

# Acoustic Detailing for Framed Buildings

**Data Sheet 15**  
November 2017

**Uniclass**  
L3221 :A4  
**EPIC**  
F611 :X221  
**CI/SfB**  
Ff2 (A)iv

## Introduction

This data sheet covers the basic principles required to provide satisfactory acoustic junctions and basic acoustic design to realise the full potential of the construction.

Manufacturers provide acoustic data on their blocks primarily based upon laboratory test values (Rw - A single-number value which characterizes the airborne sound insulation measured in a laboratory).

Most specifications require a  $D_{nT,w}$  value to be met (a single-number which characterizes the actual airborne sound insulation between rooms).

As a general rule of thumb, a  $D_{nT,w}$  value would be expected to be 5 to 8dB lower than the equivalent Rw value, due to adverse flanking conditions and workmanship on site.

$C_{tr}$  is a correction value added to the  $D_{nT,w}$  value for dwellings and some other applications to place greater importance on the lower frequency values.

## Good Design

In general the aim is to provide an airtight structure with either adequate mass to prevent the passage of sound or isolation of the structure, to prevent the passage of vibration / noise. Wherever possible a direct sound path should be avoided.

**Stagger the doors of apartments opening on to the same hall** so they are not opposite one another. Sound travels best in straight lines. Everytime it changes direction, some of it is absorbed and some diffused.

**Use halls to isolate apartments.** Two walls with an air space between them cut sound transmission about 50% more than a single wall twice as heavy as either of the two walls.

**Place windows as far away from separating walls as is possible.** The closer windows are to each other on either side of a separating wall, the more sound will pass from one apartment to the other. Simply separating windows will stop much of this sound.

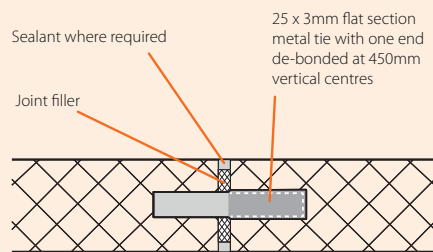
**This guidance applies equally to the spacing of doors in corridors.**

# Aggregate Concrete Blocks

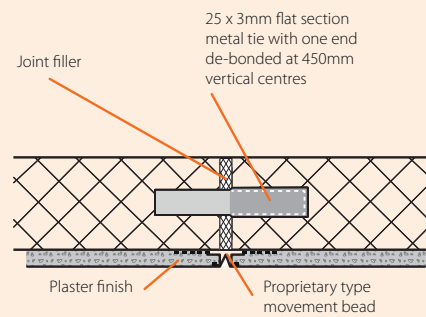
## Acoustic Detailing for Framed Buildings

### Junction Details - Movement Control

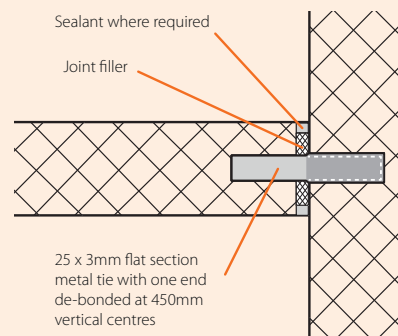
Movement joint to internal wall



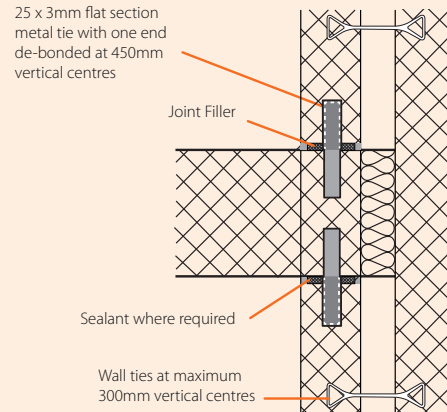
Proprietary profile for forming joint through wet finish



Movement joint at an intersecting wall

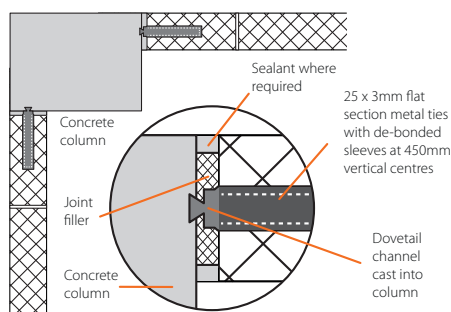


Movement joint at external wall junction to separating wall

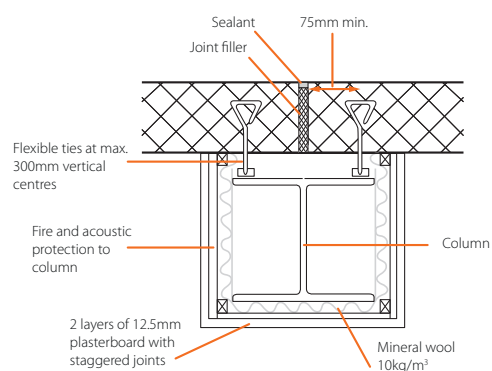


### Junction Details - Junctions at Columns

Movement joint at concrete column



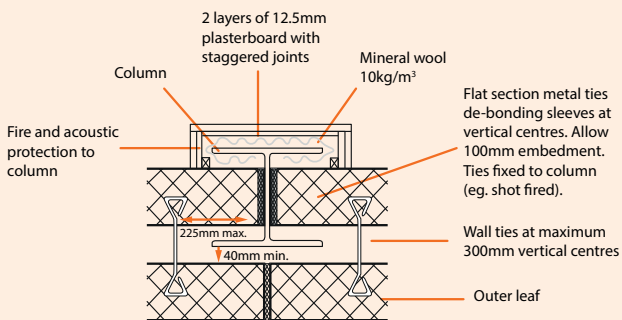
Movement joint to blockwork at internal steel column



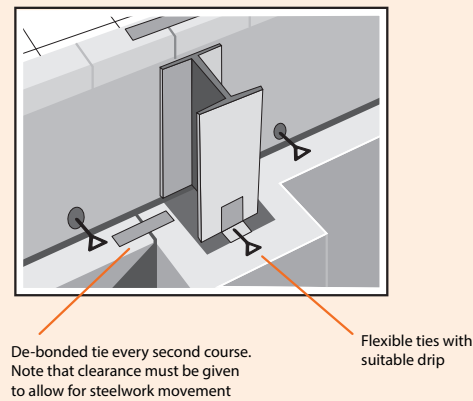
# Aggregate Concrete Blocks

## Acoustic Detailing for Framed Buildings

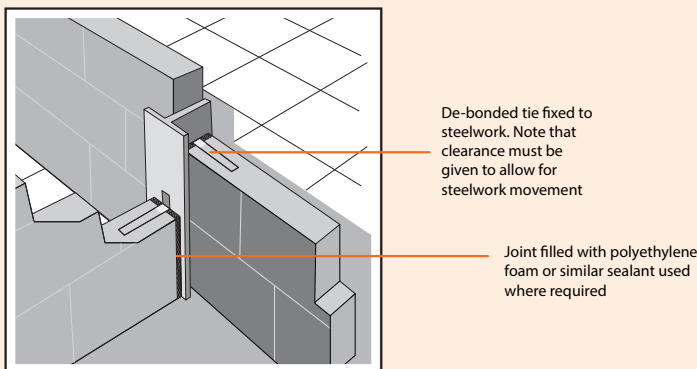
Movement joint to blockwork at steel column in cavity wall



Movement joint to blockwork at steel frame - blockwork encasing column

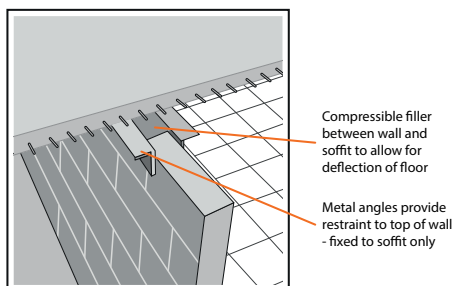


Internal blockwork butting steel frame

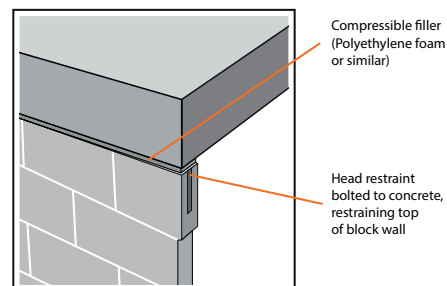


### Head Restraint

Metal angle



Straps in perpend joints



## Acoustic Detailing for Framed Buildings

**Indicative Values (Rw)** – 215mm Dense block wall plastered both sides.

No Joint in wall	58dB
Unfilled movement joints	16dB
Mineral wool filler to movement joint	34dB
15 x 15mm polyethylene foam and sealant one side	52dB
15 x 15mm polyethylene foam and sealant both sides	57dB

As can be seen, provided the joint is fully filled with a compressible filler and sealed on both sides, a movement joint need not have a detrimental effect upon the acoustic quality of a masonry wall.

Dwelling houses and flats - performance standards for separating walls, floors and stairs that have a separating function		
	Airborne sound insulation min. values $D_{nT,w} + C_{tr}$ dB	Impact sound insulation max. values $L_{nT,w}$ dB
<b>Purpose built dwelling houses and flats</b>		
Walls	45	-
Floors and stairs	45	62
<b>Dwelling houses and flats formed by a material change of use</b>		
Walls	43	-
Stairs	43	64
Rooms for residential purposes - performance standards for separating walls, floors and stairs that have a separating function		
	Airborne sound insulation min. values $D_{nT,w} + C_{tr}$ dB	Impact sound insulation max. values $L_{nT,w}$ dB
<b>Purpose built rooms for residential purposes</b>		
Walls	43	-
Floors and stairs	45	62
<b>Rooms for residential purposes formed by a material change of use</b>		
Walls	43	-
Stairs	43	64
It is important to note that the evaluation of airborne sound now includes the $C_{tr}$ value to take an account of low frequency sound that gives rise to a significant number of complaints.		

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