The details in this section have been developed for a range of externally insulated single leaf masonry/hollow block wall constructions. The Introduction document "Limiting Thermal Bridging and Air Infiltration Acceptable Construction Details" provides practical information with regards to implementation of these details onsite. This guide should be read in conjunction with these details. Details are given for the junctions with a range of roof, ground floor and internal floor types, as well as at external wall opes.

The details are indicative. They focus on the issues of thermal performance and air tightness. Other issues are not considered fully. Insulation thicknesses for the main building elements have not been provided, as these depend on the thermal properties of the materials chosen, as well as on the desired U-value.

Masonry materials shown on the drawings are blocks and bricks. Other masonry materials, including precast and insitu concrete, may be substituted without loss of thermal performance or increased technical risk. The use of thermally resistant materials, beyond that depicted, will naturally increase the thermal performance of the building fabric.

All materials and workmanship are to be installed to Technical Guidance Document D "Materials and Workmanship."

All details are shown with a thin coat render system for simplification. However, a range of cladding may be used without any loss of thermal performance. All external cladding systems should be proper materials as defined in Part D. It is recommended that insulating and cladding components are part of a system to ensure compatibility.

These diagrams illustrate good practice for design and construction of interfaces only in respect to ensuring thermal performance and air barrier continuity. The guidance must be implemented with due regard to all other requirements imposed by the Building Regulations.

Where these construction details are used for the Target U-values provided in the Appendix D, Table D2 of TGD L 2021 the psi values published in Table D2 may be used to calculate the actual Thermal Bridging heat loss for a dwelling for key thermal bridging junctions in that dwelling.

Technical Guidance Document B and Supplementary Guidance to TGD B provides guidance in relation to the provision of cavity barriers in air cavities, cavity barriers within combustible insulation layers and fire protection of structural elements.

The 2021 edition of the ACDs updates the drawings to take account of industry practice. The performance requirements remain the same as for the 2011 edition.
**Table D2 - Section 2 - External Insulation**

<table>
<thead>
<tr>
<th>Junction detail Identifier</th>
<th>Section 2 - External Insulation</th>
<th>Target U-values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Junction detail</td>
<td>U-value = 0.18 Wm²K&lt;sup&gt;1, 2&lt;/sup&gt; (roof U = 0.16)</td>
</tr>
<tr>
<td>2.01</td>
<td>Ground Floor - Insulation above slab</td>
<td>0.131</td>
</tr>
<tr>
<td>2.01a</td>
<td>Ground Floor - Insulation above slab</td>
<td>0.214</td>
</tr>
<tr>
<td>2.02</td>
<td>Ground Floor - Insulation below slab</td>
<td>0.162</td>
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<tr>
<td>2.02a</td>
<td>Ground Floor - Insulation below slab</td>
<td>0.235</td>
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<tr>
<td>2.03</td>
<td>Timber Suspended Ground Floor</td>
<td>0.158</td>
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<tr>
<td>2.03a</td>
<td>Timber Suspended Ground Floor</td>
<td>0.297</td>
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<tr>
<td>2.04</td>
<td>Concrete Intermediate Floor within a dwelling</td>
<td>0.001</td>
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<tr>
<td>2.04a</td>
<td>Concrete Separating Floor between dwellings&lt;sup&gt;4&lt;/sup&gt;</td>
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</tr>
<tr>
<td>2.05</td>
<td>Masonry Separating Wall - plan&lt;sup&gt;5&lt;/sup&gt;</td>
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<tr>
<td>2.06</td>
<td>Masonry Partition Wall</td>
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<tr>
<td>2.07</td>
<td>Stud Partition Wall</td>
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<td>2.08/2.09</td>
<td>Eaves - Unventilated/Ventilated roof space</td>
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<tr>
<td>2.10.1/2.11.1</td>
<td>Eaves - Unventilated/Ventilated - Insulation between and under rafters - Dormer</td>
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<tr>
<td>2.12.1</td>
<td>Eaves - Unventilated - Insulation between and over rafters - Pitched ceiling</td>
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</tr>
<tr>
<td>2.12.2</td>
<td>Eaves - Unventilated/Ventilated - Insulation between and under rafters - Pitched with flat ceiling</td>
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<td>2.13</td>
<td>Eaves - Unventilated - Insulation between and over rafters</td>
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<tr>
<td>2.14</td>
<td>Ventilated Roof - Attic floor level</td>
<td>0.347</td>
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<tr>
<td>2.15/2.16</td>
<td>Gable - Insulation between and under rafters - Unventilated/Ventilated rafter void</td>
<td>0.091</td>
</tr>
<tr>
<td>2.17</td>
<td>Gable - Insulation between and over rafters - Unventilated rafter void</td>
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<tr>
<td>2.18</td>
<td>Flat Roof - Eaves</td>
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<td>2.19</td>
<td>Flat Roof - Parapet</td>
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<td>2.20</td>
<td>Ope - Lintel</td>
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<tr>
<td>2.21</td>
<td>Ope - Jamb</td>
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<td>Sill</td>
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<tr>
<td>2.23.1</td>
<td>Corner</td>
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<tr>
<td>2.23.2</td>
<td>Inverted corner</td>
<td>-0.141</td>
</tr>
</tbody>
</table>

1. ψ values for a Target U-value for the wall of 0.18 W/m²K for the construction type specified. The U-values of the flanking elements to the wall can vary from the flanking element target U-value as follows: Pitched roof insulation on slope, insulation on ceiling = 0.13 to 0.16 W/m²K; Flat Roof = 0.16 to 0.2 W/m²K; Ground Floor = 0.16 to 0.21 W/m²K.

2. ψ values for a Target U-value for the wall of 0.15 W/m²K can be used for a range of U-values from 0.12 W/m²K to 0.17 W/m²K for the construction type specified. The U-values of the flanking elements to the wall can vary from the flanking element target U-value as follows: Pitched roof insulation on slope, insulation on ceiling 0.11 to 0.16 W/m²K; Flat Roof = 0.16 to 0.2 W/m²K; Ground Floor = 0.12 to 0.18 W/m²K.

3. Where two building elements have one U-value above its target while the other is below its target U-value, the aggregate percentage change from the respective target U-values in the table should not exceed +20% for the Psi (ψ) value to be valid, i.e. if for the 0.15 U-value wall, if the U-value was increased by 10% above the wall target U-value (from 0.15 to 0.165), then the roof U-value could be at most 10% below the roof target U-value (from 0.14 to 0.126), because the aggregate change would then be 20%.

4. This is an externally supported balcony (the balcony slab is not a continuation of the floorslab) where the wall insulation is continuous and not bridged by the balcony slab.

5. Value of Ψ is applied to each dwelling.

6. Psi value is for whole junction. Half the value should be applied to each dwelling on either side of the junction.
**THERMAL PERFORMANCE**

- Install perimeter insulation with a minimum R-value of 1.1 m²K/W
- Floor insulation to tightly abut blockwork wall
- Ensure block with a maximum Thermal Conductivity of 0.20 W/mK in the direction of heat flow is used and that block is suitable for use in foundations
- Ensure wall insulation is installed at least 300 mm below finished floor level

**AIR BARRIER - CONTINUITY**

- Seal between wall and floor air barriers with suitable airtightness tape or a flexible sealant
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

**GENERAL NOTES**

- Wall insulation installed below the wall DPC must be fit for purpose with regards to water absorption
- Material on top of floor insulation can be screed or floating floor
- Refer to Technical Guidance Document Part C for details on radon protection

**AIR BARRIER - OPTIONS**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes

Complying with checklist will help achieve design air permeability
### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Install perimeter insulation with a minimum R-value of 1.1 m²K/W
- Floor insulation to tightly abut blockwork wall
- Ensure wall insulation is installed at least 430 mm below ground level with a minimum R-value of 4.0 m²K/W

### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

- Seal between wall and floor air barriers with suitable airtightness tape or a flexible sealant
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

Complying with checklist will help achieve design air permeability

### GENERAL NOTES

- Wall insulation installed below the wall DPC must be fit for purpose with regards to water absorption
- Material on top of floor insulation can be screed or floating floor
- Refer to Technical Guidance Document Part C for details on radon protection

### OPTION (TICK ONE)

- **AIR BARRIER - OPTIONS**
  - Wet-finish plaster coat, or
  - Masonry wall with scratch coat, and finished with plasterboard, or
  - Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
  - Airtightness membrane and tapes
Wall insulation installed below the wall DPC must be fit for purpose with regards to water absorption. Ensure wall insulation is installed at least 300 mm below finished floor level. Floor insulation to tightly abut blockwork wall. Ensure block with a maximum Thermal Conductivity of 0.20 W/mK in the direction of heat flow is used and that block is suitable for use in foundations. Install perimeter insulation with a minimum R-value of 1.1 m²K/W.

**THERMAL PERFORMANCE CHECKLIST (TICK ALL)**

- Install perimeter insulation with a minimum R-value of 1.1 m²K/W
- Ensure block with a maximum Thermal Conductivity of 0.20 W/mK in the direction of heat flow is used and that block is suitable for use in foundations
- Ensure wall insulation is installed at least 300 mm below finished floor level
- Floor insulation to tightly abut blockwork wall

**GENERAL NOTES**

Wall insulation installed below the wall DPC must be fit for purpose with regards to water absorption. Refer to Technical Guidance Document Part C for details on radon protection.

**OPTION (TICK ONE)**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes

**AIR BARRIER - OPTIONS**

- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant
- Seal between wall and floor air barriers with suitable airtightness tape or a flexible sealant

Complying with checklist will help achieve design air permeability.
**THERMAL PERFORMANCE**

- Install perimeter insulation with a Min. R-value of 1.1 m²K/W
- Ensure wall insulation is installed at least 430 mm below ground level R-value 4.0 m²K/W
- Floor insulation to tightly abut blockwork wall

**AIR BARRIER - CONTINUITY**

- Seal between wall and floor air barriers with suitable airtightness tape or a flexible sealant
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

**GENERAL NOTES**

- Wall insulation installed below the wall DPC must be fit for purpose with regards to water absorption
- Refer to Technical Guidance Document Part C for details on radon protection

**AIR BARRIER - OPTIONS**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes
### Timber Suspended Ground Floor with Lightweight Block

1. **THERMAL PERFORMANCE**
   - Ensure block with a maximum Thermal Conductivity of 0.20 W/mK in the direction of heat flow is used and that block is suitable for use in foundations.
   - Pack gap between floor joist and blockwork wall with compressible insulation with a minimum R-value of 0.63 m²K/W.
   - Ensure wall insulation is installed at least 200 mm below top of floor insulation.
   - Ensure insulation is in contact with underside of timber flooring. Fix with netting, breather membrane or retaining batten below floor insulation.

2. **GENERAL NOTES**
   - Support joists on tassel walls to avoid building into external walls.
   - Refer to Technical Guidance Document Part C for details on sub-floor ventilation.

3. **AIR BARRIER - OPTIONS**
   - Wet-finish plaster coat, or
   - Masonry wall with scratch coat, and finished with plasterboard, or
   - Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners.
   - Airtightness membrane and tapes.

4. **AIR BARRIER - CONTINUITY**
   - Seal between wall and floor air barriers with suitable airtightness tape or a flexible sealant.
   - Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant.
   - Seal joints in timber floor with suitable glue. Fully support and fix any square edge joints in the decking to the joists.

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Complying with checklist will help achieve design air permeability.
(2) WALLS: EXTERNAL INSULATION ON SOLID MASONRY/HOLLOW BLOCK

**Timber Suspended Ground Floor**

**THERMAL PERFORMANCE**

**CHECKLIST (TICK ALL)**

- Ensure insulation is in contact with underside of timber flooring. Fix with netting, breather membrane or retaining batten below floor insulation
- Pack gap between floor joist and blockwork wall with compressible insulation with a minimum R-value of 0.63 m²K/W
- Ensure wall insulation is installed at least 750 mm below top of floor insulation

**AIR BARRIER - CONTINUITY**

**CHECKLIST (TICK ALL)**

- Seal between wall and floor air barriers with suitable airtightness tape or a flexible sealant
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant
- Seal joints in timber floor with suitable glue. Fully support and fix any square edge joints in the decking to the joists

**GENERAL NOTES**

Support joists on tassel walls to avoid building into external walls
Wall insulation installed below the wall DPC must be fit for purpose with regards to water absorption
Refer to Technical Guidance Document Part C for details on sub-floor ventilation

**OPTION (TICK ONE)**

**AIR BARRIER - OPTIONS**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes
**Concrete Intermediate Floor Within a Dwelling**

### General Notes

- **Walls: External Insulation on Solid Masonry/Hollow Block**

  **Air Barrier - Continuity Checklist (Tick All)**
  - Seal between the wall air barrier and the top and underside of the floor slab with suitable airtightness tape or a flexible sealant. (Dotted blue line is notional, to depict the air barrier continuity through floor zone)
  - Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant
  - Ensure continuous mortar bed between floor slab and top of blockwork wall

  Complying with checklist will help achieve design air permeability

### Thermal Performance Checklist (Tick All)

- Continue external wall insulation across floor abutment zone

---

### Air Barrier - Options

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes
(2) WALLS: EXTERNAL INSULATION ON SOLID MASONRY/HOLLOW BLOCK

Concrete Separating Floor Between Dwellings

DETAIL 2.04a, 2021

THERMAL PERFORMANCE

CHECKLIST (TICK ALL)

Continue external wall insulation across floor abutment zone. (Use appropriate material where cavity barrier is required)

AIR BARRIER - CONTINUITY

CHECKLIST (TICK ALL)

Seal between the wall air barrier and the top and underside of the floor slab with suitable airtightness tape or a flexible sealant. (Dotted blue line is notional, to depict the air barrier continuity through floor zone)

Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

Ensure continuous mortar bed between floor slab and top of blockwork wall

GENERAL NOTES

Refer to Technical Guidance Document E for guidance on sound insulation

Refer to Technical Guidance Document B for guidance on cavity barriers

OPTION (TICK ONE)  AIR BARRIER - OPTIONS

☐ Wet-finish plaster coat, or

☐ Masonry wall with scratch coat, and finished with plasterboard, or

Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners

☐ Airtightness membrane and tapes
### General Notes

- Refer to Technical Guidance Document E for guidance on sound insulation
- Refer to Technical Guidance Document B for guidance on cavity barriers
- Read this detail in conjunction with G.01, Masonry Separating Wall Head

### Air Barrier - Options

<table>
<thead>
<tr>
<th>Option (Tick One)</th>
<th>Air Barrier - Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>Wet-finish plaster coat, or</td>
</tr>
<tr>
<td>□</td>
<td>Masonry wall with scratch coat, and finished with plasterboard, or</td>
</tr>
<tr>
<td></td>
<td>Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners</td>
</tr>
<tr>
<td>□</td>
<td>Airtightness membrane and tapes</td>
</tr>
</tbody>
</table>

### Air Barrier - Continuity

- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

### Complying with Checklist will help achieve design air permeability

### THERMAL PERFORMANCE

- Continue external wall insulation across abutment zone. (Use appropriate material where cavity barrier is required)
### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

- Seal between air barrier on external wall and the blockwork, to the partition wall with suitable airtightness tape. (Dotted blue line is notional, to depict air barrier continuity through partition, depending on whether partition is toothed into external wall or braced with ties)
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Continue external wall insulation across abutment zone

### GENERAL NOTES

Read this detail in conjunction with G.02, Blockwork Partition Head

### AIR BARRIER - OPTIONS

**OPTION (TICK ONE)**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes

Complying with checklist will help achieve design air permeability
## THERMAL PERFORMANCE
**CHECKLIST (TICK ALL)**

- Continue external wall insulation across abutment zone

## AIR BARRIER - CONTINUITY
**CHECKLIST (TICK ALL)**

- Install external air barrier before stud; or install barrier before partition lining and seal all gaps between air barrier and stud with suitable airtightness tape. (Dotted blue line depicts air barrier continuity through partition stud member)
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

## GENERAL NOTES

Read this detail in conjunction with G.03, Timber Stud Partition Head, or G.04, Metal Stud Partition Head as appropriate

## AIR BARRIER - OPTIONS
**OPTION (TICK ONE)**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes

Complying with checklist will help achieve design air permeability
### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Ensure continuity of insulation throughout junction
- Ensure gap between wall plate and vapour permeable underlay is completely filled with insulation having a minimum R-value across the insulation thickness of 4.30 m²K/W
- Ensure full depth of insulation between and over joists abuts eaves insulation

**Note:** Detail is indicative for thermal purposes. Where continuity of insulation is maintained throughout the junction, alternative structural design may be used.

### GENERAL NOTES

- Use of over joist insulation eliminates the cold bridge caused by the joist
- Use vapour permeable roof underlay in accordance with third party certification
- Eaves insulation must not hinder free water drainage below the tiling battens
- Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures
- Read this detail in conjunction with 2.14, Gable at Attic Floor Level

### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

- Seal between wall and ceiling air barriers with suitable air tightness tape or a flexible sealant
- Seal all penetrations through air barriers with suitable air tightness tape, grommets or a flexible sealant

**Complying with checklist will help achieve design air permeability**

### AIR BARRIER - OPTIONS

**OPTION (TICK ONE)**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes
### THERMAL PERFORMANCE

**CHECKLIST**

(TICK ALL)

- Ensure continuity of insulation throughout junction
- Ensure gap between wall plate and proprietary eaves vent is completely filled with insulation having a minimum R-value across the insulation thickness of 4.30 m²K/W
- Ensure full depth of insulation between and over joists abuts eaves insulation

### GENERAL NOTES

Thermal performance of junction can be improved by incorporating an eaves wind barrier (plywood, OSB, softboard or other suitable material)

Use of over joist insulation eliminates the cold bridge caused by the joist

Use a proprietary eaves ventilator to ensure ventilation in accordance with Technical Guidance Document F. Installation of the eaves ventilator must not prevent free water drainage below the tiling battens

Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures

Read this detail in conjunction with detail 2.14, Gable at Attic Floor Level

### AIR BARRIER - OPTIONS

(TICK ONE)

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes

### AIR BARRIER - CONTINUITY

**CHECKLIST**

(TICK ALL)

- Seal between wall and ceiling air barriers with suitable air tightness tape or a flexible sealant
- Seal all penetrations through air barriers with suitable air tightness tape, grommets or a flexible sealant

Complying with checklist will help achieve design air permeability
### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Ensure insulation is installed tightly between rafters and is in contact with under-rafter insulation
- Ensure gap between wall plate and vapour permeable underlay is completely filled with insulation having a minimum R-value across the insulation thickness of 4.30 m²K/W
- Ensure full depth of insulation between and over joists abuts eaves insulation
- Ensure continuity of insulation throughout junction

### GENERAL NOTES

- Vapour permeable roof underlay to be used in accordance with approved third party certification
- Installation of the eaves insulation must not prevent free water drainage below the tiling battens
- Use of over joist and under rafter insulation eliminates the cold bridge caused by the joist/rafter
- Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures
- An effective vapour control layer, which may serve as an air barrier, should be provided on the warm side of the insulation in accordance with Appendix B of Technical Guidance Document L
- Read this detail in conjunction with detail 2.15, Gable - Unventilated Rafter Void

### AIR BARRIER - OPTIONS

**OPTION (TICK ONE)**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes

### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

- Full-depth nogging installed between ceiling joists to carry air barrier through ceiling zone, sealed to air barrier in roof with flexible sealant or airtight tape
- Seal between ceiling and wall air barriers with, suitable airtightness tape or flexible sealant
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

Complying with checklist will help achieve design air permeability
## THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

1. Ensure insulation is installed tightly between rafters and is in contact with under-rafter insulation
2. Ensure gap between wall plate and proprietary eaves vent is completely filled with insulation having a minimum R-value across the insulation thickness of 4.30 m²K/W
3. Ensure continuity of insulation throughout junction

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## AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

1. Full-depth nogging installed between ceiling joists to carry air barrier through ceiling zone, sealed to air barrier in roof with flexible sealant or airtight tape
2. Seal all penetrations through air barrier with suitable airtightness tape, grommets or flexible sealant
3. Seal between ceiling and wall air barriers with, suitable airtightness tape or flexible sealant

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## GENERAL NOTES

Thermal performance of junction can be improved by incorporating an eaves wind barrier (plywood, OSB, softboard or other suitable material)

Use a proprietary eaves ventilator to ensure ventilation in accordance with Technical Guidance Document F. Installation of the eaves ventilator must not prevent free water drainage below the tiling battens

Use of over joist and under rafter insulation eliminates the cold bridge caused by the joist/rafter

An effective vapour control layer, which may serve as an air barrier, should be provided on the warm side of the insulation in accordance with Appendix B of Technical Guidance Document L

Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures

Read this detail in conjunction with detail 2.16 Gable - Ventilated Rafter Void

## OPTION (TICK ONE)

**AIR BARRIER - OPTIONS**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes
### General Notes

Thermal performance of junction can be improved by incorporating an eaves wind barrier (plywood, OSB, softboard or other suitable material). Use a proprietary eaves ventilator to ensure ventilation in accordance with Technical Guidance Document F. Installation of the eaves ventilator must not prevent free water drainage below the tiling battens. An effective vapour control layer, which may serve as an air barrier, should be provided on the warm side of the insulation in accordance with Appendix B of Technical Guidance Document L. Use of over joist and under rafter insulation eliminates the cold bridge caused by the joist/rafter. Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures. Read this detail in conjunction with detail 2.16, Gable - Ventilated Rafter Void.

### Option (Tick One)

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners.
- Airtightness membrane and tapes.

### Air Barrier - Continuity

- Seal between wall and ceiling air barriers with suitable air tightness tape or a flexible sealant.
- Seal all penetrations through air barriers with suitable air tightness tape, grommets or a flexible sealant.

### Air Barrier - Options

Tick all.

- Suitable air tightness tape or a flexible sealant.
- Suitable air tightness tape, grommets or a flexible sealant.

Complying with checklist will help achieve design air permeability.
**THERMAL PERFORMANCE**

**CHECKLIST** (TICK ALL)

- Ensure insulation is installed tightly between rafters and is in contact with under-rafter insulation
- Ensure gap between wall plate and vapour permeable underlay is completely filled with insulation having a minimum R-value across the insulation thickness of 4.30 m²K/W
- Ensure full depth of insulation between and over joists abuts eaves insulation
- Ensure continuity of insulation throughout junction

**AIR BARRIER - CONTINUITY**

**CHECKLIST** (TICK ALL)

- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant
- Nogging installed between ceiling joists to carry air barrier through ceiling zone, sealed to air barrier in roof with flexible sealant or airtight tape
- Seal between ceiling and masonry wall air barriers with suitable airtightness tape or flexible sealant

**GENERAL NOTES**

- Vapour permeable roof underlay to be used in accordance with approved third party certification
- Use of over rafter insulation eliminates the cold bridge caused by the rafter
- Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures
- An effective vapour control layer, which may serve as an air barrier, should be provided on the warm side of the insulation in accordance with Appendix B of Technical Guidance Document L
- Read this detail in conjunction with detail 2.17, Gable - Insulation Between and Over Rafters

**OPTION** (TICK ONE) **AIR BARRIER - OPTIONS**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes
### Ventilated Roof - Attic Floor Level

<table>
<thead>
<tr>
<th>THERMAL PERFORMANCE</th>
<th>AIR BARRIER - CONTINUITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue wall insulation to at least 1 metre above ceiling level</td>
<td>Seal between wall and ceiling air barriers with suitable air tightness tape or a flexible sealant</td>
</tr>
<tr>
<td>Ensure full depth of insulation between and over joists extends to inner face of wall</td>
<td>Seal all penetrations through air barriers with suitable air tightness tape, grommets or a flexible sealant</td>
</tr>
<tr>
<td>Pack compressible insulation between last truss or joist, and gable wall with a minimum R-value across the insulation thickness of 1.25 m²K/W</td>
<td></td>
</tr>
</tbody>
</table>

### GENERAL NOTES

Thermal performance of junction can be improved significantly by running insulation of R-value 1.5 m²K/W vertically up internal face of gable wall to a height of 450mm above ceiling level or alternatively by using blockwork with a thermal conductivity of ≤ 0.20 W/mK in direction of heat flow in external wall at attic floor level.

Use of over joist insulation eliminates the cold bridge caused by the joist.

Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures.

Read this detail in conjunction with details 2-08, Eaves - Ventilated Attic, or 2-09, Eaves - Unventilated Attic, as appropriate.

### AIR BARRIER - OPTIONS

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes
**THERMAL PERFORMANCE**

- Fit insulation over top of wall within gable ladder with a R-value across the thickness of 4.35 m²K/W
- Ensure insulation continuity throughout junction
- Ensure top of wall is levelled with mortar to correct pitch, and that wall insulation is taken up level with wall top
- Ensure insulation is installed tightly between rafters and is in contact with under-rafter insulation

**GENERAL NOTES**

- Vapour permeable roof underlay in accordance with approved third party certification
- Use of under-rafter insulation eliminates the cold bridge caused by the rafter
- An effective vapour control layer, which may serve as an air barrier, should be provided on the warm side of the insulation in accordance with Appendix B of Technical Guidance Document L
- Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures
- Read this detail in conjunction with detail 2-11, Eaves - Insulation Between and Under Rafters - Unventilated Rafter Void

**AIR BARRIER - CONTINUITY**

- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant
- Seal between ceiling and masonry wall air barriers with suitable airtightness tape or flexible sealant

**OPTION**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes

**AIR BARRIER - OPTIONS**

(Tick one)
**THERMAL PERFORMANCE CHECKLIST (TICK ALL)**

- Fit insulation over top of wall within gable ladder with a minimum R-value across the thickness of 4.35 m²K/W
- Maintain 50 mm ventilated void above top of insulation
- Ensure top of wall is levelled with mortar to correct pitch, and that wall insulation is taken up level with wall top
- Ensure insulation is installed tightly between rafters and is in contact with under-rafter insulation
- Ensure insulation continuity throughout junction

**GENERAL NOTES**

Use a proprietary eaves ventilator to ensure ventilation in accordance with Technical Guidance Document F. Installation of the eaves ventilator must not prevent free water drainage below the tiling battens.

Use of under rafter insulation eliminates the cold bridge caused by the rafter.

An effective vapour control layer, which may serve as an air barrier, should be provided on the warm side of the insulation in accordance with Appendix B of Technical Guidance Document L.

Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures.

Read this detail in conjunction with detail 2.10, Eaves - Ventilated Rafter Void, or 2.12, Eaves - Ventilated Rafter Void - Pitched Ceiling, as appropriate.

**AIR BARRIER - CONTINUITY CHECKLIST (TICK ALL)**

- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant
- Seal between ceiling and masonry wall air barriers with suitable airtightness tape or flexible sealant

**OPTION (TICK ONE)**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes
**THERMAL PERFORMANCE**

- Fit insulation over top of wall within gable ladder with a minimum R-value across the thickness of 2.10 m²K/W
- Ensure top of wall is levelled with mortar to correct pitch, and that wall insulation is taken up level with wall top
- Ensure insulation continuity throughout junction
- Ensure insulation is installed tightly between rafters and is in contact with over-rafter insulation

**AIR BARRIER - CONTINUITY**

- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant
- Seal between ceiling and masonry wall air barriers with suitable airtightness tape or flexible sealant

**GENERAL NOTES**

- Vapour permeable roof underlay to be used in accordance with approved third party certification
- Use of over rafter insulation eliminates the cold bridge caused by the rafter
- An effective vapour control layer, which may serve as an air barrier, should be provided on the warm side of the insulation in accordance with Appendix B of Technical Guidance Document L
- Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures
- Read this detail in conjunction with detail 2.13, Eaves - Insulation Between and Over Rafters

**AIR BARRIER - OPTIONS**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
  - Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes

(2) WALLS: EXTERNAL INSULATION ON SOLID MASONRY/HOLLOW BLOCK

Gable - Insulation Between and Over Rafters - Unventilated Rafter Void

DETAIL 2.17, 2021
(2) WALLS: EXTERNAL INSULATION ON SOLID MASONRY/HOLLOW BLOCK

**Flat Roof - Eaves**

**THERMAL PERFORMANCE**

**CHECKLIST (TICK ALL)**

- Ensure full depth of over roof insulation over joists extends to roof edge
- Fit insulation over wall top within roof over-hang with a minimum R-value of 5.00 m²K/W
- Ensure wall top is level and that wall insulation is taken up level with wall top

**AIR BARRIER - CONTINUITY**

**CHECKLIST (TICK ALL)**

- Fix ceiling first and seal between ceiling and masonry wall air barriers with suitable airtightness tape or flexible sealant
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

**GENERAL NOTES**

BS 5250:2011 + A1:2016 provides for a high performance vapour barrier to be laid above the deck, turned up at perimeter of the insulation and sealed to weathering membrane

An effective vapour control layer, which may serve as an air barrier, should be provided on the warm side of the insulation in accordance with Appendix B of Technical Guidance Document L

Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures

**OPTION (TICK ONE)**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes
**Flat Roof - Parapet**

**THERMAL PERFORMANCE**

- Insulation upstand having a minimum R-value of 1.10 m²K/W (in heat flow direction perpendicular to wall surface) around parapet
- 300 mm minimum between top of insulation upstand and bottom of horizontal roof insulation
- Ensure roof insulation tightly abuts inner face of parapet wall

**AIR BARRIER - CONTINUITY**

- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant
- Fix ceiling first and seal between ceiling and masonry wall air barriers with suitable airtightness tape or flexible sealant

**GENERAL NOTES**

- Thermal performance of junction can be improved significantly by extending insulation vertically up internal face of parapet wall to a height of 450 mm or alternatively by using blockwork with a thermal conductivity of ≤ 0.20 W/mK in direction of heat flow in external wall at roof level
- BS 5250:2011 + A1:2016 provides for a high performance vapour barrier to be laid above the deck, turned up at perimeter of the insulation and sealed to weathering membrane
- Refer to Technical Guidance Document B and Supplementary Guidance to TGD B for guidance on cavity barriers and fire protection of structures

**AIR BARRIER - OPTIONS**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes
(2) WALLS: EXTERNAL INSULATION ON SOLID MASONRY/HOLLOW BLOCK

THERMAL PERFORMANCE

CHECKLIST
(TICK ALL)

Ensure wall insulation having a minimum R-value of 0.65 m²K/W overlaps frame by a minimum of 15mm

AIR BARRIER - CONTINUITY

CHECKLIST
(TICK ALL)

Seal all penetrations through air barriers with suitable air tightness tape, grommets or a flexible sealant

Ensure air barrier continuity between the window/door frame and the wall air barrier

GENERAL NOTES

WET-FINISH PLASTER COAT, OR

MASONRY WALL WITH SCRATCH COAT, AND FINISHED WITH PLASTERBOARD, OR

PLASTERBOARD ON DABS OR BATTENS, WITH CONTINUOUS RIBBON OF ADHESIVE AROUND ALL OPENINGS, ALONG TOP AND BOTTOM OF WALL AND AT INTERNAL AND EXTERNAL CORNERS

AIR TIGHTNESS MEMBRANE AND TAPES
### THERMAL PERFORMANCE

Ensure wall insulation having a minimum R-value of 0.65 m²K/W overlaps frame by a minimum of 15mm

### AIR BARRIER - CONTINUITY

Ensure air barrier continuity between the window/door frame and the wall air barrier

Seal all penetrations through air barriers with suitable air tightness tape, grommets or a flexible sealant

### GENERAL NOTES

Complying with checklist will help achieve design air permeability

### AIR BARRIER - OPTIONS

<table>
<thead>
<tr>
<th>OPTION (TICK ONE)</th>
<th>AIR BARRIER - OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>Wet-finish plaster coat, or</td>
</tr>
<tr>
<td>☐</td>
<td>Masonry wall with scratch coat, and finished with plasterboard, or</td>
</tr>
<tr>
<td>☐</td>
<td>Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners</td>
</tr>
<tr>
<td>☐</td>
<td>Airtightness membrane and tapes</td>
</tr>
</tbody>
</table>
**THERMAL PERFORMANCE**

- Install insulation under sill with a minimum R-value of 0.65 m²K/W

**AIR BARRIER - CONTINUITY**

- Ensure air barrier continuity between the window/door frame and the wall air barrier
- Seal all penetrations through air barriers with suitable air tightness tape, grommets or a flexible sealant

**GENERAL NOTES**

**OPTION**

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes
### THERMAL PERFORMANCE

**CHECKLIST**

(TICK ALL)

Ensure insulation continuity throughout junction

#### AIR BARRIER - CONTINUITY

**CHECKLIST**

(TICK ALL)

2.23.1

Seal all penetrations through air barriers with suitable air tightness tape, grommets or a flexible sealant

2.23.2

Ensure insulation continuity throughout junction

#### GENERAL NOTES

- Wet-finish plaster coat, or
- Masonry wall with scratch coat, and finished with plasterboard, or
- Plasterboard on dabs or battens, with continuous ribbon of adhesive around all openings, along top and bottom of wall and at internal and external corners
- Airtightness membrane and tapes