

# IBCI CONFERENCE 2003

## REGULATING FOR ENERGY EFFICIENCY - PART L (DWELLINGS) 2002

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# Part L - Update

## Driving Forces

- Sustainability
- KYOTO Targets

## Commitment to Improve Standards

## Part L - Update

### Step 1: Dwellings

- **Consultation- Nov 2001**
- **Final version - June 2002**
- **Implementation- Jan 2003**

# Part L - Dwellings

## Implementation

Commencement of works - 1/1/2003  
except

- planning applied - 31/12/02, and
- substantial work - 31/12/05

\*\*replacement of ext. doors, windows,  
rooflights

- commencement of works - 1/7/03

# Part L - Dwellings

## *MAIN CHANGES*

- *Improved fabric insulation*
- *Application*
  - Replacement windows/doors - treat as material alteration
    - but not
    - works (incl. extensions) to “protected structures” or “proposed protected structures”

## Part L - Dwellings

### *MAIN CHANGES (contd.)*

- *No “reduced provision” for*
  - *Conservatory style sunrooms - treat as integral or as extension*
  - *Holiday Homes - no special treatment*
- *Heating and water controls - clarification*
- *H.W. Storage Insulation - factory fitted*

# Part L - Dwellings

## *MAIN CHANGES (contd.)*

- *New I.S. EN calculation standards*
  - *opaque areas*
  - *windows*
  - *floors*
  - *“semi-exposed areas”*.
- *Treatment of Thermal bridging.*

# Part L - Dwellings

## HOW TO SHOW COMPLIANCE

### Retain existing three methods

- Elemental Method.
- Overall Heat Loss Method.
- Heat Energy Rating.
  - + Thermal Bridging, Air Infiltration, Controls and Insulation of Space Heating and Hot Water Systems



# Part L - Dwellings

## • Heat Energy Rating

| Area of Heat Loss Elements/ Building Volume<br>( $A_t / V$ ) ( $m^{-1}$ ) | Maximum Permitted Heat Energy Rating (MPHER) ( $kWh/m^2/yr.$ ) |
|---|--|
| 1.2   | 101.4 (138.4)  |
| 1.0   | 99.0 (127.0)   |
| 0.8   | 92.6 (115.6)   |
| 0.6   | 88.2 (104.2)   |
| 0.4   | 83.8 (92.8)  |
| 0.3   | 81.6 (87.1)  |

MPHER =

$$22 A_t/V + 75$$

• Current values in brackets

# Part L - Dwellings

## Overall Heat Loss

|                          | Area of Heat Loss Elements/Building Volume ( $A_t/V$ ) ( $m^{-1}$ ) | Maximum Average U Value ( $U_m$ ) ( $W/m^2K$ ) |
|--------------------------|---|--|
| $U_m = 0.24 + 0.19V/A_t$ | 1.3   | 0.39   |
|                          | 1.2   | 0.40 (0.61)                                    |
|                          | 1.1   | 0.41   |
|                          | 1.0   | 0.43 (0.64)                                    |
|                          | 0.9   | 0.45   |
|                          | 0.8   | 0.48 (0.69)                                    |
|                          | 0.7   | 0.51   |
|                          | 0.6   | 0.56 (0.79)                                    |
|                          | 0.5   | 0.62   |
|                          | 0.4   | 0.72 (0.97)                                    |
|                          | 0.3   | 0.87   |

•Current values in brackets.

# Part L - Dwellings

## MAXIMUM U VALUES (W/m<sup>2</sup>K) (HER and OHL methods)

- |         |      |
|---------|------|
| • ROOF  | 0.25 |
| • WALL  | 0.37 |
| • FLOOR | 0.37 |

# Part L - Dwellings

## ELEMENTAL U VALUES (W/m<sup>2</sup>K)

[Current values in ( )]

|                        | <u>New</u>  | <u>Existing</u> |
|------------------------|-------------|-----------------|
| • Wall                 | 0.27 (0.45) | 0.60            |
| • Roof (ceiling level) | 0.16 (0.25) | 0.35            |
| • Ground Floor         | 0.25 (0.45) | -               |
| • Exposed Floor        | 0.25 (0.45) | 0.60            |
| • Window               | 2.20 (3.30) | 2.20 (3.30)     |

# Part L - Dwellings

## ELEMENTAL U VALUES - ROOFS (W/m<sup>2</sup>K)

|                 | <u>New</u>  | <u>Existing</u> |
|-----------------|-------------|-----------------|
| • Pitched roof  |             |                 |
| - ceiling level | 0.16 (0.25) | 0.35            |
| - slope         | 0.20 (0.25) | 0.35            |
| • Flat roof     | 0.22 (0.25) | 0.35            |



## Part L - Dwellings

### Approx. insulation thickness (mm)

|          | <u>Current</u> | <u>Proposed</u> |
|----------|----------------|-----------------|
| • Wall   | 50-70          | 80 - 150        |
| • Roof   | 150-200        | 250 - 300       |
| • Floor  | 50-60          | 100             |
| • Window | double glazing | +low-E          |

# Part L - Dwellings

## Windows and Doors - New Dwellings

- OHL & HER Methods: No specific U value set.
- Elemental Method

Average U-value  $< 2.2 \text{ W/m}^2\text{K}$  BUT may vary with area (see Table 2)

[Element values may vary provided AVERAGE value acceptable]



# Part L - Dwellings

## Extensions & Conservatories

- Elemental Method - as new building  
BUT if using Table 2 for windows & doors, can
  - treat as part of overall building, or
  - treat extension separately [Par.1.2.3].
- When separate from dwelling can use U value of  $2.2 \text{ W/m}^2\text{K}$ , with no limit on glazed area.  
[Pars. 1.1.3 & 1.2.3]

## Part L - Dwellings

### Windows and Doors - Determination of U-value

[complete window unit, i.e. frame and glass combined]

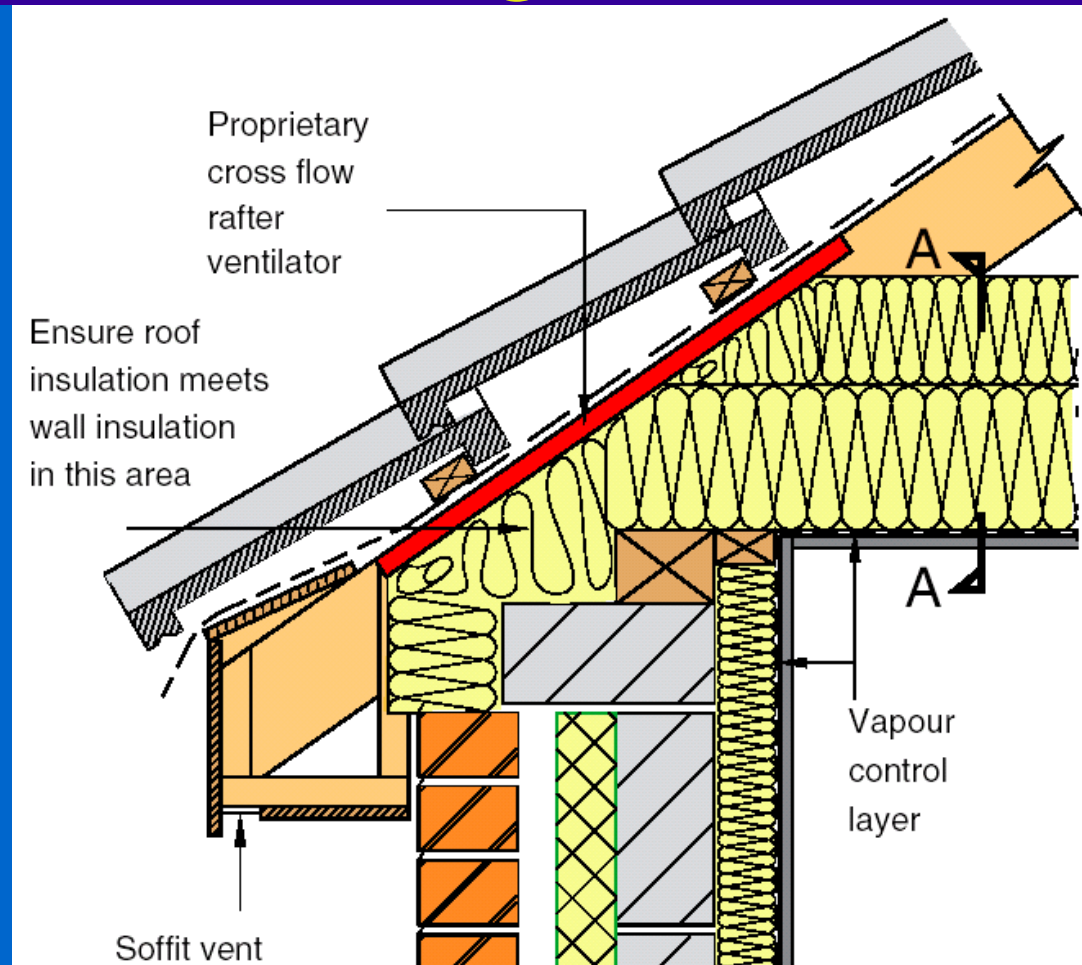
- Measurement - I.S. EN ISO 12567-1: 2001
- Calculation - I.S. EN ISO 10077-1:2000,  
I.S. EN ISO 10077-2:2000
- Estimation - TGD L(2002), Table 31

# Part L - Dwellings

## Limitation of Thermal Bridging

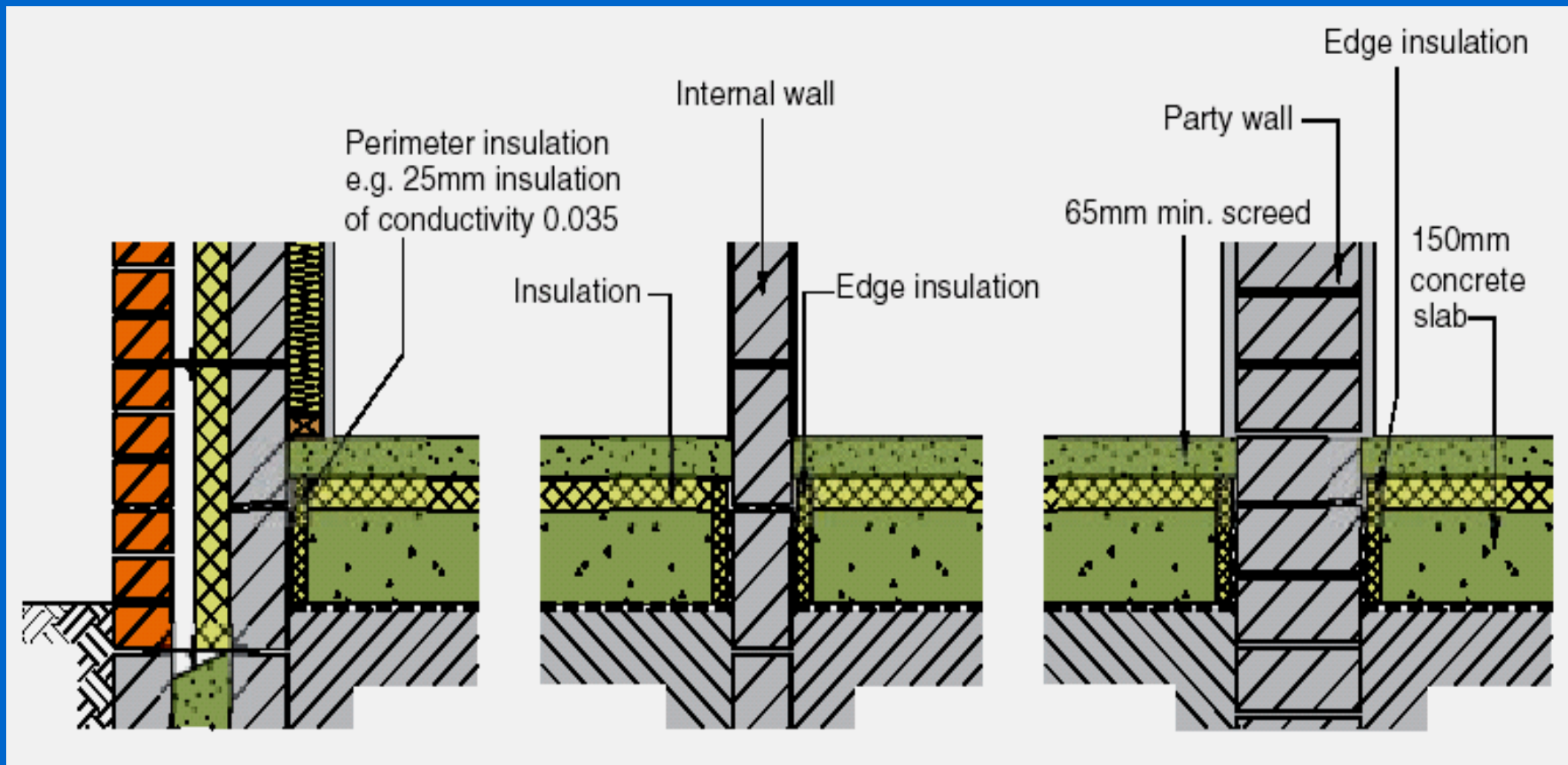
- lintel, jamb & sill details in TGD.
- Homebond “Right on the site No. 28”
- “Robust Details” published by DTLR<sub>(UK)</sub>
- Use of details satisfying Table 42 (TGD)
- Thermal Bridge losses less than 16% of element losses (Appendix D).

# Part L - Dwellings - Robust Details



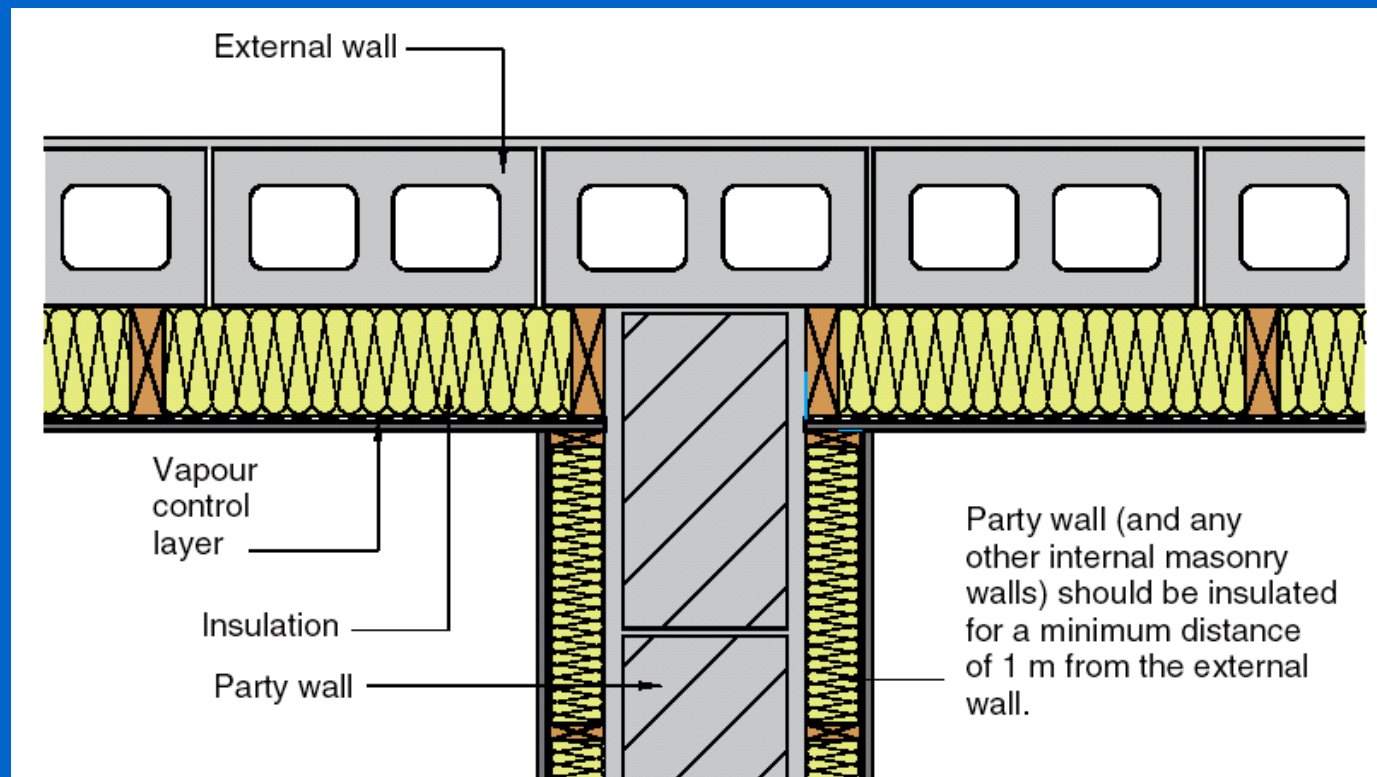
•Source: HomeBond Right on the Site no. 28

# Part L - Dwellings - Robust Details



•Source: HomeBond Right on the Site no. 28

# Part L - Dwellings - Robust Details



•Source: HomeBond Right on the Site no. 28

# Part L - Dwellings

## Construction Precautions

- Proper Installation of Insulation.
  - Ensure completeness
  - Avoid gaps
- Detailing at Joints, Junctions, Openings to eliminate Thermal Bridging.
- Minimise Air Infiltration.
- Vapour Control Membranes where appropriate .

## Part L - Update

### Step 2: Other Buildings

- **Proposals to BRAB - end 2003**
- **Consultation - Spring 2004**
- **Final Version - Autumn 2004**
- **Implement - Spring 2005**