



All the Guides provide information on the principles which should be applied in sound detailing, and they include tables to illustrate appropriate construction options

The full range of documents within the new Good Practice Guides series

Energy efficient new homes

- The details of Good Practice

New Best Practice programme publications from the Energy Efficiency Office provide the building industry with guidance on construction design for well insulated new houses, writes Peter Barton-Wood, BRECSU

New Best Practice programme publications from the EEO, which are applicable to new dwellings in both public and private sectors, consist of two parallel and complementary series of Guides: 'Detailing for Designers and Building Professionals, and Site Practice for Tradesmen'. Several Best Practice publications already provide guidance on appropriate cost-effective standards of insulation in housing. Publications

dealing with both newbuild and refurbishment in the private and social housing sectors contain technical guidance designed to promote cost-effective energy efficiency and the reduction of carbon dioxide emissions from dwellings; increased standards of thermal insulation are an essential part of this process.

Over the past two decades, the levels of thermal insulation required by Building Regulations have progressively increased.

Recently the Housing Corporation published its 'Scheme Development Standards' for new housing association dwellings (Scheme Development Standards, The Housing Corporation, October 1993). These advocate the incorporation of cost-effective energy efficiency measures and recommend a minimum energy rating of 75 using the Government's Standard Assessment Procedure.

Increasing standards of insulation are becoming a fact of life for designers and builders, but higher levels of insulation in the walls, floors, and roofs of dwellings require greater attention to detail if they are to be applied effectively.

'Cold bridging' (or as it is correctly known 'thermal bridging') occurs where insulation is interrupted and results in a local fall of internal surface temperature. This can lead to interstitial or surface condensation and also to significant heat loss. The places where thermal bridging and air leakage mainly occur are at the junctions between walls, floors and roofs and around openings such as windows and doors.

Surface condensation causes damage to finishes and promotes unsightly mould growth. It can also result in more serious problems which arise from the deterioration of building fabric and structure.

Airtightness has also become an important issue as levels of insulation have increased. As heat losses through the building fabric are reduced by increased insulation, so heat losses

due to ventilation represent a higher proportion of the total heat loss of the dwelling. Uncontrolled or "adventitious" ventilation, which occurs when the fabric of the dwelling is not airtight, leads to unnecessary heat losses and increases the risk of surface condensation.

'Detailing for Designers and Building Professionals' aimed at architects, designers and other specifiers, and 'Site Practice for Tradesmen' targeted at building contractors, site managers, foremen and tradesmen both address the problems of thermal bridging and airtightness. They are designed to supplement and complement two existing publications: the NHBC's 'Good Practice Guide to Thermal Insulation and Ventilation', and the BRE publication 'Thermal Insulation: Avoiding Risks' which accompanies the Building Regulations and which is currently being revised for re-issue with the new Building Regulations during 1994.

The content of the new Guides

The new Guides use detail drawings to illustrate ways in which thermal bridging may be minimised and airtightness maximised. They contain guidance on design principles for the effective insulation of dwellings and provide a series of detail drawings which may be used for a wide range of construction types, focusing specifically on junctions between walls, roofs and floors, and on heads, cills and jambs of window and door openings. 'Detailing for Designers and Building Professionals' consists of five leaflets dealing with: key detailing principles, ground floors, external cavity walls, windows and external doors, and pitched roofs. It is accompanied by an introductory video.

'Site Practice for Tradesmen' comprises 13 leaflets dealing firstly with best practice on site, and then with the same subjects explored in the designers' Guide, although the information is presented in a different format to suit the different readers. The leaflets are supported by four site posters and a video. The two videos illustrate the information presented in the Guides.

The Guides which deal with ground floors cover insulating below an in-situ slab, insulating above a concrete floor, insulating a timber suspended floor, and services and service entries. In each case, the Guides describe features of construction, the construction options, the main technical risks, detail-

ing to avoid loss of performance, specification notes and points of buildability.

The Guides dealing with external cavity walls adopt the same format and cover injected or blown cavity insulation, full-fill insulation batts, partial fill cavity insulation; insulated drylining, services and service entries, and assessment of exposure to driven rain.

A similar format is used in the Guides which deal with windows and external doors, and those which deal with pitched roofs. The former cover details around openings (cills, jambs and heads) and the accommodation of both built in and factory-finished components. The latter cover roofs with lofts, room-in-roof designs, and the installation of services in or through roof spaces. Once again features of construction, construction options, the main technical risks, specification notes, points of buildability and detailing to avoid loss of performance are described.

All the Guides provide information on the principles which should be applied in sound-detailing, and they include tables to illustrate appropriate construction options, diagrammatic sections and plans, and full-page illustrations of best practice details.

Authorship and availability

Preparation of the new Guides has been funded by the EEO and managed by BRECSU. The technical authors were lead-

ing consultants NBA Tectonics and Wimpey Environmental, and the team was advised throughout by BRE experts, and by representatives of all sectors of the building industry and the building professions. The material presented in the Guides represents the current best practice in sound construction detailing for energy efficient dwellings.

'Detailing for Designers and Building Professionals' and 'Site Practice for Tradesmen' take the Best Practice programme to a new level of detail. The Guides complement other publications which deal with the overall energy efficiency of new dwellings, and which recommend appropriate levels of insulation. They will assist designers and builders in adopting an integrated approach to energy efficiency which follows-through from strategic design decisions via sound, consistent detailing to the construction process on site.'

Single copies of Detailing for Designers and 'Building Professionals' and 'Site Practice for Tradesmen' may be requested from the BRECSU Enquiries Bureau, Building Research Establishment, Garston, Watford WD2 7JR. Tel: (0923) 664258. A charge may be made where multiple copies are required.

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Illustration from the Designers Guides entitled 'Typical Construction Detail'

