#### INTRODUCTION

The details within this section are valid for a range of timber frame wall thicknesses from 89mm up to 210mm stud size. Details are given for the junctions with a range of roof, ground floor and internal floor types, as well as at external wall opes.

A variety of structural forms can be adopted, with variables such as stud centres, double or single head plates. The form of structure influences thermal performance, and must be taken into account when using these details.

Insulation thicknesses for the main elements have not been provided as these depend on the thermal properties of the materials chosen together with the proposed U-value. Further variables are insulation and sheathing types, plasterboard type and thickness, internal linings and external cladding.

Details are shown with a masonry outer leaf for simplification. Other cladding may be used without loss of thermal performance or increased technical risk subject to suitable detail. All materials and workmanship are to be installed to Technical Guidance Document D "Materials and workmanship".

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.

### **ACCEPTABLE CONSTRUCTION DETAILS - SECTION (4)**

- 4-01 Ground Floor Insulation above slab
- 4-02 Ground Floor Insulation below slab
- 4-03 Timber Suspended Ground Floor
- 4-04 External Wall Corner
- 4-05 Timber Intermediate Floor
- 4-06 Separating Wall (plan)
- 4-07 Separating Wall (section) 4-08 Partition Wall (plan)
- 4-09 Eaves Ventilated roof space
- 4-10 Eaves Unventilated roof space
- 4-11 Eaves Ventilated Insulation between and under rafters Dormer
- 4-12 Faves Unventilated Insulation between and under rafters Dormer
- 4-13 Eaves Ventilated Insulation between and under rafters Pitched Ceiling
- 4-14 Eaves Unventilated Insulation between and over rafters
- 4-15 Ventilated Roof Attic Floor Level
- 4-16 Gable Insulation between and under rafters Ventilated Rafter Void
- 4-17 Gable Insulation between and under rafters Unventilated Rafter Void
- 4-18 Gable Insulation between and over rafters Unventilated Rafter Void
- 4-19 Flat Roof Parapet
- 4-20 Ope Lintel
- 4-21 Ope lamb
- 4-22 Ope Sill

### The details in this section should also be read with **Section G: General details**

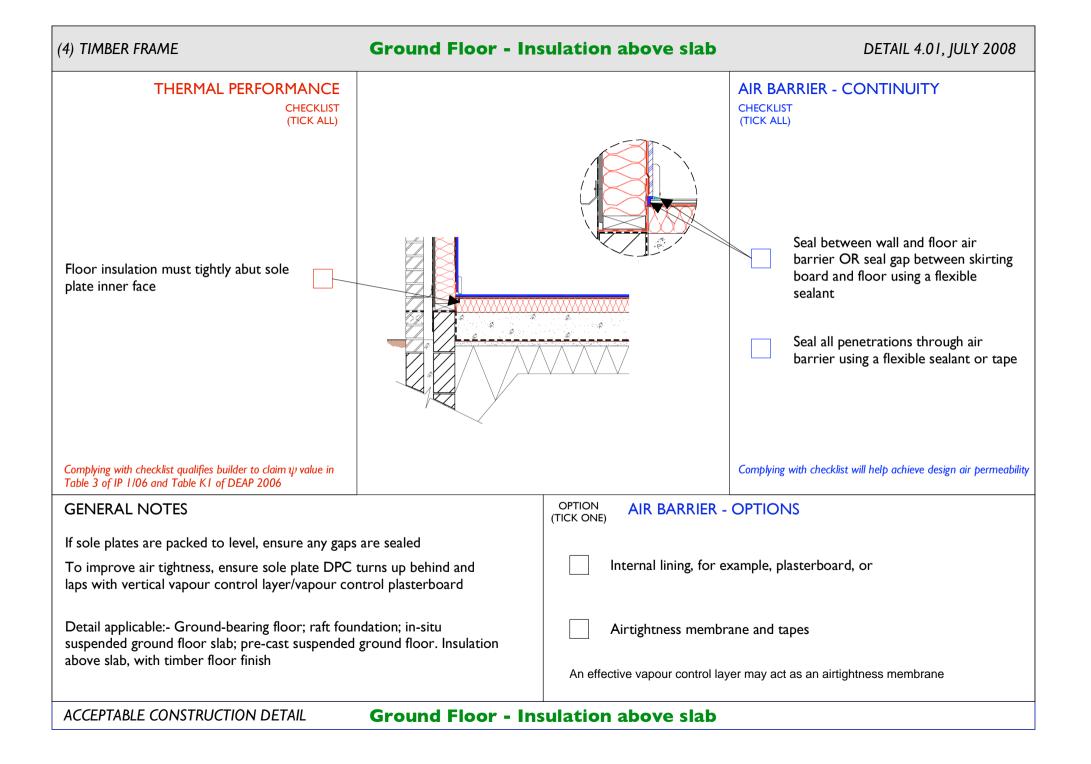
G-03 Timber Stud Partition Head - Section

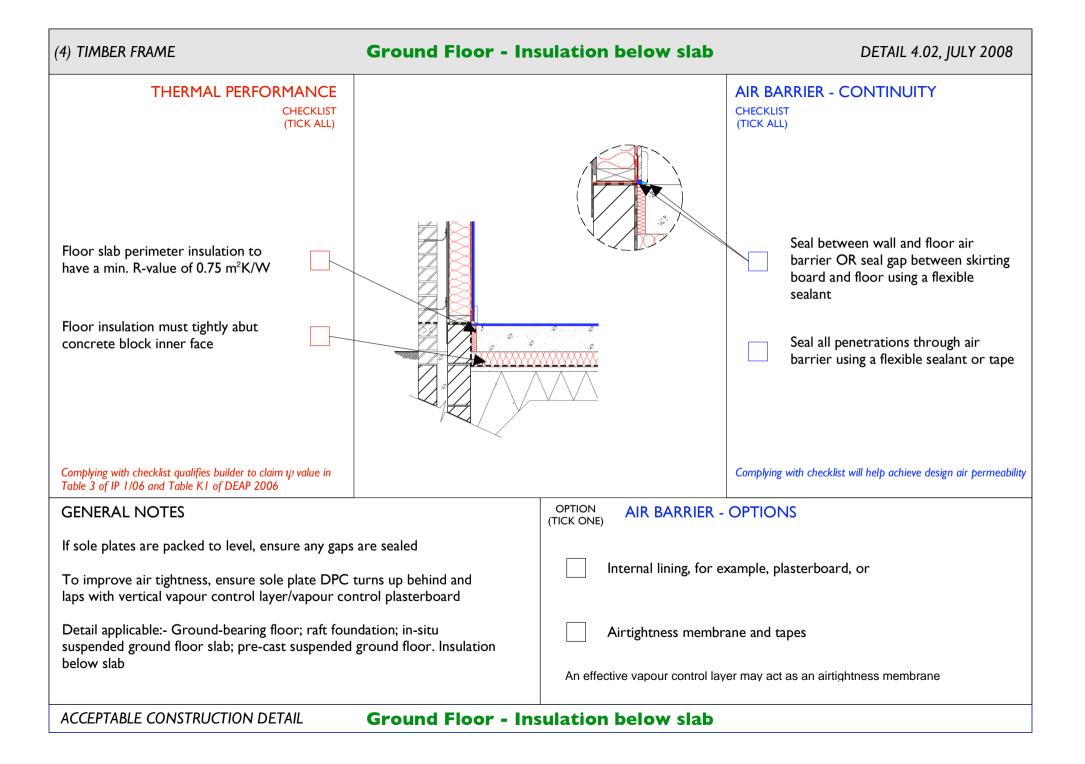
To limit the air permeability to a reasonable level as defined in Part L of the Building Regulations a high degree of attention to detail, good workmanship and appropriate site procedures are required. For further information see introductory document.

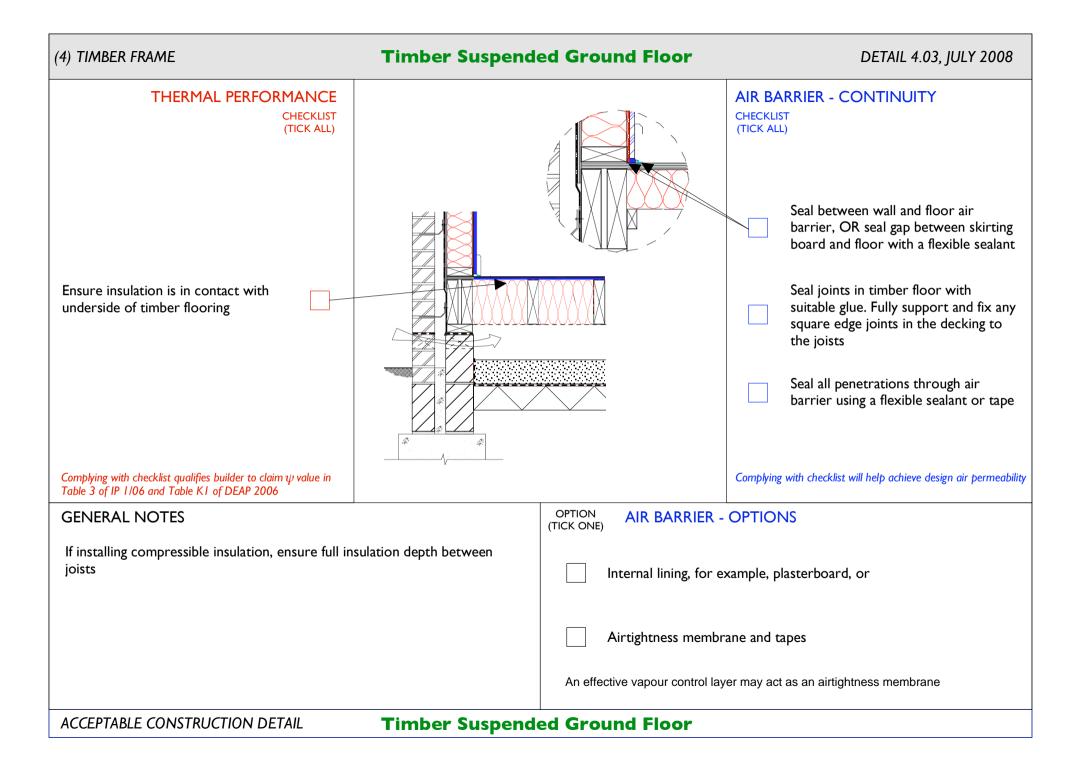


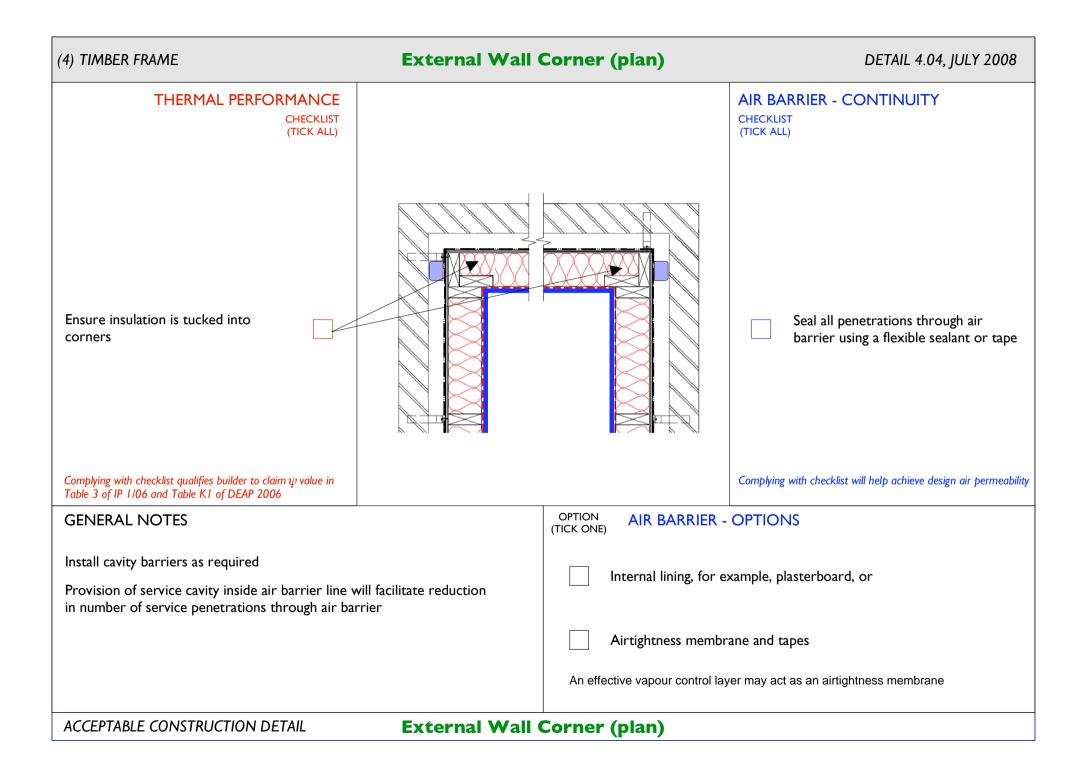


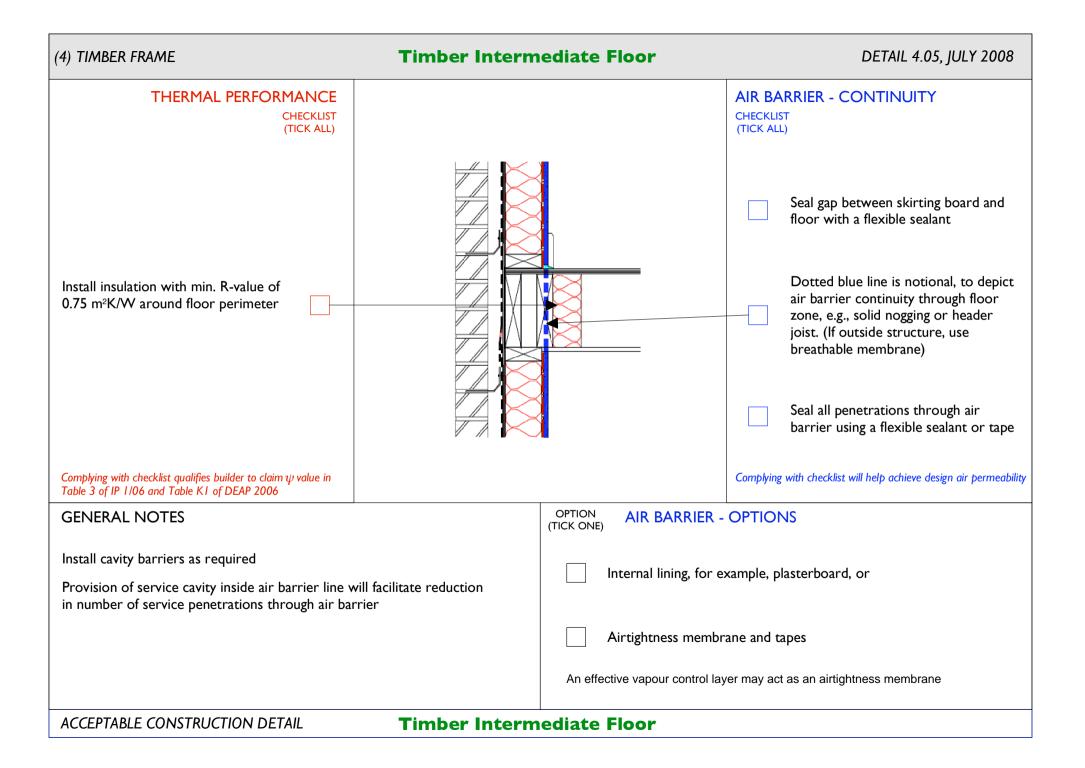


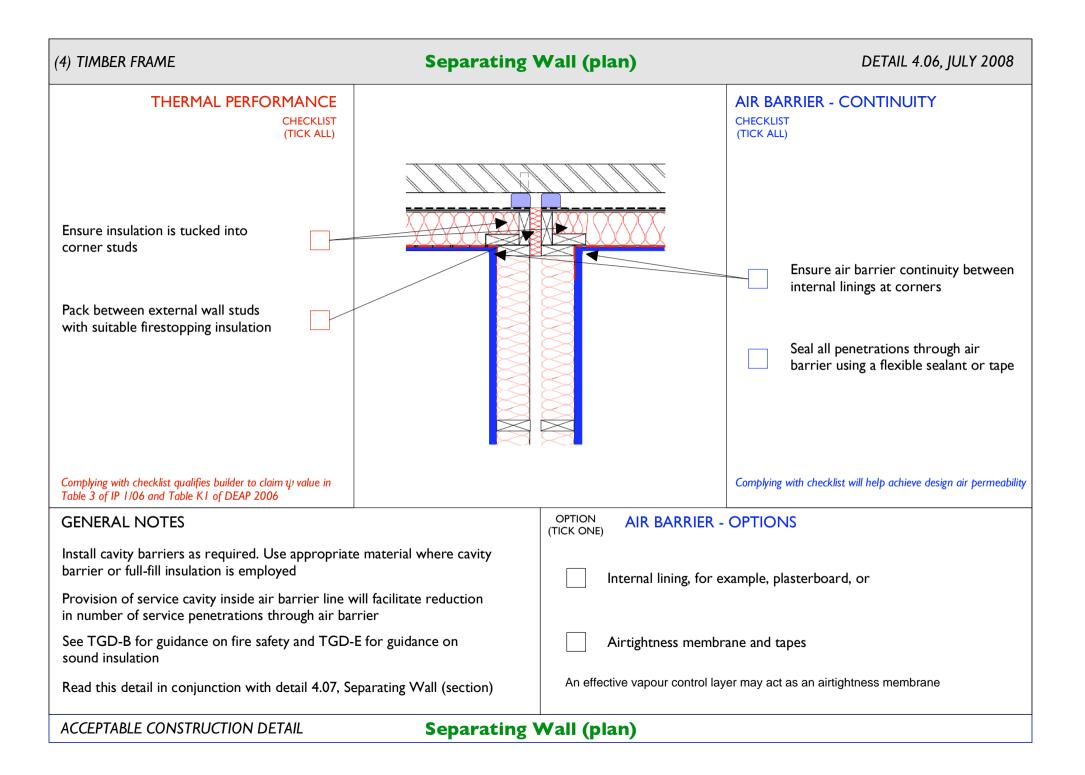


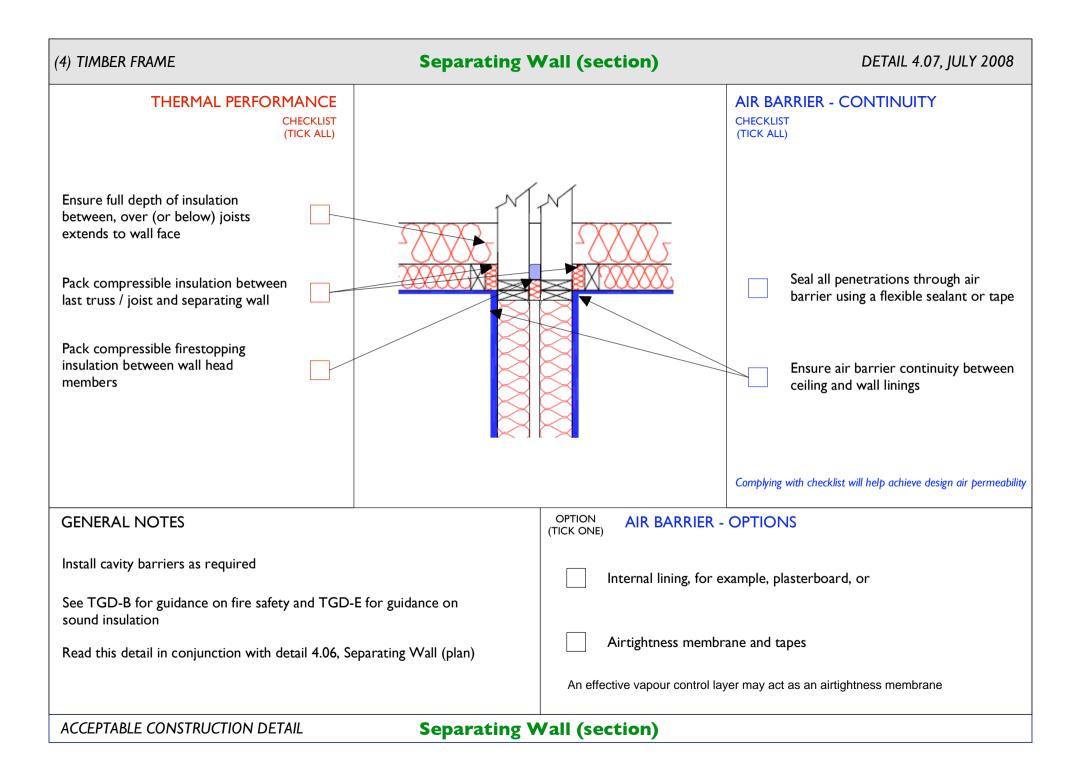


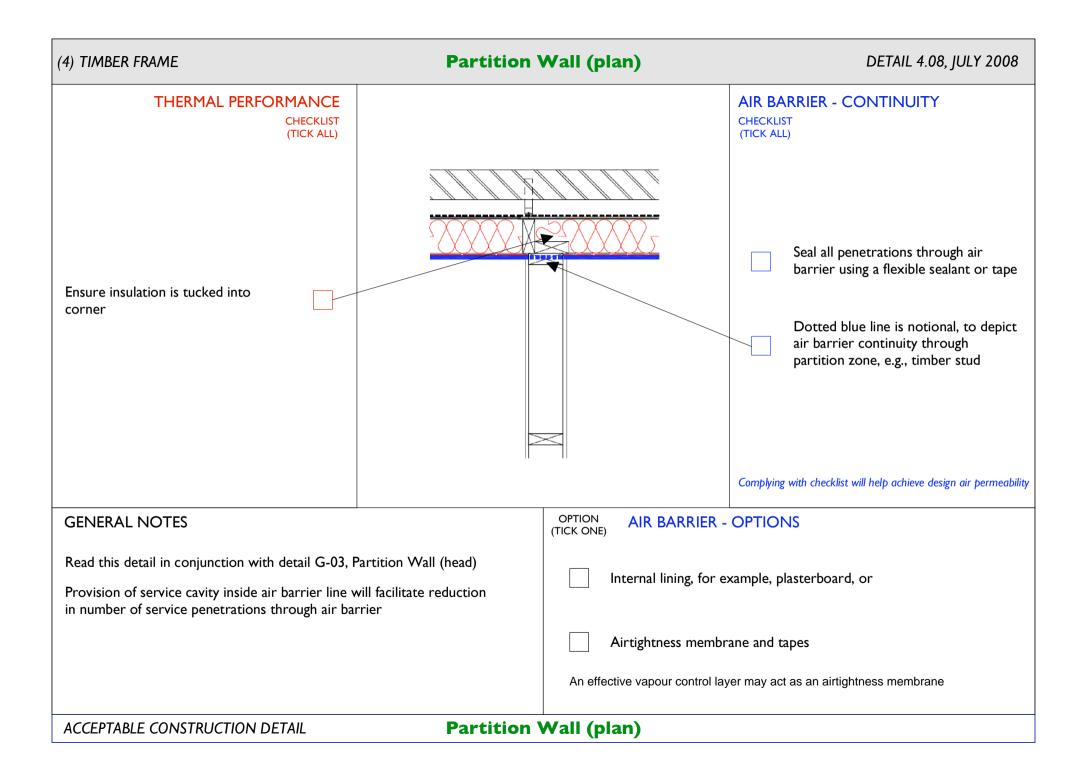












#### **Eaves - Insulation between and under DETAIL 4.11, JULY 2008** (4) TIMBER FRAME rafters - Ventilated Rafter Void - Dormer THERMAL PERFORMANCE **AIR BARRIER - CONTINUITY CHECKLIST CHECKLIST** (TICK ALL) (TICK ALL) Ensure continuity of insulation throughout junction Install full depth timber nogging between floor joists, and seal Ensure insulation is installed tightly between nogging, ceiling and upper between rafters and is in contact with stud wall with a flexible sealant. under-rafter insulation (Dotted blue line is notional, to depict air barrier continuity through Ensure full depth of insulation noggings.) between and over joists abuts eaves insulation Ensure air barrier continuity between Ensure gap between wall plate and ceiling and wall linings proprietary eaves vent is completely filled with insulation having a min. Seal all penetrations through air R-value across the insulation barrier using a flexible sealant or tape thickness of 1.2 m<sup>2</sup> K/W Complying with checklist qualifies builder to claim $\psi$ value in Complying with checklist will help achieve design air permeability Table 3 of IP 1/06 and Table K1 of DEAP 2006 **OPTION AIR BARRIER - OPTIONS GENERAL NOTES** (TICK ONE) Thermal performance of junction can be improved by incorporating an eaves wind barrier (plywood, OSB, softboard or other suitable material) around insulation to be sealed to connect with the ventilator strip thereby mitigating wind chill from the vent inlet in the eaves. Internal lining, for example, plasterboard, or If required by BS5250, use vapour control plasterboard or separate vapour control layer behind plasterboard. Use proprietary eaves ventilator to ensure ventilation in accordance with BS5250. Installation of eaves ventilator must not prevent free water drainage below tiling battens Airtightness membrane and tapes Use of over joist and under rafter insulation is considered best practice, as it eliminates the cold bridge caused by the joist/rafter Install cavity barriers as required An effective vapour control layer may act as an airtightness membrane Read this detail in conjunction with details 4-15, Gable - Attic Floor Level, and 4-16, Gable - Insulation between and under rafters - Ventilated Rafter Void

ACCEPTABLE CONSTRUCTION DETAIL

Eaves - Insulation between and under rafters Ventilated Rafter Void - Dormer

#### **Eaves - Insulation between and under DETAIL 4.12, JULY 2008** (4) TIMBER FRAME rafters - Unventilated Rafter Void - Dormer THERMAL PERFORMANCE **AIR BARRIER - CONTINUITY** CHECKLIST **CHECKLIST** (TICK ALL) (TICK ALL) Ensure continuity of insulation throughout junction Ensure air barrier continuity between Ensure insulation is installed tightly ceiling and wall linings between rafters and is in contact with under-rafter insulation Ensure full depth of insulation Install double, full depth timber between and over joists abuts eaves nogging between floor joists. (Dotted blue line is notional, to depict air insulation barrier continuity through noggings.) Ensure gap between wall plate and proprietary eaves guard is completely filled with insulation having a min. Seal all penetrations through air R-value across the insulation barrier using a flexible sealant or tape thickness of 1.2 m<sup>2</sup> K/W Complying with checklist qualifies builder to claim $\psi$ value in Complying with checklist will help achieve design air permeability Table 3 of IP 1/06 and Table K1 of DEAP 2006 **OPTION AIR BARRIER - OPTIONS GENERAL NOTES** (TICK ONE) If required by BS5250, use vapour control plasterboard or separate vapour control layer behind plasterboard. Vapour permeable roof underlay to be used in strict accordance with approved Internal lining, for example, plasterboard, or third party certification Use of over joist and under rafter insulation is considered best practice, as it eliminates the cold bridge caused by the joist/rafter Airtightness membrane and tapes Eaves insulation must not hinder free water drainage below tiling battens

Read this detail in conjunction with details 4-15, Gable - Attic floor level, and 4-17, Gable - Insulation between and under rafters - Unventilated Rafter Void

Eaves - Insulation between and under rafters Unventilated Rafter Void - Dormer

An effective vapour control layer may act as an airtightness membrane

Install cavity barriers as required

### Eaves - Insulation between and under rafters -(4) TIMBER FRAME **DETAIL 4.13, JULY 2008 Ventilated Rafter Void - Pitched ceiling AIR BARRIER - CONTINUITY** THERMAI PERFORMANCE **CHECKLIST CHECKLIST** (TICK ALL) (TICK ALL) Ensure continuity of insulation throughout junction Ensure insulation is installed tightly between rafters and is in contact with Seal all penetrations through air under-rafter insulation barrier using a flexible sealant or tape Ensure full depth of insulation between and under rafters abuts eaves insulation Ensure air barrier continuity between Ensure gap between wall plate and ceiling and wall linings proprietary eaves vent is completely filled with insulation having a min. R-value across the insulation thickness of 1.2 m<sup>2</sup> K/W Complying with checklist qualifies builder to claim $\psi$ value in Complying with checklist will help achieve design air permeability Table 3 of IP 1/06 and Table K1 of DEAP 2006 **OPTION AIR BARRIER - OPTIONS GENERAL NOTES** (TICK ONE) Thermal performance of junction can be improved by incorporating an eaves wind barrier (plywood, OSB, softboard or other suitable material) around insulation to be sealed to connect with the ventilator strip thereby mitigating wind chill from the vent Internal lining, for example, plasterboard, or inlet in the eaves. Use a proprietary eaves ventilator to ensure ventilation in accordance with BS5250. Installation of eaves ventilator must not prevent free water drainage below tiling battens If required by BS5250, use vapour control plasterboard or separate vapour control layer behind plasterboard Airtightness membrane and tapes Use of over joist and under rafter insulation is considered best practice, as it eliminates the cold bridge caused by the joist/rafter Install cavity barriers as required An effective vapour control layer may act as an airtightness membrane Read this detail in conjunction with details 4-15, Gable - Attic Floor Level, and 4-16, Gable - Insulation between and under rafters - Ventilated Rafter Void

**ACCEPTABLE CONSTRUCTION DETAIL** 

Eaves - Insulation between and under rafters - Ventilated Rafter Void - Pitched ceiling

### **Eaves - Insulation between and over rafters -**(4) TIMBER FRAME **DETAIL 4.14, JULY 2008 Unventilated Rafter Void - Dormer AIR BARRIER - CONTINUITY** THERMAL PERFORMANCE CHECKLIST **CHECKLIST** (TICK ALL) (TICK ALL) Ensure continuity of insulation throughout junction Ensure air barrier continuity between ceiling and wall plasterboard Ensure insulation is installed tightly between rafters and is in contact with over-rafter insulation Install full depth timber nogging between floor joists. (Dotted blue Ensure full depth of insulation line is notional, to depict air barrier between and over rafters abuts eaves continuity through noggings.) insulation Ensure gap between wall plate and over rafter insulation is completely Seal all penetrations through air filled with insulation having a min. barrier using a flexible sealant or tape R-value across the insulation thickness of 1.2 m<sup>2</sup> K/W Complying with checklist qualifies builder to claim $\psi$ value in Complying with checklist will help achieve design air permeability Table 3 of IP 1/06 and Table K1 of DEAP 2006 **AIR BARRIER - OPTIONS OPTION GENERAL NOTES** (TICK ONE) Vapour permeable roof underlay to be used in strict accordance with approved third party certification If required by BS5250, use vapour control plasterboard or separate vapour control layer behind plasterboard.

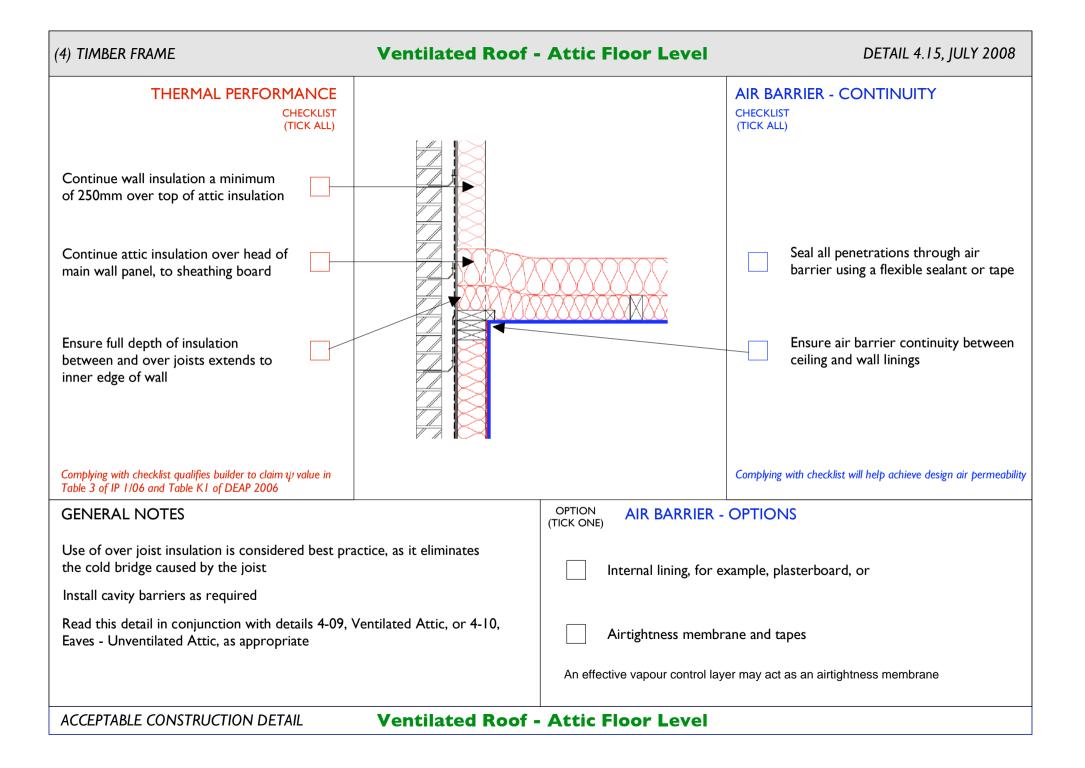
Use of over rafter insulation is considered best practice, as it eliminates the cold bridge caused by the joist/rafter

Install cavity barriers as required

Read this detail in conjunction with detail 4-18, Gable - Insulation between and over rafters

TICK ONL)
Internal lining, for example, plasterboard, or
Airtightness membrane and tapes
An effective vapour control layer may act as an airtightness membrane

Eaves - Insulation between and over rafters -**Unventilated Rafter Void - Dormer** 



## Gable - Insulation between and under (4) TIMBER FRAME **DETAIL 4.16, JULY 2008** rafters - Ventilated Rafter Void **AIR BARRIER - CONTINUITY** THERMAL PERFORMANCE CHECKLIST **CHECKLIST** (TICK ALL) (TICK ALL) Ensure full depth of insulation between and under rafters extends to wall Seal all penetrations through air Ensure insulation is installed tightly barrier using a flexible sealant or tape between rafters and is in contact with under-rafter insulation Ensure wall insulation is taken up level Ensure air barrier continuity between with top of wall ceiling and wall linings Ensure insulation continuity throughout junction Complying with checklist qualifies builder to claim $\psi$ value in Complying with checklist will help achieve design air permeability Table 3 of IP 1/06 and Table K1 of DEAP 2006 **OPTION AIR BARRIER - OPTIONS GENERAL NOTES** (TICK ONE) Ventilate roof in accordance with BS 5250 If required by BS5250, use vapour control plasterboard or separate Internal lining, for example, plasterboard, or vapour control layer behind plasterboard. Use of under rafter insulation is considered best practice, as it eliminates the cold bridge caused by the rafter Airtightness membrane and tapes Install cavity barriers as required Read this detail in conjunction with detail 4-11, Eaves - Insulation between An effective vapour control layer may act as an airtightness membrane and under rafters - Ventilated Rafter Void Gable - Insulation between and under rafters -ACCEPTABLE CONSTRUCTION DETAIL **Ventilated Rafter Void**

# Gable - Insulation between and under (4) TIMBER FRAME **DETAIL 4.17, JULY 2008** rafters - Unventilated Rafter Void **AIR BARRIER - CONTINUITY** THERMAI PERFORMANCE CHECKLIST **CHECKLIST** (TICK ALL) (TICK ALL) Ensure full depth of insulation between and under rafters extends to wall Seal all penetrations through air Ensure insulation is installed tightly barrier using a flexible sealant or tape between rafters and is in contact with under-rafter insulation Ensure wall insulation is taken up level Ensure air barrier continuity between with top of wall ceiling and wall linings Ensure insulation continuity throughout junction Complying with checklist qualifies builder to claim $\psi$ value in Complying with checklist will help achieve design air permeability Table 3 of IP 1/06 and Table K1 of DEAP 2006 **OPTION AIR BARRIER - OPTIONS GENERAL NOTES** (TICK ONE) Vapour permeable roof underlay to be used in strict accordance with approved third party certification Internal lining, for example, plasterboard, or If required by BS5250, use vapour control plasterboard or separate vapour control layer behind plasterboard. Install cavity barriers as required Airtightness membrane and tapes Read this detail in conjunction with detail 4-12, Eaves - Insulation between An effective vapour control layer may act as an airtightness membrane and under rafters - Unventilated Rafter Void Gable - Insulation between and under rafters -ACCEPTABLE CONSTRUCTION DETAIL **Unventilated Rafter Void**

### Gable - Insulation between and over (4) TIMBER FRAME **DETAIL 4.18, JULY 2008** rafters - Unventilated Rafter Void **AIR BARRIER - CONTINUITY** THERMAI PERFORMANCE CHECKLIST **CHECKLIST** (TICK ALL) (TICK ALL) Ensure full depth of insulation between and over rafters extends to wall Seal all penetrations through air Ensure insulation continuity barrier using a flexible sealant or tape throughout junction Ensure insulation is installed tightly between rafters and is in contact with Ensure air barrier continuity between over-rafter insulation ceiling and wall linings Ensure wall insulation is taken up level with top of wall Complying with checklist qualifies builder to claim $\psi$ value in Complying with checklist will help achieve design air permeability Table 3 of IP 1/06 and Table K1 of DEAP 2006 **OPTION AIR BARRIER - OPTIONS GENERAL NOTES** (TICK ONE) Vapour permeable roof underlay to be used in strict accordance with approved third party certification Internal lining, for example, plasterboard, or If required by BS5250, use vapour control plasterboard or separate vapour control layer behind linings Use of over-rafter insulation is considered best practice, as it eliminates the cold bridge caused by the rafter Airtightness membrane and tapes Install cavity barriers as required Read this detail in conjunction with detail 4-14, Eaves - Insulation between An effective vapour control layer may act as an airtightness membrane and over rafters Gable - Insulation between and over rafters ACCEPTABLE CONSTRUCTION DETAIL **Unventilated Rafter Void**

