Recent trends in Building Regulations in England & Wales and the work of CEBC

IBCI Building Control Conference
Bunratty, Co. Clare
23 March 2007

David Smith
Programme

- Building Regulations
  - Part B – Fire
  - Part E – Sound
  - Part L – Energy Conservation
- Sustainability
  - Sustainable Code for New Homes
  - Energy Certificates
  - Zero Carbon Homes
- Work of Consortium of European Building Control - CEBC
The Building Regulations 2000

Fire safety

APPROVED DOCUMENT

VOLUME 1 - DWELLINGHOUSES

B1 Means of warning and escape
B2 Internal fire spread (linings)
B3 Internal fire spread (structure)
B4 External fire spread
B5 Access and facilities for the fire service

Coming into effect April 2007

2006 edition
Changes to Part B (Fire safety) of the Building Regulations and Approved Document B

Information and slides kindly provided by Communities & Local Government and BRE
Background

Procedural Changes

Volume 1 - Dwellinghouses

Volume 2 - Buildings other than Dwellinghouses
Procedural changes
Approved Document split into two volumes

• Volume 1 - Dwellinghouses
• Volume 2 – Buildings other than Dwellinghouses

Flats (including multi-storey flats & mixed-use buildings) can be found in Volume 2
Amended Requirement B3(3) – part of ‘Internal fire spread (Structure)’

<table>
<thead>
<tr>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>B3.</td>
</tr>
</tbody>
</table>

(3) Where reasonably necessary to inhibit the spread of fire within the building, measures shall be taken, to an extent appropriate to the size and intended use of the building, comprising either or both of the following:
- (a) sub-division of the building with fire-resisting construction;
- (b) installation of suitable automatic fire suppression systems.
Fire safety Information – (Vol. 2)

• New Regulation 16B typically applies to extensions and new buildings where the building affected will be covered by the Regulatory Reform (Fire Safety) Order 2005.

• The person carrying out the work must provide sufficient information for persons to operate and maintain the building in reasonable safety.

• The exact amount of information and level of detail necessary will vary depending on the nature and complexity of the building’s design. Appendix G provides advice on the sort of information that should be provided.

• The Regulations have been amended to ensure that both Approved Inspectors and Local Authorities must consider whether it has been complied with when deciding whether to give a completion certificate or final notice.
Fire Safety Management (Vol 2)

0.13 Building Regulations do not impose any requirements on the management of a building. However, in developing an appropriate fire safety design for a building it may be necessary to consider the way in which it will be managed. A design which relies on an unrealistic or unsustainable management regime cannot be considered to have met the requirements of the Regulations.

Once the building is in use the management regime should be maintained and any variation in that regime should be the subject of a suitable risk assessment. Failure to take proper management responsibility may result in the prosecution of an employer, building owner or occupier under legislation such as the upcoming Regulatory Reform (Fire Safety) Order 2005.
Third Party Certification

Building Control Bodies may accept the certification of products, components, materials or structures under such schemes as evidence of compliance with the relevant standard.

Similarly, Building Control Bodies may accept the certification of the installation or maintenance of products, components, materials or structures under such schemes as evidence of compliance with the relevant standard.

Nonetheless, a Building Control Body will wish to establish, in advance of the work, that any such scheme is adequate for the purposes of the Building Regulations.
Hospitals & Schools

Health Care Premises DoH

• HTM 05-02

Schools - DfES

• Building Bulletin 100
## Table D1  Classification of Purpose Groups

<table>
<thead>
<tr>
<th>Title</th>
<th>Group</th>
<th>Purpose for which the building or compartment of a building is intended to be used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shop and commercial</td>
<td>4</td>
<td>Shops or premises used for a retail trade or business (including the sale to members of the public of food or drink for immediate consumption and retail by auction, self-selection and over-the-counter wholesale trading, the business of lending books or periodicals for gain and the business of a barber or hairdresser <strong>and the rental of storage space to the public</strong>) and premises to which the public is invited to deliver or collect goods in connection with their hire repair or other treatment, or (except in the case of repair of motor vehicles) where they themselves may carry out such repairs or other treatments.</td>
</tr>
</tbody>
</table>
Volume 1 - Dwellinghouses
Smoke & Heat Alarms

Restructured to refer directly to BS 5839-6

- Grade D = Mains powered with standby supply
- LD3 = Detectors in circulation spaces

Extensions

Clarifies where smoke alarms should be provided:

- Where habitable rooms are provided above the ground floor level; or
- where new habitable rooms are provided at ground floor level and there is no final exit from the new room
Domestic Sprinklers

New guidance on the use of domestic sprinklers as a compensatory feature.

Specific alternative approaches in paragraphs;

- B1 - 2.7 Houses with more than one floor over 4.5m above ground level
- B1 - 2.20b Loft conversions
- B4 - 9.15 Space separation
Egress Windows

- Not required in houses with a floor more than 4.5m above ground level
- Locks (with or without removable keys) and stays may be fitted to egress windows, subject to the stay being fitted with a release catch, which may be child resistant
Replacement windows

a) The replacement window opening should be sized to provide at least the same potential for escape as the window it replaces; or

b) Where the original window is larger than necessary for the purposes of escape, the window opening could be reduced down to the minimum specified
Self-closing Devices

- Self-closing devices not required on fire doors within dwellings.

except

- doors to integral garages
- flat entrance doors (vol. 2)

Fire doors are still necessary
Loft Conversions

Alternative approach deleted

Provide protected stair & smoke alarms

Some existing doors could be upgraded

Alternative approach for open plan ground floor

• Cut off door, escape window and sprinkler protection
Galleries

- Alternative exit/Escape window
  Or
- Overlook 50% of room below
  - 7.5m max travel to head of stair
  - 3m max travel from foot of stair
  - Cooking facilities remote or enclosed

Also applies to flats
Integral Garages

- Compartment wall & floor
- Sloping floor or a 100mm step

See also
- Item 8 Table A1 – REI 30
- Item 2 Table 3 – Soil pipes
- Item 1b Table B1 – E30 Sa Door
The Building Regulations 2000

Fire safety

APPROVED DOCUMENT

VOLUME 2 – BUILDINGS OTHER THAN DWELLINGHOUSES

B1 Means of warning and escape
B2 Internal fire spread (linings)
B3 Internal fire spread (structure)
B4 External fire spread
B5 Access and facilities for the fire service

Coming into effect April 2007

FIRE KILLS
YOU CAN PREVENT IT

2006 edition
Volume 2 – Buildings other than Dwellinghouses
Smoke Control in Blocks of Flats

- There should be some means of ventilating the common corridors/lobbies to control smoke and so **protect the common stairs**
- This offers additional protection to that provided by the fire doors to the stair.
  - Single stair buildings – AOV
  - Multi stair buildings – OV
- Guidance on the design of smoke control systems using pressure differentials is available in BS EN 12101-6:2005.

![Diagram of smoke control system in a block of flats]

30m Max

7.5m Max
Domestic Sprinkler Protection for flats

Sprinklers to be provided within ‘individual flats’ in blocks over 30m in height.

BS 9251 acceptable over 20m

- Subject to flow rate and pressure requirements being met
Care Homes

Fire safety strategy depends on the management, staffing and dependency of the residents.

Progressive Horizontal Evacuation

- Minimum three protected areas
- No more than 10 beds in protected area
- No more than 1 bed per bedroom
- Door-closing devices
  - Bedrooms – free-swing door-closers.
  - Circulation spaces – hold-open devices.

Residential Sprinklers

- Where a sprinkler system is provided
  - No door-closers on bedrooms.
  - More than 10 beds in protected area
  - More than one bed per bedroom

Diagram 19 Progressive horizontal evacuation in care homes
Phased Evacuation

- First people to be evacuated are all those of reduced mobility and those on the storey most immediately affected by the fire.

- In tall buildings over 30m in height there is a potential that persons attempting to escape could be impeded by firefighters entering and operating within the building.

- In some very tall buildings (45m+) physical measures may need to be incorporated into the building (e.g. by discounting a stair or by some other suitable means).
Compartmentation

Unsprinklered single storey warehouse -

- Max area 20,000m²
- Max height 18m

Compartment height is measured from finished floor level to underside of roof or ceiling

Single storey shops – unchanged

Fundamental review of compartment sizes & periods of fire resistance
Cavity Barriers

Barriers in under floor voids

Aluminium and UPVC windows not suitable for closing cavities around openings (Vol. 1 also)
Car Parks

Simplified guidance

**Open-sided**

- Reduced period of fire resistance
  - Unless supports or stabilises structure with higher period of FR
- Restrictions on combustible materials

**Non open-sided**

- No reduction in fire resistance
Fire & Rescue Service Vehicle Access

Buildings not fitted with fire mains

16.3 There should be vehicle access for a pump appliance to blocks of flats to within 45m of all points within each dwelling

Or provide fire mains – not necessarily in a firefighting shaft
Almost half the UK’s carbon dioxide emissions which cause climate change...

...are actually down to us.
One of homes stood between Cliff House (circled) and the cliff.
Code for Sustainable Homes

A step-change in sustainable home building practice
A step change in sustainable home building practice

• The Code for Sustainable Homes is a government owned, modified BRE EcoHomes scheme.
• It has 6 levels of performance from a bit better than Building Regulations through to zero carbon home.
• All Housing Corporation and English Partnership developments will have to be built to Code level 3 from April 2007
• It will form the basis for future developments of the Building Regulations in relation to carbon emissions.
A step change in sustainable home building practice

- If we build the homes we need, then by 2050, as much as one-third of the total housing stock will have been built between now and then.
## Achieving a sustainability rating

<table>
<thead>
<tr>
<th>Code Level</th>
<th>Energy</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard (Percentage better than Part L</strong></td>
<td><strong>Points Awarded</strong></td>
<td><strong>Standard (litres per person per day)</strong></td>
</tr>
<tr>
<td>Part L**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1(★)</td>
<td>10</td>
<td>1.2</td>
</tr>
<tr>
<td>2(★★)</td>
<td>18</td>
<td>3.5</td>
</tr>
<tr>
<td>3(★★★)</td>
<td>25</td>
<td>5.8</td>
</tr>
<tr>
<td>4(★★★★)</td>
<td>44</td>
<td>9.4</td>
</tr>
<tr>
<td>5(★★★★★)</td>
<td>100^2</td>
<td>16.4</td>
</tr>
<tr>
<td>6(★★★★★★)</td>
<td>A zero carbon home^3</td>
<td>17.6</td>
</tr>
</tbody>
</table>

### Notes

2. Zero emissions in relation to Building Regulations issues (i.e. zero emissions from heating, hot water, ventilation and lighting).
3. A completely zero carbon home (i.e. zero net emissions of carbon dioxide (CO₂) from all energy use in the home).
4. All points in this document are rounded to one decimal place.
### SUMMARY OF MINIMUM STANDARDS

The table below summarises all of the minimum standards which exist under the Code:

<table>
<thead>
<tr>
<th>Code Level</th>
<th>Category</th>
<th>Minimum Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(*)</td>
<td>Energy/CO₂</td>
<td>10%</td>
</tr>
<tr>
<td>2(**)</td>
<td>Percentage improvement over TER</td>
<td>18%</td>
</tr>
<tr>
<td>3(***+)</td>
<td>as determined by the 2006 Building Regulations</td>
<td>25%</td>
</tr>
<tr>
<td>4(****+)</td>
<td>Standards</td>
<td>44%</td>
</tr>
<tr>
<td>5(*****+)</td>
<td>A 'zero carbon home' (heating, lighting, hot water and all other energy uses in the home)</td>
<td>100%</td>
</tr>
<tr>
<td>6(******+)</td>
<td>Water</td>
<td>120 l/p/d</td>
</tr>
<tr>
<td>1(*)</td>
<td>Internal potable water</td>
<td>120 l/p/d</td>
</tr>
<tr>
<td>2(**)</td>
<td>consumption measured in litres per person per day (l/p/d)</td>
<td>105 l/p/d</td>
</tr>
<tr>
<td>3(***+)</td>
<td>105 l/p/d</td>
<td></td>
</tr>
<tr>
<td>4(****+)</td>
<td>80 l/p/d</td>
<td></td>
</tr>
<tr>
<td>5(*****+)</td>
<td>80 l/p/d</td>
<td></td>
</tr>
<tr>
<td>6(******+)</td>
<td>Materials</td>
<td>At least three of the following 5 key elements of construction are specified to achieve a BRE Green Guide 2006 rating of at least D</td>
</tr>
<tr>
<td>1(*)</td>
<td>Environmental impact of materials†</td>
<td>Ensure that peak run-off rates and annual volumes of run-off will be no greater than the previous conditions for the development site</td>
</tr>
<tr>
<td>2(**)</td>
<td>Surface Water Run-off</td>
<td></td>
</tr>
<tr>
<td>3(***+)</td>
<td>Surface water management</td>
<td></td>
</tr>
</tbody>
</table>

† A probable future development regarding the environmental impact of materials is to reward resource efficiency, as well as the use of resources that are more sustainable, by developing "EcoPoints per m²" as a measure for this item. However, it may be that the 'Green Guide' route will remain as a simple route for smaller developments.
<table>
<thead>
<tr>
<th>Code Level</th>
<th>Category</th>
<th>Minimum Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(★)</td>
<td>Waste</td>
<td>Ensure there is a site waste management plan in operation which requires the monitoring of waste on site and the setting of targets to promote resource efficiency</td>
</tr>
<tr>
<td></td>
<td>Site waste management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Household waste storage</td>
<td>Where there is adequate space for the containment of waste storage for each dwelling. This should allow for the greater (by volume) of the following</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EITHER accommodation of all external containers provided under the relevant Local Authority refuse collection/recycling scheme. Containers should not be stacked to facilitate ease of use. They should also be accessible to disabled people, particularly wheelchair users and those with a mobility impairment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OR at least 0.8m³ per dwelling for waste management as required by BS 5906 (Code of Practice for Storage and On-site Treatment of Solid Waste from Buildings)</td>
</tr>
</tbody>
</table>
### Zero Carbon

<table>
<thead>
<tr>
<th>Date</th>
<th>2010</th>
<th>2013</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy/carbon improvement as compared to Part L (Building Regulations 2006)</td>
<td>25%</td>
<td>44%</td>
<td>zero carbon</td>
</tr>
<tr>
<td>Equivalent energy/carbon standard in the Code</td>
<td>Code level 3</td>
<td>Code level 4</td>
<td>Code level 6</td>
</tr>
</tbody>
</table>
Zero Carbon

- Consultation on the Government’s proposed timetable for incorporating the energy and carbon standards set out in the Code into future Building Regulations.
- Currently every homes emits on average 6 tonnes of carbon
- From today's Part L to 25% better by 2010 and a further 19% by 2013
- 2016 – zero carbon
Ideas

• Solar hot water systems
  – Cost around £5000
  – Can save up to 0.5 tonnes of carbon
  – £60-£70 per annum

• Photovoltaics (PV)
  – PV installations can cost £8000
  – Carbon saving average 0.3 to 0.65 tonnes
  – And £75 to £125 per annum

Source Housebuilder magazine
Energy Savings Trust
Cambridge Architectural Research
Ideas

• Domestic Wind Turbines
  – A roof mounted turbine will cost approx. £5000 and can save about 1 tonne per a year
  – Reduce bills by about £150 to £250
  – A larger turbine on a 20m mast can save 3.5 tonnes per year

Source Housebuilder magazine
Energy Savings Trust
Cambridge Architectural Research
Ideas

• Insulation
  – £300 of 250mm loft insulation where none exist already can save 1.7 tonnes per year
  – Spending £3500 on 100mm of external insulation and render will reduce emissions by 2 tonnes

• Robert Lowe – UCL
  Quote:
  “Solid walled dwellings can outperform cavity-walled and are a strategic national opportunity”

Source Housebuilder magazine
Energy Savings Trust
Cambridge Architectural Research
Ideas

• Biomass
  – Installing a 20KW biomass boiler - cost approx. £5000 – saving between 3-7 tonnes
  – 10 kW cost approx. £1500 – saving about 1 tonne per annum
  – Energy Savings Trust states approx. £300 - £350 savings a year
Ideas

- Ground Source Heat Pumps
  - At £10000 – do not come cheap
  - Carbon reduction estimates range from 2.6 tonnes to 5 tonnes per year with possible cost savings of £650 to £750

Source Housebuilder magazine
Energy Savings Trust
Cambridge Architectural Research
The Bowzed – zero energy housing development in London has won several awards.

The 4 flats’ hot water and heating are provided by a wood pellet boiler.

Insulation in the walls ensures that no heating is needed most of the time.

Solar panels and a 1.5 Kwp silent wind turbines provide extra energy.
What is zero carbon - Zero Carbon

- Zero carbon energy only comes from wind, tidal and solar sources.
- Burning wood or other biomass can give low carbon electricity and heat but is not zero carbon.
- The key to zero carbon is a flexible approach.
Can it happen?

• Building 200,000 homes a year at an affordable price will be difficult.
• We need to look at the Passive Haus buildings in Germany.
• BUT it is still a massive task for the whole of industry.
Modern air-conditioned office buildings, such as the Canary Wharf tower, will be compared with a naturally ventilated benchmark. This could result in them being given a low rating.
Energy Certificates

- EU’s Directive – EPBD – all buildings constructed, sold or rented to have Energy Certificates
- Naturally ventilated buildings – B rating?
- Recent new air conditioned buildings – D rating?
- Public buildings to have a “permanent display rating” stating how much energy they consume per sq. m
Energy Certificates

Energy Certificate – Timetable

Sale or rent Certificate

*Buildings larger than 1000m²*  
January 2008

*Buildings between 500-1000m²*  
April 2008

*All other buildings*  
October 2008

Permanent display rating for public Bldgs. Over 1000²

*Buildings operated by central government*  
October 2007

*All other buildings owned and used by the public*  
April 2008
Energy Certificates - Housing

• To be part of the HIP process from 1 June 2007
• Compulsory for anyone selling a property after June 2007
• Need for up to 4000 qualified home inspectors
• EPC could cost home owners £200
• Details included in the HIP information that a buyer will see before they view a home
Energimærkning

Energimærkning for følgende ejendom:
Adresse: Hammeren 4
Postnr./by: 9990 Storstrøm
BBR-nr.: 123-123456
Energimærkning nr.: 122780
Gyldigt 5 år fra: 1. juli 2006
Energikonsulent: Jens Pedersen
Firma: Aktuel Energirådgivning

Energimærkningsen optøyer om ejendommens energiforbrug og mulighederne for at opnå besparelser. Energimærkningsen udføres af beskikkede energikonsulenter for handel, service og offentlige bygninger er lovpligtig.

Oplyst varmoforbrug
- Udgift incl. moms og afgifter: 223.900 kr./år
- Forbrug varme: 13.300 liter olie/år
- Forbrug el: 77.640 kWh/år

Ejendommens oplyste forbrug og udgifter er klimakorrigerede af energikonsulenten, så det udtrykkes forbrug og udgifter for et gennemsnitligt år rent temperaturmæssigt.

Energimærke

<table>
<thead>
<tr>
<th>Lavt forbrug</th>
<th>Energimærke</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>A2</td>
</tr>
<tr>
<td>B1</td>
<td>B2</td>
</tr>
<tr>
<td>C1</td>
<td>C2</td>
</tr>
<tr>
<td>D1</td>
<td>D2</td>
</tr>
</tbody>
</table>

Høj forbrug
A1 er det bedst opnåelige energimærke, så A2, herefter B1 osv. og G2 er det dårligste.

Rentabla besparelserforslag

Hér er energikonsulents forslag til at reducere energi- og vandforbruget i ejendommen. Se øv. flere forslag på næste side. Forslagene nedenfor uddøbes i afgørelse om bygningsgennemgangen.

<table>
<thead>
<tr>
<th>Besparelserforslag</th>
<th>Årlig besparelse i energihed</th>
<th>Årlig besparelse i kr. incl. moms</th>
<th>Skematisk investering i kr. incl. moms</th>
<th>Tilbagebetalingstid</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Isolering af lysstænd</td>
<td>135 l olie</td>
<td>1.190 kr.</td>
<td>5.000 kr.</td>
<td>4 år</td>
</tr>
<tr>
<td>2 Nye energiudstyr og besparelse</td>
<td>980 l olie</td>
<td>8.640 kr.</td>
<td>81.500 kr.</td>
<td>9 år</td>
</tr>
<tr>
<td>3 Udskiftning af ventilator med højdeflada til oliestofvarme</td>
<td>17.440 kr.</td>
<td>50.000 kr.</td>
<td>3 år</td>
<td></td>
</tr>
<tr>
<td>4 Nye lysrør og armaturer</td>
<td>2.300 kWh</td>
<td>3.120 kr.</td>
<td>3.280 kr.</td>
<td>1 år</td>
</tr>
</tbody>
</table>
Developments in the UK

Robust Details Ltd

- Appears to be working well
- Industry support – way above expectations
- Monitoring and control meets DCLG guidelines
What is a Part E robust detail?

• Separating wall or floor design assessed and approved by RDL

• Capable of consistently exceeding ADE performance standards

• Practical to construct on site

• Reasonably tolerant to workmanship

• Can be used as an alternative to PCT to comply with Requirement E1
To use the RD option, the ‘Person carrying out the work’ must:

- **Register** each plot with RDL
- **Build** in accordance with the relevant **RD specification**
- **Give registration document to the BCB**
  [before work starts]
Part E Robust Details

Masonry Walls

EWM1 MASONRY SEPARATING WALLS
dense aggregate blockwork (wet plaster)

EWM2 MASONRY SEPARATING WALLS
lightweight aggregate blockwork (wet plaster)

EWM3 MASONRY SEPARATING WALLS
dense aggregate blockwork (render and gypsum-based board)

EWM4 MASONRY SEPARATING WALLS
lightweight aggregate blockwork (render and gypsum-based board)

EWM5 MASONRY SEPARATING WALLS
Besblock ‘Star Performer’ cellular blockwork (render and gypsum-based board)

EWM6 MASONRY SEPARATING WALLS
aircrete blockwork (render and gypsum-based board)

EWM7 MASONRY SEPARATING WALLS
aircrete thin-joist blockwork (render and gypsum-based board)

E-WM-8 MASONRY SEPARATING WALLS
lightweight aggregate blockwork British Gypsum-Isover ISOWOOL
gypsum-based board
Part E Robust Details

Timber and Steel Frame

NEW

EFT1 TIMBER SEPARATING FLOORS timber I joists

EWT1 TIMBER SEPARATING WALLS timber frame cavity wall without sheathing board

EWT2 TIMBER SEPARATING WALLS

E-FT-2 TIMBER SEPARATING FLOORS timber solid joist separating floor (use in timber frame construction)

EWS1 STEEL SEPARATING WALLS twin metal frames

EWS2 STEEL SEPARATING WALLS British Gypsum GypWall QUIET IWL

EWS3 STEEL SEPARATING WALLS modular build twin metal frame for light-weight steel frame modular housing
Part E Robust Details

Masonry Floors

EFC1 CONCRETE SEPARATING FLOORS
precast concrete plank

EFC2 CONCRETE SEPARATING FLOORS
in-situ concrete slab

EFC3 CONCRETE SEPARATING FLOORS
precast concrete plank
with screed laid on resilient layers

EFC4 CONCRETE SEPARATING FLOORS
precast concrete plank
with screed laid on IsoRubber resilient layer

E-FC-5 CONCRETE SEPARATING FLOORS
precast concrete plank
and Collecta Yelofon HD10+ system and floating screed

E-FC-6 CONCRETE SEPARATING FLOOR
beam and block with concrete topping Regupol E48 system
and floating screed

E-FC-7 CONCRETE SEPARATING FLOOR
beam and block with concrete topping and floating floor treatment

EFS1 STEEL/CONCRETE COMPOSITE SEPARATING FLOORS
steel/concrete composite
Performance Monitoring

- Spot check visual inspections and sound tests
- No enforcement powers
- If any serious problems cannot be resolved, notify BCB
- Withdraw any robust detail that consistently fails to meet required standards
Analysis of Robust Details Ltd Performance Monitoring Test Data

3,500 Dwellings Tested

25% of Sites Inspected

Part E Robust Details Performance Monitoring
Contact RDL if you need help

www.robustdetails.com

Technical
Technical Line 0870 240 8209
technical@robustdetails.com

Other
Business Line 0870 240 8210
customerservice@robustdetails.com
The Consortium’s mission is to assist in the promotion of the ideals of the European Union in relation to the building control function.
CEBC

Yes that does include Ireland
The Irish Building Control Institute
   – Kevin Sheridan
   – Tom Johnson
   – Philip O Brien
   – Johnny MacGettigan

Joe Twomey
CEBC Topic Groups

- **Access for All** – leader Hugh Johnson - UK
- **EU Qualification Equivalence** – leader Martin Russell Croucher - UK
- **Self Certification** – leader Piet Paantjens – Netherlands
- **Web Based Solutions** – leader Olav Berge - Norway
- **Liability** – leader Daniel Beurms - Belgium
- **Climate Change** – leader David Smith - UK
- **Failures in Construction** – leader Manfred Tiedemann - Germany
Recent meetings:
Ljubljana, Slovenia – Spring 2005

- Earthquake Damage in Slovenia
Vienna - Autumn 2005

- Passive Housing developments in Austria
Zaandam, The Netherlands – Spring 2006

- Design to prevent flooding in Netherlands
- Floating homes in Netherlands
- Snow loads in Germany
Storm surge barrier
Project examples

Transition Sustainable Urban Water Systems
Numerous Collapses of Roofs and Shell membranes

<table>
<thead>
<tr>
<th>Location</th>
<th>Building Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berlin</td>
<td>convention hall</td>
</tr>
<tr>
<td>Moscow</td>
<td>swimming pool</td>
</tr>
<tr>
<td>Kattowice</td>
<td>exhibition hall</td>
</tr>
<tr>
<td>Paris</td>
<td>airport building</td>
</tr>
<tr>
<td>Tögling</td>
<td>supermarket</td>
</tr>
<tr>
<td>Bad Reichenhall</td>
<td>ice skating hall</td>
</tr>
</tbody>
</table>

Bundesvereinigung
der Prüfingenieurefür Bautechnik e.V.
Collapse of Ice Skating Hall
Building Control Systems in Europe
### Annex A - continued

<table>
<thead>
<tr>
<th>Note:</th>
<th>Austria</th>
<th>Belgium</th>
<th>Croatia</th>
<th>Cyprus</th>
<th>Czech Republic</th>
<th>Denmark</th>
<th>Estonia</th>
<th>Finland</th>
<th>France</th>
<th>Germany</th>
<th>Ireland</th>
<th>Latvia</th>
<th>Netherlands</th>
<th>Norway</th>
<th>Poland</th>
<th>Slovenia</th>
<th>Spain</th>
<th>Slovakia</th>
<th>Sweden</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Announcements to authority</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Inspections by building authority</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Inspections by other authority</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Inspections by private, independent expert</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>No inspections</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Declaration by owner, builder or architect</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Completion certificate by authority</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Completion certificate by private, independent expert</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Private building control schemes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complementary private building control available</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Complementary private building control partly compulsory</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Private building control accepted to replace control by authority</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Note:**

1. In Scotland there are no private approved inspectors. Permission to build (building warrant) must be obtained before work starts, and there is less site inspection. Completion certificates are issued by the developer or owner, and control is by accepting or refusal of this certificate.
2. The building control system in Northern Ireland whilst similar to that which applies in England and Wales has two main differences. Planning in Northern Ireland is a central government function with no direct linkage with building control. Also there is no system of approved inspectors currently operating in Northern Ireland.
3. Due to the federal structure there might be slight differences between the provinces.
4. Only in special cases.
**Annex A**

<table>
<thead>
<tr>
<th></th>
<th>Austria</th>
<th>Belgium</th>
<th>Croatia</th>
<th>Cyprus</th>
<th>Czech Republic</th>
<th>Denmark</th>
<th>Estonia</th>
<th>Finland</th>
<th>France</th>
<th>Germany</th>
<th>Iceland</th>
<th>Ireland</th>
<th>Latvia</th>
<th>Netherlands</th>
<th>Norway</th>
<th>Poland</th>
<th>Portugal</th>
<th>Romania</th>
<th>Slovakia</th>
<th>Slovenia</th>
<th>Spain</th>
<th>Sweden</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zoning and Planning</strong></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning approval by building authority</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning approval by other authority</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No planning approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Building Project</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approval of plans by building authority</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approval of plans by other authority</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approval of plans by private, independent expert</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No approval of plans</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

1. In Scotland there are no private approved inspectors. Permission to build (building warrant) must be obtained before work starts, and there is less site inspection. Completion certificates are issued by the developer or owner, and control is by accepting or refusal of this certificate.
2. The building control system in Northern Ireland whilst similar to that which applies in England and Wales has two main differences. Planning in Northern Ireland is a central government function with no direct linkage with building control. Also there is no system of approved inspectors currently operating in Northern Ireland.
3. Due to the federal structure there might be slight differences between the provinces.
4. Only in special cases.
<table>
<thead>
<tr>
<th>Application/Planning</th>
<th>Input documents</th>
<th>Control activities</th>
<th>Responsibility of control</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>application for a preliminary decision on individual aspects of the building project (optional)</td>
<td>notice of preliminary decision</td>
<td>local building supervisory authority</td>
<td></td>
</tr>
<tr>
<td>Application/Building project</td>
<td>- application for building permit with local building supervisory authority where permit is required</td>
<td>- checking whether building documents (construction plans, calculations etc.) comply with building laws and regulations</td>
<td>local building supervisory authority</td>
<td>regulations within the legislative competence of the German states</td>
</tr>
<tr>
<td></td>
<td>- presentation of authorisation to draw up building documents (construction plans, calculations etc.) in simplified approval procedure</td>
<td>- checking whether architect / construction engineer is authorised to draw up building documents</td>
<td>architect or certified surveyor / engineer, depending on the building project in question</td>
<td></td>
</tr>
<tr>
<td>Construction phase</td>
<td>building permit where project is not exempt from approval procedure (notification will suffice)</td>
<td>control of execution of construction work; inspection (also regarding admissible construction products)</td>
<td>local building supervisory authority or certified surveyor</td>
<td></td>
</tr>
<tr>
<td>Completion</td>
<td>- notification of progress of work</td>
<td>checking whether project has been executed in compliance with building laws and regulations</td>
<td>- building projects exempt from approval procedure</td>
<td>building projects exempt from approval procedure</td>
</tr>
<tr>
<td></td>
<td>- notification of completion of project</td>
<td></td>
<td>- simplified approval procedure</td>
<td>simplified approval procedure</td>
</tr>
<tr>
<td>Use</td>
<td></td>
<td>commissioning of repair and maintenance work</td>
<td>owner/operator with regard to regular inspections (e.g. fire protection, ventilation etc.), unless there is a hazard to the structural stability of the building or to public safety etc.</td>
<td>certified surveyors/experts on fire protection, heat and sound insulation, and structural stability</td>
</tr>
</tbody>
</table>

Note: Due to the federal structure there might be slight differences between the provinces.
CEBC - Template for the building control systems - UK (England & Wales) - See also notes below referring to systems in Scotland and Northern Ireland

<table>
<thead>
<tr>
<th>Application/Planning</th>
<th>Control actions</th>
<th>Responsibility of control</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 main/possible documents:</td>
<td>Consultation Planning approval/rejection</td>
<td>Local authority planning Dept.</td>
<td>Approvals are time limited. Decisions can be influenced by local authorities policies, elected members (Councillors, aldermen) can approve or reject an application against the advice of the officers or the approved Local Plan; Right of appeal available.</td>
</tr>
<tr>
<td>Certification of lawful building, Outline planning permission, and Full planning permission (requires the submission of detailed plans).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application/Building Project</td>
<td>Assess plans Full Plans Approval Notice (Public Sector BC) or Plans Certificate (Private sector BC)</td>
<td>Building Control Bodies - Local Authority. Private Approved Inspectors</td>
<td>Commencement of works possible without approval or decision from Local authority. Right of determination and of appeal to the responsible Government Dept. available.</td>
</tr>
<tr>
<td>May follow from planning process. Main procedures: Full plans application: drawings, location plan, specifications, calculations; or Building Notice Regularisation Certificates Submission of Approved Inspectors Initial Notice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction phase</td>
<td>Inspection Notification Framework upon which inspections are carried out Building Control Performance Standards set the benchmark for service delivery Intermediate site inspections to check progress of work</td>
<td>Contractor or other (client, design professional, etc.). Building Control Bodies - Private Approved Inspectors or Local Authority.</td>
<td></td>
</tr>
<tr>
<td>Notice of Commencement Mandatory notification at the completion of certain stages for Local Authorities Approved Inspectors agree inspection notification plan with client</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completion</td>
<td>Completion Inspection Issue completion certificate (Public Sector BC) or Final Certificate (Private sector BC)</td>
<td>Building Control Body</td>
<td>Records archived by Building Control Body for a period of time having regard to legislation and the Building Control Performance standards</td>
</tr>
<tr>
<td>Application for completion inspection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use</td>
<td>Workplace Directive</td>
<td>Fire Authority, Health &amp; Safety Executive, Planning authorities</td>
<td></td>
</tr>
</tbody>
</table>

Note: In Scotland there are no private approved inspectors. Permission to build (building warrant) must be obtained before work starts, and there is less site inspection. Completion certificates are issued by the developer or owner, and control is by accepting or refusal of this certificate.

The building control system in Northern Ireland whilst similar to that which applies in England and Wales has two main differences. Planning in Northern Ireland is a central government function with no direct linkage with building control. Also there is no system of approved inspectors currently operating in Northern Ireland.
Types of Building Regulatory Control

Prescriptive –
  e.g. The wall shall be a minimum of 100mm brickwork

Functional -
  e.g. The wall shall remain stable for sufficient time to allow people to escape

Performance based -
  e.g. The wall shall have a minimum fire resistance of 30 minutes
State

Prescriptive or Performance based / functional

Austria (9Laendar)  Performance based
Belgium  Prescriptive
Croatia  Prescriptive
Czech Republic  Performance based
Cyprus  Prescriptive
Denmark  Both
England & Wales  Performance based
Estonia  Prescriptive
Finland  Performance based
France  Generally Performance based
Germany (states)  Performance based ?
Iceland  Performance based & Some Prescriptive
Ireland  Performance based
Italy  Generally Performance based
Latvia  Prescriptive
Lithuania  Performance based
Netherlands  Performance based
Northern Ireland  Performance based
Norway  Performance based
Poland  Prescriptive
Scotland  Performance based
Slovakia  Prescriptive
Slovenia  New - Performance based  Old - Prescriptive
Spain  Performance based  (Soon)
Sweden  Performance based
Building Control by

Public Authority — Municipality

Private — Approved Inspector
Building Inspections

Generally inspections by:

Local authority or,
Private inspector or,
Architect or,
Other independent person,
Austria (Laender!)

Application — Plans and declaration of conformity!
   Building Authority –
      simplified procedure - architect

Inspections — Building Authority,
   Private ‘expert’
      building contractor

Completion — Building Authority, private expert
   or building contractor
BELGIUM

**Application** — Permit from local authority

**Inspections** — Third party private building control (voluntary)

**Completion** — Voluntary — generally no inspections

‘Exploitation’ permit for hospitals, hotels etc.
Future Developments in the UK

- Future of Building Control
- Minister’s Round Table – 27 June 2006
- The first meeting was held on the 27th of June 2006 and the following issues were discussed with the Minister and leading members of all sectors of the construction industry.
Future Developments in the UK

- issues with the existing system including concerns about compliance,
- issues with the guidance we provide and the way this is updated,
- concerns about industry's ability to find the right people; and
- questions about whether we are regulating for the right things in the right way.

www.communities.gov.uk/index.asp?id=1503007
Future Developments in the UK

- Planning Portal

- New initiative by DCLG – awareness in England & Wales not good.

- http://www.planningportal.gov.uk/
Welcome to the Planning Portal - your one-stop-shop for planning and building services online.

The Planning Portal is the UK government's online planning and building regulations resource. Use this site to learn about planning and building regulations, apply for planning permission and building regulations consent, find out about development near you, appeal against a decision and research government policy.

GENERAL PUBLIC
A guide to applying for planning permission and building regulations approval.

PROFESSIONAL USER
A resource for submitting planning applications and researching planning and building control policy.

GOVERNMENT USER
Policy updates and guidance for local authorities implementing e-planning solutions

© Crown Copyright 2006
Guide to Planning Permission and Building Regulations for Householders

Please note that this is an informal guide to planning permission and building regulations for householders. Questions regarding specific situations or applications should be dealt with by your local planning authority. Please check with your local authority before starting any work.

Hover your mouse over the area you are interested in.

Click on the area to display information for that area here.
Thank You