish, the render must be completely dry and free from any moisture. If a waterproof membrane is to be installed it should be done after the render has been applied and before texture coating or painting. Refer to Page 189 for correct waterproofing procedures.

NOTE:

- Products delivered to building sites must be stored in a dry protected area away from contaminants such as salt spray or acid spray from cleaning.
- Ensure that finished areas which are not naturally washed by rainwater are manually washed every six months or sooner in coastal areas as part of the buildings maintenance program, this will ensure air born contaminants are regularly removed.
- Bore water should not be used for any cleaning processes due to the possibility of high levels of chloride and other contaminants being present.
- E-Beads should not be used in external applications where the render/texture may be exposed to high levels of moisture or continuous damp cycles and evaporation such as planter boxes or garden beds.

NOTE: Always use fasteners that are compatible and are of equal durability to the product. Hardened galvanised nails should be used with the E-Bead Range and all interior beads. The SRO2 should be fastened with stainless steel nails only, such as 25 x 2.80mm 316 grade Stainless Steel Clouts available from Koala Nails.

PRODUCT APPLICATIONS

PRODUCT APPLICATIONS	PRODUCT		
	EP32	ER11	SRO2
7 Year Warranty *	✔	✔	✔
Exterior use	✔	✔	✔
Within 500m of fossil fuel combustion	✘	✘	✔
Within 1km of active surf	✘	✘	✔
Within 100m of open Salt water	✘	✘	✔
Within 500m of heavy industrial emissions	✘	✘	✔
Contact with dirty bore water or high chloride soils	✘	✘	✘
High levels of damp, moist conditions *(e.g. planter boxes)* †	✘	✘	✔
Suitable for Render applications	✘	✔	✔
Suitable for Texture applications	✔	✔	✔

NAILS			
Stainless	✘	✘	✔
Galvanised	✔	✔	✘

** Refer to warranty conditions.* *† Protective waterproofing required.*

RONDO EXTREME® PVC BEADS

SUMMARY

Rondo EXTREME® PVC beads are made from high quality, UV-stabilised material, and are suitable for a range of indoor or outdoor applications for plasterboard, render, or texture coating.

SUITABLE FOR:

- Plaster, render and texture applications
- Shadowline features
- Archways
- Bullnose corners
- Window sills
- Edge capping
- Outdoor applications
- Indoor applications

SPECIAL FEATURES

- 15-year warranty
- All products are UV-stabilised and suitable for outdoor use
- Tear-away profiles available for clean, sharp edges

IN PRACTICE

Although still relatively new, the Rondo EXTREME® PVC Range has been used by leading Australian Contractors in projects such as ***Melbourne's Australian Tax Office*** and ***Yarra's Edge Apartments***.

IMPORTANT NOTE:
Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page 256 of this manual.

CONTENTS:

RONDO EXTREME PVC BEADS

For Plasterboard Applications

EXTERNAL ANGLES

PE90	90° External angle
PE90SL	90° Slimline External angle
PE135	135° External angle

EXTERNAL ARCHWAY BEADS

PEA9024	90° Archway angle
PE90SLA30	90° Slimline Archway angle

EXTERNAL BULLNOSE ANGLES

PBN90	90° Bullnose External angle
PBNA90	90° Bullnose Archway angle
PBN13530	135° Bullnose External angle

SHADOW BEADS & L BEADS

PTSH10	10mm Tear-away Shadow Bead
PTLB	Tear-away L-Bead
PSLB8030	80mm Super L Bead

CASING BEADS & EXPANSION JOINTS

PCB	Casing Bead
PDM	H Mould
PEXPH30	Hideaway Expansion angle
PEXP10V30	10mm V Expansion Joint

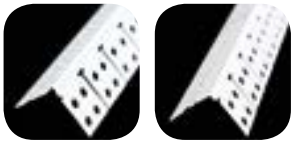
INTERNAL ANGLES

PADJIN30	Adjustable Internal angle 70°–150°
PINT9030	90° Internal angle

EXTERNAL ANGLES

PE90 PE90SL PE135

EXTERNAL ARCHWAY BEADS



PEA90 PE90SLA30

EXTERNAL BULLNOSE ANGLES

PBN90 PBNA90 PBN13530

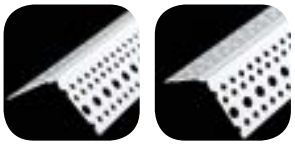
SHADOW BEADS & L BEADS

PTSH10 PTLB PSLB8030

CASING BEADS & EXPANSION JOINTS

PCB PDM PEXPH30 PEXP1OV30

INTERNAL ANGLES



PADJIN PINT9030

For Render Applications

EXTERNAL RENDER BEADS

RE25	Render External Bead - 2.5mm build
RE35	Render External Bead - 3.5mm build
RE45	Render External Bead - 4.5mm build
RE60	Render External Bead - 6mm build
RELA30	Large Adjustable Render External Bead - 4-12mm build
RE9025	90° Render External Bead - 2.5mm build
RE1352530	135° Render External Bead - 2.5mm build

EXTERNAL RENDER MESH BEADS

RMESH2530	Render Mesh Bead - 2.5mm build
RMESH3530	Render Mesh Anchor Bead - 3.5mm build

EXTERNAL RENDER ARCHWAY BEAD

REA2530	Render External Archway - 2.5mm build

EXTERNAL RENDER TEAR-AWAY L BEAD

RTLB102530	10mm Render Tear-away L-Bead - 2.5mm build

RENDER SILL & REVEAL BEADS

RWST	Window Sill Bead
RRV	Reveal Bead

RENDER EXPANSION JOINT & STARTER BEAD

REUXP30	Render Universal Expansion joint. 2.5 -6mm build
RST	Starter Bead

EXTERNAL RENDER BEADS


RE25/RE35/ RE45/RE60


RELA30


RE9025


RE1352530

EXTERNAL RENDER MESH BEADS


RMESH2530


RMESH3530

EXTERNAL RENDER ARCHWAY BEAD


REA2530

EXTERNAL RENDER TEAR-AWAY L BEAD


RTLB102530

RENDER SILL & REVEAL BEADS


RWST


RRV

RENDER EXPANSION JOINT & STARTER BEAD


REUXP30


RST

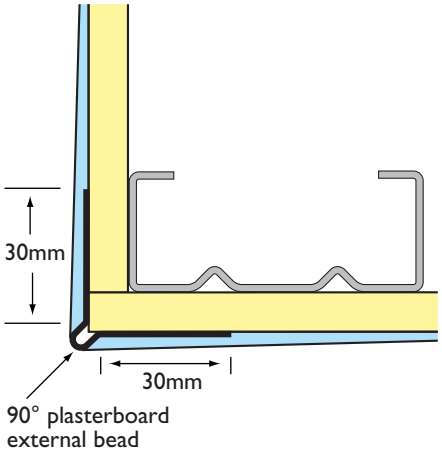
EXTERNAL PLASTERBOARD BEADS

External Angles

PE90 — 90° PLASTERBOARD EXTERNAL ANGLE

The impact-resistant 90° external corner bead is suitable for use with plasterboard in both wet and dry areas, as well as fibre cement sheeting. PE90 is available in a variety of lengths to reduce waste and is perforated to ensure maximum setting compound penetration. The PE90 can be installed by spray adhesive or stapling.

1



PE90 DETAIL

PE90SL — 90° PLASTERBOARD SLIMLINE EXTERNAL ANGLE

The PE90SL is a slimline corner bead with a sharp, modern architectural nib that is designed to minimise the use of compound. This bead can be used in both wet and dry areas with plasterboard and fibre cement sheeting, and provides a neat finish to corners, such as skirting boards.

PE135 — 135° PLASTERBOARD EXTERNAL ANGLE

The 135° profile provides for splayed and offset corners, particularly around bay windows.
The PE135 offers a straight and definitive finish that is impact resistant.

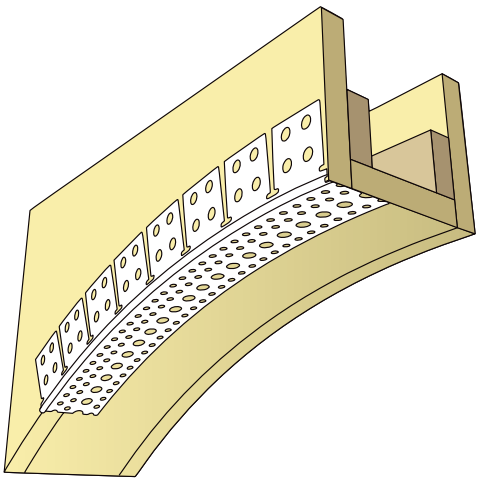
	STANDARD LENGTHS (mm)		
	2400	2700	3000
PE90	●	●	●
PE90SL	●	●	●
PE135	●		●

External Archway Beads

PEA90 — 90° PLASTERBOARD ARCHWAY ANGLE

Finishing plasterboard or fibre cement around archways and curves can be achieved with the PEA90. One leg is pre-cut to allow the bead to be fixed around both outside and inside radiuses, providing a clean and engineered finish. Either spray adhesive or staples can secure this bead.

2



PEA90 DETAIL

PE90SLA30 — 90° PLASTERBOARD SLIMLINE ARCHWAY ANGLE

The PE90SLA30 comprises a unique design that creates an attractive slim look around curves, such as archways or bulkheads, whilst minimising the amount of setting compound required.

	STANDARD LENGTHS (mm)		
	2400	2700	3000
PEA90	●		●
PE90SLA30			●

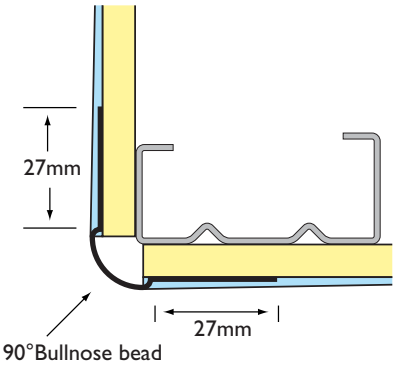
EXTERNAL PLASTERBOARD BEADS (continued)

External Bullnose Angles

PBN90 — 90° PLASTERBOARD BULLNOSE EXTERNAL ANGLE

An elegant finish to external corners of both plasterboard and fibre cement lined walls can be achieved with this 10mm bullnose bead. Suitable for accenting details in wall finishes such as niches, the bullnose bead is installed by either spray adhesive or staples.

3



■ PBNA90 DETAIL

PBNA90 — 90° PLASTERBOARD BULLNOSE ARCHWAY ANGLE

The bullnose profile creates a unique architectural feature on arches, curves and bulkheads, and allows for easy installation whilst using a minimum amount of setting compound.

PBN135 — 135° PLASTERBOARD BULLNOSE EXTERNAL ANGLE

With its superior design, the 135° Bullnose External Bead is easily installed and creates soft splayed corners, achieving a stylish finish on bay windows or decorative reveals.

	STANDARD LENGTHS (mm)		
	2400	2700	3000
PBN90	●	●	●
PBNA90	●		●
PBN135	●		●

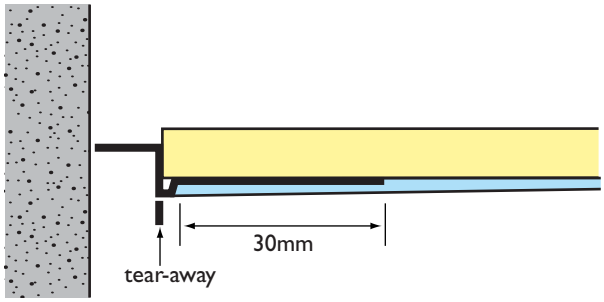
PLASTERBOARD BEADS

Shadow Beads & L Beads

PTSH10 — PLASTERBOARD TEAR-AWAY SHADOW BEAD

The PTSH10 provides a 10mm shadow effect around ceiling perimeters, doors and window frames. The tear off strip acts as a guide for the setting tool and stops compound from entering the reveal. Removing the tear-away strip is quick and easy, and creates a clean and defined edge. A version offering a 6mm reveal is also available (PTSH6).

4

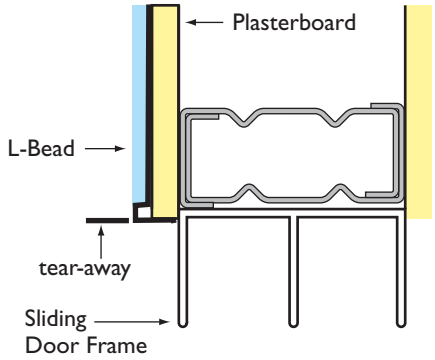


■ PTSH1030 DETAIL

PTLB — PLASTERBOARD TEAR-AWAY L-BEAD

The Tear-away L-Bead is suitable for use with both plasterboard and fibre cement, to act as a stop bead against different substrates, such as sliding glass door frames. The tear-away strip ensures a quick and easy removal of excess compound.

6

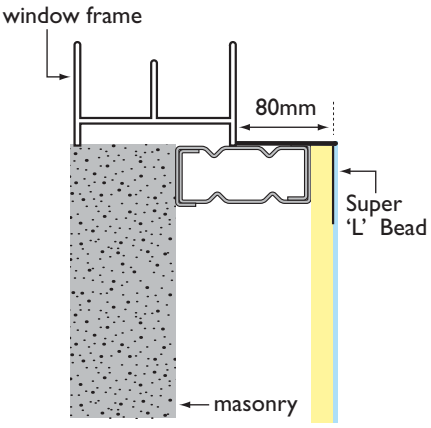


■ PTLB DETAIL

PSLB8030 — PLASTERBOARD 80mm SUPER 'L' BEAD

The Tear-away L-Bead is suitable for use with both plasterboard and fibre cement, to act as a stop bead against different substrates, such as sliding glass door frames. The tear-away strip ensures a quick and easy removal of excess compound.

7



■ PSLB8030 DETAIL

	STANDARD LENGTHS (mm)		
	2400	2700	3000
PTSH10			●
PTLB			●
PSLB8030			●

NOTE:
Gap filling adhesives with a petroleum base must not be used due to the potential reaction between the plastic and the adhesive.

PLASTERBOARD BEADS (continued)

Casing Beads & Expansion Joints

PCB — PLASTERBOARD CASING BEADS

EXTREME® plasterboard casing beads are available in sizes to suit 4.5, 6, 10, 13 & 16mm building boards. The beads fit tightly over the edge of the plasterboard to act as protection at abutments. Plasterboard casing beads are applied with a spray adhesive and easily painted over, requiring no setting.

PDM — PLASTERBOARD H-MOULD

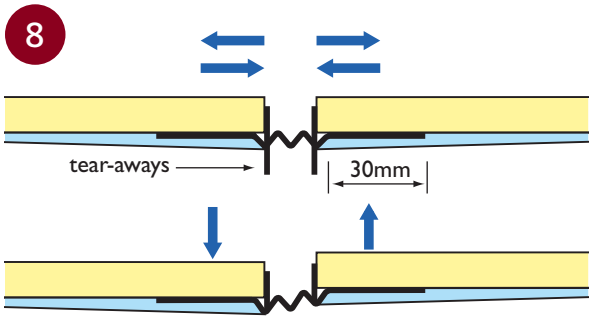
Available to suit 4.5, 6, 10 & 13mm lining boards, Divisional H-Moulds are used as slip-on trimming between sheets of board and can be painted over, with no setting required. A range of Divisional Moulds for internal and external corners are also available (PDMIN & PDMEX).

PEXPH30 — PLASTERBOARD HIDEAWAY EXPANSION ANGLE

The PEXPH30 can be applied to plasterboard or fibre cement of any thickness, and is made from flexible plastic to allow for considerable movement. PEXPH30 incorporates tear off strips to protect the centre of the expansion joint from excess setting compound. Once installation is complete, the tear-away strips are quickly and easily removed to reveal a clean finish.

PEXP10V30 — PLASTERBOARD 10MM 'V' EXPANSION JOINT

The V Expansion Joint is 10mm deep, flexible, and incorporates tear off strips to facilitate easy removal of excess compound after installation.



■ PEXPH30 DETAIL

	STANDARD LENGTHS (mm)			
	2400	2700	3000	3600
PCB4530			●	
PCB06	●	●	●	●
PCB10	●	●	●	●
PCB13	●		●	●
PCB1630			●	
PDM45	●		●	
PDM06	●		●	●
PDM10	●	●	●	●
PDM1330			●	
PEXPH30			●	
PEXP10V30			●	

Internal Angles

PADJIN — 70°-150° PLASTERBOARD ADJUSTABLE INTERNAL ANGLE

In situations where an internal corner bead is required for plasterboard or fibre cement and the corner is splayed, the PADJIN30 is the perfect solution as it can be adjusted between 70°-150° to create a neat internal finishing.

PINT9030 — PLASTERBOARD FLEXIBLE INTERNAL ANGLE

The Tear-away L-Bead is suitable for use with both plasterboard and fibre cement, to act as a stop bead against different substrates, such as sliding glass door frames. The tear-away strip ensures a quick and easy removal of excess compound.

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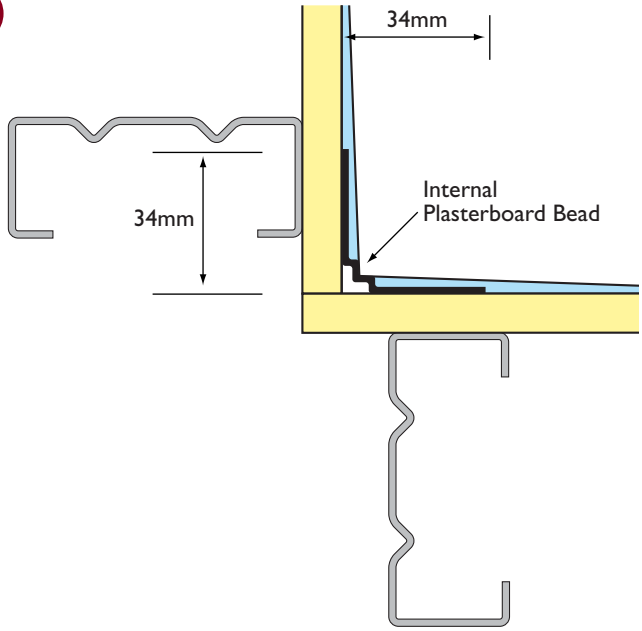
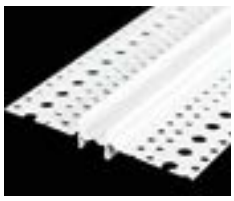


■ INTERNAL PLASTERBOARD BEAD DETAIL

	STANDARD LENGTHS (mm)	
	2400	3000
PADJIN	●	●
PINT9030		●

TYPICAL INTERNAL APPLICATIONS

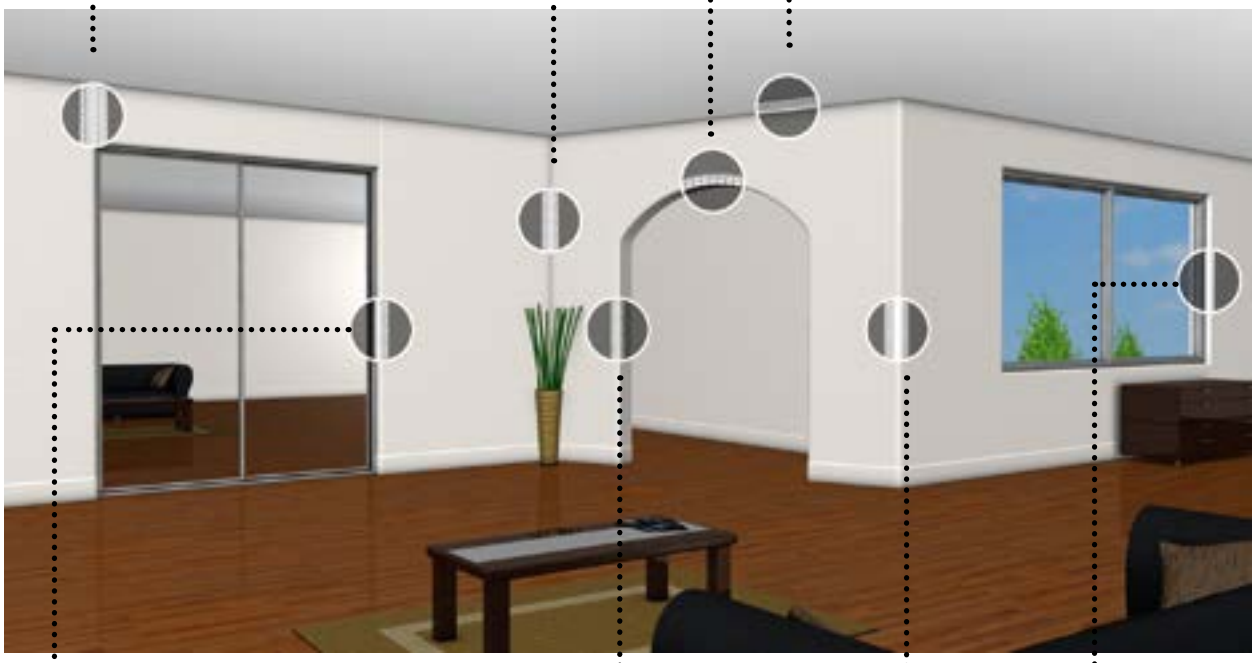


HIDEAWAY EXPANSION ANGLE

INTERNAL ANGLE

90° ARCHWAY ANGLE

TEAR-AWAY SHADOW BEAD



TEAR-AWAY L BEAD

90° EXTERNAL ANGLE

90° BULLNOSE ANGLE

SUPER L BEAD

NOTE:
This illustration shows potential uses for Rondo EXTREME® Plasterboard Beads and is not meant to imply any design imperative. Where any query occurs, contact your supplier, Rondo representative, or tradesman.

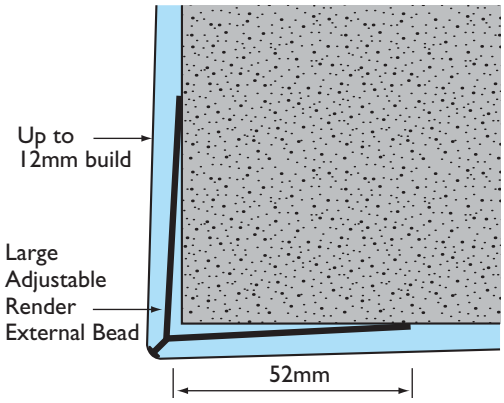
EXTERNAL RENDER BEADS

Render Beads

RE25/RE35/RE45/RE60 — RENDER EXTERNAL BEAD

Suitable for brick work, block work, concrete, polystyrene, hebel and fibre cement sheeting, which require render builds of 2.5mm, 3.5mm, 4.5mm & 6.0mm – this external corner bead incorporates a unique anchor cap head that is designed to lock the render compound into the wall cladding and is fully UV stabilised for maximum life under harsh environmental conditions.

10

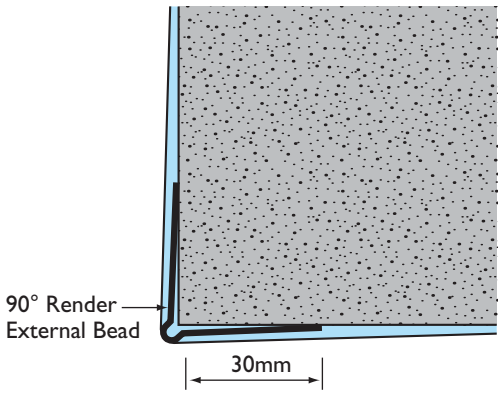


■ RELA30 DETAIL

RELA30 — LARGE ADJUSTABLE RENDER EXTERNAL BEAD

Featuring a unique anchor cap and 52mm wide wings that can be adjusted between 75° & 135°, this multipurpose external bead is suitable for render thicknesses of 4 to 12mm.

11



■ RE9025 DETAIL

RE9025/RE1352530 — RENDER EXTERNAL BEAD (90º/ 135º)

The 90° and 135° External Render Beads can be used on wall claddings that only require a 2.5mm to 3.5mm build of finishing render. The RE9025 can be used to strengthen corners on fibre cement sheeting and RE1352530 is suitable for splayed corners and bay windows.

	STANDARD LENGTHS (mm)		RENDER BUILD (mm)
	2400	3000	
RE25	●	●	2.5
RE35	●	●	3.5
RE45		●	4.5
RE60		●	6.0
RELA30		●	4–12
RE9025	●	●	2.5
RE1352530		●	2.5

EXTERNAL RENDER BEADS (continued)

External Render Mesh Beads

RMESH2530 — RENDER MESH BEAD 2.5mm

The pre-meshed external bead allows for a strong bond to form between the bead and wall claddings requiring a 2.5mm build. In particular, RMESH2530 can be used with fibre cement cladding to add strength to the corner.

RMESH3530 — RENDER MESH ANCHOR BEAD 3.5mm

The Incorporating an anchor cap nib, this pre-meshed external bead is designed for use with hebel and polystyrene panel systems requiring a 3.5mm build of finishing render.

	STANDARD LENGTHS (mm)		**RENDER BUILD** (mm)
	2400	**3000**	
RMESH2530		●	2.5
RMESH3530		●	3.5

External Render Archway Bead & Tear-away L Bead

REA2530 — 90° RENDER EXTERNAL ARCHWAY BEAD

The REA2530 is a flexible external archway bead, suitable for 2.5 to 3.5mm render builds on cladding materials installed over substrates, such as polystyrene, hebel, brick work and blockwork – to create an aesthetic finish on archways, curves and circles.

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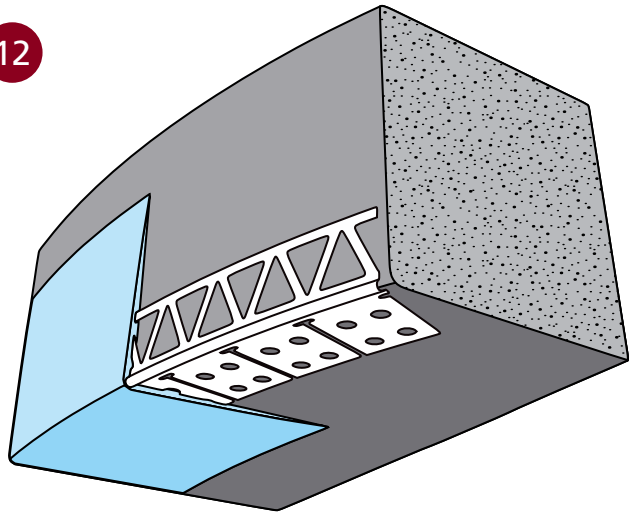

REA2530 DETAIL

RTLB102530 — RENDER TEAR-AWAY L-BEAD

This stopping bead provides a superior finish to wall claddings that are against a different material, such as door frames and brickwork, and bottom edges of fibre cement sheeting. Its tear-away strip is easily removed, taking away all excess compound to reveal a straight and defined edge.

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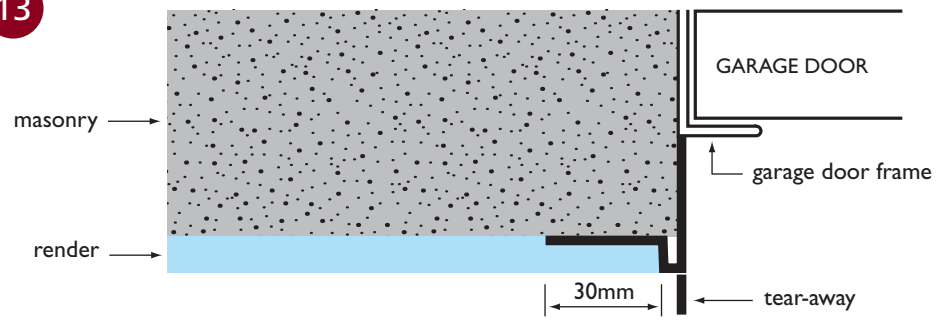

RTLB102530 DETAIL

	STANDARD LENGTHS (mm)		RENDER BUILD (mm)
	2400	3000	
REA2530		●	2.5
RTLB102530		●	2.5

EXTERNAL RENDER BEADS (continued)

Render Sill & Reveal Beads

RWST — RENDER WINDOW SILL BEAD

Render Window Sill Beads are available in 40, 60, and 75mm widths to suit render builds of 3.5 or 6.0mm, and create a 15° slope away from the window frame.

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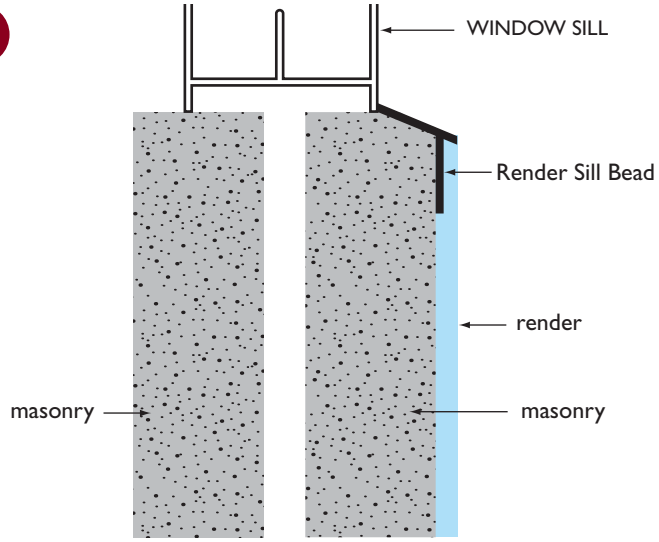
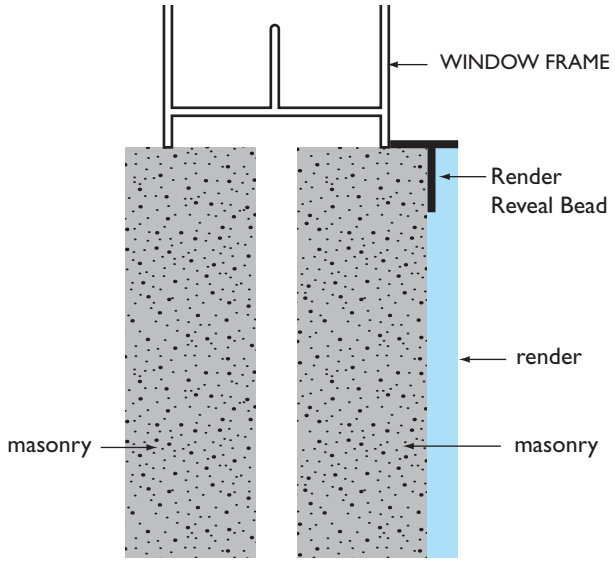


■ WINDOW SILL BEAD DETAIL

RRV — RENDER REVEAL BEAD

This 90° Render Reveal Bead is available in 40mm, 60mm & 75mm widths to suit 3.5mm or 6.0mm render builds and can be used around window and sliding door openings. RRV's should be finished with a suitable water based sealant.

15



■ REVEAL BEAD DETAIL

NOTE:
Reveal beads must be fully bonded to the backing substrate using a high grade water-based adhesive or patch render. This is an extremely important requirement when using reveal beads.

	SIZES (mm)			**RENDER BUILD** (mm)	**STANDARD LENGTHS** (mm)
	40	**60**	**75**		
RWST	●	●	●	3.5	3000
RRV	●	●	●	3.5	3000
RRV	●	●	●	6.0	3000

Render Expansion Joint & Starter Bead

REUXP30 — UNIVERSAL RENDER EXPANSION JOINT

This Universal Render Expansion Joint is reversible allowing 2.5mm or 3.5mm render build on one side, and 6mm build on the other. REUXP30 is made from UV-stabilised PVC in a rubberised form which will both expand and contract, allowing for longitudinal movement when used with cladding sheeting and includes an anchor cap design for better render rentention. The 2.5 and 3.5mm side also features a tear off strip that guards against the expansion gap from filling with render and is easily removed upon completion.

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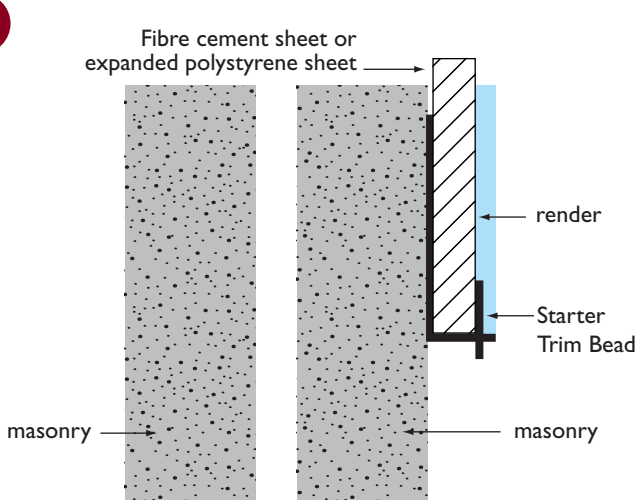


RENDER STARTER BEAD DETAIL

RST — RENDER STARTER BEAD

Designed with nailing locators on the rear leg to assist fixing to all wall framing, RST are available in many sizes to suit varying wall thicknesses and different render builds. Render Starter Beads are compatible with polystyrene, hebel and fibre cement sheeting, for use at the bottom of walls, and on parapets and bulkheads where the edge of the cladding requires protection. RST is available with or without weep holes.

	SIZES (mm)						**RENDER BUILD** (mm)	**STANDARD LENGTHS** (mm)
	7.5	**40**	**50**	**60**	**75**	**100**		
REUXP30							2.5–6.0	3000
RST752530	●						2.5	3000
RST	●	●	●	●	●	●	3.5	3000
RSTNWH (no weep holes)		●		●	●	●	3.5	3000
RST		●	●	●	●	●	6.0	3000
RSTNWH (no weep holes)		●					6.0	3000

TYPICAL EXTERNAL APPLICATIONS

RENDER WINDOW SILL BEAD

RENDER EXTERNAL ARCHWAY

REVEAL BEAD

LARGE ADJUSTABLE RENDER EXTERNAL BEAD

10MM RENDER TEAR-AWAY L BEAD

90° RENDER EXTERNAL BEAD

STARTER BEAD

NOTE:
This illustration shows potential uses for Rondo EXTREME® Render Beads and is not meant to imply any design imperative. Where any query occurs, contact your supplier, Rondo representative, or tradesman.

INSTALLATION DETAILS

Plasterboard

STEP ONE

Plasterboard beads can be easily applied with Spray Adhesive. Rondo makes available 3M Drywall Corner Bead 61 Spray Adhesive.

■ 3MSPRAYAD

STEP TWO

Holding the can of adhesive spray on a angle, apply a thin layer to the board, and to the back of the bead.

STEP THREE

Place the bead onto the wall, making sure the external edge is straight. If an adjustment is necessary, the adhesive allows the bead to be pulled off and reapplied without having to use more adhesive.

STEP FOUR

Once the bead is in place, a base coat of compound can be applied, ensuring all perforations are covered.

NOTE:
Rondo recommends using light-weight, quick-drying, petroleum based adhesive spray, such as the 3M Drywall Corner Bead 61 Spray Adhesive.

HANDY TIPS

INTERNAL & EXPANSION BeadS
When applying internal or expansion beads it is important to keep the edge or channel clean of plaster compound.

BULLNOSE PROFILES
When applying bullnose profiles to external corners do not press heavily to apply the plaster compound to the profile. Pressing heavily may cause a hairline crack to occur.

CONTROL JOINTS
On ceilings where a hallway meets a large room it is recommended to install a ceiling Control Joint. This is a low profile, easy to install Control Joint that allows the ceiling to flex at this junction preventing cracking between plaster sheets.

INSTALLATION DETAILS

Render

STEP ONE

When selecting an Extreme Render product, it is important to comply with the render manufacturers recommended system to ensure full warranties will apply.

Example: If a 3.5mm build is recommended by the render supplier, then the 3.5mm build Extreme render product needs to be selected.

STEP TWO

Apply a patch render or equivalent to the full length of the bead onto the substrate.

STEP THREE

Place the bead onto the substrate, and put slight pressure along the full length of the bead.

For upside down applications, it is recommended to then apply galvanized nails to the bead, which will hold it in place until the render sets.

STEP FOUR

Using the appropriate hand tool, smooth the finishing render, ensuring the bead is properly bedded-in.

NOTE:
The use of petroleum based gap filling type adhesives are not recommended as they can cause several potential problems, including; causing expanded polystyrene foam to dissolve, reducing adhesion by covering the triangular holes and a questionable life span in differing environments.

ACCESS PANELS

PANTHER >

RONDO®

RONDO PANTHER® ACCESS PANELS

SUMMARY

The Rondo PANTHER® range of access panels and frames have been rigorously tested for quality and performance with respect to relevant fire or acoustic ratings. The standard Sound Rated Access Panels come with a unique polymer frame, which can be temporarily secured through the face of the frame (yes, even the flanged version) for faster and safer fixing. They are also around 30% lighter which is a big plus for an installer.

The contractor has a range of standard or customer sizes to choose from, as well as a choice of locks, hinges and finishes to meet their design needs.

SUITABLE FOR:

- Sound Rated Applications (R_w30)
- 1 and 2 Hour Fire Applications
- Tiled Access Options

SPECIAL FEATURES

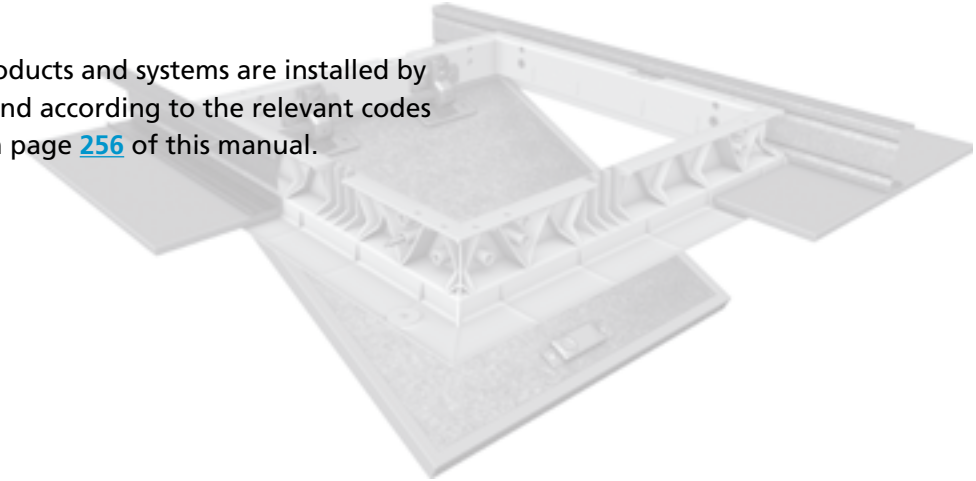
- Standard Sound Rated panels made with a unique polymer frame; 30% lighter
- Selection of surround finishes (Flanged or Set Bead)
- Wide Variety of Locks: key budget lock, numbered key cam, or concealed touch lock
- Five Standard Sizes
- Standard Sound Rated Panels can be face fixed initially, to achieve faster and safer installation
- Sound-Rated and 1 hour Fire-Rated panels over 450mm size are supplied with a safety chain

IN PRACTICE

Many leading projects have benefited from using Rondo PANTHER® Access Panels, including the multimillion dollar serviced apartment complex, ***C2 Esplanade in Darwin*** and the Five-Star Green Star rated ***400 George Street office building in Brisbane***.

IMPORTANT NOTE:
Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page 256 of this manual.

CONTENTS:



ACCESS PANELS

METAL FACED

MFAP FE	Slimline Metal-face door – Flanged: 300x300/450x450/ 550x550/600x600
MFAP SB	Slimline Metal-face door – Set Bead: 300x300/450x450/ 550x550/600x600

SOUND RATED

SRAP FE	Sound rated, polymer frame – Flanged: 300x300/450x450/ 530x530
SRAP SB	Sound rated, polymer frame – Set Bead: 300x300/450x450/ 530x530

FIRE RATED

FRAP1H FE	1 hour fire rated – Flanged: 300x300/450x450/530x530/ 600x600
FRAP1H SB	1 hour fire rated – Set Bead: 300x300/450x450/530x530/ 600x600
FRAP2H FE	2 hour fire rated – Flanged: 300x300/450x450/530x530/ 600x600
FRAP2H SB	2 hour fire rated – Set Bead: 300x300/450x450/530x530/ 600x600

ALUMINIUM MANHOLE FRAME

AMF3030	White aluminium manhole frame: 300x300/450x450/550x550/ 600x600

MADE TO ORDER:

TILE ACCESS PANEL

SPTP	Special Tile Access Panel

NOTE

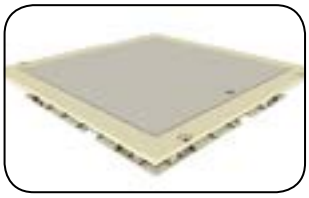
Metal Faced, Sound Rated and Fire Rated Access Panels are also available in other custom sizes and made to order. However, frame material and some depth dimensions may vary from the standard product. Contact your local Rondo Sales Office for more details.

METAL FACED

MFAP FLANGED

MFAP SET BEAD

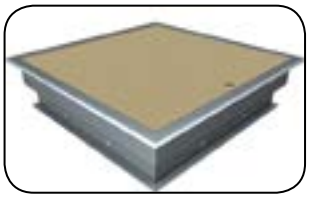
SOUND RATED



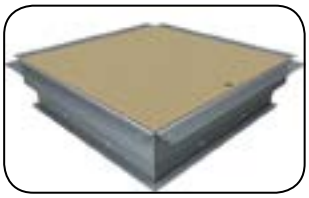
SRAP FLANGED

SRAP SET BEAD

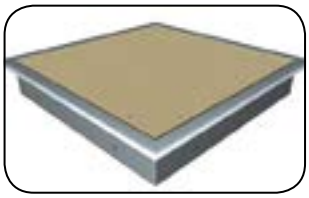
FIRE RATED



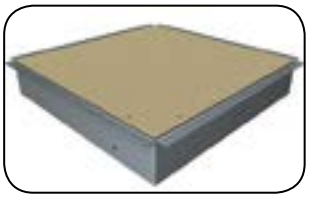
FRAP 1HR FLANGED



FRAP 1HR SET BEAD

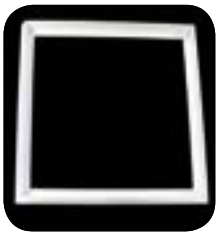


FRAP 2HR FLANGED



FRAP 2HR SET BEAD

ALUMINIUM MANHOLE FRAMES



AMF3030

TILE ACCESS PANEL

SPTP

INSTALLATION DETAILS

Metal Faced Access Panels

STEP ONE
Cut a hole in the lining board to match panel size as marked on box adding 5mm each side to allow for clearance *(refer to Figure 1)*.

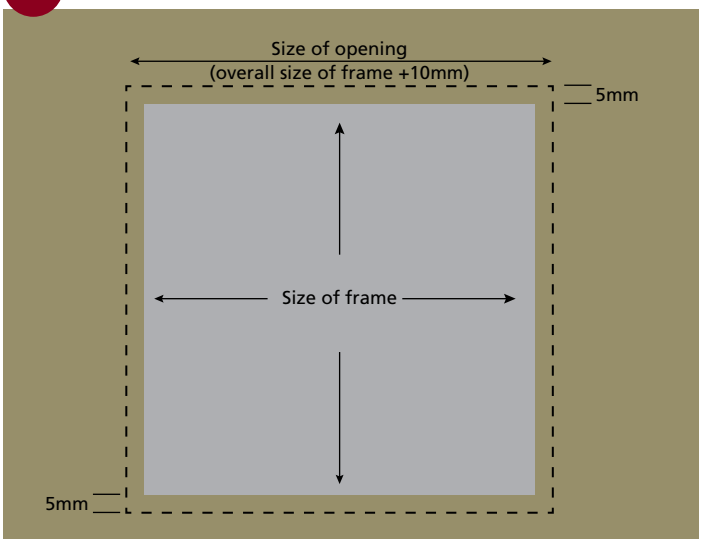
STEP TWO
Trim around the opening using 64mm steel studs, screw fixed to the plasterboard.

STEP THREE
Bend the metal fixings tags, located around the inside of the frame, to the vertical position and insert the panel into the opening.

STEP FOUR
Screw fix through the tags into the support framing. Ensure the support framing is securely fixed to the ceiling grid.

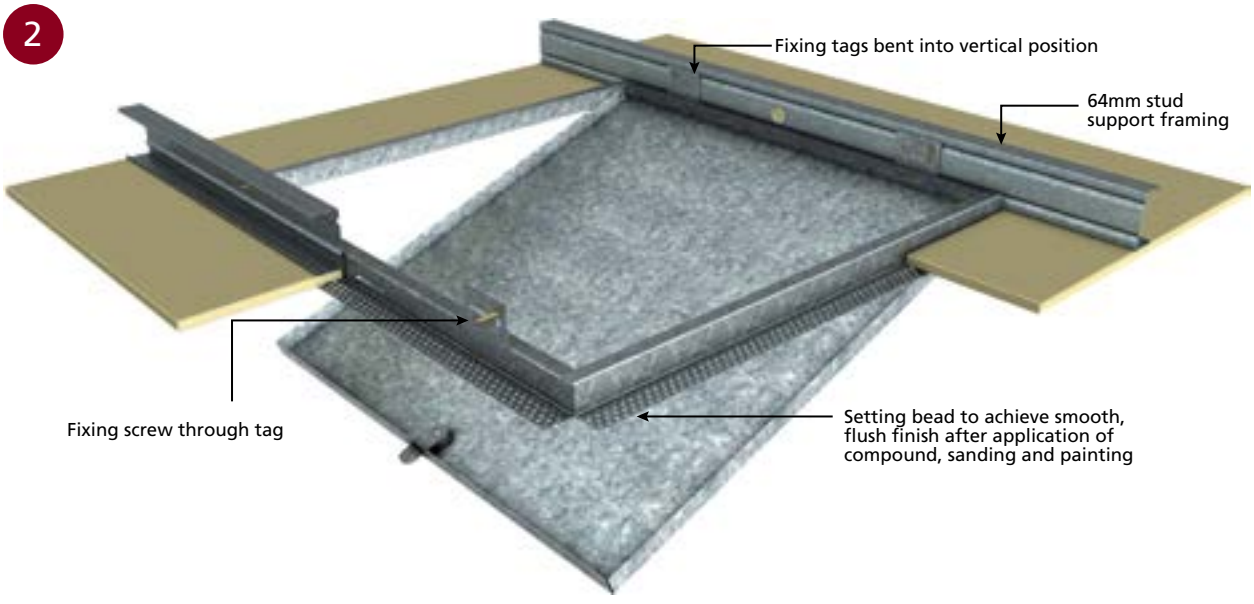
STEP FIVE
Finish as required.

1



CUTTING HOLE IN LINING BOARD

2



MFAP INSTALLATION

INSTALLATION DETAILS (continued)

Sound Rated Access Panels

STEP ONE
Cut a hole in the lining board to match panel size as marked on box adding 5mm each side to allow for clearance *(refer to Figure 1)*.

STEP TWO
Trim around the opening using 64mm steel studs, screw fixed to the plasterboard.

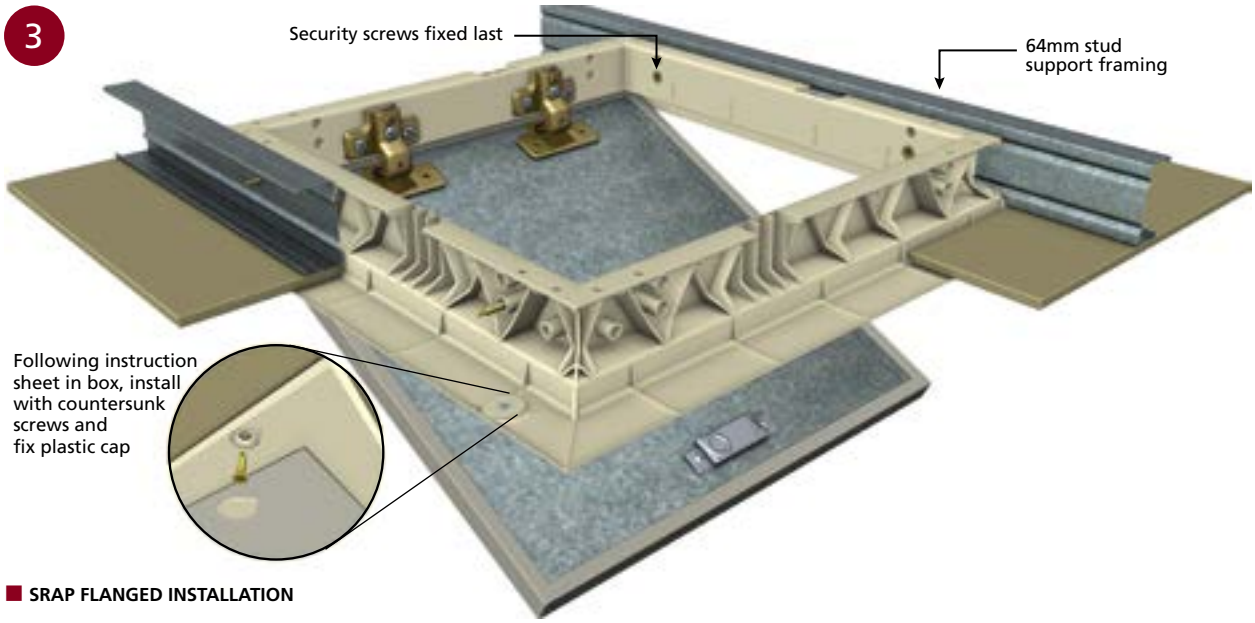
STEP THREE
Without opening the door screw fix the panel to the framing via the pre-formed countersunk holes in the surrounding bead or flange.
NOTE: Ensure support framing is installed so it is an integral part of the ceiling framing and if necessary install additional ceiling hangers.

STEP FOUR
Open the door and install the security screws through the inside of the frame.

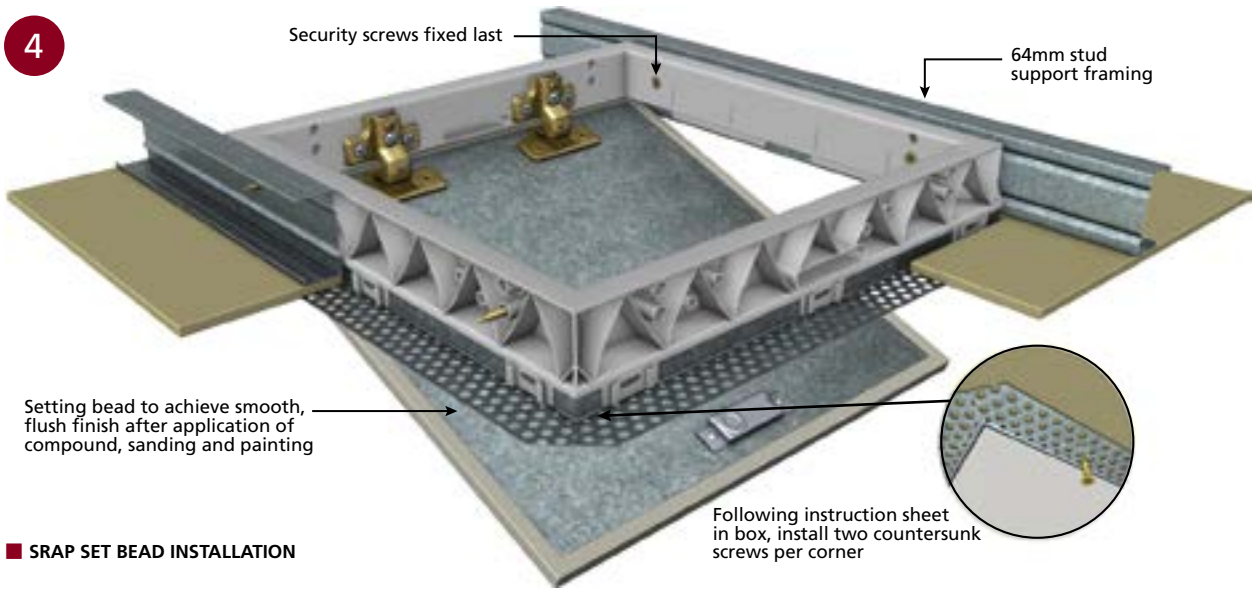
STEP FIVE
A bead of appropriate sealant should be applied around the frame before insertion into the opening.

STEP SIX
Install safety chain, if supplied.

STEP SEVEN
Finish as required.



■ SRAP FLANGED INSTALLATION



■ SRAP SET BEAD INSTALLATION

Fire Rated Access Panels

STEP ONE
Cut a hole in the lining board to match panel size as marked on box adding 5mm each side to allow for clearance *(refer to Figure 1)*.

STEP TWO
As these panels are heavy, use minimum 76mm stud as support framing so the frame becomes an integral part of the ceiling framework.
NOTE: If necessary install additional ceiling hangers to add support to the ceiling framing.

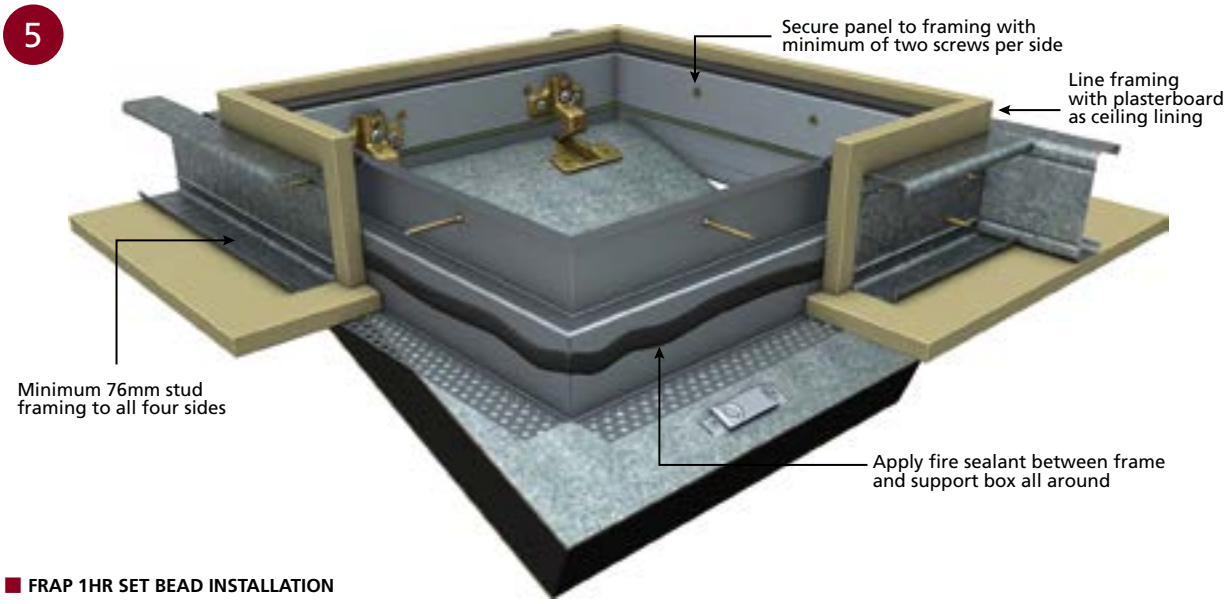
STEP THREE
Secure the panels by installing fixings screws through the inner face of the frame into the support using a minimum of 2 screws per side to all 4 sides.

STEP FOUR
Fire resistant caulking material should always be applied around the perimeters of these frames as illustrated.

STEP FIVE
Install safety chain, if supplied.

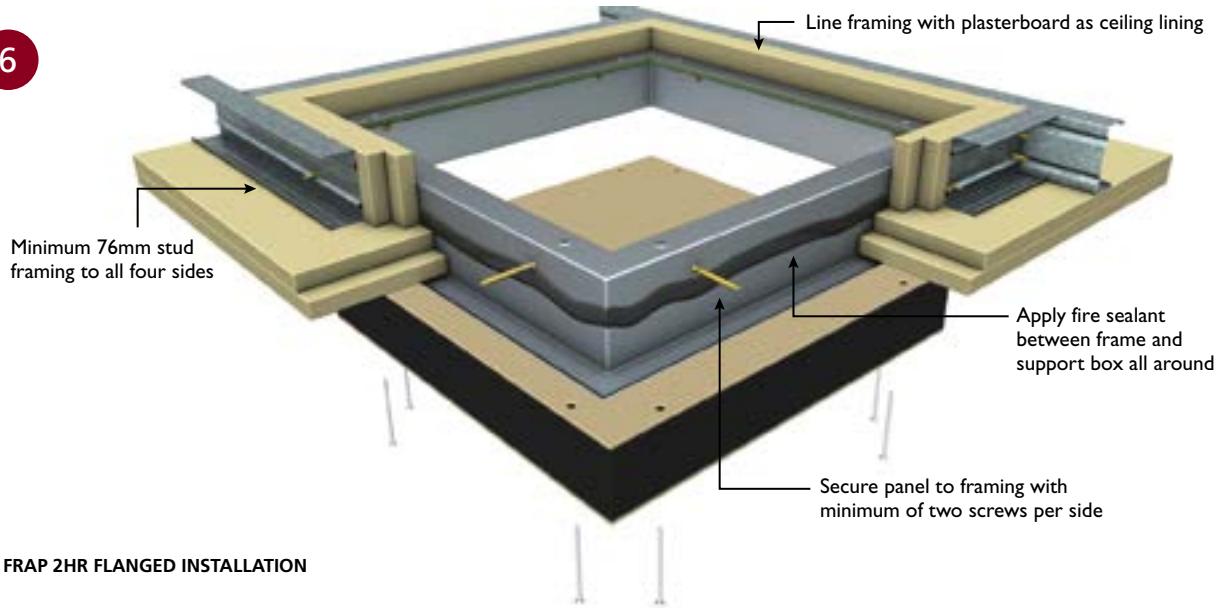
STEP SIX
Finish as required.

5



FRAP 1HR SET BEAD INSTALLATION

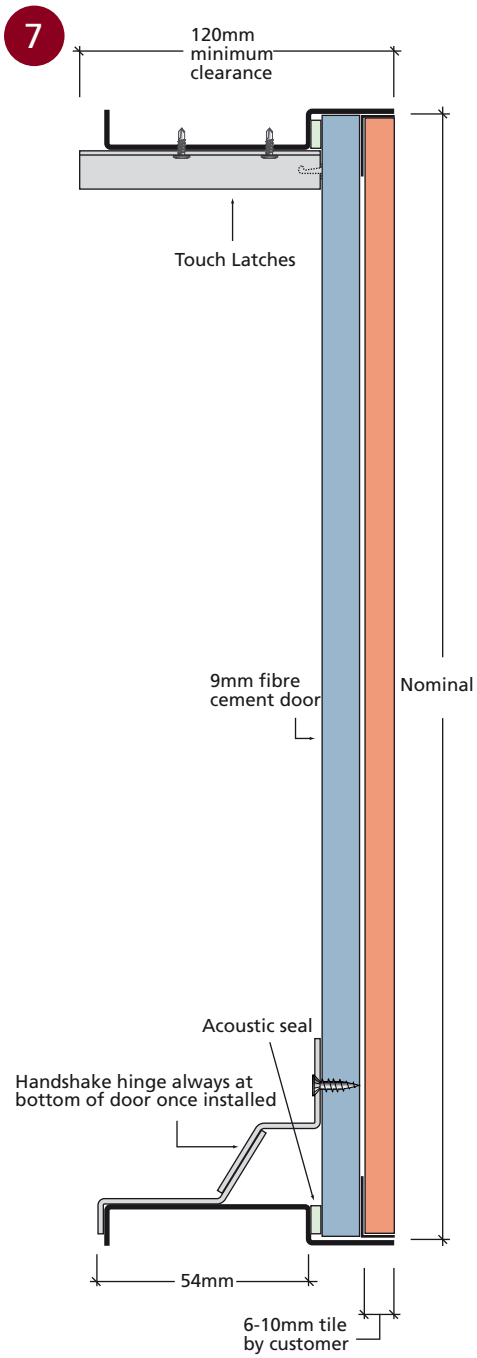
6



FRAP 2HR FLANGED INSTALLATION

TILE ACCESS PANEL

An access panel designed for a ceramic tiled or panelled wall where access may be required to service plumbing works in the event of leaks, etc. or other concealed services.



■ INSTALLATION DETAIL

APPLICATION	Walls only, 6mm or 10mm deep tile
PROFILE	Standard Profile 76mm deep (this panel can also be manufactured with a frame depth of 21mm – Budget Lock only)
PANEL FRAME	Precision manufactured from 1mm galvanised steel
PANEL DOOR	9mm CFC with a 0.40mm galvanized backing sheet
LOCKS	Touch Lock only (Touch Lock cannot exceed 600^2)
SAFETY FEATURES	Identification, safety chains and safety labels attached to the inside of the door
STANDARD SIZES	There are no standard sizes in this panel. All Tile Panels are made to order.

IMPORTANT INFORMATION:

Hinge arrangement is always placed at bottom of penetration, not at side. (i.e. 450H x 600W 10mm tile panel will have the hinge on the 600 dimension.) This prevents the panel from falling out of the wall, due to the fact that the locks are at the top of the panel and hinges are always at the bottom of the panel.

When nominating a panel for tiling:

1. If a panel 300mm square is nominated, this is overall frame size, therefore tile must be trimmed.
2. If a 300mm square tile is not to be cut, then an overall panel of 307mm square is required. This allows the tile to fit within the steel trim, but the overall panel will be in line with outside of grout lines.

HARDWARE OPTIONS

BUDGET LOCK

Standard lock for MFAP, SRAP & 1 Hour FRAP *(Note: FRAP & SRAP square key lock back sealed)*

■ SQUARE KEY BUDGET LOCK

CAM LOCK*

Alternative keyed lock for SRAP Panels only, two keys supplied per panel, all panels are supplied keyed alike or can be supplied with differing keyed barrels.

■ NUMBERED KEY CAM LOCK

TOUCH LATCH*

Supplied for MFAP & SRAP panels only and up to 450x450 size only. Panels have two latches for added security.

■ CONCEALED TOUCH LATCH

MAGNETIC CATCH*

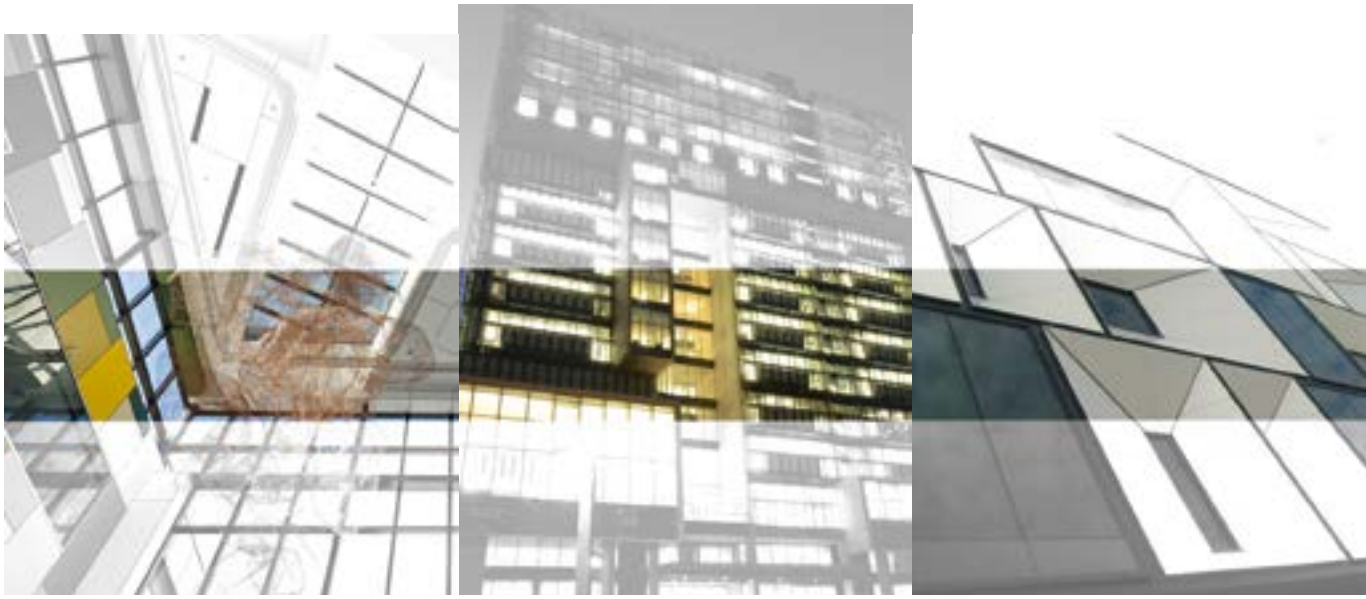
Supplied for SRAP 300 x 300, 450 x 450, and 530 x 530 sized panels only.
By placing the magnetic key beneath the lock, the latch is released and the door will open. Removing the key allows the latch to spring back and the door is closed by simply pushing it into position until it `clicks' closed.

■ MAGNETIC CATCH

NOTE

Rondo also supplies a range of special panels that are suitable for high security institutions, hospitals, and lift motor room access. Enquiries on Rondo special panels can be made to a Rondo Sales Office.

* These locks are supplied by order, requiring lead times, and are at an additional cost.



ACCESSORIES

RONDO®

RONDO ACCESSORIES

SUMMARY

Rondo has a range of accessories to complement our steel wall and ceiling systems, which includes Top Hats, Reveal Beads and Angles, as well as a rod bending tool for suspended ceiling applications.

SUITABLE FOR:

Top Hats:

- internal and external applications
- higher wind loading areas or with heavy duty sheeting
- vertical fascias and soffits

Heavy Duty Steel Angles:

- Autoclaved Aerated Concrete Panel Systems (AAC) and steel framing requirements for façade systems.

Reveal Beads:

- window openings

Speedpanel Channel & Angle:

- 78mm Speedpanel systems

Rod Bender:

- Rondo 121 Plain Rod and 122 Threaded One End Rod

SPECIAL FEATURES

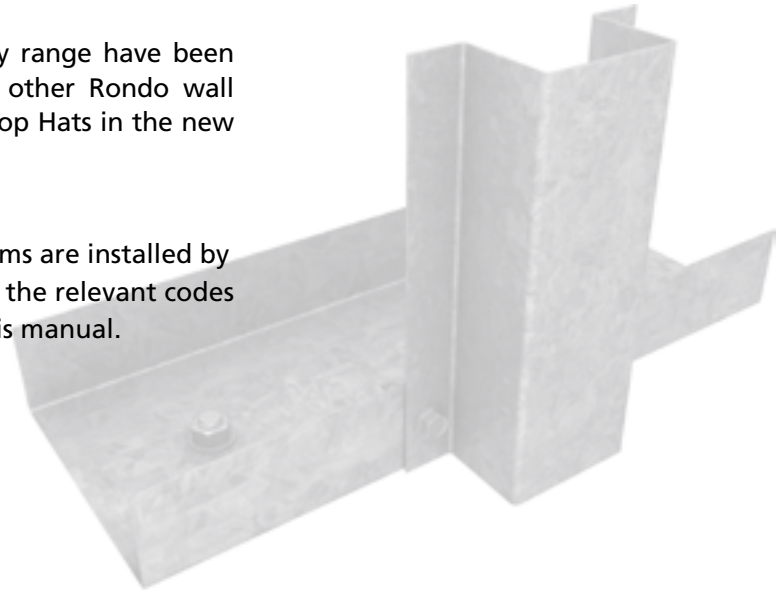
- Wide variety of Top Hat profiles to suit most external and internal applications and can be installed either vertically or horizontally
- Top Hats and Heavy Duty Angles are manufactured from G200 Z275 Galvanised Steel
- Heavy Duty Angles are available in 0.75 & 1.15bmt steel thicknesses
- Reveal Beads are cold rolled from 0.9mm Zincanneal steel for strength
- Reveal Beads are UV-resistant to withstand harsh UV rays without cracking or breaking down
- Speedpanel Channel and Angles are made from G2 Z275 Galvabond Steel and available in 1.15bmt (1.2mm TCT) steel thickness
- Rondo Rod Bender can bend up to 3 rods at one time to the required 30° angle for suspended ceiling applications

IN PRACTICE

Many components in the Rondo accessory range have been used in leading projects to complement other Rondo wall and ceiling systems, including the use of Top Hats in the new ***Queensland Children's Hospital*** project.

IMPORTANT NOTE:
Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page 256 of this manual.

CONTENTS:



ACCESSORIES

MEDIUM WEIGHT TOP HATS

M515	15 x 15 x 50 x 15 x 15 x 0.75bmt
M525	20 x 25 x 50 x 25 x 20 x 0.75bmt
M535	20 x 35 x 50 x 35 x 20 x 0.75bmt
M545	20 x 45 x 50 x 45 x 20 x 0.75bmt
M550	20 x 50 x 50 x 50 x 20 x 0.75bmt
M560	20 x 60 x 50 x 60 x 20 x 0.75bmt
M715	15 x 15 x 75 x 15 x 15 x 0.75bmt
M725	20 x 25 x 75 x 25 x 20 x 0.75bmt
M735	20 x 35 x 75 x 35 x 20 x 0.75bmt
M750	20 x 50 x 75 x 50 x 20 x 0.75bmt

HEAVY WEIGHT TOP HATS

H515	15 x 15 x 50 x 15 x 15 x 1.15bmt
H525	20 x 25 x 50 x 25 x 20 x 1.15bmt
H535	20 x 35 x 50 x 35 x 20 x 1.15bmt
H545	20 x 45 x 50 x 45 x 20 x 1.15bmt
H550	20 x 50 x 50 x 50 x 20 x 1.15bmt
H560	20 x 60 x 50 x 60 x 20 x 1.15bmt
H715	15 x 15 x 75 x 15 x 15 x 1.15bmt
H725	20 x 25 x 75 x 25 x 20 x 1.15bmt
H735	20 x 35 x 75 x 35 x 20 x 1.15bmt
H750	20 x 50 x 75 x 50 x 20 x 1.15bmt

TOP HAT CLEATS

550	50 x 55 x 1.9bmt Cleat
535	50 x 35 x 1.9bmt Cleat
750	75 x 55 x 1.9bmt Cleat
735	75 x 35 x 1.9bmt Cleat

REVEAL BEADS

REVB020	20mm Reveal Bead
REVB025	25mm Reveal Bead
REVB035	35mm Reveal Bead
REVB050	50mm Reveal Bead
REVB060	60mm Reveal Bead
REVB065	65mm Reveal Bead
REVB075	75mm Reveal Bead
REVB080	80mm Reveal Bead
REVB090	90mm Reveal Bead
REVB100	100mm Reveal Bead
REVB110	110mm Reveal Bead
REVB120	120mm Reveal Bead
REVB150	150mm Reveal Bead

ANGLES

552	25 x 25 x 0.70bmt Angle
553	35 x 35 x 0.70bmt Angle
554	50 x 50 x 0.70bmt Angle
HB50	50 x 50 x 0.80 Slotted Angle
HB75	75 x 50 x 1.15 Slotted H/D Angle
555	75 x 75 x 0.75 H/D Angle
556	75 x 75 x 1.15bmt H/D Angle
557	100 x 100 x 0.75bmt H/D Angle
558	100 x 100 x 1.15bmt H/D Angle

SPEEDPANEL

559	50 x 50 x 1.15bmt Speedpanel 'C' Angle
820	82 x 51 x 1.15bmt Speedpanel 'C' Channel

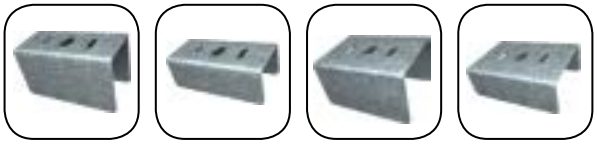
ROD BENDER

130	Rod Bender

TOP HATS

MEDIUM/HEAVY

TOP HAT CLEATS

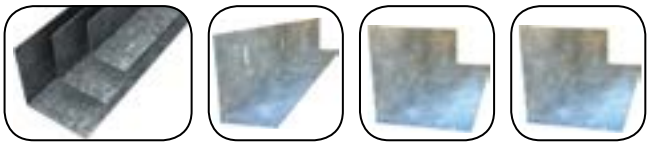


550 535 750 735

REVEAL BEADS

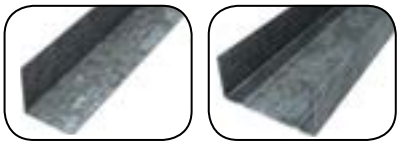
REVB

ANGLES



552/553/554 HB50/HB75 555/556 557/558

SPEEDPANEL



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ROD BENDER

130

TOP HATS

Installation

Rondo produces a wide range of standard "off the shelf" Top Hat profiles for a variety of uses both internally and externally, including applications where there is a higher wind loading or where heavy duty sheeting is to be installed. Rondo also produces a range of complementary adjustable fixing cleats.

The Rondo Fixing Cleats enable adjustable fixing of Top Hats to steel or masonry/ concrete substrates as well to steel stud framing, providing adjustment for plumb and level of the cleat to the structure and of the Top Hat onto the cleat as shown in Figures 1, 2 and 3.

The cleats are available to suit both 50 and 75mm width Top Hats and in two depths of 35 and 55mm.

These products are available in 0.75bmt (Medium) and 1.15bmt (Heavy) gauges in two different face widths, 50 and 75mm and four different depths, 15, 25, 35 and 50mm. Rondo Top Hats are manufactured from G200 Z275 Gal steel.

The product codes and details are referenced in the accompanying Ultimate and Serviceability Limit State Load Tables.

INSTALLATION TO CONCRETE OR STEELWORK

Top Hats can be fixed vertically or horizontally to suit the installer's requirements, either screw fixed directly to a supporting substrate or fixed with the Rondo cleats *(see Figures 1 & 2)*.

1

■ **TOP HAT FIXED TO STEELWORK**
FIXINGS: CLEAT TO STEELWORK AND TOP HAT TO CLEAT WITH #12 TEK SCREWS AS SHOWN

2

■ **TOP HAT FIXED TO CONCRETE**
ANCHOR SIZE TO CONCRETE/MASONRY 8-10mm AS SPECIFIED. TOP HAT TO CLEAT WITH #12 TEK SCREWS AS SHOWN

TOP HATS

Installation (continued)

INSTALLATION TO STEEL STUD FRAMING

Particularly with regards to External Stud Framing, Rondo Top Hats can be fixed either vertically with the adjustable cleats or direct fixed horizontally with packers if necessary.

If fixing vertically, the cleat method must be used as shown in Figure 3.

When fixing vertically, follow the top fixing and bottom fixing requirements shown in Figures 4 & 5.

At all times refer to the Serviceability Limit State Load Tables for the appropriate fixing dimensions on page 230 and ensure the Project Engineer has signed off on your proposal.

FIGURE 3

Screw fixing Cleat to Stud to be specified by Rondo as it depends on capacity required.

Top Hat to Cleat fixing with 2 x #12 Tek Screws as shown.

FIGURE 4

Top Hat to Slotted Deflection Head Track with 2 x #10 Tek Screws fixed at a maximum of 15mm from bottom of slot.

FIGURE 5

Top Hat to Base Track to be fixed with 2 x #10 Tek Screws at mid point of Track flange.

3

■ VERTICAL FIXING METHOD USING CLEAT

4

■ TOP FIXING

5

■ BOTTOM FIXING

Top Hat Fasteners

The preceding figures 1–3 illustrate the fixing of Top Hats to steelwork, masonry/concrete and to steel stud framing, detailing the appropriate Hex Head Tek screws to use.

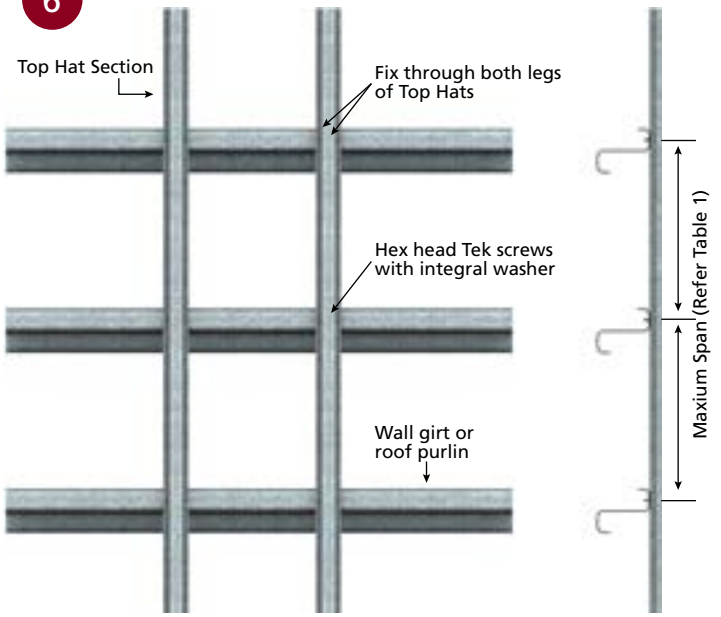
Table 1 provides information on the capacities for #12 Hex Head Tek Screws when used in conjunction with the structural fixings methods suggested and set out as shown in Figure 6, either direct fixed through the Top Hat flanges as Figure 7 or when installing the Rondo Top Hat Cleats as in Figure 8.

In the case of fixing to masonry/concrete the relevant masonry anchor chosen should have, at the least, a capacity the same as that for the Tek screws shown in Table 1.

NOTE: When using Rondo Top Hats to install fibre cement sheeting with an express joint detail it is important to ensure the board manufacturers recommendations on edge distance for securing the board is considered when choosing the appropriate face width Top Hat profile.

Similarly, building board manufacturers recommendations in respect to the installation of Control Joints should be followed closely to ensure proper function and performance of the system.

6



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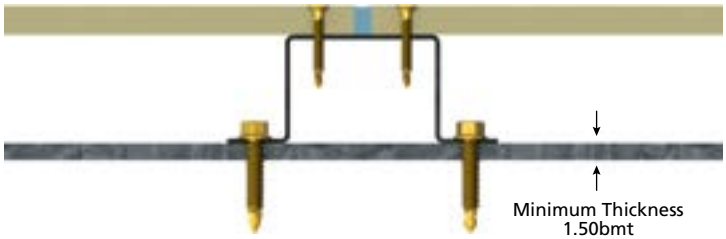

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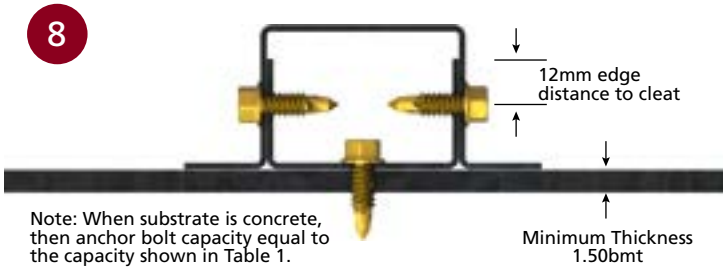


Note: When substrate is concrete, then anchor bolt capacity equal to the capacity shown in Table 1.

TABLE 1: #12 HEX HEAD FASTENERS

TOP HAT SPAN	TOP HAT SPACING	NUMBER OF FASTENERS	ULTIMATE WIND LOAD (kPa)
900	450	2	6.40
	600	2	4.80
1200	450	2	4.80
	600	2	3.60
1500	450	2	3.85
	600	2	2.90
1800	450	2	3.20
	600	2	2.40

NOTES:

1. Minimum thickness of supporting structure to be 1.50 bmt, G450 material - ie: purlin type support

2. Fastener head/washer diameter to be 12.5mm minimum

3. All screws to be manufactured in accordance with AS 3566. Screw coating to be selected based on installation requirements and manufacturers.

TOP HATS

Installation (continued)

INSTALLATION TO STEEL STUD FRAMING USING RONDO NOGGING TRACK

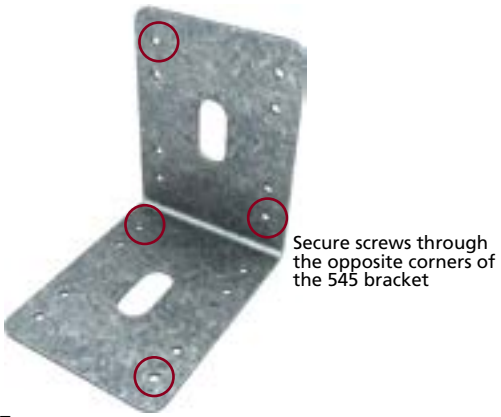
Some façade systems require the installation of Top Hats vertically and there will be occasions where studs do not coincide with the Top Hat spacing requirement. That being the case, it may be necessary to install Top Hats onto the steel Nogging Track.

There are strict limitations of fixing to Nogging Track and therefore, any such situation that requires this method needs to be referred to your Rondo Representative who will first seek written approval from Rondo's Technical Services Department.

If approved by Rondo's Technical Services Department, it will be necessary to ensure the junction between the stud and the Nogging track is strengthened by the use of Rondo 545 brackets (*Figure 9*) and installed as shown in Figures 10 and 11.

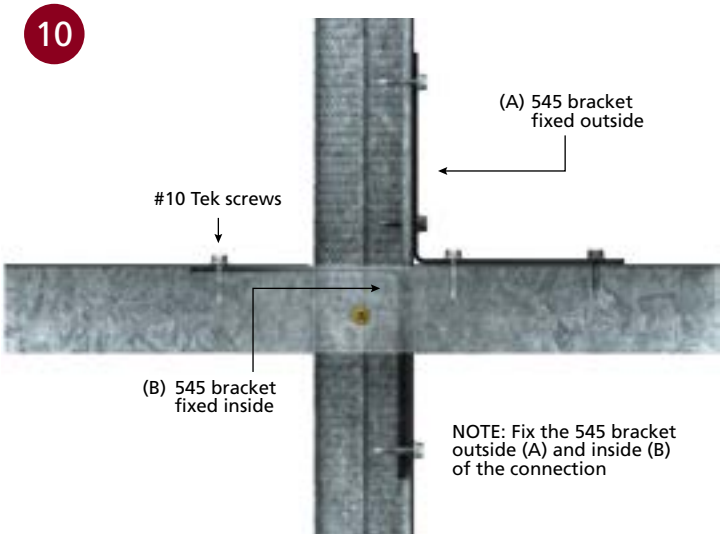
It is important that these details are followed as failure to follow this procedure may jeopardise onsite safety and system performance, and as such, invalidate the Rondo warranty.

9



■ 545 BRACKET

10



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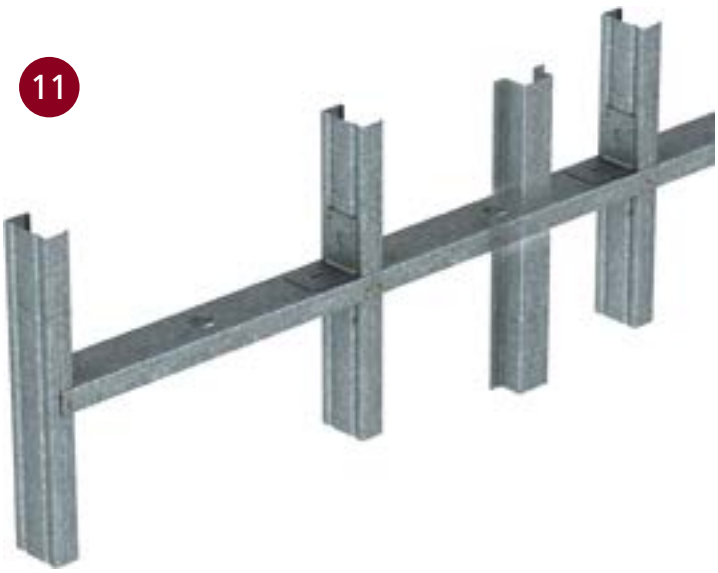

■ 545 BRACKET INSTALLATION

Section Dimensions

MATERIAL SPECIFICATIONS

The sections are cold roll formed from zinc coated steel strip, which is manufactured to AS1397.

Steel Grade: G2
Yield Strength: Fy = 270 MPa (typical)
Coating Grade: Z275 – 275g/m^2 zinc
Base Metal Thickness: As specified

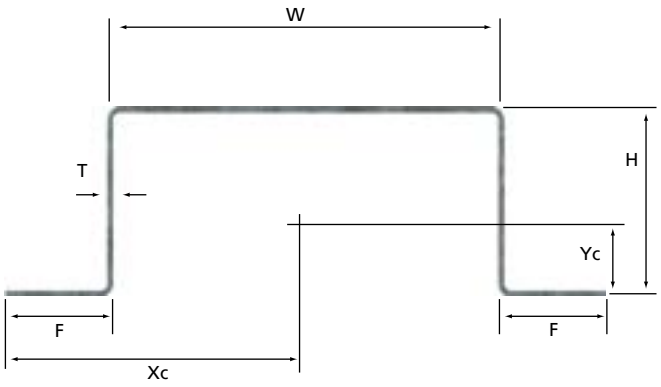

TABLE 2

RONDO PART NO	AREA (mm^2)	T (BMT) (mm)	W (mm)	H (mm)	F (mm)	Xc (mm)	Yc (mm)	YIELD STRESS (MPa)	SELF-WEIGHT (kg/m)
M515	79.45	0.75	50.0	15.0	15.0	40.1	6.27	270	0.61
M525	97.45	0.75	50.0	25.0	20.0	42.1	11.17	270	0.75
M535	111.7	0.75	50.0	35.0	20.0	41.6	15.74	270	0.89
M545	127.1	0.75	50.0	45.0	18.4	42.6	20.61	270	1.05
M550	134.2	0.75	50.0	50.0	20.0	41.6	22.89	270	1.08
M560	150.0	0.75	50.0	60.0	18.4	42.6	27.90	270	1.24
M715	97.45	0.75	75.0	15.0	15.0	52.1	5.07	270	0.78
M725	115.4	0.75	75.0	25.0	20.0	54.1	9.33	270	0.95
M735	131.2	0.75	75.0	35.0	20.0	54.6	13.65	270	1.06
M750	153.7	0.75	75.0	50.0	20.0	54.6	20.28	270	1.26
H515	117.2	1.15	50.0	15.0	15.0	38.67	6.12	270	0.91
H525	147.1	1.15	50.0	25.0	20.0	41.67	11.16	270	1.19
H535	169.4	1.15	50.0	35.0	20.0	41.37	15.78	270	1.37
H545	192.0	1.15	50.0	45.0	18.2	42.0	20.54	270	1.56
H550	204.6	1.15	50.0	50.0	20.0	41.67	23.03	270	1.66
H560	226.2	1.15	50.0	60.0	18.2	42.0	27.80	270	1.84
H715	147.1	1.15	75.0	15.0	15.0	51.67	5.10	270	1.16
H725	175.9	1.15	75.0	25.0	20.0	54.17	9.43	270	1.43
H735	198.9	1.15	75.0	35.0	20.0	54.17	13.65	270	1.61
H750	235.7	1.15	75.0	50.0	20.0	55.17	20.55	270	1.89

TOP HATS

Serviceability Limit State Load Tables (kPa)

0.75bmt (M) Top Hats

TABLE 3: PART NO. M515: 15 x 15 x 50 x 15 x 15mm

SPAN	M515 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	0.58	0.43	1.10	0.82	0.39	0.29	0.76	0.57
1000	0.41	0.31	0.80	0.59	0.28	NA	0.55	0.41
1100	0.31	NA	0.60	0.44	NA	NA	0.41	0.30
1200	NA	NA	0.45	0.34	NA	NA	0.31	NA
1300	NA	NA	0.35	0.26	NA	NA	NA	NA
1400	NA	NA	0.28	NA	NA	NA	NA	NA
1500	NA	NA	NA	NA	NA	NA	NA	NA
1600	NA	NA	NA	NA	NA	NA	NA	NA
1700	NA	NA	NA	NA	NA	NA	NA	NA
1800	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4: PART NO. M525: 20 x 25 x 50 x 25 x 20mm

SPAN	M525 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	1.96	1.46	3.72	2.78	1.35	1.01	2.57	1.93
1000	1.42	1.06	2.70	2.02	0.98	0.73	1.87	1.40
1100	1.06	0.79	2.03	1.51	0.73	0.54	1.40	1.05
1200	0.82	0.61	1.56	1.16	0.56	0.41	1.07	0.80
1300	0.64	0.47	1.22	0.91	0.44	0.32	0.84	0.63
1400	0.51	0.37	0.97	0.72	0.35	0.25	0.67	0.50
1500	0.41	0.30	0.79	0.59	0.28	NA	0.54	0.40
1600	0.33	NA	0.64	0.48	NA	NA	0.44	0.33
1700	0.27	NA	0.53	0.40	NA	NA	0.36	0.27
1800	NA	NA	0.45	0.33	NA	NA	0.30	NA

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the top hat configuration is not appropriate
2. Serviceability limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Ultimate limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TABLE 5: PART NO. M535: 20 x 35 x 50 x 35 x 20mm

SPAN	M535 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	4.17	3.12	7.88	5.90	2.89	2.16	5.47	4.09
1000	3.03	2.27	5.74	4.30	2.10	1.57	3.98	2.98
1100	2.27	1.70	4.31	3.22	1.57	1.17	2.98	2.23
1200	1.75	1.30	3.31	2.48	1.21	0.90	2.29	1.72
1300	1.37	1.02	2.60	1.95	0.94	0.70	1.80	1.35
1400	1.09	0.81	2.08	1.55	0.75	0.56	1.44	1.07
1500	0.88	0.66	1.69	1.26	0.61	0.45	1.16	0.87
1600	0.73	0.54	1.39	1.03	0.50	0.37	0.96	0.71
1700	0.60	0.45	1.15	0.86	0.41	0.30	0.79	0.59
1800	0.50	0.37	0.97	0.72	0.34	0.25	0.67	0.49

TABLE 6: PART NO. M545: 20 × 45 × 50 × 45 × 20mm

SPAN	M545 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	6.07	4.55	7.15	5.36	5.12	3.84	7.15	5.36
1000	4.61	3.45	5.79	4.34	3.72	2.79	5.79	4.34
1100	3.53	2.64	4.79	3.59	2.79	2.09	4.79	3.59
1200	2.71	2.03	4.03	3.02	2.14	1.61	4.03	3.02
1300	2.08	1.56	3.42	2.56	1.68	1.26	3.24	2.43
1400	1.60	1.20	2.91	2.18	1.34	1.00	2.59	1.94
1500	1.26	0.94	2.49	1.87	1.08	0.81	2.10	1.57
1600	1.00	0.75	2.16	1.62	0.89	0.67	1.73	1.29
1700	0.81	0.61	1.88	1.41	0.74	0.55	1.43	1.07
1800	0.66	0.50	1.63	1.22	0.62	0.46	1.20	0.90

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the Top Hat configuration is not appropriate
2. Serviceability limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Ultimate limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TOP HATS

Serviceability Limit State Load Tables (kPa)

0.75bmt (M) Top Hats (continued)

TABLE 7: PART NO. M550: 20 x 50 x 50 x 50 x 20mm

SPAN	M550 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	9.51	7.13	17.97	13.47	6.60	4.94	12.47	9.35
1000	6.93	5.19	13.09	9.81	4.81	3.60	9.09	6.81
1100	5.20	3.90	9.83	7.37	3.61	2.70	6.82	5.11
1200	4.00	3.00	7.57	5.67	2.77	2.07	5.25	3.93
1300	3.14	2.35	5.95	4.46	2.18	1.63	4.12	3.09
1400	2.51	1.88	4.76	3.56	1.74	1.30	3.30	2.47
1500	2.04	1.52	3.86	2.89	1.41	1.05	2.68	2.00
1600	1.68	1.25	3.18	2.38	1.16	0.86	2.20	1.65
1700	1.39	1.04	2.65	1.98	0.96	0.72	1.83	1.37
1800	1.17	0.87	2.23	1.67	0.81	0.60	1.54	1.15

TABLE 8: PART NO. M560: 20 × 60 × 50 × 60 × 20mm

SPAN	M560 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	9.60	7.20	10.98	8.24	9.60	7.20	10.98	8.24
1000	7.33	5.50	8.90	6.67	7.33	5.50	8.90	6.67
1100	5.66	4.24	7.36	5.52	5.63	4.22	7.36	5.52
1200	4.38	3.29	6.19	4.64	4.33	3.25	6.19	4.64
1300	3.39	2.54	5.27	3.95	3.39	2.54	5.27	3.95
1400	2.62	1.96	4.53	3.40	2.62	1.96	4.53	3.40
1500	2.04	1.53	3.90	2.92	2.04	1.53	3.90	2.92
1600	1.61	1.21	3.37	2.53	1.61	1.21	3.37	2.53
1700	1.30	0.97	2.94	2.21	1.30	0.97	2.91	2.18
1800	1.05	0.79	2.54	1.90	1.05	0.79	2.44	1.83

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the top hat configuration is not appropriate
2. Serviceability limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Ultimate limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TABLE 9: PART NO. M715: 15 x 15 x 75 x 15 x 15mm

SPAN	M715 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	0.66	0.49	1.27	0.94	0.45	0.34	0.87	0.65
1000	0.48	0.35	0.92	0.68	0.33	NA	0.63	0.47
1100	0.35	0.26	0.68	0.51	NA	NA	0.47	0.35
1200	0.27	NA	0.52	0.39	NA	NA	0.36	0.26
1300	NA	NA	0.41	0.30	NA	NA	0.28	NA
1400	NA	NA	0.32	NA	NA	NA	NA	NA
1500	NA	NA	0.26	NA	NA	NA	NA	NA
1600	NA	NA	NA	NA	NA	NA	NA	NA
1700	NA	NA	NA	NA	NA	NA	NA	NA
1800	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 10: PART NO. M725: 20 x 25 x 75 x 25 x 20mm

SPAN	M725 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	2.27	1.70	4.30	3.22	1.57	1.17	2.98	2.23
1000	1.65	1.23	3.13	2.34	1.14	0.85	2.17	1.62
1100	1.23	0.92	2.35	1.76	0.85	0.63	1.62	1.21
1200	0.95	0.70	1.80	1.35	0.65	0.48	1.25	0.93
1300	0.74	0.55	1.41	1.06	0.51	0.38	0.98	0.73
1400	0.59	0.44	1.13	0.84	0.40	0.30	0.78	0.58
1500	0.47	0.35	0.91	0.68	0.32	NA	0.63	0.47
1600	0.39	0.29	0.75	0.56	0.26	NA	0.51	0.38
1700	0.32	NA	0.62	0.46	NA	NA	0.43	0.31
1800	0.27	NA	0.52	0.39	NA	NA	0.36	0.26

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the Top Hat configuration is not appropriate
2. Serviceability limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Ultimate limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TOP HATS

Serviceability Limit State Load Tables (kPa)

0.75bmt (M) Top Hats (continued)

TABLE 11: PART NO. M735: 20 x 35 x 75 x 35 x 20mm

SPAN	M735 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	4.94	3.70	9.34	7.00	3.42	2.56	6.48	4.85
1000	3.59	2.69	6.80	5.09	2.49	1.86	4.72	3.53
1100	2.70	2.02	5.10	3.82	1.87	1.39	3.54	2.65
1200	2.07	1.55	3.93	2.94	1.43	1.07	2.72	2.04
1300	1.62	1.21	3.08	2.31	1.12	0.84	2.14	1.60
1400	1.30	0.97	2.47	1.84	0.89	0.67	1.71	1.27
1500	1.05	0.78	2.00	1.50	0.72	0.54	1.38	1.03
1600	0.86	0.64	1.65	1.23	0.59	0.44	1.14	0.85
1700	0.72	0.53	1.37	1.02	0.49	0.36	0.94	0.70
1800	0.60	0.44	1.15	0.86	0.41	0.30	0.79	0.59

TABLE 12: PART NO. M750: 20 x 50 x 75 x 50 x 20mm

SPAN	M750 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	11.19	8.39	21.14	15.85	7.77	5.82	14.68	11.00
1000	8.16	6.11	15.41	11.55	5.66	4.24	10.69	8.02
1100	6.12	4.59	11.57	8.67	4.25	3.18	8.03	6.02
1200	4.71	3.53	8.91	6.68	3.27	2.44	6.18	4.63
1300	3.70	2.77	7.00	5.25	2.56	1.92	4.86	3.64
1400	2.96	2.21	5.60	4.20	2.05	1.53	3.88	2.91
1500	2.40	1.80	4.55	3.41	1.66	1.24	3.15	2.36
1600	1.98	1.48	3.75	2.80	1.37	1.02	2.60	1.94
1700	1.64	1.23	3.12	2.34	1.14	0.85	2.16	1.62
1800	1.38	1.03	2.63	1.96	0.95	0.71	1.82	1.36

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the top hat configuration is not appropriate
2. Serviceability limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Ultimate limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

Serviceability Limit State Load Tables (kPa)

1.15bmt (H) Top Hats

TABLE 13: PART NO. H515: 15 x 15 x 50 x 15 x 15mm

SPAN	H515 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	0.80	0.59	1.52	1.14	0.55	0.41	1.05	0.78
1000	0.58	0.43	1.10	0.82	0.39	0.29	0.76	0.57
1100	0.43	0.32	0.82	0.61	0.29	NA	0.57	0.42
1200	0.32	NA	0.63	0.47	NA	NA	0.43	0.32
1300	0.25	NA	0.49	0.36	NA	NA	0.34	NA
1400	NA	NA	0.39	0.29	NA	NA	0.26	NA
1500	NA	NA	0.31	NA	NA	NA	NA	NA
1600	NA	NA	0.25	NA	NA	NA	NA	NA
1700	NA	NA	NA	NA	NA	NA	NA	NA
1800	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 14: PART NO. H525: 20 x 25 x 50 x 25 x 20mm

SPAN	H525 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	2.87	2.15	5.43	4.07	1.99	1.49	3.77	2.82
1000	2.09	1.56	3.96	2.96	1.44	1.08	2.74	2.05
1100	1.56	1.17	2.97	2.22	1.08	0.80	2.05	1.54
1200	1.20	0.89	2.28	1.71	0.83	0.61	1.58	1.18
1300	0.94	0.70	1.79	1.34	0.65	0.48	1.24	0.92
1400	0.75	0.56	1.43	1.07	0.51	0.38	0.99	0.73
1500	0.60	0.45	1.16	0.86	0.41	0.31	0.80	0.59
1600	0.49	0.37	0.95	0.71	0.34	NA	0.65	0.49
1700	0.41	0.30	0.79	0.59	0.28	NA	0.54	0.40
1800	0.34	0.25	0.66	0.49	NA	NA	0.45	0.34

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the Top Hat configuration is not appropriate
2. Serviceability limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Ultimate limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TOP HATS

Serviceability Limit State Load Tables (kPa)

1.15bmt (H) Top Hats (continued)

TABLE 15: PART NO. H535: 20 x 35 x 50 x 35 x 20mm

SPAN	H535 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	6.18	4.63	11.69	8.76	4.29	3.21	8.11	6.08
1000	4.50	3.37	8.51	6.38	3.12	2.34	5.91	4.42
1100	3.38	2.53	6.39	4.79	2.34	1.75	4.43	3.32
1200	2.60	1.94	4.92	3.68	1.80	1.34	3.41	2.55
1300	2.04	1.52	3.86	2.89	1.41	1.05	2.68	2.00
1400	1.63	1.22	3.09	2.31	1.12	0.84	2.14	1.60
1500	1.32	0.98	2.51	1.88	0.91	0.68	1.74	1.30
1600	1.08	0.81	2.06	1.54	0.75	0.56	1.43	1.07
1700	0.90	0.67	1.72	1.28	0.62	0.46	1.19	0.88
1800	0.76	0.56	1.44	1.08	0.52	0.38	1.00	0.74

TABLE 16: PART NO. H545: 20 × 45 × 50 × 45 × 20mm

SPAN	H545 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	10.96	8.22	12.61	9.45	7.89	5.92	12.61	9.45
1000	8.28	6.21	10.22	7.66	5.74	4.30	10.22	7.66
1100	6.21	4.66	8.45	6.33	4.30	3.23	8.28	6.21
1200	4.78	3.58	7.10	5.33	3.31	2.48	6.37	4.77
1300	3.75	2.81	6.06	4.54	2.59	1.94	5.00	3.75
1400	2.99	2.24	5.16	3.87	2.07	1.55	3.99	2.99
1500	2.43	1.82	4.44	3.33	1.67	1.25	3.24	2.43
1600	1.99	1.49	3.82	2.86	1.37	1.03	2.66	2.00
1700	1.66	1.24	3.21	2.40	1.14	0.85	2.21	1.66
1800	1.38	1.03	2.69	2.02	0.95	0.71	1.86	1.39

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the top hat configuration is not appropriate
2. Serviceability limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Ultimate limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TABLE 17: PART NO. H550: 20 x 50 x 50 x 50 x 20mm

SPAN	H550 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	14.31	10.73	27.03	20.27	9.93	7.45	18.76	14.07
1000	10.43	7.82	19.70	14.77	7.24	5.42	13.67	10.25
1100	7.83	5.87	14.79	11.09	5.43	4.07	10.27	7.70
1200	6.03	4.52	11.39	8.54	4.18	3.13	7.90	5.92
1300	4.74	3.55	8.95	6.71	3.28	2.46	6.21	4.65
1400	3.79	2.84	7.17	5.37	2.62	1.96	4.97	3.72
1500	3.08	2.30	5.82	4.36	2.13	1.59	4.04	3.02
1600	2.53	1.89	4.79	3.59	1.75	1.31	3.32	2.49
1700	2.11	1.58	3.99	2.99	1.46	1.09	2.77	2.07
1800	1.77	1.32	3.36	2.52	1.22	0.91	2.33	1.74

TABLE 18: PART NO. H560: 20 × 60 × 50 × 60 × 20mm

SPAN	H560 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	16.82	12.61	19.00	14.25	15.68	11.76	19.00	14.25
1000	12.93	9.70	15.40	11.55	11.42	8.56	15.40	11.55
1100	10.07	7.55	12.73	9.55	8.57	6.43	12.73	9.55
1200	7.91	5.93	10.70	8.03	6.59	4.94	10.70	8.03
1300	6.23	4.67	9.12	6.84	5.17	3.88	9.12	6.84
1400	4.92	3.69	7.87	5.90	4.13	3.10	7.87	5.90
1500	3.88	2.91	6.72	5.04	3.35	2.51	6.46	4.85
1600	3.06	2.30	5.75	4.31	2.75	2.06	5.31	3.98
1700	2.46	1.84	4.94	3.71	2.29	1.72	4.42	3.32
1800	2.00	1.50	4.27	3.20	1.92	1.44	3.72	2.79

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the Top Hat configuration is not appropriate
2. Serviceability limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Ultimate limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TOP HATS

Serviceability Limit State Load Tables (kPa)

1.15bmt (H) Top Hats (continued)

TABLE 19: PART NO. H715: 15 x 15 x 75 x 15 x 15mm

SPAN	H715 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	0.95	0.71	1.81	1.35	0.65	0.48	1.25	0.93
1000	0.69	0.51	1.31	0.98	0.47	0.35	0.91	0.67
1100	0.51	0.38	0.98	0.73	0.35	0.26	0.68	0.50
1200	0.39	0.29	0.75	0.56	0.26	NA	0.52	0.38
1300	0.30	NA	0.59	0.43	NA	NA	0.40	0.30
1400	NA	NA	0.47	0.34	NA	NA	0.32	NA
1500	NA	NA	0.37	0.28	NA	NA	0.25	NA
1600	NA	NA	0.31	NA	NA	NA	NA	NA
1700	NA	NA	0.25	NA	NA	NA	NA	NA
1800	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 20: PART NO. H725: 20 x 25 x 75 x 25 x 20mm

SPAN	H725 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	3.37	2.53	6.38	4.78	2.34	1.75	4.43	3.32
1000	2.45	1.84	4.65	3.48	1.70	1.27	3.22	2.41
1100	1.84	1.37	3.49	2.61	1.27	0.95	2.42	1.81
1200	1.41	1.05	2.68	2.01	0.97	0.73	1.86	1.39
1300	1.11	0.82	2.10	1.57	0.76	0.57	1.46	1.09
1400	0.88	0.66	1.68	1.26	0.61	0.45	1.16	0.87
1500	0.71	0.53	1.36	1.02	0.49	0.36	0.94	0.70
1600	0.58	0.43	1.12	0.83	0.40	0.29	0.77	0.57
1700	0.48	0.36	0.93	0.69	0.33	NA	0.64	0.47
1800	0.40	0.30	0.78	0.58	0.27	NA	0.54	0.40

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the top hat configuration is not appropriate
2. Serviceability limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Ultimate limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TABLE 21: PART NO. H735: 20 x 35 x 75 x 35 x 20mm

SPAN	H735 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	7.30	5.47	13.80	10.35	5.07	3.80	9.58	7.18
1000	5.32	3.98	10.06	7.54	3.69	2.76	6.98	5.23
1100	3.99	2.99	7.55	5.66	2.77	2.07	5.24	3.92
1200	3.07	2.30	5.81	4.35	2.13	1.59	4.03	3.02
1300	2.41	1.80	4.57	3.42	1.67	1.25	3.17	2.37
1400	1.93	1.44	3.65	2.73	1.33	0.99	2.53	1.89
1500	1.56	1.17	2.97	2.22	1.08	0.80	2.05	1.54
1600	1.28	0.96	2.44	1.83	0.89	0.66	1.69	1.26
1700	1.07	0.80	2.03	1.52	0.73	0.55	1.40	1.05
1800	0.90	0.67	1.71	1.28	0.62	0.46	1.18	0.88

TABLE 22: PART NO. H750: 20 x 50 x 75 x 50 x 20mm

SPAN	H750 TOP HAT SPACING							
	L / 250				L / 360			
	SINGLE SPAN		CONTINUOUS SPAN		SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600	450	600	450	600
900	17.06	12.79	32.21	24.15	11.84	8.87	22.36	16.76
1000	12.43	9.32	23.47	17.60	8.63	6.46	16.29	12.22
1100	9.33	6.99	17.63	13.22	6.48	4.85	12.24	9.17
1200	7.18	5.38	13.58	10.18	4.98	3.73	9.42	7.06
1300	5.65	4.23	10.67	8.00	3.92	2.93	7.41	5.55
1400	4.52	3.38	8.54	6.40	3.13	2.34	5.93	4.44
1500	3.67	2.75	6.94	5.20	2.54	1.90	4.81	3.61
1600	3.02	2.26	5.72	4.28	2.09	1.56	3.96	2.97
1700	2.51	1.88	4.76	3.57	1.74	1.30	3.30	2.47
1800	2.11	1.58	4.01	3.00	1.46	1.09	2.78	2.08

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the Top Hat configuration is not appropriate
2. Serviceability limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Ultimate limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TOP HATS

Ultimate Limit State Load Tables (kPa)

0.75bmt (M) Top Hats

TABLE 23: PART NO. M515: 15 x 15 x 50 x 15 x 15mm

SPAN	M515 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	1.07	0.80	1.45	1.08
1000	0.80	0.60	1.15	0.86
1100	0.61	0.45	0.93	0.69
1200	0.47	0.35	0.76	0.57
1300	0.38	0.28	0.63	0.47
1400	0.30	0.22	0.53	0.39
1500	0.25	0.18	0.45	0.33
1600	0.21	0.15	0.39	0.29
1700	0.18	0.13	0.34	0.25
1800	0.15	0.11	0.30	0.22

TABLE 24: PART NO. M525: 20 x 25 x 50 x 25 x 20mm

SPAN	M525 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	2.31	1.73	3.12	2.34
1000	1.70	1.27	2.53	1.89
1100	1.25	0.93	2.09	1.56
1200	0.95	0.71	1.73	1.29
1300	0.74	0.55	1.42	1.06
1400	0.59	0.44	1.18	0.88
1500	0.47	0.35	0.98	0.73
1600	0.38	0.28	0.83	0.62
1700	0.31	0.23	0.70	0.52
1800	0.26	0.19	0.60	0.45

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the top hat configuration is not appropriate
2. Ultimate Limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Serviceability limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TABLE 25: PART NO. M535: 20 x 35 x 50 x 35 x 20mm

SPAN	M535 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	3.85	2.88	4.94	3.70
1000	2.85	2.13	4.00	3.00
1100	2.12	1.59	3.22	2.41
1200	1.57	1.17	2.60	1.95
1300	1.20	0.90	2.12	1.59
1400	0.92	0.69	1.75	1.31
1500	0.72	0.54	1.45	1.08
1600	0.57	0.42	1.21	0.90
1700	0.47	0.35	1.01	0.75
1800	0.38	0.28	0.85	0.63

TABLE 26: PART NO. M545: 20 × 45 × 50 × 45 × 20mm

SPAN	M545 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	6.07	4.55	7.15	5.36
1000	4.61	3.45	5.79	4.34
1100	3.53	2.64	4.79	3.59
1200	2.71	2.03	4.03	3.02
1300	2.08	1.56	3.42	2.56
1400	1.60	1.20	2.91	2.18
1500	1.26	0.94	2.49	1.87
1600	1.00	0.75	2.16	1.62
1700	0.81	0.61	1.88	1.41
1800	0.66	0.50	1.63	1.22

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the Top Hat configuration is not appropriate
2. Ultimate Limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Serviceability limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TOP HATS

Ultimate Limit State Load Tables:

0.75bmt (M) Top Hats (continued)

TABLE 27: PART NO. M550: 20 x 50 x 50 x 50 x 20mm

SPAN	M550 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	6.65	4.98	8.30	6.22
1000	4.94	3.70	6.72	5.04
1100	3.68	2.76	5.37	4.02
1200	2.72	2.04	4.32	3.24
1300	2.04	1.53	3.52	2.64
1400	1.57	1.17	2.88	2.16
1500	1.21	0.90	2.37	1.77
1600	0.95	0.71	1.96	1.47
1700	0.76	0.57	1.62	1.21
1800	0.62	0.46	1.33	0.99

TABLE 28: PART NO. M560: 20 × 60 × 50 × 60 × 20mm

SPAN	M560 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	9.60	7.20	10.98	8.24
1000	7.33	5.50	8.90	6.67
1100	5.66	4.24	7.36	5.52
1200	4.38	3.29	6.19	4.64
1300	3.39	2.54	5.27	3.95
1400	2.62	1.96	4.53	3.40
1500	2.04	1.53	3.90	2.92
1600	1.61	1.21	3.37	2.53
1700	1.30	0.97	2.94	2.21
1800	1.05	0.79	2.54	1.90

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the top hat configuration is not appropriate
2. Ultimate Limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Serviceability limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TABLE 29: PART NO. M715: 15 x 15 x 75 x 15 x 15mm

SPAN	M715 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	1.33	0.99	1.57	1.17
1000	1.02	0.76	1.27	0.95
1100	0.79	0.59	1.04	0.78
1200	0.63	0.47	0.86	0.64
1300	0.5	0.37	0.72	0.54
1400	0.40	0.30	0.61	0.45
1500	0.32	0.24	0.52	0.39
1600	0.26	0.19	0.45	0.33
1700	0.22	0.16	0.39	0.29
1800	0.18	0.13	0.34	0.25

TABLE 30: PART NO. M725: 20 x 25 x 75 x 25 x 20mm

SPAN	M725 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	2.97	2.22	3.29	2.46
1000	2.31	1.73	2.66	1.99
1100	1.81	1.35	2.2	1.65
1200	1.44	1.08	1.85	1.38
1300	1.15	0.86	1.58	1.18
1400	0.92	0.69	1.36	1.02
1500	0.75	0.56	1.18	0.88
1600	0.6	0.45	1.03	0.77
1700	0.5	0.37	0.90	0.67
1800	0.41	0.3	0.79	0.59

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the Top Hat configuration is not appropriate
2. Ultimate Limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Serviceability limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TOP HATS

Ultimate Limit State Load Tables:

0.75bmt (M) Top Hats (continued)

TABLE 31: PART NO. M735: 20 x 35 x 75 x 35 x 20mm

SPAN	M735 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	4.97	3.72	5.26	3.94
1000	3.88	2.91	4.26	3.19
1100	3.08	2.31	3.52	2.64
1200	2.47	1.85	2.96	2.22
1300	2.00	1.50	2.52	1.89
1400	1.63	1.22	2.17	1.62
1500	1.33	0.99	1.89	1.41
1600	1.09	0.81	1.67	1.25
1700	0.89	0.66	1.45	1.08
1800	0.73	0.54	1.26	0.94

TABLE 32: PART NO. M750: 20 x 50 x 75 x 50 x 20mm

SPAN	M750 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	8.54	6.4	8.88	6.66
1000	6.7	5.02	7.19	5.39
1100	5.34	4.00	5.94	4.45
1200	4.31	3.23	4.99	3.74
1300	3.51	2.63	4.26	3.19
1400	2.87	2.15	3.67	2.75
1500	2.36	1.77	3.2	2.39
1600	1.94	1.45	2.77	2.07
1700	1.59	1.19	2.39	1.79
1800	1.30	0.97	2.08	1.56

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the top hat configuration is not appropriate
2. Ultimate Limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Serviceability limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

Ultimate Limit State Load Tables:

1.15bmt (H) Top Hats

TABLE 33: PART NO. H515: 15 x 15 x 50 x 15 x 15mm

SPAN	H515 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	1.93	1.44	2.32	1.74
1000	1.52	1.14	1.85	1.38
1100	1.22	0.91	1.51	1.13
1200	1.00	0.75	1.26	0.94
1300	0.84	0.63	1.06	0.79
1400	0.71	0.53	0.90	0.67
1500	0.60	0.45	0.78	0.58
1600	0.52	0.39	0.68	0.51
1700	0.45	0.33	0.60	0.45
1800	0.40	0.29	0.53	0.39

TABLE 34: PART NO. H525: 20 x 25 x 50 x 25 x 20mm

SPAN	H525 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	4.45	3.33	5.61	4.2
1000	3.39	2.54	4.54	3.4
1100	2.61	1.95	3.67	2.75
1200	2.05	1.53	3.01	2.25
1300	1.63	1.22	2.51	1.88
1400	1.31	0.98	2.11	1.58
1500	1.08	0.81	1.80	1.35
1600	0.90	0.67	1.55	1.16
1700	0.76	0.57	1.34	1.00
1800	0.65	0.48	1.18	0.88

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the Top Hat configuration is not appropriate
2. Ultimate Limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Serviceability limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TOP HATS

Ultimate Limit State Load Tables:

1.15bmt (H) Top Hats (continued)

TABLE 35: PART NO. H535: 20 x 35 x 50 x 35 x 20mm

SPAN	H535 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	7.03	5.27	8.79	6.59
1000	5.26	3.94	6.97	5.22
1100	3.98	2.98	5.59	4.19
1200	3.03	2.27	4.56	3.42
1300	2.33	1.74	3.76	2.82
1400	1.83	1.37	3.14	2.35
1500	1.47	1.10	2.65	1.98
1600	1.20	0.90	2.25	1.68
1700	1.00	0.75	1.93	1.44
1800	0.84	0.63	1.67	1.25

TABLE 36: PART NO. H545: 20 × 45 × 50 × 45 × 20mm

SPAN	H545 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	10.96	8.22	12.61	9.45
1000	8.42	6.31	10.22	7.66
1100	6.56	4.92	8.45	6.33
1200	5.16	3.87	7.10	5.33
1300	4.08	3.06	6.06	4.54
1400	3.25	2.43	5.16	3.87
1500	2.58	1.94	4.44	3.33
1600	2.07	1.55	3.82	2.86
1700	1.68	1.26	3.29	2.47
1800	1.38	1.03	2.85	2.14

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the top hat configuration is not appropriate
2. Ultimate Limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Serviceability limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TABLE 37: PART NO. H550: 20 x 50 x 50 x 50 x 20mm

SPAN	H550 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	11.72	8.79	14.47	10.85
1000	8.78	6.58	11.43	8.57
1100	6.55	4.91	9.13	6.84
1200	4.89	3.66	7.39	5.54
1300	3.67	2.75	6.05	4.53
1400	2.82	2.11	4.99	3.74
1500	2.21	1.65	4.16	3.12
1600	1.77	1.32	3.48	2.61
1700	1.44	1.08	2.93	2.19
1800	1.19	0.89	2.48	1.86

TABLE 38: PART NO. H560: 20 × 60 × 50 × 60 × 20mm

SPAN	H560 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	16.82	12.61	19.00	14.25
1000	12.93	9.70	15.40	11.55
1100	10.07	7.55	12.73	9.55
1200	7.91	5.93	10.70	8.03
1300	6.23	4.67	9.12	6.84
1400	4.92	3.69	7.87	5.90
1500	3.88	2.91	6.72	5.04
1600	3.06	2.30	5.75	4.31
1700	2.46	1.84	4.94	3.71
1800	2.00	1.50	4.27	3.20

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the Top Hat configuration is not appropriate
2. Ultimate Limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Serviceability limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TOP HATS

Ultimate Limit State Load Tables:

1.15bmt (H) Top Hats (continued)

TABLE 39: PART NO. H715: 15 x 15 x 75 x 15 x 15mm

SPAN	H715 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	2.18	1.63	2.45	1.83
1000	1.71	1.28	1.98	1.48
1100	1.37	1.02	1.64	1.23
1200	1.11	0.83	1.37	1.02
1300	0.92	0.69	1.16	0.87
1400	0.77	0.57	0.98	0.73
1500	0.65	0.48	0.85	0.63
1600	0.56	0.42	0.74	0.55
1700	0.49	0.36	0.65	0.48
1800	0.42	0.31	0.57	0.42

TABLE 40: PART NO. H725: 20 x 25 x 75 x 25 x 20mm

SPAN	H725 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	5.45	4.08	5.86	4.39
1000	4.18	3.13	4.75	3.56
1100	3.32	2.49	3.92	2.94
1200	2.68	2.01	3.30	2.47
1300	2.19	1.64	2.81	2.10
1400	1.80	1.35	2.40	1.80
1500	1.49	1.11	2.06	1.54
1600	1.24	0.93	1.78	1.33
1700	1.04	0.78	1.56	1.17
1800	0.88	0.66	1.37	1.02

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the top hat configuration is not appropriate
2. Ultimate Limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Serviceability limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

TABLE 41: PART NO. H735: 20 x 35 x 75 x 35 x 20mm

SPAN	H735 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	8.74	6.55	9.28	6.96
1000	6.85	5.13	7.51	5.63
1100	5.46	4.09	6.21	4.65
1200	4.40	3.30	5.22	3.91
1300	3.59	2.69	4.45	3.33
1400	2.96	2.22	3.78	2.83
1500	2.44	1.83	3.24	2.43
1600	2.01	1.50	2.79	2.09
1700	1.67	1.25	2.43	1.82
1800	1.39	1.04	2.13	1.59

TABLE 42: PART NO. H750: 20 x 50 x 75 x 50 x 20mm

SPAN	H750 TOP HAT SPACING			
	SINGLE SPAN		CONTINUOUS SPAN	
	450	600	450	600
900	14.72	11.04	15.31	11.48
1000	11.55	8.66	12.40	9.30
1100	9.22	6.91	10.25	7.68
1200	7.45	5.58	8.61	6.45
1300	6.08	4.56	7.27	5.45
1400	5.00	3.75	6.16	4.62
1500	4.13	3.09	5.26	3.94
1600	3.40	2.55	4.53	3.39
1700	2.80	2.10	3.93	2.94
1800	2.30	1.72	3.43	2.57

NOTES:
1. NA means the maximum kPa value is less than 0.25 kPa and the Top Hat configuration is not appropriate
2. Ultimate Limit state load capacity to be calculated in accordance with AS/NZS 1170.0 or AS/NZS 1170.2 as applicable
3 . Connections to be independently checked
4. Serviceability limit state to be checked separately
5. Lining contribution not included
6. Cantilever not to exceed 0.2 times the backspan

REVEAL BEADS

Rondo Reveal Beads are available in a variety of widths and offer a strong, straight and clean finish to window openings that require internal trimming. They are cold rolled from 0.9mm Zincanneal steel and UV-resistant to make them strong and able to withstand harsh UV rays without cracking or breaking down.

Rondo Reveal Beads can be cut by hand with sharp shears, or with other cutting devices, such as a drop saw and installed as shown in Figure 9.

It incorporates a perforated bead leg for setting into the surrounding wall lining and can be painted over to match the wall finish.

Rondo recommends each application to be bedded in with a suitable gap-filling adhesive to the supporting framework around the window opening, whether it is masonry, timber or steel studding. A bead of paintable gap-filler can be applied to finish butt corner intersections.

In the event that a Reveal Bead requires trimming down, the cut edge can be easily finished with Rondo EXTREME® Finish Trim PLBFT30 as shown in Figure 10.

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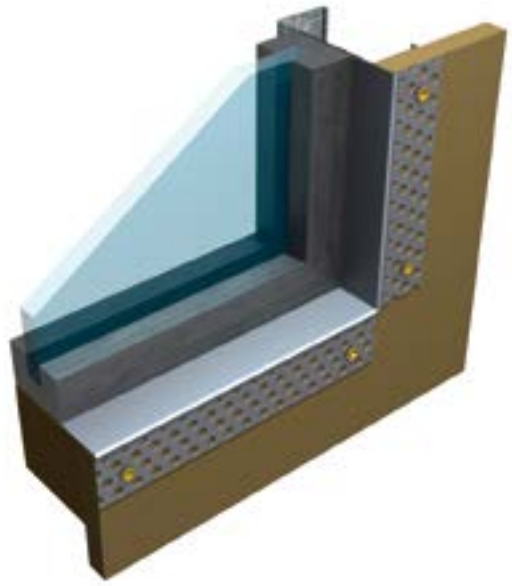

■ REVEAL BEAD INSTALLATION

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■ REVEAL BEAD WITH FINISHING TRIM

ANGLES

Rondo has a range of Steel Angles available, including heavy duty and slotted angles.

Rondo Heavy Duty Angles are manufactured from Bluescope Steel G2 Z275 material to suit both lightweight Autoclaved Aerated Concrete Panel Systems (AAC) and steel framing requirements for façade systems.

The Heavy Duty Angles are 75 x 75mm and 100 x 100mm nominal sized and are available in 0.75 and 1.15bmt steel thicknesses, and can be used to strengthen internal corners of façade systems, in the construction of bulkhead framing or in a variety of situations requiring bracing or stiffening.

The slotted angles can be used for head and base fixing for AAC panel systems.

NOTE:
Due to their weight and subsequent OH&S handling requirements, Rondo only supplies the slotted and Heavy Duty Angles in lengths no longer than 2400mm.

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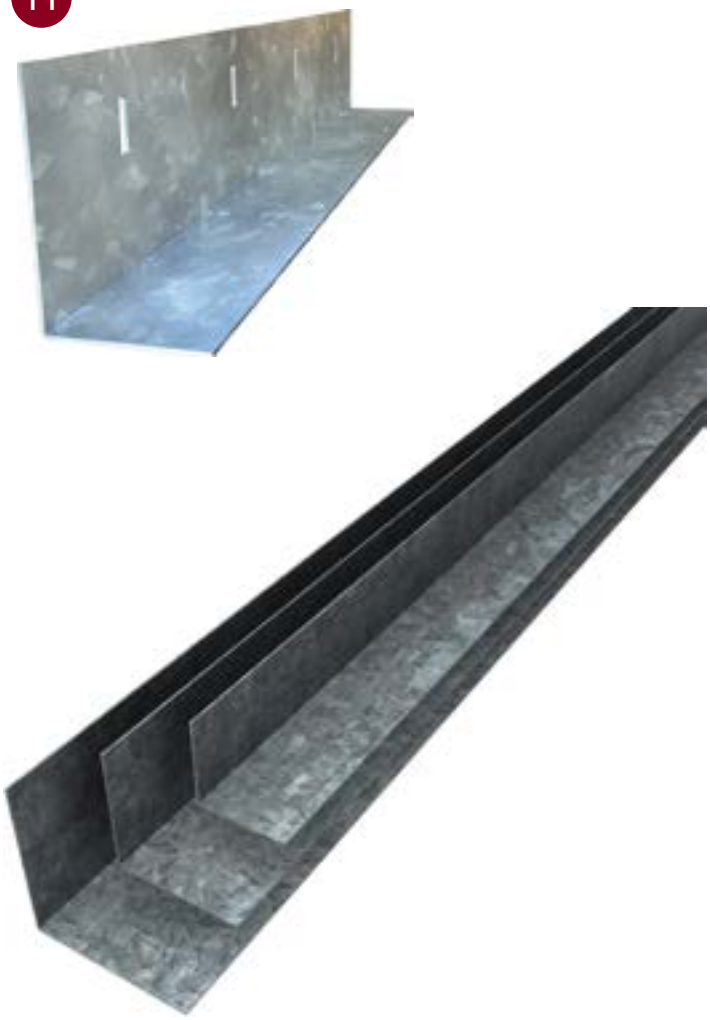

RONDO STEEL ANGLES

SPEEDPANEL

Rondo produces two accessories for specific use with the 78mm Speedpanel systems. Both are manufactured from G2 Z275 Blue Scope Galvabond Steel. Rondo 820 'C' Channel is 82 x 51mm nominally sized and available in 1.15bmt steel thickness and Rondo 559 90° Angle is 50 x 50mm nominally sized and available in a 1.15bmt steel thickness.

These products are made to suit the 78mm Speedpanel system specifically but Rondo is able to produce Speedpanel 'C' channels and angles to suit other sizes of speedpanel by special request.

NOTE: Please refer to the Speedpanel system literature for correct installation procedures.

RONDO ROD BENDER

The Rondo 130 Rod Bender can bend three rods to 30° at a time, and has been designed to accommodate Rondo 121 Plain Rod and 122 Threaded One End Rod – providing both onsite time and labour cost savings.

To use, first ensure tool is secure, then unscrew handle from mounting block and screw into pivot.

Rotate the handle through 180° and insert rods up to stopping block. Finally, pull the handle back in opposite direction to bend rod.

NOTE: Rondo recommends a 30° bend is applied to Rondo 121 and 122 Rod in Rondo Suspended Ceiling Systems to ensure optimum performance.

■ ROD BENDER

RONDO BUILDING SERVICES PTY LTD

WARRANTY

THIS WARRANTY IS ISSUED:

TO: .....

.....

PROJECT: .....

.....

.....

.....

.....

.....

.....

.....

RONDO REF: .....

This warranty is provided by:
Rondo Building Services Pty Ltd ABN 69 000 289 207
57–87 Lockwood Road, Erskine Park, NSW 2759 Australia
Tel: +61 2 9912 7300

OTHER RIGHTS

The benefits given by this warranty are additional to other rights and remedies that you may have under laws relating to our products. Our goods come with guarantees that cannot be excluded under the Consumer Guarantees Act. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

LODGING A WARRANTY CLAIM

To make a claim under this warranty, please contact the Rondo authorised dealer or Rondo sales representative from whom you purchased the product. Otherwise, you may send details of your warranty claim directly to Rondo by post:

Warranty Claims, Rondo Building Services,
PO Box 324, St Marys, NSW 1790 Australia

All claims must be received by Rondo within the applicable warranty period. Once your claim is received, a representative of Rondo will determine whether your warranty claim is valid and, if it is, will inform you how Rondo will honour it. Any costs you incur in making this warranty claim are your responsibility and not covered by this warranty.

After you lodge a warranty claim, Rondo may, before providing warranty service, require that you provide proof of purchase, respond to questions designed to assist with diagnosing potential faults and follow Rondo's procedures for obtaining warranty service. You must respond to all requests promptly and at your own expense.

GENERAL WARRANTY STATEMENT

Rondo Building Services Pty Ltd (Rondo) warrants all Rondo branded products against defects in materials under normal use for the period from the date of purchase specified below:

- All Rondo products: ten (10) years, with the exception of
- Rondo EXTREME® PVC Finishing Sections: fifteen (15) years.

In addition, Rondo warrants that the Rondo KEY-LOCK® and DUO® Suspended Ceiling Systems will remain structurally sound for a period of fifteen (15) years from the date of purchase.

If you submit a valid claim under this warranty, Rondo will, at its option:

(i) repair the product;

(ii) replace the product with a product that is at least equivalent to the original product in function and quality; or

(iii) refund the purchase price. When a product or component is replaced or refunded, any replacement item becomes your property and the replaced item becomes Rondo's property.

This warranty is subject to the exclusions and conditions below. Where an additional warranty has been issued by Rondo, the terms of that additional warranty prevail to the extent of any inconsistency.

WARRANTY EXCLUSIONS

This warranty does not apply to products that:

- Have not been purchased from Rondo or a Rondo authorised dealer;
- Have been modified or changed without approval from Rondo; or
- Have not been installed in accordance with Rondo's then current installation guidelines (such as spacing, allowable loads and the like) and environment specifications (including outdoor use of products designed for indoor use only).

This warranty does not apply to damage caused by:

- The fitting or use of components not supplied by Rondo;
- Repair, maintenance or service by a person not authorised by Rondo;
- Fasteners that do not have durability and corrosion resistance at least equal to the product that they are fastening (e.g. the use of non-stainless steel fasteners with a stainless steel bead);
- Normal wear and tear.

SPECIAL CONDITIONS FOR OUTDOOR USE

The only Rondo metal products that are designed and warranted for outdoor use are the following products in the Rondo EXANGLE® Range: EP32, EP50, EP17, ER11, P01S & SR02. Whilst these products have been coated with a highly effective corrosion resistant material, or made with corrosive resistant stainless steel, the products may still be susceptible to corrosion in highly aggressive environments. The use of the below products is not recommended, and this warranty does not apply, in the following applications:

EP32, EP50, EP17, ER11	SR02, P01S
• Within 1km of breaking surf. • Within 100m of calm, open saltwater locations (e.g. harbours). • Within 500m of areas of heavy industrial emissions.	• Within 100m of breaking surf. • Within 100m of heavy industrial emissions, or fossil fuel combustion.
• Areas exposed to prevailing winds that contain salt or regular industrial emissions. • Where continuous or cyclical moisture is present, such as retaining walls, planter boxes or garden beds unless protective waterproofing measures have been applied in accordance with Rondo's published specifications. • Environments which contain bore water or soils with high chloride content.	

ADDITIONAL WARRANTY COVERAGE & CONDITIONS

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AUTHORISED BY .....

SIGNED ..... **DATE** .....

RONDO®

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NF225/6

ADDITIONAL INFORMATION

STANDARDS & CODES

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RONDO®

STANDARDS & CODES

Relevant to Design and Performance of Systems

STANDARDS & CODES	CEILINGS			WALLS			FINISHING SECTIONS			ACCESS PANELS
	DUO	KEY-LOCK	WALK-ABOUT	STUD& TRACK	MAXIFRAME	QUIET STUD	EXANGLE	EXANGLE RT	EXTREME	PANTHER
AS/NZS 1170.0:2000 Structural Design Action										
Part 0: General Principles										
Part 1: Permanent, imposed & other actions										
AS/NZS 1170.2:2011 Part 2 : Wind Action										
AS/NZS 1170.3:2003 Part 3: Snow & Ice Action										
AS 1170.4:2007 Part 4 Earthquake actions in Australia										
NZS 1170.5:2004 Part 5 Earthquake actions in New Zealand										
AS/NZS 4055:2012 Wind load for houses										
AS/NZS 4600:2005 Cold formed steel structures										
AS/NZS 2589:2007 Gypsum Linings - Application & finishing										
AS/NZS ISO 717-1:2004 Airborne Sound Insulation										
AS/NZS 2785:2000 Suspended Ceilings - Design & Installation										
AS 3623:1993 Domestic Metal Framing										
AS/NZS 1664:1997 Aluminium Structures Limit state design	●									
AS/NZS 1657:1992 Fixed platforms,walkways,stairways & ladders. Design, construction & installation										
AS/NZS 2311:2009 Guide to the painting of buildings										
AS 1191:2002 Acoustics - Method for Laboratory measurement of airborne sound transmission loss of building partitions										
AS 1296:1999 Acoustics - Rating of Sound Insulation in buildings and of building elements Part 1 : Airborne Sound Insulation										
AS/NZS 1530.3:1999 Part 3 - Simultaneous determination of ignitability, flame propagation, heat and smoke release										
NCC - Building Code of Australia Volumes 1 & 2										

● *APPLIES TO ALUMINIUM GRID ONLY*

STANDARDS, CODES & METHODOLOGIES

For Materials, Coatings & Life & Compliance Testing of System Components

STANDARDS & CODES	CEILINGS			WALLS			FINISHING SECTIONS			ACCESS PANELS
	DUO	KEY-LOCK	WALK-ABOUT	STUD& TRACK	MAXIFRAME	QUIET STUD	EXANGLE	EXANGLE RT	EXTREME	PANTHER
AS 1191:2002 Method for laboratory measurement of airborne sound transmission loss of building partitions										
AS 1530.4:2005 Methods for fire tests on building materials, components & structures. Fire resistance tests of elements of building construction										
AS 2331.1.3.1:2001 Neutral Salt Spray Test										
AS/NZS 1397:2011 Continuous hot-dip metallic coated steel sheet & strip - Coatings of zinc & zinc alloyed with aluminium & magnesium										
AS/NZS 1866:1997 Aluminium & aluminium alloys - extruded rod, bar, solid & hollow shapes	●									
AS/NZS 3566.2:2002 Self drilling screws for the building and construction industries - corrosion resistance requirements										
ASTM C635/C635M-07 Standard Spec for the manufacture, performance and testing of metal suspension systems for acoutical tile and lay-in panel ceilings										
ASTM C636/C636M-08 Standard practice for installation of metal ceiling suspension systems for acoustical tile and lay-in panels										
ASTM G154-06 Standard Practice for operating flouro light apparatus for UV exposure of non-metallic materials										

● *APPLIES TO ALUMINIUM GRID ONLY*

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Systems and Accessories

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Rondo Components

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