Flanking sound transmission
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Flanking sound is noise from a source room that is not transmitted via the separating element. It is transmitted indirectly via paths such as windows, external walls and internal corridors. It is imperative that flanking transmission is considered at the design stage and that construction detailing is specified so as to eliminate or at least minimise any downgrading of the acoustic performance.
Introduction

Flanking sound transmission

BB93 contains information to address the performance of individual wall and floor constructions, and the flanking sound paths formed by the junctions between these elements. In all cases, good design and installation practice should be followed. It is vitally important that products are installed correctly. Failure to do so may lead to limitation of acoustic performance and the requirements of BB93 not being met.

The details in this section give guidance on junction detailing with a view to meeting the requirements of BB93.

Air leakage

Air leakage is also an important consideration when optimising sound insulation. Small openings such as gaps, cracks or holes, will conduct airborne sounds and can significantly reduce the sound insulation of a construction. For optimum sound insulation, a construction must be airtight. Most air paths can be sealed at the finishing stage using Thistle plaster or Gyproc jointing materials. Other airpaths, such as gaps around pipes or other small service penetrations, can be sealed with Gyproc Sealant. For larger gaps, such as those at the base of partitions when boards are lifted tight to the ceiling, a bulk fill of Gyproc jointing materials can be used in conjunction with Gyproc Sealant.

Deflection head details

Deflection heads, by definition, must be able to move and, therefore, achieving an airtight seal is very difficult without incorporating sophisticated components and techniques. Air leakage at partition heads will have a detrimental effect on the acoustic performance of any partition.

The approach shown in Flanking details 12 – Deflection head A could, for example, results in a loss of around 4 dB to 5 dB due to air leakage (this would be in addition to any loss in performance by flanking transmissions due to poor junction detail). Where acoustic performance is a key consideration, steps can be taken to minimise this loss of performance. Flanking details 13 – Deflection head B shows the generally accepted method of achieving this and, provided care is taken to ensure a tight fit between cloaking angle and lining board surface, the loss in performance can be reduced. A loss in performance of around 1 dB to 2 dB would be more typical with this method.
Flanking details

1. Junction with external wall – masonry minimum 365kg/m²
   - Lining solution as specified
   - GypWall Quiet SF partition system
   - Masonry minimum 365kg/m²
   - Gypsum Universal wall lining system with minimum 35mm cavity
   - Two layers of 12.5mm Gyproc SoundBloc
   - 25mm Isover APR 1200
   - Masonry less than 365kg/m²

2. Junction with external wall – masonry less than 365kg/m²
   - Floor slab minimum 365kg/m²
   - Floating floor solution as specified
   - Floor slab less than 365kg/m²
   - Gypsum Universal ceiling system with minimum 35mm cavity

3. Junction with separating floor – masonry minimum 365kg/m²
   - Lining solution as specified
   - GypWall Quiet SF partition system
   - Masonry minimum 365kg/m²
   - Gypsum Universal wall lining system with minimum 35mm cavity
   - Two layers of 12.5mm Gyproc SoundBloc
   - 25mm Isover APR 1200
   - Masonry less than 365kg/m²

4. Junction with separating floor – masonry less than 365kg/m²
   - Floor slab minimum 365kg/m²
   - Floating floor solution as specified
   - Floor slab less than 365kg/m²
   - Gypsum Universal ceiling system with minimum 35mm cavity
Flanking details

5 Junction with external wall when acoustic performance is a key consideration - helps reduce flanking transmission

6 Partition junction to optimise acoustic performance and to reduce flanking transmission

7 ‘T’ junction when partition with higher acoustic performance abuts a partition with lower acoustic performance

8 ‘T’ junction to optimise acoustic performance and to reduce flanking transmission

9 Partition and column junction

Acoustic principles only - detail may not be adequate for all solutions.

1 Gyproc plasterboard or Glasroc specialist board
2 Gypframe ‘C’ Stud
3 Gypframe ‘I’ Stud
4 Insulation
5 Gypframe GA5 Internal Fixing Angle
6 Wall structure
7 Structural steel column
8 External cladding
9 External wall stud framework
10 Cavity barrier (subject to regulatory requirements)
11 Rigid insulation board
Flanking details

10 Partition to floor junction – optimum acoustic performance

11 External wall junction

12 Deflection head A (subject to fire performance)

13 Deflection head B (subject to fire performance)

1. Gyproc plasterboard
2. Isover insulation
3. Timber stud framework
4. Timber joists - spanning in either direction
5. Floating floor
6. Resilient or suspended ceiling
7. Resilient flanking strip
8. Isover cavity barrier
9. One layer 12.5mm Gyproc WallBoard for single storey buildings
10. Two layers 12.5mm Gyproc WallBoard for multi-storey buildings
11. External brickwork
12. Gyproc Sealant for optimum sound insulation
13. 50mm timber head plate equivalent to channel width forming fire-stop
14. Gypframe GA4 Steel Angle to minimise loss of sound insulation performance due to air leakage