INTRODUCTION

This section shows appropriate details for light steel frame construction. 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 junctions with a range of roof, ground floor and internal floor types, as well as at external wall opes. The details within this section are valid for a range of steel frame wall thicknesses.

With steel frame, some insulation must be placed outside the frame to provide a thermal break and avoid condensation. Warm frame construction is where all the insulation is outside the frame. Hybrid construction is where insulation is included both outside the steel structure and in between the steel components. At least 33% of the thermal resistance should be provided outside the steel. Where compressible insulation is installed between studs in addition to rigid board insulation over, it should be tightly packed and be in direct contact with the rigid board. Take care to ensure compressible insulation is maintained above dewpoint temperature. With hybrid construction, the system manufacturer should provide a condensation risk analysis (in accordance with Technical Guidance Document L, Appendix B) to ensure there is no risk of interstitial condensation. An internal vapour control layer is generally required. The details show warm frame construction but apply equally to hybrid construction.

Insulation thicknesses have not been provided as these depend on the thermal properties of the materials chosen together with the proposed U-value. It is important to choose appropriate tightly fitting materials. Generally, a rigid insulation material, which acts as an insulated sheathing board, is required outside the frame.

Details show a masonry outer leaf for simplification. The details are also appropriate for a range of other claddings subject to suitable detailing. Further variables are insulation and sheathing types, and internal lining type and thickness. All external cladding systems should be "proper materials" as defined in Part D.

These diagrams illustrate good practice for design and construction of interfaces only in respect to ensuring thermal performance and air barrier continuity. Other issues are not considered fully. The guidance must be implemented with due regard to all other Building Regulations requirements. All materials and workmanship to be installed to Technical Guidance Document D "Materials and Workmanship."

Where these details are used for the Target U-values and constructions described in Table D5 of TGD L 2021 the psi values published in Table D5 may be used to calculate the actual Thermal Bridging heat loss for the 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.
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. The Psi value is applied to each dwelling.

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%.

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 of 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 = 0.13 to 0.16 W/m²K; Flat Roof = 0.16 to 0.2 W/m²K; Ground Floor = 0.16 to 0.21 W/m²K.

ψ values for a Target U-value for the wall of 0.21 W/m²K can be used for a range of U-values down to 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.

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%.

1. 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%.

2. 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.

3. Psi value is for whole junction. Half the value should be applied to each dwelling on either side of the junction.

### Table D5 - Steel Frame Construction

<table>
<thead>
<tr>
<th>Junction detail Identifier</th>
<th>Junction detail</th>
<th>Section 5 - Steel Frame Construction</th>
<th>Target U-values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Hybrid steel frame U-value = 0.18 2, 3 (roof U = 0.16) (floor U = 0.18)</td>
<td>Hybrid steel frame with internal insulation U-value = 0.15 2, 3 (roof U = 0.14) (floor U = 0.15)</td>
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<tr>
<td>5.01</td>
<td>Ground Floor - Insulation above slab</td>
<td>0.033</td>
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<td>5.02</td>
<td>Ground Floor - Insulation below slab</td>
<td>0.141</td>
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<td>5.03</td>
<td>Lightweight Intermediate Floor</td>
<td>0.021</td>
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</tr>
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<td>5.04</td>
<td>Separating Wall (plan) 6</td>
<td>0.103</td>
<td>0.114</td>
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<td>5.05</td>
<td>Separating Wall (section) 6</td>
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<td>5.06</td>
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<tr>
<td>5.07/5.08</td>
<td>Eaves – Unventilated/Ventilated Attic</td>
<td>0.030</td>
<td>0.026</td>
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<tr>
<td>5.09/5.10.1</td>
<td>Eaves - Unventilated/Ventilated Insulation between and under rafters - Dormer</td>
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<td>5.09.2/5.10.2</td>
<td>Eaves – Insulation between and under rafters – Unventilated/Ventilated void - Pitch Ceiling Dormer</td>
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<td>Eaves – Ventilated Insulation between and under rafters – Pitched ceiling</td>
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<td>Eaves – Ventilated Insulation between and under rafters – Pitched with flat ceiling</td>
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<td>5.12</td>
<td>Eaves – Insulation between and over rafters – Unventilated rafter void</td>
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<td>5.13</td>
<td>Ventilated and Unventilated Attic</td>
<td>0.111</td>
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<td>Gable – Insulation between and under rafters – Unventilated/Ventilated rafter void</td>
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<td>Gable – Insulation between and over rafters – Unventilated rafter void</td>
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<td>5.17</td>
<td>Flat Roof - Eaves</td>
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<td>5.18</td>
<td>Flat Roof – Parapet</td>
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<td>5.19</td>
<td>Ope – Lintel</td>
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<tr>
<td>5.20</td>
<td>Ope – Jamb</td>
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<tr>
<td>5.21</td>
<td>Ope – Sill</td>
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<td>5.22.1</td>
<td>Steel Separating Wall through ground floor</td>
<td>0.213</td>
<td>0.263</td>
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<tr>
<td>5.22.2</td>
<td>Steel Partition Wall through ground floor</td>
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<td>5.23.1</td>
<td>Corner</td>
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<td>5.23.2</td>
<td>Inverted corner</td>
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### Section G General Details

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<th>Identifier</th>
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<tr>
<td>G.01.1</td>
<td>Masonry Separating Wall Head – Section 6</td>
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<tr>
<td>G.01.2</td>
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<tr>
<td>G.05.1</td>
<td>Solid Masonry Separating Wall through ground floor 6</td>
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### Other Details

<table>
<thead>
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<td>5.B.1</td>
<td>Balcony within dwelling 6</td>
</tr>
<tr>
<td>5.B.2</td>
<td>Balcony between dwellings 6, 7</td>
</tr>
</tbody>
</table>
### (5) STEEL FRAME

**Ground Floor - Insulation Above Slab**

#### THERMAL PERFORMANCE

<table>
<thead>
<tr>
<th>CHECKLIST (TICK ALL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install edge insulation with min. R-value of 0.75 m²K/W to perimeter of floor screed</td>
</tr>
<tr>
<td>Ensure block with a maximum Thermal Conductivity of 0.20 W/mK in the direction of heat flow is used beneath the steel framing to the floor edge</td>
</tr>
<tr>
<td>Ensure wall insulation is installed at least 225 mm below top of floor</td>
</tr>
</tbody>
</table>

#### AIR BARRIER - CONTINUITY

<table>
<thead>
<tr>
<th>CHECKLIST (TICK ALL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal between wall and floor air barriers with suitable airtightness tape or a flexible sealant</td>
</tr>
<tr>
<td>Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant</td>
</tr>
</tbody>
</table>

**Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.**

#### GENERAL NOTES

If sole plates are packed to level ensure that a continuous mortar grout is installed

Wall insulation installed below wall DPC must be fit for purpose as regards water absorption

Some thermal bridging is inevitable in this location since robust bearing and holding down arrangements are normally required between frame and slab. Design should keep bridging within acceptable limits to reduce condensation risk

Refer to Technical Guidance Document Part C for details on radon protection

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

#### OPTION (TICK ONE)

<table>
<thead>
<tr>
<th>AIR BARRIER - OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigid insulation or board sheathing, or</td>
</tr>
<tr>
<td>Internal lining, for example, plasterboard, or</td>
</tr>
<tr>
<td>Airtightness membrane and tapes</td>
</tr>
</tbody>
</table>
### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Install edge insulation with min. R-value of 1.09 m²K/W to perimeter of floor slab
- Ensure wall insulation is installed at least 225 mm below top of floor

### 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

### GENERAL NOTES

Some thermal bridging is inevitable in this location since robust bearing and holding down arrangements are normally required between frame and slab. Design should keep bridging within acceptable limits to reduce condensation risk.

Refer to Technical Guidance Document Part C for details on radon protection.

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.

### OPTION (TICK ONE)

**AIR BARRIER - OPTIONS**

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes
### General Notes
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 Part B for fire safety requirements.

### Air Barrier - Options
- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

### Air Barrier - Continuity
Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.

If using wall lining to form air barrier, ensure air barrier continuity between upper and lower wall linings. A flexible membrane installed around floor edge may be used to provide this continuity. (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.

### Thermal Performance
Continue wall insulation across floor abutment zone.
**Rigid insulation or board sheathing, or**

**Internal lining, for example, plasterboard, or**

**Airtightness membrane and tapes**

---

### GENERAL NOTES

Refer to Part E for resistance to sound requirements

Refer to Part B for fire safety requirements

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 5.05, Separating Wall (Section)

### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Cavity to be stopped between the ends of the separating wall and the outer leaf with a flexible cavity barrier
- Ensure continuity of fire stopping insulation between separating wall, and external wall construction

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### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

- Ensure air barrier continuity between internal linings at corners
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

**Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.**

---

### AIR BARRIER - OPTIONS

<table>
<thead>
<tr>
<th>(TICK ONE)</th>
<th>Rigid insulation or board sheathing, or</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internal lining, for example, plasterboard, or</td>
</tr>
<tr>
<td></td>
<td>Airtightness membrane and tapes</td>
</tr>
</tbody>
</table>

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**DETAIL 5.04, 2021**
### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Ensure full depth of insulation between, over (or below) joists extends to wall face
- Spandrel panel above wall to be insulated to at least the same height as the top of attic insulation

### GENERAL NOTES

Refer to Part E for resistance to sound requirements
Refer to Part B for fire safety requirements

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 5.04, Separating Wall (Plan)

### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

- Ensure air barrier continuity between ceiling and wall vapour control layer/air barrier
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.

### OPTIONS

**AIR BARRIER - OPTIONS**

- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes
Continue wall insulation across abutment zone

GENERAL NOTES
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 G.04, Metal Stud Partition Head - Section

AIR BARRIER - OPTIONS

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.
### Eaves - Unventilated Attic

#### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Ensure full depth of insulation between and over joists abuts eaves 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 4.50m²K/W
- Ensure continuity of insulation throughout junction

#### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

- Ensure air barrier continuity between ceiling and wall vapour control layer/air barrier
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

### 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 tiling battens
- 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 5.13, Gable - Ventilated and Unventilated Attic

### AIR BARRIER - OPTIONS

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

**Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.**
Rigid insulation or board sheathing, or Internal lining, for example, plasterboard, or Airtightness membrane and tapes

**THERMAL PERFORMANCE**

- Ensure full depth of insulation between and over joists abuts eaves insulation
- Ensure gap between wall plate and proprietary eaves vent is completely filled with insulation having a minimum R-value across the insulation thickness of 4.50 m²K/W
- Ensure continuity of insulation throughout junction

**AIR BARRIER - CONTINUITY**

- Ensure air barrier continuity between ceiling and wall vapour control layer/air barrier
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

**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 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
- 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

**AIR BARRIER - OPTIONS**

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

*Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.*
**Eaves - Insulation Between and Under Rafters - Unventilated Rafter Void - Dormer**

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

- Ensure insulation is installed tightly between rafters and is in contact with under-rafter insulation
- Ensure full depth of insulation between and over joists abuts eaves 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 4.58 m²K/W
- Ensure continuity of insulation throughout junction

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

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

**GENERAL NOTES**

- Vapour permeable roof underlay to be used in accordance with approved third party certification
- Eaves insulation must not hinder free water drainage below 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 details 5.13, Gable - Ventilated and Unventilated Attic and 5.14, Gable - Insulation Between and Under Rafters - Unventilated Rafter Void

**OPTION (TICK ONE)**

**AIR BARRIER - OPTIONS**

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

*Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.*
### THERMAL PERFORMANCE CHECKLIST
(TICK ALL)

- Ensure insulation is installed tightly between rafters and is in contact with under-rafter insulation
- Ensure full depth of insulation between and over joists abuts eaves insulation
- Ensure gap between wall plate and proprietary eaves vent is completely filled with insulation having a minimum R-value across the insulation thickness of 4.58 m²K/W
- Ensure continuity of insulation throughout junction

### AIR BARRIER - CONTINUITY
(TICK ALL)

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

### 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 batten.

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 details 5.13, Gable - Ventilated and Unventilated Attic and 5.15, Gable - Insulation Between and Under Rafters - Ventilated Rafter Void.

### OPTION
(TICK ONE)

### AIR BARRIER - OPTIONS

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.
### 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 proprietary eaves vent is completely filled with insulation having a minimum R-value across the insulation thickness of 4.70 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)

- Ensure air barrier continuity between ceiling and wall vapour control layer/air barrier
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

### GENERAL NOTES

- Ensure insulation is installed tightly between rafters and is in contact with under-rafter insulation
- Ensure gap between wall plate and proprietary eaves vent is completely filled with insulation having a minimum R-value across the insulation thickness of 4.70 m²K/W
- Ensure full depth of insulation between and over joists abuts eaves insulation
- Ensure continuity of insulation throughout junction

- 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 details 5.13, Gable - Ventilated and Unventilated Attic and 5.15, Gable - Insulation Between and Under Rafters - Ventilated Rafter Void

### OPTION (TICK ONE)

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.
### Eaves - Insulation Between and Over Rafters - Unventilated Rafter Void - Dormer

#### THERMAL PERFORMANCE CHECKLIST (TICK ALL)

- Ensure insulation is installed tightly between rafters and is in contact with over-rafter insulation
- Ensure full depth of insulation between and over joists abuts eaves insulation
- Ensure gap between wall plate and vapour permeable underlay is completely filled with insulation having a min. R-value across the insulation thickness of 4.70 m²K/W
- Ensure continuity of insulation throughout junction

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

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

#### GENERAL NOTES

- Vapour permeable roof underlay to be used in accordance with approved third party certification
- 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 in conjunction with detail 5.16, Gable - Insulation Between and Over Rafters - Unventilated Rafter Void

#### OPTION (TICK ONE)

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

*Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.*
### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Ensure full depth of insulation between and over joists extends to inner face of rigid wall sheathing / insulation
- Pack compressible insulation between last truss / joist, and gable wall insulation

### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

- Ensure air barrier continuity between ceiling and wall vapour control layer/air barrier
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

### GENERAL NOTES

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

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 in conjunction with details 5.07, Eaves - Unventilated Attic, or 5.08, Eaves - Ventilated Attic, as appropriate

### OPTION (TICK ONE)

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes
### Gable - Insulation Between and Under Rafters - Unventilated Rafter Void

#### THERMAL PERFORMANCE

- Ensure full depth of insulation between and under rafters extends to wall.
- Fit insulation over top of wall within gable ladder with a minimum R-value of 4.35 m²K/W
- Ensure insulation continuity throughout junction
- Ensure wall insulation/cavity barrier is taken up level with top of wall
- Ensure insulation is installed tightly between rafters and is in contact with under-rafter insulation

#### AIR BARRIER - CONTINUITY

- Ensure air barrier continuity between ceiling and wall vapour control layer/air barrier
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

#### GENERAL NOTES

- Vapour permeable roof underlay to be used in accordance with approved third party certification
- Eaves insulation must not hinder free water drainage below 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 in conjunction with details 5.09, Eaves - Insulation Between and Under Rafters - Unventilated Rafter Void

#### OPTION

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.
Rigid insulation or board sheathing, or Internal lining, for example, plasterboard, or Airtightness membrane and tapes

Gable - Insulation Between and Under Rafters - Ventilated Rafter Void

THERMAL PERFORMANCE

- Fit insulation over top of wall within gable ladder with a minimum R-value of 4.35 m²K/W
- Maintain 50 mm ventilated void above top of insulation
- Ensure full depth of insulation between and under rafters extends to wall.
- Ensure insulation continuity throughout junction
- Ensure wall insulation/cavity barrier is taken up level with top of wall
- Ensure insulation is installed tightly between rafters and is in contact with under-rafter insulation

AIR BARRIER - CONTINUITY

- Ensure air barrier continuity between ceiling and wall vapour control layer/air barrier
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.

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 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 in conjunction with details 5.10, Eaves - Insulation Between and Under Rafters - Ventilated Rafter Void

OPTION

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes
### Gable - Insulation Between and Over Rafters - Unventilated Rafter Void

**THERMAL PERFORMANCE CHECKLIST (TICK ALL)**

- Fit insulation over top of wall within gable ladder. Fully fill void between wall head, and over-rafter insulation with a minimum R-value of 2.17 m²K/W
- Ensure wall insulation/cavity barrier is taken up level with top of wall
- Ensure insulation continuity throughout junction
- Ensure insulation is installed tightly between rafters and is in contact with over-rafter insulation

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

- Ensure air barrier continuity between ceiling and wall vapour control layer/air barrier
- Seal all penetrations through air barrier with suitable air tightness tape, grommets or flexible sealant

**GENERAL NOTES**

- Vapour permeable roof underlay to be used in accordance with approved third party certification
- 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 in conjunction with details 5.12, Eaves - Insulation Between and Over Rafters - Unventilated Rafter Void

**OPTION (TICK ONE)**

- **Rigid insulation or board sheathing, or**
- **Internal lining, for example, plasterboard, or**
- **Airtightness membrane and tapes**
### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Ensure full depth of over roof insulation over joists extends to roof edge
- Fully fill void between top of wall and underside of roof deck with a minimum R-value across the thickness of 5.00 m²K/W
- Ensure wall insulation/cavity barrier tightly abuts underside of roof insulation

### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

- Ensure air barrier continuity between ceiling and wall vapour control layer/air barrier
- 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

### AIR BARRIER - OPTIONS

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

**Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.**
### Flat Roof - Parapet

#### THERMAL PERFORMANCE

- Insulation upstand having a minimum R-value of 1.14 m²K/W (in heat flow direction perpendicular to wall surface) around parapet
- Install compressible insulation between wall studs over level of deck
- 300 mm minimum between top of insulation upstand and bottom of horizontal roof insulation
- Ensure roof insulation tightly abuts inner face of parapet wall insulation

#### AIR BARRIER - CONTINUITY

- Ensure air barrier continuity between ceiling and wall vapour control layer/air barrier
- 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

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.
### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Finish insulation tight to cavity closer
- Install proprietary cavity closer with thermal resistance path through closer of 3.94 m²K/W or better (Manufacturers' certified data)

### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

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

### GENERAL NOTES

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

### OPTION (TICK ONE)

**AIR BARRIER - OPTIONS**

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

*Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.*
### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Finish insulation tight to cavity closer
- Install proprietary cavity closer with thermal resistance path through closer of 3.94 m²K/W or better (Manufacturers' certified data)

### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

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

### GENERAL NOTES

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

### OPTION (TICK ONE)

**AIR BARRIER - OPTIONS**

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

*Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.*
THERMAL PERFORMANCE

Install proprietary cavity closer with thermal resistance path through closer of 3.13 m²K/W or better (Manufacturers' certified data)

Finish insulation tight to cavity closer

AIR BARRIER - CONTINUITY

Ensure air barrier continuity between window/door frame and wall vapour control layer/air barrier

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

GENERAL NOTES

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

OPTION (TICK ONE)

AIR BARRIER - OPTIONS

☐ Rigid insulation or board sheathing, or

☐ Internal lining, for example, plasterboard, or

☐ Airtightness membrane and tapes
### THERMAL PERFORMANCE

**CHECKLIST** (TICK ALL)

- Install edge insulation with min. R-value of 1.09 m²K/W to perimeter of floor slab

**GENERAL NOTES**

- Refer to Part E for resistance to sound requirements
- Refer to Part B for fire safety requirements
- 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 5.02, Ground Floor - Insulation Above Slab
- Refer to Technical Guidance Document Part C for details on radon protection

### AIR BARRIER - CONTINUITY

**CHECKLIST** (TICK ALL)

- Seal between wall and floor air barriers with suitable airtightness tape or a flexible sealant

**OPTION** (TICK ONE)

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

*Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.*
### GENERAL NOTES

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.

### AIR BARRIER - OPTIONS

- Rigid insulation or board sheathing, or
- Internal lining, for example, plasterboard, or
- Airtightness membrane and tapes

### THERMAL PERFORMANCE

**CHECKLIST (TICK ALL)**

- Ensure insulation tightly abuts at corners

### AIR BARRIER - CONTINUITY

**CHECKLIST (TICK ALL)**

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

*Complying with checklist will help achieve design air permeability and may effect a reduced testing regime.*

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**DETAIL 5.23.1 + 5.23.2, 2021**

5.23.1

5.23.2

[Diagram of corner/inverted corner with insulation and air barrier details]