



Minutes of IRCC Meeting

10-12 November 2004

Tokyo, Japan

Location: Building Centre of Japan, 30th Mori Building, 4F,5F, 3.2.2 Toranomon, Minato.ku 105-0001 Japan

Time: 9am – 5pm Wednesday, Thursday 10, 11 November 2004;
9am – 12:30pm Friday 12 November 2004

Present

Mike Balch,	ABCB, Australia	(MB)
Lam Pham,	ABCB, Australia	(LP)
Tomoki Sera,	MLIT, Japan	(TS)
Wataru Gojo,	NILIM, Japan	(WG)
Denis Bergeron,	NRC, Canada	(DB)
Dick Bukowski,	NIST, USA	(RB)
Brian Meacham,	Arup, USA	(BM)
Rick Okawa,	ICC, USA	(RO)
Paul Everall,	ODPM, UK	(PE)
Javier Serra,	MOH, Spain	(JS)
Rainer Mikulits	OIB, Austria	(RM)
Mike Stannard,	BIA, NZ	(MS)

Apologies

Bob Bowen,	NRC, Canada
Olav Berge,	NOBTH, Norway
David Smith,	CEBC, RICS, ODPM, UK

Guests

Tomiyoshi Ogawa	MLIT, Japan	(TO)
Yoshinobu Hirano	NILIM, Japan	(YH)
Hiroharu Habu	BCJ, Japan	(HH)
Suzanne Townsend	DBH, NZ	(ST)
Tas Twyman	ABCB, Australia	(TT)
Tariq Nawaz	ODPM, UK	(TN)
Shinji Takami	MLIT, Japan	(STk)
Takamiya Shigetaka	ABCB, Australia	(TaS)
Daren Hansen	Australian Embassy	(part time)

Agenda Item 1 Welcome, Opening Remarks

TO welcomed all participant to the meeting in Japan. As a founding member of IRCC but having been away for some time, he was happy to see familiar faces. He commented on the growth of the organization, with Meeting 3 also being held in Japan but on a much smaller scale.

MB thanked Japan for hosting the meeting and for their hospitality. He welcomed new IRCC member Austria represented by Rainer Mikulits, Lam Pham, newly appointed member, and Tariq Nawaz and Suzanne Townsend attending for the first time. He also welcomed the attendance of Dr Hiroharu Habu, representing the WFTAO. There would be minor changes to the Agenda with Item 4 now being a WFTAO presentation.

Agenda Item 2 Record of IRCC 16 (Meeting May 2004 – Ottawa)

The minutes of IRCC 16 were approved as presented

Agenda Item 3 Actions from IRCC 16 (Meeting May 2004 – Ottawa)

ID	Action	Result
1	Website access for members to start making more use of the members portion of the website	Technical problems resulting from changing servers have caused delay. Passwords to be sent to members shortly. (Action 1)
2	Hot water temperature limitations from each country	Dealt with during meeting
3	Spain to provide a presentation of the new tool being introduced online.	Presentation by JS during meeting
4	Provide links to review online objective based code http://www.nationalcodes.ca/consult/obc/consultation_e.shtml or go to nationalcodes.ca and follow links to consultation material	done
5	Residential sprinkler studies and reports to be posted on IRCC website.	Item during meeting
6	Sharing information at follow up meetings (example automatic revolving doors) and post on IRCC members portion of website	On going, refer Action Item 1
7	Results of ABCB's review posted on IRCC Website	Refer Action Item 1
8	Website, charter and other information needs to be reviewed and updated to reflect new chair and secretariat	Refer Action Item 1
9	Follow up summit organization and check Japanese conference on Sustainability to see how it might affect IRCC Summit in Australia	Item during meeting
10	Members share relevant lawsuits and other legal actions of interest	On going
11	Standards papers on Website	Refer Action Item 1. On NIST website URL www.nist.gov . RB provided

		soft copy of “Role of Standards in a Performance Based Building Regulatory System” to be installed on IRCC website (Action 2)
12	SFPE Papers for Luxemburg Conferences posted on Website	RB and BM
13	“Fire as a Structural Load” article Posted on Website when published	Published in Structural Engineering magazine. BM to advise
14	Website link to UK task group recommendations	PE
15	Membership invitation to Austria	Done. RM present
16	Membership invitation to Singapore	Done. MB to see whether Singapore attends
17	Membership invitation via Rodney Milford for South Africa	Done. South Africa may attend next meeting in London
18	Report back on China in November	Visit by MB delayed until Feb 05
19	Norway question regarding mediation emailed to members for response	DB to arrange for the question to be shared.
20	Update in Japan on issues of risk based upon comments from Members	Agenda Item 7
21	Issues related to Risk forwarded to BM to focus November discussion	Agenda Item 7

Agenda Item 4 WFTAO Proposal

The Chairman introduced Dr Hiroharu Habu of the World Federation of Technical Assessment Organisations, stating that the ABCB had attended two meetings of WFTAO, had become a member of the federation in September, and felt there were considerable synergies with the IRCC.

Dr Habu then made a presentation on the purpose and activities of the WFTAO (refer document 15). The Federation is a world wide network consisting currently of 24 members coordinating and facilitating the technical assessment of innovative and non-standard construction products. Its role is to enhance and promote the role of technical assessment and develop mutual confidence so as to minimize duplication and facilitate trade. He distinguished between mandatory and voluntary compliance. International harmonization is more difficult where materials must conform with national building codes and regulation. There are greater opportunities for international harmonization of standards and mutual recognition with voluntary verification. The international coordination of verifying new and innovative products that must comply with the regulations in each country presents a challenge for the WFTAO.

Dr Habu proposed a cooperative relationship with the IRCC beginning with information exchange, giving access to respective websites, and participating as observers at respective meetings.

PE agreed that there were important links between code development and technical product assessment. There is a move to harmonise standards within Europe. Mutual recognition will avoid the need for testing innovative products in a number of countries.

RM spoke of the European Construction Products Directive requiring mandatory approvals but not mutual recognition. This is distinct from European Technical Approval, ETA, which is voluntary and provides for mutual recognition.

JS said there had been a lack of success in the voluntary area in Europe with barriers and difficulties and suggested that there should be a concentration on the mandatory part.

RO supported the proposal with the important ties to performance based codes. WAFTA is the US body.

TO said that with Japan's isolation, they couldn't rely on mutual recognition. The ABCB is the first foreign organization to be accepted for product accreditation in Japan.

ST said that the new Act in New Zealand was a mix of voluntary and mandatory provisions, setting technical standards that link back to the code.

MB said that the arrangement in Australia was voluntary only.

There was unanimous support for Dr Habu's proposal for a cooperative relationship between the IRCC and WFTAO. An overlap meeting was suggested for 2006/07. Dr Peter Hewlett, the British WFTAO representative, would be invited to attend the next IRCC meeting in London (**Action 3**).

Further discussion occurred on the relationship between code development and the technical assessment of products.

DB talked of the role of codes in setting minimum performance levels. In Canada there were voluntary standards. Products are evaluated by CCMC against code criteria plus other criteria such as fitness for use, durability, and other risks that are not objectives of the Canadian Code. He asked whether evaluation criteria should only be against code criteria. Equally should Standards go beyond minimum code requirements?

MB spoke of past difficulties between ABCB and Standards Australia, SA. There is now an agreement between ABCB and SA to ensure that Standards needed for regulation are being developed. There is a distinction between the development of Regulatory Standards, those required for citing in the Code and voluntary standards for industry. Development of regulatory standards is open to organizations other than SA. Cost benefit analysis is required but how should these be measured. Who gets the benefit and who bears the cost.

RM said that in the drafting of European product standards, mandatory provisions were clearly distinguished from voluntary provisions. There is also a distinction between product standards and design standards.

JS spoke of the requirement to make freely available all mandatory design Standards that are cited in the Spanish Code. This causes copyright and funding issues as Standards bodies are independent private bodies.

TN said that it was important to recognize the marketplace and that bare minimum standards were not the end goal of manufacturers. A clear example was the human safety fire provisions of most codes verses the property protection requirements of owners and insurers. There were sometimes greater drivers outside of the regulator. PE said that industry had not delivered on making residential sprinklers affordable in the UK and were reluctant to do so.

BM said that there was a balance between how much is imposed by government (minimum expectations) verses how much the public is prepared to accept. Market mechanisms other than technical standards and code development need to be considered. As pointed out by RM the regulator role is to balance conflicting requirements. The builder/developer will be trying to build as cheaply as possible whereas the Fire Service and Insurer will be trying to make any fire protection system as sophisticated as possible to minimize risk with the owner and subsequently tenant paying.

In Japan detectors are mandatory but not residential sprinklers. The regulator needs to persuade the public that certain standards are necessary. For example, why do schools require 3m minimum ceiling heights? It is easier to persuade the public that buildings should not contain hazardous materials in order to comply with air quality regulations. PE reminded the group that analysis of some code provisions is required as their origin can be outdated or arbitrary, eg length of firemen's ladders or time to evacuate being the time to play the National Anthem.

DB said that this had been a helpful discussion. NRC had formed an internal task group to discuss and reflect on the Canadian Standards process to better define the regulator's needs and clarify expectations and relationships with the Canadian Standards bodies.

Agenda Item 5 Country Updates

5.1 Australia

TT presented the Country Update from Australia (refer document 21). It included the following:

- a) Review of ABCB by Productivity Commission. This major review of the ABCB commenced with TOR in February 2004, and the report released by commissioner responsible, Tony Hilton, in August. The report is 412 pages long and has 31 recommendations. Comments by stakeholders closed 8 October and the final report will be released 17 November for consideration by Australian Government and States & Territories. Key findings: ABCB have made significant progress in regulatory reform, reducing regional differences and introducing performance based regulations. However there is a need to further reduce regional differences and better articulate performance requirements. Local government regulations are not always soundly based and have caused an erosion of national consistency. It suggests that asset protection for commercial, but not residential, buildings should be an objective of the code. However it is felt that the insurance market operates effectively in this area so why would it be necessary to further regulate. It recommends the ABCB to rebadge with a new mission statement removing the reference to community expectations. It also recommends the Code to be provided free. This will create a funding issue as the ABCB currently receives \$3.5M from sales, \$1M federal funding and \$1M from S&T. It also suggests the Intergovernmental Agreement to be strengthened.
- b) Technical Validation Panel (trial). This has been trialed for two years and will be reviewed next year. It was introduced to speed up changes to the BCA by undertaking technical evaluation of proposals to give comfort to States and Territories adopting the changes that they are robust and appropriate.
- c) Sound Insulation Guideline. The new guidelines increase the requirements by 10 dba (from 45 to 55). Governments don't support because of cost. It requires site testing. Spain have carried out in house research on site testing of sound attenuation and have concluded that it cannot be done reliably.
- d) International Fire Engineering Guidelines. This was first developed by the Fire Research Centre and now further developed jointly by ABCB, Canada, US and NZ. Singapore, Taiwan and Hong Kong are considering joining. The framework is flexible to accommodate the different regulatory regimes. It provides guidance for all parties involved in the decision process: owners; regulator; fire service; designers. Part 0 is country specific, Part 1 is Process, Part 2 is Methodologies and Part 3 is Data. There are sections on each of the sub systems- egress, smoke control, etc. The document is to be published in February 2005, printed in Australia with Part 0 for all four countries to be

included in one document so that there can be a greater understanding internationally of differences. Canada have consulted with regulators and professional bodies and will need to rethink their Part 0 as there are difficulties in that Fire Safety Engineers are not regulated in Canada. There is considerable lack of understanding; even professional organizations are under the impression that the move to Objective Based Code shifts approval from the Regulator to Professional Engineers. There is also a perception that NRC will be making it a mandatory guide rather than as a service provision to regulators.

Austria and Spain both expressed interest in participating in the Guidelines. MB to forward them to JS and RM for their review (**Action 4**).

- e) Standards. Relationship improved (refer discussion Section 4 above). The technical review of the ABCB a few years ago by BM, John Traw and Russ Thomas recommended that the ABCB needed to exert greater control over the standards development process and they are now rejecting unnecessary changes. The ABCB has developed a protocol for anyone to write standards for reference in the BCA. A legal opinion indicated that all secondary and tertiary references are part of regulation and improved control is necessary over secondary and tertiary references. The BCA references 120 primary standards, 1000 secondary and 10,000 tertiary. RB pointed out the Vec(??) case in the US where an individual put a model building code adopted by a jurisdiction on a website because he considered it became public domain once adopted. The ruling is being closely followed by all model code writers and standards bodies in the US as it affects their funding and ability to operate. Intellectual property rights and copyright law need to be considered.
- f) Attack on buildings by salinity and acid sulphate soils. With land clearing, rise in water tables brings salinity to surface affecting building work. Acid sulphate attack is also an issue in certain locations. Guidance is being developed.
- g) Sustainability. The Board has approved this as a goal of the BCA. It is to include energy, water, materials and indoor air quality. The Governments have yet to provide the mandate.
- h) Access to buildings for people with disabilities. Differences between BCA and human rights legislation. Working with disability sector and proposal has been out to public comment and is now being reviewed by State governments to see whether the proposal is taking things too far. It applies to all non residential buildings. A protocol is being developed for how to deal with existing buildings.
- i) Wire balustrades. Now has a provision for maintaining tension.
- j) Future BCA - BCA21. A new strategic overview committee has been appointed to revitalize the development of a new BCA to correct current weaknesses. It has met
- k) National Technical summits. This is a useful tool to get ownership and a channel to inform constituents. Approximately 60 people attend mainly from industry associations to discuss and have input into code developments.
- l) Product Certification. A 3rd party scheme is being developed with NZ collaboration. The old scheme was a failure as the hurdle with all States in the approval process was too high. This scheme is more hands off for the regulator relying on accredited 3rd party certification.
- m) Digital River. This is a guidance project for developers for high tech facilities in buildings. It provides advice on ensuring that penetrations and duct sizes are appropriate for all service providers to ensure competition can occur between providers.
- n) Trans Tasman Building Regulatory Reform Council. Closer collaboration is occurring between BIA and ABCB on code development, research, product certification and

practitioner licensing. Staff of the two organizations are to work together on these activities with review at Board level.

- o) Energy Efficiency in buildings. Including energy efficiency in BCA results in big changes for industry. However the Board wanted to improve energy efficiency levels. Provisions will apply for multi residential building (class 2, 3 & 4) in BCA2005. Currently working on Class 5 to 9 buildings and residential for BCA2006. Five of the eight states have adopted the requirements. NSW has their own BASICS scheme; Victoria also has their own 5 star rating system. A protocol has been developed for the use of energy rating schemes.

5.2 Japan

- a) Accident Prevention Measures for Automatic Revolving Doors:
TS made a presentation on accident prevention measures concerning automatic revolving doors (refer document 16). Following the tragic accident where the small child died in a large diameter automatic revolving door, the Ministries of Economic Trade & Development, and Land, Infrastructure and Transport formed technical committees with members from industry, research, government and regulators. They collected a lot of information, including from IRCC members (refer documents 18 & 19 – minor updating of these still required to be done). A provisional guideline document (document 17) has been produced for voluntary compliance. There are 660 such large diameter doors (>3m) but since the accident about half have been voluntarily decommissioned. Approximately 25 comply with the guidelines and the others are relying on manual attention. There is a trend against their use for new buildings. They should be used in combination with other types of doors for children, elderly and people with a disability. Consideration is being given to introduce ‘safety in use’ provisions into the code but there is difficulty in setting appropriate performance standards.
- b) Amendment of Japanese Building Standard Law – Enforcement Order
WG presented an overview of amendments to BSL (refer document 20) for structural safety of existing buildings and to allow partial compliance in the upgrade of existing buildings. Currently there is a disincentive to upgrade/retrofit buildings because it triggers work to upgrade the whole building to achieve compliance with current requirements. Rules have been created allowing:
 - (i) partial application of requirements (structure – only the part structurally independent, fire – whole building, ventilation/equipment/systems – only addition or alteration) or
 - (ii) step by step compliance (approved timeframes for total compliance).

There is also a new proposal under discussion to prevent vehicles falling from parking buildings by strengthening barriers against impact. An increasing number deaths from vehicles falling from rooftops and parking building has been occurring possibly because of an aging population. RO mentioned the elderly person in San Francisco killing 10 people driving through a flea market. Societal needs change from different causes including demographic changes and regulations need to be revisited.

Other considerations include:

- changes to the prescriptive provisions for concrete cover to allow for some of the new materials being used;
- allowing optical fibre cables inside elevator shafts
- requirements to prevent collapse of structures under construction or demolition.

WG also provided an update on progress of ISO/TC/SC15. Structural Safety ISO 15928-1 published in Dec 03; Structural Serviceability to be published next year; Structural
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durability consultation document expected February 05. South Africa is preparing a new work item proposal on sustainability and energy efficiency.

- c) YH gave a very interesting presentation on the recent Niigata-Ken Chu-Etsu earthquake that occurred at 5pm on 23 October 2004. Location 350 km north of Tokyo, mountainous area with isolated communities, magnitude 6.8 Richter Scale, depth 13 km, 39 deaths, 2600 wounded, 22000 buildings damaged, similar response spectrum as Kobe. There were many landslides as the ground was very wet with recent typhoon. Most deaths caused by one severe landslide which came down over a motorway and a number of cars and people were buried. One small boy was dug out alive after four days. Landslides had dammed water courses causing flooding and slips had caused fires in 4 or 5 wooden buildings by overturning cooking appliances. Old wooden houses had pancaked. More modern structures with rigid foundations performed well (typically lower living floor built 2 to 3 metres above ground to allow for snow during winter. Some buildings survived well after the first quake but were severely damaged by adjacent buildings that had been damaged in the first shake and then collapsed in the after shock four days later. The walls of an old reinforced concrete hospital were damaged but the annex built 8 years ago with base isolation performed very well. There was some damage to infrastructure/lifelines – gas, water, the Shinkansen was derailed. Implications for the code - post 1981 buildings, when earthquake performance requirements were changed, perform satisfactorily. Similar experience to Kobe.

TO discussed consideration being given in Japan to subsidise the seismic strengthening of buildings that presented some risk to the public.

5.3 United Kingdom

PE presented the Country Update for England & Wales (refer document 7). There is pressure to regulate for sustainability and security. Parliament has passed the Sustainable and Secure Buildings Act 2004. The Act has application to existing buildings not undergoing building work. It gives power to require work. A Sustainable Buildings task force has been established to extend the scope of Building Code to include water conservation, sustainable materials, reducing waste and energy conservation (already included). It is also intended to develop/adopt an aspirational rather than minimum standard Code for Sustainable Buildings (models Green Homes, ECA) that bodies could voluntarily adopt, eg Housing Corp could require all Housing Associations to comply. Achievable goals to save 25% water and energy have been set. A Building Energy Performance Directive aims to make people aware how energy efficient buildings are and require public display of certificates as well as requiring boiler inspections and air conditioning monitoring.

Changes made to the Building Code include: structural safety (new documents produced recently come into force in December); site preparation; sound insulation (proposing robust details that work even with poor construction – comes into effect in January); and a new guidance document on Access to Buildings.

Changes proposed to the Building Code include: a major consultation on both energy efficiency and ventilation. Kyoto protocol requires carbon savings so energy efficiency measures are required. However, energy and ventilation are being treated together as building air tightness can lead to an unhealthy indoor environment. Residential sprinklers are being considered for vulnerable people. The principle of Lifetime Homes is being considered addressing issues such as stairs and lifts whereby people can convert rather than move.

The pace of change over the past 5 years is more than the construction industry and certifiers/local authorities can handle. Consequently enforcement is problematic: local authorities lack adequate resources and there is a need to update archaic legislation (the
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current 1984 Act includes Victorian public health regulations). Self certification is being considered for non critical items, eg replacement glazing, sound insulation.

5.4 United States - ICC

RO made a presentation in the US based International Code Council (refer document 22). The ICC aim is “setting the standard for building safety”, to promote regulations for the built environment that are effective, efficient and meet government, industry and public needs. It produces a complete system with regulations developed in an open process that includes all stakeholders. It came together as a single organization in 1994 with a 6 year goal to have a common code for the US, namely the IBC combining the best provisions of the previously disparate system. The model IBC produced in 2000 on a 3 year development cycle. Next published in 2003 and the next edition for 2006. Fourteen technical committees undertake the development. There is a cooperative arrangement with the insurance industry as they realize the importance of building codes. The coalition of major insurance companies (Institute of Building Safety based in Florida) send representatives to code hearings.

ICC provides Certification and Licensing Services, undertaking professional examination and assessment services to support code administration and safety of the built environment. National certification eliminates the need for testing programmes for each state/ local agencies and is therefore cost effective and provides consistent performance standards. ICC certification examinations create a level of skill and knowledge. There are a number of exams categories (residential & commercial building, electrical, mechanical, plumbing & combination inspector/plan examiner; certified building official, etc. Exams test job relevant knowledge & skills with a direct link to protection of public’s health, safety and welfare.

The ICC Foundation has been established to: educate consumers, governments and industry about constructing stronger, safer buildings & homes; support research and development; and promote technical services, training and guidance. The programme is as yet in its infancy and is currently more of an outreach programme. Recent work includes working to assist Caribbean governments to establish early warning systems, evacuation schemes, building design standards against hurricanes.

The International Accreditation Service, IAS, is a non profit scientific organization formed to consolidate all ICC accreditation activities (laboratory accreditation, inspection agencies, training).

Building Code Enforcement: currently ICC services approx 6000 building departments/ jurisdictions. A voluntary building department accreditation programme is being offered from 2005 that has an enforcement rating system. The grading system will be able to be used by jurisdictions for funding, resources & training purposes. It is cooperative rather than adversarial and includes self evaluation, peer evaluation, etc.

5.5 Spain

JS presented the Country Update for Spain (refer document 4, 5 & 6). He outlined the 1999 Building Act and new performance based Building Code. A “Basis for the new code” document received widespread support after it was launched in March 2000. The first draft was released for public comment in March 2002. More than 2600 comments were received resulting in a second draft by October 2003. It has then required submission to the European Commission to ensure there are not barriers to trade and translation into English, French and German. It should be approved by the Spanish Government by the beginning of 2005. Meanwhile, education, training and e-learning activities are being planned. It will come into effect a minimum of 12 months after approval. There will be an increase in the cost of

building with higher thermal and acoustic requirements. The new Building Code will be available to all on a website using open source language that will allow wide participation and transparency, foster independent expert participation and provide a working tool to coordinate drafts, working groups, etc (refer www.codigotecnico.org).

Also being addressed is the radon issue which is important in several parts of Spain. There will be at least minimum accessibility requirements (lifts, ramps, etc) for all parts of the country.

Discussion occurred on Eurocode for structural standards. TN advised that there is a 3 year period for adoption by each EC country, after which the national standards (at least in the UK) would no longer be maintained.

5.6 Austria

RM made a presentation on the new harmonized building regulations in Austria (refer document 23). The OIB, the Austrian Institute of Construction Engineering, was founded in 1994 as a result of the EC Construction Products Directive to coordinate the implementation of regulations by the 9 provinces, each having their own building law. There have been two previous unsuccessful attempts at harmonization of building regulations: 1948 draft of model building law; and 1961-80, Model building law. The present project has used a different approach by having a treaty whereby all provinces replace the technical requirements in the existing provincial law with a harmonized building code. Only the functional requirements are law (level 1). Guidelines (level 2) provide technical details for the fulfillment of building regulations (six produced: 1 Mechanical resistance & stability; 2 Safety in case of fire; 3 Hygiene, health & the environment; 4 Safety in use and access for all; 5 Protection against noise; 6 Energy economy and heat retention).

Deviations from the guidelines are possible using an equivalence principle. One person from each province makes up the top level Expert Group to address the treaty and level 1 building law. A steering committee consisting of government ministries, chamber of commerce, the chambers of architects and engineers, other chambers (eg. doctors) was formed to oversee the preparation of the guidelines. The treaty agreed one year ago and has been notified to the EC. Governors of provinces and provincial parliaments are due to sign by early 2005. Final drafts of the Guidelines will be released by end 2004 with consultation end 04/early 05. It will be in force by 1 January 2006. Austria is keen to learn from the implementation experiences of IRCC members, particularly education.

JS asked whether the contents of the Eurocode (structural) was incorporated into the Code as had been the case in Spain where any referenced document had to be made available without charge. This is not the case for Austria where a short introduction to Eurocode has been included in Number 1 Guideline plus references to Standards (Austria has their own well developed Standards, generally don't use DIN). The provinces insisted on minimal regulation and all six guidelines total only 65 pages. Such things as hot water temperatures are not included. This is possible because there is already strong regulation of the professions and contractors. Only certain people can design or construct. Experts are on the building site. Access for all standards have been slightly relaxed during the development/consultation as they were initially too severe. Housing is excluded although provinces decide on access requirements for apartment buildings (lifts, etc).

Hamomisation has been driven by industry. English versions of the functional statements are available. RM to send URL (**Action 5**). The Guidelines are only in German (RM to send to BM).

5.7 Canada

DB spoke to the Canadian Country Update (refer documents 1 and 1a).

a) Update on technical changes to Canada's national code documents.

The Commission has approved the technical content of the new Objective Based Code which is planned to be published in mid 2005. There have been two outstanding issues:

- Seismic changes.

Proposals to change to the dynamic analysis procedure for evaluating earthquake loading met with some concern, particularly in Ontario, the more seismically active province. They felt that financial and technical implications were unknown. Further study has quantified the financial costs to be in the range of 1%, predominantly in design and conformance assessment rather than construction. As a result this has now been ratified for inclusion in the Code. The lesson from this exercise has been the need to develop mechanisms to discuss changes with the Provinces and Territories earlier.

- Hot water temperatures.

The conflict between scalding and the risk of legionella has caused controversy and argument. A target 49°C proposed by Safe Kids Canada has not recognized the legionella risk. A task group has now been formed to find an effective technical solution.

TT stated that the required delivery temperature of hot water in Australia is regulated by plumbing regulations in each State referencing AS/NZS 3500.4, 2003 (45° & 50°C) and water stored is to be at a minimum of 60°C.

MS provided the current NZ Acceptable Solution whereby hot water delivery is to be maximum of 55°C and 45°C for schools, child care centres and the elderly. Water storage is at a minimum of 60°C with tempering valves required in the system.

PE provided a paper on UK requirements. Thermostatic mixing valves, TMVs, are being considered and it is proposed to limit outlet temperatures for baths to 46°C and showers to 41°C. He provided the BRE paper "Preventing hot water scalding in bathrooms using TMVs and the TMV Assn Recommended Code of Practice for Safe Water Temperatures for all non-domestic installations.

Austria does not regulate hot water temperature.

RB presented information on legionella. It grows in still water at temperatures between 20 and 50°C. It is not a problem in recirculating water. It requires a narrow pH range 7.4±0.2. ClO₂ is more effective than Cl. Care is required with Cl injection as high concentrations can kill kidney dialysis patients. CuAg ion being tested in Europe.

b) Joint CCBFC/PTPACC Task Groups

Terms of reference for task groups were presented. One is to establish code development priorities for work to be undertaken by the Commission and standing committees after the publication of the 2005 National Code documents. A list of issues raised by the Commission, Provinces and Territories, Standing Committees and stakeholders is included. A second one is established to evaluate the new coordinated code development system. This is to make recommendations on the system, processes, length of code cycle, etc, reporting to the Commission by June 2005. The TOR and list of issues was included in document 1.

c) NRC Cladding Systems Assessment Research Project

This research project is to evaluate the moisture management capabilities of cladding systems.

d) Mould in buildings.

The proceedings from the November 2003 Montreal Workshop on mould in the indoor environment is available at www.healthyindoors.com.

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5.8 New Zealand

MS and ST presented the New Zealand Country Update (refer documents 2 & 3). MS outlined the current environment in New Zealand with significant changes under way as a result of the weathertightness issues that had affected a large number of houses built since the mid 1990s. The BIA is to be dissolved on 30 November 2004 so this is the final IRCC meeting that New Zealand will be attending as the BIA. In future NZ will be represented by the Department of Building and Housing, DBH. Current challenges include:

- capability and capacity issues in the sector with activity at record levels, skill shortages and quality concerns;
- liability issues. Currently there are approximately 2000 homes registered with Weathertight Homes Resolution Service, a government mediation and adjudication service for resolving leaky building issues. The BIA has been joined in a small number of these cases but has always maintained that this is not the appropriate place to try matters of law and public policy and that such issues should be resolved in the High Court. Currently one case has been resolved prior to trial in the High Court through a judicial settlement conference. Seven further cases are before the High Court and one before the District Court that involve the BIA. Generally claims against the BIA fall into four categories: (1) that it was negligent in failing to act before it did to the emerging monolithic cladding/leaky homes situation; (2) that it was negligent in the way it monitored private building certifiers and territorial authorities, TAs, (issuers of building consents and undertaking inspections/approvals); (3) that it failed to ensure that private building certifiers were adequately insured; and (4) that its conduct was misleading and in breach of the Fair Trading Act.

Liability concerns are causing TAs to act sometimes very conservatively. This has resulted in a twenty fold increase in the number of determinations before the BIA.

- private building certifiers. An insurance review is being undertaken to determine the level of insurance that private certifiers should be required to have and whether the market will provide it. The new Act provides for Private Building Consent Authorities but it is in question as to whether current private certifiers can qualify in the short term.
- transition to the new Building Act 2004.

Current technical development is focusing on five areas:

- weathertightness. New compliance documents for timber treatment requirements and cladding and roofing systems and details have been issued. Significant education and training, brochures and publicity have also been undertaken for building officials, designers and builders. Further work is underway on torch on membranes, and guidance material on the principles of weathertightness.
- structural engineering. Concern has been expressed about the earthquake response of some design and construction practices. Investigations have been proceeding into hollow core slab detailing, ductility of high tensile reinforcing, slender wall panels, amended loading Standards, particularly related to seismicity, and concrete Standards. A number of Advisories are shortly to be issued.
- fire safety. The adequacy and robustness of fire reports and designs has been questioned, particularly related to means of escape. The promulgation of the IFEG process should help. Amendments to compliance documents related to minimum fire ratings and safety in childcare centres are shortly to be released for public comment.

- high density living. The trend towards apartment living, particularly in Auckland means that issues that were previously of lesser concern are having to be addressed: space, amenity, noise, access, ventilation, isolation from natural light and outside environment. Public consultation feedback on proposed airborne, impact and environmental sound amendments means that substantial work will be required prior to changes being adopted. The criticism focused particularly on the proposed use of spectrum adaptation terms C_{tr} (for airborne sound) and C_i for impact sound as measurement is difficult and results uncertain.
- interior environment. Changes are underway for the internal moisture and ventilation and safety from falling regulations. A proposal to increase energy efficiency levels is about to go out for public comment. This would require double glazing in the South Island and the North Island central plateau.

ST spoke of the development and implementation of the new Building Act 2004 which has now been passed by parliament and comes into effect progressively from 30 November 2004. The licensing of Building Practitioners comes into force in 2009. A new framework for consenting and approval of building work comes into effect progressively over three years whereby all territorial authorities are required to become accredited Building Consent Authorities. A new product certification scheme will replace the current product accreditation process. Certification will be done by an accredited third party.

The Department of Building and Housing came into effect from 1 November. It will combine a number of current agencies and creates a critical mass of expertise to provide advice to government.

MS spoke about the Code Review which is required by the Act to be undertaken with a report to the Minister within three years. It will consider the new purposes and principles of the Act, sustainability, well being, whole of life costing, etc and clarify performance criteria to meet societal expectations. An open process is being followed to establish societal expectations and code user requirements. Public workshops were held in Wellington 4/5 November and further workshops are being organized for Auckland in February. The IRCC 8-tiered hierarchy that includes risk groupings, levels and criteria is proposed.

Agenda Item 6 IRCC Global Summit – Australia, Sustainability, September 2005

MB distributed a brochure announcing ABCB's 4th National Conference and IRCC's 2nd Global Policy Conference in Surfers Paradise. The one day IRCC summit on Sustainability is on 15 September following the 3 day ABCB National Conference. ABCB is expecting 350 to 500 delegates to the National Conference and would hope to get 150 to 250 to stay on for the IRCC summit with the four day enrolment package.

MB stressed the need for a programme for the one day summit by the end of February. A programme committee was established: Dick Bukowski (lead), Rick Okawa, Paul Overall and Suzanne Townsend. RB is contacting the CIB Working Commission on Sustainability. The programme committee is to decide speakers, establish budget for speakers and programme for the day BY February 2005 (**Action 6**). It was suggested that a possible format could include a plenary session, a debate, a workshop and reporting back. The theme should be on how to make sustainability relevant to building controls, eg how to regulate for energy use.

Agenda Item 7 Risk Concepts in Building Regulation

BM presented risk concepts in building regulation (refer paper 24. Refer also paper 12, BM, performance based building regulatory systems: structure, hierarchy and linkages; paper 13, Deierlein & Hamilton, Framework for Structural Fire Engineering and Design Methods).

Current practice is for risk to be assessed qualitatively more than quantitative (low probability of failure) and risk to life not directly addressed, surrogate often used (damage state following event or length of exit path). Criteria is generally lacking. Risk is focused on physical hazards, mostly natural hazards and structural response. Fire not well addressed and safety in use (slips, etc) health hazards, security, etc not explicitly addressed. Cost impact not addressed, prescriptive requirements can ignore cost/risk/benefit tradeoff. The regulatory systems generally take too narrow a view, focusing on the building and not externalities impacting on system. Limited resources, political issues, public perception add to the shortcomings.

Insights are provided from other areas. De minimus and de manifestis target levels provided in environmental, drinking water and OSH legislation. Different levels for individual ($1-10^{-4}$) and societal (10^{-3} to 10^{-6}) risk. Market based incentives, eg emissions trading may be more difficult for buildings. The global reporting initiative, GRI, provides performance metrics for sustainability and provides a mechanism on how people view the corporation. At issue is often who is at risk, who bears the cost/consequence. There can be a disconnect between public and technical expectations, eg Northridge earthquake.

Establishing risk levels is a public policy decision not a technical question. Public policy is doing what is good for the people whereas the market is about doing what is good for me. A fundamental issue is that actions with private benefits can have significant social costs and actions with social benefits can incur substantial private costs. Good public policy aims to solve the most serious problems to satisfaction of community for overall net benefit to society (available information, influence and subject to change over time). To influence agenda need agreement of problem to be solved, an agreed solution and triggering event. Better frameworks and linkages are required. What are the risks? Does it impact on people, property, downtime, financial, etc. Metrics are needed and an understanding of costs and benefits – who bears costs and who gains benefits. There is need for a framework within which technical problem can be described in detail, agreed technical, risk and cost criteria exist that reflect stakeholder needs, and technology is available to address stakeholder needs.

Risk characterization – can be difficult to gain agreement on risk problem. A person with a disability will view risk differently from a non disabled. There are different perceptions of risk and risk acceptability, different views on data, tools, methods, variability, unknowns. The ICC framework for risk characterization includes: the nature of the hazard, number of persons in the building, length of time occupied and time of day, whether people sleep, whether occupants are familiar with layout and means of egress, whether occupants are vulnerable population groups.

Quantification of risk can be difficult. Cost benefit analysis for driving can be very different to air flight. Psychometric profiling is used to consider controllability/dread. High rise building where don't have control is different to residential where relatively have control. Trips and falls only become political with aging populations. It is necessary to look ahead 20 to 50 years to assess what the issues/risks will be then.

It was agreed to establish a work programme that IRCC would like to see addressed. It may then be possible for multiple providers to work cooperatively to fit pieces into the puzzle. BM, JS, WG and LP agreed to identify deliverables (**Action 7**).

Agenda Item 8 Security Requirements in Building Codes

8.1 World Trade Centre Inquiry - Dick Bukowski

RB presented Issues for Possible Changes to Codes, Standards and Practices related to World Trade Centre Inquiry conclusions (refer paper 14). The NIST draft report is to be published end January 05 with comments due by March and final report June 05. A full presentation of the World Trade Centre Investigation is available on NIST website www.nist.gov. There will be an open workshop at NIST at end June. The report is in order of 10,000 pages in hierarchical structure with a single report for laymen, 8 technical reports and many contractor reports.

The investigation has clarified causes of collapse. The jet fuel was only an igniter and oxygen load caused by open holes in the building intensified the fire conditions many times. There had been an assumption that spray applied fire proofing had been blown off by impact but modeling showed that the debris field moving through the building would have stripped off any fire proofing.

Issues for possible changes to Codes relate to:

- enhanced structural integrity. Wind tunnel testing was not consistent. Standards needed for wind tunnel testing to determine design loads. Holistic structural design methods needed – integration of architectural, structural and fire engineering.
- Enhanced fire protection features. Reliability and redundancy. Evac time four hours, should fire rating be evac time + 1 hour? Actual evac rates 50% slower than SFPE handbook for non emergency evacuation times.
- Access and egress. Mobility challenged occupants 6% (more than think there are, often temporary, eg accidents, asthma). Fire service access didn't seem to cause counter flow problems but needs to be considered. Training, large number had not had evacuation training. Protected elevators.

8.2 Introduction of Security into Building Regulations for England & Wales – Paul Overall

PE presented Introduction of Security into Building Regulations for England and Wales (refer paper 8). There have been general powers but no specific powers under the 1984 Act. The Sustainable & Secure Buildings Act 2004 provides further protection against crime. Building regulations can address target hardening. Stronger doors and frames, better locks, laminated glass in vulnerable areas (need also to strengthen frames as they can blow out), wiring for alarms and security lights. Need to consider means of escape (key from inside).

Terrorist attacks:

- ventilation systems (toxic compounds, research on location and protection of air intakes),
- fire protection (access & fire fighter safety, research required on use of lifts & escalators in emergency, debate of passive verses active fire protection systems – robustness of passive fire protection),
- structural stability (how to avoid disproportionate collapse, ties – more ductile connections, removal of structural members under wider range of circumstances, removal of key elements)

RB reported that NFPA had a new project on Premises Security. First two Standards: (i) occupancy based, (ii) the other hardware, space protection. They are considering quick release requirement for security bars (cast iron on windows) popular with Hispanic
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population. Currently people are being trapped inside in fires. Also collateral damage to neighbouring buildings (Oklahoma bombings). Should requirements for inexpensive arrangements against collateral damage, eg window films, be regulated? There is a NIST model "Contam" available on website that predicts most likely places where contamination might have spread to through the ventilation system. It has been tested during the US Anthrax cases and is quite accurate. Consideration can be given to modifying HVAC in mailroom to prevent spreading through the building.

8.3 Security Concepts in Building Regulation - Brian Meacham

BM presented security concepts in building regulation (refer paper 25. Refer also paper 10, FEMA 440, Risk and the performance of buildings in extreme events; paper 11, Arup, Risk & Security for NYC Buildings)

There is a lot of guidance in US to provide resilience against terrorist attack. Also Standards – ASHRAE, ASCE, ASTM, etc. Activities also in Canada, UK and Norway. Is security a building regulation objective? Balance required between security and civil liberties. There are competing objectives between locked doors and fire egress. Threats being considered include impact, blast (internal/external), chemical/biological/radiological CBR, incendiary, ballistics, assault. Consideration of target hardening, increased resilience of building components (water supply, communications, perimeter protection, layout of building to minimize hiding places). It is necessary to understand vulnerabilities. Is there an opportunity for international collaboration? Research funding is possible through various agencies.

TS reported that security was not being considered for building regulations in Japan. They are considering adding it to voluntary housing performance indication system but not in commercial.

JS said that the focus in Spain was not on buildings but on public spaces, crowded areas, trains. In the train bombings there were 200 victims and thousands injured. There are now three towers in Madrid of greater than 50 storeys and more are being considered so focus could change. The 2012 Olympic bid will focus on security and sustainability.

MB said that following the Bali bombings the response from government was not on buildings but on beefing up intelligence and a quick response team, medical post disaster.

BM mentioned the need for profiling of target buildings plus those adjacent. Targets were symbolic buildings, prestigious, interrupting communication flows to make a political/religious statement.

PE spoke of target hardening hospitals, etc in UK with the IRA bombing threats, mitigating against glazing shards by film but anchoring frame as it could become a projectile.

There is a need to change ventilation characteristics as design assumptions may not apply.

Guidance for resilience is a country by country, city by city, facility by facility consideration.

DB reported that Canada was relatively safe place and there was no security objective in the code although there were some security requirements for single family dwellings for protection against unwanted entry, not robbery. There has been an initiative by Federal Government to harden federal buildings, police, customs, airports, strategic buildings with intention of uninterrupted use.

It was resolved to keep the topic on the agenda (**Action 8**).

Agenda Item 9 Luxemburg Conference

The proceedings and case studies from the 5th International Conference on Performance Based Codes (6-8 October 2004 in Luxemburg) were circulated. These are available from SFPE at www.sfpe.org. BM reported that there had been good papers and case studies presented. Risk evaluation is now the generally recognized approach rather than the previous deterministic approach. DB mentioned that the fire engineering community now recognized that setting the performance criteria was not up to them, this was the role of the regulator. He mentioned that there was some confusion as to where the International Fire Engineering Guidelines fitted in with other initiatives under way.

BM suggested that the IRCC should look to co-sponsor such events with other organizations and should engage other communities and look for liaisons for other subjects down the road.

Agenda Item 10 New Members

MB reported that Singapore were keen to join but there were political considerations for them that needed to be resolved. South Africa would be invited to present a CV, detailing how they could contribute to IRCC activities, and invited to attend the London meeting.

Agenda Item 11 Parking Lot Issues

1. Frequency of code review:
 - UK – when case to do so
 - Spain – update according to social needs, small amendments, full revision every 5 years
 - Australia – every year. Published & available 4 months prior to adoption. Energy efficiency broken up over 3 years.
 - ICC – 3 year cycle. 2 code cycles 18 months apart. 2000 code changes. Annual meeting for education
 - NZ – continuous review
 - Canada – 5 year cycle + interim changes
 - Japan – continuous review. Now have one contact point for anyone to put forward suggestions.
2. Residential Sprinklers
 - RB showed video clip of fire starting in furniture with sprinklers and same scenario without. Some US communities requiring domestic sprinklers, eg Scotsdale. It can be an mechanism to transfer fire fighting facility costs to home owners. Real estate incentives for up to half costs. Uses combined piping, low flow system, more expensive changing piping system from 1/2" to 3/4 ". Property damage \$50,000 per event with unsprinklered verses \$1,000 for sprinklered properties. Reliability 90-95%. Still need smoke alarms for smoldering fires.

UK, US and Australia all required hard wired smoke alarms with battery back up for new housing.

Agenda Item 12 Other Business

- a) BM requested that members publicise the IRCC name more broadly and that they use the name an logo in papers and presentations. JS reported that Argentina had shown interest in the Spanish Building Control system and that he will inform them of IRCC activities. DB said that he was writing an article on IRCC activities for the NRC magazine and that he would circulate to all members to form the basis for other articles for member country newsletters and magazines (**Action 9**). MB agreed to get his staff to create an IRCC power point presentation template (**Action 10**).
- b) MS is to install papers from the meeting on the members only area of the website (**Action 11**). RM requested that the Austrian flag is not displayed on the IRCC website until the provinces had reported back (**Action 12**).
- c) TT agreed to coordinate a project to update the IRCC 1998 publication “Guidelines for Introduction of Performance Based Building Regulations”
- d) BM raised the difficulty associated with the IRCC name. It was agreed that the initials IRCC would remain but the term Inter-jurisdictional Regulatory Collaboration Council be deemphasized.
- e) MB suggested that meetings no longer be named by number but by date and location; ie this meeting was not IRCC 17 but IRCC November 2004, Tokyo. This was agreed.

Agenda Item 13 Next Meetings

The next meeting is to be hosted by the UK Office of the Deputy Prime Minister in London from 9 to 11 May 2005. Members could combine the IRCC meeting with the Consortium of European Building Controls meeting to be held in Ljubljana, Slovenia, on 16 & 17 May 2005.

This is followed by the meeting hosted by the ABCB on the Gold Coast, Australia, 16-18 September 2005, at the conclusion of the ABCB’s National Conference (12-14 September) and the 2nd IRCC Global Policy Summit (15 September).

Norway and the US are possibilities for the first IRCC meeting for 2006.

Agenda Item 14 Conclusion

MB thanked TO and TS for hosting the meeting with a special thanks for the secretariat: Ms Kanako Nishino and Bud Shoji. He also thanked YH for attending and presenting the earthquake review.

Thanks to all for attending, especially those attending for the first time. It has been good to welcome Austria into the organization.

Specific outcomes from this meeting:

- Agreed to explore the relationship with WFTAO
- Established a working group for risk management processes
- Confirmed the working group for programming the 2nd IRCC Global Policy Summit for the Gold Coast September 2005
- Shared Country Updates that are one of the most valuable and important aspects of the meeting.

Actions from IRCC Tokyo Meeting

ID	Action	Action By
1	Website access for members to start making more use of the members portion of the website	MS/MB
2	RB provided "Role of Standards in Performance-Based Building Regulatory System" paper to be installed on Website	MS
3	Dr Peter Hewlett, the British WFTAO representative, would be invited to attend the next IRCC meeting in London	PE
4	MB to forward International Fire Engineering Guidelines to Austria and Spain for their review and consideration on participation	MB
5	English versions of the Austrian functional statements are available. RM to send URL. The Guidelines are only in German (RM to send to BM).	RM
6	Dick Bukowski (lead), Rick Okawa, Paul Everall and Suzanne Townsend were appointed as the programming committee for the one day IRCC 2 nd Global Policy Summit. Topic, Sustainability in Building Codes. RB is contacting the CIB Working Commission on Sustainability. The programme committee is to decide speakers, establish budget for speakers and programme for the day BY February 2005	RM, RO, PE & ST
7	BM, JS, WG and LP to identify deliverables for a work programme on risk issues that IRCC would like to see addressed.	BM, JS, WG & LP
8	Include Security on Agenda for next meeting	MS
9	DB to circulate an article on IRCC activities for the NRC magazine to members to form the basis for other articles.	DB
10	MB agreed to get his staff to create an IRCC power point presentation template.	MB
11	MS is to install papers from the meeting on the members only area of the website.	MS
12	RM requested that the Austrian flag is not displayed on the IRCC website until the provinces had reported back.	RM

Appendix Correspondence between Ottawa Meeting May 2005 and Tokyo Meeting November 2005

28 May 2004	Beth Tubbs	Email Draft Minutes of IRCC Ottawa meeting May 9-11
28 May 2004	Bob Bowen	Email Sprinkler TG Report – Report of Joint Task Group on Mandatory Installation of Sprinklers in Houses
10 June 2004	Tomoki Sera	Email Invitation to Japan, Hotel Reservation
11 June 2004	Mike Stannard	Email Low Cost Domestic Sprinkler Standard NZS 4517 + NZFS research report
15 July 2004	Mike Balch	Letter Mr Wong, Singapore Building & Construction Authority, Invitation to attend Japan IRCC Meeting
15 July 2004	Mike Balch	Letter Rodney Milford, CSIR Bautek, South Africa, Invitation to attend Japan IRCC Meeting
15 July 2004	Mike Balch	Rainer Mikulits, OIB, Austria, Invitation to attend Japan IRCC Meeting
1 August 2004	Mike Stannard	Email, Ottawa Minutes updated + reminder to submit risk issues to BM for Japan
10 September 2004	Rainer Mikulits	Letter, Information about OIB
11 September 2004	Mike Balch	Email forwarding OIB letter to members
12 September 2004	Brian Meacham	Email, Risk concept papers
14 September 2004	Bob Bowen	Email apology for Japan attendance
14 September 2004	Javier Serra	Email Structural Risk Spanish Building Code
1 October 2004	Tomoki Sera	Ottawa Minutes corrections
3 October 2004	Wataru Gojo	Japan Risk & Security Issues
8 October 2004	Tomoki Sera	Reminder about Tokyo IRCC meeting
10 October 2004	Mike Stannard	Updated Ottawa minutes & Tokyo Agenda
12 October 2004	Brian Meacham	FEMA 445 Report
19 October 2004	Rodney Milford	Request for agenda
29 October 2004	Denis Bergeron	Hot water temperature limitations request
2 November 2004	Javier Serra	Spanish Hot water temperature requirements
8 November 2004	Olav Berge	Apology for Tokyo meeting