A Handbook of thermal bridging details incorporating aircrete blocks

Prepared for the *Aircrete Products Association* by the *BBA* and *RDL*

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Purpose of the handbook

This handbook was prepared for the Aircrete Products Association (APA can be contacted at www.aircrete.co.uk) and it aims to provide a set of thermal bridging junction details for a new dwelling. The details are for a masonry external wall with a partial fill cavity wall insulation, constructed using aircrete blocks. The drawings provided are for typical details and show all the elements essential in achieving the calculated ψ-values. All other site requirements and all relevant building regulations must be taken into consideration when implementing the details.

Each detail in this handbook includes drawings of the junction, ψ-values calculated by an experienced thermal modeller and a process checklist for use on site to facilitate the achievement of the calculated ψ-values.

List of Constructive Details

There are a total of 21 details, labelled CD0001 to CD0021. To provide additional guidance for designers and specifiers the corresponding E and P numbers given in the SAP conventions document are also included.

The Handbook covers aircrete blocks for three different conductivity values up to 0.11 $W \cdot m^{-1} \cdot K^{-1}$, 0.15 $W \cdot m^{-1} \cdot K^{-1}$ and 0.19 $W \cdot m^{-1} \cdot K^{-1}$. Other APA blocks with intermediate thermal conductivity values or lower than 0.11 (for example 0.09 $W \cdot m^{-1} \cdot K^{-1}$) could also be used without significantly affecting the ψ-values provided. For example, if using blocks with a λ value of 0.18 $W \cdot m^{-1} \cdot K^{-1}$, the 0.19 $W \cdot m^{-1} \cdot K^{-1}$ values can be taken and would, in the vast majority of cases represent the worst case scenario solution. A number of such aircrete blocks are covered by BBA Certification (see www.bbacerts.co.uk) and only aircrete blocks manufactured by the APA may be used. When aircrete blocks were used in the ground, the thermal conductivity has been adjusted for higher moisture content.

This handbook begins with the ground floor junctions, moving on to lintels and windows, intermediate floor and roof, corner and a party wall with an external wall, and concludes with floor and roof junctions with a fully filled party wall. These junctions are for separating walls between dwellings and the ψ-values should be applied to each dwelling.

Detail number	Detail title	SAP ref
CD0001	External Masonry Cavity Wall. Partial Fill Suspended beam-and-block floor — Insulation above slab	E5
CD0002	External Masonry Cavity Wall. Partial Fill Suspended in-situ concrete floor — Insulation below slab	E5
CD0003	External Masonry Cavity Wall. Partial Fill Concrete ground bearing floor — Insulation below slab	E5
CD0004	External Masonry Cavity Wall. Partial Fill Independent lintel	E2
CD0005	External Masonry Cavity Wall. Partial Fill Steel lintel — Perforated base plate (Insulated soffit)	E1
CD0006	External Masonry Cavity Wall. Partial Fill Sill	E3
CD0007	External Masonry Cavity Wall. Partial Fill Jamb	E4
CD0008	External Masonry Cavity Wall. Partial Fill Intermediate timber floor within a dwelling	E6
CD0009	External Masonry Cavity Wall. Partial Fill Precast concrete separating floor between dwellings	E7
CD0010	External Masonry Cavity Wall. Partial Fill Pitched roof. Gable — Insulation at ceiling level — Ventilated loft	E12
CD0011	External Masonry Cavity Wall. Partial Fill Pitched roof. Gable — Insulation at rafter Level — Unventilated rafter void	E13
CD0012	External Masonry Cavity Wall. Partial Fill Pitched roof. Eaves — Insulation at ceiling level — Ventilated Loft	E10
CD0013	External Masonry Cavity Wall. Partial Fill Pitched roof. Eaves — Insulation at rafter level — Unventilated rafter void	E11
CD0014	External Masonry Cavity Wall. Partial Fill Normal corner	E16
CD0015	External Masonry Cavity Wall. Partial Fill Inverted corner	E17
CD0016	External Masonry Cavity Wall. Partial Fill Party wall between dwellings	E18
CD0017	Party Wall Masonry. Full Fill Suspended beam-and-block floor — Insulation above slab	P1
CD0018	Party Wall Masonry. Full Fill Suspended concrete floor — Insulation below slab	P1
CD0019	Party Wall Masonry. Full Fill In-situ concrete ground bearing floor — Insulation below slab	P1
CD0020	Party Wall Masonry. Full Fill Roof — Insulation at ceiling level — Ventilated loft	P4
CD0021	Party Wall Masonry. Full Fill Roof — Insulation at rafter level — Unventilated rafter void	P5

How to use this handbook

The details have been prepared in line with the range of U values appropriate to achieve compliance within The Building Regulations 2010 (England and Wales), Part L. Therefore all of the building elements have an upper U value limit of 0.30 $W \cdot m^{-2} \cdot K^{-1}$ for a wall, 0.25 $W \cdot m^{-2} \cdot K^{-1}$ for a floor and 0.20 $W \cdot m^{-2} \cdot K^{-1}$ for the roof element, inline with the limiting fabric parameters given in Approved Document L1A.

The ψ-values are provided for different bands of U values. For each band the ψ-value is calculated for the worst case after considering the effect of thickness and conductivity of insulation independently. This ψ-value can therefore be taken for the complete range of U values quoted.

In all of the details the wall finish drawn is plasterboard on dabs. This was chosen for consistency and also as it is a common construction method. It is not, however, essential to use this internal finish solution to achieve the stated ψ-value. The same applies for the use of rendered block or brick for the outer leaf. Additionally the mortar joints are indicative and may not necessarily coincide with those shown in the diagrams. The maximum external wall cavity width is 200 mm and the residual air space is kept clear. Although the details show 100 mm thick blocks, greater thicknesses up to 140 mm may also be adopted, without significantly affecting the calculated values.

As a general rule, unless a specific solution for a wall or floor finish is either indicated in the *Notes* section or is explicitly mentioned in the annotations, it should be considered optional. The main driver in selecting the materials for each detail would be to achieve the U value bands as provided in each detail.

Some minimum guidance on how to achieve air tightness is also provided. As a general rule, acceptable barrier options are the use of plastercoat, blockwork inner leaf/parging coat applied to the internal face of the inner leaf with plasterboard cover, or plasterboard on dabs. Where plasterboard on dabs is used, a continuous ribbon of adhesive should also be applied around all openings, along the top and bottom of the wall and at internal and external corners. In general, all penetrations through the air barrier should be sealed with a flexible sealant. This type of guidance can also be found in the current Accredited Construction Details, available at the DCLG portal.

A series of tips on interpreting the information in each Constructive Detail, is given below, starting from the first to the last page.

Front page — Illustration

The drawing

The front page drawing is in full colour, and the annotations identify the critical parameters that must be observed in order for this junction to achieve the calculated ψ-values. The annotations are also consistent with the wording used in the *Notes* section, to make it easier to read and understand the important elements.

The Notes

This section relates to the steps in the build process of the junction that are essential for the construction of the detail with regards to achieving the stated ψ-values. Any other guidance by all relevant Building Regulations must be followed and this detail focuses only on the thermal performance and provides basic guidance with regards to air tightness.

Main body — ψ-values

The drawing

The second drawing provides additional information to that given on the front page. It highlights in colour the product for which these details have been produced, in this case, the aircrete blocks. It also indicates the position of the air barrier that must be maintained and provides the necessary information to enable the U value calculation to be carried out.

ψ-values

A table of ψ-values (psi-values) and temperature factors is provided for each detail. The banding of U values provides the specifier with the flexibility to use different U values for the main elements, but ensures that the calculated ψ-value is still valid within that range. The ψ-values were calculated and checked by an experienced individual, as required by Approved Document L1A, using the THERM or TRISCO software, the latter where 3D modelling was required.

The temperature factor is a property of the construction and is used to assess the risk of surface condensation or mould growth. This parameter is provided in all the junctions. In all cases the calculated values are higher than the critical temperature factor for dwellings (0.75) as given in BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*, which limits the risk of surface condensation or mould growth.

All ψ-values have been calculated in accordance with BRE Report 497 : 2007 *Conventions for calculating linear thermal transmittance and temperature factors* and other relevant standards quoted within that document.

U value examples

Some indicative guidance on the insulation thickness and thermal conductivity values required to achieve the U value example constructions in combination with the aircrete blocks, are also provided. Depending on the complexity of the detail, there are one or more U value bands available. There is no specification for the type of insulation used, but the necessary information is provided to enable the calculations to be repeated. The U values were calculated in accordance with BRE Report (BR 443 : 2006) *Conventions for U-value calculations* and other relevant British Standards.

A fully detailed U value calculation using the stated thickness and thermal conductivity values may produce lower U values than that indicated in the details, as only the minimum amount of information is provided, such as the use of aircrete blocks, thickness and conductivity of insulation. Other combinations of thicknesses and conductivities can be used to achieve the U values, and as long as these are within the bands provided, the corresponding ψ-value will still be valid. This provides the user with considerable flexibility compared to more traditional representations of ψ-values, while maintaining the accuracy and technical rigour of the calculation.

Last page — Checklist

Guidance checklist

This part of the detail relates to the quality assurance aspect, which used in combination with guidance given on the first page, would provide reassurance to the builder that this detail will perform as expected. The creation of the list is a combination of the thermal modelling analysis of the detail and site experience.

The *Notes* box is intended for the inspector or the site supervisor to record any additional information or changes that may have occurred to the final built detail. It can be used as a log of the work done for each detail and as a process for checking by the site supervisor, to ensure the detail was constructed as detailed and so that the calculated ψ-values can be achieved.

Acoustic performance

One more parameter that was also considered in the preparation of the details was the acoustic performance of the junctions. Where appropriate, advice was provided by RDL to establish that the details could be followed without conflicting with the acoustic requirements of that scheme. For example, the cavity widths and insulation for separating walls are specified such that they can accommodate what is required in a corresponding acoustic detail. The Robust Details (RD) Handbook must be referenced when using the RD scheme.

A similar approach was also taken for the intermediate floors details, which led to the production of two details, one for the separating floor and another for the intermediate floor detail between dwellings, which in Appendix K of SAP 2009 have the same ψ-values.

Example using CD0002

Lets assume that you are using this junction detail where the wall consists of 100 mm of aircrete blocks (λ = 0.19 $W \cdot m^{-1} \cdot K^{-1}$) and 85 mm of foil-faced insulation with a λ value of 0.022 $W \cdot m^{-1} \cdot K^{-1}$. If using the example construction provided, the U value of the wall will be 0.20 $W \cdot m^{-2} \cdot K^{-1}$, or less, which means that the corresponding ψ-values would be the ones given in the first line and column of the three main tables, so either 0.128 $W \cdot m^{-1} \cdot K^{-1}$, 0.119 $W \cdot m^{-1} \cdot K^{-1}$ or 0.064 $W \cdot m^{-1} \cdot K^{-1}$.

Now you need to decide on the U value of the floor. This U value will be dependent on its exposed perimeter length to area ratio (P/A), so for example if the U value is 0.24 $W \cdot m^{-2} \cdot K^{-1}$ for a P/A ratio of 0.50, then the corresponding U value for a P/A ratio of 0.25 would be 0.19 $W \cdot m^{-2} \cdot K^{-1}$. In this case, the ψ-value for this detail would be 0.119 $W \cdot m^{-1} \cdot K^{-1}$. Following the examples provided for the floor U value, this floor U value could be achieved using between 50 mm and 125 mm of insulation.

If the U value you chose was 0.25 $W \cdot m^{-2} \cdot K^{-1}$ but for a ratio of 0.40, then the corresponding floor U value for the floor at P/A = 0.25 would be higher then 0.19 $W \cdot m^{-2} \cdot K^{-1}$, which means that the ψ-value for this detail would be 0.064.

In summary, for the ground floor details, the P/A ratio tables provide the user with additional flexibility to calculate the corresponding floor U values, without having to perform each calculation separately.

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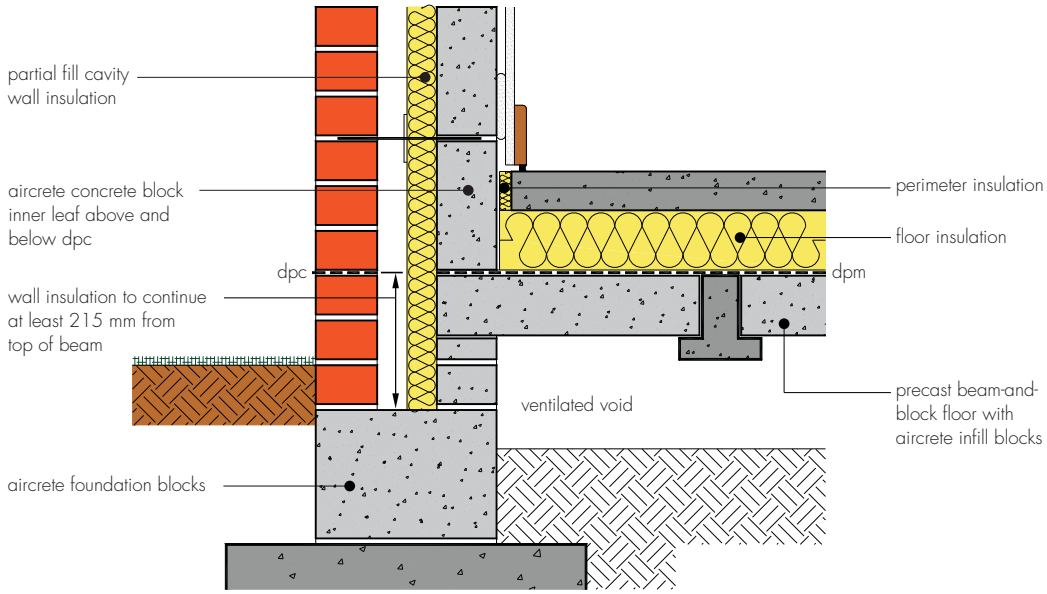
External Masonry Cavity Wall. Partial Fill

Suspended beam-and-block floor — Insulation above slab

CD0001

constructive DETAILS



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Notes

- perimeter insulation with a minimum resistance value of 0.8 $m^2 \cdot K \cdot W^{-1}$ (eg 20 mm of insulation with λ = 0.025 $W \cdot m^{-1} \cdot K^{-1}$) and installed up to floor finish
- ensure that floor insulation tightly abuts blockwork wall
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall and continues at least 215 mm from top of beam. Care must be taken when the partial fill insulation is taken to the ground, as the product must be fit for purpose with regards to water absorption. If this is not the case, a void may be required between the bottom of the insulation and the top of the foundation block
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- ensure there is a seal between the wall and the floor air barrier, and that there are no gaps between the skirting board and the floor
- other improved air barrier continuity solutions can be used.

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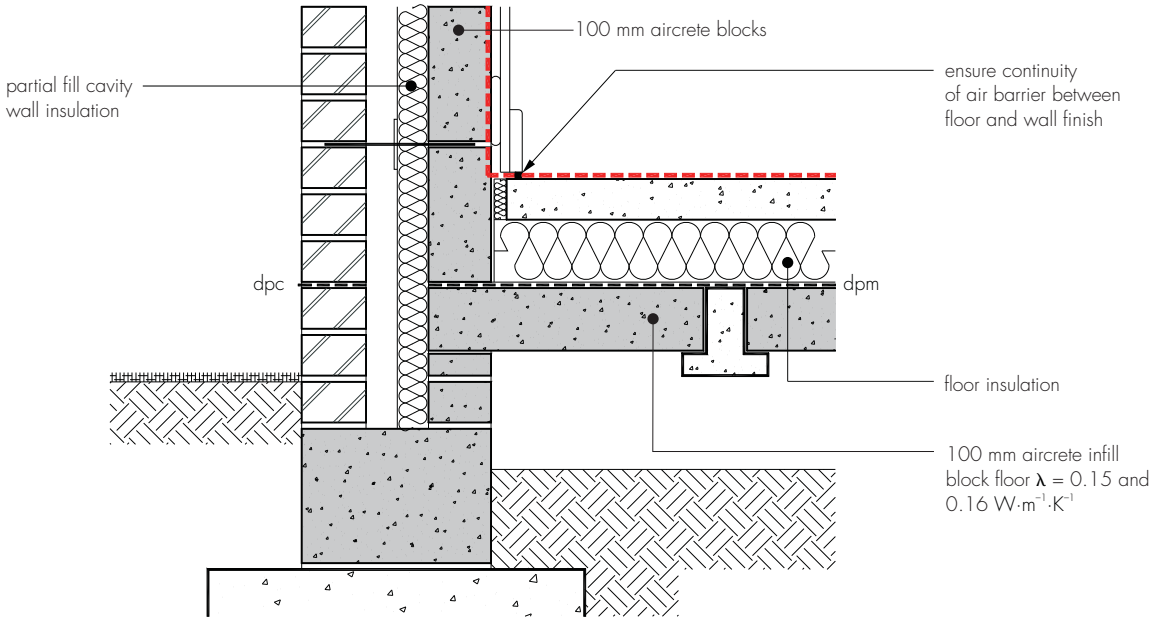
External Masonry Cavity Wall. Partial Fill
Suspended beam-and-block floor — Insulation above slab

CD0001



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail(1)

Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.061	0.93
0.15	0.055	0.93
0.11	0.050	0.93

These values are valid for floor U value less or equal than 0.25 $W \cdot m^{-2} \cdot K^{-1}$ and wall U value less or equal than 0.30 $W \cdot m^{-2} \cdot K^{-1}$.

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Examples of constructions achieving these U values:

Floor U values $\leq$ 0.25 $W \cdot m^{-2} \cdot K^{-1}$ (for a perimeter/area ratio $\leq$ 1) can be achieved with:
— 60 mm or thicker insulation thickness with $\lambda \leq 0.023$ $W \cdot m^{-1} \cdot K^{-1}$

Wall U values $\leq$ 0.30 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— 50 mm $\leq$ foil faced insulation thickness $\leq$ 55 mm with $\lambda \leq 0.022$ $W \cdot m^{-1} \cdot K^{-1}$

Wall U values $\leq$ 0.25 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— 60 mm $\leq$ foil faced insulation thickness $\leq$ 80 mm with $\lambda \leq 0.022$ $W \cdot m^{-1} \cdot K^{-1}$

Wall U values $\leq$ 0.20 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— 85 mm minimum foil faced insulation thickness with $\lambda \leq 0.022$ $W \cdot m^{-1} \cdot K^{-1}$.

(1) These values are valid for the case of beams parallel to the junction. For the case of beams perpendicular to the junction, the ψ-values provided can also be adopted, as the difference is not significant, particularly for lower U values.

External Masonry Cavity Wall. Partial Fill
Suspended beam-and-block floor — Insulation above slab

CD0001

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the edge insulation as specified? — Minimum resistance of 0.8 $m^2 \cdot K \cdot W^{-1}$ (eg 20 mm of insulation with λ = 0.025 $W \cdot m^{-1} \cdot K^{-1}$)	☐ ☐ .....
	— Installed up to floor finish.	☐ ☐ .....
2	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
3	Is the partial fill insulation continued at least 215 mm from top of beams?	☐ ☐ .....
4	Is the floor insulation abutting the blockwork wall, leaving no gaps?	☐ ☐ .....
5	Is the continuity of the air barrier between the floor and the wall achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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External Masonry Cavity Wall. Partial Fill

Suspended in-situ concrete floor — Insulation below slab

CD0002

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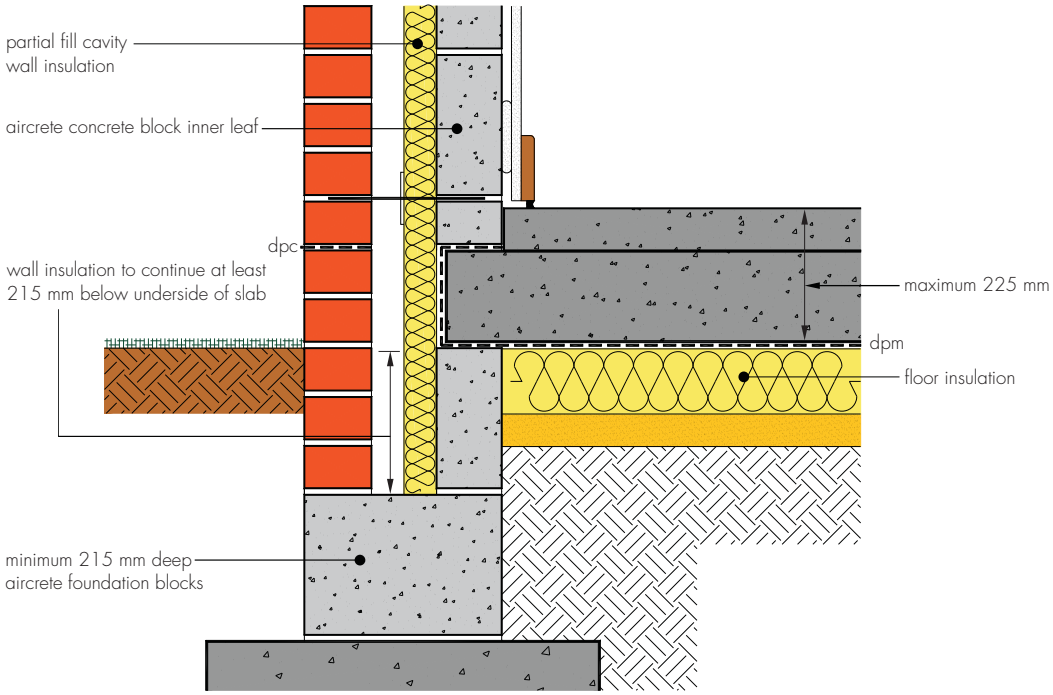

This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Notes

- minimum 215 mm deep aircrete foundation block
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall and continues at least 215 mm below underside of slab. Care must be taken when the partial fill insulation is taken to the ground, as the product must be fit for purpose with regards to water absorption. If this is not the case, a void may be required between the bottom of the insulation and the top of the foundation block
- maximum 225 mm concrete floor slab (including floor finish)
- ensure that floor insulation tightly abuts blockwork wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- ensure there is a seal between the wall and the floor air barrier, and that there are no gaps between the skirting board and the floor
- other improved air barrier continuity solutions can be used.

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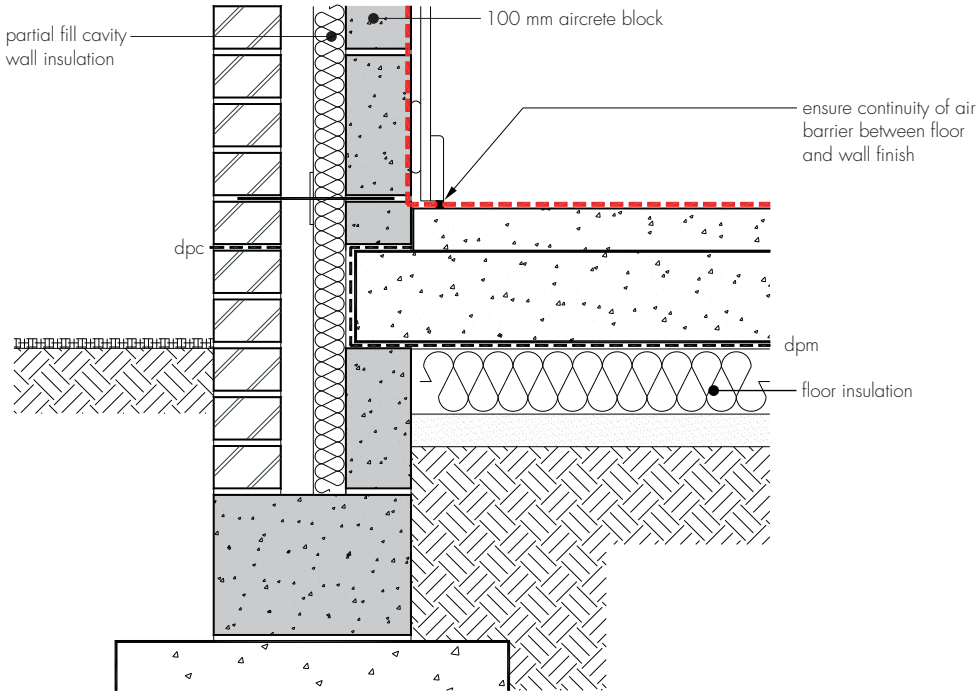
External Masonry Cavity Wall. Partial Fill
Suspended in-situ concrete floor — Insulation below slab

CD0002



denotes 'notional' line of continuous air barrier to be maintained

This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

Case 1: Floor U value between 0.08 and 0.11 $W \cdot m^{-2} \cdot K^{-1}$ (for a perimeter/area ratio of 0.25)

For example, floor U values for the range shown above can be achieved with insulation thickness between 130 mm and 200 mm and with $\lambda \leqslant 0.023\ W \cdot m^{-1} \cdot K^{-1}$.

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.128	0.92	0.142	0.91	0.156	0.91
0.15	0.119	0.93	0.134	0.92	0.150	0.91
0.11	0.121	0.92	0.139	0.91	0.160	0.90

The table below provides U values for the same floor construction for P/A ratios other than 0.25. The ψ-values can only be used when the actual floor U value is less than that given for the P/A ratio relevant to the dwelling in question:

P/A ($m \cdot m^{-2}$)	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
U value ($W \cdot m^{-2} \cdot K^{-1}$)	0.11	0.11	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14

Case 2: Floor U values between 0.12 and 0.19 $W \cdot m^{-2} \cdot K^{-1}$ (for a perimeter/area ratio of 0.25)

For example, floor U values for the range above can be achieved using between 50 mm and 125 mm of insulation thickness with $\lambda \leqslant 0.023$ $W \cdot m^{-1} \cdot K^{-1}$.

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U Value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.119	0.91	0.136	0.90	0.147	0.90
0.15	0.114	0.92	0.127	0.91	0.142	0.90
0.11	0.116	0.91	0.132	0.90	0.150	0.89

The table below provides U values for the same floor construction for P/A ratios other than 0.25. The ψ-values can only be used when the actual floor U value is less than that given for the P/A ratio relevant to the dwelling in question:

P/A ($m \cdot m^{-2}$)	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	*0.65*	*0.70*	*0.75*	*0.80*	*0.85*	*0.90*	*0.95*	*1.00*
U value ($W \cdot m^{-2} \cdot K^{-1}$)	0.18	0.19	0.21	0.22	0.23	0.23	0.24	0.25	0.25	*0.26*	*0.26*	*0.27*	*0.27*	*0.28*	*0.28*	*0.28*	*0.28*

Note: The U values shown in italics are above the limit floor U value according to The Building Regulations 2010 (England and Wales).

Case 3: Floor U value $\geqslant 0.20$ $W \cdot m^{-2} \cdot K^{-1}$ (for a perimeter/area ratio of 0.25)

For example, floor U values for the range above can be achieved using:
— 45 mm insulation thickness with $\lambda \leqslant 0.023$ $W \cdot m^{-1} \cdot K^{-1}$.

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U Value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.064	0.90	0.076	0.89	0.086	0.89
0.15	0.056	0.90	0.068	0.90	0.082	0.89
0.11	0.058	0.90	0.073	0.89	0.089	0.88

The table below provides U values for the same floor construction for P/A ratios other than 0.25. The ψ-values can only be used when the actual floor U value is greater than that given for the P/A ratio relevant to the dwelling in question:

P/A ($m \cdot m^{-2}$)	0.20	0.25	0.30	0.35	0.40	0.45	*0.50*	*0.55*	*0.60*	*0.65*	*0.70*	*0.75*	*0.80*	*0.85*	*0.90*	*0.95*	*1.00*
U value ($W \cdot m^{-2} \cdot K^{-1}$)	0.18	0.20	0.22	0.23	0.24	0.25	*0.26*	*0.26*	*0.27*	*0.27*	*0.28*	*0.28*	*0.29*	*0.29*	*0.30*	*0.30*	*0.30*

Note: The U values shown in italics are above the limit floor U value according to The Building Regulations 2010 (England and Wales).

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

For $U_{wall} \leqslant 0.30$ $W \cdot m^{-2} \cdot K^{-1}$ use:
— 50 mm $\leqslant$ foil-faced insulation thickness $\leqslant$ 55 mm with $\lambda \leqslant 0.022$ $W \cdot m^{-1} \cdot K^{-1}$

For $U_{wall} \leqslant 0.25$ $W \cdot m^{-2} \cdot K^{-1}$ use:
— 60 mm $\leqslant$ foil-faced insulation thickness $\leqslant$ 80 mm with $\lambda \leqslant 0.022$ $W \cdot m^{-1} \cdot K^{-1}$

For $U_{wall} \leqslant 0.20$ $W \cdot m^{-2} \cdot K^{-1}$ use:
— 85 mm minimum thickness of foil-faced insulation with $\lambda \leqslant 0.022$ $W \cdot m^{-1} \cdot K^{-1}$.

External Masonry Cavity Wall. Partial Fill
Suspended in-situ concrete floor — Insulation below slab

CD0002

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
2	Is the partial fill insulation continued at least 215 mm below underside of slab?	☐ ☐ .....
3	Is the floor insulation abutting the blockwork wall, leaving no gaps?	☐ ☐ .....
4	Are the foundations at least 215 mm of aircrete blocks?	☐ ☐ .....
5	Is the concrete floor slab 225 mm maximum (including floor finish)?	☐ ☐ .....
6	Is the continuity of the air barrier between the floor and the wall achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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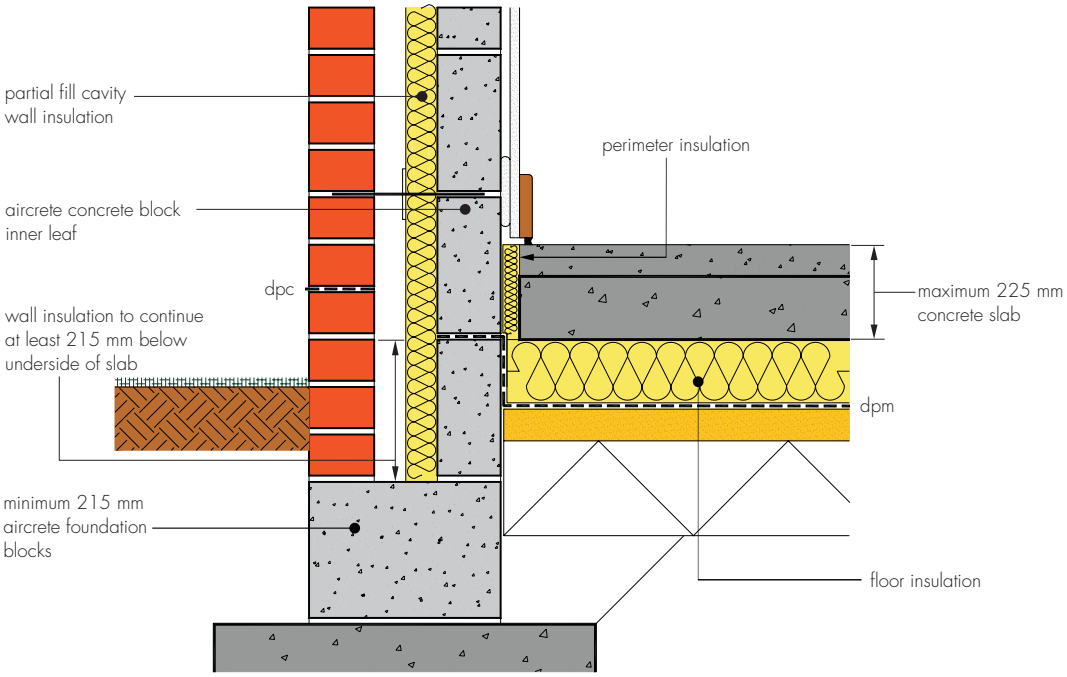
External Masonry Cavity Wall. Partial Fill

Concrete ground bearing floor — Insulation below slab

CD0003

constructive DETAILS



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

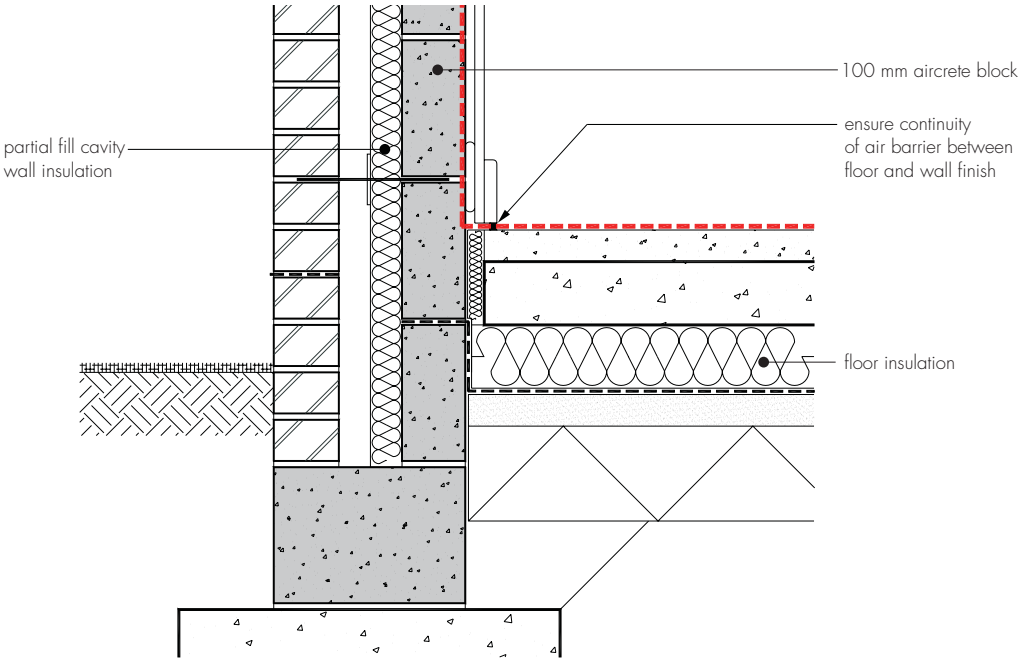
Notes

- perimeter insulation with a minimum resistance value of 0.8 $m^2 \cdot K \cdot W^{-1}$ (eg 20 mm of insulation with λ = 0.025 $W \cdot m^{-1} \cdot K^{-1}$) and installed up to floor finish
- minimum 215 mm aircrete foundation block
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall and continues at least 215 mm below underside of slab. Care must be taken when the partial fill insulation is taken to the ground, as the product must be fit for purpose with regards to water absorption. If this is not the case, a void may be required between the bottom of the insulation and the top of the foundation block
- maximum 225 mm concrete floor slab (including floor finish)
- ensure that floor insulation tightly abuts the blockwork wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- ensure there is a seal between the wall and the floor air barrier, and that there are no gaps between the skirting board and the floor
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

External Masonry Cavity Wall. Partial Fill
Concrete ground bearing floor — Insulation below slab

CD0003



denotes 'notional' line of continuous air barrier to be maintained

This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

Case 1: Floor U value between 0.08 and 0.11 $W \cdot m^{-2} \cdot K^{-1}$ (for a perimeter/area ratio of 0.25)

For example, floor U values for the range shown above can be achieved with insulation thickness between 130 mm and 200 mm and with $\lambda \leqslant 0.023\ W \cdot m^{-1} \cdot K^{-1}$.

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.083	0.94	0.090	0.94	0.096	0.93
0.15	0.077	0.95	0.084	0.94	0.090	0.94
0.11	0.069	0.95	0.077	0.94	0.084	0.94

The table below provides U values for the same floor construction for P/A ratios other than 0.25. The ψ-values can only be used when the actual floor U value is less than that given for the P/A ratio relevant to the dwelling in question:

P/A ($m \cdot m^{-2}$)	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
U value ($W \cdot m^{-2} \cdot K^{-1}$)	0.11	0.11	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14

Case 2: Floor U value between 0.12 and 0.19 $W \cdot m^{-2} \cdot K^{-1}$ (for a perimeter/area ratio of 0.25)

For example, floor U values for the range above can be achieved using between 50 mm and 125 mm of insulation thickness with $\lambda \leqslant 0.023$ $W \cdot m^{-1} \cdot K^{-1}$.

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.079	0.94	0.087	0.93	0.093	0.93
0.15	0.073	0.94	0.080	0.93	0.087	0.93
0.11	0.067	0.94	0.074	0.94	0.082	0.93

The table below provides U values for the same floor construction for P/A ratios other than 0.25. The ψ-values can only be used when the actual floor U value is less than that given for the P/A ratio relevant to the dwelling in question:

P/A ($m \cdot m^{-2}$)	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	*0.65*	*0.70*	*0.75*	*0.80*	*0.85*	*0.90*	*0.95*	*1.00*
U value ($W \cdot m^{-2} \cdot K^{-1}$)	0.18	0.19	0.21	0.22	0.23	0.23	0.24	0.25	0.25	*0.26*	*0.26*	*0.27*	*0.27*	*0.28*	*0.28*	*0.28*	*0.28*

Note: The U values shown in italics are above the limit floor U value according to The Building Regulations 2010 (England and Wales).

Case 3: Floor U value higher and equal to 0.20 $W \cdot m^{-2} \cdot K^{-1}$ (for a perimeter/area ratio of 0.25)

For example, floor U values for the range above can be achieved using 45 mm of insulation thickness with $\lambda \leqslant 0.023$ $W \cdot m^{-1} \cdot K^{-1}$.

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.036	0.93	0.043	0.92	0.049	0.92
0.15	0.030	0.93	0.037	0.92	0.044	0.92
0.11	0.025	0.93	0.033	0.92	0.041	0.92

The table below provides U values for the same floor construction for P/A ratios other than 0.25. The ψ-values can only be used when the actual floor U value is greater than that given for the P/A ratio relevant to the dwelling in question:

P/A ($m \cdot m^{-2}$)	0.20	0.25	0.30	0.35	0.40	0.45	*0.50*	*0.55*	*0.60*	*0.65*	*0.70*	*0.75*	*0.80*	*0.85*	*0.90*	*0.95*	*1.00*
U value ($W \cdot m^{-2} \cdot K^{-1}$)	0.18	0.20	0.22	0.23	0.24	0.25	*0.26*	*0.26*	*0.27*	*0.27*	*0.28*	*0.28*	*0.29*	*0.29*	*0.30*	*0.30*	*0.30*

Note: The U values shown in italics are above the limit floor U value according to The Building Regulations 2010 (England and Wales).

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Wall U values $\leqslant 0.30$ $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— 50 mm $\leqslant$ foil-faced insulation $\leqslant$ 55 mm with $\lambda \leqslant 0.022$ $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant 0.25$ $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60 mm and 80 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant 0.20$ $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall. Partial Fill
Concrete ground bearing floor — Insulation below slab

CD0003

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the edge insulation as specified? — Minimum resistance of 0.8 $m^2 \cdot K \cdot W^{-1}$ (eg 20 mm of insulation with λ = 0.025 $W \cdot m^{-1} \cdot K^{-1}$) — Installed up to floor finish.	☐ ☐ ..... ☐ ☐ .....
2	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
3	Is the partial fill insulation continued at least 215 mm below underside of slab?	☐ ☐ .....
4	Is the floor insulation abutting the blockwork wall leaving no gaps?	☐ ☐ .....
5	Are the foundations at least 215 mm deep of aircrete blocks?	☐ ☐ .....
6	Is the concrete floor slab 225 mm maximum (including floor finish)?	☐ ☐ .....
7	Is the continuity of the air barrier between the floor and the wall achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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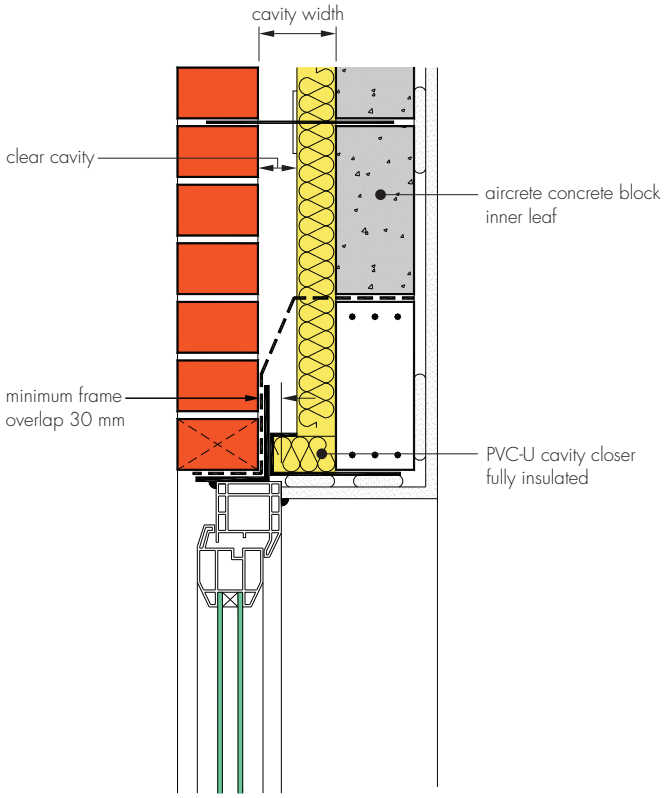
External Masonry Cavity Wall. Partial Fill

Independent lintel

CD0004



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

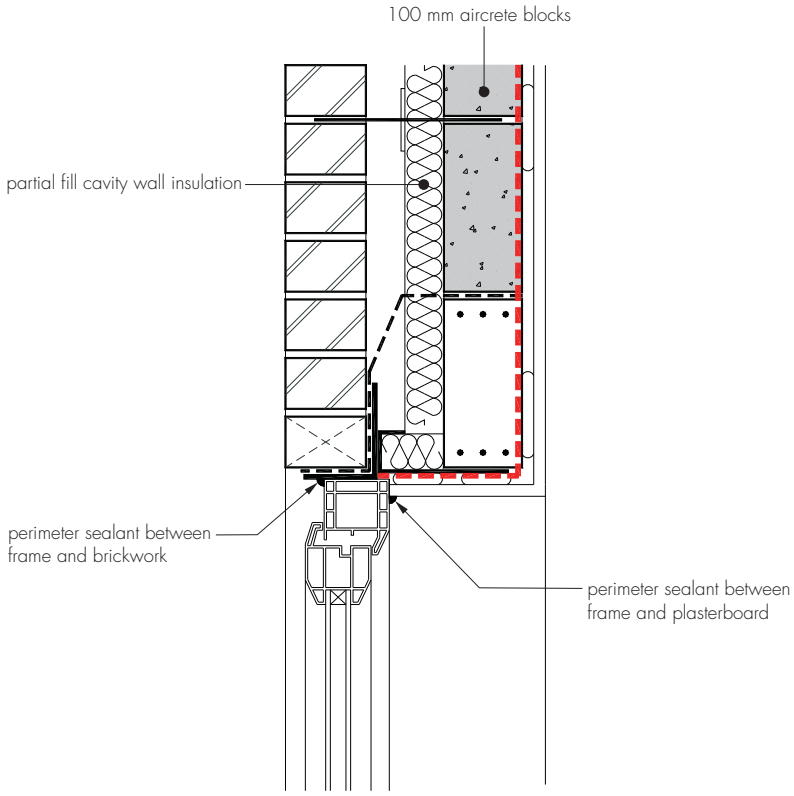
Notes

- PVC-U cavity closer fully insulated with conductivity 0.038 $W \cdot m^{-1} \cdot K^{-1}$ or less
- a steel or concrete box lintel can be used
- minimum frame overlap of 30 mm
- maximum cavity width of 200 mm
- minimum clear cavity of 50 mm
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- flexible sealant should be applied between frame and brickwork and frame and plasterboard
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

External Masonry Cavity Wall. Partial Fill
Independent lintel

CD0004



denotes 'notional' line of continuous air barrier to be maintained

This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.058	0.89	0.055	0.88	0.054	0.88
0.15	0.058	0.89	0.056	0.88	0.056	0.88
0.11	0.059	0.89	0.059	0.88	0.060	0.88

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Examples of constructions achieving the required wall U values are shown below.

Wall U values ⩽ 0.30 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 50 mm and 55 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values ⩽ 0.25 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60 mm and 80 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values ⩽ 0.20 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall. Partial Fill
Independent lintel

CD0004

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No	Inspected (initials and date)
1	Is the PVC-U cavity closer fully insulated with insulation conductivity equal or less than 0.038 $W \cdot m^{-1} \cdot K^{-1}$?	☐ ☐	.....
2	Is the window frame overlap at least 30 mm?	☐ ☐	.....
3	Is the wall cavity width 200 mm or less?	☐ ☐	.....
4	Is the clear cavity 50 mm or more?	☐ ☐	.....
5	Is the partial fill wall insulation secured firmly?	☐ ☐	.....
6	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐	.....

Notes (include details of any corrective action)

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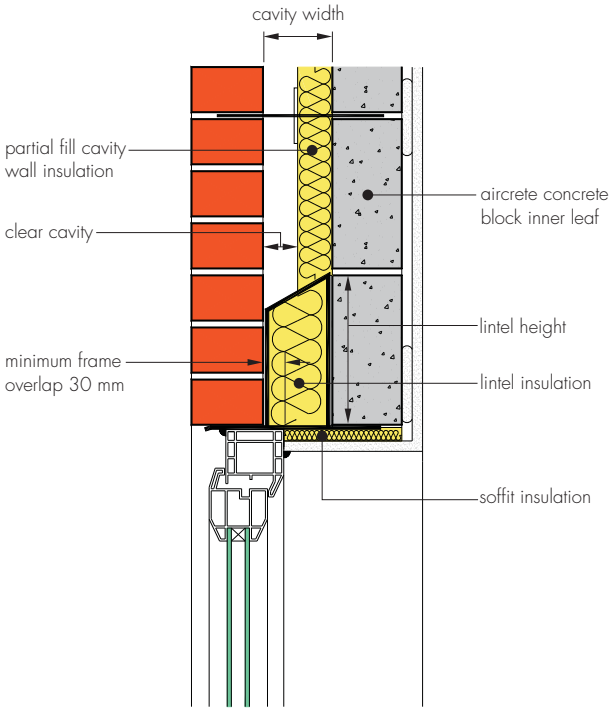
External Masonry Cavity Wall. Partial Fill

Steel lintel — Perforated base plate (insulated soffit)

CD0005



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

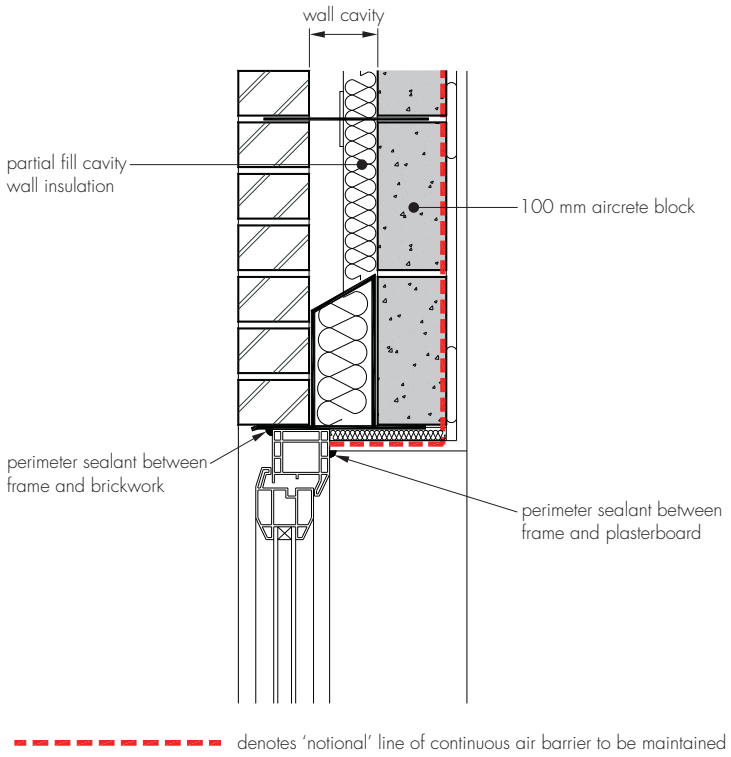
Notes

- soffit insulation with a minimum resistance value of 0.6 $m^2 \cdot K \cdot W^{-1}$ (eg 15 mm of insulation with λ = 0.025 $W \cdot m^{-1} \cdot K^{-1}$)
- maximum thickness of steel lintel of 3.2 mm
- equivalent conductivity of base plate 30 $W \cdot m^{-1} \cdot K^{-1}$ or less
- minimum frame overlap of 30 mm
- fully insulated lintel
- maximum lintel height of 220 mm
- maximum cavity width of 200 mm
- minimum clear cavity of 50 mm
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- flexible sealant should be applied between frame and brickwork, and frame and plasterboard
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

External Masonry Cavity Wall. Partial Fill
Steel lintel — Perforated base plate (insulated soffit)

CD0005



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

	Wall cavity width between 100 mm and 200 mm		Wall cavity width less or equal than 100 mm	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.38	0.88	0.33	0.81
0.15	0.36	0.89	0.31	0.83
0.11	0.34	0.91	0.28	0.85

This values are valid for wall U value $\leqslant 0.30\ W \cdot m^{-2} \cdot K^{-1}$.

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Wall U values $\leqslant 0.30\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 50 mm and 55 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant 0.25\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60 mm and 80 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant 0.20\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall. Partial Fill
Steel lintel — Perforated base plate (insulated soffit)

CD0005

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the soffit insulation as specified?	
	— Minimum resistance of 0.6 $m^2 \cdot K^{-1} \cdot W^{-1}$ (eg 15 mm of insulation with λ = 0.025 $W \cdot m^{-1} \cdot K^{-1}$).	☐ ☐ .....
2	Is the lintel thickness less than 3.2 mm?	☐ ☐ .....
3	Is the equivalent thermal conductivity of base plate 30 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
4	Is the lintel height less than 220 mm?	☐ ☐ .....
5	Is the window frame overlap at least 30 mm?	☐ ☐ .....
6	Is the lintel fully insulated?	☐ ☐ .....
7	Is the wall cavity width 200 mm or less?	☐ ☐ .....
8	Is the clear cavity 50 mm or more?	☐ ☐ .....
9	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
10	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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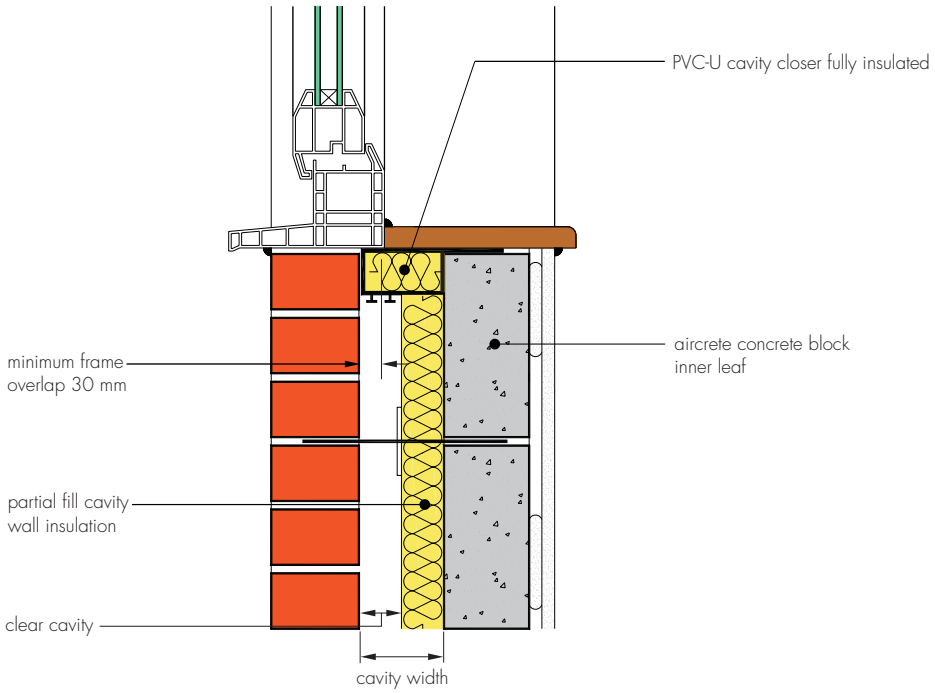
External Masonry Cavity Wall. Partial Fill

Sill

CD0006

constructive DETAILS



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

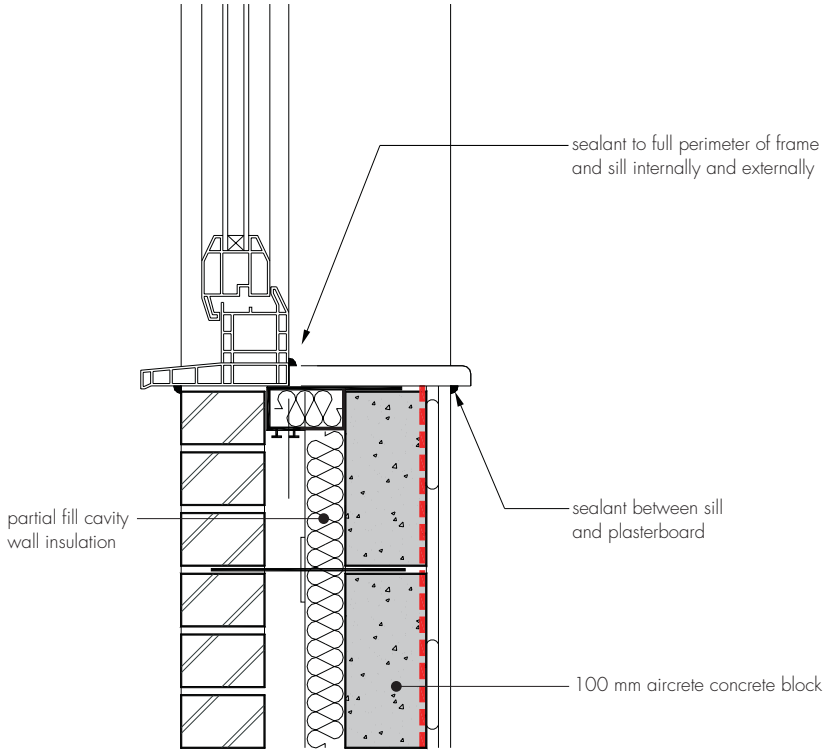
Notes

- PVC-U cavity closer fully insulated with conductivity 0.038 $W \cdot m^{-1} \cdot K^{-1}$ or less
- minimum frame overlap of 30 mm
- maximum cavity width of 200 mm
- minimum clear cavity of 50 mm
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- flexible sealant should be applied to the junction of the plasterboard, sill board and also between the window frame member
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

External Masonry Cavity Wall. Partial Fill
Sill

CD0006



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Calculated ψ-values for this detail

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.045	0.84	0.037	0.84	0.034	0.84
0.15	0.046	0.84	0.038	0.84	0.035	0.84
0.11	0.046	0.84	0.037	0.84	0.035	0.84

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Wall U values ⩽ 0.30 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 50 mm and 55 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values ⩽ 0.25 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60 mm and 80 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values ⩽ 0.20 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall. Partial Fill
Sill

CD0006

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the PVC-U cavity closer fully insulated with conductivity equal or less than 0.038 $W \cdot m^{-1} \cdot K^{-1}$?	☐ ☐ .....
2	Is the window frame overlap at least 30 mm?	☐ ☐ .....
3	Is the wall cavity width 200 mm or less?	☐ ☐ .....
4	Is the wall clear cavity 50 mm or more?	☐ ☐ .....
5	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
6	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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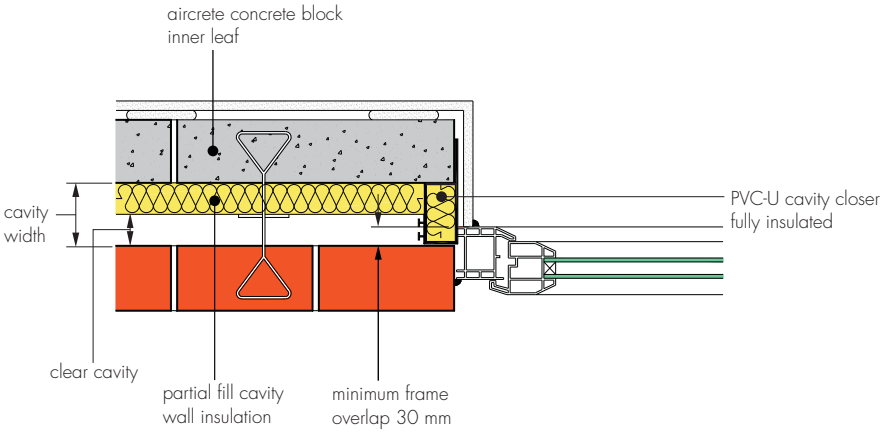
External Masonry Cavity Wall. Partial Fill Jamb

CD0007



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

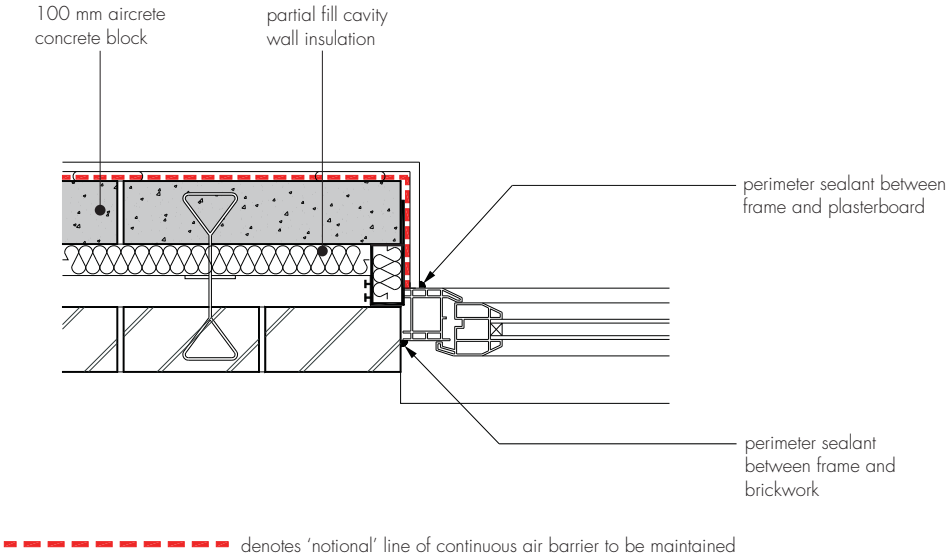
Notes

- PVC-U cavity closer fully insulated with conductivity 0.038 $W \cdot m^{-1} \cdot K^{-1}$ or less
- minimum frame overlap of 30 mm
- maximum cavity width of 200 mm
- minimum clear cavity of 50 mm
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- flexible sealant to be applied between the plasterboard, window frame and brickwork
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

External Masonry Cavity Wall. Partial Fill
Jamb

CD0007



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Calculated ψ-values for this detail

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.050	0.86	0.042	0.86	0.039	0.86
0.15	0.050	0.86	0.042	0.86	0.039	0.86
0.11	0.051	0.86	0.042	0.86	0.040	0.86

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Wall U values ⩽ than 0.30 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 50 mm and 55 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values ⩽ 0.25 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60 mm and 80 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values ⩽ than 0.20 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall. Partial Fill
Jamb

CD0007

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the PVC-U cavity closer fully insulated with conductivity equal or less than 0.038 $W \cdot m^{-1} \cdot K^{-1}$?	☐ ☐ .....
2	Is the window frame overlap at least 30 mm?	☐ ☐ .....
3	Is the wall cavity width 200 mm or less?	☐ ☐ .....
4	Is the clear cavity 50 mm or more?	☐ ☐ .....
5	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
6	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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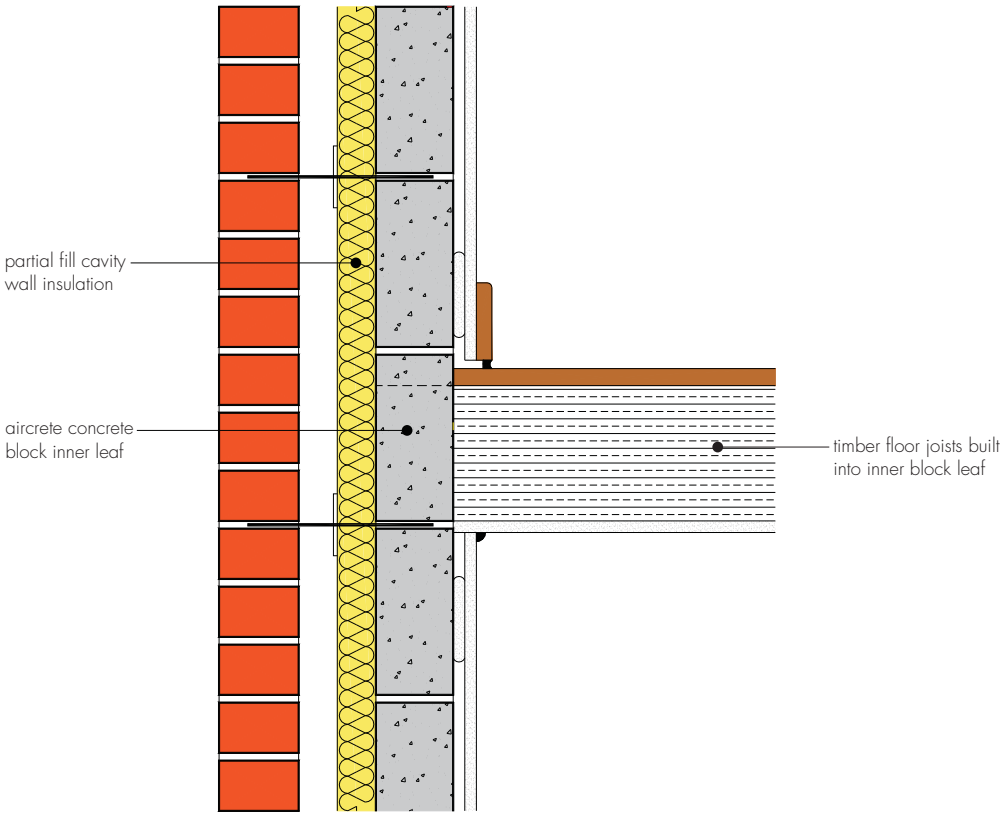
External Masonry Cavity Wall — Partial Fill

Intermediate timber floor within a dwelling

CD0008



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

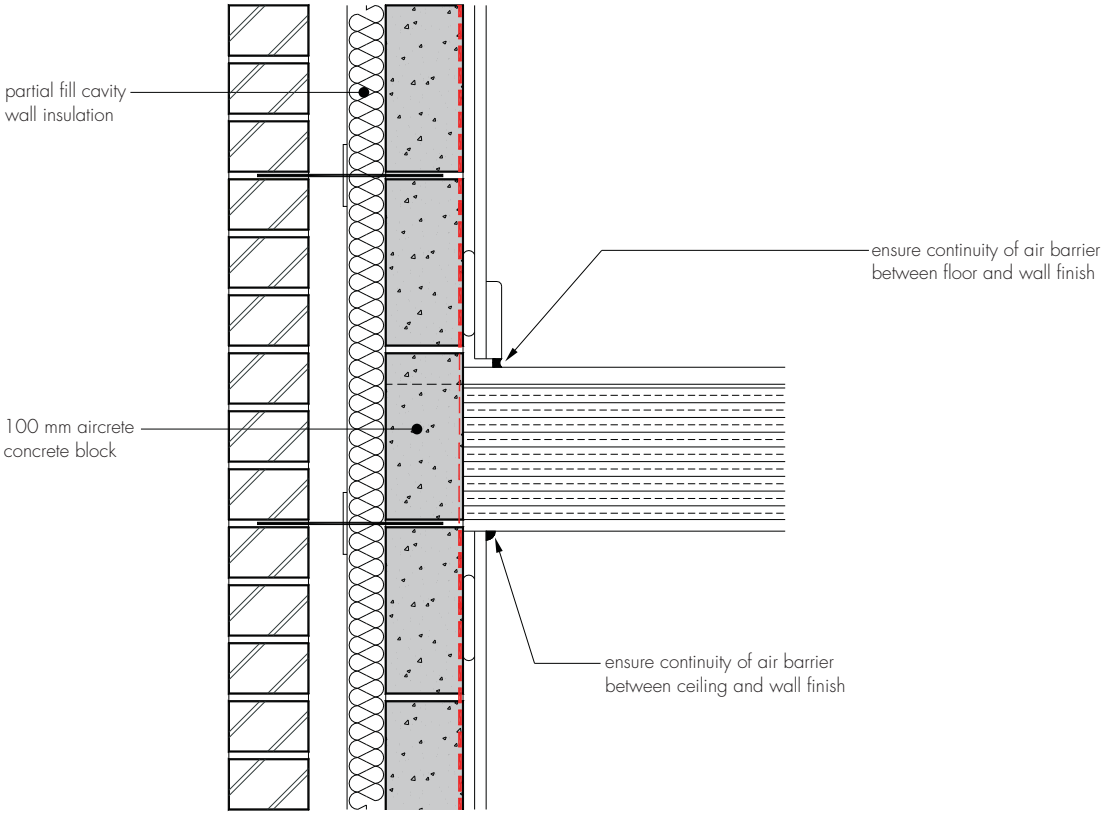
Notes

- continue cavity wall insulation across floor abutment zone
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- ensure there is a seal between the floor and wall finish, and the ceiling and wall finish
- this detail is also valid for joists supported using joist hangers (not shown in drawing)
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

External Masonry Cavity Wall — Partial Fill
Intermediate timber floor within a dwelling

CD0008



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)
0.19	0.00
0.15	0.00
0.11	0.00

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

These values are valid for wall U value $\leqslant 0.30\ W \cdot m^{-2} \cdot K^{-1}$.

Wall U values $\leqslant 0.30\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 50 mm and 55 mm of foil-faced insulation with conductivity of $0.022\ W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant 0.25\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60 mm and 80 mm of foil-faced insulation with conductivity of $0.022\ W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant 0.20\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of $0.022\ W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall — Partial Fill
Intermediate timber floor within a dwelling

CD0008

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the continuity of insulation throughout the junction achieved?	☐ ☐ .....
2	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
3	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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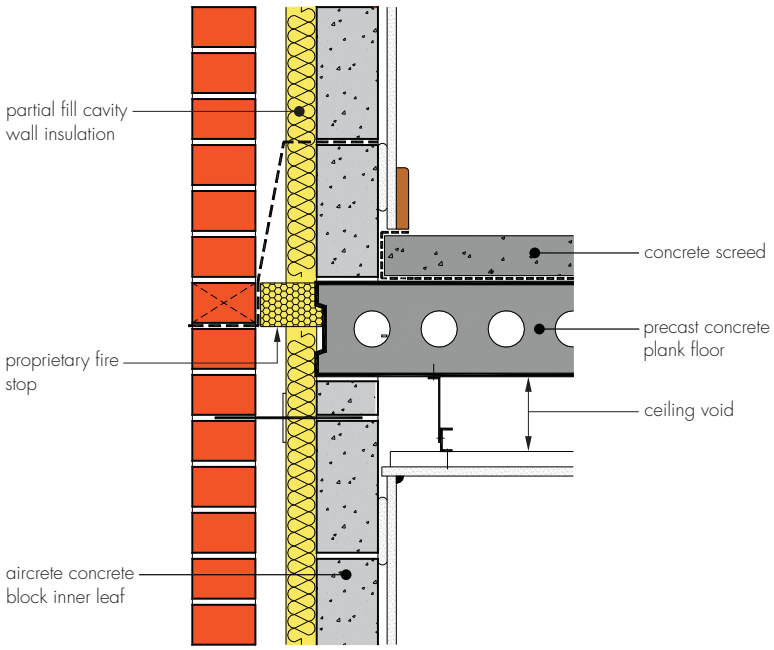
External Masonry Cavity Wall. Partial Fill

Precast concrete separating floor between dwellings

CD0009



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

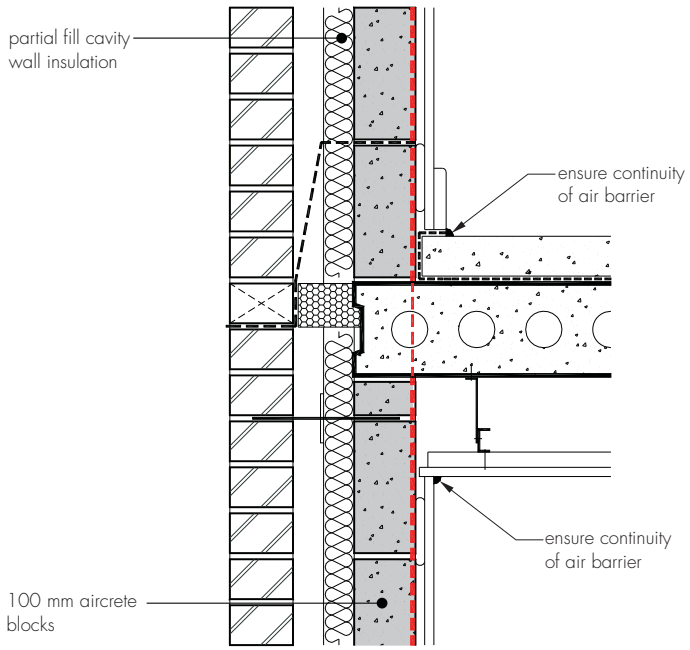
Notes

- maximum thickness of precast concrete plank floor 225 mm
- maximum thickness of concrete screed 75 mm
- maximum thickness of ceiling void 150 mm
- maximum conductivity of fire stop 0.040 $W \cdot m^{-1} \cdot K^{-1}$
- ensure continuity of the insulation throughout the junction leaving no gaps
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- ensure there is a seal between the wall and the floor air barrier, and that there is no gap between the skirting board and the floor
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

External Masonry Cavity Wall. Partial Fill
Precast concrete separating floor between dwellings

CD0009



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

	Wall U value less or equal than 0.20 W·m^{-2}·K^{-1}		Wall U value between 0.21 and 0.25 W·m^{-2}·K^{-1}		Wall U value between 0.26 and 0.30 W·m^{-2}·K^{-1}	
Inner leaf block conductivity (W·m^{-1}·K^{-1})	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor
0.19	0.058	0.97	0.070	0.96	0.086	0.95
0.15	0.057	0.97	0.069	0.96	0.085	0.95
0.11	0.062	0.96	0.074	0.96	0.093	0.94

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

The ψ-value is applied to each dwelling.

Wall U values ⩽ 0.30 W·m^{-2}·K^{-1} can be achieved with:
— between 50 mm and 55 mm of foil-faced insulation with conductivity of 0.022 W·m^{-1}·K^{-1} or less

Wall U values ⩽ 0.25 W·m^{-2}·K^{-1} can be achieved with:
— between 60 mm and 80 mm of foil-faced insulation with conductivity of 0.022 W·m^{-1}·K^{-1} or less

Wall U values ⩽ 0.20 W·m^{-2}·K^{-1} can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of 0.022 W·m^{-1}·K^{-1} or less.

External Masonry Cavity Wall. Partial Fill
Precast concrete separating floor between dwellings

CD0009

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the precast concrete plank thickness 225 mm or less?	☐ ☐ .....
2	Is the concrete screed thickness 75 mm or less?	☐ ☐ .....
3	Is the ceiling void thickness 150 mm or less?	☐ ☐ .....
4	Is the fire stop conductivity 0.040 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
5	Is the continuity of insulation throughout the junction achieved?	☐ ☐ .....
6	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
7	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

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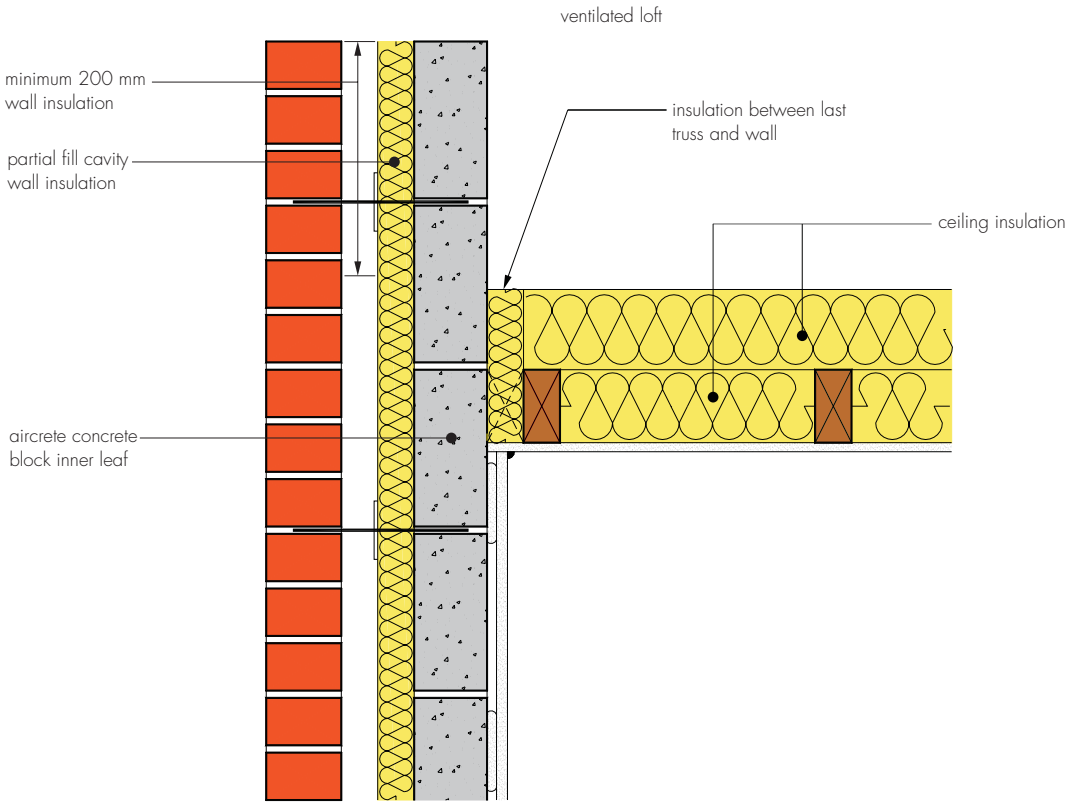
External Masonry Cavity Wall. Partial Fill

Pitched roof. Gable — Insulation at ceiling level — Ventilated loft

CD0010



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

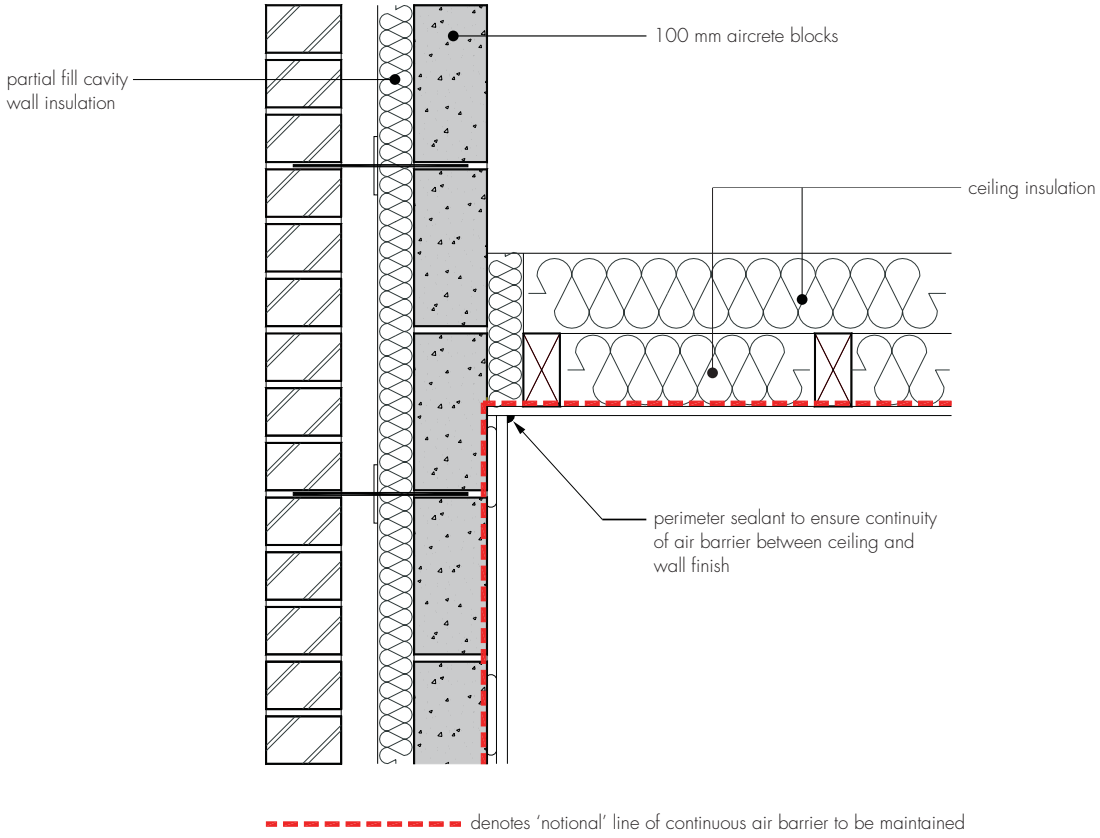
Notes

- ceiling insulation thickness between 130 mm and 410 mm
- maximum ceiling insulation conductivity 0.044 $W \cdot m^{-1} \cdot K^{-1}$
- the wall insulation should continue to at least 200 mm above the top of the ceiling insulation
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- pack compressible insulation between last truss/joist and gable wall to prevent any gaps between the insulation and the inner edge of the wall
- seal between the ceiling and wall with either plaster, adhesive or flexible sealant
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

External Masonry Cavity Wall. Partial Fill
Pitched roof. Gable — Insulation at ceiling level — Ventilated loft

CD0010



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

	Ceiling insulation thickness between 130 mm and 209 mm		Ceiling insulation thickness between 210 mm and 309 mm		Ceiling insulation thickness between 310 mm and 410 mm	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.087	0.87	0.071	0.89	0.065	0.90
0.15	0.076	0.88	0.061	0.90	0.057	0.91
0.11	0.063	0.89	0.051	0.91	0.048	0.92

These values are valid for roof U values $\leqslant 0.20\ W \cdot m^{-2} \cdot K^{-1}$ and wall U values $\leqslant 0.30\ W \cdot m^{-2} \cdot K^{-1}$.

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Wall U values $\leqslant 0.30\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 50-55 mm of foil-faced insulation with conductivity of $0.022\ W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant 0.25\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60-80 mm of foil-faced insulation with conductivity of $0.022\ W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant 0.20\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of $0.022\ W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall. Partial Fill
Pitched roof. Gable — Insulation at ceiling level — Ventilated loft

CD0010

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the ceiling insulation thickness between 130 mm and 410 mm?	☐ ☐ .....
2	Is the ceiling insulation conductivity 0.044 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
3	Is the gap between the last joist and the gable wall filled with insulation?	☐ ☐ .....
4	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
5	Is the insulation continued to at least 200 mm above the top of the ceiling insulation?	☐ ☐ .....
6	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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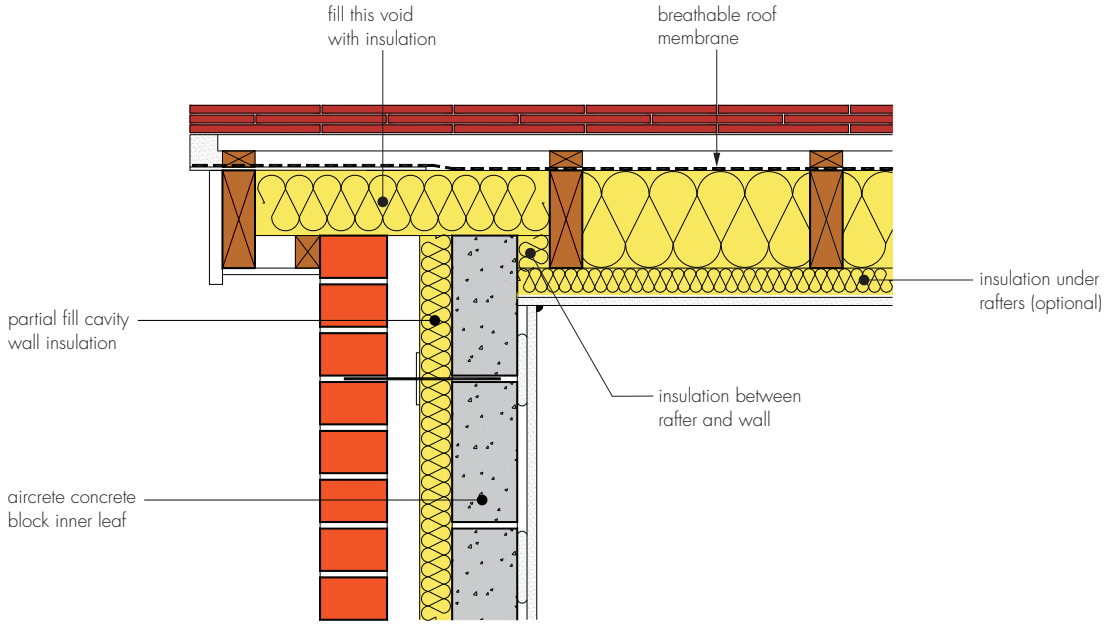
External Masonry Cavity Wall. Partial Fill

Pitched Roof. Gable — Insulation at rafter level — Unventilated rafter void

CD0011



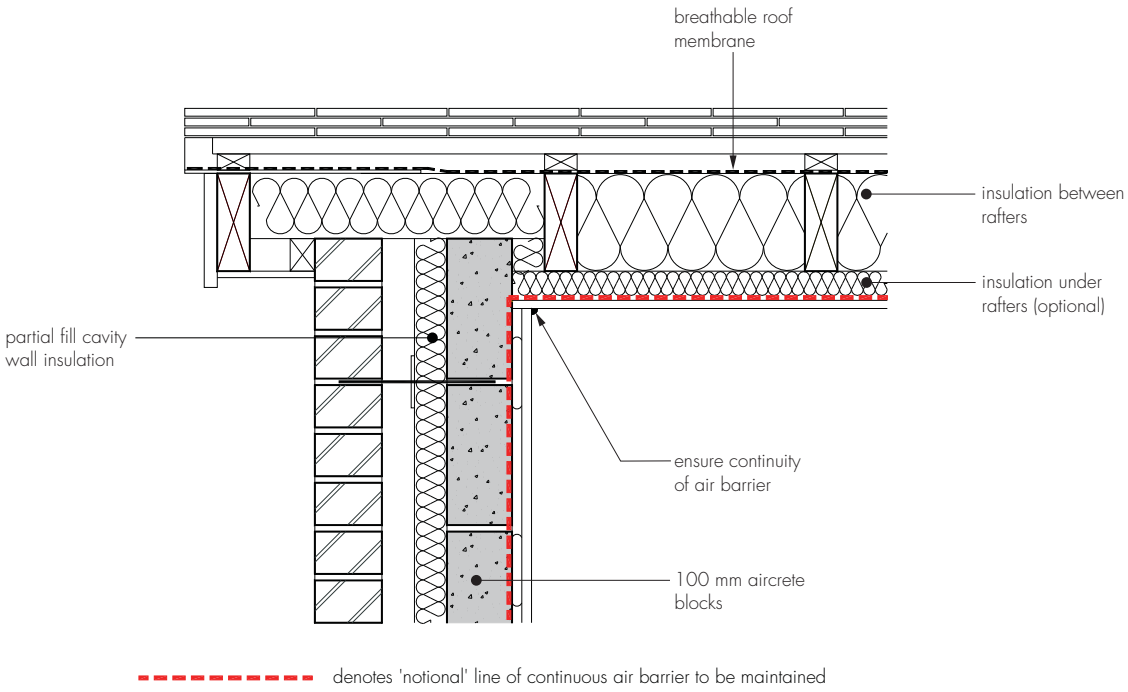
This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Notes

- fill the void between top of the gable and underside of breathable roof membrane (100 mm minimum) with insulation with conductivity 0.04 $W \cdot m^{-1} \cdot K^{-1}$ or less. Also fill the gap between rafter and wall
- maximum roof insulation conductivity 0.040 $W \cdot m^{-1} \cdot K^{-1}$ between 150 mm minimum rafters
- ensure continuity of the insulation throughout the junction leaving no gaps between wall insulation and roof insulation
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- use a vapour control layer in the roof plasterboard if required by BS 5250 : 2011
- insulation under or above rafters (not shown in drawing) are optional
- seal between the ceiling and wall with either plaster, adhesive or flexible sealant
- other improved air barrier continuity solutions can be used.

External Masonry Cavity Wall. Partial Fill
Pitched Roof. Gable — Insulation at rafter level
— Unventilated rafter void

CD0011



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.073	0.90
0.15	0.069	0.91
0.11	0.065	0.91

These values are valid for roof U values equal or less than 0.20 $W \cdot m^{-2} \cdot K^{-1}$ and wall U values equal or less than 0.30 $W \cdot m^{-2} \cdot K^{-1}$.

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Wall U values $\leq$ 0.30 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 50-55 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leq$ 0.25 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60-80 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leq$ 0.20 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall. Partial Fill
Pitched Roof. Gable — Insulation at rafter level
— Unventilated rafter void

CD0011

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the void between top of the gable and underside of breathable roof membrane 100 mm minimum?	☐ ☐ .....
2	Is void between top of the gable and underside of breathable roof membrane filled with insulation with conductivity of 0.04 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
3	Is the gap between rafter and wall filled with insulation with conductivity of 0.04 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
4	Is the roof insulation conductivity 0.040 $W \cdot m^{-1} \cdot K^{-1}$ or less between 150 mm minimum rafters?	☐ ☐ .....
5	Is the continuity of insulation throughout the junction achieved?	☐ ☐ .....
6	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
7	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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External Masonry Cavity Wall. Partial Fill

Pitched roof. Eaves — Insulation at ceiling level — Ventilated loft

CD0012

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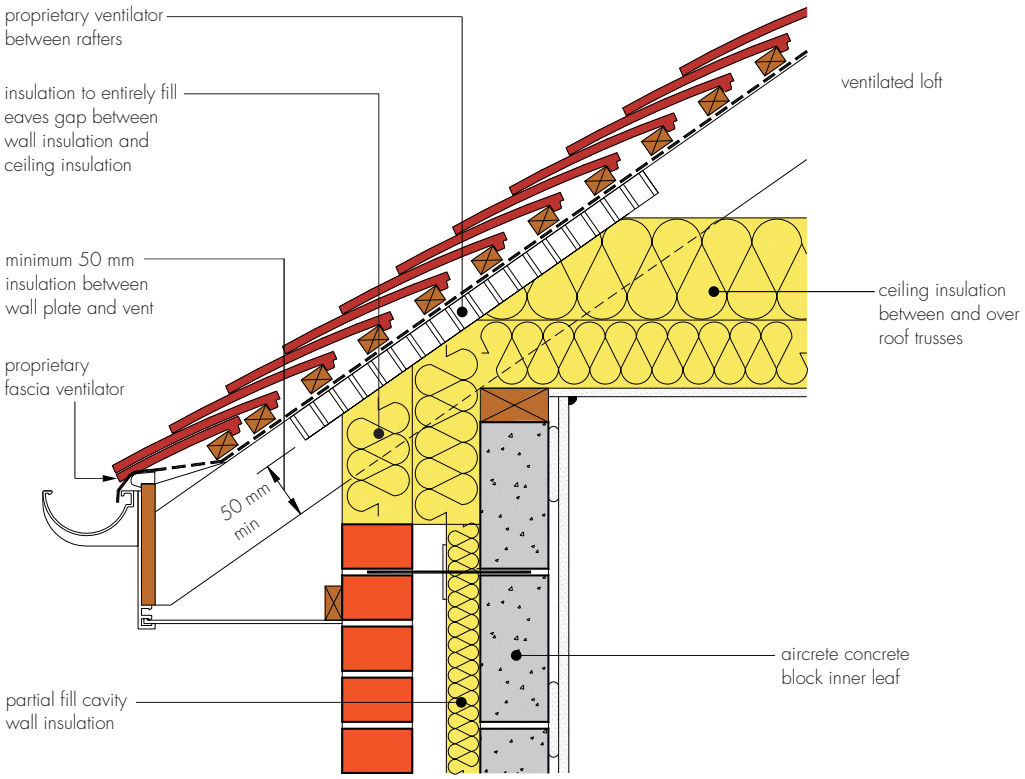


This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

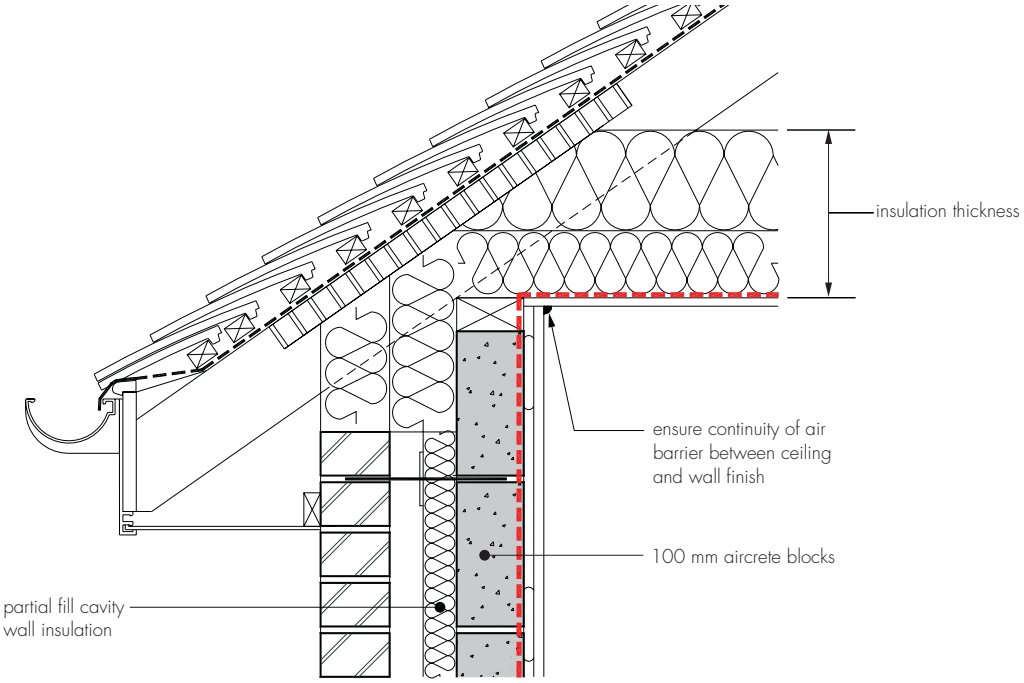
Notes

- maximum wall cavity width of 200 mm
- minimum 50 mm wall clear air cavity
- ceiling insulation thickness between 130 mm and 410 mm
- maximum ceiling insulation conductivity 0.044 $W \cdot m^{-1} \cdot K^{-1}$
- minimum 50 mm gap between ventilator and wall plate filled with insulation
- insulation to entirely fill eaves gap between wall insulation and ceiling insulation
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- seal between the ceiling and wall with either plaster, adhesive or flexible sealant
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

External Masonry Cavity Wall. Partial Fill
Pitched roof. Eaves — Insulation at ceiling level — Ventilated loft

CD0012



denotes 'notional' line of continuous air barrier to be maintained

This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

These values are valid for roof U values ≤ 0.20 $W \cdot m^{-2} \cdot K^{-1}$.

Ceiling insulation thickness between 130 mm and 210 mm

	Wall U value less or equal than 0.20 $W \cdot m^{-1} \cdot K^{-2}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-1} \cdot K^{-2}$		Wall U value between 0.26 and 0.30 $W \cdot m^{-1} \cdot K^{-2}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.092	0.91	0.081	0.91	0.071	0.90
0.15	0.089	0.91	0.079	0.90	0.069	0.90
0.11	0.086	0.90	0.072	0.90	0.064	0.90

Ceiling insulation thickness between 211 mm and 310 mm

	Wall U value less or equal than 0.20 $W \cdot m^{-1} \cdot K^{-2}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-1} \cdot K^{-2}$		Wall U value between 0.26 and 0.30 $W \cdot m^{-1} \cdot K^{-2}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.111	0.91	0.100	0.91	0.090	0.90
0.15	0.108	0.91	0.098	0.90	0.088	0.90
0.11	0.105	0.91	0.092	0.90	0.083	0.90

External Masonry Cavity Wall. Partial Fill
Pitched roof. Eaves — Insulation at ceiling level — Ventilated loft

CD0012

Ceiling insulation thickness between 311 mm and 410 mm

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U Value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.128	0.91	0.116	0.91	0.106	0.91
0.15	0.125	0.91	0.114	0.90	0.105	0.90
0.11	0.122	0.91	0.108	0.90	0.099	0.90

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Wall U values $\leqslant$ 0.30 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 50-55 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant$ 0.25 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60-80 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant$ 0.20 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall. Partial Fill
Pitched Roof. Eaves — Insulation at Ceiling Level — Ventilated Loft

CD0012

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the wall cavity width 200 mm or less?	☐ ☐ .....
2	Is the clear cavity 50 mm or more?	☐ ☐ .....
3	Is the ceiling insulation thickness between 130 mm and 410 mm?	☐ ☐ .....
4	Is the ceiling insulation conductivity 0.044 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
5	Is there a minimum 50 mm gap between ventilator and wall plate filled with insulation?	☐ ☐ .....
6	Is the continuity of insulation throughout the junction achieved?	☐ ☐ .....
7	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
8	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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External Masonry Cavity Wall. Partial Fill

Pitched roof. Eaves — Insulation at rafter level — Unventilated rafter void

CD0013

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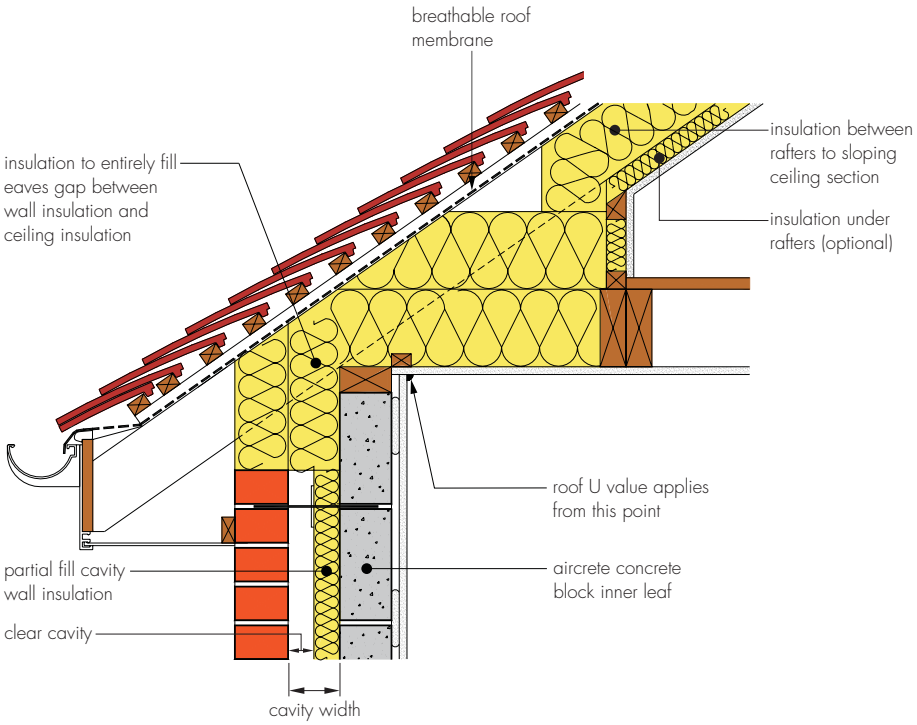


This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

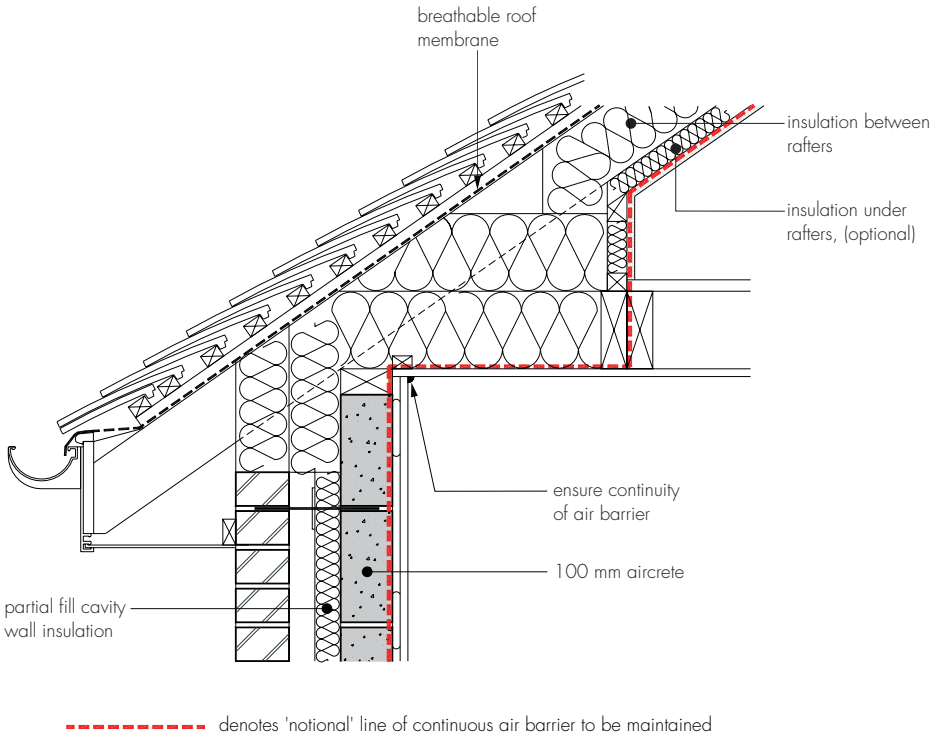
Notes

- maximum wall cavity width of 200 mm
- minimum 50 mm wall clear cavity
- maximum roof insulation conductivity 0.040 $W \cdot m \cdot K^{-1}$
- use a vapour control layer in the roof plasterboard if required by BS 5250 : 2011
- insulation to entirely fill eaves gap between wall insulation and ceiling insulation
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- ensure all gaps between the ceiling and masonry wall are sealed
- insulation under or above rafters (not shown in drawing) are optional
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

External Masonry Cavity Wall. Partial Fill
Pitched roof. Eaves — Insulation at rafter level — Unventilated rafter void

CD0013



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

	Wall cavity width between 100 mm and 200 mm		Wall cavity width less or equal than 100 mm	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.036	0.95	0.020	0.97
0.15	0.036	0.95	0.020	0.97
0.11	0.035	0.95	0.021	0.97

These values are valid for roof U values $\leq 0.20\ W \cdot m^{-2} \cdot K^{-1}$ and wall U values $\leq 0.30\ W \cdot m^{-2} \cdot K^{-1}$.

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Wall U values $\leq 0.30\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 50 mm and 55 mm of foil-faced insulation with conductivity of $0.022\ W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leq 0.25\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60 mm and 80 mm of foil-faced insulation with conductivity of $0.022\ W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leq 0.20\ W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of $0.022\ W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall. Partial Fill
Pitched roof. Eaves — Insulation at rafter level — Unventilated rafter void

CD0013

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the wall cavity width 200 mm or less?	☐ ☐ .....
2	Is the clear cavity 50 mm or more?	☐ ☐ .....
3	Is the roof insulation conductivity 0.040 $W \cdot m^{-1} \cdot K^{-1}$ or less between 150 mm minimum rafters?	☐ ☐ .....
4	Is the continuity of insulation throughout the junction achieved?	☐ ☐ .....
5	Is the eaves gap entirely filled with insulation?	☐ ☐ .....
6	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
7	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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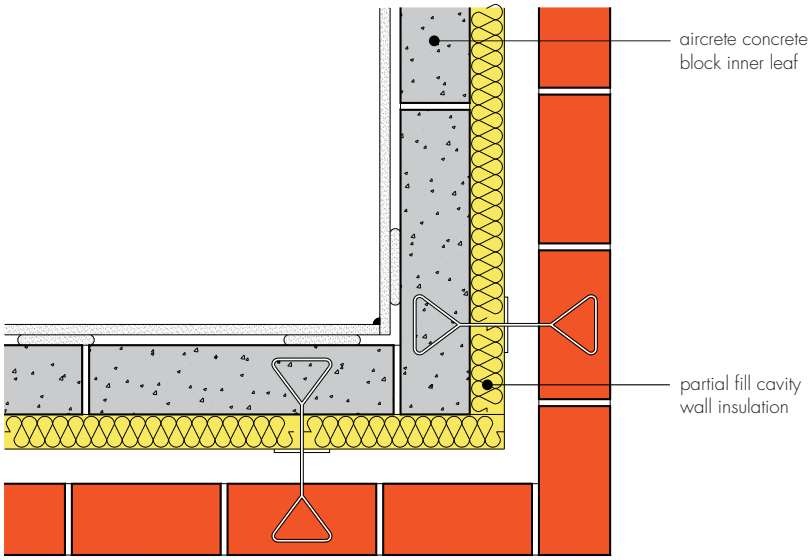
External Masonry Cavity Wall. Partial Fill

Normal corner

CD0014



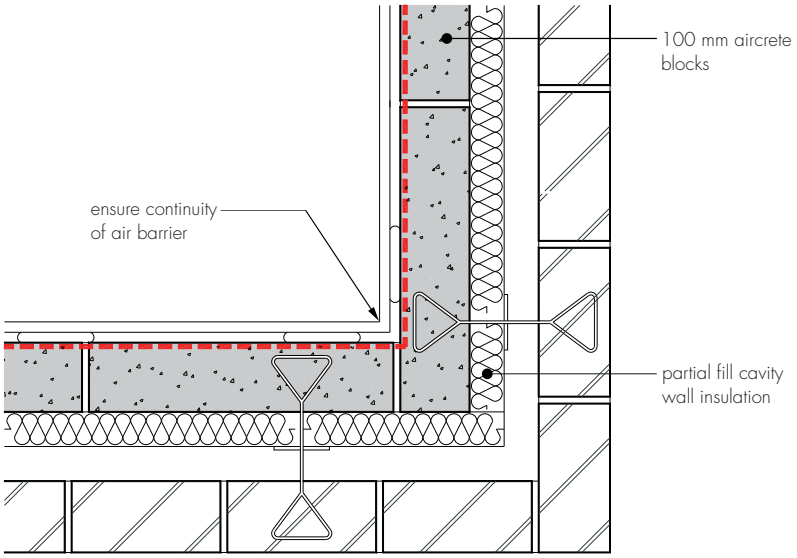
This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Notes

- ensure continuity of the insulation throughout the junction leaving no gaps
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- ensure all gaps are sealed
- other improved air barrier continuity solutions can be used.

External Masonry Cavity Wall. Partial Fill
Normal corner

CD0014



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.047	0.93	0.052	0.92	0.056	0.90
0.15	0.044	0.93	0.048	0.92	0.052	0.90
0.11	0.040	0.92	0.043	0.91	0.047	0.89

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Wall U values ⩽ 0.30 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 50 mm and 55 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values ⩽ 0.25 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60 mm and 80 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values ⩽ 0.20 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall. Partial Fill
Normal corner

CD0014

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the continuity of insulation throughout the junction achieved?	☐ ☐ .....
2	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
3	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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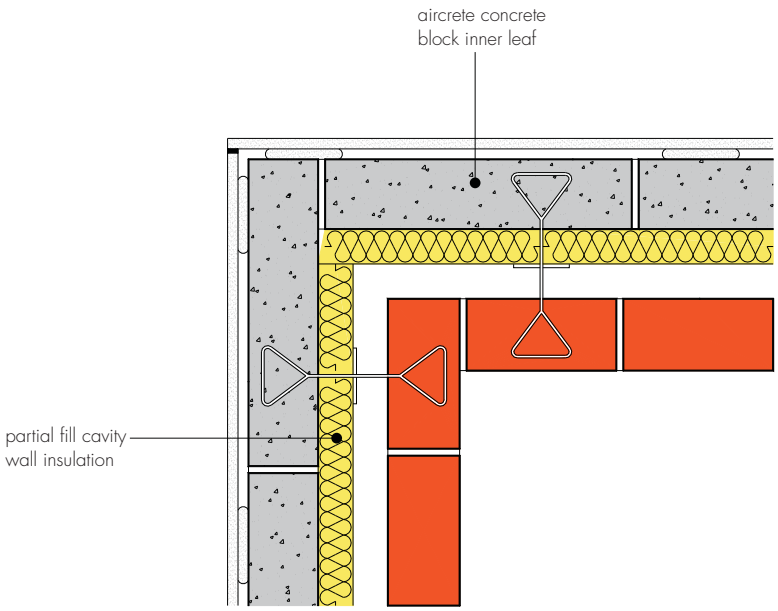
External Masonry Cavity Wall. Partial Fill

Inverted corner

CD0015



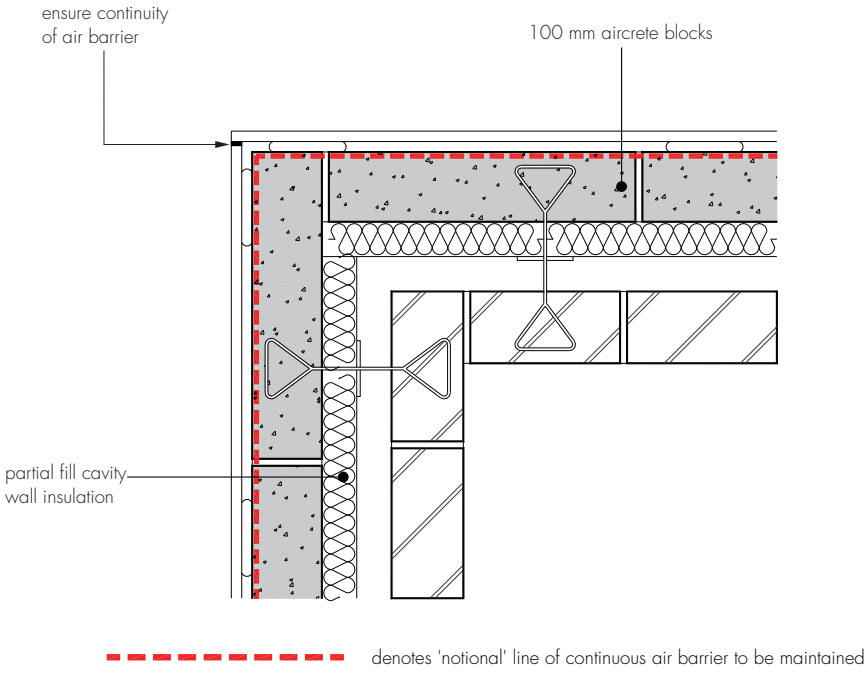
This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Notes

- ensure continuity of the insulation throughout the junction leaving no gaps
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- ensure all gaps are sealed
- other improved air barrier continuity solutions can be used.

External Masonry Cavity Wall. Partial Fill
Inverted corner

CD0015



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

	Wall U value less or equal than 0.20 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.21 and 0.25 $W \cdot m^{-2} \cdot K^{-1}$		Wall U value between 0.26 and 0.30 $W \cdot m^{-2} \cdot K^{-1}$	
Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	–0.054	0.99	–0.070	0.98	–0.080	0.97
0.15	–0.053	0.99	–0.068	0.98	–0.080	0.97
0.11	–0.052	0.99	–0.066	0.98	–0.077	0.97

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Wall U values ⩽ 0.30 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 50 mm and 55 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values ⩽ 0.25 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— between 60 mm and 80 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values ⩽ 0.20 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of 0.022 $W \cdot m^{-1} \cdot K^{-1}$ or less.

External Masonry Cavity Wall. Partial Fill
Inverted corner

CD0015

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the continuity of insulation throughout the junction achieved?	☐ ☐ .....
2	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
3	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

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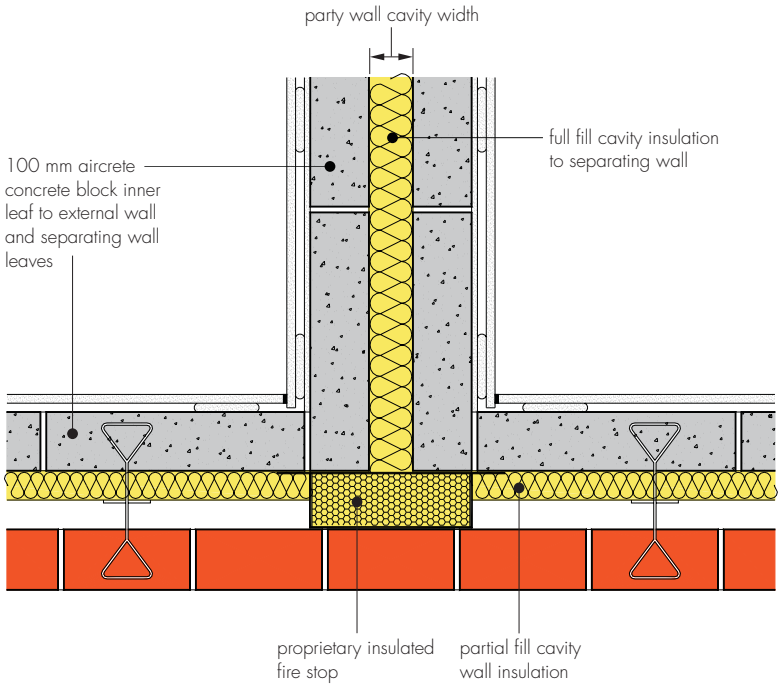
External Masonry Cavity Wall. Partial Fill

Party wall between dwellings

CD0016

constructive DETAILS



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

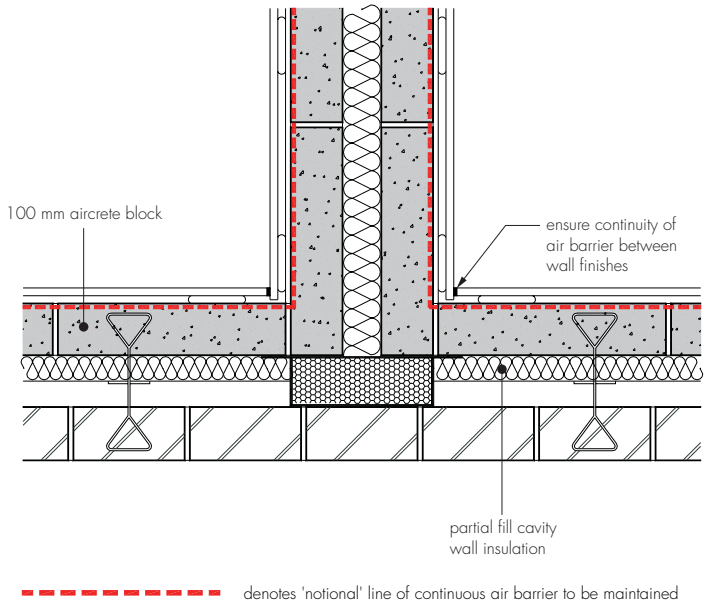
Notes

- party wall fully filled with insulation (λ = 0.044 W·m^{-1}·K^{-1} maximum)
- maximum party wall cavity width of 100 mm
- ensure that the insulated fire stop (λ = 0.044 W·m^{-1}·K^{-1} maximum) covers the full width of the abutting wall
- ensure continuity of the insulation throughout the junction leaving no gaps
- ensure that the partial fill insulation is secured firmly against the inner leaf of the cavity wall
- ensure cavities and wall ties are kept clean of mortar or other debris during construction
- ensure all gaps are sealed
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

External Masonry Cavity Wall. Partial Fill
Party wall between dwellings

CD0016



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values — party wall aircrete block conductivity of 0.19 W·m^{-1}·K^{-1}

	Wall U value less or equal than 0.20 W·m^{-2}·K^{-1}		Wall U value between 0.21 and 0.25 W·m^{-2}·K^{-1}		Wall U value between 0.26 and 0.30 W·m^{-2}·K^{-1}	
Inner leaf block conductivity (W·m^{-1}·K^{-1})	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor
0.19	0.037	0.93	0.040	0.93	0.044	0.91
0.15	0.036	0.93	0.040	0.93	0.044	0.91
0.11	0.039	0.93	0.041	0.92	0.046	0.91

External Masonry Cavity Wall. Partial Fill
Party wall between dwellings

CD0016

Calculated ψ-values — party wall aircrete block conductivity of 0.15 W·m^{-1}·K^{-1}

	Wall U value less or equal than 0.20 W·m^{-2}·K^{-1}		Wall U value between 0.21 and 0.25 W·m^{-2}·K^{-1}		Wall U value between 0.26 and 0.30 W·m^{-2}·K^{-1}	
Inner leaf block conductivity (W·m^{-1}·K^{-1})	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor
0.19	0.035	0.93	0.039	0.93	0.042	0.91
0.15	0.035	0.93	0.038	0.93	0.041	0.91
0.11	0.037	0.93	0.039	0.92	0.043	0.91

The ψ-value is applied to each dwelling.

In all the example calculations, wall ties are stainless steel double triangle types, with 100 mm aircrete blocks.

Wall U values ⩽ 0.30 W·m^{-2}·K^{-1} can be achieved with:
— between 50 mm and 55 mm of foil-faced insulation with conductivity of 0.022 W·m^{-1}·K^{-1} or less

Wall U values ⩽ 0.25 W·m^{-2}·K^{-1} can be achieved with:
— between 60 mm and 80 mm of foil-faced insulation with conductivity of 0.022 W·m^{-1}·K^{-1} or less

Wall U values ⩽ 0.20 W·m^{-2}·K^{-1} can be achieved with:
— minimum 85 mm of foil-faced insulation with conductivity of 0.022 W·m^{-1}·K^{-1} or less.

External Masonry Cavity Wall. Partial Fill
Party wall between dwellings

CD0016

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the party wall fully filled with insulation of 0.044 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
2	Is the party wall cavity width 100 mm or less?	☐ ☐ .....
3	Is the fire stop insulated with a material of 0.044 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
4	Is the fire stop covering the full width of the abutment wall?	☐ ☐ .....
5	Is the continuity of insulation throughout the junction achieved?	☐ ☐ .....
6	Is the partial fill wall insulation secured firmly?	☐ ☐ .....
7	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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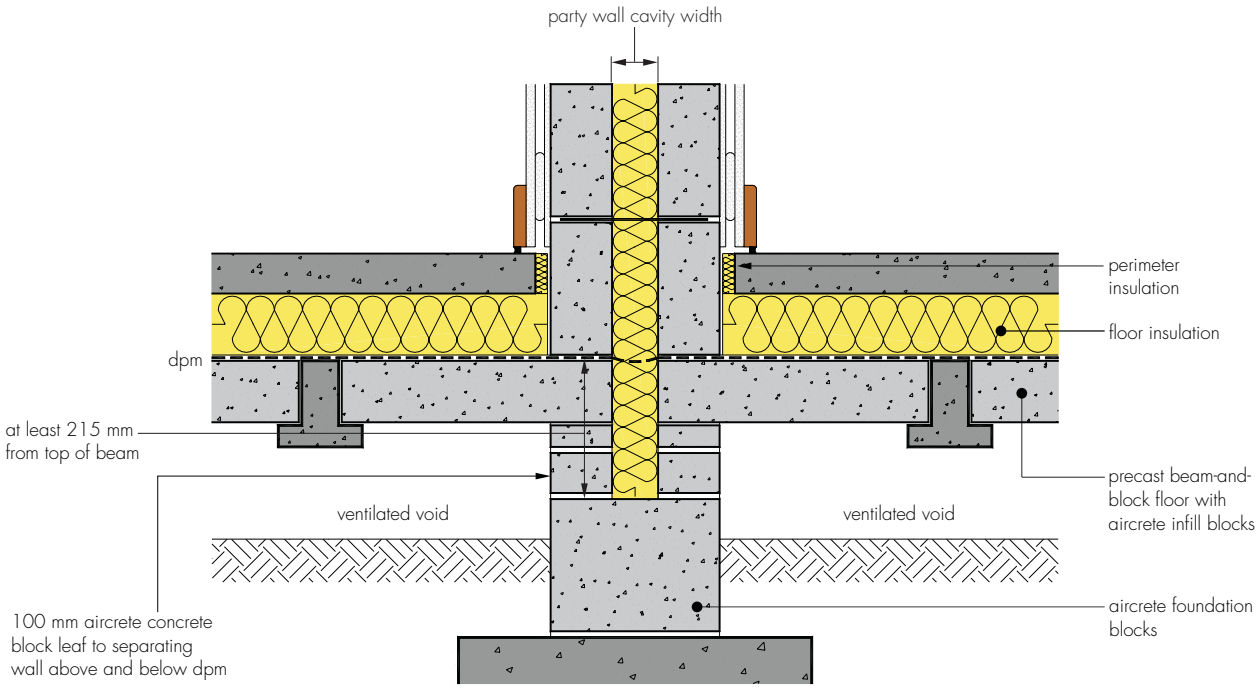
Party Wall Masonry. Full Fill

Suspended beam-and-block floor — Insulation above slab

CD0017

constructive DETAILS



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

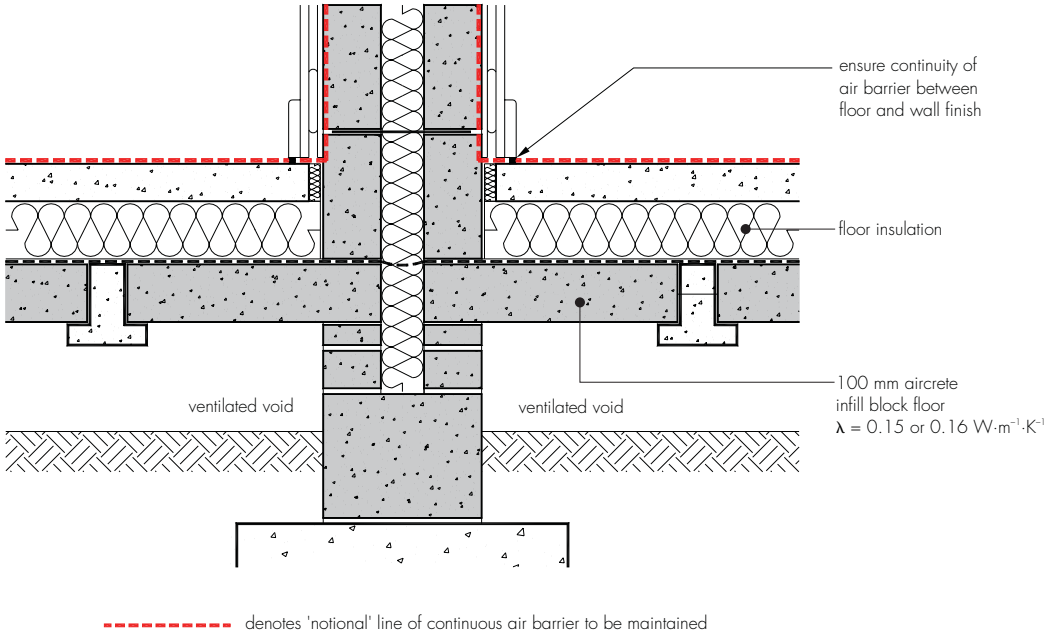
Notes

- party wall fully filled with insulation (λ = 0.044 W·m^{-1}·K^{-1} maximum)
- maximum party wall cavity width of 100 mm
- perimeter insulation with a minimum resistance value of 0.8 m^2·K·W^{-1} (eg 20 mm of insulation with λ = 0.025 W·m^{-1}·K^{-1}) and installed up to floor finish
- ensure that the party wall insulation continues at least 215 mm from top of beams
- ensure that floor insulation tightly abuts blockwork wall
- ensure all gaps are sealed
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

Party Wall Masonry. Full Fill
Suspended beam-and-block floor — Insulation above slab

CD0017



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.049	0.95
0.15	0.043	0.95

The ψ-value is applied to each dwelling.

These values are valid for floor U value $\leqslant 0.25\ W \cdot m^{-2} \cdot K^{-1}$.

Floor U values $\leqslant 0.25\ W \cdot m^{-2} \cdot K^{-1}$ (for a perimeter/area ratio $\leqslant 1$) can be achieved with:

— 100 mm aircrete infill block floor.
— 60 mm or thicker insulation with conductivity of $0.023\ W \cdot m^{-1} \cdot K^{-1}$ or less.

Party Wall Masonry. Full Fill
Suspended beam-and-block floor — Insulation above slab

CD0017

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the edge insulation as specified? — Minimum resistance of 0.8 $m^2 \cdot K^1 \cdot W^{-1}$ (eg 20 mm of insulation with λ = 0.025 $W \cdot m^{-1} \cdot K^{-1}$) — Installed up to floor finish	☐ ☐ .....
2	Is the party wall insulation continued at least 215 mm from top of beams?	☐ ☐ .....
3	Is the floor insulation abutting the blockwork wall, leaving no gaps?	☐ ☐ .....
4	Is the party wall fully filled with insulation of 0.044 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
5	Is the party wall cavity width 100 mm or less?	☐ ☐ .....
6	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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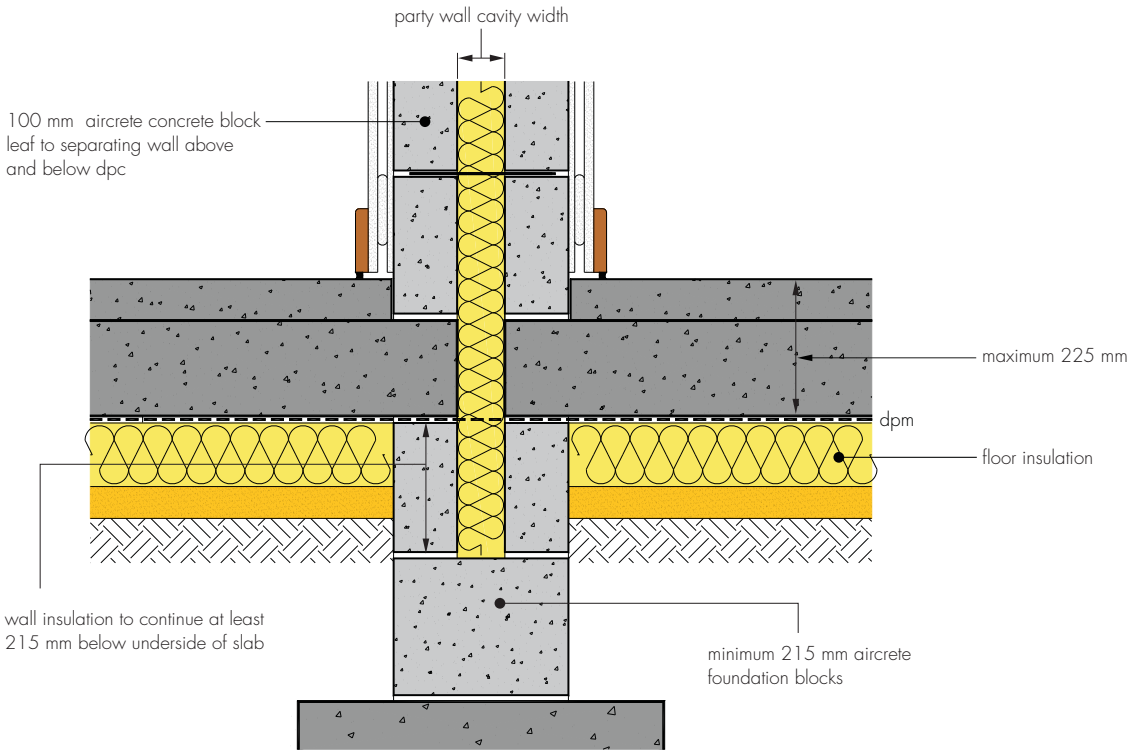
Party Wall Masonry. Full Fill

Suspended concrete floor — Insulation below slab

CD0018



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

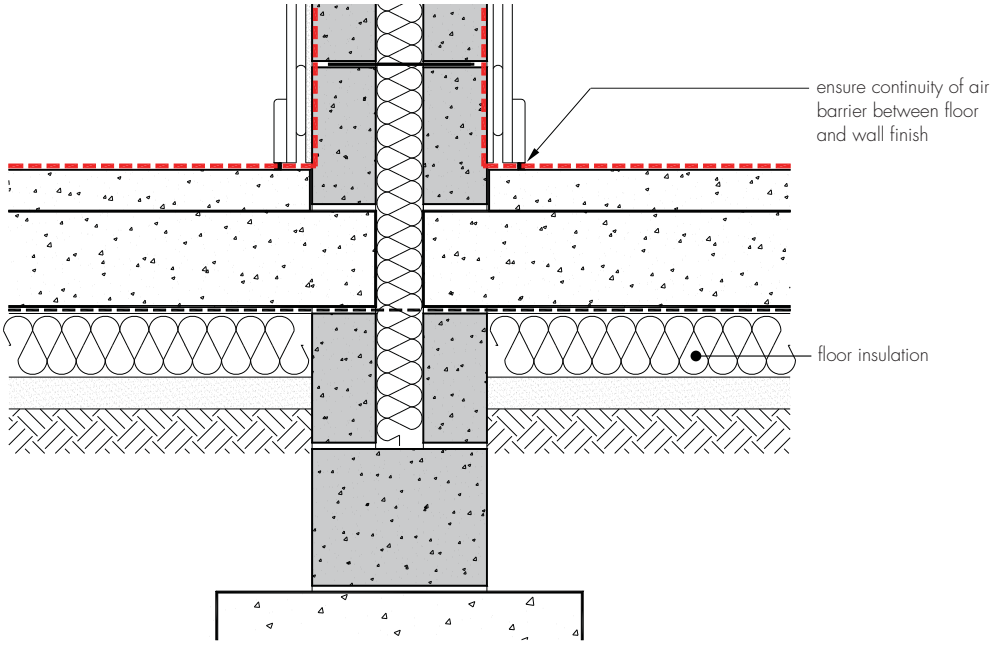
Notes

- party wall fully filled with insulation (λ = 0.044 W·m^{-1}·K^{-1} maximum)
- maximum party wall cavity width of 100 mm
- ensure that the party wall insulation continues at least 215 mm below underside of slab
- 225 mm maximum concrete floor slab (including floor finish)
- minimum 215 mm deep aircrete foundation block
- ensure that floor insulation tightly abuts blockwork wall
- ensure all gaps are sealed
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

Party Wall Masonry. Full Fill
Suspended concrete floor — Insulation below slab

CD0018



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.073	0.92
0.15	0.064	0.93

The ψ-value is applied to each dwelling.

These values are valid for floor U value $\leqslant$ 0.25 $W \cdot m^{-2} \cdot K^{-1}$.

Refer to CD0002 for U value examples.

Party Wall Masonry. Full Fill
Suspended beam-and-block floor — Insulation above slab

CD0018

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the party wall fully filled with insulation of 0.044 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
2	Is the party wall cavity width 100 mm or less?	☐ ☐ .....
3	Is the party wall insulation continued at least 215 mm below underside of slab?	☐ ☐ .....
4	Is the floor insulation firmly abutting the blockwork wall, leaving no gaps?	☐ ☐ .....
5	Are the foundations at least 215 mm deep of aircrete blocks?	☐ ☐ .....
6	Is the concrete floor slab 225 mm maximum (including floor finish)?	☐ ☐ .....
7	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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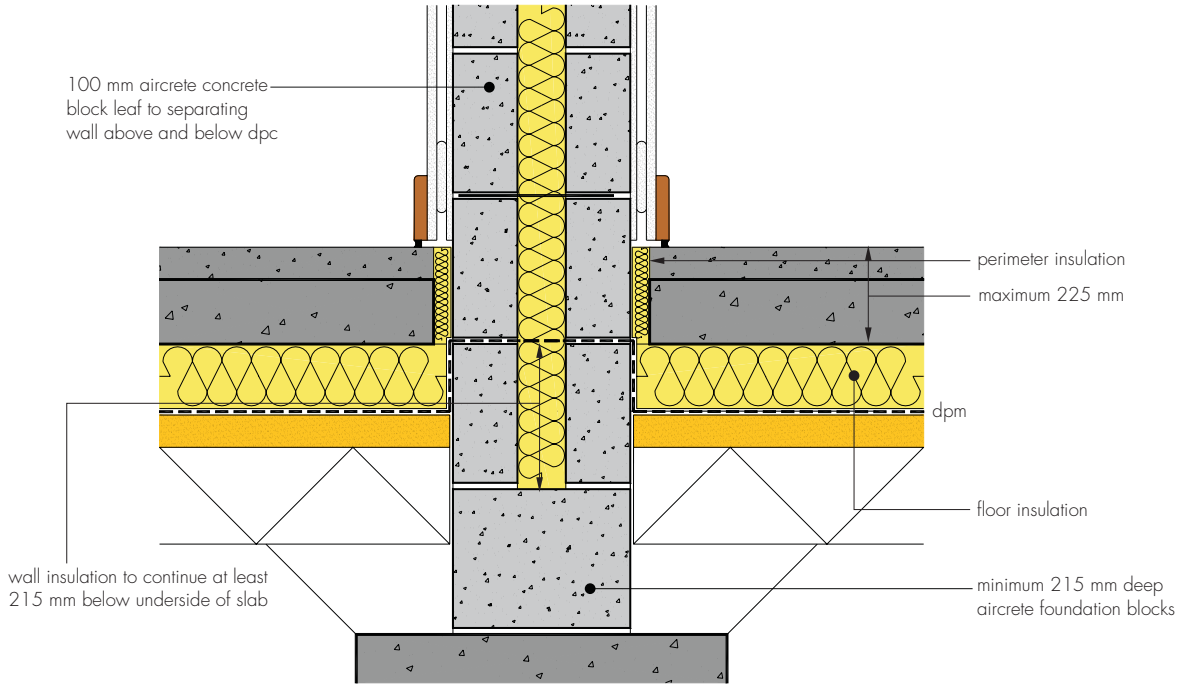
Party Wall Masonry. Full Fill

In-situ concrete ground bearing floor — Insulation below slab

CD0019

constructive DETAILS



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

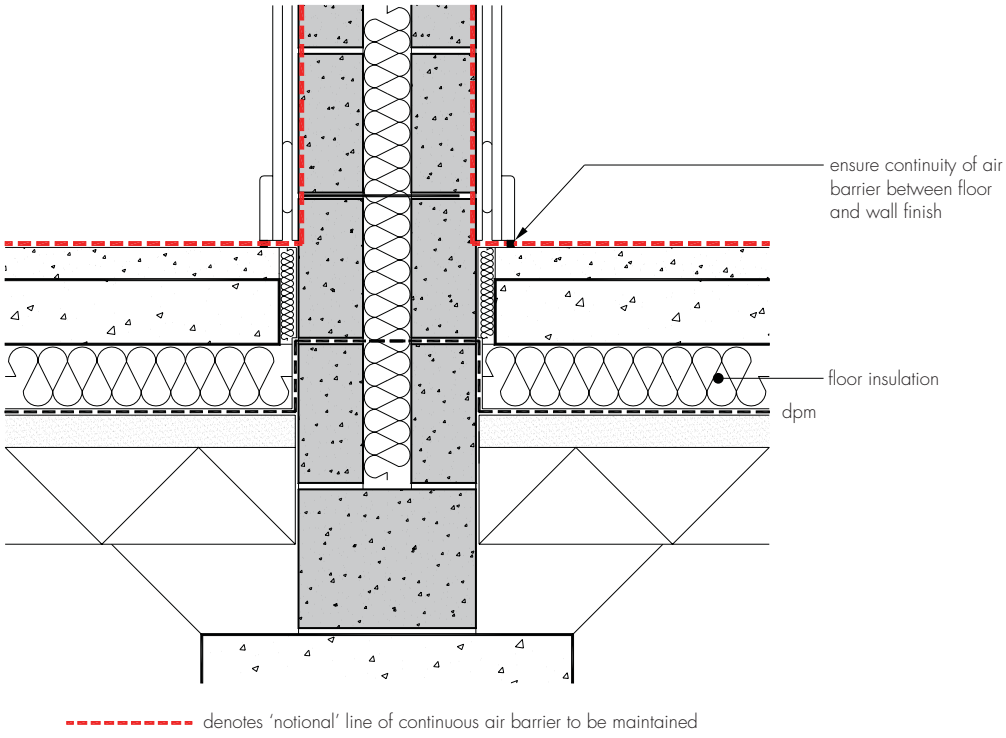
Notes

- perimeter insulation with a minimum resistance value of 0.8 $m^2 \cdot K \cdot W^{-1}$ (eg 20 mm of insulation with λ = 0.025 $W \cdot m^{-1} \cdot K^{-1}$) and installed up to floor finish
- party wall fully filled with insulation (λ = 0.044 $W \cdot m^{-1} \cdot K^{-1}$ maximum)
- maximum party wall cavity width of 100 mm
- ensure that the party wall insulation continues at least 215 mm below underside of slab
- 225 mm maximum concrete floor slab (including floor finish)
- minimum 215 mm deep aircrete foundation block
- ensure that floor insulation tightly abuts blockwork wall
- ensure all gaps are sealed
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

Party Wall Masonry. Full Fill
In-situ concrete ground bearing floor — Insulation below slab

CD0019



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.060	0.93
0.15	0.052	0.94

The ψ-value is applied to each dwelling.

These values are valid for floor U value $\leqslant 0.25\ W \cdot m^{-2} \cdot K^{-1}$.

Refer to CD0003 for U value examples.

Party Wall Masonry. Full Fill
In-situ concrete ground bearing floor — Insulation below slab

CD0019

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the edge insulation as specified? — Minimum resistance of 0.8 $m^2 \cdot K \cdot W^{-1}$ (eg 20 mm of insulation with λ = 0.025 $W \cdot m^{-1} \cdot K^{-1}$)	☐ ☐ .....
	— Installed up to floor finish	☐ ☐ .....
2	Is the party wall fully filled with insulation of 0.044 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
3	Is the party wall cavity width 100 mm or less?	☐ ☐ .....
4	Is the party wall insulation continued at least 215 mm below underside of slab?	☐ ☐ .....
5	Is the floor insulation abutting the blockwork wall, leaving no gaps?	☐ ☐ .....
6	Are the foundations at least 215 mm deep of aircrete blocks?	☐ ☐ .....
7	Is the concrete floor slab 225 mm maximum (including floor finish)?	☐ ☐ .....
8	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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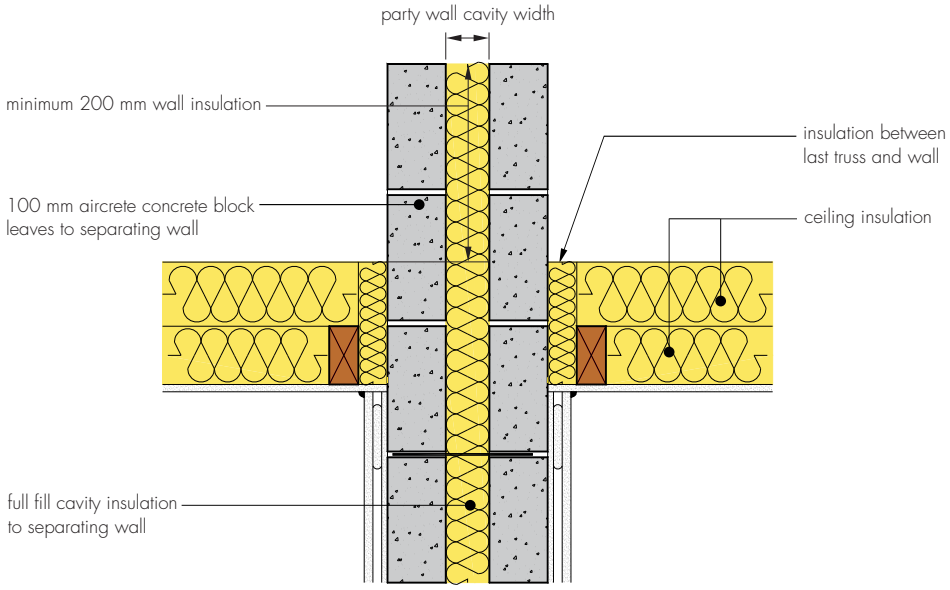
Party Wall Masonry. Full Fill

Roof — Insulation at ceiling level — Ventilated loft

CD0020



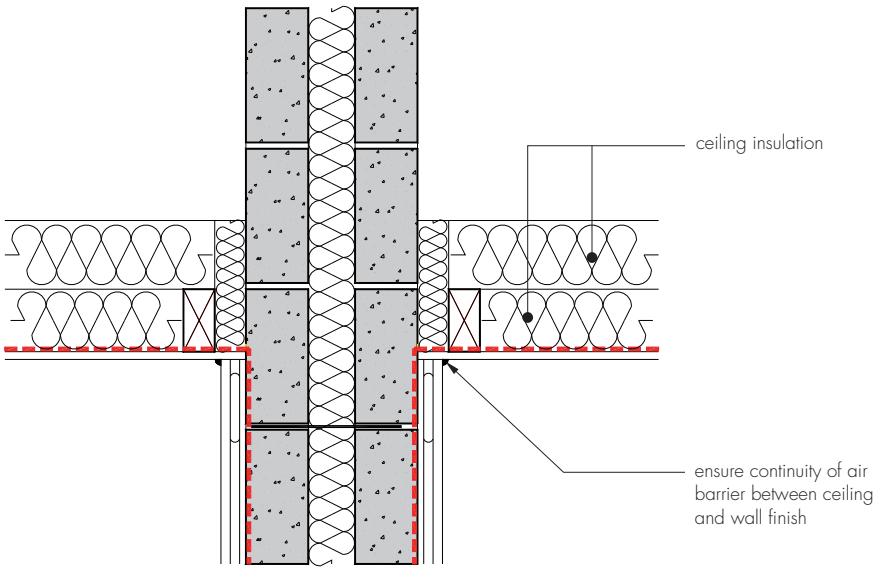
This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Notes

- party wall fully filled with insulation (λ = 0.044 W·m^{-1}·K^{-1} maximum)
- maximum party wall cavity width of 100 mm
- ceiling insulation thickness between 130 and 410 mm
- maximum ceiling insulation conductivity 0.044 W·m^{-1}·K^{-1}
- the party wall insulation should continue to at least 200 mm above the top of the ceiling insulation
- pack compressible insulation between last truss/joist and party wall to prevent any gaps between the insulation and the wall
- ensure all gaps are sealed
- other improved air barrier continuity solutions can be used.

Party Wall Masonry. Full Fill
Roof — Insulation at ceiling level — Ventilated loft

CD0020



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

	Ceiling insulation thickness between 130 mm and 209 mm		Ceiling insulation thickness between 210 mm and 309 mm		Ceiling insulation thickness between 310 mm and 410 mm	
Block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.087	0.90	0.065	0.93	0.049	0.90
0.15	0.077	0.91	0.055	0.94	0.041	0.91

The ψ-value is applied to each dwelling.

This values are valid for roof U values $\leqslant 0.20\ W \cdot m^{-2} \cdot K^{-1}$.

Party Wall Masonry. Full Fill
Roof — Insulation at ceiling level — Ventilated loft

CD0020

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the party wall fully filled with insulation of 0.044 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
2	Is the party wall cavity width 100 mm or less?	☐ ☐ .....
3	Is the ceiling insulation thickness between 130 and 410 mm?	☐ ☐ .....
4	Is the ceiling insulation conductivity 0.044 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
5	Is the gap between the last joist and the party wall filled with insulation?	☐ ☐ .....
6	Is the party wall insulation continued to at least 200 mm above the top of the ceiling insulation?	☐ ☐ .....
7	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ ..... ☐ ☐ .....

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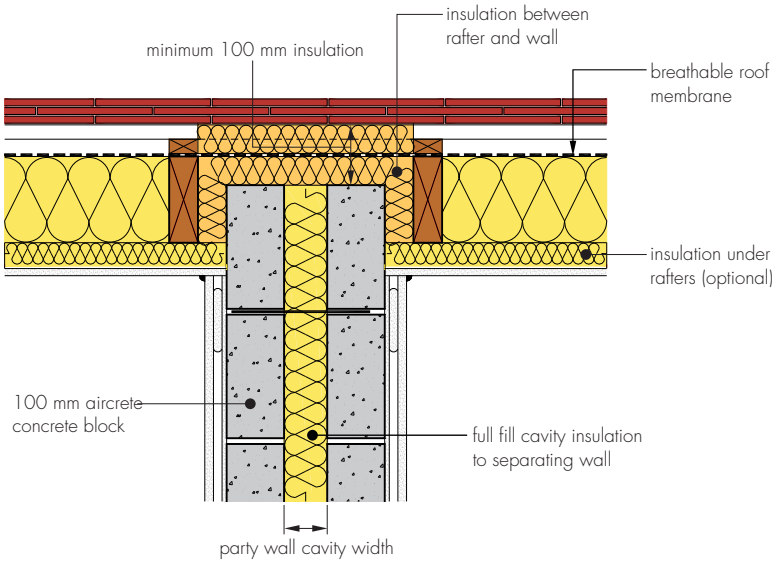
Party Wall Masonry. Full Fill

Roof — Insulation at rafter level — Unventilated rafter void

CD0021



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

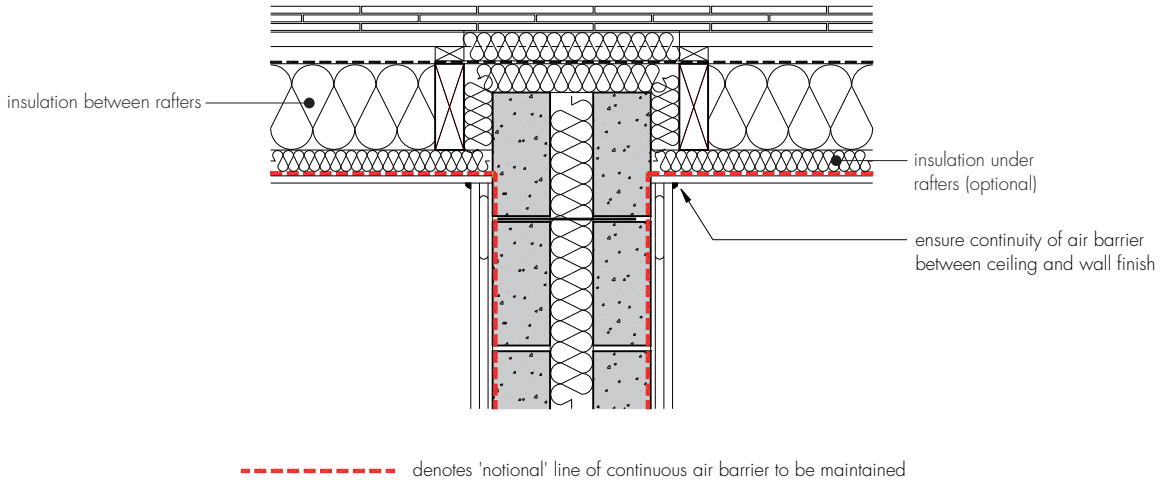
Notes

- minimum 100 mm insulation on top of party wall with conductivity 0.040 $W \cdot m^{-1} \cdot K^{-1}$ or less covering the full width of party wall
- fill the void between top of the wall and underside of breathable roof membrane and the gap between rafter and wall
- maximum roof insulation conductivity 0.040 $W \cdot m^{-1} \cdot K^{-1}$ between 150 mm minimum rafters
- ensure continuity of the insulation throughout the junction leaving no gaps
- party wall fully filled with insulation (λ = 0.044 $W \cdot m^{-1} \cdot K^{-1}$ maximum)
- maximum party wall cavity width of 100 mm
- use a vapour control layer in the roof plasterboard if required by BS 5250 : 2011
- insulation under or above rafters (not shown in drawing) are optional
- ensure all gaps are sealed
- other improved air barrier continuity solutions can be used.

Issued: 1 June 2012

Party Wall Masonry. Full Fill
Roof — Insulation at rafter level — Unventilated rafter void

CD0021



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

Inner leaf block conductivity ($W \cdot m^{-1} \cdot K^{-1}$)	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature factor
0.19	0.071	0.93
0.15	0.069	0.93

The ψ-value is applied to each dwelling.

These values are valid for roof U values $\leq 0.20\ W \cdot m^{-1} \cdot K^{-1}$.

Party Wall Masonry. Full Fill
Roof — Insulation at rafter level — Unventilated rafter void

CD0021

Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is there minimum 100 mm insulation on top of party wall with conductivity 0.040 $W \cdot m^{-1} \cdot K^{-1}$ or less covering the full width of party wall?	☐ ☐ .....
2	Is the void between top of the wall and underside of breathable roof membrane filled with insulation with conductivity 0.04 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
3	Is the gap between rafter and wall filled with insulation with conductivity 0.04 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
4	Is the roof insulation conductivity 0.040 $W \cdot m^{-1} \cdot K^{-1}$ or less between 150 mm minimum rafters?	☐ ☐ .....
5	Is the continuity of insulation throughout the junction achieved?	☐ ☐ .....
6	Is the party wall fully filled with insulation of 0.044 $W \cdot m^{-1} \cdot K^{-1}$ or less?	☐ ☐ .....
7	Is the party wall cavity width 100 mm or less?	☐ ☐ .....
8	Is the continuity of the air barrier achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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