



THE SAINT-GOBAIN GROUP





A GLAZE OF SAINT- GOBAIN MALAYSIA



SPEAKER

SAINT-GOBAIN GYRPOC REPRESENTATIVES



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AGENDA

Covering in today's talk...

1. Introduction to Saint-Gobain

- *Saint-Gobain Group*
- *Saint-Gobain Malaysia Sdn Bhd*

2. GypBoard

- *Gyproc products*
- *Complementary components*

3. Gyproc Solutions

- *Lightweight material for building construction*
 - *Ceiling System*
 - *GypWall CLASSIC*
 - *GypWall FIRE*
 - *GypWall ACOUSTIC*
 - *GypWall AQUA*
 - *GypWall Heavy Fixing*
 - *Innovative Solution*



350 YEARS OF HISTORY



1665

In Paris, Creation of the **Manufacture royale des glaces** by King Louis XIV



1688

Invention of **glass table casting**



1850 - 1900

Saint-Gobain expands in Europe: **Germany, Italy, Belgium and Spain**



1970

Merger between Pont-à-Mousson and Saint-Gobain.
Ongoing internationalization

1990

Refocus on **materials with a high technology content and entry** into building distribution & plasterboard



2007

Saint-Gobain focuses its **strategy on habitat**

2015

Saint-Gobain celebrates its **350th anniversary**

A UNIFYING PURPOSE: MAKING THE WORLD A BETTER HOME

MAKING THE WORLD A BETTER HOME



The result of an international collaboration involving nearly 15,000 Group employees, our purpose expresses in a few words what we are, what brings us together and defines our common project, the future we want to build together.

THIS IS THE PROFOUND AMBITION OF OUR PURPOSE:

*To act every day to make the world a more beautiful
and sustainable place to live*

THE SAINT-GOBAIN GROUP'S VISION



Be the worldwide leader in light and sustainable construction



Improving daily life through high-performance solutions



A STRONG GLOBAL GROUP



Commitment to achieve
carbon neutrality in 2050



World or European leader
in most of our businesses

Founded over

350

years ago

Locations in

76

countries

Saint-Gobain Research

8

cross-business R&D centers

More than

166,000

employees

Approximately

800

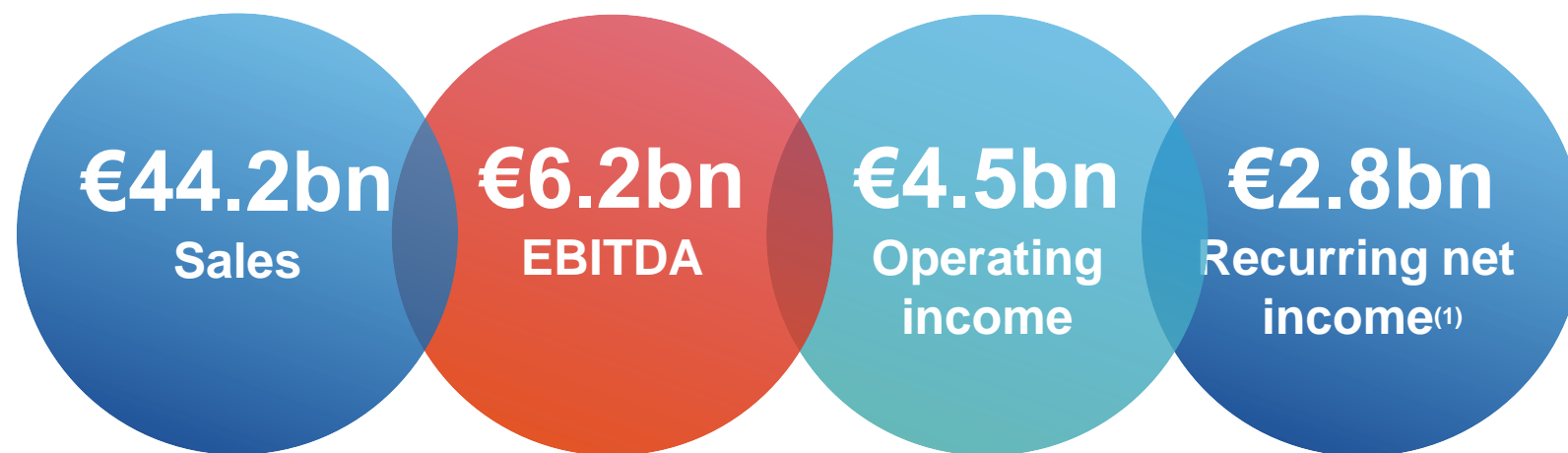
manufacturing facilities
around the world

Around

3,500

sales outlets

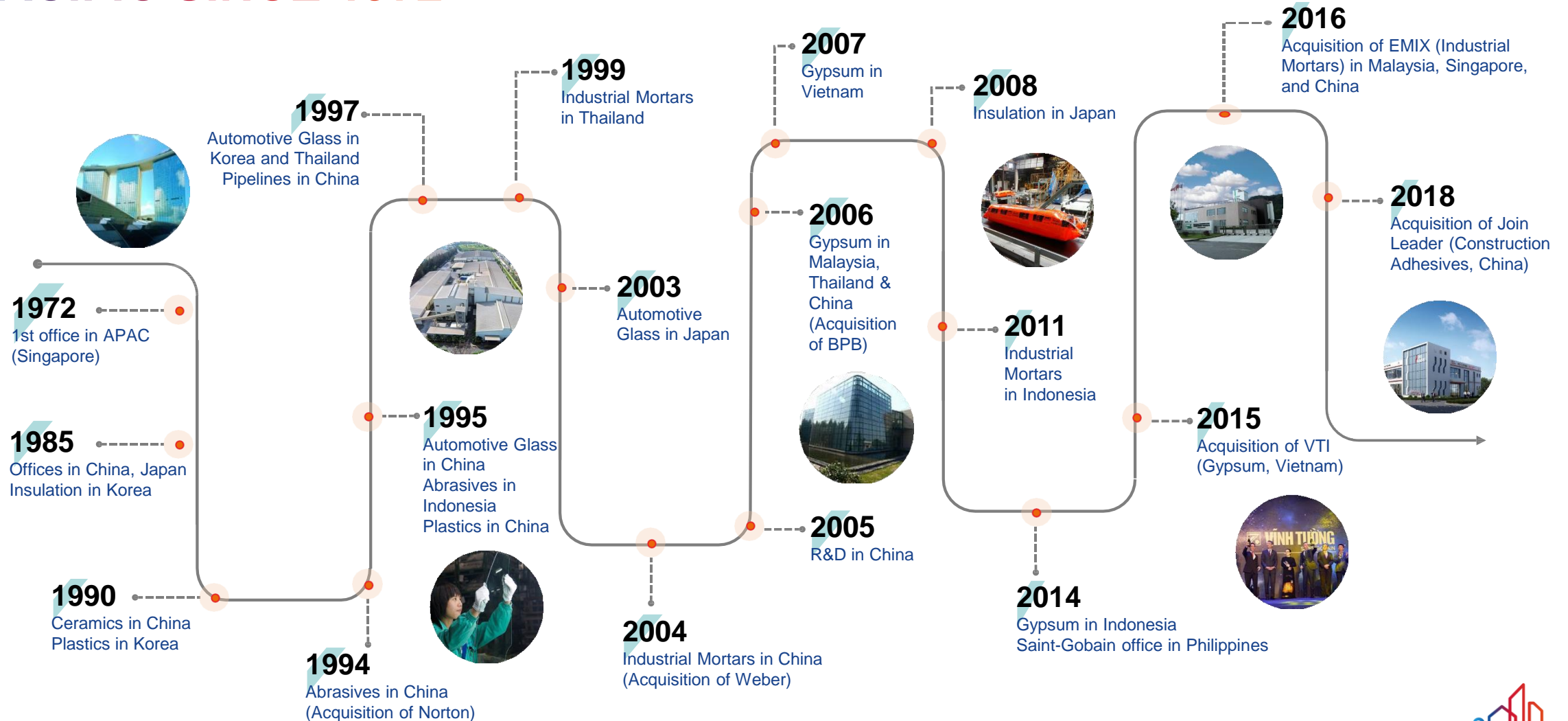
2021 GROUP RESULTS



Net income (Group share) from continuing operations excluding capital gains or losses on disposals, asset impairments and significant non-recurring provisions.



SAINT-GOBAIN HAS BEEN BUILDING ITS PRESENCE IN ASIA-PACIFIC SINCE 1972



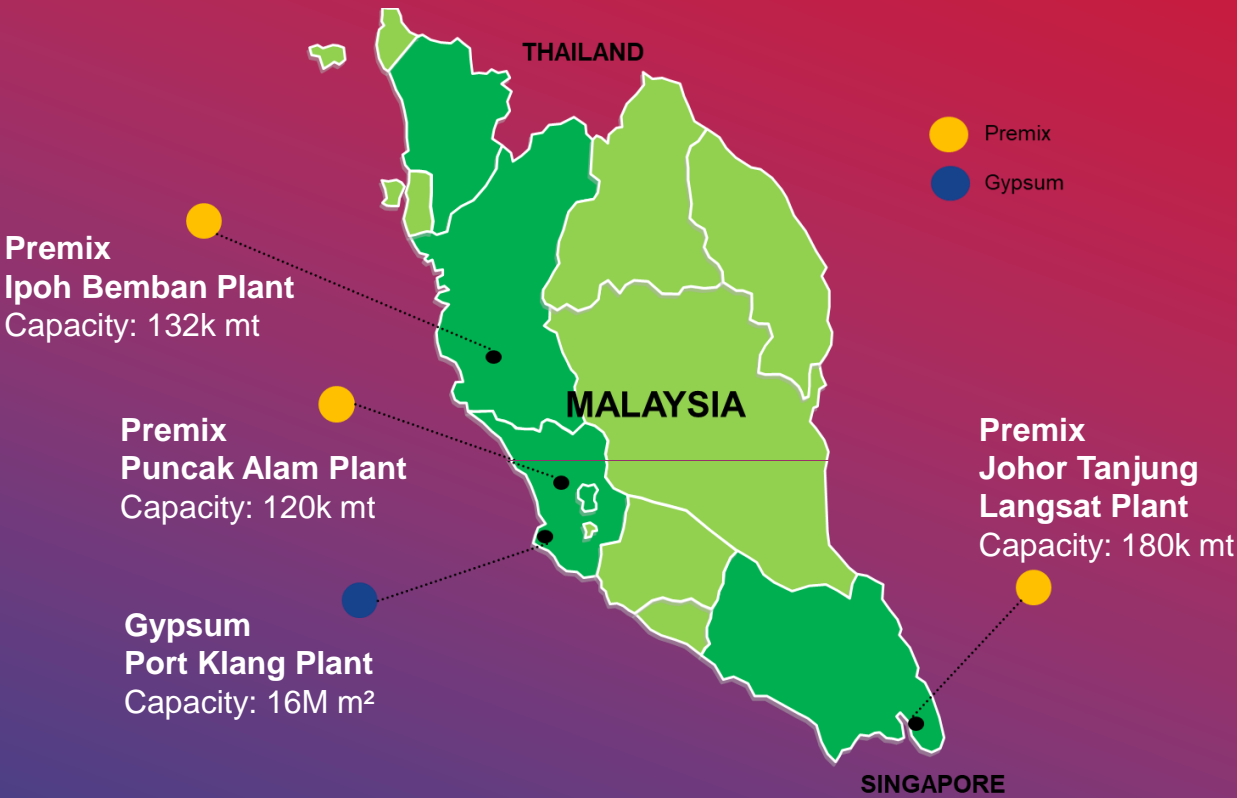
SAINT-GOBAIN MALAYSIA

SAINT-GOBAIN MALAYSIA PLANT



Saint-Gobain Malaysia was first established in year 2000 and continues to lead the market trend by bringing forward innovative solutions by offering a diverse variety of solutions, including:

<p>GLASS</p>  <p>SAINT-GOBAIN</p>	<p>GYPSUM-BASED SOLUTIONS</p>  <p>SAINT-GOBAIN</p>
<p>MORTARS & CONSTRUCTION CHEMICALS</p>  <p>SAINT-GOBAIN</p>  <p>E-MIX</p>	<p>FIBRECEMENT</p>  <p>SAINT-GOBAIN</p>



SAINT-GOBAIN MALAYSIA



HIGH PERFORMANCE
FAÇADE COATED
GLASS & MIRRORS



GYPSUM
PLASTERBOARD FOR
DRYWALL & CEILING



PREPACKED
DRY-MIX,
WATERPROOFING &
RESINOUS FLOORING



GLASSWOOL &
PREFABRICATED
INSULATED
DUCTWORK (PID)



PASSIVE FIRE
PROTECTION, FIBRE
CEMENT BOARD,
DECORATIVE WOOD





LIGHTWEIGHT MATERIAL FOR BUILDING CONSTRUCTION



OUR 100 YEARS OF PASSION FOR INNOVATION



1917

Gyproc formerly known as **British Plaster Board (BPB)** was founded in the UK.



1950'S

BPB expands to France, Ireland, Canada & South Africa.



2000'S

BPB expands to Asia & the US.



2005

Saint-Gobain acquires **BPB**, world leader in plaster and plasterboards.



- We have been present in Malaysia ever seen.
- Largest plasterboard manufacturing plant in Malaysia; capacity of 16 million sq. meter per annum.
- Serves Malaysia & Singapore.



VS



CEILING SOLUTIONS

Fibrous Plasterglass Ceiling



- Pour gypsum slurry into 4' x 6' cast mould and chopped fibreglass
- Hand cast mould (Backyard Process)



Gyproc Gypsum Plasterboard



- Machine made with thickness control and consistency
- Established manufacturing (with ISO standard)

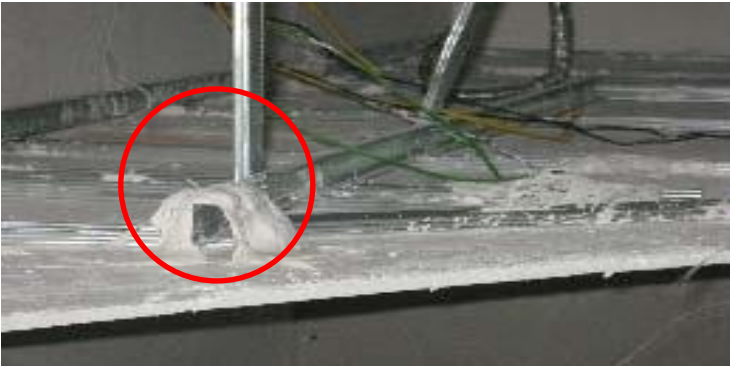
COMPARISON



- Poor bulkhead / L-Box detailing



- Sharp GypStep (L-Box)

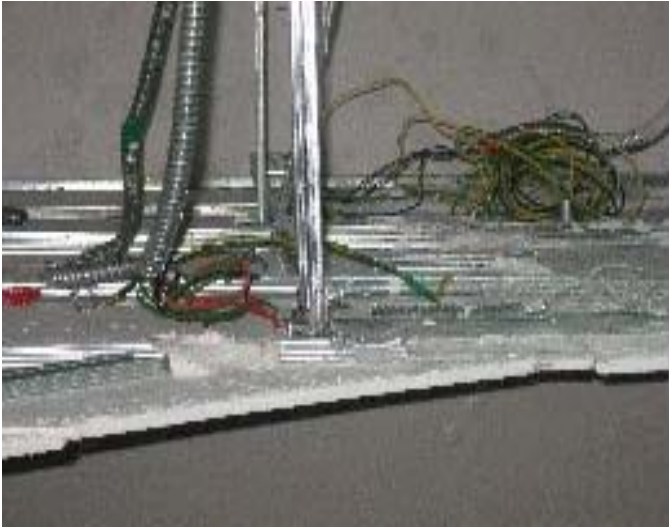


- Plasterglass material jointing with grouting (mixture with fibre glass and gypsum)



- Gyproc® has no messy grouting

COMPARISONS



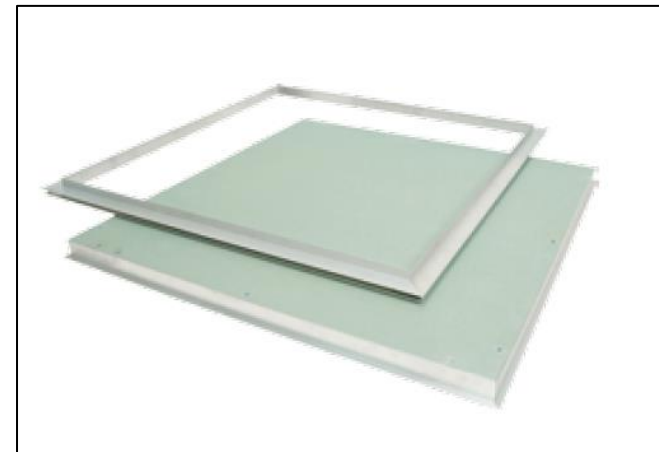
- Plasterglass Joint with stopping compound and fiberglass



Plasterboard joint with Gyproc Paper tape and finished with ProTop Joint Compound for smooth and seamless finish.



- Poor Access Panel Detailing



Seamless Finish Access Panel

SITE INSTALLATION OF GYPROC PLASTERBOARD



Can Be Use as Wall Solution as well !



WHAT IS GYPSUM BOARD

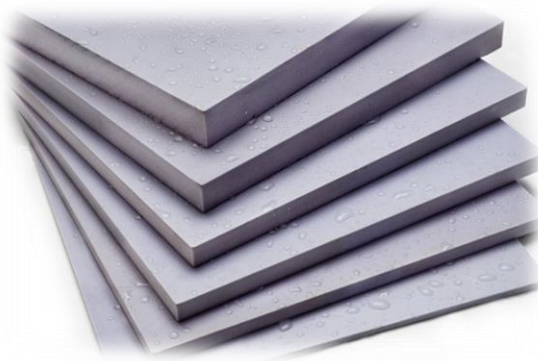


Understand your choice...

BOARD PRODUCTS

Modern building materials

- Common materials used:
 - Plywood
 - Medium Density Fibreboard
 - Chipboard
 - Fibre Reinforced Cement
 - Calcium Silicate
 - Gypsum plasterboard
 - And others
 - Etc.



GYPSUM MINERAL

Natural resource from earth...

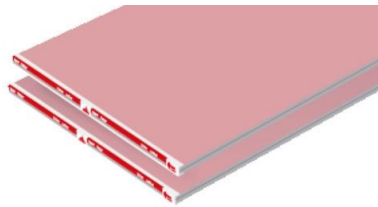
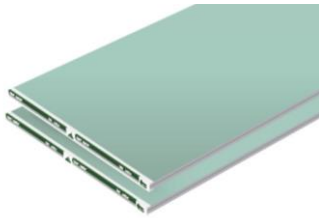
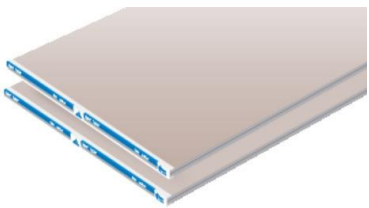
- A natural occurring rock also known as *Calcium Sulphate Dihydrate* ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$)
- Composed of 70.1% of Calcium Sulphate and 20.9% of water
- Gypsum is non-toxic & not hazardous to health
- Most of the Gypsum comes from underground mines.
- Gypsum was used as mortar in the construction of the great pyramids of Egypt, dated back to 3000 B.C.



WHAT IS GYPSUM BOARD?

Knowing the product...

- Is the technical product name used by manufacturers for a specific board with a **gypsum core sandwich between paper facing**.
- Gypsum board is the premier building material for wall, ceiling, and partition systems in residential, institutional, and commercial structures and is designed to provide a **MONOLITHIC surface** when **joints and fastener heads are covered with a joint treatment system**.



GYPROC GYPBOARD®

Gypsum plasterboard products for interior applications

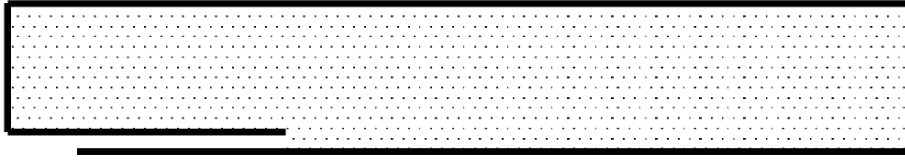
- By varying the content of the core and the type of liner used, boards are produced to meet specific requirements
- Requirements include
 - Fire resistance
 - Acoustic Sound absorption
 - Moisture resistance
 - Impact resistance
 - Thermal
 - Indoor air quality
- Designed to meet all current local & international standards
- Many different types of board in a wide variety of sizes



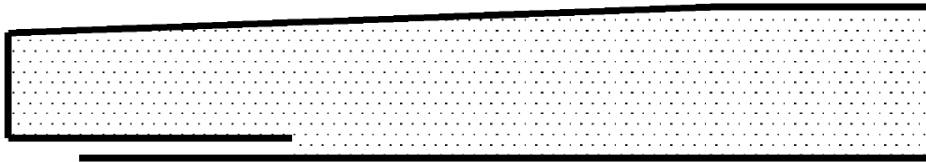
GYPROC GYPBOARD®

Product Introduction

Board Edges



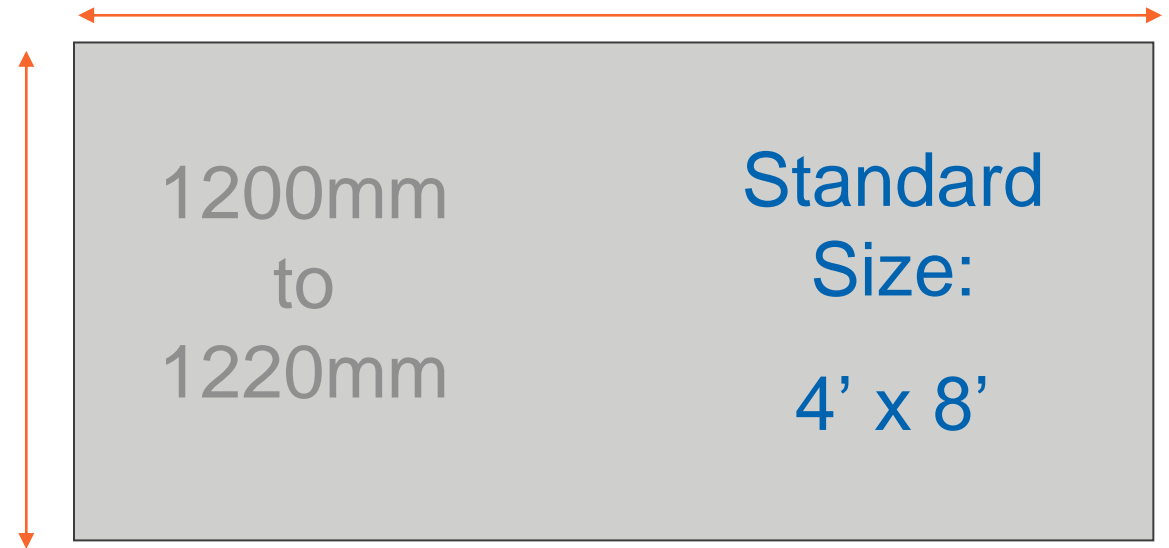
Square Edge



Tapered Edge /
Recessed Edge

Board Size

2000mm to 3350mm



GYPROC ACCESSORIES

All from under one roof...



Gyproc GypFrame®

- Metal & Accessories – C-Studs, U-Track, Deflection Head Track, Noggin / Shadowline, Corner bead, Control joint, Ceiling tee, Ceiling Batten, Furring Channel etc. GypFrame metal is Zincalume with G300 Steel Coated.

Gyproc ProTop®

Formulated jointing compound for board jointing. Can be used for all phases of gypsum plasterboard jointing with excellent finishing quality.

- ProTop® All Purpose Ready-Mixed Joint Compound & ProTop® 2-in-1 Joint Filler/ Finish



Gyproc Proflex

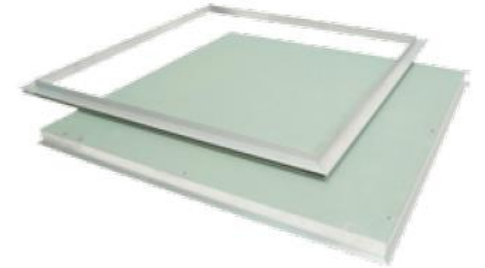
- 60 minutes & 120 minutes fire rated access panels are designed and
- tested to meet performance requirements in accordance to British Standards BS 476 Part 22.

GYPROC ACCESSORIES

All from under one roof...

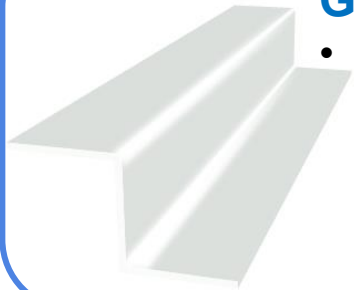
Gyproc ProServe

- Non-fire rated access panel for application in ceilings, making access to hidden services quick and easy.



Gyproc GypStep

- pre-fabricated gypsum board manufactured as per international quality regulations.






Gyproc Paper Tape or Mesh Tape

- designed for use with Gyproc® Jointing Compound to reinforcing joints and corners in gypsum drywall interiors



RECOMMENDED SCREW

Product Name	SG System	Board Type	Board Thickness	Description	Fixing Type	Length Req.	Application	Packaging
Drywall Screw - Sharp Point	Indoor partitions, suspended ceilings	Regular plasterboard	9mm 12.5mm 15mm, 16mm 19mm.	Corrosion-resistant self-tapping zinc plated steel screws with countersunk cross head & sharp point	TTPC 25, 35, 45, 55, 65 mm 	Plasterboard thickness + 10mm	Plasterboard to metal framing: on profiles less than 0,80mm gauge	1000 pieces per box (customizable)
Wafer Head - Sharp Point	Indoor partitions, suspended ceilings	Metal Sections	N/A	Corrosion-resistant zinc plated steel screws with a wafer head	13 mm 	Metal thickness + 10mm	Metal to metal framing: on profiles less than 0,80mm gauge	200 pieces per box (customizable)
Wet Areas Screw - Sharp Point	Indoor wet areas applications	Glasroc H Board / Aqualine	12,5mm	Corrosion-resistant, self-tapping zinc plated screws with countersunk cross head & sharp point	23, 35, 45, 55, 65 mm 	Plasterboard thickness + 10mm	Glasroc H / MR board to metal framing: on profiles equal and above 0,80mm gauge.	1000 pieces per box (customizable)

OUR MULTI-APPLICATIONS OFFER



We offer solutions for a variety of application to adapt to the needs of all building occupants whether it be in residential, commercial, leisure, hospitality or healthcare buildings.



OFF-SITE



EDUCATION



HOTELS



OFFICES



RETAIL



DIY



HOMES

OUR CUSTOMERS



Our **Gypsum brands** serve those who build and those who spend time in buildings while addressing a variety of markets in construction and renovation.



SPECIFIERS



DISTRIBUTORS



CONSTRUCTORS



DIYERS



INSTALLERS



OCCUPANTS

OUR SERVICES





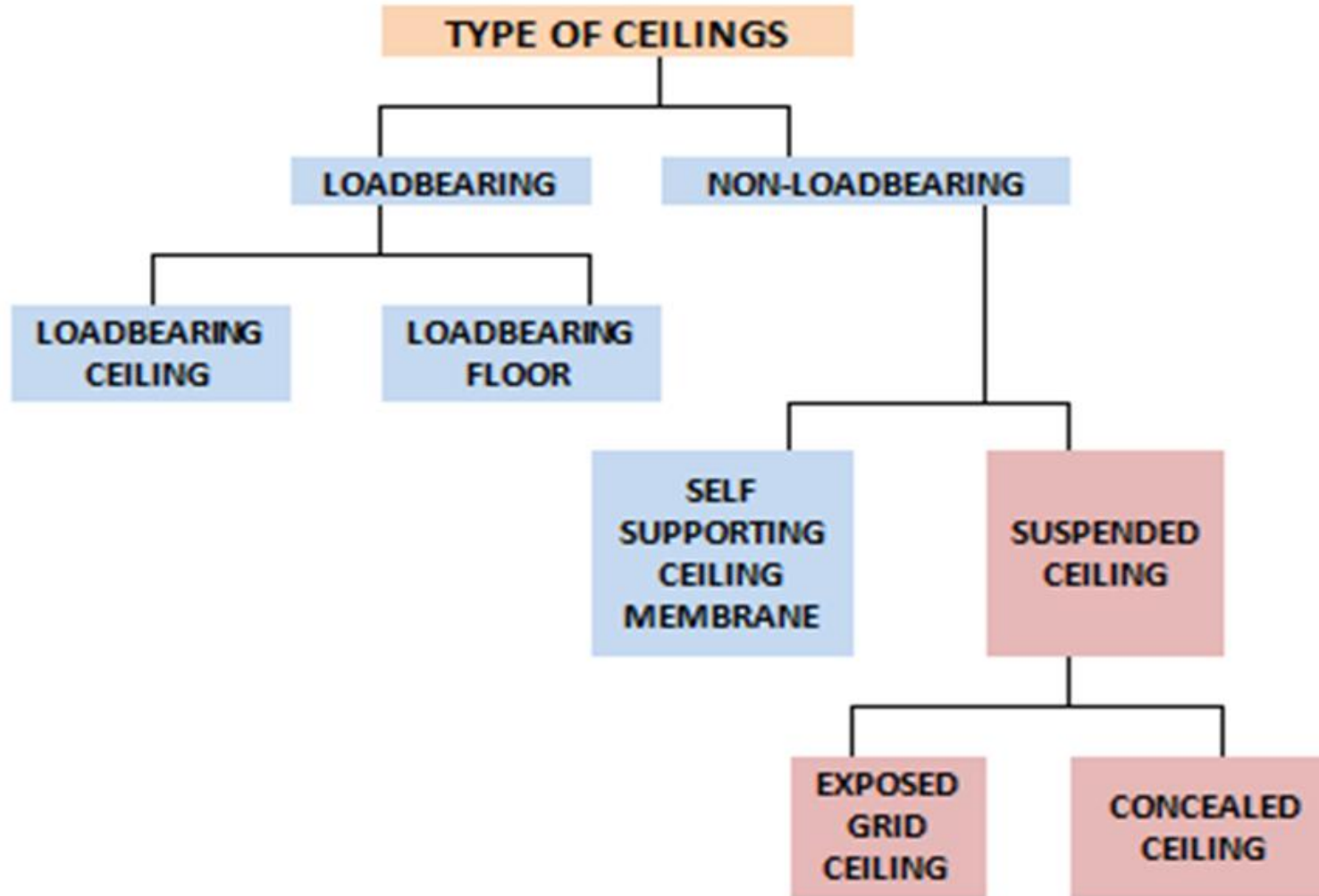
GYPROC CEILING SYSTEM



HOW TO SELECT OR SPECIFY CEILING SYSTEMS



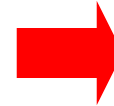
TYPES OF CEILING



01 | PLASTERBOARD VS FIBROUS PLASTERGLASS



Fibrous Plasterglass Ceiling



Gyproc Plasterboard

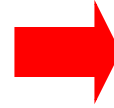


- Pour gypsum slurry into 4' x 6' cast mould and chopped fibreglass
- Hand cast mould (Backyard Process)

- Machine made with thickness control and consistency
- Established manufacturing (with ISO standard)



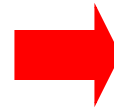
• Poor Bulkhead / L-Box Detailing



• Sharp GypStep (L-Box)



• Plaster Glass Material jointing with grouting (Mixture with fibre glass and gypsum)



• Gyproc has no messy Grouting

FIBROUS PLASTERGLASS VS GYPROC® PLASTERBOARD

Fibrous Plasterglass



Poor Access Panel Detailing

Gyproc® Plasterboard



Seamless Finish Access Panel

Site Installation of Gyproc Plasterboard

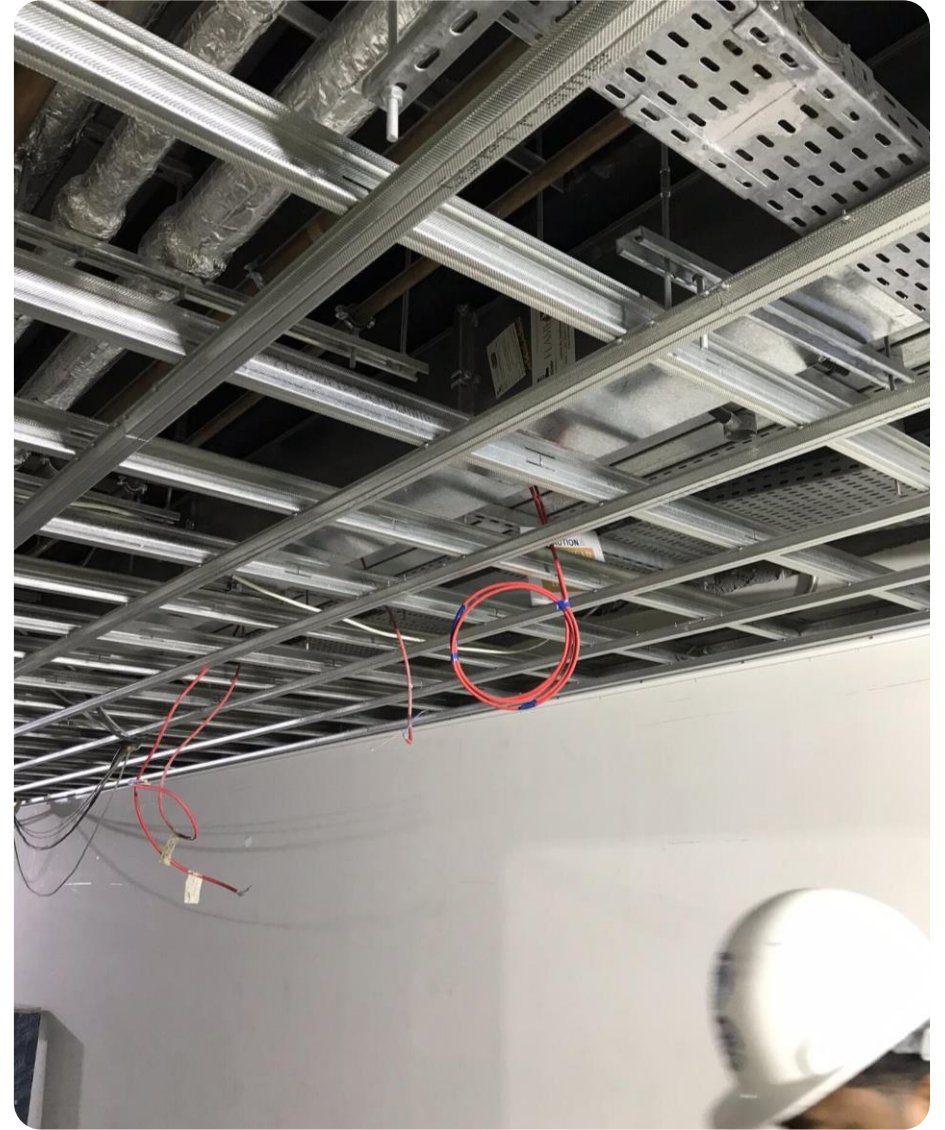


Can Be Used as Wall Solution as well !



GYPROC SYSTEM SOLUTION

- Ceiling System
- Various ceiling framing system
 - SL35Z – Ceiling Batten
 - SL40Z – Furring Channel
 - Standard GypLock – Hanging Rod
 - Heavy Duty GypLock – Threaded Rod
 - Grid Ceiling – Expose Tee's
 - Semi Exposed Ceiling – C-Stud & U-Track



GYPROC SYSTEM SOLUTION

PERFORMANCE CONCEALED CEILING SYSTEMS



**FIRE
PROTECTION**



**ROBUSTNESS
GUARANTEE**



**INDOOR AIR
QUALITY**



NEAT FINISH



**ENVIRONMENTALLY
FRIENDLY**



**ACOUSTIC
CONTROL**



**MOISTURE
RESISTANCE**



**ENERGY
EFFICIENCY**



**PRODUCTIVITY
GAIN**



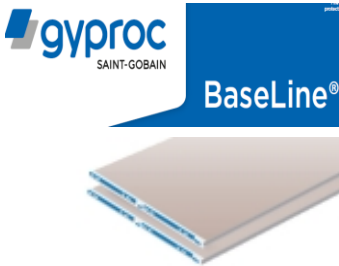
**SUPERIOR
AESTHETIC
& DESIGN**

GYPROC GYPBOARD® RANGE

Standard Regular Board



9mm



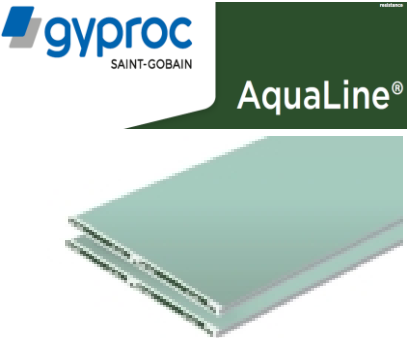
12.5mm

Tiles Backer & External Board



12.5mm

Technical Performance Board



9mm & 12.5mm



15mm



16mm & 19mm



12.5mm



12.5mm



ThermaLine®



37.5mm



4

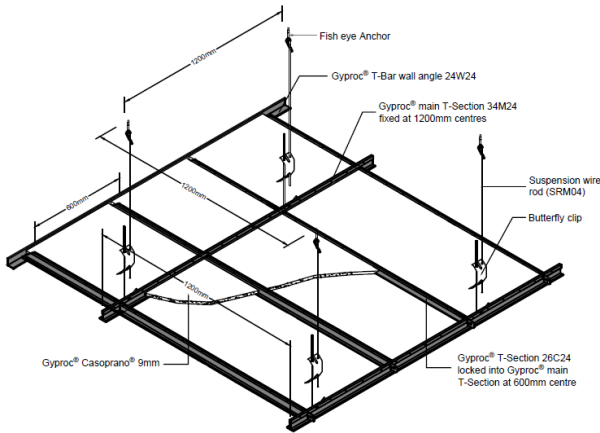
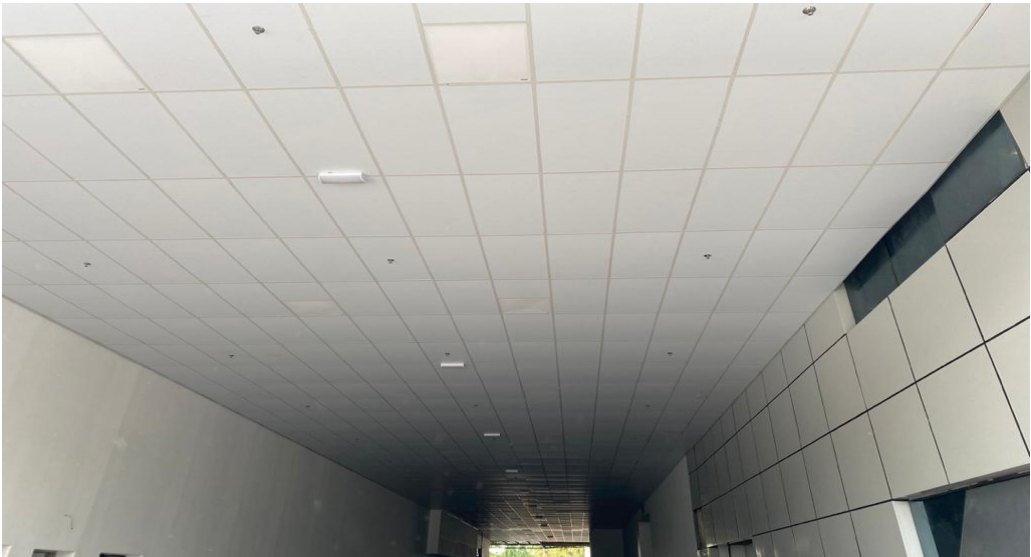
Grid Ceiling Tiles – Finish Product



9mm



9mm

**SAINT-GOBAIN**

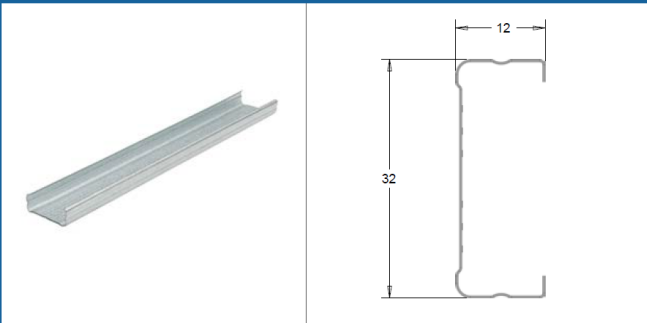
CONCEALED CEILING SYSTEM



GYPROC SL35Z CEILING SYSTEM – INTERNAL CEILING

CHANNEL SL35Z

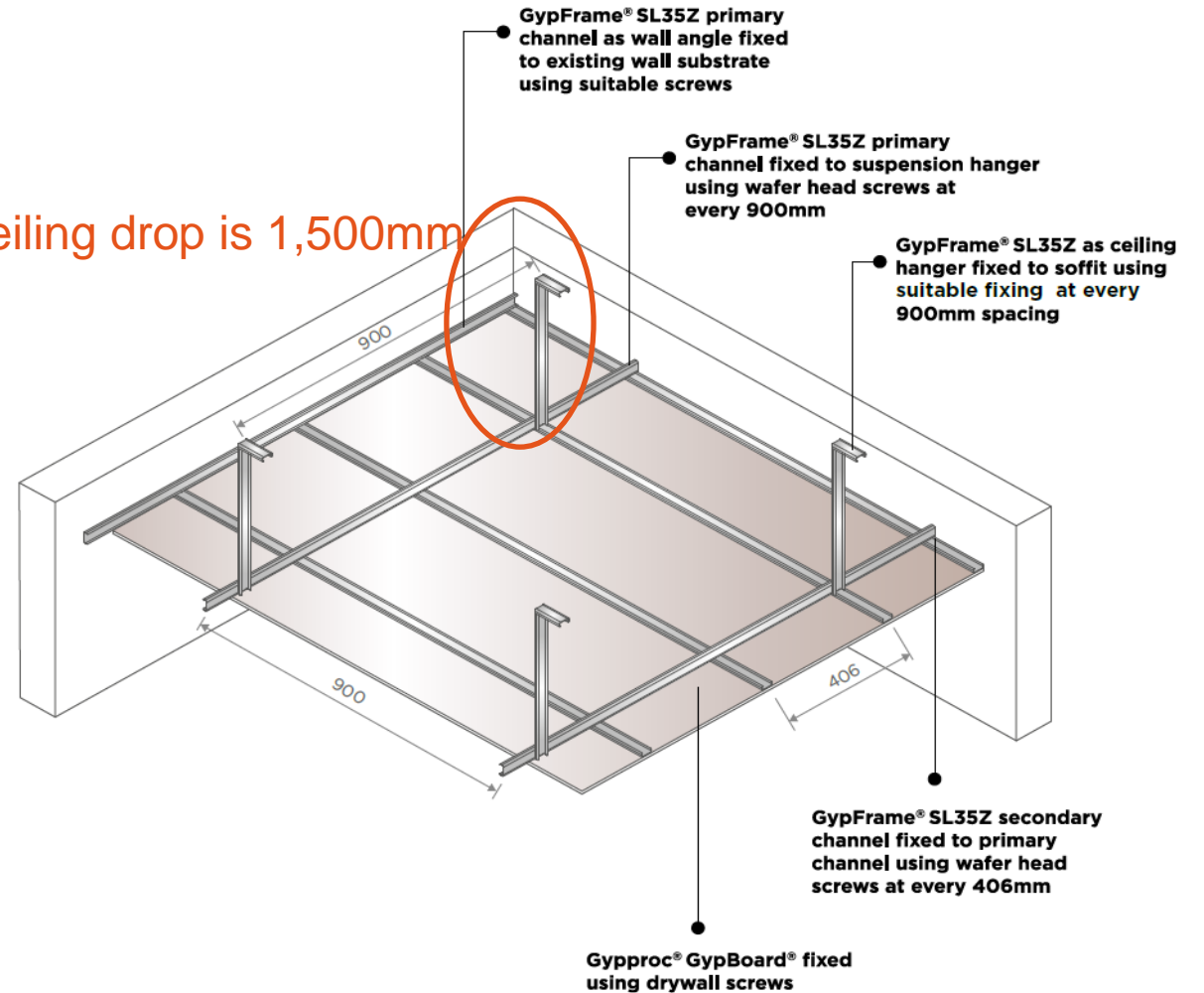
Component Data Sheet



Part No.	SL35Z
Thickness (BMT)	0.35mm
Steel Grade	G300 AZ90 to AS1397

- Ceiling batten by Zincalume coated steel;
- Only suitable for 9mm boards i.e. Topline 9mm & Aqualine 9mm;
- Max ceiling drop is 1,500mm;
- No wind load is being considered.

Max ceiling drop is 1,500mm



GYPROC SL40Z CEILING SYSTEM – INTERNAL CEILING

CHANNEL SL40Z

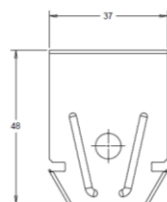
Component Data Sheet



Part No.	C3612
Thickness (BMT)	0.40mm
Steel Grade	G300 AZ150 to AS1397

CROSS JOINER (CJ35)

Component Data Sheet



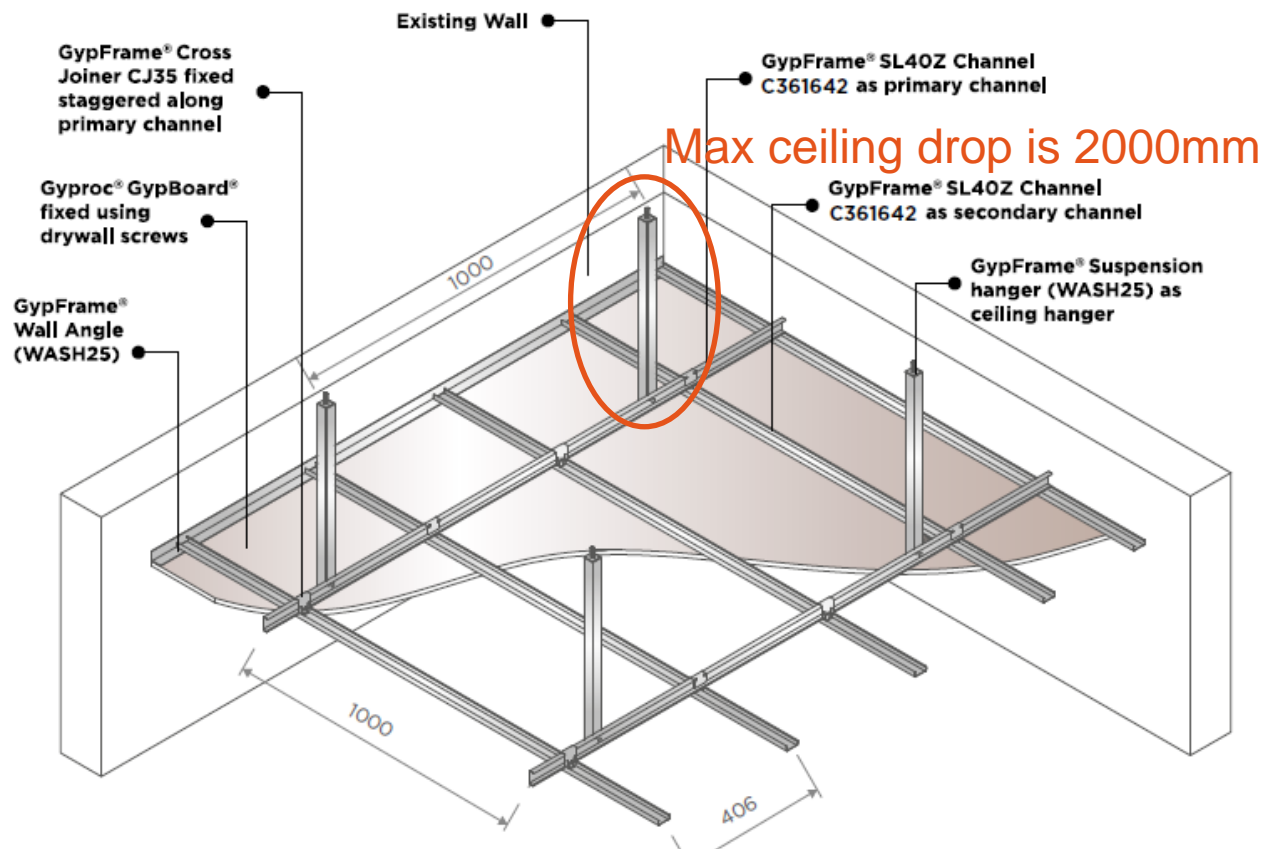
Part No.	CJ35
Thickness (BMT)	0.50mm
Steel Grade	G300 AZ150 to AS1397

WALL ANGLE (WASH25)

Component Data Sheet



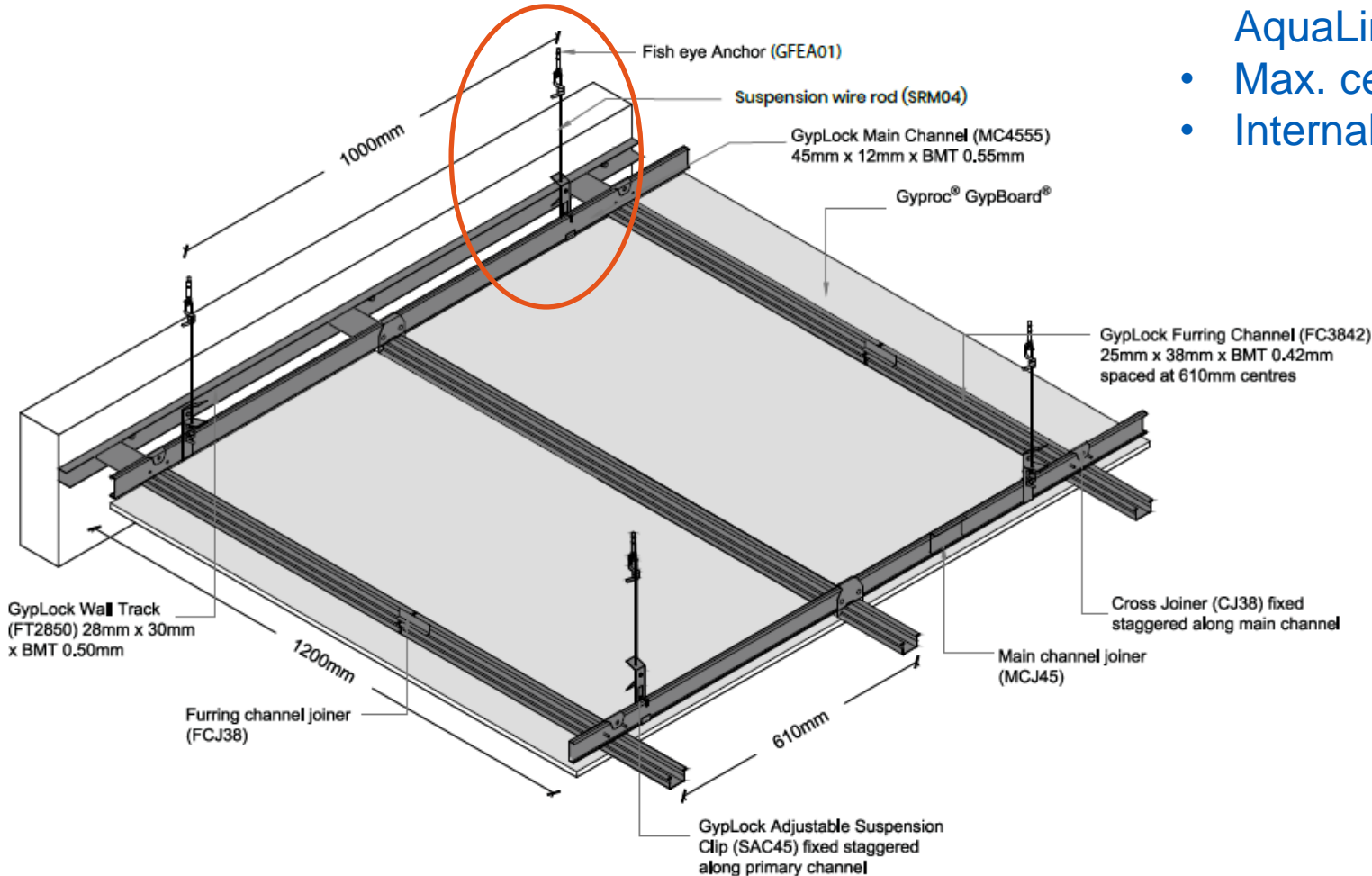
Part No.	WASH25
Thickness (BMT)	0.50mm
Steel Grade	G300 AZ150 to AS1397



- JKR specifications;
- Suitable for 9mm & 12.5mm boards i.e. TopLine 9mm, AquaLine 9mm, BaseLine 12.5mm, AquaLine 12.5mm & GypTone 12.5mm;
- Max. ceiling drop is 2000mm;
- No wind load is being considered.

GYPROC STANDARD GYPLOCK CEILING SYSTEM – INTERNAL CEILING

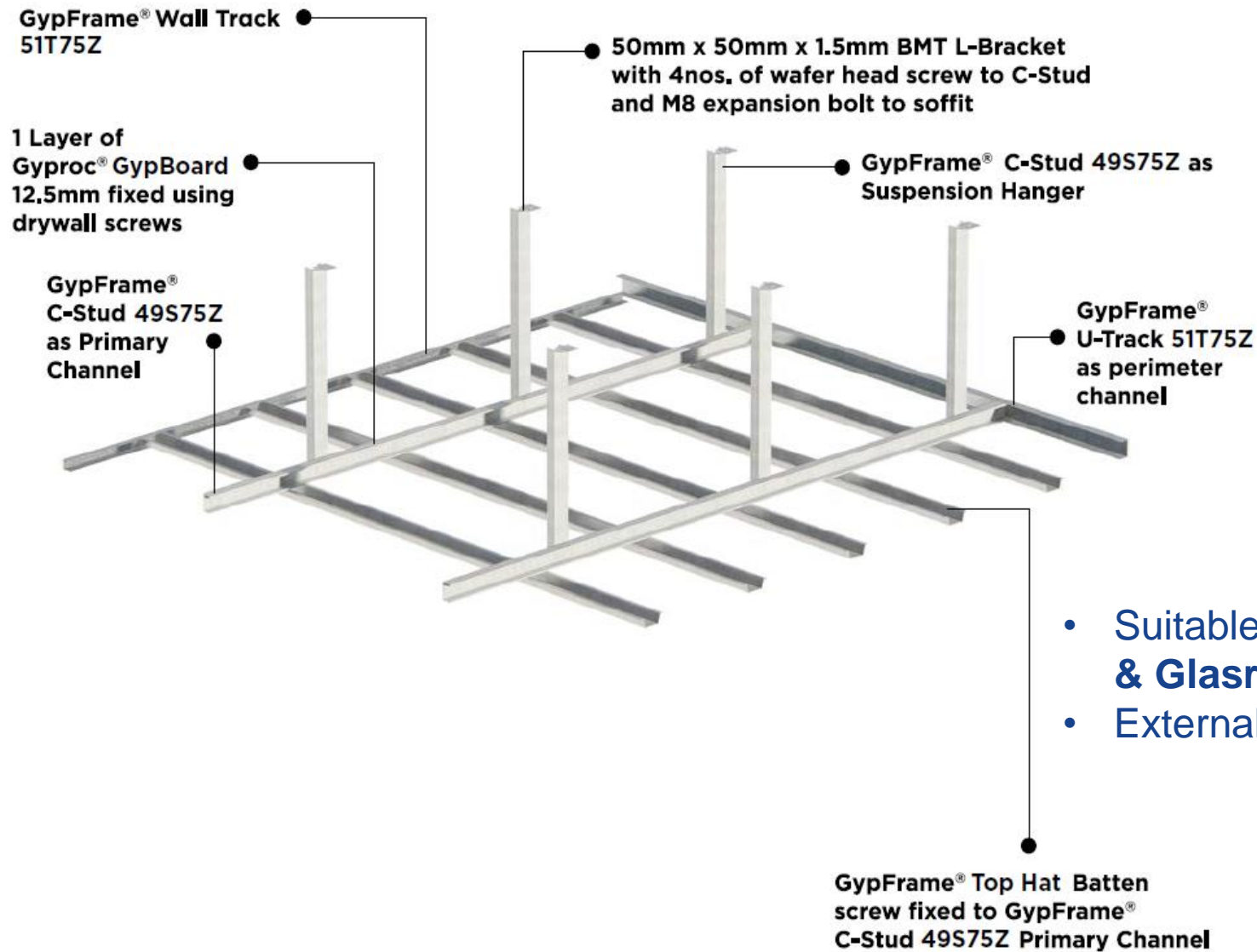
Max ceiling drop is 3,600mm



- Suitable for 9mm & 12.5mm boards i.e. TopLine 9mm, AquaLine 9mm, BaseLine 12.5mm, AquaLine 12.5mm & GypTone 12.5mm;
- Max. ceiling drop is 3,600mm;
- Internal wind load of 0.375kPa (ultimate).



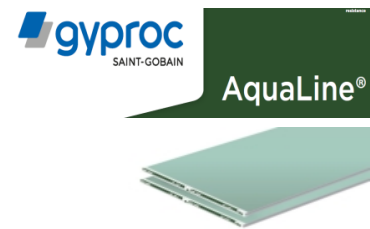
GYPROC WIND LOAD SYSTEM – SEMI EXTERNAL



- Suitable for 12.5mm boards i.e. **AquaLine 12.5mm & Glasroc H 12.5mm;**
- External wind load of 1.0kPa, 1.2kPa, 1.5kPa, etc.



GYPROC WIND LOAD SYSTEM – SEMI EXTERNAL - SELECTION OF BOARD

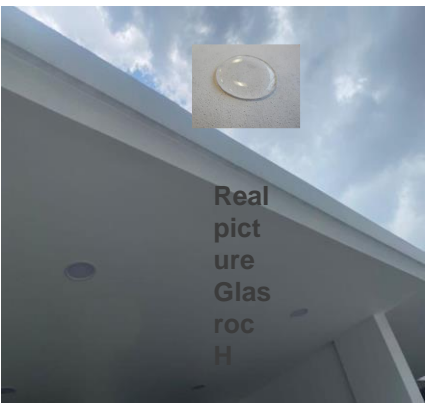
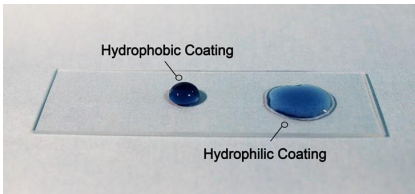


MR - Moisture Resistant 12.5mm

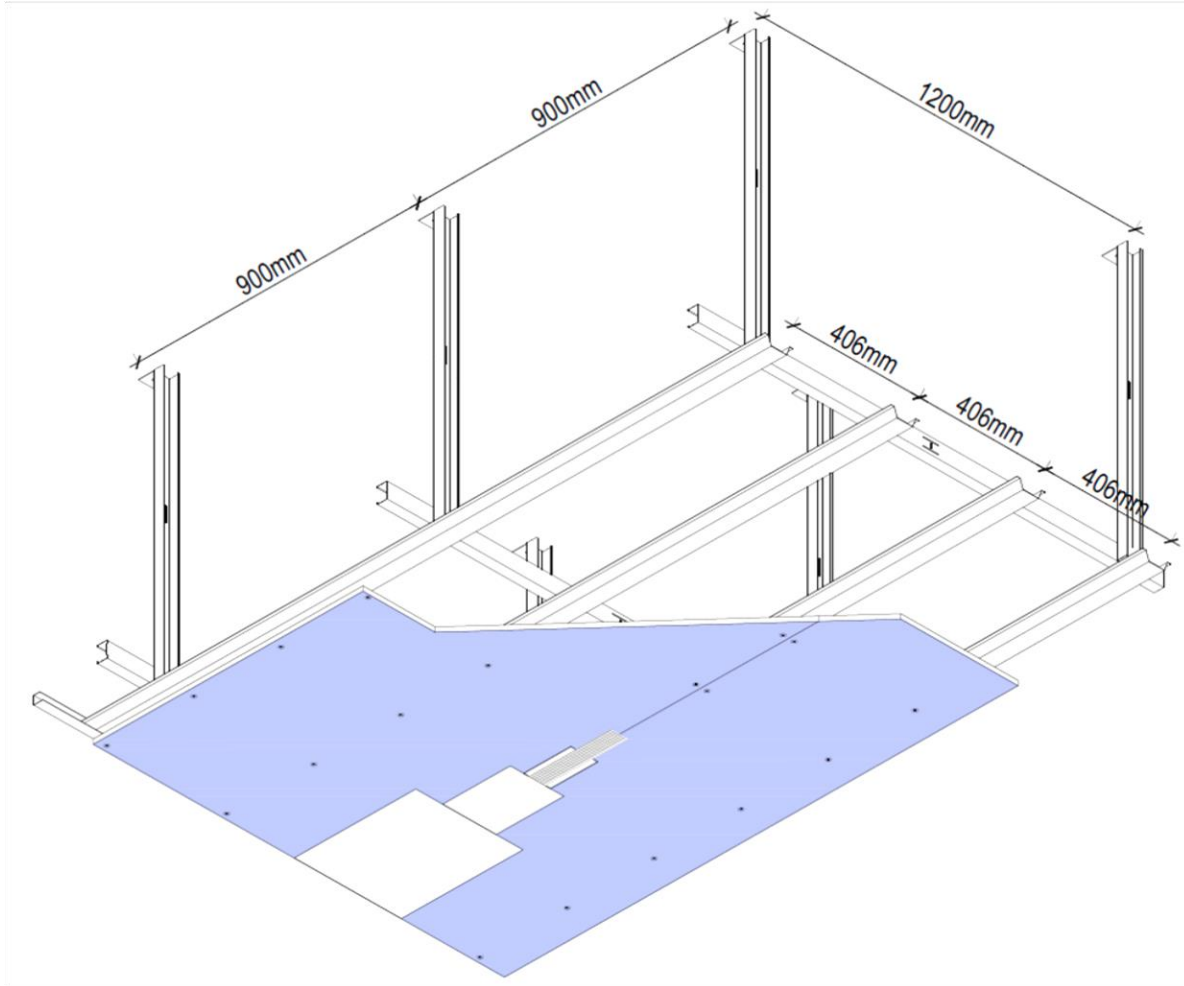
VS



Hydrophobic 12.5mm



JOINT TREATMENT FOR GLASROC H (SEMI EXPOSED CEILING SYSTEM)



**Stainless Steel
Drywall Screw
25mm**



**Gyproc Gypfill
Super Joint**



**Gyproc Fiber
Mesh Tape
50mm(W) x
70mm(L)**

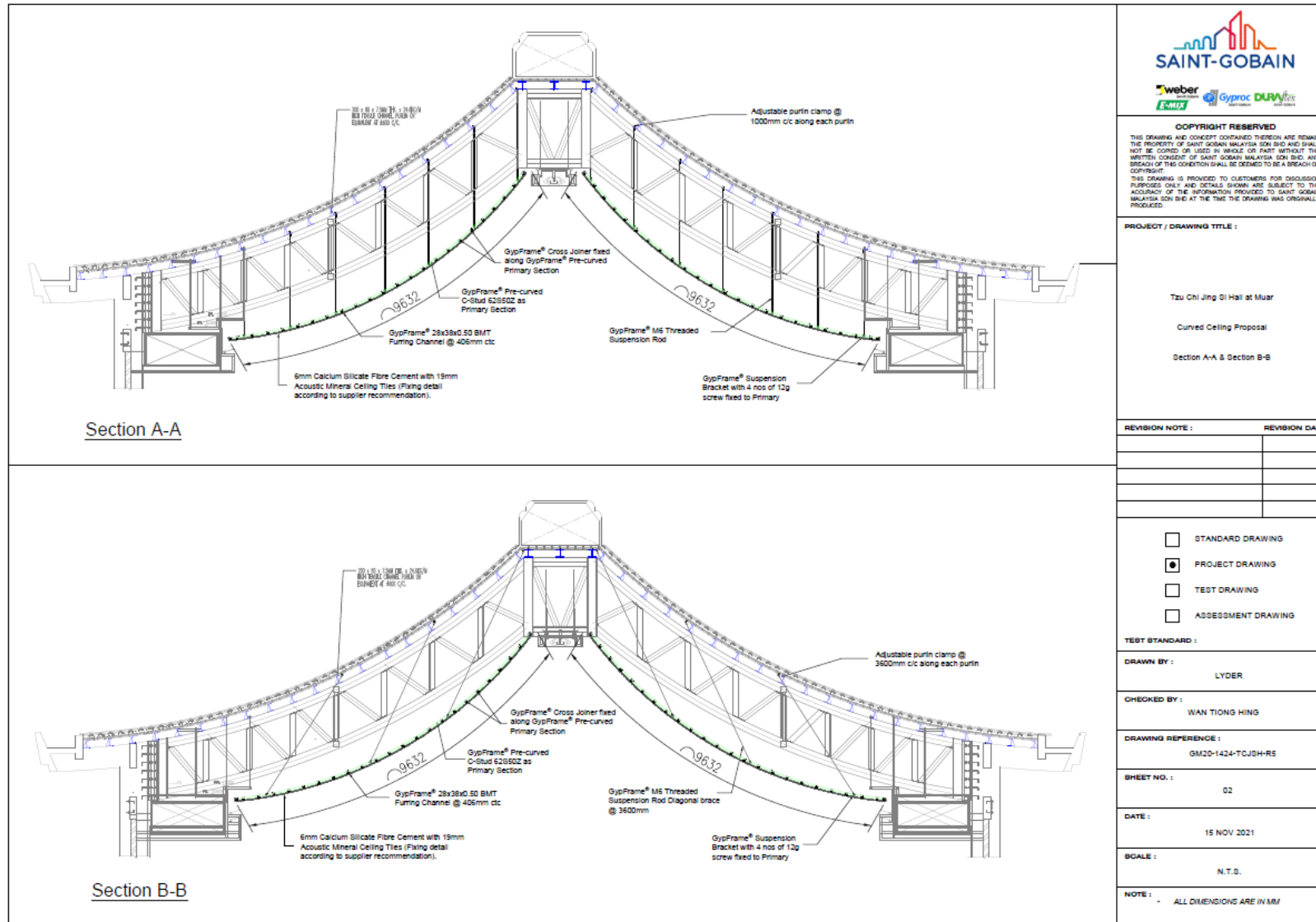
Design to
1.5kpa

Joint Treatment

1st Coat
Reinforcement
2nd Coat
3rd Coat

- Gypfill SuperJoint 75mm width
- Paper Tape
- Gypfill SuperJoint 150mm width
- Gypfill SuperJoint 300mm width

OTHER CEILING SYSTEMS (CURVED CEILING)



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PROJECT / DRAWING TITLE :

Tzu Chi Jing Ji Hall at Muar

Curved Ceiling Proposal

Section A-A & Section B-B

REVISION NOTE : **REVISION DATE :**

- ☐ STANDARD DRAWING
☒ PROJECT DRAWING
☐ TEST DRAWING
☐ ASSESSMENT DRAWING

TEST STANDARD :

DRAWN BY :

LYOER

CHECKED BY :

WAN TIONG HING

DRAWING REFERENCE :

GM20-1424-TJUSH-R5

SHEET NO. :

02

DATE :

15 NOV 2021

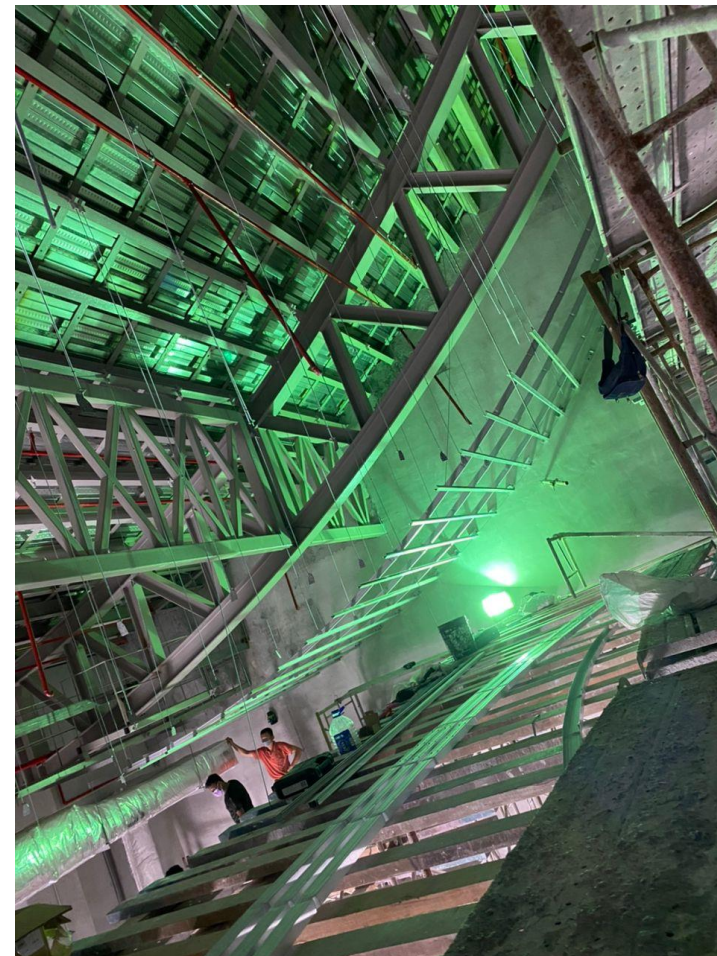
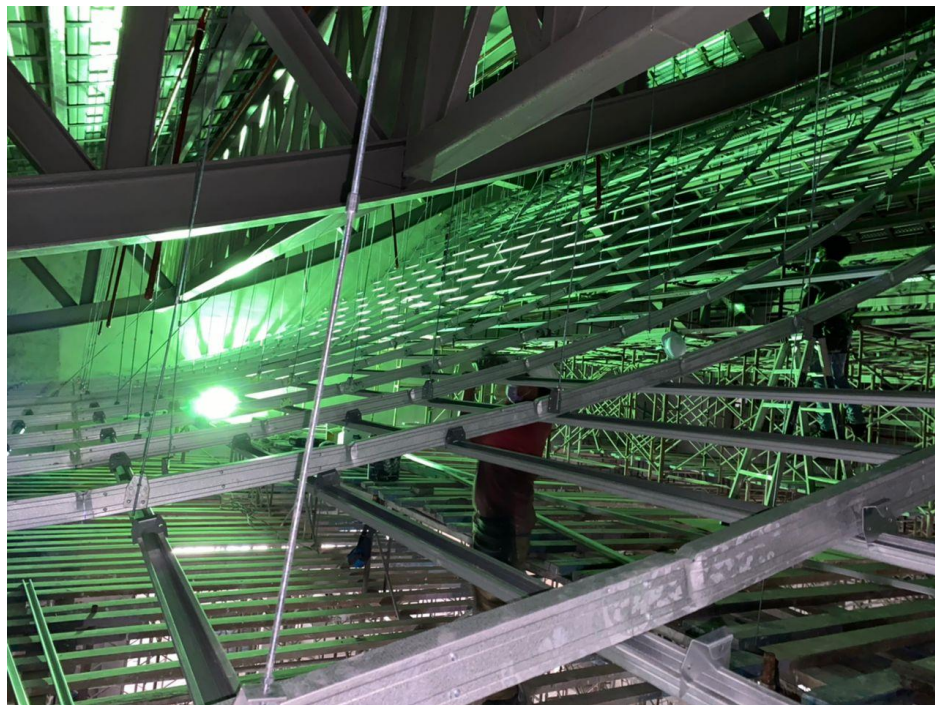
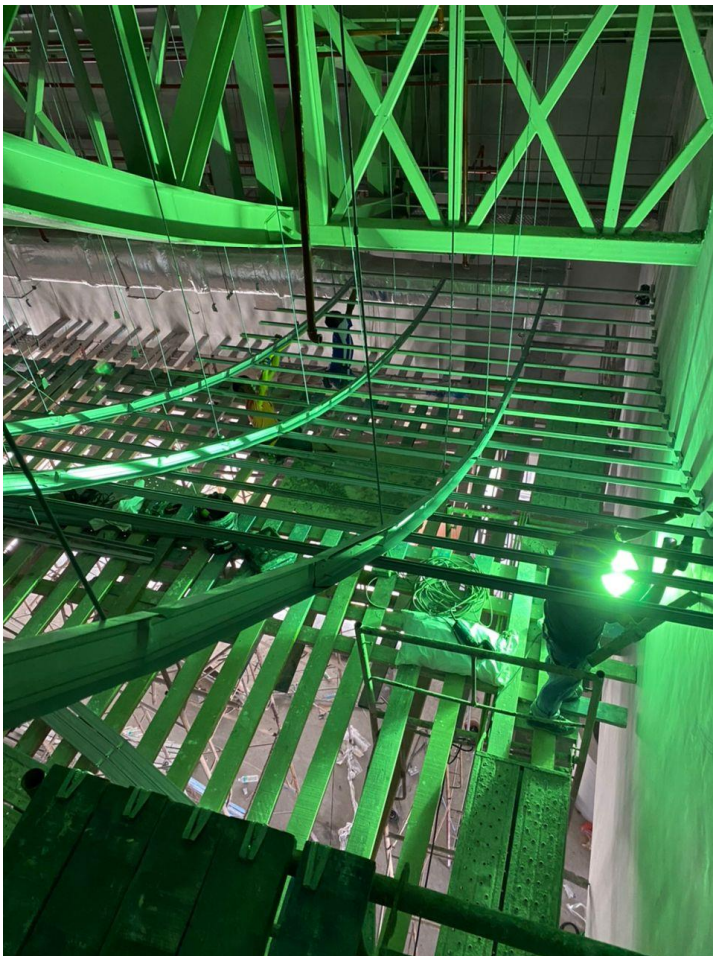
SCALE :

N.T.S.

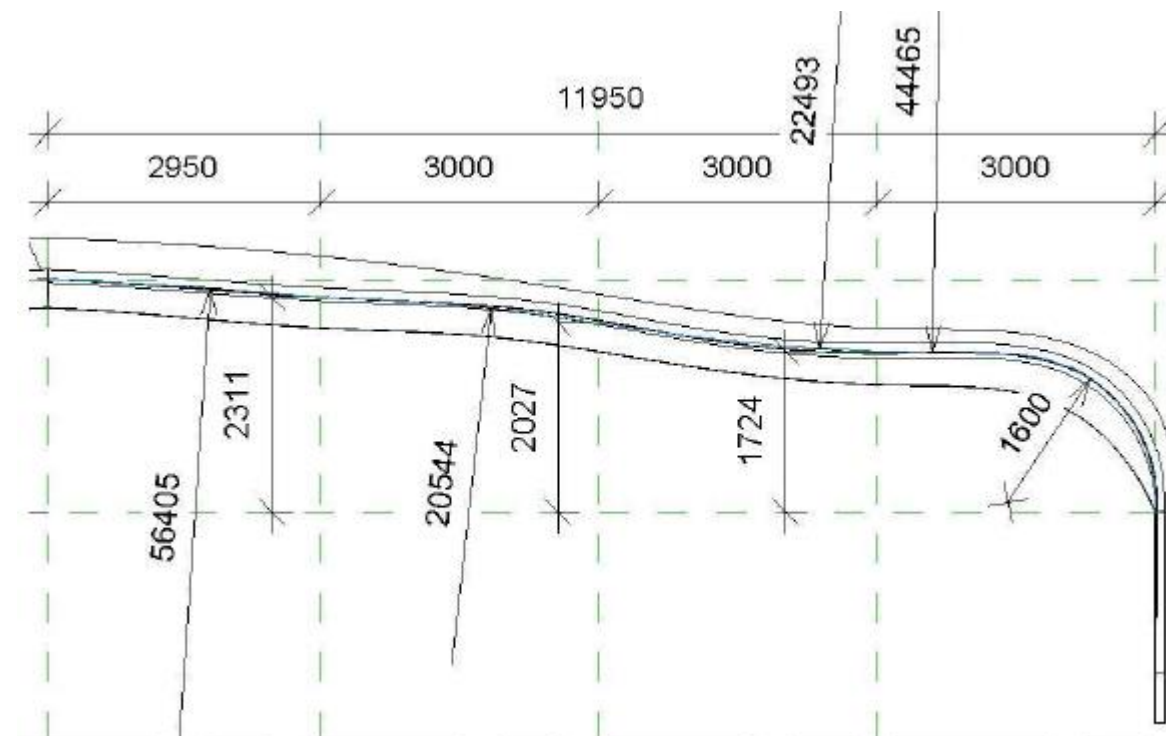
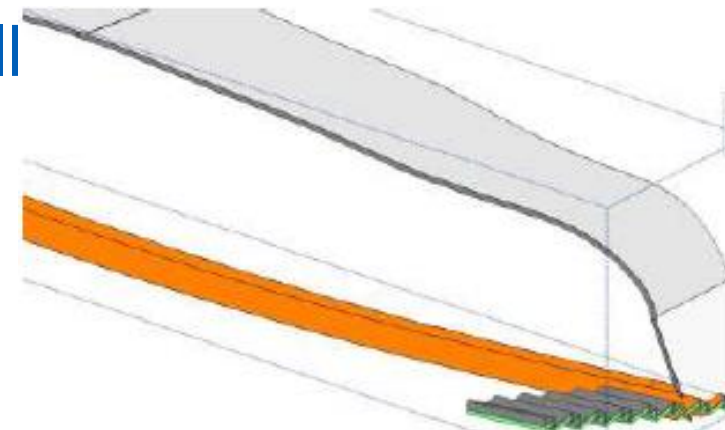
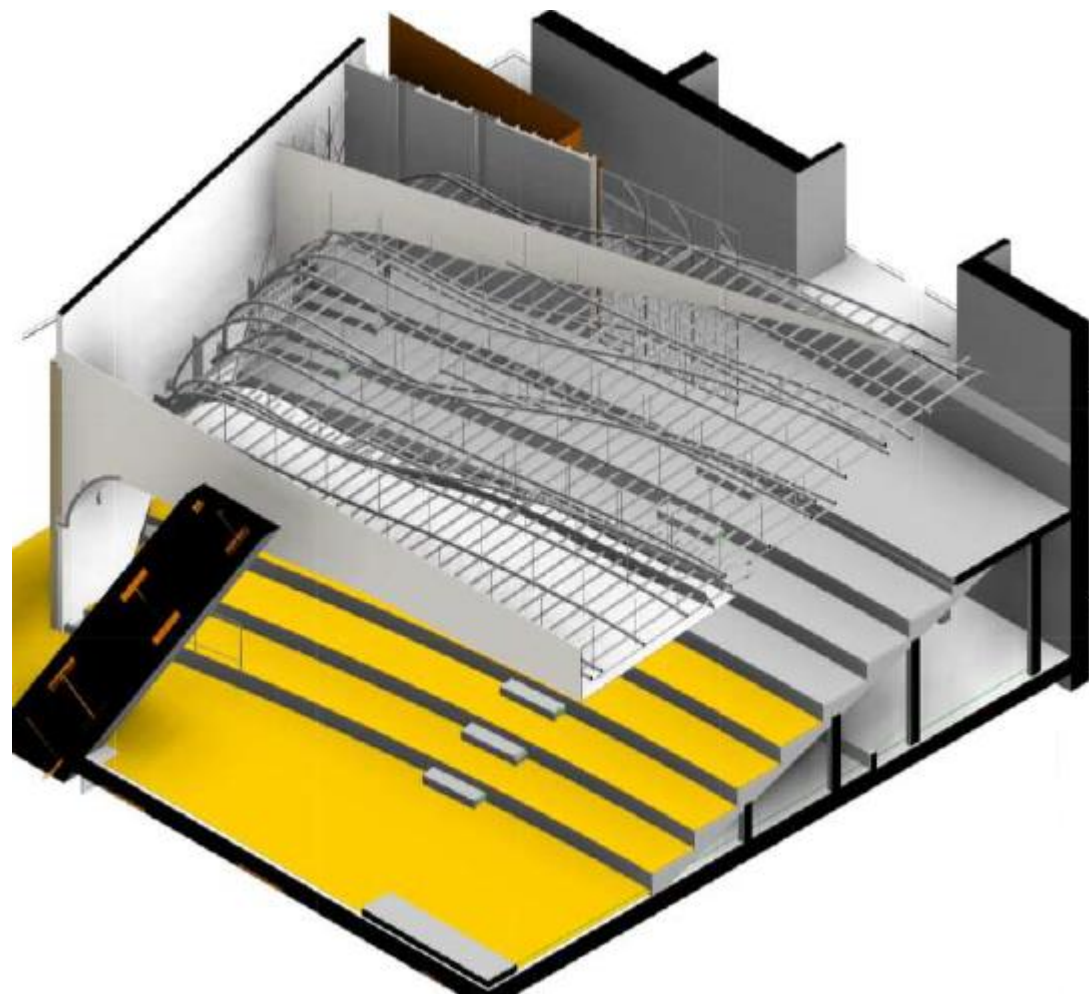
NOTE :

- ALL DIMENSIONS ARE IN MM

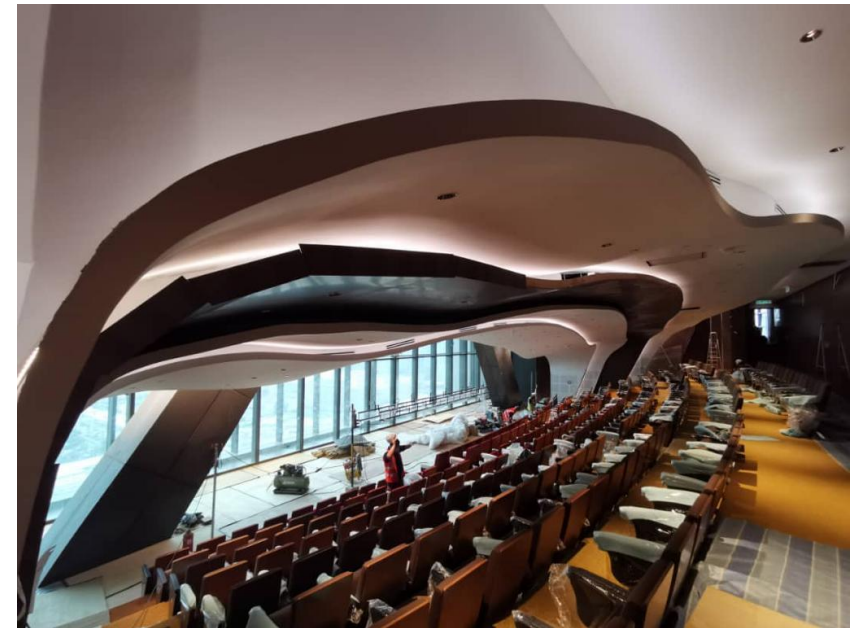
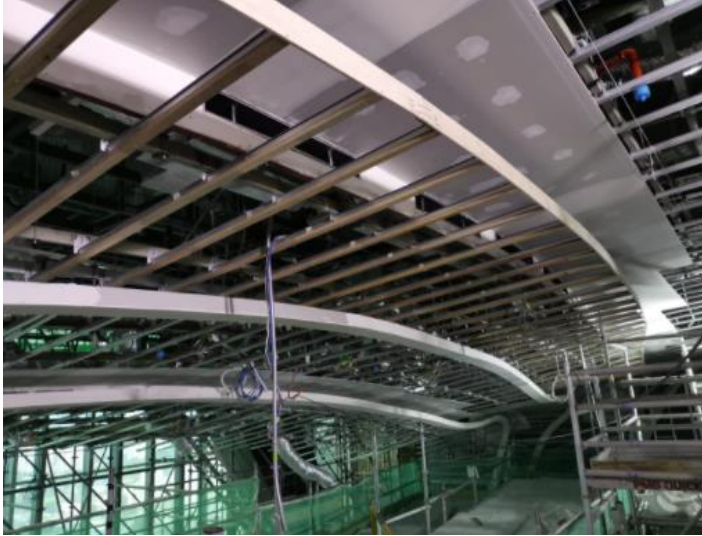
OTHER CEILING SYSTEMS (CURVED CEILING)



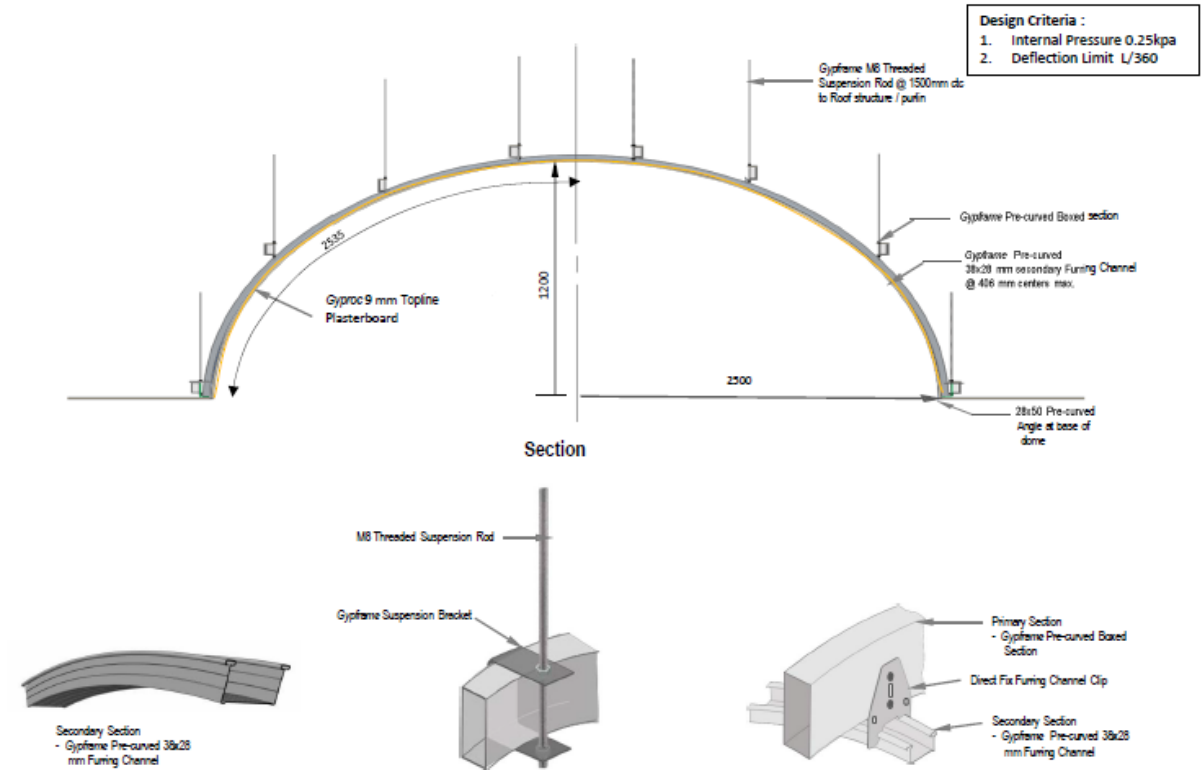
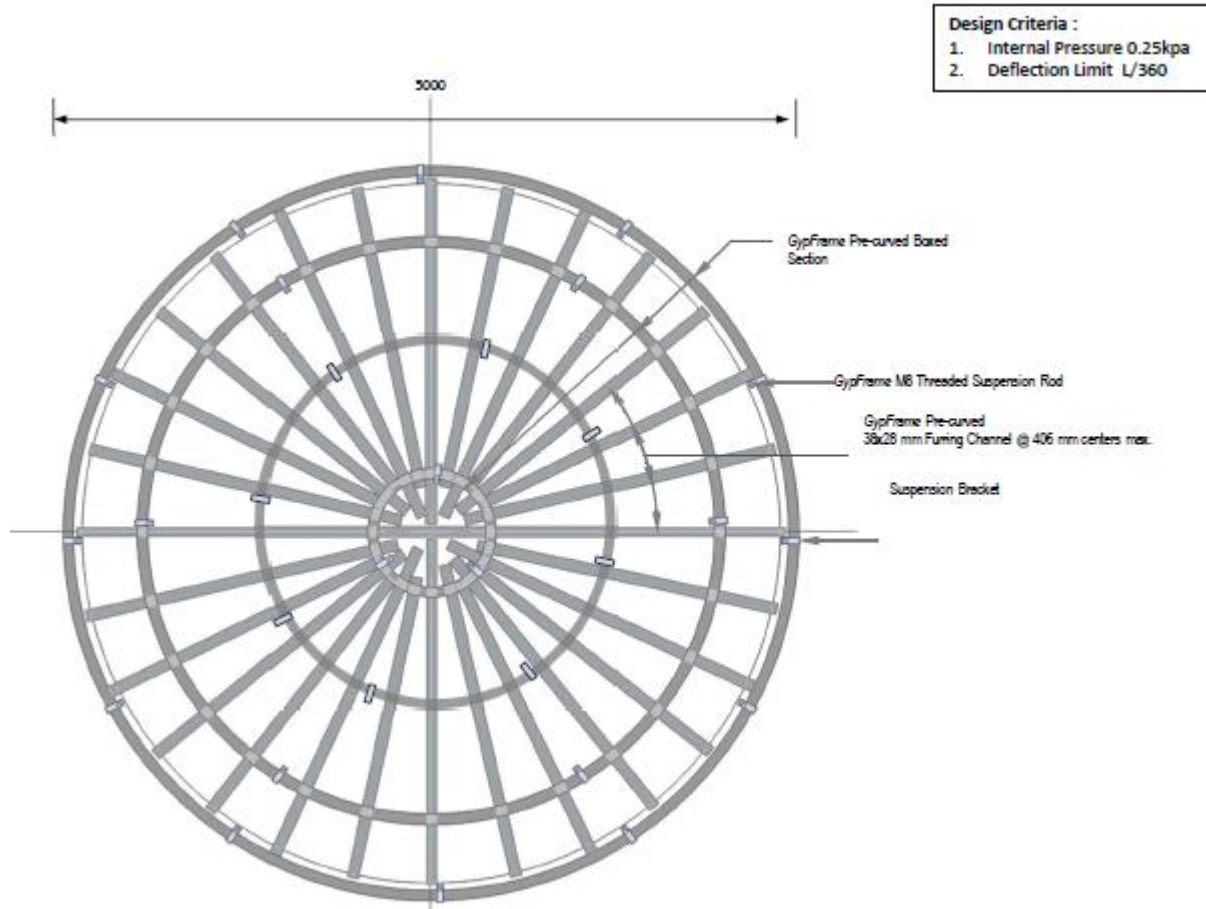
OTHER CEILING SYSTEMS (CURVED CEILING)



OTHER CEILING SYSTEMS (CURVED CEILING)



OTHER CEILING SYSTEMS (DOME CEILING)

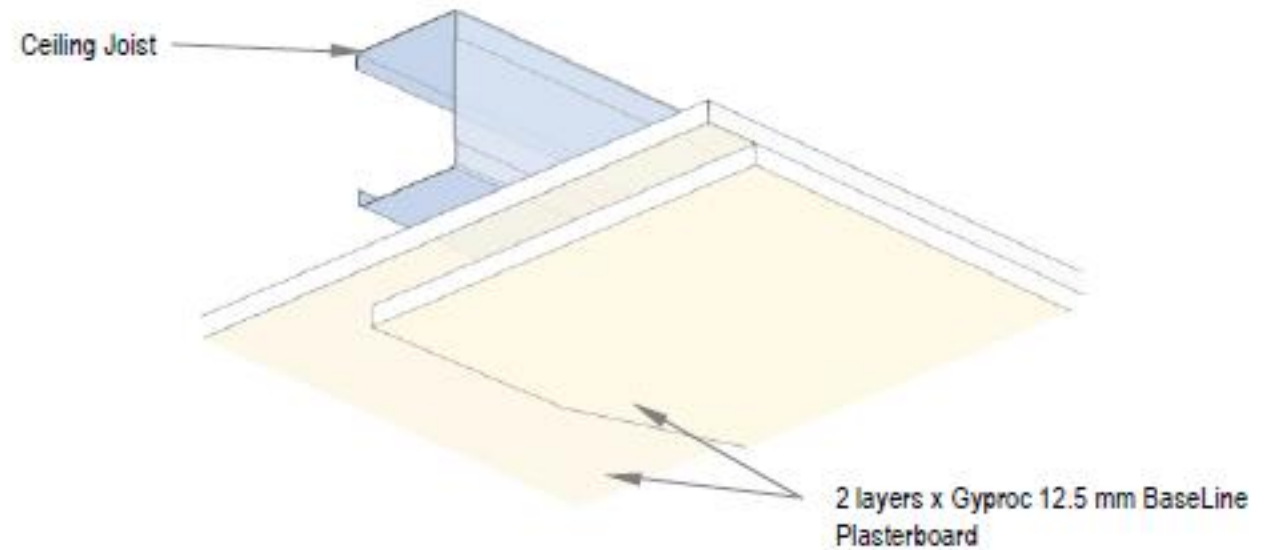
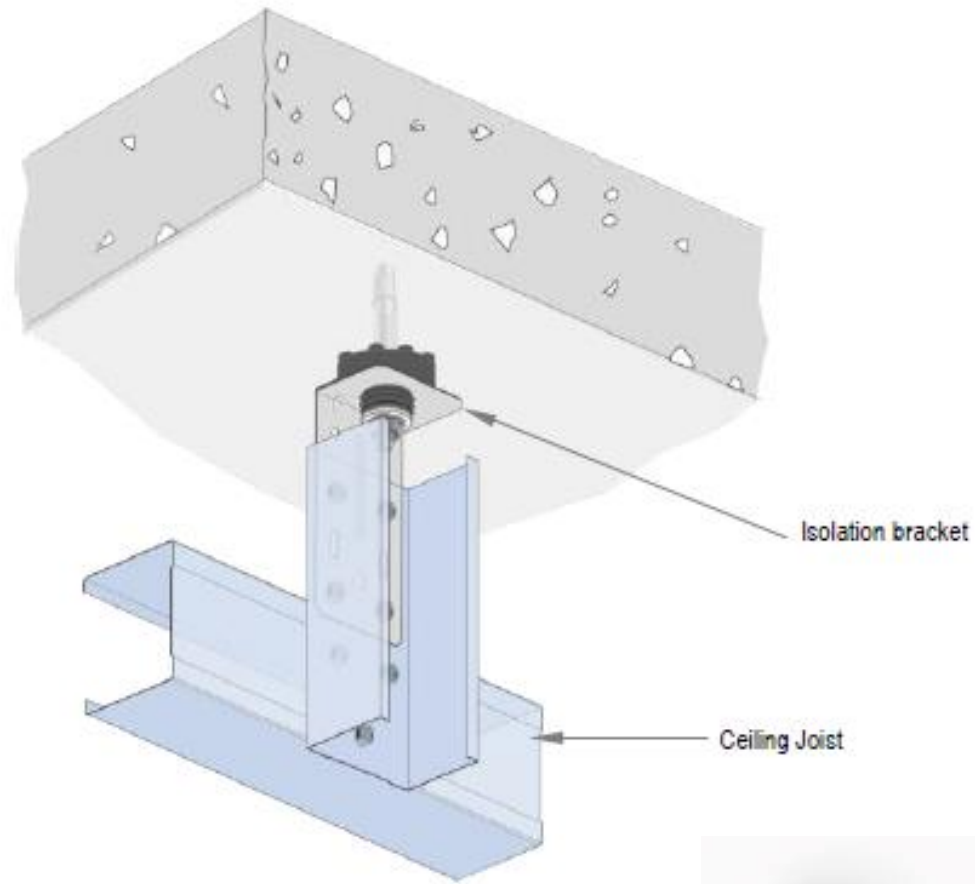


OTHER CEILING SYSTEMS (DOME CEILING)



OTHER CEILING SYSTEMS (ACOUSTIC CEILING WITH STC 69*)

*based on INSUL Simulation Report

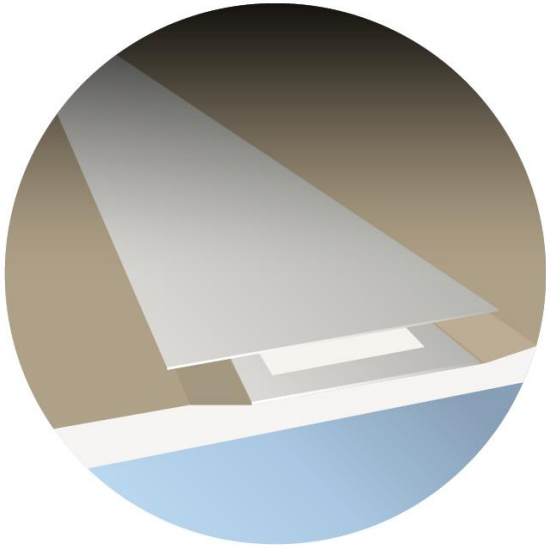


Sound Isolation Bracket
for total acoustics

OTHER CEILING SYSTEMS (ACOUSTIC CEILING)

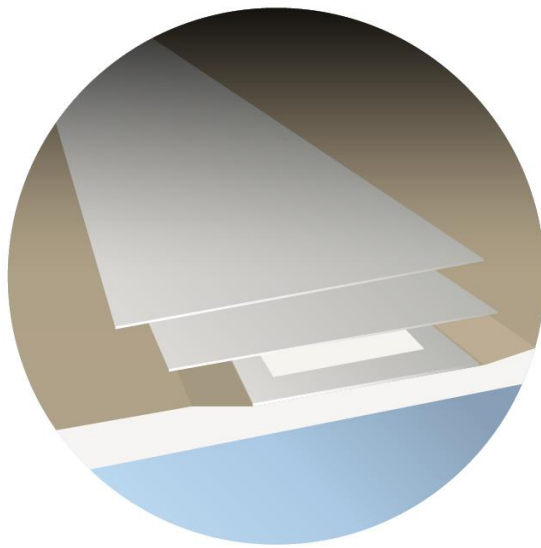


LEVELS OF QUALITY FINISHES



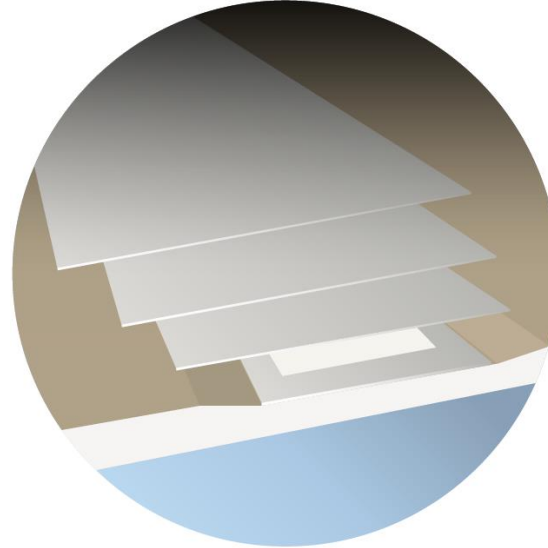
Q1

Joint treatment comprises total 2 coats of ProTop series joint compound and reinforced with tape up to 100mm width.



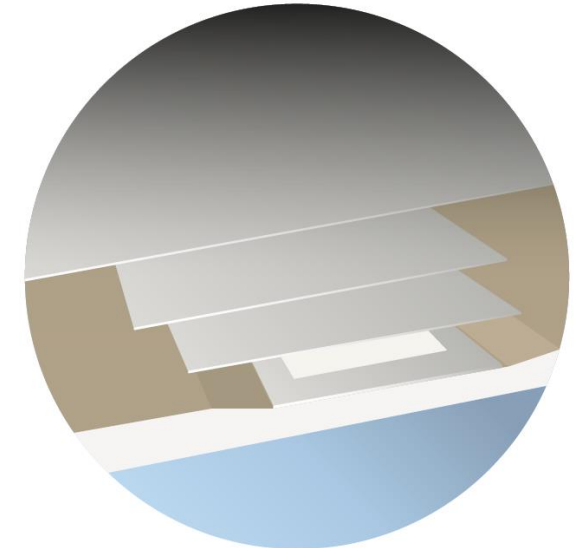
Q2

Joint treatment comprises total 3 coats of ProTop series joint compound and reinforced with tape up to 150mm width.



Q3

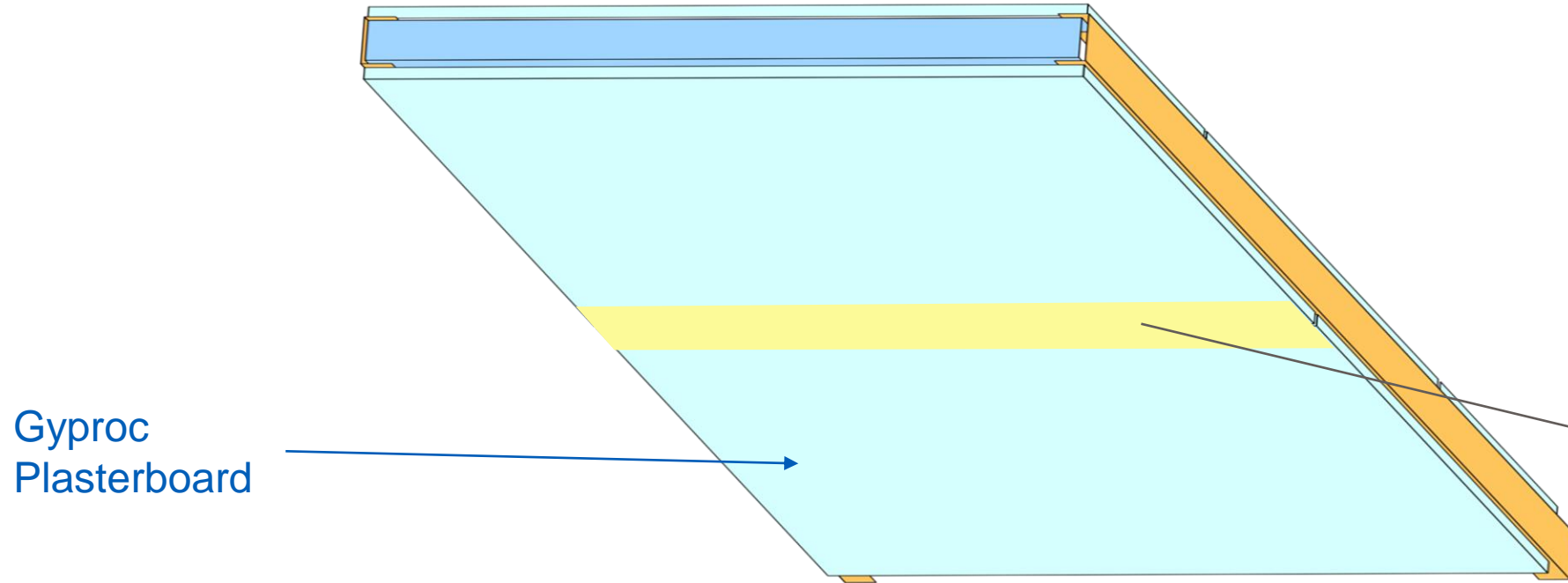
Joint treatment comprises total 4 coats of ProTop series joint compound and reinforced with tape up to min 200mm width. Pores on surface of boards to be filled



Q4

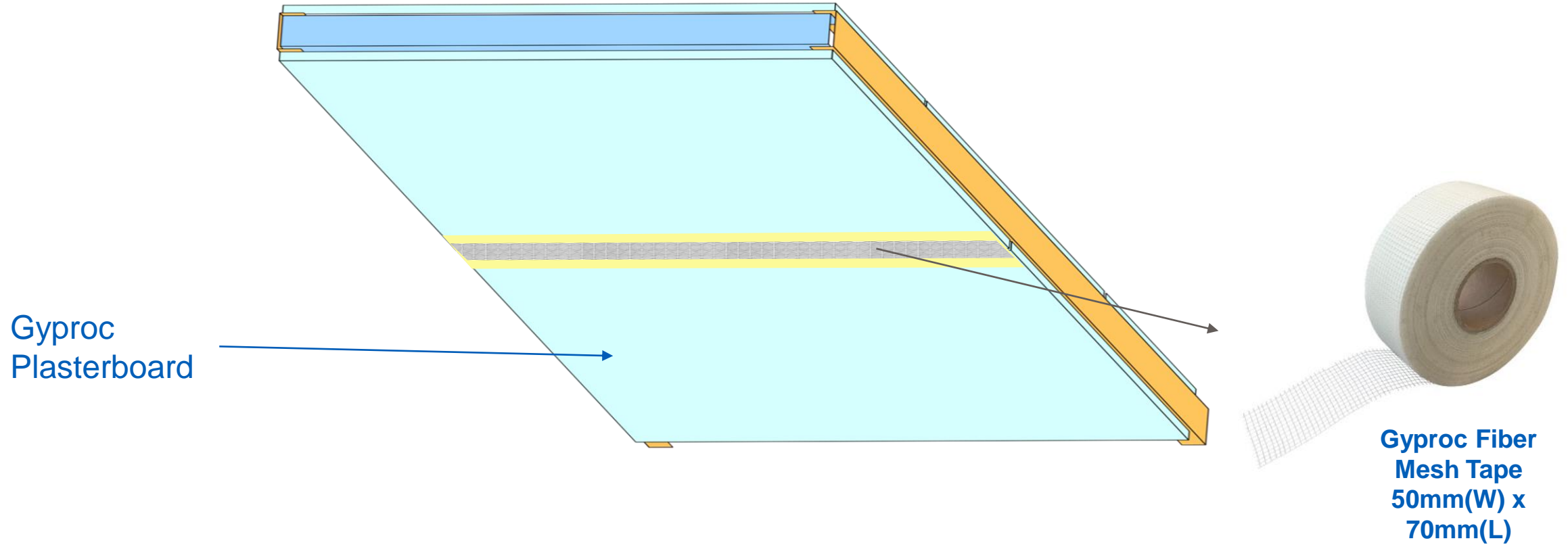
Joint treatment comprises total 4 coats of ProTop series joint compound and reinforced with tape up to min 200mm width. Whole board surface to be skimmed > 1mm thick

JOINT TREATMENT FOR CEILING SYSTEM

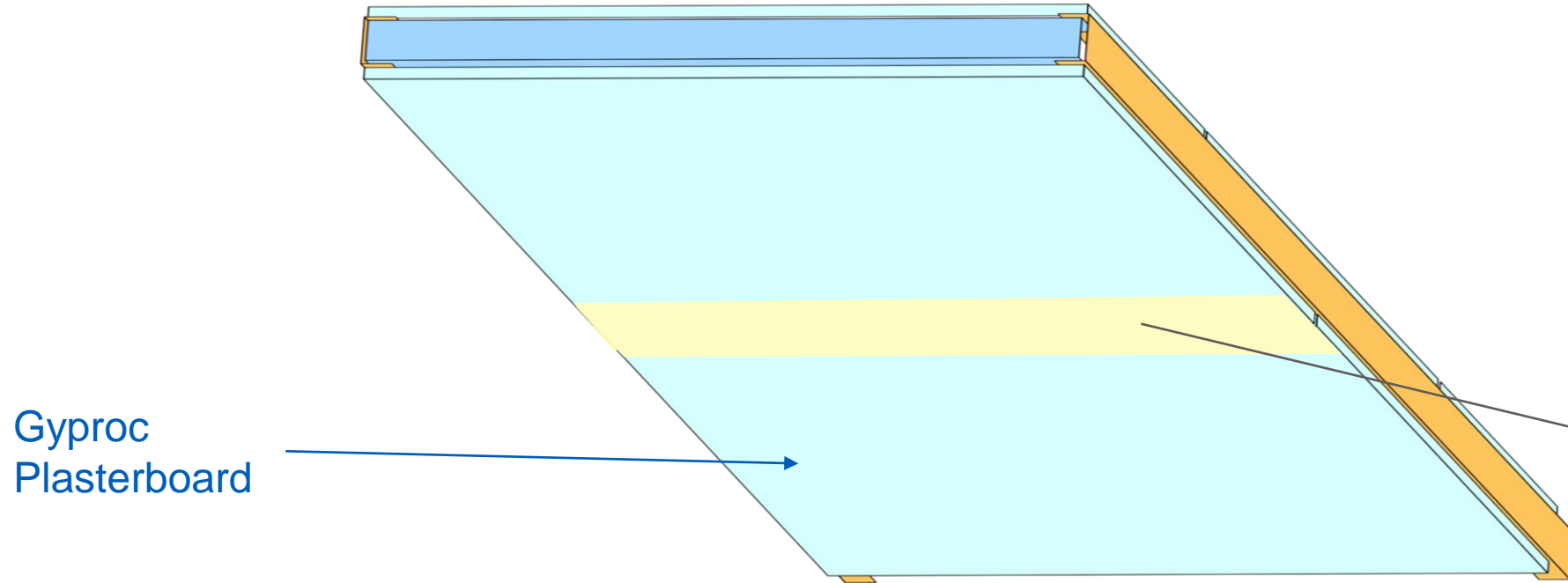


**1st Coat Gyproc ProTop
Joint Compound to
75mm Width**

JOINT TREATMENT FOR CEILING SYSTEM

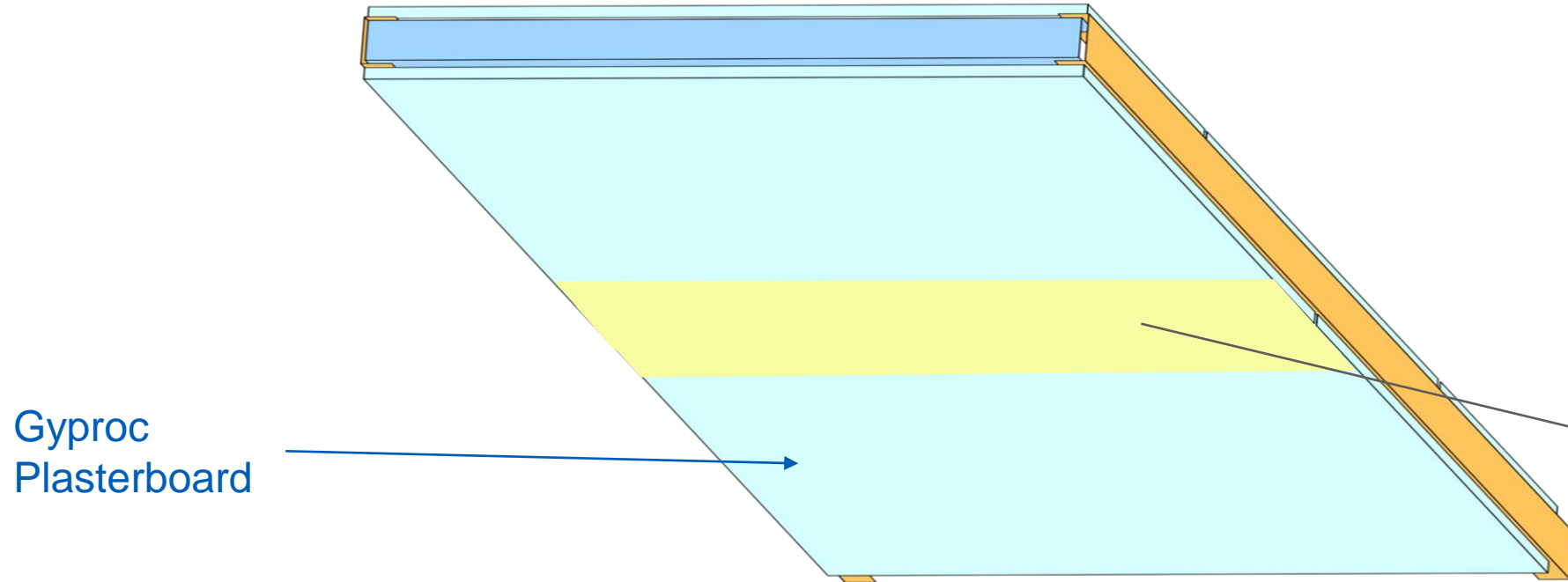


JOINT TREATMENT FOR CEILING SYSTEM



**2nd Coat Gyproc ProTop
Joint Compound to
150mm Width**

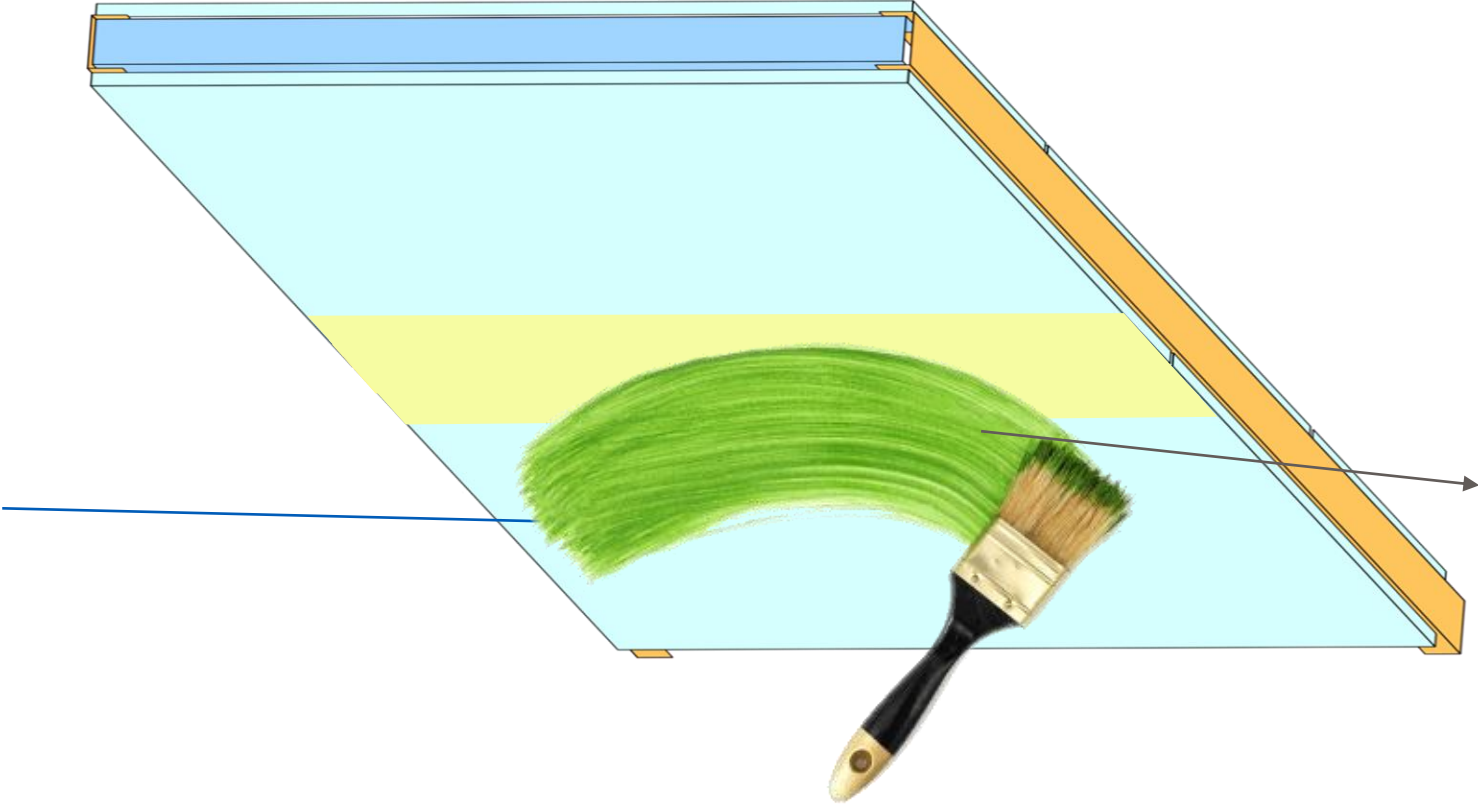
JOINT TREATMENT FOR CEILING SYSTEM



**3rd Coat Gyproc ProTop
Joint Compound to
Min. 200mm width**

JOINT TREATMENT FOR CEILING SYSTEM

Gyproc
Plasterboard



Paint Finishes

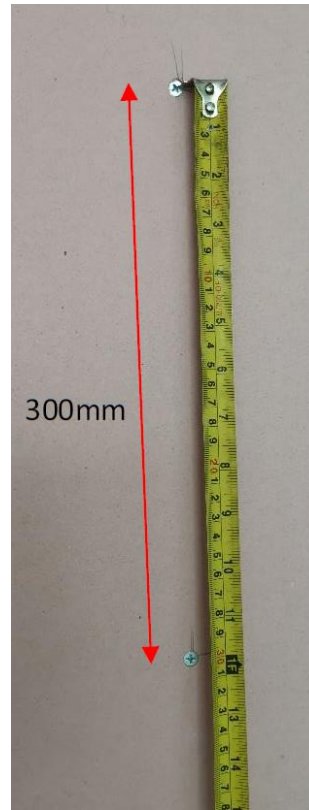


SITE SCENARIO 04

What went wrong, issues could be happen...

INSTALLATION ISSUES

Deep Screw Fixing



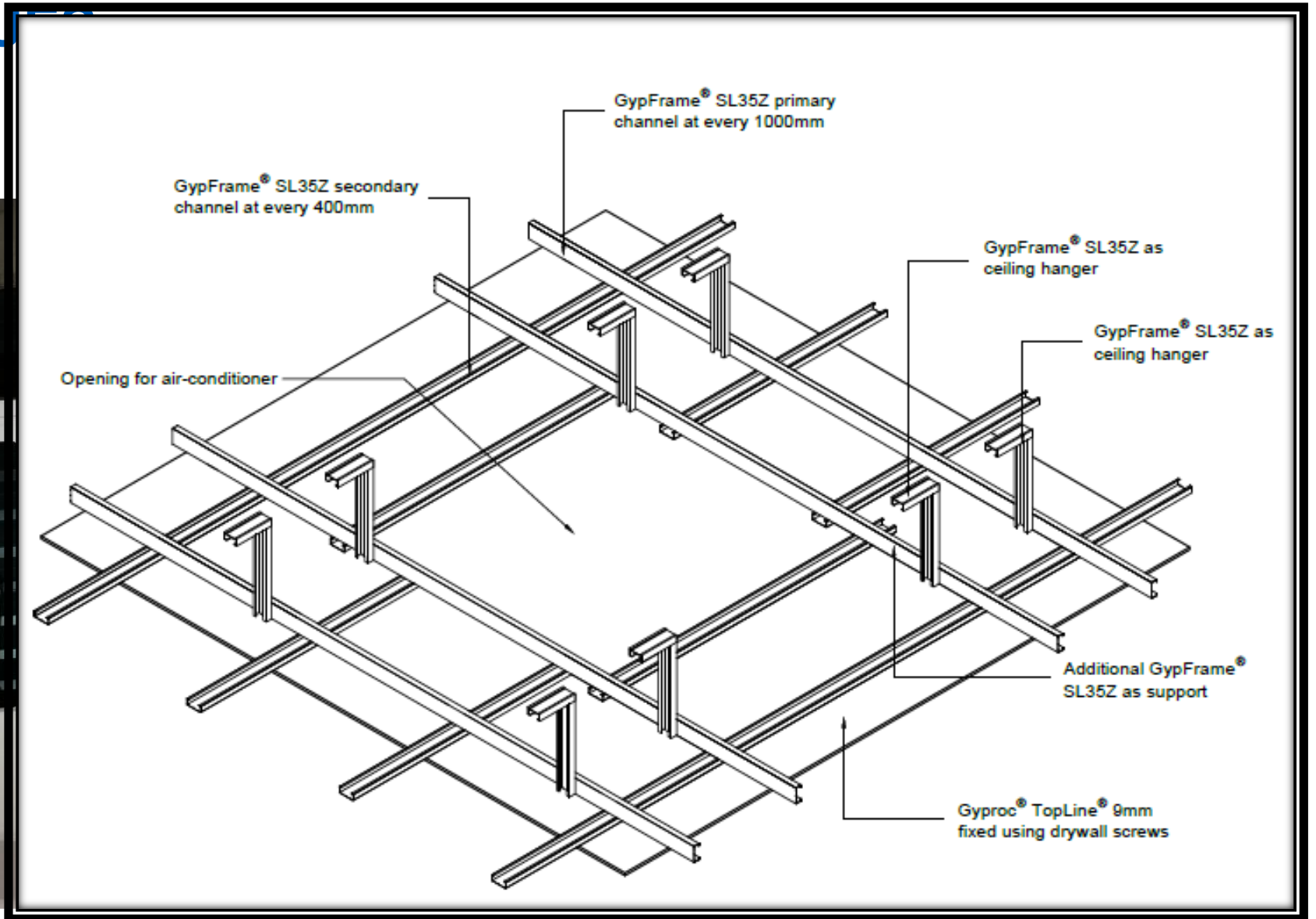
Over space screw fixing



Leading Cause of SAGGIN or WAVINESS

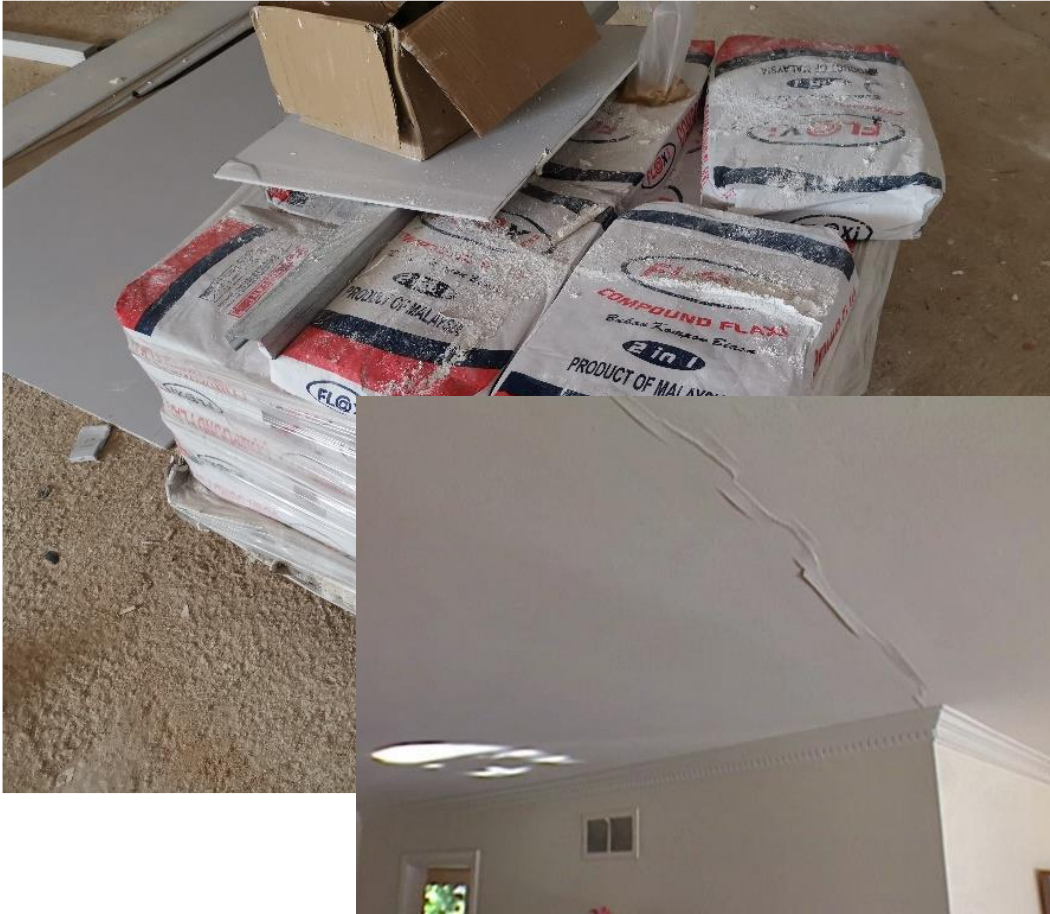
INSTALLATION ISSUES

Opening / Access



MATERIAL ISSUES

Compound

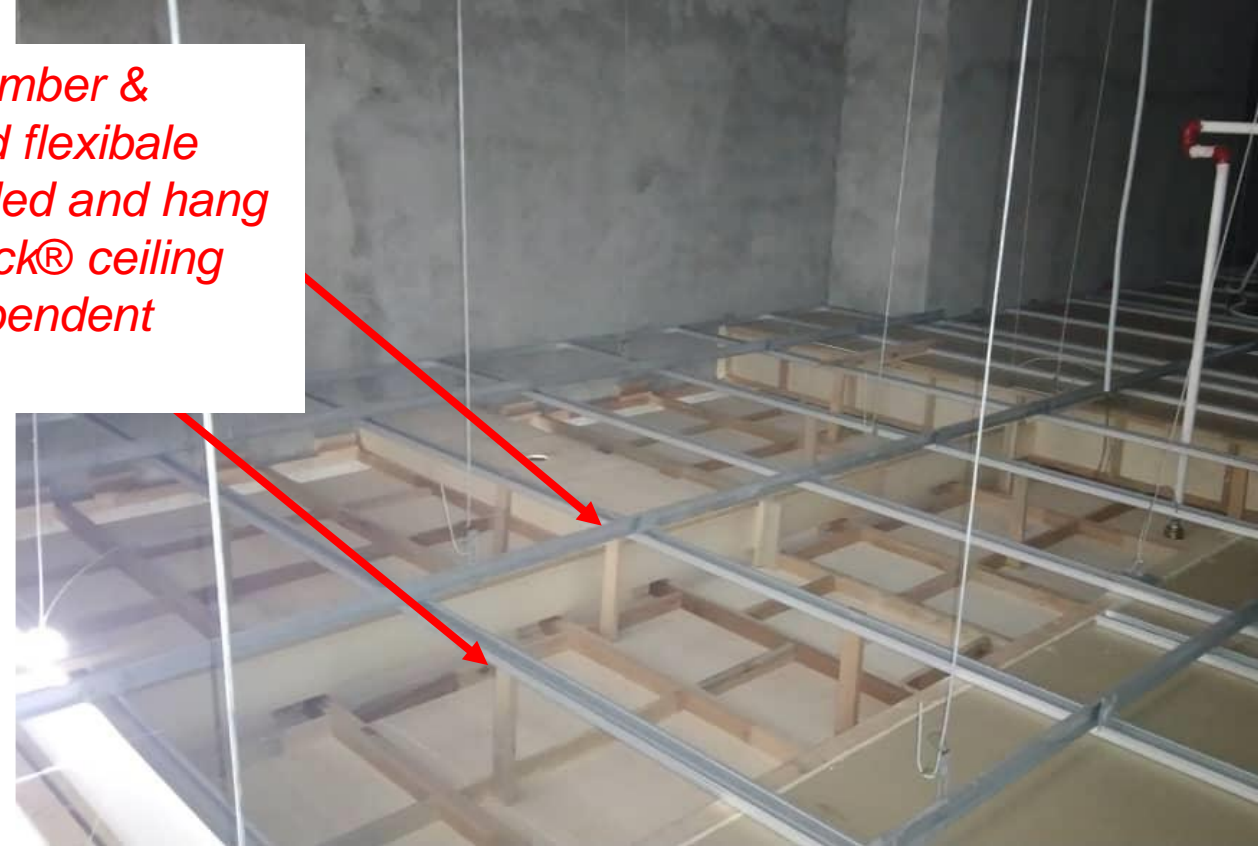
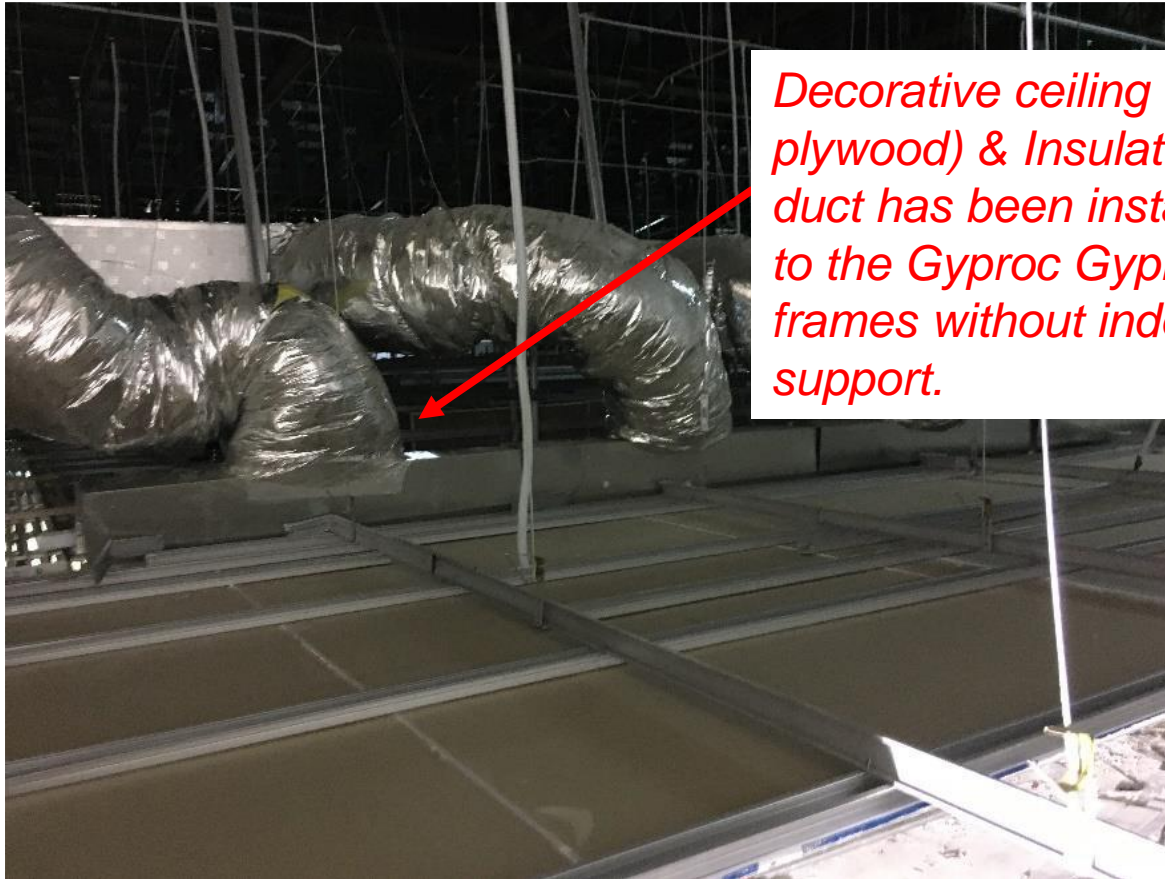


Metal



THIRD PARTY ISSUES

Extra load



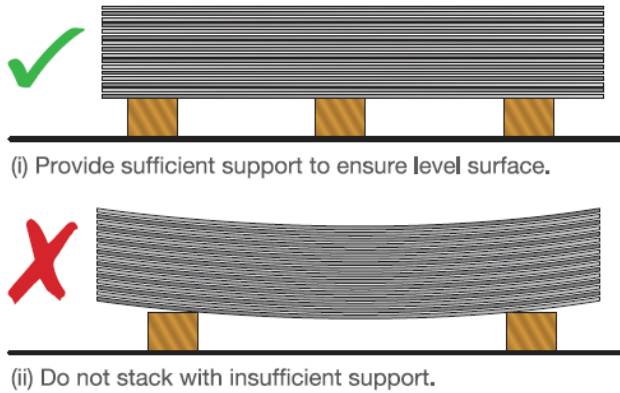
THIRD PARTY ISSUES

Extra load



STORAGE ISSUES

Board Stacking



Storage Area



Corrosion / Defect



GYPROC WALL LINING & DRYWALL SOLUTIONS

GYPROC WALL SOLUTION



Drywall

GYPWALL CLASSIC
GYPWALL FIRE & IMPACT
GYPWALL AQUA



Wall Lining

WHAT ARE BASIC REQUIREMENTS FOR WALL?

Key attributes...



Weight

Green

Finishes

Speed

Sound Insulation

Fire Protection

Security / Robustness

Can you hang heavy fixtures

GYPROC SYSTEM SOLUTION

Drywall System

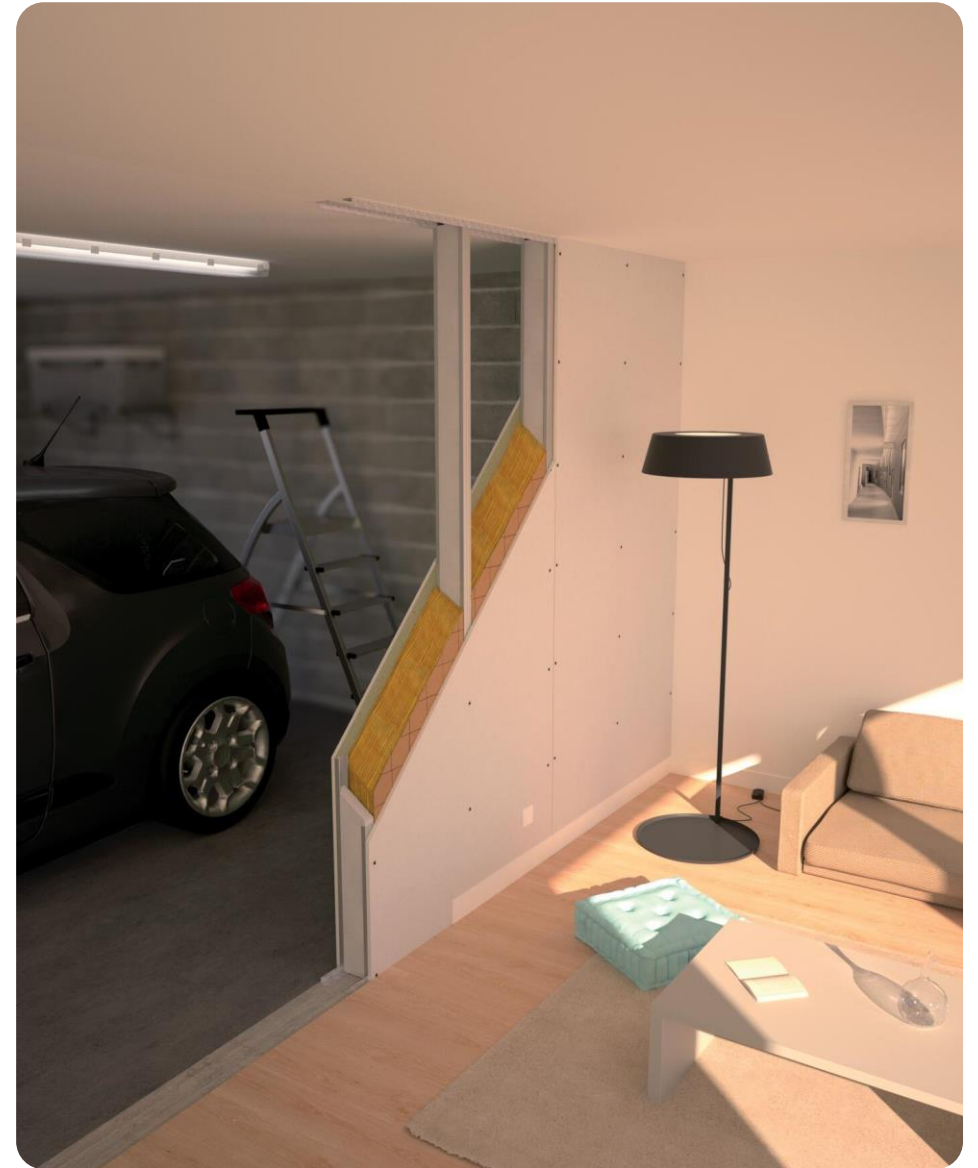


Description	GypWall®	Traditional Brick Wall
Overall Thickness	96mm – 184mm (Flexible based on requirement)	Minimum 100mm
Weight	30 kg/m ²	280 kg/m ²
Sound Insulation	42dB and above	38 dB
Duty	Severe duty (with single layer board) BS 5234: Part 2	Severe duty with BS 5234: Part 2
Fire Resistance	Minimum 1 hour	Minimum 2 hours
Thermal Insulation	Four times less heat convection (K=0.19 W/m ² K)	High heat convection (K=0.85 W/m ² K)
Wall Surface	Seamless, smooth and crack-free	Rough and easy to crack
Services	Easily incorporated, no chasing	Require advance planning and wall chasing
Time Saving (Labor)	20 – 25m ² / Man Day	5 - 7m ² / Man Day (inclusive plastering)

GYPROC SYSTEM SOLUTION

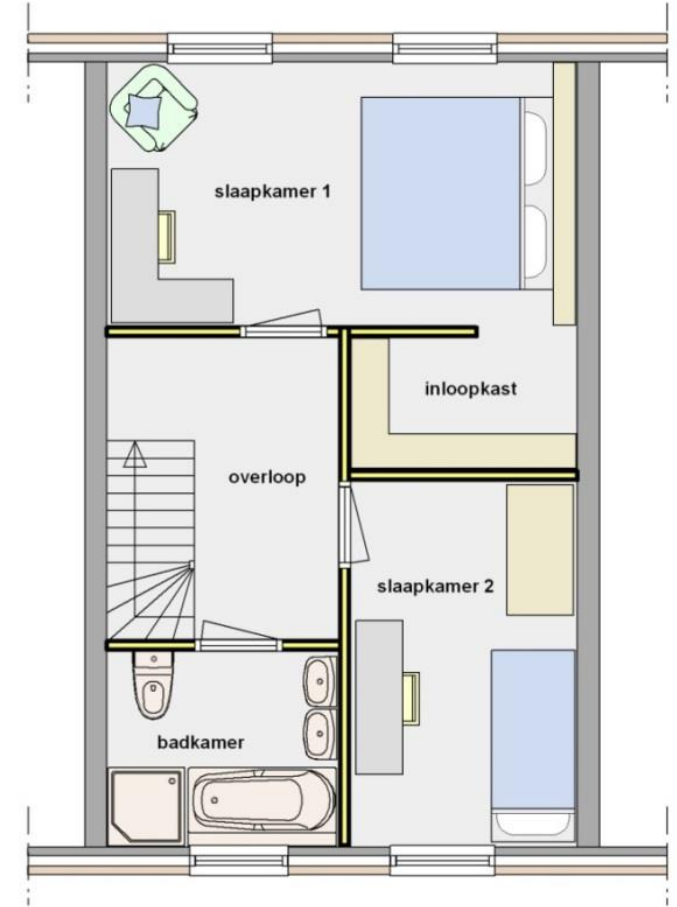
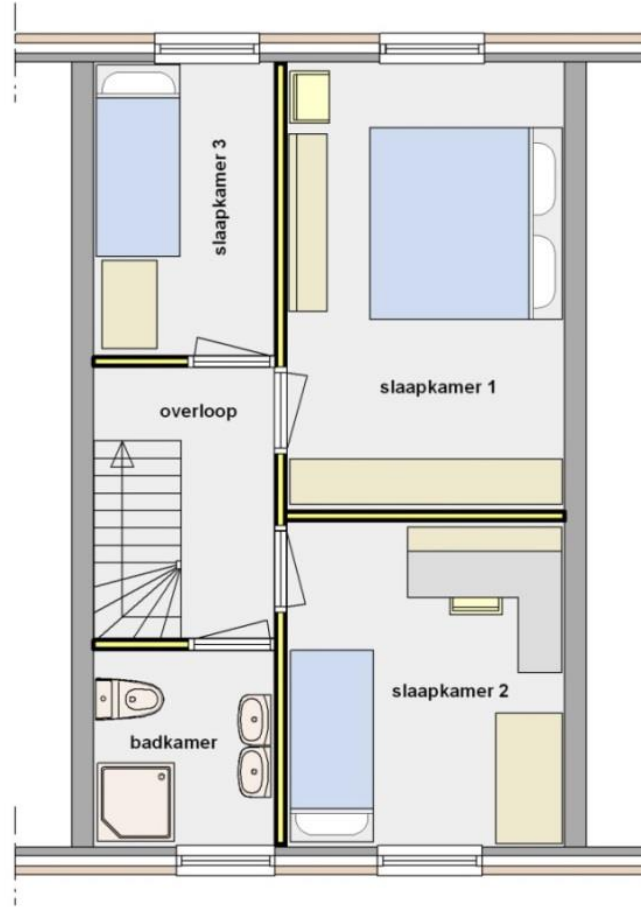
Drywall System

- Revolution of Wall Construction
 - Drywall to replace conventional brick and block
- Advantages
 - 7x lighter than brick & block
 - 2x faster than brick & block
 - No need for wall chasing to concealed services



CREATIVE INTERIOR DESIGN

Creativity is limitless...



- Different internal layout design for 2 same houses to show the flexibility and ease of renovation

DESIGN CONSIDERATIONS FOR DRYWALL

The important factors...

Key performance criteria to consider:

- Wall height
- Fire resistance
- Acoustic performance
- Robustness
- Etc.



Stiffness Test



Heavyweight Anchorage Test



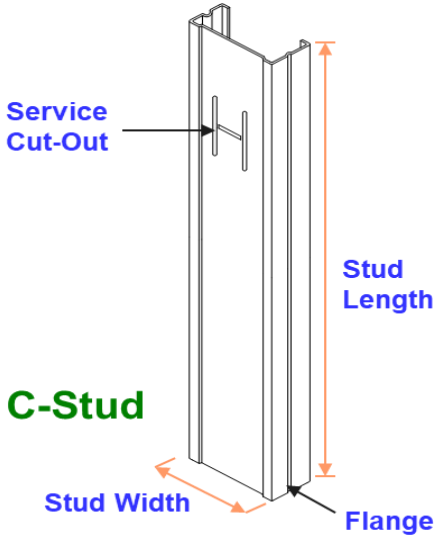
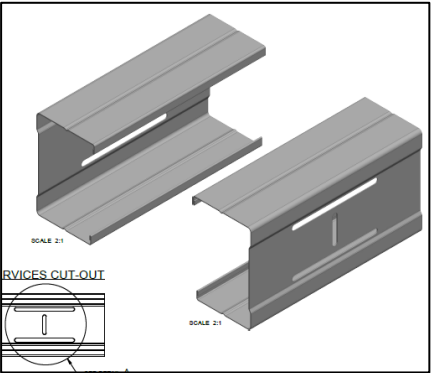
Small Hard Body Impact



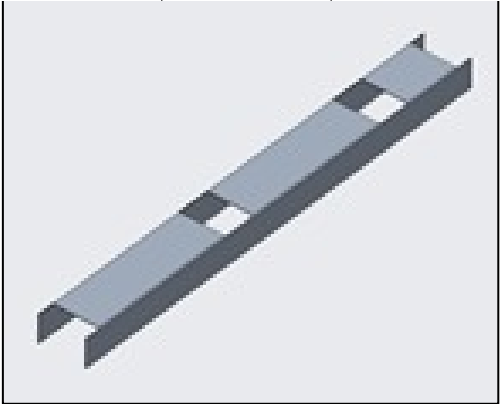
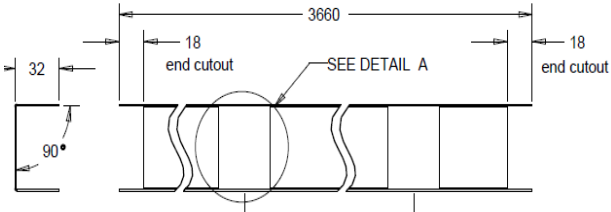
Large Soft Body Impact

TYPICAL GYPWALL INSTALLATION

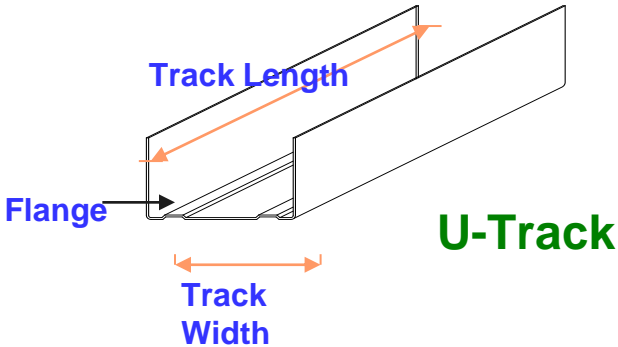
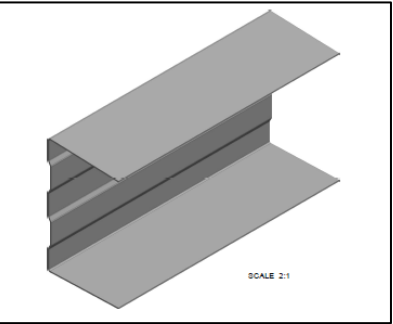
Basic components involve...



C-Stud



U-Noggin



U-Track

GypFrame® C-Stud / U-Track	Base Metal Thickness (BMT)
49mm / 51mm	0.50
62mm / 64mm	
74mm / 76mm	
92mm / 94mm	
100mm / 102mm	
125mm / 127mm	0.55
49mm / 51mm	
62mm / 64mm	
74mm / 76mm	
92mm / 94mm	
100mm / 102mm	
125mm / 127mm	
150mm / 152mm	0.75

GYPWALL® WALL HEIGHT LOADING

Example...

Wall height above 4.4m require a noggin

Wall Height (m)		Number of Noggins
0 - 4.4	Lined at Both Sides	0
4.4 - 8.8		1
8.8 and above		2

ESTIMATED MAXIMUM GYPFRAME C-STUD WALL HEIGHTS TABLE

Internal Non-Load Bearing Wall
Deflection Limit: L/240
Rev Date: 01-12-2020

PLASTERBOARD FIXED TO BOTH SIDES

		Stud Centres = 610mm																									
C-Stud Size		49 S 50	49 S 75	49 S 100	62 S 50	62 S 75	62 S 100	62 S 115	74 S 55	74 S 75	74 S 100	74 S 115	92 S 55	92 S 75	92 S 100	92 S 115	100 S 55	100 S 75	100 S 100	100 S 115	125 S 55	125 S 75	125 S 100	125 S 115	150 S 75	150 S 100	150 S 115
Living Thickness																											
Plasterboard Fixed to Both Sides	1 x 9mm	3050	3400	3760	3750	4190	4540	4660	4410	4780	5180	5380	5080	5630	6070	6330	5310	5970	6450	6700	5950	7000	7530	7570	7640	8180	8410
	1 x 12.5mm	3080	3420	3770	3830	4260	4590	4720	4490	4870	5250	5450	4960	5740	6170	6390	5180	6080	6550	6790	5800	6990	7610	7580	7660	8190	8420
	1 x 15mm	3200	3640	3960	3610	4470	4780	4890	4220	5120	5460	5650	4690	5720	6410	6610	4900	5990	6790	7020	5510	6790	7800	7600	7480	8210	8430
	1 x 16mm	3150	3710	4010	3560	4560	4850	4970	4150	5030	5530	5710	4610	5610	6510	6710	4820	5890	6890	7110	5420	6670	7870	7610	7340	8210	8440
	1 x 19mm	3090	3880	4190	3500	4480	5070	5170	4080	4940	5730	5800	4530	5520	6550	6960	4740	5790	6890	7300	5330	6560	7870	7630	7220	8240	8460
	2 x 9mm	3180	3920	4190	3580	4590	5040	5140	4180	5070	5690	5970	4640	5670	6720	6900	4860	5940	7080	7260	5460	6730	8010	7620	7410	8230	8460
	2 x 12.5mm	3020	3790	4340	3420	4370	5440	5420	3990	4830	5660	5660	4430	5390	6390	6890	4630	5650	6720	7280	5200	6400	7680	7680	7050	8290	8510
	2 x 15mm	2910	3630	4140	3290	4190	5410	5170	3830	4630	5420	5420	4250	5170	6120	6590	4440	5420	6430	6950	4970	6130	7340	7700	6750	8130	8530
	2 x 16mm	2840	3540	4030	3200	4090	5250	5030	3740	4500	5290	5290	4140	5040	5960	6420	4320	5280	6260	6770	4830	5980	7150	7710	6570	7920	8540
	2 x 19mm	2770	3460	3940	3140	3990	5100	4910	3660	4410	5170	5170	4050	4920	5820	6280	4220	5160	6120	6610	4710	5840	6980	7580	6410	7730	8440
3 x 19mm	-	-	-	2880	3680	4250	4510	3360	4060	4750	5070	3700	4530	5350	5760	3850	4740	5620	6070	4260	5340	6400	6950	5830	7070	7720	

		Stud Centres = 406mm																									
C-Stud Size		49 S 50	49 S 75	49 S 100	62 S 50	62 S 75	62 S 100	62 S 115	74 S 55	74 S 75	74 S 100	74 S 115	92 S 55	92 S 75	92 S 100	92 S 115	100 S 55	100 S 75	100 S 100	100 S 115	125 S 55	125 S 75	125 S 100	125 S 115	150 S 75	150 S 100	150 S 115
Living Thickness																											
Plasterboard Fixed to Both Sides	1 x 9mm	3900	4440	4910	4790	5420	5890	6060	5600	6190	6710	6980	6200	7220	7660	7890	6480	7560	8030	8270	7280	8590	9140	9270	9360	10010	10290
	1 x 12.5mm	3970	4460	4920	4500	5480	5940	6100	5250	6260	6780	7040	5850	7110	7740	7950	6120	7460	8100	8340	6910	8470	9210	9280	9340	10020	10300
	1 x 15mm	3860	4660	5090	4370	5560	6110	6270	5100	6160	6970	7210	5680	6890	7900	8100	5950	7230	8260	8480	6700	8210	9370	9290	9060	10040	10320
	1 x 16mm	3790	4710	5140	4300	5450	6180	6330	5010	6040	7030	7260	5580	6760	7960	8160	5840	7090	8320	8540	6590	8050	9430	9300	8890	10040	10320
	1 x 19mm	3730	4620	5290	4230	5350	6170	6520	4930	5930	6900	7380	5490	6640	7820	8340	5740	6970	8250	8690	6480	7920	9450	9320	8740	10060	10340
	2 x 9mm	3820	4750	5310	4340	5500	6350	6500	5060	6100	7110	7360	5630	6830	8050	8300	5890	7160	8500	8660	6650	8130	9730	9310	8970	10060	10340
	2 x 12.5mm	3650	4500	5140	4130	5220	6000	6410	4820	5790	6720	7180	5360	6480	7630	8160	5610	6800	8040	8630	6320	7720	9210	9360	8520	10100	10380
	2 x 15mm	3500	4300	4890	3970	5000	5730	6100	4620	5530	6410	6840	5140	6200	7290	7790	5380	6510	7680	8250	6050	7390	8800	9380	8150	9790	10400
	2 x 16mm	3410	4190	4760	3870	4870	5570	5930	4510	5390	6240	6650	5010	6040	7100	7580	5240	6340	7470	8030	5900	7200	8570	9280	7940	9520	10370
	2 x 19mm	3340	4090	4640	3780	4750	5430	5770	4400	5270	6090	6480	4890	5900	6930	7400	5110	6190	7290	7840	5750	7020	8350	9050	7740	9280	10110
3 x 19mm	-	-	-	3480	4370	4980	5280	4050	4840	5600	5950	4490	5420	6350	6800	4690	5680	6690	7200	5240	6430	7650	8280	7080	8490	9240	

		Stud Centres =305mm																									
C-Stud Size		49 S 50	49 S 75	49 S 100	62 S 50	62 S 75	62 S 100	62 S 115	74 S 55	74 S 75	74 S 100	74 S 115	92 S 55	92 S 75	92 S 100	92 S 115	100 S 55	100 S 75	100 S 100	100 S 115	125 S 55	125 S 75	125 S 100	125 S 115	150 S 75	150 S 100	150 S 115
Living Thickness																											
Plasterboard Fixed to Both Sides	1 x 9mm	4810	5370	5940	5500	6520	7120	7270	6430	7370	7850	8090	7120	8280	8800	9060	7450	8670	9220	9500	8380	9850	10500	10820	10790	11550	11880
	1 x 12.5mm	4530	5390	5950	5140	6510	7140	7310	5990	7230	7890	8130	6680	8100	8860	9120	6990	8510	9280	9560	7900	9670	10560	10880	10690	11560	11880
	1 x 15mm	4390	5430	6100	4980	6290	7270	7420	5820	6990	8020	8250	6480	7840	9000	9250	6790	8230	9420	9690	7670	9370	10700	11010	10360	11570	11900
	1 x 16mm	4310	5320	6080	4900	6160	7110	7460	5710	6850	7940	8290	6370	7680	9000	9300	6670	8070	9480	9740	7540	9190	10760	11060	10150	11580	11900
	1 x 19mm	4240	5210	5950	4810	6040	6960	7420	5610	6730	7780	8310	6250	7540	8830	9450	6550	7930	9330	9680	7410	9020	10740	11210	9980	11600	11920
	2 x 9mm	4350	5370	6160	4940	6220	7190	7580	5760	6930	8020	8380	6420	7760	9100	9430	6730	8150	9590	9850	7600	9280	10870	11170	10250	11590	11910
	2 x 12.5mm	4130	5070	5780	4700	5880	6760	7200	5480	6560	7560	8070	6100	7350	8590	9190	6400	7720	9080	9720	7230	8800	10450	11320	9730	11630	11950
	2 x 15mm	3960	4840	5490	4510	5620	6430	6840	5250	6260	7210	7670	5850	7030	8200	8750	6130	7380	8670	9260	6930	8400	9970	10790	9300	11120	11970
	2 x 16mm	3860	4710	5340	4390	5480	6250	6640	5120	6100	7010	7460	5700	6840	7980	8510	5970	7190	8440	9010	6750	8180	9700	10490	9050	10810	11740
	2 x 19mm	3770	4600	5200	4290	5350	6090	6470	5000	5950	6830	7260	5570	6680	7790	8300	5840	7010	8230	8790	6580	7980	9460	10220	8820	10540	11450
	3 x 19mm	-	-	-	3950	4920	5570	5900	4600	5460	6260	6640	5120	6120	7150	7600	5350	6430	7540	8060	6010	7310	8650	9350	8060	9630	10480

CLASSIC GYPWALL SYSTEM

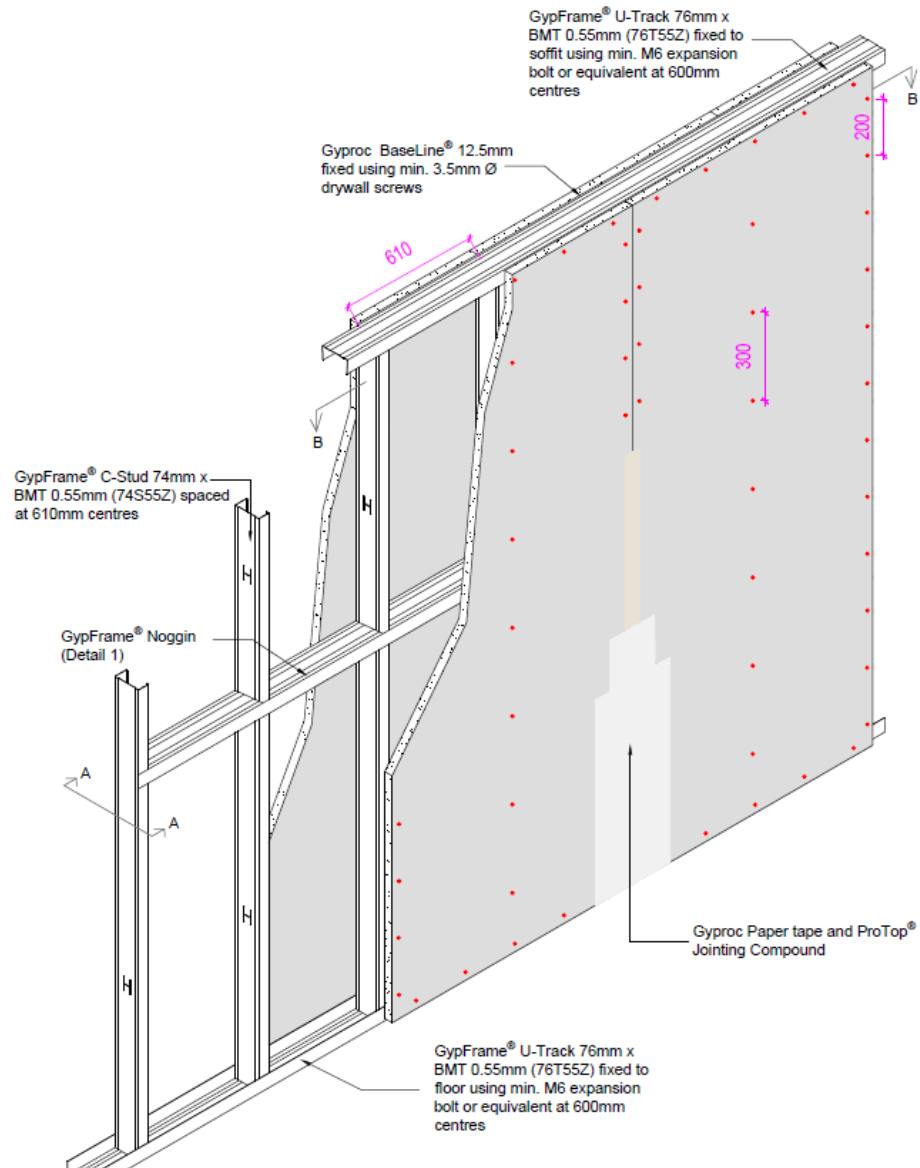
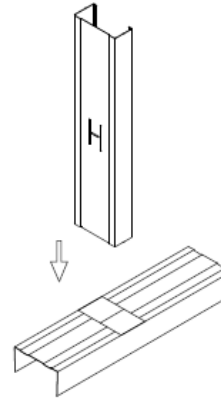


Table 1 : Recommended Quantity of GypFrame® Noggin

	Wall Height (m)	No. of noggin
1	0 - 4.4	0
2	4.4 - 8.8	1
3	8.8 and above	2



DETAIL 1 - INSERTION OF STUD THROUGH NOGGIN

Specification Description

Gyproc GypWall® Classic 101mm comprising of single layer **Gyproc BaseLine® 12.5mm** laid staggered to opposite layer and screw-fixed at max. 300mm centres to both sides of framing system formed by **GypFrame® C-Stud 74mm (BMT=0.55mm, Zincalume Steel)** spaced at nominal 610mm centres and **GypFrame® U-Track 76mm (BMT=0.55mm, Zincalume Steel)**; with horizontal **GypFrame® Nogging Track 76mm (BMT=0.75 Zincalume Steel)**; all joints are reinforced with **Gyproc Paper Tape** and finished with **ProTop® All Purpose Ready Mixed Joint Compound** for a seamless surface

GYPROC SYSTEM SOLUTION

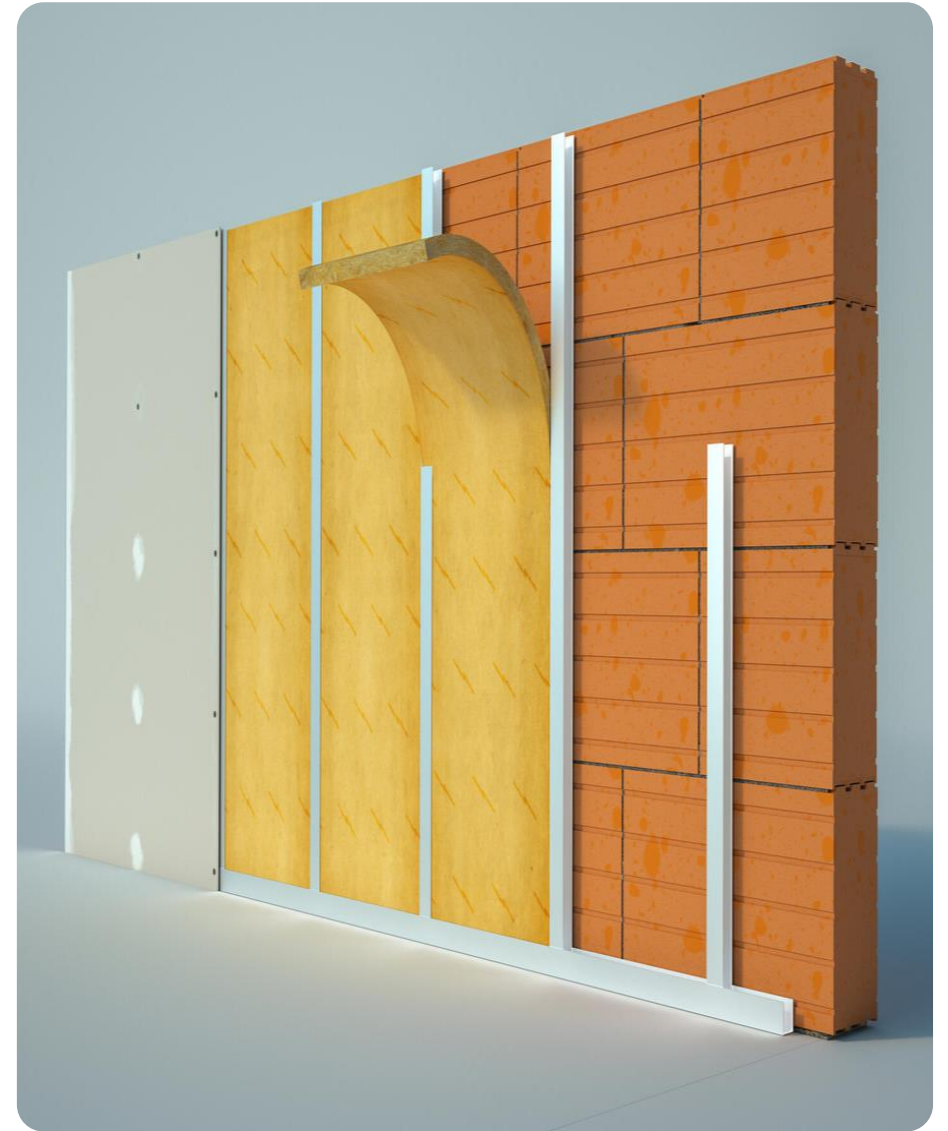
Wall Lining System

Revolution of Wall Construction

- To replace cement plasters

Advantages

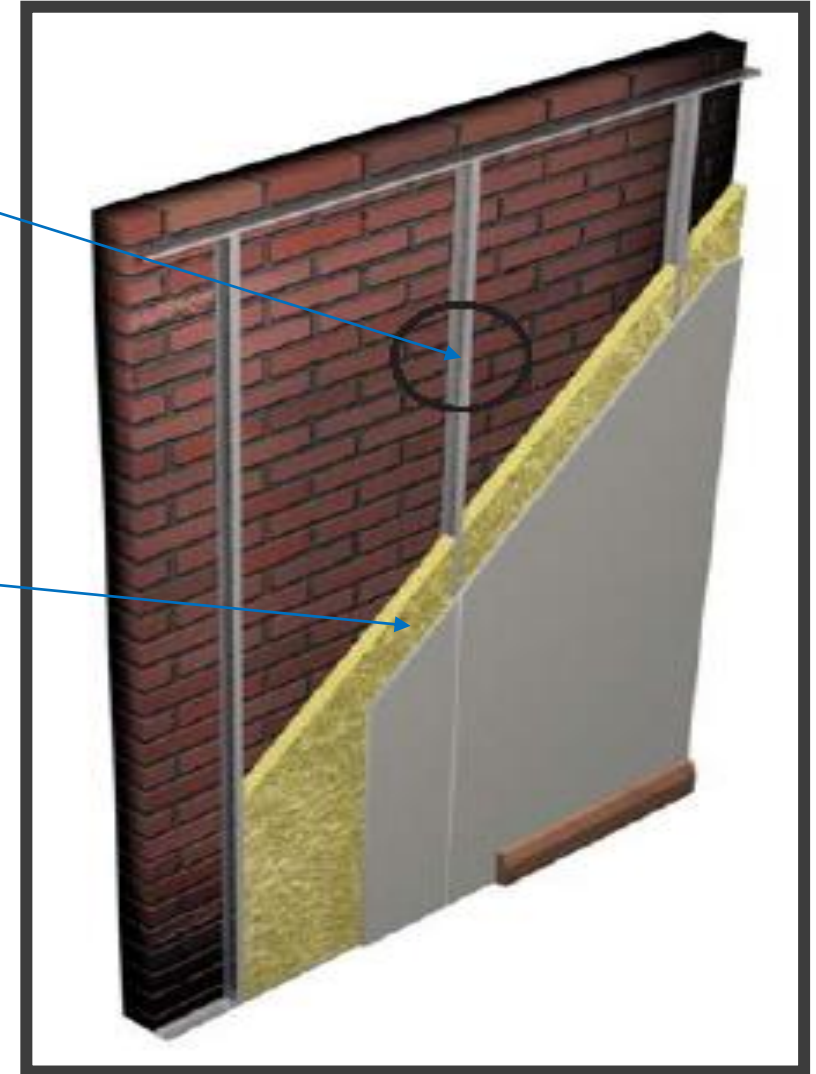
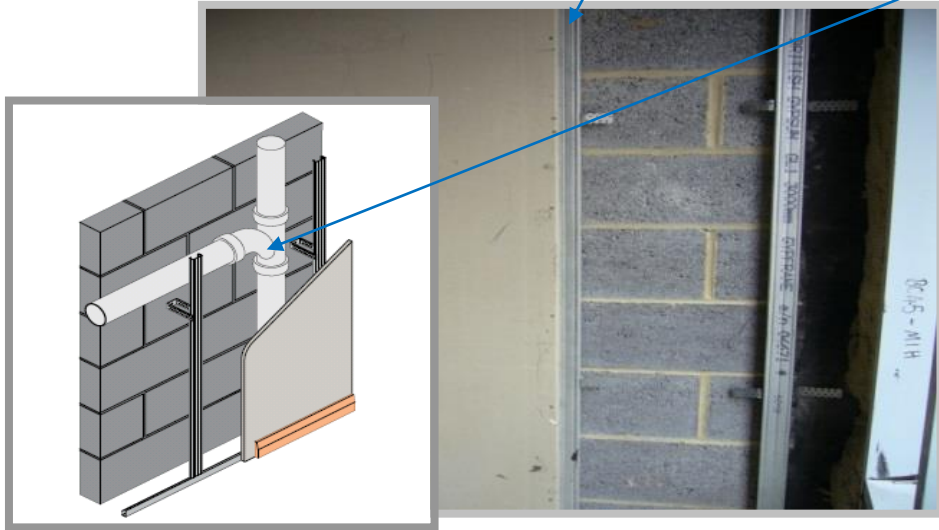
- Incorporation of services (up to Ø75mm or 3" pipe)
- Smooth and seamless surface
- 2x faster than the routine plastering work (20m²/day)



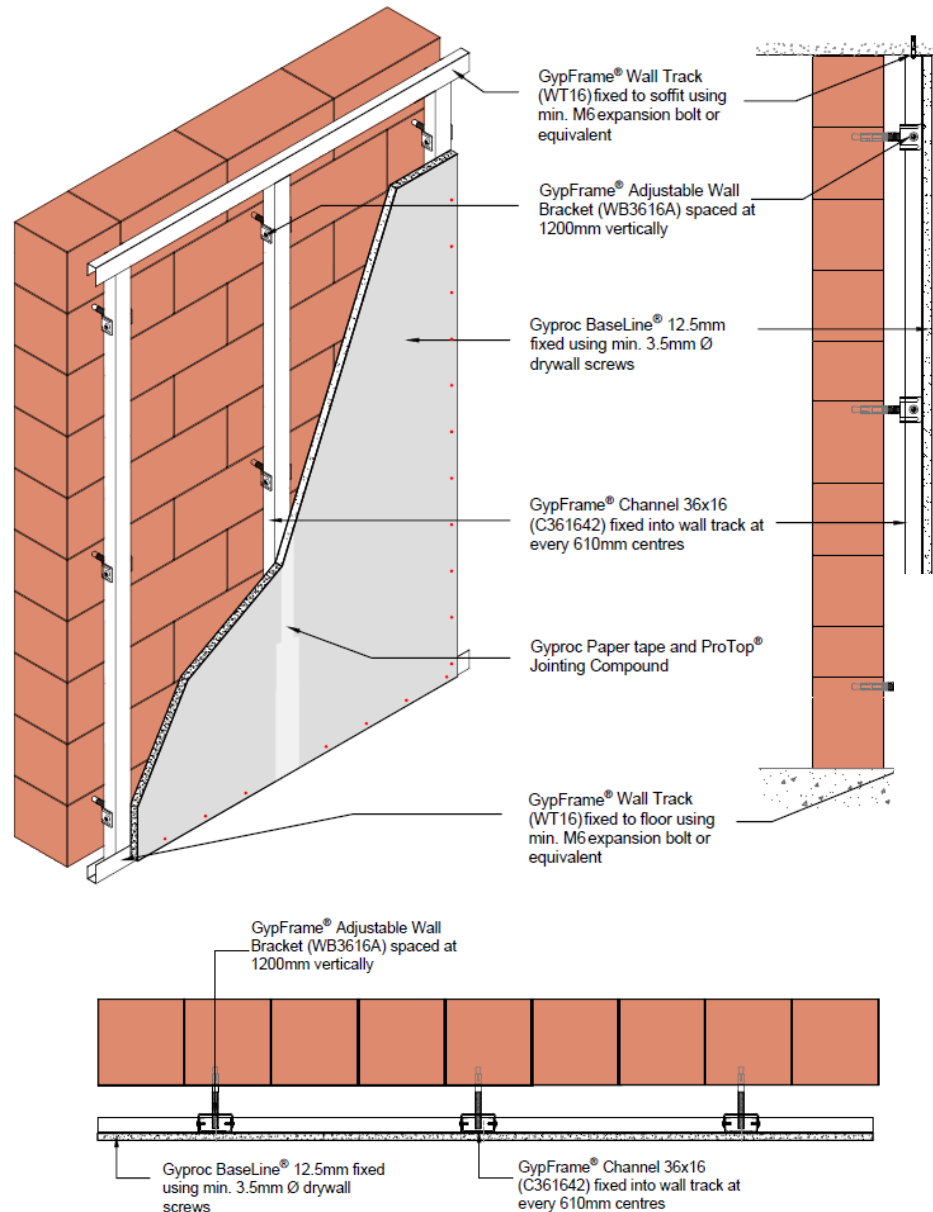
GYPROC SYSTEM SOLUTION

Metal Channel

Cavity for
Insulation
Material or
Services

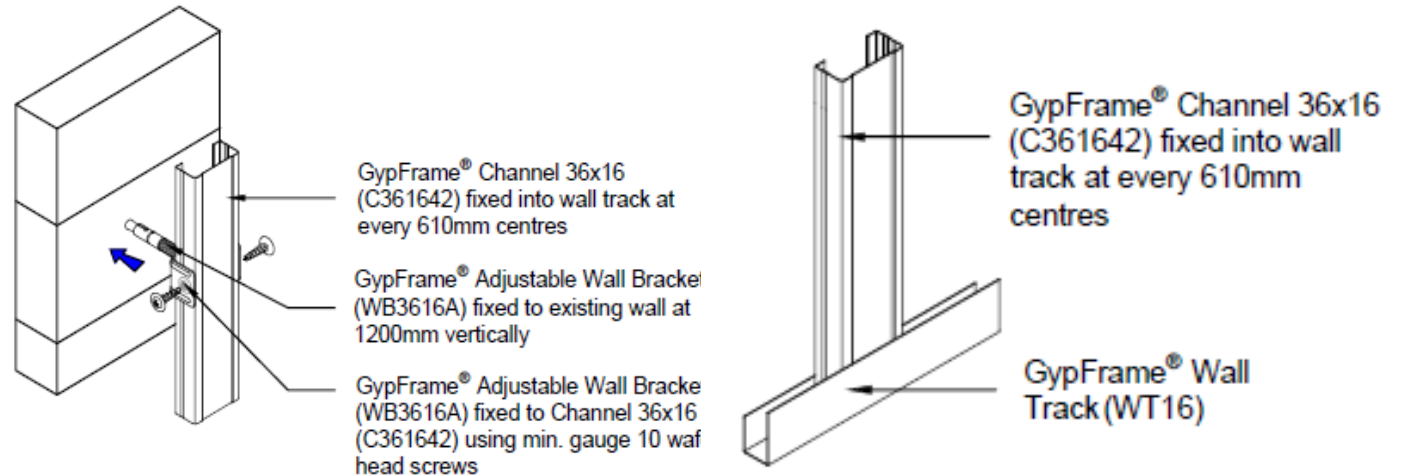


GYPROC GYPLYNER 3616 SYSTEM

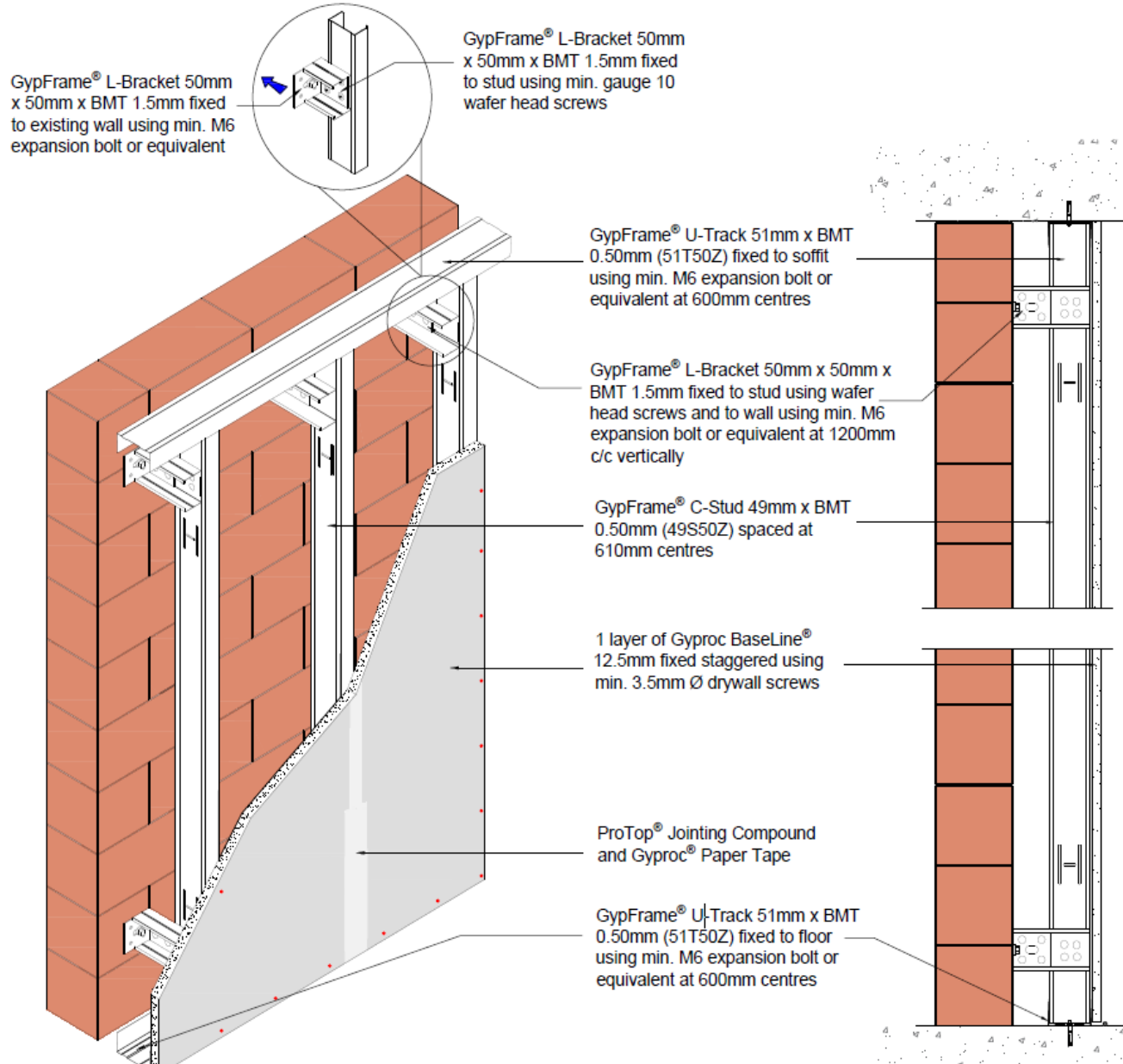


Specification Description

Gyproc GypLyner® System comprising of single layer **Gyproc BaseLine® 12.5mm** screw-fixed at max. 300mm centres to the framing system formed by **GypFrame® Channel 36x16 (Part No. C3616) (BMT=0.42mm)**, spaced at **610mm** centres fixed onto **GypFrame® Wall Track (Part No. WT16) (BMT=0.42mm)**, and fixed **GypFrame® Adjustable Wall Bracket (PartNo. WB3616A)** spaced at 1200mm vertical ; giving **maximum airgap of 75mm** to masonry backing wall and board joints are secured with Gyproc Paper Tape and finished with ProTop® Joint Compound for a seamless finish.



GYPLYNER STUD/TRACK SYSTEM

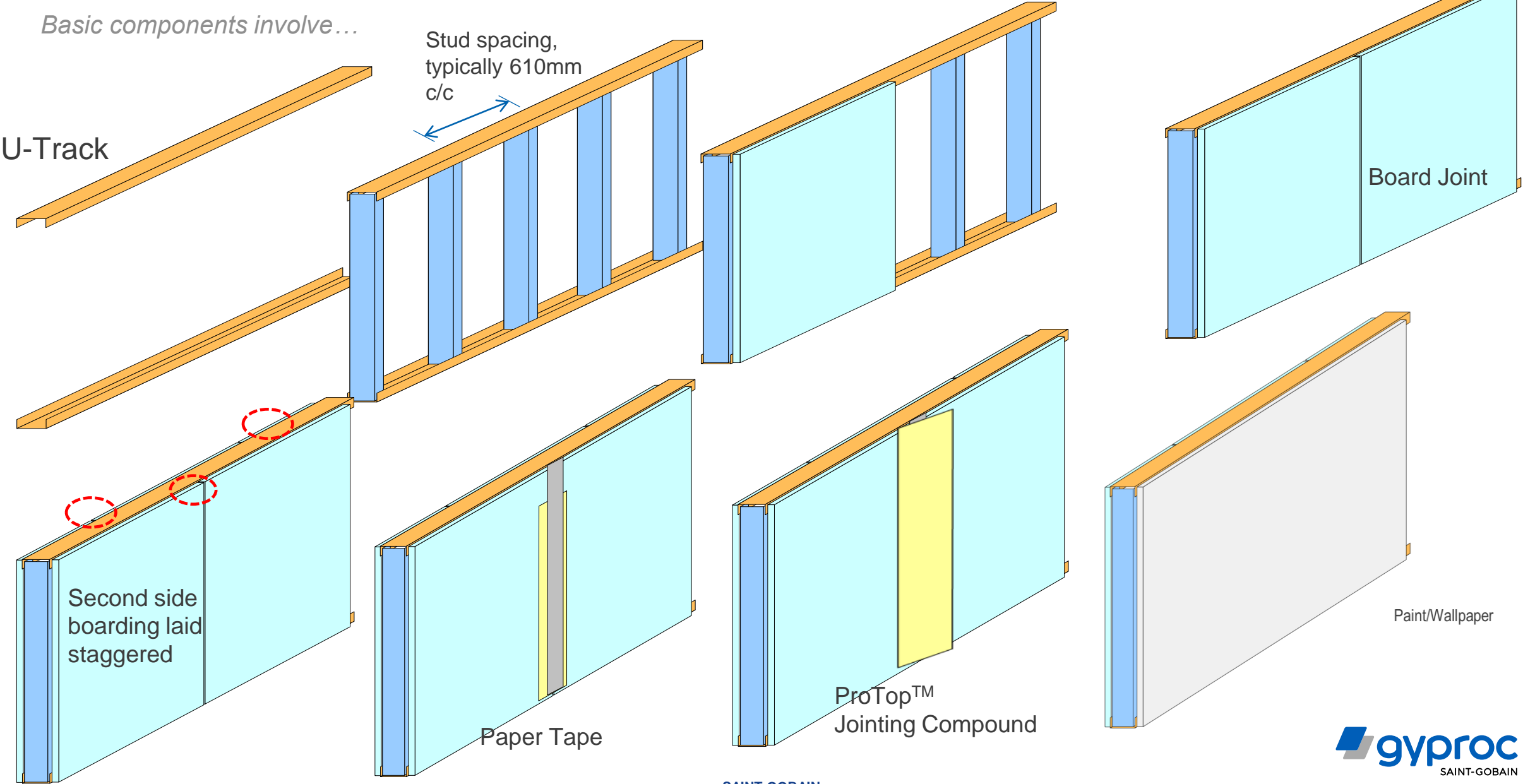


Specification Description

Gyproc Gypliner® 63.5mm Classic comprising of single layer one side **Gyproc BaseLine® 12.5mm** screw-fixed at max. 300mm centres to one sides of framing system formed by **GypFrame® C-Stud 49mm (BMT 0.50, Zincalume Steel)** spaced at nominal 610mm centres and **GypFrame® U-Track 51mm (BMT 0.50, Zincalume Steel)**; all joints are reinforced with **Gyproc Paper Tape** and finished with **ProTop® All Purpose Ready Mixed Joint Compound** for a seamless surface.

TYPICAL GYPWALL INSTALLATION

Basic components involve...



SAINT-GOBAIN

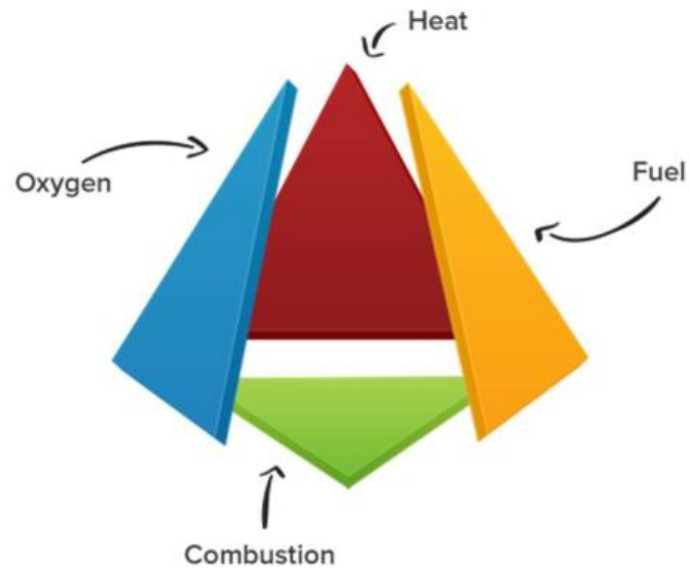


**FIRE PROTECTION
SOLUTION**

FUNDAMENTAL OF FIRE SCIENCE

Key factors for fire to exist:

Fire Tetrahedron



Fire safety, at its most basic, is based upon the principle of keeping fuel sources and ignition sources separate.



Major causes of fire ;-

- Electrical wiring
- Cigarette butts
- Sparks

FIRE PROTECTION



Fire protection in a building can be categories into 2 different type;-

➤ Active Fire Protection

- Defection and suppression
- Fire and Smoke detectors, alarms
- Sprinklers and fire extinguishers

➤ Passive fire protection system

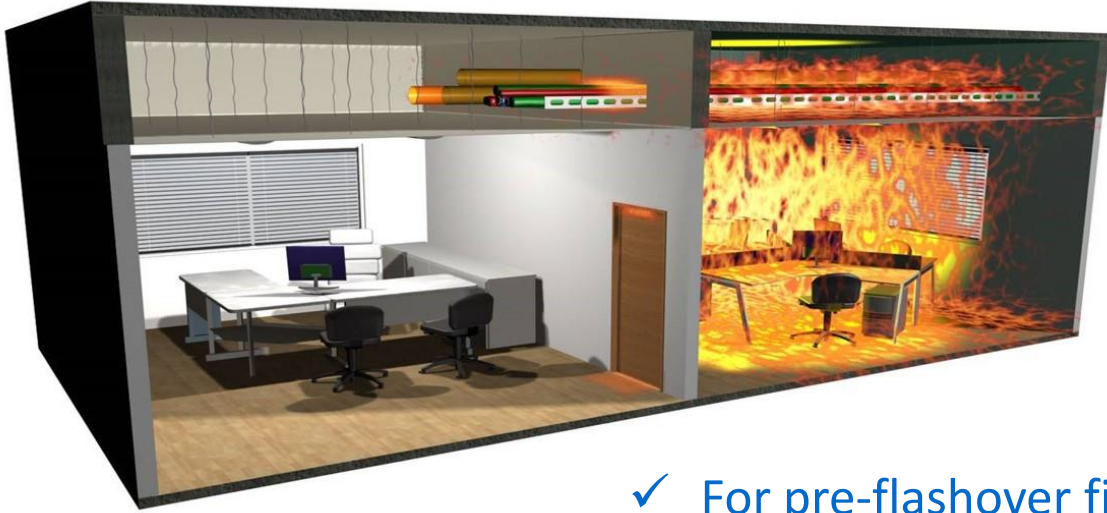
- Material, construction and building design
- Used to prevent fire developing and passage of flames and smoke from one area of the building to another
- Maintenance the building structure to allow escape and fire fighting
- Protect life, the building, its assets and business activities

PASSIVE FIRE PROTECTION

- Control the fire or fire effects by systems that are built into the structure or fabric of the building, not requiring specific operation by people or automatic controls at the time of fire.
- Fire Resistance
 - Most important is passive fire protection, which is designed to prevent the spread of fire and/or structural collapse of a building exposed to fire.
 - An important part of the whole fire safety strategy.
- Passive fire protection system
 - Fire protection systems that do not require power or water to operate.
 - Fire protection that you can not turn off.
 - Fire resistant partitions, ceilings, ducts, cable enclosures, glazing, structural steel and fire stopping etc.
 - Based on specimens of construction tested to set standards thus accurate comparisons are possible.



PASSIVE FIRE PROTECTION



➤ Role of Passive Fire Protection

- Ensure the safe escape of building occupants
- Give fire fighters the time to rescue occupants
- Property protection
- Preventing economic damage

✓ For pre-flashover fires

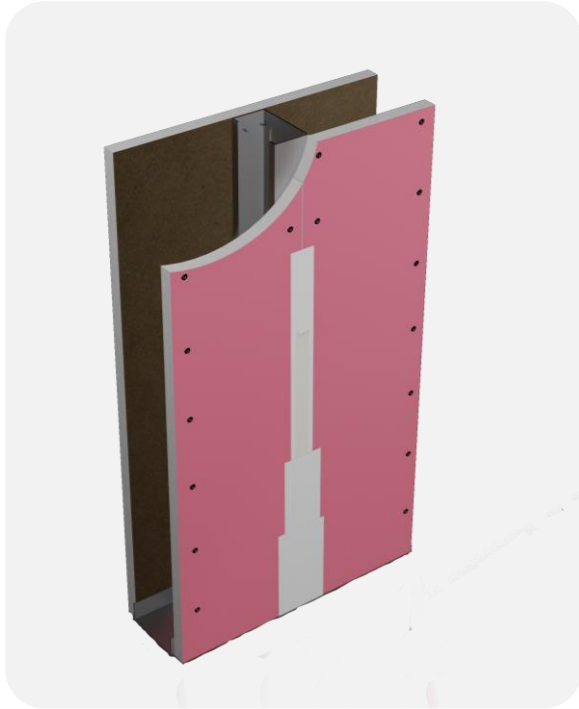
- Selection of suitable materials for building contents and interior linings that do not support rapid flame spread.

✓ For post flashover fires

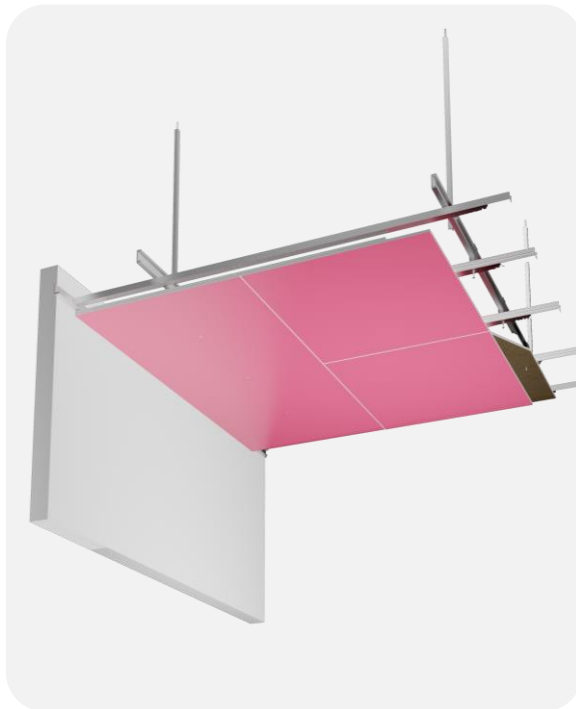
- Provided by structures and assemblies that have sufficient fire resistance to prevent both spread of fire and structural collapse.

FIRE PROTECTION SOLUTION

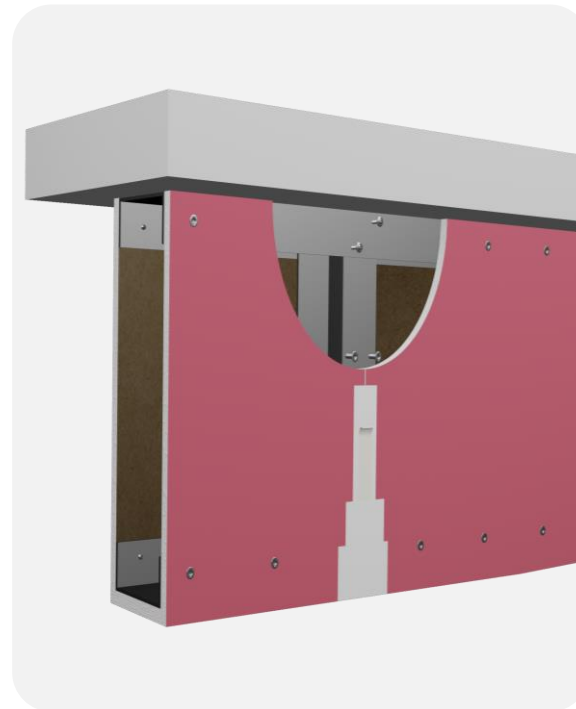
60minutes – 240minutes



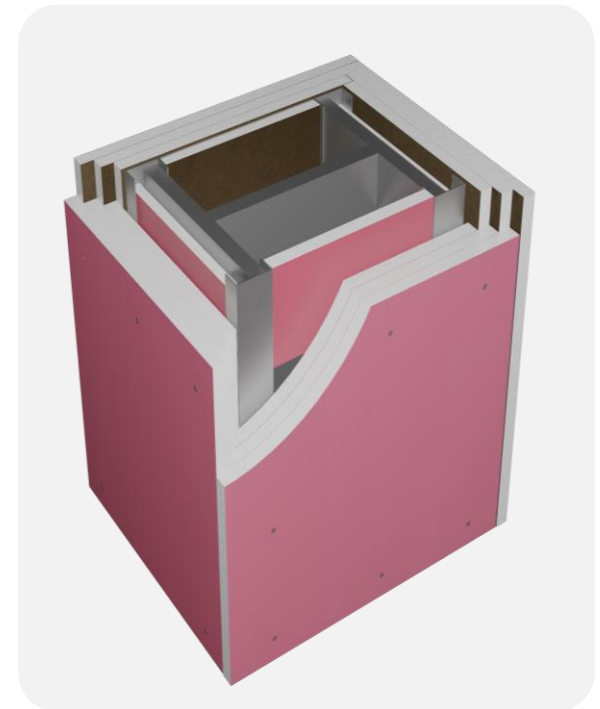
Fire Rated Drywall



Fire Rated Ceiling



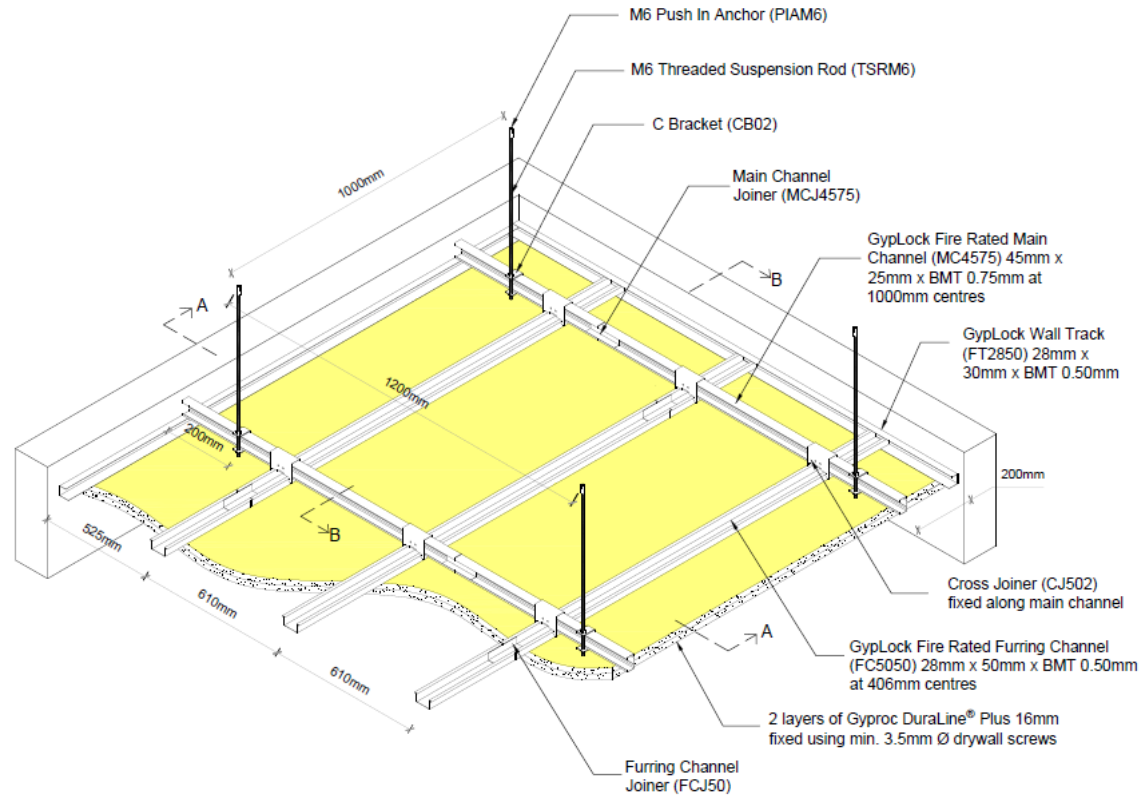
Smoke Barrier



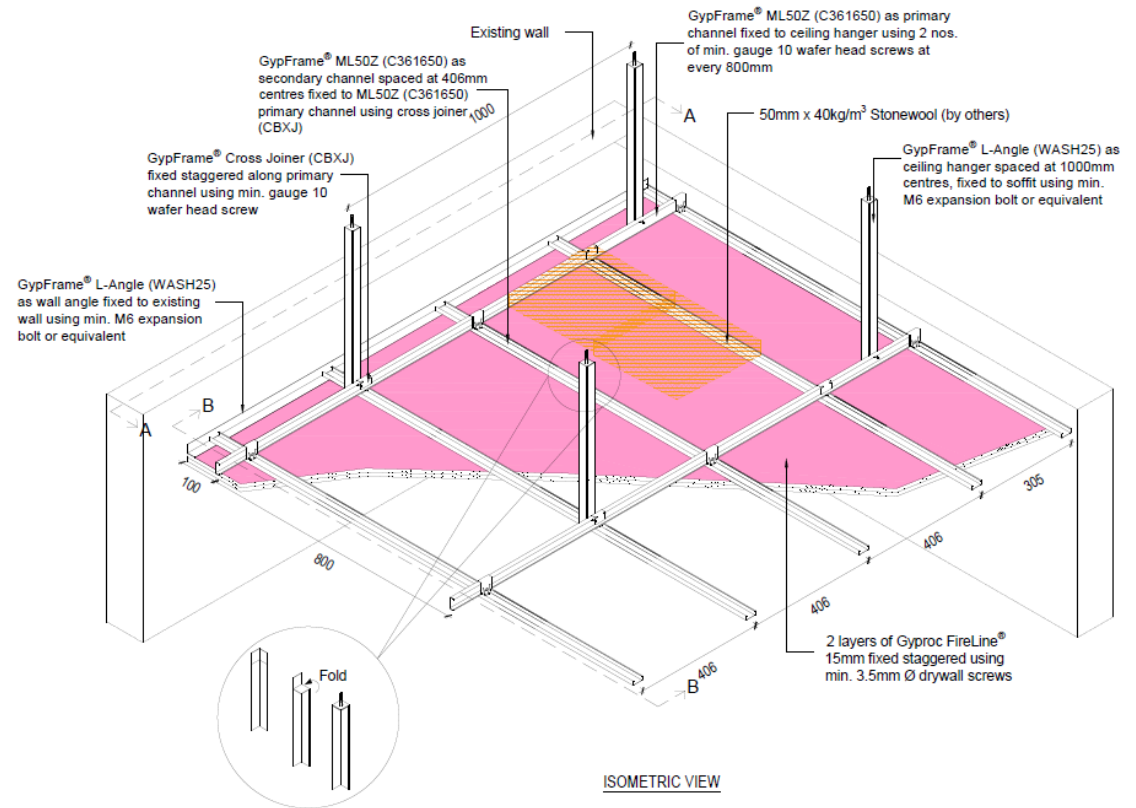
Fire Rated Steel
Encasement

1 HOUR FIRE RATED CEILING SYSTEM

Suspended



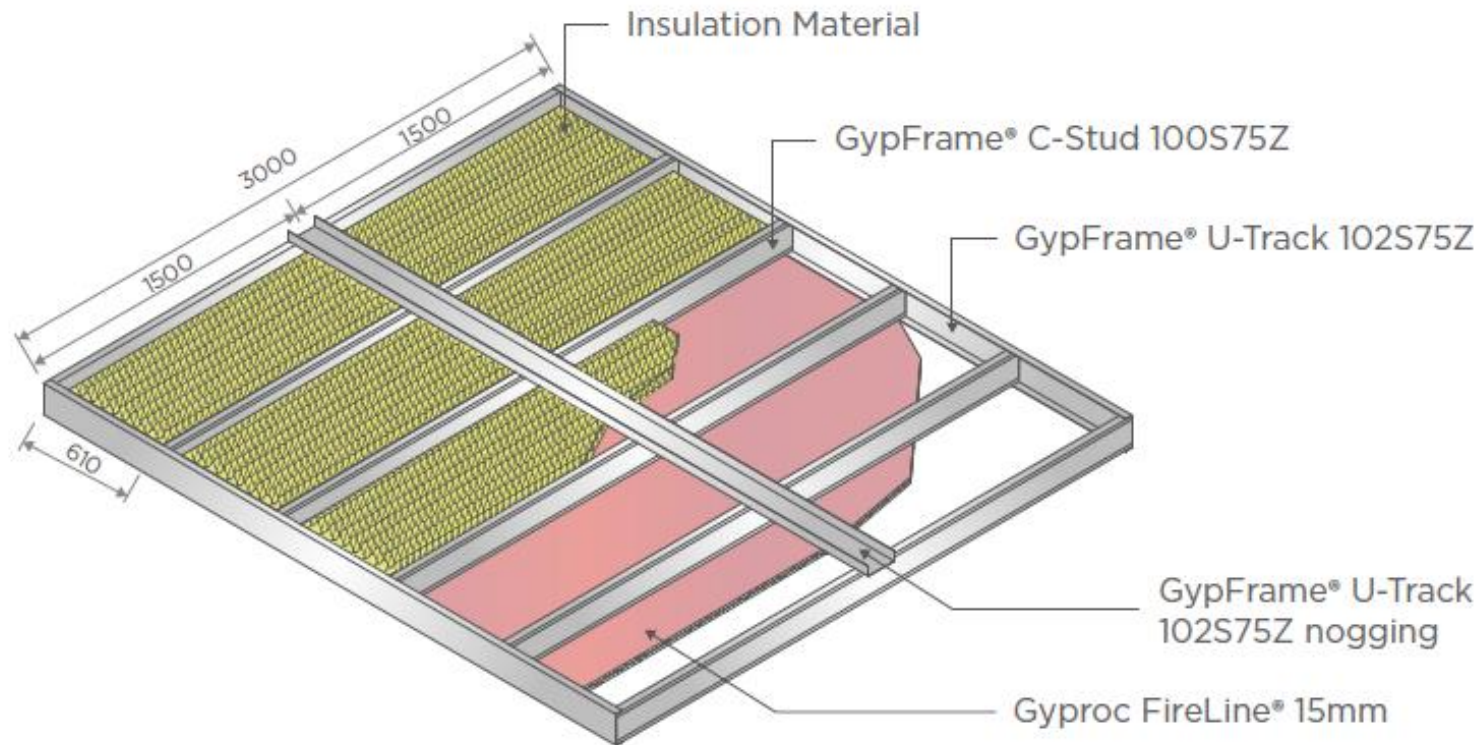
2 x DuraLine 16mm GypLock



2 x FireLine 15mm c/w GypLock, 50SW40kg

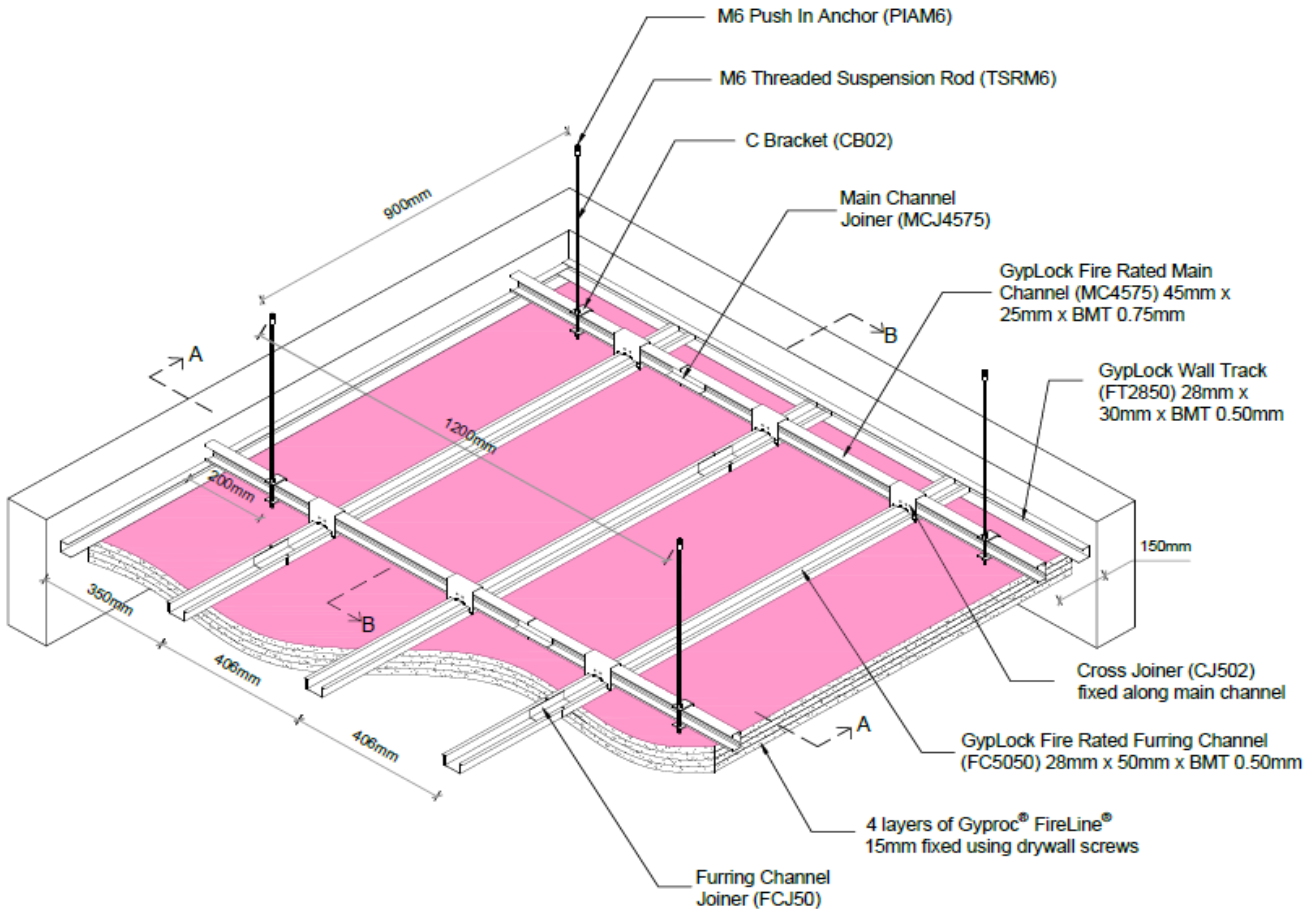
1 HOUR FIRE RATED CEILING SYSTEM

Self Support

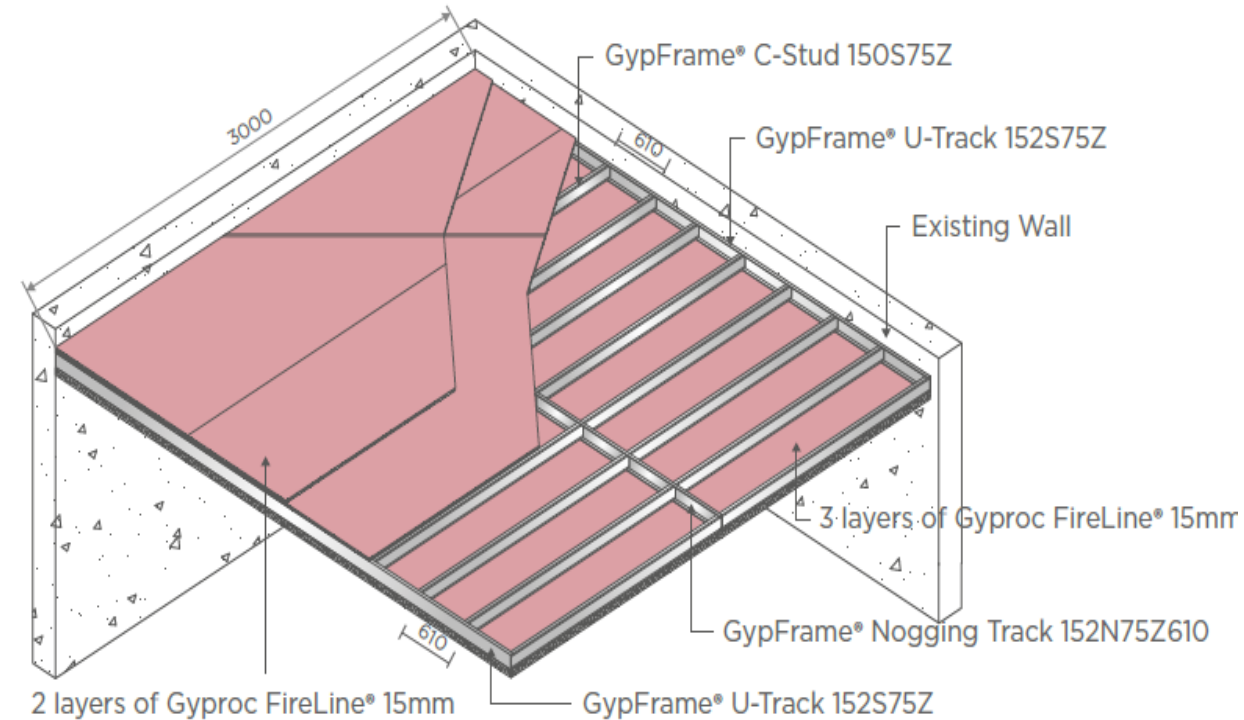


2 x FireLine 15mm C-Stud 100S75Z with c/w 50SW40kg

2 HOURS FIRE RATED CEILING SYSTEM



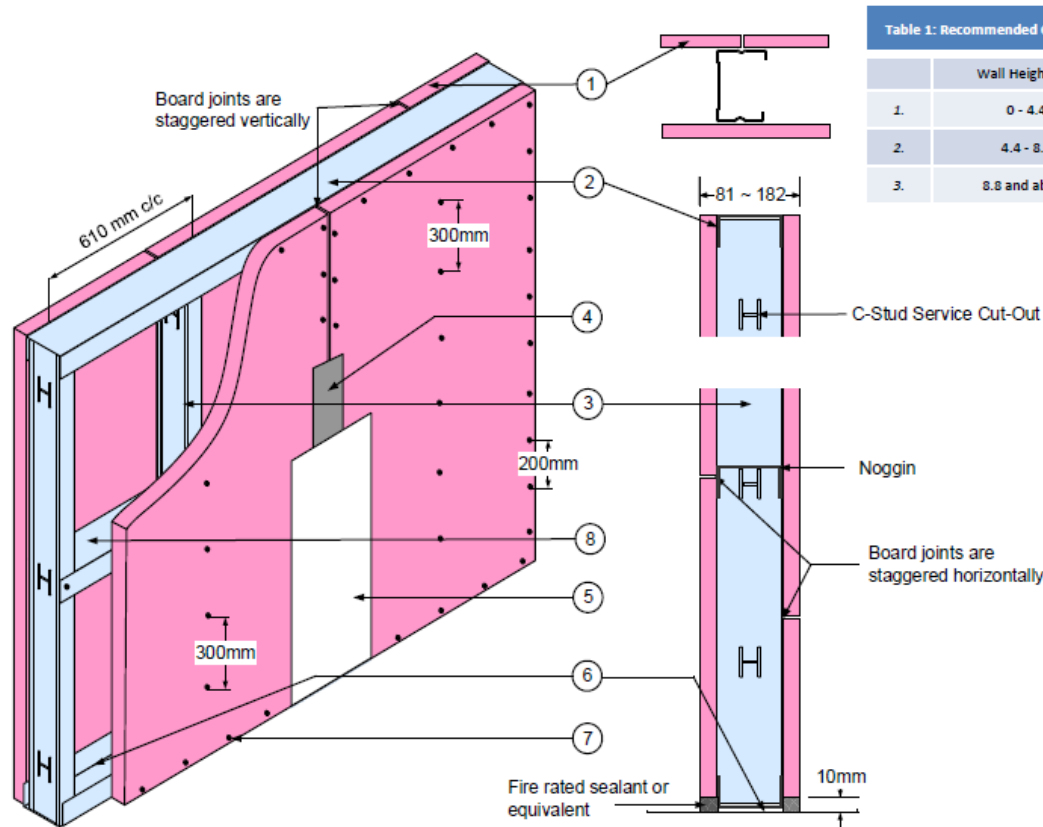
Suspended = 4 x FireLine 15mm GypLock



Self Support = 2 + 3 FireLine 15mm C-Stud 150S75Z

FIRE RESISTANCE OF GYPWALL

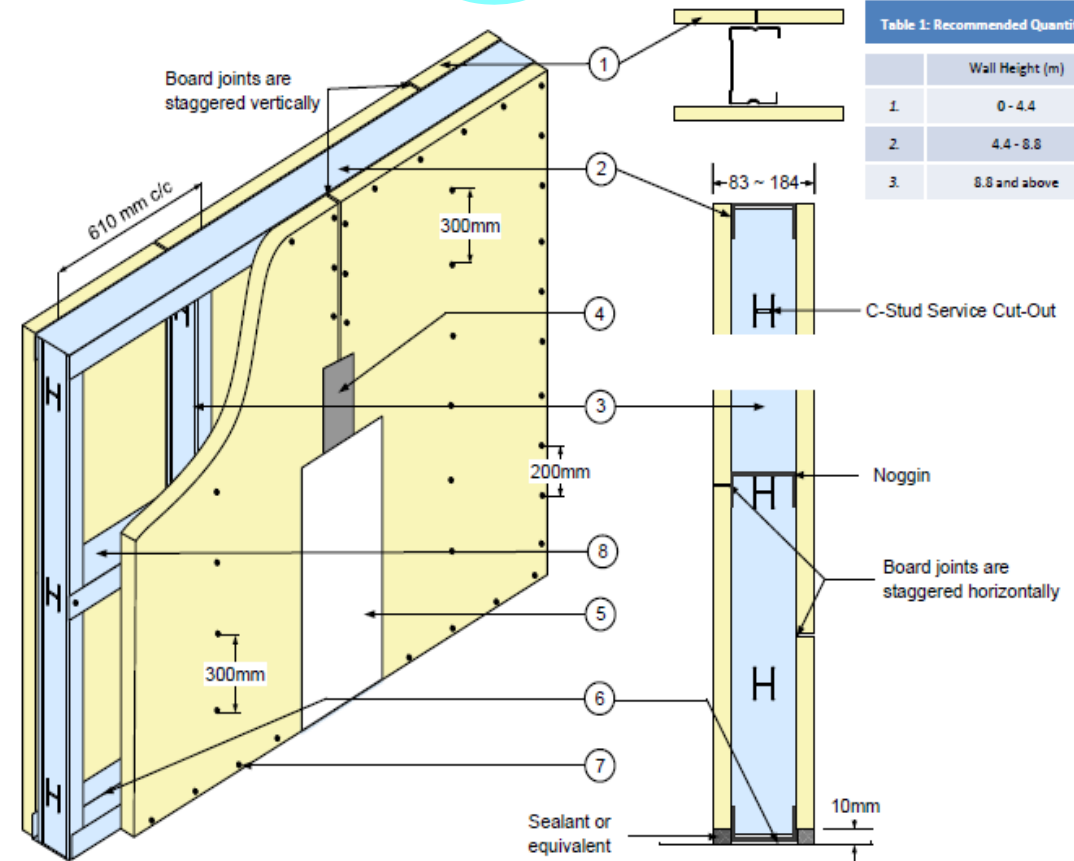
1 Hour Fire Rated Partition System



	Wall Height (m)	No. of noggin
1.	0 - 4.4	0
2.	4.4 - 8.8	1
3.	8.8 and above	2

Single Layer FireLine® 15mm

FIRE & ROBUST



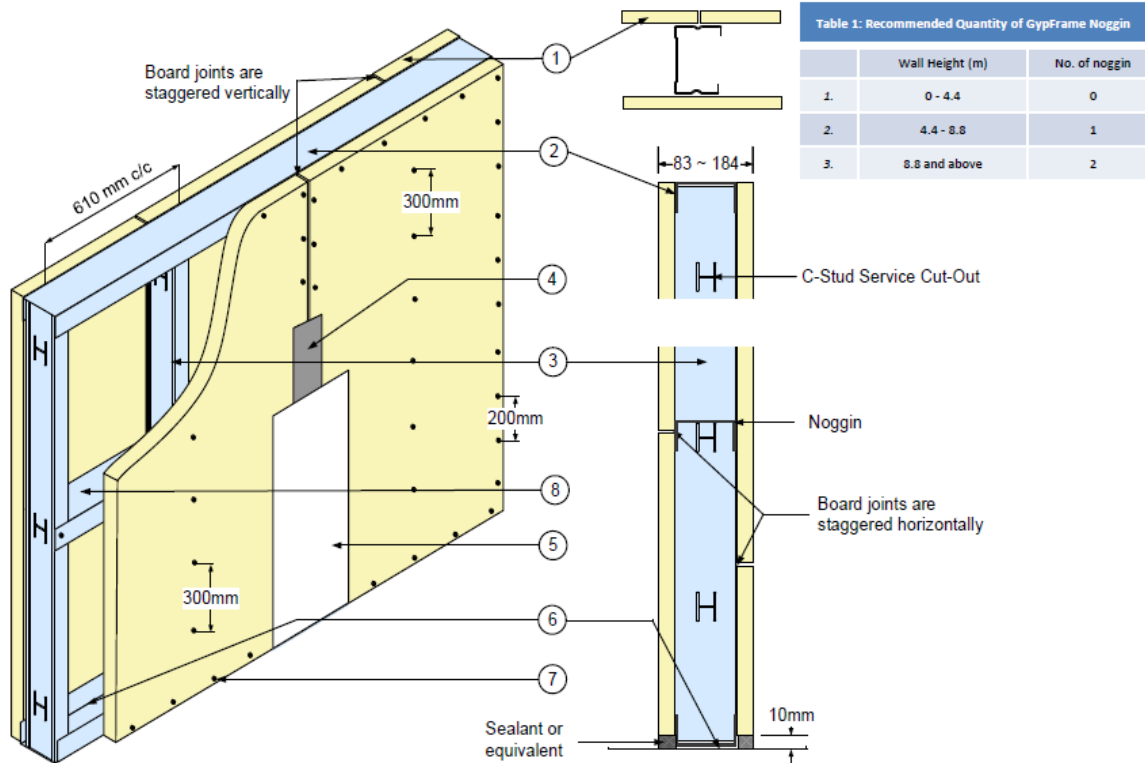
	Wall Height (m)	No. of noggin
1.	0 - 4.4	0
2.	4.4 - 8.8	1
3.	8.8 and above	2

Single Layer DuraLine® Plus 16mm

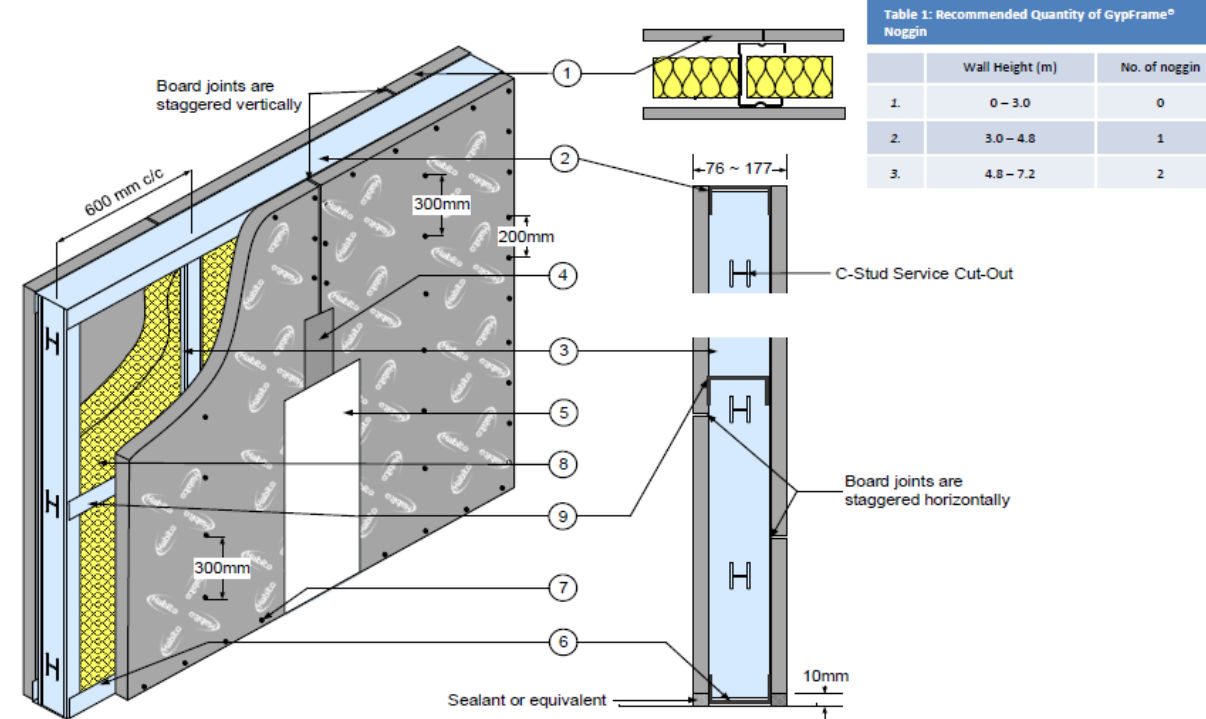
FIRE RESISTANCE OF GYPWALL

1 Hour Fire Rated Partition System

FIRE &
ROBUST



Single Layer DuraLine® Plus 19mm



Single Layer Habito® 12.5mm with 50SW40kg

FIRE RESISTANCE OF GYPWALL – WET AREA

1 Hour Fire Rated Partition System

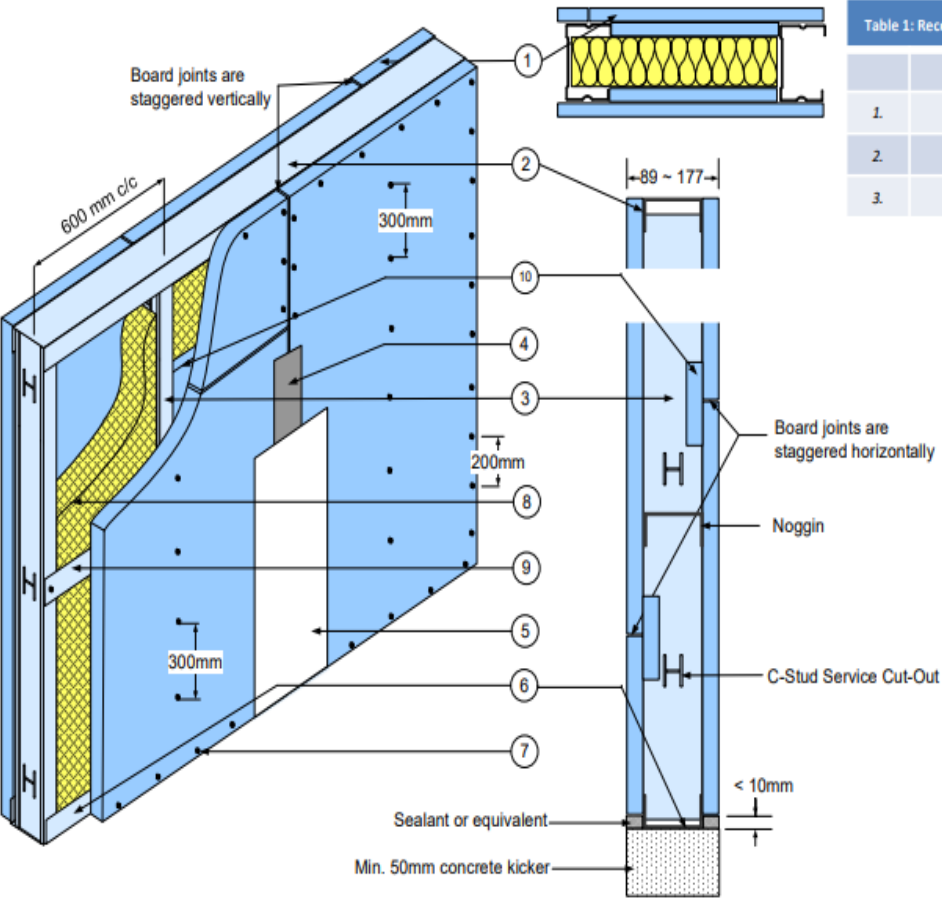


Table 1: Recommended Quantity of GypFrame Noggin

	Wall Height (m)	No. of noggin
1.	0 - 4.4	0
2.	4.4 - 8.8	1
3.	8.8 and above	2

Tiles Load
60kg/m²

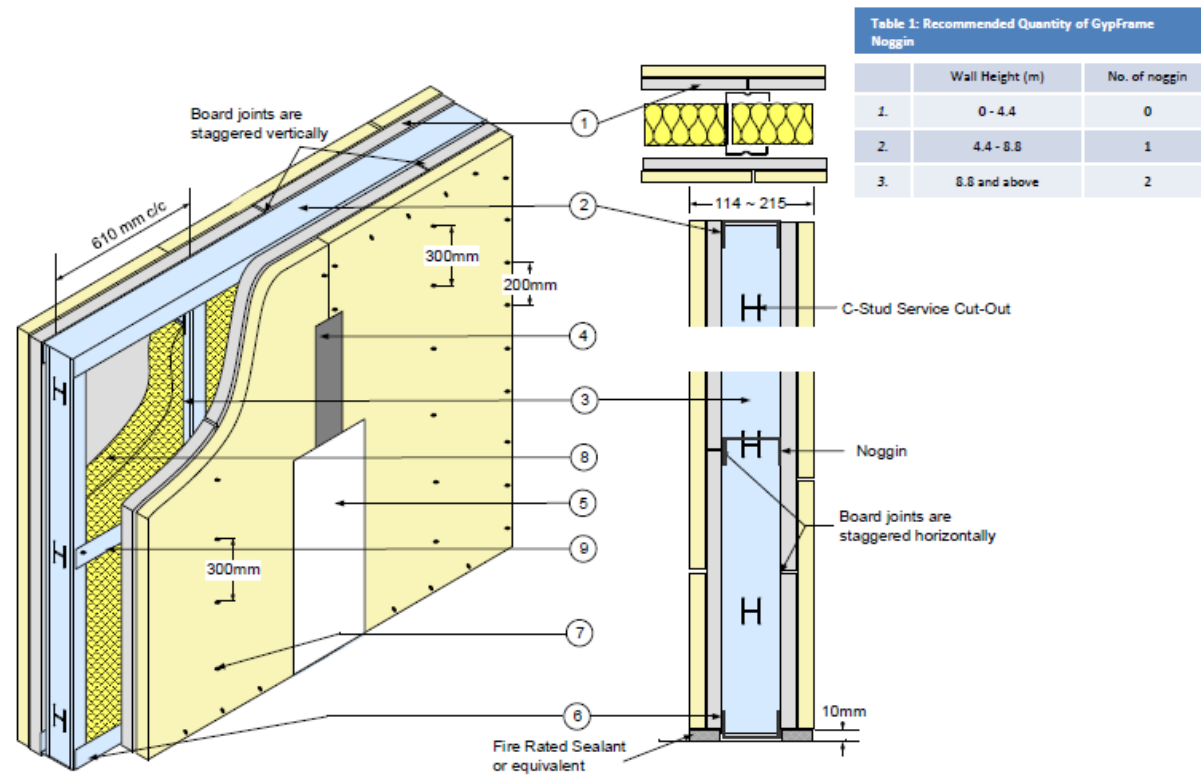
Single Layer Glasroc® H 12.5mm with 50SW40kg

2 Hours Fire Rated Partition System

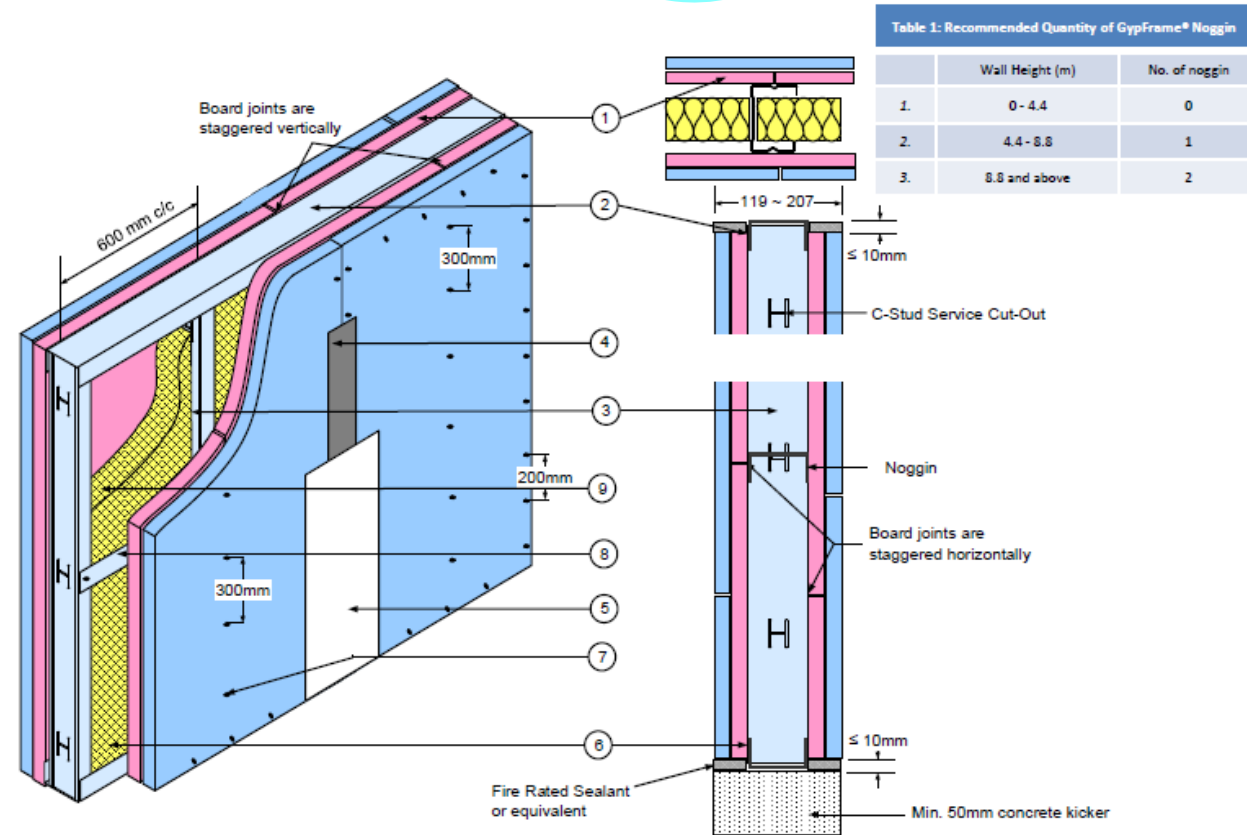


FIRE RESISTANCE OF GYPWALL

2 Hours Fire Rated Partition System



BaseLine® 12.5mm + DuraLine® Plus 19mm with 50SW40kg



FireLine® 15mm + Glasroc® H 12.5mm with 50SW40kg

FIRE RESISTANCE OF GYPWALL

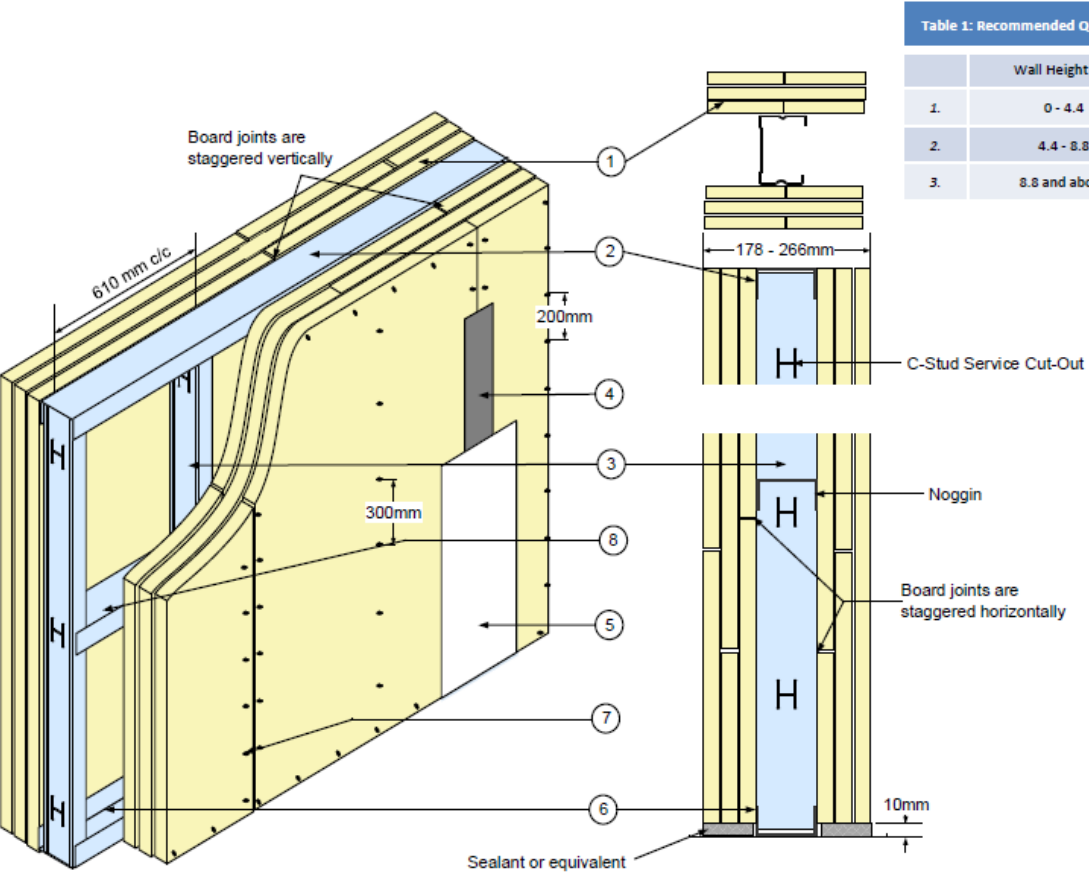


Table 1: Recommended Quantity of GypFrame Noggin

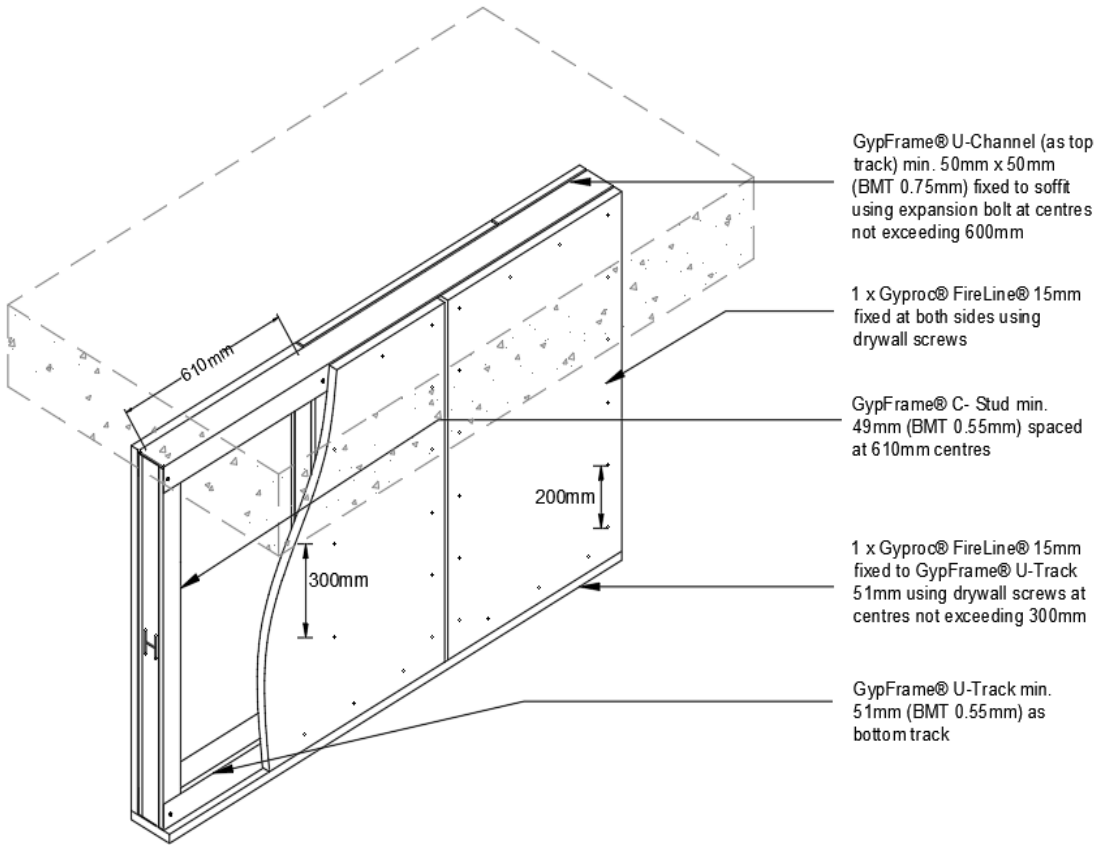
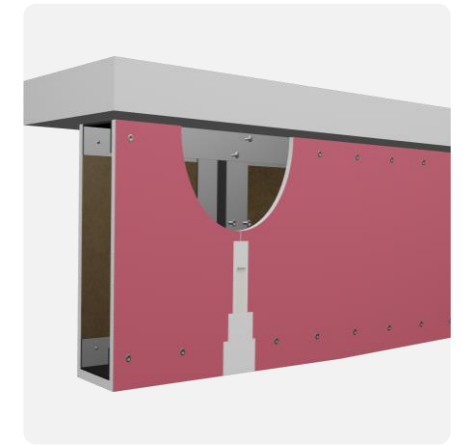
	Wall Height (m)	No. of noggin
1.	0 - 4.4	0
2.	4.4 - 8.8	1
3.	8.8 and above	2

4 Hours Fire Rated Partition System

3 Layer DuraLine® Plus 19mm

OTHER SYSTEMS AGAINST FIRE

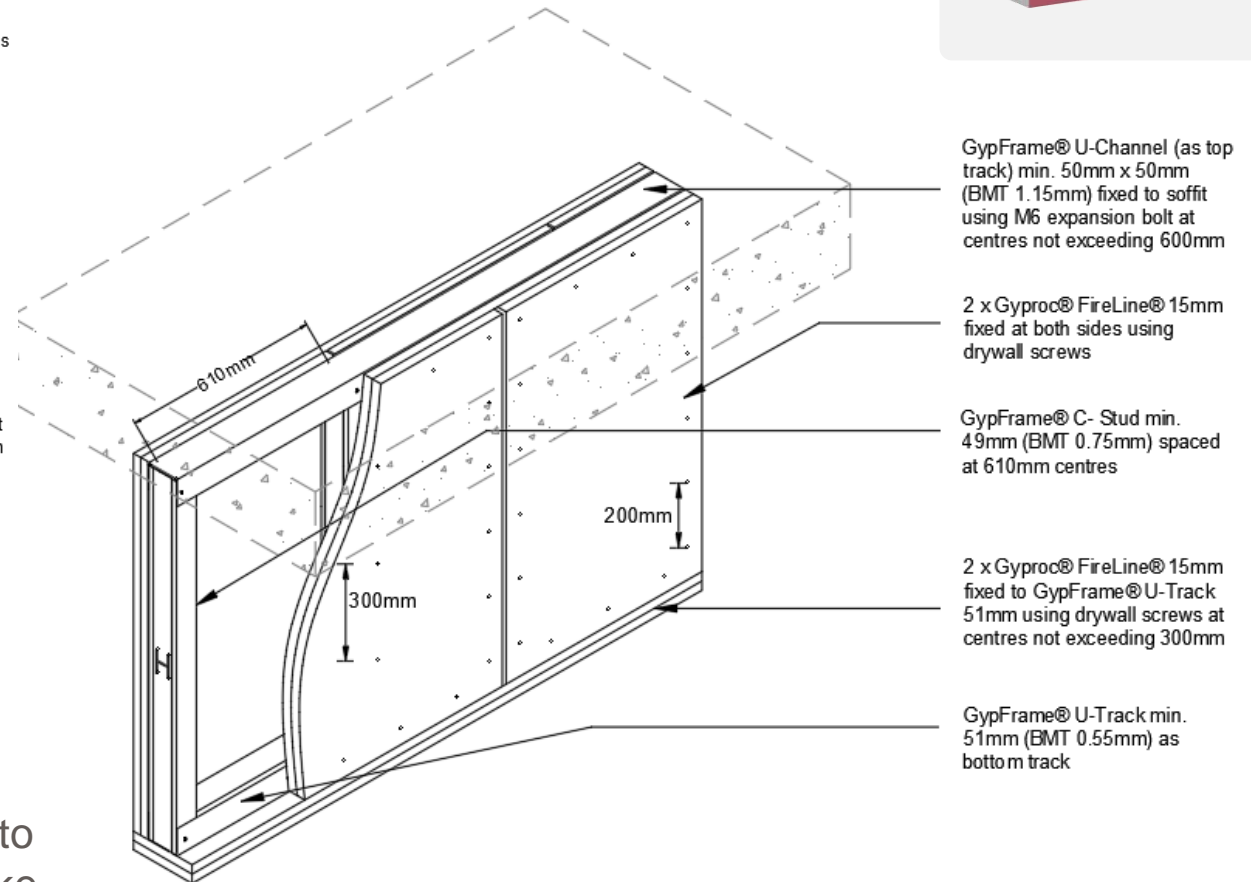
Typical Solutions – Fire & Smoke Barrier



1 HOUR FIRE RATED FIRE AND SMOKE BARRIER

Note:

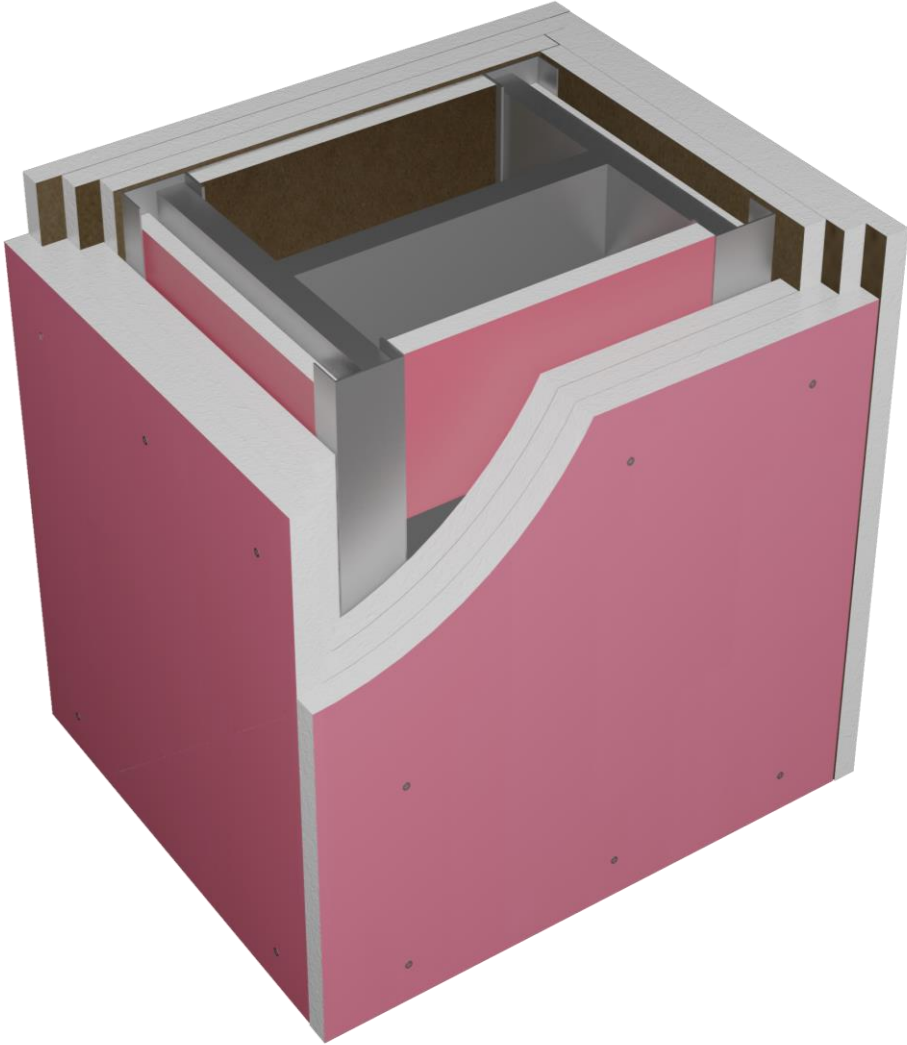
Smoke barriers are used to subdivide building spaces into smoke compartments. They restrict the passage of smoke.



2 HOURS FIRE RATED FIRE AND SMOKE BARRIER

FIRE PROTECTION SOLUTION

- Fire Rated Steel Encasement



1 ~ 2 HOUR FIRE RATED STEEL
ENCASEMENT SYSTEM



**ACOUSTIC
PERFORMANCE**

ACOUSTIC PERFORMANCE

Building Acoustic

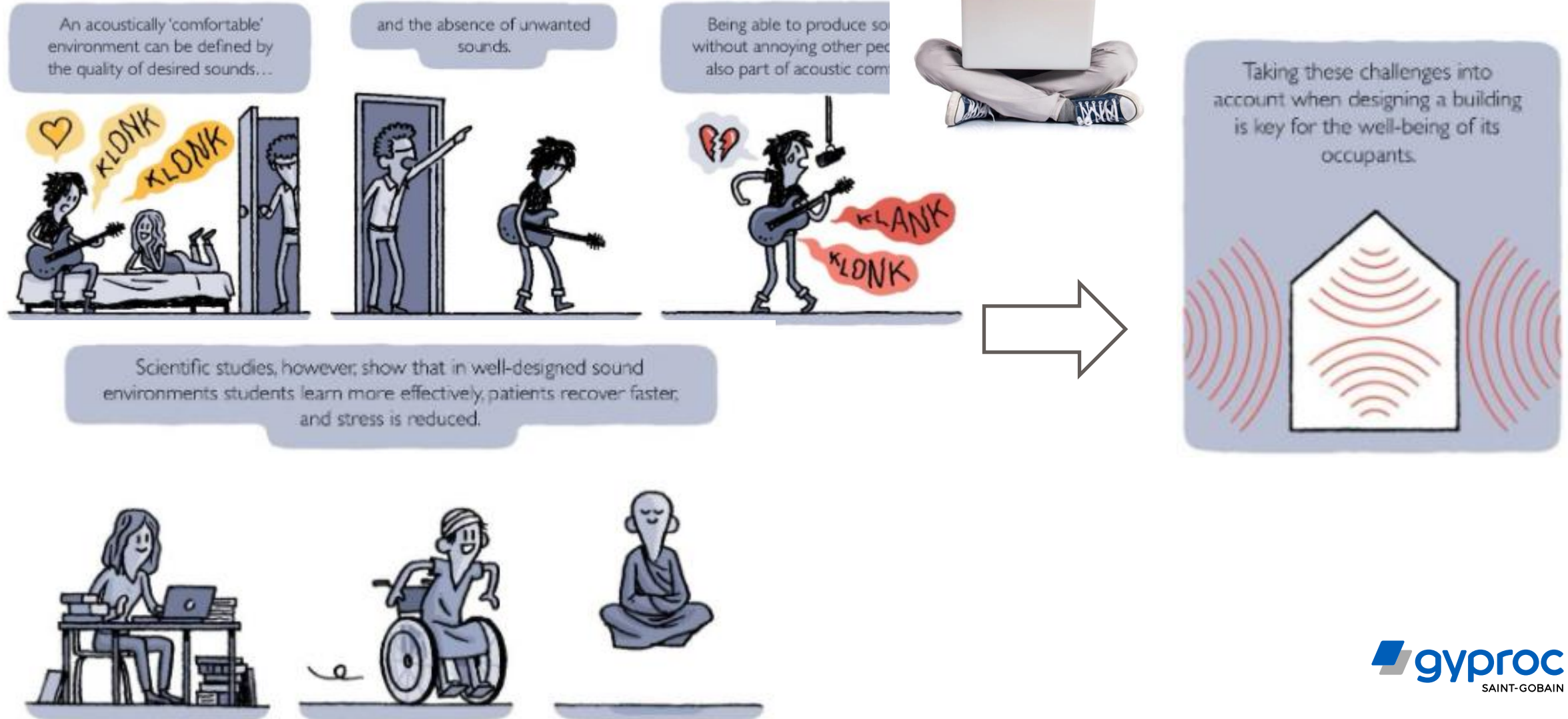
The science of controlling noise in buildings, including the minimization of noise transmission from one space to another (STC) & The control of noise levels and characteristics within a space. (NRC)



ACOUSTIC PERFORMANCE

Building Acoustic

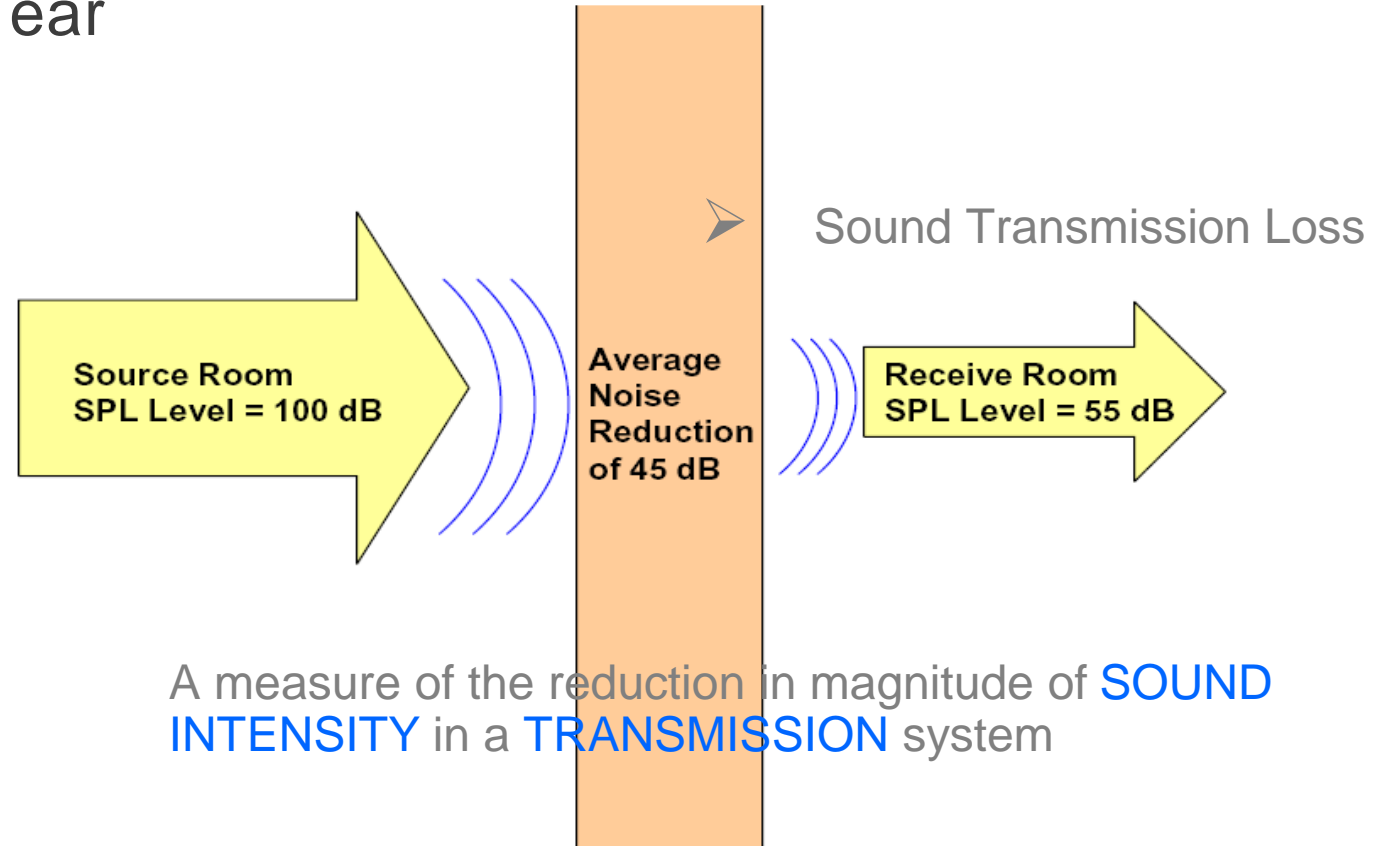
Why is it Important?



STC – SOUND TRANSMISSION CLASS *To isolation the wall assembly*

Controlling noise in buildings, including the minimization of noise transmission from one space to another

- Airborne Sound, measured in decibels (dB)
 - Result of sound wave travelling through air
 - Detected by human ear



Decibel

❖ Difference in dB – how do we feel?

+/- 3 dB



A difference of at least 3 dB is normally required in order to be detectable.



- 20dB

- 10dB

Source

+/- 10 dB



A difference of 10 dB is commonly heard as twice as loud, or half as loud.

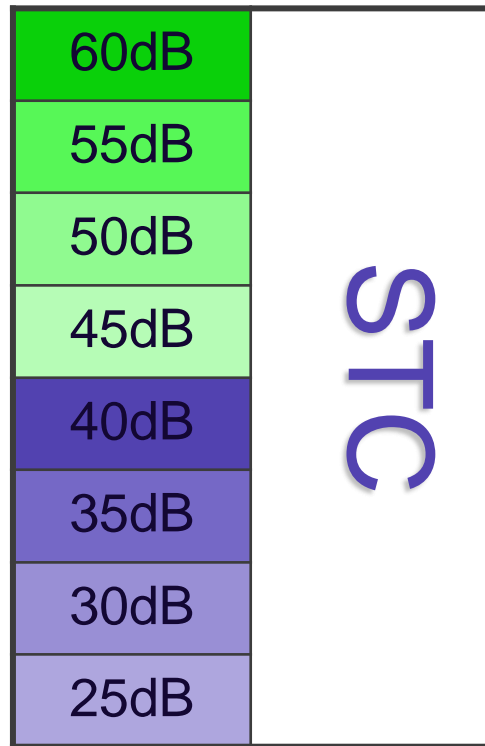
+ 10dB

+ 20dB

LIGHTWEIGHT & MORE USABLE SPACES

STC Comparison

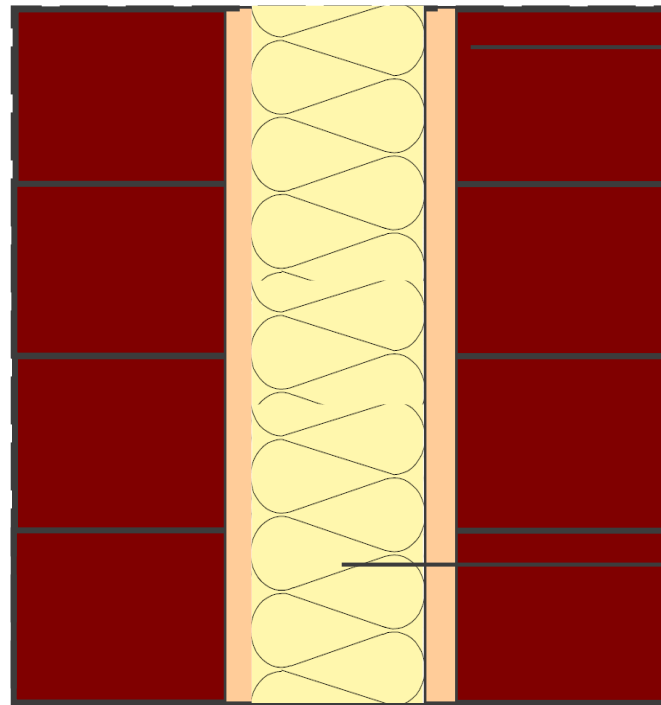
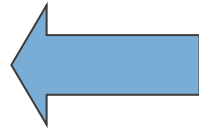
The Gypwall System



112 mm

The Conventional Brick wall System

40 dB



SINGLE LAYER OF DURALINE 19mm

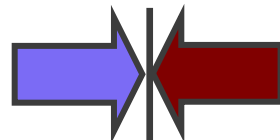
+ 3dB

42 dB

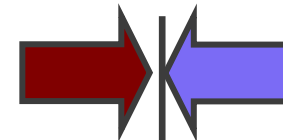
+ 2dB

50mm of 40kg/m³ Rockwool

45 dB



150 mm



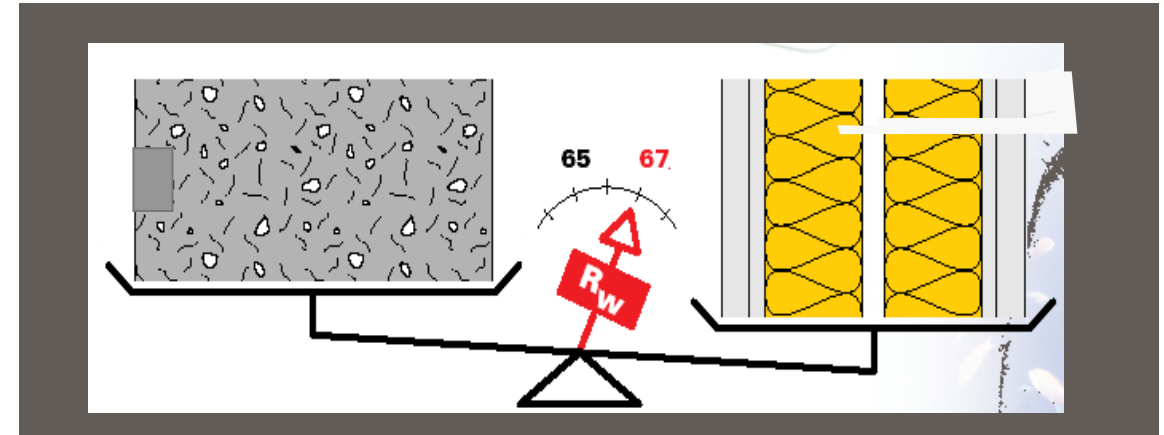
SAINT-GOBAIN

gyproc
SAINT-GOBAIN

ACOUSTIC PERFORMANCE

Drywall Design

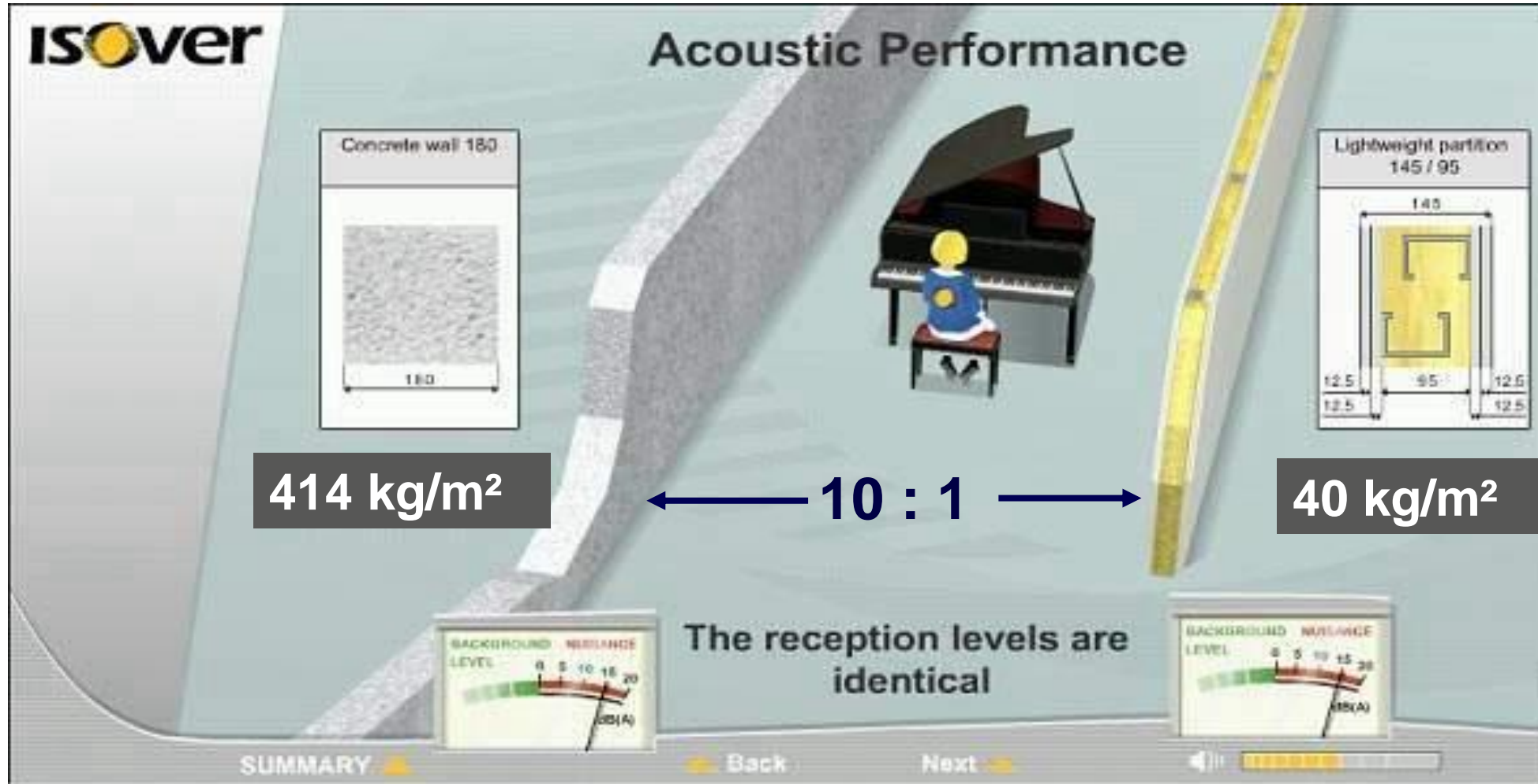
There is a big difference between the mechanism of sound insulation by mass-effect (heavy wall) and by a mass-spring-mass system (Lightweight double leaf partition wall).



Mass Law
with a single layer element
Surface mass 600 kg/m^2
Thickness 260 mm
 $R_w = 65 \text{ dB}$

Mass - Spring - Mass System
Surface mass 60 kg/m^2
Thickness 220 mm
 $R_w = 67 \text{ dB}$

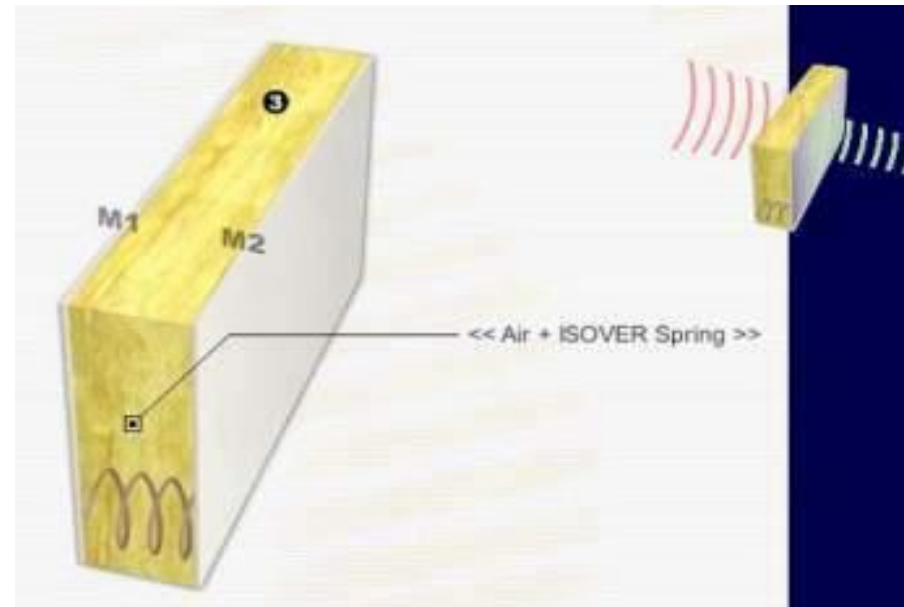
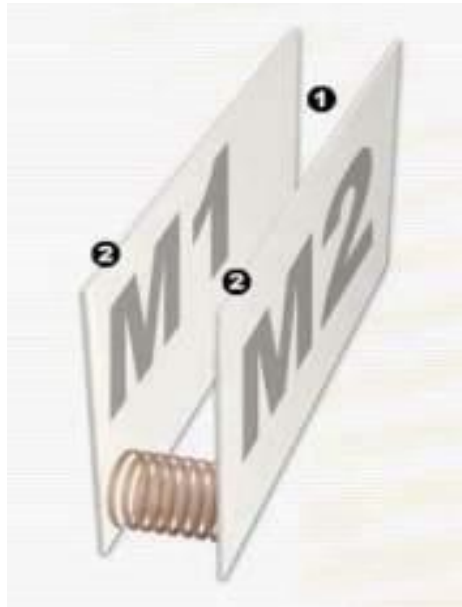
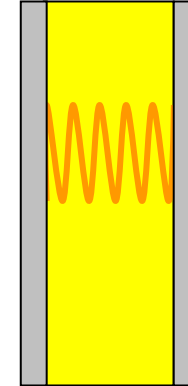
Mass – Spring – Mass



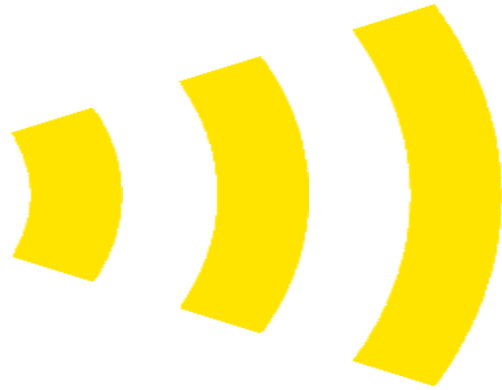
Mass – Spring – Mass

Lightweight and efficient with

mass – spring – mass system



**HOW DOES MINERAL WOOL
IMPROVE THE ACOUSTIC
PERFORMANCE OF A WALL ?**



PARTITION DESIGN

- **Board type and number of layers**

More external layers increase sound insulation

- **Cavity depth**

the wider the better

- **Insulation in the cavity**

increases the loss in energy via the air in the cavity reducing energy transmission
the more amount of material the better
density plays a limited role

- **Degree of acoustic coupling between leafs via the structural element**

Acoustic stud (reduced bridging through the stud)

Resilient bar (resilient mounting reducing energy entering the stud)

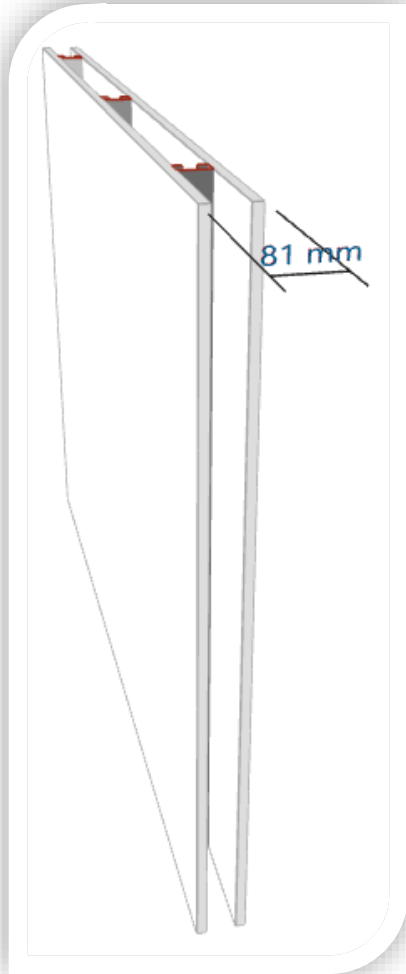
Staggered stud (no connection other than head and base channel)

Twin Frame (no connections between leafs)

ACOUSTIC PERFORMANCE

Drywall Design

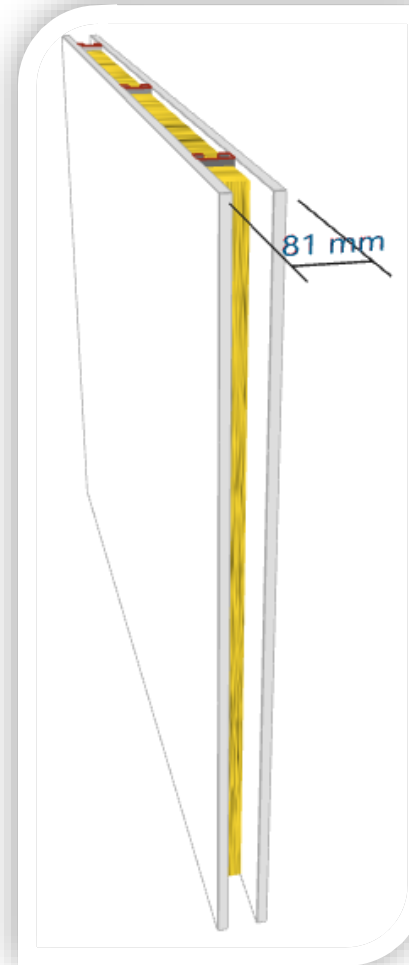
Inclusion of
Insulation



Single Layer **15mm** **BaseLine**

On both sides of
49/51 GypFrame
(0.50mm BMT)
spaced at 610mm
center to center

STC 38



Single Layer **15mm** **BaseLine**

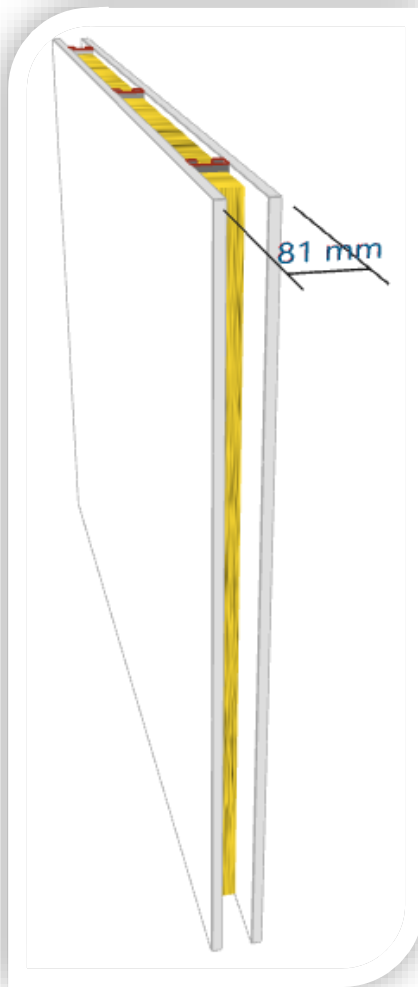
On both sides of
49/51 GypFrame
(0.50mm BMT)
spaced at 610mm
center to center
with

Stonewool
Insulation 50RW40

STC 42

ACOUSTIC PERFORMANCE

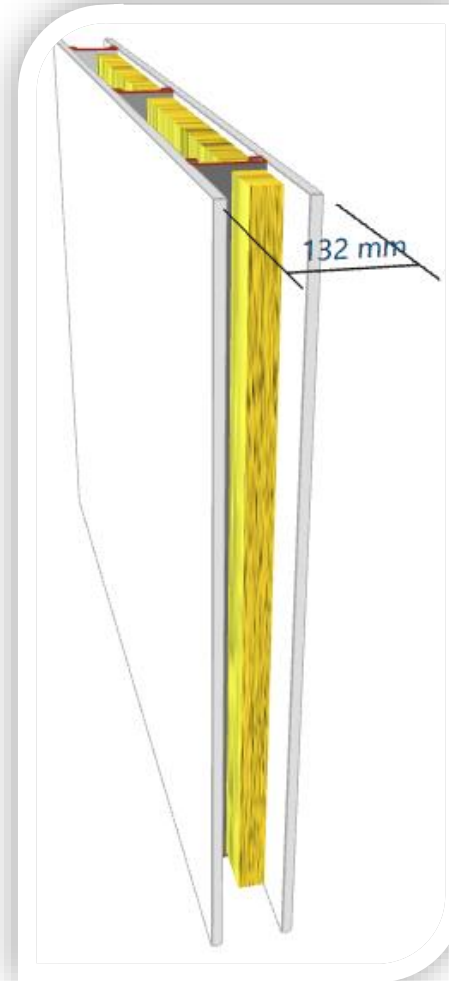
Drywall Design



Single Layer 15mm BaseLine

On both sides of
49/51 GypFrame
(0.50mm BMT)
spaced at 610mm
center to center with
Stonewool Insulation
50RW40

STC 42



Single Layer 15mm BaseLine

On both sides of
100/102 GypFrame
(0.50mm BMT)
spaced at 610mm
center to center with
Stonewool Insulation
50RW40

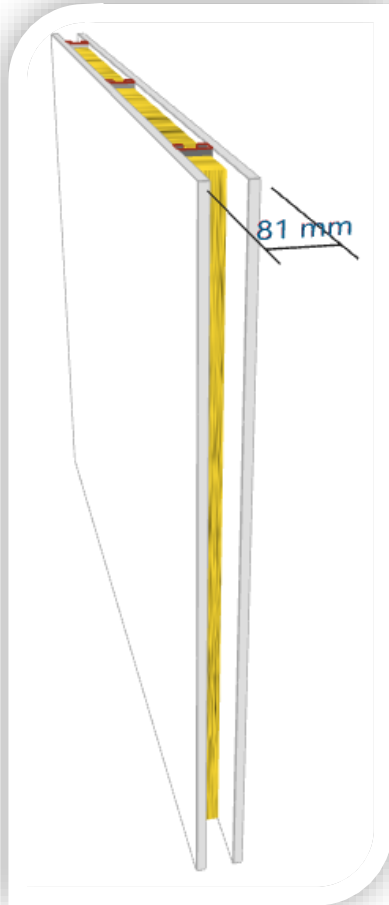
STC 48

Wider Cavity
Width

ACOUSTIC PERFORMANCE

Drywall Design

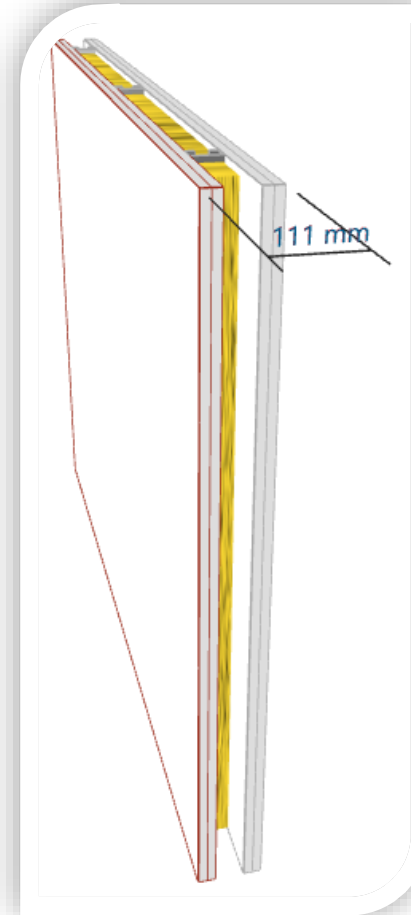
Additional of
Boards



Single Layer 15mm BaseLine

On both sides of
49/51 GypFrame
(0.50mm BMT)
spaced at 610mm
center to center with
Stonewool
Insulation 50RW40

STC 42



Double Layer 15mm BaseLine

On both sides of
49/51 GypFrame
(0.50mm BMT)
spaced at 610mm
center to center with
Stonewool Insulation
50RW40

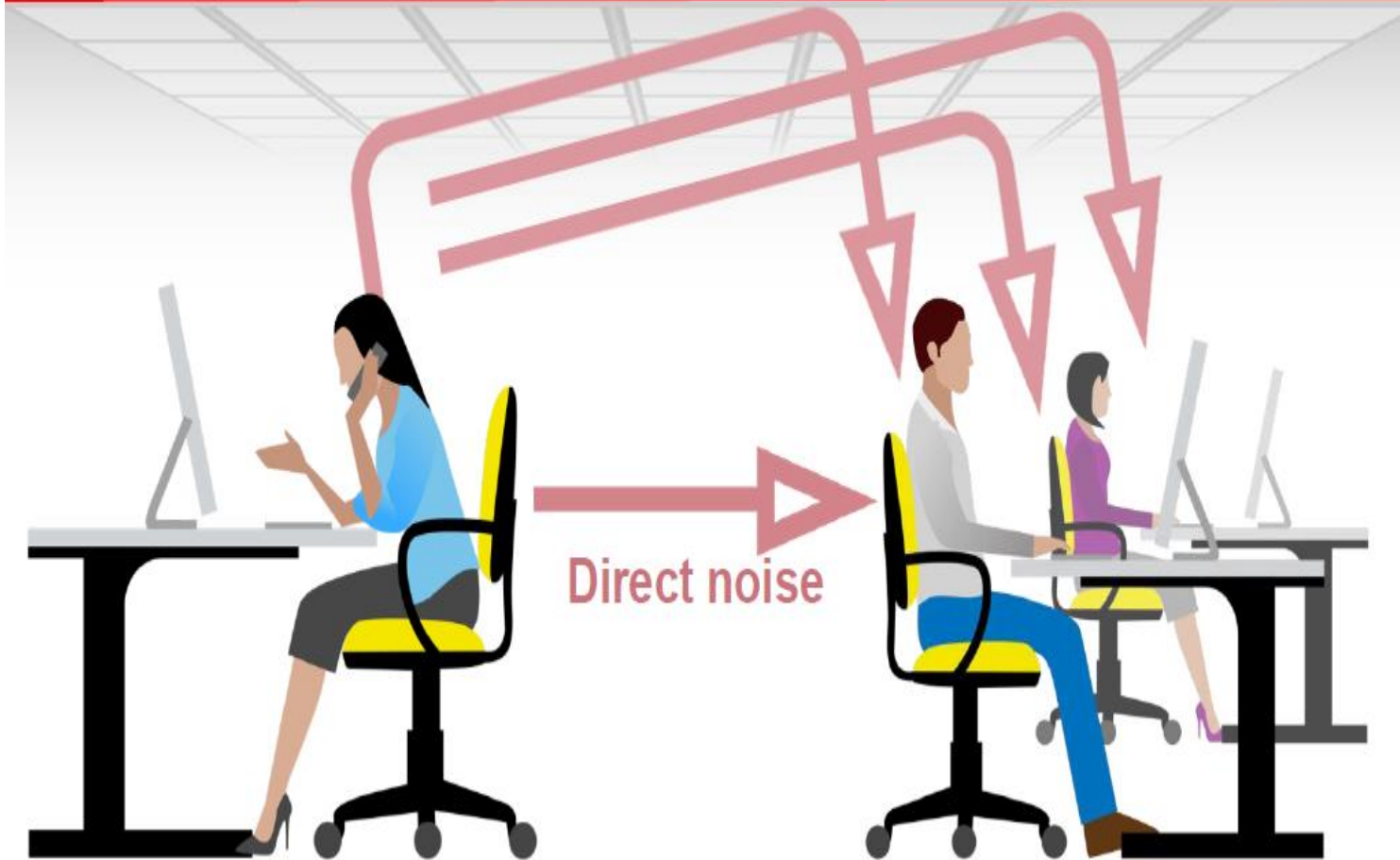
STC 55

NRC - NOISE REDUCTION COEFFICIENT - REDUCE REVERBERATION

control of noise levels and characteristics within a space

✗ WITHOUT absorption, reverberation time and sound pressure level in the room are increased

Noise is reflected

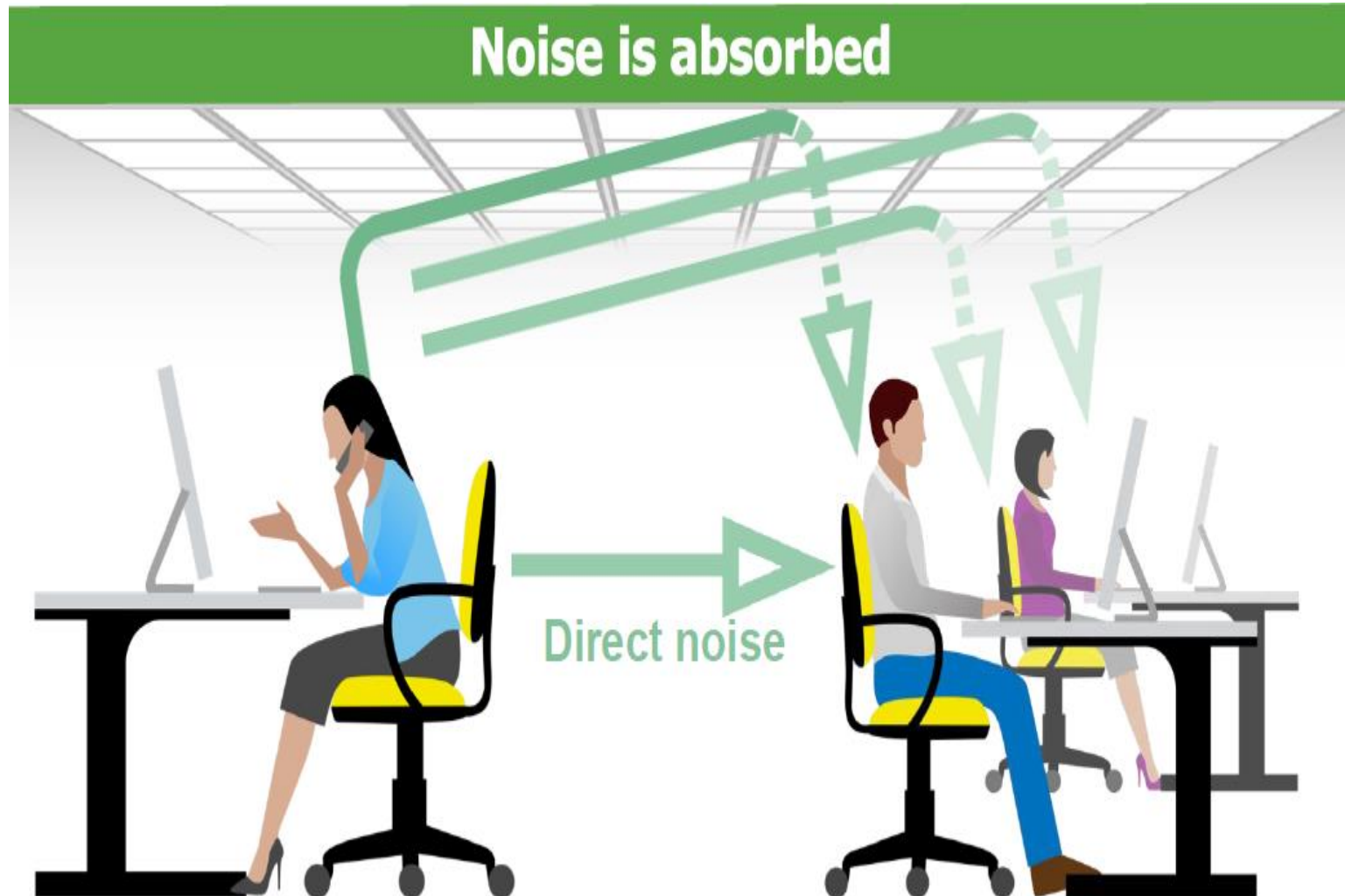


Reverberation: effect on room acoustic comfort

- Bad communication
- Difficult to understand speech
- Additional stress
- Difficult to concentrate
- People get tired more quickly
- Increasing number of mistakes

REDUCE REVERBERATION

✓ **WITH** absorption, reverberation time decreases and sound pressure level in the room is reduced

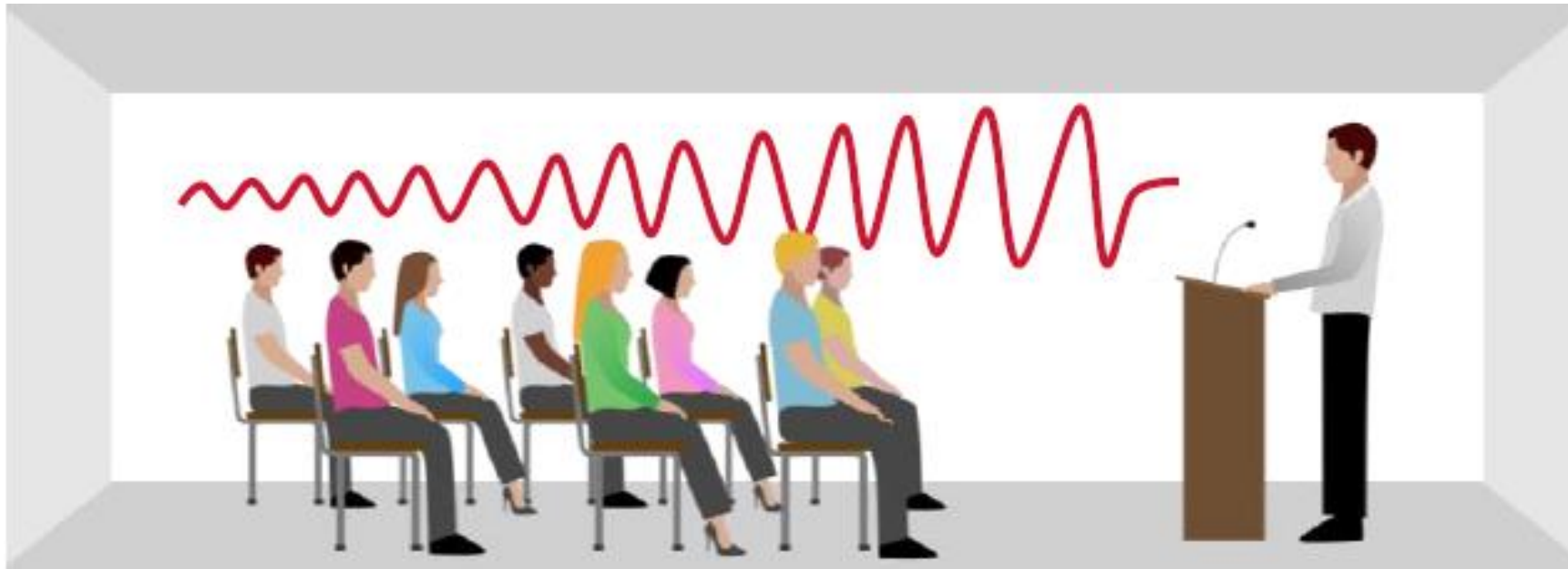


Absorption: effect on room acoustic comfort

- Communication is easier
- Better concentration
- Less stress
- People work more efficiently
- Healthier working environment

REDUCE REVERBERATION

- Used to reduce the reverberation (echoes) in a place, to provide a clearer speech
- Critical in open room application where high ceiling or multiple occupants or large space etc
- A ceiling or wall panel with NRC of 0.60 will absorb 60% of the sound that strikes it and deflect or transmit 40% into the space



ACOUSTIC CEILING

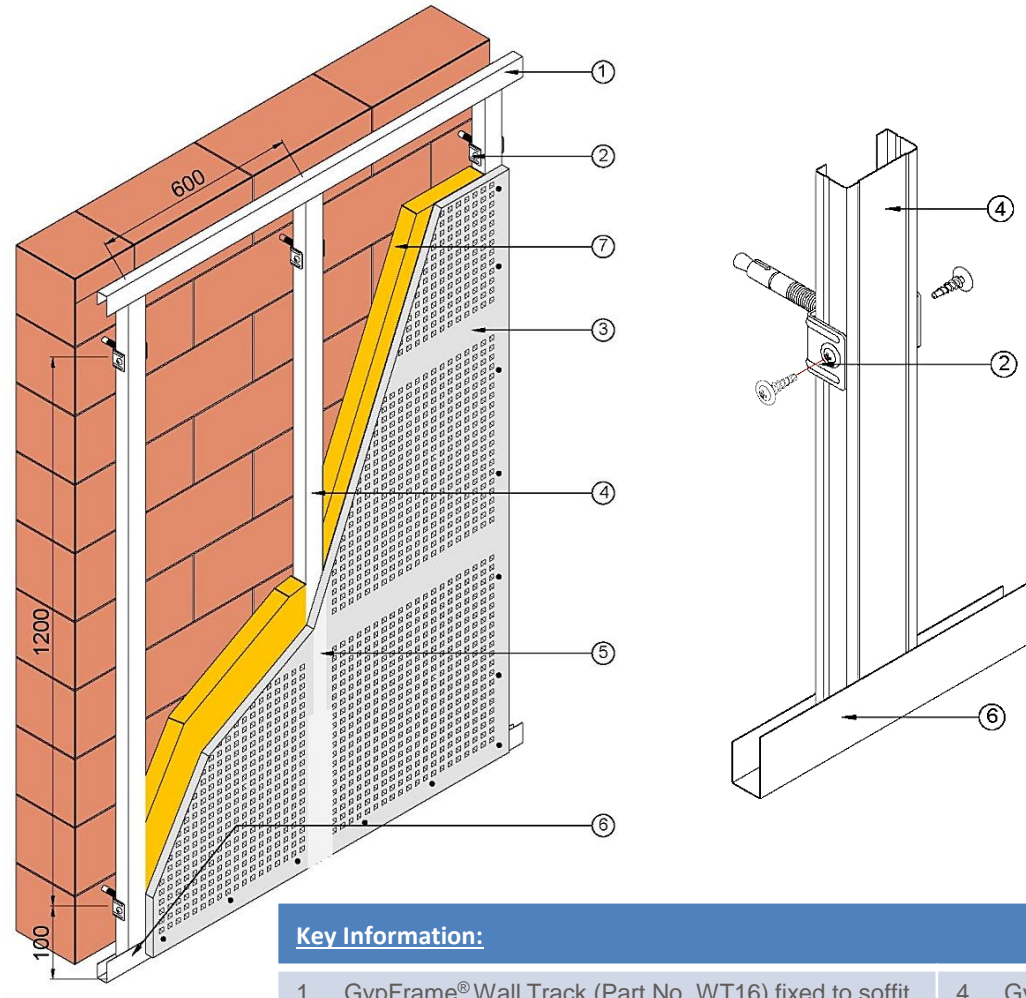


Gyptone® BIG Quattro 41 (Q41)

- ✓ Gypsum plasterboard with perforation and backed with special tissue lining.
- ✓ High performance in Acoustics, Aesthetics and Durability.
- ✓ NRC : 0.75

Specification:	Description:
Size	1200x2400mm
Thickness	12.5mm
Edge	B1 (4TE)
Perforation size	12x12mm
Perforation rate	16%
Weight	8kg/m2
Fire rating	Class O
Sound absorption	
Color	Un-painted liner
Installation system	Gyptone Liner

GYPLYNER® SYSTEM WITH GYPTONE

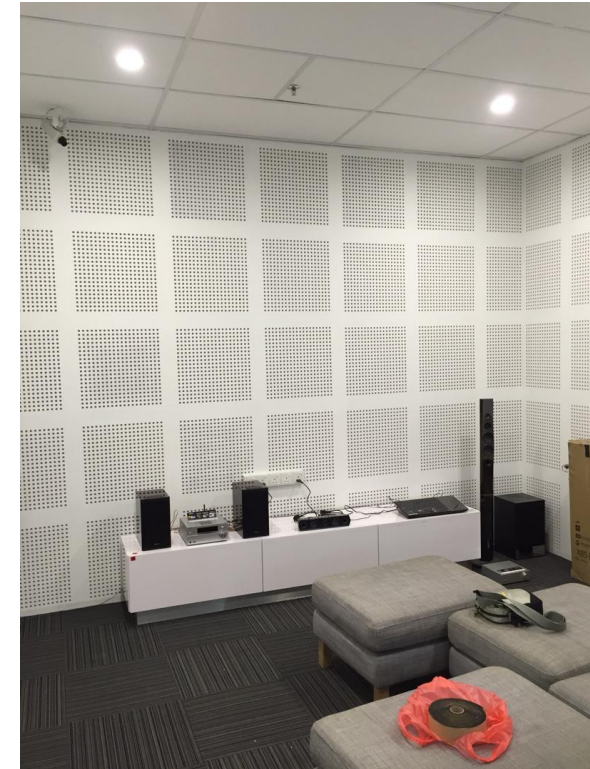


Key Information:

- | | |
|--|---|
| 1. GypFrame® Wall Track (Part No. WT16) fixed to soffit using expansion bolt | 4. GypFrame® Channel 36x16 (Part No. C3616) |
| 2. Adjustable Wall Bracket (Part No. WB3616A) | 5. Gyproc ProTop® All Purpose Ready-mixed Joint Compound |
| 3. Gyproc Gyptone® Quattro 41 12.5mm | 6. GypFrame® Wall Track (Part No. WT16) fixed to floor using expansion bolt |
| | 7. Insulation – Stone wool 50mm x 40kg/m ³ |

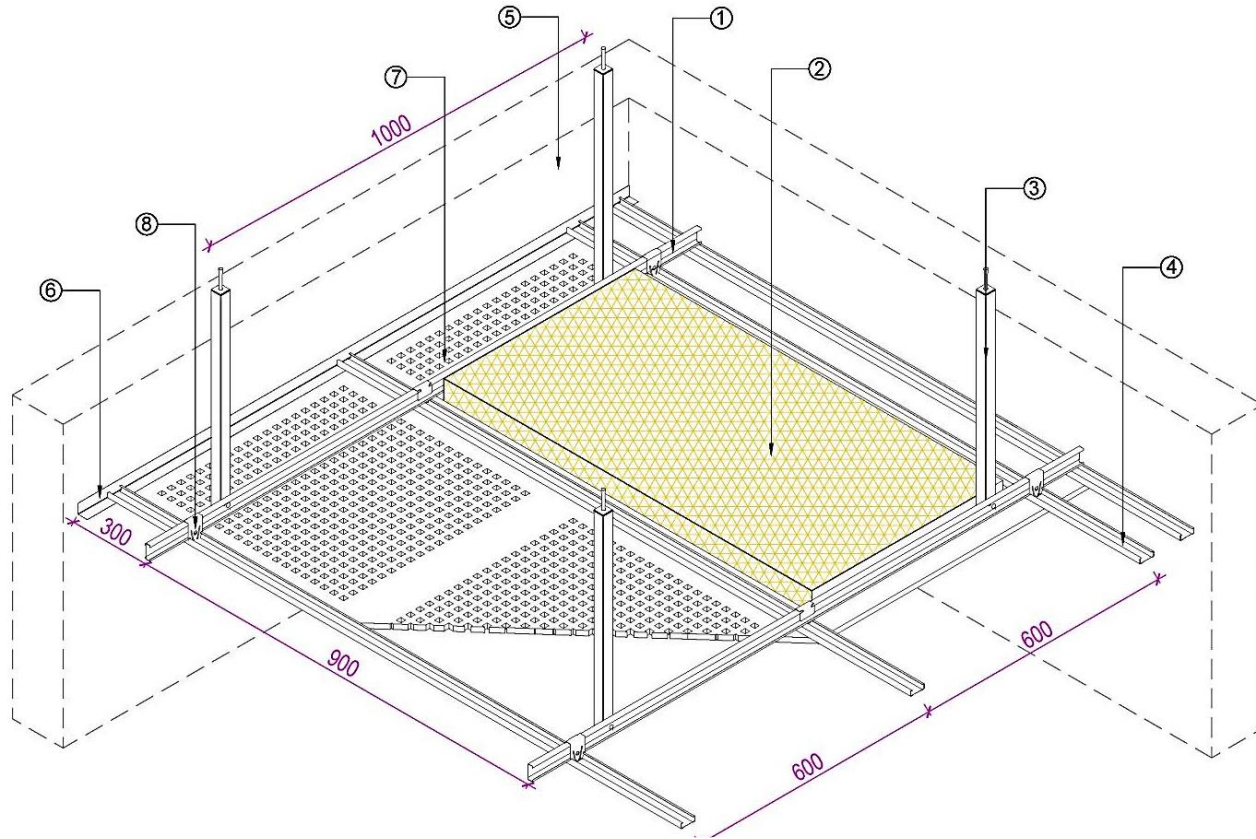


**SAMSUNG STUDIO @
1UTAMA**



SL40Z CASOLINE® CONCEALED CEILING SYSTEM

For Sound Absorption – using GypTone Perforated Board

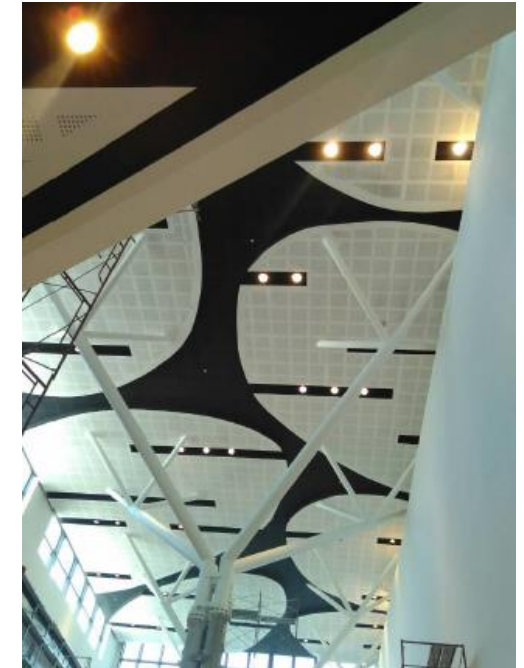


Key Information:

- | | |
|--|--|
| 1. GypFrame® SL40Z Primary Channel at 900mm centres | 5. Existing Wall Substrate |
| 2. 50mm x 40kg/m³ Insulation Material | 6. GypFrame® L- Angle as Wall Angle |
| 3. GypFrame® L-Angle as Suspension Hanger every 1000mm intervals | 7. Gyproc GypTone® Quattro 41 12.5mm |
| 4. GypFrame® SL40Z Secondary Channel at 600mm centres | 8. GypFrame® Cross Joiner fixed staggered along Main Channel |



MYTOWN CHERAS





WET AREA APPLICATION

WET AREA APPLICATION

Tiling on Drywall

- Moisture Resistance Boards (AquaLine 12.5 / Dural MR)

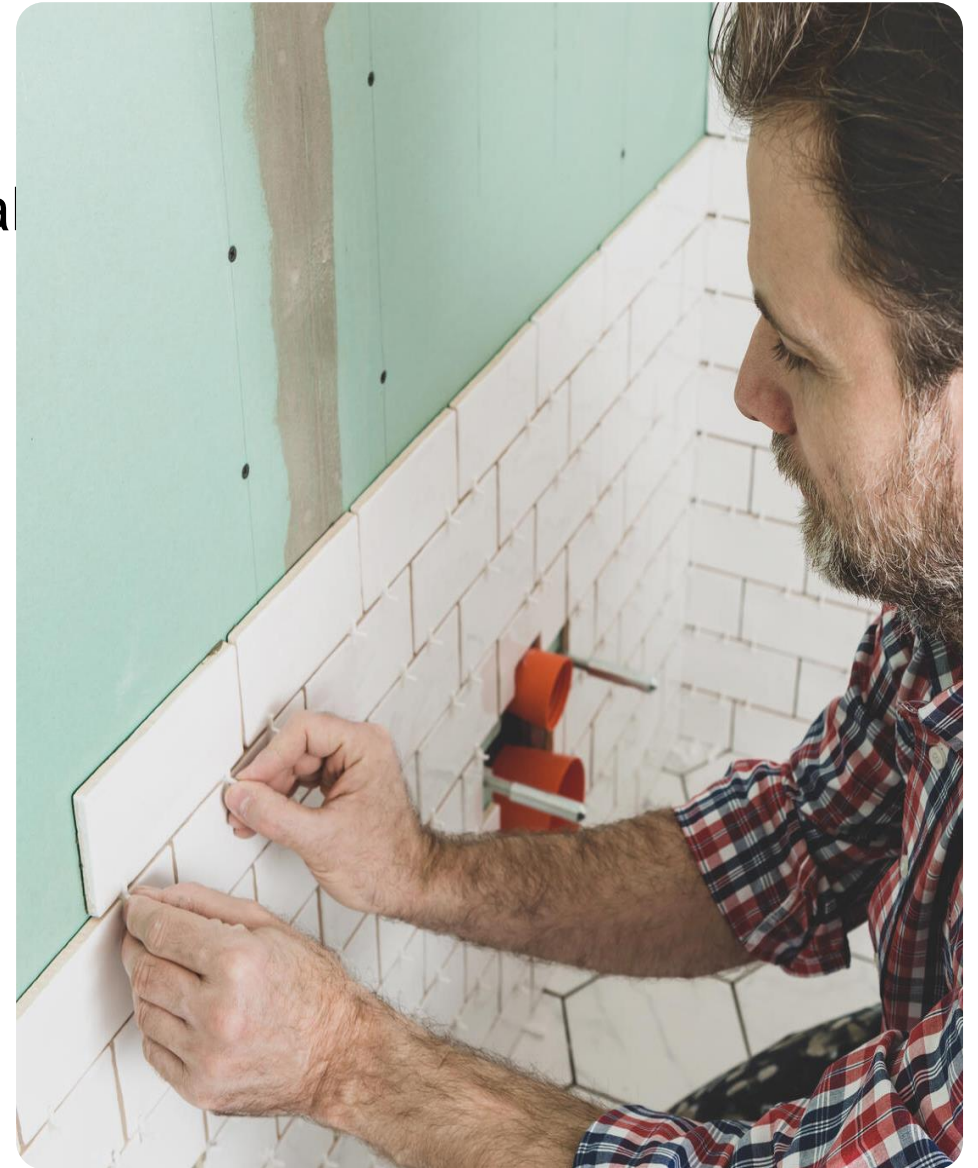
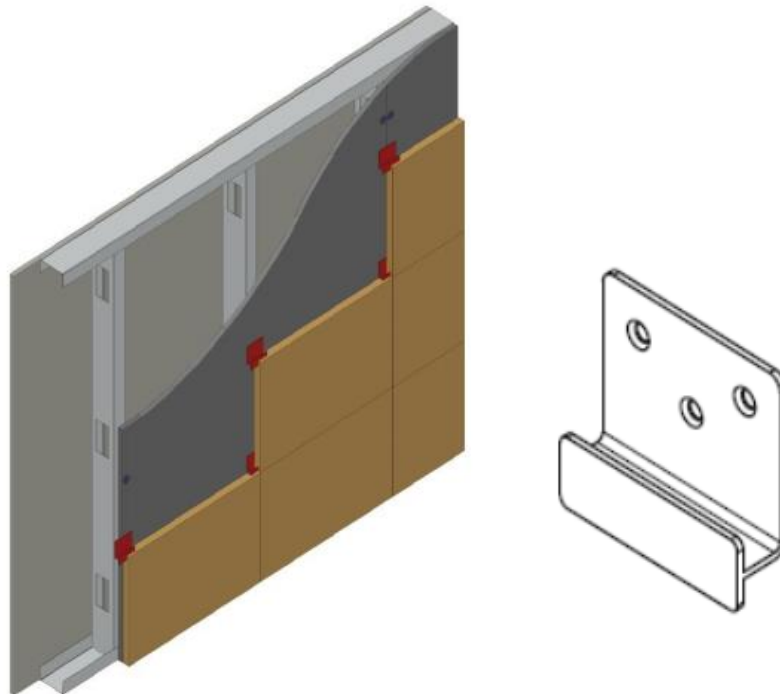
(Tile weight up to 32kg/m² with adhesive type C2TES1)

- Glasroc H / X








(Tile weight up to 60kg/m² with adhesive type C2TES1)

Note:-

Heavy tiling weight (eg. stone, marble), to be supported by mechanical fixing.



MOISTURE RESISTANCE GYPSUM PLASTERBOARD

	Temperature	Humidity	contact with water	Cleaning methodology	Condensation	Products
						
Private bathrooms	low	med	splash	soft	low	MR
Private bathrooms (shower area)	med	high	frequent	soft	high	Glasroc H
Public toilets (without shower)	low	low	sporadic	soft	low	MR
Kitchens	med	med	frequent	med-hard	high	Glasroc H
Laundry	med-high	high	sporadic	med	low	Glasroc H
Spa area / indoor swimming pool	high	high	frequent	med (walls) hard (floor)	high	Glasroc H
Sauna and Turkish room	very high	Extreme	frequent	hard	Very high	
Gym and locker room	med	med	sporadic	med-hard	low	MR Glasroc H
Gym and locker room (shower area)	med	high	frequent	med-hard	High	Glasroc H

Glasroc H



Light-blue coloured pre-primed glass mats top and bottom replace plasterboard liners



Inorganic surface specially designed for tiling or decoration with a high resistance to mould

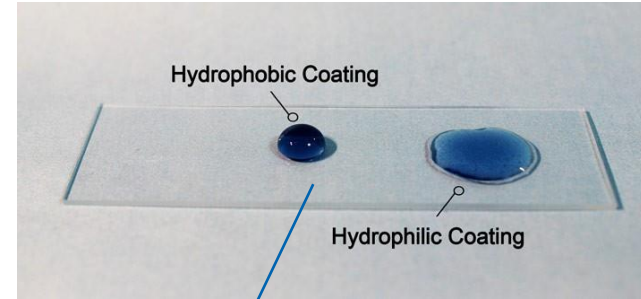


Scores 10 to ASTM D3273

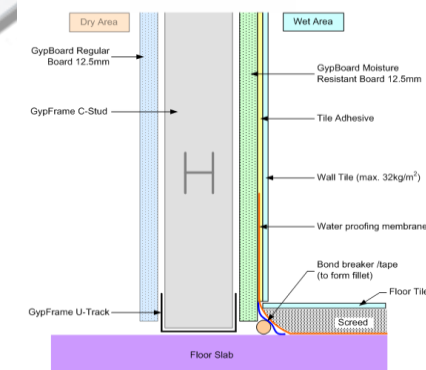


Moisture and mould resistant core containing special biocide

<3% moisture absorption better than EN520 H1



Real picture
Glasroc H



AQUA GYPWALL – WET AREA

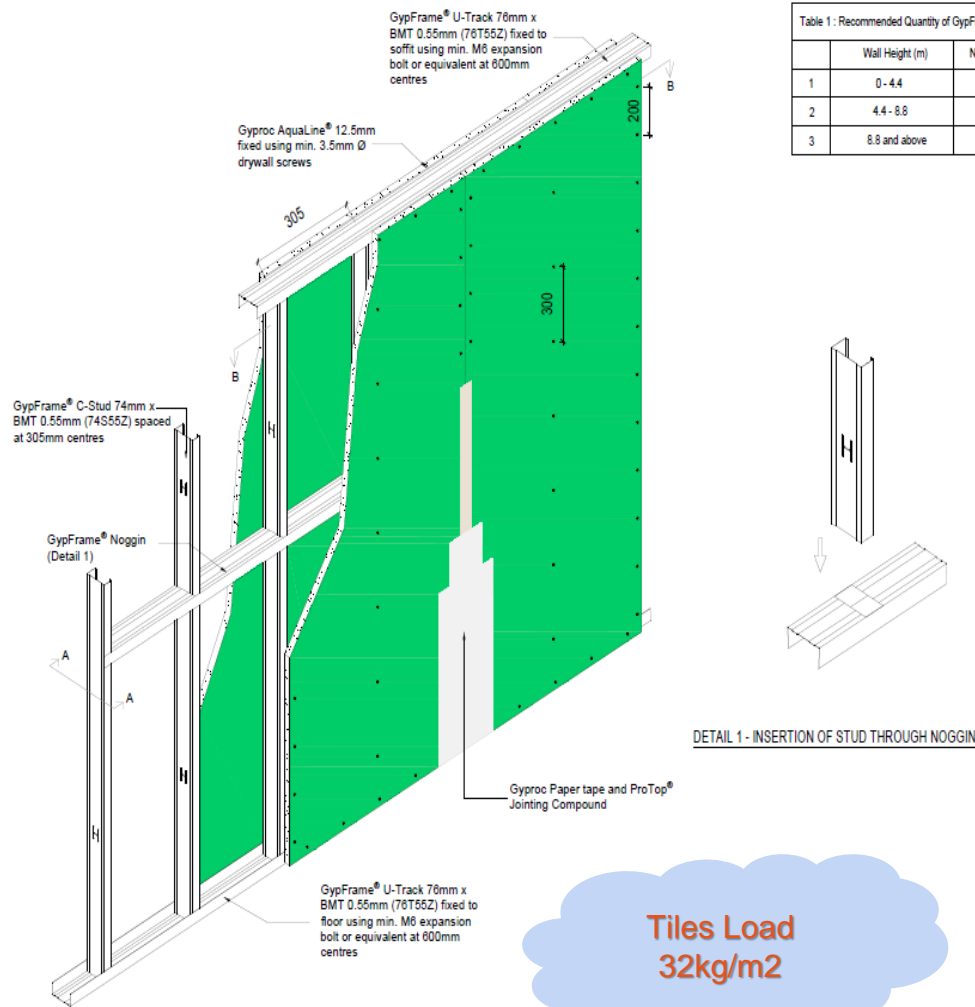
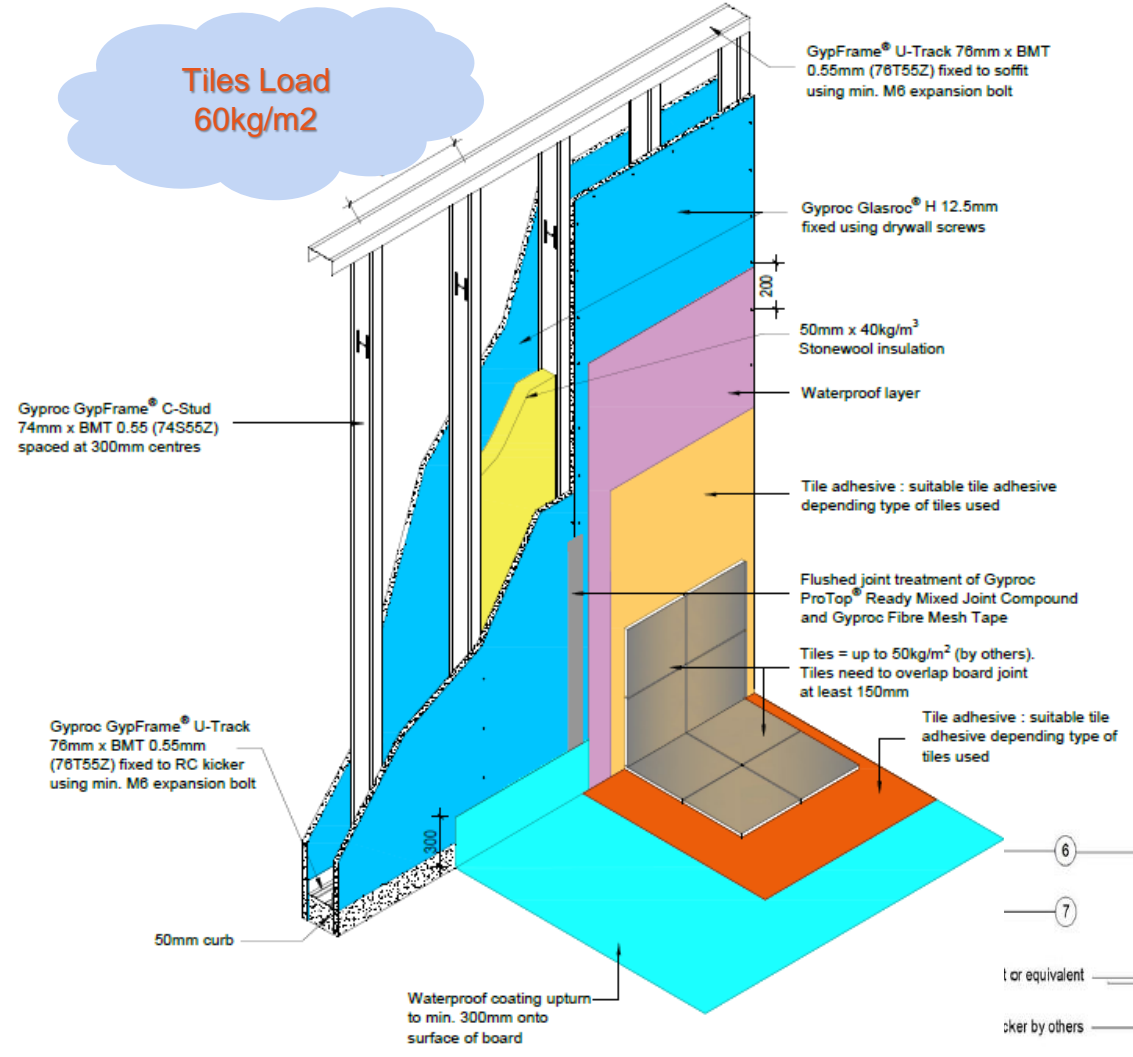


Table 1 : Recommended Quantity of GypFrame® Noggin

	Wall Height (m)	No. of noggin
1	0 - 4.4	0
2	4.4 - 8.8	1
3	8.8 and above	2



AQUA GYPWALL & CLASSIC GYPWALL – DRY / WET

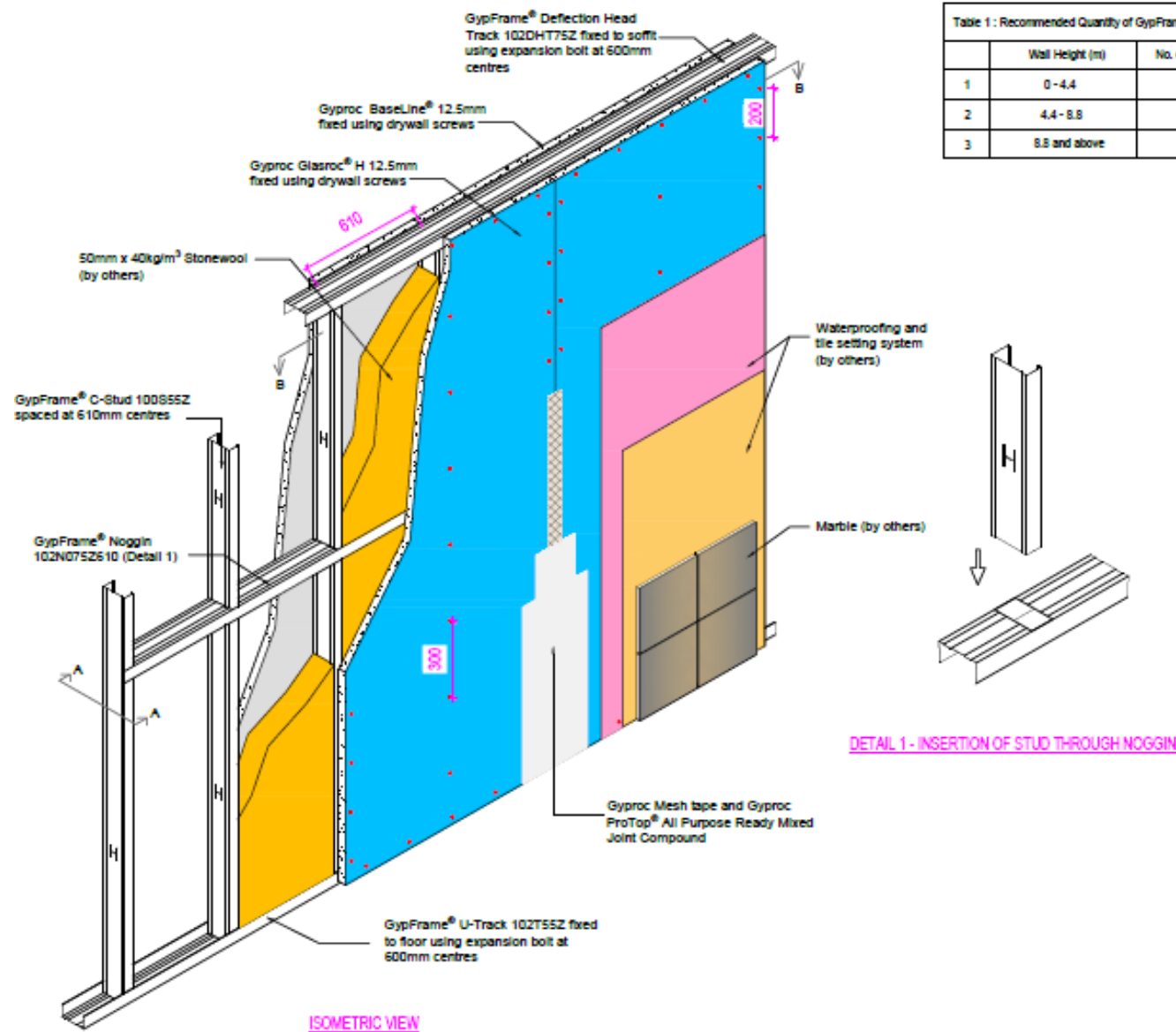


Table 1: Recommended Quantity of GypFrame® Noggin

	Wall Height (m)	No. of noggin
1	0 - 4.4	0
2	4.4 - 8.8	1
3	8.8 and above	2

Description:

Gyproc GypWall® comprising of single layer **Gyproc Glasroc® H 12.5mm** laid staggered to opposite layer and screw-fixed at max. 300mm centres to both sides of framing system formed by **GypFrame® C-Stud** (Zincalume Steel) spaced at nominal 300mm centres and **GypFrame® U-Track** (Zincalume Steel); all joints are reinforced with **Gyproc Paper Tape** and finished with **ProTop® All Purpose Ready Mixed Joint Compound** for a seamless surface.

DETAIL 1 - INSERTION OF STUD THROUGH NOGGIN

IMPACT RESISTANT



ROBUST WALL



DRYWALL ROBUSTNESS TEST

In accordance with BS 5234: Part 2



PULL OUT TEST



**HEAVY WEIGHT
ANCHORAGE TEST**



STIFFNESS TEST



PULL DOWN TEST

DRYWALL ROBUSTNESS TEST

In accordance with BS 5234: Part 2



**LARGE SOFT BODY
IMPACT**

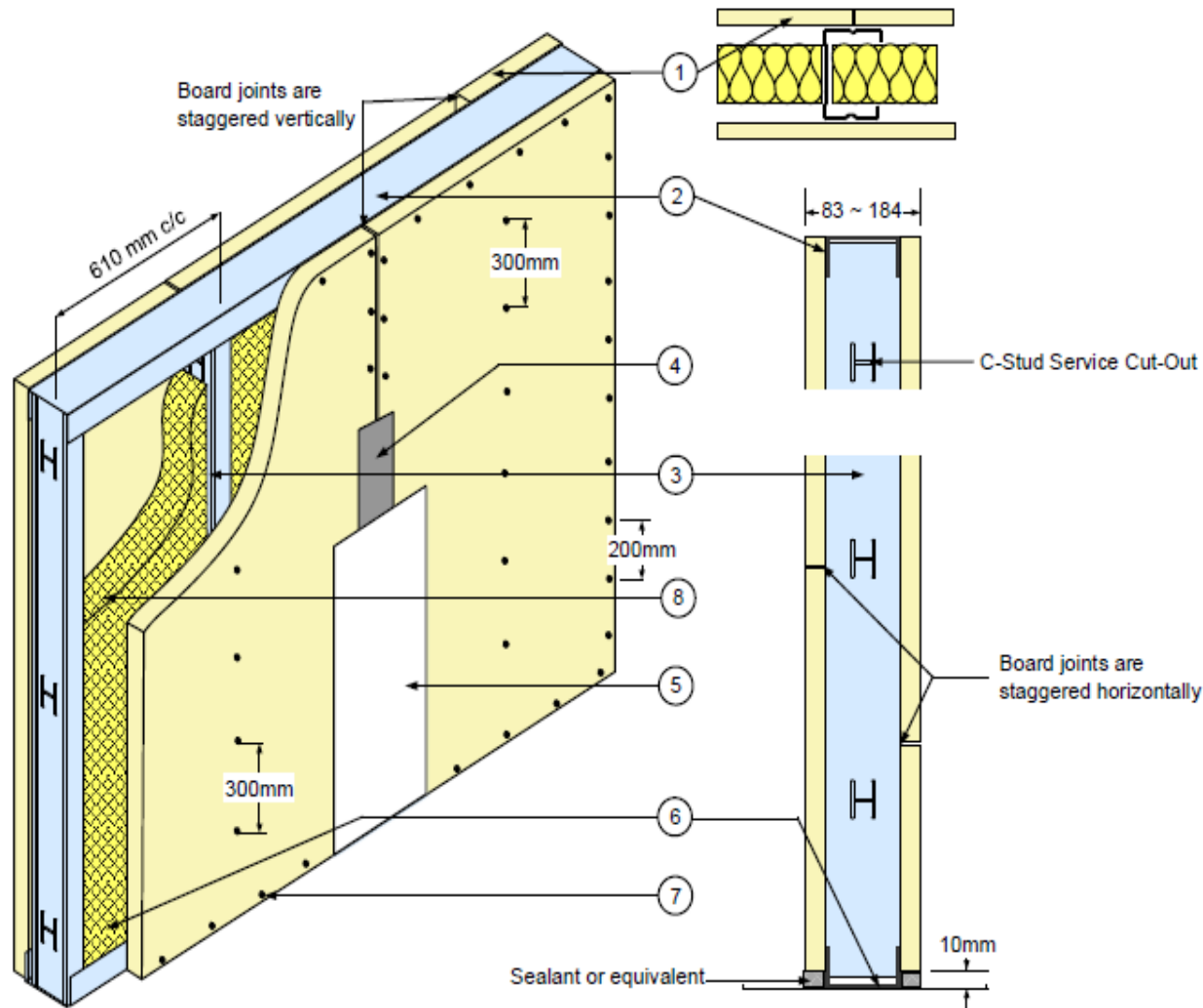


**SMALL HARD BODY
IMPACT**



DOOR SLAM TEST

96MM THICK ROBUST WALL



DuraLine® Plus

- ✓ Lined with thick paper liner
- ✓ Impact resistance, tested in accordance with BS 5234: Part 2
- ✓ Severe duty with just single layer board
- ✓ Suitable for internal wall of residential, commercial and healthcare sectors
- ✓ Available in thickness of 16mm and 19mm



Severe Duty



Non-combustible



STC 45

SITE FIELD TEST

Test Report No. 7191020765-MEC11-TBK
dated 14 Nov 2011

Note: This report is issued subject to TÜV SÜD PSB's "Terms and Conditions Governing Technical Services".
The terms and conditions governing the issue of this report are set out as attached within this report.



Choose certainty.
Add value.

ASSESSMENT ON A PARTITION PERFORMANCE

FOR STRENGTH AND ROBUSTNESS OF

'GYPROC DURALINE PLUS' 19mm THICK GYPSUM PLASTER BOARD

WITH

GYPFRAME 62S50 METAL C-STUDS & 64S50 METAL U-TRACKS

(THE GYPWALL ROBUST [DURALINE PLUS 19mm] DRYWALL PARTITION SYSTEM
HAS A NOMINAL THICKNESS OF 102mm AND C-STUDS SPACING OF 610mm)

(This report must be used in conjunction with test reports 54S073625/DL dated 18 Jul 2007,
54S072121/1/DL dated 11 Jul 2007 & Client's declaration letter in the appendix attached)

ASSESSED FOR:

Saint-Gobain Construction Products (Malaysia) Sdn Bhd
(Formerly known as BPB Malaysia Gypsum Sdn Bhd)
No. 1 Jalan Sultan Mohamad 4, Kawasan Perindustrian
Bandar Sultan Suleiman, 42000 Port Klang, Selangor,
Malaysia
Attention: Mr. Andrew Ang

PREPARED BY:

Tan Boon Kwan
Product Manager

APPROVED BY:

Dr Sun Qiling
AVP
Building & Acoustics Group
Mechanical Centre



Laboratory:
TÜV SÜD PSB Pte. Ltd.
No. 1 Science Park Drive
Singapore 118221

Phone: +65-6885 1333
Fax: +65-6776 8670
E-mail: testing@tuv-sud-psb.sg
www.tuv-sud-psb.sg
Co. Reg.: 199002667R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-01/05
The Franklin, Singapore 118223
TUV®

Page 1 of 9

Date : 21 June 2007
To : Mr. Andrew Ang
Org : BPB Malaysia Gypsum Sdn. Bhd.
Fax No. : 603 31695500
Tel No. : 603 31695588
Pages : 1 of 1
Ref : -
From : David Li
Dept : Building & Industrial Products,
Testing Group
Fax : 65 67793903
DID : 65 68851429
Email : david.li@tuv-sud-psb.sg



Re: Partition Performance of BPB Duraline Board 16mm with BPB metal Stud &
Track System

Facsimile

Dear Mr. Ang,

As per requested, below is the summary of test results for performance tests of partition system tested.

Summary of strength and robustness tests to BS 5234 : Part 2 : 1992				
Tests for grade compliance				
Requirements tested	Grade performance achieved Pass/Fail			
	LD	MD	HD	SD
Stiffness	-	-	-	Passed
Surface damage by small hard body impact: ¹				
Straight partition	-	-	-	Tested*
Right angle partition	-	-	-	Tested*
Surface damage by large soft body impact:				
Straight partition	-	-	-	Passed
Right angle partition	-	-	-	Passed
Perforation by small hard body impact: ¹				
Straight partition	-	-	-	Passed
Right angle partition	-	-	-	Passed
Resistance to structural damage by large soft body impact	-	-	-	Passed
Door slamming	-	-	-	Passed
¹ See test report if surface damage is acceptable * Show "tested" under grade tested				
Summary of other tests on partition specimen				
Requirement tested			Performance achieved	
Crowd pressure			3.0 kN/M	
Light weight anchorage – Pull-out			Passed	
Light weight anchorage – Pull-down			Passed	
Heavy weight anchorage – (Wash basin)			1500 N	
Heavy weight anchorage – (Wall cupboard)			4000 N	

Best regards,

David Li
Associate Engineer

Telephone : +65-6885 1333
Telefax : +65-6776 8670
www.tuv-sud-psb.sg

TÜV SÜD PSB Corporation Pte Ltd
1 Science Park Drive
Singapore 118221
Reg. No.: 199002667R



Gyproc® Activ' air



INDOOR AIR QUALITY SOLUTION

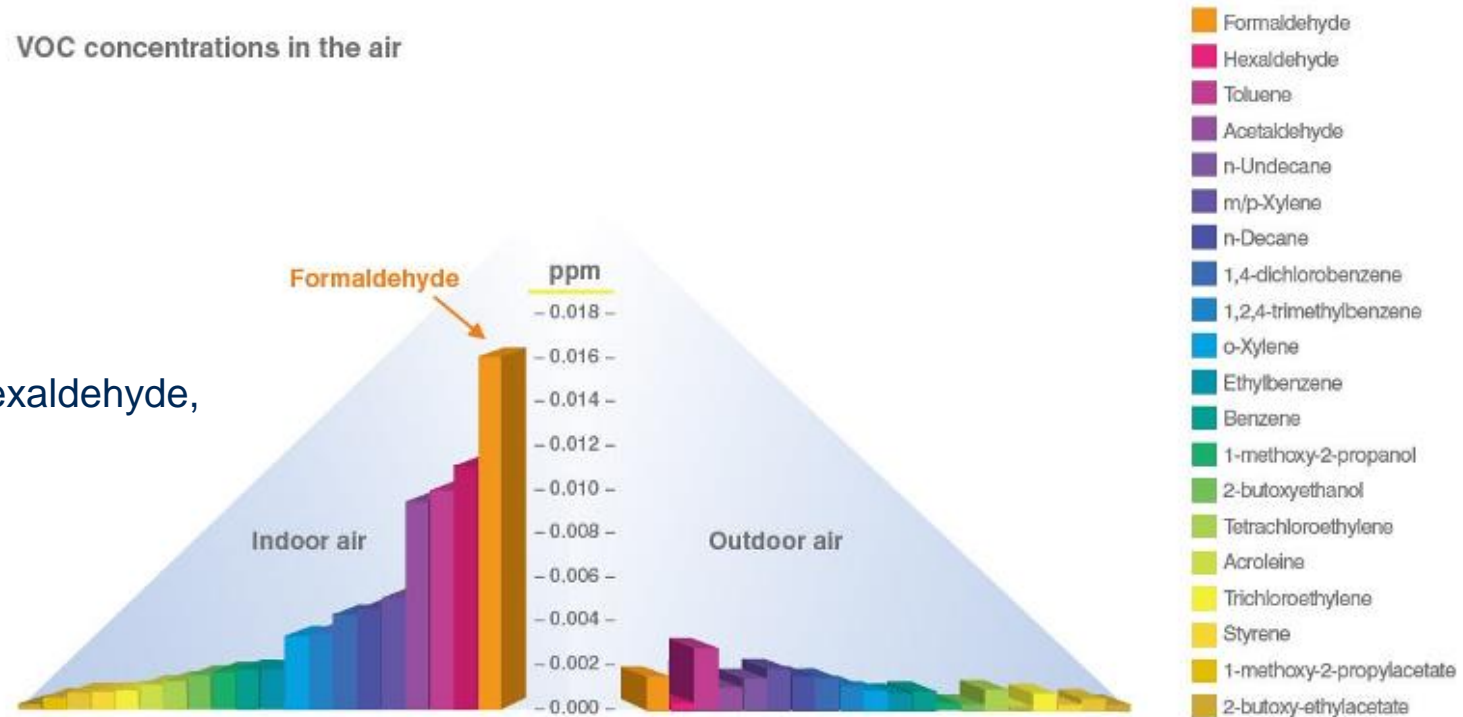


IMPORTANCE OF IAQ

- We spend 80% of our lives in enclosed spaces
- Impurities can be found in the air in both our living & working spaces
- Pollutants include formaldehyde and other volatile organic compounds (VOCs)

Examples –

Formaldehyde, Hexaldehyde, Benzene, Styrene



THE DANGER OF VOCs AND EFFECTS

- Some VOC's are dangerous to human health or cause harm to the environment
- Harmful VOC's are typically not acutely toxic, but instead have compounding long-term health effects
- Formaldehyde is classified as carcinogenic to humans by the WHO



Long-term exposure to VOC's can cause health problems and reduce general well-being:

- Lack of concentration
- Rapid fatigue
- Eye irritation
- Breathing problems
- Headaches
- Nausea
- Allergies

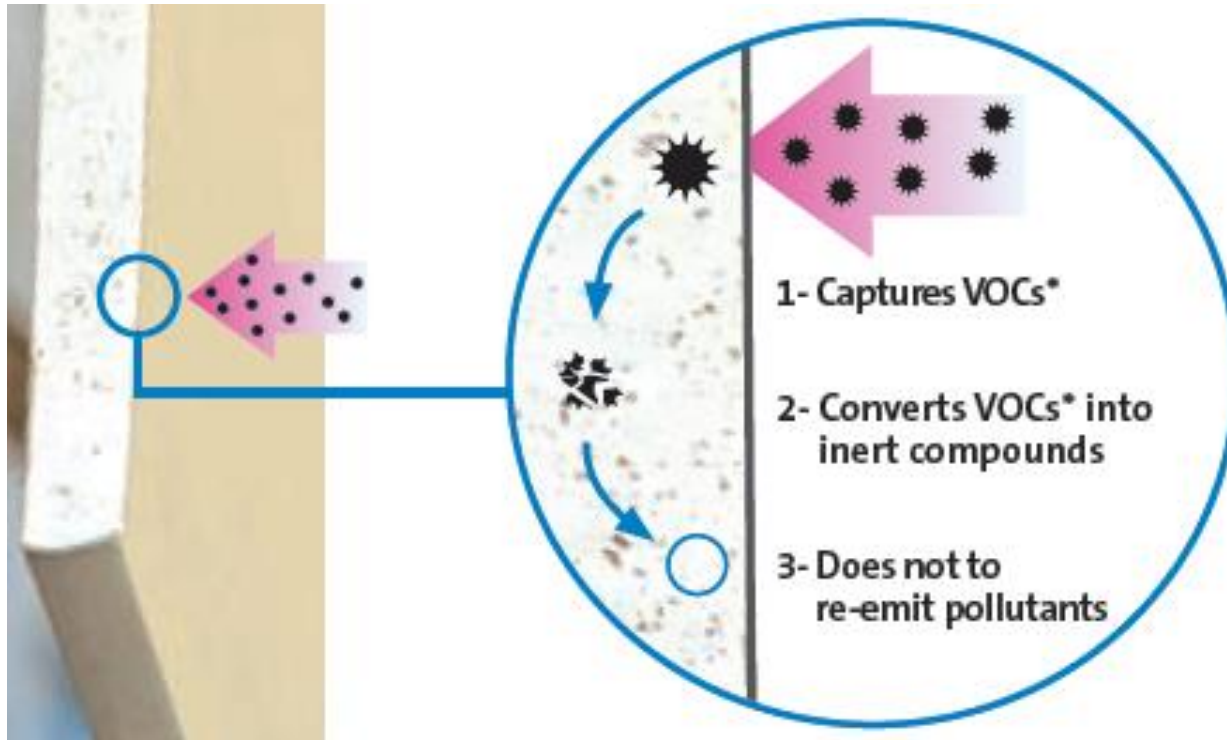


SOURCES OF VOCs

Some examples:

- Furniture
- Carpets and floor coverings
- Timber products – OSB, chipboard
- Paints and varnishes
- Pesticides
- Smoking
- Air fresheners
- Cleaning products
- Poorly maintained ventilation systems (mould)





ACTIV' Air Technology

- ✓ Permanently reduces 72-97% of formaldehyde in the air when tested in accordance with ISO 16000-23

ACTIV' AIR TECHNOLOGY – A UNIQUE SOLUTION



ACTIV*air* benefits – Promotes building occupant health & wellbeing

- Health
- Comfort
- Productivity

Healthy Communities

Faster patient
recovery



Greater
motivation
and reduced
absence

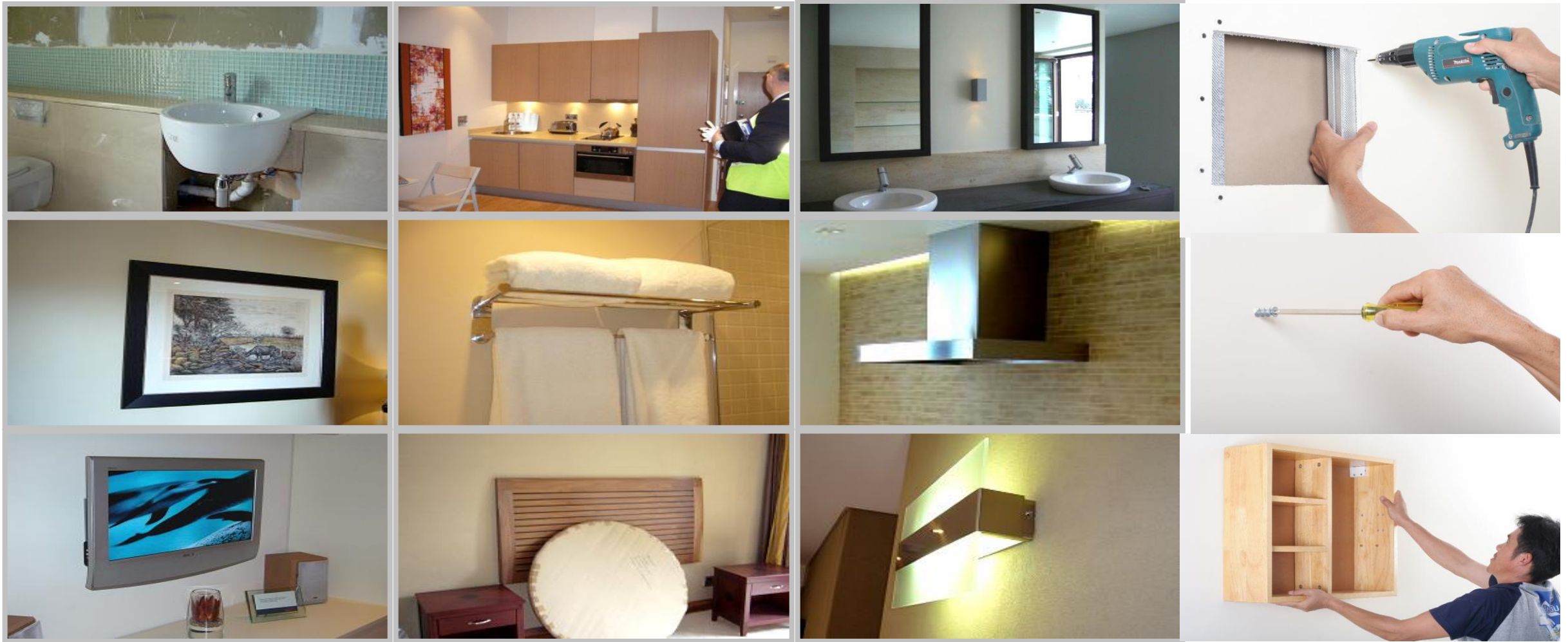


Greater
concentration
and learning



Reduction in
allergy
related illness





HEAVY WALL FIXTURES AND FIXING

FIXTURES

Component Recommended	Fixing Method	Load Capacity
	Suitable drywall screw into Gyproc gypsum board	3kg
	Gyproc drywall fixed through plasterboard into GypFrame metal stud/fixing channel	19kg
	Toggle fixing into single layer Gyproc gypsum board	12kg
	Toggle fixing into double layer Gyproc gypsum board	20kg
	No.12 Wood Screw fixed through Gyproc gypsum board into Timber noggin (within stud)	120kg



FIXING ANCHORS

Fastener



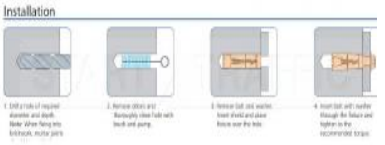
Sleeve Anchor



Plastic Anchor



Bolt Eye Anchor



Wedge Anchor



DBZ Wedge Anchor

Mechanical Expansion Bolt



Hammer Drive Anchor

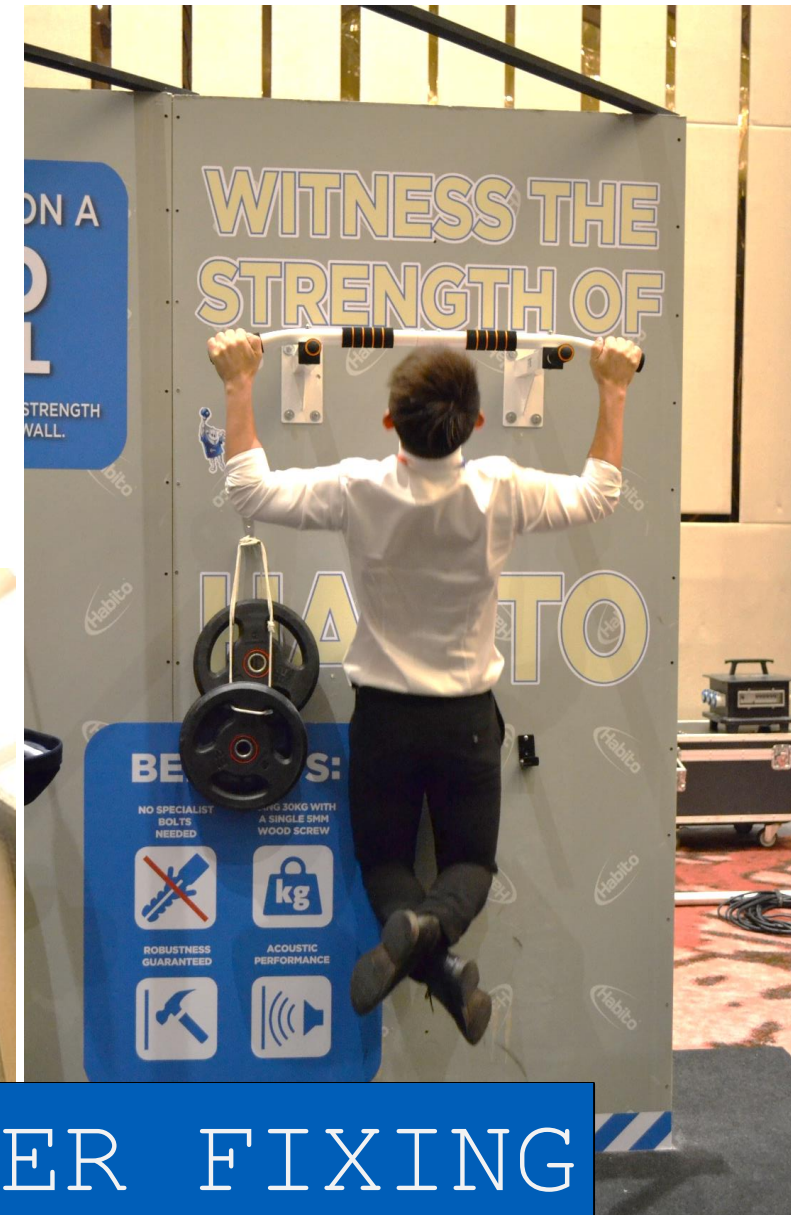


Hollow Wall Anchor (Suitable for drywall)

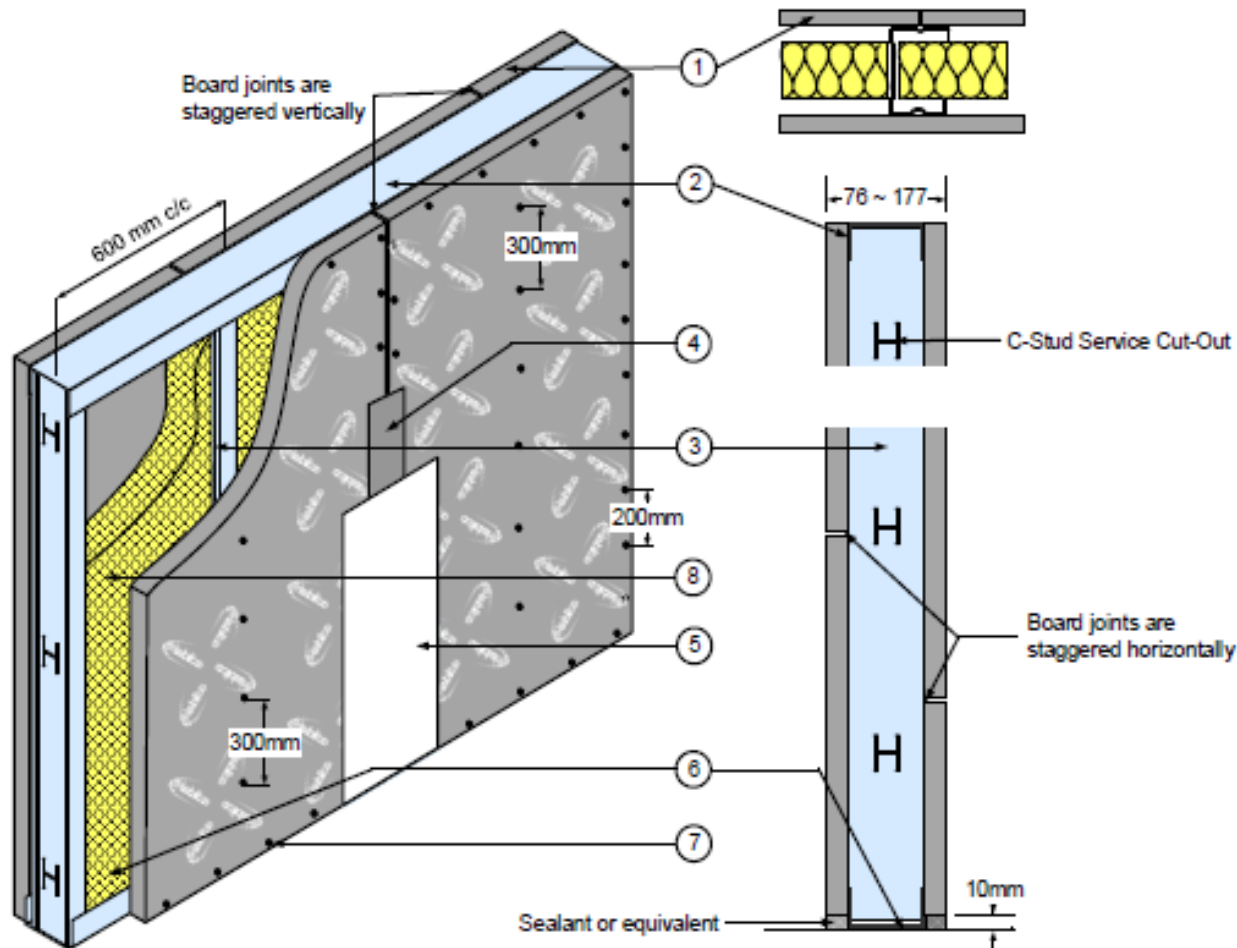




- 1 screw point can hold up to **30 kg.**
- Screw does not attached to frame, but **direct to Habito™ board.**
- Hanging **heavy fixture** is a proof that Habito™ can hold the load without attach to frame.
- However, it is **not recommended to hang properties with dynamic load.**



75MM THICK ROBUST WALL



Habito®

- ✓ A revolution gypsum plasterboard with excellent screw retention strength and impact resistant.
- ✓ High performance in Acoustics, Durability and Fixing capability.
- ✓ Available in thickness of 12.5mm.



Severe Duty



Non-combustible



STC 44

COMPARISON OF 2 GYPSUM BOARDS

REGULAR BOARD vs HABITO™



INDUSTRIALISED BUILDING SYSTEM

Recognition from industry authority.

**Duty
Exemption**

**Saint-Gobain Products &
Systems are IBS certified for**

- Reduction of site labor
- Lower total construction cost
- Faster project completion
- Cleaner environment
- Better quality
- Neater and safer construction sites
- Less site materials
- Lower wastages

CIDB MALAYSIA  **PENILAIAN PENGELUAR BERSTATUS IBS**
ASSESSMENT OF IBS STATUS MANUFACTURER (AIS)

Adalah dengan ini disahkan bahawa :
It is hereby verified that :

No. Siri : **0069**
Serial No. :

SAINT-GOBAIN MALAYSIA SDN BHD
NO. 1, JALAN SULTAN MOHAMAD 4
KAWASAN PERINDUSTRIAN BANDAR SULTAN SULEIMAN
42000 PORT KLANG
SELANGOR DARUL EHSAN

Merupakan :
Is :
PENGELUAR

Lokasi Kilang :
Factory Location :
**NO. 1, JALAN SULTAN MOHAMAD 4
KAWASAN PERINDUSTRIAN BANDAR SULTAN SULEIMAN
42000 PORT KLANG
SELANGOR DARUL EHSAN**

No. Laporan :
Report No. :
FSL111113IBSC0411

Tarikh Dikeluarkan :
Issue Date :
30 DISEMBER 2013

Sah Sehingga :
Valid Until :
29 DISEMBER 2016

Sebagai syarikat Status IBS yang mengeluarkan produk IBS berikut :
As an IBS status company that manufactures the following IBS components :

**SISTEM BERINOVATIF :
- DRYWALL (GYPSUM BOARD)**

Kelas :
Class :
A

PUSAT IBS, CIDB Malaysia
Tingkat 1, Blok E, Lot 8
Jalan Chan Sow Lin
55200 Kuala Lumpur
MALAYSIA
Tel : 603-9281 6909
Fax : 603-9281 5870
http://www.cidb.gov.my
http://www.ibscentre.com.my

Ir. Ahmad Asri Abdul Hamid
b.p. Ketua Eksekutif
CIDB Malaysia

Pendaftaran ini hendaklah diperbaharui selawat-lawatnya 30 hari sebelum tarikh tamat tempoh.
This registration shall be renewed within 30 days before expiration date.

SINGAPORE GREEN BUILDING PRODUCT



CERTIFICATES

No. Fail: JBPM/IP/RNP:700-7/27-460 (15)
(PEMBAHARUAN : KELIMA)

SIJIL PEPASANGAN KESELAMATAN KEBAKARAN

APPROVAL CERTIFICATE

Jabatan Bomba dan Penyelamat Malaysia
dengan ini memperakukan
Fire and Rescue Department of Malaysia
hereby certify

BAHAN KELAS 'O'
GYPSUM BOARD
TRADE MARK: GYPROC GYPBOARD
MODEL: AQUALINE
NOMINAL THICKNESS: 9mm & 15mm

Berdasarkan Piawaian
Complying with

BS476 : PART6 : 1989 + A1:2009 & BS476 : PART 7:1997

Syarikat Berdaftar
Registered company

SAINT-GOBAIN MALAYSIA SDN BHD
No. 1, Jalan Sultan Mohamad 4,
Kawasan Perindustrian Bandar Sultan Sulaiman,
42000 Port Klang,
Selangor.

Tempoh sah perakuan: 20/07/2021 hingga 19/07/2022

(PKP)B KAMARULZAMAN MAJIK ABDULLAH
Pengarah,
Bahagian Perancangan dan Penyelidikan,
p.p. Ketua Pengarah,
Jabatan Bomba dan Penyelamat Malaysia.

Tarikh: 19 July 2021

**** Peringatan:**
Sila patuhi sepenuhnya syarat-syarat dan had kegunaan seperti dalam Lampiran A1

No Lesen : PB031402
Licence No :

LESEN PENSIJILAN BARANGAN

Product Certification Licence

SIRIM QAS International Sdn. Bhd. dengan ini menganugerahkan kepada
SIRIM QAS International Sdn. Bhd. hereby grants to

SAINT-GOBAIN MALAYSIA SDN. BHD.
NO. 1 JALAN SULTAN MOHAMMAD 4
KAWASAN PERINDUSTRIAN
BANDAR SULTAN SULAIMAN
42000 PELABUHAN KLANG
SELANGOR, MALAYSIA

Lesen untuk menggunakan Tanda Pensijilan di atas barangan
a licence to use the Certification Mark on
GYPSUM BOARD

Please refer to detail in the SCHEDULE

sebagai mematuhi keperluan
as complying with
ASTM C 1396/C 1396M - 2004

Mohd Azanuddin bin Salleh
Ketua Pegawai Eksekutif
Chief Executive Officer
SIRIM QAS International Sdn. Bhd.

SIRIM QAS International Sdn. Bhd. (No. Pendaftaran 410204-21) 1, Pundarik Street (Mentari) Mentari 5, Peti Surat 7733 42700 Bandar Baru Klang Selangor Darul Okeh MALAYSIA	Tarikh Mula Pensijilan : 24 August 2007 Certified Since Bekal Sehingga : 24 August 2021 Valid Until	Tarikh Dikeluarkan : 19 August 2020 Issued Date No Siri : 057204 Serial No
--	--	---

Lesen ini ditugaskan kepada pihak-pihak yang berdaftar dengan SIRIM QAS International Sdn. Bhd.
This Licence is granted subject to the provisions of the Product Certification Agreement of SIRIM QAS International Sdn. Bhd.

- BS 476 part 6 & 7
- BS 476 part 22
- BS EN 520
- ASTM C1396
- LS107401

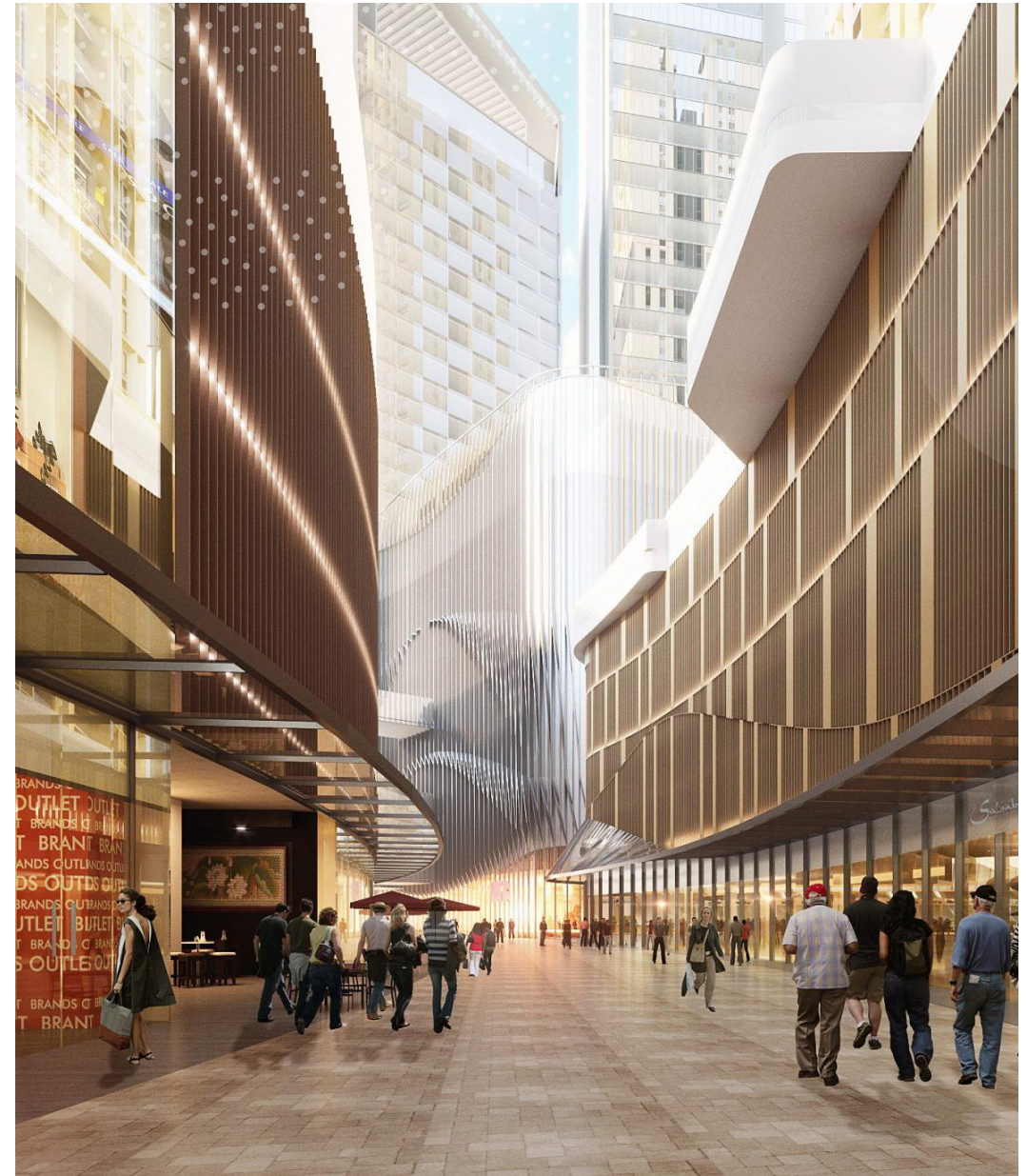
OUR ICONIC PROJECTS

Warisan Merdeka Tower PNB118
@ Kuala Lumpur



OUR ICONIC PROJECTS

Mitsui Shopping Park Lalaport
Bukit Bintang City Center @
Kuala Lumpur



OUR ICONIC PROJECTS

The Exchange TRX Lifestyle Mall @ Kuala Lumpur



OUR ICONIC PROJECTS

Pavillion Bukit Jalil Mall @
Kuala Lumpur



gyproc
SAINT-GOBAIN

weber
SAINT-GOBAIN

E•MIX

OUR ICONIC PROJECTS

8 Conlay @ Kuala Lumpur



OUR ICONIC PROJECTS

MRT 2 Station @ Kuala Lumpur



OUR ICONIC PROJECTS

Petronas Leadership Center
@ Bangi



 **gyproc**
SAINT-GOBAIN

OUR ICONIC PROJECTS

Gamuda Cove @ Dengkil



OUR ICONIC PROJECTS

KPJ Bandar Dato Onn @
Johor Bahru



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SAINT-GOBAIN

OUR ICONIC PROJECTS

KPJ Miri @ Sarawak



OUR ICONIC PROJECTS

University Malaysia @ Sabah
Teaching Hospital



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OUR ICONIC PROJECTS

Sunway Grid Residence @
Johor Bahru



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OUR ICONIC PROJECTS

Sunway Carnival Mall @
Penang



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OUR ICONIC PROJECTS

Pavillion Damansara Heights
@ Kuala Lumpur



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OUR ICONIC PROJECTS

Park Hyatt KL118 @
Kuala Lumpur



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SAINT-GOBAIN

OUR ICONIC PROJECTS

Utar Hospital @ Kampar



 **gyproc**
SAINT-GOBAIN

OUR ICONIC PROJECTS

Park Royal Hotel @
Bukit Bintang Kuala Lumpur



OUR ICONIC PROJECTS

Thomson Hospital @
Kota Damansara Kuala Lumpur



OUR ICONIC PROJECTS

Pavilion Embassy @
Kuala Lumpur



OUR ICONIC PROJECTS

The Maple Residence @
Kuala Lumpur



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OUR ICONIC PROJECTS

1 Powerhouse Bandar Utama @
Selangor



OUR ICONIC PROJECTS

Trion @ Sungai Besi KL



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SAINT-GOBAIN

OUR ICONIC PROJECTS

Lucentia Residences @ BBCC
Kuala Lumpur



OUR ICONIC PROJECTS

Hyatt Centric @ Kota Kinabalu



OUR ICONIC PROJECTS

KPJ Healthcare @ Kuching



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SAINT-GOBAIN

OUR ICONIC PROJECTS

Holiday Inn Express @
Kota Kinabalu



weber
SAINT-GOBAIN

E-MIX

OUR ICONIC PROJECTS

Raia Hotel @ Kuching



 **gyproc**
SAINT-GOBAIN

OUR ICONIC PROJECTS

Sabah Chief Minister Office Complex
@ Kota Kinabalu



 **gyproc**
SAINT-GOBAIN



THANK YOU