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PJD/PPN/C/5848.01

July 2024

Coleg Cambria
23041-Llysfasi Accommodation Block
LL15 2LB

Acoustic Design
Summary for The
Building Regulations
Approved Document E.

Prepared for:-

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Pembroke House
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LL13 7YT

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Contents

1.0 Introduction

The proposed development at Llysfasi College, LL15 2LB, consists of a purpose-built project to form rooms for residential purposes as part of an accommodation block for the College.

The development is to comply with the performance targets for sound insulation stated within the Building Regulations Approved Document E (ADE) 2003 (amended 2015).

ADC Acoustics have been appointed to review the Architect's details for compliance with the Building Regulations. Planning and other issues will be covered in a separate report if required.

Compliance with ADE will be proved through pre-completion sound testing.

2.0 Building Regulations (amended 2015)

2.1 Approved Document E

The new version of the Building Regulations Approved Document E: 2003 came into force in July 2003. Among the aspects covered are a range of performance criteria required for Building Regulations approval, with the requirement E1 as stated below:

Requirement

Protection against sound from other parts of the building and adjoining buildings

E1. Dwelling-houses, flats and rooms for residential purposes shall be designed and constructed in such a way that they provide reasonable resistance to sound from other parts of the same building and from adjoining buildings.

A brief summary of the minimum performance criteria needed to meet this requirement is shown below.

Type of Accommodation	Nature of the Building Work	Transmission Path	Type of Party Element	Performance Criterion (dB)
Dwellings	Purpose built	Airborne	Wall	45 $D_{nTw}+C_{Tr}$
			Floor	45 $D_{nTw}+C_{Tr}$
			Stairs	45 $D_{nTw}+C_{Tr}$
		Impact	Floor	62 L'_{nTw}
	Formed by material change of use	Airborne	Wall	43 $D_{nTw}+C_{Tr}$
			Floor	43 $D_{nTw}+C_{Tr}$
			Stairs	43 $D_{nTw}+C_{Tr}$
		Impact	Floor	64 L'_{nTw}
Rooms for residential purposes	Purpose built	Airborne	Wall	43 $D_{nTw}+C_{Tr}$
			Floor	45 $D_{nTw}+C_{Tr}$
			Stairs	45 $D_{nTw}+C_{Tr}$
		Impact	Floor	62 L'_{nTw}
	Formed by material change of use	Airborne	Wall	43 $D_{nTw}+C_{Tr}$
			Floor	43 $D_{nTw}+C_{Tr}$
			Stairs	43 $D_{nTw}+C_{Tr}$
		Impact	Floor	64 L'_{nTw}

Note that, for airborne sound insulation, the LARGER value means better performance, so the values in the above table are MINIMUM performance standards

2.1.1. Requirements for this Development

This development is purpose built and will need to comply with the minimum requirements as highlighted below:

Type of Accommodation	Nature of the Building Work	Transmission Path	Type of Party Element	Performance Criterion (dB)
Rooms for residential purposes	Purpose built	Airborne	Wall	43 $D_{nTw}+C_{Tr}$
			Floor	45 $D_{nTw}+C_{Tr}$
			Stairs	45 $D_{nTw}+C_{Tr}$
		Impact	Floor	62 L'_{nTw}
	Formed by material change of use	Airborne	Wall	43 $D_{nTw}+C_{Tr}$
			Floor	43 $D_{nTw}+C_{Tr}$
			Stairs	43 $D_{nTw}+C_{Tr}$
		Impact	Floor	64 L'_{nTw}

Acoustic partitions are rated in terms of R_w values, in decibels. The R_w parameter is defined as the weighted standard reduction index and is the level of sound insulation provided by a partition when measured within a laboratory, but with no allowance for flanking sound transmission.

Therefore, in order to achieve the correct $D_{nT,w}$ value on site, a system must be chosen with a higher R_w value. For lightweight partitions, the R_w value should be at least 5 dB higher than the required $D_{nT,w}$ value.

2.2 Building Regulations Separating Elements, ADE Requirement E1

2.2.1 Party Walls between Residential Units

Building Regulations ADE Party Walls: Single Stud Solutions

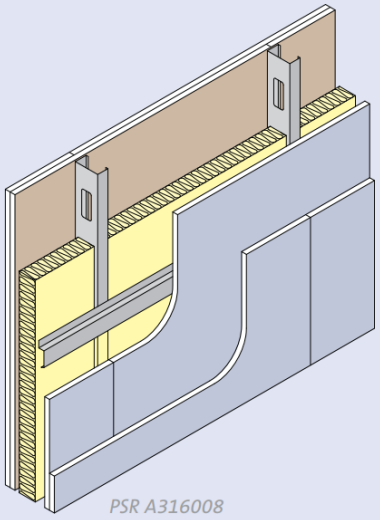
Single stud systems with resilient bar to one side only, can be used for New Build if build quality can be relied upon.

Thinnest Possible Solution for Requirement E1

PRE-COMPLETION TESTING - CONVERSIONS

BRITISH GYPSUM APPROVED SYSTEM (43 dB D_{nTw} + Ctr)

SOUND	FIRE	HEIGHTS
53 dB R_w + Ctr	60 mins *BS*	Max. 4000mm at 600mm centres



PSR A316008

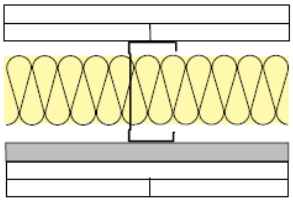
- Overall construction nominal width 138mm
- Gypframe 70 S 50 'C' Studs at 600mm centres with Gypframe RB1 Resilient Bar at 600mm centres fixed to one side of the stud
- 50mm Isover APR 1200 positioned in the cavity
- Lined each side with a double layer of 12.5mm Gyproc SoundBloc

Alternatively:

- Lined with a double layer of 15mm Gyproc DuraLine for 120 minutes fire resistance

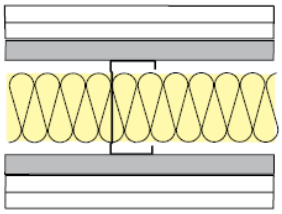
White Book Test Data, for resilient bar to 1 and 2 sides

1



Two layers of board each side of Gypframe 'C' Studs at 600mm centres with Gypframe RB1 Resilient Bar at 600mm centres to one side. 50mm Isover Acoustic Partition Roll (APR 1200) in the cavity. Linings as in table.

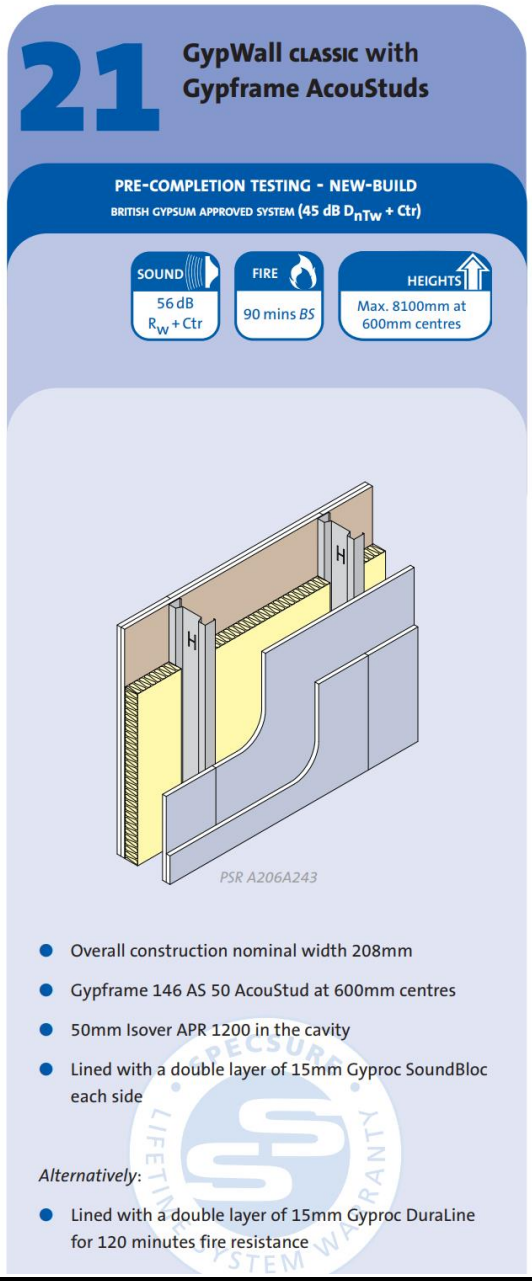
2

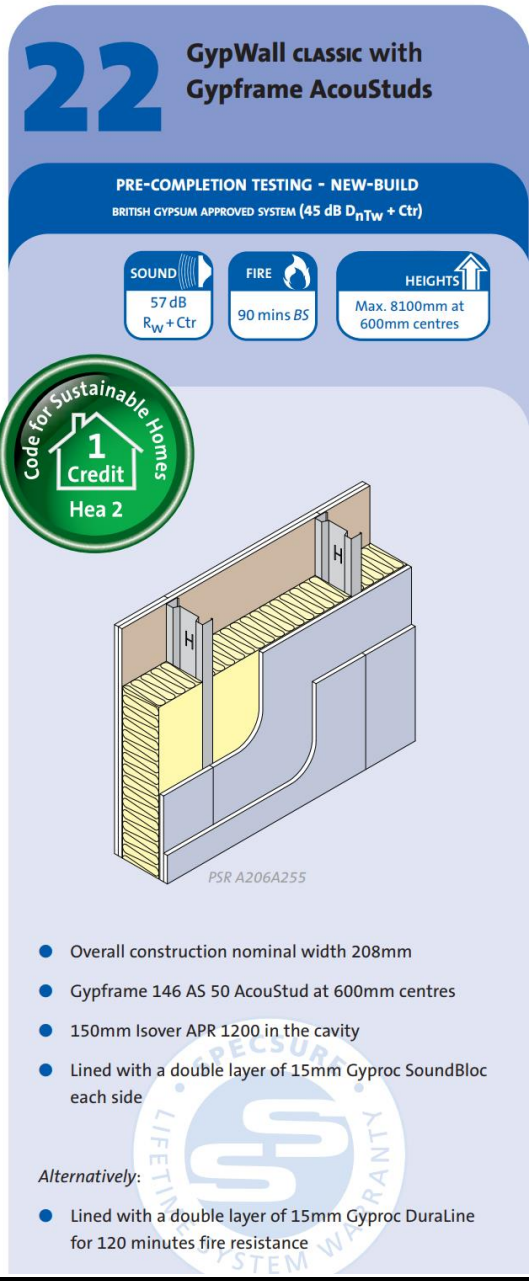


Two layers of board each side of Gypframe 'C' Studs at 600mm centres with Gypframe RB1 Resilient Bar at 600mm centres to both sides. 50mm Isover Acoustic Partition Roll (APR 1200) in the cavity. Linings as in table.

Detail	Partition thickness mm	Board type[1]	Lining thickness mm	Stud size mm	Max. partition height[2] mm	Sound insulation R_w ($R_w + C_{tr}$) dB[5]	
						Any[3] finish	Skim[4] only
60 minutes fire resistance EN							
1	137	Gyproc SoundBloc	2 x 12.5	70	4000	61 (53)	-
2	152	Gyproc SoundBloc	2 x 12.5	70	3200	62 (55)	-
1	159	Gyproc SoundBloc	2 x 12.5	92	5000	61 (53)	-
2	174	Gyproc SoundBloc	2 x 12.5	92	4000	63 (55)	-
1	213	Gyproc SoundBloc	2 x 12.5	146	6800	62 (56)	-
2	228	Gyproc SoundBloc	2 x 12.5	146	5700	64 (58)	-

Single Stud Solutions without using Resilient Bars (strongly recommended)





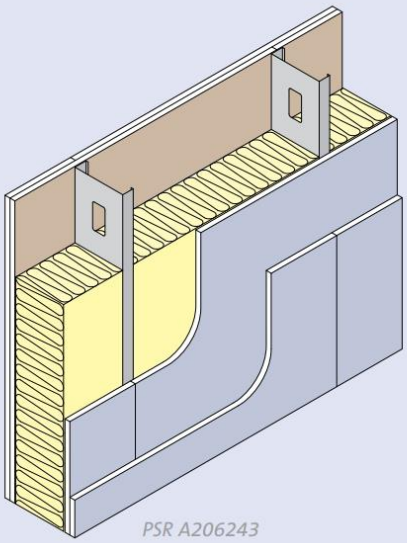
or

31 GypWall CLASSIC

PRE-COMPLETION TESTING - CONVERSIONS

BRITISH GYPSUM APPROVED SYSTEM (43 dB D_{nTw} + Ctr)

SOUND	FIRE	HEIGHTS
53 dB R_w + Ctr	90 mins *BS*	Max. 4000mm at 600mm centres



PSR A206243

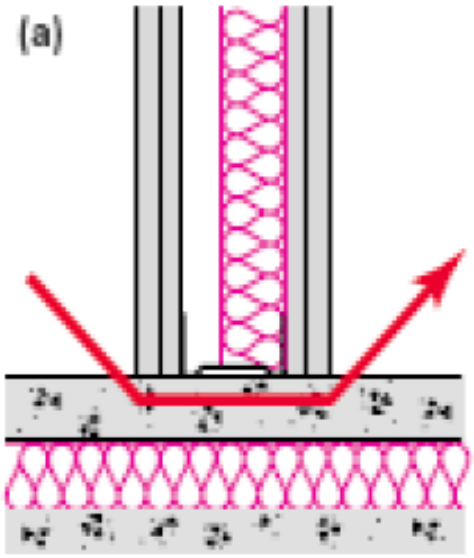
- Overall construction nominal width 208mm
- Gypframe 146 S 50 'C' Studs at 600mm centres
- 50mm Isover APR 1200 in the cavity
- Lined with a double layer of 15mm Gyproc SoundBloc

N.B. Please note our comments regarding good construction in the Build Quality section of this report.

2.2.2 Party Floors

This development consists of a lightweight steel construction.

Therefore, the biggest acoustic issue for this development regarding floors, at all levels (including ground floor) is the potential risk of horizontal flanking sound transmission under the party walls, see example diagram below:



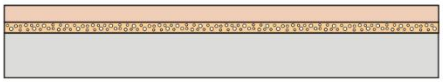
Ground Floor

The ground floor consists of a poured screed installed on top of thermal insulation layer and will therefore act in the same manner as any other typical floating screed.

We will there require a resilient acoustic break to the full depth of the screed in order to avoid horizontal flanking.

Upper Floor Levels

For the upper floor levels we would recommend a floating floor deck, for example:



FFT 5 – Resilient overlay shallow platform floor system

- 9mm (min) t & g flooring board
- resilient layer pre-bonded to flooring board
- no services to be installed in floor system*

Example FFT 5 compliant systems:

https://www.cellecta.co.uk/wp-content/uploads/2019/12/wa9.sc01e.pdf

https://www.hushacoustics.co.uk/sound-control-products/hush-panel-28/

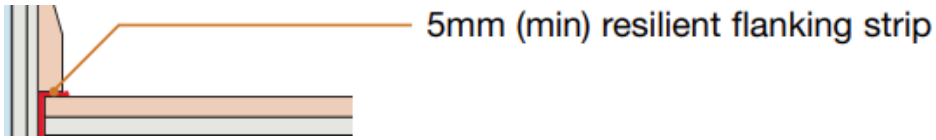
https://www.jcwacousticflooring.co.uk/robust-detail/robust-standard-detail-fft-5/

https://www.bmigroup.com/uk/s/monarfloor-deck-9-1000311775/

Floor Treatment perimeter isolation

For all floor treatments (including ground floor level), a resilient perimeter flanking strip **must** be installed around the entire perimeter of each individual unit..

N.B. The Build Quality Criteria Section within this report provides further important guidance installation of "floating" floor treatments and the correct installation of perimeter flanking strips, please see example detail below:



Ceilings

For the proposed profiled metal deck floor system, we would recommend the following ceiling build up:

3. Ceiling treatment for E-FS-1

Ceiling treatment must be installed in accordance with the manufacturer's instructions

All ceiling joints must be sealed with tape or caulked with sealant

The maximum load on resilient bars shall not exceed that specified in the manufacturer's instructions

Note: the sound insulation performance of ceiling treatment is increased if:

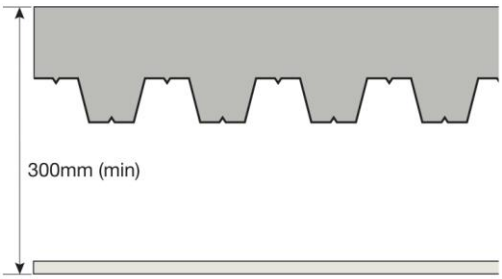
- 25mm (min) mineral wool quilt is placed in the ceiling void, and/or
- resilient hangers are used

Downlighters and recessed lighting

Provided there is a minimum ceiling void of 75mm downlighters or recessed lighting may be installed in the ceiling:

- in accordance with the manufacturer's instructions
- at no more than one light per 2m² of ceiling area in each room or see Appendix F
- at centres not less than 0.75m
- into openings not exceeding 100mm diameter or 100x100mm

Particular attention should also be paid to Building Regulations Part B - Fire Safety



Any ceiling system

- one layer of nominal 8 kg/m² gypsum-based board

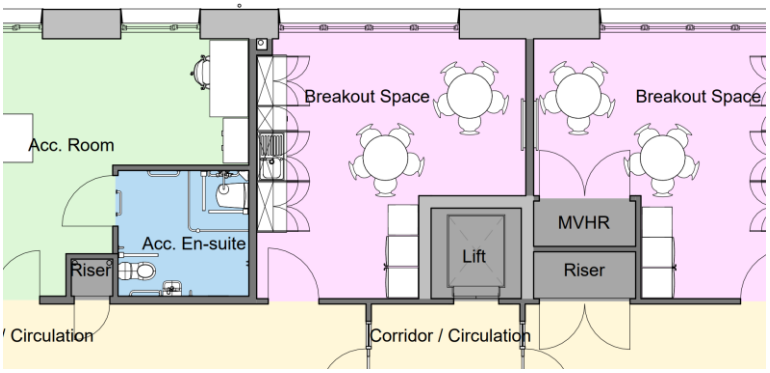
2.2.3 Wall Linings

It is strongly recommended that all stud systems are installed independently of any structural steelwork.

See the steelwork section of this report for further guidance.

2.2.4 Lifts and Lift Shafts

Lifts are not positioned directly adjacent to bedrooms, see drawing extract below:



So, transmission of airborne sound is likely to be minimal. However, in order to minimise the transmission of structureborne vibration it is strongly recommended that all mechanical kit and lift running gear is mounted onto suitable anti-vibration mounts.

2.3 Internal Partitions and Floors, ADE Requirement E2.

ADE 2003 requirement E2 introduced the following need for internal walls and floors:-

Protection against sound within a dwelling-house etc.

E2. Dwelling-houses, flats and rooms for residential purposes shall be designed and constructed in such a way that:

(a) internal walls between a bedroom or a room containing a water closet, and other rooms; and

(b) internal floors

provide reasonable resistance to sound.

Requirement E2 does not apply to:

(a) an internal wall which contains a door;

(b) an internal wall which separates an en suite toilet from the associated bedroom;

(c) existing walls and floors in a building which is subject to a material change of use.

With the minimum laboratory rated requirement being as shown below:

PERFORMANCE **E**

Table 0.2 **Laboratory values for new internal walls and floors within dwelling-houses, flats and rooms for residential purposes, whether purpose built or formed by material change of use**

	Airborne sound insulation R_w dB (Minimum values)
Walls	40
Floors	40

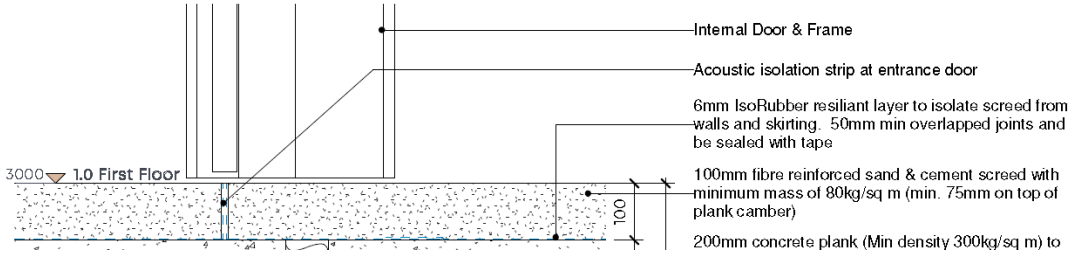
However, requirement E2 **does not** apply to the following, as such there are no internal walls within this development where requirement E2 applies.

a. an internal wall which contains a door
b. an internal wall which separates an ensuite toilet from the associated bedroom
c. Existing walls and floors in a building which is subject to a material change of use.

There are no internal floors within the development.

2.4 Apartment Entrance Doors

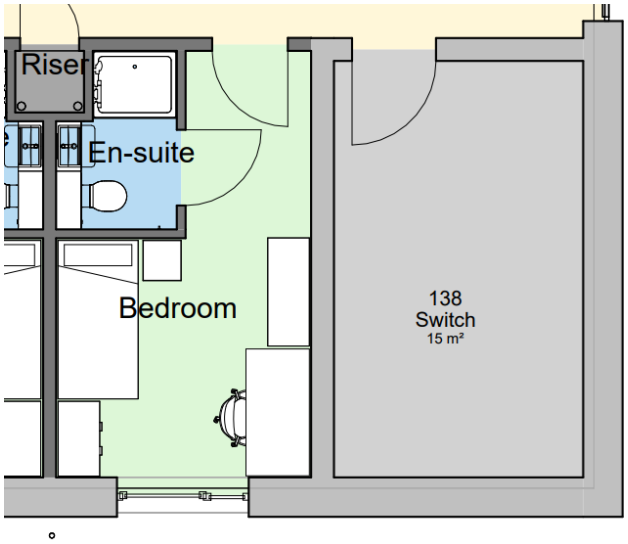
For compliance with ADE, doorsets onto common corridors are to have good perimeter seals with a minimum mass per unit area of 25 kg/sq. metre and achieve a minimum sound reduction index, R_w of 29 dB. It is also recommended that a resilient break within the floating floor treatment/screed etc (at all floor levels, including ground floor) is installed, in order to minimise horizontal flanking to and from common corridors, see example detail below:



In addition, a significant path for airborne sound transmission can be via the entrance doors, it is therefore recommended that acoustic door seals, including a threshold seal be fitted to the entrance doors of each individual residential unit.

Residential Units onto Plant/ Mechanical spaces

At each floor level, one residential unit shares a party wall with a space for Mechanical use, see example drawing extract below:



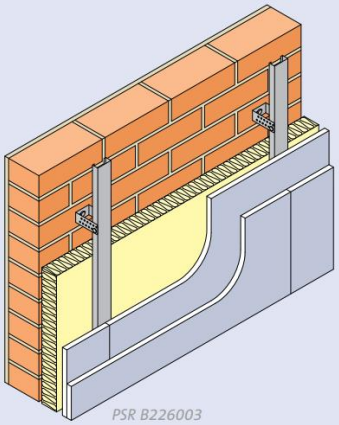
In these areas it is strongly recommended that an independent wall lining is fitted toe the residential unit side of the party wall, see example detail below:

36 Masonry walls and GypLyner UNIVERSAL lining

PRE-COMPLETION TESTING - CONVERSIONS

BRITISH GYPSUM APPROVED SYSTEM (43 dB D_{nTw} + Ctr)

SOUND
55 dB
R_W + Ctr



PSR B226003

- Improvement when lining to one side of a core masonry element (mass per unit area circa 200kg/m²) with plaster the other side
- **GypLyner UNIVERSAL**, minimum 35mm cavity, with 2 x 12.5mm Gyproc SoundBloc, 25mm Isover APR 1200 R_W = 13 dB and R_W + Ctr = 11 dB

3.0 Build Quality Criteria

Sound is simply the movement of energy and sound insulation is simply the principle of containment of that energy be it airborne or structure borne.

Energy will always take the easiest and most efficient path to travel by between two areas. Therefore, any acoustic detail is only as good as the quality of its construction on site.

In order to ensure a high quality of workmanship on site, it is strongly recommended that the following criteria are issued to the installation contractors.

It is also strongly recommended that regular site inspections are conducted to monitor build quality.

3.1 Plasterboarding

Broken or damaged boards must **not** be used.

All joints **must** be tightly butted with secondary layered boards positioned so that joints completely overlap with first layer boards.

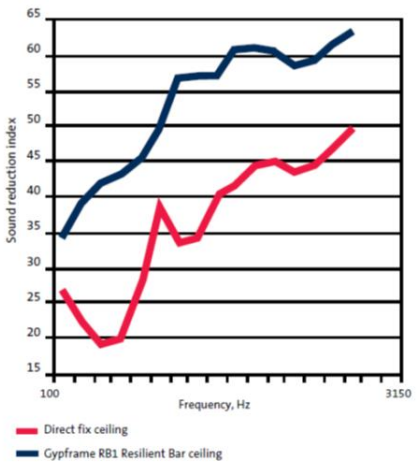
Any holes for electrical cables and any other services **must** be neat and fully sealed with fire stops, expanding foam and acoustic mastic.

Cable runs are not to pass through party walls. Cable runs must run along corridors and then into the teaching area concerned.

All joints **must** be tightly butted with secondary layered boards positioned so that joints are staggered and completely overlap with first layer boards.

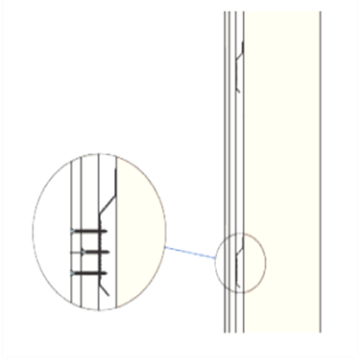
3.2 Resilient Bars (if used)

Resilient bars can provide a significant improvement rather than fitting directly to the joist, see graph below:



Airborne sound insulation benefit of resilient bars (ceiling)

Resilient bars must be correctly installed throughout as shown below:



The correct length of screw **must** be used. If the screw is too long, it significantly increases the risk of bridging, see example picture below:

Screw fixings **must not** screw through the resilient bar into the building structure as shown below:

Incorrect installation of the resilient bars can reduce the acoustic performance by up to **8dB**.

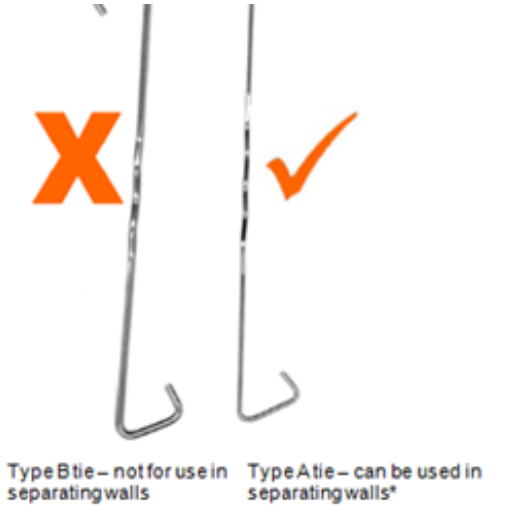
Please refer to section 3.12 of this report for alternatives to resilient bars.

3.3 Acoustic Mastic

Acoustic mastic is simply **non-setting mastic.** For acoustic purposes, the aim is to achieve a seal that will always stay flexible and not set hard and crack thereby generating a route for airborne sound transmission. Therefore, any non-setting mastic will be suitable.

3.4 Blockwork and Wall Ties

All wall ties must be as thin as structurally permissible (Type “A”), see below



Wall ties **must** be kept clean and free from any mortar drops throughout construction and it is therefore strongly recommended that a “cavity lath” is used throughout the blockwork construction.

Blockwork Joints and Parge Coats

All blockwork joints must be fully mortared throughout, both horizontally and vertically.

Whilst parge coats are useful in sealing up any gaps within the blockwork prior to lining, if the quality of the blockwork joints is very good throughout, then the parge coat may be omitted.

However, checks should be made to see if a parge coat is still required for Air Tightness or other purposes.

Movement Joints in cavity block walls

Please see example detail below for information:

Movement joints in cavity masonry separating walls

Separating walls with a gypsum-based board finish

Where possible, movement joints should be avoided in separating walls with a gypsum-based board finish. Where they are essential, they should be formed as follows:

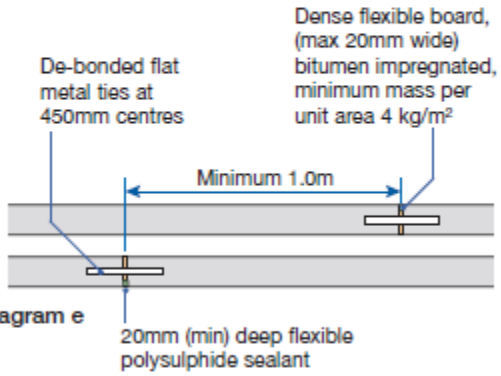


Diagram e

Where possible, movement joints should be located in bathrooms or other minor rooms or behind cupboards, etc.

3.5 Plasterboard on Dabs for wall linings

This form of construction is the most common cause of failure with regard to sound insulation performance.

The reason behind this being that, if the dabs are too small and positioned at too greater distance apart, then the plasterboard sheet vibrates and acts like a loudspeaker. When this occurs, it can drastically reduce the sound insulation performance of a party wall. Therefore, the dabs **must** be correctly applied. The following is a minimum specification for correct spacing of the dabs per typical 900 mm board.

Dabs to be 50mm to 75mm wide and approx. 250mm long. Dabs to be applied in three vertical rows. Minimum area of contact to be 20%. Perimeter edges of board to have continuous band of bonding adhesive.

3.6 Build Order and Inspections

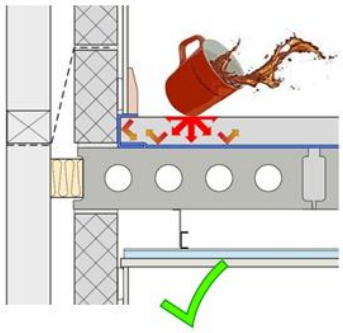
Party walls must be fitted first, then ceilings, then wall lining systems and finally floating floor treatments. This is to ensure that wall linings, floating floors, ceilings or corridor walls **do not** continuously "fly past" or over party walls.

3.7 Curtain Walling Flanking Paths Horizontally and Vertically

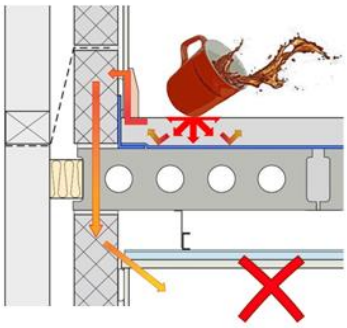
It is understood that there are no areas of curtain walling for this development.

3.8 Floating Floors/Screeds

Floating floors/screeds **must** be effectively isolated from walls and structural elements through correct application of resilient perimeter strips, around the entire footprint of individual units, including across door thresholds. Perimeter isolating strips to continue over the edge of the floor finish and underneath skirting boards, see example details below:

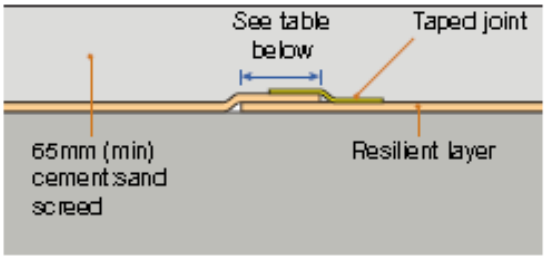


Correctly isolated screed – sound 'contained' within screed



Screed not correctly isolated – sound transmitted via the areas of contact of the screed with the other elements

The resilient decoupling layer to the floating screed must be correctly installed, with a minimum overlap of 50mm, see example detail below:

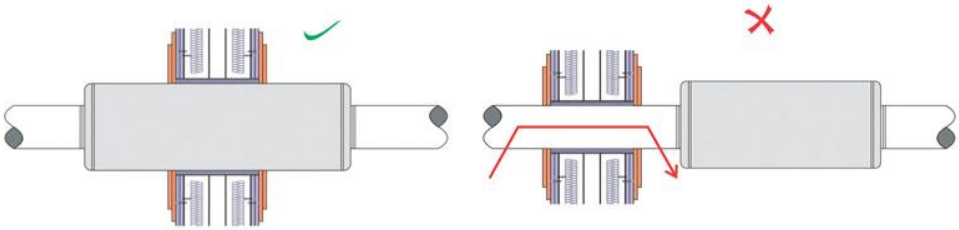


All penetrations through the floating floor/screed e.g. soil pipes etc, **must** also be wrapped in a resilient material

3.9 Mechanical Services and Cross Talk Attenuators in Party walls

To be designed by others, however, we would make the following recommendations. Where M&E ducting passes through party walls into apartments, it is strongly recommended that cross talk attenuators are installed.

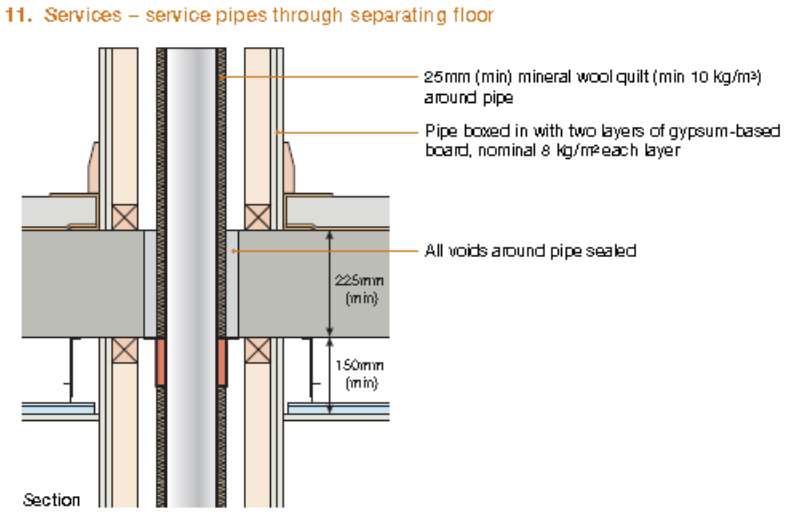
Crosstalk attenuators must be correctly positioned along the line of the party wall, see below:



It is also recommended that all mechanical equipment is mounted onto suitable AV mounts and ductwork is suitably lagged.

3.10 SVPs

ADE and Robust Details typically recommend that SVPs are wrapped and boxed in as per the example detail below:



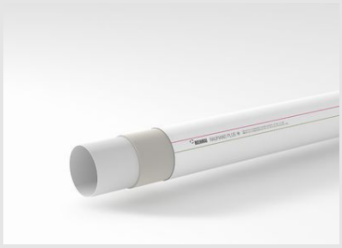
However, this is primarily to protect the integrity of the sound insulation between residential units, rather than preventing egress of noise from running water, which can sometimes become an issue for long, vertical drop heights.

Typical mitigation methods to minimise noise emissions can involve the following:

Reducing the number of tight bends in the pipework and changing of direction in water flow, sound attenuated pipes and resilient acoustic brackets, see example products below:

Noise protection: verified by the Fraunhofer Institute

Our RAUPIANO Plus acoustic soil and waste system comes in significantly below the required values of VDI 4100 sound protection guideline, with sound levels of just 17 dB(A)* . Quieter than a whisper, because all the components - pipe, fittings and jointing technology - helps to ensure that RAUPIANO PLUS works without any noise nuisance.



Sound-absorbing multi-layer technology

The rigid middle layer of RAUPIANO pipes achieves a pipe density of 1.9 g/cm³ through sound-absorbing filler materials, therefore substantially reducing the sound level.

Less impact noise in corners

RAUPIANO bends have thicker walls which reduces the generation of airborne noise. The hydraulically optimised inner contours of the branches minimise flow noise.

Patented acoustic bracket isolates structure-borne noise

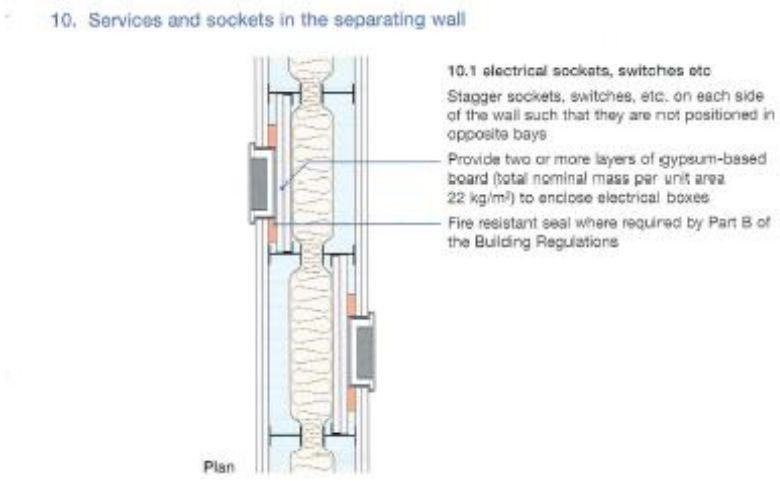
The acoustic bracket forms the connection to the wall, this significantly minimises structure-borne sound transmission to the installation wall.

** Performance with the patented acoustic bracket from REHAU (P-BA 274/2016)*

For this development, SVPs have been located within non-noise sensitive areas such as bathrooms and store cupboards and will therefore be unlikely to cause an issue.

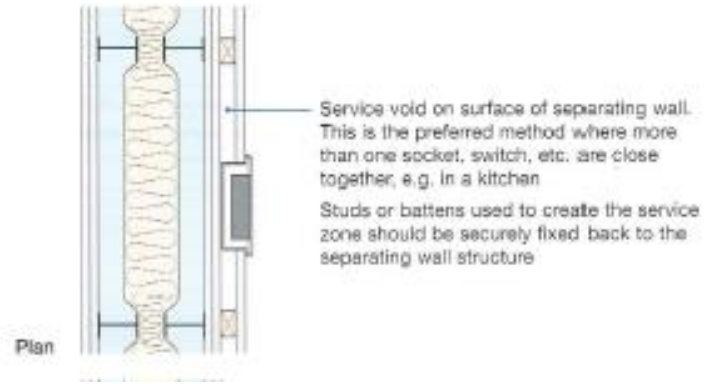
3.11 Electrical Sockets in Party Walls (Stud Walls only)

Penetrations through party walls **must** be kept to an absolute minimum through any party wall. The golden rule is that electrical sockets **must not** be positioned on party walls unless absolutely unavoidable. If sockets are to be positioned onto party walls they must be staggered and acoustically protected, see diagram below:



Any holes for electrical cables **must** be neat and sealed with acoustic mastic.

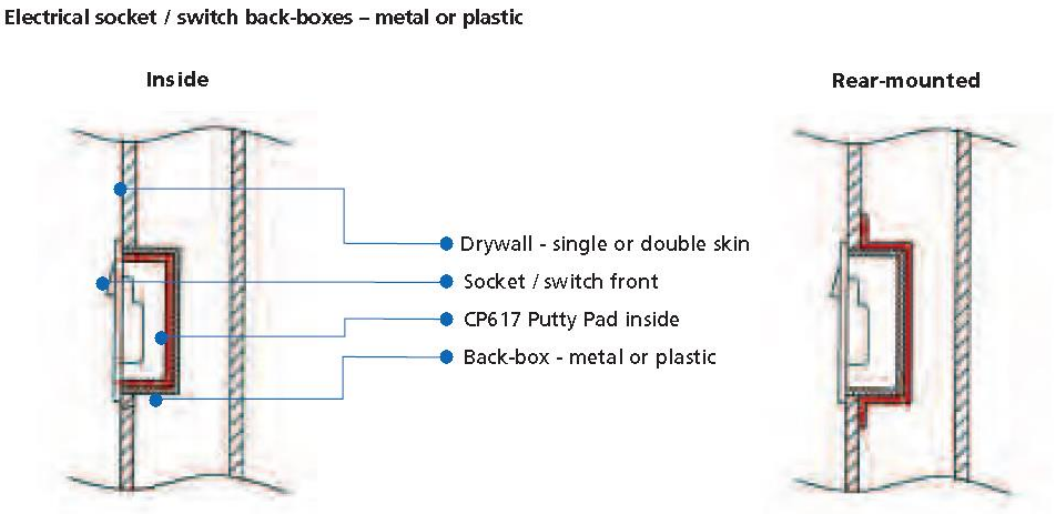
It is also recommended that electrical sockets for kitchen areas onto party walls between apartments are protected as shown below:



Putty Pads

A “Putty Pad” type product is also acceptable as an alternative way of protecting sockets.

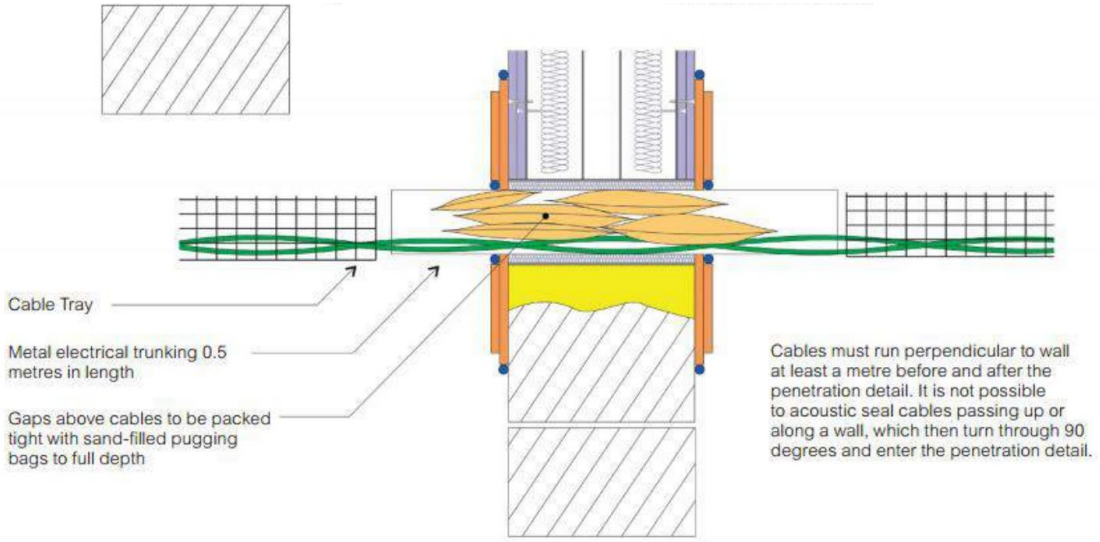
Pads may be fitted to the inside or rear of sockets, see example diagram below:



If sockets have to be fitted back-to-back due to no other design alternative, then the protection of the sockets becomes even more paramount.

Cable trays

Where cable runs pass through party walls, these need to be correctly sealed acoustically, see examples below:



3.12 Steelwork and Resilient Connections

The framework for this development is to be steel.

Steel is a very efficient material for conducting sound energy and therefore the golden rule is that there must be **no** rigid fixings made to **any** steelwork for any metal stud systems, wall linings or ceilings.

If connections must be made then all connections for plasterboard and metal stud systems must be via resilient fixings, see example products below:

Metal products

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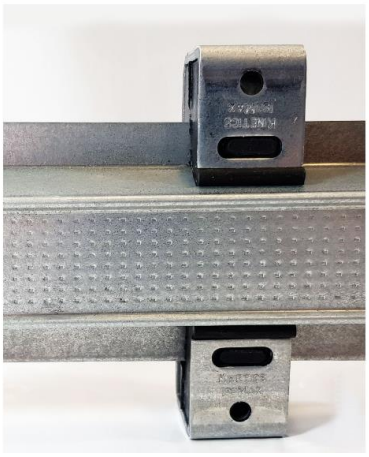
Gypframe RB1 Resilient Bar

Cut noise transfer through walls and ceilings.



IsoMax Acoustic Isolation Clips

The IsoMax Acoustic Isolation Clips System is a space saving acoustic solution designed to completely isolate walls and ceilings.

- Offers a robust and higher performing alternative to traditional wall and ceiling isolation methods
- Out-performs standard resilient bar construction by up to 7dB
- Withstands greater loads than standard systems to provide peace of mind for developers and dwellers
- Reduces the risk of error at installation stage as screws cannot be inadvertently attached to the stud or joist through the resilient area
- wall constructions with minimal encroachment into living space
- For situations where fire protection is a consideration fire rated wall and ceiling systems are also available
- Offers one of the most cost effective methods available to achieve superior noise control in walls and ceilings while using standard materials

+ Applications

OVERVIEW DOWNLOADS UL ASSEMBLY

GenieClip® RST

GenieClip RST was designed as an alternative to resilient channel (RC) for isolating drywall from both ceiling and wall structures. It features a one piece molded rubber and galvanized steel body with a single hole for fastening.

This sound control clip has been designed to:

- work straight out of the box – no on-site adjustment required
- require only one screw to attach to either wood or metal wall studs or floor joists
- eliminate the risk of short circuiting which reduces sound insulation performance
- reduce assembly weight and contributes to LEED certified buildings

3.13 Curtain Walling Flanking Paths Horizontally and Vertically

For this development, curtain walling only occurs between breakout spaces and not residential units, however, the following is provided for guidance.

Continuous curtain walling “flying past” party walls and floors can lead to significant potential for sound flanking both horizontally and vertically.

The following is a summary of the potential issue of flanking via curtain walling, reference:- proceedings of the Institute of Acoustics

The flanking paths for sound to pass from one space to another can be considered to be any route other than through the separating element. For most scenarios this can be broken down to be the sound through the glazing, through the curtain wall sections (mullions or transoms) and the method of sealing between the curtain wall sections and the main separating element (floor or partition). These are shown in Figure 1.

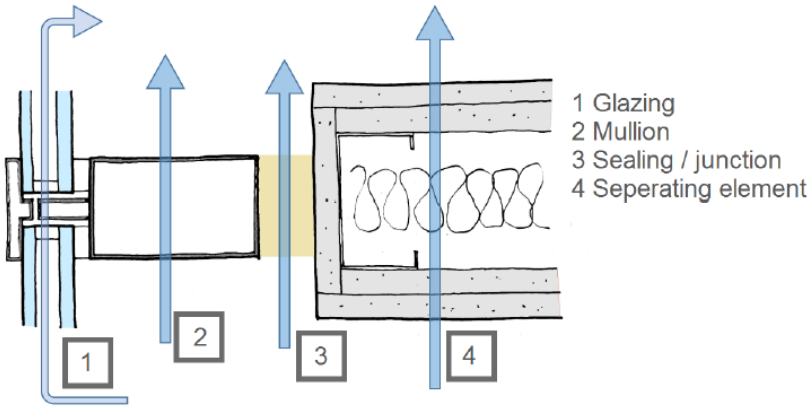


Figure 1: Plan view of flanking and direct paths for sound transmission

When considering vertical sound insulation through a floor, there is also the additional path of sound flanking through common mullions, which are not split at the separating floors. This is shown in Figure 2.

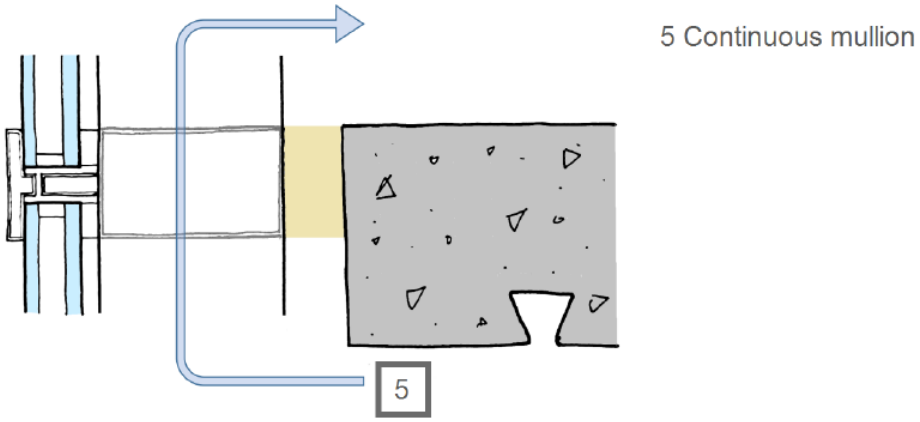


Figure 2: Section showing the flanking path via a continuous mullion

Typical performance of unfilled and unbroken systems compared with treated

3.3 Performance of mullions for vertical transmission

Sound can travel between floors via a mullion which is exposed in the rooms either side of the separating floor. The mullions can be continuous structures, or can be split and supported at the floor edge, and the split mullions can have infill pieces inserted to blank off airborne sound transmission. Typical performance for three 2.75m long,125mm deep mullions are shown in Table 7.

Table 7: Performance of mullions for vertical transmission

Mullion details	Acoustic performance / dB
Continuous and unbroken	43 $D_{n,f,w}$
Broken at floor level and joined with Schuco profile infill	54 $D_{n,f,w}$
Broken, partially filled with foam and ends capped	68 $D_{n,f,w}$

Typical Methods of reducing vertical flanking Transmission

SIDERISE CW range: AB & CVB/C acoustic upgrades for curtain walling

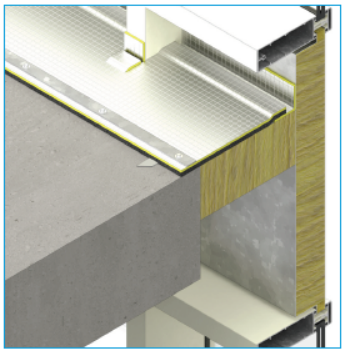
Acoustic barriers used as additional mass lines within curtain walling to form a higher performance sound barrier to improve floor-to-floor acoustic performance.

Application

SIDERISE AB acoustic upgrades for curtain walling consist of a flexible acoustic composite for use as a mass overlay within curtain walling to form a high performance sound barrier. They represent a simple solution to the problem of improving 'floor-to-floor' acoustic performance when used in conjunction with SIDERISE perimeter barriers & fire stops for curtain walling.

SIDERISE AB is extremely quick and easy to install and is suitable for improving sound performance within all curtain walling environments.

As the product is flexible and thin it is ideal for curtain wall application as, unlike rigid boards or partitions, SIDERISE AB is designed to accommodate facade deflection.



Benefits

- Reduces 'floor-to-floor' sound transmission
- Ideal for remedial treatment after installation of fire stops
- Accommodates facade movement
- Deforms to contours
- Quality assured to BS EN ISO 9001
- Flexible - easily cut, shaped and installed

Link to example product below:

https://www.siderise.com/applications/products/perimeter-barriers-firestops-for-curtain-walling?facades

It is also strongly recommended that a resilient break or a soft joint is installed within the frame along the line of any party wall/floor.

4.0 Reverberation Times (RTs) in common areas, ADE Requirement E3.

Approved Document E (ADE) 2003 has introduced the following:

Reverberation in the common internal parts of buildings containing flats or rooms for residential purposes

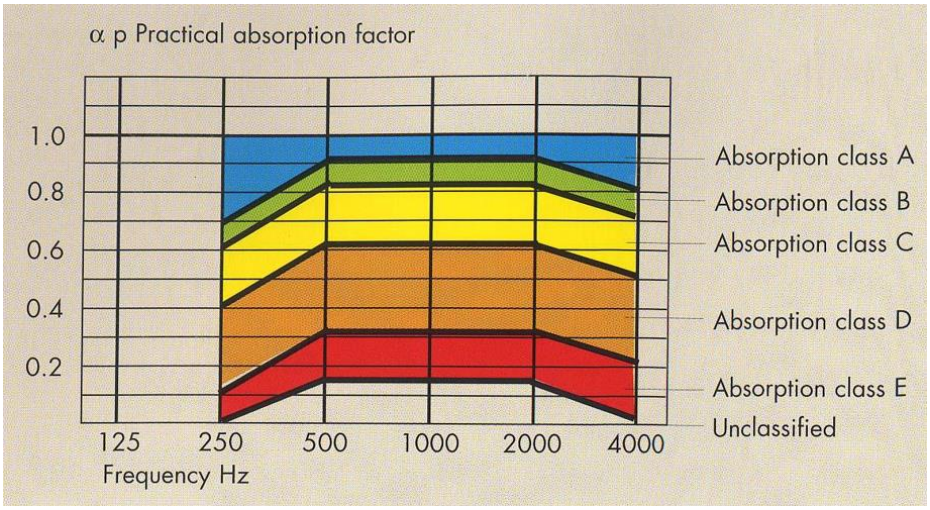
E3. The common internal parts of buildings which contain flats or rooms for residential purposes shall be designed and constructed in such a way as to prevent more reverberation around the common parts than is reasonable.

Requirement E3 only applies to corridors, stairwells, hallways and entrance halls which give access to the flat or room for residential purposes.

The control of reverberation within a space is governed by the following factors, namely the volume of the space concerned, the amount of absorption present in square metres and the efficiency of the absorbing material used. Acoustic absorbers are rated in efficiency from Class “A” which is the most efficient down to Class “D” which is the least efficient. The amount of surface area of absorption required is governed by the absorption class chosen i.e. a lesser area would be required for a Class “A” absorber than would be needed for a Class “D” absorber.

4.1 Acoustic Absorber Classes

Classes for acoustic absorption are rated as shown below:



Two methods are detailed as solutions to the ADE requirements, namely Method A and Method B.

4.2 Reverberation Requirements for this Development

For this development the proposed ceiling finish is unknown at this stage, however, it is strongly recommended that Method A is used.

This will involve the installation of a Class “C” ceiling tile installed to all common areas, that apartments open onto directly, we would also recommend that this ceiling treatment is extended into the breakout areas also.

However, if the plasterboard ceilings are preffered by the client, then it is recommended that absorbent wall panels are installed, see examples below:

Or decorative:

If this approach is taken, the exact surface area of absorption required will depend upon the chosen product performance.

5.0 Conclusions

This report summarises all acoustic design elements of this development and we have provided recommendations to ensure that the requirements of ADE are met.

However, particular attention is drawn to the Build Quality Criteria section of the report, since the final performance of any acoustic element is governed purely by the quality of its construction.

So, providing that our recommendations are adopted, and all build criteria is correctly followed, the current design for this development would be expected to meet the requirements of Building Regulations ADE.