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Proposed Residential Development
63 Market Street, Milnsbridge, Huddersfield, HD3 4HZ

Acoustic Design Advice

For:
DB Architects

1st April 2026

Ref: ADA-12509-26-12875-v1 63 Market Street
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1 Introduction

Environmental Noise Solutions Ltd (ENS) has been commissioned by DB Architects to provide acoustic design advice offered in relation to the proposed residential conversion of the upper floors of 63 Market Street, Milnsbridge, Huddersfield, HD3 4HZ.

Development proposals are for the conversion of the existing first floor and second floor stores to form 3 no. apartments. The ground floor will be retained as a pharmacy.

The review has been requested to address the requirements of Building Regulations - Approved Document E 'Resistance to the Passage of Sound' (ADE 2003).

For dwellings formed by a material change of use, the performance requirements of ADE 2003 are:

- Airborne sound insulation of separating walls no less than 43 dB $D_{nT,w} + C_{tr}$
- Airborne sound insulation of separating floors no less than 43 dB $D_{nT,w} + C_{tr}$
- Impact sound insulation of separating floors no greater than 64 dB $L'_{nT,w}$

In addition, Condition 5 of Planning Permission Ref: 2025/62/91398/W for the change of use is as follows:

5. *Before the development is brought into use written evidence to demonstrate that the airborne sound insulation performance of the party floors/walls/ceiling of the development is of a minimum of 55dB DnTw + Ctr shall be submitted to and approved in writing by the Local Planning Authority.*

It is assumed that this requirement (a +12 dB betterment over the requirements of ADE 2003) only applies to the separating floor between the ground-floor pharmacy and the first-floor accommodation. Clarification on this matter has been sought with Kirklees Council, but no response has been received at the time of writing.

It is understood that:

- The existing external walls of the building are solid 9" masonry
- The existing separating floors of the building are timber joists with floorboards above and lathe and plaster ceiling below
- New separating walls are to be built in twin timber stud

The advice contained in this report has been prepared with reference to the development plans provided by DB Architects. The advice offered relates to the acoustic design only and does not consider compliance with other parts of the Building Regulations.

In preparing acoustic design advice for this project, ENS has undertaken to eliminate hazards and reduce risks, as far as is reasonably practicable, in accordance with the requirements of the Construction (Design and Management) Regulations 2015 in so far as they relate to the acoustic design service provided.

This acoustic design advice has been prepared for DB Architects for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult ENS and DB Architects as to the extent to which the findings may be appropriate for their use.

2 Requirement E1 – Separating Floors

2.1 Separating Floor between Ground and First Floor

In order to achieve required sound insulation of **55 dB $D_{nT,w}+C_{tr}$**, the recommended solution is to install a suspended ceiling (below the existing floor) and a circa 185 mm deep platform floor (above the existing floor) within the proposed first floor dwelling flats (effectively raising the finished floor level by a further step in relation to the existing stairs).

Existing floorboards should be in good repair and all gaps in the existing floorboards and at the perimeter wall junctions should be sealed. Where floorboards are replaced, 22 mm t&g flooring grade chipboard should be used.

Existing lathe + plaster ceilings may be retained/made good and upgraded with a single layer of 12.5 mm FireLine plasterboard.

The overall build-up of the proposed separating floor is as follows (see Figure 2.1):

- 22 mm t&g flooring grade chipboard
- 19 mm plasterboard plank
- 75 mm soft wood batten
- 70 mm dynamic batten (a soft wood batten with a bonded acoustic mat to the underside; see www.hush.uk.com) with 50 mm Isover APR 1200 between battens
- Existing floorboards
- Existing timber joists
- Existing ceiling (upgraded with 12.5 mm FireLine board)
- A suspension system consisting of a concealed grid metal frame (e.g. British Gypsum Casoline, or equivalent) system incorporating **acoustic hangers** to create a (minimum) 150 mm void
- 2 layers of 12.5 mm FireLine or SoundBloc plasterboard with staggered joints
- 100 mm mineral wool insulation (min. density 10-60 kg/m^3) above the ceiling

Note: The 75 mm soft wood batten should run perpendicular to the 70 mm dynamic batten

Note: Care must be taken not to bridge the bonded resilient layer of the dynamic batten

The acoustic hangers are used to resiliently attach the ceiling frame strap hangers to the underside of the joists (this will require the hangers to be reversed such that they are fixed to the underside of the joist through the existing ceiling rather than fixed to the side of the joists as is traditional). Acoustic hangers are available through suppliers such as British Gypsum or Arthur Hough.

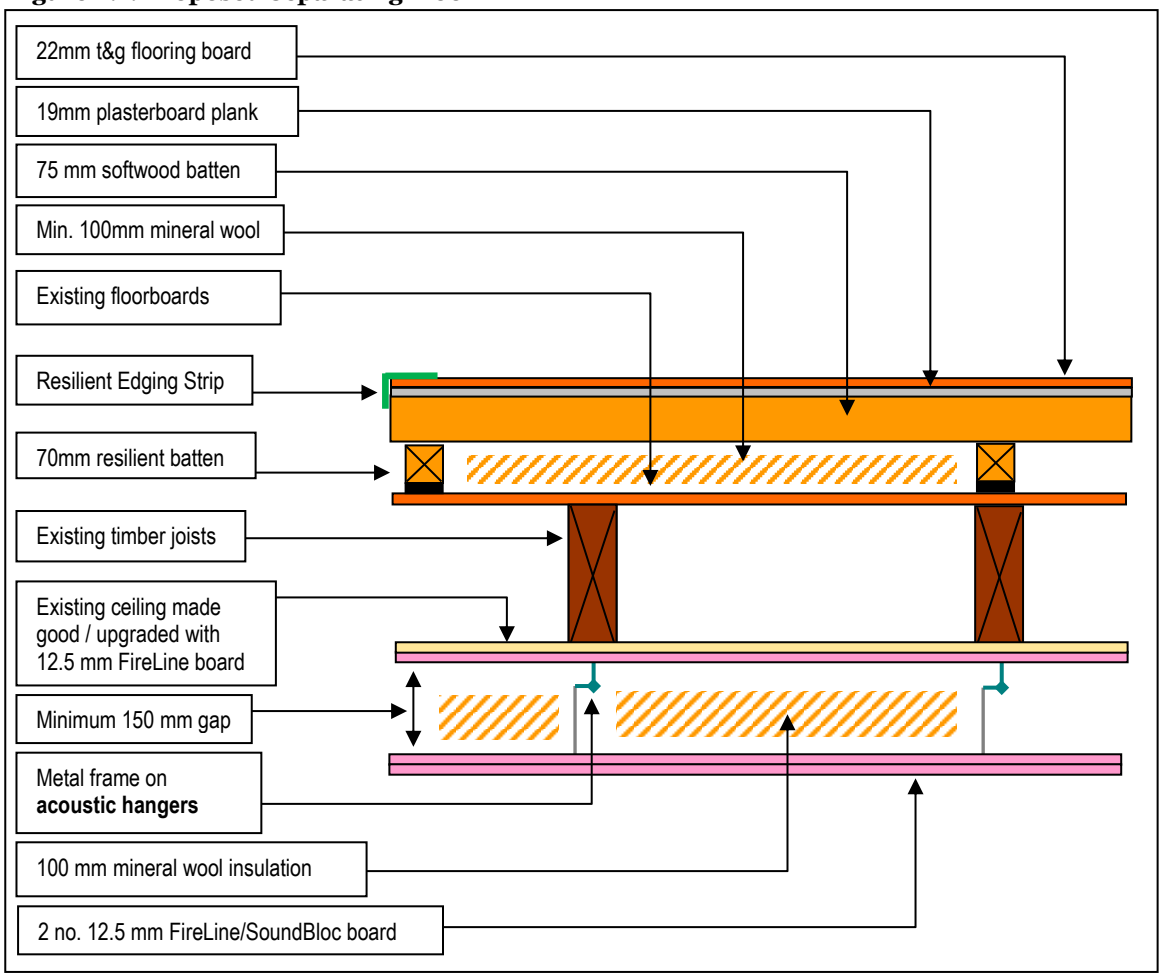
As an alternative to the metal frame ceiling, independent timber joists (not in contact with the existing ceiling) may be used with mid-span support from acoustic hangers.

As an alternative to the batten floor described above, the following options are appropriate:

- 22 mm T&G flooring grade chipboard and 19 mm plasterboard plank over 75 mm soft wood batten (perpendicular to) over 50 mm soft wood batten sat within an adjustable cradle (see www.hush.uk.com)

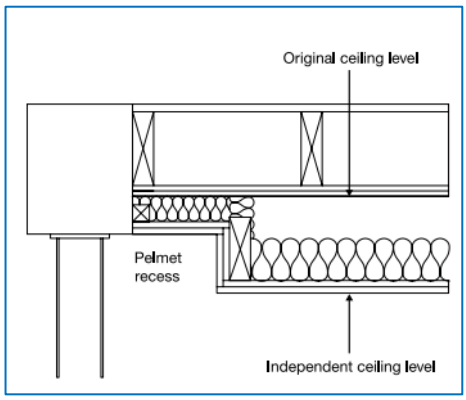
- 22 mm T&G flooring grade chipboard and 19 mm plasterboard plank on new floor joists (note: new floor joists supported by joists hangers on trimmer batten fixed to perimeter walls; new floor joists independent of existing floor except mid-span bracing as required) to achieve required finished floor level)

Figure 2.1: Proposed Separating Floor



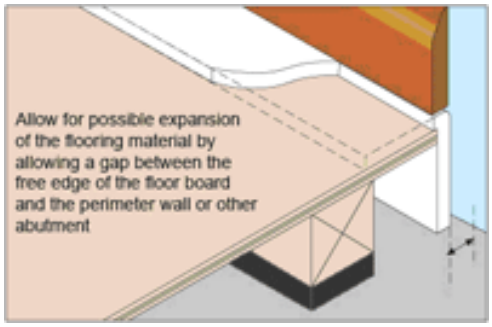
Where a window head is near to the existing ceiling, the new independent ceiling may be raised to form a pelmet recess. Appropriate remedial work may be required to fully seal the existing construction around the perimeter of the window area.

Figure 2.2: Typical Pelmet Detail



Installation advice for the batten floor is as follows:

- **Perimeter battens –** Place a single row of battens around floor perimeter maintaining 50 mm gap between wall and batten.
- **Spacing of battens** – Batten spacing to be in accordance with flooring manufacturer's recommendations, commonly: 400 mm centres (450 mm max) for 18 mm chipboard and 600 mm centres (max) for 22 mm chipboard.
- **Batten stagger** – Batten joints in adjacent rows should be staggered by a minimum of 600 mm.
- **Mounting partitions** – Partitions should be taken off the sub-floor (see Separating Wall section).
- **Fixing flooring** – The specified flooring boards should be placed lengthways across the battens ensuring board ends are supported by a batten. Ensure the ends of the boards in adjacent rows are a minimum of 400 mm apart. Apply a line of adhesive to the top of the resilient batten prior to installing plasterboard plank (or similar gypsum based board). Spot bond the flooring boards using adhesive to the plasterboard plank. Offset all joints of the flooring boards from the joints of the plasterboard plank. Apply adhesive to the tongue and groove joints of all flooring boards before fitting them together following flooring board manufacturers instructions. No further fixings are necessary, but if required, preferably screws (or annular ringed shank nails) may be used in the normal manner. It is important that the fixings do not penetrate the batten and foam to the sub-floor (deck layer). Remove any surplus adhesive from the surface, before it dries, with a damp cloth. Adequate gluing will help reduce potential squeaks.
- **Expansion of flooring materials** – Allow for possible expansion of the flooring material by allowing a gap between the free edge of the floor boards and the perimeter wall or other abutment. This gap should be calculated as 1 mm per linear metre of flooring and in no circumstances should be less than 10 mm.



- **Gap at wall or door frame** – Ensure that the floor boarding does not make contact with any part of the wall structure including door frames and the like. Use flanking strip at all perimeters and abutments to ensure this separation.
- **Supporting noggins** – Where ends of flooring boards fall between lines of battens, place a continuous length of batten for support with each board securely fixed to it (following fixing advice above).
- **Doorways** – Continue the perimeter resilient batten past the door opening. Where butt joints are formed at thresholds, place a continuous length of resilient batten directly beneath the joint of adjacent boards with each board securely fixed to it. The joint must be glued and where deemed necessary for a secure fix, screws should be used to secure both edges of the butt joint to the same batten. Allow a gap between the batten, flooring and doorframe for the flanking strip. Care should be taken to ensure that fire stops are fitted to the same standard as that required for the fire doors.
- **Skirting boards** – Fold the flanking strip onto the flooring board and fix the skirting so that it rests on the flanking strip. Trim the edge of the flanking strip flush with the skirting.

2.2 Separating Floor between First and Second Floor

The existing timber separating floor construction will not achieve ADE 2003 compliance and will therefore require upgrading. The recommended solution is to install an independent plasterboard ceiling throughout first floor.

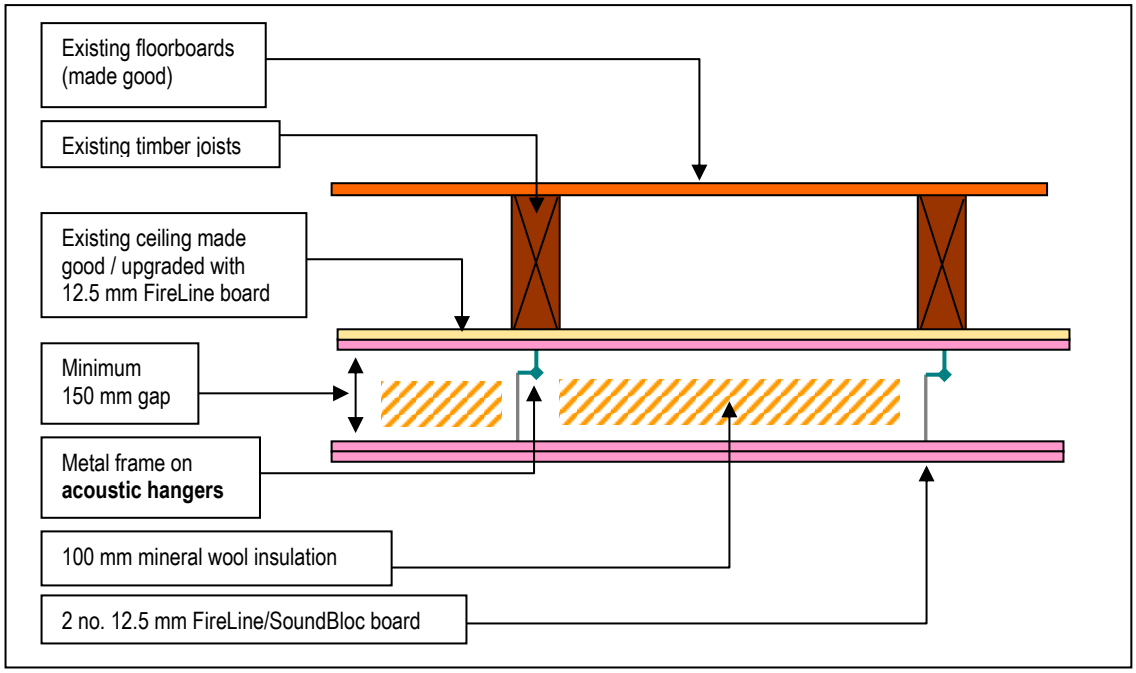
Existing floorboards should be in good repair and all gaps in the existing floorboards and at the perimeter wall junctions should be sealed. Where floorboards are replaced, 22 mm t&g chipboard should be used.

Existing lathe + plaster ceilings may be retained/made good and upgraded with a single layer of 12.5 mm FireLine plasterboard.

The direct-fixed ceiling should be upgraded with a metal frame ceiling consisting of (see Figure 2.3):

- A suspension system consisting of a concealed grid metal frame (e.g. British Gypsum Casoline, or equivalent) system incorporating **acoustic hangers** to create a (minimum) 150 mm void
- 2 layers of 12.5 mm FireLine or SoundBloc plasterboard with staggered joints
- 100 mm mineral wool insulation (min. density 10-60 kg/m^3) above the ceiling

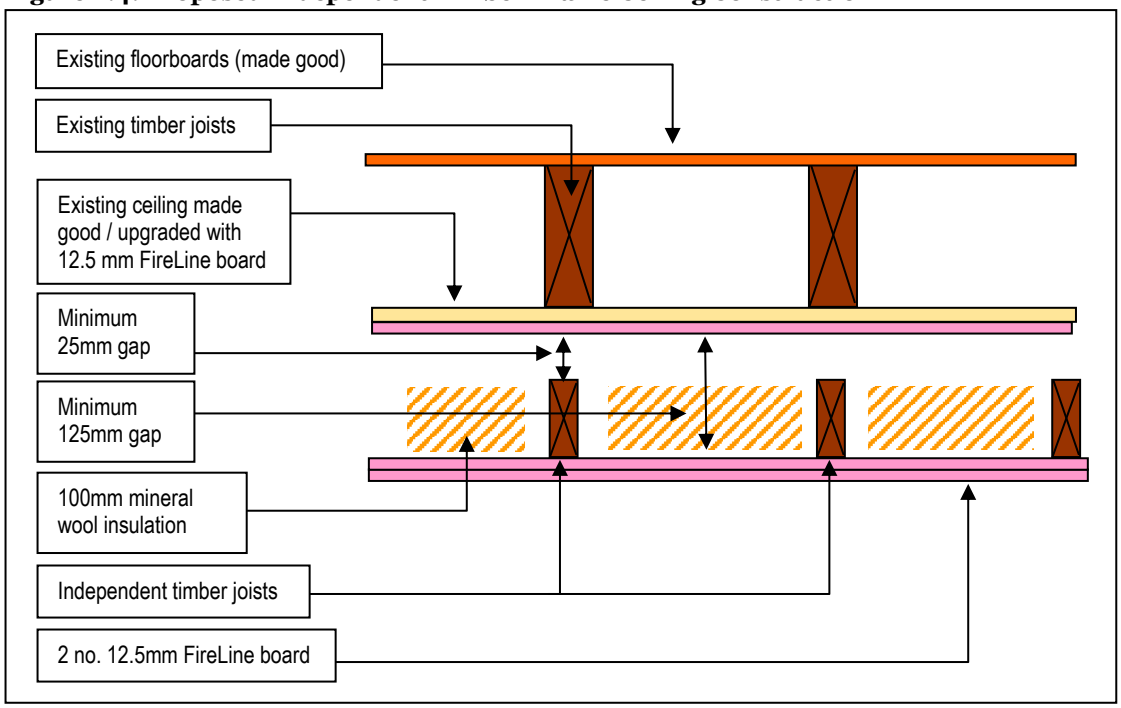
Figure 2.3: Proposed Metal Frame Ceiling Construction



The acoustic hangers are used to resiliently attach the ceiling frame strap hangers to the underside of the joists (this will require the hangers to be reversed such that they are fixed to the underside of the joist through the existing ceiling rather than fixed to the side of the joists as is traditional). Acoustic hangers are available through suppliers such as British Gypsum or Arthur Hough.

Alternatively, independent timber joists (not in contact with the existing ceiling) may be used with mid-span support from acoustic hangers (see Figure 2.4 overleaf).

Figure 2.4: Proposed Independent Timber Frame Ceiling Construction



Downlighters may be installed in the suspended ceiling at no more than one light per 2 m^2 of ceiling area in each room and at centres not less than 0.75 metres into openings not exceeding 100 mm diameter or 100 x 100 mm. These should be backed with an acoustic/fire hood.

Where a window head is near to the existing ceiling, the new independent ceiling may be raised to form a pelmet recess. Appropriate remedial work may be required to fully seal the existing construction around the perimeter of the window area.

Overall points to note:

- Ceiling linings should be applied with taped staggered joints and be built to the existing masonry (rather than stopping at any external wall linings)
- Any gaps at the perimeters of the floorboards or plasterboard linings should be well sealed using flexible or acoustic sealant
- Any gaps between existing timber floorboards should be well sealed using flexible or acoustic sealant

3 Requirement E1 – Separating Walls

3.1 New Lightweight Separating Walls

It is understood that new build stud partitions are proposed at the development. An appropriate construction is as follows:

- 2 x 12.5 mm SoundBloc/FireLine plasterboard
- 75 mm timber stud
- 50 mm gap between studs, with 50 mm mineral wool in the cavity
- 75 mm timber stud
- 2 x 12.5 mm SoundBloc/FireLine plasterboard

This construction would typically be expected to satisfy the airborne sound insulation performance standard in ADE 2003 assuming a good level of workmanship and appropriate junction detailing.

The following points should be noted:

- The frames of the twin stud separating walls should be independent
- Mineral wool insulation in the cavity should be a minimum of 50 mm thick and 10 kg/m3 density (Rockwool Flexi, or equivalent, would be appropriate
- Wall linings should be applied with taped / caulked staggered joints
- Any gaps at the perimeters of partitions should be well sealed using flexible or acoustic sealant
- Preferably, there should be no sockets in separating walls, but if required they should not be back-to-back and the rear of the socket should be lined with 2 layers of dense plasterboard (or use Hilti CP 630 Putty Pads)

4 Junction Detailing

4.1 Control of Flanking Transmission

Where perimeter walls to the separating floor are continuous between floors and are of < 215 mm brick / block work, a major flanking transmission path exists. This is because the coincidence dip of a 100–150 mm brick / block work wall is around 200 Hertz. This is the frequency at which sound generated in one room will preferentially travel along the wall and reradiate in the room below (a form of resonance), flanking around the separating floor.

It is understood that the perimeter walls of the building are at least 215 mm thick.

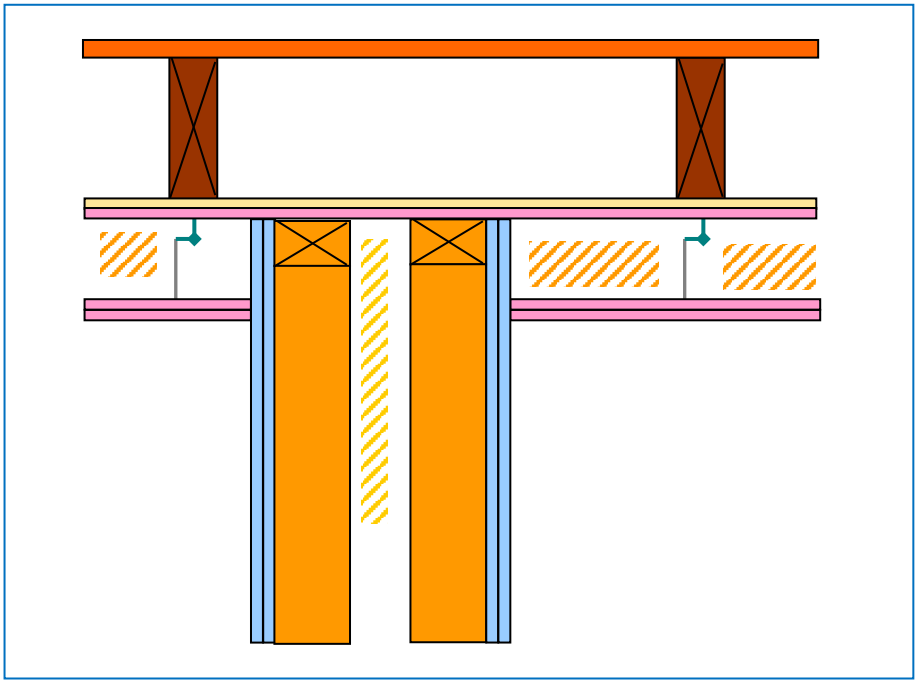
Where any existing masonry walls are found to be < 215 mm brick / block work and are continuous between floors, these walls should be upgraded with a wall lining to prevent vertical flanking transmission between floors (**ENS should be notified in order to advise on the location and construction of the wall lining**).

4.2 Lightweight Separating Wall Junctions

At the junction of the separating walls with existing masonry walls, the wall junction must be with the masonry and not any wall lining (e.g. IWL or thermal linings).

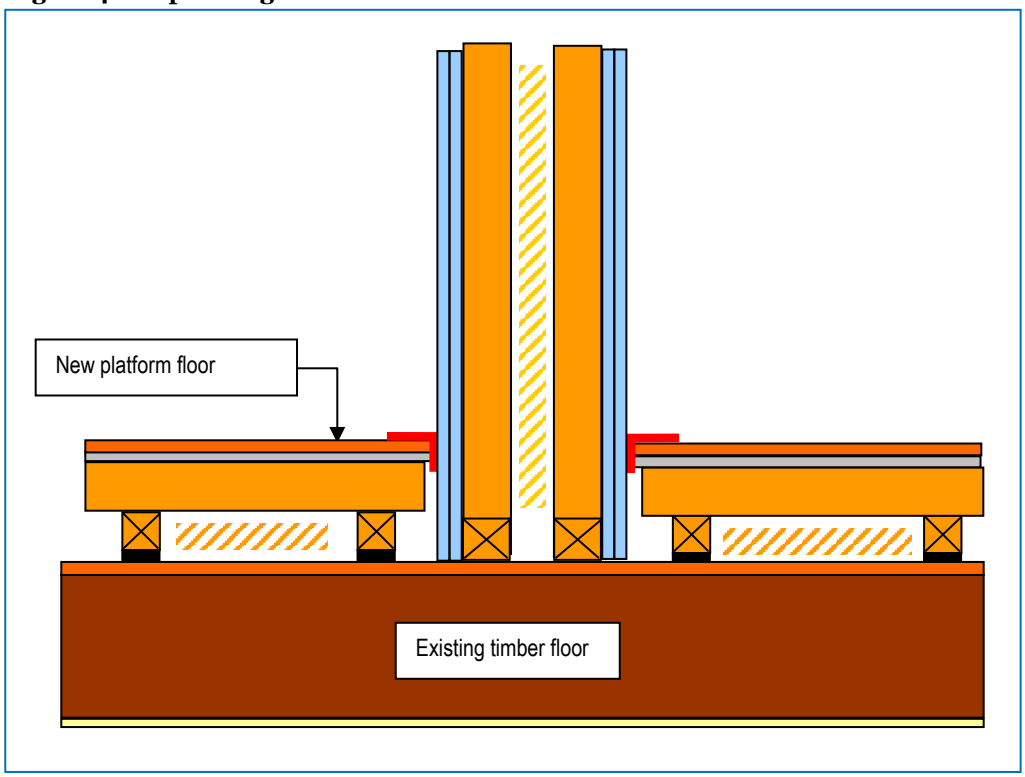
At first floor level, the head of the new lightweight stud wall should be taken up to the direct-fixed ceiling, with the suspended ceiling installed afterwards (see Figure 4.1).

Figure 4.1: Stud Separating Wall Head Detail



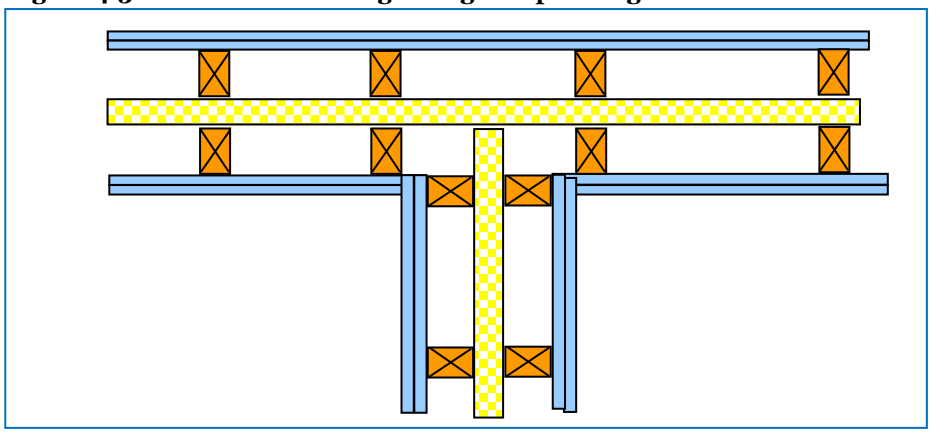
In order to control flanking transmission at the base, the new separating walls at first floor level should be constructed off the existing floorboards and not the new batten floor (see Figure 4.2)

Figure 4.2 Separating wall – base detail



A cavity should be maintained at the junction of two lightweight separating walls (see Figure 4.3).

Figure 4.3: Junction of Two Lightweight Separating Walls



5 Requirement E2 – Internal Walls

Requirement E2 of ADE 2003 states that new build internal walls and floors should be constructed to achieve a laboratory airborne sound insulation performance of 40 dB R_w. This construction requirement applies whether or not the performance can be achieved in reality (e.g. with open stairwells etc.).

For **newly built** internal walls, this requirement applies to internal walls between a bedroom, or a room containing a water closet, and other rooms (but does not apply to walls containing a door or a wall which separates an en-suite toilet from the associated bedroom). It also does not apply to existing walls in a building which is subject to a material change of use.

An example construction consists of a single 70mm 'C' stud with plasterboard linings to each face. Each lining to be 2 or more layers of plasterboard (joints staggered), each sheet minimum mass per unit area of 10 kg/m^2. Linings fixed to timber frame with a minimum distance between linings of 75 mm.

An example construction is as follows:

- 2 x 12.5 mm Gyproc Wallboard
- 70 mm 'C' stud
- 2 x 12.5 mm Gyproc Wallboard

Alternatively, a single layer of plasterboard can be fixed to each side if 25 mm mineral wool insulation is placed in the cavity.

6 Service Penetrations

Services should not puncture ceiling linings (except cables, which should be sealed around with flexible sealant).

Where services (e.g. SVPs) are required to run vertically between flats, they should be lagged with a minimum 25mm mineral wool quilt and boxed in with two layers of plasterboard, joints staggered, on independent studwork.

Penetrations through a separating wall should be avoided.

To control vertical noise transmission, any existing chimney breasts/flues should be blocked up.

7 Entrance Doors to Apartments

In order to conform to ADE 2003, entrance doors to apartments should be specified that have good perimeter and threshold sealing and a minimum mass per unit area of 25 kg/m² or a minimum sound reduction index of 29 dB R_w.

Note: Modern FD30 fire doors are lightweight and may not fulfil this requirement.

With regards to the provision of a 29 dB R_w door set, this acoustic performance can be achieved by a well fitted solid doorset where the door is sealed effectively around its perimeter in a substantial frame with an effective stop. A 30 minute fire doorset (FD30) can be suitable. Timber FD30 doors often have particle core or laminated softwood cores with a mass per unit area ≈ 25 kg/m² and a thickness of ≈ 44 mm. Frames for FD30 doors often have a 90 mm x 40 mm section with a stop of at least 15 mm. Compression or wipe seals should be used around the door's perimeter along with a threshold seal beneath. A drop–down or wipe type threshold seal is suitable.

8 Control of Reverberation in Common Areas

Requirement E3 of ADE 2003 requires that the common internal parts of buildings which contain apartments shall be designed and constructed in such a way as to prevent more reverberation around the common parts than is reasonable. E3 applies to corridors, stairwells, hallways and entrance halls which give direct access to the flats.

For this development, Requirement E3 applies to the landing and stairwell.

For common entrance halls, corridors or hallways giving direct access to the studios, Requirement E3 states that an area equal to or greater than the floor area is covered with a Class C absorber of better. It is normally convenient to cover the ceiling area with the additional absorption.

Class C and absorbers come in many forms, but the most typical are:

- Perforated ceiling boards (such as Gypsum Quattro 41) or
- Suspended ceiling tile (such as Armstrong Ultima) or

In summary, a Class C ceiling should be provided to the communal corridor.

It may also be appropriate to consider 'thinner' proprietary solutions, such as Echosorba tiles http://www.soundsorba.com/acoustic-products/sound-absorption/echosorba/, which are only 30 mm thickness. This tile may be bonded directly to plasterboard. It is a Class B absorber ($\dot{\alpha}_w = 0.85$). In this instance, it would be necessary to cover around 60 percent of the underside of ceiling with this tile.

For reference, the control of reverberation of common areas in conversions is not necessarily requested by the Building Control Officer (particularly where circulation space is carpeted). The purpose of this section is to highlight the requirement for acoustic treatment of circulation corridor ceilings. It is not subject to pre-completion sound insulation testing.