



REPORT REFERENCE:

SA - 6215

INTERNAL NOISE ASSESSMENT

CLIENT:

Permitted Developments Investments no 6 Ltd

SITE:

Bridge House

Oxford Road

Uxbridge

UB8 1HS

Report Presented By
Mr. B. J. Scrivener MIOA*

A handwritten signature in black ink, appearing to be "B. J. Scrivener", written over a horizontal line.

Sound Advice Acoustics Ltd
2 West Links, Tollgate, Chandlers Ford, Hampshire, SO53 3TG
Tel: 0800 180 4005
soundadviceacoustics.co.uk

1	INTRODUCTION.....	3
1.1	PLANNING CONDITIONS	3
2	CRITERIA	4
3	PROCEEDURE	5
4	CALCULATION SUMMARY	6
4.1	AIRBORNE TEST - WALLS & FLOORS	6
4.2	IMPACT TEST - FLOORS	6
4.3	AIRBORNE TEST - WALLS & FLOORS ENHANCED PERFORMANCE (NEW BUILD ONLY)	7
4.4	IMPACT TEST – FLOORS ENHANCED PERFORMANCE (NEW BUILD ONLY)	7
5	RESIDENTS FITNESS SUITE	8
5.1	PARTY FLOOR DETAIL	8
5.2	PARTY WALL DETAIL.....	8
6	RECOMMENDATIONS.....	9
6.1	SEPARATING WALL (DWELLING DIVIDING) (PERMITTED DEVELOPMENT)	9
6.2	SEPARATING WALL (DWELLING DIVIDING) (EXTENSION)	9
6.3	SEPARATING WALL (NON-LOAD BEARING INTERNAL DWELLING)	10
6.3.1	<i>Internal Wall Type A:</i>	10
6.3.2	<i>Internal Wall Type B:</i>	10
6.4	FLOORING (EXTENSION)	11
6.5	FLOORING (4 TH FLOOR)	11
6.6	FLOORING (TYPICAL)	11
6.7	CEILING (6 TH FLOOR)	12
6.8	CEILING (3 RD FLOOR)	12
6.9	CEILING (TYPICAL).....	12
6.10	FLANKING NOISE	13
6.11	RSJ's & SVP's.....	13
6.12	SPOT LIGHTS.....	13
6.13	SOCKETS WITHIN SEPARATING WALLS.....	14
7	CONCLUSION	15

1 INTRODUCTION

Sound Advice Acoustics Ltd. has been instructed by Permitted Developments Investments no 6 Ltd, to assess the internal construction of the proposed re development at Bridge House, Uxbridge UB8 1HS.

This assessment has been based on the requirements of the current Building Regulations 2010 Approved Document E 2003 Edition incorporating 2004, 2010, 2013 AND 2015 amendments.

Construction consists of an existing commercial property, which is being converted to apartments, with 2 new floors being built onto the existing roof.

The following report assesses selected room separating walls and floors for the airborne and impact sound insulation properties in accordance with Building Regulations 2010 Approved Document E 2003 Edition incorporating 2004, 2010, 2013 and 2015 amendments. Prediction calculations have been carried out using the Bastian© prediction software system and has been based on the proposed construction materials and design.

1.1 Planning Conditions

Planning permission has been granted for this site where condition 11 states;

Prior to commencement of the development, details shall be submitted to and approved in writing by the Council, of an enhanced sound insulation value $D_{nT,w}$ of at least 5dB above the Building Regulations value, for the floor/ceiling/wall structures separating different types of rooms/ uses in adjoining dwellings, namely (20dB for the gym area proposed). Approved details shall be implemented prior to occupation of the development and thereafter be permanently retained.

REASON: To safeguard the amenity of the surrounding area in accordance with policy OE1 of the Hillingdon Unitary Development Plan.

Therefore this investigation has been undertaken to ensure that compliance with planning condition 11 is met. Calculations and measurements have been undertaken and demonstrate compliance with planning condition 11, therefore, it is our professional opinion that this planning condition can be discharged.

2 CRITERIA

The Building Regulation Part E of schedule 1 states that:

“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 other parts of the same building and from adjoining buildings.

This does not apply to:

For purpose built dwellings and dwellings formed by material change of use the Building Regulations Approved Document E2 2003 ‘Resistance to the Passage of Sound’ requires separating structures to adhere to the following requirements as detailed in table 0.1a of the above document.

Dwellings houses and flats – performance standards for separating walls, separating floors and stairs that have a separating function.

Table 1a: Dwelling-houses and flats – performance standards for separating walls, separating floors, and stairs that have a separating function		
	Airborne Sound Insulation	Impact Sound Insulation
	$D_{nT'w} + C_{tr}$ dB (Minimum values)	$L'_{nT'w}$ dB (Maximum values)
Purpose built dwelling-houses and flats		
Walls	45	-
Floors and Stairs	45	62
Dwelling-houses and flats Formed by material change of use		
Walls	43	-
Floors and Stairs	43	64

3 PROCEDURE

Calculation of the airborne and impact predicted sound transmission between rooms in buildings was carried out.

The calculations were carried out at selected areas between units. All standard separation constructions were deemed to have been constructed to the requirements of the Building Regulations 2010 Approved Document E 2003 Edition incorporating 2004, 2010, 2013 and 2015 amendments.

The following areas have been selected and calculations carried out accordingly.

Predicted internal levels		Figure
7 th Floor – Lounge	6 th Floor – Lounge	1
7 th Floor – Bedroom	6 th Floor – Bedroom	2
7 th Floor – Bedroom	7 th Floor – Bedroom	3
7 th Floor – Lounge	7 th Floor – Bedroom	4
7 th Floor – Bedroom	7 th Floor – Lounge	5
4 th Floor – Lounge	3 rd Floor – Lounge	6
4 th Floor – Bedroom	3 rd Floor – Bedroom	7
Typical Floor – Lounge	Typical Floor – Lounge	8
Typical Floor – Bedroom	Typical Floor – Bedroom	9
Typical Wall – Bedroom	Typical Wall – Bedroom	10
Typical Wall – Lounge	Typical Wall – Bedroom	11
Typical Wall – Bedroom	Typical Wall - Lounge	12

4 CALCULATION SUMMARY

4.1 Airborne Test - Walls & Floors

FIGURE NO.	FROM	TO	REQUIRED MIN $D_{nT,w} + C_{tr}$ dB	ACHIEVED $D_{nT,w} + C_{tr}$ dB	RESULT
1	7 th Floor – Lounge	6 th Floor – Lounge	45	55.1	PASS
2	7 th Floor – Bedroom	6 th Floor – Bedroom	45	54.6	PASS
3	7 th Floor – Bedroom	7 th Floor – Bedroom	45	52.8	PASS
4	7 th Floor – Lounge	7 th Floor – Bedroom	45	53.5	PASS
5	7 th Floor – Bedroom	7 th Floor – Lounge	45	56.8	PASS
6	4 th Floor – Lounge	3 rd Floor – Lounge	43	57.0	PASS
7	4 th Floor – Bedroom	3 rd Floor – Bedroom	43	56.6	PASS
8	Typical Floor – Lounge	Typical Floor – Lounge	43	53.9	PASS
9	Typical Floor – Bedroom	Typical Floor – Bedroom	43	54.0	PASS
10	Typical Wall – Bedroom	Typical Wall – Bedroom	43	47.8	PASS
11	Typical Wall – Lounge	Typical Wall – Bedroom	43	48.4	PASS
12	Typical Wall – Bedroom	Typical Wall – Lounge	43	51.6	PASS

4.2 Impact Test - Floors

FIGURE NO.	FROM	TO	REQUIRED MAX $L_{nT,w}$ dB	ACHIEVED $L_{nT,w}$	RESULT
1	7 th Floor – Lounge	6 th Floor – Lounge	62	43.2	PASS
2	7 th Floor – Bedroom	6 th Floor – Bedroom	62	44.2	PASS
6	4 th Floor – Lounge	3 rd Floor – Lounge	64	41.8	PASS
7	4 th Floor – Bedroom	3 rd Floor – Bedroom	64	42.9	PASS
8	Typical Floor – Lounge	Typical Floor – Lounge	64	43.2	PASS
9	Typical Floor – Bedroom	Typical Floor – Bedroom	64	44.2	PASS

4.3 Airborne Test - Walls & Floors Enhanced Performance (New Build Only)

FIGURE NO.	FROM	TO	REQUIRED MIN $D_{nT,w} + C_{tr}$ dB	ACHIEVED $D_{nT,w} + C_{tr}$ dB	RESULT
1	7 th Floor – Lounge	6 th Floor – Lounge	50	55.1	PASS
2	7 th Floor – Bedroom	6 th Floor – Bedroom	50	54.6	PASS
3	7 th Floor – Bedroom	7 th Floor – Bedroom	50	52.8	PASS
4	7 th Floor – Lounge	7 th Floor – Bedroom	50	53.5	PASS
5	7 th Floor – Bedroom	7 th Floor – Lounge	50	56.8	PASS

4.4 Impact Test – Floors Enhanced Performance (New Build Only)

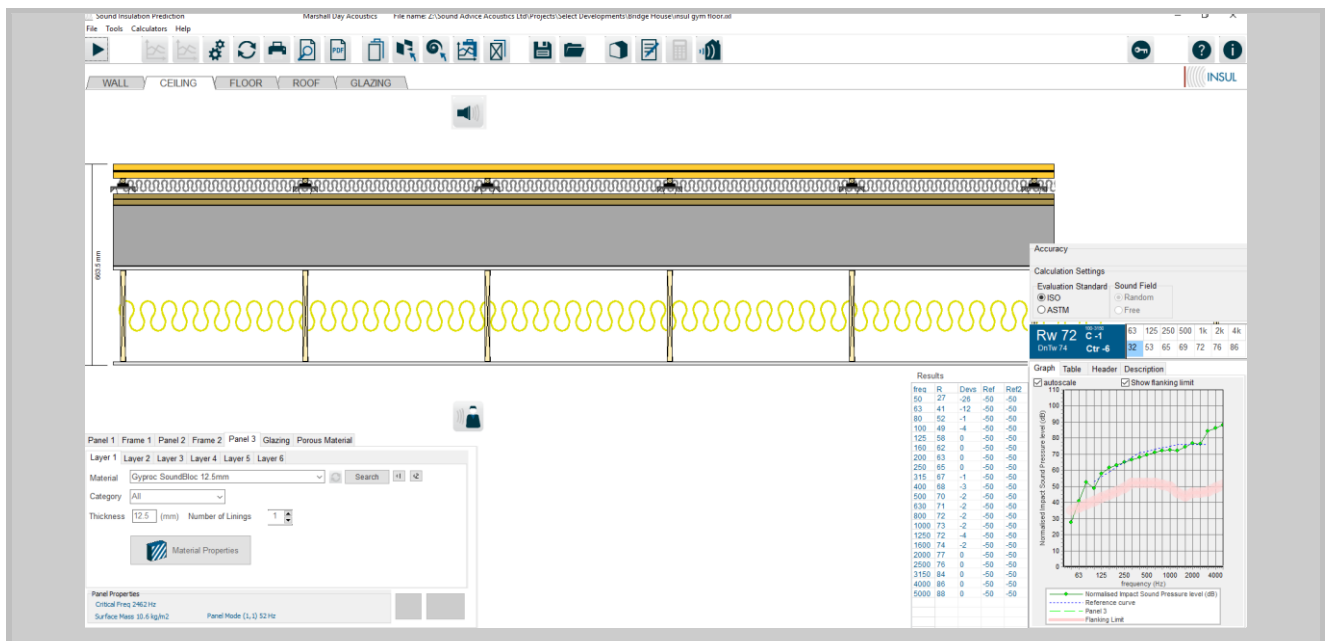
FIGURE NO.	FROM	TO	REQUIRED MAX $L_{nT,w}$ dB	ACHIEVED $L_{nT,w}$	RESULT
1	7 th Floor – Lounge	6 th Floor – Lounge	57	43.2	PASS
2	7 th Floor – Bedroom	6 th Floor – Bedroom	57	44.2	PASS

5 Residents Fitness Suite

There is a requirement of a + 20 dB improvement over the building regulations criteria. Therefore the following calculations have been undertaken to demonstrate compliance.

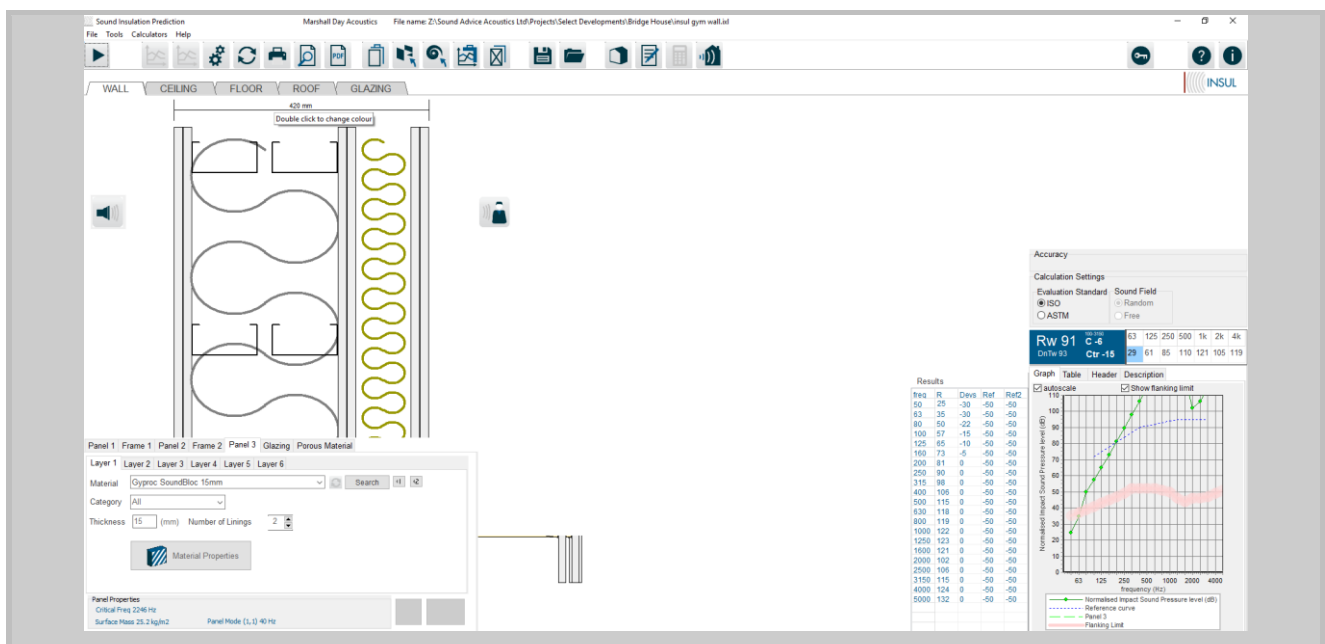
5.1 Party Floor Detail

The calculations demonstrate that the floor could give an attenuation value of $D_nT_w + C_{tr}$ 68 dB



5.2 Party Wall Detail

The calculations demonstrate that the wall could give an attenuation value of $D_nT_w + C_{tr}$ 78 dB



6 RECOMMENDATIONS

6.1 Separating Wall (dwelling dividing) (Permitted Development)

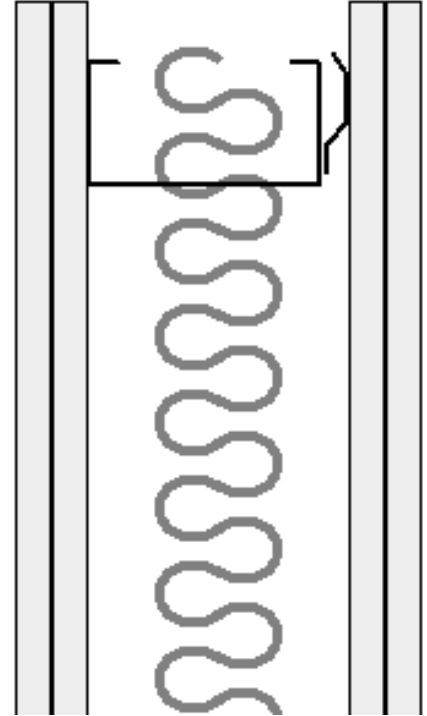
Calculations have been based on the following calculated attenuation figures for the proposed separating wall construction between residential apartments for the existing building:

2 x 15mm Soundbloc Plasterboard

Resilient Bars

70mm metal c stud with 50mm 45kg/m³ mineral wool

2 x 15mm Soundbloc plasterboard



6.2 Separating Wall (dwelling dividing) (Extension)

Calculations have been based on the following calculated attenuation figures for the proposed separating wall construction between residential apartments for the extension:

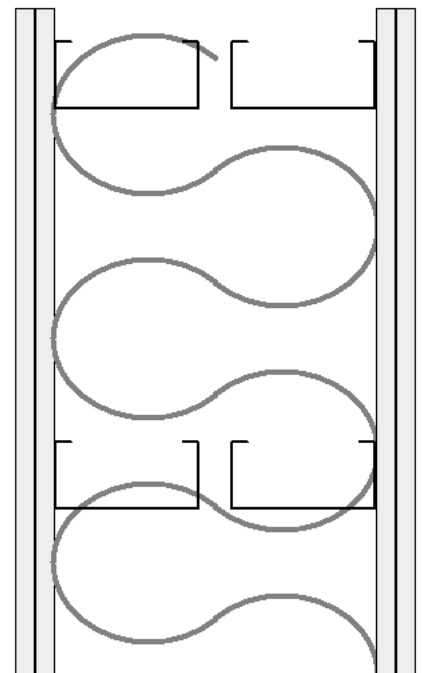
2 x 15mm Soundbloc Plasterboard

70mm metal stud with 70mm insulation

50mm cavity with 50mm insulation

70mm metal stud with 70mm insulation

2 x 15mm Soundbloc Plasterboard



6.3 Separating Wall (non-load bearing internal dwelling)

Calculations have been based on the following calculated attenuation figures for the proposed separating wall within residential apartments. The construction can be either 12.5mm wallboard / 70mm metal stud including 50mm mineral wool / 12.5mm wallboard or equivalent (Rw 40dB minimum), or 2 x 12.5mm plasterboard / 70mm metal stud with no insulation / 2 x 12.5mm wallboard or equivalent (Rw 40dB minimum).

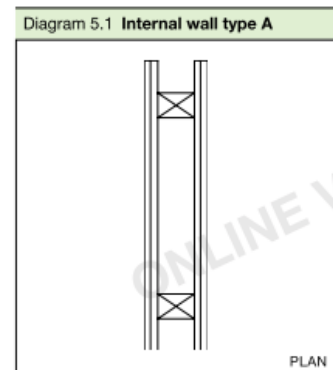
The following extract from Building Regulations Approved Document E 'Resistance to the Passage of Sound' should be followed.

The following construction details are suggested:

Rw 40 dB minimum. Building Regulations Part E suggest that any one of the three following wall details are acceptable to achieve this criteria. One of these three must be selected.

6.3.1 Internal Wall Type A:

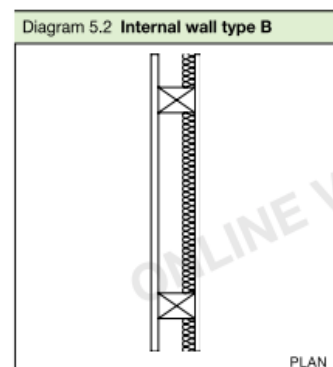
- ✓ Timber or metal frames with plasterboard lining on each side of frame.
- ✓ Each lining to be two or more layers of plasterboard, each sheet of a minimum mass per unit of 10kg/m².
- ✓ Lining Fixed to timber frame with a minimum distance between linings of 75mm, or metal frame with a minimum distance of 45mm.
- ✓ All joints well sealed.



6.3.2 Internal Wall Type B

Timber or metal frames with plasterboard lining each side of the frame and absorbent material.

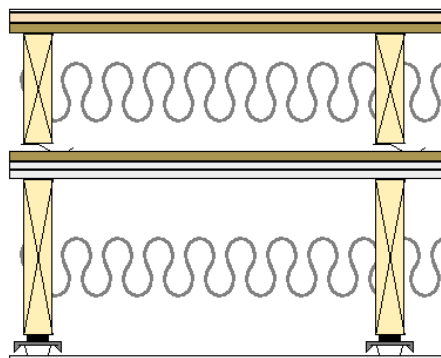
- ✓ Single layer of plasterboard of minimum mass per unit area 10kg/m². Linings fixed to timber frame with a minimum distance between linings of 75mm, or metal frame with a minimum distance between linings of 45mm.
- ✓ An absorbent layer of un-faced mineral wool batts or quilt (minimum thickness 25mm, minimum density 10kg/m³) which may be wire reinforced, suspended in the cavity.



6.4 Flooring (Extension)

Calculations have been based on the following calculated attenuation figures for the proposed separating floor between units.

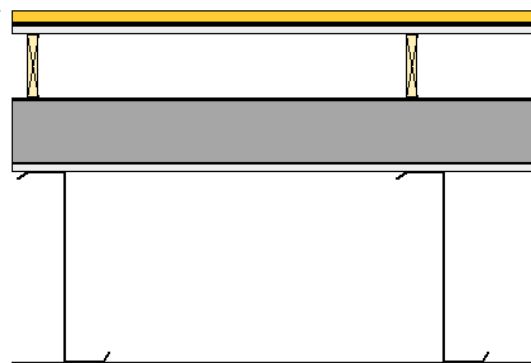
6mm Isorubber
18mm Plywood
19mm Plasterboard plank
200mm timber joist with 100mm of 45 – 60kg/m³ mineral wool
Resilient bar
19mm Plasterboard plank
2 x 15mm Fireline board
300mm void with MF ceiling hangers & 100mm of 45 – 60kg/m³ mineral wool
12.5mm Soundbloc board



6.5 Flooring (4th Floor)

Calculations have been based on the following calculated attenuation figures for the proposed separating floor between units.

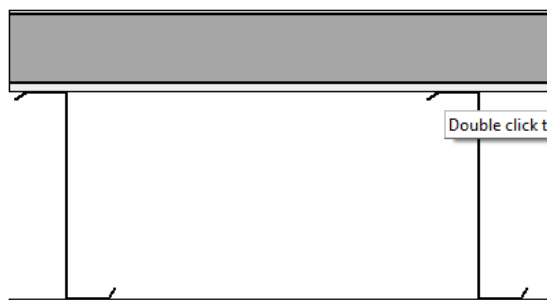
32mm Isocheck board
45mm timber battens on pedestals
6mm Isorubber
100mm concrete slab
100mm brick infill
15mm Fireline board



6.6 Flooring (Typical)

Calculations have been based on the following calculated attenuation figures for the proposed separating floor between units.

6mm Isorubber
100mm concrete slab
100mm brick infill
15mm Fireline board



6.7 Ceiling (6th Floor)

300mm void with mf ceiling system and 100mm of 45kg/m³ mineral wool
12.5mm soundbloc board

6.8 Ceiling (3rd Floor)

300mm void with mf ceiling system
12.5mm Soundbloc board

6.9 Ceiling (Typical)

300mm void with mf ceiling system
12.5mm Soundbloc board

6.10 Flanking Noise

Flanking strips should be used on all floors and wrapped up the walls and folded over in order that the skirting boards do not touch the floor. Any deviations from this specification should be checked with ourselves prior to alteration for further calculation and analysis.

6.11 RSJ's & SVP's

Where there are any metal RSJ's or soil pipes (SVP's) these should be wrapped in 45kg/m³ insulation and double boarded with 2 layers of 15mm soundbloc. Alternatively a preparatory Acoustic SVP could be considered if the downpipes do not run vertically through the entire building. The following company supplies suitable products, although others are available on the market.

Aliaxis – 01622 852796

Lenham, Maidstone, Kent, ME17 2DE

Mr Adam Catrell.

6.12 Spot Lights

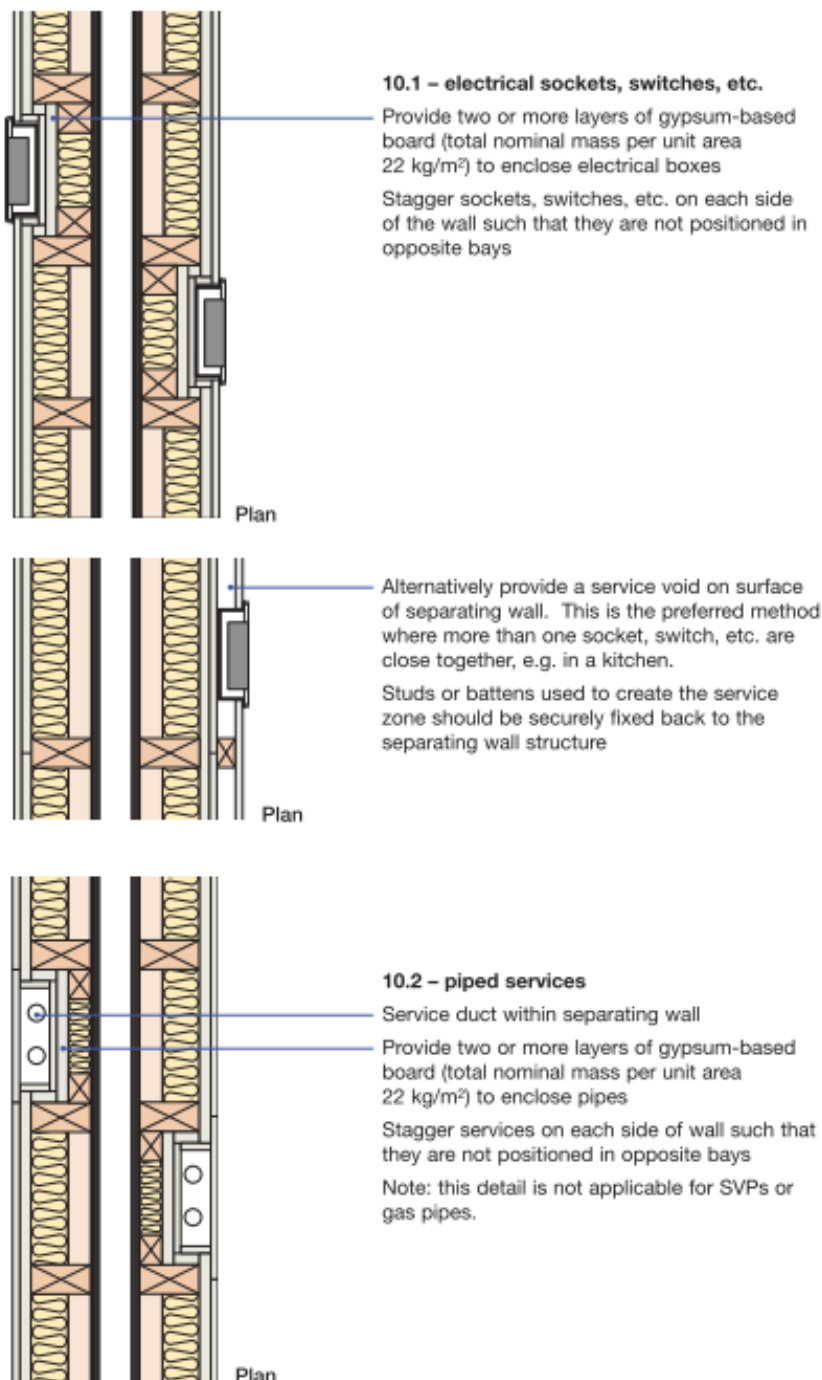
It is highly recommended that any spot lights installed within separating floors between dwellings be fitted with suitable acoustic hoods with the number of spot lights per room limited to 6 for rooms of areas less than 20m².

6.13 Sockets within Separating Walls

Back to back sockets should be avoided within the separating party walls of the apartments as this will reduce the overall wall sound insulation. If sockets are installed within these walls they must be fitted with suitable British Gypsum Acoustic Boxes, or equivalent, in order to maintain the acoustic integrity of the wall itself.

Care should be taken when installing the electrical cables and a minimal diameter hole drilled for the cables to be fed through. Once the cable is installed the hole should be sealed completely around the cable using non setting acoustic mastic in order to maintain the acoustic integrity of the wall.

The following excerpt from the robust detail book gives guidance for services and sockets in the separating wall:



7 CONCLUSION

Sound Advice Acoustics Ltd. has been instructed by Permitted Developments Investments no 6 Ltd, to assess the internal construction of the proposed re-development at Bridge House, Oxford Road, Uxbridge, UB8 1HS.

This assessment has been based on the requirements of the current Building Regulations 2010 Approved Document E 2003 Edition incorporating 2004, 2010, 2013 and 2015 amendments. The selected rooms within the development have indicated compliance with the current Building Regulations therefore confirming the proposed design details.

It is therefore recommended that the proposed construction methods are adopted for this development throughout. Any deviations from this specification should be checked with ourselves prior to alteration for further calculation and analysis.

Planning permission has been granted for this site where condition 11 states;

Prior to commencement of the development, details shall be submitted to and approved in writing by the Council, of an enhanced sound insulation value $D_{nT,w}$ of at least 5dB above the Building Regulations value, for the floor/ceiling/wall structures separating different types of rooms/ uses in adjoining dwellings, namely (20dB for the gym area proposed). Approved details shall be implemented prior to occupation of the development and thereafter be permanently retained.

REASON: To safeguard the amenity of the surrounding area in accordance with policy OE1 of the Hillingdon Unitary Development Plan.

Therefore this investigation has been undertaken to ensure that compliance with planning condition 11 is met. Calculations and measurements have been undertaken and demonstrate compliance with planning condition 11, therefore, it is our professional opinion that this planning condition can be discharged.