

# Flanking sound

Construction meeting the new standards is of little use if sound energy can reach adjacent rooms by taking sound paths with a lesser resistance.

Both Approved Document E and Robust Detail construction details contain information to address the performance of individual separating wall and floor constructions, and the flanking sound paths formed by the junctions between these separating elements. This section provides an overview of that information.

In all cases, good design and installation practice should be followed. It is imperative that measures to eliminate or minimise

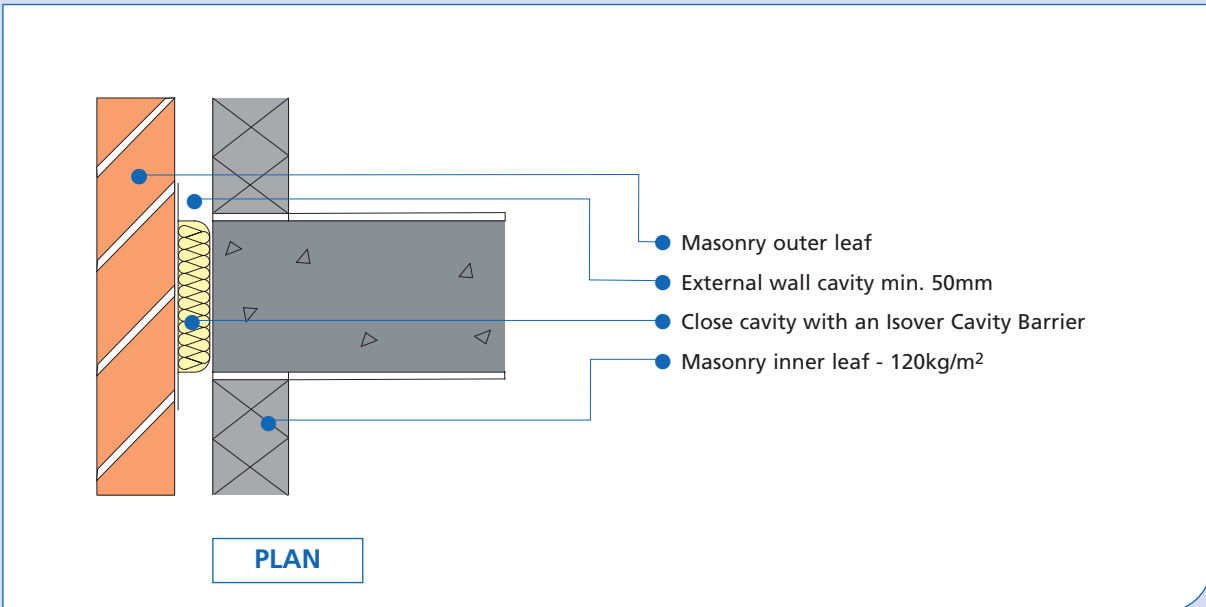
flanking sound transmission are considered at the design stage and that products are installed correctly by the builder. Failure to do so may lead to limitation of acoustic performance and the requirements of the Building Regulations not being met.

For Robust Details compliance, reference to the flanking details given in the Robust Detail pattern book must be followed. Failure to follow this design advice may lead to PCT (Pre-Completion Testing) being demanded.

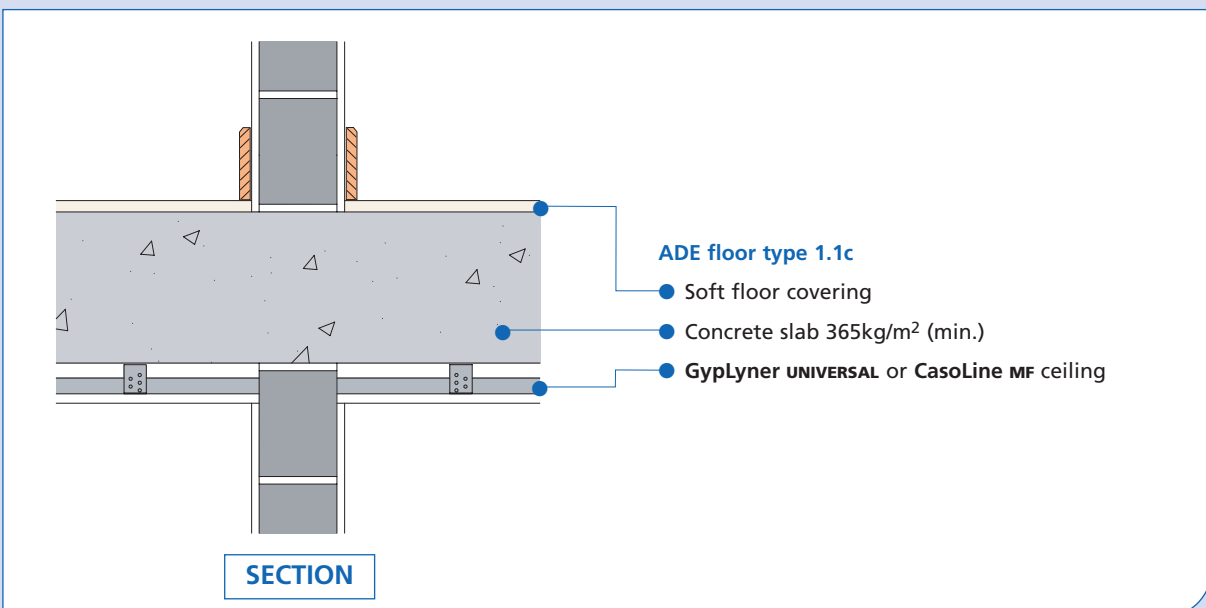
# Solid masonry



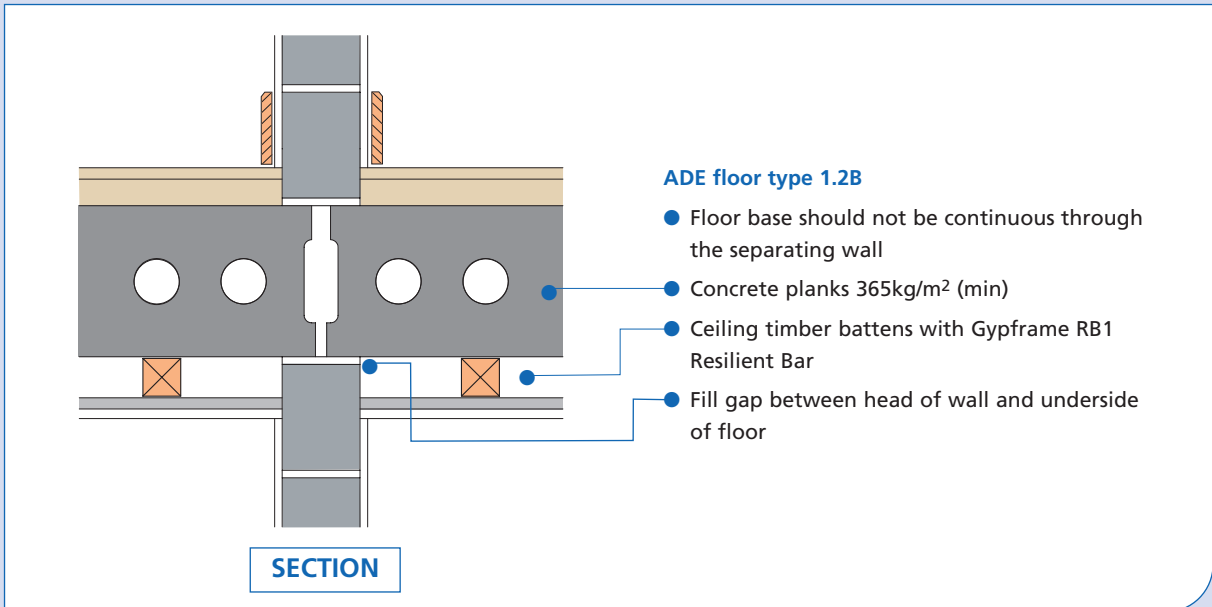
## External wall junction



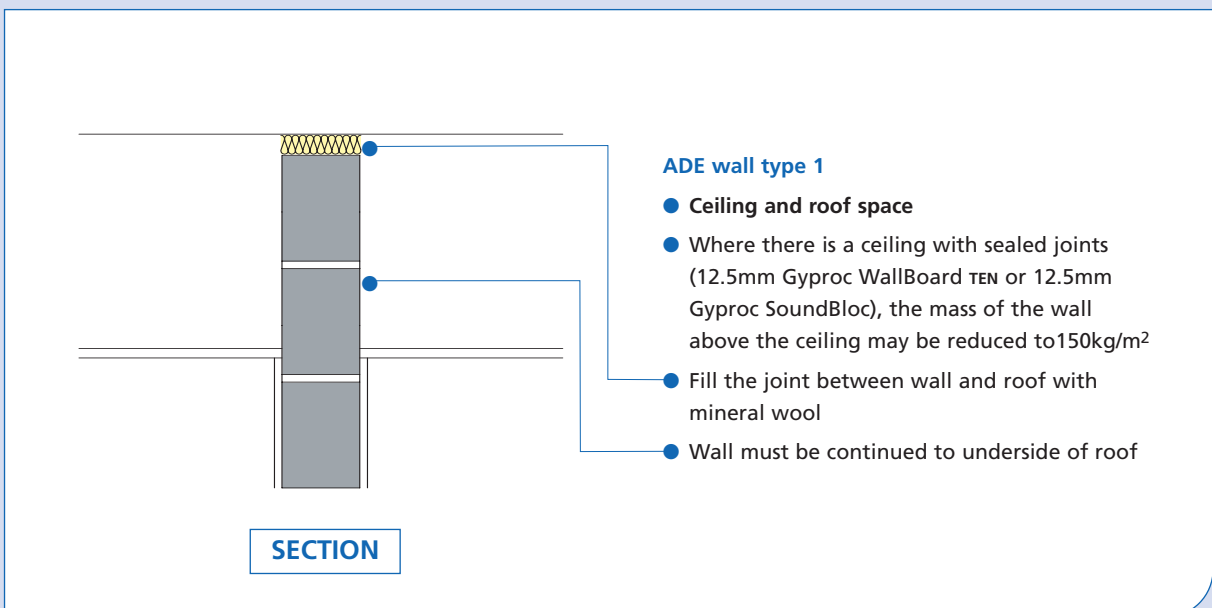
## Junction with separating floor



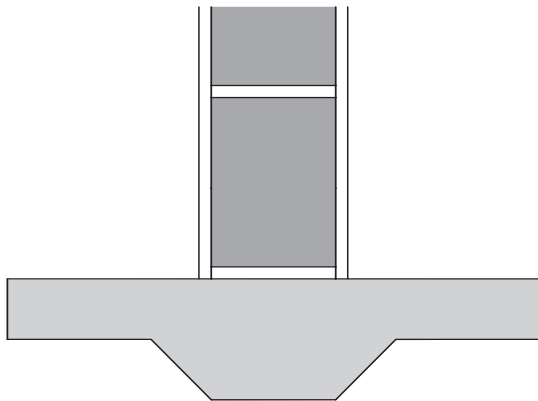
### Junction with separating floor



### Junction with roof space



## Junction with ground floor



SECTION

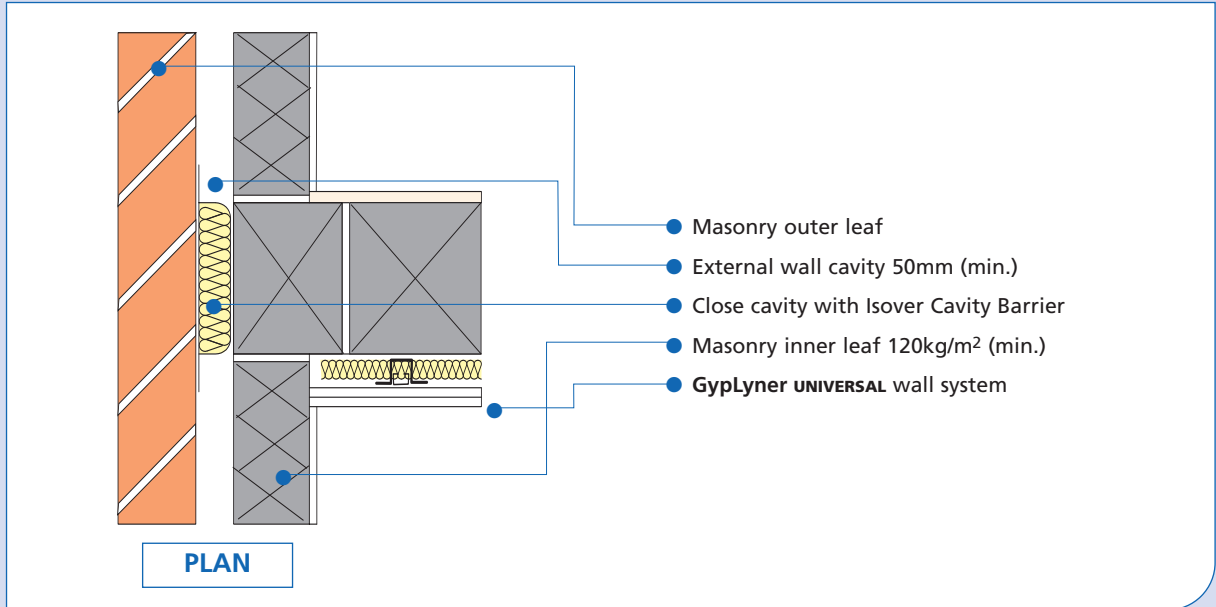
### ADE wall type 1

- The floor base may only be carried through if it has a mass of at least  $365\text{kg/m}^2$
- The ground floor may be solid slab, laid on the ground or a suspended concrete floor
- If it is suspended it may only pass through the wall if it has a mass of at least  $365\text{kg/m}^2$

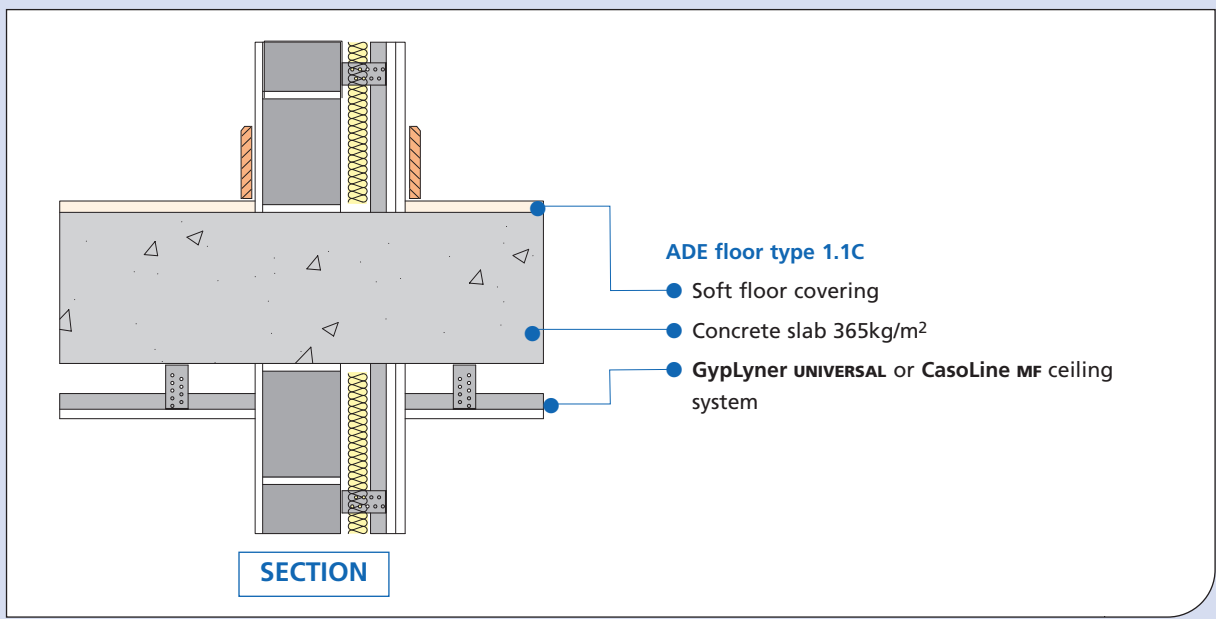
# Solid Masonry with GypLyner UNIVERSAL system



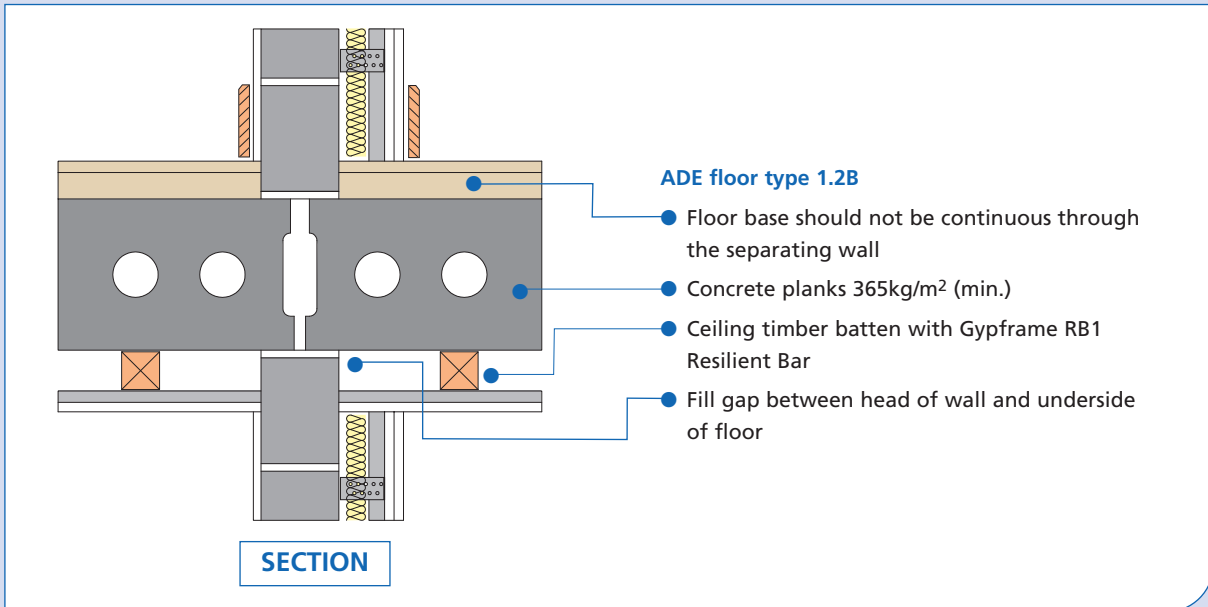
## External wall junction



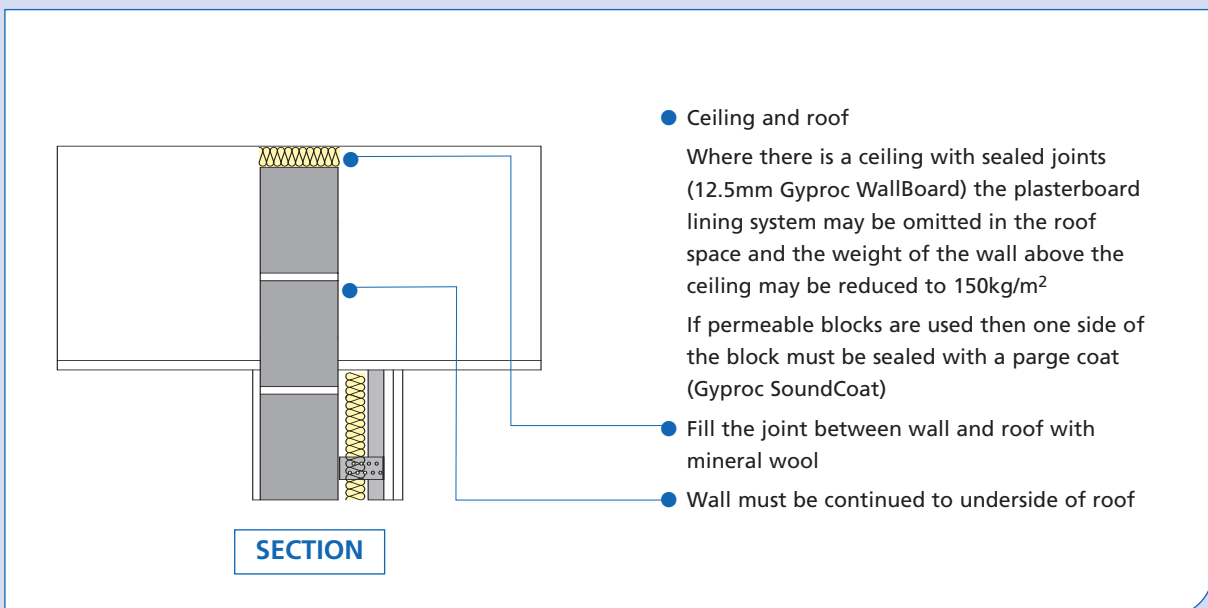
## Junction with separating floor



### Junction with separating floor



### Junction with roof space



## Junction with internal wall



- **Partitions**

- Partitions that abut a plasterboard lining system should not be of masonry construction
- Loadbearing partitions should be fixed to the masonry core through a continuous pad of mineral wool
- Non-loadbearing partitions should be butted tight to the isolated panels
- All joints between the partitions and panels should be sealed with Gyproc jointing materials or caulked with Gyproc Sealant

# Cavity Masonry



## External wall junction

**PLAN**

- Masonry outer leaf
- External wall cavity (min 50mm)
- Close cavity with an Isover cavity barrier unless it is fully filled with non combustible insulation
- Inner leaf where there is no separating floor (e.g. for houses)
  - 100mm (min) concrete block 1350kg/m<sup>3</sup> – 1600kg/m<sup>3</sup> or 1850kg/m<sup>3</sup> – 2300kg/m<sup>3</sup> or aircrete block 450kg/m<sup>3</sup> – 800kg/m<sup>3</sup>
  - Internal finish 13mm Thistle plaster or 12.5mm Gyproc WallBoard or Gyproc ThermaLine thermal laminate
- Inner leaf where there is a separating floor (e.g. for flats / apartments)
  - If using a Robust Detail floor, check that wall and floor are compatible
  - Aircrete blocks only permitted with E-FC-3 and E-FC-4 floor types
- Tooth or tie walls together (as shown left)

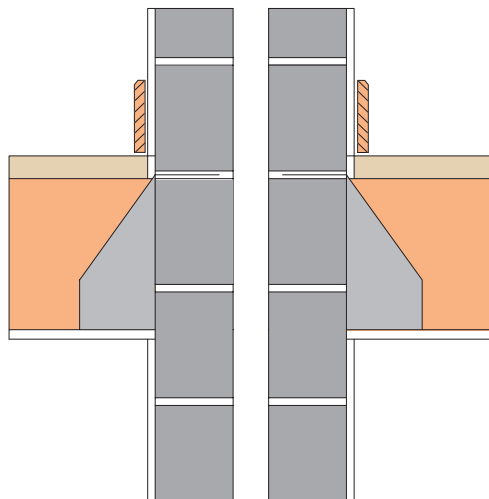


## Junction with separating floor

**SECTION**

- Separating wall must not be continuous between storeys
- 5mm foamed resilient flanking strip between walking surface and wall lining
- In-situ concrete (can be planks) with all voids between planks and blockwork filled with mortar or flexible sealant
- Isover Cavity Barrier between separating floor
- Separating floor must not be continuous between dwellings
- If using a Robust Detail floor, check that wall and floor are compatible

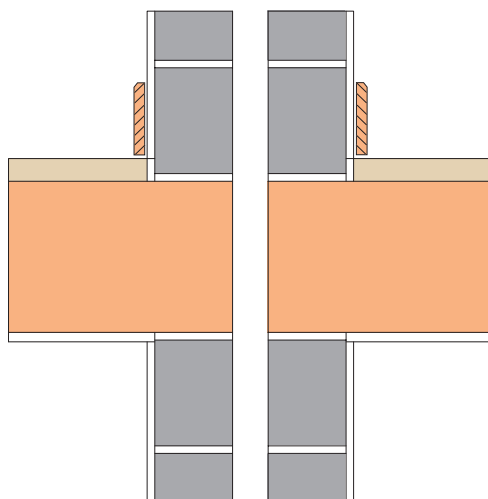
### Junction with timber internal floor (joist hangers)



SECTION

- Floor to comply with Building Regulations Requirement E2

### Junction with built-in internal floors (timber, beam+block, concrete)



SECTION

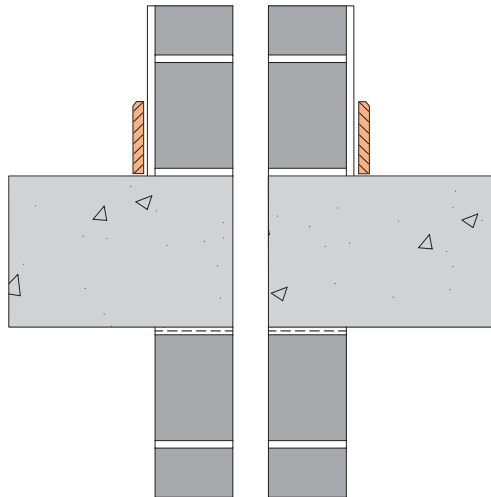
- Internal floors should not be continuous between dwellings

#### Floor construction:

- Timber joists built in with :
  - All voids around the joist filled with mortar
  - The joint surface between the joist and the mortar sealed with flexible sealant (Refer to Robust Detail pattern book)
- Beam and block floor with all voids filled with mortar (floor to comply with Building Regulations Requirement E2), **or**
- Concrete planks with all voids between planks and blockwork filled with mortar or flexible sealant (floor to comply with Building Regulations Requirement E2)

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Suspended ground floor junction

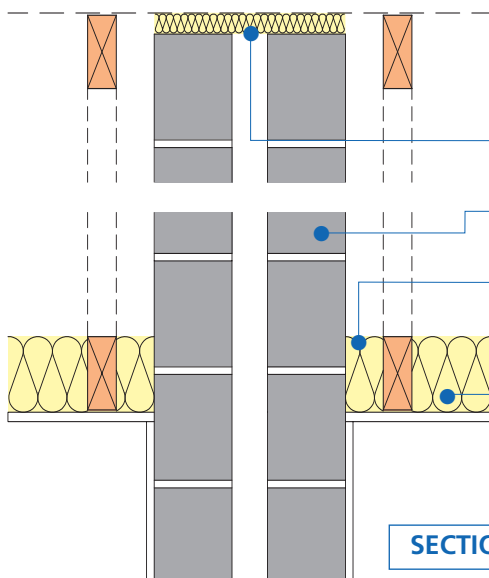


SECTION

- Suspended ground floor not continuous between dwellings
- **Suspended ground floor construction**
- Timber joists built in with:-
- All voids filled with mortar
- The joint between the joist and the mortar sealed with silicone sealant
- Beam and block floor with all voids filled with mortar, **or**
- Concrete planks with all voids between planks and blockwork filled with mortar or flexible sealant, **or**
- Ground bearing slab (raft is not acceptable)

6

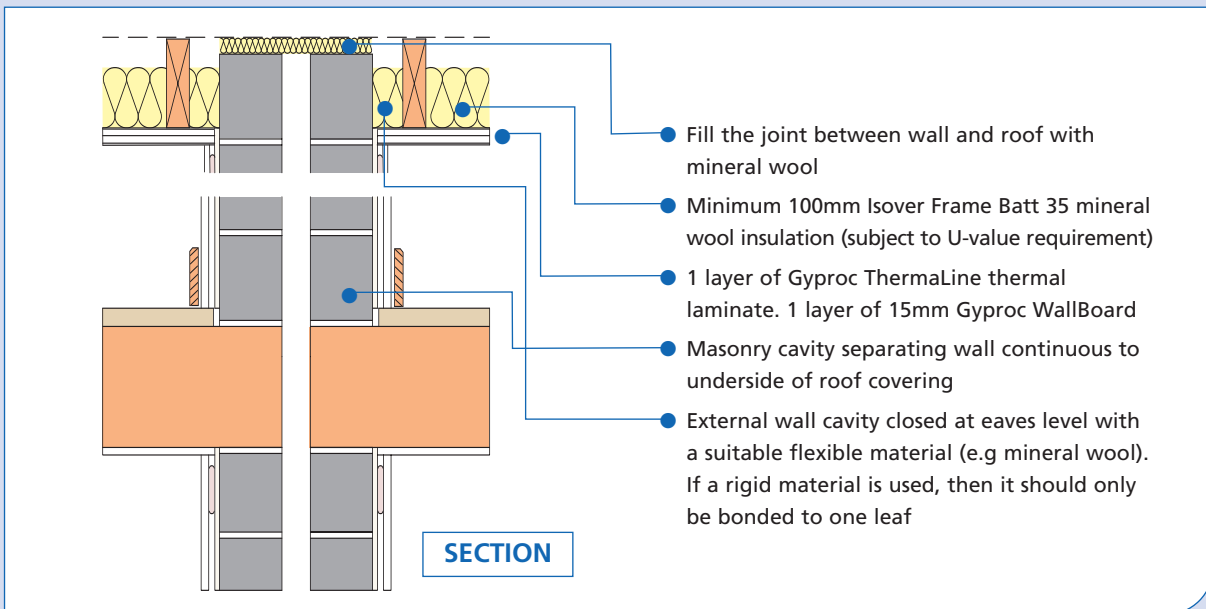
Roof space junction (no room in loft)



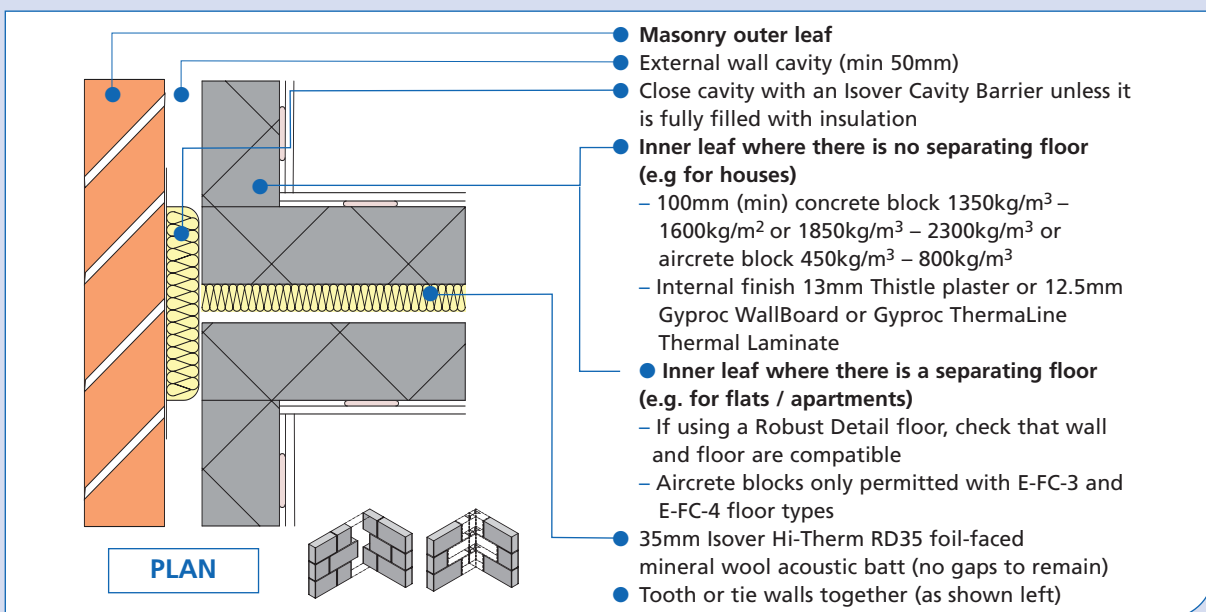
SECTION

- Fill the joint between wall and roof with mineral wool
- Masonry cavity separating wall continuous to underside of roof
- External wall cavity closed at eaves level with a suitable flexible material (e.g mineral wool). If a rigid material is used, then it should only be bonded to one leaf
- 100mm Isover APR 1200 mineral wool insulation (between ceiling joists)

## Roof junction - pitched roof with room-in-roof



## External (flanking) wall junction



## Internal floor junction - timber floor supported on joist hangers



- 35mm Isover Hi-Therm RD35 foil-faced mineral wool acoustic batt (ensure joints are tightly butted)
- Floor to comply with Building Regulations requirement E2
- Lined with one layer of 15mm Gyproc WallBoard, 12.5mm Gyproc WallBoard TEN or 12.5mm Gyproc SoundBloc

SECTION

## Internal floor junction



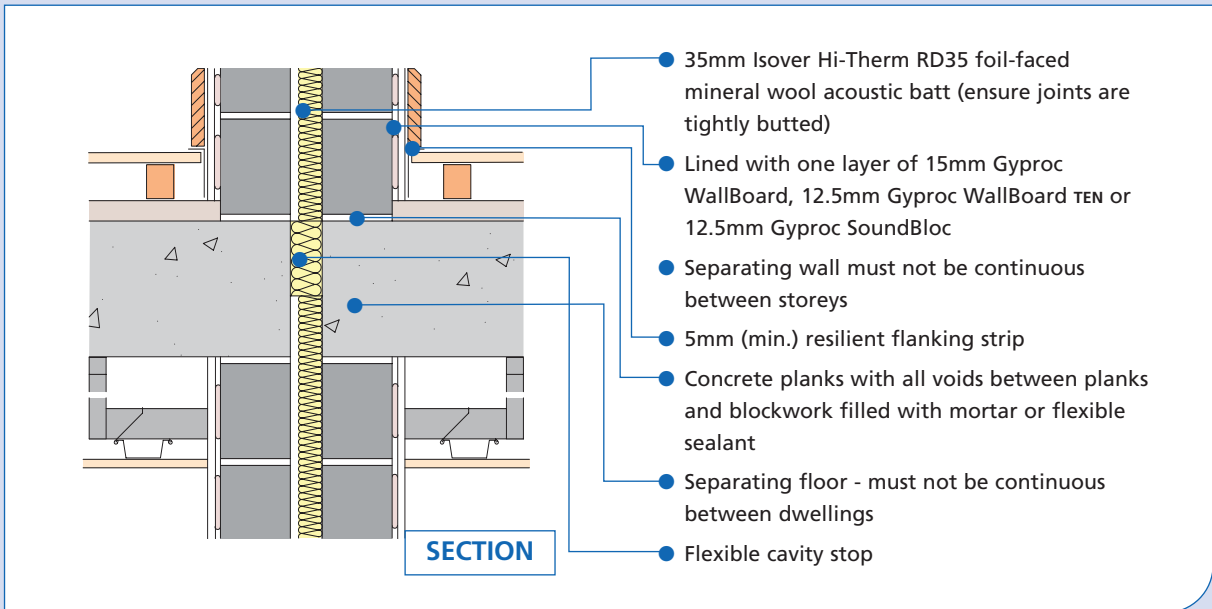
- 35mm Isover Hi-Therm RD35 foil-faced mineral wool acoustic batt (ensure joints are tightly butted)
- Floor to comply with Building Regulations requirement E2
- Internal floors should not be continuous between dwellings

**Floor construction**

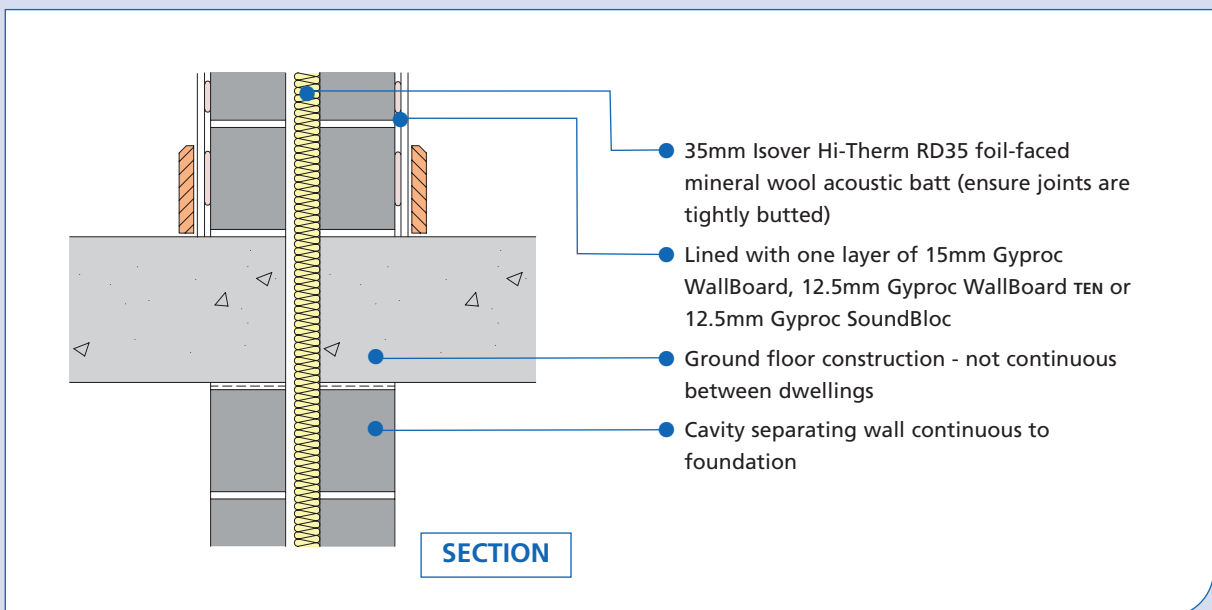
- timber joists built-in with all voids around the joists filled with mortar; joint interface between the joist and the mortar sealed with flexible sealant **or**
- Beam and block floor with all voids between planks and blockwork filled with mortar or flexible sealant **or**
- Concrete planks with all voids between planks and blockwork filled with mortar or flexible sealant

SECTION

### Separating floor junction

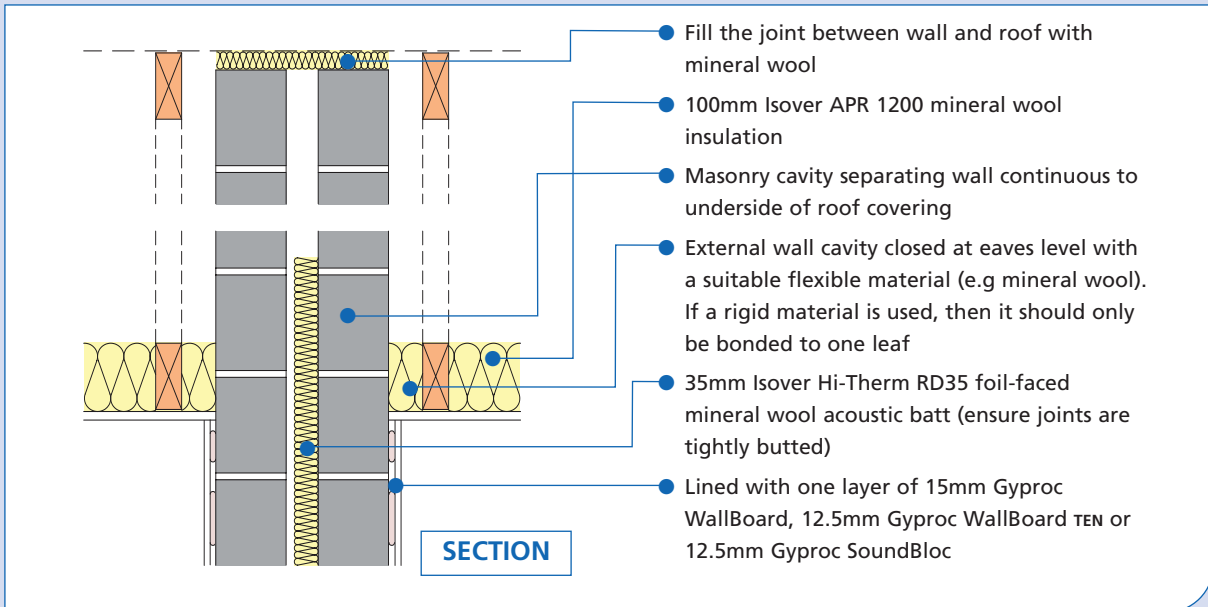


### Ground floor junction



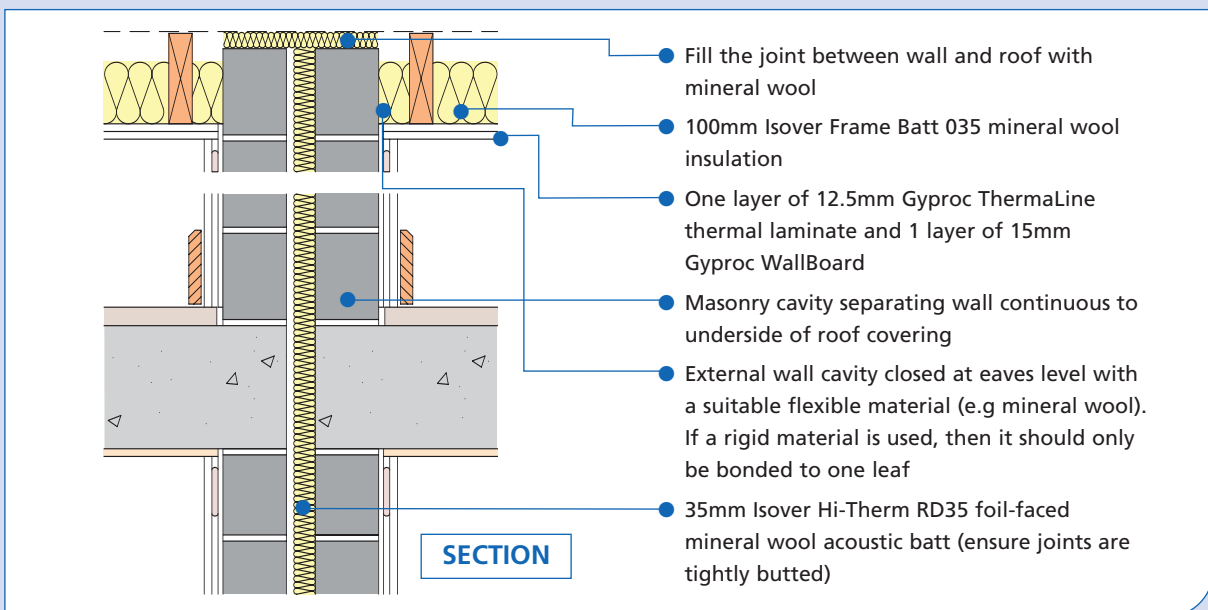
## Roof junction - pitched roof without room-in-roof

▶▶ 13



## Roof junction - pitched roof with room-in-roof

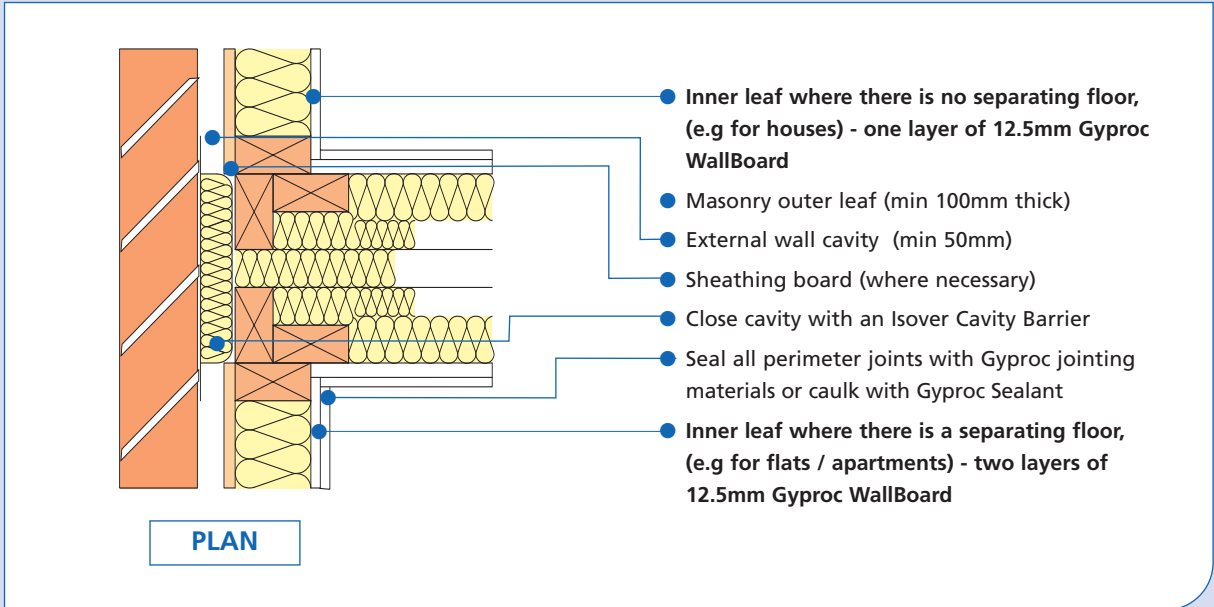
▶▶ 14



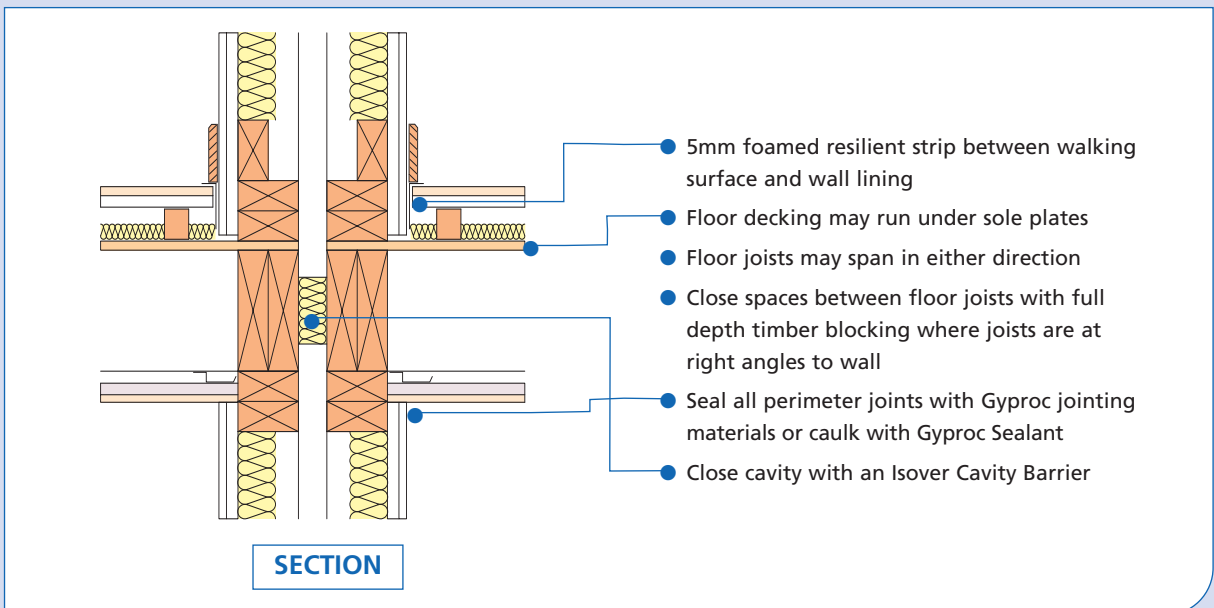
# Twin framed walls



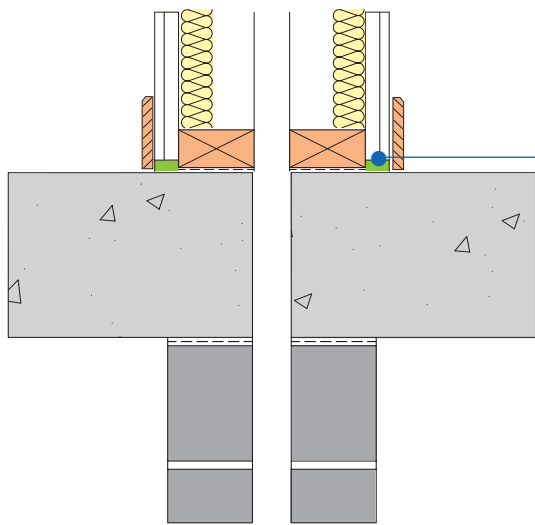
## External wall



## Internal floor / separating floor



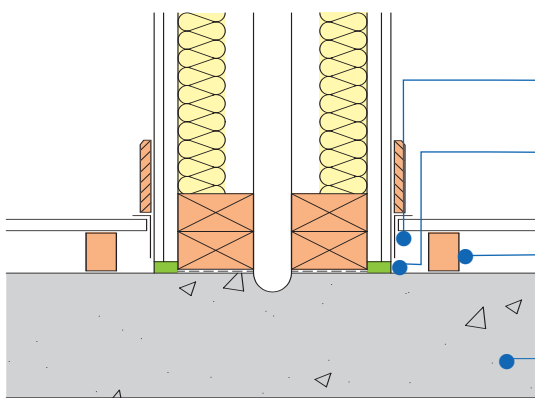
Ground floor junction



SECTION

**Timber floor, beam and block, precast concrete plank, or cast in-situ concrete suspended slab**

- Ground floors not continuous between dwellings
  - Flexible or acoustic sealant between wall lining and floor
- Ground floor construction**
- Timber floor joists:
    - may span in either direction
    - floor decking may run under sole plates
    - close spaces between floor joists with full depth timber blocking where joists are at right angles to wall, **or**
  - Beam and block floor with all voids filled with mortar, **or**
  - Precast concrete planks with all voids between planks and blockwork filled with mortar or flexible sealant, **or**
  - Cast in-situ concrete suspended slab



SECTION

**Raft foundation**

- 5mm foamed resilient flanking strip between walking surface and wall lining
- Flexible or acoustic sealant between wall lining and floor
- A floating floor treatment must be used (for ground floor floating floor treatments mineral fibre quilt is not required between the battens or cradle system)
- Concrete raft - mass per unit area of 365kg/m<sup>2</sup> (min)

▶▶ 4

Roof space junction (no room-in-the-roof)

- Fill the joint between wall and roof with mineral wool
- Cavity separating wall continuous to underside of roof. Wall lining above ceiling can be reduced to two layers of 12.5mm Gyproc WallBoard. No quilt is required in cavity above ceiling
- External wall cavity closed at eaves level with a suitable flexible material (e.g mineral wool) If a rigid material is used, then it should only be bonded to one leaf
- 100mm Isover APR 1200 mineral wool insulation between ceiling joists
- Seal all perimeter joints with Gyproc jointing materials or caulk with Gyproc Sealant

**SECTION**

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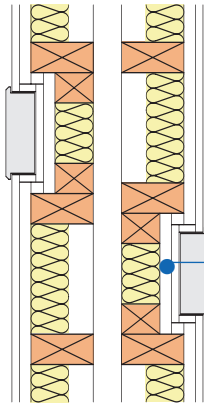
Roof space with room in the roof

- Not currently permitted within Robust Details
- Fill the joint between wall and roof with mineral wool
- Cavity separating wall continuous to underside of roof
- External wall cavity closed at eaves level with a suitable flexible material (e.g mineral wool) If a rigid material is used, then it should only be bonded to one leaf
- 100mm Isover Frame Batt 35 mineral wool insulation between ceiling joists
- One layer of Gyproc ThermaLine thermal laminate. One layer of 15mm Gyproc WallBoard
- Seal all perimeter joints with Gyproc jointing materials or caulk with Gyproc Sealant

**SECTION**

Service details

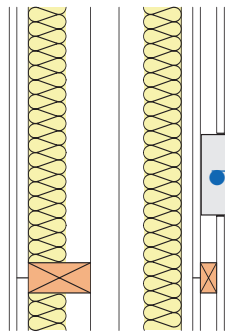
PLAN



Electrical sockets, switches etc.

- Provide two or more layers of Gyproc plasterboard (total nominal mass per unit area 22kg/m<sup>2</sup>) to enclose electrical boxes
- Stagger sockets, switches, etc. on each side of the wall (ADE recommends minimum 150mm edge to edge)
- Alternatively, Hilti putty pads can be used, see page 162

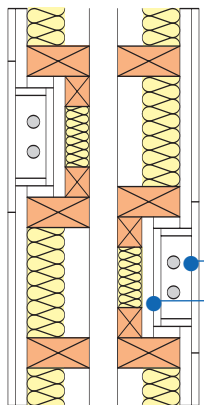
PLAN



Electrical sockets, switches etc.

- Alternatively provide a service void on surface of separating wall. This is the preferred method where more than one socket, switch, etc. are close together, e.g. in a kitchen

PLAN



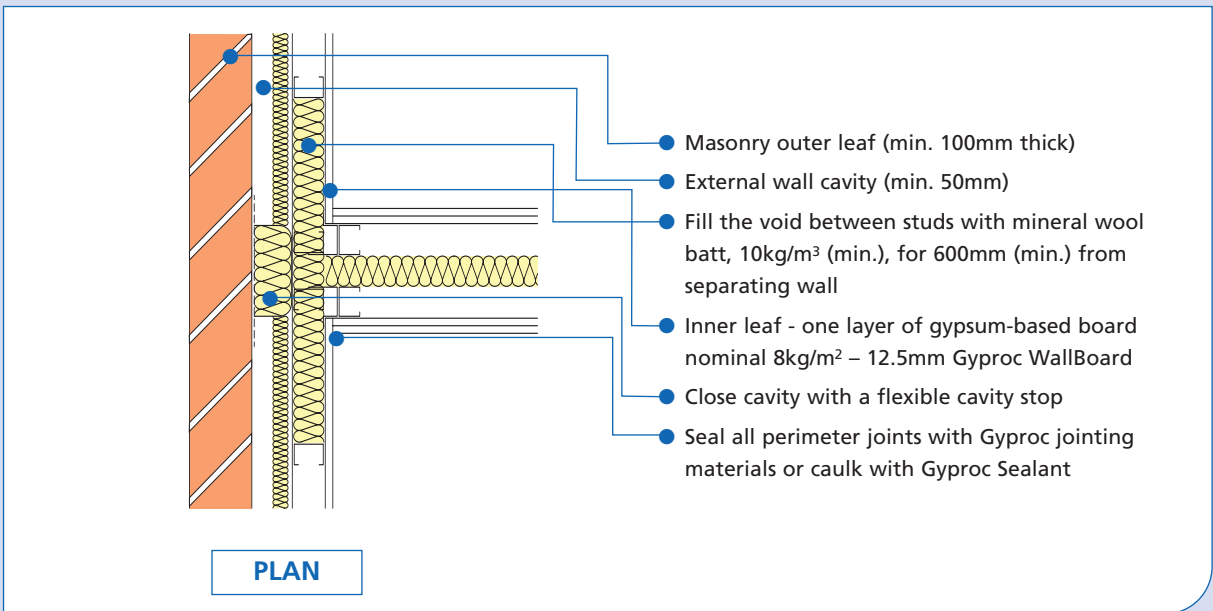
Piped services

- Service void within separating wall
- Provide two or more layers of Gyproc plasterboard (total nominal mass per unit area 22kg/m<sup>2</sup>) to enclose pipes
- Stagger services on each side of wall

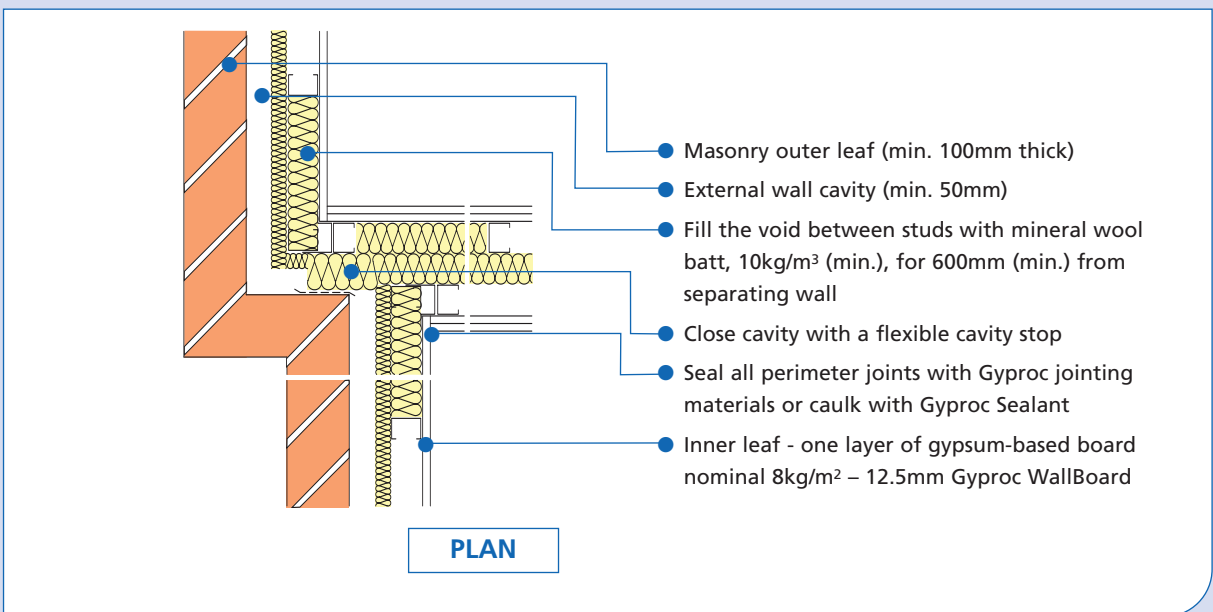
# Steel frame (E-WS-1)



## External (flanking) wall junction

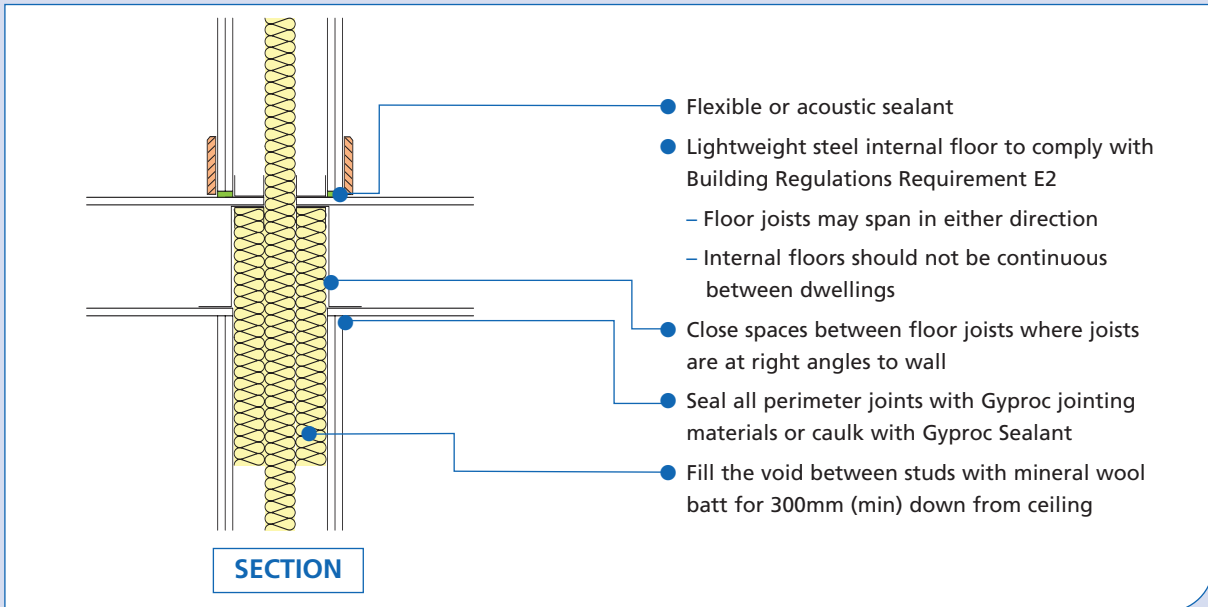


## Staggered external (flanking) wall junction



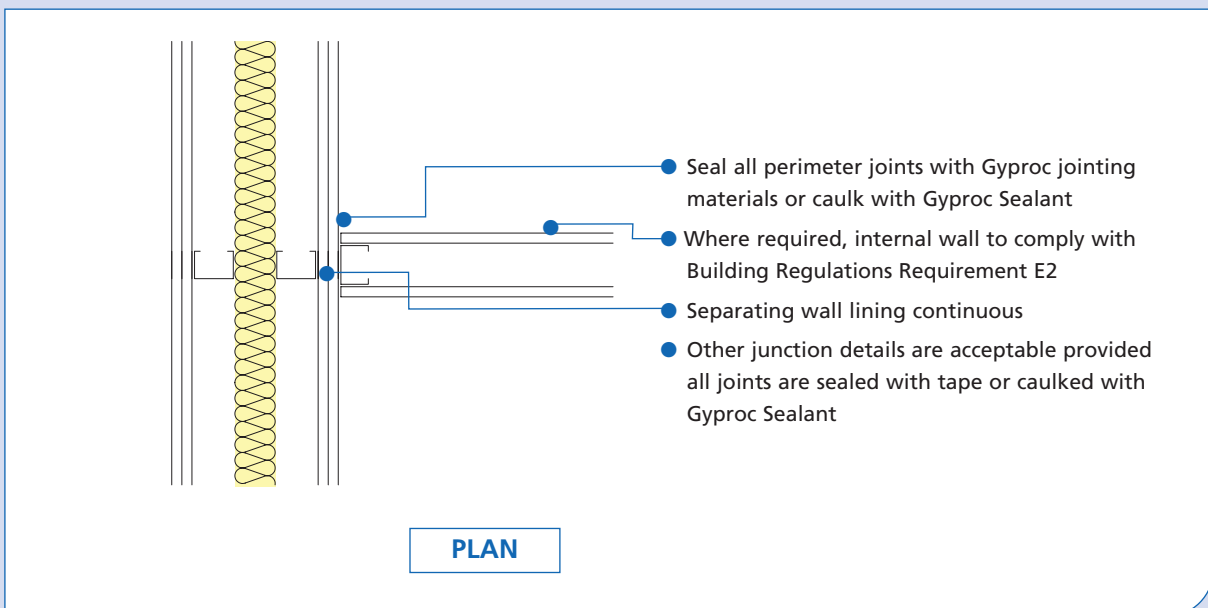
▶▶ 3

### Internal floor junction

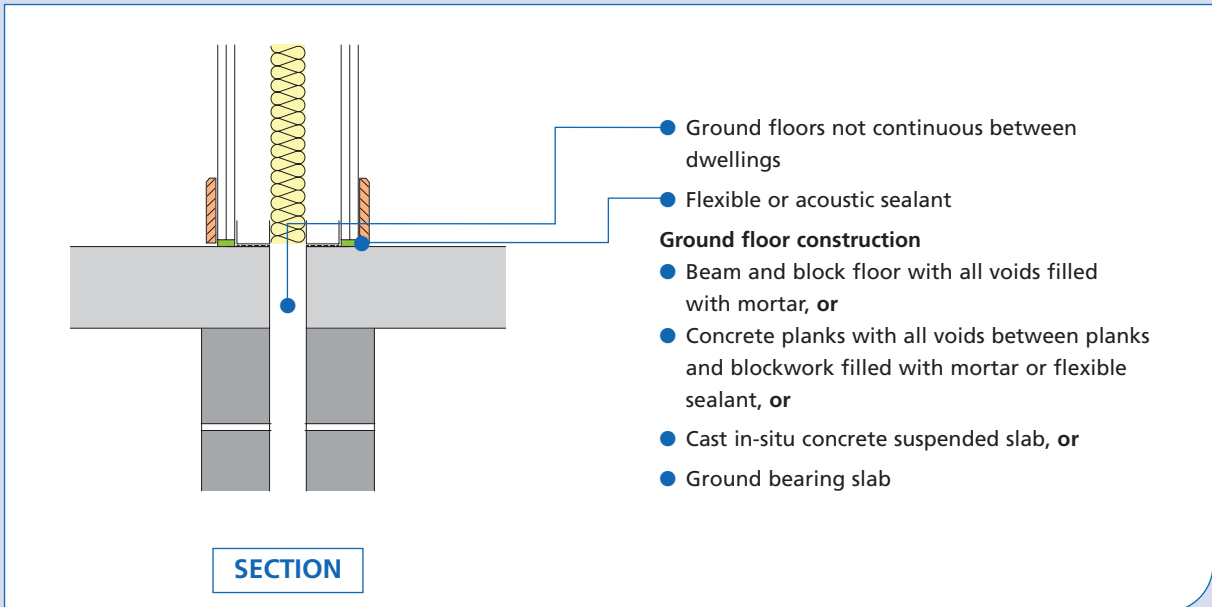


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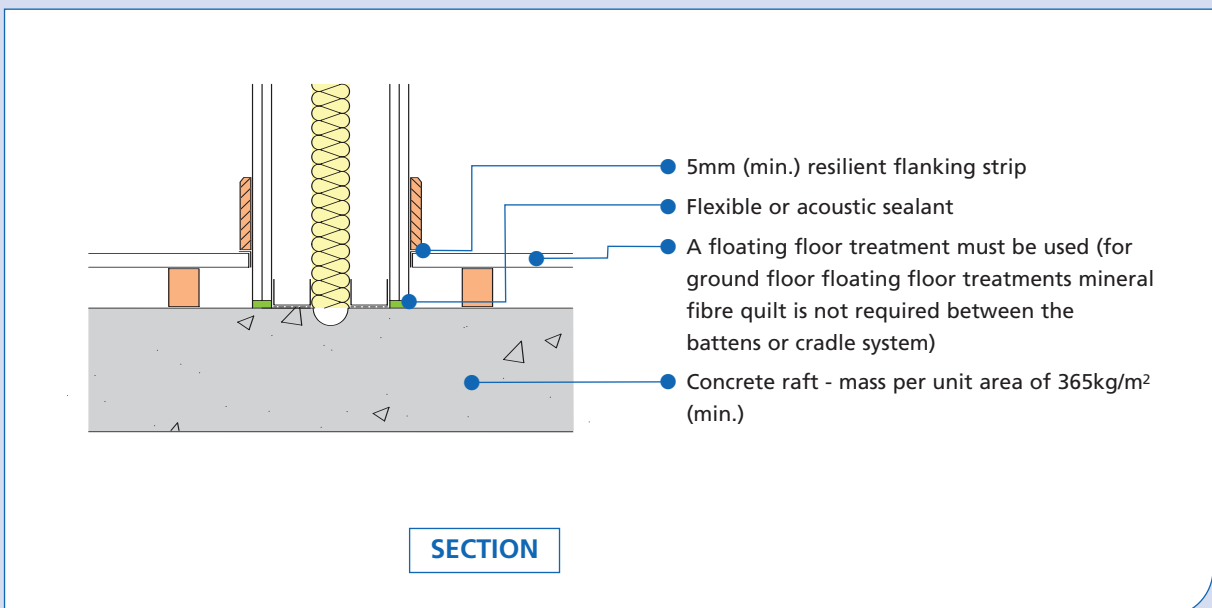
### Internal wall junction



## Ground floor junction: beam and block, precast concrete plank, cast in-situ concrete suspended slab or ground bearing slab

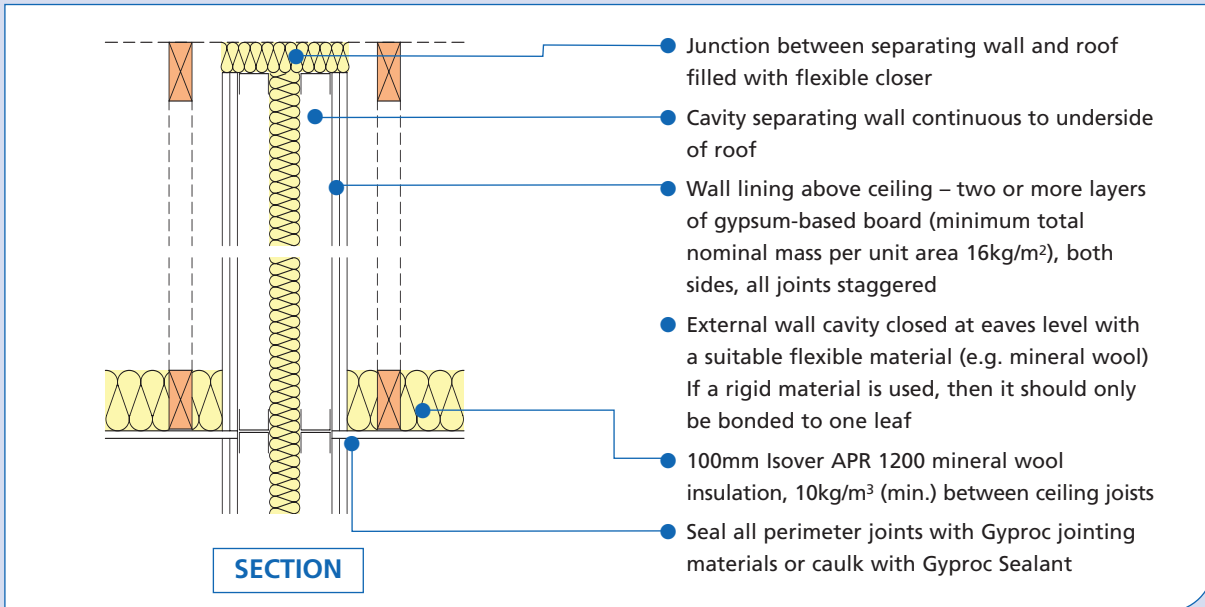


## Raft foundation





### Roof junction - pitched roof with no room-in-the-roof



## Services and sockets in the separating wall

The diagram consists of three vertical plan views of a separating wall, each labeled 'PLAN' in a blue box on the left. The wall is represented by a central vertical line with a yellow hatched pattern. Various components are shown on either side of the wall, including electrical sockets, switches, and piped services. Blue lines connect these components to their respective descriptions in the text on the right.

**PLAN**

**Electrical sockets, switches etc.**

- Provide two or more layers of gypsum-based board (total nominal mass per unit area 22kg/m<sup>2</sup>) to enclose electrical boxes
- Stagger sockets, switches, etc. on each side of the wall (ADE recommends minimum 150mm edge to edge)
- Fire resistant seal where required by Part B of the Building Regulations
- Alternatively, Hilti Putty Pads can be used, see page 162

**PLAN**

**Electrical sockets, switches etc.**

- Service void on surface of separating wall. This is the preferred method where more than one socket, switch, etc are close together, e.g. in a kitchen

**PLAN**

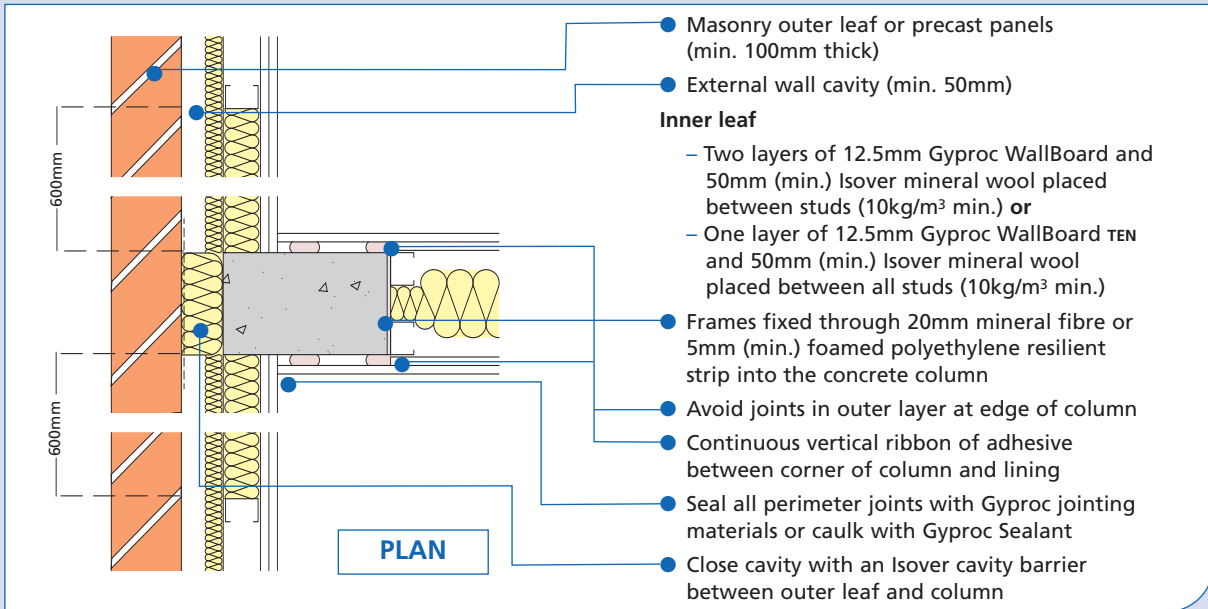
**Piped services**

- Stagger services on each side of wall  
Note: this detail is not applicable for SVPs or gas pipes

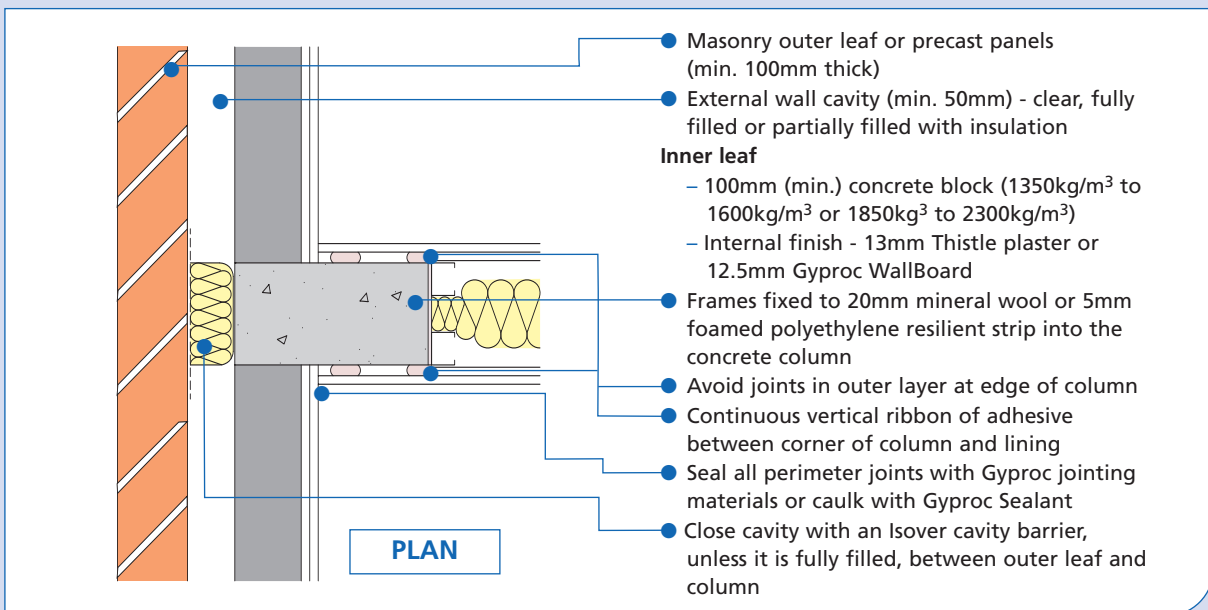
# GypWall QUIET IWL (E-WS-2)

Details shown are for GypWall QUIET IWL walls, but the principles shown are also applicable to GypWall QUIET.

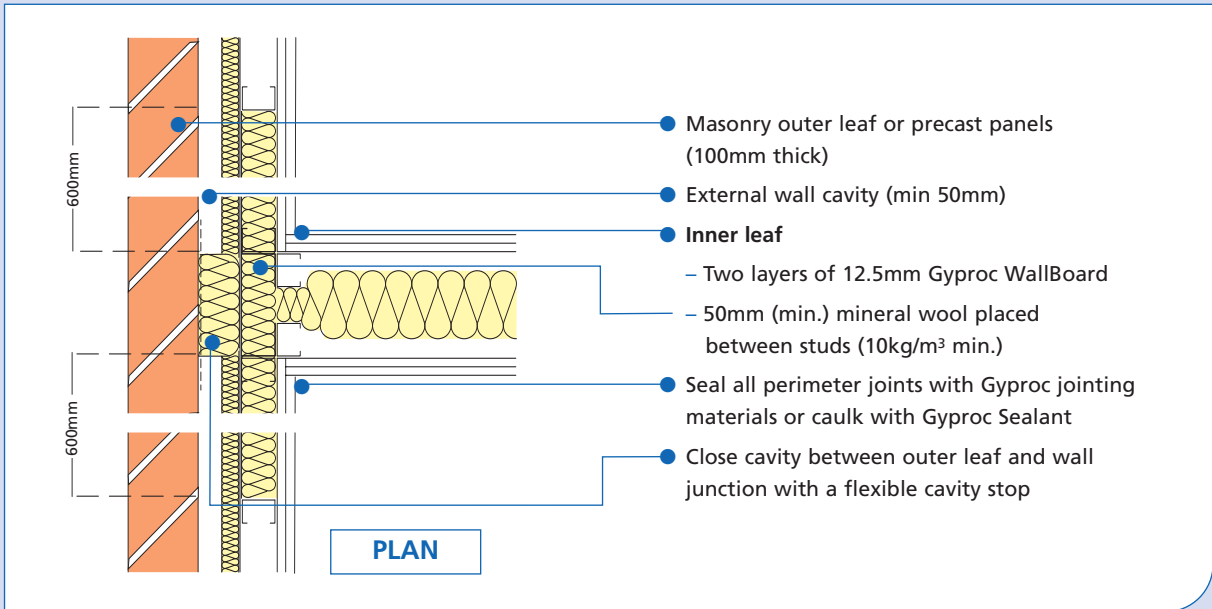
## External (flanking) wall junction - steel or timber frame inner leaf (at concrete column position)



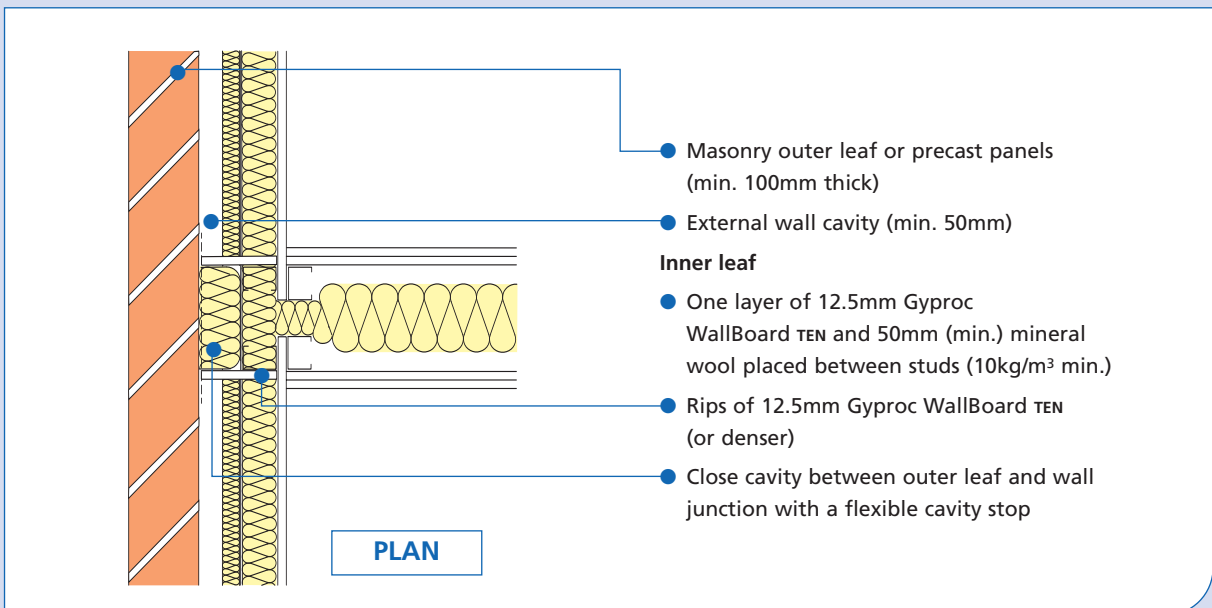
## External (flanking) wall junction - masonry inner leaf (at a concrete column position)



### External (flanking) wall junction - steel or timber frame inner leaf (not at concrete column position) - option 1

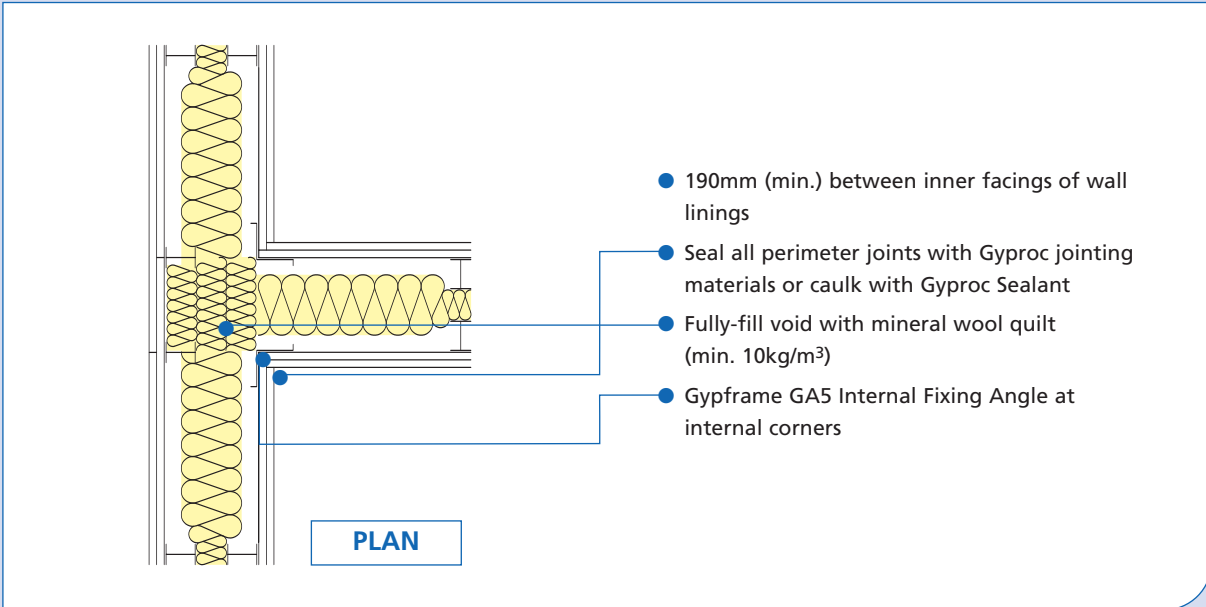


### External (flanking) wall junction - steel or timber frame inner leaf (not at concrete column position) - option 2



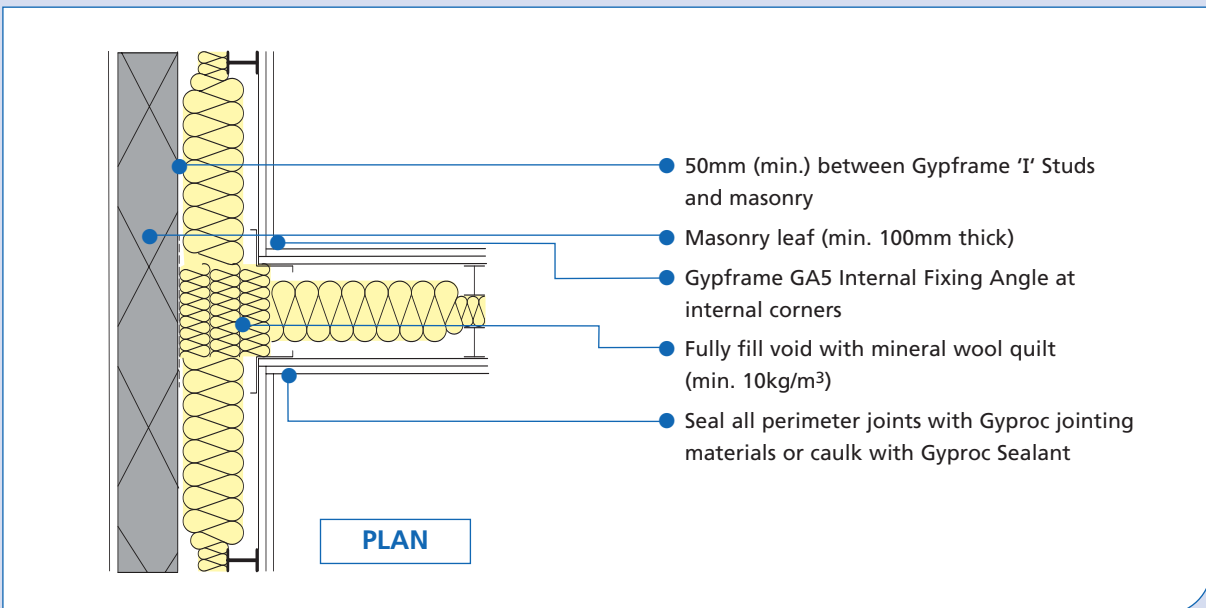
### Separating wall to separating wall junction

## 5.1

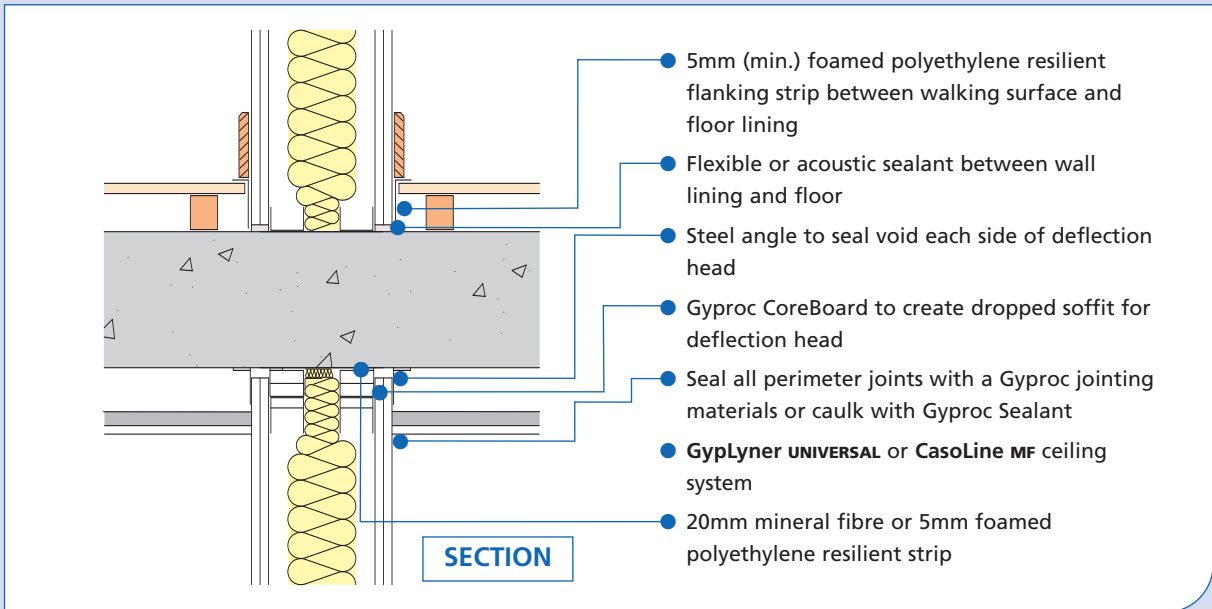


### Separating wall to separating wall junction

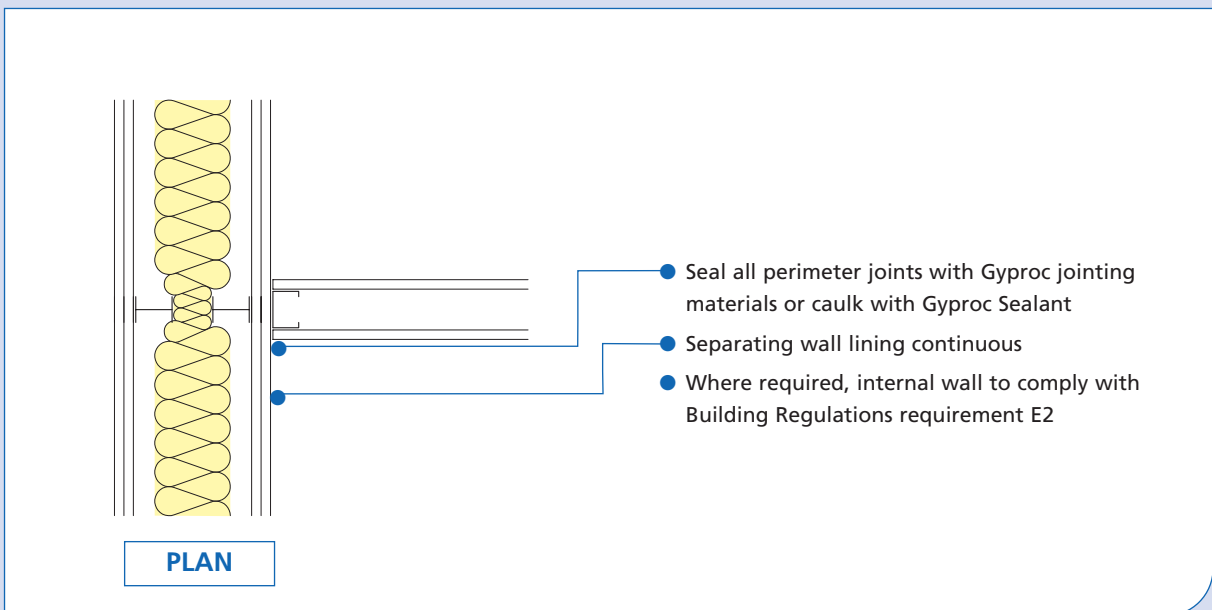
## 5.2



## Separating floor junction - in-situ concrete floor E-FC-2



## Internal wall junction





## Sockets in the separating wall

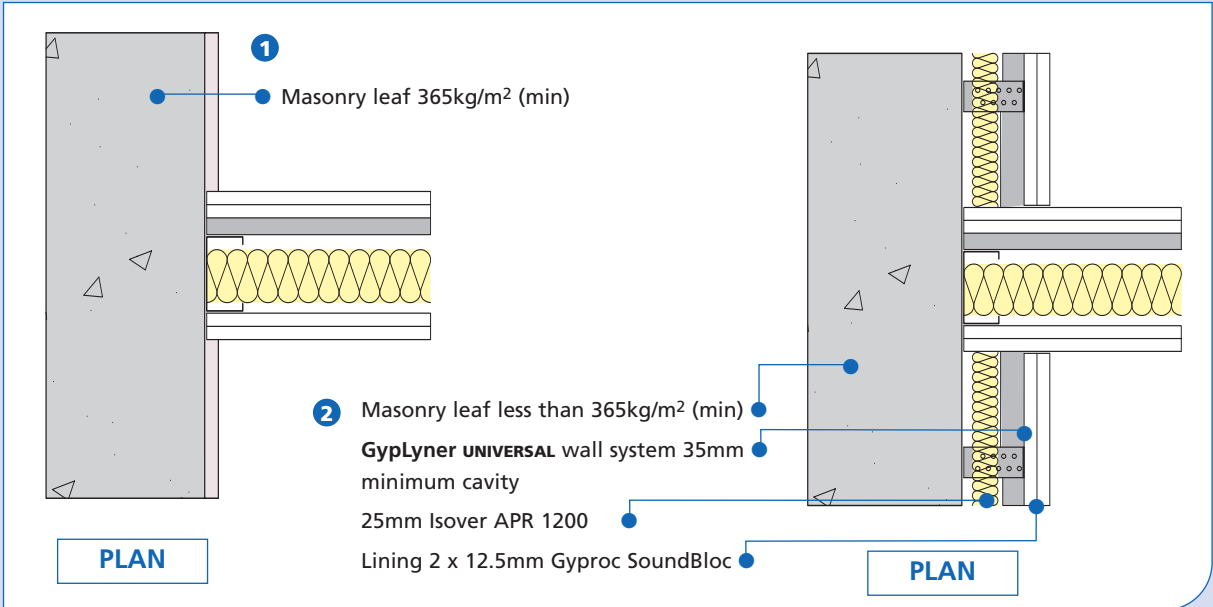
**Electrical sockets, switches etc**

- Stagger sockets, switches, etc on each side of the wall such that they are not positioned in opposite bays
- Provide two or more layers of gypsum-based board (total nominal mass per unit area 22kg/m<sup>2</sup>) to enclose electrical boxes
- Fire-resistant seal where required by Part B of the Building Regulations
- Service void on surface of separating wall. This is the preferred method where more than one socket, switch, etc are close together e.g. in a kitchen
- Alternatively, Hilti Putty Pads can be used, see page 162

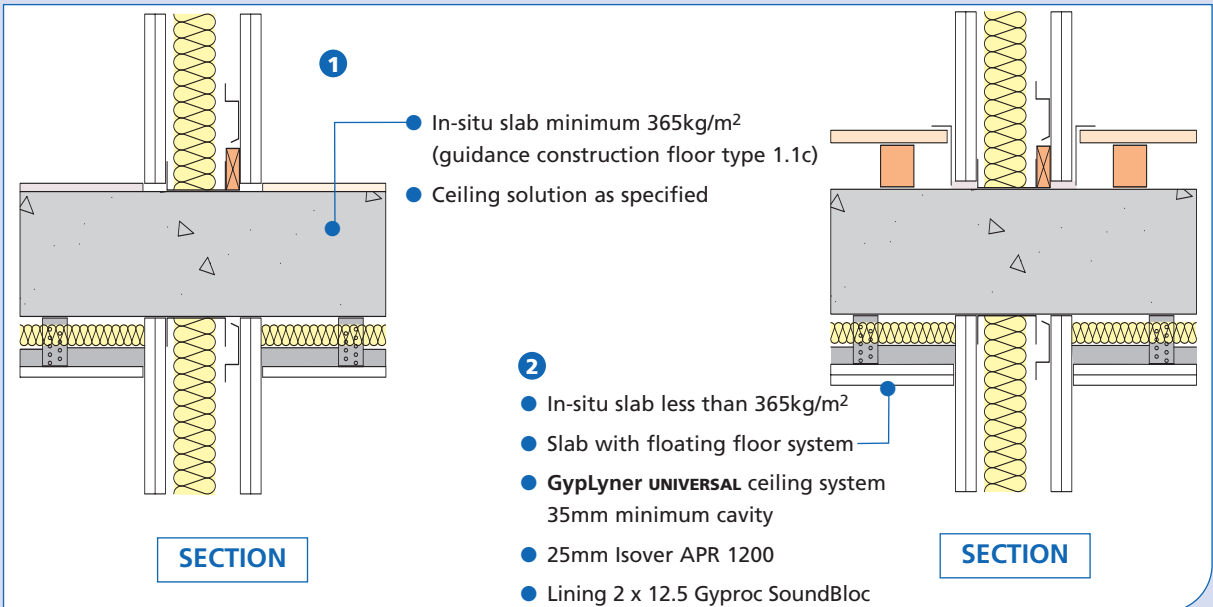
# Single frame walls



## External wall junction

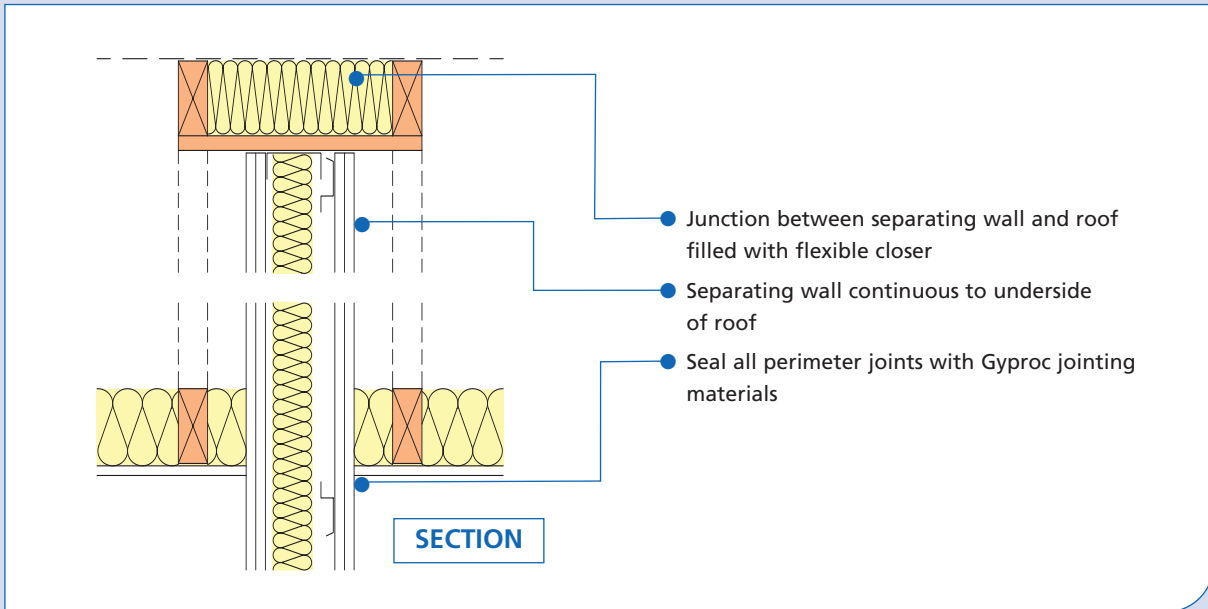


## Junction with separating floor



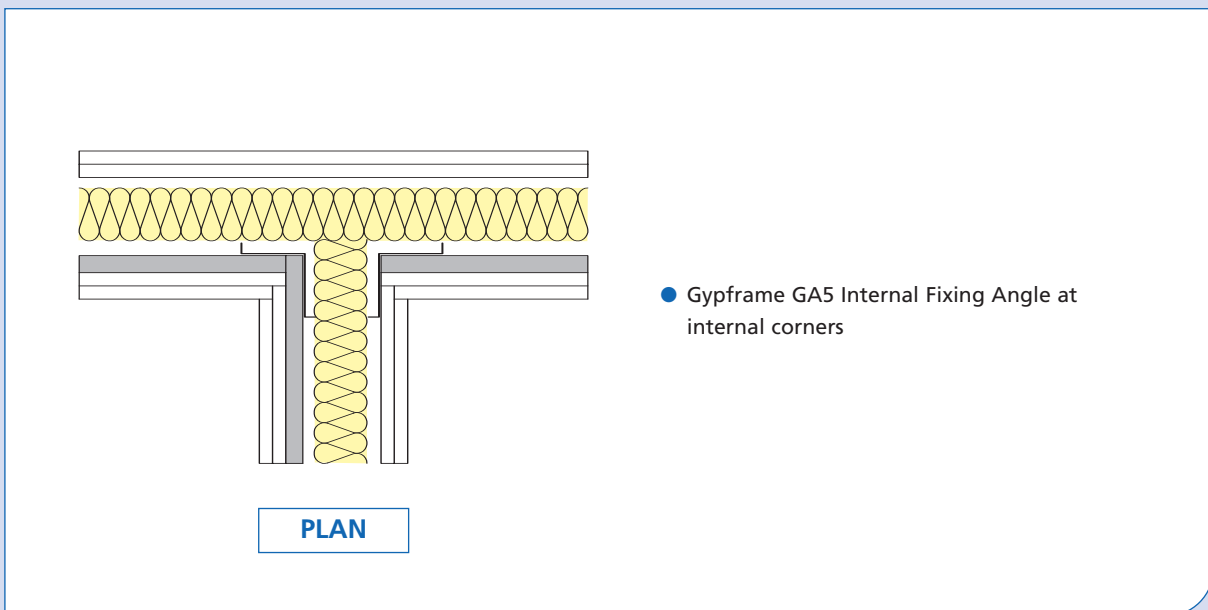
▶▶ 3

Roof junction



▶▶ 4

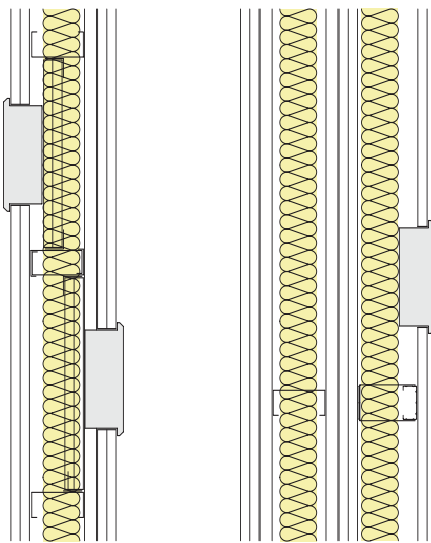
Internal Junction of separating walls



## Internal partition

- There are no special provisions for the flanking treatment of lightweight internal partitions abutting a separating wall
- Partitions that abut a plasterboard lining system should not be of masonry construction

## Services and sockets in the separating wall



### Electrical sockets, switches etc.

- Provide two or more layers of gypsum-based board (total nominal mass per unit area 22kg/m<sup>2</sup>) to enclose electrical boxes
- Stagger sockets, switches, etc. on each side of the wall (ADE recommends minimum 150mm edge to edge)
- Fire resistant seal where required by Part B of the Building Regulations
- Alternatively, Hilti Putty Pads can be used, see page 162

### Electrical sockets, switches, piped services etc.

- Service void on surface of separating wall. This is the preferred method where more than one socket, switch, etc are close together, e.g. in a kitchen

# Framed floors



## External wall

**SECTION**

- Masonry outer leaf
- External wall cavity (min. 50mm)
- Two layers 12.5mm Gyproc WallBoard
- 5mm foamed polyethylene resilient flanking strip between walking surface and wall lining
- Close cavity with an Isover Cavity Barrier
- Joists may span in either direction
- Close spaces between floor joists with full depth timber blocking where joists are at right angles to the wall
- Seal all perimeter joints with Gyproc jointing materials or caulk with Gyproc Sealant
- Rip Liner\* between floor and wall lining

\* Within Robust Details a Rip Liner is described as a small section of wall lining material or any board material fitted in advance of the main wall lining to allow the installation of the floating floor treatment. British Gypsum recommends an MR grade plasterboard is used for this purpose or a Glasroc board for increased impact resistance



## Separating wall (also applicable to internal floor)

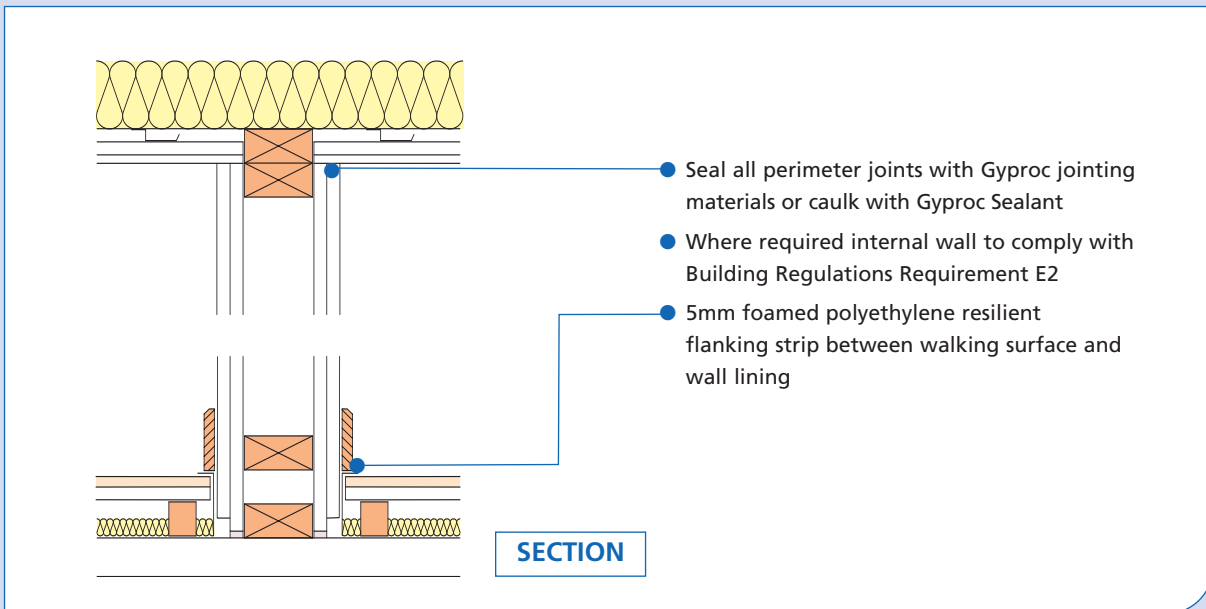
**SECTION**

- 5mm foamed polyethylene resilient flanking strip between walking surface and wall lining
- Close spaces between floor joists with full depth timber blocking where joists are at right angles to the wall
- Joists may span in either direction
- Close cavity with an Isover Cavity Barrier
- Seal all perimeter joints with Gyproc jointing materials or caulk with Gyproc Sealant
- Solid softwood joists can be used instead of engineered 'I' joists (E-FT-2)
- Rip Liner\* between floor and wall lining

\* Within Robust Details a Rip Liner is described as a small section of wall lining material or any board material fitted in advance of the main wall lining to allow the installation of the floating floor treatment. British Gypsum recommends an MR plasterboard is used for this purpose or a Glasroc board for increased impact resistance

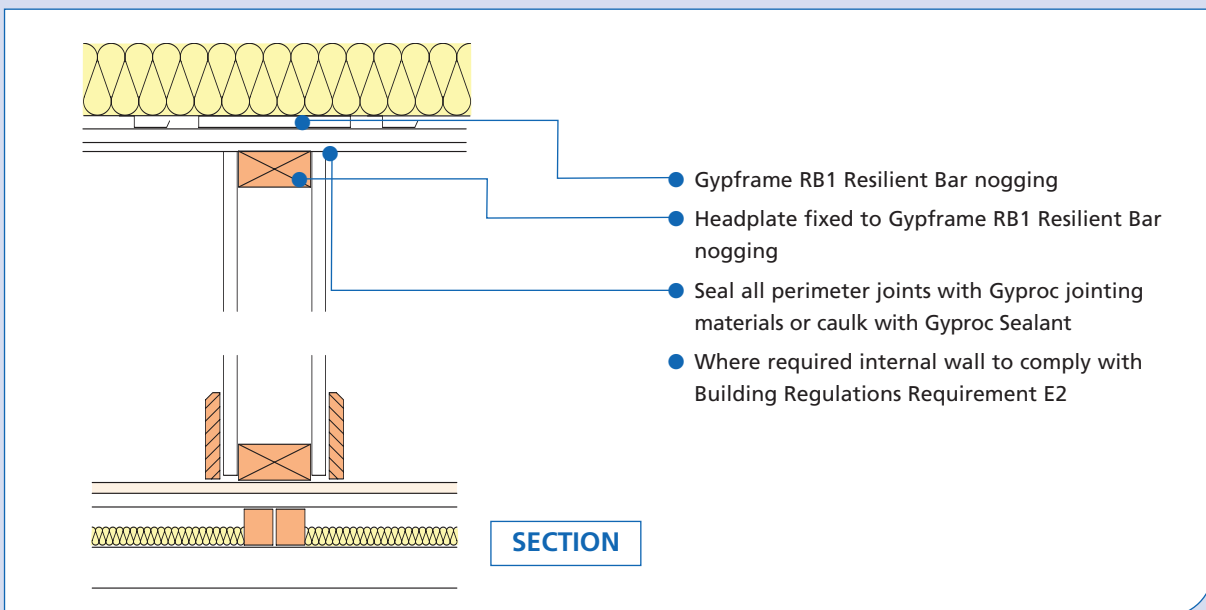
▶▶ 3

Internal wall (load-bearing)



▶▶ 4

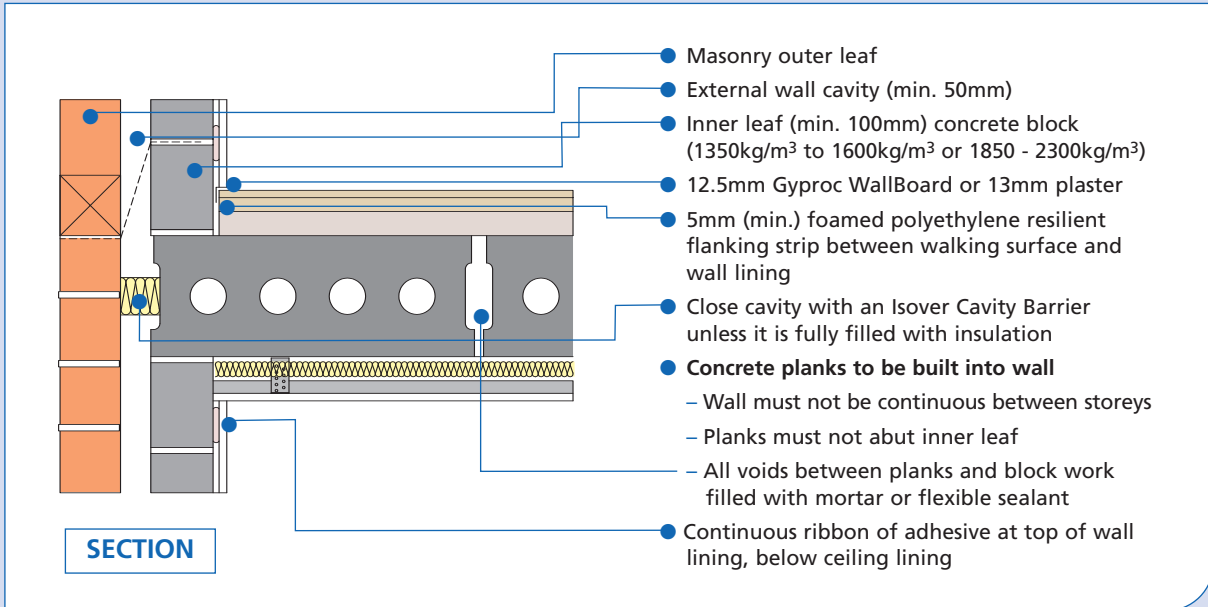
Internal wall (non load-bearing)



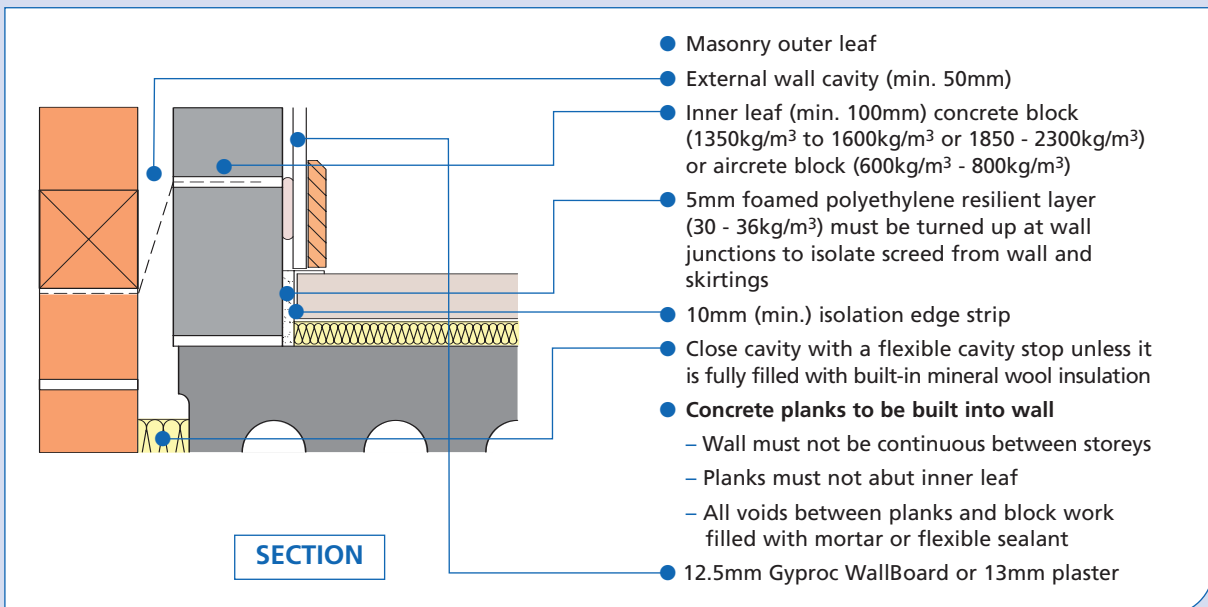
# Masonry floors



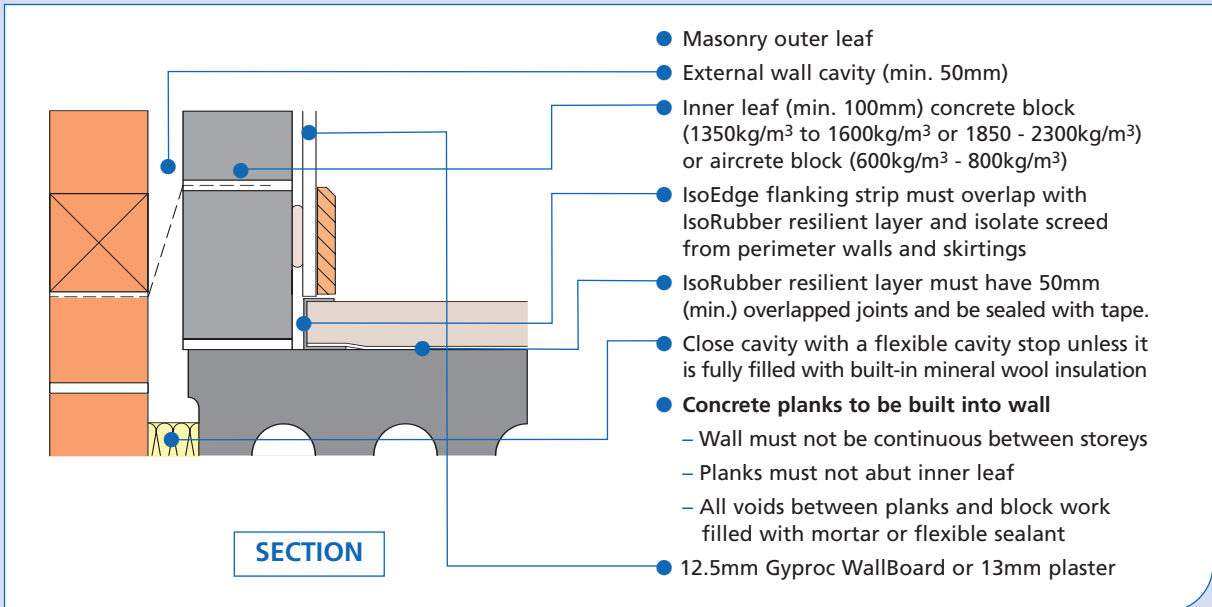
## E-FC-1 & E-FC-2 External wall junction - masonry leaf



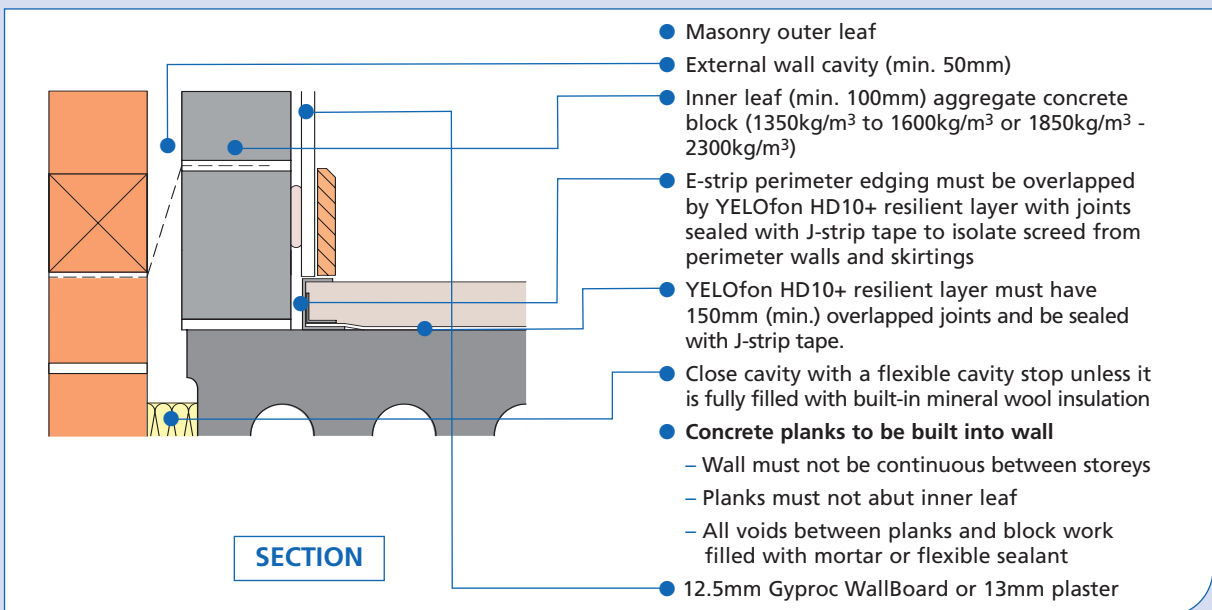
## E-FC-3 External wall junction - masonry leaf



E-FC-4 External wall junction - masonry leaf



E-FC-5 External wall junction - masonry leaf



▶▶ 5

Separating wall junction - Precast Units

**SECTION**

- 5mm foamed polyethylene resilient flanking strip between walking surface and wall lining
- Close cavity with an Isover cavity barrier
- Concrete planks to be built into wall:**
- Wall must not be continuous between storeys
- Planks must not abut separating wall
- All voids between planks and blockwork filled with mortar or flexible sealant

**Note:** Lightweight walls (framed or aircrete block) not Robust Details permitted with this floor type.

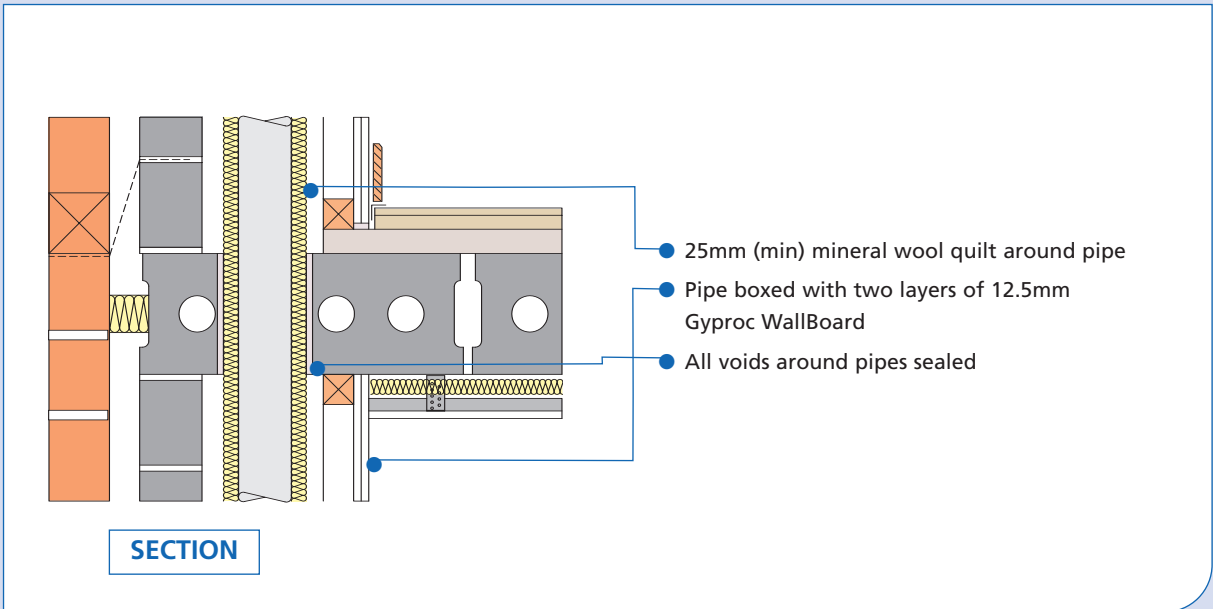
▶▶ 6

E-FC-2 Separating wall junction - in-situ concrete

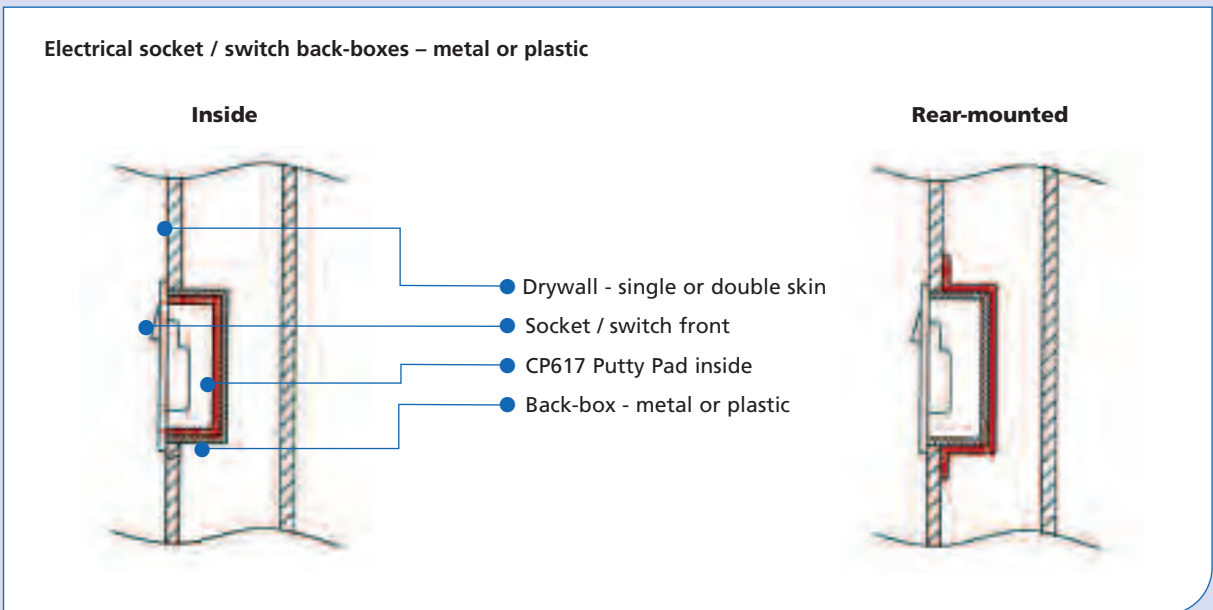
**SECTION**

- 5mm foamed polyethylene resilient flanking strip between walking surface and wall lining
- Flexible or acoustic sealant (Gyproc Sealant) between slab and wall linings at head and base
- Separating wall must not be continuous between storeys
- Junction to allow for deflection of slab where required
- Gyproc CoreBoard to create dropped soffit for deflection head
- GyLyner UNIVERSAL or CasoLine MF ceiling system

Services



Hilti CP 617 Intumescent and Acoustic Putty Pad



...think **BG** ...think **BGR**



# Constructive partnerships

## ...think BG

...think big. British Gypsum is the UK's leading supplier and foremost authority on internal wall and ceiling systems, with a proven record of providing residential solutions for the leading UK house builders and developers

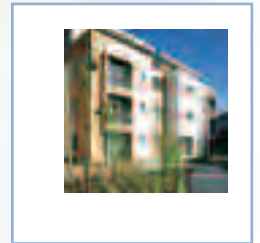
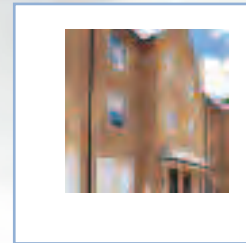
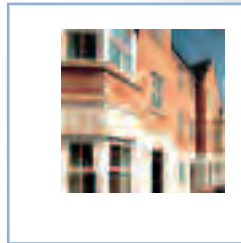
- Innovative systems
- Technical expertise
- Preferred products
- Lifetime Warranted systems
- 'Drywall Academy' support

## ...think BGR

...think British Gypsum Residential

...think bigger. House builders who work in partnership with British Gypsum benefit from a unique premium package of products and services unmatched in the house building industry

- Assured availability
- Waste collection and recycling service
- Supervisory training
- Unmatched technical support
- 'Moving In' guide for home buyers



experts in residential

## Also from British Gypsum



The White Book



Plasterboard recycling service



Corporate responsibility report



SpecSure®



Plasterboard waste

## British Gypsum

UK market leader in gypsum plaster and plasterboard systems, British Gypsum markets its products under the Gyproc, Thistle, Gypframe, Glasroc, Arteco and Isover\* brand names.

All British Gypsum management systems have been independently audited and certified as conforming with *ISO 9001:2000*. The company maintains the quality and leading edge performance of its products and systems through an extensive and on-going programme of research, development and testing, supported by in-house fire, acoustic and system test facilities which are unique amongst building product manufacturers and match the best available anywhere in the UK.

British Gypsum quality does not stop at the products themselves - CAD and technical support for specifiers; comprehensive on-site support and off-site training through three dedicated product training centres at East Leake near Nottingham, Kirkby Thore in Cumbria, and Erith in Kent, and ex-stock or next day availability through around 4000 stockists nationwide are just a part of a customer support package that has, for many years, set British Gypsum apart in the marketplace.

Gyproc, Thistle, Gypframe, Glasroc and Arteco are all registered trade names of BPB United Kingdom Limited. Isover is a registered trade name of Saint-Gobain.

British Gypsum reserves the right to revise product specifications without notice. The information in this document was correct to the best of our knowledge at the time of publication. It is the user's responsibility to ensure that it remains current prior to use.

The information in this document is for guidance only and should not be read in isolation. Users should read and familiarise themselves with all the information contained in this document and ensure that they are fully conversant with the products and systems being used, before subsequent specification or installation.

For a comprehensive and up-to-date library of information visit the British Gypsum website at: [www.british-gypsum.com](http://www.british-gypsum.com)

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