



July 2004

Volume 2, Issue 8

In this edition:

- P2 New improved CBE
- P4 Future collaborations
- P5 Autumn seminar series
- P6 Sustainability Centre
- P7 Building standards and DDA
- P10 DDA: Equality, Dignity, Respect
- P13 PgDip in Construction Law
- P14 Building research worldwide
- P15 Free information?
- P16 CBE's seminars booking form

the centre for the **BUILT ENVIRONMENT**

The Lighthouse, 3<sup>rd</sup> Floor,  
Mitchell Lane, Glasgow, G1 3NU  
T: 0141 249 9888  
F: 0141 249 9906  
E: [info@cbe.org.uk](mailto:info@cbe.org.uk)  
[www.cbe.org.uk](http://www.cbe.org.uk)

## Welcome to the second volume of **CyBER** the Centre for the Built Environment's newsletter

### In this Edition

We start this edition with news on future changes of CBE activities, which will offer improved services to the construction industry. We also inform you on CBE's planned collaboration with the Mackintosh School of Architecture, University of Glasgow, and **lintol** (CPD website, Edinburgh).

Two of the speakers at the workshop on Disability Discrimination Act (DDA), held on 15<sup>th</sup> April 2004, have written articles which summarise their presentations. You can also find information on DDA in Issue 7 of our newsletter, which can be downloaded from CBE's website.

This issue highlights a number of building research themes from the CIB World Congress in Toronto, Canada. A list of all papers presented there is published on CBE's website (CyBER News, Issue 8, CIB CD). We also inform you on CBE's assistance to the research on open (free) access in publishing research articles for the construction industry.

You will find information on CBE's autumn seminar programme on page 5 or alternatively on our website [www.cbe.org.uk](http://www.cbe.org.uk)

### Free Advice

- Q Do you or your company require advice from an expert concerning issues relating to your current work?
- Q Do you or your company need some advice on strategic decisions relating to the development of your business or to the sustainability of its operation and outputs e.g. social, economic, environmental?
- Q Would you like to discuss your organisations CPD needs in more detail?

If you answered yes to any of the questions above then CBE are here to help. Academics from the University of Strathclyde and Glasgow Caledonian University are offering up to 4 hours free one-to-one advice to SME organisations operating within the West of Scotland's built environment sector.

If you are interested in finding out more about free advice consultancy or would like to arrange a consultancy session please contact CBE on 0141 249 9888 or alternatively e-mail us at [info@cbe.org.uk](mailto:info@cbe.org.uk)

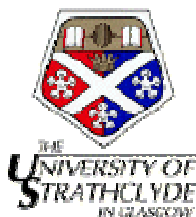
### CBE Website

Our website is only a touch of a button away, visit us at [www.cbe.org.uk](http://www.cbe.org.uk)

### Your Suggestions

CBE welcomes your suggestions to organise seminars, workshops or networking events to tackle topics of interest to your organisation. They can be organised either as a bespoke seminars in your company or for all CBE clients in other venues.

A joint initiative supported by



**MACKINTOSH SCHOOL OF ARCHITECTURE**  
**THE GLASGOW SCHOOL OF ART**



PROJECT PART-FINANCED  
BY THE EUROPEAN UNION

Europe and Scotland  
Making it **work together**

## New improved CBE!

We've been carrying out a strategic review of our activities at CBE and have decided to introduce a number of improvements over the next few months in order to make sure we are responding to our clients' needs.

CBE was established, in June 2002, to provide a "bridge" between the construction industry in the West of Scotland, particularly small and medium sized enterprises (less than 250 employees), and academic staff at the Universities of Strathclyde (Department of Civil Engineering and Department of Architecture and Building Science) and Glasgow Caledonian University (School of the Built and Natural Environment). Our role is to enable a two-way information exchange between these two: the Universities have a great deal of experience, knowledge and facilities which are of use to SMEs in the sector and, in turn, SMEs can assist with the development and dissemination of this knowledge base by bringing their own experiences and issues to the forefront.

CBE, therefore, has two client groups:

- SMEs in construction in the West of Scotland
- Academics from the two Universities

The main ways in which we aim to serve these clients are:

- Providing seminars, workshops and conferences on topics of interest to our SME clients. We try to arrange that our academic clients deliver these where both appropriate and possible.
- Providing "bespoke" consultancy and advice to SMEs on issues that are challenging them. We do this by drawing on the expertise of the academic staff.

Over the past 24 months 1,827 delegates from 377 organisations attended CBE events; 233 organisations are operating in the construction industry (e.g. contractors, architects, civil engineers, project managers, chartered surveyors, building products manufacturers, etc.) and 144 are involved with the construction industry (e.g. building control officers, building clients, lawyers, researchers, etc.). CBE events offer an opportunity for networking with a wide range of professionals who work in the industry or have a professional interest in it.

CBE's programme of events included:

- 46 seminars
- 2 free lectures
- 5 half-day workshops
- 2 conferences
- 1 networking event.

The events covered a range of themes related to:

- Sustainable buildings
- Sustainable urban space
- Sustainable construction
- Indoor environmental issues
- Environmental assessment
- Accessibility of the built environment
- Equal opportunities and social issues
- Health and Safety in Construction
- Best Value and Value Management
- Quality in design
- Skills shortages
- Construction Management
- Building Legislation
- Legal issues
- Information Technology
- Information and Knowledge Management
- Innovative building design
- Urbanism
- Housing
- Insurance
- Marketing
- Research and innovation funding programmes
- Public policy in construction

Top ten seminars in terms of numbers attending were as follows:

1. Impact of Disability Discrimination Act on Building Design - 105 delegates
2. Disability Discrimination Act workshop - 102 delegates
3. Architect Eva Jericna – 100 delegates
4. Constructing Excellence; Building Standards Legislation – 74 delegates
5. Housing Stock Transfer – 60 delegates
6. Best Value – 58 delegates
7. Dispute Resolution – 57 delegates
8. Quality in School Design – 56 delegates
9. Design for Accessibility and Dementia – 54 delegates
10. Getting Paid – 52 delegates

To provide a programme which tackles a range of sustainability issues in the construction industry, CBE links with a number of environmental organisations (e.g. Scottish Natural Heritage, Caledonian SHANKS Centre for Waste Management, Scottish Environmental Protection Agency, NetRegs, Greenspace Scotland, Scottish Allotments and Gardens Society) and equal opportunities agencies (e.g. Disability Rights Commission, Commission for Racial Equality). To address legislative issues, CBE invited speakers from the Building Control Division of Scottish Executive and local councils. Scottish Enterprise Glasgow has also supported CBE's activities.

Mackintosh School of Architecture (University of Glasgow) and Lintol (CPD website, Edinburgh) have recently expressed their interest to collaborate with CBE. We believe that these new collaborations will contribute to CBE's programme in the forthcoming period.

Our seminar series has proved to be extremely successful and we aim to achieve a similar outcome with our advice consultancy services.

### **Free advice**

Over the next few months, we shall be recruiting a Business Development Manager whose job it will be to make direct contact with our clients to establish their needs and help implement plans to meet these. In particular, we want to identify areas where SMEs feel they might benefit from advice, research and/or consultancy from our academics.

Academics at Strathclyde (SU) and GCU, between them, cover virtually every aspect of the built environment. Many of them are leading experts in their field and gained considerable industry experience before joining academia.

GCU has recently established the Sustainability Centre, the first of its kind in Scotland, with dedicated resources to advise and research all aspects of sustainability.

There are, therefore, many areas in which specialist advice, not generally available in the private sector, can be offered and CBE is keen to act as the channel to allow businesses to access this. Initial advice (up to half a day) to determine the nature of the issue and discuss potential solutions will be free.

Thereafter, there are a number of grant and financial support schemes designed to help SMEs obtain consultancy and research and development advice.

If you have a technical, operational or management problem on which you'd like some advice – even an informal chat - please contact CBE and we shall be happy to help.

### **“Hot topics”**

In the autumn season, we plan to run a number of seminars and activities relating to key topics which CBE's on-going survey among our clients has shown to be the most popular, including the top ten:

1. Sustainable Building Design
2. Sustainable Construction
3. Whole Life Costing
4. Partnering
5. Best Value
6. Procurement Routes
7. Construction Health and Safety
8. Value Management
9. Design for Accessibility
10. Construction risk management

More news about these will be sent to you as details are finalised. We also intend to issue **CPD certificates** to delegates at seminars to help meet their professional development requirements.

### **Re-branded newsletter**

Oh and... the newsletter is being re-branded and revamped in order to reflect the progressive, responsive image that we feel is appropriate to CBE. Look out for the next issue with more news about how CBE aims to meet your needs. We're happy to take articles or suggestions from any of our readers if you have a project or experience that you'd like to share.

See you in October – after a very busy summer!!



## Collaboration of the Mackintosh School of Architecture with CBE

Knowledge transfer between academia and the construction industry in Scotland through CBE will be enriched by contributions from academics of the Mackintosh School of Architecture. To strengthen links between academics, a joint research presentation event is planned for autumn this year. Academics of the Mackintosh School of Architecture will contribute to CBE's programme of events.

On-going research at the Department of Architecture and Building Science, Department of Civil Engineering (University of Strathclyde), School of the Built and Natural Environment (Glasgow Caledonian University) and Mackintosh School of Architecture (University of Glasgow) will be presented.

### CBE links with LINTOL to spread CPD in the Construction Industry

**lintol** are delighted to be working with **CBE** on the provision of CPD events throughout Central Scotland. The outcome of this process will commence as a series of monthly events to be held in Edinburgh from October 2004.

**lintol** was founded in 2002 by Edinburgh architects as a "self-help" initiative with the aim of providing a much needed community for all those working in the field of architecture. The aim was to promote open dialogue on matters affecting the built environment - something which we felt was lacking in more established networks.

The **lintol** concept is intended to work at both private and public levels:

Public participation is done through our web site [www.lintol.com](http://www.lintol.com)

Users of the **lintol.com** web site can contribute to our various forums as well as on-line gallery, profile, news and technical library sections. These services allow users to up-load their own material directly to [www.lintol.com](http://www.lintol.com) enabling it to be accessible for other users.

The web site also assists groups working in common areas to find each other for possible collaboration.

Private participation is currently done through organised CPD events which are shared between local groups of practitioners. Interesting outcomes from any discussion following these events can be carried over into the **lintol** forums to be communicated more generally.

Whilst **lintol** organises and promotes CPD events through [lintol.com](http://lintol.com), other users can also add events directly to the on-line diary, thus enabling collaboration and promotion in the same way.

**lintol** is a strong supporter of the principle of mentoring as a means to supplement academic training. [Lintol.com](http://Lintol.com) allows students and practices to create searchable on-line profiles so that both groups can find each other for a potential mentoring relationship. This is a free service available through the site, simply requiring registration and the completion of on-line forms to which text and jpeg images can be attached.

Although the [www.lintol.com](http://www.lintol.com) has been set up principally as an internet tool for those working in the field of the Built Environment in Scotland, it receives many visitors from all over the world, with approximately half coming from outside the UK. In this sense it has been useful in raising awareness of developments in Scottish Architecture at an international level.

The **lintol.com** website recently benefited from significant upgrading thanks to sponsorship received as Part of the National Programme's Innovation Fund supported by the Scottish Executive. We are also grateful to the on-going support received from Edinburgh Architectural Association.

**lintol** have been greatly impressed by the work of **CBE** and we look forward to working together in connection with the provision of future CPD events in Eastern Scotland.

## CBE's Forthcoming Seminars

Below is a list of forthcoming seminars that will be held by the CBE. Bookings can be taken by email, fax or over the telephone. Alternatively please visit our website [www.cbe.org.uk](http://www.cbe.org.uk) and complete the *Online Booking Form*. Further information on these seminars will be published on the CBE website prior to the event.

It will again be possible for your organisation to make a block booking for these events. 10 bookings will cost just £200, a saving of £100. These can be redeemed in any combination against any seminar. All events are held at lunchtime and take place in the conference suite at The Lighthouse, unless otherwise advised. Registration, lunch and refreshments are at 12.00 followed by presentations at 12.30. The seminars will close at 14.00.

29 <sup>th</sup> July	<b>Making a Sustainable Pie</b>	Alistair Scott Smith Scott Mullan Associates
21 <sup>st</sup> September	<b>ESRC Workshop 'Child Care Issues'</b> <b>Venue: Glasgow Caledonian University</b>	University of Strathclyde & Glasgow Caledonian University
7 <sup>th</sup> October	<b>Practice based routes to professional qualification in the construction industry</b> <b>Venue: University of Strathclyde</b>	Colin Gordon Lintol, Edinburgh
14 <sup>th</sup> October	<b>From Allotments to Urban Forests and Agriculture: the sustainable use of open space in the city and city region</b> <b>Venue: University of Strathclyde</b>	Hildebrand Frey University of Strathclyde Judy Wilkinson Scottish Allotments and Gardens Society
11 <sup>th</sup> -16 <sup>th</sup> October	<b>Exhibition: From Allotments to Urban Forests and Agriculture</b>	University of Strathclyde & Scottish Allotments and Gardens Society
21 <sup>st</sup> October	<b>Quiet Site</b>	Nick Charlton Smith Charlton Smith Partnership
28 <sup>th</sup> October	<b>The impact of urban form on travel behaviour</b>	Neil Ferguson University of Strathclyde
4 <sup>th</sup> November	<b>Disease pathways in the home (hazard, risk and assessment)</b>	Mike Hepher Glasgow Caledonian University
11 <sup>th</sup> November	<b>Race, residence and identity: integration vs urban diversity, a comparative survey of racialised and multicultural residence and space in Glasgow and Liverpool</b>	Ola Oduku University of Strathclyde
18 <sup>th</sup> November	<b>Project complexity and risk management</b>	Peter Edwards RMIT University, Melbourne
25 <sup>th</sup> November	<b>Off Site Manufacturing</b>	Andrew Carpenter Board Member of Constructing Excellence

## **The Sustainability Centre in Glasgow (SCG): In pursuit of Sustainability!**

The sustainability Centre in Glasgow (SCG) has been established to provide a multi-disciplinary and comprehensive approach to research and consultancy in the sustainability field at local, regional, national and international level.

Sustainability can be regarded as one of the hottest contemporary issues facing both current and future generations at local and global levels. Going 'green' or 'living sustainably' is now both fashionable and desirable. New and pioneering ways are increasingly being sought to ensure that we all live sustainable lives. From the increasing use of renewable energy sources to the recycling of household waste we are starting to adopt *sustainability* as a goal worth pursuing. The world is coming to recognise that we can no longer separate the environment from the economy (and politics for that matter) and to do so would be unsustainable in the long-term. It is accepted that present human actions have a bearing on both the quality of environment and life of future populations. In this sense we must 'act locally' as well as 'think globally'. While there has been no recent shortage of discussions, documents and even innovative projects (especially at the local level) regarding sustainability it is acknowledged that there is much more evidence of unsustainable practices and pursuits. Part of the problem lies in defining what is meant by sustainability, what should or is being sustained and how best to promote sustainability, within an increasingly globalised world.

It is within this context that the recently established *Sustainability Centre in Glasgow* (SCG) based at Glasgow Caledonian University is concerned with the evolution of evidence-informed practice and thinking. The SCG combines expertise on social, economic, political, managerial and environmental issues to take a multidisciplinary approach to research, policy and practice for sustainability. More specifically, the SCG is currently involved in developing the following research and consultancy areas:

- Developing urban sustainability assessment metrics, models and toolkits
- Sustainable urban environmental study on mapping knowledge in glass recycling
- Sustainability appraisal/strategic environmental assessment in the strategic planning process
- Corporate management of environmental impacts
- Construction and demolition waste minimisation
- Identifying training need of waste management professionals
- Evaluating community recycling
- The governance of sustainability
- Environmental justice

While sustainability could be dismissed as the latest trendy buzz, the issues surrounding this concept cannot so easily be ignored or neglected. These issues go to the heart of and question how individuals, groups and organisations live and experience life. In sum, the pursuit of sustainability is not about being environmentally and socially responsible, but it also makes economic sense. Its forward march continues.

**For further information on Centre please contact Dr Rubina Greenwood at [Rubina.Greenwood@gcal.ac.uk](mailto:Rubina.Greenwood@gcal.ac.uk)  
Tel 0141 331 8533 or visit the website [www.sustainabilitycentre.org](http://www.sustainabilitycentre.org)**

# **Building Standards and the Disability Discrimination Act – A Legislator's Viewpoint**

by Steven G Scott, Building Standards Division, Scottish Executive

Author's note: This text is a condensed version of the presentation made at the CBE workshop of 15/4/04. I work in the Building Standards system in Scotland and my views on issues relating to the DDA are therefore informal. I cannot speak for other's legislation - the Disability Discrimination Act is produced for the UK government in Westminster by the Department of Work and Pension.

## **INTRODUCTION**

Consider the question posed in the circular issued for this workshop - "Will the minimum standards necessary for the health, safety, and welfare of people in and around buildings be enough to satisfy the DDA"? The short answer is No.

Firstly, there is no such thing as 'DDA compliance'. Instead, we have what is considered reasonable in the application of good practice to a particular situation and time. What is reasonable differs dependent on circumstance and what you and your building offer - for example, an employer has differing duties from a service provider.

Secondly, the issues within the Building Standards, whilst significant, are only a small portion of those to be addressed by an owner to discharge their duties under the DDA. The Technical Standards apply to those elements of a building that can be legislated for in a practical manner using the Building Warrant process. Not all works require to go through this process. The building regulations also presently use a physical model of disability considering mobility, visual and hearing impairments, rather than the social model advanced in the DDA.

Thirdly, compliance with the Building Standards can be considered a 'one-off' procedure - a snapshot of compliance - carried out each time qualifying building work is carried out. Conversely, duties under the DDA, whilst also addressable at the time of construction, are a continual, evolving responsibility.

## **THE DDA AND BUILDING STANDARDS**

The DDA is a legislative tool to eliminate discrimination in the everyday lives of a significant proportion of our population. This legislation requires building owners to consider 'reasonable adjustments' to overcome physical barriers to prevent discrimination against any person with a disability. Whilst removal or alteration of an offending feature may often be the most appropriate choice, in many cases it may be impractical or unreasonable or, indeed, unnecessary where the same result can be achieved by altering practices or procedures.

Building Standards relate to the creation and alteration of the built environment and exist primarily to protect the safety of all building users by imposing mandatory requirements on relevant work to buildings. What is the relationship between these two pieces of legislation?

Whilst Building Standards address issues of amenity, they are not, primarily, an anti-discrimination tool.

However, this does not mean that they cannot work with the aims of the DDA. Indeed, a shared aim must be the goal if we are to properly address inclusive design in our legislation in accordance with the stated aim of the Scottish Executive.

## **OVERVIEW OF BUILDING STANDARDS**

Since 1984, the issue of access has been advanced within the Building Standards. The system of Building Standards in Scotland will change in May 2005 with

the introduction of the new Building (Scotland) Regulations. This is primarily a procedural change to provide a more responsive system. It does not make significant change to the requirements of the current Technical Standards.

The new Technical Handbooks for domestic and non-domestic buildings will contain general procedural information together with a 64 mandatory functional standards supported by a body of guidance. This is intended to allow for innovation and more flexible solutions to the requirements of the functional standards. The functional standards related to access are written to reflect an inclusive approach to design.

Once the new Building Standards system is operational, access issues set out within the new handbooks will be reviewed as a matter of priority.

#### *THE DESIGNER*

A designer, unless also the building owner, has no direct duty under the DDA. Responsibility lies instead in his duty of care to his client. Designers and consultants should therefore understand the client's duties under the DDA and be able to advise the client appropriately in relation to any development. In this, the Codes of Practice produced by the Disability Rights Commission provide an invaluable reference in understanding duties under the DDA. The issues that appear particularly relevant to designers are:

#### *APPLICATION OF GOOD PRACTICE*

Building Standards are concerned solely with compliance with the building regulations. This alone does not address matters under the DDA. Issues of good practice should be considered and applied where reasonable. For many aspects of access, these may exceed the requirements of the Technical Standards. Chief amongst such publications is the British Standard code of practice, BS 8300: 2001. Consensus opinion is that there is not presently a more definitive general

reference source for assessing issues of use and access to and within a building.

It can also be invaluable to obtain the input from building users, particularly those with disabilities. Individuals, local access panels and other voluntary organisations can provide insight that can be of great assistance, particularly where the question of reasonability of an issue is unresolved.

#### *EXEMPTION THROUGH COMPLIANCE WITH THE BUILDING STANDARDS*

Within Parts 2 & 3 of the DDA, there are presently exemptions from the requirement to alter features that present a physical barrier to access where such features comply with the Technical Standards.

Under Part 2 of the Act, an employer's duty in this respect is reactive rather than anticipatory. The exemption for places of employment is of unlimited duration. Where a building element continues to comply with the Technical Standards applicable at the time it was installed, it need not be further altered under the DDA, though an employer may still be required to consider other reasonable adjustments to overcome such a barrier. However, the DDA (Amendment) Regulations 2003 curtail this exemption and it will cease to apply on the 30<sup>th</sup> of September 2004.

The duties of a service provider under Part 3 of the Act are anticipatory and should be addressed before the 1<sup>st</sup> of October deadline. The exemption for buildings under Part 3 presently allows an owner a period of 10 years from the date of completion of works before he is required to consider making changes to any elements that complied with the Technical Standards at the time of building. The continuation of the exemption in Scotland past May 2005 is presently under consideration by the Department of Work and Pensions.

Where building regulation requirements do not reflect accepted good practice, this can raise issues where the exemption route is chosen. For example, where a building contains both employees and members of

the public, it attracts duties under both Parts 2 and 3 of the Act, it might give rise to a situation where an action raised by a member of the public against discriminatory access might be unsuccessful due to the Part 3 exemption, but where an identical action raised by an employee under Part 2 might succeed.

Although there is a mixture of reactive and anticipatory duty present in such an example, it illustrates the possible problems of following the exemption route rather than adopting good practice. Owners should also be aware that any issues not covered directly by a building standard would still require to be assessed against what is considered reasonable in relation to good practice.

#### *ACCESS STATEMENTS AS AN AID TO INCLUSIVE DESIGN*

Access statements are a useful tool to address and record access issues from a project's inception, through construction to the management of the building in operation. They will not have any mandatory status, but may be of benefit where solutions to access issues are proposed that are other than given in the Technical Handbooks.

The Scottish Executive is preparing guidance for designers and local authorities addressing the general issues of the DDA in relation to both Planning and Building Warrant processes. This is programmed for publication towards the end of this year.

#### **THE BUILDING STANDARDS OFFICER**

It is not the role of Building Standards Officers to assess an application in relation to the DDA. They are concerned solely with assessment of compliance with the Technical Standards.

With emphasis of meeting functional standards through solutions that may, or may not follow the supporting guidance of the Technical Handbooks, the new Building Standards system will allow a

greater breadth of interpretation and place a greater emphasis on the acknowledged professionalism of Building Standards Officers.

#### *IMPROVING ACCESS IN EXISTING BUILDINGS*

With the introduction of the remaining duties under Part 3 of the Act in October this year, Local Authorities are already receiving a significant number of applications for alterations to existing buildings to improve access, such as the installation of an entrance ramp or lift. Where such alterations are proposed a very important issue arises:

'If alterations are made to a building to improve access, does the building owner also require, under the Technical Standards, to make further improvements elsewhere in the building as a result of this improved access'?

Would this require that further, consequential alterations be made elsewhere in the building? Issues such as provision of sanitary facilities, increased space standards or, particularly, means of escape in the event of fire can all be raised.

The present Act empowers local authorities with interpretation of the building regulations and Technical Standards. It is recommended that Building Warrant applications for works of this nature are discussed with the local Building Standards Officer at an early stage in the project to determine how such issues should be addressed.

#### **SUMMARY**

1. Meeting the Technical Standards does not equate to DDA 'compliance'
2. The use of exemptions through compliance with Technical Standards should be approached with caution and be weighed against the advantages of following good practice
3. To assist a responsible party in discharging their duties under the DDA

when carrying out work relating to the Technical Standards, one might:

- Ensure that the Technical Standards are met (of course)
- Look beyond existing mandatory requirements or guidance and, where reasonable, consider codes of good practice which offer greater scope or performance
- Consider the use of access statements as an aid to inclusive design
- Remember the benefits to be gained through consultation with other parties.

# Equality, Dignity, Respect: Understanding the Disability Discrimination Act

by Richard Kuppusamy, Keppie Design, Glasgow

The predominant view of disability has been one of individual misfortune and medical problem. However as we embark in the 21<sup>st</sup> Century we realise that this is an outdated view. Disability and disablement is a consequence of decades of poorly designed and implemented built environments and social oppression on a passive and active level.

This social model of disability places the responsibility of disablement on society and the environments it creates, rather than on the disabled person themselves. A disability according to the social model is not a medical condition, it is the stigma, oppression and stereotyping a disabled person experiences as other people encounter them, make assumptions about them and refuse to alter their own attitudes and practices to include them in their standard thinking. The responsibility for removing these barriers to accessibility whether physical or social lies with the people and organisations that create them and those who maintain them by not challenging the status quo.

We live in a world of diverse cultures and peoples striving for society based on social inclusion, racial equality, and gender equality. Surely our next step must be to achieve a physical equality where we refute the idea of average people, but

The DDA signals a fundamental shift in the rights of disabled people, empowering the disabled building user to bring about change to the built environment. The DDA seeks to outlaw discrimination against disabled people by providing them new rights in:

- The field of employment
- Access to goods, facilities and services
- Buying and renting land and property
- Education

Rehabilitation Act, Section 504, established a basic civil right of non-discrimination in 1973 with the Americans with Disabilities Act following on in 1990. However in the United Kingdom the same basic civil right of non-discrimination was only established in 1995 through the Disability Discrimination Act, and duties to make physical adjustments are only enforceable from 2004. Noticeably public transportation need not be fully accessible under the DDA until 2020. The point being that both the US and UK are considered to be first world civilised countries of equal footing and yet there is a disparity of up 30 years in basic civil rights for disabled people.

There are now a number of pieces of legislation protecting the civil rights of disabled people in addition to the DDA itself:

- Disability Rights Commission Act 1999
- Special Educational Needs and Disability Act 2001
- The DDA Amendment Regulations 2003
- Codes of Practice
- Building Regulations
- The Disability Bill (Draft 2003 in consultation).
- Access to public transportation vehicles.

You will note that the categories above say nothing about buildings. The DDA isn't about buildings and architecture. It really isn't about building regulations, how steep is a ramp, how wide is a door? The DDA is about civil rights. It's about legislating how we treat our fellow human beings. It perhaps suggests a disappointing commentary about why society needs

legislation to tell us how to behave sensibly towards our fellow men.

The DDA is perhaps the single most important piece of non- building regulation legislation to have an impact on the construction industry in recent time. As human rights legislation, its implications for the Architectural profession is underrated, overlooked and over simplified at times. Whilst the primary purpose of the legislation is to improve access to employment, and services for disabled people; it is clear that there must be an impact for designers of built environments and for all users of those built environments.

The DDA is divided into seven parts. For the purposes of the CBE seminar in April the discussions focused around Parts I, II and III as these have the most obvious interests and implications for the construction industry. I would however add that Part IV which covers access to education is as equally important; but this could have been a topic of debate in itself.

Part I of the DDA establishes the definition of disability and therefore defines the scope of which persons have their rights protected under the Act. Under the act a person is disabled if they have a physical or mental impairment which has a substantial and long-term adverse effect on their ability to carry out normal day-to-day activities. This definition of disability includes persons with sensory impairments, disfigurement, HIV and cancer.

Throughout each part of the Act the definition of discrimination defined and it varies slightly. However the basic principles remain consistent.

Discrimination is said to occur when:

- (a) for a reason which relates to a person's disability, he is treated less favourably than others whom that reason does not or would not apply; and,
- (b) when the treatment in question cannot be shown to be justified

Discrimination also occurs when a specific duty under the Act is not complied with.

Duties for employers and the rights of disabled employees are covered under Part II of the Act. Part III of the Act deals with access to goods, facilities, and services. Under both these parts there is a duty to make physical adjustments.

Employers have a specific duty to “*take such steps as is reasonable*” to change arrangements or make adjustments to physical features of their premises where they place disabled persons at a substantial disadvantage in comparison with persons who are not disabled.

Part III Section 21(2) of the Act states that where a physical feature makes it impossible or unreasonably difficult for disabled persons to make use of the service; it is the duty of the service provider to *take such steps as it is reasonable*, to remove, alter, avoid, or provide a reasonable alternative method of making the service available in order to prevent the barrier from having an effect. This Section 21 Duty comes into effect on the 1<sup>st</sup> of October 2004. These duties under the DDA are both anticipatory and continuous.

The term “reasonable” is used throughout the Act. The concept of acting reasonably under the Act is a difficult one. Many of us may prefer a more concrete, stipulative piece of legislation. However reasonability allows more flexibility over time. What is reasonable today is not what is reasonable tomorrow. Ultimately reasonability will in all likelihood be determined through case law. At present however the Act lists a number of factors which may have a bearing on determining reasonableness in having to make adjustments, although there may be other relevant ones:

- How effective will the adjustment be in overcoming the barrier?
- Will it be practical to implement?
- What are the costs?
- What is the likely disruption?
- What are the resources available (own and other assistance)?
- How much has already been spent?

The Act defines a physical feature as “anything on the premises arising from a buildings design or construction or from an approach, exit, or access to such a building; fixtures, fittings, furnishings, furniture, equipment, or materials; and any other physical element or quality of land in the premises”. These are all covered whether they are temporary or permanent. The Disability Rights Commissions (DRC) Code of Practice for service providers suggest that the preference will always be towards the removal or alteration of the barrier as a solution as this would be consistent with an inclusive approach to providing access for disabled persons.

Under the Act a 10 year exemption to removal or alteration of a physical feature is provided for. Any physical feature which was compliant and remains compliant with the Building Regulations need not be removed or altered until 10 years from the date of its installation or completion of the feature. However this only applies directly to features within a Building Regulation. (i.e. changing a door width maybe exempted, but changing the door closure tension or shape of ironmongery would not.) The exemption at this time relates specifically to Approved Document M 1999 in England and the 6<sup>th</sup> Amendment of the Technical Standards in Scotland. However the introduction of new technical standards in accordance with the Building Scotland Act 2003 in the near future may not carry the same temporary exemption.

It is clear that there is no denying that whilst the DDA is civil rights legislation, there is an impact for building owners and facilities managers. From this there will be an onus for Architects to respond pro-actively towards DDA legislation in designing buildings which are accessible from their outset with a wholly inclusive premise. Design of the built environment in a universal and inclusive approach benefits all people. In most cases the design solutions which enable disabled people also aid those without a disability. Some will argue that making buildings accessible is prohibitively costly.

The reality is that the cost of designing in access can be as little as 1% of the overall building cost. But the cost of retrofitting a building after construction can be as much as 15%. The spending power of disabled people in the UK is estimated to be as much as £45 Billion per annum, as the continued exclusion of disabled people impacts not just upon individuals and their families, but also on communities, society and the economy as a whole. So if you're not swayed by the moral and legal case for better accessibility then surely you must be by the commercial one.

As an Architect and regardless of my own physical disability, I firmly believe that I have a duty of care towards the users of the buildings I design, and that I must in this day and age presume that those people may be disabled. Architects are by definition creators and innovators of new solutions. There is no longer any place for complacency, blindly implementing text book solutions. We must have a real understanding of the nature of the people we design for. There is little relevance today for Corbusier's Modulor or anthropometrics based solely on the “average white male”.

The Disability Discrimination Act gained royal ascent in 1995 and yet still to this day some 9 years later, disabled people regularly face discrimination. With the 10 year exemption on physical adjustments disabled people may not be able to expect a fully accessible and inclusive built environment protected by law until well into the next decade. I pose to you the question: What are disabled people supposed to do in the meantime? Most of us take for granted the simple things; getting in and out of the car, using public

transport, climbing a few steps, using a toilet. But these simple things in life can be a challenge for disabled people. Challenges which can be overcome if designers of the built environment considered their needs. All people deserve to be treated with equality, dignity, and respect. With this in mind we should embrace the DDA and act in the spirit of the legislation. From the manufacturer,

design team, contractor, facilities manager,  
to the client we must all share a  
responsibility towards making a more  
inclusive built environment.

## **LLM/PgDip in CONSTRUCTION LAW (Evening Classes)**

Application closing date: September 2004

The Construction Industry is known for being adversarial – disputes mean delays. Greater teamwork and collaboration among all the parties involved can reduce costs and curtail these delays. New legislation has fundamentally changed how disputes are handled and how projects are undertaken. In the process Construction Law has emerged as a set of legal concepts and rules that operate with variants through the whole of the English-speaking world. *Collaboratively, the Universities of Strathclyde & Glasgow offer the means of learning and understanding the law in this evolving area through its LLM and Postgraduate Diploma in Construction Law.*

Designed for construction industry professionals whose work involves them in any of the various stages of major construction projects – from commissioning to completion, as well as for lawyers seeking greater understanding of the processes and management of construction projects, it provides in-depth legal expertise relating to such projects.

**Recent Graduate Mark Clarke (MCIOB, LLM) emphasised the importance of the programme:**

*“At the sharp end of construction, a clear understanding of your rights and obligations can make the difference between the commercial success and failure of projects. The menu of construction contracts has become ever longer, the ingredients more complicated and when you are in a stew, or trying to avoid one, the confidence that knowledge brings is measured in pounds sterling as opposed to avoirdupois. I feel the LLM has tipped the scales in my favour.”*

**For further information contact (quoting reference CBE1/04):**

Mrs Linda Ion  
Glasgow Graduate School of Law  
The University of Strathclyde  
The Lord Hope Building, Level 2  
141 St James' Road, Glasgow G4 0LT  
Scotland, UK

Tel: +44 (0) 141 548 3119  
Fax: +44 (0) 141 552 4264  
Email: [conlaw@law.strath.ac.uk](mailto:conlaw@law.strath.ac.uk)  
Web: [www.ggsl.strath.ac.uk](http://www.ggsl.strath.ac.uk)

## **Building Research Worldwide**

*Highlights from the congress of the International Council for Research and Innovation in Building and Construction (CIB Toronto, Canada, 1-7 May 2004)*

CIB World Congress is held every three years. This year, the congress was held in conjunction with the 5<sup>th</sup> International Conference on Indoor Air Quality, Ventilation and Energy Conservation in Buildings and the 6<sup>th</sup> International Conference on Multipurpose High-Rise Towers and Tall Buildings.

From the 328 papers presented at the conference, here is a selection of titles which might attract your attention:

- Practical considerations on design and installation of green roofs: the waterproofing challenge
- Advanced facades and environmental systems: integrated design solutions
- Innovative self-cleaning and de-polluting façade surfaces
- Analysis and design of an information communication system for construction projects
- Communal spaces in housing for elderly people
- Briefing as an ongoing co-learning process
- Bio-shaders for sustainable buildings
- The Norwegian model of life cycle costs applied to churches in Norway
- Long-term forecasting of construction and demolition waste streams
- Open building implementation in hospital architecture
- Observing designers: disparate values and the realisation of design intent
- Integrated risk management concept for construction system providers
- The development of an environmental performance standard for materials in buildings for the Dutch Building Decree
- Sustainable metrics: a design process model for high performance buildings
- Strategies for the sustainable renovation of apartment buildings using IFD technology
- Lean and green: integrating sustainability and lean construction
- Comparative assessment of lifetime technical and environmental properties of three insulation materials (stone wool, flax and paper wool)
- Environmental performance of building products: from LCA to EPD, from theory to practice
- Compendium of performance based statements of requirements: applying the performance based building approach to acquiring, using and managing property
- How to use fire risk assessment tools to evaluate performance based designs
- A computer analysis model for accessible building layout
- Online product libraries: the state-of-the-art

**To view all the titles, please access the CBE website (CyBER News, Issue 8, Info on CIB Congress CD). To order a CD-Rom with all the papers submitted at CIB 2004 conference for a nominal charge of \$50 CAN (around £20), please e-mail Mrs Monique Myre: [Monique.Myre@nrc-cnrc.gc.ca](mailto:Monique.Myre@nrc-cnrc.gc.ca)**

## **Are we closer to free information for the Construction Industry?**

To answer the above question, members of CIB W102 Information and Knowledge Management in Building, a working group of the International Council for Research and Innovation in Building and Construction (CIB), will undertake a research in a number of countries and publish the outcomes in May 2005 at the CIB W102 conference Information and Knowledge Management in a Global Economy. CBE and postgraduate researchers of the Glasgow Caledonian University will contribute to this joint paper which will be a starting point for a worldwide survey on open access in publishing for the construction industry. The survey will be continuously updated and published on W102 website.

The question of open (free) access to research papers published in journals was raised in a talk given by Zita Murphy, Electronic resources Librarian and Subject Librarian (Faculty of Engineering and Applied Science, Ryerson University, Toronto, Canada), at the meeting of W102 in Toronto on 29-30 April 2004. Biomedical journals lead in this new approach to information dissemination, but it can be expected that others will follow.

In providing open access, publishers will have to address issues such as:

- economic viability
- intellectual property rights
- persistency/durability
- preservation for future.

New models of relationship between publishers and researchers are emerging; e.g. researchers have to pay for publishing and these costs will have to be included in preparing research proposals. Open access will affect many aspects of information and research dissemination such as:

- infrastructure of information provision
- standards and credibility
- academic promotion and tenure
- dissemination funding.

Since W102 is concerned with free circulation of knowledge for small and medium size enterprises (SMEs), who need brief information, it was suggested that intermediary mechanism should exist to search for information in open access journals and publish succinct summaries which “translate” academic jargon into easily understandable language. However, it was pointed out that provision of information for the construction industry is already free or very cheap in some countries and that intermediaries exist. For instance, in Germany SHADIS publishes texts on pathology in construction for 3 Euros per article. A similar system exists in Finland.

The National Research Council of Canada's Institute for Research in Construction (IRC) is funded primarily by the federal government, with some funds obtained via research contracts with industrial partners. IRC has been transferring information to SMEs in the construction industry since its inception in 1947. The majority of information provided by IRC is free on the web, including the Construction Technology Updates which are practical 4-6 page publications for architects, engineers, specification writers, property managers, builders and building officials. Also on its website is the IRC publications database, which includes references to all IRC publications (approx. 12,000), 2200 of which are available in full text, free of charge.

Through W102, CBE will be involved in the search for best practice in open access publishing for the construction industry and will keep you informed about the examples.



**CBE 2004 Seminar Series**  
**Fax-Back Booking Form**

Contact person:

Title \_\_\_\_\_ First name \_\_\_\_\_ Last Name \_\_\_\_\_

Organisation: \_\_\_\_\_

Address: \_\_\_\_\_

Town/City: \_\_\_\_\_ Post code: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax : \_\_\_\_\_

E-mail: \_\_\_\_\_

**I would like to book 10 places for £200 (a saving of £100)** **Yes/No**  
(organisations taking up this offer can advise CBE on seminar/delegate choices up to one week before each event)

**I would like to book for events on an individual basis** **Yes/No**

Delegates \_\_\_\_\_ Attending the event on

First name \_\_\_\_\_ Last name \_\_\_\_\_ \_\_\_\_\_

First name \_\_\_\_\_ Last name \_\_\_\_\_ \_\_\_\_\_

First name \_\_\_\_\_ Last name \_\_\_\_\_ \_\_\_\_\_

First name \_\_\_\_\_ Last name \_\_\_\_\_ \_\_\_\_\_

First name \_\_\_\_\_ Last name \_\_\_\_\_ \_\_\_\_\_

First name \_\_\_\_\_ Last name \_\_\_\_\_ \_\_\_\_\_

First name \_\_\_\_\_ Last name \_\_\_\_\_ \_\_\_\_\_

First name \_\_\_\_\_ Last name \_\_\_\_\_ \_\_\_\_\_

First name \_\_\_\_\_ Last name \_\_\_\_\_ \_\_\_\_\_

First name \_\_\_\_\_ Last name \_\_\_\_\_ \_\_\_\_\_

Please fax this form back to **CBE** on 0141 249 9906. Alternatively send it by post to The Lighthouse,  
56 Mitchell Street, Glasgow G1 3NU. You will be invoiced on receipt of your booking form.

**Thank you**

## **Papers from the CIB World Building Congress 2004**

To order a CD-Rom with all the papers submitted at CIB 2004 conference for a nominal charge of \$50 CAN (around £20), please e-mail Mrs Monique Myre: [Monique.Myre@nrc-cnrc.gc.ca](mailto:Monique.Myre@nrc-cnrc.gc.ca)

### **Building Techniques**

#### **Heat, air and moisture transfer in buildings**

- Application of modeling tool to assess moisture and thermal performance of retrofitted wall assemblies
- Field performance based specification for landcretes in hot humid regions
- Semi-scale testing and computer simulations of hygrothermal performance in moisture management of building envelopes
- Benchmarking for one-dimensional cases of combined heat, air and moisture transfer in building components
- Metal constructions: all hygrothermal problem cases?
- Experiment for moisture buffering and effects of ventilation rate, volume rate of the hygrothermal materials
- Large scale laboratory measurements and benchmarking of an advanced hygrothermal model
- Evaluating the energy impact of air infiltration through walls with a coupled heat and mass transfer method
- Vapour barrier and moisture response of wood-frame stucco wall – results from hygrothermal simulation

#### **Roofing materials and systems**

- EPDM roof restoration
- Sustainable low-slope roof systems designed for the long term – getting it right the first time
- Cool metal roofing tested for energy efficiency and sustainability
- Photovoltaic in Mediterranean climate countries
- Hail resistance of aged PVC roofing membranes – a field of evaluation of the roofs ranging between 15 and 34 years carried out by one of the world's major producers of the thermoplastic roofing and waterproofing membranes
- Service life tests for roofing membranes
- Adhesives for the installation of single ply roofing membranes
- The built-up roof: the quiet evolution
- Green roofing: the durability challenge
- Learning from past experience to improve future roof construction
- Field investigation and laboratory testing of exposed vinyl roof systems

#### **Indoor climate: design and performance**

- Steady state and dynamic thermophysical parameters of transparent building components
- Environmental quality and the productive workplace
- Proposal for a porous-type residential building models for hot and humid regions of Asia and evaluation of energy efficiency and indoor environment

#### **Construction automation and human interface**

- Thermal properties of building materials in high temperatures range
- Housing and technologies in the EU for promoting quality of life: current trends in the UK and Italy
- Performing renovations while business operations continue

#### **Facade systems and technologies**

- Advanced facades and environmental systems: integrated design solutions
- Innovative performance based systems for facade facings in brick
- Innovative self-cleaning and de-polluting facade surfaces
- The double glass skin facade: a sustainable option for the curtain wall in Mediterranean climate countries?
- Numerical solutions to unilateral frictional contact problems in glass facade systems
- Window size and orientation in a low energy house
- The potential of lightguiding holographic optical elements for solar control: a case study of a university office building

### ***Design for fire management***

- Parameters affect the fire resist performance of floor systems
- A literature review of design fires for fire safety engineering
- Fire performance of curtain wall with sheet metal backpans

### ***Information and knowledge management in buildings***

- Using digital images to automate construction progress for reporting
- Analysis and design of an information and communication system for construction projects
- Building engineering in Canada
- Building green competencies: the educational challenges of sustainable construction

### **Buildings and the Environment**

#### **Performance indicators and assessment methods**

- Implementation of dwelling building' energy certification and labeling scheme in Ogré town
- Assessing the maintainability of building facades in the tropics
- The vacancy risk meter – an instrument for defining the lower end of the office premises market
- Transformation of office buildings
- Ultrasonic extraction/anodic stripping voltammetry for determining lead in household paint: summary of a laboratory study
- The environment information system of the energy consumption of buildings
- Climate change assessment and building performance
- Effect of capillarity of rainwater penetration in the building envelope
- Selected findings of an IRC study of the wetting and drying potentials of wood-frame walls exposed to different climates
- Framework for assessing the performance of building systems
- Constructing an inventory of materials stock at risk from air pollution damage in Canada
- Form, structure and performance

#### **Energy conservation in built environment**

- Development of environmental conscious design of prison buildings
- A study on the environmental loads associated with upgrading or replacing an existing office building
- Residential energy code for new buildings in Egypt
- Links between satellite thermal imagery and building energy use
- Potential of applying hybrid solar technology in Hong Kong
- Development of a comprehensive database on thermal physical properties of building insulation materials in a wide range of conditions: a critical survey and analysis
- Study of nocturnal heat island effect in urban residential developments of Hong Kong – to achieve energy saving

#### **Environmental design**

- Communal spaces in housing for elderly people
- Solving the problems due to stack effect in tall buildings
- Briefing as an ongoing co-learning process
- Evaporative cooling effect of the pavement covered with reused sanshu roofing tiles
- 'Usable workplaces'
- Bioshades for sustainable buildings
- Sustainable offices – effective solutions for office organisation, space use, lifespan, design and technology
- In search for energy efficient urban forms: the residential solar block
- Logistics management for inner-city construction projects

#### **Facilities management and maintenance**

- Challenges in asset management – a case study
- A methodological and graphical decision tool for evaluating component failure
- Optical energy management of HVAC systems by using evolutionary algorithm
- CIB T2S5 facilities management and maintenance
- Building infrastructure asset management: Australian practices
- The Norwegian model of life cycle costs applied to churches in Norway

- Development of an integrated facility management model

### **Building Process**

#### **Building commissioning, monitoring and inspection**

- Assessment of the performance of 'Security of payment Act in the Australian Construction Industry'
- Pre- & post occupancy evaluations

#### **Project management**

- Win-win situations by partnering project delivery forms – case studies conducted in Switzerland
- A case of construction project mismanagement
- Project management challenges and opportunities
- Project toolkit for standardisation and pre-assembly
- Time survey of job site management in Korea
- Innovative managerial control systems (IMCS): an application to the precast concrete building products industry
- The role of team knowledge in managing change within construction project team settings
- The development of a change management dependency framework
- A comparative analysis of health& safety management practices in refurbishment projects involving demolition and structural instability in the UK and Italy
- Partnering: a change in the traditional method of subcontracting in Singapore to reduce wastage

#### **Construction conflicts: avoidance and resolution**

- Long-term forecasting of construction and demolition waste streams
- Measurement of dissatisfaction in the Dutch building industry
- Used building materials for low-cost construction
- Partnering combined with value-based management in a building project organisation- an action research experiment

#### **Architectural concepts and management**

- Open building implementation in hospital architecture
- Conceptual understanding of corporate social responsibility in the UK construction and property sectors
- On the science war between architecture, technology and management
- Improvement of the design process in the building construction
- Observing designers: disparate values and the realisation of design intent
- Integrating (lean) design and construction: upstream and downstream values
- Managing multi-layered briefing process using quality function deployment

#### **Building economics**

- Integrated risk management concept for construction system providers
- Building performance of intelligent buildings
- The procurement systems of a mega city, an international perspective
- Construction sector system, innovation and services
- Construction sector system, innovation and services
- Organisational culture & identity in a construction organisation: an Australian case study
- New frontiers of construction organisation theory
- Prototype cost management stochastic models for concrete batching plant

#### **Quality assurance**

- Diagnosis of premature defects and deficiencies associated with building process oversights
- Outcomes of applying a VHP grouting method at reconstruction of quays of seaport in Klaipeda
- Development of an environmental performance standard for materials in buildings for the Dutch building decree

#### **Quality and safety at construction sites**

- Monitoring system for health care environment quality during hospitals' requalification processes
- The facility owner's role in construction workers safety

## **Sustainable Construction**

### **Urban Sustainability**

- Integral approach of infrastructure in dense urban areas
- Critical issues and opportunities for managing
- Critical issues and opportunities for managing municipal infrastructure: preliminary survey results of municipal infrastructure investment planning project
- Service facilities and their impact on travel needs in an urban residential district in Beijing, China
- Some aspects of environmental sustainability in upgraded informal settlements
- Integration of the sustainable concept in the Spanish legislation
- Sustainable city
- Urban sustainability issues for the Chinese small cities

### **Regeneration of the built environment**

- Tuning infrastructure with economic life span of buildings
- Technology advancements for the future of sustainable constructions
- How to improve the Spanish construction and demolition waste management. A challenge to take into consideration
- Sustainable metrics: a design process model for high performance buildings
- Theory and practice of learning and teaching – learning and teaching sustainability
- Re-using buildings in the urban context: an exploration through process mapping

### **Best practices in sustainable construction**

- Strategies for the sustainable renovation of apartment buildings using IFD technology
- Strategies for innovation in construction demolition waste management in Brazil
- Establishing a green practice: sustainability and agricultural education
- Lean and green: integrating sustainability and lean construction
- Managing sustainability knowledge for a sustainable built environment

### **Economics and life cycle analysis**

- The possible use of LCC & LCA for commercial property valuations – putting a value on ‘green’ buildings
- Comparative assessment of life-time technical and environmental properties of three insulation materials (stone wool, flax and paper wool)
- Service life as main aspect in environmental assessment
- Life cycle cost analysis as a decision support tool for managing municipal infrastructure
- Environmental performance of building products: from LCA to EPD, from theory to practice
- Life-cycle-analysis of steel-intensive sustainable construction
- Life cycle operational and embodied energy for a single storied residential building at Chennai, India
- The whole building approach to retrofits

### **Social aspects of sustainable construction**

- Evaluating the triple bottom line in the implementation of photovoltaic systems in UK social housing
- Older workers in South African construction: general contractor (GC) perceptions
- Respect for people
- Corporate social responsibility – an imperative or imposition upon the UK construction industry?

## **Performance Based Buildings and Regulatory Systems**

### **Performance concepts and requirements**

- Development of a wall performance classification system
- Building regulations for the improvement of the quality of the housing stock
- Assessing building performance – an integrated model
- Performance-based building and innovation: closing the loop
- International co-operation in the technical assessment field
- Evaluation strategy for innovative construction products and systems
- Building regulations – a decision tree is developed to support maintenance of effective building regulations
- Defining performance requirements to assess the suitability of constructed assets in support of the mission of the organisation

- Compendium of PB statements of requirement (SQR): applying the performance based building approach to acquiring, using and managing property

### **Service life prediction**

- Service life prediction of reinforced concrete structures damaged by reinforcement corrosion
- Performance based planning and service life prediction
- Engineering method for service life planning: the evolved factor of method
- Recent advances in methods for service life prediction of building materials and components-an overview
- Referenced service life based constructed works

### **Performance criteria and indicators**

- Building performance or product quality – what information should be signalled in consumer markets?
- Stakeholders' perspectives in defining asset performance
- Dutch building decree reformulated and completed. The first tabulated, performance based building regulations
- Design for value; a synthesis of strategic design and performance based control

### **Performance based codes and standards**

- CIB TG37, final report and recommendations
- The origin and development of Canada's objective-based codes concept
- Building control: private versus public responsibilities
- A comparison of technical requirements for housing in Europe
- Performance approach in Italy: an excursus through recent acts and regulations
- Eurocodes – European codes for structural design
- The benefit of intended –use (performance-based\_ standards in support of objective –based codes
- Comparison of two building energy-related standards: MNEECH (Canada) and RT-2000 (France)
- The PeBBu network – impact & perspectives

### **Performance evaluation**

- The use of predictive tools and software in a building regulatory environment
- A systems thinking approach for performance based buildings
- How to use fire risk assessment tools to evaluate performance-based designs
- Social housing performance in Argentina: the last decades
- Protocol and assessment tool for performance evaluation of light-frame building envelopes
- Fitness for use and CE marking of construction products in Latvia
- Life cycle management of built environment – an integrated tool with case studies
- Technological design of building components and sustainable construction
- Creating an electronic performance evaluation tool
- The performance of environmentally sustainable design features in commercial buildings

### **Revaluing Construction**

#### **Revaluing construction agenda**

- Applied business management research
- Construction engineering and management discipline in the USA
- Information technology evaluation practices of construction SME's in Australia
- Using critical incident analysis as a strategy for improving international construction processes

#### **Innovative technologies and practices**

- Success factors in construction processes as a key for a benefit oriented knowledge management model
- Increased construction efficiency and energy savings in steel stud construction
- Critical issues in implementing business process reengineering in building companies: process owner vocational training
- The virtual project management (PM) services company – in the case of construction markets in Finland
- Lessons learned in construction process improvement

- Improving supply chain management in construction: what can be learned from the electronics industry?
- Partnering model for early involvement of stakeholders in urban development projects
- Visualisation technologies applied to construction process simulation: application on real life case studies
- Opportunities offered by computer modelling for restructuring construction
- Capture of client requirements using UML
- Development of a cooperative integration system for architecture design
- Project management reconceived from a production perspective
- High rise building, analysis of constraints to innovation
- Applying industrialisation strategies & technologies to the production of building systems

#### **Innovation systems**

- The unanticipated impacts of research on practice
- New approach in Winkler's model for foundation plans
- A conceptual framework for collaborative building design support by the utilisation of design resolution attributes in a CAD system
- Innovation and sectoral change in construction: the role of the industry paradigm and industry leaders
- Design and construction research for quality of life
- The intelligence of intelligent buildings

#### **Geographic information systems**

- Media, an integrated decision support system for urban (re) development
- TNO city – integrated and sustainable city planning
- Geographical information systems for sustainable management of built environment
- Geographical information systems (GIS) as an integrated decision support tool for municipal infrastructure asset management

#### **Future needs of construction industry**

- Value-based management as means for increasing effectiveness and efficiency in construction projects
- Future research needs for mould growth risk analysis
- The use of composite materials in industrial buildings
- AEC industry culture: a need for change

#### **Construction safety**

- Fleet safety in construction – the hidden hazards for construction companies
- Predicting safety levels of construction project sites
- A workplace guide to occupations in the construction industry (rats)

#### **Innovative procurement systems**

- Process and system innovation in the building and construction industry: developing a model for integrated value chain and life cycle management of built objects
- Aspirations of collaboration integrated procurement and the mediating effects of context

#### **Information technology in construction**

- Learning of construction management through new technologies
- Standardizing and separating pipelines with CAD programming
- Building regulations ICT instrumental to access the relevant clauses and related texts
- Implementing 3D parametric modelling in technical areas of construction – a case study
- A fuzzy procurement selection decision support tool for construction
- Relational DB implementation of step based product model
- Work functional characteristics: a new research 'building block? Size=
- An integration approach for developing AEC/FM total project systems
- User requirement capture in construction IT: the case of the diversity project
- Formalization of transactions in AEC/FM industry
- IEEE 802.11B wireless networks: an enabler for real-time data capture in construction
- Using multiple views to model construction
- Consumer driven housing with IBUILD
- A process modelling practice workshop for materials management

- The myth of precision
- Using simulation for pull-driven scheduling with buffer for precast concrete component fabrication and erection
- An investigation into information overload in construction project teams
- Overcoming legal barriers to ICT uptake in collaborative working in construction
- A computer analysis model for accessible building layout
- Individuals' resistance to IT implementation in the AEC industry
- Online product libraries: the state-of-the-art
- Partial model exchange between data owners
- Managing information technology in construction industry: the Indonesian experience
- Semantic web technologies applied to building specifications
- A process model to support data rich digital environments
- Geometric reasoning for site space analysis

### **Construction in Developing Countries**

#### **Best practices in construction**

- The slake-durability test for evaluating surface resistance of cement stabilised blocks
- Design and construction of first skeleton-rent apartment in the private sector
- Prospective study to production chain in housing construction in Brazil
- Trends for design and project management in the Brazilian building industry
- Reaching best practice in rehabilitation of cultural heritage buildings in developing countries
- Funding construction industry development

#### **Sustainable construction**

- Sustainable technologies and restoration in critical areas. The historical centre of Belem – door to Amazon
- Housing industrialization in Chongqing, China

#### **Informal settlements**

- Towards stimulating modern urban upgrading policies for informal settlements in Egypt
- The structural forms and construction of informal housing: a case study of East Java

#### **Regional, economic and social issues**

- Study on global infrastructure required for climate change
- Preliminary analyses of sustainability of ceramic components for masonry for social housing: aspects of culture, industry capacity, quality and recycling in Brasilia – distrito federal
- Criteria for selecting construction labour market in Saudi Arabia (CIB T7)
- Effects of construction cost and materials on construction time of residential projects in Texas
- Sustainable construction: the dilemma of the high-rise buildings in developing country as Nigeria

### **The 5th International Conference on Indoor Air Quality, Ventilation and Energy Conservation in Buildings**

#### **Indoor air quality and material emission**

- Changes in natural ventilation conditions associated with floor plans and openings of houses in Japan
- Long-termed field survey of indoor air quality and health hazards in sick houses
- Quantification of effects of air velocity on voc emissions from building materials
- Simulation of temperature and humidity in mattresses to evaluate risks and house dust mite allergy
- Half-life time for voc emission and sorption of porous building materials
- Development of the diagnosis system to evaluate the concentration and exposure level of indoor radon based on the questionnaire
- A palm-size dynamic chamber for do-it-yourself emission sampling of volatile organic compounds from interior finishes and furnishings in non-industrial microenvironments
- Indoor voc source and sink modelling in multizone simulations of real buildings

#### **Thermal and visual comfort**

- Evaluating a control strategy for a hybrid air-conditioning and windcatchers ventilation system
- Effectiveness of portable room air cleaners for control of volatile organic compounds in indoor air

- Evaluation of thermal comfort by a dummy representing suit for simulation of human heatloss (dressman)
- Observational investigation of bioclimatic design method of traditional houses with stonewall in windy coastal region of Japan
- Modelling the angular variation of solar absorptance in windows with coated panes
- Change of thermal comfort of student by installation of air-conditioning system in a classroom
- Interaction effects between selected indoor and environmental factors and job difficulties on office worker's perception and reported SBS symptoms in the tropics

#### **Energy conservation and thermal comfort**

- Improving thermal performance in structural fenestration products
- The regulation frame in view of buildings energetic certification
- BPs to match energy demand and energy supply – required simulation output of BPs

#### **Innovative energy system design**

- Statistical derivation of coincident climate – conditions for air-conditioning design
- A daylighting control system with the illuminance ratio prediction method
- Time-dependent load determination in thermal dynamic models

#### **Energy conservation and indoor air quality**

- The solar contribution to the energy use for heating or residential buildings
- Indoor air quality in residential buildings in Rajasthan (India) – an experimental study (IAQ T2S4)
- Window sizes required for the energy efficiency of a building against window sizes required for view

#### **Innovative techniques in IAQ**

- A study on the performance evaluation of hybrid ventilation systems with a heat exchanger
- Indoor air quality management and infection control in health care facility construction
- Cleanliness requirements for ventilation ducts in the new Finnish labelling system: practical consequences

#### **Integrated air handling systems and strategies**

- Operation and control of activated slab heating and cooling systems
- Quantification of aerosol losses in mechanical exhaust and balanced air flow ventilation systems
- Fin efficiency of the newly developed compartmented coil of a single coil twin fan system

#### **Design & modelling of building integrated HVAC systems**

- Building integrated ventilation systems – modelling and design challenges
- Impact of double ventilated facades in buildings
- Using a coupled multizone and CFD program for natural ventilation studies
- Acoustical aspects of thermal responsive building elements
- Modelling of ventilation airflow rates of solar chimneys for building integration of renewable energy devices
- Performance assessment of a naturally ventilated multizone building
- Effects of outdoor air supply rates on worker's perception and the incidence of SBS symptoms in the tropics

#### **Computer models to predict ventilation requirements**

- Transient prediction of contaminated transport and distribution by introduction of energy load calculations into multizone modelling
- On the validity of zonal model in simulating indoor airflow
- CFD simulation in the architectural strategy for the ventilation of public podium spaces in a local hospital building
- Natural ventilation openings – a discussion of discharge coefficients
- An evaluation method for ecological buildings design
- Computational fluid dynamics in the indoor environment, new development and quality considerations
- Evaluation of fin efficiency concepts in cooling and dehumidifying coils – a Monte Carlo simulation approach

### **Integrated ventilation and daylighting models**

- Acoustical effect evaluation of balconies' ceiling form in protecting buildings facades against traffic noise
- Adding sub-hourly occupancy prediction, occupancy-sensing control and manual environmental control to whole-building energy simulation
- Design with skyvision: a computer tool to predict daylighting performance of skylights
- Making the case for hybrid ventilation and adaptive comfort theory in Canada

### **Heat, air and moisture transfer in buildings**

- Effects of coupled heat and moisture transfers through walls upon indoor environment predictions
- Ventilation control based on indoor air quality using simbad building and HVAC toolbox
- Web-based wizards for optimising building design energy performance on-line
- The effect of changing workstation position on the ventilation performance of a room with mixing ventilation

### **The 6th International Conference on Multipurpose High-rise Towers and Tall Buildings**

#### **Innovative new designs for tall structures**

Serviceability consideration for tall residential buildings

Super tall housing architectural & socio-psychological implications

The design and specification of high-rise building drainage systems

Bionic tower, vertical garden-city, 1.228 M. high: A high rise sustainable garden bio-structure (learning from biological structures in nature)

Structural and construction features of the Hong Kong international financial center phase II

E-War: an early warning and response methodology for buildings at risk to chemical and biological threats

#### **Design for fire safety**

Protection of buildings against fires following earthquakes

Design of occupant egress systems for tall buildings

Safety measures in the work place for people with disabilities: A comparison between USA and Italy

Role of fire resistance issues in the first ever collapse of a steel-framed building – WTC 7