

Sound Advice

ACOUSTICS LTD

REPORT REFERENCE:

SA – 6685 Rev7

INTERNAL NOISE ASSESSMENT

CLIENT:

HG Construction

SITE:

Building 3

Tottenham Hale Centre Island

London

Report Presented By
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1 INTRODUCTION

Sound Advice Acoustics Ltd has been instructed by HG Construction, to assess the internal construction of the proposed new development for Building 3, Tottenham Hale Centre Island, London.

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 a new build tower block with retail on the ground and first floors.

The Sandy Brown report reference: 17422-R10-8 in section 7.2.5 refers to a performance of $D_{nT,w} + C_{tr}$ 50 dB. The performance requirement for a party wall in Building Regulations 2010 Approved Document E 2003 Edition incorporating 2004, 2010, 2013 AND 2015 amendments is $D_{nT,w} + C_{tr}$ 45 dB. Could they therefore explain why the higher requirement is required.

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.

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

Section 0.8 of Approved Document E 2003 edition states;

The performance standards set out in Tables 1a and 1b are appropriate for walls, floors and stairs that separate spaces used for normal domestic purposes. A higher standard of sound insulation may be required between spaces used for normal domestic purposes and communal or non-domestic purposes. In these situations the appropriate level of sound insulation will depend on the noise generated in the communal or non-domestic space. Specialist advice may be needed to establish if a higher standard of sound insulation is required and, if so, to determine the appropriate level.

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
3.11.05 – Bedroom	3.11.06 – Living/Kitchen	1
3.11.05 – Living/Kitchen	3.10.05 – Living/Kitchen	2
3.11.05 – Bedroom	3.10.05 – Bedroom	3
3.11.04 – Living/Kitchen	3.10.04 – Living/Kitchen	4
3.11.03 – Living/Kitchen	3.10.04 – Bedroom	5
3.11.08 – Bedroom	3.11.01 – Bedroom	6
3.07.02 – Studio	Electrical Room & IT Room	7
Retail	3.01.06 – Bedroom	8
Retail	3.01.04 – Living/Kitchen	9

4 CALCULATION SUMMARY

4.1 Airborne Test - Wall & Floors

FIGURE NO.	FROM	TO	REQUIRED MIN $D_{nT,w} + C_{tr}$ dB	ACHIEVED $D_{nT,w} + C_{tr}$ dB	RESULT
1	3.11.05 – Bedroom	3.11.06 – Living/Kitchen	45	55.5	PASS
2	3.11.05 – Living/Kitchen	3.10.05 – Living/Kitchen	45	56.0	PASS
3	3.11.05 – Bedroom	3.10.05 – Bedroom	45	55.3	PASS
4	3.11.04 – Living/Kitchen	3.10.04 – Living/Kitchen	45	53.9	PASS
5	3.11.03 – Living/Kitchen	3.10.04 – Bedroom	45	58.9	PASS
6	3.11.08 – Bedroom	3.11.01 – Bedroom	45	55.1	PASS
7	3.07.02 – Studio	Electrical Room & IT Room	45	54.6	PASS
8	Retail	3.01.06 – Bedroom	45	58.1	PASS
9	Retail	3.01.04 – Living/Kitchen	45	55.0	PASS

4.2 Employers Requirement – Walls

FIGURE NO.	FROM	TO	REQUIRED MIN $D_{nT,w} + C_{tr}$ dB	ACHIEVED $D_{nT,w} + C_{tr}$ dB	RESULT
1	3.11.05 – Bedroom	3.11.06 – Living/Kitchen	50	55.5	PASS
6	3.11.08 – Bedroom	3.11.01 – Bedroom	50	55.1	PASS

4.3 Impact Test - Floors

FIGURE NO.	FROM	TO	REQUIRED MAX $L_{nT,w}$ dB	ACHIEVED $L_{nT,w}$	RESULT
2	3.11.05 – Living/Kitchen	3.10.05 – Living/Kitchen	62	53.5	PASS
3	3.11.05 – Bedroom	3.10.05 – Bedroom	62	55.7	PASS
4	3.11.04 – Living/Kitchen	3.10.04 – Living/Kitchen	62	54.1	PASS

5 RECOMMENDATIONS

5.1 Separating Wall (dwelling dividing)

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

1 x 15mm Soundbloc Plasterboard
1 x 12.5mm Habito board
70mm metal stud with 100mm APR 1200
155mm cavity with 100mm APR 1200
70mm metal stud with 100mm APR 1200
1 x 12.5mm Habito board
1 x 15mm Soundbloc plasterboard

5.2 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).

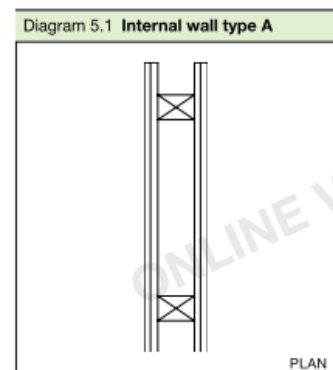
The following extract from Building Regulations Approved Document E 'Resistance to the Passage of Sound' should be followed.

The following construction details are suggested:

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

5.2.1 Internal Wall Type A:

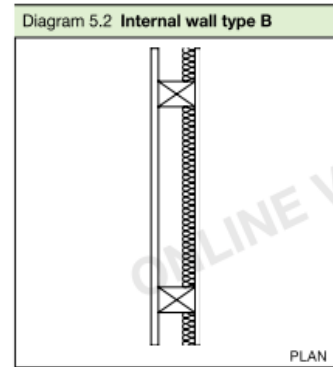
- ✓ Timber or metal frames with plasterboard lining on each side of frame.
- ✓ Each lining to be two or more layers of plasterboard, each sheet of a minimum mass per unit of 10kg/m².
- ✓ Lining Fixed to timber frame with a minimum distance between linings of 75mm, or metal frame with a minimum distance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



5.2.2 Internal Wall Type B

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

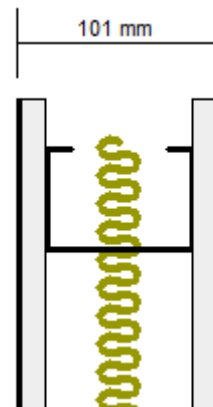
- ✓ Single layer of plasterboard of minimum mass per unit area 10kg/m². Linings fixed to timber frame with a minimum distance between linings of 75mm, or metal frame with a minimum distance between linings of 45mm.
- ✓ An absorbent layer of un-faced mineral wool batts or quilt (minimum thickness 25mm,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



5.3 Employer's Requirement Internal walls

It is understood that for this project, there is an employer's requirement for the internal walls within the same dwelling to achieve R_w 45 dB instead of the standard R_w 40 dB. The following is the proposed construction and has been shown to comply with the employer's requirement of R_w 45 dB.

2mm plaster
12.5mm Soundbloc
72mm C stud with 25mm of APR 1200 insulation
12.5mm Soundbloc
2mm Plaster



5.4 Employer's Requirement Separating Walls

It is understood that for this project, there is an employer's requirement for the separating walls to achieve $R_w + C_{tr}$ 59 dB. The following table demonstrates that this could be achieved.

Wall Type	Requirement $R_w + C_{tr}$	Achieved $R_w + C_{tr}$
FPS-157	59	72
FPS-158	59	66
FPS-160	59	69
FPS-161	59	64

5.5 External Wall

2 x 15mm Soundbloc plasterboard

5.6 Plant Room to Student Accommodation

1400mm block (1000kg/m³), 10mm void, 62mm metal stud with 62mm APR 1200, 2 x 12.5mm plasterboard.

5.7 Flooring

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

Floor finish

Screed

Insulation

200mm concrete

5.8 Ceiling

12.5mm plasterboard

5.9 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.

5.10 RSJ's & SVP's

There are three different conditions of SVP enclosures and the the necessary wall build ups to ensure acoustic performance. The SVP needs to be wrapped in 45kg/m³ insulation in all cases.

5.10.1 SVP in corner of bedroom

2 x 15mm soundbloc

5.10.2 SVP behind bathroom pod

12.5mm soundbloc

15mm soundbloc

5.10.3 SVP inside MEPH cupboard

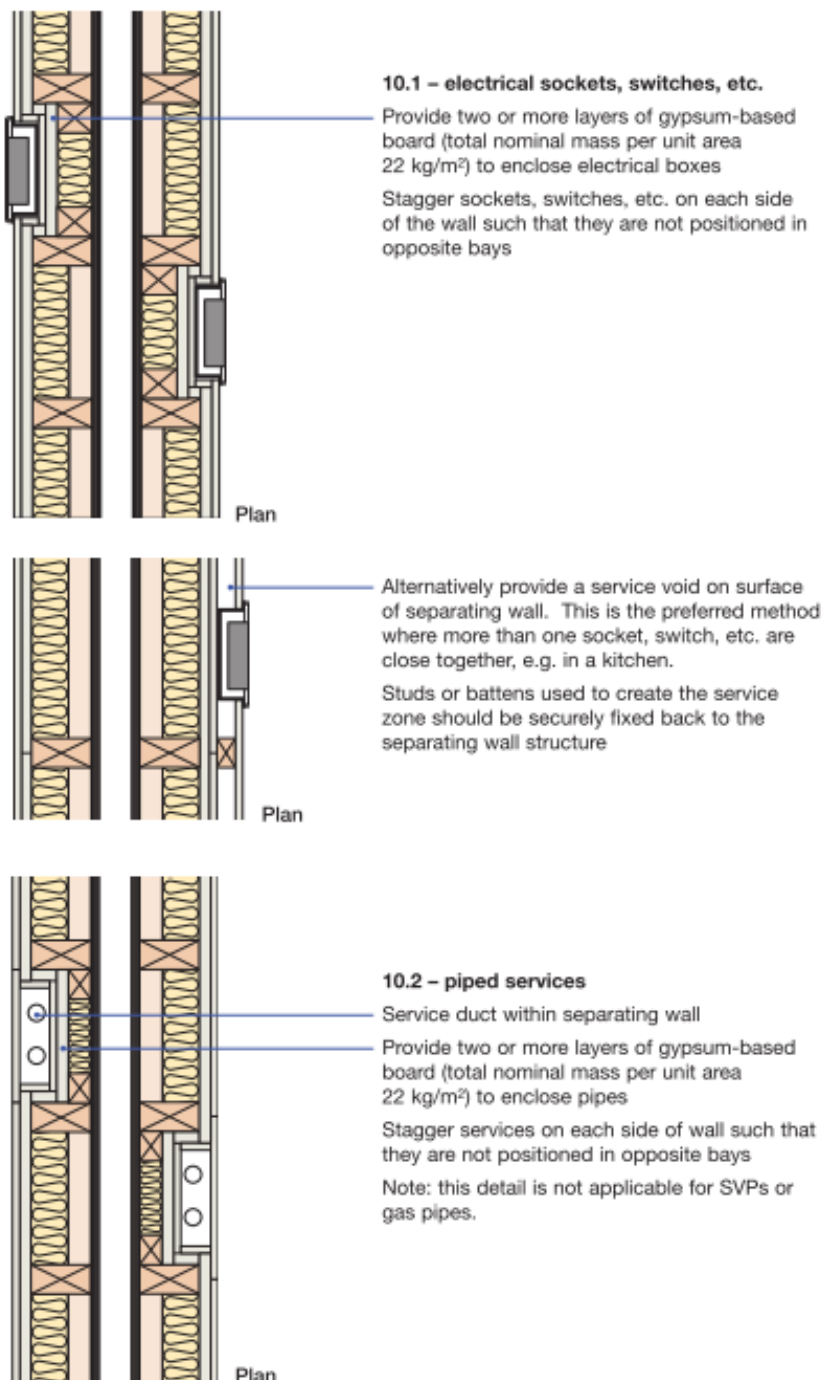
There is no requirement, as the SVP is in a cupboard. Unless, it is required for aesthetics.

5.11 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:



6 CONCLUSION

Sound Advice Acoustics Ltd has been instructed by HG Construction, to assess the internal construction of the proposed new development for Building 3, Tottenham Hale Centre Island, London.

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.