

# **PD Construction Consultants**

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## **ACOUSTIC INSULATION ASSESSMENT AND SPECIFICATION**

### **PROPOSED ALTERATIONS**

**9 BIRTWISTLE TERRACE, WHALLEY ROAD, LANGHO, LANCs., BB6 8BT**

#### **1. Introduction**

This document provides an assessment of the acoustic insulation properties of the existing fabric of the building and addresses the actions required to provide acoustic insulation to attain compliance with Building Regulations Approved Document, Part E1 & E2, 2015 – Resistance to Passage of Sound.

Any remedial specifications are designed to match or exceed the stipulated levels required by Building Regulations.

In preparing this assessment reference has been made to technical information contained within:

- “The British Gypsum White Book”
- London Fire Brigade Fire Safety Guidance Note GN01 – Fire Resisting Standards.
- “Robustdetails® Technical Handbook - February 2025”.

The robustdetails® scheme is an alternative to pre-completion sound testing to satisfy Approved Document E of The Building Regulations.

#### **2. The Existing Structure**

The property is an end terrace building, formerly used as a dwelling; and dates from the early 1890's

##### **External Walls:**

The gable and front elevation are constructed with a pitch faced, coursed, natural stone 400mm thick. The rear elevation walls are rendered brickwork 400mm thick.

##### **Party Wall:**

Measurement taken from the survey drawing indicates that the party wall between no.9 & no.8 is 215mm thick brick with a 3no coat, lime plaster finish and this is used for assessing the acoustic properties of the existing building.

##### **First Floor:**

The original floor structure has been retained and comprises 25mm thick softwood timber board over 175 x 50mm softwood timber joists at 400mm centres. The ceiling finish to the underside is 20mm lath and plaster finish. Independent test results indicate that this type of timber floor construction results in noise levels 64dB for Impact noise and 48dB for Airborne noise.

The first floor has been upgraded with 3mm vinyl flooring, 6mm screed, 6mm plywood, There is an independent suspended ceiling at ground floor level comprising 100 x 50mm joists with 1no layer 12.5mm Gyproc Fireline plasterboard and lightweight plaster skim finish. There is 100mm thickness of glass fibre insulation between the joists.

The addition of a new floor covering and introduction of an independent ceiling improves both the acoustic and fire resistance properties of the floor.

### **3. Acoustic Assessment of the Existing Structure**

Party Wall:

One brick thick walls with an unplastered finish can achieve a sound reduction index of 50dB. The nominal density of clay brick being 1690kg/m<sup>3</sup>

First Floor:

Typically this type of timber floor construction would result in noise levels 64dB for Impact noise and 38dB for Airborne noise

### **4. Matters to address**

The proposed alterations require that the works are to comply with Building Regulations Approved Document E.

Section 0: Performance, Table 0.1a details the minimum performance standards required for walls and floors to satisfy the requirements of Part E1 & E2.

<b>Table 0.1a Dwelling-houses and flats – performance standards for separating walls, separating floors, and stairs that have a separating function</b>		
	<b>Airborne sound insulation sound insulation <math>D_{nT,w} + C_{tr}</math> dB (Minimum values)</b>	<b>Impact sound insulation <math>L'_{nT,w}</math> dB (Maximum values)</b>
<b>Purpose built dwelling-houses and flats</b>		
Walls	45	-
Floors and stairs	45	62
<b>Dwelling-houses and flats formed by material change of use</b>		
Walls	43	-
Floors and stairs	43	64

*Extract from Approved Document E*

## **5. Action Required to Comply with Approved Documents**

### Party Wall:

The existing walls are a minimum of 215mm thick brick and this will provide an Airborne sound index of 55db > 43dB minimum requirement.

**2.35 Wall type 1.3** Brick, plaster on both room faces (see Diagram 2.4)

- minimum mass per unit area including plaster 375kg/m<sup>2</sup>;
- 13mm plaster on both room faces;
- bricks to be laid frog up, coursed with headers.

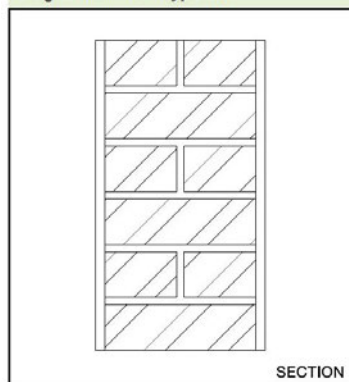
#### **Example of wall type 1.3**

The required mass per unit area would be achieved by using

- 215mm brick
- brick density 1610kg/m<sup>3</sup>
- 75mm coursing
- 13mm lightweight plaster (minimum mass per unit area 10kg/m<sup>2</sup>) on both room faces

This is an example only. See Annex A for a simplified method of calculating mass per unit area. Alternatively use manufacturer's actual figures where these are available.

Diagram 2.4 Wall type 1.3



*Extract from Approved Document E*

### First Floor:

The Impact noise level of the existing floor meets the Document E need for 64dB, the addition of the plywood and screed improves this to 54dB.

Airborne sound level needs increasing to a minimum of 43dB. The introduction of the independent suspended ceiling with 12.5mm Gyproc Fireline board and 100mm glass fibre insulation increases the sound level to 45dB.

In addition to achieving compliance with Approved Document E, the first floor between the ground floor and the first floor needs to comply with Building Regulations Approved Document B: Fire Safety. The floor structure needs to be 60 minutes fire resistant. The upgraded floor covering and the suspended ceiling with 1no Gyproc Fireline boarded finish brings the existing floor up to 60minutes fire resistance.

## **6. Acoustic Impact Assessment Summary**

The existing wall construction complies with Approved Document E

Airbourne sound = 55db > 43dB

The upgraded floor and suspended ceiling complies with Approved Document E

Airbourne sound = 45db > 43dB

Impact sound = 54db < 64dB

Signed:

Paul Derbyshire *Dip.Surv.*

Dated: 24<sup>th</sup> May 2025