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

<u>Step 1</u>: 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

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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 (At / 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

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Overall Heat Loss

$U_m = 0.24+0.19V/A_t$

Area of Heat Loss Elements/Building Volume (A_t/V) (m^{-1})	Maximum Average U Value (U_m) (W/m^2K)	
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.

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MAXIMUM U VALUES (W/m^2K)

(HER and OHL methods)

• ROOF	0.25
• WALL	0.37
• FLOOR	0.37

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ELEMENTAL U VALUES (W/m^2K)

[Current values in ( )]

	New	Existing
• 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)

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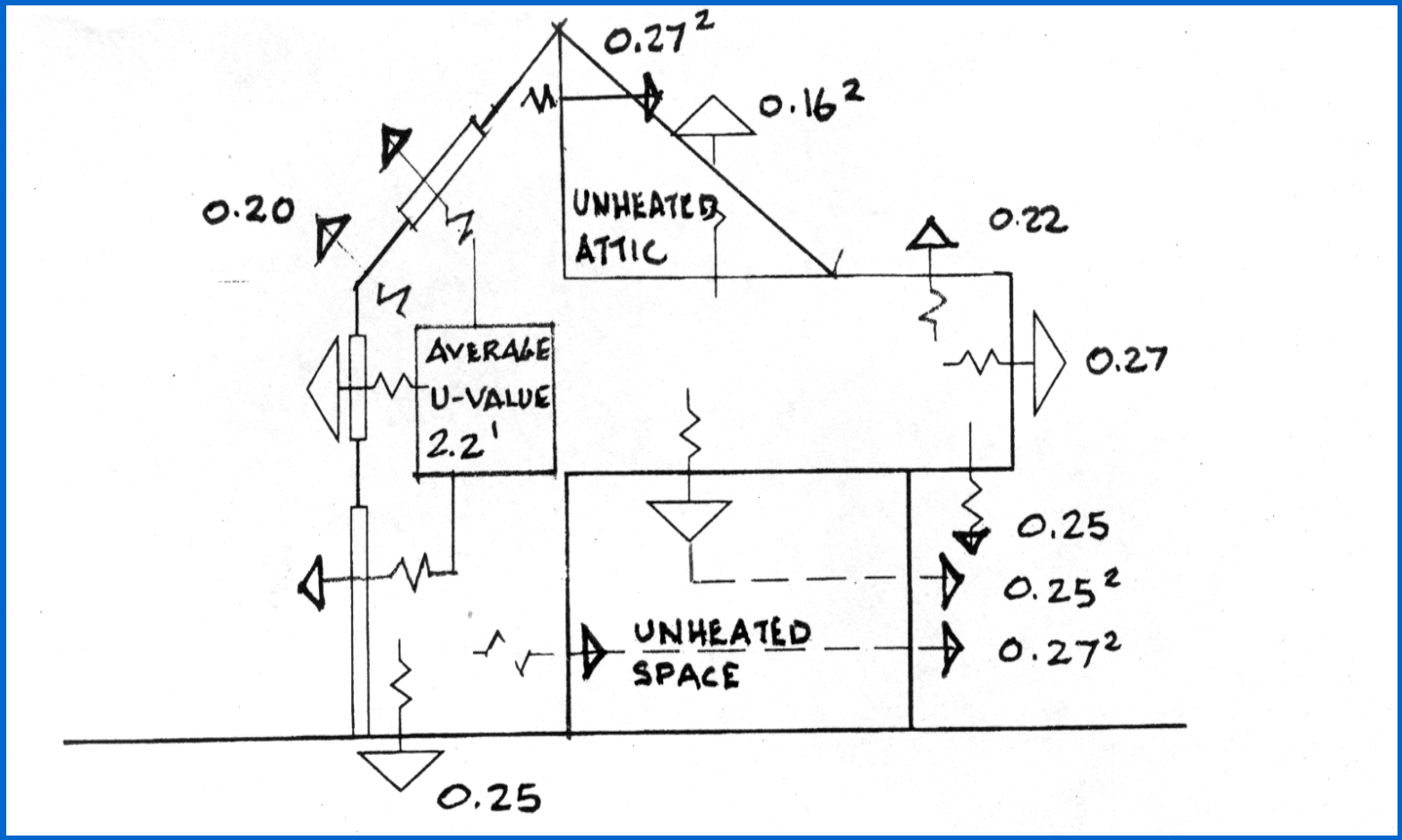
ELEMENTAL U VALUES - ROOFS
(W/m^2K)

	New	Existing
• 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



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Approx. insulation thickness (mm)

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

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Windows and Doors - New Dwellings

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

  Average U-value < 2.2 W/m^{2}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 W/m^{2}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]

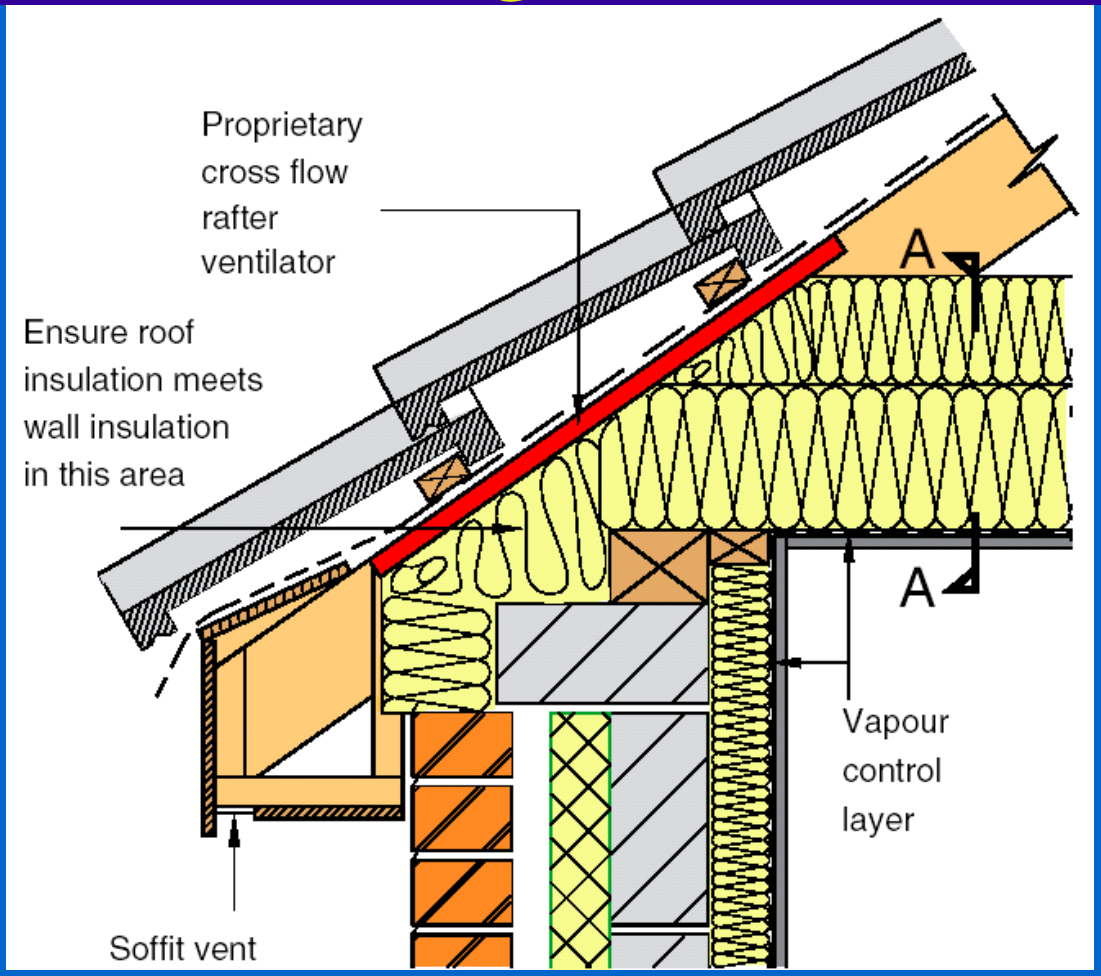
- Measurement - I.S. EN ISO 12567-1: 2001
- Calculation - I.S. EN ISO 10077-1:2000, I.S. EN ISO 10077-2:2000
- Estimation - TGD L(2002), Table 31

Part L - Dwellings

Limitation of Thermal Bridging

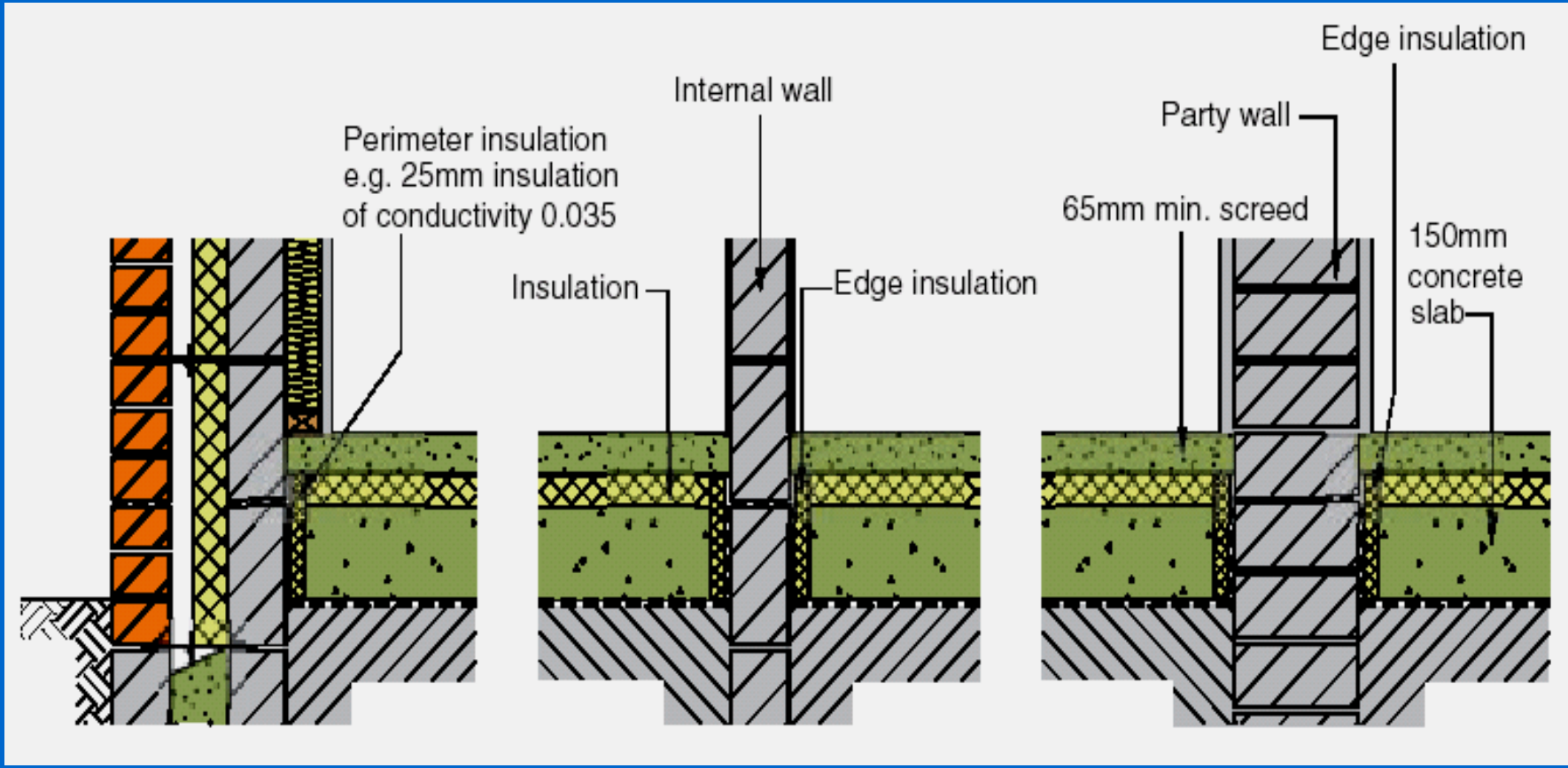
- lintel, jamb & sill details in TGD.
- Homebond "Right on the site No. 28"
- "Robust Details"published by DTLR(UK)
- Use of details satisfying Table 42 (TGD)
- Thermal Bridge losses less than 16% of element losses (Appendix D).

Part L - Dwellings - Robust Details



•Source: HomeBond Right on the Site no. 28

Part L - Dwellings - Robust Details



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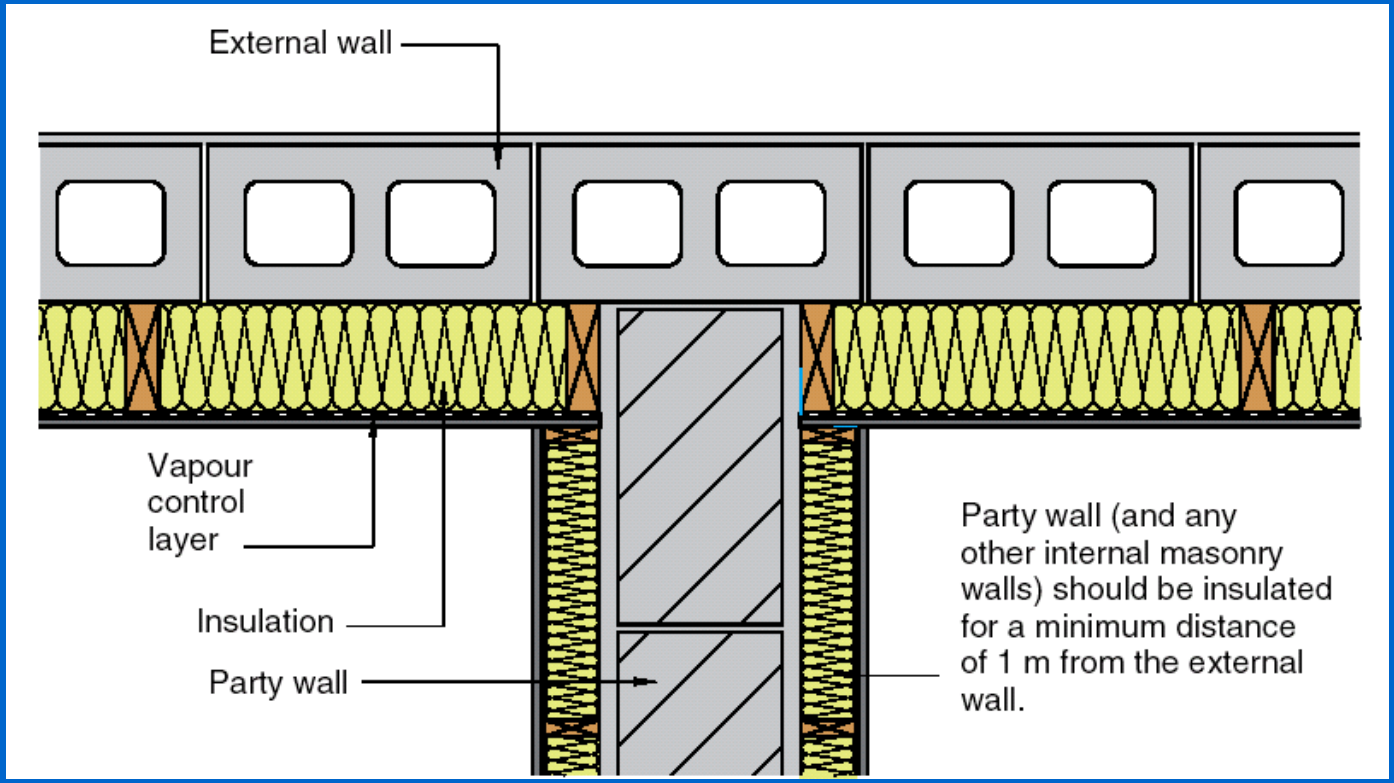
Part L - Dwellings - Robust Details



- 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**