BUILDING EXCELLENCE

MADA GYPSUM

SYSTEM GUIDE

2022

Edition 01 - 2022 - 1443 H

SOLUTIONS

Partition system

		Acoustic STC / R_W Range	Fire Fire Range (min)
MonoPlus		**35** to **52**	Up to **60**
MultiPlus		**49** to **60**	Up to **120**
FirePlus		**55** to **65**	Up to **180**
SoundPlus		**50** to **68**	Up to **120**
CinePlus		**56** to **79**	Up to **180**
ShaftPlus		**43** to **51**	Up to **120**
AquaPlus		**35** to **61**	Up to **120**

SOLUTIONS

Lining system

Primary usage

Dot & Dab
Minimal lining system using adhesive to bond single layers of board to a substrate

Minimum thickness lining system

Braced Liner
Single or double boarded, steel frame lining braced to a substrate, insulation optional.

Acoustic upgrade or service cavity for irregular substrates

Independent Liner
Single or double boarded, steel frame lining independent from a substrate, insulation optional.

Lining for any substrate condition

Ceiling system

Primary usage

MF Ceiling
Single or double boarded, steel frame ceiling, insulation optional

Cost effective monolithic ceiling or acoustic barrier

Corridor Spanning System
Single or double boarded, special steel frame ceiling, insulation optional.

Ceiling installation with reduced hanger requirement

Tile & Grid
A range of aesthetic gypsum ceiling tiles supported by a traditional 'T' suspension system

Cost effective, aesthetic ceiling with high levels of access

TABLE OF CONTENT

OUR PROMISE

The Mada Promise

- To remain constantly committed to our partnership with our customers, ensuring that together we design and deliver the Best-in-Class solutions for your projects.
- To relentlessly support our customers from the initial design to the finished installation.
- To continually invest in people and technology that allow us to deliver the Solutions, Services, and Support you've come to expect from our company.
- To maintain the highest standards for Mada Gypsum Solutions. Our fully integrated supply chain features the Mada gypsum quarry, our state-of the-art manufacturing plant, and unparalleled technical support. This unique position allows us to listen to our customers and bring new products and solutions to the marketplace.
- To provide superior products that have been tested, certified, and approved by independent laboratories to the highest international building standards.

Greg Smith
President of Mada Gypsum Company

Chapter 1
ABOUT

LEADING MANUFACTURER OF

DRYWALL PRODUCTS

IN KINGDOM OF SAUDI ARABIA

MADA GYPSUM COMPANY (MGC) WAS ESTABLISHED IN YANBU, IN THE KINGDOM OF SAUDI ARABIA (KSA), IN 2005. A LEADING MANUFACTURER OF DRYWALL PRODUCTS IN KSA AND THE WIDER MENA REGION, MGC TAKES A SYSTEMS-ORIENTED APPROACH TO PROVIDING HIGH-QUALITY PRODUCTS AND SERVICES; QUICKLY ESTABLISHING ITSELF AS A KEY PLAYER IN THE GCC REGION, WITH A SIGNIFICANT PRESENCE IN THE LEVANT, EGYPT, AFRICA, AND THE INDIAN SUBCONTINENT.

Our Mission

To be the number one sustainable gypsum solutions provider in the MENA region.

Our Vision

To continuously improve by putting the customer voice at the center of everything we do to deliver lightweight sustainable drywall solutions, superior design, technical support and customer service. Being committed to developing our employees and protecting our environment for future generations.

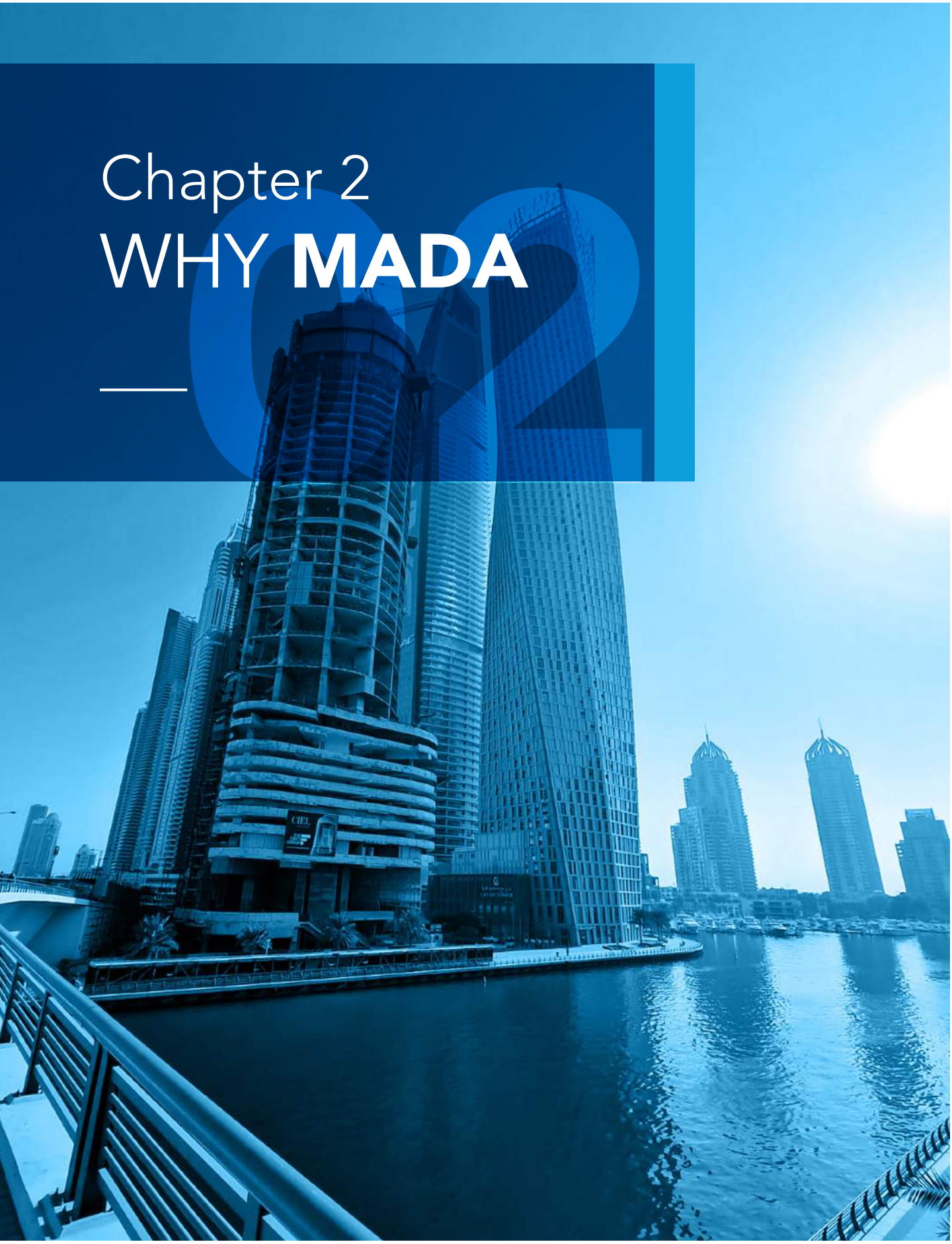
Our Quality

We ensure our customers to receive the best quality products and services, the first time and every time, by deploying strict quality control on products and processes. Our products are certified by some of the world's leading laboratories. ISO 9001 certified, we take a World Class Manufacturing (WCM) approach to ensure high standard and stable production process at all stages.

Mada Gypsum products are Tested and Certified to meet and exceed ASTM E119 for Fire Rated Systems

Mada Gypsum Company is **ISO 9001** certified.

Chapter 2
WHY **MADA**



MADA PLUS

PROJECT SUPPORT

AS THE FIRST PRODUCER OF FULLY TESTED AND CERTIFIED SYSTEMS IN SAUDI ARABIA, MGC IS COMMITTED TO QUALITY AND PERFORMANCE. ALL MADA PLUS SYSTEMS INCLUDED IN THIS DOCUMENT ARE COVERED BY OUR MADA PLUS 10 YEAR WARRANTY.

We only use high-quality materials and components specially developed to work together within our systems. This allows us to guarantee that all Mada PLUS systems perform according to the lab-tested performences in this guide.

Using full Mada PLUS Systems also gives you access to:

Design Support

From the largest Technical Department of any gypsum producer in Saudi Arabia

Site Visits

and support from experienced and qualified Technical Engineers and Technical Trainers

Third Party

accredited fire and acoustic test data

Support

at every stage of the design and build process

Structural

calculations

10 YEARS

The Mada PLUS Systems Warranty ensures Mada Gypsum will rectify any issues or defects that should arise as a result of unsatisfactory product or system performance. Eligibility for this warranty requires that all products must be purchased from Mada Gypsum and installed as specified in our literature and guidance.

The installation of products from other manufacturers without consulting Mada Gypsum will void any warranty offered and Mada Gypsum will not be liable for any defects or performence elements..

We can develop bespoke training programs to support your company's requirements. **Please contact:** The Mada Gypsum Technical Department for further information or to book a place on any of our courses.

Chapter 3
DESIGN
CONSIDERATION

03

DESIGN CONSIDERATION

INTRODUCTION

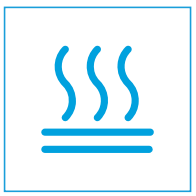
THE MODERN CONSTRUCTION PROCESS CAN BE FAST, EFFICIENT AND COST EFFECTIVE – BUT ONLY WHEN ALL THE PERFORMANCE REQUIREMENTS ARE CONSIDERED AT THE DESIGN STAGE. TO HELP WITH THE SELECTION OF OPTIMAL SOLUTIONS, MADA HAS OUTLINED SOME OF THE KEY PERFORMANCE TOPICS THAT MAY BE RELEVANT TO YOUR PROJECT.

The following pages offer a brief introduction the elements and regulations that cover:

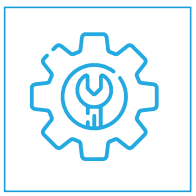
Structure

Fire

Acoustic



Thermal



Service

01 STRUCTURE

Structural

Mada wall and ceiling framing systems are designed and manufactured to meet the most demanding job site requirements, and applicable building codes. A safe and effective framing system must meet/exceed the structural requirements for wind, live & dead loads, and other project-specific types of potential loading.

Safe and effective wall design should allow for the following factors and considerations:

- Loadings created by potential external/internal pressure differences
- Vertical loads
- Adequate support for wall-mounted accessories and materials such as shelves, cabinets, and siding
- Vertical deflection resulting from movement of the building
- Proper support of windows/door openings (including lateral support)
- Thermal expansion from fire or excessive heat

Mada steel frame design solutions consider the following basis:

1. Allowable Strength Design (ASD)
2. Load and Resistance Factor Design (LRFD)
3. Load Combinations

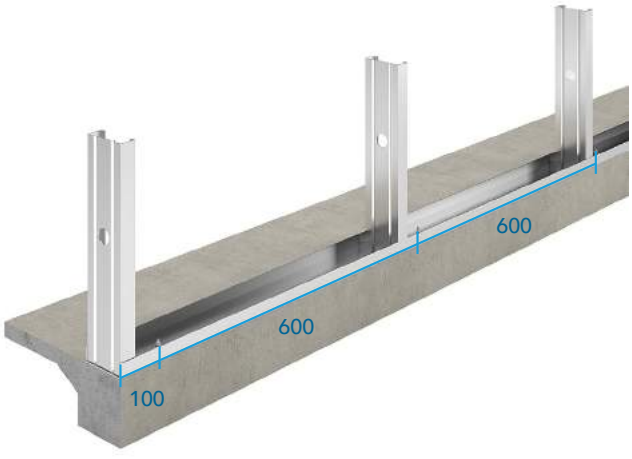
Typical additional consideration include:

- Local Buckling, Distortional Buckling, and Post-buckling Strength of Thin Compression Elements
- Torsional Rigidity
- Variable Properties of Sections Having Stiffened or Unstiffened Compression Elements
- Connections
- Web Crippling Strength

Non-Loadbearing Walls

Typically, the wall studs install with no clearance gap at the bottom, and a small allowance for vertical movement at the top track. When vertical building movement is anticipated, local agencies require the use of a deflection head track and appropriate movement gap.

Base and head tracks are to be attached at 600mm (maximum) centers to the substrate surface. Each attachment point should be rated to withstand a shear load of 0.75 kN for a UDL of 0.25kPa and 1.1 kN for UDL of 0.35kPa. All other UDLs will require shear load calculations.



Loadbearing Walls

It is the responsibility of the building designer, or design team, to ensure that all loadbearing walls meet the following additional criteria:

- Be in accordance with ASTM C955-09
- Resist all potential applied loads
- Wall linings provide no additional axial strength to the assembly

During a fire test, steel weakens at a high temperature. As a result, the axial strength of some systems is reduced to meet the required Fire Resistance Level (FRL). The Axial Capacity Reduction (ACR%) for Mada framing systems has been noted elsewhere in our literature. The designer must first increase the applied loads to compensate for the system's ACR%, before determining the appropriate stud size.

Wind Loads

All framing and lining systems choices should be based on anticipated wind loads for the finished structure. Contact the Mada Technical team for wind loads exceeding those stated in the Mada Installation Guide.

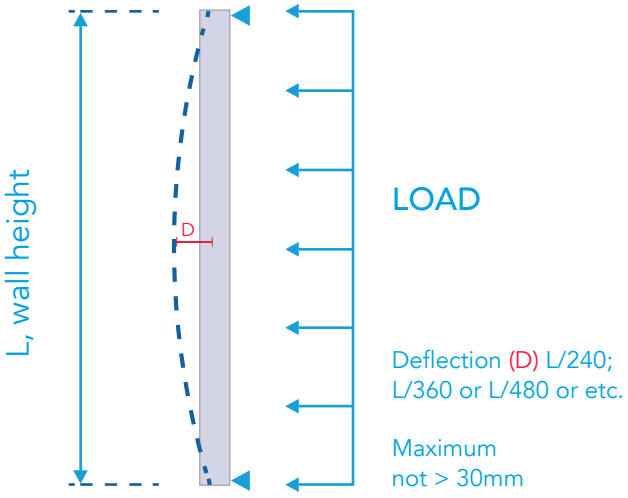
The walls and ceilings that form the building envelope are subject to wind pressure, as the air moves through the façade and lining system. Wall and ceiling openings such as doors and windows also allow for wind pressure buildup or may create pressure differences between the interior and exterior of the building. Spacing for these framing members should match the span limits of the plasterboard lining.

Mada plasterboard linings may be attached solely with appropriate fasteners, or a combination of fasteners and adhesives for non-fire rated systems. Please refer to the specific framing systems pages for more information.

Maximum Wall Heights

Non-load bearing steel stud framing systems must not exceed the heights given in the Framing Systems Section.

Maximum heights consider the maximum allowable deflection at mid-point.



The maximum height for non-loadbearing walls has been provided for:

SBC compliance - 0.25KPa lateral pressure and based on L/240 (deflection criteria) per the NCC.

International Industry Standard – 0.2KPa lateral pressure and based on L/240 (deflection criteria) per the NCC.

Additionally, finishes or loads may indicate the acceptable level of mid-point deflection. For example:

L/240
- General partition
- Paint / wallpaper finish

L/360
- Brittle finish (stone tiles or mosaic)
- Higher level of finish required

L/480
- Eccentric (shelf loads)

For all other design pressure or limiting deflection criteria questions, please contact the Mada Technical Team.

48mm Stud

WALL HEIGHT CHART (mm)						
Total metal thickness (mm)	0.50	0.55	0.60	0.70	0.80	0.90
Spacing of stud at 600mm centers						
Lined on both side – 12.5mm	2800	2950	3000	3150	3250	3450
Lined on both side – 15mm	2950	3050	3050	3250	3450	3550
Lined on both side – L-bracket fixing at top/bottom	3600	3700	3850	3950	4050	4150
Lined on one side – 12.5mm/15mm	2100	2150	2250	2450	2500	2800
Lined on both side – **0.48kPa**	2000	2100	2250	2300	2400	2650
Spacing of stud at 400mm centers						
Lined on both side – 12.5mm	3200	3550	3650	3700	3850	4050
Lined on both side – 15mm	3400	3650	3750	3800	3900	4100
Lined on both side – L-bracket fixing at top/bottom	4300	4500	4650	4700	4850	4950
Lined on one side – 12.5mm/15mm	2600	2650	2750	2850	2950	3050
Lined on both side – **0.48kPa**	2400	2600	2650	2750	2800	2950
Spacing of stud at 300mm centers						
Lined on both side – 12.5mm	3800	3950	4050	4150	4200	4450
Lined on both side – 15mm	3950	4150	4250	4300	4350	4550
Lined on both side – L-bracket fixing at top/bottom	4500	4650	4700	4750	4800	5050
Lined on one side – 12.5mm/15mm	2900	2950	3050	3100	3250	3350
Lined on both side – **0.48kPa**	2850	2900	3000	3050	3100	3300

Lined on both sides: 0 noggins (1m to 3m) - 1 noggins > 3m. Lined on one side: 1 noggins (1m to 3m) - 2 noggins > 3m.

68mm Stud

WALL HEIGHT CHART (mm)						
Total metal thickness (mm)	0.50	0.55	0.60	0.70	0.80	0.90
Spacing of stud at 600mm centers						
Lined on both side – 12.5mm	3700	3950	4100	4250	4600	4800
Lined on both side – 15mm	3850	4150	4200	4350	4700	4900
Lined on both side – L-bracket fixing at top/bottom	4500	4750	4950	5050	5350	5500
Lined on one side – 12.5mm/15mm	2400	2550	2650	2800	2950	3100
Lined on both side – **0.48kPa**	2700	2900	3100	3250	3400	3650
Spacing of stud at 400mm centers						
Lined on both side – 12.5mm	3950	4100	4300	4650	4800	4950
Lined on both side – 15mm	4200	4400	4600	4900	5100	5350
Lined on both side – L-bracket fixing at top/bottom	5100	5200	5500	5650	5900	6200
Lined on one side – 12.5mm/15mm	3100	3350	3500	3600	3750	3900
Lined on both side – **0.48kPa**	3000	3250	3600	3800	4000	4100
Spacing of stud at 300mm centers						
Lined on both side – 12.5mm	4150	4350	4550	4750	4950	5200
Lined on both side – 15mm	4300	4500	4800	4950	5100	5300
Lined on both side – L-bracket fixing at top/bottom	5800	6100	6400	6750	6900	7100
Lined on one side – 12.5mm/15mm	3100	3350	3500	3600	3750	3900
Lined on both side – **0.48kPa**	3000	3250	3600	3800	4000	4100

Lined on both sides: 0 noggins (1m to 3.5m) - 1 noggins > 3.5m. Lined on one side: 1 noggins (1m to 3.5m) - 2 noggins > 3.5m.

MADA Cold Steel Design 2.0, Analysis and Design of Cold Formed Members

According to LRFD & ASD Method ; **Steel Grade** = G280 ; **Limit** = L/240 **NR** = Not Required ; **Deflection Gap** = 15mm-20mm

Wind Pressure: W = 0.24kPa | **Strength:** 1.2 G + 0 Q + 1.6W | Partition with cement board to be 250mm to 300mm less than above

98mm Stud

WALL HEIGHT CHART (mm)						
Total metal thickness (mm)	0.50	0.55	0.60	0.70	0.80	0.90
Spacing of stud at 600mm centers						
Lined on both side – 12.5mm	4600	4950	5300	5650	5950	6150
Lined on both side – 15mm	4900	5250	5500	5850	6050	6150
Lined on both side – L-bracket fixing at top/bottom	6000	6300	6500	6750	6950	7100
Lined on one side – 12.5mm/15mm	3500	4000	4150	4350	4500	4750
Lined on both side – **0.48kPa**	3250	3600	3800	4000	4350	4600
Spacing of stud at 400mm centers						
Lined on both side – 12.5mm	5000	5450	5750	5950	6350	6450
Lined on both side – 15mm	5200	5700	6100	6350	6600	6850
Lined on both side – L-bracket fixing at top/bottom	6500	6750	7000	7300	7500	7800
Lined on one side – 12.5mm/15mm	4000	4450	4650	4750	4950	5150
Lined on both side – **0.48kPa**	3500	3850	4000	4250	4500	5000
Spacing of stud at 300mm centers						
Lined on both side – 12.5mm	3800	5850	6100	6500	6850	7350
Lined on both side – 15mm	3950	6100	6500	6850	7050	7450
Lined on both side – L-bracket fixing at top/bottom	7000	7300	7500	7750	7950	8100
Lined on one side – 12.5mm/15mm	4450	4850	5250	5500	5750	5950
Lined on both side – **0.48kPa**	3900	4150	4350	4550	4950	5350

Lined on both sides: 0 noggins (1m to 4.5m) - 1 noggins > 4.5m. Lined on one side: 1 noggins (1m to 4.5m) - 2 noggins > 4.5m.

148mm Stud

WALL HEIGHT CHART (mm)						
Total metal thickness (mm)	0.50	0.55	0.60	0.70	0.80	0.90
Spacing of stud at 600mm centers						
Lined on both side – 12.5mm	NR	NR	NR	NR	6800	7050
Lined on both side – 15mm	NR	NR	NR	NR	6950	7250
Lined on both side – L-bracket fixing at top/bottom	NR	NR	NR	NR	7900	8500
Lined on one side – 12.5mm/15mm	NR	NR	NR	NR	5500	5800
Lined on both side – **0.48kPa**	NR	NR	NR	NR	5400	5750
Spacing of stud at 400mm centers						
Lined on both side – 12.5mm	NR	NR	NR	NR	7250	7550
Lined on both side – 15mm	NR	NR	NR	NR	7450	7900
Lined on both side – L-bracket fixing at top/bottom	NR	NR	NR	NR	9100	10500
Lined on one side – 12.5mm/15mm	NR	NR	NR	NR	6200	6600
Lined on both side – **0.48kPa**	NR	NR	NR	NR	6100	6550
Spacing of stud at 300mm centers						
Lined on both side – 12.5mm	NR	NR	NR	NR	7500	8200
Lined on both side – 15mm	NR	NR	NR	NR	7900	8500
Lined on both side – L-bracket fixing at top/bottom	NR	NR	NR	NR	12000	12500
Lined on one side – 12.5mm/15mm	NR	NR	NR	NR	7050	7400
Lined on both side – **0.48kPa**	NR	NR	NR	NR	6900	7200

Lined on both sides: 0 noggins (1m to 5m) - 1 noggins > 5m. Lined on one side: 1 noggins (1m to 5m) - 2 noggins > 5m.

MADA Cold Steel Design 2.0, Analysis and Design of Cold Formed Members
According to LRFD & ASD Method ; **Steel Grade** = G280 ; **Limit** = L/240 **NR** = Not Required ; **Deflection Gap** = 15mm-20mm
Wind Pressure: W = 0.24kPa | **Strength:** 1.2 G + 0 Q + 1.6W | Partition with cement board to be 250mm to 300mm less than above

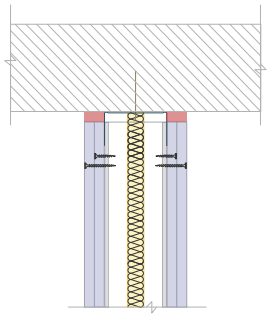
Head Clearance / Deflection Heads

Virtually every structure will experience deflection during its lifetime. Designers must consider potential live, dead, and other loadings on non-loadbearing walls since they are not designed to take on axial loading deflection.

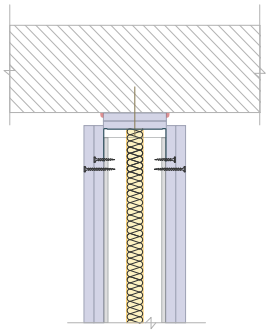
Designers can expect thermal expansion of up to 5mm/m for steel studs in a fire-rated wall assembly during a fire event. This expansion may be reduced in thinner walls, where thermal bowing causes stud shortening.

When considering deflection head requirements, designers must consider the thermal expansion of studs, and expected vertical deflections.

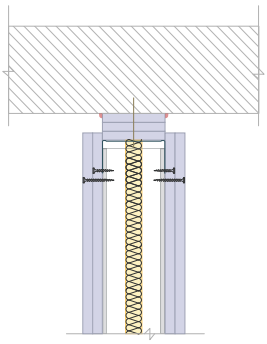
The included standard head details should accommodate most service deflection requirements. Please contact the Mada Technical Team for further deflection head design assistance.



10 -15 MM
DEFLECTION HEAD DETAIL



16 - 25 MM
DEFLECTION HEAD DETAIL



26 - 40 MM
DEFLECTION HEAD DETAIL

Movement

Deflection of the floor and roof assemblies can transfer stress to the wall framing system. The connection points between the structural element and the framing system must allow for this movement, and still maintain fire and acoustical performance. Typical deflection head details can be found within the framing system section of this guide.

Installing steel angles on either side of the head track, sealed to the structure can reduce the impact of deflection heads on the building acoustics.

Where linings and other wall and ceiling assemblies cross a structural movement joint, they will require a matching movement joint. Contact the Mada Technical Team for assistance with expansion joint options to meet your specific needs.

Allowable Ceiling Loads

In the Ceilings Section, you'll find the maximum allowable span and direct load limits for each Mada Drywall product.

Plasterboard as Structural Bracing

Mada Drywall does not recommend the use of our products to brace the individual roof trusses or the roof structure.

Mada Drywall does not recommend the use of our products to provide wall bracing.

Shelf Loading

Shelf loading limits can be found within the appropriate Framing System Section.

Mada Fiber Cement (ProCem) sheets can support the following loads:

MAXIMUM LOAD ON PROCEM	
Thickness	**Maximum Point Load**
12.5 mm	12.5 Kg
15.0 mm	15.0 Kg

FIRE SAFETY Consideration

02

Drywall Fire Performance Principles

Fire Growth

When considering if a material is safe to be used inside a modern building, it is important to consider its reaction to a fire.

Materials inside a building can significantly affect the spread of fire and its growth rate, even though they are most likely not the source of the original ignition. Therefore, the correct selection of materials is an essential part of fire safety and the choice of linings and coverings is critical in:

- Circulation spaces where adjoining surfaces provide the primary means for fire to spread.
- Areas (hallways, lobbies, and stairs) where rapid spread is most likely to prevent occupants from exiting the building.

Designers and architects should focus attention on two critical properties of lining materials that influence fire spread:

- The rate the flame spreads over the surface when subjected to an intense radiant heating source.
- The rate at which the tested material gives off heat when burning.

To enable designers to consider these factors and compare potential solutions, international regulations allow for simple classifications.

Materials Classified as Non-Combustible

To be designated as non-combustible, the material must meet the criteria for ASTM E136, Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C (1382°F).

For this test, a material sample goes into the test furnace, and its flaming time and the furnace temperature are measured. This process tests the base material only and does not cover any surface coverings or coatings.

For materials with a surface covering, the building codes further define a non-combustible material as:

Having a base material that meets the requirements of ASTM E136, with a surface covering less than 1⁄8" (3mm) in thickness, whose flame spread index is not greater than 50.

European standards for non-combustibility testing include the following:

- EN ISO 1182:2020 Reaction to fire tests for products — Non-combustibility test
- BS 476: Part 4: 1970 (1984) Non-combustibility test for materials.
- BS 476: Part 11: 1982 (1988) Method for assessing the heat emission from building materials.

Materials of Limited Combustibility

Under ASTM E84, Standard Method for Test of Surface Burning Characteristics of Building Materials, all wall/ceiling surfaces receive an FSI (Flame Spread Index) and SDI (Smoke Developed Index) score.

This testing method determines the relative performance value of the test material, as compared to inorganic reinforced cement board (FSI = 0) and red oak (FSI = 100).

The International Building Code (IBC) established three classes of performance, based upon the flame spread (FSI) and smoke developed (SDI) indexes.

Class Designation Flame Spread Index Smoke Developed Index		
I or A	00 - 25	00 - 450
II or B	26 - 75	00 - 450
III or C	76 - 200	00 - 450

(A) Any non-combustible material.
(B) Any material with a density of 300 kg/m³ or more, which does not flame or cause a 20°C temperature rise when tested to BS 476: Part 11.
(C) Any material with a non-combustible core at least 8mm thick, with combustible facings (on one or both sides) not more than 0.5mm thick. When a flame spread rating is specified, these materials must also meet the appropriate test requirements.

Upon testing, Mada standard gypsum plasterboards meet all the limited combustibility requirements. Additionally, Mada X-type gypsum boards meet the criteria as a non-combustible material.

Surface Spread of Flame

Flame spread over the wall and ceiling surfaces can be controlled using coverings classified as non-combustible or having limited combustibility.

Upon completion of the ASTM test outlined above, or tested to BS 476: Part 7: 1997 Method of test to determine the classification of the surface spread of flame of products materials receive a rating of Class A-C or Class 1-4 respectively with Class A or Class 1 providing the most significant flame spread resistance.

Class 0

Building codes regulate the type and locations of materials used in the building process to provide structural stability and an acceptable degree of occupant safety when exposed to fire.

Additional to spread of flame, it's critical to consider the amount and rate of heat created by these linings and coverings materials when used in areas requiring maximum safety.

Designers, architects, and local building codes can require ceiling and wall surfaces to have a Class 0 in circulation spaces (often escape routes) and other specific situations (building common areas).

In UK Building Regulations, Approved Document B (AD B) defines a Class 0 material as either:
(a) composed entirely of materials of limited combustibility (this term includes non-combustible materials)
or
(b) a Class 1 material having a fire propagation index (I) of not more than 12 with a sub-index (i1) of no more than 6.

Always consult with local jurisdictional agencies to determine your project's specific building codes and compliance requirements.

Compartmentation

Compartmentation strategies (separating sub-assemblies using fire-resistive construction techniques) can effectively reduce or restrict the building's risk of fire spread.

Two key objectives of compartmentation are:

- To prevent rapid fire spread, potentially trapping occupants in the building.
- To reduce the chance of fires growing in size and temperature, which could affect occupants, fire service personnel, and people in the vicinity of the building.
- Determining the level of compartmentation needed depends on three key factors:

1. The building's use and fire load, which affects the potential for and the severity of a fire, and building evacuation strategies.
2. The height to the top story of the building indicates the ease of evacuation and the accessibility for firefighters and first responders.
3. The building code standards of the Authority Having Jurisdiction (AHJ) over the project permits and inspections.

Structural Fire Precautions

All loadbearing steel elements should meet a minimum period of fire resistance to avoid premature structure failure.

Structures that utilize fire-resistive construction products and assemblies are:

- Safer for the occupants because the fire spreads more slowly, allowing extra time for evacuation.
- Safer for the firefighters engaged in search and rescue operations.
- Safer for people in the vicinity of the building who are at risk from falling debris or a building collapse.

Fire Resistance

Due to the unique performance of gypsum in a fire, Mada Drywall (insert product line names) provide excellent fire resistance in commercial, residential, and industrial applications.

Benefits of gypsum:

1 Tried and tested

2 Chemically bonded moisture

3 It's a natural mineral

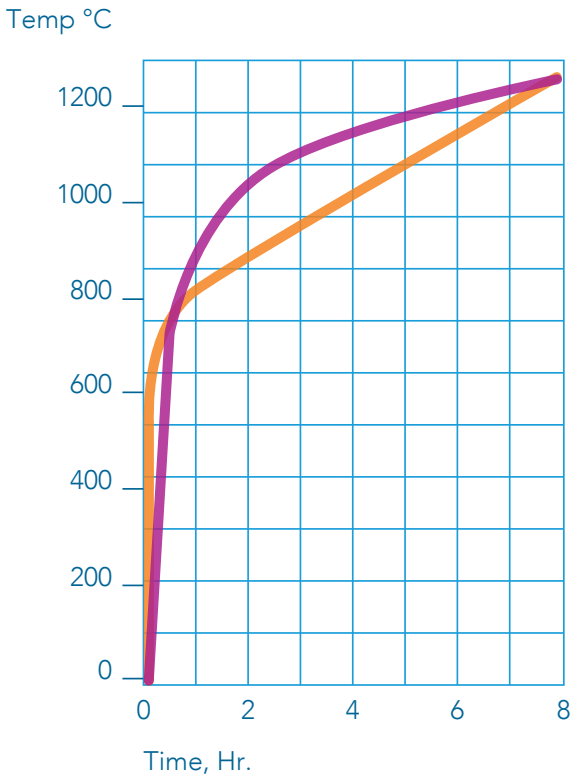
During a fire, the calcination (dehydration by heat) process begins on the exposed surface and gradually travels through the gypsum material thickness.

The calcined gypsum on the exposed face bonds to the uncalcined material of the core, slowing down further calcination. Therefore, as the material thickness increases, the slower the calcination rate.

During the calcination process, materials adjacent to the unexposed side will not exceed 100°C (212°F). This temperature is below most building materials' ignition point and far below the critical temperatures for structural components. As long as the gypsum board remains intact, the calcined gypsum residue acts as an insulating layer.

The graph below shows the plateau in temperature rise during the calcination process. After this, the temperature will continue to rise until the gypsum board losses its integrity and falls away.

Time Temperature Curve for Fire-Endurance Testing



We add glass fibers and shrinkage inhibitors to specific Mada gypsum products to improve cohesion and fire integrity performance. As a result, these additives provide a much higher fire performance than standard Mada drywall products.

Since the endothermic hydration reaction removes energy from the fire, Mada drywall products are negative calorific contributors, providing excellent fire resistance for any project.

Fire Resistance Test Standards

Current building regulations and codes require certain elements to provide a minimum period of fire resistance, measured in minutes. Therefore, all Fire Testing must comply with one of the international standards specified by the AHJ. The most common example of these standards across the GCC is ASTM E119 – Standard Test Method for Fire Tests of Building Construction and Materials.

In this test, a large-scale construction sample experiences a standardized fire condition while tracking the following fire-resistant factors;

- Temperature rise
- Ignition of cotton on the unexposed side of the sample
- The product's ability to remain in place during the test period
- The ability to withstand a hose stream test after completing the fire test

Passing materials then receive a fire-resistance rating based on their performance of 30-minute, 45-minute, 1-hour, 2-hour, etc.

Additionally, American test methods UL 263 and UBC Standard 7-1 are acceptable alternates to ASTM E119. European equivalents include BS EN 1364-1:1999 and BS 476: Part 22:1987.

Resistance Period

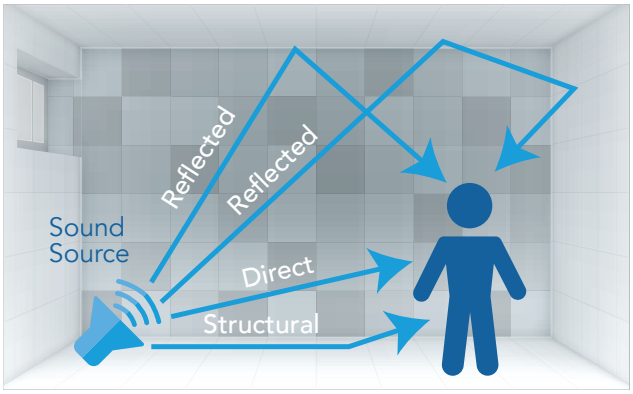
This part of the test evaluates the impact, erosion, and cooling effects of a hose stream directed at the fire-exposed surface. If there is a breakthrough on the unexposed side, sufficient to pass a stream of water, the test result is a failure.

Resistance Period (RP) Water Pressure at Base of Nozzle kPa Duration of Application, Min per 10 m² exposed area:

Resistance Period (RP)	Water Pressure at Base of Nozzle kPa	Duration of Application, Min per 10 m² exposed area
RP > 8 Hr	310	6
4 Hr < RP < 8 Hr	310	5
2 Hr < RP < 4 Hr	207	2½
1½ Hr < RP < 2 Hr	207	1½
1 Hr < RP < 1½ Hr	207	1
RP < 1 Hr If required	207	1

03 ACOUSTICS

Sound



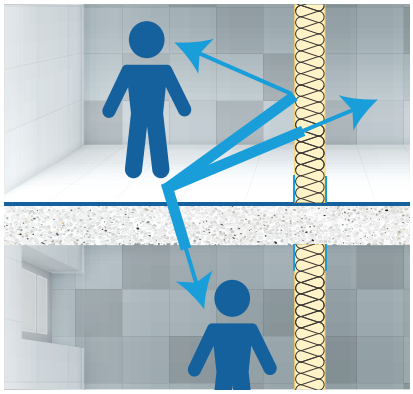


Figure 1: Impact sound can affect those within spaces as airborne sound, and those in other parts of the building as structure born sound

Definition

Sound and noise levels get expressed in either:
Decibels (dB) - a logarithmic unit used to measure sound level.
Hertz (Hz) – measures the frequency of the wave.

As the ear detects changes in the sound pressure, they become electrical impulses and get sent to the brain. The brain converts the impulses to auditory signals, allowing us to hear sound and noise between the 20 Hz and 20,000 Hz range.

The human ear distorts its sensitivity to lower and higher frequency sounds. Sound meters try to mimic this process by weighting the readings. This scale is known as the A scale and readings taken using this scale will be denoted as dBA or dB(A). Some basic examples of this are:

- 80 dBA for a person shouting.
- 100 dBA for a pneumatic drill.
- 120 dBA for a propeller aircraft at takeoff.
- Pain or physical harm may result from sound levels over 120 dBA.

Humans interpret a 10 dB increase as doubling the sound level, which explains why a pneumatic drill (100 dBA) seems four times louder than a person shouting (80dBA). And why a 10 dBA reduction in the sound level makes an area seem 50% quieter.

In humans, the optimum hearing occurs in the speech range, or middle-frequency sounds ranging from 500 Hz to 4,000 Hz. Hearing ability can vary from one individual to the next, depending on age, physical health, or previous long-term exposure to excessive noise.

Acousticians use a weighting system known as DBA to account for these variations in their calculations since effective communication requires speech levels ranging from 10-15 dBA above any background noise level. Designers can use this information for calculating a room's maximum sound level containing machinery or ventilation equipment. Light and sound reflect similarly; the perceived effect of increasing the sound can result from too much reflection. In a hard-surfaced room, sound reflects off nearly every surface, increasing the space's ambient volume. People then began talking louder to be heard over the increased background noise.

Sources

Transportation noise – in well-established and growing communities, naturally ventilated structures will experience some level of noise from traffic, planes, trains, and even boats.

Building services – every buildings infrastructure includes equipment or machinery to provide essential services such as heating, cooling and lighting to their occupants. Typically, mechanical services such as pumps, motors, and fans are the source of noise issues, but not always.

Both internal and exterior plant installations or services can negatively impact the building environment when vibration or noise transmits through construction elements such as walls, ducts, floors, or risers.

Ventilation systems are especially prone to noise from air movement through the ducts, filters, registers and the fans or blowers that move the air.

Activity noise – from everyday activities such as phones, conversations, and loud footsteps can be especially problematic in specific environments such as offices, hospitals, and schools with high traffic areas. Solutions to reduce activity noise include adding sound-absorbing surfaces such as carpet, drapes, and other soft finishes.

Noise leakage – diminished acoustic performance will result if there are any cracks or gaps from one building service/component/assembly to another, as sound can quickly move through the air from one area to another. Here are a few of the most common noise leakage culprits.

- Wall and floor openings where distribution services such as wiring, pipes, or ducts pass from one area to another.
- Continuous curtain walling or internal lining system installations.
- Perimeter junctions and the joints where partitions, raised floors, and ceilings meet one another.
- Door vents and keyholes, the edges of improperly fitted doors and thresholds without an acoustic seal.
- Air handling luminaires (grills and registers) in the suspended ceiling connecting to a common air supply/return plenum supplying adjacent areas.
- Recessed lighting fixture troughs that span across the top of a shared partition.
- Air ducts installed above the ceiling or below a raised floor supplying air services to two or more areas.

Sound level dBA (log scale)	Sound Source
0	Threshold and audibility
20	Whisper
30	Quiet conversation
40	Background noise in unoccupied office
50	Normal conversation
60	Occupied offices
70	Inside a travelling railway carriage
80	Road side, busy street
100	Inside a nightclub
120	Jet aircraft taking off 100m away or MP3 player at maximum volume
120-130	Threshold of pain
140>	Damage to hearing

Indirect Sound Paths (Flanking Transmission)
Flanking transmission differs from noise leakage because it occurs indirectly through windows, hallway corridors, and external wall surfaces. Please see Figure 2 - Common Flanking Paths for examples.

Minimizing the potential of flanking transmission issues should always be a key concern during the design phase of any project. Construction details that do not negatively impact the project's overall acoustic performance should be paramount. The sound values listed in the system performance tables were determined under laboratory conditions and will be challenging to match in the job site environment. This is due primarily to acoustic performance (decreased efficiency) due to various job site flanking transmission issues outside the lab.

When designing residential spaces, seek expert flanking transmission advice to ensure the desired acoustical criteria are met and avoid remedial repair costs.

Small gaps, cracks, holes, or other openings allow air-bound sound to travel to adjacent areas, reducing overall acoustic performance. Therefore, maximum sound transmission control requires an airtight seal around all penetrations. Use Mada Acoustical Sealant for small gaps and cracks, and for gaps greater than 5mm, where wallboards meet either the ceiling or floor surfaces, use Mada Jointing Compound.

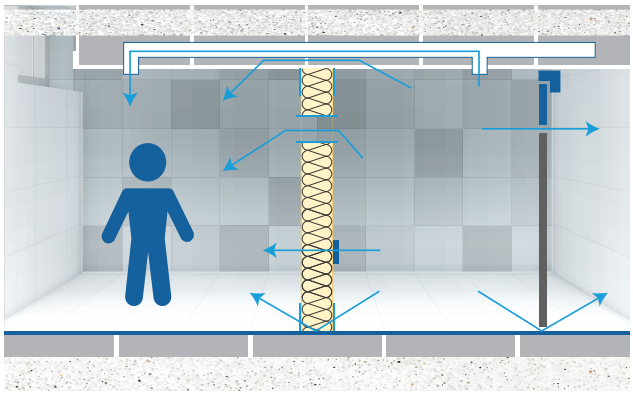


Figure 2: Typical flanking paths around partitions

Sector Considerations

Healthcare – unwanted sound and noise is a problem for hospitals around the globe and impacts staff and patients in a variety of ways. High noise levels make it difficult for medical staff to work, communicate, and increases stress. High noise levels can slow the body's healing process for patients, resulting in more extended hospital stays. Private conversations between staff and patients may be overheard in a poorly designed environment, resulting in security and confidentiality breaches. Essential communication and auditory signals can get lost in a high noise setting, resulting in patient safety concerns. Current data suggest that lowering noise levels using different design factors and options can reduce noise while improving communication and patient confidentiality.

Key design considerations for hospitals:

- Single-patient rooms are substantially quieter than multi-bed rooms. Patients perceive this as being more comfortable, private, and allowing more effective and confidential communication between patients, medical staff, and other family members.
- To increase privacy and limit the amount of noise travel, consider high-performance sound-absorbing ceiling tiles. These panels can improve speech recognition, reduce sound propagation, and shorten reverberation times for a quieter hospital environment.
- Educate staff about the effects of excessive noise on a patient's health and their health. For example, remove or relocate mechanicals and machinery away from patient and high-occupancy areas.
- Walls between patient rooms should run full height to the ceiling assembly and be fully insulated to further prevent voices and noises from being heard in an adjoining area.

Office Spaces – noise levels are also an issue for office workers. Over the last 40 years, numerous studies have repeatedly shown how noise has a detrimental effect on employee performance. Over time, the decreased productivity affects the company's efficiency, leading to a decrease in sales and profit margins.

Large open offices, a popular design trend, can also suffer from excessive noise levels. For example, a recent study (Pejtersen et al., 2006) shows that noise is an issue 6% of the time for workers in a cellular office, compared to 60% for workers stationed in a large open office area. In addition, other factors such as flexible shifts, new technologies, and in-person and virtual team meetings and workgroups have created the need for a wide variety of work zones and different acoustic requirements.

The sizeable open office allows for more workstations, but the tradeoffs reduce personal privacy and increase difficulty concentrating and communicating. The designer's goal is to find a balance of materials, products, and processes to address these concerns and meet the required acoustic performance for the project.

While addressing noise issues such as ringing phones, loud voices, and laughter, the designer must realize that excessively low noise levels can impact privacy and confidentiality. As a result, many existing guidelines (BS 8233: 1999 and BREEAM 2008) now contain minimum and maximum background noise level requirements. Research shows that the optimum background noise level occurs between 45 and 50 dBA (Kjellberg and Landstrom 1994). At this level, the background noise can provide a reasonable degree of speech masking (confidentiality and privacy) without affecting concentration and communication levels. Naturally vented buildings are most affected by external noise sources of varying levels and frequency. Mechanically vented structures can regulate steady noise levels from equipment and machinery.

Education – studies confirm that high noise levels can affect teachers and students alike. A Heriot-Watt University study showed that the students do not hear 70% of the consonants spoken by teachers in extreme situations. INQA conducted a survey involving 1,200 teachers showed that 80% believe that excessive noise affects their teaching ability. Primary school students showed a 25% decrease while performing a memory test under high background noise levels.

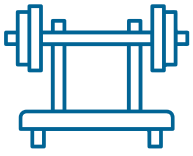
These numbers demonstrate how a healthy acoustic environment facilitates beneficial learning for our children.

Classrooms

acoustical treatments are a simple, cost-effective means to eliminate poor speech intelligibility, allowing every student to comprehend and absorb learning materials.

High Circulation Spaces

classrooms and hallways can become noisy when students congregate. Common areas and administrative spaces can become uncomfortable rather quickly. Our superior acoustical products can help restore comfort and calmness for everyone.



Sports Halls

high ceilings and hard reflective surfaces impair communication due to excessive reverberation and echo. Therefore, sound absorption and impact resistance are paramount for any sports hall acoustic solution.

School Room	Upper Limit For Upper Ambient Noise Level (dB)
Nursery	≤ 35
Primary school rooms (General)	≤ 35
Secondary school (General)	≤ 35
Open plan teaching/Resource areas	≤ 40
Lecture rooms (50+ people)	≤ 30
Classrooms for hearing impaired (including speech therapy rooms)	≤ 30
Indoor sports hall	≤ 40

Retail – sound reverberates through an area with poor acoustics. Reverberation occurs when a sound wave traveling through the air hits another surface. While a portion of the sound gets absorbed, the remainder reflects back into the air space. The reflected sound then repeats the process over and over again. The energy created from all the reflected sound is called reverberation. Speech intelligibility improves as the reverberation rate of the area decreases.

The effects of sound in the retail environment

The subconscious effects of sound	Bad sound	Good sound
Physiological - Our breathing, heart rate, brainwaves	Feeling uncomfortable, headache, nausea (where the word noise comes from) fight/flight response	Feeling relaxed
Physiological - Our emotional state	Feeling sad, angry	Feeling happy, in the perfect mood for shopping
Cognitive - Our understanding	We can't listen to two people talking at once - it's confusing, frustrating, annoying	The right sound can enhance our creativity and decision making
Behavioural	Poor interaction with people, anger	Longer dwell time in store, better interaction with people

The customer

Excessive noise and poor acoustics are a recipe for disaster in the retail environment. Unfortunately, the elements used for a unique-looking décor can increase sound reflection and high reverberation in many cases. As a result, instead of focusing on a purchase decision, they are distracted, and the sales process is interrupted, delayed, or never occurs.

The recent introduction of informational and entertainment video screens increases sound reflection throughout the store. If a customer is there to register a complaint, they may already be agitated, and the added stimulation may intensify, not alleviate these feelings. Stressed or angry customers can present a more significant challenge for store employees.

The employee

While poor acoustics can affect a customer's shopping experience, imagine the long-term effects for store employees. Their prolonged exposure of months and years could be detrimental to their physical and mental health.

Regardless of their position, store employees may be required to interact with customers to answer questions, process purchases or returns, or simply answer the phones. The store's soundscape can impact their concentration and efficiency, resulting in less-than-favorable reviews and increased complaints. Even well-trained staff can experience stress, aggression, and even anti-social behavior from elevated noise levels. Reducing noise-related stress can improve employee performance, your customer service delivery, and increase customer dwell times.

Sales

Retail architects prefer solid surfaces such as wood, stone, and glass, mainly for their durability and because they're easy to clean. Instead of providing a calm relaxing shopping experience, the customer receives an assault of their senses. These surfaces are highly sound reflective and can raise the ambient volume of the area quite quickly. Acoustic design should always be an early design consideration when designing retail spaces.

Acoustics and Sound Insulation

The control of noise levels and the sound characteristics within a space and noise transmission from one area to another is known as Building Acoustics. Noise can be an undesirable sound, but this is subjective and depends on the individual. Unpleasant sounds can reduce the occupant's comfort and efficiency, and long-term exposure can cause physical discomfort and mental distress. A noisy neighbor is one of the most common complaints with attached housing. Proper acoustic planning during the construction phases provides the best defense against potential noise complaints during the design and execution. Designers should always specify noise transmission levels for the individual space and be compatible with the intended usage. Acoustical retrofits are expensive, time-consuming, and inconvenient for all parties involved.

Sound insulation requirements must consider both internal and external sound transmission sources to be completely effective. Building Acoustics includes two distinct components, sound insulation, and sound absorption.

Sound insulation refers to the process of reducing sounds that moves from one defined space to another, separated by a dividing element. Direct transmission occurs when sound travels through the dividing element. Indirect transmission (flanking) refers to sound traveling through the adjoining building structure. An effective sound insulation solution will address both types of sound transmission. Typically, the walls and floors that flank the dividing element are the main paths for sound transmission. But designers must also consider windows, ventilation shafts/ducts, and doorways to provide maximum sound and noise control.

Each room or building has its unique acoustic environment, based on the doors, ceiling assembly, ducting, pipework, and glazing components, affecting sound insulation performance. Due to these variables, it's almost impossible to replicate laboratory ratings in the field. Instead, consider utilizing superior sound insulation to address flanking (indirect) transmission concerns when the background noise level is low. When there is an existing sound insulation problem, identifying the weakest link in the composite construction is an essential first step.

Sound Absorption and Sound Transmission

Sound absorption occurs when sound waves contact an absorbent surface such as a wall, ceiling, or floor and don't reflect any sound back into the space, is sound absorption. Products and materials fall into classes ranging from A (the best) through E, based on their sound absorption abilities when tested.

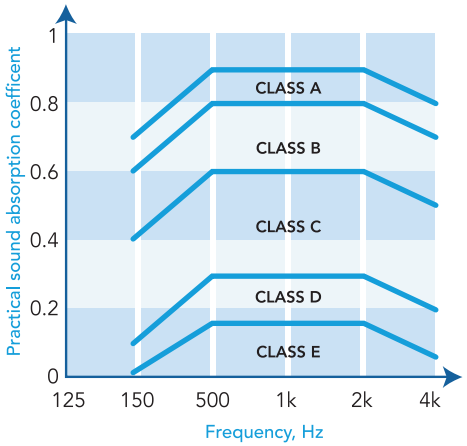


Illustration of the reference curve limiting the different sound absorption classes, from BS EN ISO 11654: 1997.

The ability of sound to transmit/travel through materials is known as sound transmission. Standardized materials and wall assemblies have been tested and assigned an STC (Sound Transmission Class) rating. The score is representative of the noise decibel reduction that a product such as doors, windows, or a building assembly can provide.

Guide to sound insulation levels for speech privacy

STC	Speech privacy
25 dB	Normal speech can be heard quite easily and distinctly
30 dB	Loud speech can be understood fairly well; Normal speech can be heard but not understood
35 dB	Loud speech can be heard but not intelligible
42 dB	Loud speech is audible as a murmur
45 dB	Loud speech is not audible
50 dB	Very loud sounds such as musical instruments or a stereo can be faintly heard
65 dB	Very loud speech cannot be heard
75 dB	Extremely loud speech cannot be heard

Weighted Sound Reduction Index (Rw)

The Weighted Sound Reduction Index (Rw) measures the sound isolating properties of specific building elements. Products and assemblies are tested by certified labs, under controlled conditions, and assigned a score. For example, the sound-isolating performance doubles with a 10 point increase to the Rw score. So, a wall assembly with a high Rw rating isolates sounds better than a wall assembly with a lower Rw rating.

Noise Rating (NR)

When assessing the level of acceptable sound energy of a room, designers must consider the potential for noise generated within the room and the potential for intrusive noise levels from adjoining areas. One of the most popular and accurate assessment methods is the Noise Rating (NR) System, which quantifies the noise level inside the room, break-in noise from adjacent areas, and background noise level from building services (ventilation and mechanical components).

While ceiling surfaces can provide a large sound absorptive surface for sound absorption, walls are less effective due to the placement of windows, doors, and furniture. However, wall-mounted sound absorbers can help reduce reverberation time and complement (increase) the ceiling's NR rating. The table below provides the recommended maximum noise levels for various room functions.

Recommended maximum noise rating for various types of room function.

Situation	NR Criteria (dB)
Sound studio	15
Concert halls, large theatres, opera houses	20
Large auditoria, large conference rooms, TV studios, hospital wards, private bedrooms, music practice rooms	25
Libraries, hotel rooms, courtrooms, cinemas, medium sized conference rooms	30
Classrooms, small conference rooms, open-plan offices, restaurants, public rooms, operating theatres, nightclubs	35
Sports halls, swimming pools, cafeteria, large shops, circulation areas	40
Workshops, commercial kitchens, factory interiors	45

Reverberation Time or RT describes the reverberation time of an enclosed space. However, it's not the best option for large, open office areas where one dimension is significantly disproportionate to the others. Also, depending on the sources and receiver locations, the results could vary wildly within the same test area.

Room volume m^3	Reverberation time RT	
	Speech	Music
50	0.4	1.0
100	0.5	1.1
200	0.6	1.2
500	0.7	1.3
1000	0.9	1.5
2000	1.0	1.6

In these situations, using the STI (Speech Transmission Index) and other factors suggested in ISO DIS 3382-3 (2012). The SNR (Speech/Signal to Noise Ratio) plays a critical role in the acoustics equation when determining speech intelligibility. The higher the SNR, the higher the speech intelligibility rating for the area. The exception is when a site has a high reverberation rate, such as public announcement systems.

The announcement starts with a good SNR score, but a long delay can make the message unintelligible to travelers. An SNR of 10-15 dB is the standard for acceptable intelligibility for most areas. The SNR should be kept as low as possible when privacy is a concern.

For residential designs, the sound standards given are not adequate for unit separation purposes Please contact the Mada Drywall Team directly for specific acoustical advice for healthcare and educational projects.

Spectrum Adaptation Term (Ctr)

The Rw single figure index considers a range of high and low frequencies. In certain applications, lower frequency sounds, such as bass, is a key consideration. To ensure an assembly isolates these specific low-frequency sounds, use the Rw+Ctr criteria. Combining these two scores provides a single number index, which better indicates the partition's ability to isolate low-frequency noise.

Even if their respective Ctr scores are very different, two partitions with the same Rw+Ctr value will have similar low-frequency acoustic performance. The higher the Rw+Ctr rating for a wall or ceiling assembly, the better the sound insulation performance. The Ctr value, determined from a partition's airborne performance, usually falls between the range of 1-15 dB.

Mada Acoustic performances

All acoustic performances displayed in the Mada System Book are produced by industry leading acoustic modeling software.

Construction Changes and Substitutions

The acoustic performance of the ceiling and wall systems can be affected by using different materials or processes during the construction phase.

Unless otherwise noted, the following comments apply to wall systems.

Studs

- Using wood studs instead of steel typically decreases sound isolation, except for twin-stud or staggered stud wall systems.
- Increasing the stud thickness from 0.55 BMT to 0.75 BMT or 1.15 BMT will result in decreased sound isolation for single stud walls lined on both sides.
- Decreasing the stud spacing also decreases the sound isolation.

Plasterboard

Lighter plasterboard will result in a 1-2 dB reduction of the Rw value for most wall systems. A more significant reduction may result when working with a separating wall system design.

Insulation

- A thinner insulation can decrease sound isolation performance.
- Thicker insulation usually increases sound isolation performance.
- Typically, higher density insulation provides improved acoustic performance. For example, polyester-based insulation should be 40% denser than fiberglass to provide similar acoustical performance.

Drywall (Plasterboard) Attachment

- Increasing the number of nails/screws used to attach the panels to the studs can reduce the sound isolation performance for the wall assembly.
- The use of adhesives, and other lamination forms, instead of the specified nailing/screwing requirements, can also decrease sound isolation.

Perimeter Acoustical Sealants

The control of potential flanking paths becomes even more critical as the sound isolation requirements increase. As a result, the acoustic requirements for a wall with an Rw 60dB are more robust than those with an Rw 30dB. In addition, any high-performance sound isolation wall requires virtually airtight connections.

To effectively control noise passing through gaps or cracks, acoustical sealants must possess the following qualities:

- Good flexibility at a wide range of temperatures.
- Low hardness when dry (set).
- Less than 5% shrinkage rate over product lifespan.
- Superior adhesion to wood, concrete, plaster, and steel (galvanized and stainless).
- A density greater than 800 kg/m^3 and a fire rating for hallways and escape paths.

Noise Flanking

The perceived sound isolation of a wall or floor/ceiling assembly can suffer from noise flanking and must receive careful consideration during the design phase.

These are the most common flanking paths for a wall system:

- Glazing and windows
- Light switches, receptacles, and phone/internet connection points
- Ceiling system and the plenum/attic space above
- Flooring system and any crawl space below
- Gaps, cracks, or holes around pipes, ducts, and other services
- Perimeter joints where floor/ceiling systems and wall systems intersect
- Adjacent walls and façade connections

These are the most common flanking paths for a floor/ceiling system:

- Skylights
- Lighting and HVAC registers/diffusers installed in the ceiling system
- Shared building elements such as external walls, hallways, and lobbies
- Shared services such as air plenums, pipes, ducting, and wiring
- Existing sound and air leaks
- Perimeters where walls and floor/ceiling intersect

Doors

Virtually any solid-core or hollow door affects a wall's overall sound isolation. In addition, most doors allow air leaks where the door edge meets the frame or an adjoining door or where the frame meets the wall surface. Airtight seals and acoustic thresholds can minimize acoustical performance loss. If applicable, when using door seals, they must match the door's fire rating.

Lightweight Panels Above Doors

Sound insulation can be compromised when lightweight panels get used above the door for aesthetic or other design purposes. This is because the panels have almost no acoustic value, to begin with, and any gaps, cracks, or holes around the frame will substantially reduce the benefit of sound insulation in the adjoining wall area.

Appliances

Noise producing appliances and devices such as:

- Dishwashers
- Washing machines
- Pumps
- Cisterns
- Water storage tanks
- Fans and blowers
- Water closets (toilets)

Should be repositioned/relocated or isolated from the surrounding building structure with resilient mountings with flexible utility connections or leads.

If fittings and connections duplicate on opposite sides of the wall, such as back-to-back shower units and bathtubs, the partition wall should run continuously between the fittings. If not, the wall will be a path for direct sound transmission between the two spaces.

If possible, designers should avoid service penetrations for wiring, plumbing, and electrical service in separating walls.

Plumbing connections on opposite sides of a partition should Introduce a service break, using a flexible connection for maximum acoustic efficiency, and then seal the connections to prevent sound transmission.

Without extreme care during the design and construction phase, walls with service penetrations will lose sound performance to acoustical bridging as sound travels from one building component to another. When service penetrations are unavoidable in a separating wall, never place outlets, switches, or other connection points back-to-back in the wall. Instead, seal the box sides and back with acoustic sealant. Use sound-rated switches and outlets or mount the devices to the wall surface. In wood and steel-framed walls, offset outlets by a minimum of 300mm.

Penetrations in Linings Separating Soil and Waste Pipes

You can find the acoustic rating for waste pipes and unlagged soil in the Multi-Residential section. While lagging and cladding have the benefit of reducing the pipe noise, the effects of penetrations differ based on lagged or unlagged ground and clad pipes.

Refer to the lagging manufacturer's data for the acoustic rating of lagged soil and waste pipes.

Terminology

dBA or dB(A) A-weighted decibel
A modification of the measured sound pressure level approximates more closely to the ear's response over the normal range of sound levels heard and thus correlates reasonably well to the subjective reaction to the sound level.

R' Apparent sound reduction index
A measurement of the sound reduction index, but in the presence of flanking sound transmission. Use BS EN ISO 140-3 or 140-4 to establish an apparent sound reduction index for laboratory or field measurements.

CAC Ceiling Attenuation Class
A US-based single number rating system expressed in decibels of the laboratory-measured frequency-dependent room to room sound insulation of a suspended ceiling, sharing a common ceiling plenum above adjoining rooms.

dB Decibel
It is a unit of magnitude for sound pressure, sound intensity, sound power, and the measurement of the level reduction in relation to sound insulation. The dB is a logarithmic unit that compresses a wide range of values into a smaller scale.

DnT,w
See the weighted standardized level difference.

Dnc
See suspended ceiling normalized level difference.

Dnc,w
See weighted suspended ceiling normalized level difference.

Dne
See element normalized level difference.

Dne,w
See element normalized level difference.

Dnf,w
See flanking normalized level difference.

Dw
See the weighted sound level difference - also ISO 717 and 140.

Element normalized level difference, Dne,w
From BS EN ISO 12354: 2000 - the difference in the space and time-average sound pressure level produced in two rooms by a source in one, where sound transmission is only due to a small building element, such as transfer air devices, electrical cable ducts, transit sealing systems. Dne is normalized to the reference equivalent sound absorption area.

Flanking sound
Describes sound transmission between adjacent rooms or spaces, bypassing the obvious dividing barrier element. Such transmission paths may include sidewalls, floor slabs, and ceiling slabs. The effect of flanking sound is to lower the achieved sound insulation between adjacent areas below, which would be expected from the known performance of the identified dividing barriers. Because flanking sound is always present on the project, practical site performance between 'non-isolated' constructions will be limited (typically to about Rw 55dB).

Dnf,w Flanking normalized level difference
Defines the sound insulation value from room to room, where a dividing partition abuts the underside of the ceiling with a plenum (void) above. Using a massive wall assembly, the derived performance is the ceiling alone, with no flanking paths.

Floating floor
A floating floor is part of a composite floor assembly whereby the upper surface membrane is independently isolated (floated) from the lower structural floor using a resilient underlay and an array of flexible pads or spring isolators. This separation improves airborne and impacts sound insulation by an equivalent solid floor of the same overall mass. The 'isolation' continues throughout the area with no rigid connections between the structural floor and the floating, including the floating floor edges.

f Frequency
Frequency refers to the number of cycles of pressure fluctuations within a given time. For example, the human audible frequency scale extends from about 20Hz (i.e., cycles per second) to 20,000Hz. With such a range of frequencies, breaking them into manageable groups is necessary; octave bands and one-third octave bands are for sound insulation.

Hz Hertz
Hertz is the unit of frequency for measuring pressure fluctuations. One hertz equals one cycle per second.

Impact sound
Describes the sound heard as surface radiating airborne sound within the area containing the noise source. Impact sound may also travel as a structure-borne sound to re-radiate as an airborne sound in more remote locations. Impact sound occurs when short-duration sources such as footsteps, wheeled trolleys, or door slams directly impact a structure.

Impact sound pressure level, Li
Refers to measuring sound pressure levels in a receiving room when the floor/ ceiling assembly is under test (including floorcoverings if applicable) and is excited by a standardized tapping machine in the room directly above.

Imperforate construction
It occurs when no air gaps exist through which noise can be transmitted.

L'nTw
See weighted standardized impact sound pressure level.

Mass law
A relationship is used to predict the approximate sound reduction index (SRI) of a uniform single-skin dividing barrier based on its mass.

Noise
The unwanted sounds result in a distraction or disturbance, interference with speech, or stress or damage to hearing. In addition, noise is often subjective - a noise that upsets one person may go unnoticed or be pleasing to another individual.

NC Noise criteria curves
NC is a US method for rating broadband sound against standardized sound curves that broadly equate to equal loudness curves.

NR Noise rating curves
NR is the European method of rating broadband sound against standardized curves that broadly equate to curves of equal loudness. Typically used to describe mechanical ventilation system sounds.

NRC Noise reduction coefficient
NRC is a US single number rating for random incidence sound absorption coefficients. ASTM 423 (ASTM International, formerly known as the American Society for Testing and Materials (ASTM)) defines the term as the mathematical average of the measured sound absorption coefficients for the four one-third octave band center frequencies of 250Hz, 500Hz, 1,000Hz and 2,000Hz, and then rounded to the nearest 0.05.

Octave band
Describes a group of adjoining frequencies where the value of the upper limiting frequency is twice that of the lower limiting value. For example, in building acoustics, octave bands are typically centered around 63Hz, 125Hz, 250Hz, 500Hz, 1,000Hz, 2,000Hz, and 4,000Hz.

One-third octave band
A higher resolution version of octave bands, breaking each octave into equal thirds.

Pink noise
Broadband (electronically generated) noise is used as a sound source for acoustic measurements, whose energy content is equal, based on frequency bandwidth.

Pugging
Describes a loose-fill material inserted into the joist cavity of a lightweight timber floor to improve its sound reduction properties (performance increases with mass). Dry sand, gravel, ash, or dense granular manufactured mineral fiber are acceptable pugging materials. The material is either laid onto the rear of the ceiling or supported on boards fixed between the joists.

αs Random incidence sound absorption coefficient, αs
Under BS EN 20354 or ASTM C423 is a measure of sound absorption derived from tests undertaken in a reverberation chamber of an acoustics laboratory, over the one-third octave frequency bands 100Hz to 5,000Hz.

Reverberation
After terminating the sound source, this sound is the persistence of sound in an enclosure due to its continued reflection or scattering from one surface or object to another. Reverberation is significant in determining the quality and level of sound within internal spaces.

T or RT Reverberation time
RT is the time, in seconds, required for reverberant sound in an enclosure such as a room to decay to one-millionth (equivalent to a decrease of 60dB) of its original energy level after stopping the sound source. RT is the most used (and easily obtained) measurement or predictor of the sound quality of a room or enclosure. A long reverberation time lowers speech intelligibility, as successive speech sounds overlap.

Rating of sound insulation
Most airborne or impact sound insulation measurements are conducted over a range of frequencies to obtain a detailed picture of the insulation's performance. If these are made in accordance with national or international standards, at least 18 individual one-third octave band measurements over the 100Hz to 5,000Hz range should be obtained. However, such an extensive range of values is cumbersome and makes comparisons awkward for alternative building materials and suppliers of acoustic data.

A single number rating (that distills the wide range of measurement results) is more appealing and easily handled. Therefore, a simple arithmetic average (totaling the values in the range and dividing by the number in the range) is preferred - see Sound Reduction Index. However, the final result can be misleading because it doesn't account for the frequency spectrum shape. For example, using this method, three entirely different shaped spectra could all have the same average value. As a result, specific rating methods have evolved to consider the spread of measurements, against frequency, by comparing them with a standard curve.

Additionally, the standard curves adopted to simulate the human response to sound, so the values obtained will typically correlate well with the subjective perception of familiar internal noise sources. BS EN ISO 717-1 and 717-2 and ASTM E413 and E989 give this test's rating method and procedural details.

Rw
See weighted sound reduction index - also ISO 717 and 140.

Sound absorption
It occurs in one of two ways: Sound energy is lost when the sound wave strikes (or is transmitted into) a surface material or when causing a volume of air to resonate. The energy reduction results from the sound dissipating into heat caused by friction. Energy can also be lost when the sound moves to an adjacent area or outside air and doesn't return.

Most building materials absorb sound to some extent and fall into one of these three main types – dissipative (porous) – membrane (panel) – resonant (cavity) sound absorbers. Newer engineered sound absorber options include micro-perforated plates, films, and even non-woven porous tissues. You can further optimize sound performance by selecting specific flow resistance values and spacing them in front of reflective surfaces. Air can absorb sound at significantly high frequencies and under certain temperatures and humidity.

Increasing a room's sound absorption decreases the reverberant sound pressure level and reverberation time. Conversely, reducing a room's sound absorption increases the reverberant sound pressure level and reverberation time.

α Sound absorption coefficient
This factor is the fraction of incident sound energy absorbed at its surface for a given material. It is expressed as a value between 0 (total reflection or no absorption) to 1.0 (perfect absorption or no reflection)—the sound absorption value changes with the wave frequency and the angle of incidence.

Sound insulation (also known as sound attenuation)
1. A term used concerning the room-to-room transition of sound via a common ceiling plenum.
2. A general term referring to the reduction in the transmission of sound pressure levels between one internal area and another.
3. The reduction of noise levels associated with airflows, such as ventilation equipment and ductwork systems.

Sound (noise) leakage
Any airborne sound transmission occurring via gaps or cracks around or through building elements and services allows sound to travel from one area to an adjacent room, lowering the element's potential sound reduction ability.

Sound masking/conditioning
Internal multi-occupancy spaces such as open-plan offices or cellular offices with low sound insulation levels suffer from poor acoustic conditions, resulting in disturbances due to the various activity and speech noise levels between one working zone and another. A site using a sound masking system can eliminate these problems. This term describes the electronically generated sound of a specified level and frequency content, incorporated into such environments (typically speakers concealed in the ceiling void) to provide masking of the fluctuating noise levels, enhancing speech privacy.

SRI or R Sound reduction index
Per BS EN ISO 140-3, the test-barrier mounts between two reverberant chambers in an acoustic laboratory, and its ability to reduce sound transmitting through it is measured. Ideally, measurements should be made over the one-third octave frequency bands of 100 to 5,000Hz, since SRI is a function of frequency.

STC Sound transmission class
STC refers to the laboratory-measured frequency-dependent airborne sound insulation of a dividing barrier, expressed in decibels (dB). This test can distort results compared to the Rw value because that test uses a different range of frequencies to calculate the US single-number rating.

Sound wave
The waves that result from sound wave activity cause a pressure disturbance in the air traveling at a finite velocity.

STI Speech transmission index
STI is an acoustic descriptor that defines the speech intelligibility of a room or open space.

C & Ctr Spectrum adaptation terms
As defined in BS EN ISO 717-1, this single number rating determines the weighted value of airborne sound insulation by using a standard reference curve. As annex A of the referenced standard indicates, the spectrum adaptation terms C and Ctr can be calculated using source spectra. The value C is an A-weighted pink noise spectrum, while the value of Ctr is an A-weighted urban traffic noise spectrum. Ctr can also be added to DnT, w, or Rw to account for low-frequency noise.

Dnc Suspended ceiling normalized level difference
Is the laboratory-measured frequency-dependent level difference of a suspended ceiling sharing a common ceiling plenum above two adjacent rooms. The figure is corrected, accounting for the sound absorption of the receiving room.

Tapping machine
A tool for standardized impact sources, this portable device is used to rate the normalized sound pressure levels or the impact noise insulation of floor assemblies.

Tmf
This value is the mean value of reverberation time in the octave bands of 500Hz, 1kHz, and 2kHz.

Vibration
The back-and-forth movement of a solid body about a reference point, with sufficient amplitude and frequency to generate sound.

Vibration isolation
A technique to minimize the transmission of vibration energy to the surrounding structure, using devices such as rubber mounts, steel springs, and other resilient materials to support a vibrating structure or source.

λ Wavelength
The distance a sound wave travels in one cycle.

Rw Weighted sound reduction index
Rw is used to compare the sound reduction performance of one building element to another. Only the element in question is laboratory tested and rated without any flanking loss.

R'w Weighted apparent sound reduction index
Another field measurement of airborne sound insulation between two rooms expressed in decibels. Unlike DnT,w this test measures the performance of the building element, not the entire room. Ideal for testing extensive separating wall areas without flanking paths.

Dw Weighted sound level difference
Dw can also be defined as DnT,w where T=T0, canceling any reverberation corrections. Unfortunately, this term is not defined in BS EN ISO 717-1: 1997, although it's listed as another descriptor for sound insulation in BB93 (this issue should disappear when BB93 is next revised).

w Weighted standardized level difference, DnT
This descriptor is the level difference achieved between two rooms, which has been normalized to a standard reverberation time known as T0 (The most common value of T0 is 0.5 seconds, per building regulations Part E), and then weighted to provide a single-figure value. There will be flanking transmission due to the two rooms used for testing purposes. Since the element being tested (such as a separating wall) may not be the culprit, every component of the room construction must be considered. DnT,w is referenced in the Building Regulations to provide an overall performance of the tested building element.

Alpha W (α_w) Weighted sound absorption coefficient

This is the European single number rating for random incidence sound absorption coefficients, as calculated by reference to BS EN ISO 11654: 1997. Using a curved-fitting process, the process can also convert a wide frequency-based range of sound absorption values into a single number. However, αw is considered more representative, despite requiring more effort to calculate how the human ear interprets sound. In addition, the single figure rating can have a modifier added to indicate if a particular frequency range dominates the spectral shape:

L Absorption is predominantly in the low-frequency region.
M Absorption is predominantly in the mid-frequency region.
H Absorption is predominantly in the high-frequency region.

The absence of a letter in the rating indicates that the absorber has no distinct area of sound absorption and an essentially flat spectral shape.

The method is fully described in BS EN ISO 11654: 1997 and, at the time of writing, is the preferred European unit for simple and rapid sound absorption performance comparison.

L'nTw Weighted standardized impact sound pressure level

A single number is used to characterize the impact sound insulation of floors over various frequencies, referenced in ISO 717 and 140 BS 8233 Weighted Standardized Impact Sound Pressure Level.

LnT,w Weighted standardized level

This test also measures the level difference achieved between two rooms, the main difference being that the rooms are on adjoining floors. Once again, due to flanking transmission concerns, every element used to construct the rooms must be considered since the tested component (the floor assembly) may not be responsible for the sound transmission. LnT,w is referenced in the Building Regulations to provide the overall performance of the building element (floor) being tested in a 'real' environment.

Dnc,w Weighted suspended ceiling normalized level difference

A laboratory-measured, single-number rating of the frequency-dependent room-to-room sound attenuation of a suspended ceiling, sharing a common ceiling plenum above adjoining rooms, expressed as decibels. Unlike DnT,w, this test uses a normalized value for the absorption of the entire room instead of reverberation time. Dnc,w was used by specifiers to compare one suspended ceiling assembly with another, but has now been superseded by Dnf,w – see ISO 12354.

White noise

Refers to broadband (often electronically generated) background noise, but can also be attributed to running water, air movement, and other random sounds in the area.

04 THERMAL

Thermal Performance

As the leading drywall manufacturer, Mada Drywall is firmly committed to help our clients reduce their local environmental impact, while lowering future energy costs for their new construction or remodel projects.

Today's building requirements now include energy saving components to lower power and fuel costs; and reduce carbon emissions by limiting heat loss to the outside environment. As a result, thermal performance should be a critical design factor for any new construction or remodel project.

Thermal performance (limiting potential heat gain or loss) efforts will vary depending on the individual materials used and how they are assembled. Materials with a higher thermal performance make better insulators, because they transfer less heat, which results in lower energy costs.

Additional factors to consider improving thermal performance include:

- Temperature difference between internal and external environments
- Seasonal temperature ranges
- Water and moisture sources
- Solar gain – the heat increase of a structure from absorbed solar radiation
- Available shading
- Heat radiation (incoming and outgoing)
- Daily diurnal range (difference from low to high temperature)
- Air-tightness – uncontrolled air leaking through gaps, cracks, or compromised seals/sealants.

Thermal insulation is the simplest and most cost-effective solution to the complex problem of reducing long-term energy costs. Typically installed between the wall framing members or above ceiling assemblies, thermal insulation will reduce the loss of treated (heated or cooled) air, provided by the HVAC system and its components.

Besides making work and living spaces are more comfortable and productive, thermal insulation reduces total energy consumption over the life of the building. Thermal insulation will also increase the longevity of the HVAC system while lowering maintenance costs as well.

Standards and Regional U-value Requirements

Most jurisdictions now have thermal insulation requirements for commercial or residential building projects. Mada Drywall recommends consulting with local architects, engineers, and building officials to ensure compliance with the current standards or requirements.

Here are the current U-value requirements for the GCC region:

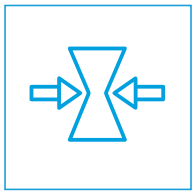
Country	Specific	U-value (W/m^2K)
Bahrain	Thermal Insulation Order 2018	0.57
Kuwait	Light construction, dark external color	0.37
	Light construction, medium-light external color	0.43
Oman	Muscat	0.74
Qatar	Kahramaa	0.34
Saudi Arabia	SEEC - Zone 1 - Residential	0.40
	SEEC - Zone 2 - Residential	0.45
	SEEC - Zone 3 - Residential	0.53
	SASO - Commercial	0.57
United Arab Emirates	Abu Dhabi - Commercial	0.32
	Abu Dhabi - Residential	0.57
	Dubai	0.57

U-value - refers to rate of heat loss through a building material or assembly, sometimes referred to as the "building fabric" which includes the floor, walls, and roof assemblies. When comparing building materials and assemblies, the lower the "U" value, the better the thermal performance (reduced energy costs) for the end user.

U-values allow architects and designers to accurately compare different combinations of materials, thicknesses, and sub-assemblies to achieve optimal thermal performance, while keeping material and maintenance costs down.

U-values are measured in watts per square meter per degree Kelvin (W/m^2K). To illustrate this point, let's look at a double-glazed window with a U-value of 2.8. This U-value means that for every degree of difference in temperature between the air inside and outside of the window, 2.8 Watts will be transmitted every square meter.

Air Tightness – Per the ATTMA, a building's thermal performance will suffer from any "uncontrolled air leaks or gaps around MEP (mechanical, electrical, and plumbing) penetrations through the sub-floor, wall, and roof assemblies."



Interstitial Condensation

Condensation results when warm humid air intersects with a colder surface. Wet locations such as bathrooms, kitchens, and laundry areas that experience large temperature fluctuations are especially prone to condensation issues. Enclosed wall, floor, and ceiling cavities can be prone to this type of condensation, which typically results in visible dampening of the substrate surfaces.

Prolonged or sustained condensation exposure can result in:

- Sagging (ceiling areas)
- Nail/screw popping (walls and ceilings)
- Mold
- Rotting
- Joint or corner cracks
- Compromised air quality

In most cases, an effective vapor barrier installed towards the warm (living) side of the cavity will minimize or prevent any condensation build up. In addition, roof and sub-floor spaces should be properly ventilated to minimize condensation. Installing vent fans (that exit the building) in every bathroom, kitchen, or laundry area will further reduce the potential for condensation. Thermal breaks for steel framing systems are another option to reduce/eliminate condensation issues, while improving the overall U-value for the project.

Thermal Resistance

The total R-value of a building system is the sum of R-values of all the system components (such as framing members, insulation, vapor barriers, enclosed air gaps and internal and external air supplies).

Thermal resistance (R) – Measures of the resistance to the passage of heat through the thickness of a material and is expressed as m^2K/W.

The thermal resistance of a material is obtained by the following calculation:

$R = t / \lambda$

Where t = thickness in (m) and λ = thermal conductivity (W/mK)

Mada Plus Board	Thermal Resistance* (m^2K/W)
12.5mm Regular	0.181
12.5mm Moisture Resistant	0.128
12.5mm Fire Resistant	0.118
12.5mm Fire & Moisture Resistant	0.119
12.5mm ProGuard Sheathing	0.070

*at the specified mean temperature of 35°C

Thermal conductivity (λ) – Measures a material's ability to transmit heat to an adjoining surface or material. Thermal conductivity is expressed as heat flow in watts per meter thickness of material for a temperature gradient of one degree Kelvin (K). It is expressed as W/mK.

Generally, dense materials are inefficient thermal insulants because they have high thermal conductivity.

Lightweight materials have a lower conductivity rate and can be efficient thermal insulation in a variety of locations and situations. The lower the λ value of a material, the better its insulating efficiency.

Mada Plus Board	Thermal Resistance* (m²K/W)
12.5mm Regular	0.139
12.5mm Moisture Resistant	0.197
12.5mm Fire Resistant	0.215
12.5mm Fire & Moisture Resistant	0.210
12.5mm ProGuard Sheathing	0.179

*at the specified mean temperature of 35°C

Heat Capacity

The Specific Heat Capacity of a material is the amount of heat needed to raise the temperature of 1kg of the material by 1K (or by 1oC) . A good insulator has a higher Specific Heat Capacity because it takes time to absorb more heat (temperature rising) before it begins to transfer the heat.

Material Type	Specific heat capacity* (J/kgK)
Gypsum Plasterboard	1000
Gypsum Plaster	1000
Mineral Wool	1030
Phenolic Foam	1400

*at the specified mean temperature of 35°C

Expansion and temperature limits

Mada Gypsum does not recommend the use of radiant heating systems to continuously subject plasterboards ceilings to temperatures beyond 52°C. Prolonged exposure to temperatures higher than 52°C may cause changes in the chemical composition of the gypsum core and loss of plasterboard integrity over time.

The following regulatory and normative requirements must be followed to prevent plasterboard deterioration due to excessive temperatures from heat generating devices:

- National Building Codes related to the provisions for installation of heating appliances, fireplaces, chimneys, and flues.
- In accordance with AS 5601, gypsum-based wall boards within 200mm of the edge of the nearest burner must be protected to a height of not less than 150mm above the periphery of that burner and for the full length of the cooking surface area with a fire-resistant facing material. In no case the periphery of the burner should be closer than 140mm to wall linings.

05 SERVICE INTEGRATION

The following information is intended to support project detailing. Please note:

- All loadings are offered as Safe Working Loads (SWL) calculated using a safety factor of 4 (for steel fixings) or 7 (for plastic fixings) against the Typical Failure Load (TFL).
- Maximum heights of frames are explained in the Structure section
- Maximum height calculations do not include loadings
- For full calculations combining heights and loadings, please contact the Mada Technical team.
- Acoustic and fire performances can be affected by details

Fixtures

Component Recommended	Fixing Method	Load Capacity
	Wall Mate screw suitable for use with MADA gypsum board	5 kg
	Fisher Butterfly fixing into single layer MADA gypsum board	20 kg Shear Load

Fixing to internal framework

SWL
Safe working load

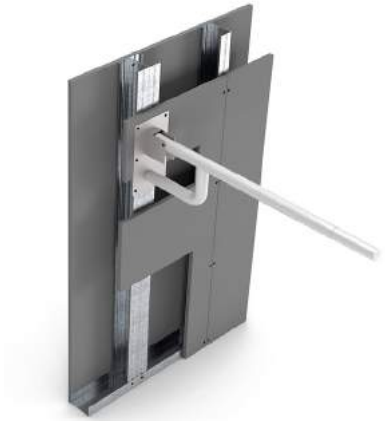
TFL
Typical failure load

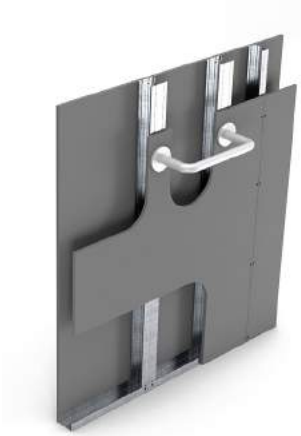
Based on safety factor of 4 (steel fixings) and 7 (plastic fixings) has been used

Description (per fixing)	SWL	TFL
Mada drywall plasterboard screws through Mada 0.7mm thick metal framing (stud/ fixing channel)	19 Kg	76 Kg
Mada drywall plasterboard screws throuch Mada 0.9mm thick metal framing (stud/ fixing channel)	30 Kg	120 Kg
Mada self tapping screws fixed through Mada 0.9mm metal framing	50 Kg	200 Kg
Steel expanding metal cavity fixing m6 x 40 through Mada plasterboard into 0.9mm thick Mada metal frame	40 Kg	160 Kg
Steel expanding metal cavity fixing m6 x 65 through Mada plasterboard into 0.9mm thick Mada metal frame (board thickness 12.5mm to 25)	50 Kg	200 Kg

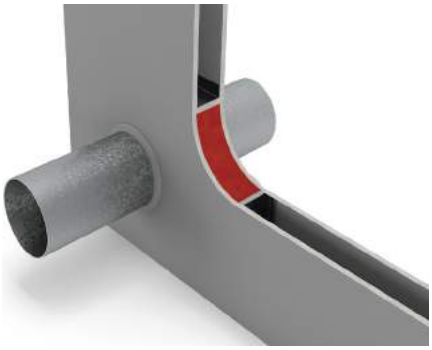
Typical Support Details
See project specification for exact requirements

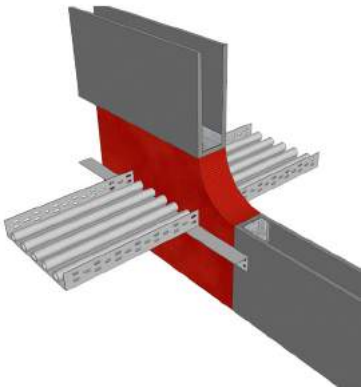


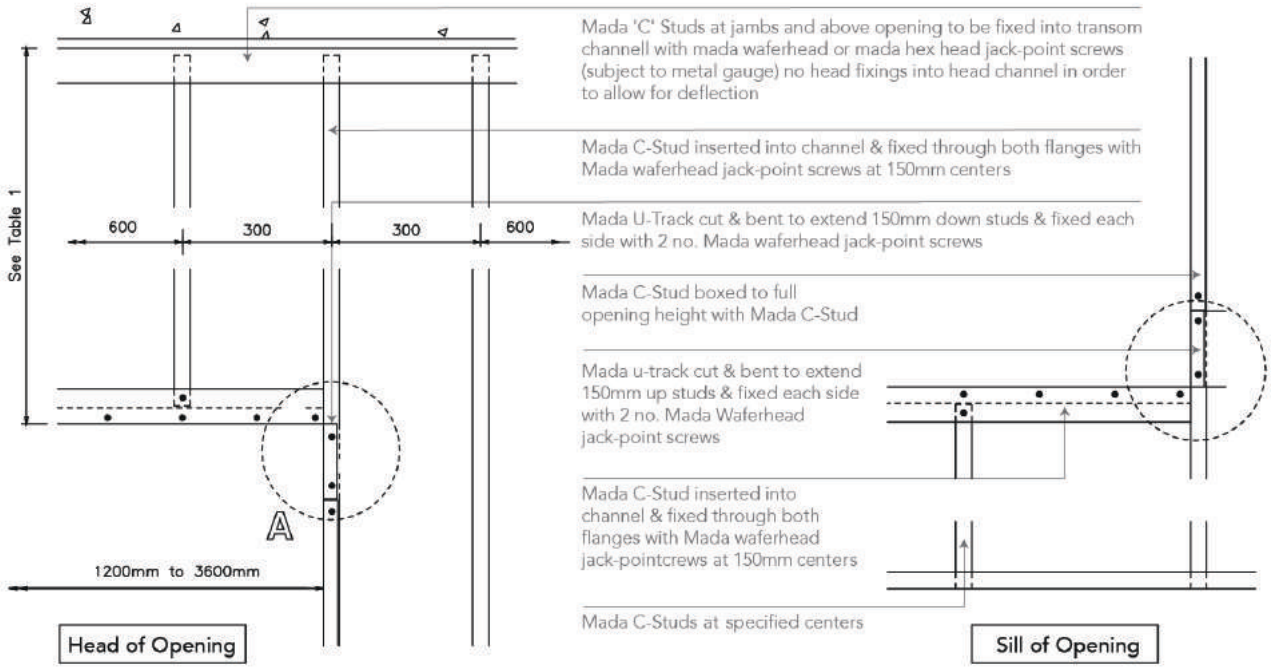


Typical Penetration Details
See Project Specification for exact requirements



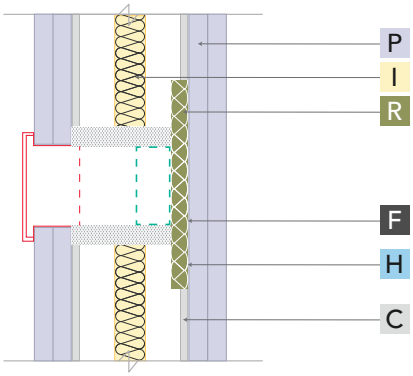


1200mm to 3600mm Opening detail

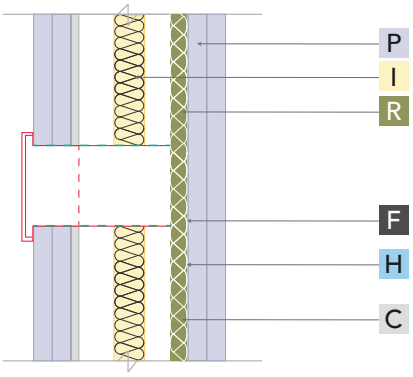


Socket Box detail

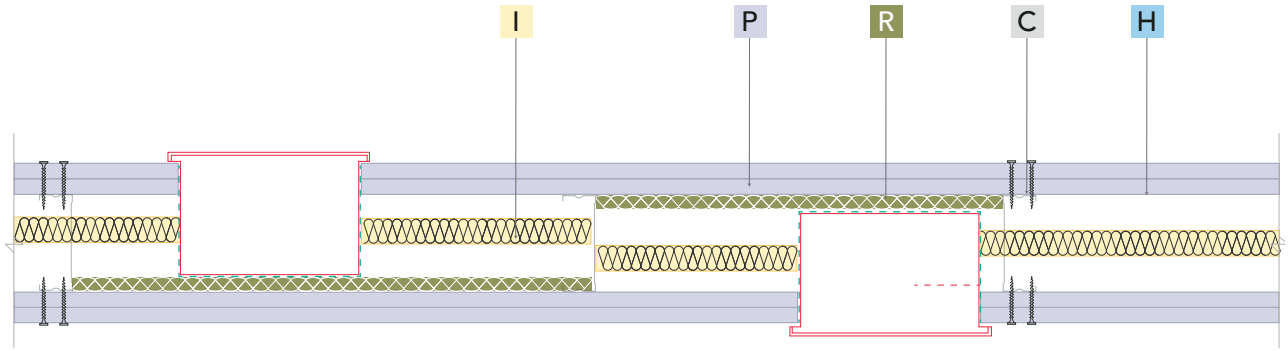
Section A



Section A1



Plan



Penetrations

To maintain the Fire Resistance Level rating of a Mada framing system, strict adherence to the installation details, and governing agency requirements is paramount.

Where non-Mada products such as collars, dampers, and sealant are specified, they must be installed per the manufacturer's specifications and recommendations. Each manufacture is responsible to ensure their product does not impact the system's fire rating performance.

Electrical and Service Connections

Penetrations and services should be avoided in separating wall systems, as they can provide a pathway for noise and sound.

Plumbing connections and fittings can provide another noise pathway if not properly sealed. Flexible connections inside or on the wall interrupt the pathway to reduce sound and noise transmission.

Existing services and penetrations can decrease acoustic performance. Acoustical bridging can occur via plumbing and electrical services traveling across structural elements, including the floor.

If penetrations or services within a separating wall system cannot be avoided, they should never be located back-to-back. Seal the back, sides, and perimeter of all pipes, boxes, and other utility connection points. Additionally, sound-rated switches and surface mounted devices can improve acoustic performance.

Per the NCC, electrical outlets in steel or timber walls must be offset by a minimum of not less than 300mm.

Penetrations in Linings Between Waste and Soil Pipes

Specific acoustic ratings for waste pipes and unlagged soil can be found in the Multi-Residential Section. The ratings of clad pipe vary significantly between lagged and unlagged soil.

Acoustic ratings for waste pipes and lagged soil are supplied by the lagging manufacturer.

Attachments and Shelf Loading

Attaching items through a fire rated lining, and into the framing members is allowable when the following provisions have been met:

- The attached item has a self-ignition temperature above 200 degrees Celsius.
- The framing is specifically designed and constructed to carry the load.

Electrical conduits may be mechanically fastened (screws or clips) to the steel stud, without negatively impacting the partition's FRL rating provided that:

- Conduits do not increase the axial load because they are self-supported.
- Conduit clips are made from a metal with a melting point below 250 degrees Celsius.

Framing system and fasteners must be designed by a qualified structural engineer to comply with AS 4600 Cold-Formed Steel Structures for load bearing steel wall/ceiling framing systems.

Attachment options for non-load bearing wall systems may be found in that section of the guide.

Penetrations

In fire rated wall and ceiling assemblies, penetrations for:

Pipes - Cables - Access hatches - Tap sets - Duct - GPO - Lighting recesses

Are to be constructed per the Mada approved details. The addition of services and utilities must not compromise the structural capacity, fire resistance or acoustic performance of the wall system.

Lighting Recesses & Service Chases

For lights or utility services that pass through, or are contained within, a fire rated wall system, Mada Drywall recommends installing a service chase. After framing, the top, bottom, and sides must be lined with the same material and number of layers as the penetrated wall system.

The corners between the layers are to be herringbone style, with a metal stud, track, or metal angle greater than 0.4mm BMT used for backing. Seal any pipe or cable penetrations with an approved fire rated sealant. Further details can be found in the Junctions and Penetrations Section.

Chapter 4
SOLUTIONS

04

PARTITION SYSTEMS Overview

06

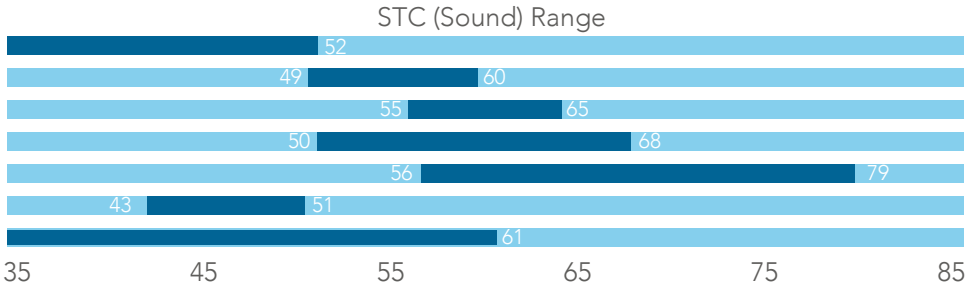
High-performance, tested solutions from Mada Gypsum

Mada gypsums range of partitioning systems have been developed to offer high performance solutions in a cost effective way. Your local mada gypsum representative or the mada gypsum technical department are available to assist in selecting the optimum construction, alternatively, just follow the simple process below to identify a suitable assembly

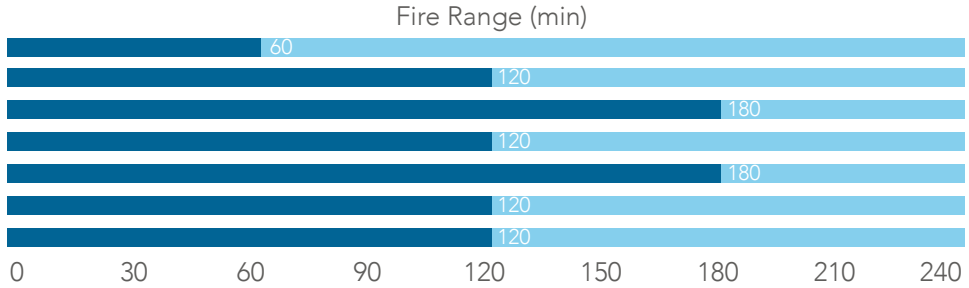
To select the correct partition, follow this simple process:

1. Starting at the top, chose the first system that covers your acoustic requirement
2. Check that the system also matches the fire requirement
3. Turn to the named section
4. Select the variant that meets the height requirements
5. If no solution matches your requirements, contact Mada Technical Services for additional or bespoke

Acoustic

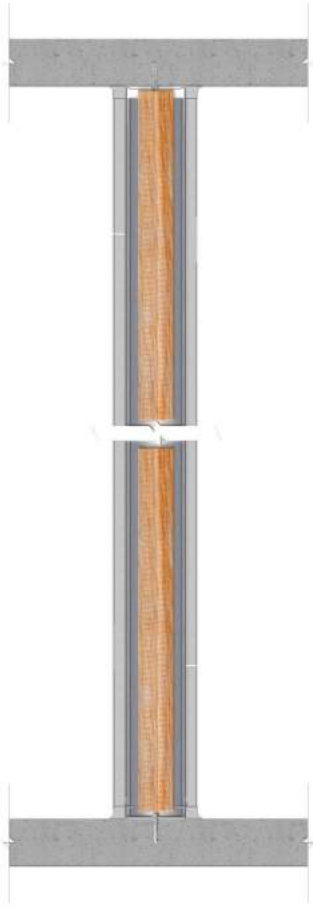


Fire



* All height data displayed is for a minimum steel thickness of 0.5mm for Mada studs below 148mm and for a minimum of 0.8mm for Mada stud sizes above. The heights are calculated based on maximum yield strength of the steel, actual may vary based on yield strength/metal size & thickness. For project specific detailing contact Mada Technical Department.

MONOPLUS



Mada MonoPlus

Our original lightweight partitioning system provides huge savings of time and money, compared to traditional masonry construction for walls. Adding MEP services is quick and easy, no matter the project's design.

MonoPlus is perfect for most standard height walls because a creates a lightweight, yet rigid steel framing system for the attachment of drywall panels in a variety of living and working spaces alike.

STC (Sound)
41 to **50**

Fire (min)
Up to **60**

Detail 1
No insulation

Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m^3)

48mm Stud (0.5mm)

System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
30 mins Fire Resistant							
MON101	75	1	1 Layer of 12.5 Regular	35	2800	37	3050
MON102	75	1	1 Layer of 12.5 Fire Resistant	36	2800	36	3050
MON112	75	2	1 Layer of 12.5 Fire Resistant	37	2800	40	3050
MON111	75	2	1 Layer of 12.5 Regular	40	2800	42	3050
45 mins Fire Resistant							
MON105	82	1	1 Layer of 16 Regular	36	2950	38	3200
MON103	75	1	1 Layer of 12.5 Impact Resistant	37	2800	40	3050
MON125	82	3	1 Layer of 16 Regular	41	2950	43	3200
MON113	75	2	1 Layer of 12.5 Impact Resistant	42	2800	44	3050
60 mins Fire Resistant							
MON106	82	1	1 Layer of 16 Fire Resistant	42	2950	41	3200
MON116	82	2	1 Layer of 16 Fire Resistant	48	2950	46	3200
MON126	82	3	1 Layer of 16 Fire Resistant	48	2950	46	3200

68mm Stud (0.5mm)

System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
30 mins Fire Resistant							
MON201	95	1	1 Layer of 12.5 Regular	35	3700	37	4050
MON211	95	2	1 Layer of 12.5 Regular	40	3700	42	4050
MON221	95	3	1 Layer of 12.5 Regular	40	3700	42	4050
45 mins Fire Resistant							
MON205	102	1	1 Layer of 16 Regular	40	3850	40	4200
MON203	95	1	1 Layer of 12.5 Impact Resistant	41	3700	41	4050
MON215	102	2	1 Layer of 16 Regular	45	3850	44	4200
MON213	95	2	1 Layer of 12.5 Impact Resistant	46	3700	46	4050
60 mins Fire Resistant							
MON206	102	1	1 Layer of 16 Fire Resistant	41	3850	41	4200
MON207	102	1	1 Layer of 16 Impact Resistant	45	3850	43	4200
MON216	102	2	1 Layer of 16 Fire Resistant	48	3850	46	4200
MON217	102	2	1 Layer of 16 Impact Resistant	50	3850	48	4200

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

Detail 1
No insulation

Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m^3)

98mm Stud (0.5mm)

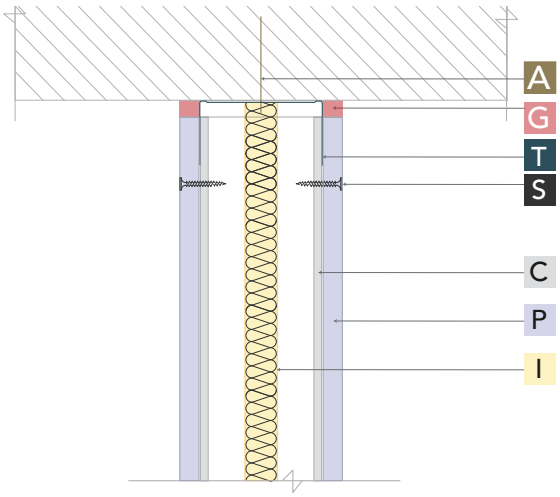
System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
30 mins Fire Resistant							
MON301	125	1	1 Layer of 12.5 Regular	35	4600	37	5050
MON302	125	1	1 Layer of 12.5 Fire Resistant	40	4600	39	5050
MON311	125	2	1 Layer of 12.5 Regular	40	4600	42	5050
MON312	125	2	1 Layer of 12.5 Fire Resistant	44	4600	44	5050
45 mins Fire Resistant							
MON305	132	1	1 Layer of 16 Regular	41	4900	41	5350
MON303	125	1	1 Layer of 12.5 Impact Resistant	45	4600	43	5050
MON315	132	2	1 Layer of 16 Regular	48	4900	47	5350
MON313	125	2	1 Layer of 16 Regular	50	4900	49	5350
60 mins Fire Resistant							
MON306	132	1	1 Layer of 16 Fire Resistant	41	4900	41	5350
MON307	132	1	1 Layer of 16 Impact Resistant	46	4900	45	5350
MON316	132	2	1 Layer of 16 Fire Resistant	48	4900	46	5350
MON317	132	2	1 Layer of 16 Impact Resistant	51	4900	50	5350

148mm Stud (0.8mm)

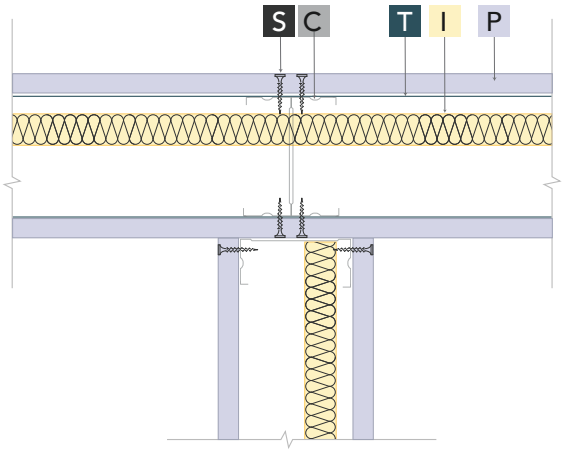
System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
30 mins Fire Resistant							
MON401	175	1	1 Layer of 12.5 Regular	35	6800	37	7300
MON411	175	2	1 Layer of 12.5 Regular	40	6800	42	7300
MON402	175	1	1 Layer of 12.5 Fire Resistant	41	6800	42	7300
MON412	175	2	1 Layer of 12.5 Fire Resistant	48	6800	47	7300
45 mins Fire Resistant							
MON405	182	1	1 Layer of 16 Regular	41	6950	43	7450
MON403	175	1	1 Layer of 12.5 Impact Resistant	46	6800	46	7300
MON415	182	2	1 Layer of 16 Regular	48	6950	49	7450
MON413	175	2	1 Layer of 12.5 Impact Resistant	51	6800	51	7300
60 mins Fire Resistant							
MON406	182	1	1 Layer of 16 Fire Resistant	41	6950	41	7450
MON407	182	1	1 Layer of 16 Impact Resistant	46	6950	47	7450
MON416	182	2	1 Layer of 16 Fire Resistant	48	6950	46	7450
MON417	182	2	1 Layer of 16 Impact Resistant	51	6950	52	7450

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

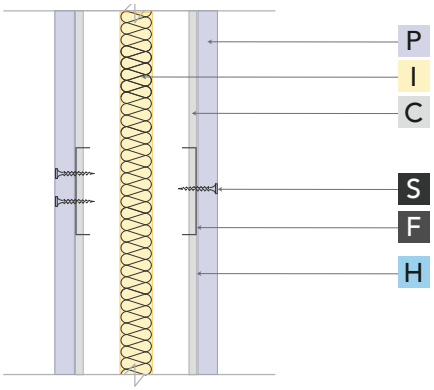
Top Detail



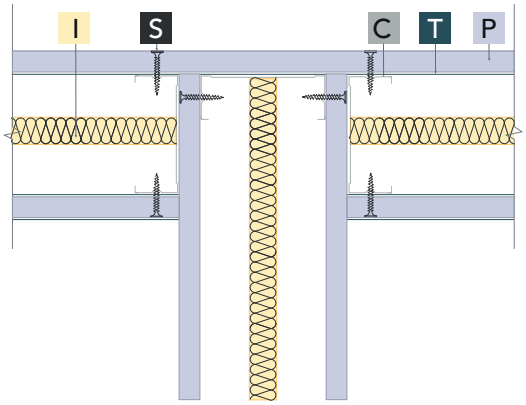
Low Acoustic T - Junction Detail



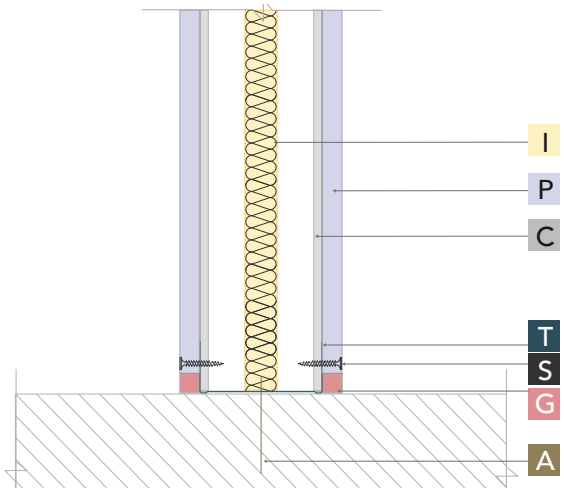
Noggin & Fixing Channel



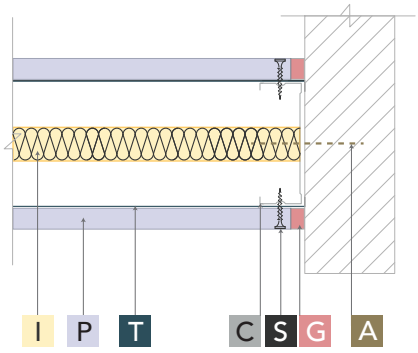
High Acoustic T - Junction Detail



Bottom Detail

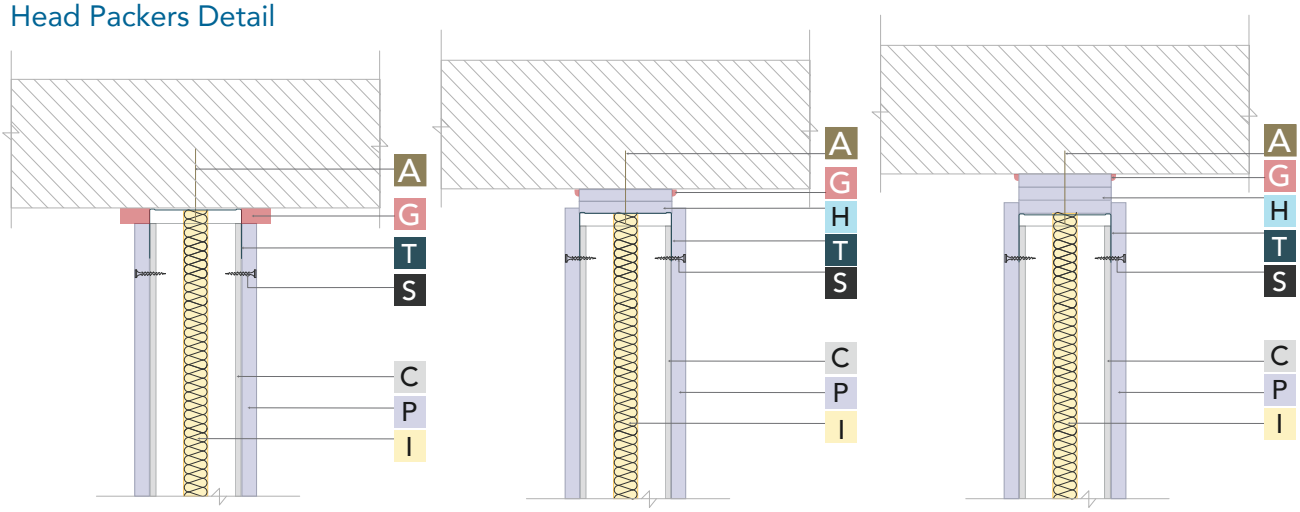


Abuttment Detail



A	Mada Anchor	B	Mada Acoustic Brace	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
I	Mada Insulation	J	Corner Profile / Tape	P	Mada Plus Plasterboard	S	Mada Drywall Screw
T	Mada U-Track	2	Wood Skirting				

Head Packers Detail



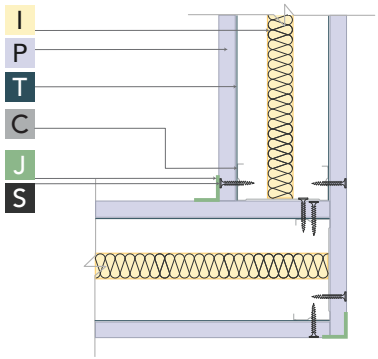
10 -15 MM
DEFLECTION HEAD DETAIL

16 - 25 MM
DEFLECTION HEAD DETAIL

26 - 40 MM
DEFLECTION HEAD DETAIL

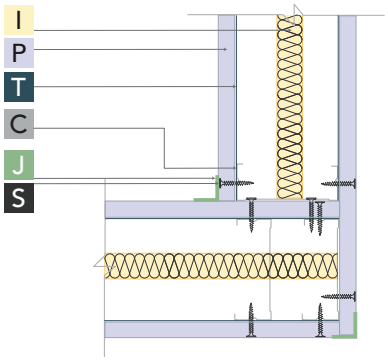
Corner Detail

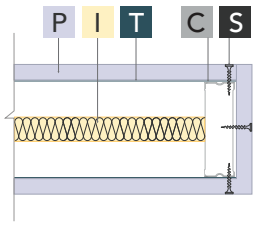
Up to 70 mm stud



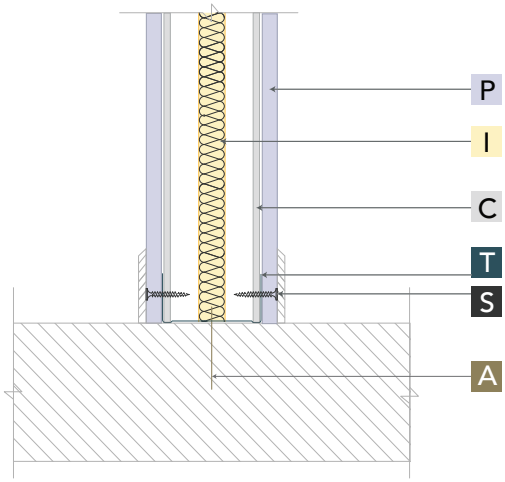
Corner Detail

Up to 150 mm stud

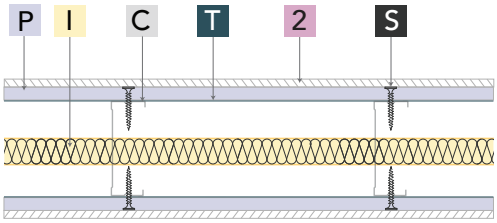




Skirting Detail

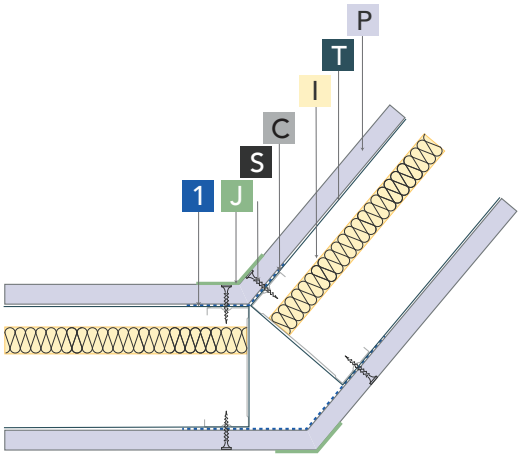


Skirting Detail

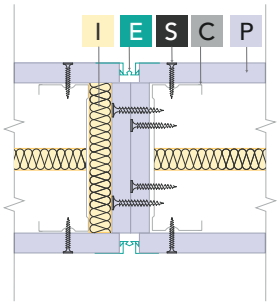


A Mada Anchor
B Mada Acoustic Brace
C Mada C-Stud
D Mada Deflection Head Track
E Mada Expansion Joint
F Mada Fixing Channel
G Mada Fire Guard Acrylic Sealant
H Mada Head Packer with Mada Plus Plasterboard
I Mada Insulation
J Corner Profile / Tape
P Mada Plus Plasterboard
S Mada Drywall Screw
T Mada U-Track
2 Wood Skirting

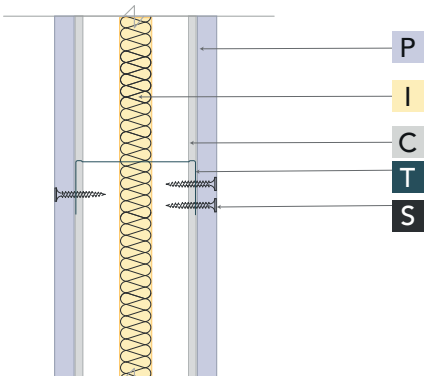
Splayed Junction Detail



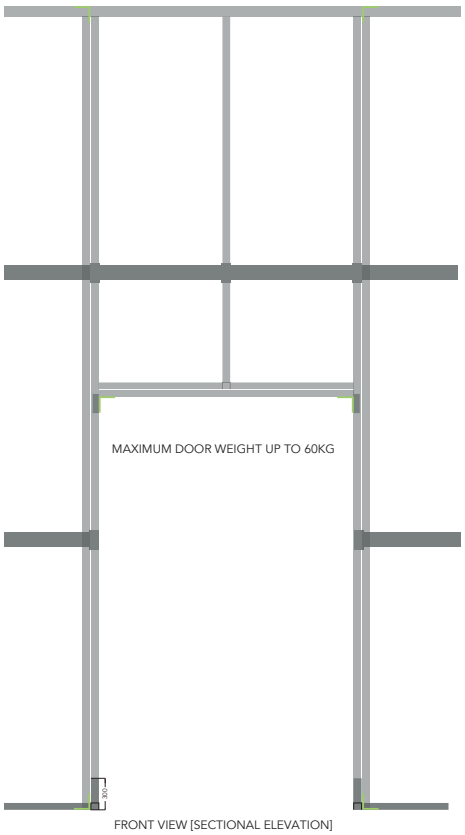
Expansion Joint



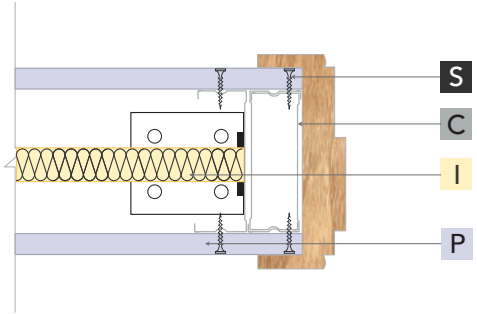
Noggin & Fixing Channel



60kg Door Detail

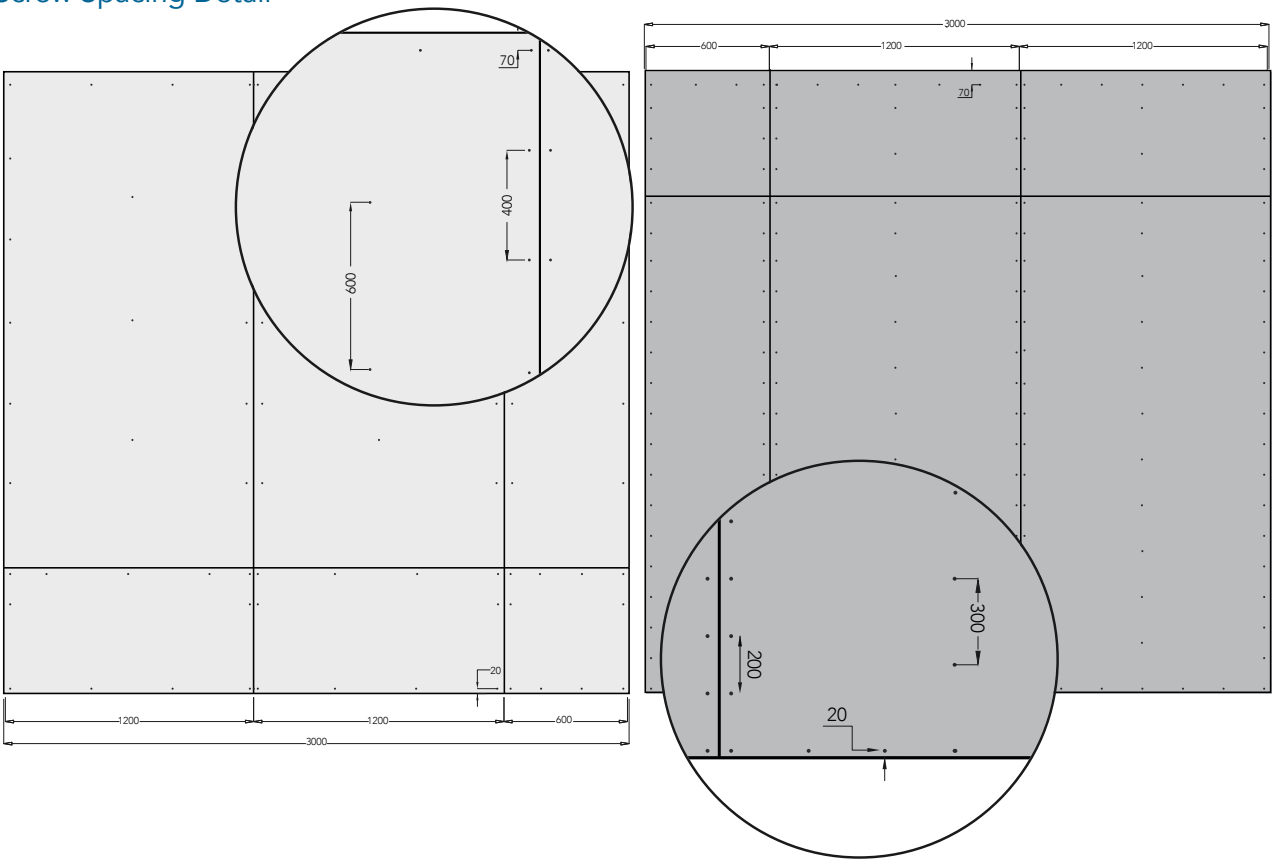


Door Frame Section

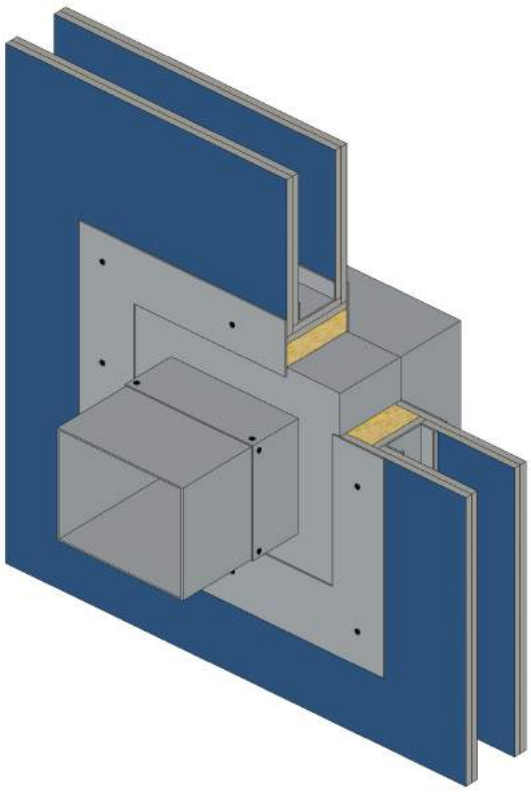


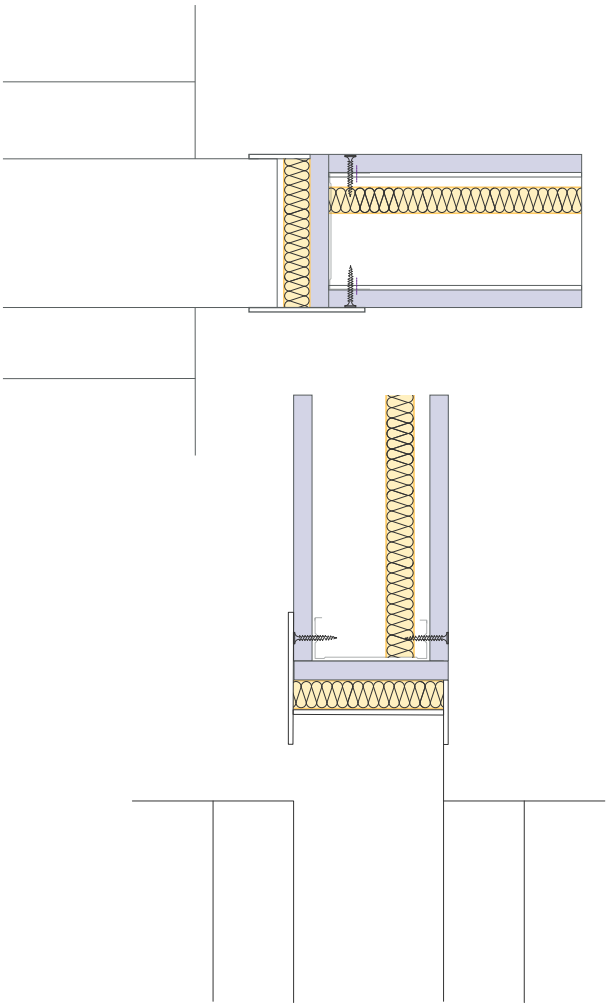
A Mada Anchor
B Mada Acoustic Brace
C Mada C-Stud
D Mada Deflection Head Track
E Mada Expansion Joint
F Mada Fixing Channel
G Mada Fire Guard Acrylic Sealant
H Mada Head Packer with Mada Plus Plasterboard
I Mada Insulation
J Corner Profile / Tape
P Mada Plus Plasterboard
S Mada Drywall Screw
T Mada U-Track
2 Wood Skirting

Screw Spacing Detail



Duct Penetration





System Notes

Installation Stage

Mada Gypsum recommends installing the MonoPlus Plus partition system only after the building envelope is complete. Otherwise, the partition system could be exposed to rain, wind, and moisture beyond the design limits of our partition system. For additional support and clarification, please contact the Mada Gypsum Technical Team.

Installation

You can find complete installation and finishing guidance in the Mada Gypsum Installation Guide, available for free download at www.madagypsum.com. If you require additional assistance or would like to set up a training and certification for your installers, please contact your local Mada Gypsum representative or the Mada Gypsum Technical Team.

Maintaining Performance

All our performance statements are based on partitions built and tested under optimal conditions. To minimize the loss of on-site performance, all penetrations, abutments, and connections must meet installed per the approved drawings and details. We have included standard industry-wide details here for your convenience and can provide project-specific detail support through your local Mada Gypsum representative or the Mada Gypsum Technical Department.

Key installation aspects to consider when installing this partition system include:

- Following manufacturer's guidelines for attachment, spacing, reinforcement, and drywall installation.
- Maintain continuous sealant at all perimeters, penetrations, and abutments.
- Use only system-approved accessories such as socket boxes, cable trays, ducts, and pipes for building services.

Your Mada Gypsum representative and the Mada Gypsum Technical Department can assist with finding suitable suppliers to meet your project's needs.

Partition Stability

Because the partition framing changes for doors, windows, and other penetrations, it may be necessary to reinforce the framing before installing the gypsum board panels. We have included standard industry-wide details here for your convenience and can provide project-specific detail support through your local Mada Gypsum representative or the Mada Gypsum Technical Department.

Deflection Heads

Partition systems installed with structural openings should include a deflection allowance, to absorb the movement or load from the adjoining floor. Without a deflection allowance, the partition may flex, crack, or even fail over time. To avoid this scenario, Mada Gypsum has developed and tested Deflection Head Details that provide the required lateral restraint and allow for vertical movement. Deflection heads have different requirements than the partition below it, and this detail must be considered to maintain the acoustic performance of the partition. We've include these standardized details for your convenience, if your project requires specific deflection head criteria, please contact the Mada Gypsum Technical Department for design assistance.

Fixtures

All Mada Gypsum partition systems have been engineered to support common loads for a variety of devices and applications. Heavier than normal and live loads may require changes to the framing to provide adequate support. We've included standard fixture details for your convenience, if you need structural calculations, please contact the Mada Gypsum Technical Department for assistance.

Component Recommended	Fixing Method	Load Capacity
	Wall Mate screw suitable for use with MADA gypsum board	5 kg
	Fisher Butterfly fixing into single layer MADA gypsum board	20 kg Shear Load
	Heavy Duty Anchor fixed into sub-frame through MADA gypsum board	100 kg Shear Load

Tiling

For Mada Plus partition systems, we support the recommendations of international standard BS 5385-1:2018 which sets the maximum tile weight (including adhesive) of 32kg/m2 for ceramic tile installations on a wall surface. We also recommend reducing stud centers to 400 mm on center to minimize deflection and maximize adhesion. However, reducing stud centers can affect the acoustic performance of a wall assembly. For greater tile weights or additional tiling support, please contact the Mada Gypsum Technical Department.

Moisture Resistance

Gypsum plasterboards are not recommended for any location that is not weather-tight, may experience wetting, or consistently/regularly damp. Both the American and European classifications require specific manufacturing guidelines for plasterboards to meet different moisture and humidity performance levels. Mada Gypsum has developed moisture-resistant plasterboards for areas subject to high-humidity or excessive moisture such as kitchens and bathrooms, for both residential and commercial projects.

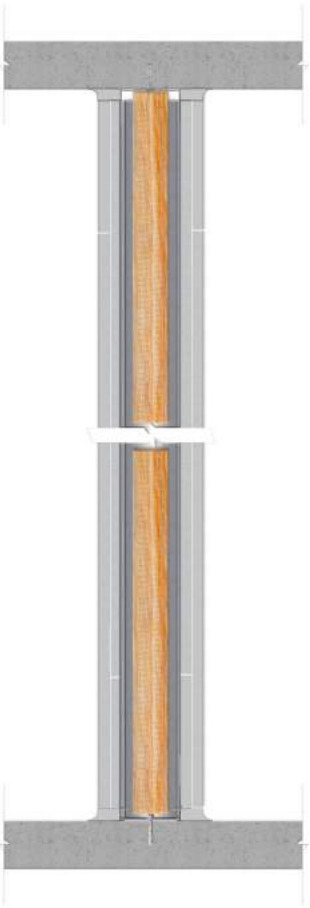
Standard Board	Upgrade
Mada Plus Regular board	Mada Plus Moisture Resistant board
Mada Plus Fire Resistant	Mada Plus Fire and Moisture Resistant board

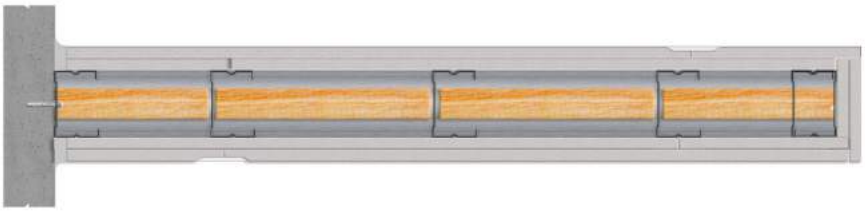
Mold & Moisture Resistance

For areas requiring moisture, mold and mildew resistance performance, Mada developed the Mada ProGuard glass mat board.

For swimming pool and spa areas, please contact the Mada Gypsum Technical Team for specialized assistance and detailed support.

MULTIPLUS





Mada MultiPlus

Available in a variety of finished wall widths, MultiPlus is the builder's choice for the most common wall types found in commercial and residential spaces. Designed with the acoustic performance needed to pass stringent noise standards, MultiPlus panels also provide an additional 60-minute rating above our standard plasterboard products.

STC (Sound)
54 to **58**

Fire (min)
Up to **120**

Detail 1
No insulation

Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m^3)

48mm Stud (0.5mm)

System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
MUL101	100	1	2 Layers of 12.5 Regular	50	3100	49	3600
MUL111	100	2	2 Layers of 12.5 Regular	54	3100	54	3600
120 mins Fire Resistant							
MUL102	100	1	2 Layers of 12.5 Fire Resistant	52	3100	51	3600
MUL105	114	1	2 Layers of 16 Regular	53	3150	52	3650
MUL107	114	1	2 Layers of 16 Impact Resistant	55	3150	56	3650
MUL112	100	2	2 Layers of 12.5 Fire Resistant	56	3100	56	3600
MUL122	100	3	2 Layers of 12.5 Fire Resistant	57	3100	56	3600
MUL115	114	2	2 Layers of 16 Regular	57	3150	57	3650
MUL116	114	2	2 Layers of 16 Fire Resistant	57	3150	57	3650
MUL117	114	2	2 Layers of 16 Impact Resistant	57	3150	60	3650

68mm Stud (0.5mm)

System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
MUL201	120	1	2 Layers of 12.5 Regular	50	4100	49	4800
MUL211	120	2	2 Layers of 12.5 Regular	54	4100	54	4800
120 mins Fire Resistant							
MUL202	120	1	2 Layers of 12.5 Fire Resistant	52	4100	51	4800
MUL205	136	1	2 Layers of 16 Regular	53	4150	52	4850
MUL207	136	1	2 Layers of 16 Impact Resistant	55	4150	56	4850
MUL203	120	1	2 Layers of 12.5 Impact Resistant	56	4100	55	4800
MUL212	120	2	2 Layers of 12.5 Fire Resistant	56	4100	56	4800
MUL222	120	3	2 Layers of 12.5 Fire Resistant	57	4100	56	4800
MUL215	136	2	2 Layers of 16 Regular	57	4150	57	4850
MUL216	136	2	2 Layers of 16 Fire Resistant	57	4150	57	4850
MUL217	136	2	2 Layers of 16 Impact Resistant	57	4150	60	4850
MUL213	120	2	2 Layers of 12.5 Impact Resistant	58	4100	59	4850

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

Detail 1
No insulation

Detail 2
25 mm of Mada Glasswool insulation (16kg/m3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m3)

98mm Stud (0.5mm)

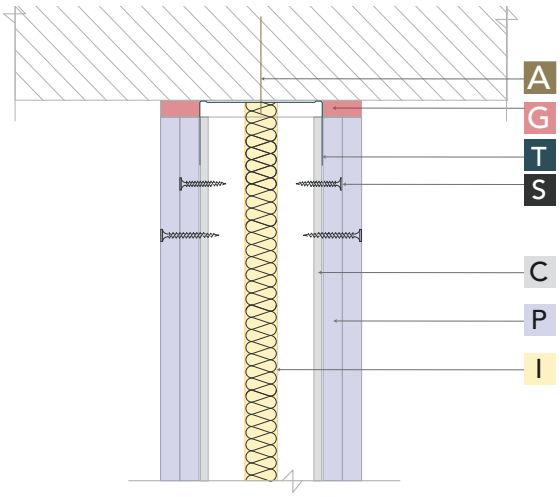
System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
MUL301	150	1	2 Layers of 12.5 Regular	50	5100	49	6000
MUL311	150	2	2 Layers of 12.5 Regular	54	5100	54	6000
120 mins Fire Resistant							
MUL302	150	1	2 Layers of 12.5 Fire Resistant	52	5100	51	6000
MUL305	166	1	2 Layers of 16 Regular	53	5300	52	6200
MUL303	150	1	2 Layers of 12.5 Impact Resistant	56	5100	55	6000
MUL312	150	2	2 Layers of 12.5 Fire Resistant	56	5100	56	6000
MUL315	166	2	2 Layers of 16 Regular	57	5300	57	6200
MUL316	166	2	2 Layers of 16 Fire Resistant	57	5300	57	6200
MUL317	166	2	2 Layers of 16 Impact Resistant	57	5300	60	6200
MUL313	150	2	2 Layers of 12.5 Impact Resistant	58	5100	59	6000
MUL323	150	3	2 Layers of 12.5 Impact Resistant	58	5100	60	6000

148mm Stud (0.8mm)

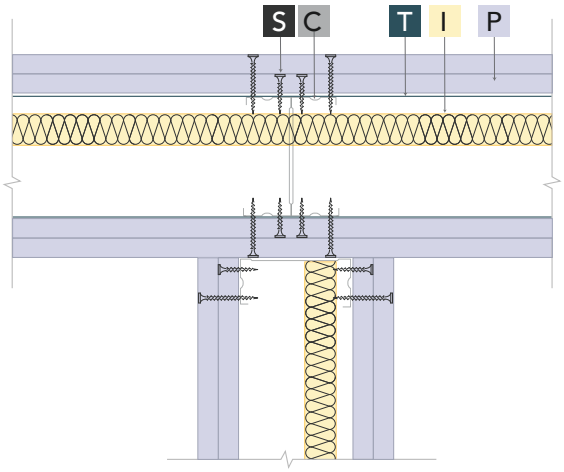
System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
MUL401	200	1	2 Layers of 12.5 Regular	50	7300	49	8300
MUL411	200	2	2 Layers of 12.5 Regular	54	7300	54	8300
90 mins Fire Resistant							
MUL405	214	1	2 Layers of 16 Regular	53	7350	52	8350
MUL415	214	2	2 Layers of 16 Regular	57	7350	57	8350
120 mins Fire Resistant							
MUL402	200	1	2 Layers of 12.5 Fire Resistant	52	7300	51	8300
MUL403	200	1	2 Layers of 12.5 Impact Resistant	56	7300	55	8300
MUL412	200	2	2 Layers of 12.5 Fire Resistant	56	7300	56	8300
MUL416	214	2	2 Layers of 16 Fire Resistant	57	7350	57	8350
MUL413	200	2	2 Layers of 12.5 Impact Resistant	58	7300	59	8350

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

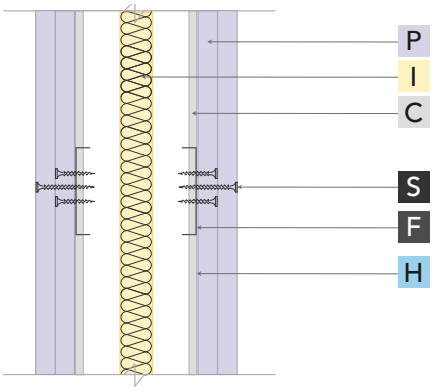
Top Detail



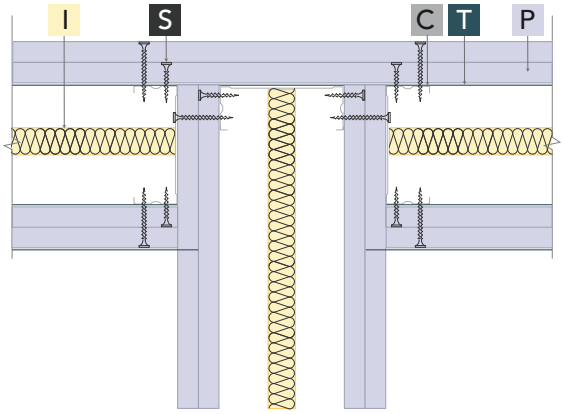
Low Acoustic T - Junction Detail



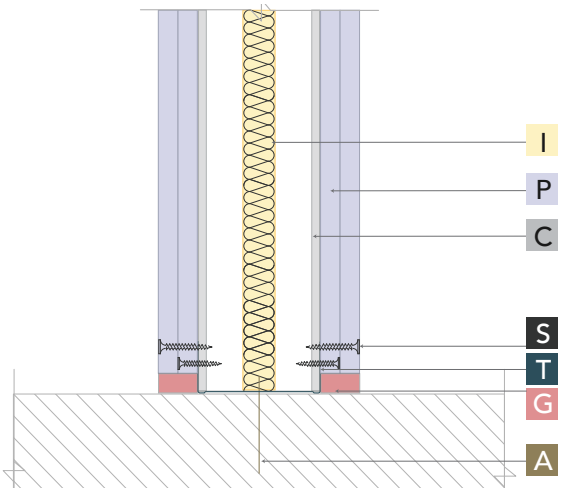
Noggin & Fixing Channel



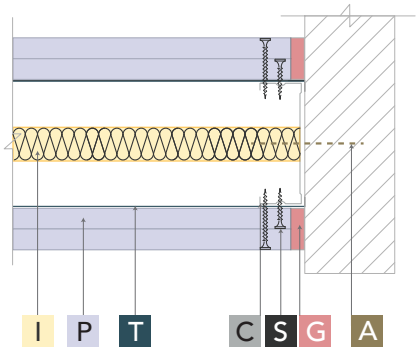
High Acoustic T - Junction Detail



Bottom Detail

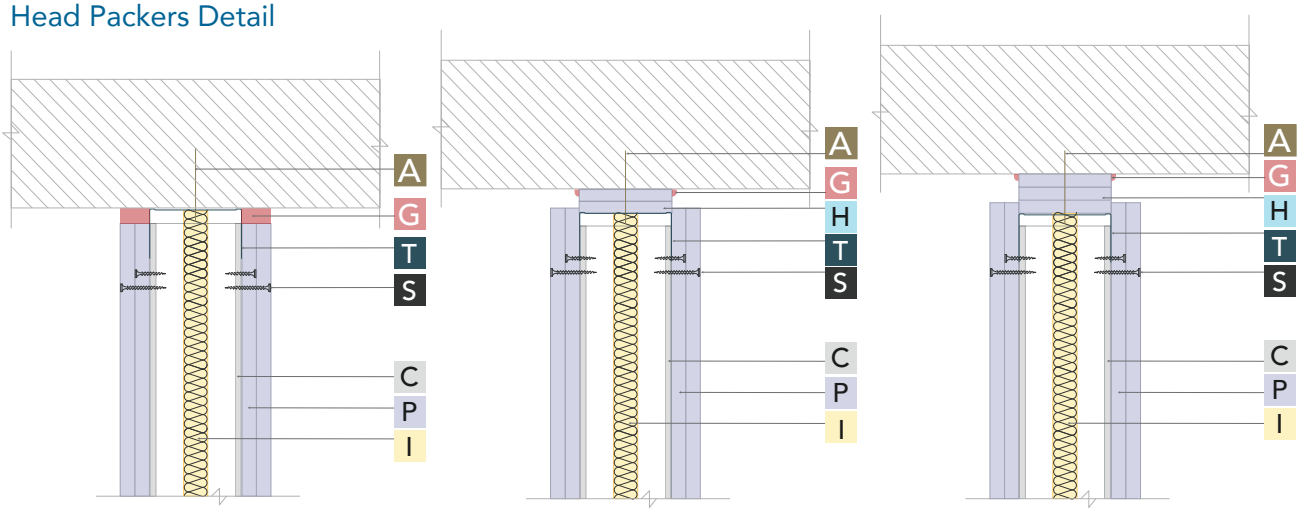


Abuttment Detail



A Mada Anchor
B Mada Acoustic Brace
C Mada C-Stud
D Mada Deflection Head Track
E Mada Expansion Joint
F Mada Fixing Channel
G Mada Fire Guard Acrylic Sealant
H Mada Head Packer with Mada Plus Plasterboard
I Mada Insulation
J Corner Profile / Tape
P Mada Plus Plasterboard
S Mada Drywall Screw
T Mada U-Track
2 Wood Skirting

Head Packers Detail



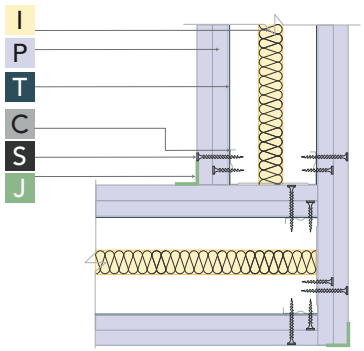
10 -15 MM
DEFLECTION HEAD DETAIL

16 - 25 MM
DEFLECTION HEAD DETAIL

26 - 40 MM
DEFLECTION HEAD DETAIL

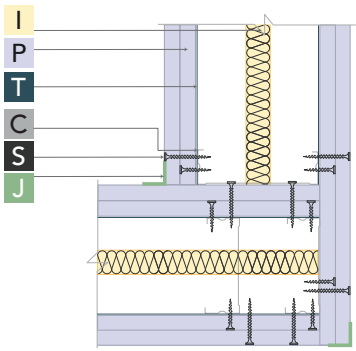
Corner Detail

Up to 70 mm stud

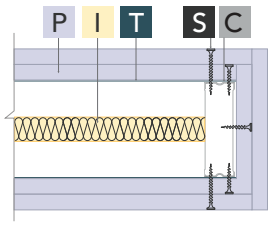


Corner Detail

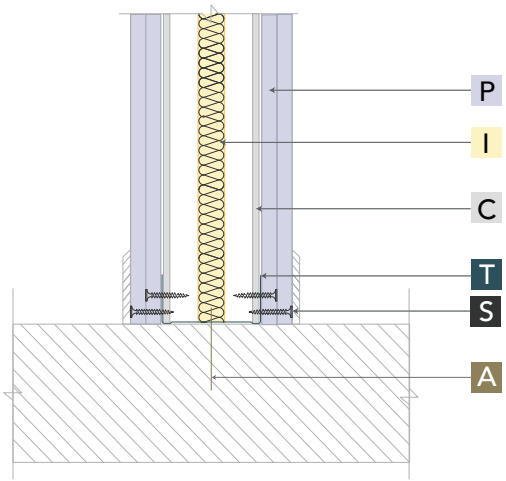
Up to 150 mm stud



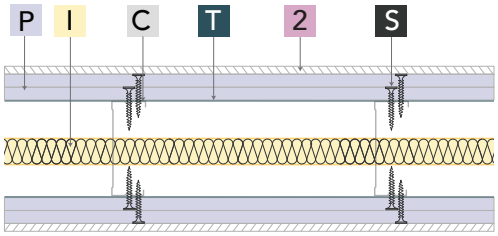
End Detail



Skirting Detail

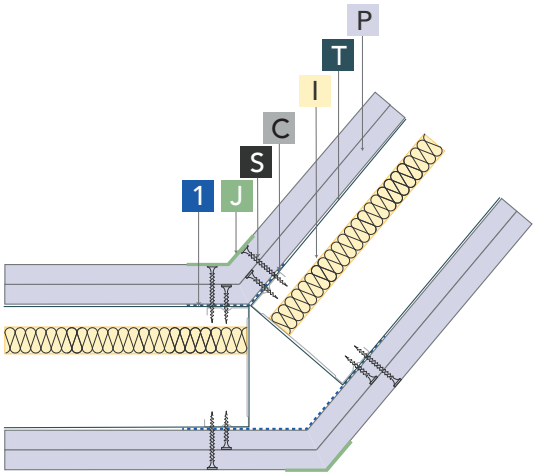


Skirting Detail

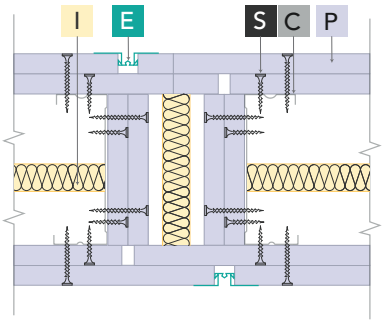


- A Mada Anchor
- B Mada Acoustic Brace
- C Mada C-Stud
- D Mada Deflection Head Track
- E Mada Expansion Joint
- F Mada Fixing Channel
- G Mada Fire Guard Acrylic Sealant
- H Mada Head Packer with Mada Plus Plasterboard
- I Mada Insulation
- J Corner Profile / Tape
- P Mada Plus Plasterboard
- S Mada Drywall Screw
- T Mada U-Track
- 2 Wood Skirting

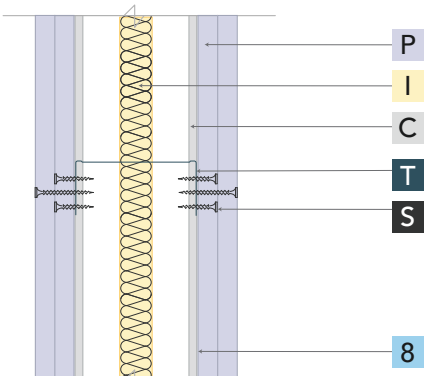
Splayed Junction Detail



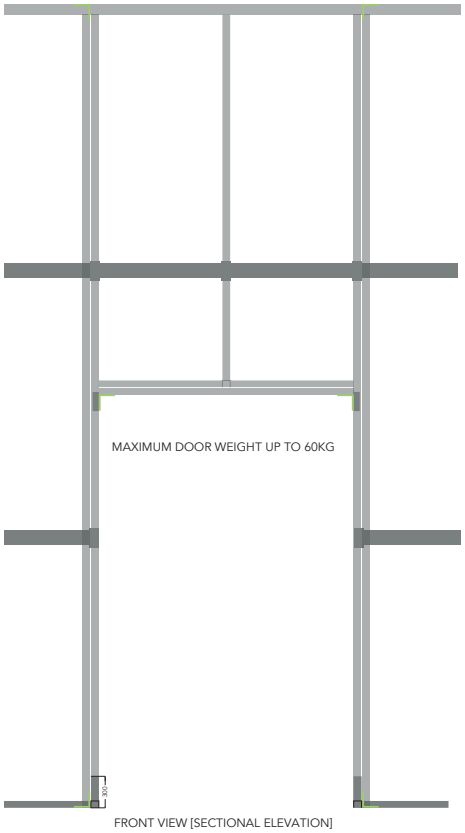
Expansion Joint



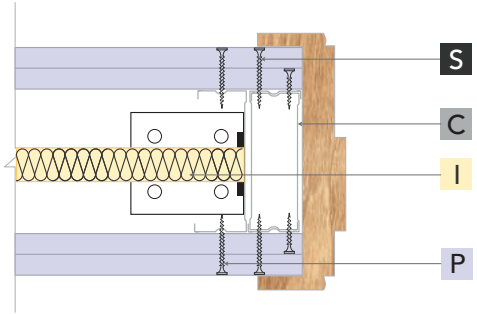
Noggin & Fixing Channel



60kg Door Detail



Door Frame Section



A Mada Anchor
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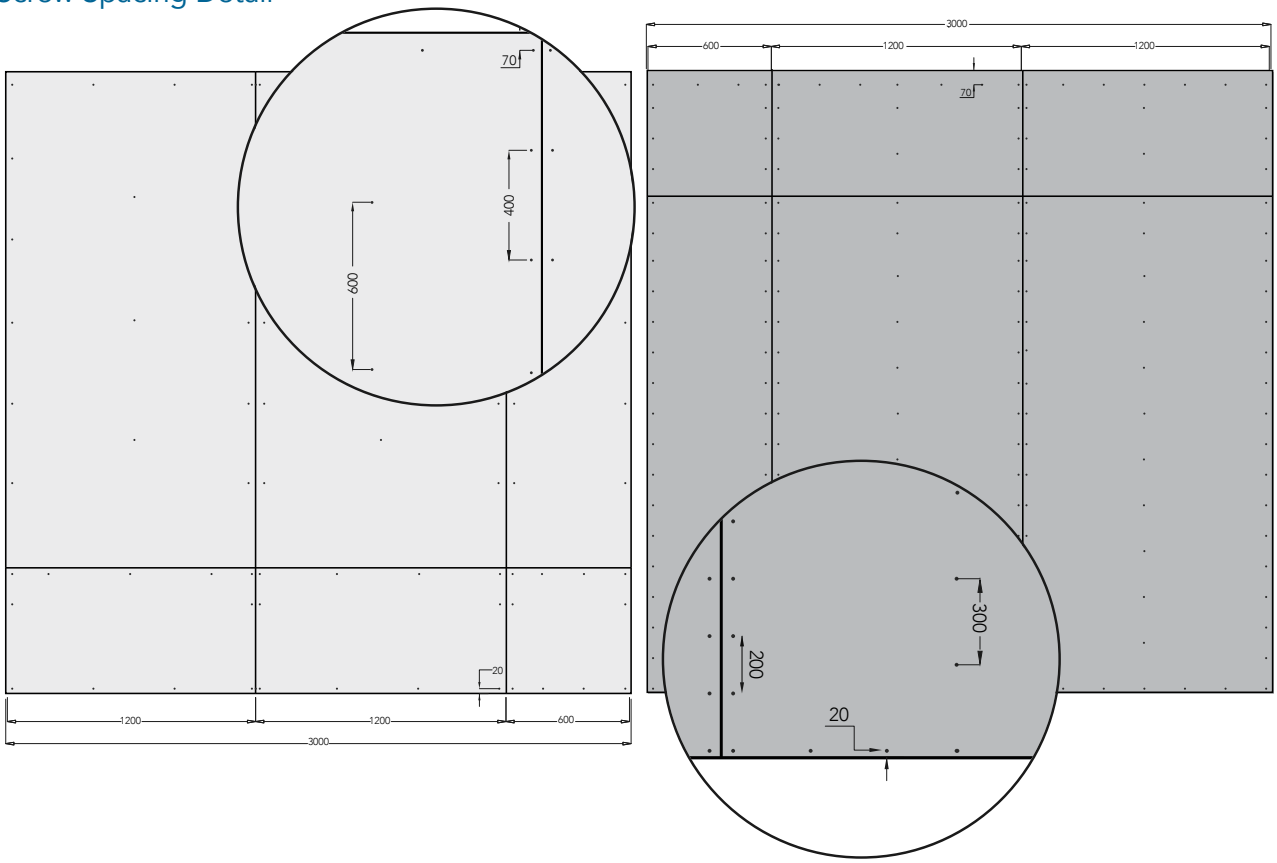
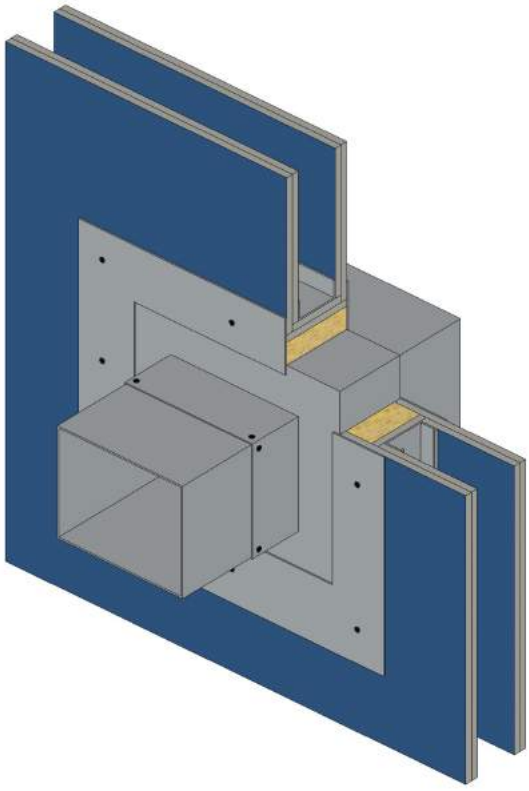
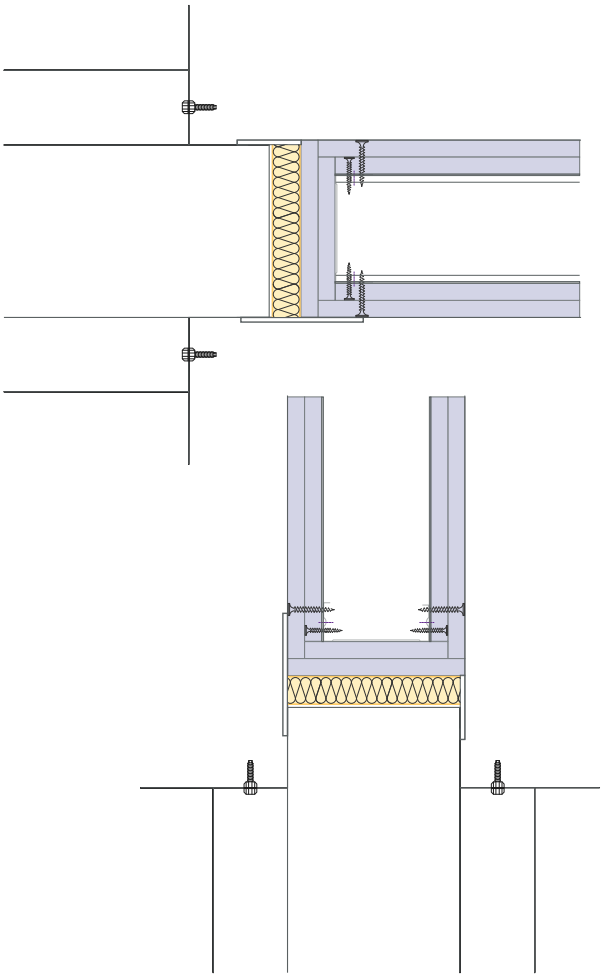
J Corner Profile / Tape
P Mada Plus Plasterboard
S Mada Drywall Screw
T Mada U-Track
2 Wood Skirting

Screw Spacing Detail



Duct Penetration





System Notes

Installation Stage

Mada Gypsum recommends installing the MultiPlus partition system only after the building envelope is complete. Otherwise, the partition system could be exposed to rain, wind, and moisture beyond the design limits of our partition system. For additional support and clarification, please contact the Mada Gypsum Technical Team.

Installation

You can find complete installation and finishing guidance in the Mada Gypsum Installation Guide, available for free download at www.madagypsum.com. If you require additional assistance or would like to set up a training and certification for your installers, please contact your local Mada Gypsum representative or the Mada Gypsum Technical Team.

Maintaining Performance

All our performance statements are based on partitions built and tested under optimal conditions. To minimize the loss of on-site performance, all penetrations, abutments, and connections must meet installed per the approved drawings and details. We have included standard industry-wide details here for your convenience and can provide project-specific detail support through your local Mada Gypsum representative or the Mada Gypsum Technical Department.

Key installation aspects to consider when installing this partition system include:

- Following manufacturer's guidelines for attachment, spacing, reinforcement, and drywall installation.
- Maintain continuous sealant at all perimeters, penetrations, and abutments.
- Use only system-approved accessories such as socket boxes, cable trays, ducts, and pipes for building services.

Your Mada Gypsum representative and the Mada Gypsum Technical Department can assist with finding suitable suppliers to meet your project's needs.

Partition Stability

Because the partition framing changes for doors, windows, and other penetrations, it may be necessary to reinforce the framing before installing the gypsum board panels. We have included standard industry-wide details here for your convenience and can provide project-specific detail support through your local Mada Gypsum representative or the Mada Gypsum Technical Department.

Deflection Heads

Partition systems installed with structural openings should include a deflection allowance, to absorb the movement or load from the adjoining floor. Without a deflection allowance, the partition may flex, crack, or even fail over time. To avoid this scenario, Mada Gypsum has developed and tested Deflection Head Details that provide the required lateral restraint and allow for vertical movement. Deflection heads have different requirements than the partition below it, and this detail must be considered to maintain the acoustic performance of the partition. We've include these standardized details for your convenience, if your project requires specific deflection head criteria, please contact the Mada Gypsum Technical Department for design assistance.

Fixtures

All Mada Gypsum partition systems have been engineered to support common loads for a variety of devices and applications. Heavier than normal and live loads may require changes to the framing to provide adequate support. We've included standard fixture details for your convenience, if you need structural calculations, please contact the Mada Gypsum Technical Department for assistance.

Component Recommended	Fixing Method	Load Capacity
	Wall Mate screw suitable for use with MADA gypsum board	5 kg
	Fisher Butterfly fixing into single layer MADA gypsum board	20 kg Shear Load
	Heavy Duty Anchor fixed into sub-frame through MADA gypsum board	100 kg Shear Load

Tiling

For Mada Plus partition systems, we support the recommendations of international standard BS 5385-1:2018 which sets the maximum tile weight (including adhesive) of 32kg/m2 for ceramic tile installations on a wall surface. We also recommend reducing stud centers to 400 mm on center to minimize deflection and maximize adhesion. However, reducing stud centers can affect the acoustic performance of a wall assembly. For greater tile weights or additional tiling support, please contact the Mada Gypsum Technical Department.

Moisture Resistance

Gypsum plasterboards are not recommended for any location that is not weather-tight, may experience wetting, or consistently/regularly damp. Both the American and European classifications require specific manufacturing guidelines for plasterboards to meet different moisture and humidity performance levels. Mada Gypsum has developed moisture-resistant plasterboards for areas subject to high-humidity or excessive moisture such as kitchens and bathrooms, for both residential and commercial projects.

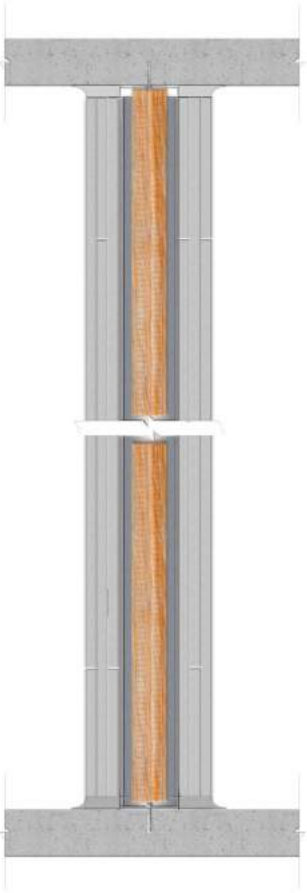
Standard Board	Upgrade
Mada Plus Regular board	Mada Plus Moisture Resistant board
Mada Plus Fire Resistant	Mada Plus Fire and Moisture Resistant board

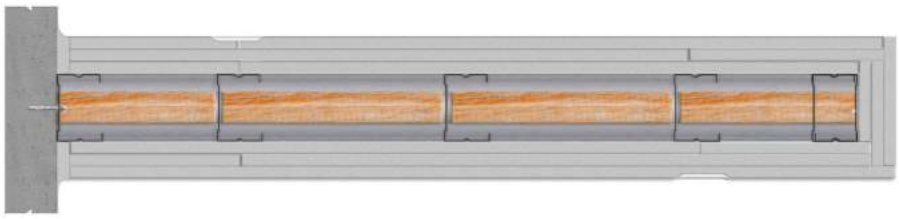
Mold & Moisture Resistance

For areas requiring moisture, mold and mildew resistance performance, Mada developed the Mada ProGuard glass mat board.

For swimming pool and spa areas, please contact the Mada Gypsum Technical Team for specialized assistance and detailed support.

FIREPLUS





Mada FirePlus

Meeting the requirements of the GCC Civil Defense Department is no easy task but adding a third layer of plasterboard can provide the two-hour fire rating needed for your next project.

The FirePlus partition system has been independently tested and certified, ensuring full code compliance without sacrificing the speed and ease of our lightweight framing systems.

STC (Sound)
54 to **58**

Fire (min)
Up to **180**

Detail 1
No insulation

Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m^3)

48mm Stud (0.5mm)

System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
FIR101	125	1	3 Layers of 12.5 Regular	56	3150	55	3650
FIR111	125	2	3 Layers of 12.5 Regular	59	3150	60	3650
120 mins Fire Resistant							
FIR102	125	1	3 Layers of 12.5 Fire Resistant	58	3150	57	3650
FIR103	125	1	3 Layers of 12.5 Impact Resistant	61	3150	61	3650
FIR112	125	2	3 Layers of 12.5 Fire Resistant	61	3150	61	3650
FIR115	146	2	3 Layers of 16 Regular	61	3150	62	3650
FIR113	125	2	3 Layers of 12.5 Impact Resistant	62	3150	64	3650
FIR123	125	3	3 Layers of 12.5 Impact Resistant	62	3150	65	3650
180 mins Fire Resistant							
FIR106	146	1	3 Layers of 16 Fire Resistant	58	3150	58	3650
FIR107	146	1	3 Layers of 16 Impact Resistant	60	3150	61	3650
FIR116	146	2	3 Layers of 16 Fire Resistant	61	3150	62	3650
FIR117	146	2	3 Layers of 16 Impact Resistant	61	3150	65	3650

68mm Stud (0.5mm)

System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
FIR201	147	1	3 Layers of 12.5 Regular	56	4150	55	4850
FIR211	147	2	3 Layers of 12.5 Regular	59	4150	60	4850
120 mins Fire Resistant							
FIR202	147	1	3 Layers of 12.5 Fire Resistant	58	4150	57	4850
FIR203	147	1	3 Layers of 12.5 Impact Resistant	61	4150	61	4850
FIR212	147	2	3 Layers of 12.5 Fire Resistant	61	4150	61	4850
FIR215	168	2	3 Layers of 16 Regular	61	4150	62	4850
FIR213	147	2	3 Layers of 12.5 Impact Resistant	62	4150	64	4850
FIR223	147	3	3 Layers of 12.5 Impact Resistant	62	4150	65	4850
180 mins Fire Resistant							
FIR206	168	1	3 Layers of 16 Fire Resistant	58	4150	58	4850
FIR207	168	1	3 Layers of 16 Impact Resistant	60	4150	61	4850
FIR216	168	2	3 Layers of 16 Fire Resistant	61	4150	62	4850
FIR217	168	2	3 Layers of 16 Impact Resistant	61	4150	65	4850

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

Detail 1
No insulation

Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m^3)

98mm Stud (0.5mm)

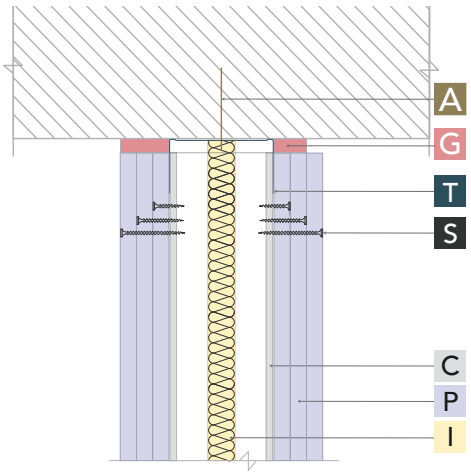
System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
FIR301	177	1	3 Layers of 12.5 Regular	56	5300	55	6200
FIR311	177	2	3 Layers of 12.5 Regular	59	5300	60	6200
120 mins Fire Resistant							
FIR302	177	1	3 Layers of 12.5 Fire Resistant	58	5300	57	6200
FIR303	177	1	3 Layers of 12.5 Impact Resistant	61	5300	61	6200
FIR312	177	2	3 Layers of 12.5 Fire Resistant	61	5300	61	6200
FIR315	198	2	3 Layers of 16 Regular	61	5300	62	6200
FIR313	177	2	3 Layers of 12.5 Impact Resistant	62	5300	64	6200
FIR323	177	3	3 Layers of 12.5 Impact Resistant	62	5300	65	6200
180 mins Fire Resistant							
FIR306	198	1	3 Layers of 16 Fire Resistant	58	5300	58	6200
FIR307	198	1	3 Layers of 16 Impact Resistant	60	5300	61	6200
FIR316	198	2	3 Layers of 16 Fire Resistant	61	5300	62	6200
FIR317	198	2	3 Layers of 16 Impact Resistant	61	5300	65	6200

148mm Stud (0.8mm)

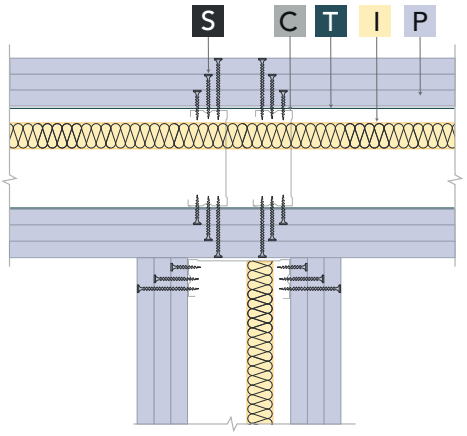
System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
FIR401	225	1	3 Layers of 12.5 Regular	56	7350	55	8350
FIR411	225	2	3 Layers of 12.5 Regular	59	7350	60	8350
120 mins Fire Resistant							
FIR402	225	1	3 Layers of 12.5 Fire Resistant	58	7350	57	8350
FIR403	225	1	3 Layers of 12.5 Impact Resistant	61	7350	61	8350
FIR412	225	2	3 Layers of 12.5 Fire Resistant	61	7350	61	8350
FIR415	246	2	3 Layers of 16 Regular	61	7350	62	8350
FIR413	225	2	3 Layers of 12.5 Impact Resistant	62	7350	64	8350
FIR423	225	3	3 Layers of 12.5 Impact Resistant	62	7350	65	8350
180 mins Fire Resistant							
FIR406	246	1	3 Layers of 16 Fire Resistant	58	7350	58	8350
FIR407	246	1	3 Layers of 16 Impact Resistant	60	7350	61	8350
FIR416	246	2	3 Layers of 16 Fire Resistant	61	7350	62	8350
FIR417	246	2	3 Layers of 16 Impact Resistant	61	7350	65	8350

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

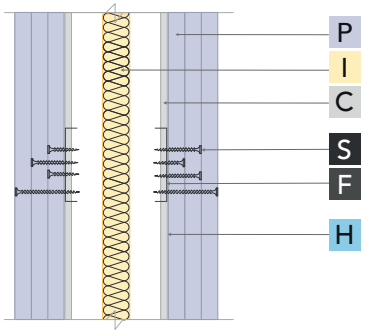
Top Detail



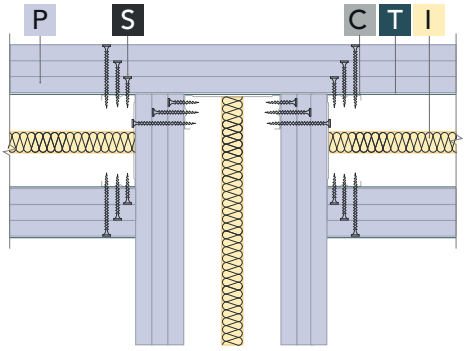
Low Acoustic T - Junction Detail



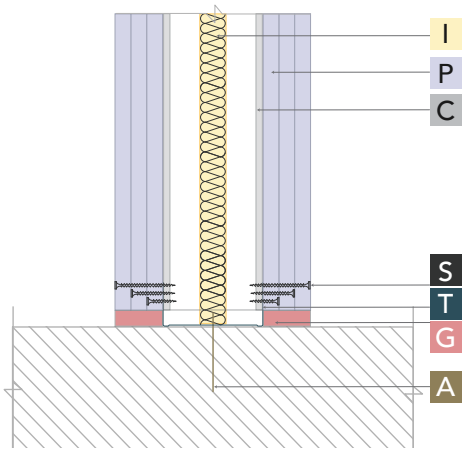
Noggin & Fixing Channel



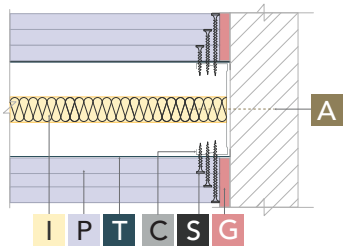
High Acoustic T - Junction Detail



Bottom Detail



Abuttment Detail



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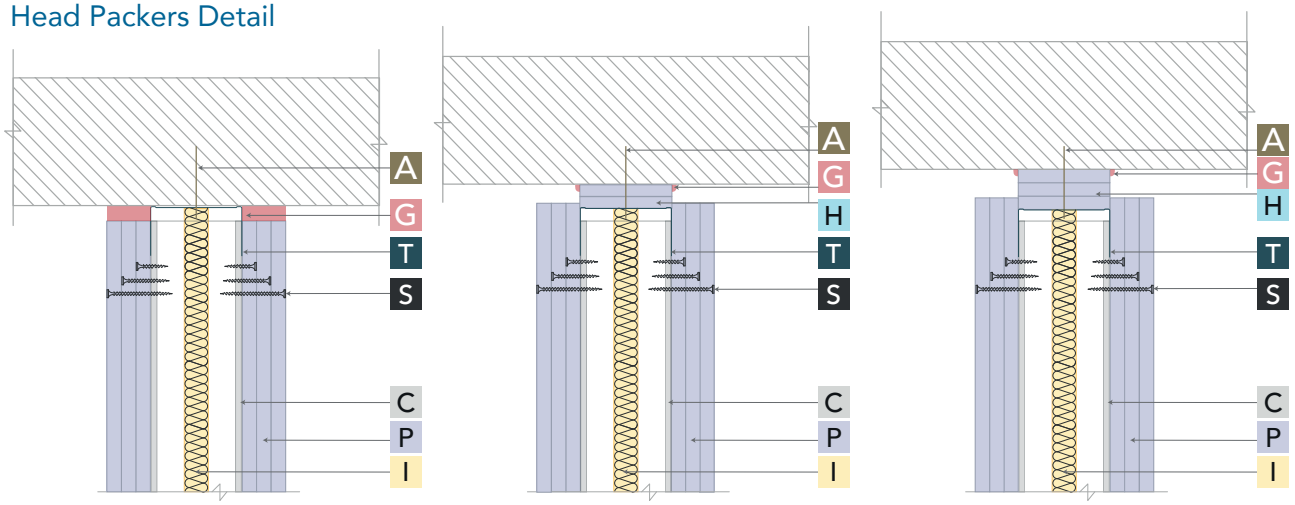
H Mada Head Packer with Mada Plus Plasterboard
I Mada Insulation
J Corner Profile / Tape
P Mada Plus Plasterboard
S Mada Drywall Screw
T Mada U-Track
2 Wood Skirting

Head Packers Detail



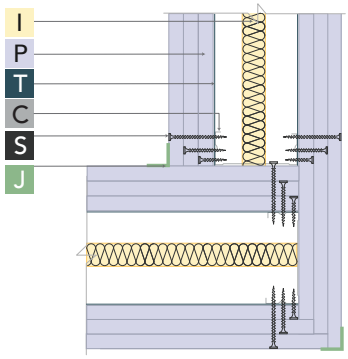
10 -15 MM
DEFLECTION HEAD DETAIL

16 - 25 MM
DEFLECTION HEAD DETAIL

26 - 40 MM
DEFLECTION HEAD DETAIL

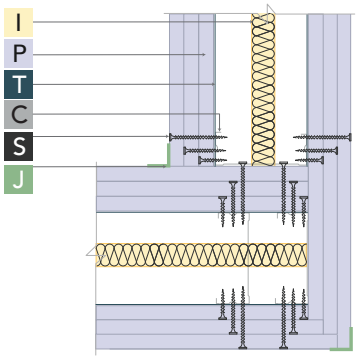
Corner Detail

Up to 70 mm stud

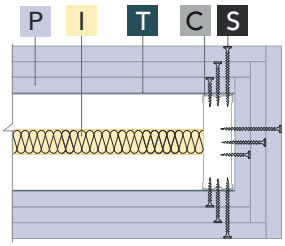


Corner Detail

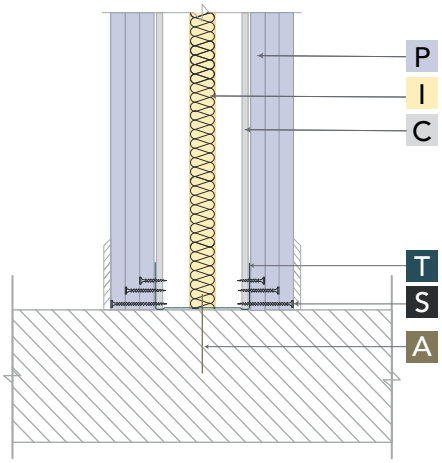
Up to 150 mm stud



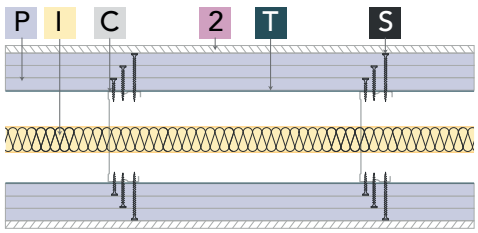
End Detail



Skirting Detail

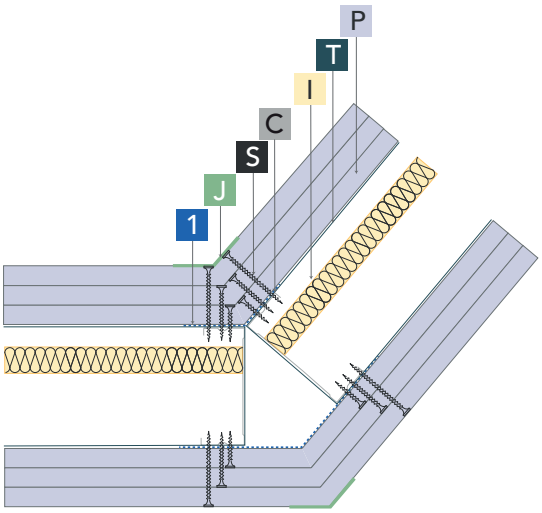


Skirting Detail

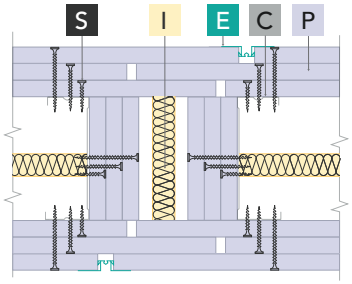


- A Mada Anchor
- B Mada Acoustic Brace
- C Mada C-Stud
- D Mada Deflection Head Track
- E Mada Expansion Joint
- F Mada Fixing Channel
- G Mada Fire Guard Acrylic Sealant
- H Mada Head Packer with Mada Plus Plasterboard
- I Mada Insulation
- J Corner Profile / Tape
- P Mada Plus Plasterboard
- S Mada Drywall Screw
- T Mada U-Track
- 2 Wood Skirting

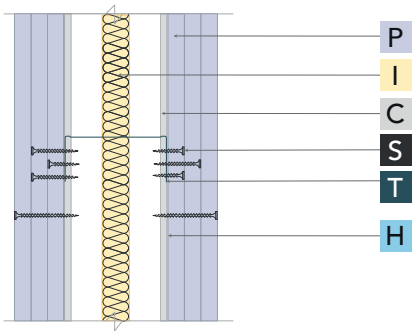
Splayed Junction Detail



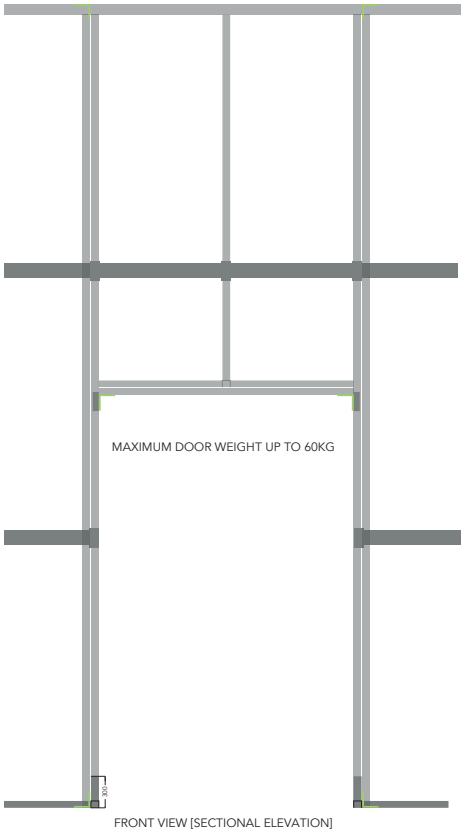
Expansion Joint



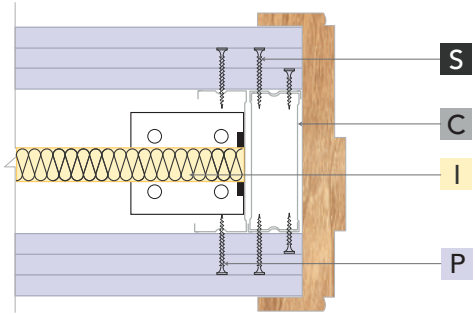
Noggin & Fixing Channel



25kg Door Detail



Door Frame Section



A	Mada Anchor	B	Mada Acoustic Brace	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
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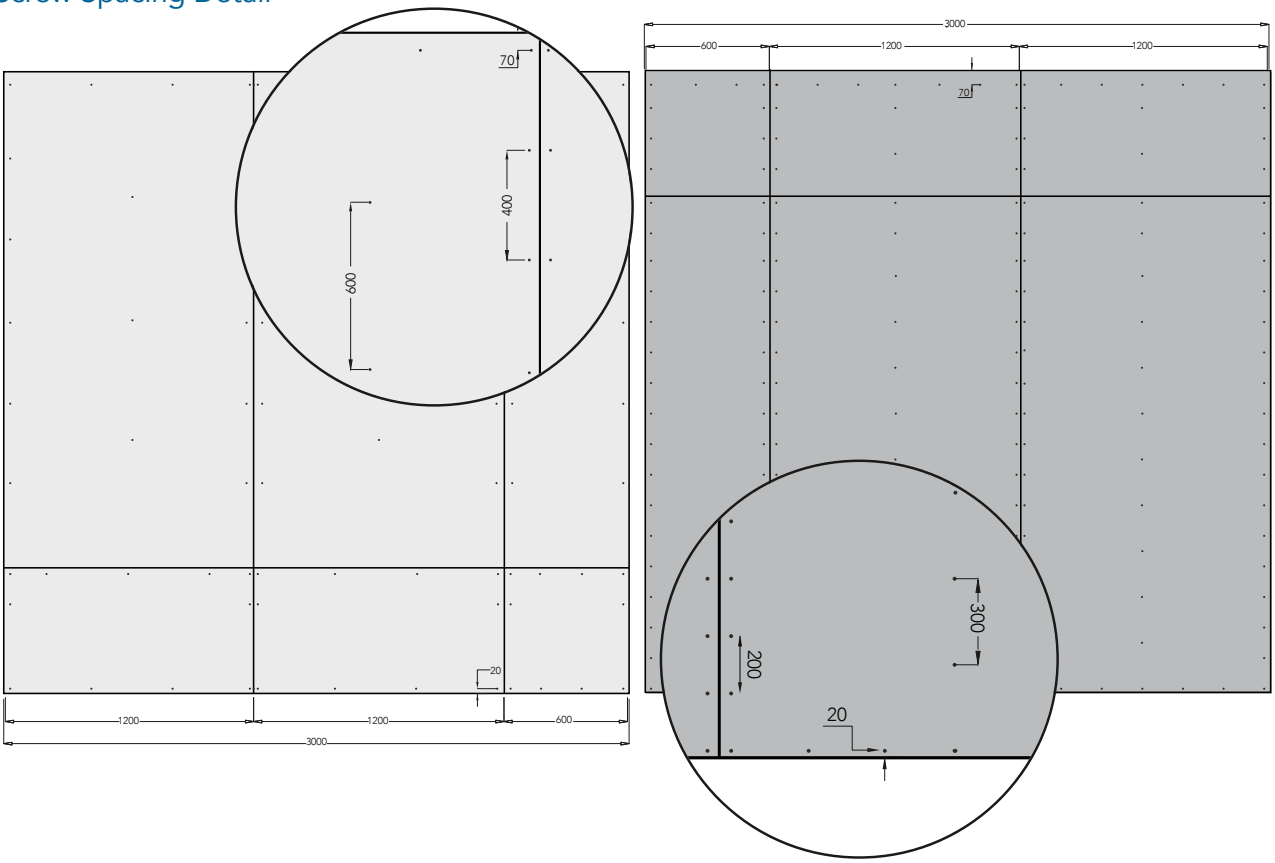
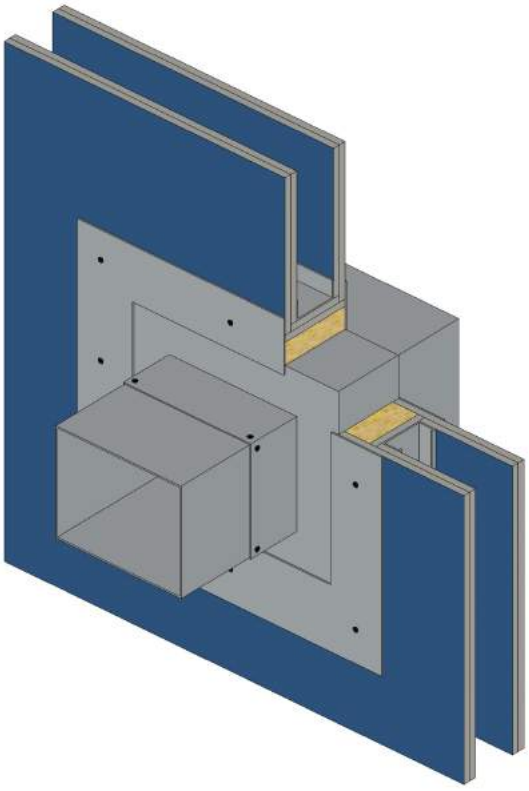
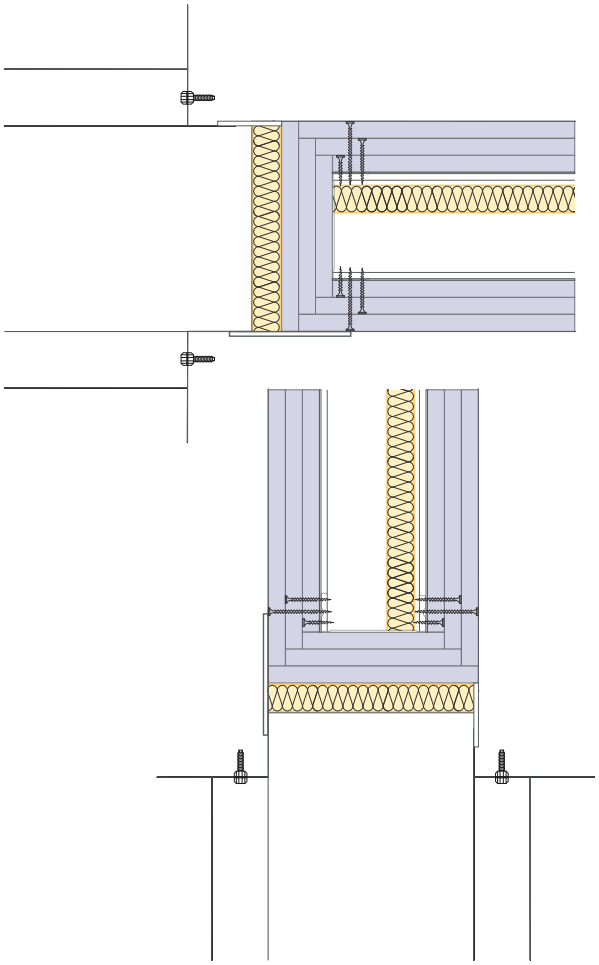
T	Mada U-Track	2	Wood Skirting				

Screw Spacing Detail



Duct Penetration





System Notes

Installation Stage

Mada Gypsum recommends installing the FirePlus partition system only after the building envelope is complete. Otherwise, the partition system could be exposed to rain, wind, and moisture beyond the design limits of our partition system. For additional support and clarification, please contact the Mada Gypsum Technical Team.

Installation

You can find complete installation and finishing guidance in the Mada Gypsum Installation Guide, available for free download at www.madagypsum.com. If you require additional assistance or would like to set up a training and certification for your installers, please contact your local Mada Gypsum representative or the Mada Gypsum Technical Team.

Maintaining Performance

All our performance statements are based on partitions built and tested under optimal conditions. To minimize the loss of on-site performance, all penetrations, abutments, and connections must meet installed per the approved drawings and details. We have included standard industry-wide details here for your convenience and can provide project-specific detail support through your local Mada Gypsum representative or the Mada Gypsum Technical Department.

Key installation aspects to consider when installing this partition system include:

- Following manufacturer's guidelines for attachment, spacing, reinforcement, and drywall installation.
- Maintain continuous sealant at all perimeters, penetrations, and abutments.
- Use only system-approved accessories such as socket boxes, cable trays, ducts, and pipes for building services.

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Partition systems installed with structural openings should include a deflection allowance, to absorb the movement or load from the adjoining floor. Without a deflection allowance, the partition may flex, crack, or even fail over time. To avoid this scenario, Mada Gypsum has developed and tested Deflection Head Details that provide the required lateral restraint and allow for vertical movement. Deflection heads have different requirements than the partition below it, and this detail must be considered to maintain the acoustic performance of the partition. We've include these standardized details for your convenience, if your project requires specific deflection head criteria, please contact the Mada Gypsum Technical Department for design assistance.

Fixtures

All Mada Gypsum partition systems have been engineered to support common loads for a variety of devices and applications. Heavier than normal and live loads may require changes to the framing to provide adequate support. We've included standard fixture details for your convenience, if you need structural calculations, please contact the Mada Gypsum Technical Department for assistance.

Component Recommended	Fixing Method	Load Capacity
	Wall Mate screw suitable for use with MADA gypsum board	5 kg
	Fisher Butterfly fixing into single layer MADA gypsum board	20 kg Shear Load
	Heavy Duty Anchor fixed into sub-frame through MADA gypsum board	100 kg Shear Load

Tiling

For Mada Plus partition systems, we support the recommendations of international standard BS 5385-1:2018 which sets the maximum tile weight (including adhesive) of 32kg/m2 for ceramic tile installations on a wall surface. We also recommend reducing stud centers to 400 mm on center to minimize deflection and maximize adhesion. However, reducing stud centers can affect the acoustic performance of a wall assembly. For greater tile weights or additional tiling support, please contact the Mada Gypsum Technical Department.

Moisture Resistance

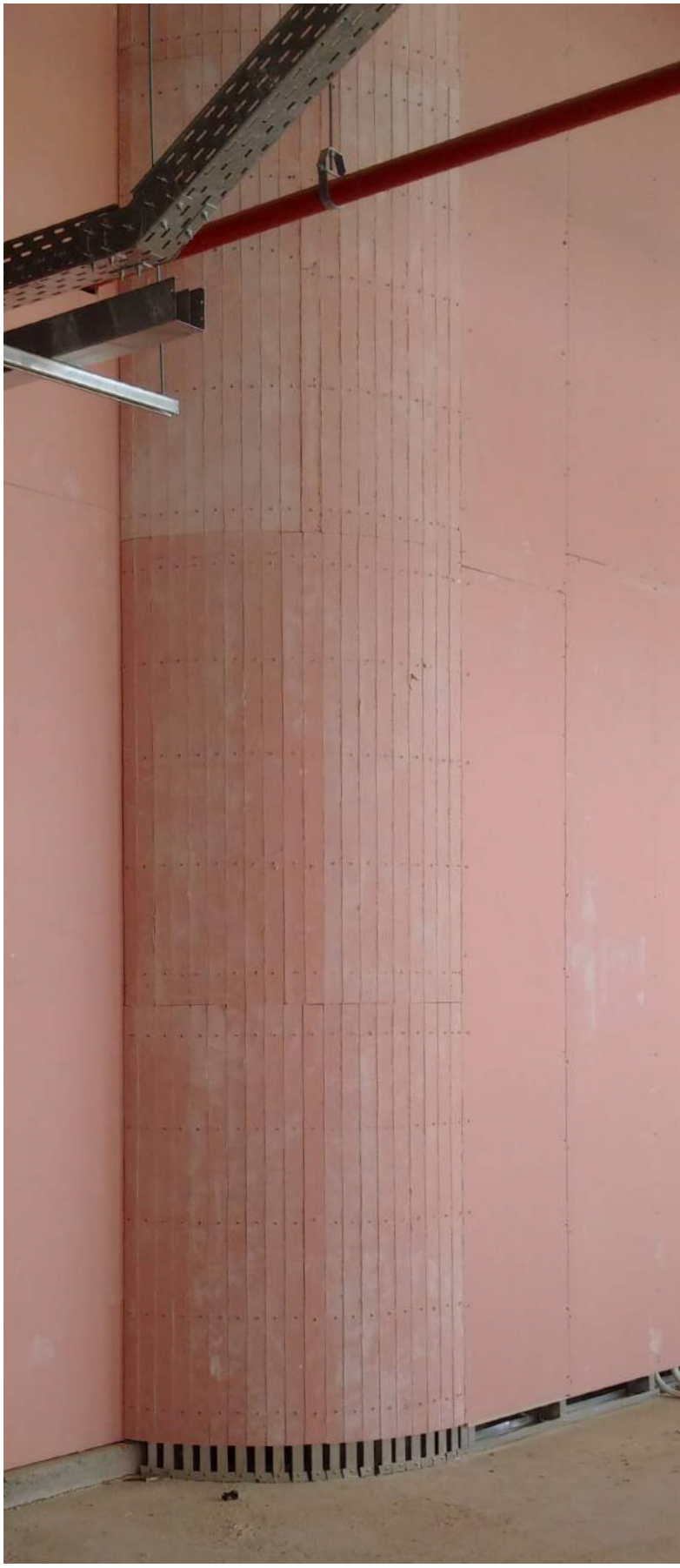
Gypsum plasterboards are not recommended for any location that is not weather-tight, may experience wetting, or consistently/regularly damp. Both the American and European classifications require specific manufacturing guidelines for plasterboards to meet different moisture and humidity performance levels. Mada Gypsum has developed moisture-resistant plasterboards for areas subject to high-humidity or excessive moisture such as kitchens and bathrooms, for both residential and commercial projects.

Standard Board	Upgrade
Mada Plus Regular board	Mada Plus Moisture Resistant board
Mada Plus Fire Resistant	Mada Plus Fire and Moisture Resistant board

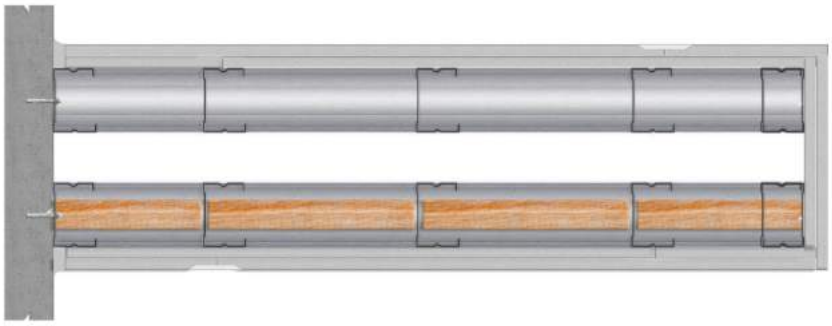
Mold & Moisture Resistance

For areas requiring moisture, mold and mildew resistance performance, Mada developed the Mada ProGuard glass mat board.

For swimming pool and spa areas, please contact the Mada Gypsum Technical Team for specialized assistance and detailed support.



SOUNDPLUS



Mada SoundPlus

Our highest acoustic performance wall system, SoundPlus utilizes horizontal fixing channels to further reduce sound and noise transmission through the wall assembly. Combined with acoustic insulation and double-layered drywall on both sides provides compliance with the most rigorous sound requirements.

STC (Sound)
56 to **68**

Fire (min)
Up to **120**

Detail 1
No insulation

Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m^3)

48mm Stud (0.5mm)

System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
SOU101	160	1	2 Layers of 12.5 Regular	51	2150	50	2400
SOU105	160	1	2 Layers of 16 Regular	54	2200	55	2450
SOU111	160	2	2 Layers of 12.5 Regular	63	2150	62	2400
SOU115	160	2	2 Layers of 16 Regular	63	2200	62	2450
120 mins Fire Resistant							
SOU102	160	1	2 Layers of 12.5 Fire Resistant	53	2150	52	2400
SOU106	160	1	2 Layers of 16 Fire Resistant	54	2200	55	2450
SOU103	160	1	2 Layers of 12.5 Impact Resistant	58	2150	57	2400
SOU112	160	2	2 Layers of 12.5 Fire Resistant	59	2150	59	2400
SOU107	160	1	2 Layers of 16 Impact Resistant	59	2200	58	2450
SOU116	160	2	2 Layers of 16 Fire Resistant	63	2200	62	2450
SOU123	160	3	2 Layers of 12.5 Impact Resistant	65	2150	65	2400
SOU117	160	2	2 Layers of 16 Impact Resistant	68	2200	66	2450

68mm Stud (0.5mm)

System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
SOU201	204	1	2 Layers of 12.5 Regular	51	2450	50	2800
SOU205	204	1	2 Layers of 16 Regular	54	2500	55	2850
SOU211	204	2	2 Layers of 12.5 Regular	63	2450	62	2800
SOU215	204	2	2 Layers of 16 Regular	63	2500	62	2850
120 mins Fire Resistant							
SOU202	204	1	2 Layers of 12.5 Fire Resistant	53	2450	52	2800
SOU206	204	1	2 Layers of 16 Fire Resistant	54	2500	55	2850
SOU203	204	1	2 Layers of 12.5 Impact Resistant	58	2450	57	2800
SOU212	204	2	2 Layers of 12.5 Fire Resistant	59	2450	59	2800
SOU207	204	1	2 Layers of 16 Impact Resistant	59	2500	58	2850
SOU216	204	2	2 Layers of 16 Fire Resistant	63	2500	62	2850
SOU223	204	3	2 Layers of 12.5 Impact Resistant	65	2450	65	2800
SOU217	204	2	2 Layers of 16 Impact Resistant	68	2500	66	2850

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

Detail 1
No insulation

Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m^3)

98mm Stud (0.5mm)

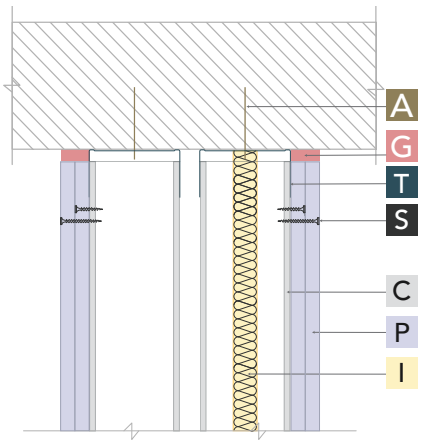
System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
SOU301	264	1	2 Layers of 12.5 Regular	51	3650	50	4100
SOU305	264	1	2 Layers of 16 Regular	54	3700	55	4150
SOU311	264	2	2 Layers of 12.5 Regular	63	3650	62	4100
SOU315	264	2	2 Layers of 16 Regular	63	3700	62	4150

148mm Stud (0.8mm)

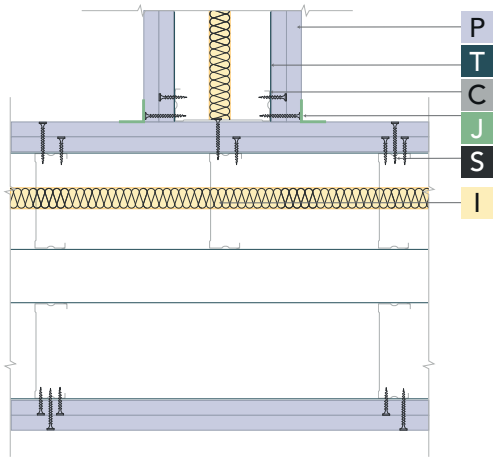
System Ref.	Width (mm)	Detail Type	Board and thickness *(On each side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
SOU401	360	1	2 Layers of 12.5 Regular	51	6050	50	6550
SOU405	360	1	2 Layers of 16 Regular	54	6100	55	6600
SOU411	360	2	2 Layers of 12.5 Regular	63	6050	62	6550
SOU415	360	2	2 Layers of 16 Regular	63	6100	62	6600
120 mins Fire Resistant							
SOU402	360	1	2 Layers of 12.5 Fire Resistant	53	6050	52	6550
SOU406	360	1	2 Layers of 16 Fire Resistant	54	6100	55	6600
SOU403	360	1	2 Layers of 12.5 Impact Resistant	58	6050	57	6550
SOU412	360	2	2 Layers of 12.5 Fire Resistant	59	6050	59	6550
SOU407	360	1	2 Layers of 16 Impact Resistant	59	6100	58	6600
SOU416	360	2	2 Layers of 16 Fire Resistant	63	6100	62	6600
SOU423	360	3	2 Layers of 12.5 Impact Resistant	65	6050	65	6550
SOU417	360	2	2 Layers of 16 Impact Resistant	68	6100	66	6600

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

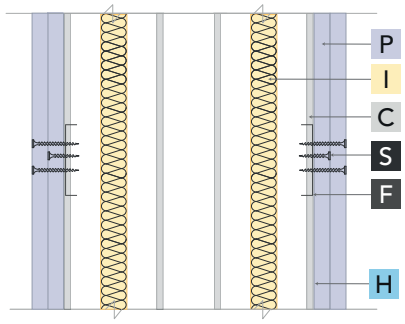
Top Detail



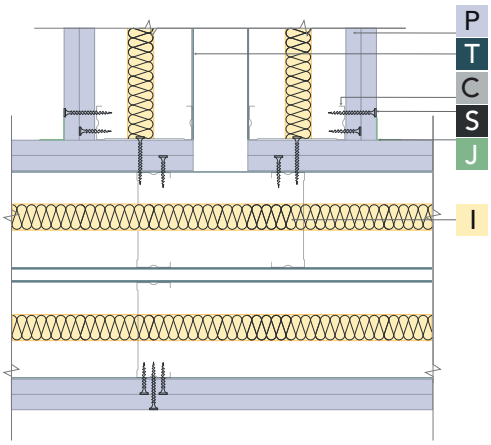
Low Acoustic T - Junction Detail



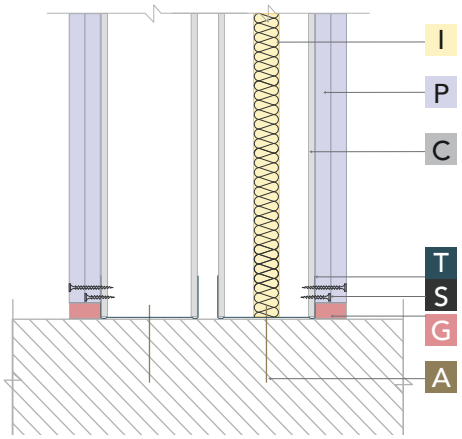
Noggin & Fixing Channel



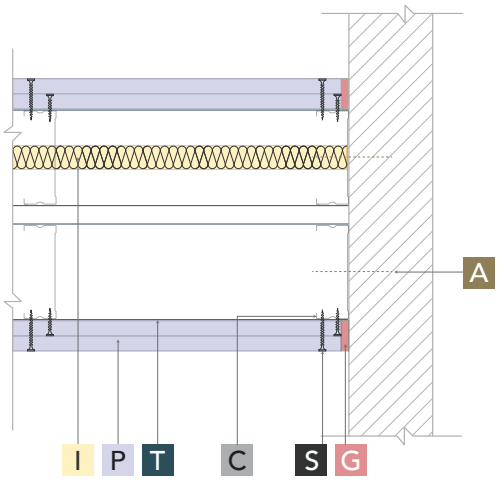
High Acoustic T - Junction Detail



Bottom Detail

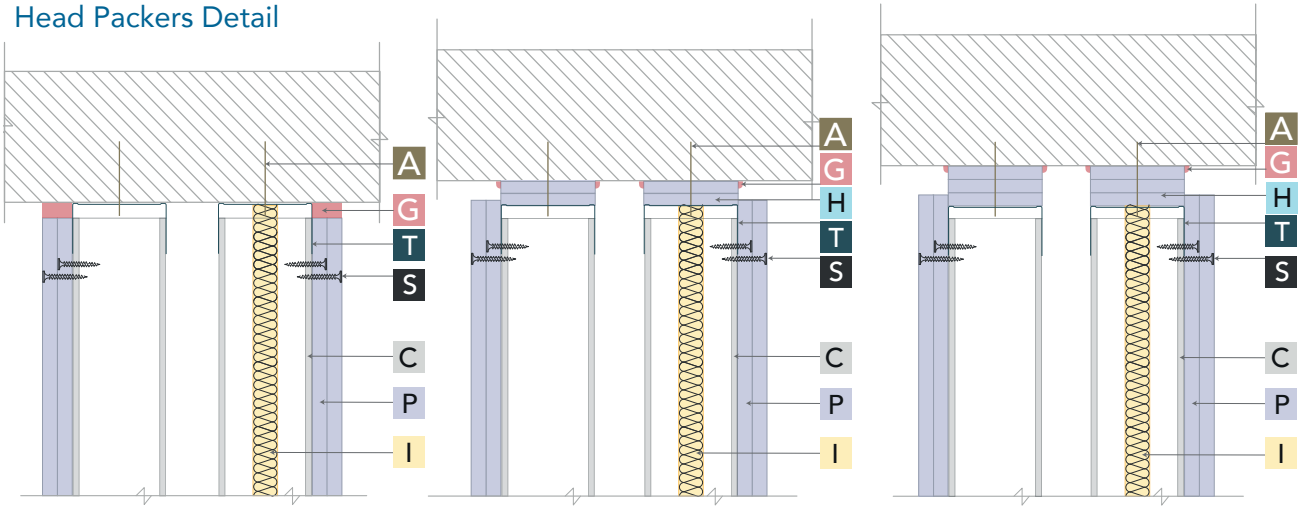


Abuttment Detail



A	Mada Anchor	B	Mada Acoustic Brace	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
I	Mada Insulation	J	Corner Profile / Tape	P	Mada Plus Plasterboard	S	Mada Drywall Screw
T	Mada U-Track	2	Wood Skirting				

Head Packers Detail

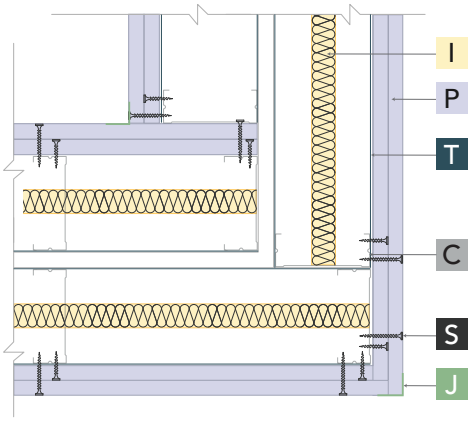


10 -15 MM
DEFLECTION HEAD DETAIL

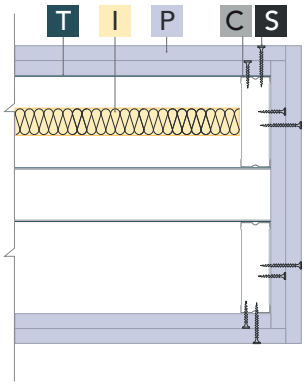
16 - 25 MM
DEFLECTION HEAD DETAIL

26 - 40 MM
DEFLECTION HEAD DETAIL

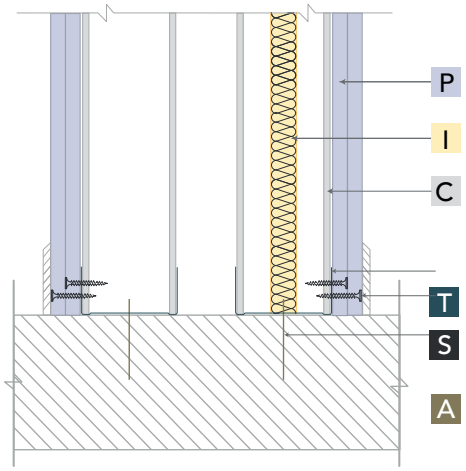
Corner Detail



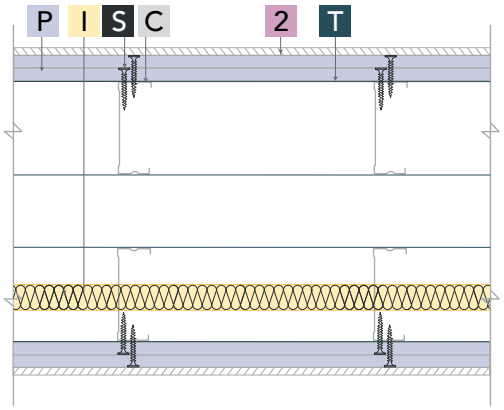
End Detail



Skirting Detail



Skirting Detail



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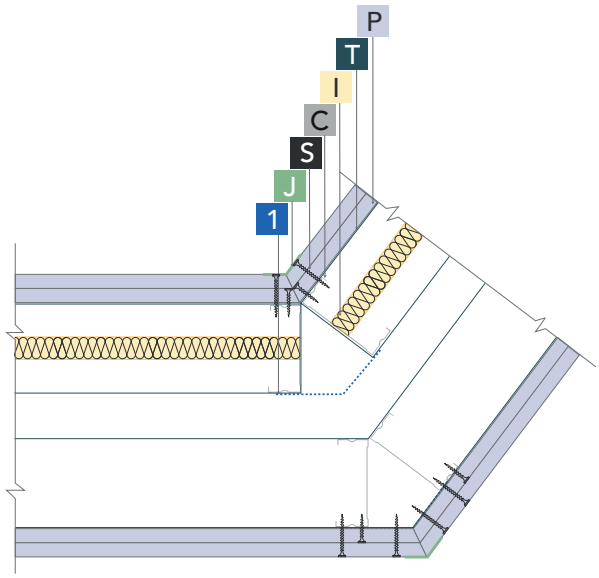

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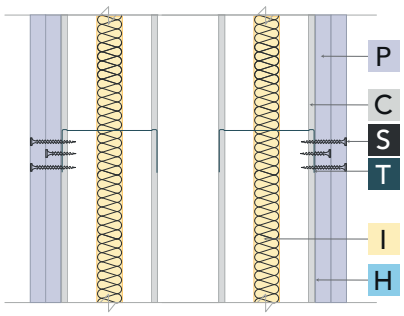

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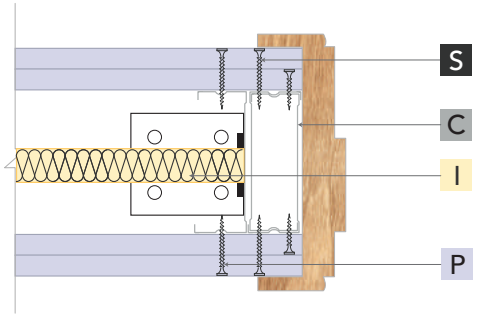

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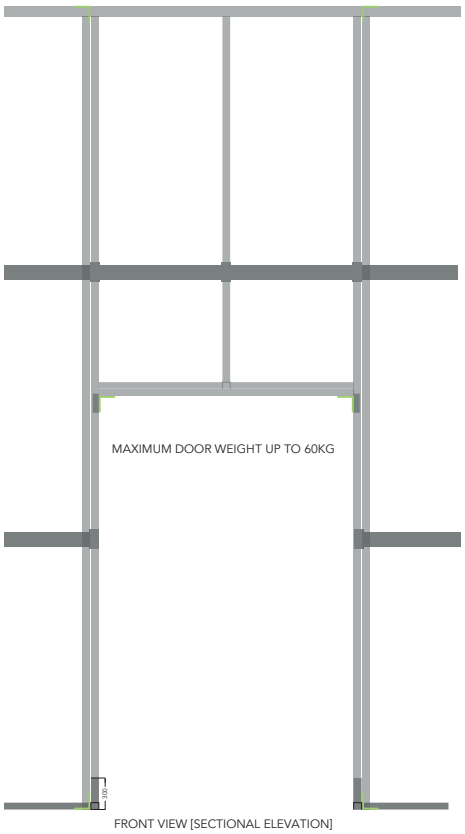

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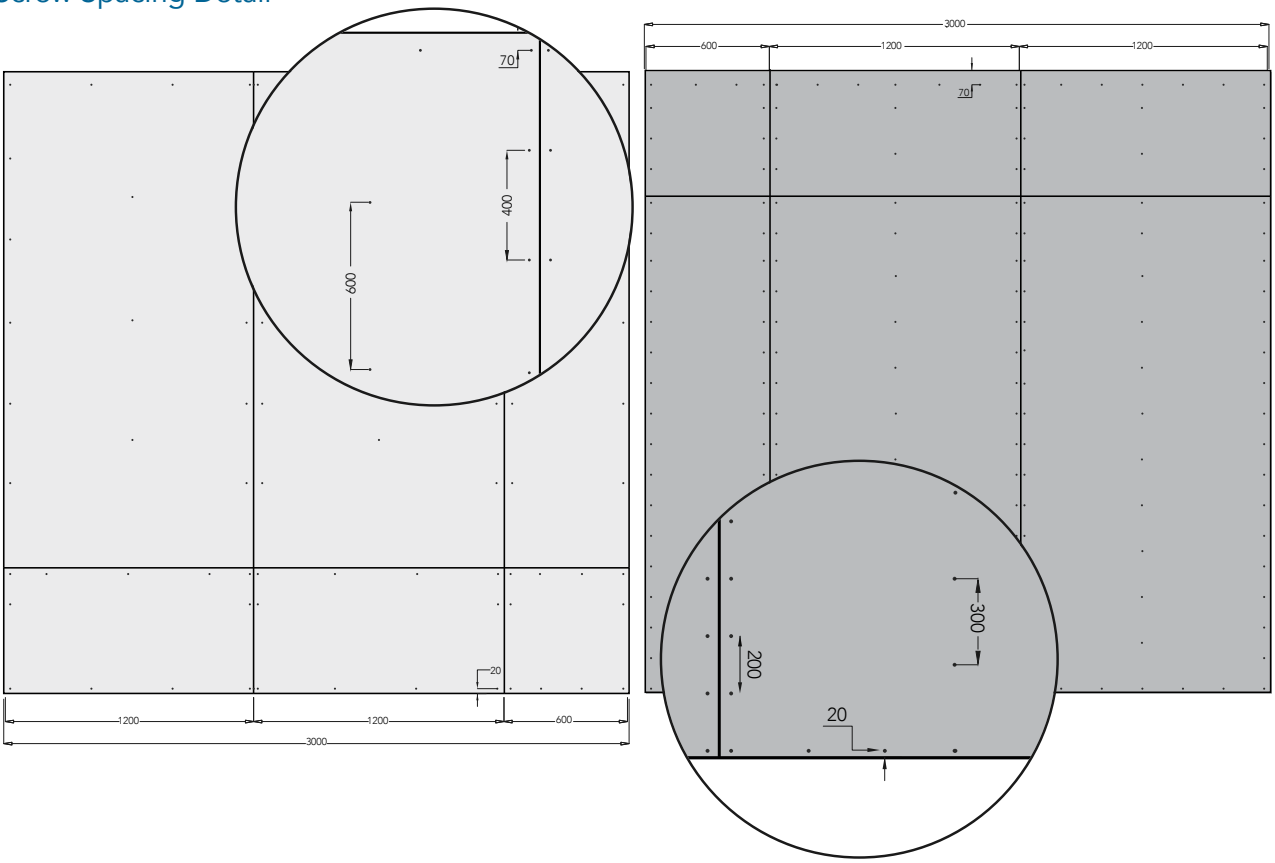

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Component Recommended	Fixing Method	Load Capacity
	Wall Mate screw suitable for use with MADA gypsum board	5 kg
	Fisher Butterfly fixing into single layer MADA gypsum board	20 kg Shear Load
	Heavy Duty Anchor fixed into sub-frame through MADA gypsum board	100 kg Shear Load

Tiling

For Mada Plus partition systems, we support the recommendations of international standard BS 5385-1:2018 which sets the maximum tile weight (including adhesive) of 32kg/m2 for ceramic tile installations on a wall surface. We also recommend reducing stud centers to 400 mm on center to minimize deflection and maximize adhesion. However, reducing stud centers can affect the acoustic performance of a wall assembly. For greater tile weights or additional tiling support, please contact the Mada Gypsum Technical Department.

Moisture Resistance

Gypsum plasterboards are not recommended for any location that is not weather-tight, may experience wetting, or consistently/regularly damp. Both the American and European classifications require specific manufacturing guidelines for plasterboards to meet different moisture and humidity performance levels. Mada Gypsum has developed moisture-resistant plasterboards for areas subject to high-humidity or excessive moisture such as kitchens and bathrooms, for both residential and commercial projects.

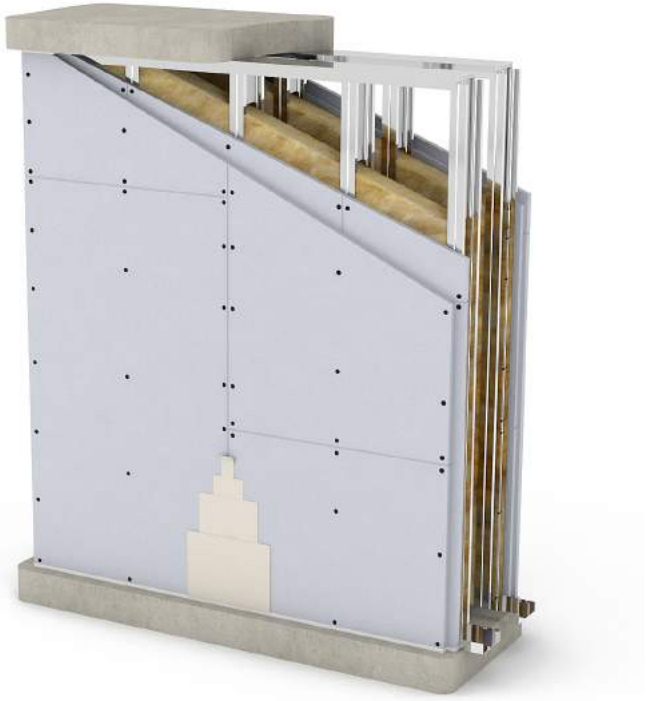
Standard Board	Upgrade
Mada Plus Regular board	Mada Plus Moisture Resistant board
Mada Plus Fire Resistant	Mada Plus Fire and Moisture Resistant board

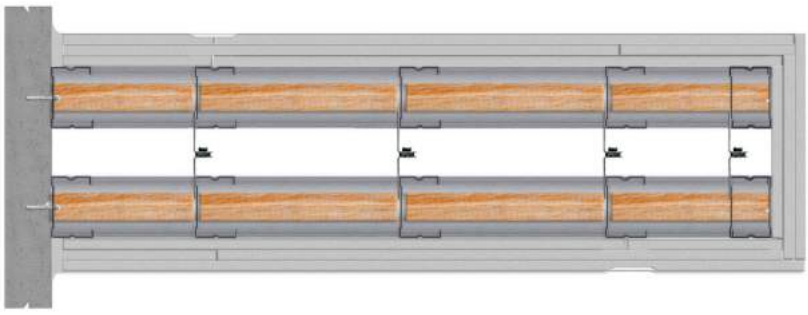
Mold & Moisture Resistance

For areas requiring moisture, mold and mildew resistance performance, Mada developed the Mada ProGuard glass mat board.

For swimming pool and spa areas, please contact the Mada Gypsum Technical Team for specialized assistance and detailed support.

CINEPLUS





Mada CinePlus

Today's cinema or theater presents unique challenges for the designer and builder; superior acoustic performance combined with large area requirements. Mada CinePlus was specifically developed, designed, and tested to meet these challenges with a unique chase-wall framing arrangement utilizing a 25 mm (minimum) air gap for optimum acoustic frequency separation.

STC (Sound)
57 to **79**

Fire (min)
Up to **180**

Acoustic
STC (dB): 79
R_w (dB): 77

Width: 350mm **Stud Size**: 88mm

Board Thickness
Side A: 2 Layer of 16 Fire Resistant
1 Layer of 12.5 Procem

Side B: 2 Layer of 16 Fire Resistant
1 Layer of 12.5 Procem

System Ref.
CINC4696696

Maximum Height*
(mm) 0.24kPa: 16000
(mm) 0.2kPa: 18000

Acoustic
STC (dB): 78
R_w (dB): 77

Width: 450mm **Stud Size**: 88mm

Board Thickness
Side A: 3 Layer of 16 Fire Resistant
1 Layer of 12.5 Procem

Side B: 3 Layer of 16 Fire Resistant
1 Layer of 12.5 Procem

System Ref.
CINC466696966

Maximum Height*
(mm) 0.24kPa: 16000
(mm) 0.2kPa: 18000

Acoustic
STC (dB): 72
R_w (dB): 73

Width: 450mm **Stud Size**: 88mm

Board Thickness
Side A: 3 Layers of 16 Fire Resistant
Side B: 3 Layers of 16 Fire Resistant

Maximum Height*
(mm) 0.24kPa: 16000
(mm) 0.2kPa: 18000

System Ref.
CINC4666666

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

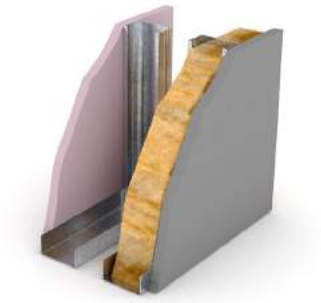
Acoustic
STC (dB): 70
R_w (dB): 70

Width: 350mm **Stud Size**: 88mm

Board Thickness
Side A: 2 Layers of 16 Fire Resistant
Side B: 2 Layers of 16 Fire Resistant

Maximum Height*
(mm) 0.24kPa: 12000
(mm) 0.2kPa: 14000

System Ref.
CINC46666



Acoustic
STC (dB): 61
R_w (dB): 60

Width: 350mm **Stud Size**: 88mm

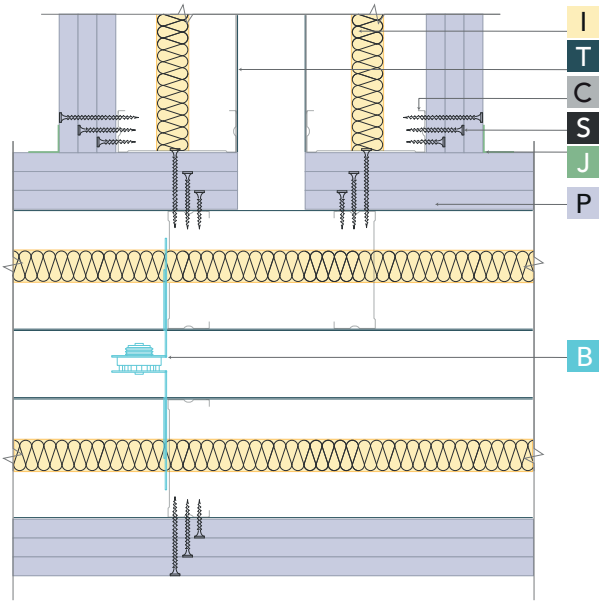
Board Thickness
Side A: 1 Layer of 15 Procem
Side B: 1 Layer of 16 Fire Resistant

Maximum Height*
(mm) 0.24kPa: 8000
(mm) 0.2kPa: 10000

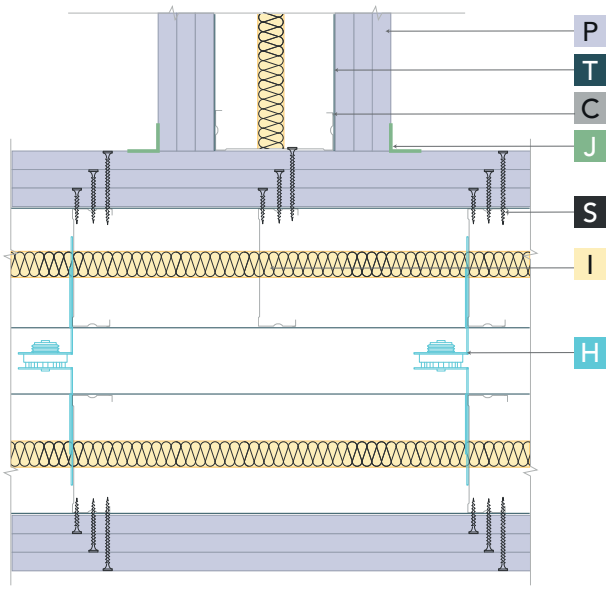
System Ref.
CINC2P6

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

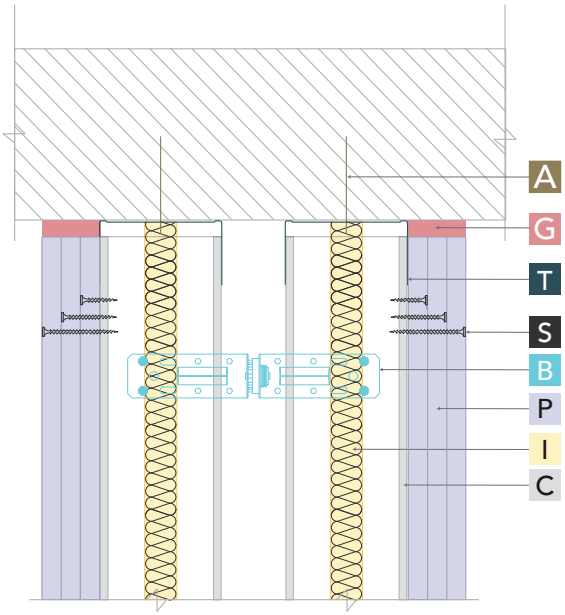
High Acoustic T - Junction Detail



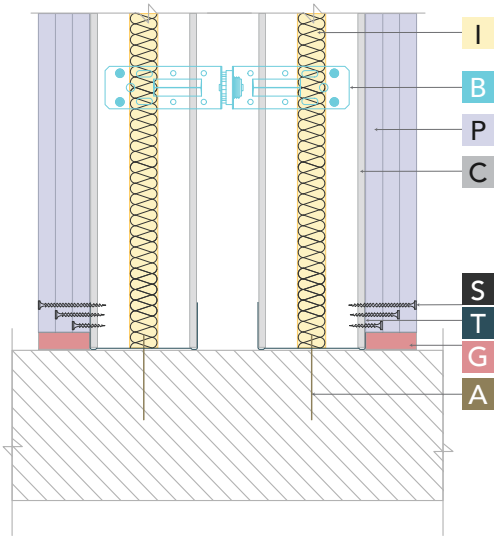
Low Acoustic T - Junction Detail



Top Detail

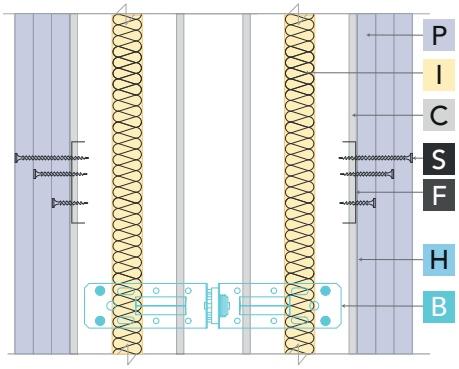


Bottom Detail

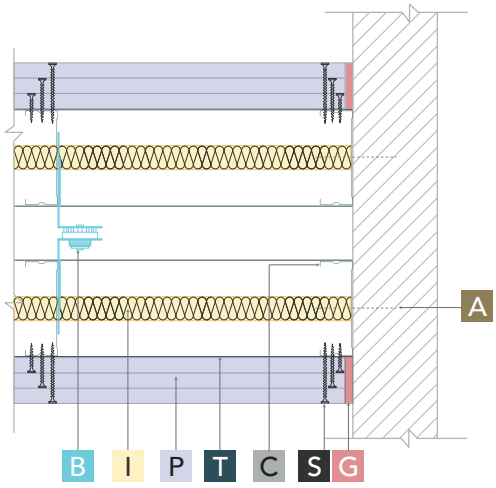


A Mada Anchor
B Mada Acoustic Brace
C Mada C-Stud
D Mada Deflection Head Track
E Mada Expansion Joint
F Mada Fixing Channel
G Mada Fire Guard Acrylic Sealant
H Mada Head Packer with Mada Plus Plasterboard
I Mada Insulation
J Corner Profile / Tape
P Mada Plus Plasterboard
S Mada Drywall Screw
T Mada U-Track
2 Wood Skirting

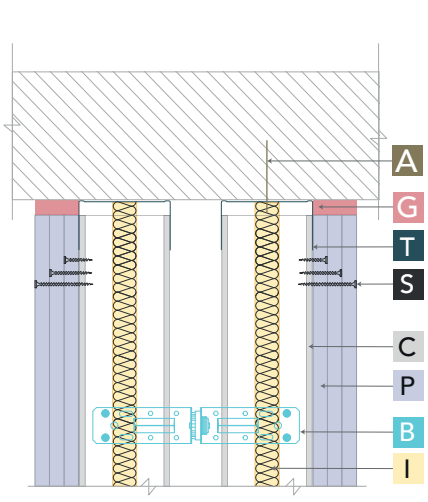
Noggin & Fixing Channel



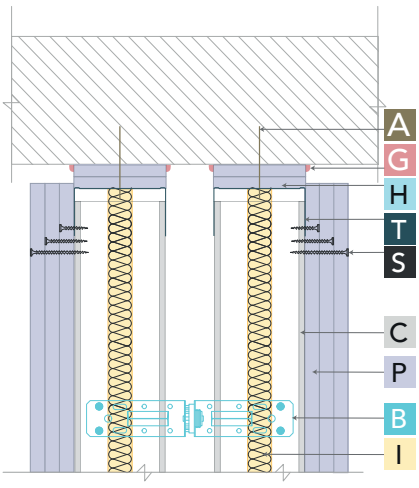
Abuttment Detail



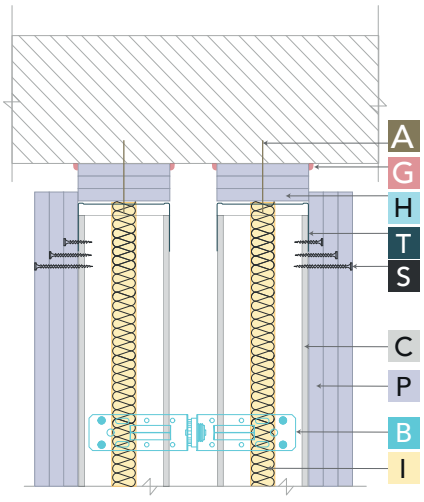
Head Packers Detail



10 -15 MM
DEFLECTION HEAD DETAIL



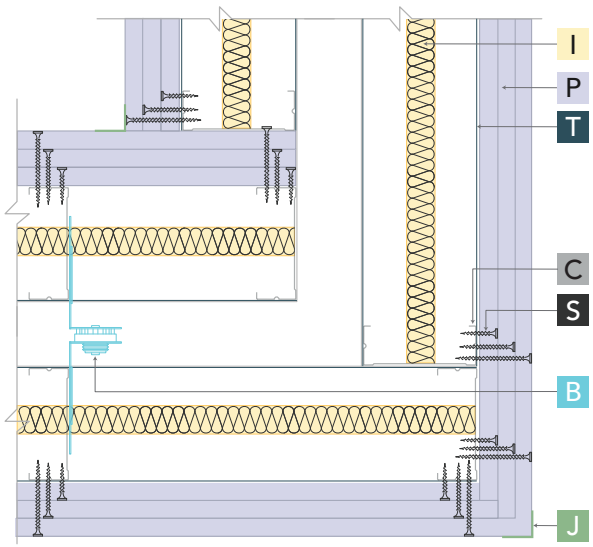
16 - 25 MM
DEFLECTION HEAD DETAIL



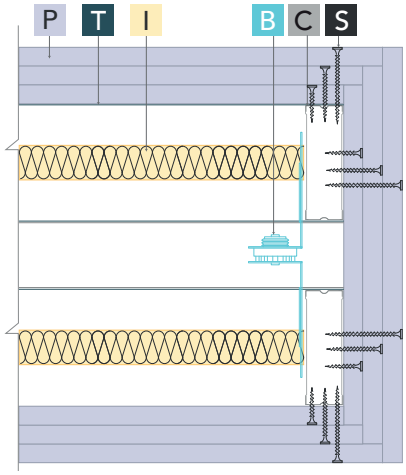
26 - 40 MM
DEFLECTION HEAD DETAIL

A	Mada Anchor	B	Mada Acoustic Brace	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
I	Mada Insulation	J	Corner Profile / Tape	P	Mada Plus Plasterboard	S	Mada Drywall Screw
T	Mada U-Track	2	Wood Skirting				

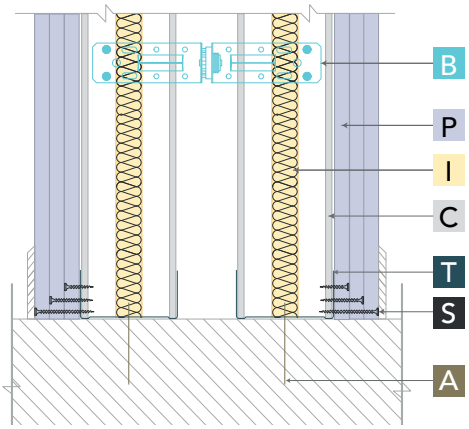
Corner Detail



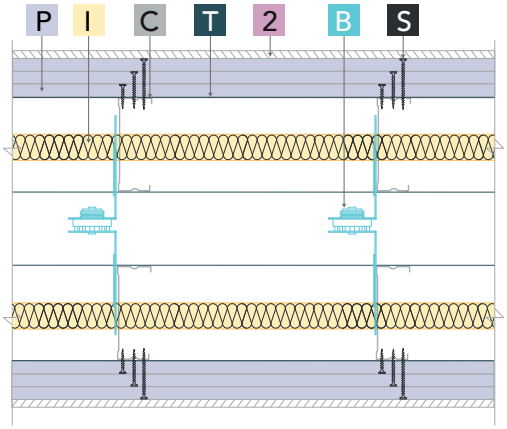
End Detail



Skirting Detail

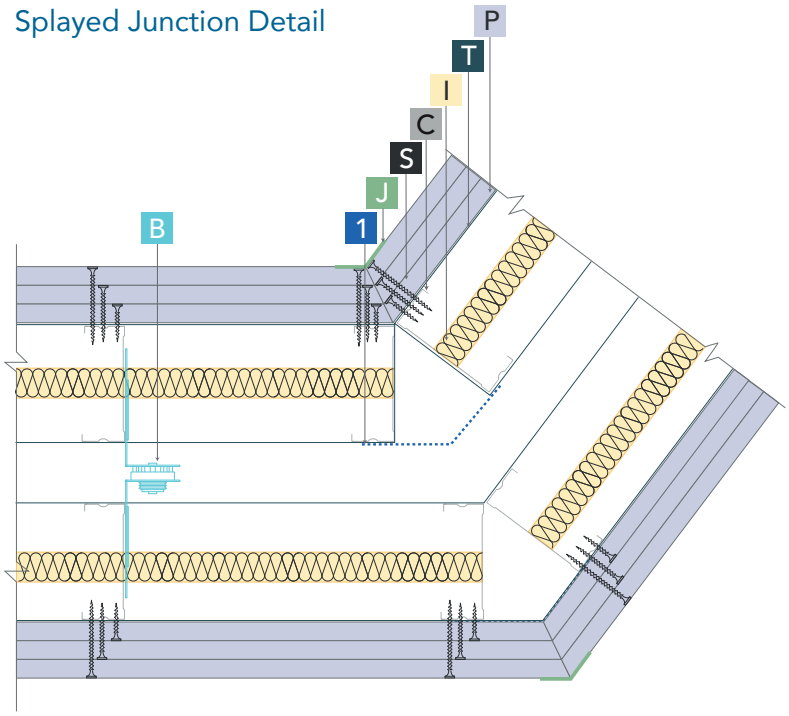


Skirting Detail

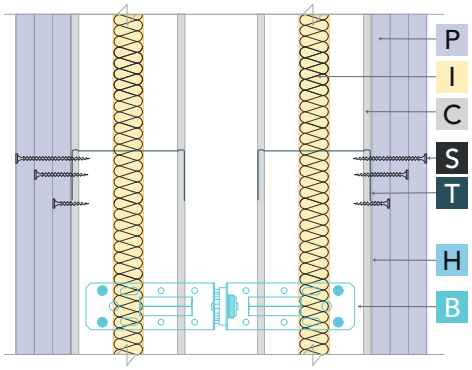


A Mada Anchor
B Mada Acoustic Brace
C Mada C-Stud
D Mada Deflection Head Track
E Mada Expansion Joint
F Mada Fixing Channel
G Mada Fire Guard Acrylic Sealant
H Mada Head Packer with Mada Plus Plasterboard
I Mada Insulation
J Corner Profile / Tape
P Mada Plus Plasterboard
S Mada Drywall Screw
T Mada U-Track
2 Wood Skirting

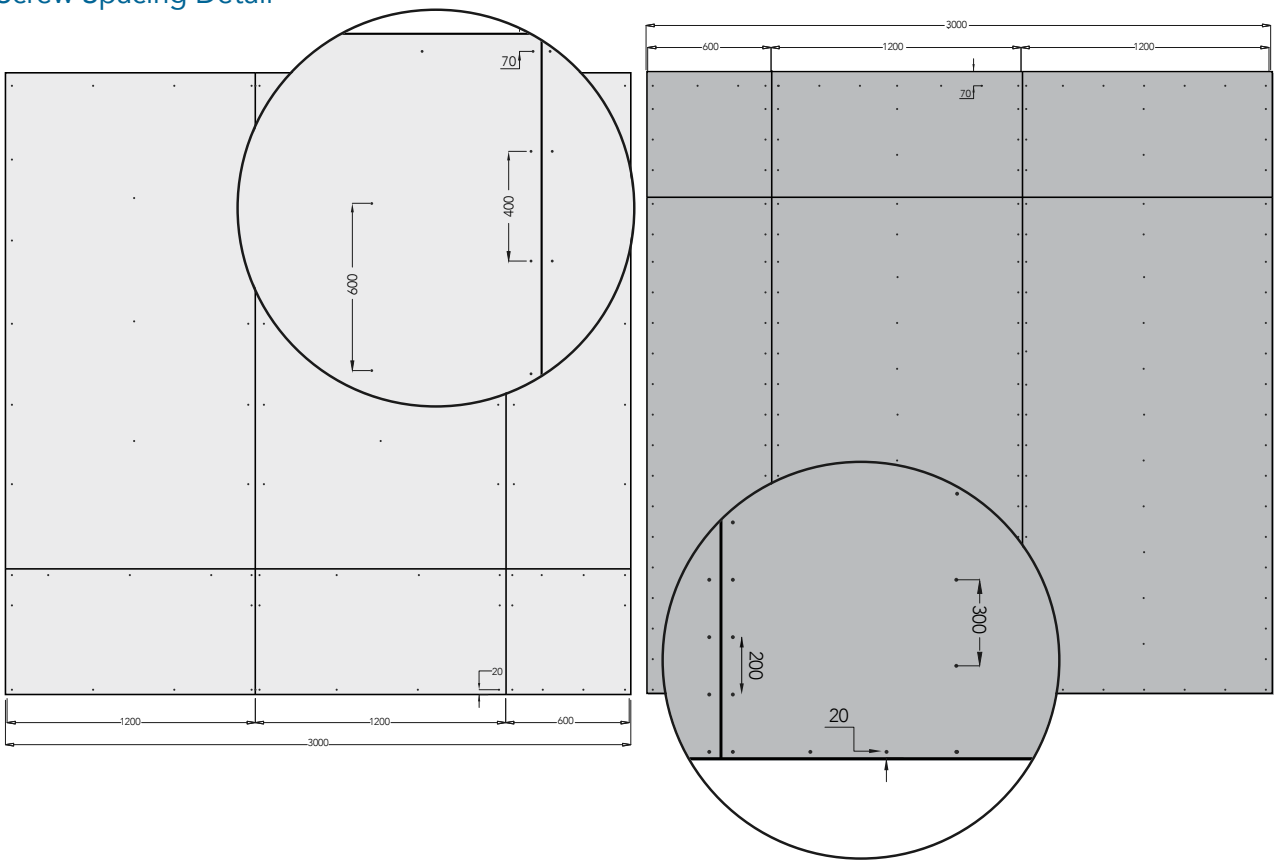
Splayed Junction Detail



Noggin & Fixing Channel



Screw Spacing Detail



A	Mada Anchor	B	Mada Acoustic Brace	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
I	Mada Insulation	J	Corner Profile / Tape	P	Mada Plus Plasterboard	S	Mada Drywall Screw
T	Mada U-Track	2	Wood Skirting				

System Notes

Installation Stage

Mada Gypsum recommends installing the CinePlus partition system only after the building envelope is complete. Otherwise, the partition system could be exposed to rain, wind, and moisture beyond the design limits of our partition system. For additional support and clarification, please contact the Mada Gypsum Technical Team.

Installation

You can find complete installation and finishing guidance in the Mada Gypsum Installation Guide, available for free download at www.madagypsum.com. If you require additional assistance or would like to set up a training and certification for your installers, please contact your local Mada Gypsum representative or the Mada Gypsum Technical Team.

Maintaining Performance

All our performance statements are based on partitions built and tested under optimal conditions. To minimize the loss of on-site performance, all penetrations, abutments, and connections must meet installed per the approved drawings and details. We have included standard industry-wide details here for your convenience and can provide project-specific detail support through your local Mada Gypsum representative or the Mada Gypsum Technical Department.

Key installation aspects to consider when installing this partition system include:

- Following manufacturer's guidelines for attachment, spacing, reinforcement, and drywall installation.
- Maintain continuous sealant at all perimeters, penetrations, and abutments.
- Use only system-approved accessories such as socket boxes, cable trays, ducts, and pipes for building services.

Your Mada Gypsum representative and the Mada Gypsum Technical Department can assist with finding suitable suppliers to meet your project's needs.

Partition Stability

Because the partition framing changes for doors, windows, and other penetrations, it may be necessary to reinforce the framing before installing the gypsum board panels. We have included standard industry-wide details here for your convenience and can provide project-specific detail support through your local Mada Gypsum representative or the Mada Gypsum Technical Department.

Deflection Heads

Partition systems installed with structural openings should include a deflection allowance, to absorb the movement or load from the adjoining floor. Without a deflection allowance, the partition may flex, crack, or even fail over time. To avoid this scenario, Mada Gypsum has developed and tested Deflection Head Details that provide the required lateral restraint and allow for vertical movement. Deflection heads have different requirements than the partition below it, and this detail must be considered to maintain the acoustic performance of the partition. We've include these standardized details for your convenience, if your project requires specific deflection head criteria, please contact the Mada Gypsum Technical Department for design assistance.

Fixtures

All Mada Gypsum partition systems have been engineered to support common loads for a variety of devices and applications. Heavier than normal and live loads may require changes to the framing to provide adequate support. We've included standard fixture details for your convenience, if you need structural calculations, please contact the Mada Gypsum Technical Department for assistance.

Component Recommended	Fixing Method	Load Capacity
	Wall Mate screw suitable for use with MADA gypsum board	5 kg
	Fisher Butterfly fixing into single layer MADA gypsum board	20 kg Shear Load
	Heavy Duty Anchor fixed into sub-frame through MADA gypsum board	100 kg Shear Load

Tiling

For Mada Plus partition systems, we support the recommendations of international standard BS 5385-1:2018 which sets the maximum tile weight (including adhesive) of 32kg/m2 for ceramic tile installations on a wall surface. We also recommend reducing stud centers to 400 mm on center to minimize deflection and maximize adhesion. However, reducing stud centers can affect the acoustic performance of a wall assembly. For greater tile weights or additional tiling support, please contact the Mada Gypsum Technical Department.

Moisture Resistance

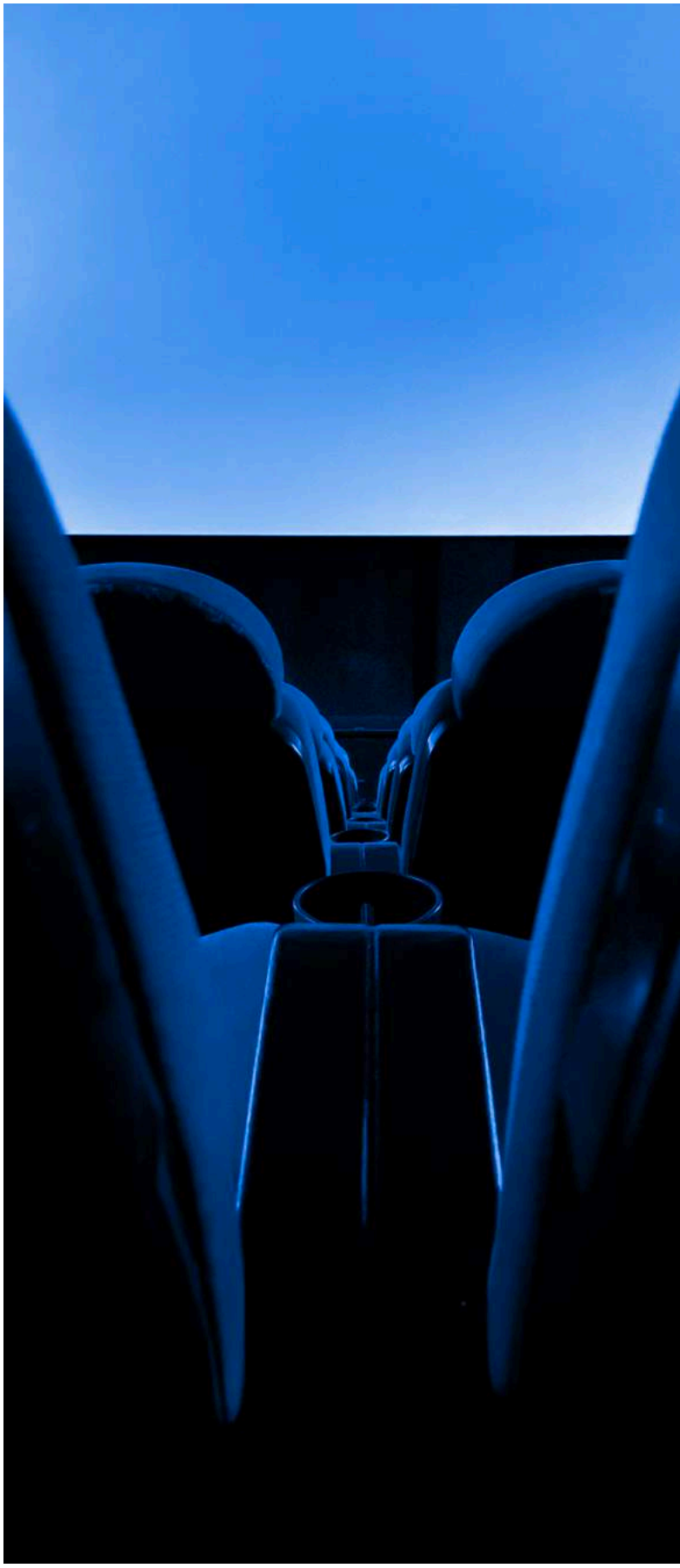
Gypsum plasterboards are not recommended for any location that is not weather-tight, may experience wetting, or consistently/regularly damp. Both the American and European classifications require specific manufacturing guidelines for plasterboards to meet different moisture and humidity performance levels. Mada Gypsum has developed moisture-resistant plasterboards for areas subject to high-humidity or excessive moisture such as kitchens and bathrooms, for both residential and commercial projects.

Standard Board	Upgrade
Mada Plus Regular board	Mada Plus Moisture Resistant board
Mada Plus Fire Resistant	Mada Plus Fire and Moisture Resistant board

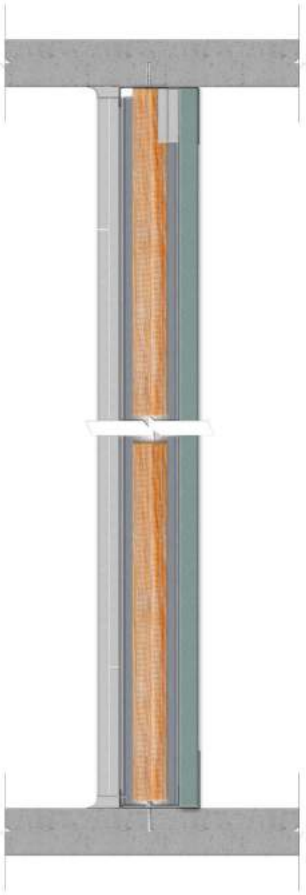
Mold & Moisture Resistance

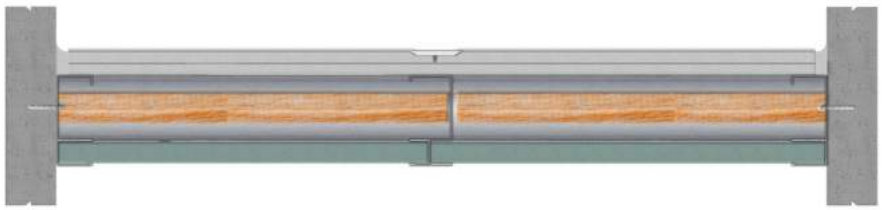
For areas requiring moisture, mold and mildew resistance performance, Mada developed the Mada ProGuard glass mat board.

For swimming pool and spa areas, please contact the Mada Gypsum Technical Team for specialized assistance and detailed support.



SHAFTPLUS





Mada ShaftPlus

Our ShaftPlus partition system is the answer for those situations where there isn't enough room, limited access, or it's not safe to build a wall. Typically utilized around stairwells, service risers, and lift shafts ShaftPlus has been tested and certified to a 120-minute (2 hour) rating. Available in a variety of acoustic ratings for residential and commercial spaces alike.

STC (Sound)
40 to **52**

Fire (min)
Up to **120**

Detail 1
No insulation

Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
No insulation

Detail 4
25 mm of Mada Glasswool insulation (16kg/m^3)

64mm Stud (0.6mm)

System Ref.	Width (mm)	Detail Type	Board and thickness 1 Layer of 25 Shaft Board &	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
SHA10S6	82	1	1 Layer of 16 Fire Resistant	44	4000	43	4400
SHA10S7	82	1	1 Layer of 16 Impact Resistant	45	4000	45	4400
SHA11S6	82	2	1 Layer of 16 Fire Resistant	47	4000	46	4400
SHA11S7	82	2	1 Layer of 16 Impact Resistant	48	4000	47	4400
120 mins Fire Resistant							
SHA10S66	98	3	2 Layers of 16 Fire Resistant	48	4000	48	4400
SHA10S67	98	3	1 Layer of 16 Fire & 16 Impact Resistant	49	4000	49	4400
SHA11S66	98	4	2 Layers of 16 Fire Resistant	50	4000	50	4400
SHA11S67	98	4	1 Layer of 16 Fire & 16 Impact Resistant	51	4000	51	4400

64mm Stud (0.8mm)

System Ref.	Width (mm)	Detail Type	Board and thickness 1 Layer of 25 Shaft Board &	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
SHA20S6	82	1	1 Layer of 16 Fire Resistant	44	4400	43	4800
SHA20S7	82	1	1 Layer of 16 Impact Resistant	45	4400	45	4800
SHA21S6	82	2	1 Layer of 16 Fire Resistant	47	4400	46	4800
SHA21S7	82	2	1 Layer of 16 Impact Resistant	48	4400	47	4800
120 mins Fire Resistant							
SHA20S66	98	3	2 Layers of 16 Fire Resistant	48	4400	48	4800
SHA20S67	98	3	1 Layer of 16 Fire & 16 Impact Resistant	49	4400	49	4800
SHA21S66	98	4	2 Layers of 16 Fire Resistant	50	4400	50	4800
SHA21S67	98	4	1 Layer of 16 Fire & 16 Impact Resistant	51	4400	51	4800

100mm Stud (0.6mm)

System Ref.	Width (mm)	Detail Type	Board and thickness 1 Layer of 25 Shaft Board &	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
SHA30S6	118	1	1 Layer of 16 Fire Resistant	44	5500	43	6100
SHA30S7	118	1	1 Layer of 16 Impact Resistant	45	5500	45	6100
SHA31S6	118	2	1 Layer of 16 Fire Resistant	47	5500	46	6100
SHA31S7	118	2	1 Layer of 16 Impact Resistant	48	5500	47	6100
120 mins Fire Resistant							
SHA30S66	134	3	2 Layers of 16 Fire Resistant	48	5500	48	6100
SHA30S67	134	3	1 Layer of 16 Fire & 16 Impact Resistant	49	5500	49	6100
SHA31S66	134	4	2 Layers of 16 Fire Resistant	50	5500	50	6100
SHA31S67	134	4	1 Layer of 16 Fire & 16 Impact Resistant	51	5500	51	6100

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

Detail 1
No insulation

Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
No insulation

Detail 4
25 mm of Mada Glasswool insulation (16kg/m^3)

100mm Stud (0.8mm)

System Ref.	Width (mm)	Detail Type	Board and thickness 1 Layer of 25 Shaft Board &	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
SHA40S6	118	1	1 Layer of 16 Fire Resistant	44	5700	43	6300
SHA40S7	118	1	1 Layer of 16 Impact Resistant	45	5700	45	6300
SHA41S6	118	2	1 Layer of 16 Fire Resistant	47	5700	46	6300
SHA41S7	118	2	1 Layer of 16 Impact Resistant	48	5700	47	6300
120 mins Fire Resistant							
SHA40S66	134	3	2 Layers of 16 Fire Resistant	48	5700	48	6300
SHA40S67	134	3	1 Layer of 16 Fire & 16 Impact Resistant	49	5700	49	6300
SHA41S66	134	4	2 Layers of 16 Fire Resistant	50	5700	50	6300
SHA41S67	134	4	1 Layer of 16 Fire & 16 Impact Resistant	51	5700	51	6300

150mm Stud (0.6mm)

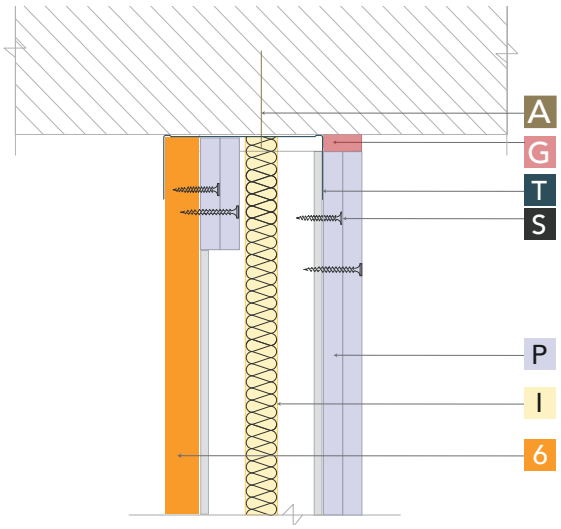
System Ref.	Width (mm)	Detail Type	Board and thickness 1 Layer of 25 Shaft Board &	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
SHA50S6	168	1	1 Layer of 16 Fire Resistant	44	5500	43	6100
SHA50S7	168	1	1 Layer of 16 Impact Resistant	45	5500	45	6100
SHA51S6	168	2	1 Layer of 16 Fire Resistant	47	5500	46	6100
SHA51S7	168	2	1 Layer of 16 Impact Resistant	48	5500	47	6100
120 mins Fire Resistant							
SHA50S66	184	3	2 Layers of 16 Fire Resistant	48	5500	48	6100
SHA50S67	184	3	1 Layer of 16 Fire & 16 Impact Resistant	49	5500	49	6100
SHA51S66	184	4	2 Layers of 16 Fire Resistant	50	5500	50	6100
SHA51S67	184	4	1 Layer of 16 Fire & 16 Impact Resistant	51	5500	51	6100

150mm Stud (0.8mm)

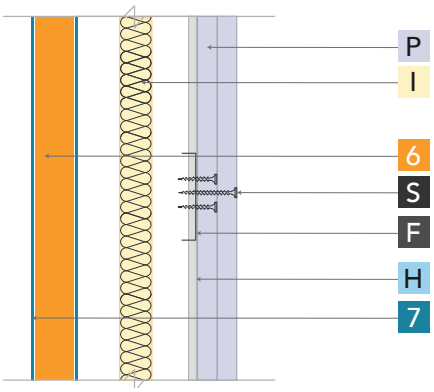
System Ref.	Width (mm)	Detail Type	Board and thickness 1 Layer of 25 Shaft Board &	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
60 mins Fire Resistant							
SHA60S6	168	1	1 Layer of 16 Fire Resistant	44	6500	43	7100
SHA60S7	168	1	1 Layer of 16 Impact Resistant	45	6500	45	7100
SHA61S6	168	2	1 Layer of 16 Fire Resistant	47	6500	46	7100
SHA61S7	168	2	1 Layer of 16 Impact Resistant	48	6500	47	7100
120 mins Fire Resistant							
SHA60S66	184	3	2 Layers of 16 Fire Resistant	48	6500	48	7100
SHA60S67	184	3	1 Layer of 16 Fire & 16 Impact Resistant	49	6500	49	7100
SHA61S66	184	4	2 Layers of 16 Fire Resistant	50	6500	50	7100
SHA61S67	184	4	1 Layer of 16 Fire & 16 Impact Resistant	51	6500	51	7100

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

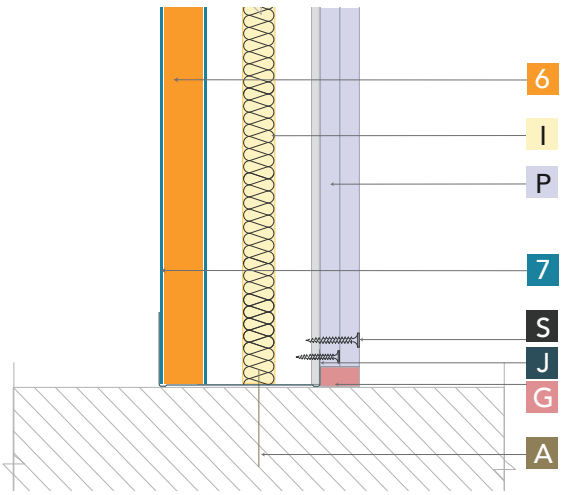
Top Detail



Noggin & Fixing Channel

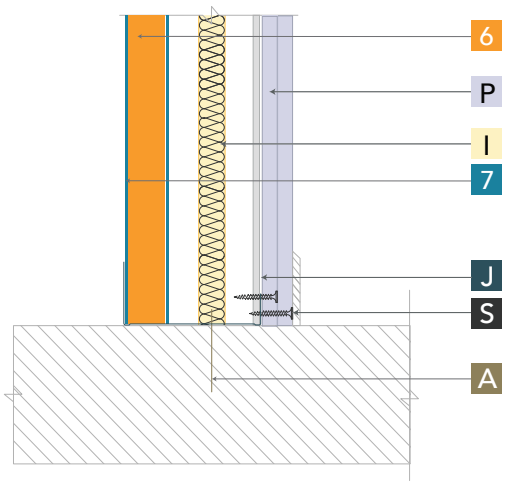


Bottom Detail

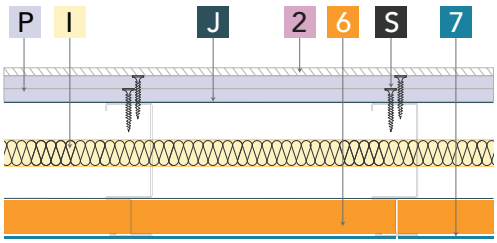


A	Mada Anchor	I	Mada Insulation	C	Mada C-Stud	6	Mada Plus Shaftboard
J	Mada J Trim	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
7	Mada CH - Stud	2	Wood Skirting	P	Mada Plus Plasterboard	S	Mada Drywall Screw

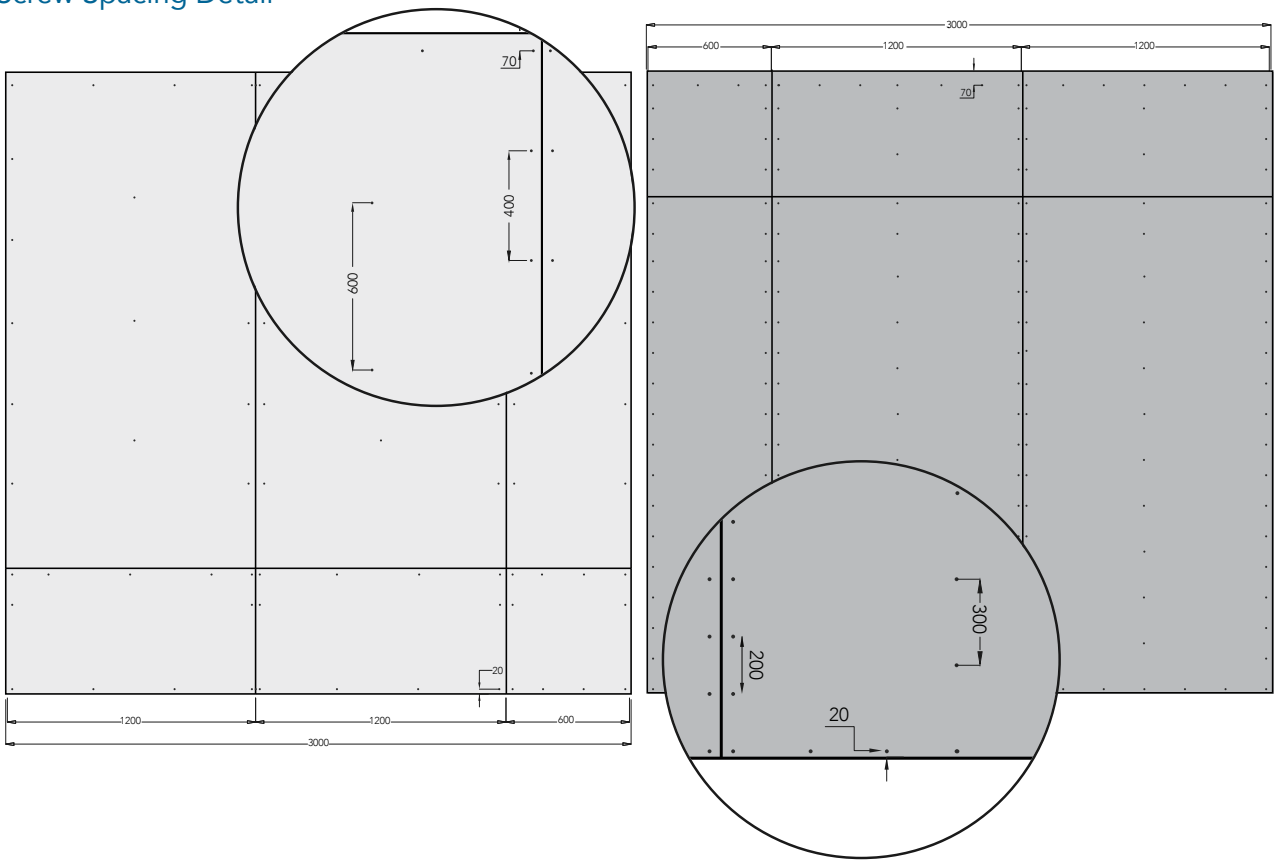
Skirting Detail



Skirting Detail



Screw Spacing Detail



A	Mada Anchor	I	Mada Insulation	C	Mada C-Stud	6	Mada Plus Shaftboard
J	Mada J Trim	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
7	Mada CH - Stud	2	Wood Skirting	P	Mada Plus Plasterboard	S	Mada Drywall Screw

System Notes

Installation Stage

Mada Gypsum recommends installing the ShaftPlus partition system only after the building envelope is complete. Otherwise, the partition system could be exposed to rain, wind, and moisture beyond the design limits of our partition system. For additional support and clarification, please contact the Mada Gypsum Technical Team.

Installation

You can find complete installation and finishing guidance in the Mada Gypsum Installation Guide, available for free download at www.madagypsum.com. If you require additional assistance or would like to set up a training and certification for your installers, please contact your local Mada Gypsum representative or the Mada Gypsum Technical Team.

Maintaining Performance

All our performance statements are based on partitions built and tested under optimal conditions. To minimize the loss of on-site performance, all penetrations, abutments, and connections must meet installed per the approved drawings and details. We have included standard industry-wide details here for your convenience and can provide project-specific detail support through your local Mada Gypsum representative or the Mada Gypsum Technical Department.

Key installation aspects to consider when installing this partition system include:

- Following manufacturer's guidelines for attachment, spacing, reinforcement, and drywall installation.
- Maintain continuous sealant at all perimeters, penetrations, and abutments.
- Use only system-approved accessories such as socket boxes, cable trays, ducts, and pipes for building services.

Your Mada Gypsum representative and the Mada Gypsum Technical Department can assist with finding suitable suppliers to meet your project's needs.

Partition Stability

Because the partition framing changes for doors, windows, and other penetrations, it may be necessary to reinforce the framing before installing the gypsum board panels. We have included standard industry-wide details here for your convenience and can provide project-specific detail support through your local Mada Gypsum representative or the Mada Gypsum Technical Department.

Deflection Heads

Partition systems installed with structural openings should include a deflection allowance, to absorb the movement or load from the adjoining floor. Without a deflection allowance, the partition may flex, crack, or even fail over time. To avoid this scenario, Mada Gypsum has developed and tested Deflection Head Details that provide the required lateral restraint and allow for vertical movement. Deflection heads have different requirements than the partition below it, and this detail must be considered to maintain the acoustic performance of the partition. We've include these standardized details for your convenience, if your project requires specific deflection head criteria, please contact the Mada Gypsum Technical Department for design assistance.

Fixtures

All Mada Gypsum partition systems have been engineered to support common loads for a variety of devices and applications. Heavier than normal and live loads may require changes to the framing to provide adequate support. We've included standard fixture details for your convenience, if you need structural calculations, please contact the Mada Gypsum Technical Department for assistance.

Component Recommended	Fixing Method	Load Capacity
	Wall Mate screw suitable for use with MADA gypsum board	5 kg
	Fisher Butterfly fixing into single layer MADA gypsum board	20 kg Shear Load
	Heavy Duty Anchor fixed into sub-frame through MADA gypsum board	100 kg Shear Load

Tiling

In line with the international standard BS 5385-1:2018, we recommend that tile weights (including adhesive) up to 32kg / m2 can be installed on to our Mada Plus boards. For greater tile weights, please contact Mada Gypsum Technical Department.

Generally, for tiled areas, it is recommended to reduce stud centres to 400mm to reduce deflection and maximize tile retention. Reducing stud centres is not a cost effective option with the Mada ShaftPlus system. For additional information on alternative supports, please contact Mada Gypsum Technical Department.

Moisture Resistance

Gypsum plasterboards are not recommended for any location that is not weather-tight, may experience wetting, or consistently/regularly damp. Both the American and European classifications require specific manufacturing guidelines for plasterboards to meet different moisture and humidity performance levels. Mada Gypsum has developed moisture-resistant plasterboards for areas subject to high-humidity or excessive moisture such as kitchens and bathrooms, for both residential and commercial projects.

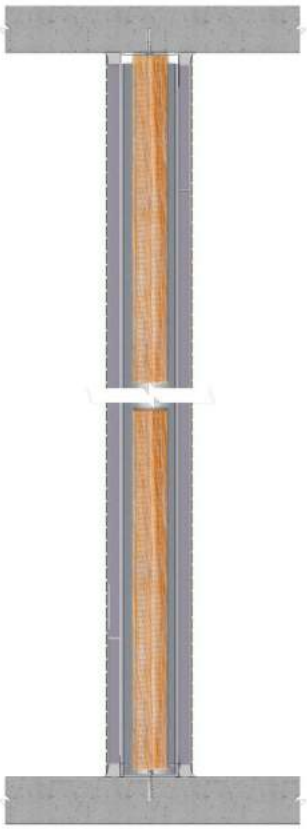
Standard Board	Upgrade
Mada Plus Regular board	Mada Plus Moisture Resistant board
Mada Plus Fire Resistant	Mada Plus Fire and Moisture Resistant board

Mold & Moisture Resistance

For areas requiring moisture, mold and mildew resistance performance, Mada developed the Mada ProGuard glass mat board.

For swimming pool and spa areas, please contact the Mada Gypsum Technical Team for specialized assistance and detailed support.

AQUAPLUS



Mada AquaPlus

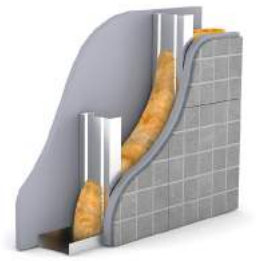
The basis of our AquaPlus partition system uses framing elements from either the MultiPlus or SoundPlus partition systems (depending on size and structural rating). Plasterboard is then chosen to meet the moisture, wetness, or high-humidity concerns for your project.

AquaPlus may be used near pools or for external use by replacing the plasterboard with either: Mada ProCem cement board, Mada Fiber Cement Sheets, or Mada ProGuard Sheathing board.

STC (Sound)
42 to **68**

Fire (min)
Up to **120**

Detail 1
No insulation



Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m^3)

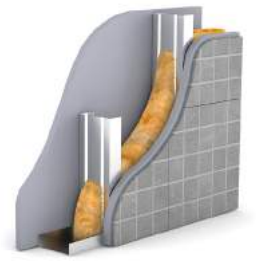
48mm Stud (0.5mm)

System Ref.	Width (mm)	Detail Type	Board Type & Thickness (mm) Side A	Side B	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
30 mins Fire Resistant								
AQU1092	75	1	1 x 12.5 Procem	1 x 12.5 FR	44	2500	43	2750
AQU1099	75	1	1 x 12.5 Procem	1 x 12.5 Procem	46	2500	46	2750
AQU1192	75	2	1 x 12.5 Procem	1 x 12.5 FR	49	2500	48	2750
AQU1193	75	2	1 x 12.5 Procem	1 x 12.5 IR	52	2500	50	2750
AQU1199	75	2	1 x 12.5 Procem	1 x 12.5 Procem	52	2500	51	2750
45 mins Fire Resistant								
AQU1044	75	1	1 x 12.5 ProGuard	1 x 12.5 ProGuard	35	2800	37	3050
AQU1144	75	2	1 x 12.5 ProGuard	1 x 12.5 ProGuard	39	2800	41	3050
AQU1244	75	3	1 x 12.5 ProGuard	1 x 12.5 ProGuard	39	2800	41	3050
60 mins Fire Resistant								
AQU10P6	81	1	1 x 15 Procem	1 x 16 FR	46	2650	44	2900
AQU1188	82	2	1 x 16 ProGuard	1 x 16 ProGuard	40	2950	41	3200
AQU11P6	81	2	1 x 15 Procem	1 x 16 FR	51	2650	50	2900
AQU11PP	80	2	1 x 15 Procem	1 x 15 Procem	52	2650	51	2900
AQU1288	82	3	1 x 16 ProGuard	1 x 16 ProGuard	41	2950	42	3200
90 mins Fire Resistant								
AQU109999	100	1	2 x 12.5 Procem	2 x 12.5 Procem	58	2800	57	3300
AQU119999	100	2	2 x 12.5 Procem	2 x 12.5 Procem	61	2800	60	3300
120 mins Fire Resistant								
AQU104444	100	1	2 x 12.5 ProGuard	2 x 12.5 ProGuard	50	3100	51	3600
AQU109922	100	1	2 x 12.5 Procem	2 x 12.5 FR	55	2800	55	3300
AQU114444	100	2	2 x 12.5 ProGuard	2 x 12.5 ProGuard	56	3100	56	3600
AQU119922	100	2	2 x 12.5 Procem	2 x 12.5 FR	59	2800	59	3300
AQU129922	100	3	2 x 12.5 Procem	2 x 12.5 FR	60	2800	59	3300

*** FR: Fire Resistant | IR: Impact Resistant**

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

Detail 1
No insulation



Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m^3)

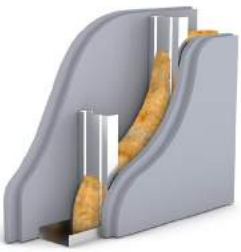
68mm Stud (0.5mm)

System Ref.	Width (mm)	Detail Type	Board Type & Thickness (mm) Side A	Side B	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
30 mins Fire Resistant								
AQU2092	95	1	1 x 12.5 Procem	1 x 12.5 FR	44	3400	43	3750
AQU2099	95	1	1 x 12.5 Procem	1 x 12.5 Procem	47	3400	46	3750
AQU2192	95	2	1 x 12.5 Procem	1 x 12.5 FR	49	3400	48	3750
AQU2193	95	2	1 x 12.5 Procem	1 x 12.5 IR	52	3400	50	3750
AQU2199	95	2	1 x 12.5 Procem	1 x 12.5 Procem	52	3400	51	3750
60 mins Fire Resistant								
AQU21PP	100	2	1 x 15 Procem	1 x 15 Procem	52	3550	51	3900
90 mins Fire Resistant								
AQU209999	120	1	2 x 12.5 Procem	2 x 12.5 Procem	58	3800	57	4500
AQU219999	120	2	2 x 12.5 Procem	2 x 12.5 Procem	61	3800	60	4500
120 mins Fire Resistant								
AQU209922	120	1	2 x 12.5 Procem	2 x 12.5 FR	55	3800	55	4500
AQU219922	120	2	2 x 12.5 Procem	2 x 12.5 FR	59	3800	59	4500
AQU229922	120	3	2 x 12.5 Procem	2 x 12.5 FR	60	3800	59	4500

*** FR: Fire Resistant | IR: Impact Resistant**

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

Detail 1
No insulation



Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m^3)

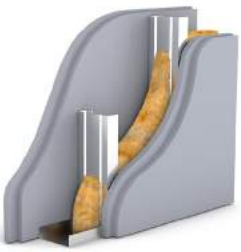
98mm Stud (0.5mm)

System Ref.	Width (mm)	Detail Type	Side A	Side B	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
30 mins Fire Resistant								
AQU3092	125	1	1 x 12.5 Procem	1 x 12.5 FR	44	4300	43	4750
AQU3099	125	1	1 x 12.5 Procem	1 x 12.5 Procem	47	4300	46	4750
AQU3192	125	2	1 x 12.5 Procem	1 x 12.5 FR	49	4300	48	4750
AQU3193	125	2	1 x 12.5 Procem	1 x 12.5 IR	52	4300	50	4750
AQU3199	125	2	1 x 12.5 Procem	1 x 12.5 Procem	52	4300	51	4750
60 mins Fire Resistant								
AQU31PP	130	2	1 x 15 Procem	1 x 15 Procem	52	4600	51	5050
90 mins Fire Resistant								
AQU309999	150	1	2 x 12.5 Procem	2 x 12.5 Procem	58	4800	57	5700
AQU319999	150	2	2 x 12.5 Procem	2 x 12.5 Procem	61	4800	60	5700
120 mins Fire Resistant								
AQU309922	150	1	2 x 12.5 Procem	2 x 12.5 FR	55	4800	55	5700
AQU319922	150	2	2 x 12.5 Procem	2 x 12.5 FR	59	4800	59	5700
AQU329922	150	3	2 x 12.5 Procem	2 x 12.5 FR	60	4800	59	5700

*** FR: Fire Resistant | IR: Impact Resistant**

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

Detail 1
No insulation



Detail 2
25 mm of Mada Glasswool insulation (16kg/m^3)

Detail 3
50 mm of Mada Glasswool insulation (16kg/m^3)

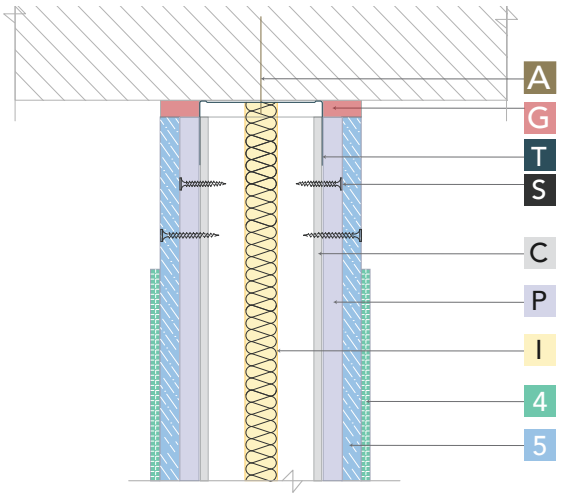
148mm Stud (0.8mm)

System Ref.	Width (mm)	Detail Type	Side A	Side B	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
30 mins Fire Resistant								
AQU4092	175	1	1 x 12.5 Procem	1 x 12.5 FR	44	6500	43	7000
AQU4099	175	1	1 x 12.5 Procem	1 x 12.5 Procem	47	6500	46	7000
AQU4192	175	2	1 x 12.5 Procem	1 x 12.5 FR	49	6500	48	7000
AQU4193	175	2	1 x 12.5 Procem	1 x 12.5 IR	52	6500	50	7000
AQU4199	175	2	1 x 12.5 Procem	1 x 12.5 Procem	52	6500	51	7000
60 mins Fire Resistant								
AQU41PP	180	2	1 x 15 Procem	1 x 15 Procem	52	6650	51	7150
90 mins Fire Resistant								
AQU409999	200	1	2 x 12.5 Procem	2 x 12.5 Procem	58	7000	57	8000
AQU419999	200	2	2 x 12.5 Procem	2 x 12.5 Procem	61	7000	60	8000
120 mins Fire Resistant								
AQU409922	200	1	2 x 12.5 Procem	2 x 12.5 FR	55	7000	55	8000
AQU419922	200	2	2 x 12.5 Procem	2 x 12.5 FR	59	7000	59	8000
AQU429922	200	3	2 x 12.5 Procem	2 x 12.5 FR	60	7000	59	8000

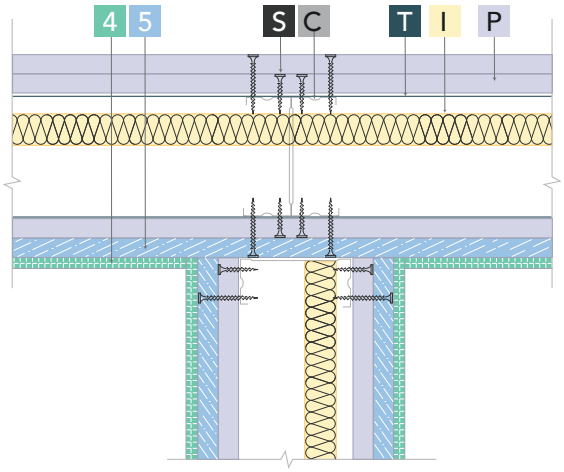
*** FR: Fire Resistant | IR: Impact Resistant**

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

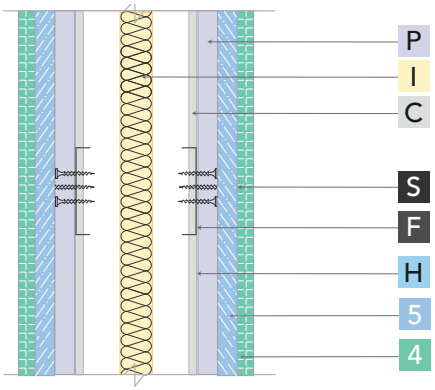
Top Detail



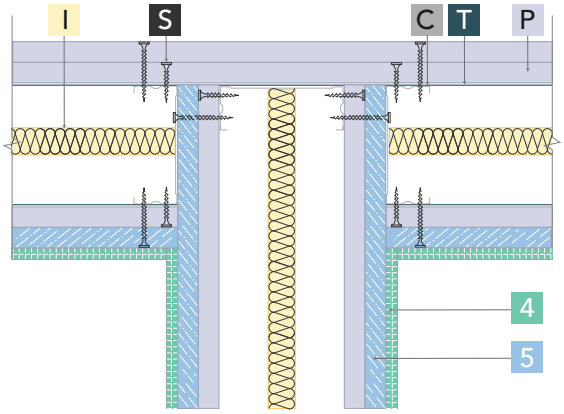
Low Acoustic T - Junction Detail



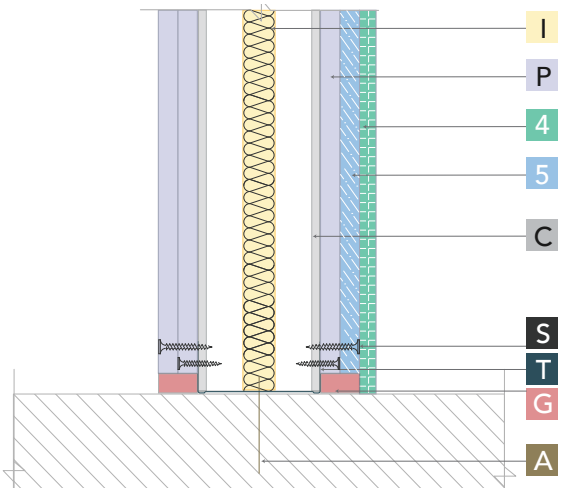
Noggin & Fixing Channel



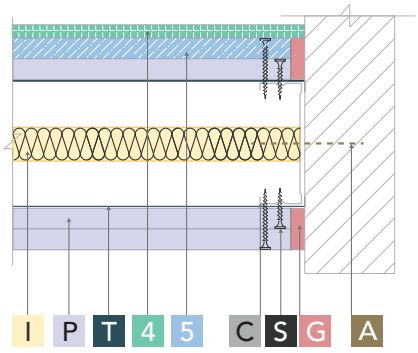
High Acoustic T - Junction Detail



Bottom Detail

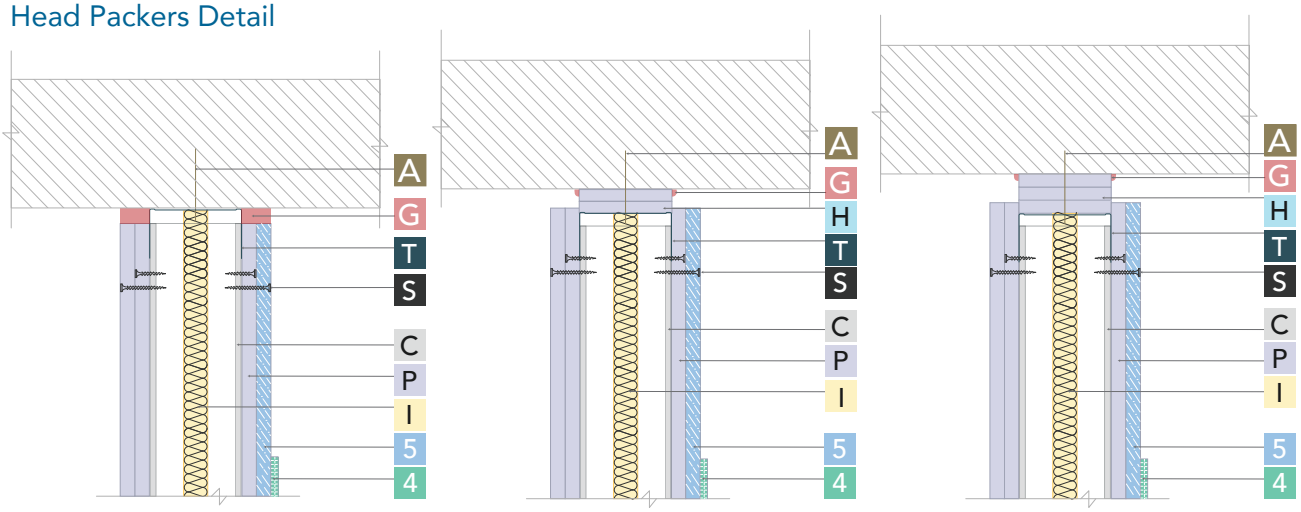


Abuttment Detail



A	Mada Anchor	B	Mada Acoustic Brace	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
I	Mada Insulation	J	Corner Profile / Tape	P	Mada Plus Plasterboard	S	Mada Drywall Screw
T	Mada U-Track	2	Wood Skirting	4	Tile Cladding	5	Mada Specialist Water Resistant Board

Head Packers Detail



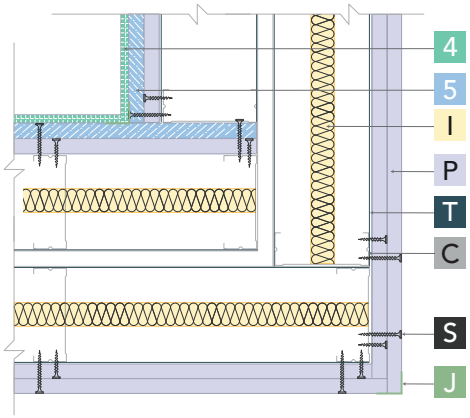
10 -15 MM
DEFLECTION HEAD DETAIL

16 - 25 MM
DEFLECTION HEAD DETAIL

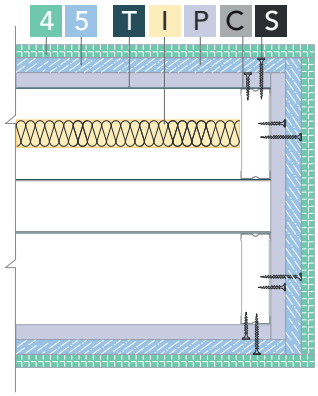
26 - 40 MM
DEFLECTION HEAD DETAIL

Corner Detail

Up to 70 mm stud

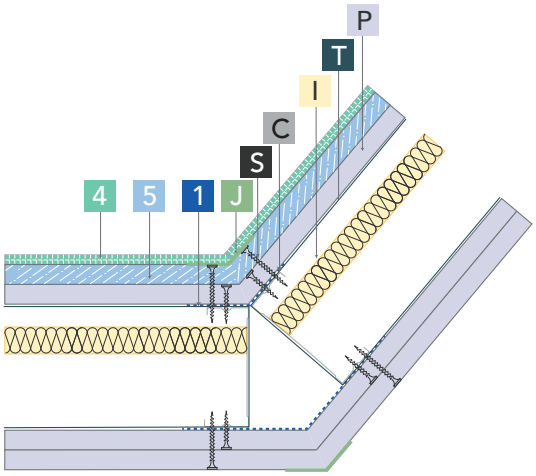


End Detail

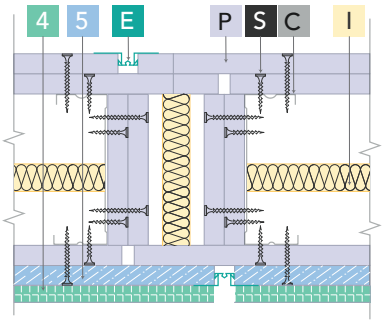


A	Mada Anchor	B	Mada Acoustic Brace	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
I	Mada Insulation	J	Corner Profile / Tape	P	Mada Plus Plasterboard	S	Mada Drywall Screw
T	Mada U-Track	2	Wood Skirting	4	Tile Cladding	5	Mada Specialist Water Resistant Board

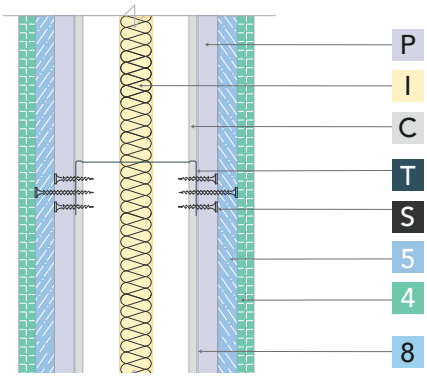
Splayed Junction Detail



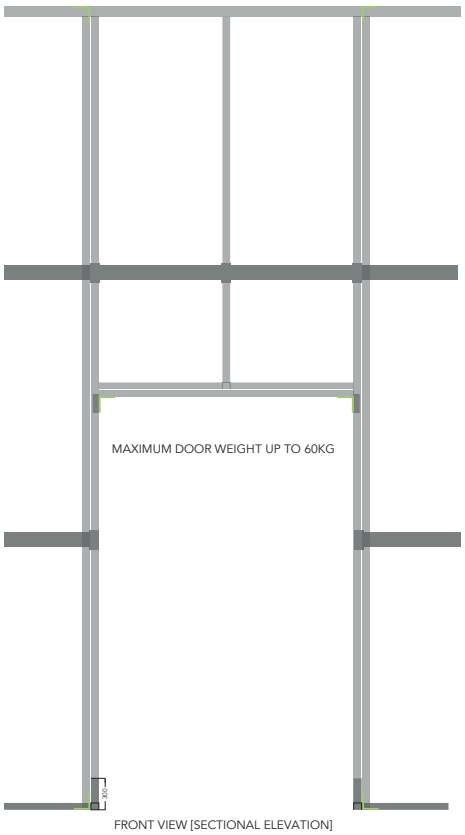
Expansion Joint



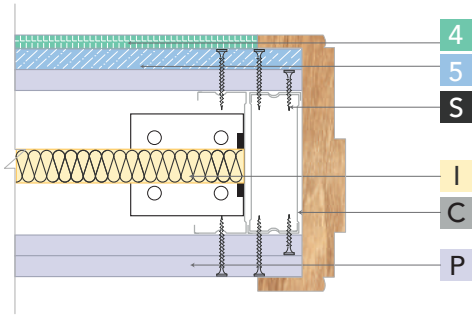
Noggin & Fixing Channel



60kg Door Detail

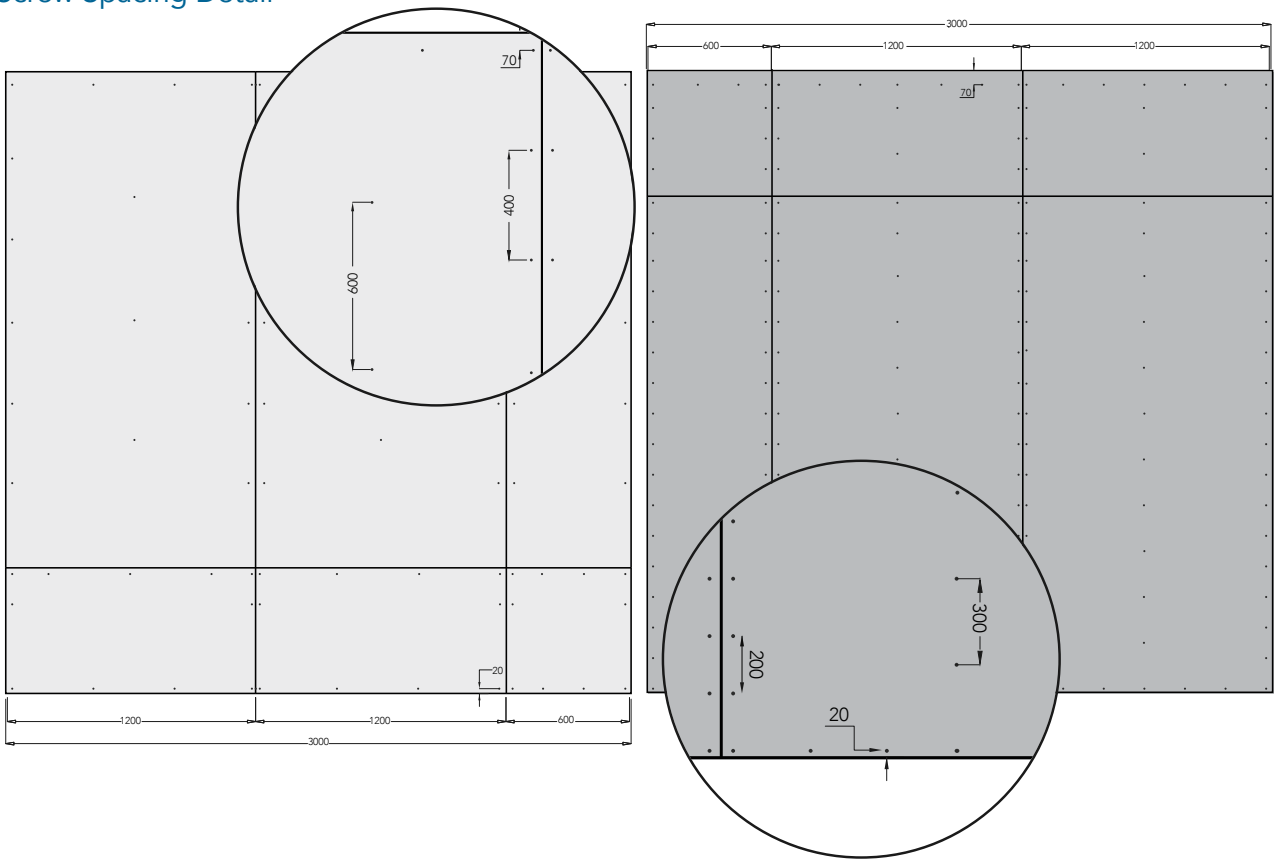


Door Frame Section

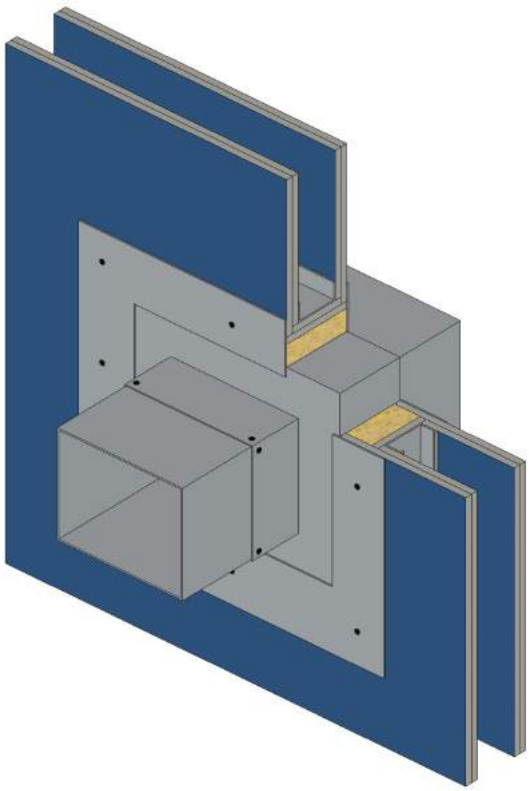


A Mada Anchor
B Mada Acoustic Brace
C Mada C-Stud
D Mada Deflection Head Track
E Mada Expansion Joint
F Mada Fixing Channel
G Mada Fire Guard Acrylic Sealant
H Mada Head Packer with Mada Plus Plasterboard
I Mada Insulation
J Corner Profile / Tape
P Mada Plus Plasterboard
S Mada Drywall Screw
T Mada U-Track
2 Wood Skirting
4 Tile Cladding
5 Mada Specialist Water Resistant Board

Screw Spacing Detail



Duct Penetration



System Notes

Installation Stage

Mada Gypsum recommends installing the AquaPlus partition system only after the building envelope is complete. Otherwise, the partition system could be exposed to rain, wind, and moisture beyond the design limits of our partition system. For additional support and clarification, please contact the Mada Gypsum Technical Team.

Installation

You can find complete installation and finishing guidance in the Mada Gypsum Installation Guide, available for free download at www.madagypsum.com. If you require additional assistance or would like to set up a training and certification for your installers, please contact your local Mada Gypsum representative or the Mada Gypsum Technical Team.

Maintaining Performance

All our performance statements are based on partitions built and tested under optimal conditions. To minimize the loss of on-site performance, all penetrations, abutments, and connections must meet installed per the approved drawings and details. We have included standard industry-wide details here for your convenience and can provide project-specific detail support through your local Mada Gypsum representative or the Mada Gypsum Technical Department.

Key installation aspects to consider when installing this partition system include:

- Following manufacturer's guidelines for attachment, spacing, reinforcement, and drywall installation.
- Maintain continuous sealant at all perimeters, penetrations, and abutments.
- Use only system-approved accessories such as socket boxes, cable trays, ducts, and pipes for building services.

Your Mada Gypsum representative and the Mada Gypsum Technical Department can assist with finding suitable suppliers to meet your project's needs.

Partition Stability

Because the partition framing changes for doors, windows, and other penetrations, it may be necessary to reinforce the framing before installing the gypsum board panels. We have included standard industry-wide details here for your convenience and can provide project-specific detail support through your local Mada Gypsum representative or the Mada Gypsum Technical Department.

Deflection Heads

Partition systems installed with structural openings should include a deflection allowance, to absorb the movement or load from the adjoining floor. Without a deflection allowance, the partition may flex, crack, or even fail over time. To avoid this scenario, Mada Gypsum has developed and tested Deflection Head Details that provide the required lateral restraint and allow for vertical movement. Deflection heads have different requirements than the partition below it, and this detail must be considered to maintain the acoustic performance of the partition. We've include these standardized details for your convenience, if your project requires specific deflection head criteria, please contact the Mada Gypsum Technical Department for design assistance.

Fixtures

All Mada Gypsum partition systems have been engineered to support common loads for a variety of devices and applications. Heavier than normal and live loads may require changes to the framing to provide adequate support. We've included standard fixture details for your convenience, if you need structural calculations, please contact the Mada Gypsum Technical Department for assistance.

Component Recommended	Fixing Method	Load Capacity
	Wall Mate screw suitable for use with MADA gypsum board	5 kg
	Fisher Butterfly fixing into single layer MADA gypsum board	20 kg Shear Load
	Heavy Duty Anchor fixed into sub-frame through MADA gypsum board	100 kg Shear Load

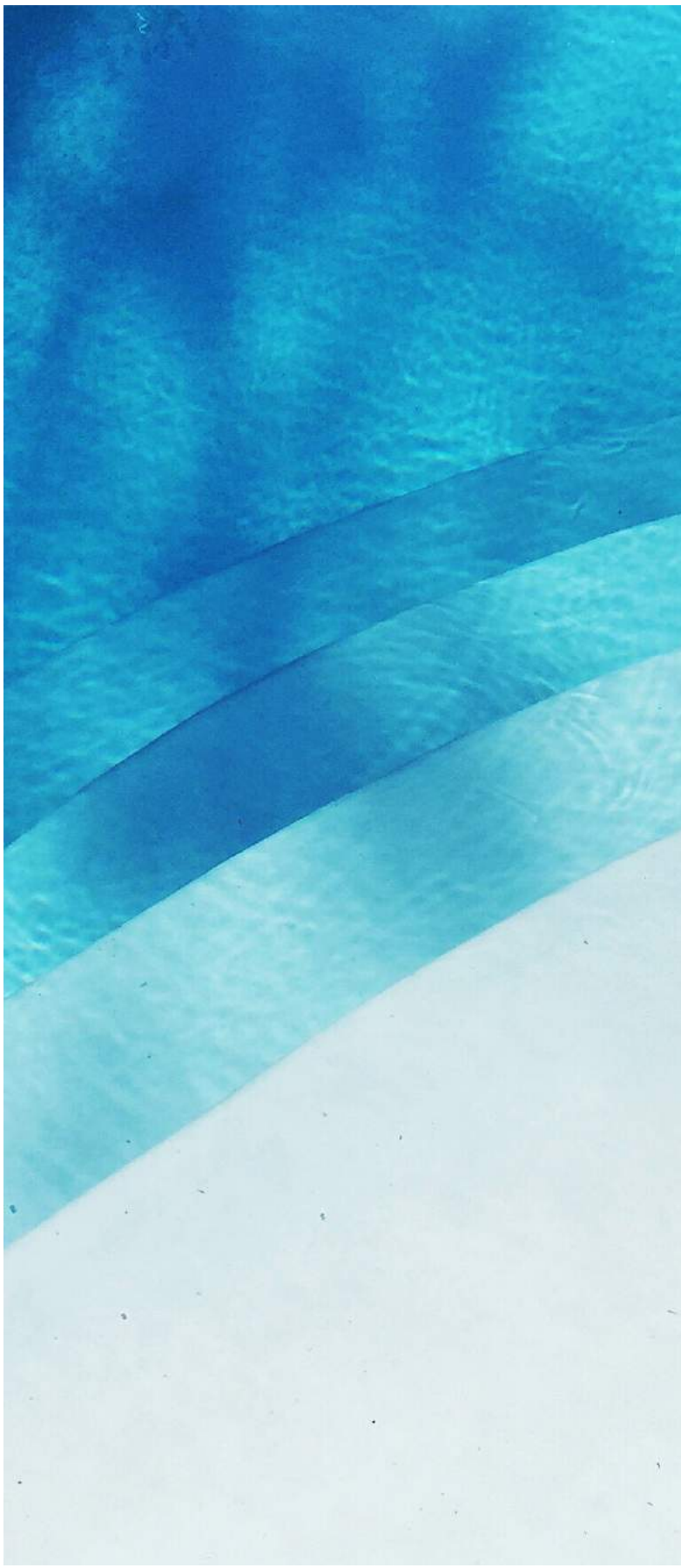
Tiling

For Mada Plus partition systems, we support the recommendations of international standard BS 5385-1:2018 which sets the maximum tile weight (including adhesive) of 32kg/m2 for ceramic tile installations on a wall surface. We also recommend reducing stud centers to 400 mm on center to minimize deflection and maximize adhesion. However, reducing stud centers can affect the acoustic performance of a wall assembly. For greater tile weights or additional tiling support, please contact the Mada Gypsum Technical Department.

Moisture Resistance

Gypsum plasterboards are not recommended for any location that is not weather-tight, may experience wetting, or consistently/regularly damp. Both the American and European classifications require specific manufacturing guidelines for plasterboards to meet different moisture and humidity performance levels. Mada Gypsum has developed moisture-resistant plasterboards for areas subject to high-humidity or excessive moisture such as kitchens and bathrooms, for both residential and commercial projects.

Specialist Mada Board	Maximum Tiling Weight
Mada Procem	50 (kg / m^2)
Mada Fiber Cement Sheet	50 (kg / m^2)
Mada ProGuard	40 (kg / m^2)



LINING SYSTEMS Overview

07

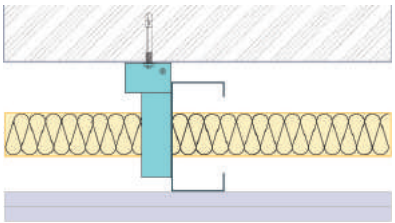
Mada Gypsum has developed a full line of lining systems to work with virtually every substrate.

You can use the chart below to pick the best lining option based on the substrate, or you can contact your local Mada Gypsum representative or the Mada Gypsum Technical Team to assist your lining system solution.

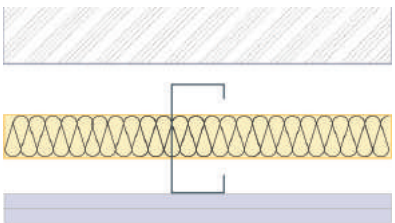
Reverberation time RT		Performance Need	Lining System
Presence	Stability		
Continuous	Stable	Low	Mada Dot & Dab
		High	Mada Braced Lining System / Mada Independent Lining System
	Unstable	Low	Mada Braced Lining System / Mada Independent Lining System
		High	Mada Independent Lining System
Intermittent	Stable	Low	Mada Braced Lining System / Mada Independent Lining System
		High	Mada Independent Lining System
	Unstable	Low	Mada Independent Lining System
		High	Mada Independent Lining System
Absent	N/A	Low	Mada Independent Lining System
		High	Mada Independent Lining System

Dot & Dab

Braced Liner



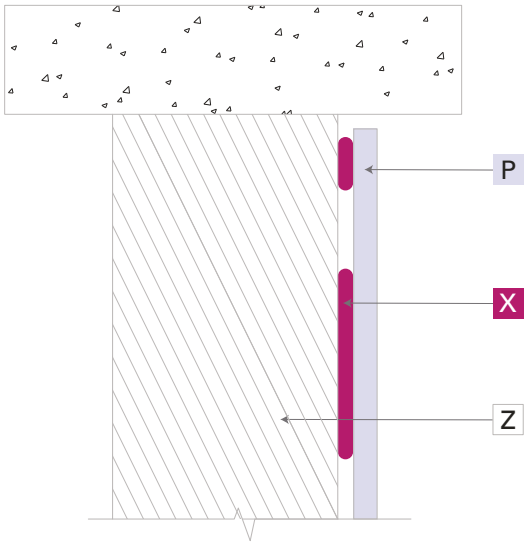
Independent Liner



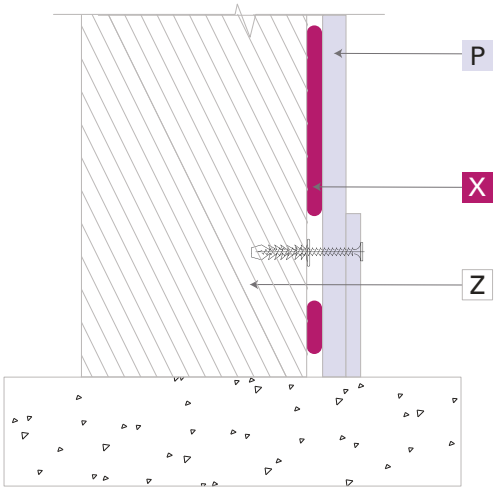
DOT & DAB

AS ONE OF THE ORIGINAL SYSTEMS FOR USING ADHESIVE FOR DRYLINING MASONRY WALLS, THE DOT & DAB SYSTEM HAS BEEN TRIED AND TESTED IN EVERY SECTOR AND REMAINS ONE OF THE NARROWEST SOLUTIONS FOR CREATING A CAVITY FOR MEP WHILST PRODUCING A CONSISTENT SMOOTH FINISH.

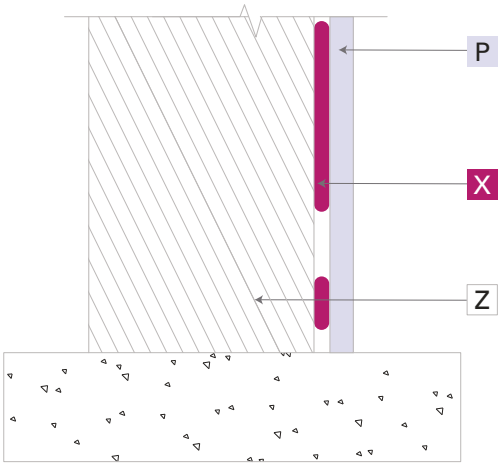
Top Detail



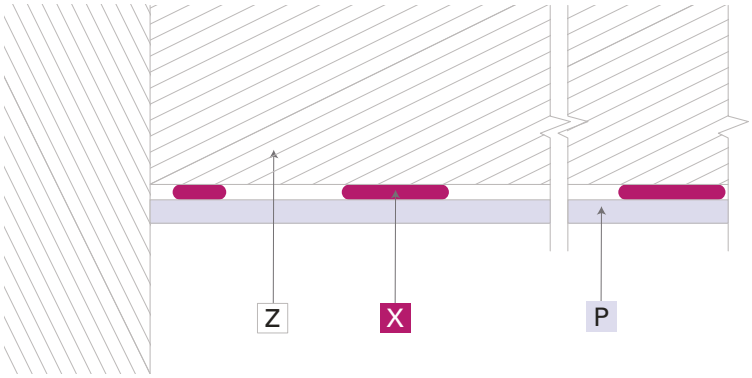
Skirting Detail



Bottom Detail



Plan View

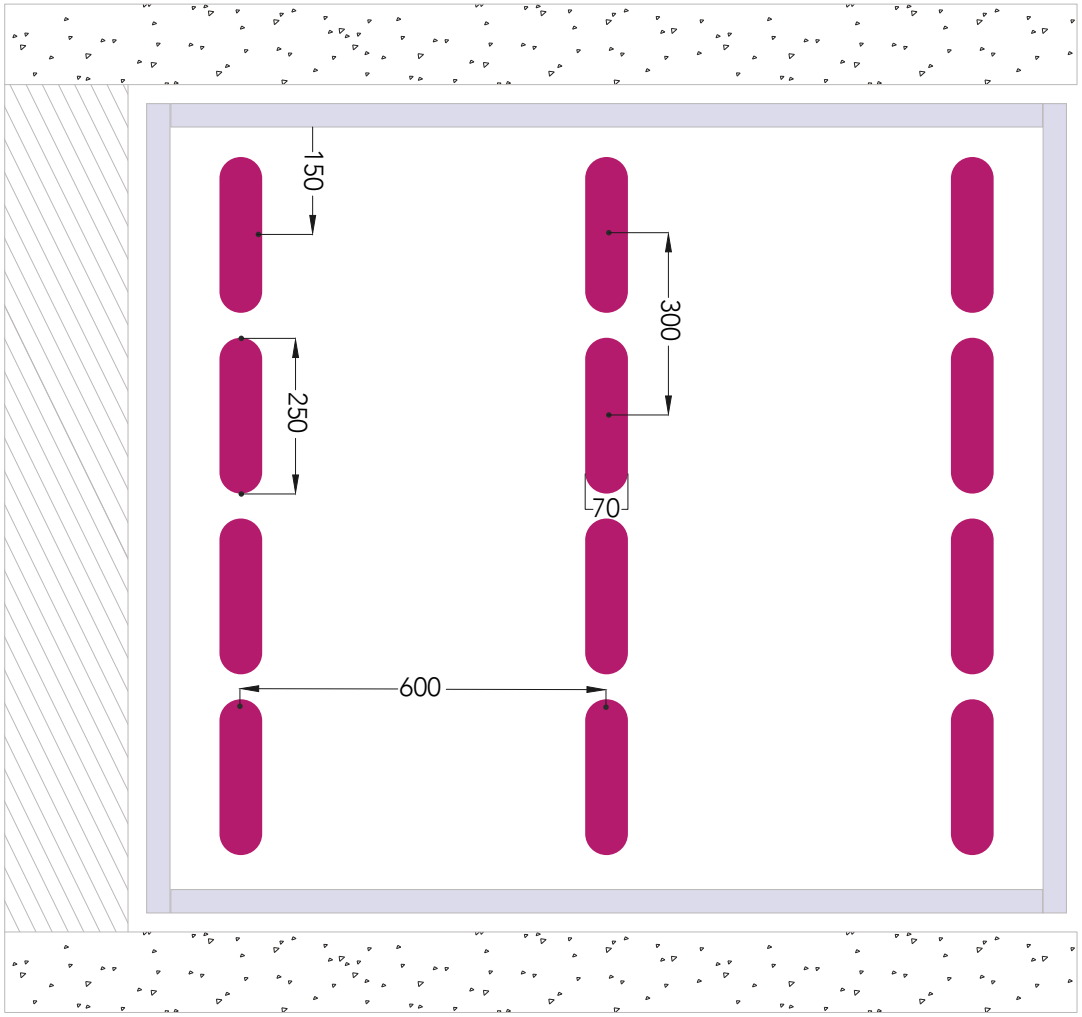


P Mada Plus Plasterboard

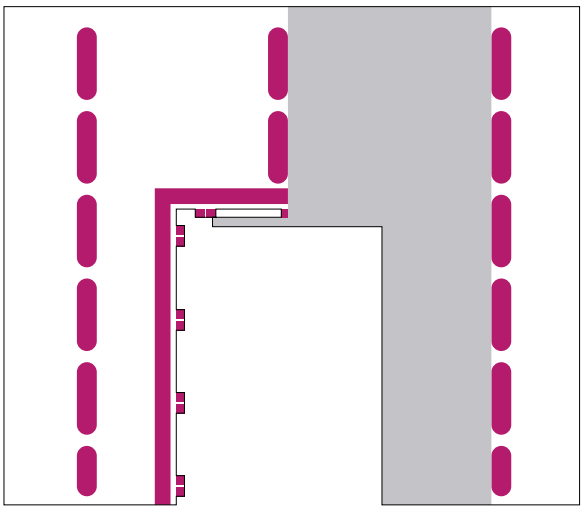
X Mada French Adhesive

Z Brick Wall or Concrete Wall

Adhesive Pattern Detail



Door Opening Detail



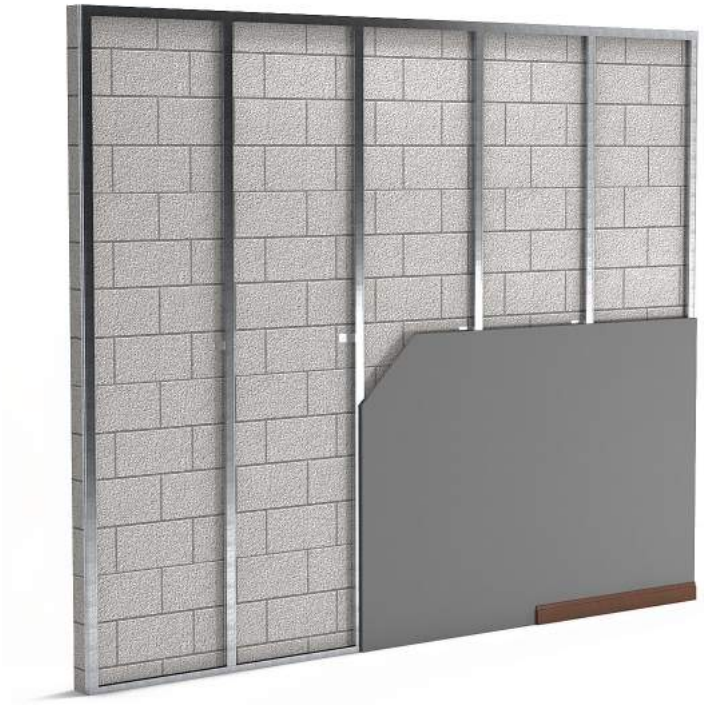
P Mada Plus Plasterboard

X Mada French Adhesive

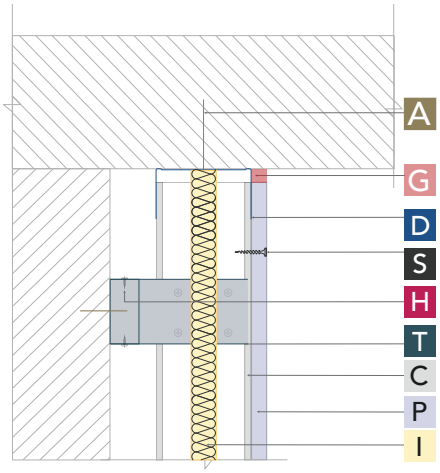
Z Brick Wall or Concrete Wall

BRACED LINER

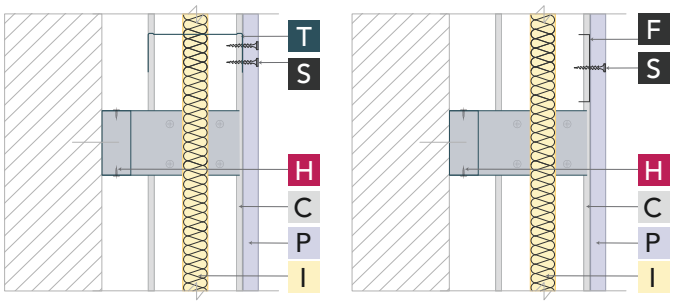
WHERE THE EXISTING SUBSTRATE IS NOT SUITABLE FOR A DIRECTLY BONDED SOLUTION, A FRAME IS REQUIRED TO SUPPORT THE LINING. THIS LINER SYSTEM BRACES TO THE BACKGROUND TO ALLOW FOR MINIMAL WIDTH BUILD UPS AND ALLOWS FOR ACOUSTIC UPGRADES TO THE EXISTING WALL.



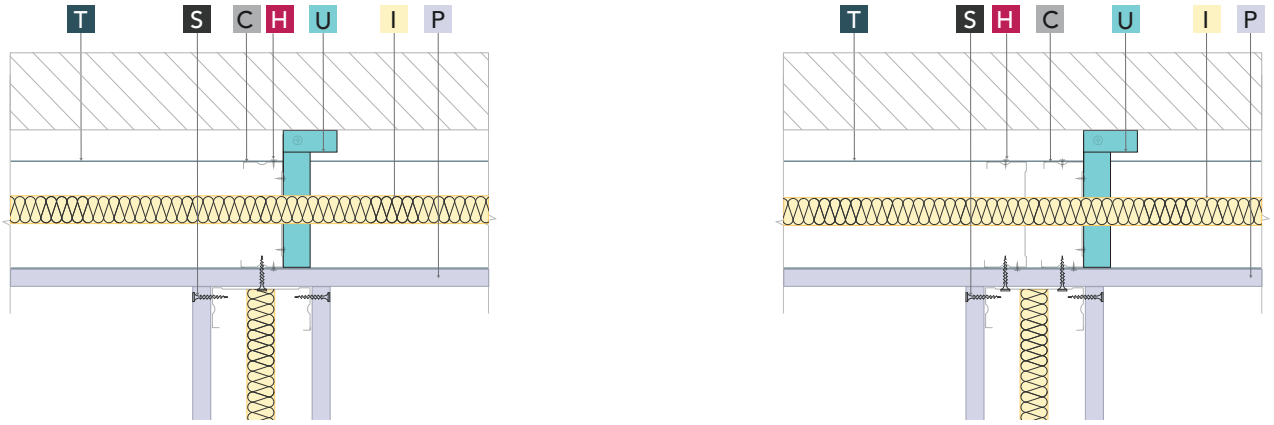
Top Detail



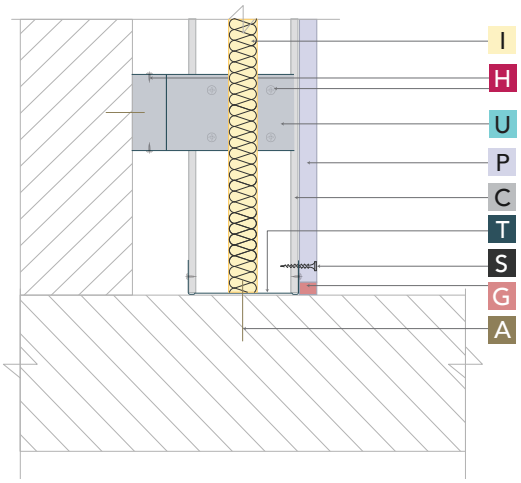
Noggin & Fixing Channel



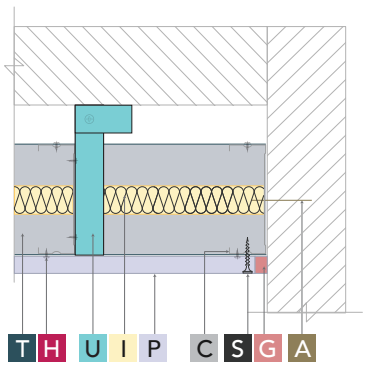
Low Acoustic T - Junction Detail



Bottom Detail

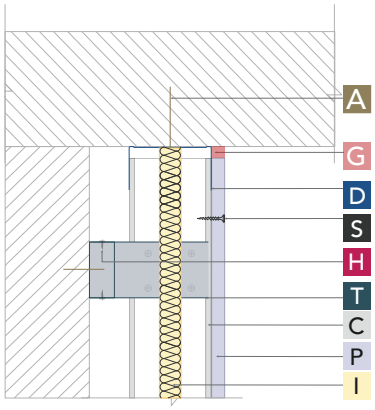


Abuttment Detail

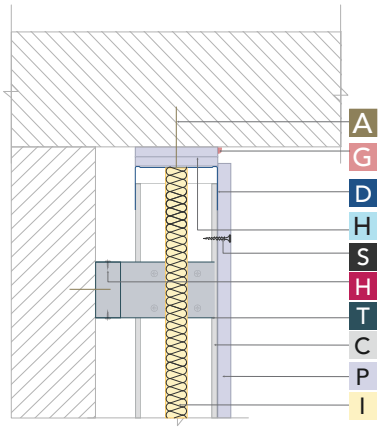


A	Mada Anchor	H	Mada Wafer Head Screw	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
I	Mada Insulation	J	Corner Profile / Tape	P	Mada Plus Plasterboard	S	Mada Drywall Screw
T	Mada U-Track	1	Customized Flat Strap				

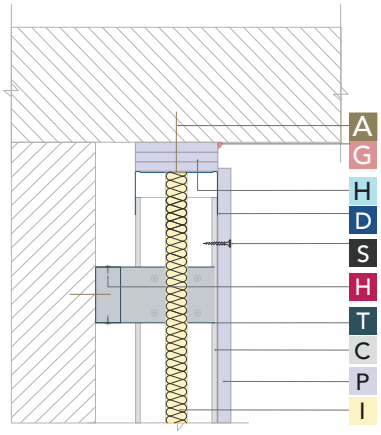
Head Packers Detail



10 - 15 MM
DEFLECTION HEAD DETAIL

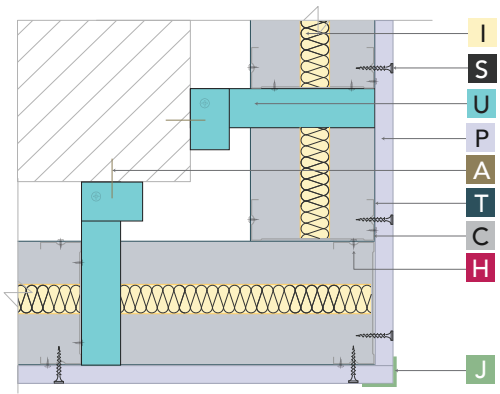


15 - 20 MM
DEFLECTION HEAD DETAIL

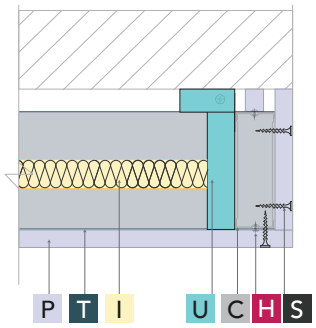


25 MM
DEFLECTION HEAD DETAIL

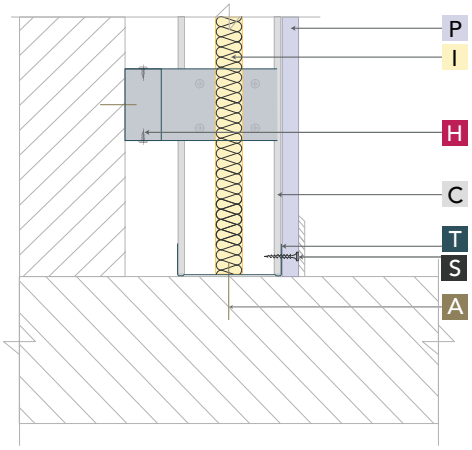
Corner Detail



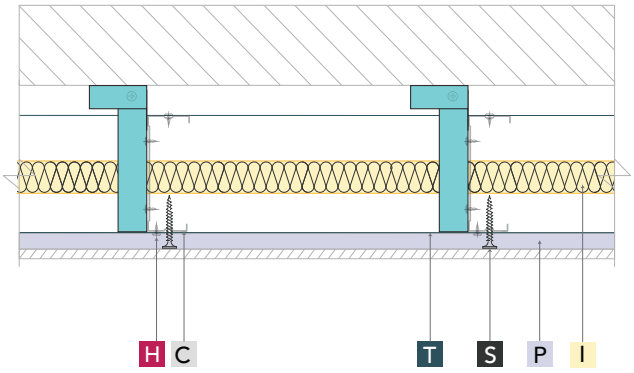
End Detail



Skirting Detail

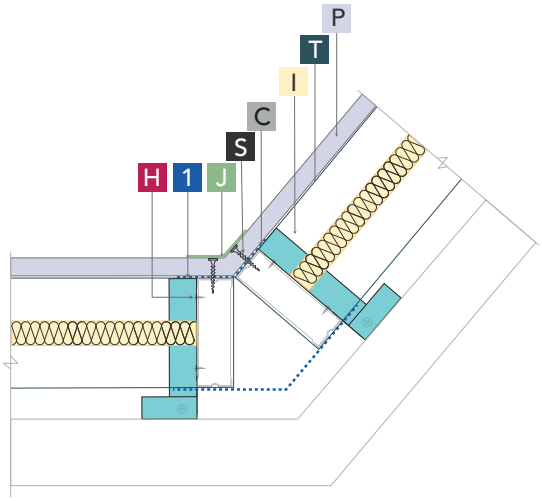


Skirting Detail

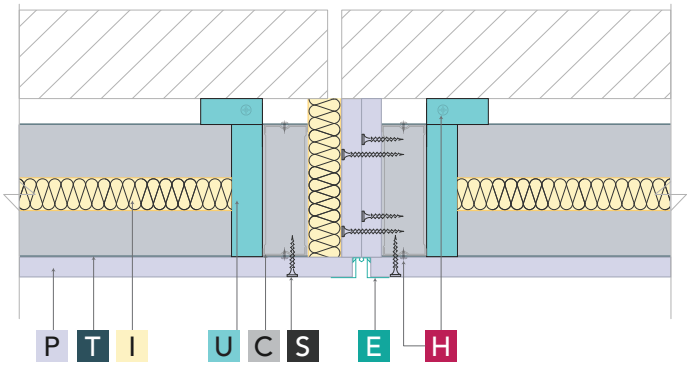


A	Mada Anchor	H	Mada Wafer Head Screw	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
I	Mada Insulation	J	Corner Profile / Tape	P	Mada Plus Plasterboard	S	Mada Drywall Screw
T	Mada U-Track	1	Customized Flat Strap				

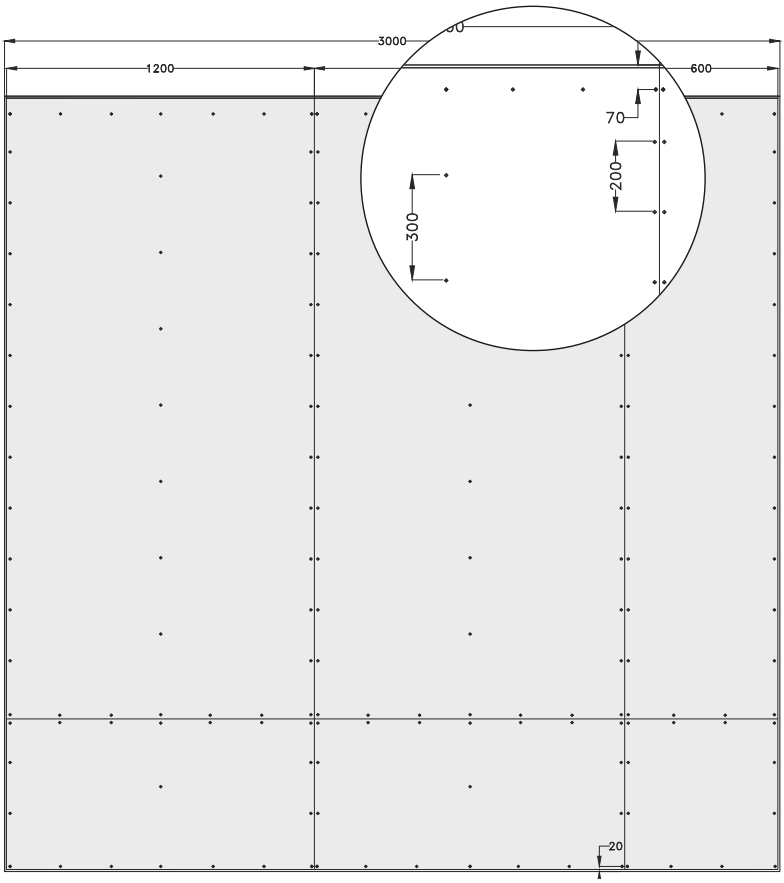
Splayed Junction Detail



Expansion Joint



Screw Spacing Detail



A	Mada Anchor	H	Mada Wafer Head Screw	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
I	Mada Insulation	J	Corner Profile / Tape	P	Mada Plus Plasterboard	S	Mada Drywall Screw
T	Mada U-Track	1	Customized Flat Strap				

INDEPENDENT LINER

OFFERING A FULLY INDEPENDENT LINING SYSTEM, INDEPENDENT LINER SYSTEM USES MADA 'C' STUDS TO SPAN VERTICALLY AND CREATE ACOUSTIC UPGRADES OR EFFECTIVE COMPARTMENTATION THROUGH A SIMPLE AND EASY TO INSTALL CONSTRUCTION.

Acoustic upgrade options

Data below describes upgrading Hollow Concrete Block 760 kg/m3 and 200mm that delivers an Rw & STC 44 dB base performance

48mm Stud (0.5mm)

System Ref.	Width (mm)	Insulation Thickness (mm)	Board and thickness *(On one side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
ILS101	62.5	-	12.5 Regular	47	2150	47	2400
ILS102	62.5	-	12.5 Fire Resistant	48	2150	47	2400
ILS103	62.5	-	12.5 Impact Resistant	51	2150	50	2400
ILS104	62.5	-	12.5 ProGuard	50	2150	49	2400
ILS111	62.5	25	12.5 Regular	55	2150	54	2400
ILS114	62.5	25	12.5 ProGuard	56	2150	55	2400
ILS109	62.5	-	12.5 Procem	52	1850	50	2100
ILS119	62.5	25	12.5 Procem	56	1850	55	2100
ILS105	66	-	16 Regular	50	2150	49	2400
ILS107	66	-	16 Impact Resistant	52	2150	51	2400
ILS115	66	25	16 Regular	55	2150	55	2400
ILS118	66	25	16 ProGuard	56	2150	55	2400
ILS101	75	-	2 x 12.5 Regular	53	2450	52	2700
ILS103	75	-	2 x 12.5 Impact Resistant	54	2450	54	2700
ILS104	75	-	2 x 12.5 ProGuard	54	2450	53	2700
ILS111	75	25	2 x 12.5 Regular	57	2450	57	2700
ILS114	75	25	2 x 12.5 ProGuard	57	2450	57	2700

68mm Stud (0.5mm)

System Ref.	Width (mm)	Insulation Thickness (mm)	Board and thickness *(On one side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
ILS201	82.5	-	12.5 Regular	50	2550	49	2800
ILS202	82.5	-	12.5 Fire Resistant	51	2550	50	2800
ILS203	82.5	-	12.5 Impact Resistant	53	2550	52	2800
ILS204	82.5	-	12.5 ProGuard	52	2550	51	2800
ILS211	82.5	25	12.5 Regular	56	2550	55	2800
ILS214	82.5	25	12.5 ProGuard	57	2550	57	2800
ILS221	82.5	50	12.5 Regular	56	2550	55	2800
ILS209	82.5	-	12.5 Procem	53	2250	52	2500
ILS219	82.5	25	12.5 Procem	56	2250	56	2500
ILS205	86	-	16 Regular	52	2550	51	2800
ILS206	86	-	16 Fire Resistant	52	2550	51	2800
ILS201	95	-	2 x 12.5 Regular	54	2850	53	3100
ILS203	95	-	2 x 12.5 Impact Resistant	55	2850	55	3100
ILS204	95	-	2 x 12.5 ProGuard	55	2850	55	3100
ILS211	95	25	2 x 12.5 Regular	57	2850	57	3100

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

98mm Stud (0.5mm)

System Ref.	Width (mm)	Insulation Thickness (mm)	Board and thickness *(On one side)*	Maximum Height* STC (dB)	(mm) 0.24kPa	Maximum Height* R_w (dB)	(mm) 0.2kPa
ILS301	112.5	-	12.5 Regular	52	4000	51	4250
ILS303	112.5	-	12.5 Impact Resistant	54	4000	53	4250
ILS304	112.5	-	12.5 ProGuard	53	4000	53	4250
ILS311	112.5	25	12.5 Regular	57	4000	56	4250
ILS309	112.5	-	12.5 Procem	54	3700	53	3950
ILS319	112.5	25	12.5 Procem	56	3700	56	3950
ILS314	112.5	25	12.5 ProGuard	57	4000	57	4250
ILS305	116	-	16 Regular	53	4000	52	4250
ILS301	125	-	2 x 12.5 Regular	55	4300	54	4550
ILS304	125	-	2 x 12.5 ProGuard	56	4300	56	4550
ILS311	125	25	2 x 12.5 Regular	57	4300	57	4550

Independent Liner

System Ref.
ILS236

Acoustic
STC (dB): 45
R_w (dB): 44

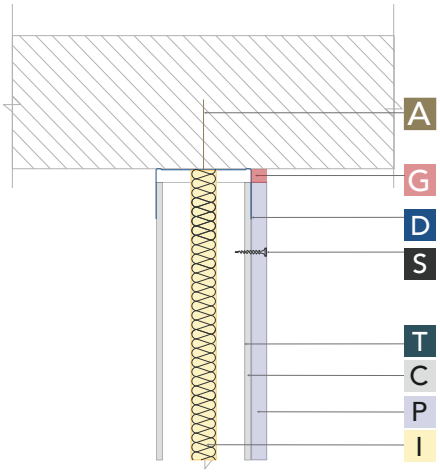
Width: 118mm **Stud Size**: 68mm

Board Thickness
3 Layers of 16 Fire Resistant

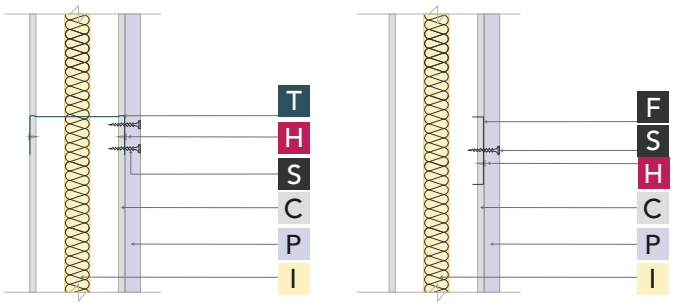
Maximum Height*
(mm) 0.24kPa: 2500
(mm) 0.2kPa: 2750

* Limiting deflection criteria of l/240 @ 0.24kPa | ** Limiting deflection criteria of l/240 @ 0.2kPa

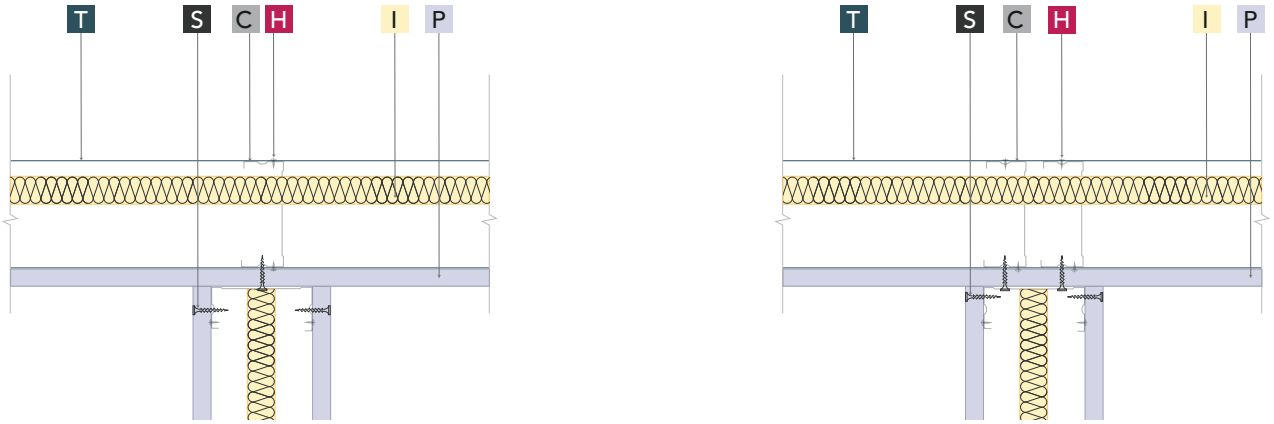
Top Detail



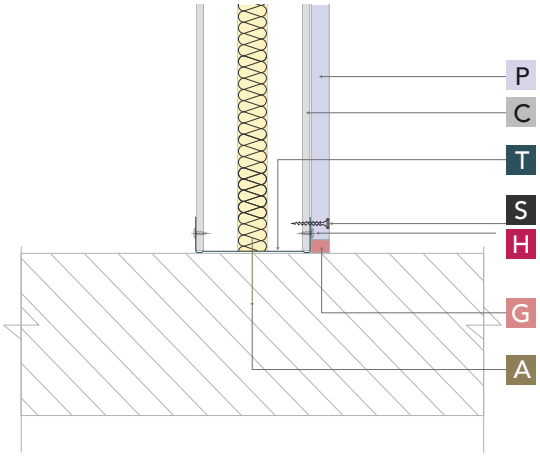
Noggin & Fixing Channel



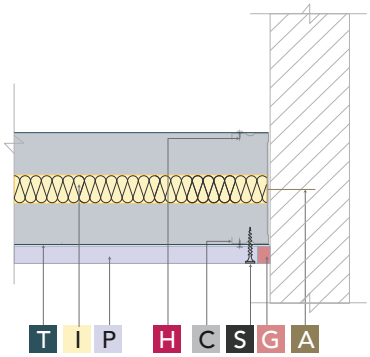
Low Acoustic T - Junction Detail



Bottom Detail

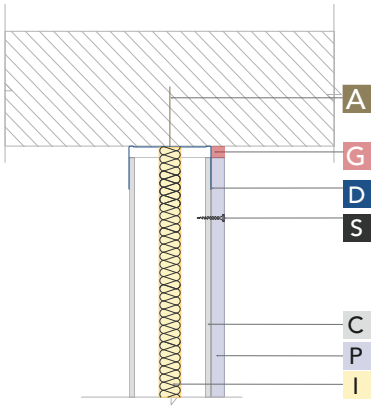


Abuttment Detail

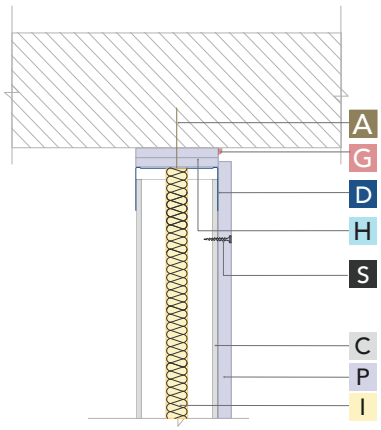


A	Mada Anchor	H	Mada Wafer Head Screw	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
I	Mada Insulation	J	Corner Profile / Tape	P	Mada Plus Plasterboard	S	Mada Drywall Screw
T	Mada U-Track	1	Customized Flat Strap				

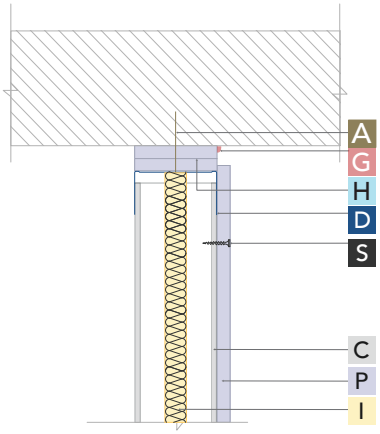
Head Packers Detail



10 - 15 MM
DEFLECTION HEAD DETAIL

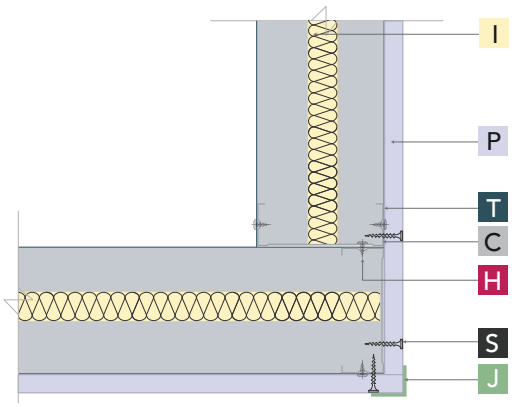


15 - 20 MM
DEFLECTION HEAD DETAIL

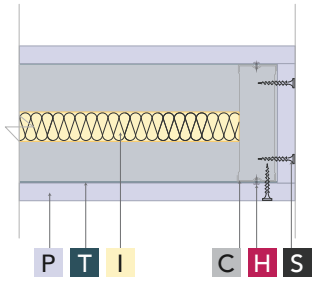


25 MM
DEFLECTION HEAD DETAIL

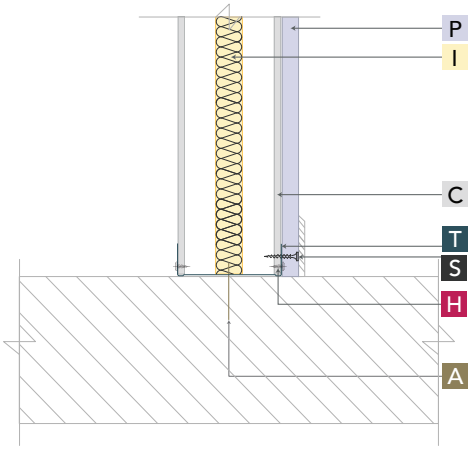
Corner Detail



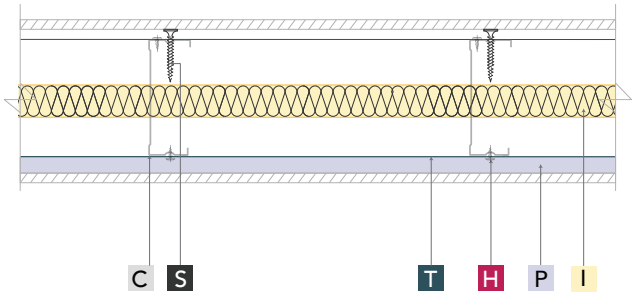
End Detail



Skirting Detail

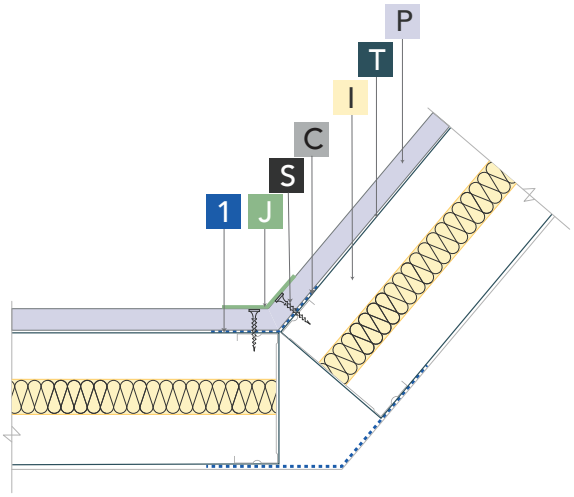


Skirting Detail

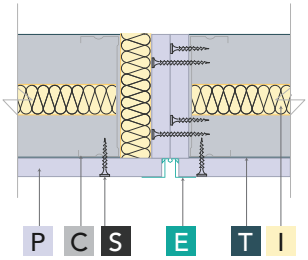


A	Mada Anchor	H	Mada Wafer Head Screw	C	Mada C-Stud	D	Mada Deflection Head Track
E	Mada Expansion Joint	F	Mada Fixing Channel	G	Mada Fire Guard Acrylic Sealant	H	Mada Head Packer with Mada Plus Plasterboard
I	Mada Insulation	J	Corner Profile / Tape	P	Mada Plus Plasterboard	S	Mada Drywall Screw
T	Mada U-Track	1	Customized Flat Strap				

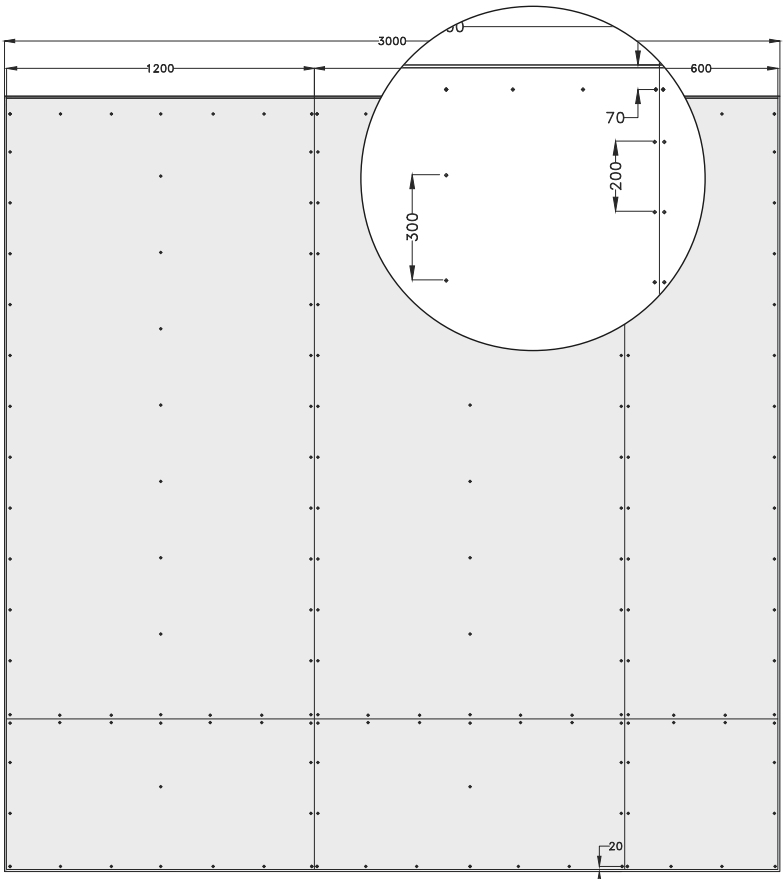
Splayed Junction Detail



Expansion Joint



Screw Spacing Detail



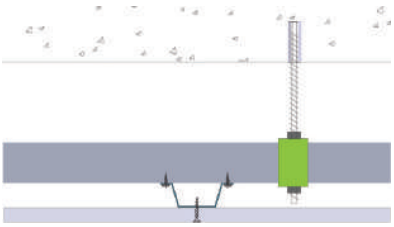
A Mada Anchor
E Mada Expansion Joint
I Mada Insulation
T Mada U-Track
H Mada Wafer Head Screw
F Mada Fixing Channel
J Corner Profile / Tape
1 Customized Flat Strap
C Mada C-Stud
G Mada Fire Guard Acrylic Sealant
P Mada Plus Plasterboard
D Mada Deflection Head Track
H Mada Head Packer with Mada Plus Plasterboard
S Mada Drywall Screw

CEILING SYSTEMS Overview

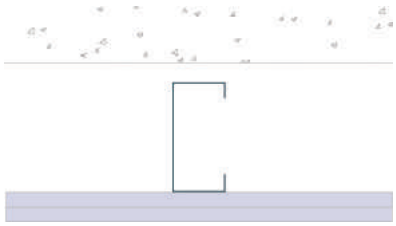
08

Mada Gypsum offers a variety of installation methods for its ceiling solutions depending on the accessories chosen, with a consideration for corridors systems. Mada offers a choice between monolithic or tile options, single or double boards, with an option for insulation:

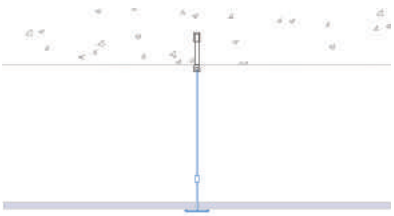
MF Ceiling



Corridor Spanning



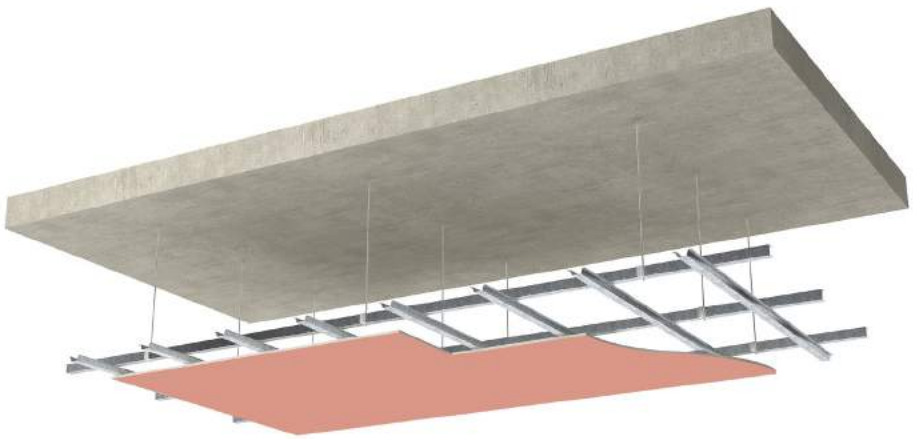
Tile & Grid



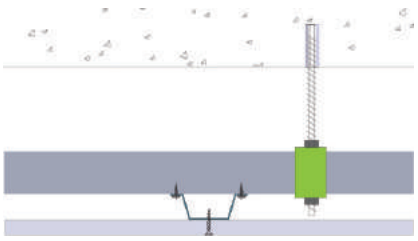
METAL FRAMING (MF) CEILING

THREADED ROD

THE MOST COMMON SOLUTION FOR CREATING SIMPLE, COST-EFFECTIVE, MONOLITHIC CEILINGS, MADA MF CEILING IS HIGHLY ADAPTIVE BEING ABLE TO OFFER FIRE RATED SOLUTIONS AND HIGH PERFORMANCE ACOUSTIC MASS BARRIER CONFIGURATIONS.



Non rated



Fire Rating
Not rated

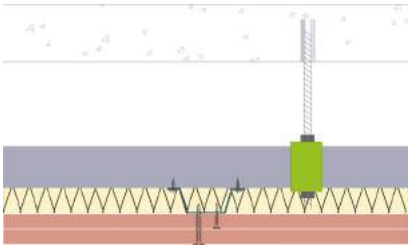
Board Thickness
1 Layer of 12.5 Regular

Insulation
None

Main Channel Centers
900mm

Furring Channel Centers
400mm

1 hour fire rated solution



Fire Rating
EN1364-2: 60 min

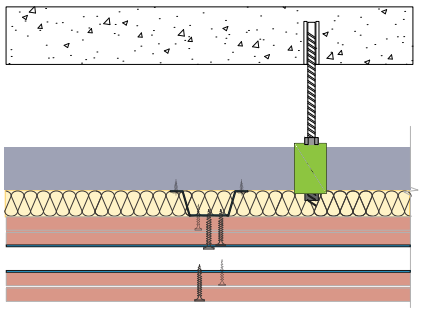
Board Thickness
2 Layers of 16 Fire Resistant

Insulation
50mm Rockwool (40 kg/m^3)

Main Channel Centers
900mm

Furring Channel Centers
400mm

2 hour fire rated solution



Fire Rating
EN1364-2: 120 min

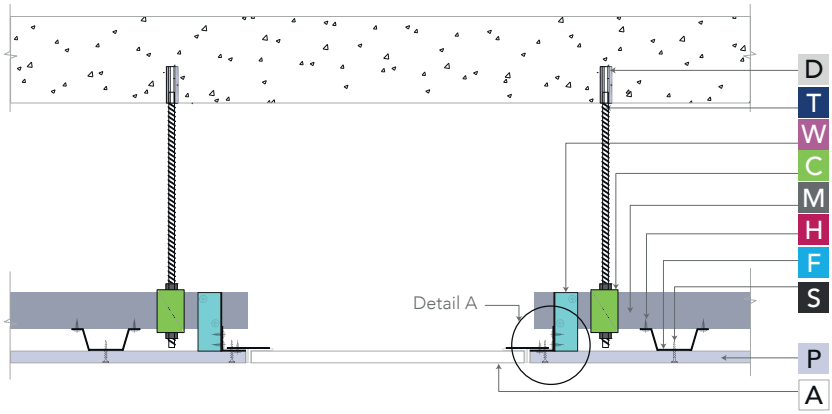
Board Thickness
4 Layers of 16 Fire Resistant

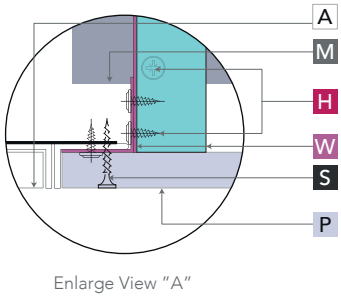
Insulation
50mm Rockwool (40 kg/m^3)

Main Channel Centers
900mm

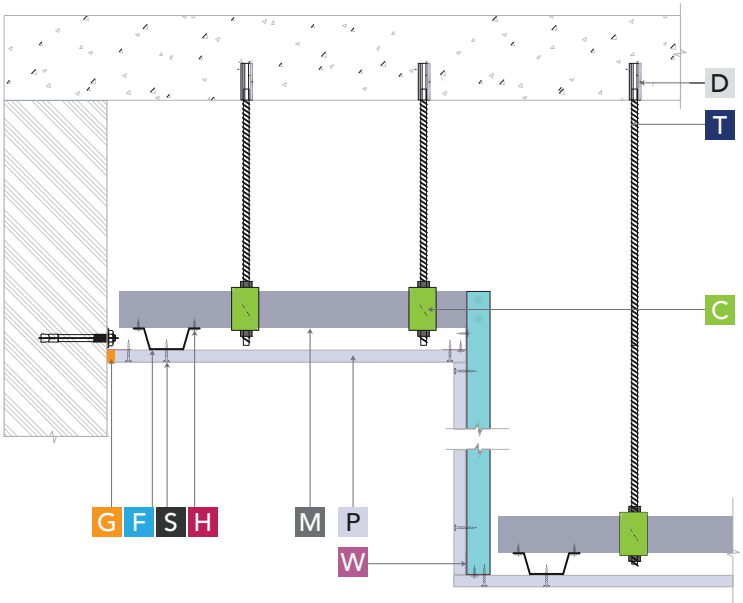
Furring Channel Centers
400mm

Access Panel Detail

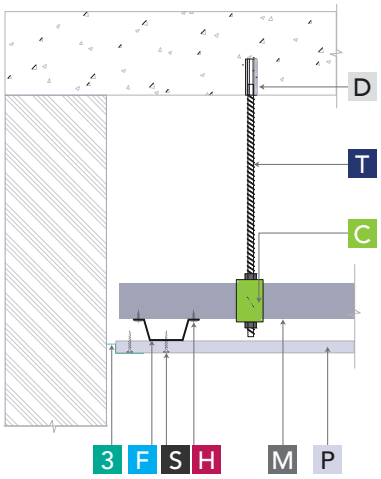




Change of Level Perimeter Detail Parallel to Furring Channel

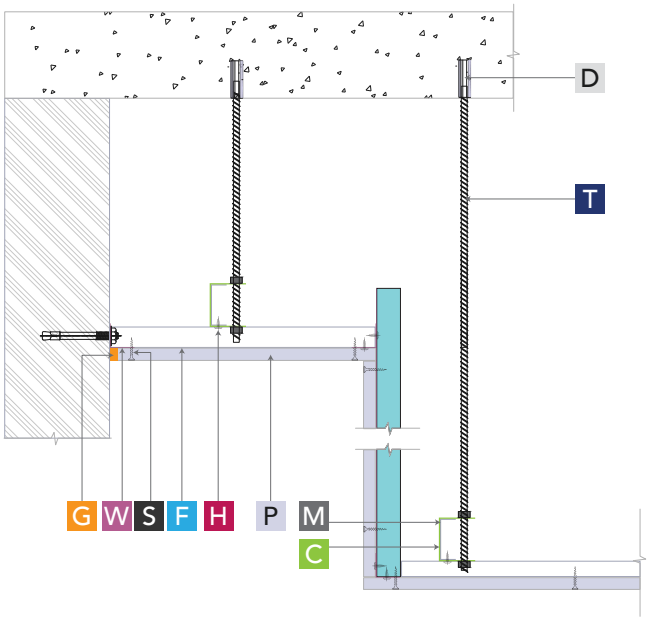


Floating Perimeter Detail Parallel to Furring Channel

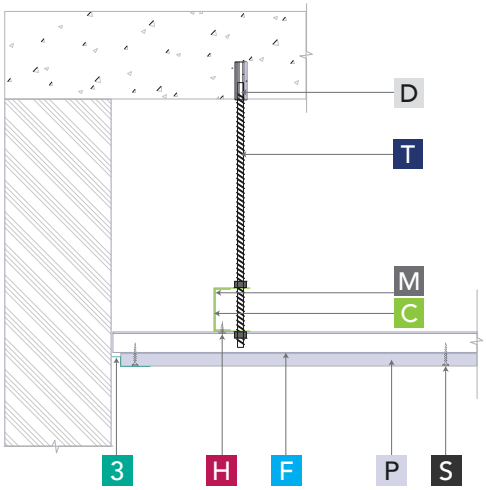


A Mada Access Panel
S Mada Drywall Screw
3 Mada Shadow Gap Angle
H Mada Wafer Head Screw
W Mada Wall Angle
G Mada Fire Guard Acrylic Sealant
P Mada Plus Plasterboard
F Mada Furring Channel
T Mada Threaded Rod
M Mada Main Channel
D Mada Drop In Anchor
C Mada C-Clamp

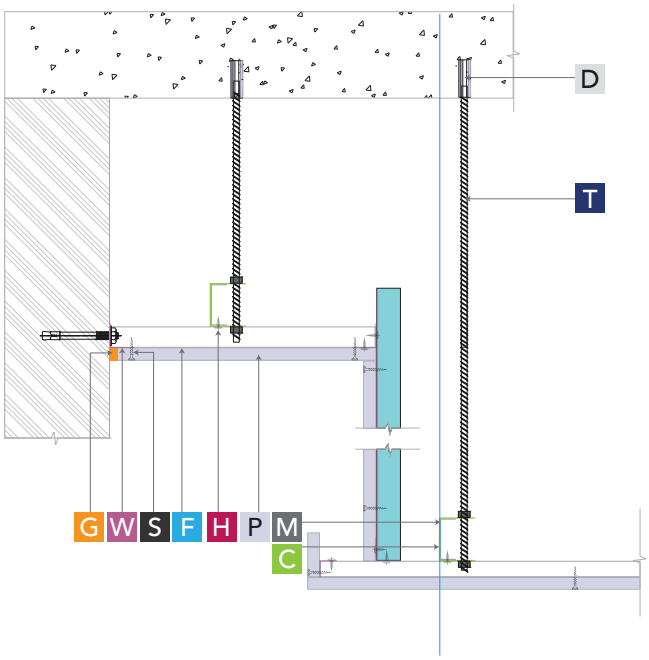
Change of Level Perimeter Detail Parallel to Furring Channel



Floating Perimeter Detail Parallel to Main Channel



Light Cove Detail



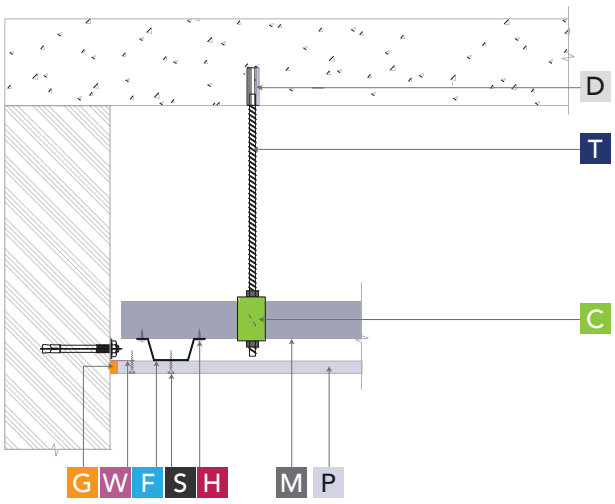
Threaded Rod Load Table

Based on 0.55mm Mada Sections

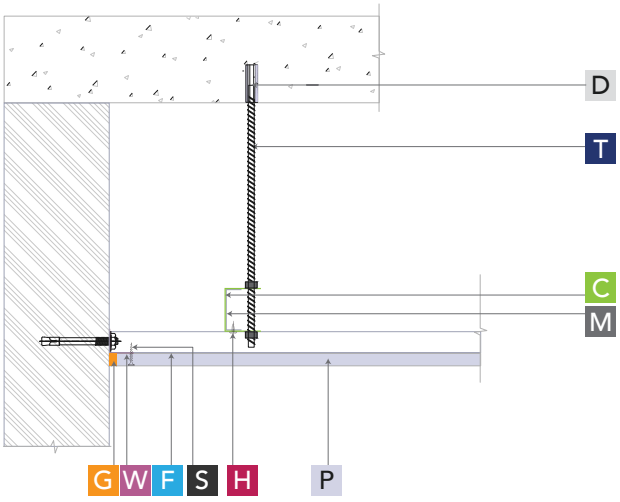
Hanger Centres (mm)	Main Channel Centers (mm)	Furring Channel Centers (mm)	Maximum Load (kg/m²)
1200	1200	400	19.60
1000	1000	400	24.50
600	900	400	34.30
600	600	400	39.20

A Mada Access Panel
S Mada Drywall Screw
3 Mada Shadow Gap Angle
H Mada Wafer Head Screw
W Mada Wall Angle
G Mada Fire Guard Acrylic Sealant
P Mada Plus Plasterboard
F Mada Furring Channel
T Mada Threaded Rod
M Mada Main Channel
D Mada Drop In Anchor
C Mada C-Clamp

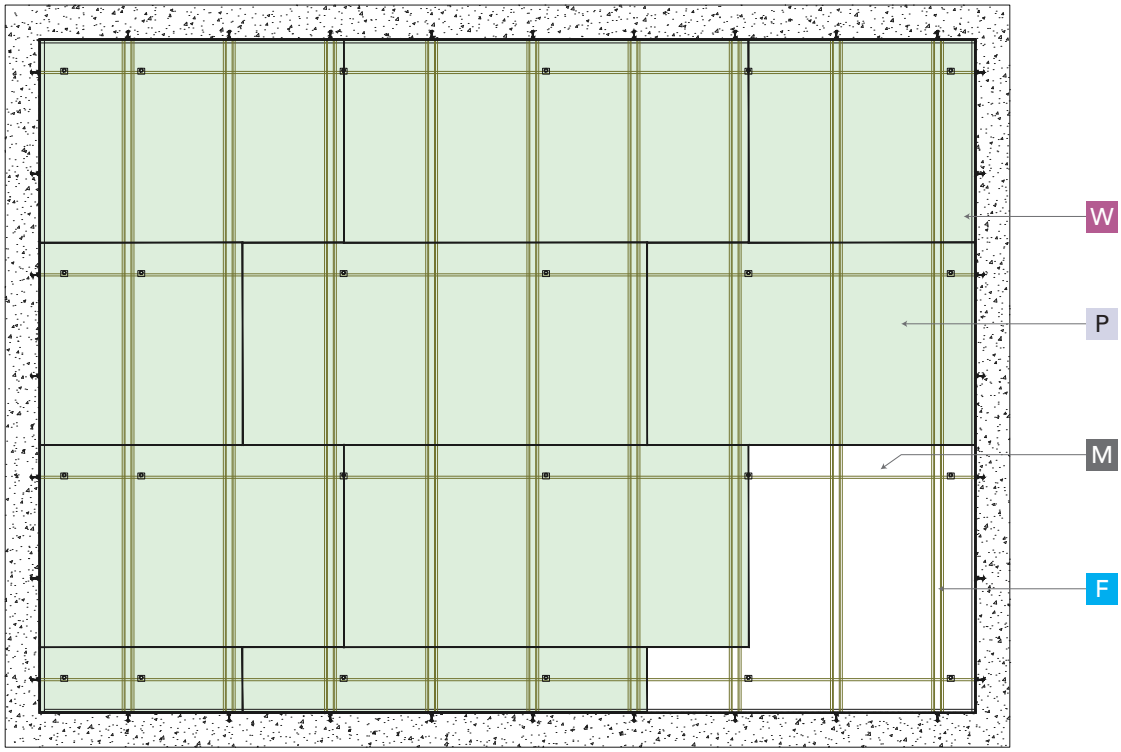
Perimeter Detail
Parallel to Furring Channel



Perimeter Detail
Parallel to Main Channel



Ceiling Board - Reflecting Ceiling Plan
Double Layer



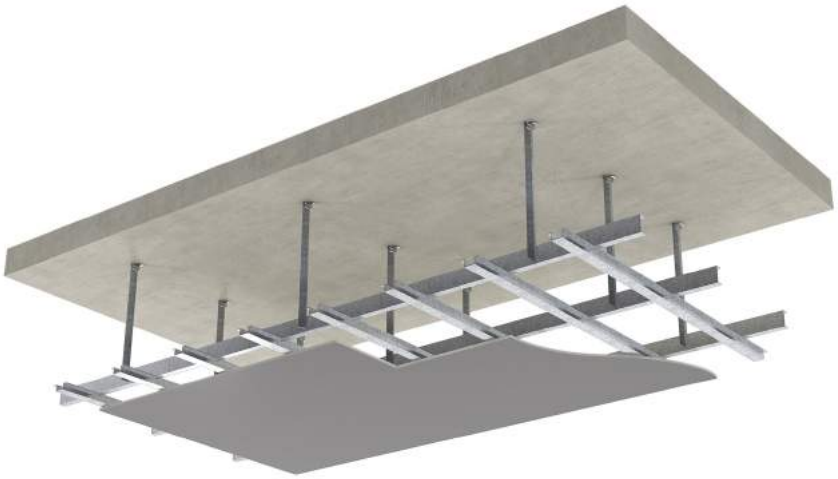
PLAN VIEW - REFLECTED CEILING PLAN (THREADED ROD) - DOUBLE LAYER

A	Mada Access Panel	H	Mada Wafer Head Screw	P	Mada Plus Plasterboard	M	Mada Main Channel
S	Mada Drywall Screw	W	Mada Wall Angle	F	Mada Furring Channel	D	Mada Drop In Anchor
3	Mada Shadow Gap Angle	G	Mada Fire Guard Acrylic Sealant	T	Mada Threaded Rod	C	Mada C-Clamp

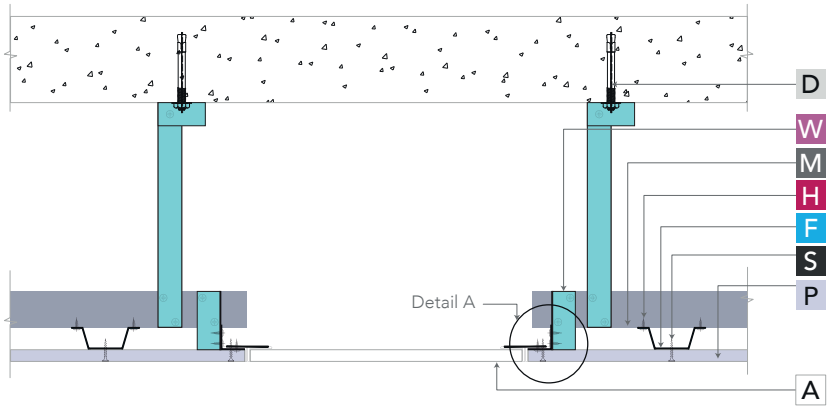
METAL FRAMING (MF) CEILING

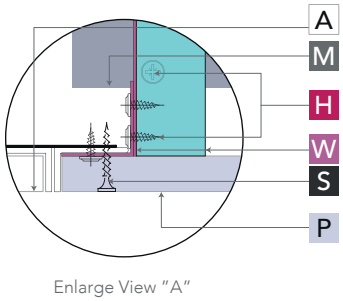
ANGLE FIXATION

THE MOST COMMON SOLUTION FOR CREATING SIMPLE, COST-EFFECTIVE, MONOLITHIC CEILINGS, MADA MF CEILING IS HIGHLY ADAPTIVE BEING ABLE TO OFFER FIRE RATED SOLUTIONS AND HIGH PERFORMANCE ACOUSTIC MASS BARRIER CONFIGURATIONS.

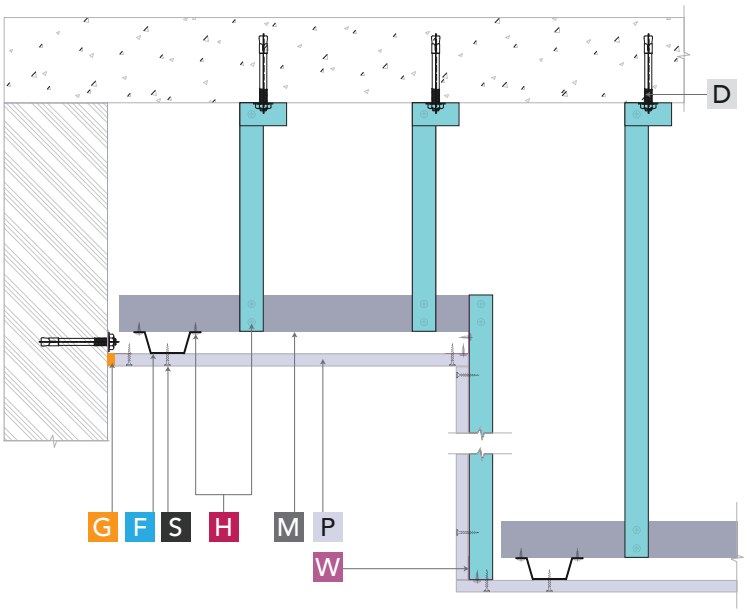


Access Panel Detail

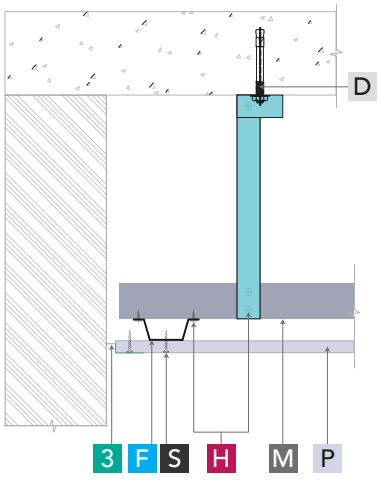




Change of Level Perimeter Detail Parallel to Furring Channel

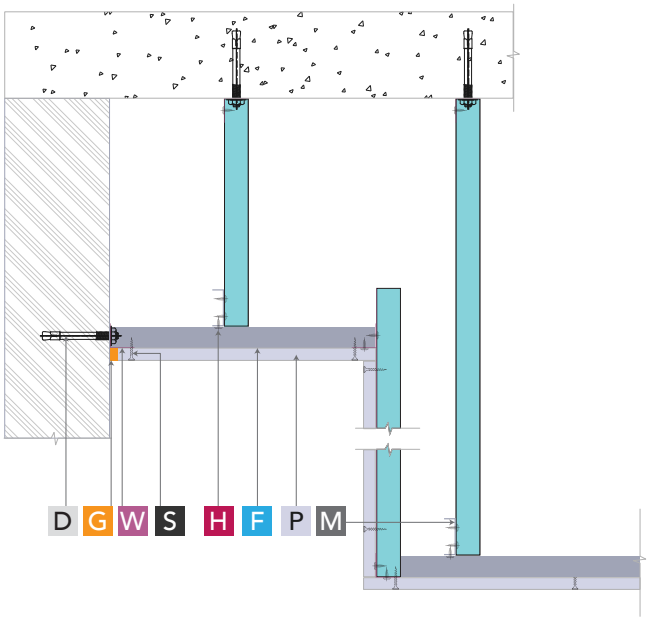


Floating Perimeter Detail Parallel to Furring Channel

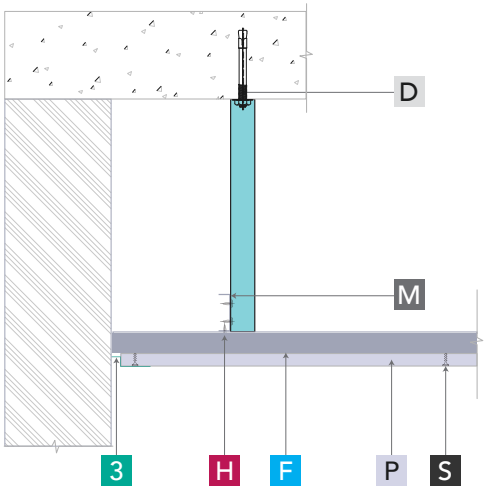


A Mada Access Panel
S Mada Drywall Screw
3 Mada Shadow Gap Angle
H Mada Wafer Head Screw
W Mada Wall Angle
G Mada Fire Guard Acrylic Sealant
P Mada Plus Plasterboard
F Mada Furring Channel
M Mada Main Channel
D Mada Drop In Anchor

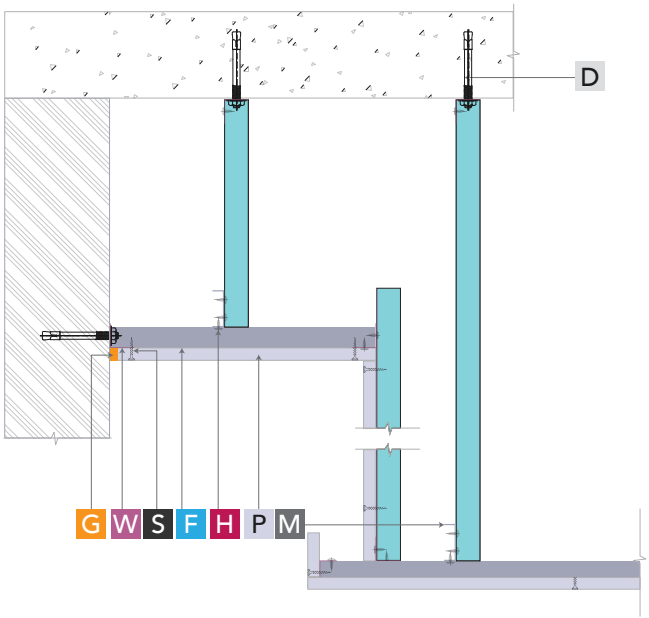
Change of Level Perimeter Detail Parallel to Furring Channel



Floating Perimeter Detail Parallel to Main Channel



Light Cove Detail



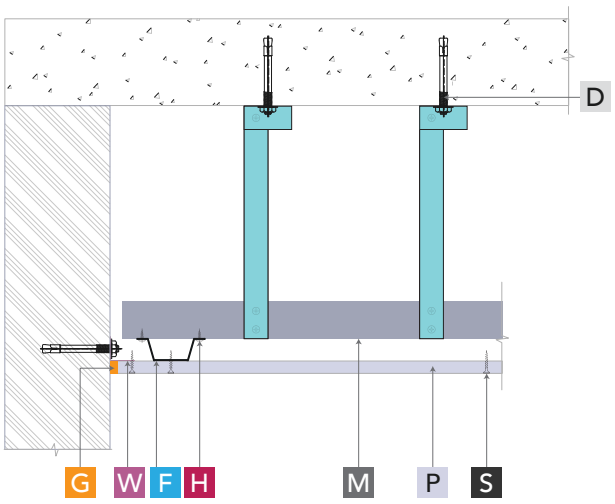
Angle Fixation Load Table

Based on 0.55mm Mada Sections

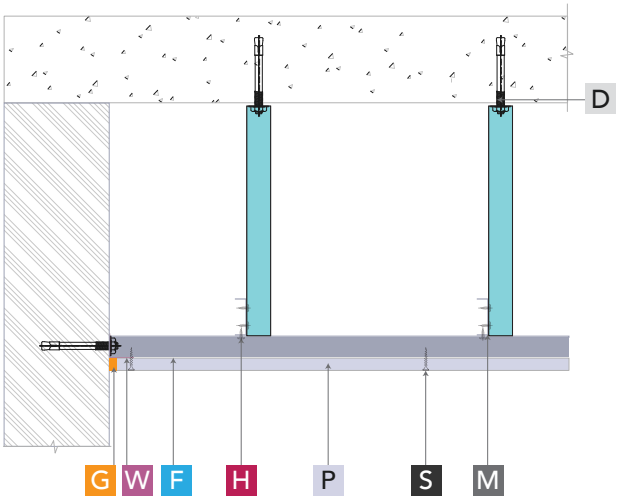
Hanger Centres (mm)	Main Channel Centers (mm)	Furring Channel Centers (mm)	Maximum Load (kg/m²)
1200	1200	400	14.70
1000	1000	400	19.60
600	900	400	29.40
600	600	400	34.30

A Mada Access Panel
S Mada Drywall Screw
3 Mada Shadow Gap Angle
H Mada Wafer Head Screw
W Mada Wall Angle
G Mada Fire Guard Acrylic Sealant
P Mada Plus Plasterboard
F Mada Furring Channel
M Mada Main Channel
D Mada Drop In Anchor

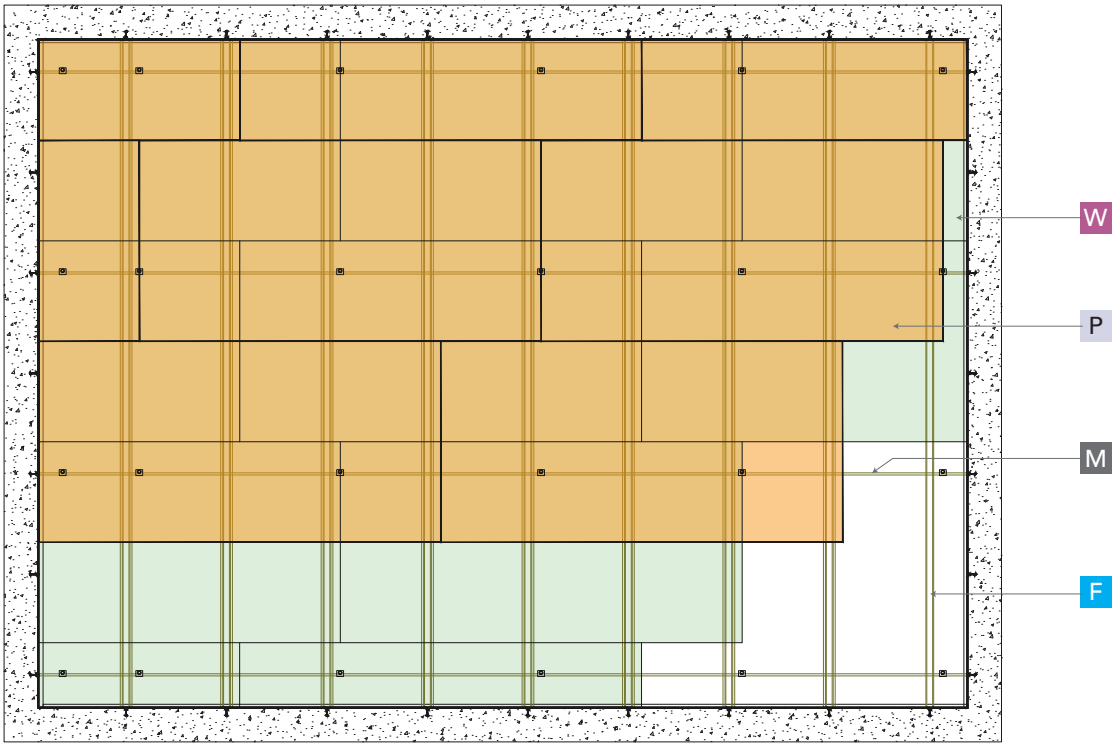
Perimeter Detail
Parallel to Furring Channel



Perimeter Detail
Parallel to Main Channel



Ceiling Board - Reflecting Ceiling Plan
Double Layer



PLAN VIEW - REFLECTED CEILING PLAN (ANGLE FIXATION) - DOUBLE LAYER

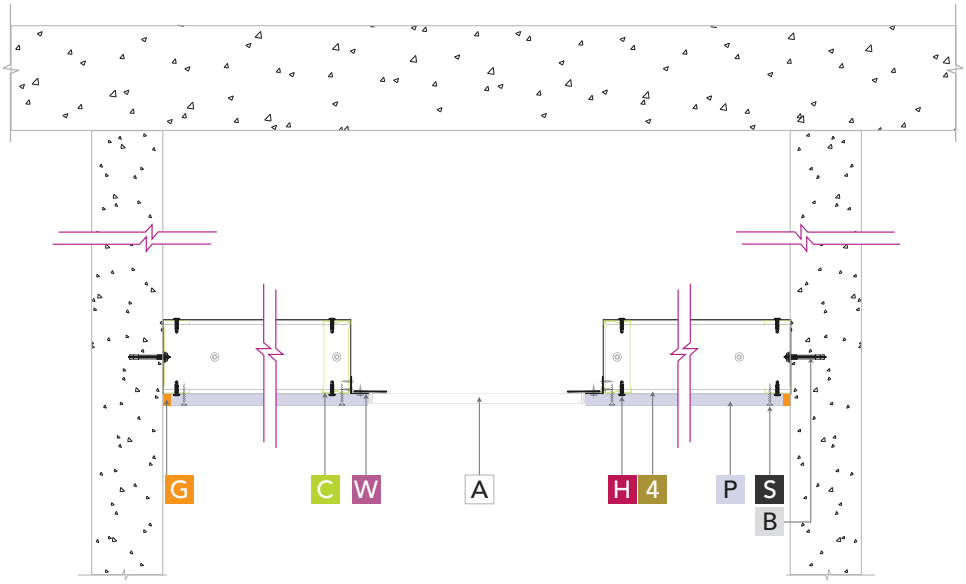
A	Mada Access Panel	H	Mada Wafer Head Screw	P	Mada Plus Plasterboard	M	Mada Main Channel
S	Mada Drywall Screw	W	Mada Wall Angle	F	Mada Furring Channel	D	Mada Drop In Anchor
3	Mada Shadow Gap Angle	G	Mada Fire Guard Acrylic Sealant				

CORRIDOR SPANNING SYSTEM

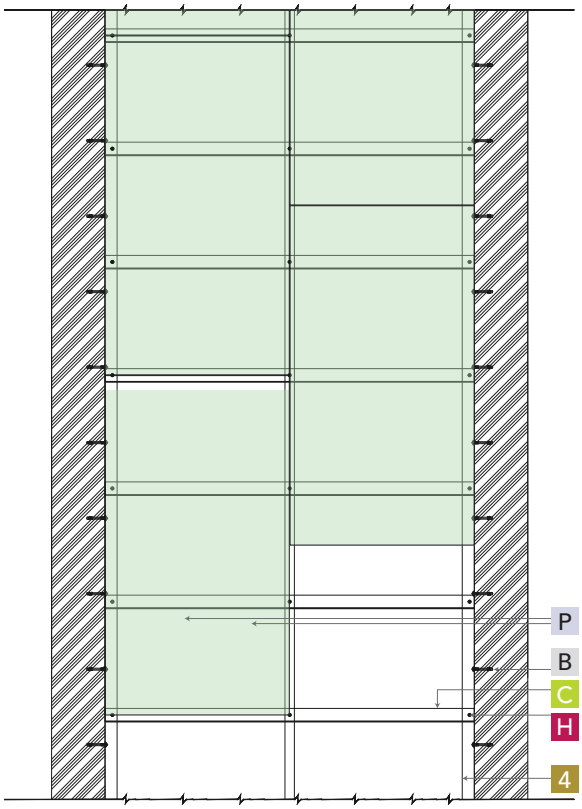
THERE ARE MANY SITUATIONS WHERE ACCESS TO THE SOFFIT IS LIMITED. THESE SITUATIONS ARE VERY LIMITING FOR TRADITIONAL SUSPENDED CEILING SOLUTIONS. TO OVERCOME THIS, MADA CORRIDOR SPANNING SYSTEM USES SECTIONS TO SPAN HORIZONTALLY WITHOUT THE NEED FOR VERTICAL SUSPENSION.

			Span (mm)
Horizontal Frame	Centres (mm)	Thickness (mm)	1 layer of 15mm board
48mm 'C' stud	400	0.55	1900
		0.9	2200
	300	0.55	2150
		0.9	2350
68mm 'C' stud	400	0.55	2400
		0.9	2700
	300	0.55	2950
		0.9	3400
98mm 'C' stud	400	0.55	3500
		0.9	3750
	300	0.55	3800
		0.9	4050
148mm 'C' stud	400	0.8	5050
		0.9	5350
	300	0.8	5300
		0.9	5800

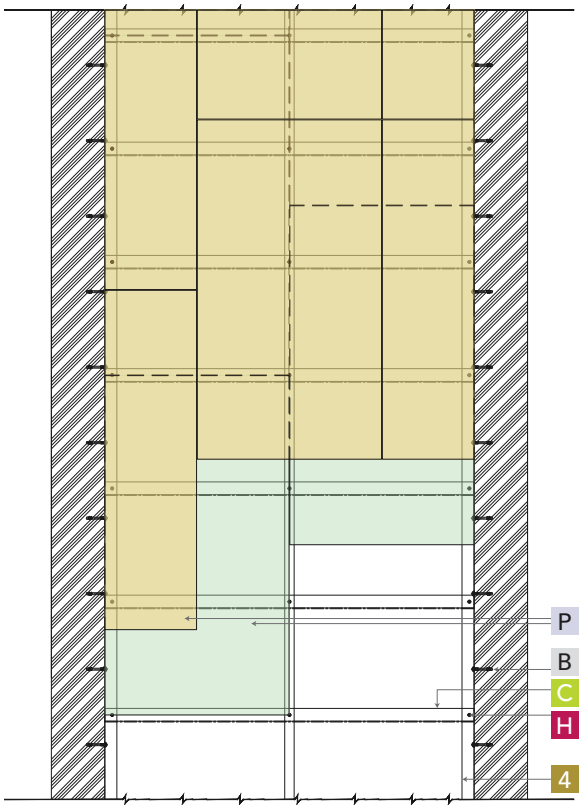
Access Panel Detail



Reflected Ceiling Plan (Single Layer)

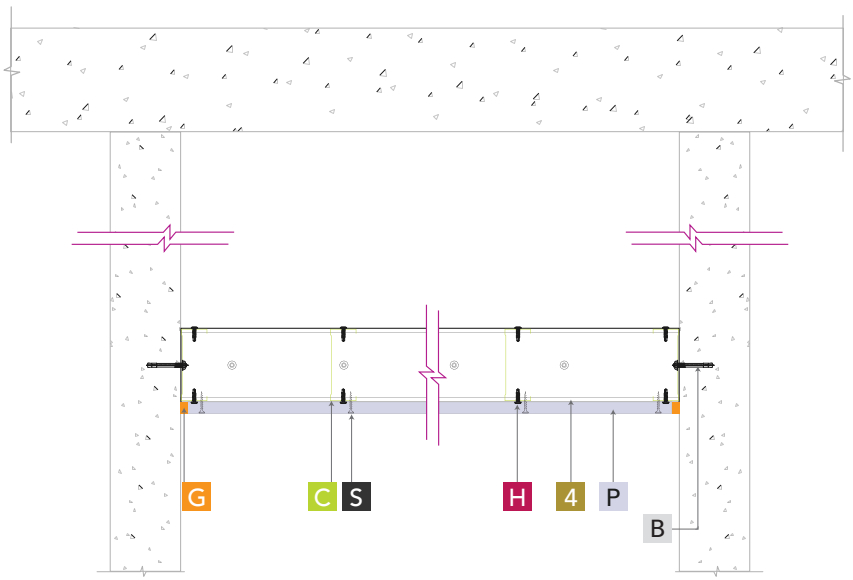


Reflected Ceiling Plan (Double Layer)

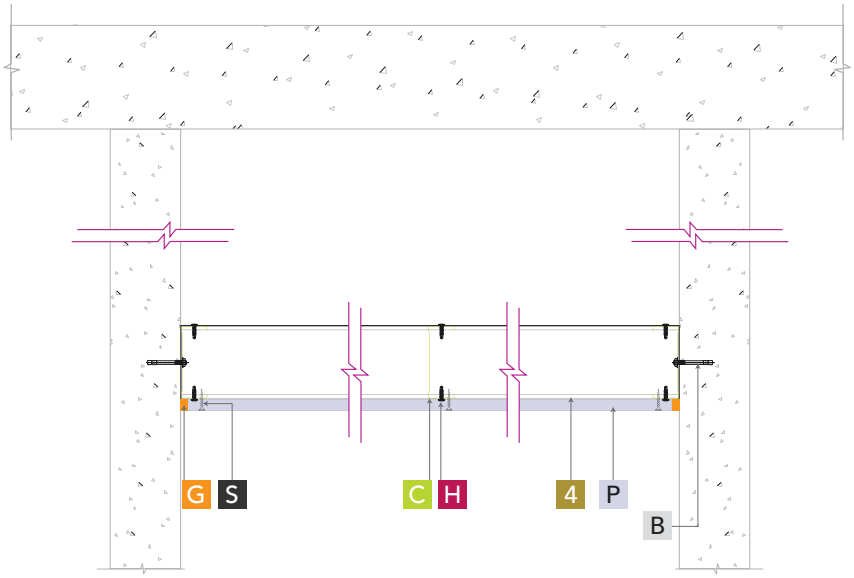


A Mada Access Panel
P Mada Plus Plasterboard
S Mada Drywall Screw
H Mada Wafer Head Screw
W Mada Wall Angle
G Mada Fire Guard Acrylic Sealant
C Mada C-Stud Box
B Mada Trubolt Anchor
4 Mada Deflection Head Track

Section Detail Parallel to Primary Stud Frame



Section Detail Parallel to Reinfocement Frame

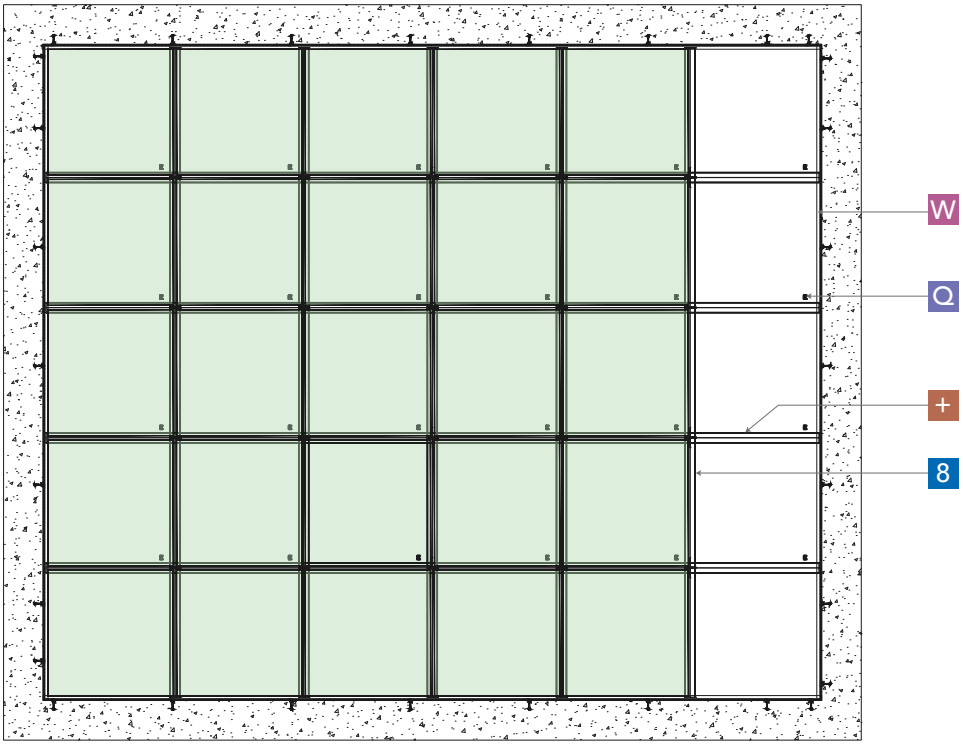


A Mada Access Panel
P Mada Plus Plasterboard
S Mada Drywall Screw
H Mada Wafer Head Screw
W Mada Wall Angle
G Mada Fire Guard Acrylic Sealant
C Mada C-Stud Box
B Mada Trubolt Anchor
4 Mada Deflection Head Track

TILE & GRID

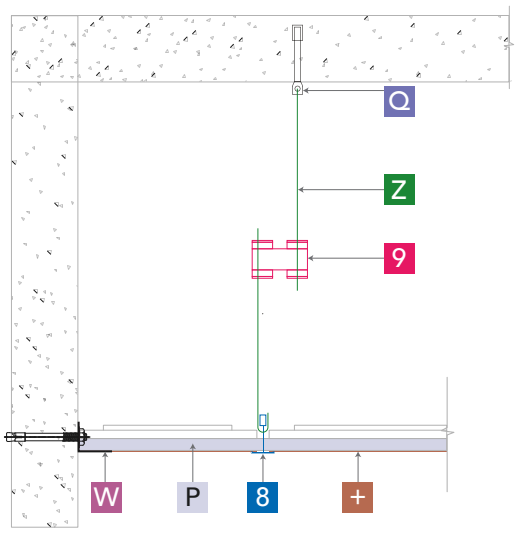
THE MOST COST EFFECTIVE SOLUTION FOR INSTALLING A CEILING WITH EASY ACCESS TO THE PLENUM, MADA TILE & GRID ALLOWS FOR MULTIPLE AESTHETICS THAT CAN BE INSTALLED QUICKLY AND CLEANLY.

Tile Ceiling Reflecting Plan

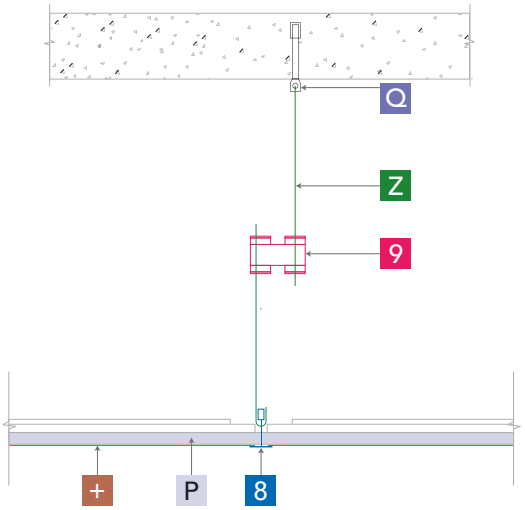


- H Mada Wafer Head Screw
- S Mada Drywall Screw
- T Mada Threaded Rod
- 8 Main Tee
- P Mada Plus Plasterboard
- W Mada Wall Angle
- Q Mada Wire Anchor
- \+ Cross Tee
- M Mada Main Channel
- F Mada Furring Channel
- Z Mada Wire Hanger
- D Mada Drop In Anchor
- C Mada C-Clamp
- 9 Mada Adjustable Clip

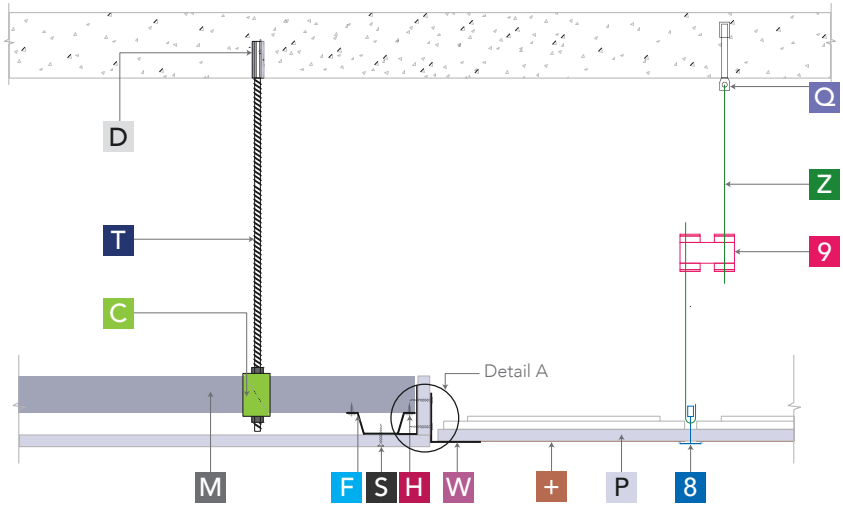
Perimeter Detail

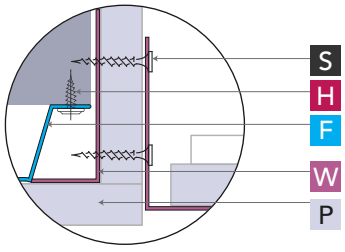


Soffit Fixation



Grid to MF Transition Detail





Enlarge View "A"

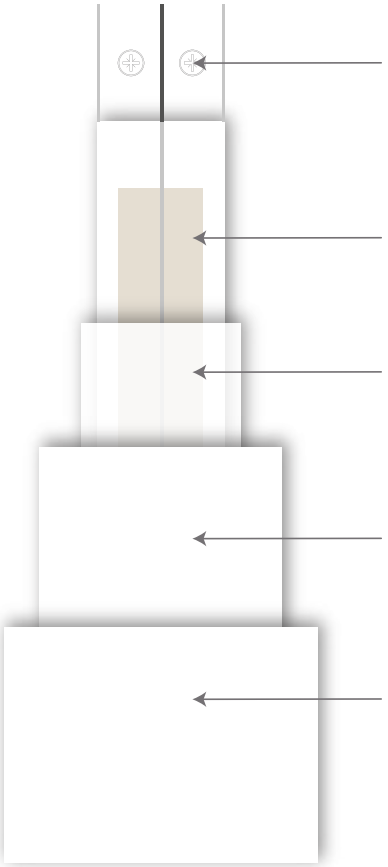
H Mada Wafer Head Screw
S Mada Drywall Screw
T Mada Threaded Rod
8 Main Tee
P Mada Plus Plasterboard
W Mada Wall Angle
Q Mada Wire Anchor
\+ Cross Tee
M Mada Main Channel
F Mada Furring Channel
Z Mada Wire Hanger
D Mada Drop In Anchor
C Mada C-Clamp
9 Mada Adjustable Clip

JOINTING 09

Drywall Finishing Level

Mada Drywall carries a complete line of jointing, topping, and total surface-finishing products to achieve the drywall finishing requirements identified by ASTM C 840, "Standard Specification for Application and Finishing of Gypsum Board," which we have summarized below for your convenience.

DRYWALL



DRYWALL SCREW
Fasten drywall screws

JOINT TAPE
Center tape over seam, gently press into the fresh compound

1ST COAT
Is the heaviest and uses the most compound. With a taping knife 6 to 8 inches wide end up with an area that is about 6 to 8 inches wide and featherad out smoothly

2ND COAT
Is the fill coat that is done with a slightly wider taping knife (8 to 10 inches)

3RD COAT
uses a broad knife of about 10 to 12 inches in width

0

Level 0 Finish

This finish level includes installing the drywall to cover the framing system without tape, topping, or corner bead. Level 0 is ideal for spaces where the final finishes have not yet been determined, as well as temporary barricades, above-ceiling locations, and back-of-house areas, not visible to the public.

1

Level 1 Finish

All joints, seams, and corners require joint tape embedded in the topping compound. Some tooling marks are acceptable, but the finished surface should be free of any topping compound excess. A Level 1 finish typically occurs in plenum areas above the ceiling, attic spaces, service corridors, and other concealed areas.

2

Level 2 Finish

All joints, seams, and inside corners require joint tape embedded in the topping compound, followed by a thin second coat for sealing purposes. All fasteners, penetrations, and accessories receive a single layer of topping. The finished surface should be free of excess topping, and some tooling marks are acceptable. A Level 2 finish is ideal where final appearance is not critical, such as garages, storage spaces, and mechanical/utility rooms.

3

Level 3 Finish

All joints, seams, and corners require joint tape embedded in the topping compound, followed by two thin coats of topping compound. All fasteners, penetrations, and accessories receive two thin layers of topping compound. Surfaces should receive a light sanding between topping compound applications. Finish surfaces should be smooth and free of any tool marks. A Level 3 finish works well for areas to receive texture, wallpaper, or wainscoting.

4

Level 4 Finish

All joints, seams, and inside corners require joint tape embedded in the first layer of the topping compound, followed by three additional topping coats for a smooth finish. All fasteners, penetrations, and accessories receive three thin layers of topping. Surfaces should receive a light sanding between topping compound applications. Level 4 is ideal for areas receiving a flat paint, delicate texture, or lightweight wall covering finish. Not recommended for critical light areas as flashing (joint photographing) may occur.

5

Level 5 Finish

This level consists of meeting all Level 4 requirements, with a final skim coat of topping compound (or another specialized product) applied to all exposed surfaces of the wall assembly for an ultra-smooth finish. This highest finish level works well with walls that receive semi-gloss, gloss, or other non-textured paints or wall coverings. The ideal level for critical lighting areas to eliminate flashing (joint photographing) caused by a window or other light source. Designers and architects should identify level 5 finishes on the construction plans and documents to inform potential bidders.

Drywall Finishing Tips

General

1.Taping knives should be kept as clean as possible. After each knife pass, you should return the excess compound to the taping pan.

2.Thoroughly mix the compound (even ready-mix) with a mixing paddle and electric drill before applying to the wall surface.

3.Remove any dried compound from the pan before each use. Never mix dry and fresh toppings, as the dry mixture will result in an uneven finished surface.

4.Always check that screws are below the finished drywall by running your knife (or another tool) across the drywall surface. If you hit a screw head, tighten it to set the correct depth.

5.Longer knife passes (strokes) will minimize sanding later.

6.When using paper tape, pass the tape piece through a bucket of water, wetting both sides of the tape before applying.

7. Taping knife blades must be flexible to properly embed the tape into the compound and evenly spread the topping at the joints and seams.

8.Do not overload your knife with compound, as the excess will hit the floor, creating a mess and wasting material.

9.Press the knife against the drywall surface and move it slowly along the joint, flattening the blade as you move.

10. After the first pass, clean off the knife on the side of the pan and smooth the entire joint in one stroke.

Finishing Sequence

1. Start by finishing butt joints on the ends of each drywall sheet.

2. Next come the tapered joints along the long edges of the drywall sheet.

3. The last areas to be worked are inside corners followed by outside corners. When finishing inside corners drywall joints, remember to work one side at a time.

Butt Joints

1. Cut tape to the length of all joints you will be finishing before starting.

2. After covering the butt joint with the joint compound, center the tape over the butt joint.

3. Wipe off any excess joint compound that squeezes out and return it to your mud pan. Once the tape is in place and smooth, cover the entire joint with more topping and repeat the smoothing process.

4. Some professionals recommend letting the compound dry for 24 hours before applying a second joint compound coat.

5. When finishing butt joints, remember to wipe off joint compound from both corners of the knife after each pass.

Tapered Joints

Finishers must fill tapered joints with joint compound by using a 5" wide knife before repeating steps 5-8 above.

Fasteners

Apply light sanding using fine 220 grit paper on a 75x205 mm sanding block or pole sander tool. After dusting or vacuuming the surface, shine a light to check for flaws or imperfections and fill with thinned mud drawn tightly.

To provide a Level 1 or higher finish requires the following products:

- Paper or fiber joint tape
- Corner tape
- Mada Multiuse Jointing Compound* (Mada ProCem Jointing Compound for cement-board systems)

*Recommended for use with all Mada Drywall systems, the average coverage area of MADA Jointing Compound is 0.26 Kg/m2.

To provide a Level 5 finish requires the products above, plus one of the following:

- Mada Thin Coat Render for concrete/block wall systems
- Mada Hand-Applied Render for internal locations
- Mada Machine-Applied Render for plastering machines

Additional products for a complete installation can include corner bead and flexible joints to allow structural or substrate movements.

Chapter 5
PRODUCT LIST

MADA PLUS METAL PROFILES

High quality, accredited cold-rolled steel profiles

Mada PLUS cold-rolled, galvanized (Z180 – Z275) steel profiles, produced to ASTM C754 standards.

Wall Stud (C-Stud)

Vertical framing components that friction fit between head and base tracks.

Width Available
40mm | 48mm | 58mm | 68mm | 73mm | 90mm | 98mm | 148mm | 198mm

Flange Lengths
34mm | 36mm

Thickness of Steel
0.5mm up to 1.5mm

Standard Lengths
3000mm

Deflection Head track

Head track for accommodating deflection within the structure.

Basic Dimensions
50mm | 70mm | 75mm | 90mm | 100mm | 148mm

Flange Lengths
50mm

Thickness of Steel
0.5mm up to 1.5mm

Standard Lengths
3000mm

Fixing Channel

Horizontal member for use supporting horizontal cut joints, and/or as noggins to provide support for hanging heavy loads.

Basic Dimensions
72mm

Flange Lengths
12mm

Thickness of Steel
0.55mm

Standard Lengths
3000mm

MADA PLUS METAL PROFILES

High quality, accredited cold-rolled steel profiles

Mada PLUS cold-rolled, galvanized (Z180 – Z275) steel profiles, produced to ASTM C754 standards.

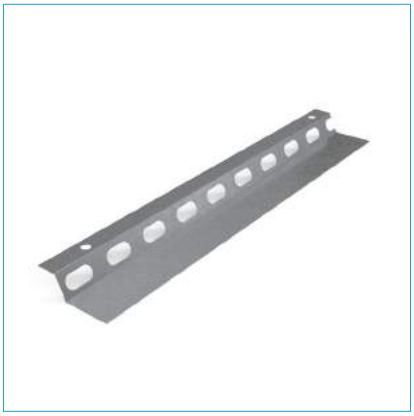
Flat Strap

Normally used for covering up horizontal cuts of the gypsum board.

Width Available
58mm | 62mm

Thickness of Steel
0.5mm up to 1.5mm

Standard Lengths
3000mm



Resilient Channel

Acoustical barrier, isolating the gypsum board from the framing system to minimize the contact area.

Basic Dimensions
40mm x 13.5mm | 45mm x 17mm

Flange Lengths
14mm

Thickness of Steel
0.4mm up to 1.2mm

Standard Lengths
3000mm

Wall Track (U-Track)

Supports the wall or soffit studs of assemblies where vertical deflection is not needed or required.

Basic Dimensions
42mm | 50mm | 60mm | 62mm | 70mm | 75mm | 90mm | 92mm | 100mm | 125mm | 150mm | 200mm

Flange Lengths
32/32mm | 27/27mm

Thickness of Steel
0.5mm up to 1.5mm

Standard Lengths
3000mm

MADA PLUS SHAFT WALL PROFILES

Explore the Mada Gypsum range

CH Studs

Specialist vertical studs for Mada Shaft Plus Systems

Widths
64mm | 102mm | 150mm

Flange Lengths
38mm x 35mm

Thickness of Steel
0.55mm up to 0.9mm

Standard Lengths
3000mm | 4500mm | 5000mm
Special lengths are available on request based on a minimum order quantity

E Studs

Specially designed studs that form vertical elements of Mada PLUS shaft wall systems.

Widths
64mm | 102mm | 150mm

Flange Lengths
25mm x 90mm

Thickness of Steel
0.55mm up to 0.9mm

Standard Lengths
3000mm | 4500mm | 5000mm
Special lengths are available on request based on a minimum order quantity

MADA PLUS SHAFT WALL PROFILES

Explore the Mada Gypsum range

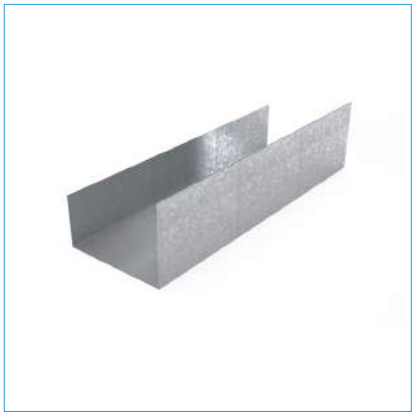
J track
Base track for use in Mada PLUS drywall sytems.

Widths
66mm | 104mm | 152mm

Flange Lengths
57mm x 25mm

Thickness of Steel
0.5mm up to 1.5mm

Standard Lengths
3000mm



J Deflection Head track
Deep flange framing component for accommodating deflection heads within Mada PLUS Shaft Wall systems.

Widths
66mm | 104mm | 152mm

Flange Lengths
75mm x 50mm

Thickness of Steel
0.5mm up to 1.5mm

Standard Lengths
3000mm

MADA PLUS PROFILES FOR SUSPENDED CEILINGS

High quality, accredited solutions for your project needs

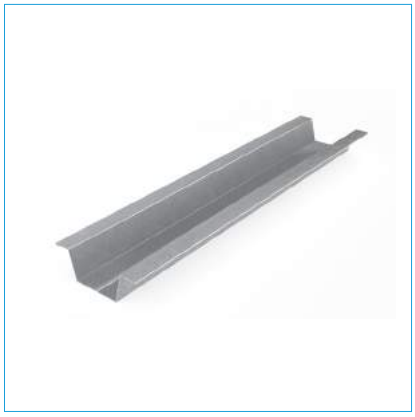
Main Channel

Primary support for use in Mada PLUS suspended ceiling systems.

Basic Dimensions
38mm x 12mm x 12mm | 45mm x 12mm x 12mm

Thickness of Steel
0.55mm up to 1.5mm

Standard Lengths
3000mm



Furring Channel

Secondary support for use in Mada PLUS suspended ceiling systems.

Basic Dimensions
70mm x 35mm x 22mm | 70mm x 50mm x 22mm

Thickness of Steel
0.45mm up to 0.9mm

Standard Lengths
3000mm

Wall Angle

Equal flange angle for support at the perimeter of Mada PLUS suspended ceilings systems

Widths
25mm x25mm

Thickness of Steel
0.45mm up to 0.9mm

Standard Lengths
3000mm

MADA PLUS PROFILES FOR SUSPENDED CEILINGS

High quality, accredited solutions for your project needs

Furring Channel (Hat Shape)

Used to furr-out (align) one surface to another before applying final finish materials.

Basic Dimensions
70mm x 35mm | 85mm x 50mm

Thickness of Steel
0.4mm up to 1.2mm

Standard Lengths
3000mm

W-Angle

Ideal to use for a quick and easy finishing for your external corners.

Basic Dimensions
20mm x 20mm x 20mm x 20mm | 20mm x 15mm x 15mm x 20mm

Thickness of Steel
0.45mm

Standard Lengths
3000mm

MADA PLUS FIXINGS

High quality steel fixings from MADA Gypsum

Mada PLUS Wedge Anchors

Galvanized steel expansion anchors used for fixing hangers, brackets, and drywall profiles to concrete backgrounds.

Mada PLUS Drop-in-Anchor

Drop-In-Anchors are an all-steel, medium duty expansion anchor designed to provide a permanent anchorage point in concrete substrates. An internal thread allows for use with both machine bolts and threaded rod, with no restrictions on fixture thickness.

Mada PLUS Trublot Anchor

Trubolt Stud Anchors are true-to-size, heavy duty, torque-controlled expansion anchors, for permanent anchoring into concrete substrates.

Mada PLUS Plastic Nail Plug

Galvanized steel expansion anchors used for fixing hangers, brackets, and drywall profiles to concrete backgrounds.

Mada PLUS Drywall Screws

Corrosion-resistant screws with bugle head for fixing plasterboard to metal studs up to a steel thickness of 0.80mm.

Available Lengths
25mm | 35mm | 42mm | 50mm | 62mm

Mada PLUS Self Drilling Screws

Corrosion-resistant screws with bugle head and self-drilling tip for fixing plasterboard to metal studs above 0.80mm thick.

Available Lengths
25mm | 35mm | 45mm | 50mm | 60mm | 65mm

Mada PLUS Wafer Head Screws

Corrosion-resistant screws for fixing metal framing members together.

Available Lengths
13mm

Mada PLUS PROCEM Steel Drill Screws

Corrosion-resistant screws with countersunk head, specially designed ribs under the head and self drilling tip for fixing Mada PLUS PROCEM cement boards to metal studs.

Available Lengths
25mm | 35mm | 45mm | 50mm | 60mm

Mada PLUS Hex Head Self Drilling Screws

Corrosion-resistant screws specially designed for fixing metal to metal with a thickness of 0.8mm up to 3.0mm.

Available Lengths
19mm | 25mm | 50mm

MADA PLUS APPROVED INSULATION

Find the right insulation solution for your project

Glasswool Insulation

An insulating material consisting of fine, long, inorganic fibers bonded together by a high-temperature binder. Excellent acoustic properties, lightweight, high-tensile strength, with exceptional resilience.

Rockwool Insulation

Rockwool is an insulating material manufactured from natural minerals such as basalt, which are melted at very high temperatures and spun using advanced production techniques. The fibers are then bonded with a thermosetting resin binder and special additives. It has good thermal and acoustic properties, is lightweight and strong, and classed as non-combustible when tested to BS:476.

MADA PLUS ACCESSORIES

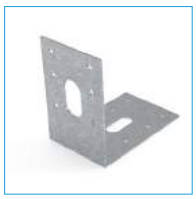
Explore our comprehensive range of accessories

Mada PLUS C-Clamp

Mada C-Clamp is designed to hold the primary ceiling channel to the soffit via threaded rod. This C-Clamp can accommodate 38mm and 45mm Mada Main channels.

Threaded Rod

Threaded rods for suspending ceilings. One end fixes to the concrete slab/beams or any other structure with suitable fixings, the other end attaches to the ceiling framework. Designed to be used in high tensions, the thread runs along the entire length of the rod. Available in M^, M8 and M10 sizes.



Mada PLUS L-Bracket

Mada PLUS L-Brackets for supporting C-studs at the floor and soffit. Suitable for use in Mada PLUS partitions, Mada PLUS lining systems, and Mada PLUS suspended ceilings.

Mada PLUS Slotted L-Bracket

Slotted L-Brackets are designed to resist high moments and shear due to excessive loading, such as live loads, as well as seismic and wind pressures. Vertical slots on the bracket allow the slab to deflect without impacting the performance or structural integrity of the partition.

Mada External Corner Beads

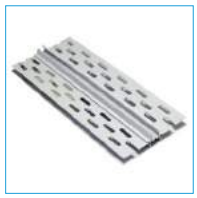
Mada External Corner Beads are used for straight, durable, corrosion and impact-resistant protection of the edges and corners of drywall systems.

Mada Casin Bead

Mada Casing Beads are squared corner beads that fit firmly over the edge of the plasterboard for protection against impact. A range of casing beads are available to fit different plasterboard thicknesses.

Mada Shadow Gap Angle Bead

Mada Shadow Gap Angle Bead provides straight and neat finishing details for the internal corners of Mada PLUS suspended ceiling systems.



Mada PLUS Control Joint Bead

Mada Shadow Gap Angle Bead provides straight and neat finishing details for the internal corners of Mada PLUS suspended ceiling systems.

Mada Sealants

Mada FireGuard Sealant

An acrylic-based caulk that is resistant to water and mild chemicals, and contains anti-microbial protection to inhibit the growth of mold and mildew.

Mada Fire Guard - Fire and Acoustic Silicone Sealant

A single component, neutral cure, elastomeric, gun-grade, high performing fire stopping sealant.

MADA PLUS FINISHING PRODUCTS

High quality, approved finishing products you can trust

Mada Fiber Joint Tape

Mada Fiber Joint Tape is composed of twisted strands of fiber glass woven at right angles to one another and used for reinforcing drywall joints. Suitable for hand or mechanical application with Mada Gypsum's Jointing Compound.

Mada Multi-Use Jointing Compound

Mada Multi-Use Jointing Compound contains vinyl binders and other ingredients that provide superior performance compared to ordinary ready mix products. Can be used directly from pail and requires minimal mixing, thinning, and re-tempering.

Mada PLUS PROCEM CEMENT Jointing Compund

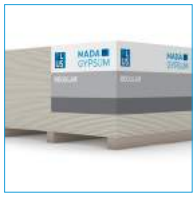
Mada PROCEM Cement Jointing Compound is a 2-component high-adhesion, high-flexibility jointing material. A powder based on special cement and a secondary, liquid-based, acrylic polymer element with fibers and special additives. Used for jointing and finishing Mada PLUS PROCEM cement board.

Mada French Adhesive

Mada French Adhesive is a special gypsum product for adhering decorations and cornices to walls, and the installation of plasterboard on a dot and dab system.

MADA PLUS PLASTERBOARD

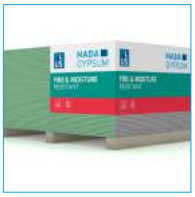
Explore the comprehensive Mada Gypsum product range



Mada PLUS Regular: RG
Laminated with ivory paper lining on board face and grey paper on back.

Mada PLUS Fire Resistant: FR
Laminated with pink paper on board face and grey paper on back. Specially designed for use on systems requiring fire resistance.

Mada PLUS Moisture Resistant: MR
Laminated with green paper on face and grey paper on back. Specially designed to perform in internal areas of intermittent wetness and high humidity.



Mada PLUS Fire and Moisture Resistant: FMR
Laminated with green paper on face and grey paper on back. Specially designed to perform in areas requiring increased fire resistance and internal areas of intermittent wetness and high humidity.

Mada PLUS Impact Resistant: IR
Laminated with ivory paper lining on board face and grey paper on back. High-performance special plasterboard designed for systems requiring improved fire resistance and impact resistance.

Mada PLUS Shaft board: SB
Laminated with pink paper on board face and grey paper on back. Specially designed 25mm thick, 600mm wide board for use on shaft wall systems.

Plasterboard dimensions

Thickness
12.5mm, 15mm and 16mm

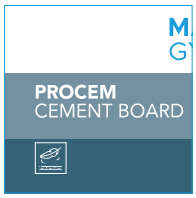
Widths
The standard width is 1200mm. Special width of 900mm can be produced on request for agreed minimum order.

Lengths
Standard lenghts are: 2400mm & 3000mm. Special length can be produced on request for agreed minimum order quantity of each length.

Edges
Tapered Edge | Square Edge.

MADA PROCEM

Explore the comprehensive Mada Gypsum product range



Mada PROCEM cement boards

Mada PROCEM is a lightweight cement board composed of Portland cement, light aggregate material, and silica sand. It is 15% lighter than other types of cement board, and classed as non-combustible, Class C0, non-asbestos fiber-mat reinforced cement board. Suitable for both internal and external applications. Boards are produced to ASTM C1325 standards.

PROCEM board dimensions

Thickness

12.5mm and 15mm Boards of other thickness can be made available on special order.

Widths

Standard width is 1200mm.

Lengths

Standard lenghts are: 180mm & 2400mm.

Edges

Rounded Edge: This is the standard edge type at the longitudinal edge of the board.

Square Cut Edge: This is the standard edge type at the transversal edge of the board.

MADA PROGUARD

Explore the comprehensive Mada Gypsum product range

Mada ProGuard boards

MADA ProGuard glass-mat is noncombustible, mold-, delamination-, and moisture-resistant sheathing board that meets the standards of Exterior Insulation Finish Systems (EIFS). It is designed for use under exterior claddings like brick veneer, marble cladding, siding systems, porcelain tiling and conventional stucco or direct render.

MADA ProGuard glass-mat Tile Backerboard is a water- and mold-resistant panel ideal for use as a tile substrate in wet or dry locations. The panel face incorporates a proprietary coating which improves moisture-resistance and provides a superior tile bonding surface. Panels meet ASTM C1178 – Standard Specification for Coated Glass-Mat Water-Resistant Gypsum Backing Panels.

ProGuard dimensions

Thickness
12.5mm and 16mm

Widths
Standard width is 1200mm.

Lengths
Standard lenghts are: 2400mm & 3000mm.

Edges
Square Cut Edge: This is the standard edge type at the transversal edge of the board.

BUILDING EXCELLENCE

MADA GYPSUM

SYSTEM GUIDE

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