

Practice Note 1 - Separating Wall - Cavity Masonry

Introduction

The Part E Robust Details scheme was established to provide an alternative means of compliance with Requirement E1 of the Building Regulations (England and Wales), for new build attached houses and flats, to avoid the requirement for pre-completion sound testing (PCT). A fundamental part of the scheme is performance monitoring of the Part E Robust Details in use. In this respect Robust Details Ltd (RDL) has engaged a number of acoustic consultants (the RDL Inspectorate) to undertake both visual inspections of Part E Robust Detail construction in progress and sound tests on completed Part E Robust Details.

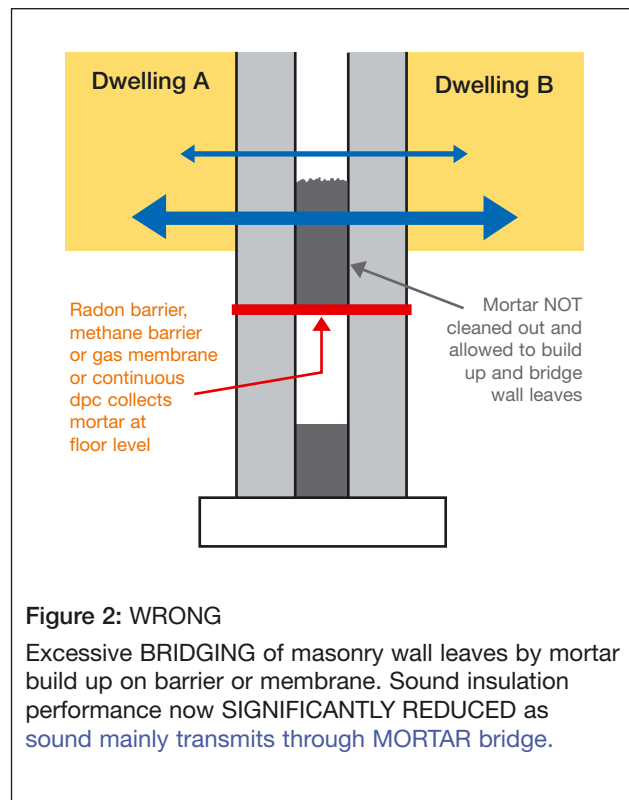
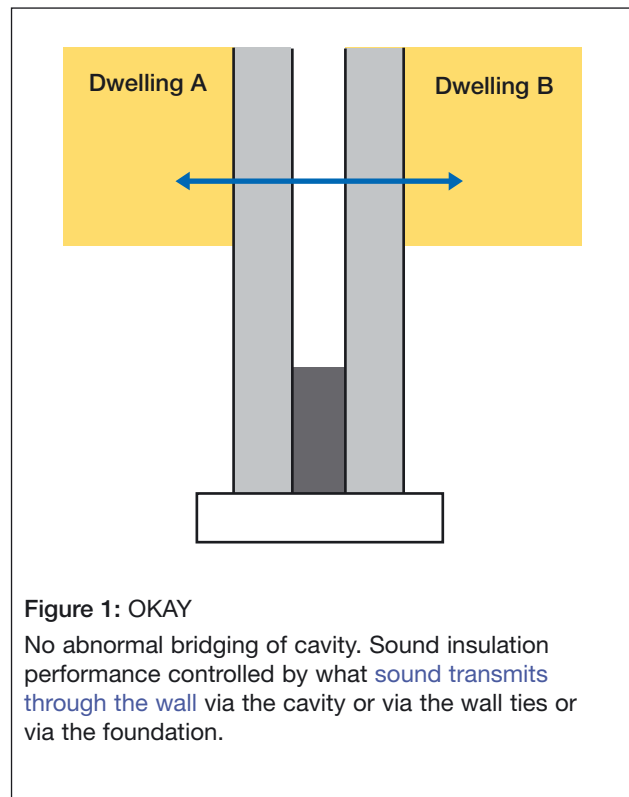
The Part E Robust Details Practice Notes are intended to be a mechanism for feeding back the Inspectorate's observations to the industry as a whole. In adopting the use of Part E Robust Details, organisations should ensure that all relevant requirements of the Robust Details Part E Handbook are strictly followed. This first Practice Note looks at a common issue that the Inspectors have identified with the Part E Robust Detail cavity masonry walls – cavities being bridged by mortar and debris.

Choice of wall tie

The level of sound insulation between dwellings using cavity separating walls is highly dependent on the isolation that is provided by the cavity between the wall leaves. Structural connections required for strength and stability will tend to reduce the isolation properties between the wall leaves. For cavity masonry walls sound will primarily transmit structurally via the wall ties and foundations. For this reason cavity masonry separating walls should only be constructed using appropriate wall ties, such as butterfly ties or Tie Type A - please refer to the Building Regulations (England and Wales) Approved Document E 2003 (ADE) Section 2: 2.19 and Appendix A of the Robust Details Part E Handbook.

Avoid mortar build up (Figures 1 and 2)

In the course of constructing the wall leaves, mortar droppings and debris may fall down to the base of the cavity. Mortar that is able to collect and build up, such that it bridges the wall leaves at and above the ground floor structure, will result in excessive bridging of the separating wall leaves. Installation of **radon barriers, gas membranes, continuous damp proof courses (dpc) and horizontal cavity stops** at floor level prevents mortar from falling to the base of the cavity. Bridging effects can lead to significant sound transmission between attached dwellings, by-passing any useful isolation effect that the cavity provides and may result in a significant reduction in sound insulation performance.



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Figure 3: Good Practice



AVOID:

Useful deep cavity being **incorrectly** sealed off by continuous dpc which will allow mortar to easily bridge between separating wall leaves when constructed.



AVOID:

As construction proceeds mortar droppings collect, if they are not cleaned out, leading to bridging of the leaves of the separating wall.



AVOID:

Mortar may also collect on wall ties, bridging the cavity and effectively increasing the stiffness of the wall ties.

Figure 4: Text from page 1 of Part E Robust Detail cavity masonry walls

DO

- Keep cavity and wall ties free from mortar droppings and debris
- Fully fill all blockwork joints with mortar
- Make sure there is no connection between the two leaves except for wall ties and foundation
- Keep any chases for services to a minimum and fill well with mortar. Stagger chases on each side of the wall to avoid them being back to back
- Ensure that render is applied to the complete face of each leaf (it may be omitted within the floor joist/beam zone)
- Refer to Appendix A of the Robust Details Part E Handbook for further guidance

Figure 5: Blocks carefully removed to allow cavity to be cleared of excess mortar and debris



Good practice (Figures 3 and 4)

On the first page of each of the Part E Robust Detail cavity masonry separating walls is an instruction to keep the cavity free from mortar droppings and debris. It is therefore important that, during the construction of masonry walls, site personnel should ensure that:

- excess mortar and debris are not permitted to fall down the cavity
- any mortar or debris that does fall into the cavity should be carefully removed and not allowed to build up in the cavity
- wall ties are regularly cleaned to avoid mortar build up
- mortar or debris does not bridge the wall leaves together at any point – the areas most at risk being at or above the junctions with floor structures (particularly the ground floor) and wall ties.

Consideration could also be given to the temporary removal of some wall blocks at floor levels (Figure 5) in order to provide access for cleaning the cavity, although, care will be required to ensure that:

- radon barriers and gas membranes are not damaged
- when returning the blocks into the structure, the joints are fully filled whilst not forcing mortar into the previously cleaned cavity.

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Normal open cavities (Figure 6)

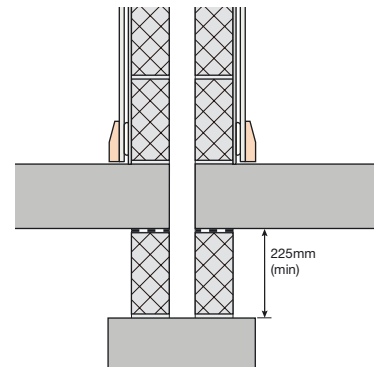
The details of each of the Part E Robust Detail cavity masonry separating walls also indicate that the ground floor junction should be formed such that the cavity, for both separating walls and external (flanking) walls, should be maintained for at least 225mm below the underside of where the ground floor structure would or does break the vertical continuity of the wall, the aim being to:

- mitigate the risk of sound transmission via the foundation connection
- to allow for some collection of mortar droppings below the floor level.

Radon barriers, gas membranes or continuous dpcs

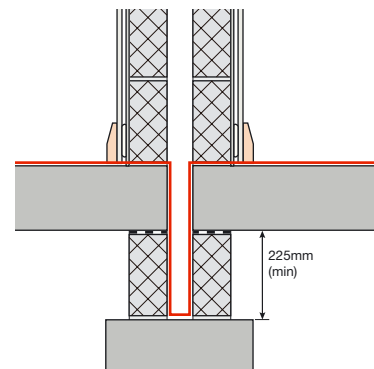
The installation of radon barriers, gas membranes and continuous dpcs that bridge the cavity at ground floor level prevents excess mortar from falling to base of the cavity. This may be avoided through careful consideration of detailing and workmanship on site. The continuous membrane could be dressed down and around the cavity (Figure 7), to maintain a clear cavity of at least 225mm below the underside of the ground floor structure, rather than bridging straight across the cavity. However, particular consideration needs to be given to ensuring the membrane can be adequately dressed around the cavity, particularly at wall junctions, to ensure that the membrane remains gas and water tight whilst preventing the membrane bulging into the cavity. The use of preformed proprietary products, which help to address these issues, should therefore be considered.

Alternatively, consideration could be given to installing the membrane at a lower level in the construction such that it may be laid as a single horizontal layer 225mm (min) below the underside of the ground floor structure and up to 225mm below external ground level, where appropriate (Figure 8). Typically, this approach would not be suitable for sloping sites or where ground movement is possible. If this method is adopted under suspended ground floors it would be necessary to use a reinforced membrane and to protect the membrane, from objects falling during construction, by a layer of sand or lean mix concrete being installed above the membrane.



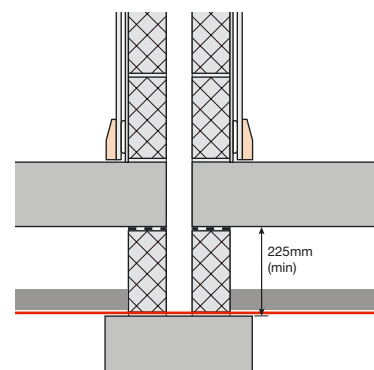
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Figure 6: Ground floor junction detail from Robust Details Part E Handbook.



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Figure 7: Gas membrane dressed around cavity at ground floor junction.



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Figure 8: Gas membrane installed at lower level with layer of concrete over for protection.

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Recommendations for improved site practice

1. Bricklayers should be instructed to build the separating walls with the aim of avoiding mortar or other debris falling down the cavity.
2. Site operatives should be informed and alerted to avoid build up of mortar or debris within the cavity of masonry walls, particularly at the base of the separating walls.
3. Cavities should regularly be cleaned to avoid mortar and debris building up, particular attention should be paid to the junctions with floors (particularly the ground floor) and wall ties.
4. Site managers should conduct regular plot inspections to monitor workmanship and ensure that mortar or debris is not allowed to bridge the cavities.
5. Particular care and attention is required when using products, such as radon barriers, gas membranes, continuous damp proof courses (dpcs) and horizontal cavity stops, that will create a bridge between the leaves of cavity walls that allow mortar and other debris to collect.
6. All relevant requirements of the Robust Details Part E Handbook should be strictly followed.

Further details

For further details about Part E Robust Detail constructions or for technical enquiries please contact:

Technical
Robust Details Limited
Bletchley Park Science and Innovation Centre
Milton Keynes
MK3 6EB

RDL Technical Desk

Tel: 03300 882 140
Fax: 01908 363433
Email: technical@robustdetails.com
Web: www.robustdetails.com