



Design & Installation Guide

MASS TIMBER FLOORS SYSTEMS

New Zealand | v2.3 | March 2023

||| SoundDown™

To be used in conjunction with SoundDown™ &
Affiliate Product & Safety Data Sheets

www.sounddown.co.nz

SoundDown™ Floor Systems

Sustainable, engineered solutions solving mass timber acoustics



High acoustic energy rooms



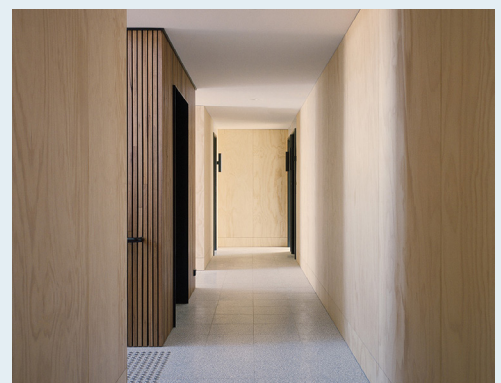
Living Spaces



Large open spaces



Modern workspaces



High traffic areas

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This Design and Installation Guide has been prepared as a source of information to provide general guidance to consultants – and in no way replaces the services of the professional consultant and relevant engineers designing the project.

It is the responsibility of the architectural designer and engineering parties to ensure that the details in this Design and Installation Guide are appropriate for the intended application.

The recommendations of this guide are formulated along the lines of good building practice, but are not intended to be an exhaustive statement of all relevant data.

01 | INTRODUCTION

SoundDown™ are leaders in innovation for acoustic-rated intertenancy floor and ceiling systems suitable for high density residential, commercial, educational and healthcare applications. SoundDown™ Floor Systems are engineered to solve complex acoustic problems associated with CLT structural floors while maintaining the ethos and values of Mass Timber construction.

SoundDown™ PAB and SDP systems are sustainable, lightweight solutions designed to reduce noise and vibration for CLT structural floors that the market is accustomed to with the likes of reinforced concrete. The benefits of SoundDown™ are simply reducing onsite labour requirements and removing messy wet trades; leading to fast and efficient installation and ultimately, allowing the project to realise construction programme and cost benefits.

The systems are comprised of proprietary SoundDown™ products and industry-leading building materials to create a practical, resilient, dry subfloor as an alternative to wet screeds and concrete toppings which diminish the value of Cross-Laminated Timber (CLT). SoundDown™ Acoustic Floor Systems were developed to offer a variety of airborne and impact sound options, services integration and project-unique floor depth requirements to meet the vast range of project and customer needs.

As the construction field evolves, the market, industry and governing bodies are continually calling for better quality and safer systems constructed of moisture resistant, non-combustible and non-hazardous materials to drive positive change in the built environment. SoundDown™ acknowledges the changing landscape and brings progressive solutions to the market guaranteeing compliance and best in class practices.

The Benefits of SoundDown™

- Highly durable topping
- Available in easy to carry unit sizes
- Designed to be installed by one person
- Simple design and construction detailing
- Lightweight solution through resiliency over mass
- Suitable for wet areas
- Use of recycled and sustainable materials

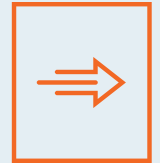
For further information or project support:

web www.sounddown.co.nz
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phone (+64) 022 377 2162

||| SoundDown™



Acoustic Rated



Fast & Efficient



**Non-Combustible
Topping Option**



Moisture Resistant



Non-Hazardous



Simple Design



High Value



Squeak Free

02 | USE OF THIS GUIDE

Industry Professionals

This Design & Installation guide has been prepared for use by qualified construction professionals to provide the necessary technical information on SoundDown™ PAB and SDP Floor Systems for CLT structural floors in Mass Timber buildings for New Zealand.

Products referred to in this document other than SoundDown™ products are required to be used to meet the specified performance values. New Zealand standards and other manufacturer literature are required to be consulted by all stakeholders to ensure safe and compliant design and construction.

This guide does not provide exhaustive information and as such, projects may require professional advice from qualified subject matter experts to assess the suitability of SoundDown™ Acoustic Floor Systems and detailing for your project. This can include acoustics, structural, waterproofing and fire engineering.

This guide is for designers and installers; professional judgement must be used when referencing this document. Full responsibility for the design and compliance with the New Zealand Building Code (NZBC) and New Zealand Standards, rests with the design professional specifying the product.

SoundDown™ will not accept any liability for the failure of any other elements of the building which cause a subsequent failure of a SoundDown™ system.

While all reasonable efforts have been made to ensure the accuracy of information provided, this guide is a guide only. It may be subject to change.

Technical assistance is available at www.sounddown.co.nz.

Designers & Specifiers

As per Clause G6 'Airborne and Impact sound' to the New Zealand Building Code (NZBC), the Sound Transmission Class (STC) and the Impact Insulation Class (IIC) for intertenancy floors shall be no less than 55. SoundDown™ systems have been tested and verified to achieve STC & IIC values well above the minimum requirements of Clause-G6 of the NZBC.

Ensure the information in this design and installation guide is appropriate for the application you are planning and that you undertake specific design and detailing for areas which fall outside the scope of the following contents.

Installers

Ensure that you follow the design detailing and associated product literature provided to you.

High risk areas such as wet areas, penetrations and wall to floor junctions require you to practice care and caution.

Please contact SoundDown™ if you seek further support.

Version Control

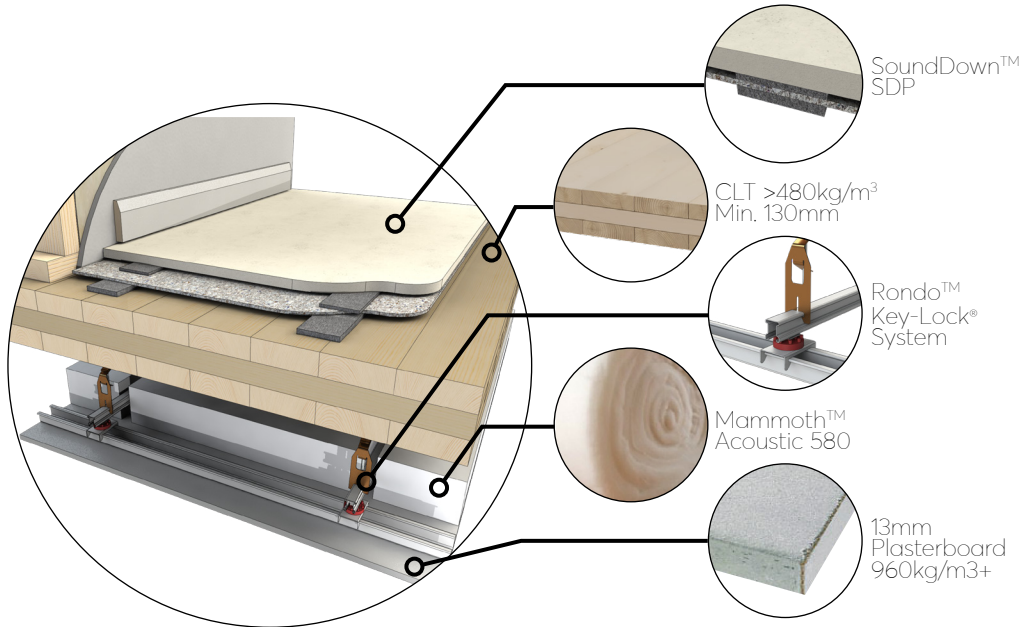
This design and installation guide receives updates and version control is used. The latest issue is always available on the SoundDown™ website. It is the user's responsibility to ensure that the latest version is in use at all times.

03 | INTRODUCING SOUNDDOWN™ ACOUSTIC FLOOR SYSTEMS FOR MASS TIMBER

SoundDown™ offer engineered floor systems to assure premium acoustic performance for buildings in New Zealand utilising Cross-Laminated Timber structural floors over 130mm (8.12in"). There are two types of SoundDown™ Acoustic Floor Systems:

SoundDown™ SDP

A pre-assembled acoustic sandwich panel comprising of Maglok Dragonboard 20mm, Saveboard 6mm and recycled rubber isolation strips and pads.



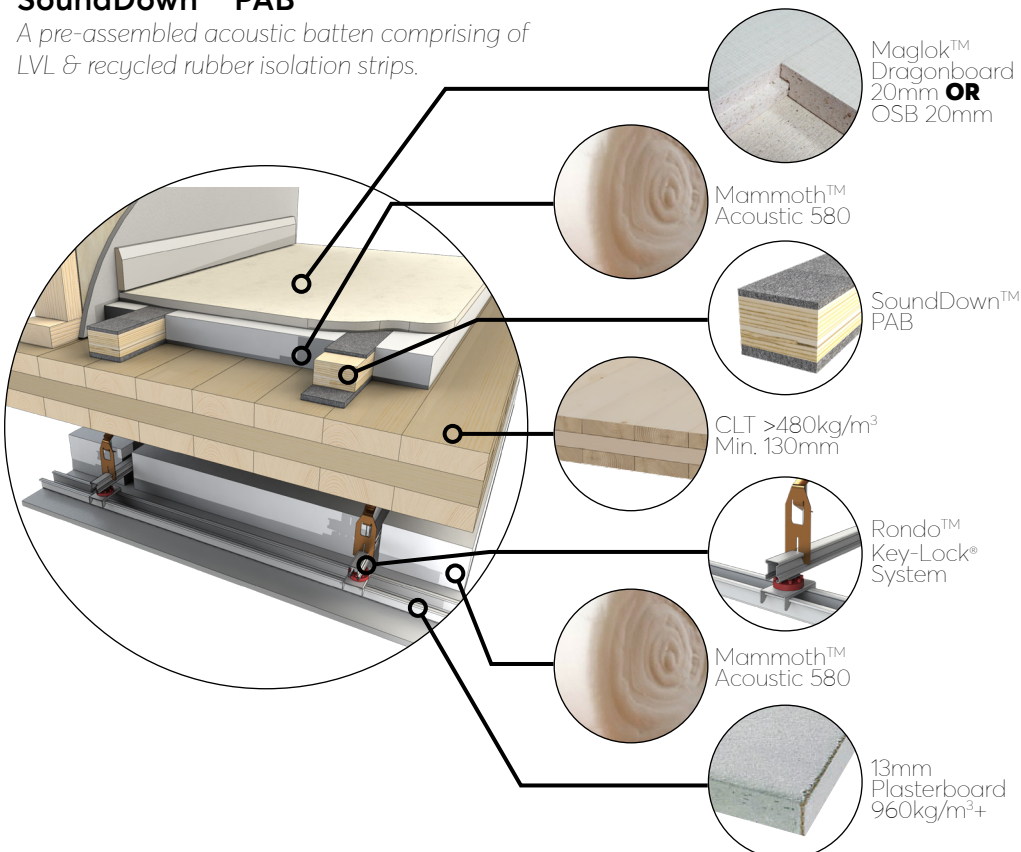
System Information

Min. System Depth:	422mm
SoundDown™ Build Up:	42mm
Services Routing:	✗
Topping Durability:	Maglok ✓
Installation Time:	>5m ² /HOUR
IIC:	62
STC:	64

A tailored solution suitable for projects conscious of floor-to-floor heights and speed of installation.

SoundDown™ PAB

A pre-assembled acoustic batten comprising of LVL & recycled rubber isolation strips.






System Information


Total System Depth:	460mm
SoundDown™ Build Up:	80mm
Services Routing:	✓
Topping Durability:	Maglok ✓
Installation Time:	>3m ² /HOUR
IIC (OSB):	57
IIC (Maglok):	60
STC:	66

A high performance solution for projects requiring services integration and flexibility of topping layer.

04 | PRODUCTS, ACCESSORIES & TOOLS

SoundDown™ raised acoustic floor systems are feature proprietary and market-available, reputable construction products, available through Trade Supply (tradesupply.co.nz).

Boards, Battens & Insulation	
	SoundDown™ PAB A pre-assembled acoustic batten comprising of LVL & recycled rubber isolation strips, 45x46mm. Available in 1.0m, 1.8m, 2.4m & 3.0m lengths.
	SoundDown™ SDP A pre-assembled acoustic sandwich panel comprising of Maglok Dragonboard 20mm, recycled rubber isolation strips and pads and 6mm SaveBoard Exposed Internal Lining. Available in 1800x600x42mm.
	Maglok™ Dragonboard A chloride-free, fibre-reinforced MgO board for use as structural sub-floor featuring a shiplap joint on the long edge. Available in 2000x1200x20mm and 1800x600x20mm. *1800x600x20mm is preferred for SoundDown™ PAB due to fitting batten spacing.
	Mammoth™ Acoustic 580 A 580gsm, moisture-resistant, non-sag, polyester insulation available in blankets and sections. Available in 600x2500mm roll (2pcs/30m² per pack).
	Oriented-Strand Board (OSB) 20mm A oriented strand board (OSB) for use as a structural sub-floor featuring a tongue and groove joint on the long edge. SoundDown™ recommends the use of either: - IBS™ Eurofloor. Available in 2400x1200x20mm & 3600x1200x20mm. - Laminex Strandfloor T&G. Available in 2400x1200x20mm & 3600x1200x20mm. *Where used in wet areas; a moisture-resistant OSB is required. H31 grade or higher.
	Plasterboard (13mm) A 960kg/m³+ 13mm high-performance acoustic and fire plasterboard lining is required. SoundDown™ recommends GIB™ Braceline® Noiseline® 13mm Plasterboard. Available in 1200 x 2400 2700 3000 3600.
	Rondo KEY-LOCK® Suspended Ceiling System A performance, snap-fit acoustically-rated suspended ceiling system. The following products must be used: - Rondo 547 Suspension Bracket - Rondo 2534 Suspension Clip 110mm (To suit TCR 127/128) - Rondo 121 Suspension Rod - Rondo 127 TCR 25mm (*128 TCR 38mm permitted for use) - Rondo STSU Acoustic Isolator - Rondo 129 Furring Channel (28x38mm) - Rondo 272 TCR Joiner *Additional layers of plasterboard may be used to provide a fire-rated system. Refer to www.rondo.co.nz for more information.

 Denotes interchangeability of products permitted when a professional acoustician has provided a technical specification suitable for your project needs.

Accessories	
	SoundDown™ SDP Acoustic Isolation Kit A kit of additional isolation strips and pads to reinforce SoundDown™ SDP panels where cutting has removed pre-assembled isolation material.
	Screws 8G x 50mm Countersunk (CSK) Self-Tapping Screw Dry Areas: Min. Class 3 Galvanised Wet Areas: SS304 or SS316 Required.
	Construction Adhesive Examples: Sika™ Nail Bond Premium, Holdfast Gorilla™ Grip, Bostik™ Alpha Grip & Selleys™ Liquid Nails
	Fire & Acoustic Sealant Examples: Selleys Superfire 810
	Backing Rod Closed-cell, 10mm backing rod for control joints
	Insulation Ties/Strap
SoundDown™ Tools	
	SoundDown™ PAB Setout Tool A prefabricated setout tool, removing onsite measuring and maintaining alignment during installation of SoundDown™ PAB battens.
Power Tools	
	Simpson Strong-Tie Quik Drive Screw® Driving System An extended, collated, auto-feed screw gun enabling fast fixing of subfloor topping panels. (SoundDown™ PAB Only)
	Cordless Impact Driver / Drill
	Track Saw with Vacuum Dust Extraction (M Class or Higher)
	180mm+ Diamond-Tipped Saw Blade
Hand Tools	
	Gorilla™ Gripper
	Spatula / Joint Knife
	Caulking Gun

05 | SOUNDDOWN™ ACOUSTIC PERFORMANCE

SoundDown™ have undertaken acoustic system testing in accredited laboratories to guarantee compliance and performance of the systems within this guide. Alternative structural and subfloor options are presented below. Where the option has not been tested; it is advised that the project seek a professional opinion from an acoustician.

SOUNDDOWN™ PAB ACOUSTIC MATRIX | CLT Specification & Topping

SUBFLOOR TOP-PING	MAGLOK™ DRAGONBOARD		OSB	
	STC	IIC	STC	IIC
C3/130mm	66 ¹	60 ¹	66 ¹	57 ¹
C5/140mm	66 ²	61 ²	66 ²	58 ²
C5/170mm	67 ²	63 ²	67 ²	60 ²
C5/200mm	68 ²	65 ²	68 ²	62 ²
C5/220mm	68 ²	66 ²	68 ²	63 ²
C7/240mm	69 ²	67 ²	69 ²	64 ²
C7/260mm	69 ²	67 ²	69 ²	64 ²
C7/310mm	70 ²	68 ²	70 ²	65 ²

¹ Tested by University of Auckland. Reports available from www.sounddown.co.nz


² Estimate by professional; acoustic modelling or advice required for project use.

SOUNDDOWN™ SDP ACOUSTIC MATRIX | CLT Specification

SUBFLOOR TOP-PING	MAGLOK™ DRAGONBOARD	
	STC	IIC
C3/130mm	64 ¹	62 ¹
C5/140mm	64 ²	63 ²
C5/170mm	65 ²	66 ²
C5/200mm	66 ²	68 ²
C5/220mm	66 ²	69 ²
C7/240mm	67 ²	70 ²
C7/260mm	67 ²	70 ²
C7/310mm	68 ²	73 ²

¹ Tested by University of Auckland. Reports available from www.sounddown.co.nz

² Estimate by professional; acoustic modelling or advice required for project use.

 **All System combinations feature the same system depth, insulation and ceiling specification. This table provides information relating to changing the structural CLT thickness, number of CLT lamellas and in the case of using SoundDown™, the subfloor topping material.**

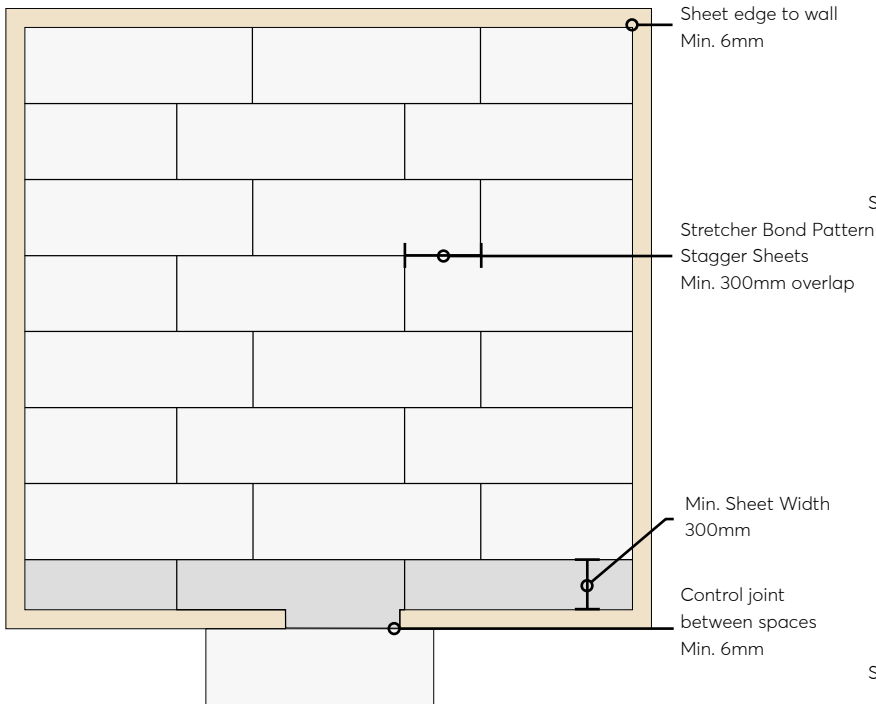
Acoustic Considerations


The sound insulation of CLT building elements relies on appropriate design and construction detailing. The compliant rating can be effectively achieved by SoundDown™ floor assemblies incorporated in mass timber (CLT) floor structure, resilient layers, air gaps, and absorbent insulation within cavities.

Designers must detail to avoid 'flanking' sound transmission via alternative paths e.g. through air gaps, services ducts or adjoining elements which are common to two tenancies. There are significant interdependencies between acoustic solutions which require them to be considered together at an early stage. SoundDown™ recommend discontinuous floor systems between spaces to ensure impact sound is not transmitted through flanking paths.

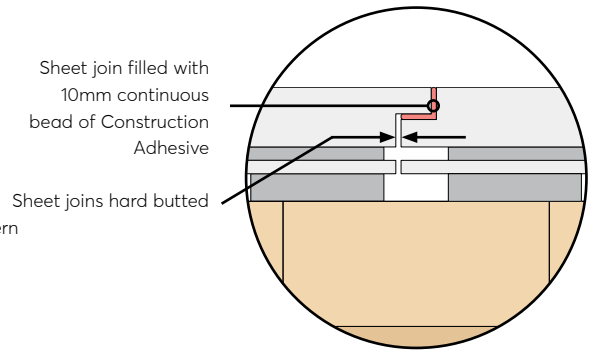
06 | SOUNDDOWN™ SDP | LAYOUT

ROOM PLAN

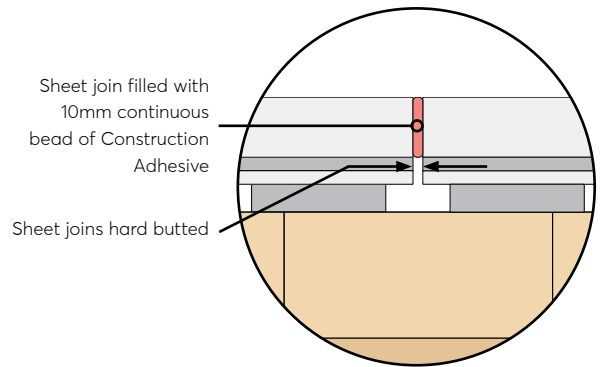


 **Panels are NOT to come into contact with the wall lining or framing.**

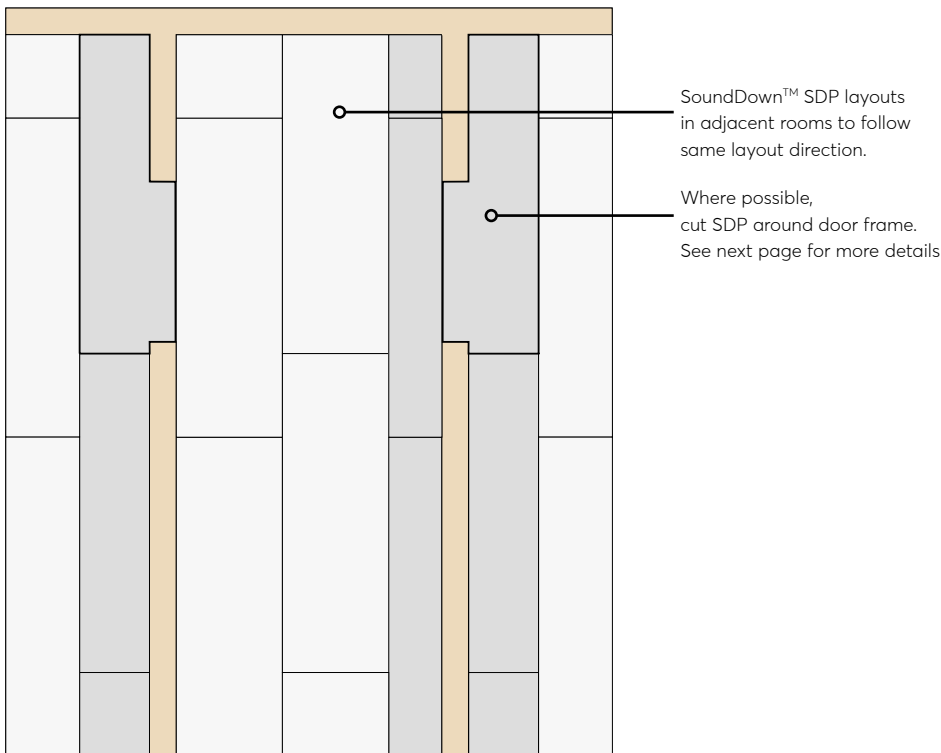
LONG EDGE JOIN - SHIPLAP



SHORT EDGE JOIN - BUTT JOIN

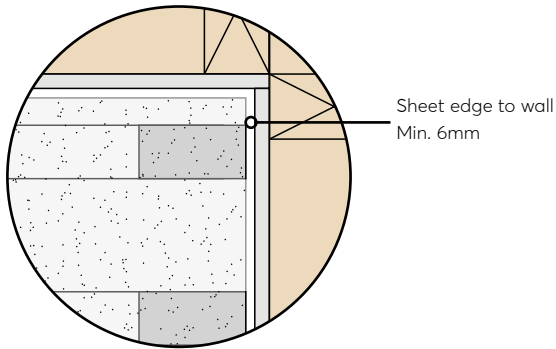


CORRIDOR PLAN

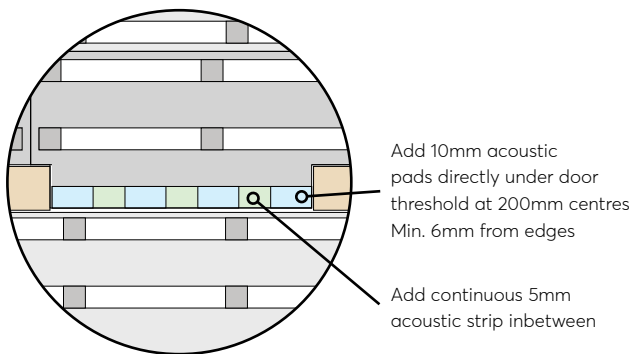


07 | SOUNDDOWN™ SDP | CONSTRUCTION DETAILS

CORNER

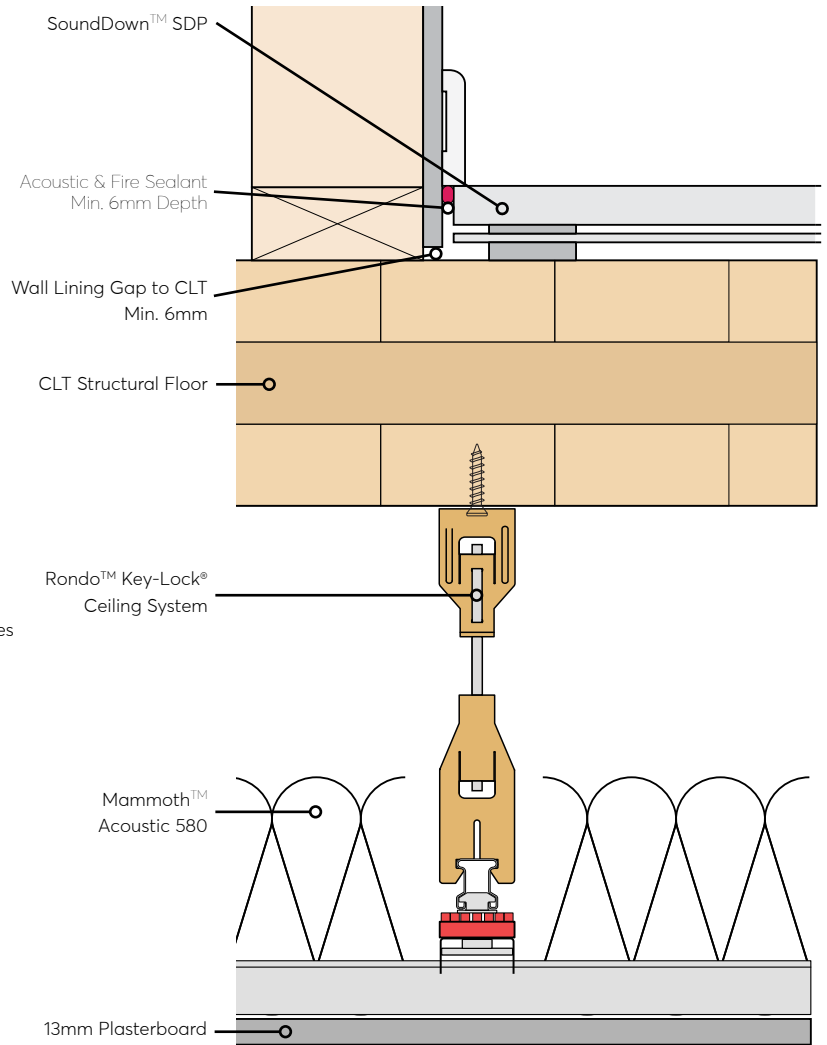


DOORWAY

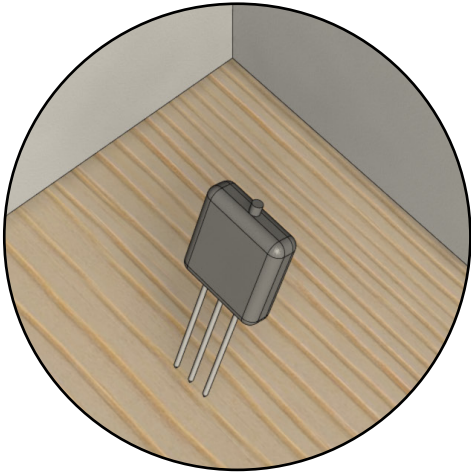


Where the isolation pads and strips are removed due to panel cut, additional material is to be added to support the sheet edge.

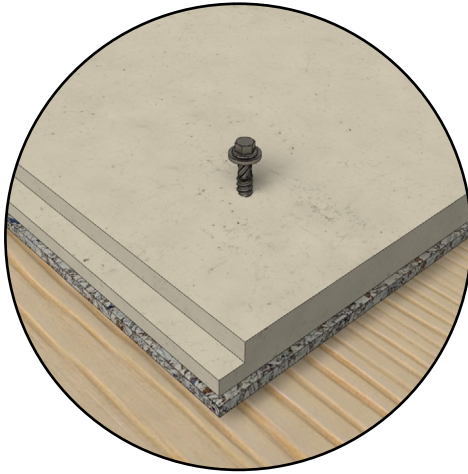
SECTION VIEW



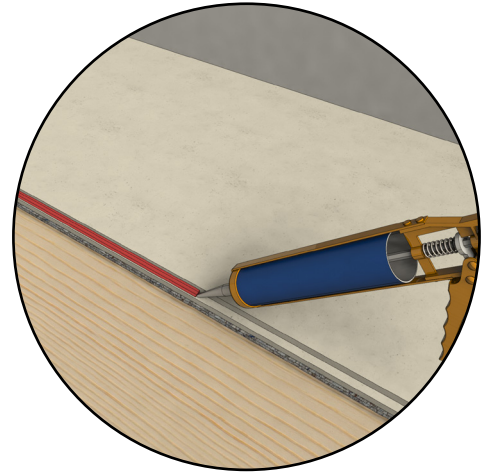
08 | SOUNDDOWN™ SDP | INSTALLATION



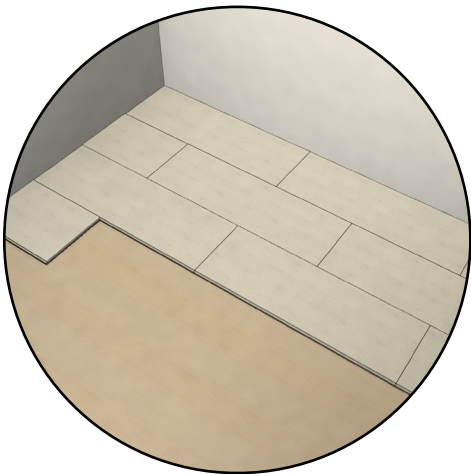
- Ensure CLT is free of debris, dust, nails and screws.
- Check CLT moisture content, must be under <16% before installation.
- If the CLT has been coated, install after desired curing time has lapsed.
- Wall lining to be installed before installing SoundDown™ SDP Floor System, and not touching the CLT structural floor.



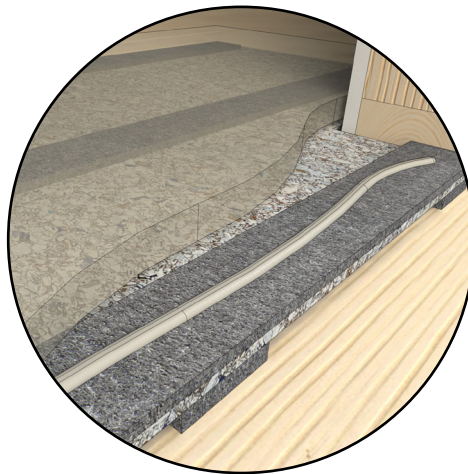
- The first panel may be secured in two locations using 8Gx50mm hex head screws at diagonally opposing sides. This is to ensure the panel does not move while butting up the next panels.
- The screws MUST be removed after installation and holes filled with fire and acoustic sealant through the entire panel depth.



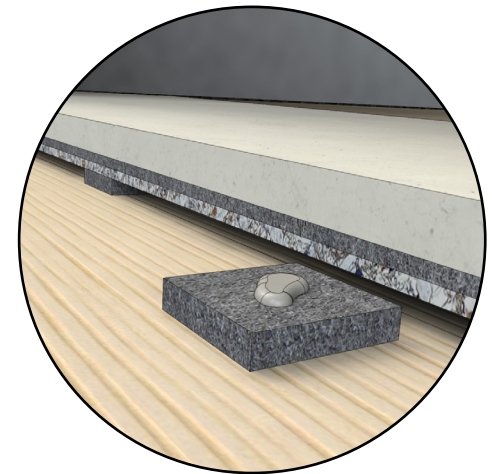
- Measure room layout, calculate panel sizing (considering minimum cut panel size), ensure panels can be positioned to allow for minimum stretcher-bond overlap. See Construction Details.
- Start installation from the furthest corner from the door opening.
- Apply a continuous bead of the specified Construction Adhesive into the joint and scrape excess.
- Ensure Construction Adhesive is applied at the butt-join where sheet ends meet.



- Follow layout to front of the area. Panel width cuts may be required with additional SoundDown™ 10mm Acoustic Pads to be placed under the SDP board. See Construction Details for further information on cut SDP panel detailing.



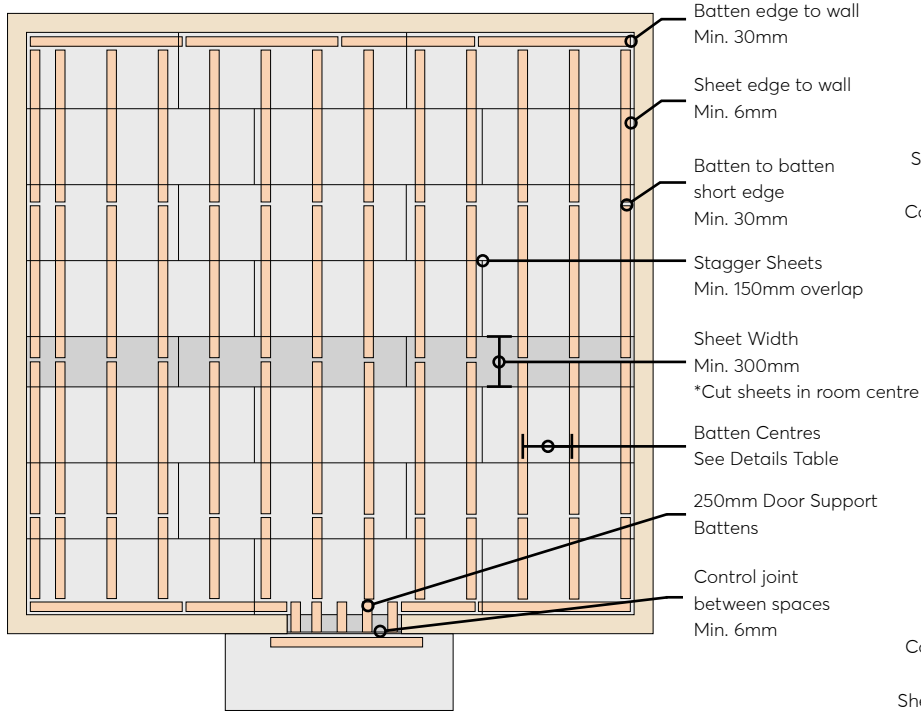
- Where cutting of panels leads to removal of inbuilt isolation strip, add a continuous length of 5mm isolation material to the inside edge of panel, using a generous amount of construction adhesive.



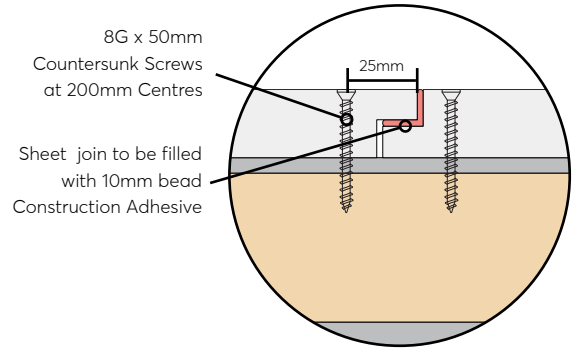
- Add 10mm isolation pads at 250mm centres to the underside of the panel along the cut edge, using a generous amount of construction adhesive.
- Panel edge to be clamped firmly until the isolation strips are securely adhered.

09 | SOUNDDOWN™ PAB | LAYOUT

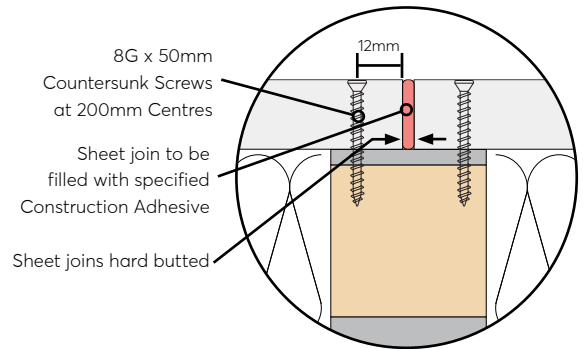
ROOM PLAN



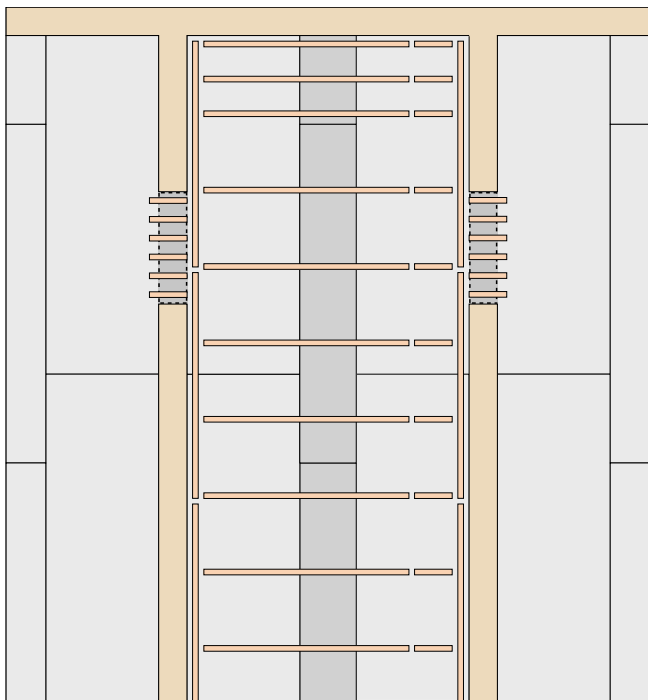
LONG EDGE JOIN - SHIPLAP



SHORT EDGE JOIN - BUTT JOIN

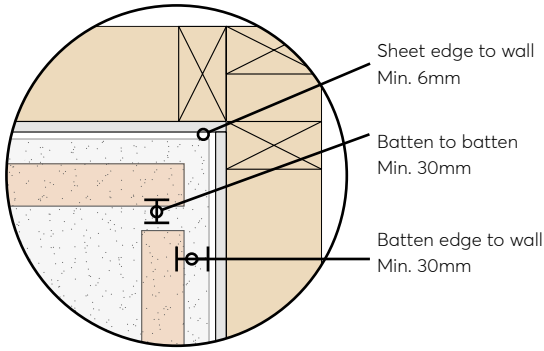


CORRIDOR PLAN

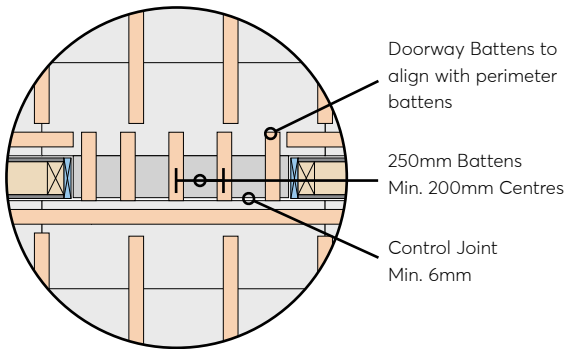


10 | SOUNDDOWN™ PAB | CONSTRUCTION DETAILS

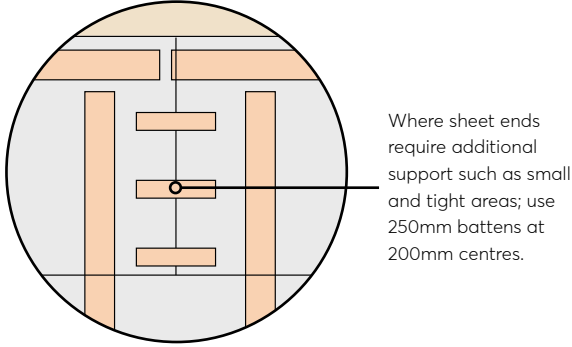
EDGE DETAIL



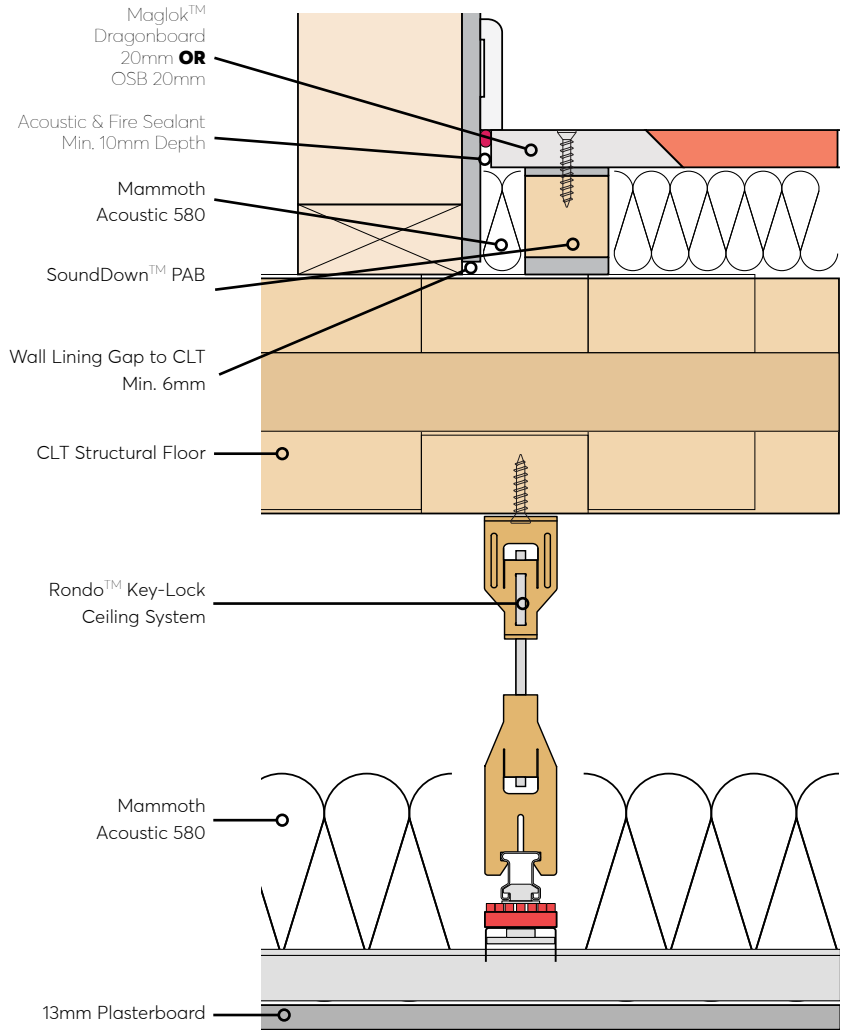
DOOR TRANSITION DETAIL



INTERMEDIATE BATTEN



SECTION VIEW



BATTEN SPACING

SoundDown™ PAB must be installed at a maximum of 450mm centres. The options listed below are to minimise panel cutting and wastage.

Topping Type	MAGLOK™ DRAGONBOARD	OSB	
Topping Panel Size	1800x600x20mm	2400x1200x20mm	2400x1200x20mm
SoundDown™ PAB 45x45mm	450mm Centres	400mm Centres	400mm Centres

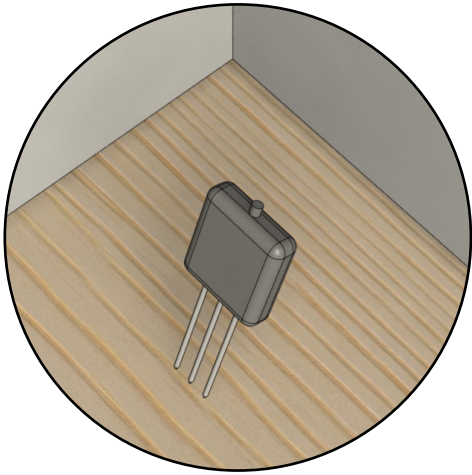
Panels & Battens are NOT to come into contact with the wall lining or framing.

FIXING SPACING

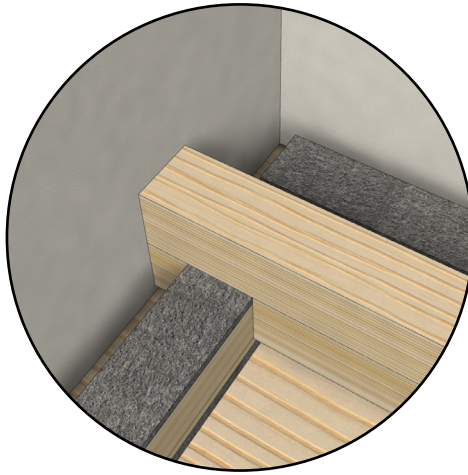
SCREWS	MAGLOK™ DRAGONBOARD		OSB	
	FASTENER EDGE DISTANCE	FASTENER SPACING	FASTENER EDGE DISTANCE	FASTENER SPACING
8G x 50mm CSK Self-Tapping Screw Dry Areas: Min. Class 3 Galvanised Wet Areas: SS304 or SS316 Required.	Shiplap Edge - 25mm Butt Edge - 15mm	Sheet Edge - 300mm Sheet Centre - 400mm	Shiplap Edge - 25mm Butt Edge - 15mm	Sheet Edge - 150mm Sheet Centre - 300mm

SoundDown™ recommends the use of Simpson Strong-Tie Quik Drive® Screw Driving System or similar

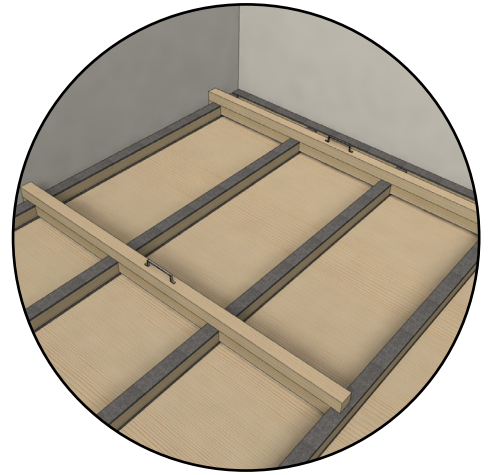
11 | SOUNDDOWN™ PAB | INSTALLATION



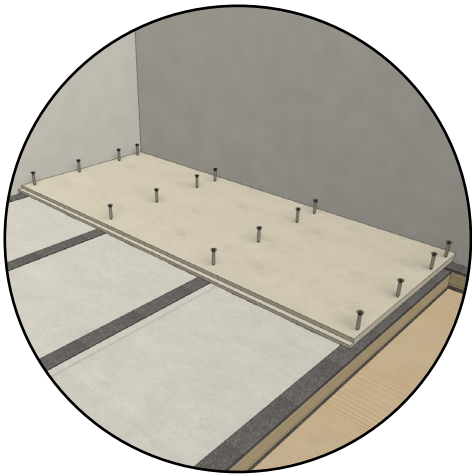
- Ensure CLT is free of debris, dust, nails and screws.
- Check CLT moisture content, must be under <16% before installation.
- If the CLT has been coated, install after desired curing time has lapsed.
- Wall lining to be installed before installing SoundDown™ Acoustic Batten Floor System, and not touching the CLT structural floor.



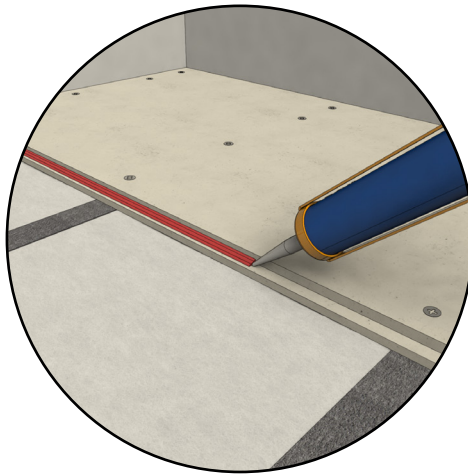
- Measure room layout, calculate panel sizing (considering minimum cut panel size) and ensure battens can support sheet edges adequately. Use PAB Setout Tool to set wall distance (30mm).
- Start installing the SoundDown™ Acoustic Battens around the perimeter, completing the doorway detail, followed by the room centre. See Construction Details for batten edge distances and spacing.



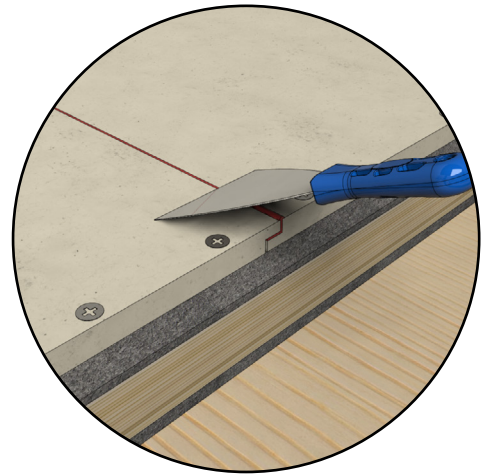
- Use SoundDown™ Setout Tool to accurately align and hold battens at 450mm centres for Topping Panel installation.
- Do NOT mechanically fix the battens to the CLT structural floor. The Acoustic Battens are designed to 'float' over the floor.



- Install the specified the Structural Topping sub-floor panel at the furthest corner from the doorway or exit path; checking the correct fasteners and fastener spacing is used for specified substrate. See Construction Details for more information.
- Use chalkline to mark batten centres on topping panel before progressing.



- Apply a continuous bead of the specified Construction Adhesive into the joint.
- Ensure Construction Adhesive is applied at the butt-joint where sheet ends meet.



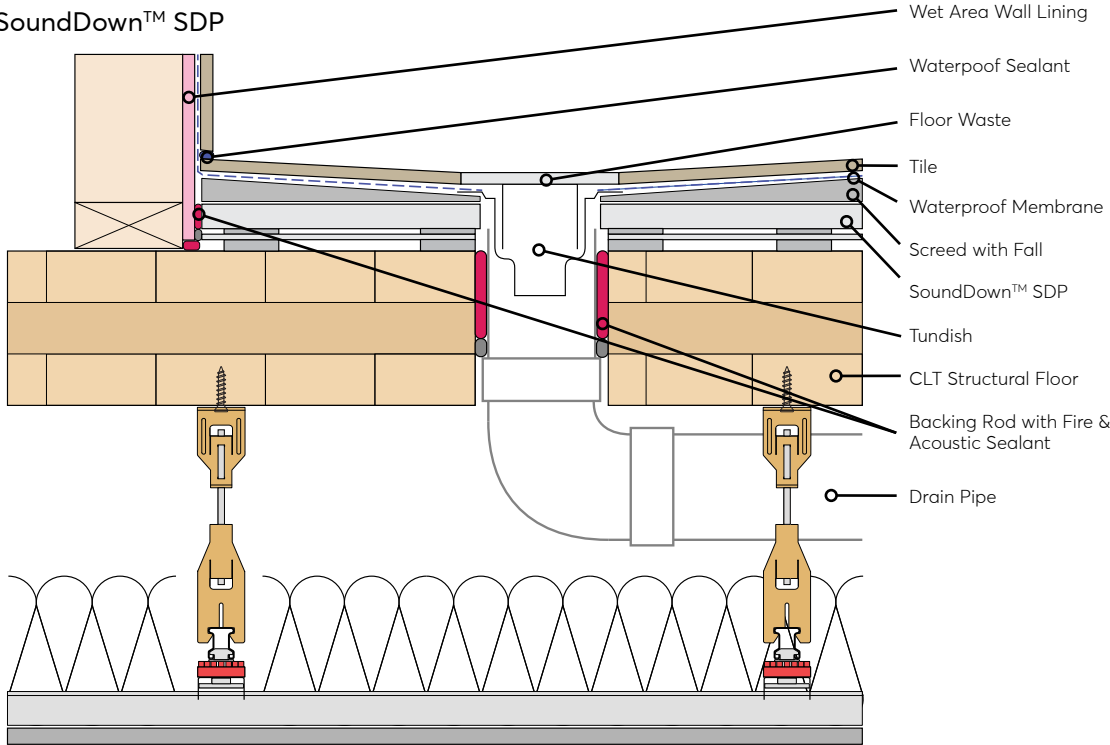
- Using a joint knife, scrape excess adhesive.
- In wet areas, cover fastener heads with a waterproof acrylic sealant after room has been completed. Refer to Wet Area section for further information.

12 | WET AREAS & PENETRATIONS

SoundDown™ Floor Systems utilise a common wet area and penetration detail for insitu bathrooms.

If your project features the use of bathroom pods or other pre-fabricated elements, it is the designers responsibility to coordinate design and detailing with all parties to ensure a compliant and secure waterproof details.

SoundDown™ SDP



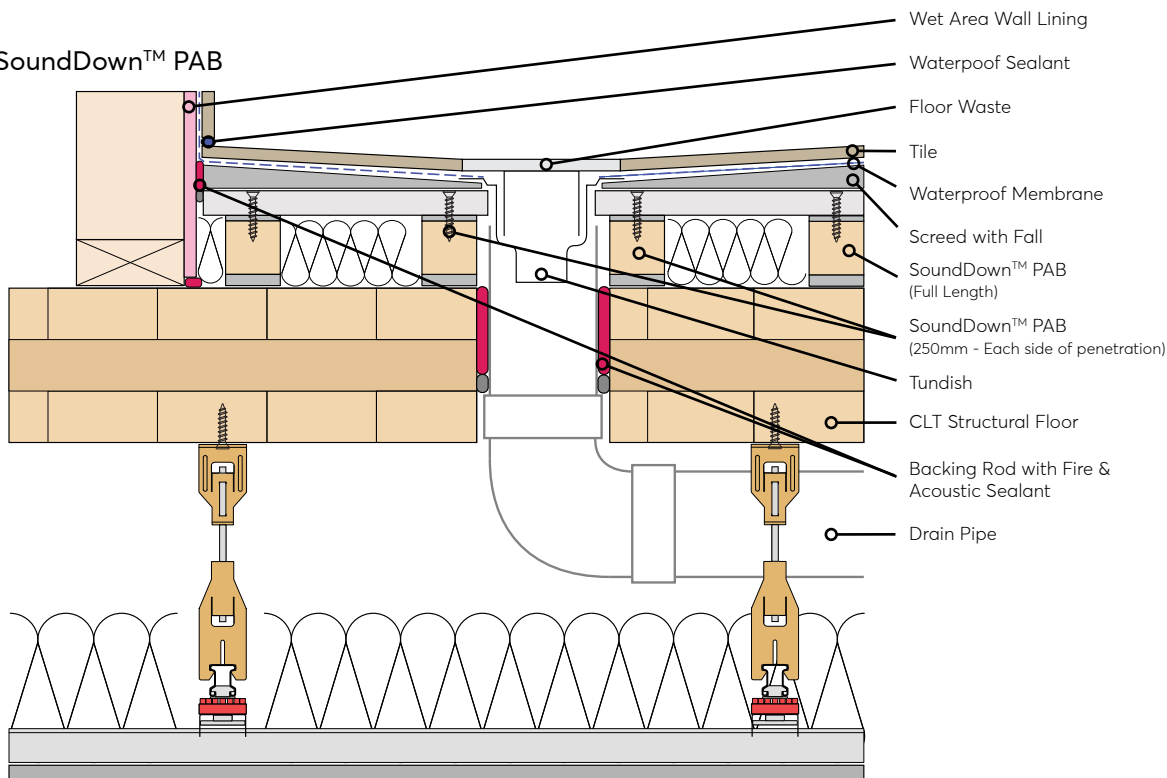
SoundDown™ Systems

- Penetrations must be only 10mm larger than required pipe/ducting and filled with fire & acoustic sealant.
- PAB and SDP require additional min. 250mm supports at either side of the penetrations.

SoundDown™ PAB System

- Only Maglok Dragonboard in wet areas.
- Stainless steel screws only to be used in wet areas.
- Fastener heads to be covered in waterproof sealant, scrape flush to floor.

SoundDown™ PAB



Important Information

- Fire & Acoustic performance can be adversely affected by penetrations; it is the responsibility of the designer to coordinate with 3rd parties to ensure penetrations and products used are compliant and fit for purpose.

13 | FURTHER INFORMATION

Ceiling Specification & Installation

The acoustic performance of SoundDown™ systems are dependant on specifying the correct ceiling system from Rondo. For further information on ceiling specification and installation, visit www.rondo.co.nz.

Handling & Storage

To avoid damage, all SoundDown™ building products should be stored with edges and corners of the product protected from chipping. SoundDown™ building products must be installed in a dry state and protected from weather during transport and storage. The product must be laid flat under cover on a smooth level surface clear of the ground to avoid exposure to water, moisture, etc.

Prohibited Uses

SoundDown™ Floor Systems are not to be used in external applications.

Safe Working Practices

Before starting work, read the relevant Product Safety Data Sheets (SDS).

Take all necessary steps to ensure your safety and the safety of others:

- Ensure adequate ventilation or mechanical dust extraction when cutting or drilling
- Ensure the boards are well supported when cutting and nailing
- Wear appropriate safety equipment, clothing and footwear
- Use all tools in accordance with relevant instruction manuals
- Plan and monitor a safe approach for working at height; select and use the right equipment
- Clear the work area of any obstruction before work starts.

For further information refer to:

- WorkSafe. [July 2018] Small Construction Sites, the Absolutely Essential Health and Safety Toolkit.
- WorkSafe. [December 2016] Health and Safety at Work, Quick Reference Guide.

These documents are available at www.worksafe.govt.nz.

Warranty

Visit www.sounddown.co.nz for warranty statement.

Limitations

SoundDown™ only warrants the products that are manufactured by SoundDown™ exclusively. All other 3rd party products cited in this manual carrying their own conditions of use and warranties. SoundDown™ may supply literature that is correct at the time but may change without notice. It is advised to seek warranty documentation from the manufacturer before specifying and designing your floor system.

System Variations

SoundDown™ recommends the use of the products listed on page 7. The solutions presented in this guide have been acoustically tested in accredited laboratories. If your project requires the use of an alternate product, SoundDown™ are cannot guarantee performance claims of an untested system.

In all cases where a variation is required, professional advice must be obtained.

Branding, Trademarks & Registrations

The brands, trademarks and registrations of 3rd party manufacturers and suppliers cited in this manual are correct at the time of publication.



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solutions solving mass timber acoustics*

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