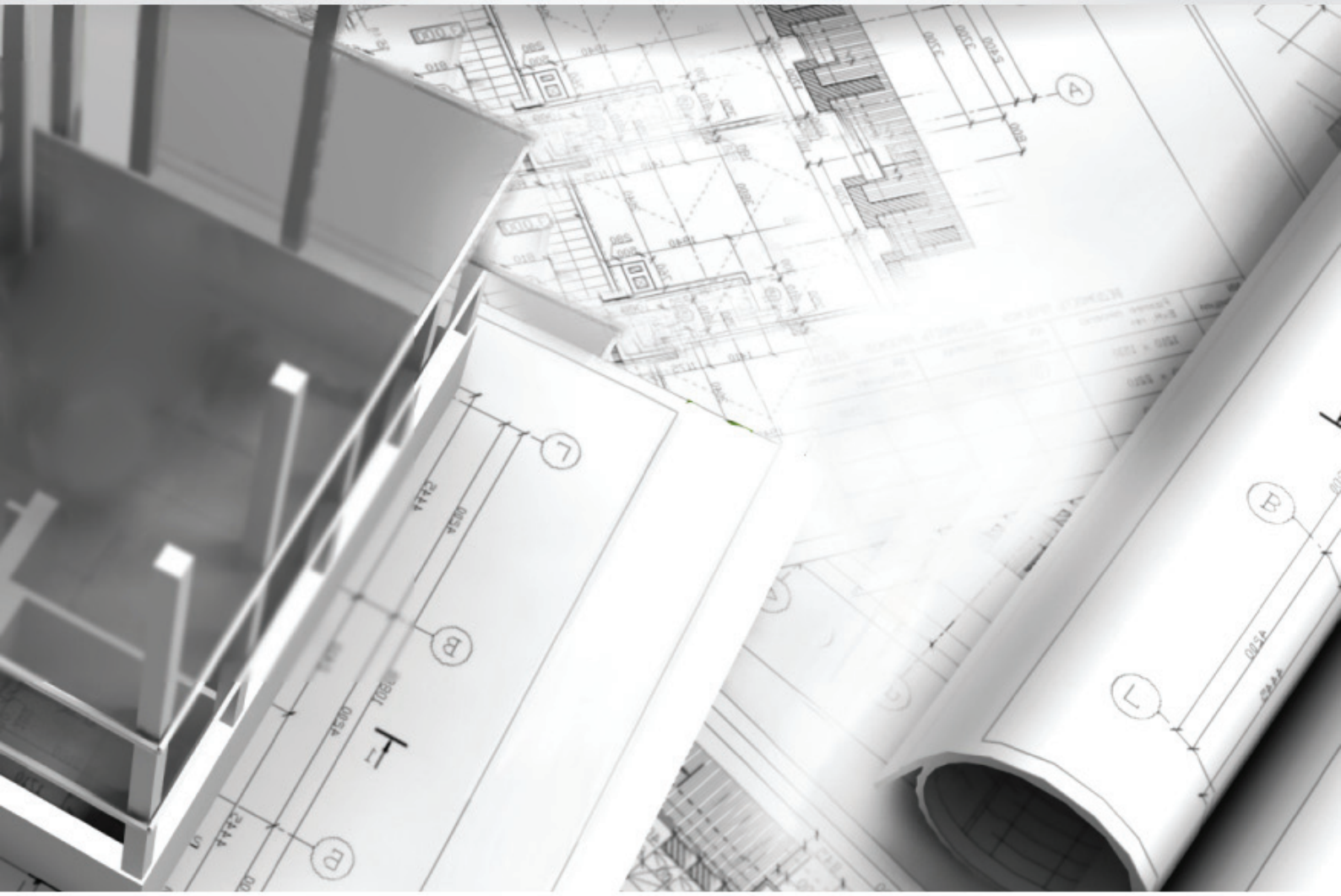
THE HONG KONG INSTITUTE OF SURVEYORS

香港測量師學會

BUILDING SURVEYORS CONFERENCE 2011
25TH ANNIVERSARY

BUILT ENVIRONMENT: HEALTH AND SAFETY



Date: 22 October 2011 (Saturday)

Venue: Hotel ICON, 17 Science Museum Road, Tsim Sha Tsui East, Kowloon

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MR. LEUNG CHUN YING, GBM, GBS, JP

Mr. LEUNG Chun Ying, GBM, GBS, JP
Chairman, The Hong Kong Coalition of Professional Services

As we spend more and more time in the built environment, the relationship between the built environment and our health and safety has never been closer. Any built environment such as office buildings, shopping malls or residences poses potential risks if they are not properly managed or are built with hazardous materials. Therefore, we need professionals to assess, identify, prevent or mitigate these potential risks in the built environment.

Building surveyors are trained to perform these important roles. Besides, they can contribute to the design and development of sustainable built environment so that buildings consume less energy, water and other valuable resources. Together they ensure that both the people and the planet co-exist in harmony.

The Building Surveyors Conference 2011 is organized by the Hong Kong Institute of Surveyors (HKIS) around the theme "Built Environment: Health and Safety". It provides a valuable opportunity for building surveyors and other stakeholders from the construction industry to share their expertise and experiences on the promotion of a safe and sustainable built environment.

I congratulate the HKIS on organizing this important conference and take this opportunity to wish the conference a great success.

Mr. LEUNG Chun Ying, GBM, GBS, JP
Chairman, The Hong Kong Coalition of Professional Services

MESSAGE FROM THE PRESIDENT
MR. WONG BAY

Mr. WONG Bay
President, The Hong Kong Institute of Surveyors (2010-11)

Welcome to the Building Surveyors Conference 2011.

I am really glad to be invited to speak at the 25th Anniversary of the Building Surveyors Conference and have a chance to meet so many experts in building surveying practice sharing and exchanging their views on the built environment.

The built environment today is full of surprises and challenges. With increasing world population, technology helps solving the problems of living space and human traffic by building high-rise and state-of-the-art structures, but frequent natural disasters, such as typhoon, landslide, earthquake and tsunami around the world, keep reminding us that our human-made construction are not robust enough to resist the nature and there are always rooms for improvement.

Thanks to the building surveyors' tremendous and unfailing efforts in promoting and ensuring the proper maintenance and care of buildings during the past few decades, the built environment in Hong Kong has been relatively safe and habitable. However, there are a lot of man-made hidden risks in our living environment posing safety hazards to building users and the public. We need to pay particular attention to the human impacts on the existing structures in order to avoid potential tragedies. Fire safety, ventilation, lighting, water supply, drainage etc are the aspects that we should keep our eyes on, especially when the number of aged buildings in our society is growing. Recent individual sad incidents in sub-divided flats and the proliferation of unauthorized building works (UBWs) have rung the alarm bell.

Apart from the effort of building surveyors, property owners should also play an active role in making sure their properties are in compliance of all relevant regulations in relation to health and safety, as well as taking their own responsibilities on building maintenance. It is utmost important for everyone to make an effort to create and maintain a healthy and safe built environment.

We are most honored to have Mr LEUNG Chun Ying, GBM, GBS, JP, Chairman of The Hong Kong Coalition of Professional Services, to give us an opening keynote speech and Mr AU Choi Kai, JP, Director of Buildings, Buildings Department of HKSAR Government, to share with us the Harmonizing New and Old Buildings in the Dense Built Environment. We are also delighted to have so many heavy-weight speakers both in and outside Hong Kong looking into the topic from various distinctive perspectives. I hope all of you will find the conference inspiring and interesting.

Taking this opportunity, I would like to thank all speakers, moderators, sponsors, guests, Organizing Committee led by Vice Chairman of Building Surveying Division Mr Andrew KUNG to make this conference a successful event.

WONG Bay
President, The Hong Kong Institute of Surveyors (2010-11)

MESSAGE FROM THE BUILDING SURVEYING DIVISION CHAIRMAN

MR. VINCENT HO

CONFERENCE PROGRAMME

Time	Programme
08:30 – 08:55	Registration
09:00 – 09:10	Welcome Remarks
	Mr. WONG Bay President The Hong Kong Institute of Surveyors
09:10 – 09:40	Keynote Speech - The Supply Side Considerations
	Mr. LEUNG Chun Ying, GBM, GBS, JP Chairman, The Hong Kong Coalition of Professional Services
09:40 – 09:50	Souvenir Presentation to Guest-of-Honour
09:50 – 10:20	Harmonising New and Old Buildings in the Dense Built Environment
	Mr. AU Choi Kai, JP Director of Buildings Buildings Department
10:20 – 10:40	Coffee Break
10:40 – 11:10	Our Changing Environment
	Mr. Geoff MITCHELL Managing Director, GMA Certification Group Pty Ltd (Building Surveyors) Past National President, Australian Institute of Building Surveyors
11:10 – 11:40	Control, No Control, or Loss of Control
	Mr. Daniel C. LAM, BBS, JP Past President The Hong Kong Institute of Surveyors
11:40 – 12:10	Construction Site Safety Management in China
	Prof. LIU Yi Sheng Professor & Head of Construction Management Department Beijing Jiaotong University
12:10 – 12:30	Q & A ***Moderator*** **Mr. Kenneth Y.K. YUN** Immediate Past Chairman, Building Surveying Division The Hong Kong Institute of Surveyors Convener of BSD Green and Sustainability Panel
12:30 – 12:35	Souvenir Presentation to Speakers (Morning Session)
12:35 – 12:40	Souvenir Presentation to Sponsors
12:40 – 14:05	Lunch
14:05 – 14:35	Control, Change, Observe - The Art of Project Management
	Mr. C.K. LAU, MH, JP Director C. K. LAU & Associates Limited
14:35 – 15:05	A Study on the Crowd Flow Pattern in Mass Transit Rail Stations
	Dr. S. M. LO Associate Head Department of Civil and Architectural Engineering
15:05 – 15:25	Coffee Break
15:25 – 15:55	Building Safety ⊂ Building Surveying
	Prof. Barnabas H. K. CHUNG
15:55 – 16:25	Q & A ***Moderator*** **Mr. Edwin TANG** Past BSD Chairman, Building Surveying Division The Hong Kong Institute of Surveyors
16:25 – 16:30	Souvenir Presentation to Speakers (Afternoon Session)
16:30 – 16:35	Closing Remarks
	Mr. Vincent HO Chairman, Building Surveying Division The Hong Kong Institute of Surveyors
16:35	End of Conference

SPEAKERS AND PAPERS

MR. AU CHOI KAI, JP

Mr AU Choi-kai, JP
Director of Buildings
Buildings Department

Biography

Mr C K Au is a professional building surveyor. He is a Fellow of the Hong Kong Institute of Surveyors, Fellow of the Royal Institution of Chartered Surveyors of U.K. and Member of the Society of Fire Protection Engineers of USA. After completing his education in the Hong Kong Polytechnic, he joined the Hong Kong Government in 1974. He has held a number of positions in the then Buildings Ordinance Office, Building Development Department, Buildings and Lands Department and Buildings Department. He is now the Director of the Buildings Department. He has over thirty years of experience in building control, especially in the review and formulation of statutory standards in the design and construction of buildings. He was the chief drafter of a number of Codes of Practice which are still in force. These include the Codes of Practice for "Means of Escape 1996", "Fire Resisting Construction 1996", "Means of Access for Fire Fighting and Rescue 2004", "Overall Thermal Transfer Value in Buildings 1995" and "Building Works for Lifts and Escalators 1993".

Abstract

Harmonizing New and Old Buildings in the Dense Built Environment

The dense and compact built environment of Hong Kong calls for an efficient use of land and energy as well as measures to minimize environmental impact. This leads to a pressing need for the Building Department to fine-tune the building control system with an aim to promote and set the framework for good environmental performances of new buildings and proper upkeeping and upgrading of existing buildings so as to achieve a harmonized built environment in Hong Kong. All along the Buildings Department has adopted a multi-pronged approach to facilitate innovative designs of new buildings. The approach includes modernizing the building design standards stipulated in the Buildings Ordinance and Regulations and the various codes of practice by transforming the prescriptive standards to performance requirements, promoting green and sustainable building designs, and promoting reduction in waste generated from new buildings and construction sites. On the other hand, the Buildings Department has to tackle the problem of building disrepair – to which timely and preventive maintenance of buildings is the most effective means to upkeep their safety and health which is the fundamental responsibility of their owners. The Buildings Department has therefore taken various measures to ensure building owners discharge their responsibility properly, namely pursuing legislative amendments to introduce mandatory schemes for regular building inspection and repair, facilitating building owners to carry out repair works and minor alterations to their premises including additions of amenity features under the simplified requirements of the newly launched minor works control system, upgrading the fire safety standards of old domestic and composite buildings under the Fire Safety (Buildings) Ordinance, and formulating design guidelines and methodologies for upgrading heritage buildings to current building standards in their adaptive re-use. Professional inputs are, however, required to help building owners discharge their responsibility. After all, the Buildings Department and the building professionals have to continue working in concert in order to achieve the goal of harmonizing the old and new buildings in the dense built environment of Hong Kong.

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MR. AU CHOI KAI, JP

Paper

Introduction

Many people looking down from the Peak have a feeling that the city is a living organism. The highways are the arteries and the people are cells. They keep Hong Kong moving forward. To me, the city is more like an orchestra playing symphony. Different members, though playing their own parts, coordinate with each other well to achieve harmony. Yet, members come and go and the conductor has to work hard to keep the orchestra working as a team. As Hong Kong is a highly vibrant city, the Government is facing a similar challenge of harmonizing the new and old buildings in the dense built environment.

Hong Kong has a small area of about 1,100 km^2 but her population is over seven million. Land is a scarce and precious natural resource because of the hilly topography leaving only small areas of relatively flat lands readily available for building developments. Only about 25% of the land in Hong Kong is developed and about 40% of the land is designated as country parks. Naturally, this leads to a dense built environment. Hong Kong is renowned for her spectacular and expansive skyline. The mode of development is unique: dense and compact urban fabric with clusters of high-rise buildings. According to the research of an international real estate company[1], Hong Kong has more than 7,500 high-rise buildings, ranked number one in the world; and the stock keeps increasing. Also, Hong Kong is supported by extensive mass transportations with over 11 million passenger journeys made on public transport systems every day[2]. In general, country parks are in the close proximity of urban districts, which are just a few minutes away. This results in highly efficient use of land and energy.

However, the scene is far from satisfactory if we look into details. Our living environment also has acute problems in many facets. I think many people will agree that the summers of Hong Kong are getting hotter in recent years. The dense building developments may contribute to such a phenomenon. One of the best-known effects of urbanization is the heat island effect. Factors that may bring about such effect include the absorption of more sun energy by concrete buildings due to their high heat capacity; low heat release rate from urban areas to higher atmosphere due to the high density of buildings; increasing man-made heat emissions from buildings, in particular air-conditioning and reflective glass; and also the adverse wall effect created by densely packed buildings which reduces wind speed and inhibits cooling by convection[3]. We therefore have the pressing need to formulate a new set of rules for the design of new buildings to improve their environmental performances.

Another problem is our aging old buildings. The building collapse incident at Ma Tau Wai last year rang the alarm bell. Hong Kong will not be recognized as a world-class city unless our old building stock is properly managed and maintained. We have to change our approach to building maintenance to improve the longstanding problem of building neglect and disrepair, ensuring the attainment of minimum safety and health standards in all existing buildings.

The Building Authority (BA) plays the role of the conductor (i.e. the harmonizing regulator to ensure "working in concert"). Buildings come and go. He has the responsibility of tuning the building control system to ensure our built environment is in harmony by promoting and setting the framework to facilitate sustainable building developments in Hong Kong.

Development of new buildings

Every new musical instrument must be tuned before use to ensure working in concert with the orchestra. New members of an orchestra should adjust their musical instruments to tune to the 'A' note played by the principal violinist to ensure harmony. Similarly, new buildings have to be compatible with their neighbourhood. Most new buildings in Hong Kong are tall buildings. Apart from their own performance, tall buildings may not necessarily have greater impact to the environment than their low-rise counterparts if they have adopted relevant sustainable building designs. All along, the Buildings Department (BD) has been promoting sustainable built environment. We adopt a multi-pronged approach to facilitate innovative designs of new buildings including modernizing the building design standards stipulated in the Buildings Ordinance (BO) and Regulations and the various codes of practice by transforming the prescriptive standards to performance requirements, promoting green and sustainable building designs and also promoting reduction in waste generated from new buildings or construction sites.

1 Emporis (2011). Emporis Skyline Ranking. [WWW] http://www.emporis.com/application/?nav=skylineranking&lng=3 (29.8.2011)
2 Transport Department of HKSAR (2011). Public Transport. [WWW] http://www.td.gov.hk/en/transport_in_hong_kong/public_transport/introduction/index.html (29.8.2011)
3 Hong Kong Observatory of HKSAR (2011). Urbanization Effect. [WWW] http://www.weather.gov.hk/climate_change/urbanization_e.htm (29.8.2011)

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Performance-based requirements

The Building (Planning) Regulation 30 and 31 prescribed the statutory requirements on provisions of natural lighting and ventilation to spaces used as habitable rooms, offices and domestic kitchens. The BD recognizes that a performance-based approach is an acceptable alternative in satisfying these requirements. In the early 2000s, the BD commissioned and completed a consultancy study on the review of the standards of lighting and ventilation requirements in buildings. In 2003, the PNAP 278 (now PNAP APP-130) was issued to promulgate the related performance requirements, together with guidelines for the simplified assessment method and guidance notes on validation of lighting simulation by computer software. The standard of vertical daylight factor of 8% and 4% is specified as the performance requirement for natural lighting provision to habitable rooms and kitchens respectively. For natural ventilation, the performance requirements are set at 1.5 air change per hour by natural means for habitable rooms and 1.5 air change per hour by natural means plus 5 air change per hour by mechanical means for domestic kitchens. We believe that performance-based design can give a more detailed assessment of the actual amount of natural lighting and ventilation provided to the relevant spaces by the windows, allowing the authorized persons (AP) to have a better understanding of the window design and refine the design as necessary to improve its effectiveness. This can potentially reduce the use of artificial lighting and mechanical ventilation and hence save the amount of energy consumed.

Also in early 2000s, the BD commissioned consultancy studies to conduct comprehensive reviews of the Building Regulations including the Buildings (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations (the 'Drainage Regulations') and the Building (Construction) Regulations (the 'Construction Regulations') as well as the three codes of practice in relation to fire safety in buildings. These studies aim to ensure the requirements in these regulations or codes meet the modern day needs of the society and are in line with the current standards of other developed countries. They also aimed at transforming some prescriptive standards into performance requirements so as to allow flexibility for building designers to adopt innovative building designs and technologies. Any improved building design as a result may help saving building components and materials and facilitating future maintenance of buildings. For example, the revision to loading requirements will help designers coming up with more economical structural designs of buildings and hence reduce the use of materials. Another example is that we propose to allow alternate use of natural and artificial light to maintain the illumination at exit routes in the new Code of Practice for Fire Safety in Buildings (the new FS Code), which will help reducing electricity consumption. The first stage amendments to the loading requirements in the Construction Regulations (i.e. Regulation 17) were made and have come into operation on 1.8.2011. On the other hand, the new FS Code has been published and uploaded to the BD's website, to be effective on 1.4.2012. Amendments to the Drainage Regulations and the remaining parts of the Construction Regulations are planned to be submitted to the Legislative Council in the first half of 2012. Apart from transformation of prescriptive standards to performance requirements, the Drainage Regulations will also be amended to increase the provision of sanitary fitments for female patrons in shopping arcade, cinema and places of public entertainment by 60%, 160% and 150% respectively.

Green and sustainable building designs

Since 2001, the BD, the Lands Department and the Planning Department issued the joint practice notes JPN1 & JPN2 with a view to coping with the Government's policy of promoting construction of green and innovative buildings. Exemption from gross floor area (GFA) calculations is provided as an incentive to encourage provisions of certain green and amenity features including balconies, utility platforms, wider common corridors or lift lobbies in residential buildings and communal sky gardens. However, there had been voices from the green groups and some members of the public, raising their concerns over the general increase in building bulk and height, lack of air ventilation and greening and also energy efficiency in buildings. In 2009, the Council for Sustainable Development launched a public engagement process entitled "Building Design to Foster a Quality and Sustainable Built Environment" in collaboration with the Government. The result pointed to a need for a package of new measures to foster a quality and sustainable built environment. In view of this, a set of sustainable building design guidelines (SBD Guidelines) has been developed on building separation, building set back and provision of greenery, which are promulgated through the PNAP APP-151 & 152. Satisfactory compliance with the SBD guidelines is a pre-requisite for granting GFA concessions. Also, in order to avoid excessive building bulk, an overall cap of 10% is imposed on the total amount of GFA concessions that will be granted for the green and amenity features.

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The overall effect of reduction in building bulk and increase in building separation, setback from narrow streets and increase in green coverage areas serves to improve air ventilation around buildings, reduce the heat island effect and improve the microclimate of neighbourhoods. This will enhance the quality of our built environment, particularly at pedestrian level.

As a step forward, we propose to conduct a review of the provisions in the Building (Planning) Regulation (the 'Planning Regulations') relating to development intensity by adopting a holistic approach with an aim to reducing the impact of building bulks to the environment and to increase the certainty on the exclusion and granting of additional plot ratio under the Planning Regulations.

Apart from the control of building bulk, the design of building fabric also has significant impact on the environmental performance of buildings. The first Building (Energy Efficiency) Regulation (the 'Energy Regulation') came into effect in 1995. It applies to hotels and commercial buildings including offices and shops, and aims at reducing heat transfer through building envelope by requiring the external walls and roofs of such buildings to be designed and constructed to have a suitable 'overall thermal transfer value' (OTTV), thus saving the electricity consumption of buildings. A code of practice has been published by the BD providing technical guidelines to comply with the requirement of the Regulation. The first review of the Energy Regulation was conducted and the proposal thereof implemented in 2000. The second review has been completed recently. The result has been promulgated through the revised PNAP APP-67 in that the OTTV in the code is further tightened to not exceeding 24 W/m^2 in the case of a building tower and not exceeding 56 W/m^2 in the case of a podium.

Meanwhile, a consultancy study is being carried out on the design and construction of residential buildings for energy efficiency to review the effectiveness of current measures in promoting energy efficient design, taking into account the relevant national and international practices and to formulate guidelines, standards or requirements for improving energy efficiency of residential buildings in Hong Kong. The design parameters being studied include the façade heat gain, natural ventilation and daylighting. The building-related energy consumption[4] in residential buildings may be reduced by a quarter to even one-third if energy efficient building fabric designs are adopted. Awaiting the final result of the study, we aim at amending the Energy Regulation to extend its application to residential buildings in the long run.

Reduction in waste

While adopting performance-based requirements and promoting green and sustainable building designs on the one hand, the BD also promotes reduction of waste. As early as 1992, the BD issued PNAP 153 (now PNAP ADV-5) advocating the reduction in use of tropical hardwood in order to contribute to saving of rainforests. It rightly pointed out the problem of the use of timber as the major material for construction of hoardings, covered walkways and formworks for casting of concrete. Nowadays, the use of timber for such purposes is largely reduced. All hoardings and covered walkways are now constructed with materials other than timber, usually in steel. Also, profiled steel formwork, which can be re-used, is very common. In addition, the BD also promotes the use of precast concrete construction. In JPN 2, 150mm thickness of non-structural precast concrete external walls may be disregarded from GFA and site coverage calculations if certain criteria are met. The wider use of precast concrete nowadays has greatly reduced the use of timber formworks and also construction waste.

On the side of design of new buildings, the Building (Refuse Storage and Material Recovery Chambers and Refuse Chutes) Regulations (the 'Refuse Storage Regulations') was enacted in 2000 requiring certain new building developments to be provided with refuse storage and material recovery chamber and specifying the minimum floor space of such chamber based on the total usable floor space of the building. The Planning Regulations (i.e. Regulation 23(3)(b)) were also amended to allow refuse storage and material recovery chambers and refuse storage and material recovery rooms (the provision of the latter not being mandatory) to be disregarded in the GFA calculations to serve as an incentive for provision of such facilities. The Refuse Storage Regulations were further amended in 2008 requiring that domestic buildings and the domestic part of composite buildings shall be provided with a refuse storage and material recovery room on every floor. This complements the Government's policy of promoting waste reduction and enhancing source recovery of waste for recycling.

The principal violinist has already played the note 'A', it is now time for the members of the orchestra to tune their instruments to match this pitch. While the BD has paved the ways for performance-based approach and

4 Building-related energy consumption means the energy used for space-conditioning and lighting that are influenced by design and construction of building fabric. Energy uses that are solely determined by users (such as cooking, refrigeration, laundry and audiovisual equipment) are not included.

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green and sustainable designs, it is up to the designers to choose whether to reap the benefits from this new control framework. The building industry is encouraged to devise innovative designs and employ advanced technologies. No matter how hard the conductor waves the wand, there will be no harmony if the musicians do not play the right tone. The society relies much on the professional inputs of the building designers to realize their dream of a green built environment.

Upkeeping of Existing buildings

Old musical instruments need regular maintenance to upkeep the quality of performance. No doubt, well maintained old instruments, usually made by famous artisans, would perform better than low quality new instruments. The value of a well-maintained quality made old instrument, like antiques, will increase with time.

Buildings also need maintenance, not only to sustain their prices, but also to upkeep their functional performance. In fact, the impact of good upkeep of existing buildings is far more significant in improving our living environment than new buildings, given the large stocks of existing buildings comparing to new buildings completed every year. Our entire living environment will be reshaped if the existing buildings are well maintained or suitably upgraded.

Timely and preventive maintenance – Inspection and Repair

I think nobody likes his home leaking while raining nor finds the escape staircases blocked when there is a fire. However, due to the lack of or inadequate knowledge on the complicated management matters in multi-storey buildings, many owners are indifferent to proper maintenance of their buildings. Many existing old buildings are lack of maintenance and left in disrepair. The costs of building neglect are huge at both the societal and individual levels. In fact, the cost of repair and maintenance will be much lower if the defects are cured at the early stage. Timely and preventive maintenance is definitely the most effective means in tackling the problem of building disrepair.

It is the owners' fundamental responsibility to upkeep the safety and health of their properties. For this purpose, they should conduct periodic inspections of their buildings and carry out timely maintenance and repair accordingly. The Government should and could only play a monitoring role on behalf of the public to ensure the owners discharge their responsibility diligently and properly such that the public safety is not prejudiced. However, we have learnt lessons from past experience that it is ineffective to leave the owners themselves to initiate building inspection and repair. Therefore, we propose a mandatory building inspection scheme (MBIS) and a mandatory window inspection scheme (MWIS). Under the two schemes, owners are statutorily required to discharge their responsibility to regularly inspect and upkeep their own properties. Under the MBIS, owners of buildings aged 30 years or above will be required to carry out inspections (and, if necessary, repair works) of the common parts, external walls and projections including signboards of the buildings once every 10 years. Under the MWIS, owners of buildings aged 10 years or above are required to carry out inspections and if necessary, repair works, of all windows of the buildings once every 5 years. These two schemes do not apply to domestic buildings not exceeding 3 storeys since their risk involved is lower.

At present, there are about 18,000 buildings falling within the scope of MBIS and, in 10 years' time, the number will increase to more than 28,000. We cannot rely on the relatively small number (about 1,700) of the AP and registered structural engineers (RSE) currently registered under the BO to conduct inspections under the MBIS and MWIS. Moreover, many of them focus on construction of new buildings and are not interested in doing inspection and repair works for existing old buildings. We therefore propose to set up a new register of "registered inspectors" (RI) under the BO. The eligible applicants are mainly registered building professionals under the respective statutory registration boards, i.e. the registered professional surveyors of relevant divisions, the registered architects and the registered professional engineers of relevant engineering disciplines. They will be subject to control similar to the AP and RSE. For example, they will be subject to prosecutions and disciplinary proceedings as appropriate if they commit an offence or professional misconduct when discharging their duties under the two mandatory inspection schemes.

For the MWIS, we propose that the relevant inspection and repair works may be conducted by a "qualified person" (QP). This QP is in fact the registered building professionals or contractors under the BO, which means the AP, RSE, RI, registered general building contractors and registered minor works contractors (RMWC). There are at present about 10,000 RMWC and we estimate that eventually there will be around 25,000 RMWC

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under the BO. Together with the new RI, the total number of QP should be enough to meet the demand of the MWIS.

Administrative panels will be set up to select about 2,000 buildings under the MBIS and 5,800 buildings under the MWIS every year for which the BA will serve statutory notices requiring the owners to carry out inspection to the common parts, external walls, projections and signboards of the buildings under the MBIS and, of course, windows under the MWIS. In case of default, the BD will carry out the inspection and repair works on behalf of the owners. After completion of works, the BD will recover the concerning cost including the cost of works and supervision charge from the owners. A surcharge not exceeding 20% of the concerning cost will also be imposed to encourage the owners to comply with the comply with the notices voluntarily.

The Buildings (Amendment) Bill 2010 introducing the MBIS and MWIS, after prolonged scrutiny by the Legislative Council, was eventually passed on 29 June 2011 as the Buildings (Amendment) Ordinance 2011. We will table the associated subsidiary legislation to the Legislative Council as soon as possible after this summer recess and hopefully, the two schemes will come into operation in early 2012.

Alterations and additions

People like to improve their living environment. Every day many minor alterations or additions are carried out to existing buildings. For example, erection of window canopies to shield their premises from sun and rain. However, many owners ignore or are not aware of the requirements of the law and hire cowboy contractors to carry out such works for them. Since 31 December 2010, the minor works control system has come into full operation. It offers building owners a simple and lawful channel for carrying out minor works. There are three classes of minor works, namely Class I, Class II and Class III minor works. Class I covers the larger scale and relatively more complicated minor works, and require design and supervision inputs by registered building professionals, for example, erection of internal staircases. Class II covers the relatively simpler minor works like repair of external walls or windows, which can be carried out by registered contractors independently without supervision by building professionals. Class III minor works are mainly the so called household minor works like erection of lightweight window canopies, drying racks or supporting frames for air-conditioning units, which can be carried out by registered contractors who may be competent individual workers independently.

The procedures for minor works, i.e. simplified requirements, are easy to follow. Building professionals and contractors are required to notify the BD before the commencement of Classes I and II minor works. Notification of the commencement of Class III minor works is not required because of the short duration of works. The building professionals and registered contractors are required to certify the completion of all minor works they have undertaken and submit the certificates to the BD. The BD will only issue acknowledgement after receipt of the commencement and completion notifications. However, it should be noted that such acknowledgement is only an administrative arrangement. The minor works control system is essentially a self-regulatory system for which approval from the BA is not required. The BD will carry out audit check on minor works submissions and when irregularities are identified, will take enforcement actions such as instigating prosecution or disciplinary proceedings as appropriate. Therefore the building professionals and registered contractors should take full responsibility of the minor works carried out by them.

As mentioned, there are more than 10,000 contractors successfully registered as minor works contractors under the BO. Also, up to the end of September, we have received more than 25,000 minor works submissions. This proves that the public and the industry are getting more familiar with and welcome the new control system. We are now reviewing the system to see if there is any room for improvement. There are at present 118 minor works items. Amongst which there are erection of supporting structures for solar water heating systems and photovoltaic systems. In order to promote green and sustainable built environment, new minor works items are being formulated to cover additions of green roof systems and open trellis for plants to existing buildings. We have also identified other areas to enhance the control system such as designating the erection of retractable canopies as minor works so that they can be carried out under the simplified requirements. We are now stocktaking the proposed amendments to the schedule of minor works and we intend to submit the amendment regulation to the Legislative Council early next year.

We hope that in the long run the smooth operation of the minor works system will help curb the growth of new unauthorized building works (UBWs) and improve

4 Building-related energy consumption means the energy used for space-conditioning and lighting that are influenced by design and construction of building fabric. Energy uses that are solely determined by users (such as cooking, refrigeration, laundry and audiovisual equipment) are not included.

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the safety and quality of minor works. Accompanying the full implementation of this new control system is a scheme for validation of unauthorized household minor works. At present, it covers the small sized unauthorized window canopies, drying racks and supporting frames for air-conditioners carried out or completed before 31 December 2010. If the owners of such unauthorized structures want to retain them, they can appoint registered building professionals or contractors to carry out inspection to ascertain the safety of such structures. If it is revealed that certain strengthening or repair works are required, they can carry out such works under the simplified requirements. After completion of the inspection or the required strengthening, the appointed professionals or contractors shall submit a certificate to the BD. The BD will not issue statutory removal orders or warning notices against such validated UBWs on the ground that their erection had contravened the procedural requirements under the BO, i.e. without approval and consent from the BA. This validation scheme offers the owners a channel to retain these UBWs if their safety have been ensured by the registered personnel under the BO. In fact, this helps reduce BD's enforcement effort against UBWs that are of relatively low risk to the public so that we can focus our attention to items of higher risk or causing nuisances. This can also help reducing demolition waste since many of such UBWs are actually in good order and can be further used for a longer period.

We are now considering extending the scheme to cover unauthorized signboards and other common green and amenity features such as retractable canopies, open trellis for plants, security fences on roofs and enclosed balconies. Such UBWs are essential to operations of businesses and the well-beings of many owners and occupants. If they can be incorporated into the validation scheme, grievances and arguments arising from enforcement for demolition of such UBWs can be avoided, thus resulting in a more harmonious society.

Amongst the numerous kinds of alterations to existing buildings, one kind is unique to Hong Kong and is a headache to the BA. Subdivision of flat is a recent hot topic. While it is a by-product of the lack of adequate housing supply and inflated property price, we cannot neglect the safety and health problems posed by subdivision of flats. To tackle the problem of UBWs associated with subdivided units, apart from carrying out investigation in response to reports or complaints on subdivided units from the public and taking enforcement action, the BD has launched a special operation since 1 April 2011, to proactively inspect suspected subdivided units and ascertain whether the alteration and addition works involved comply with the technical requirements under the Building Regulations concerning fire safety, drainage works and structural safety, in particular the means of escape aspect. Enforcement action will be taken against the irregularities identified. In this special operation, the BD will inspect 150 target buildings involving more than 1,300 approved flats that have been subdivided each year. On 1 August 2011, we inspected an 8-storey building in To Kwa Wan which was built in 1959. There are 14 approved flats inside. According to our investigation, there are a total of 51 subdivided flats inside 12 out of the 14 approved flats. We invoked the power under section 22 of the BO in the presence of police officers and broke into two of the premises which accesses could not be gained after repeated visits. We understand that members of the public have concerns about the interference with private property rights that may arise from the BA exercising this power under section 22. Therefore, we propose and will submit to the Legislative Council soon proposed amendment to this section allowing staff of the BD to apply for warrants of entry from the Court if there is reasonable ground to suspect that the premises involve contraventions of the provisions of the BO and entry into the premises cannot be gained.

In order to solve the problem at its root, apart from enforcement, the Government proposed to incorporate building works commonly involved in sub-division of flats into the minor works control system to enhance the safety level and quality of such works. These include the addition of floor screeding, erection of partition walls and formation of openings to a fire escape staircase or its protected lobby. The regulation of these building works will help prevent the subdivision from affecting fire escapes and the building structure. The BD is now consulting the industry on the relevant technical details and will submit the proposed legislation to the Legislative Council for scrutiny before the end of 2011.

Upgrading of old buildings

Old buildings are designed according to old standards. Even if they are well maintained with lawful alterations and additions, they still may not fully meet the needs of modern living style and the current safety standards. One of the essential aspects that we should look after is the fire safety standard of old buildings. We find that for domestic and composite buildings constructed

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before 1987, there is room for upgrading their fire safety provisions to provide better protection to the occupants, users and visitors from the risk of fire. The Fire Safety (Buildings) Ordinance (Cap. 572) was enacted for the purpose and it came into operation on 1 July 2007. The implementation is divided into 2 stages. The first 9 years cover the composite buildings whilst the second stage will cover the domestic buildings. Under this ordinance, the Director of Fire Services and the Director of Buildings may serve fire safety directions on the owners requiring them to carry out improvement or upgrading works for the fire service installations and equipment and the passive fire safety provisions of their buildings.

Professional inputs

The conductor alone cannot secure a successful performance. He depends much on the support and professional performance of the members of the orchestra. In order to help owners discharging their responsibility of building maintenance, professional inputs from the private sector are required. I would like to express my gratitude to the continuous contributions by the Hong Kong Institute of Surveyors (HKIS) to building maintenance. For example, the institute helped to work out a standard form of contract for decoration, repair and maintenance works, issued guides for preparing building maintenance manual and good property management practices and published user-friendly booklets on timely maintenance of buildings and drainage systems. In fact, the BD has also published a Building Maintenance Guidebook in 2002. This guidebook was compiled by a BD consultant which was building surveyor-based. I note that the institute is currently conducting a study to formulate a building maintenance cost database covering data like average total cost of repair per flat for different categories of buildings classified in terms of scale and age. This is a useful database for owners' reference when assessing tender prices. I would be more than happy to see the HKIS continue to be the 'pillar organization' in the scene of promoting timely maintenance of the built environment in Hong Kong.

Adaptive reuse of old buildings

I remember when I was young, many 'new' buildings in Hong Kong were demolished, giving way to even taller new buildings. A more recent example was the Ritz-Carlton Hotel facing Chater Garden which was still brand new when it was demolished. Also, many buildings of high cultural or historical values vanished from our neighbourhood. Nowadays we can only take a glimpse of them in the black and white photos. In recent years, there is a rising outcry for building conservation. People's value has been changing. Profits and economic prosperity are no longer the sole parameters measuring the success of our city. "Collective memory", "building conservation", "rehabilitation" and "revitalization" have become fashionable quotations. In fact, many existing buildings can lead a new life with their use changed or replenished with some new facilities. Hong Kong, as a responsible member of the globe, should re-examine our habit of discarding. This will not only help reduce waste production or retain buildings of high cultural and historical values but also help people building up a stronger sense of belonging which is an important contribution to a harmonious society. This is in fact also the core concept of sustainable development.

Most heritage buildings were completed long ago and their designs and facilities may not comply with the current standards and requirements under the law. If we apply the BO rigidly to the proposals of rehabilitation or adaptive re-use of such buildings, most of these proposals will not get approved and the buildings will be left in desolation. The BD therefore should play a facilitating role in bringing new life to heritage buildings but without compromising the safety and health standards. In 2008, the BD established a Heritage Unit to process all plan submissions involving adaptive re-use of or A&A to heritage buildings. In 2009, in consultation with the Antiquities and Monuments Office and the Fire Services Department, the BD issued an interim edition of the Practice Guidebook on Compliance with Building Safety Requirements for Adaptive Re-use of and Alteration and Addition Works to Heritage Buildings under the Buildings Ordinance (the Practice Guidebook). It aims to provide a set of design guidelines and methodologies for complying with the building safety requirements under the BO to facilitate adaptive re-use of and A&A works to buildings of heritage values. A consultancy study on the subject had been conducted with a view to strengthening the guidelines in the Practice Guidebook with reference to international practice and successful cases in other countries. We will soon issue the draft of the final edition of the Practice Guidebook for consultation.

Hong Kong is still in her infant stage for adaptive re-use of heritage buildings. We should learn more from overseas countries. The International Museum and Library of Music in Bologna is a good example of adaptive re-use of heritage buildings and is a perfect blend of architecture and music. The museum was re-opened in 2004 after

5 Museo internazionale e biblioteca della musica (2004). Palazzo Sanguinetti: History and Architecture. [WWW] http://www.museomusicabologna.it/palazzosanguinetti_eng.htm#storia (29.8.2011)

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a long and careful restoration of its site, the Palazzo Sanguinetti. The collection comprises a rich variety of musical heritage, including more than eighty antique musical instruments and valuable treatises, opera libretti, letters, manuscripts and original musical scores. It is most famous for the frescoes, which are portraits of over one hundred famous people from the music world. The last owner of the palace was the Sanguinetti family and in 1986, the last heiress, Eleonora Sanguinetti, donated the building to the city of Bologna in memory of her father, Dr. Guido Sanguinetti. She wrote in her will that she wanted to donate the building in his name and memory, and for the love that he always had for his city and his home, so that it could become a music museum and library[5]. Perhaps the first thing that we should learn is to cultivate our love to our city.

Conclusion

Nobody who has visited the Peak, when looking at the splendid views, will disagree that Hong Kong is a world-class city. To the BA, for sure it is a challenging task to harmonize the old ensembles and new developments in such a dense built environment. The Government has to adopt a multi-pronged approach to keep Hong Kong being a harmonious society. I hope the BA will never be alone. The conductor leads the orchestra but it is in fact the musicians, i.e. the building professionals, who are the core performers. The built environment of Hong Kong depends much on your performance. The HKIS has been spending much effort in guiding the building industry of Hong Kong to the right track. I hope we continue working in concert to achieve our goal of harmonizing the old and new buildings in the dense built environment of Hong Kong.

Thank you.

SPEAKERS AND PAPERS

MR. GEOFF MITCHELL

Mr Geoff MITCHELL
Managing Director, GMA Certification Group Pty Ltd (Building Surveyors)
Past National President, Australian Institute of Building Surveyors

Biography

Geoffrey MITCHELL has been involved in the Building Surveying Industry for over 35 Years. He started in the Industry as a Cadet Building Inspector with the Albert Shire Council. After 12 Years in Local Government he set up in private practice in anticipation of the introduction of Private Certification. Geoffrey is currently the Managing Director and Principal Building Surveyor for GMA Certification Group Pty Ltd.

Geoffrey holds the following Qualifications and professional affiliations:

- Certificate for Building Construction Technician (1980)
- Bachelor of Building Surveying
- Graduate Certificate in Building Fire Safety
- Masters in Urban Planning
- Accredited at the level of Building Surveyor
- Registered House And General Builder QBSA License No 20976
- Registered Supervisor Building Design Drafting (Limited) QBSA License No 20976
- Justice of the Peace Queensland (1983)

Professional Associations:

- Life Fellow of the Australian Institute of Building Surveyors (AIBS)
  (Past National & Past State President of the QLD / Northern Territory Chapter)
- Director on National Board of the AIBS
- Executive Member of the AIBS QLD/ NT Chapter
-

Technical & Committee Membership:

- Member of the Australian Building Codes Board (ABCB) – Building Codes Committee (peak advisory committee to the ABCB on the technical content of the Building Code of Australia)
- Member of the Building Codes Queensland – Building Industry Consultative Group
- Referee-Building Dispute Resolution Committee
- Adjunct Teaching Fellow - Bond University
- Coauthor Lexis Nexis commentary on the Building Code of Australia
- National Chairman of the AIBS Education & Training Committee
- Chair of the AIBS Qld/NT Education & Training Committee
- Member of the Course Review Committee (Building Surveying) of the Central Queensland University
- Past Lecturer in Performance Legislation - Central Queensland University
-

Other:

Has actively fought for the Building Surveying Profession at all levels of government.
Has presented papers both national and internationally on the Building Surveying Profession in Australia.
Has presented papers at numerous conferences, both AIBS and other organisations, on various subjects.

SPEAKERS AND PAPERS
MR. GEOFF MITCHELL

Abstract

Our Changing Environment

Geoff. MITCHELL.
B BldSurv, Gd Cert Bld Fire Safety, M Urb Plan .JP. LFAIBS
Past National President – Australian Institute of Building Surveyors

Not only is the world adapting its building regulations as a response to climate change, technology advances and the political will of government are other significant drivers of our changing regulatory environment.
Australia has experienced some of its worst ever natural disasters in recent years. These disasters, some of which took a large number of human lives and also resulted in significant building damage or total loss, have triggered reviews, changes in regulations and our legislative processes.

This paper will take a brief look at those natural events and the resultant regulatory outcomes as well as visiting the other significant areas of change in the Australian building regulatory environment. These areas of change include Energy Efficiency, Sustainability and Access for persons with disabilities.

Paper

1. INTRODUCTION

Like many parts of the world Australia has seen a downturn in construction activity due to the Global Financial Crisis. The Australian Bureau of Statistics (ABS) information shows that the value building approvals is still in a downward trend.

There are some interesting sudden changes in the graph which correspond with initiatives the government took to boost the economy and injected significant funds into infrastructure and other projects throughout the country. This fluctuation in activity has not stopped the ever changing legislative environment as we struggle to keep pace with new technology and research, changing political environment and worldwide expectations of a greener environment.

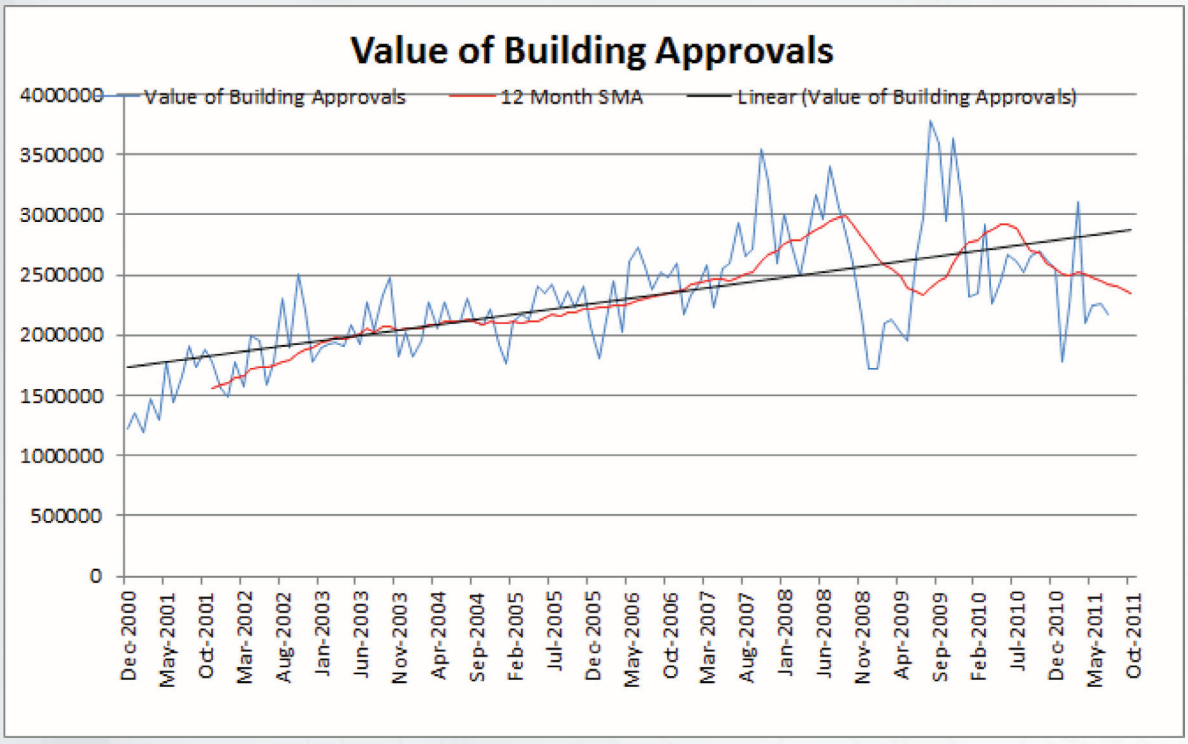

Figure 1: From data -ABS series 8731 Table 39

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MR. GEOFF MITCHELL

2. ENERGY EFFICENCY

Background

Over the past decade international awareness of greenhouse gas (GHG) emissions and their influence on global warming has grown significantly. Increased concentrations of GHG are predicted to cause variations to our climate that will differ between geographic regions. The predicted changes are to temperatures, rainfall, wind speed, vegetation and animal life.

A report by the Intergovernmental Panel on Climate Change (IPCC) published in July 2005, found that global atmospheric concentrations of Carbon Dioxide, methane, and nitrous oxide have increased markedly as a result of human activities since 1750.Carbon dioxide levels have increased from about 280 ppm to 379 ppm in 2005,with the concentration growth being larger in the last 10 years (1.9 ppm/yr.) The primary source of increased Carbon dioxide is a result of fossil fuel use but some smaller percentage can be attributed to agriculture.

Global atmospheric concentration of methane has increased from 715 ppb to 1774 ppb in 2005. Growth rates have declined since the 1990's. The research on the rise in methane is not comprehensive but some can be attributed to agriculture and fossil fuel use.
Global atmospheric concentration of nitrous oxide has increased from 270 ppb to 319 ppb in 2005 but has been constant since 1980. More than a third of all nitrous oxide emissions are due to agriculture.

Australian Projections

All of Australia is very likely to warm during this century comparable with the overall global mean warming. The median warming averaged over the northern region is expected in the range of 3.0^{o}C. [Ref to Figure 2]

Rainfall is expected to decrease in southern Australia. Changes in rainfall in Northern and Central Australia are uncertain. Extremes in daily rainfall are very likely to increase i.e. more intense storm events. There is uncertainty on the probability of increased tropical cyclone activity. [Ref to Figure 3]

Australia's Response

In 1997 the Prime Minister issued a statement on Australia's response to global warming that included measures to reduce energy consumption in buildings. The building sector is not the largest contributor to national GHG emissions although it contributes 27% of energy related GHG emissions.

In the late 1990'sthe government considered the need for new buildings to operate in an energy efficient manner. It was hoped that market forces would address the issue of energy efficiency, however it became apparent that it was not been addressed effectively so there was a need for regulatory reform.

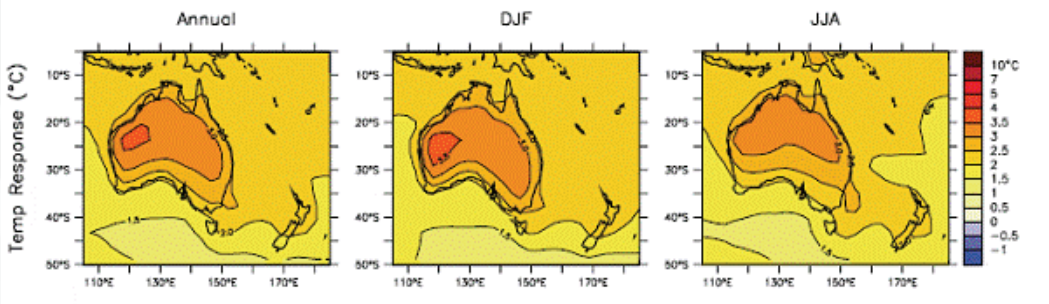

Figure 2: Australian temperature projections (IPCC Fourth Assessment Report)

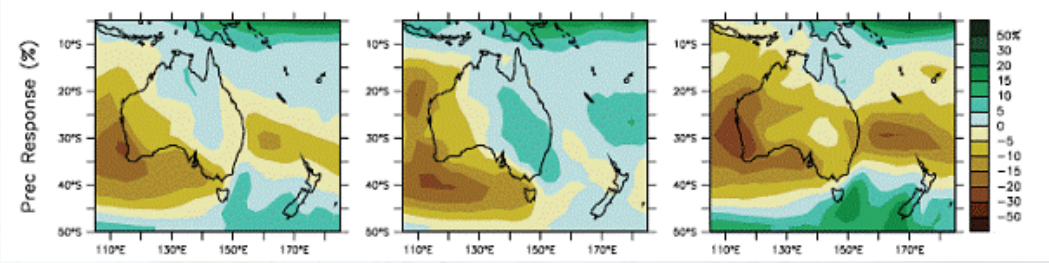

Figure 3: Australian rainfall projections (IPCC Fourth Assessment Report)

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In the year 2000 there was an agreement by the Council of Australian Governments (COAG) to introduce energy efficiency regulations for domestic and commercial buildings. In response to the agreement in 2001, the Australian Greenhouse Office (AGO) and the Australian Building Codes Board (ABCB) entered into an agreement to develop energy efficiency provisions and introduce these through the Building Code of Australia (BCA). These provisions were developed over the next 2 years.

In January 2003 the first provisions were introduced into the BCA to cover domestic dwellings. This was not adopted Australia wide assome States/Territories already had some existing provisions in place in the local legislation. The levels of efficiency to be achieved were set at 4 stars in the cooler climates and 3.5 stars in the warmer areas.In 2005 the same provisions were introduced to cover unit and apartment buildings. In 2006 the first provisions were introduced to cover commercial and industrial buildings. At the same time the requirements for domestic housing, units and apartments were increased to a 5 star requirement. This was further increased to 6 stars in 2010 as well as a further increase in the requirements for the commercial and industrial buildings. The term “star rating” referred to above is a numeric scale of energy load from ZERO (no energy efficiency features or savings) to TEN (a building that does not need additional energy to heat or cool) and is derived from computer software packages.

The objective of the BCA energy efficiency provisions is to reduce GHG emissions by reducing operational energy use of new buildings without reducing comfort and amenity. The BCA requirements primarily address two key issues, i.e. heat flowinto and out of thebuilding envelopeand servicesthat use energy.

- The building envelope is the element that separates a conditioned space (which is an area that is artificial heated or cooled) from the outside or other spaces that are not conditioned.
- A Serviceis defined as a mechanical or electrical system that uses energy to provide air-conditioning, mechanical ventilation, hot water supply, artificial lighting, vertical transport and the like within a building, but which does not include –
  (a) Systems used solely for emergency purposes; and
  (b) Cooking facilities; and
  (c) Portable appliances

This will result in reducingthe demand on electricity, gas, oil, or other fuels. Currently the code provisions do not encompass embodied energy. I.e. energy used in manufacturing building materials or constructing a building.

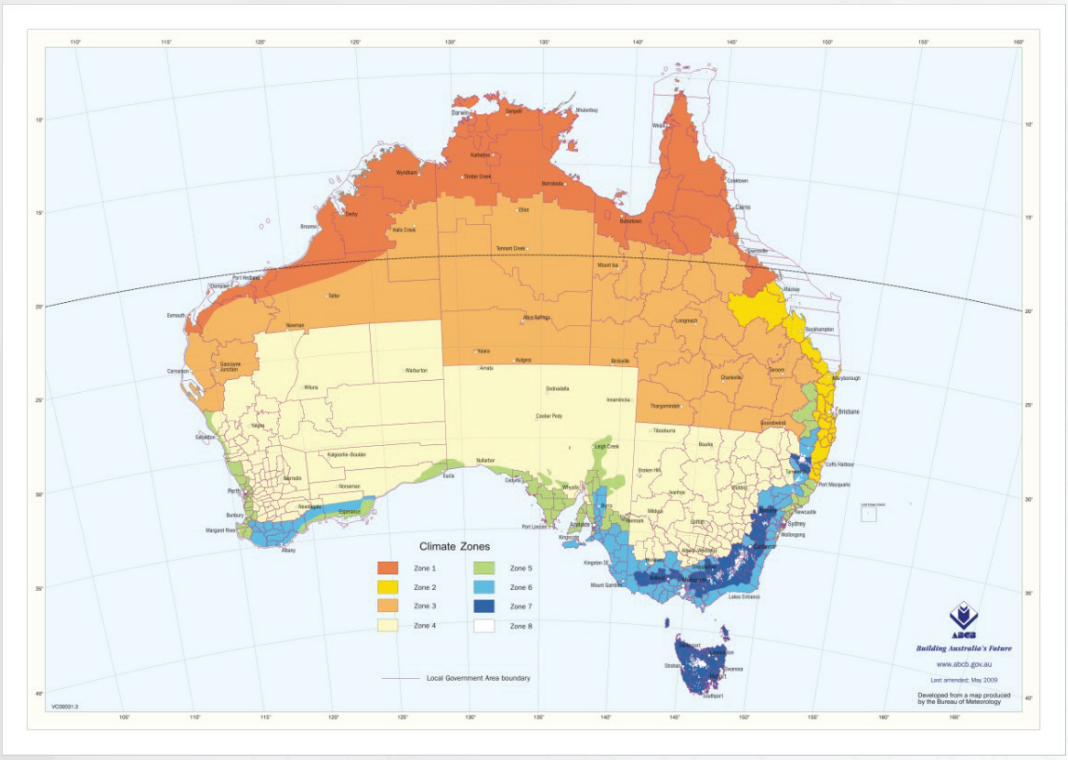

Figure 4: Australia’s climate zone map

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While the principles of energy efficiency are relatively simple, not all of Australia has the same climate and therefore we don't have the same requirements being applied nationally. To cater for the variations in climate, the country was divided into 8 separate climate zones, with zones 1 -4 covering the warmer and tropical climates and zones 5-8 covering the cooler southern and alpine regions. The software that has been developed to calculate the star ratings further divides the country into about 70 climate zones.

3. ACCESS FOR PERSONS WITH DISABILITIES

In May 2011 significant changes regarding the requirements for the design of buildings to cater for persons with disabilities were introduced into the BCA.

In early 2000, an amendment was made to the Disability Discrimination Act (DDA) to allow the Australian Government's Attorney-General to formulate 'Disability Standards for Access to Premises' (Premises Standards) to help to clarify accessibility requirements for premises under the DDA.The ABCB was requested by the Australian Government to develop proposals for a revised BCA, to enable it to form the basis of the Premises Standards. It has taken 10 years to get a set of proposals that were acceptable to all sectors and then release for public comment. With the finalisation of the Premises Standards the BCA has now been amended so that the technical details of each document mirror each other. This now means compliance with the access provisions of the BCA will mean compliance with the Premises Standards and hence the DDA. This is a situation that we as Building Surveyors have been desperately waiting for, as previously even compliance with the access provisions in the BCA did not protect us as the approval authority for a claim based on discrimination under the DDA.

The significant changes that occurred fall into a number of areas which include;

1. New access requirements covering matters that were not currently dealt with in the BCA
   a. Access to all residential home units
   b. Access to a proportion of holiday cabins in caravan parks.
   c. Access into shared swimming pools
2. Improvements to the access requirements that are already in the BCA
   a. Larger circulation and doorways
   b. To and within all areas of the all buildings other than private dwellings.

The changes have also required amendments to State and Territory regulations or systems to cover various aspects of the Premises Standards that are of an administrative nature.

4. NATURAL PHENOMENA

In recent years Australia has experienced a number of natural disasters that have resulted in significant property damage and loss of life and. Each of the events has triggered a government response which has formulated changes or proposed changes in our building codes.

4.1. Victorian Bushfires

On the 7th February 2009 the state of Victoria had a bushfire event that affected seventy eight (78) communities. The event commonly referred to as Black Saturday affected four hundred thousand (400,000) hectares of land and unfortunately took the lives of one hundred and seventy three (173) people. Two thousand and twenty nine (2029) homes were destroyed as well as hundreds of businesses. Five (5) schools and kindergartens as well as three (3) sporting clubs and other buildings were also destroyed.

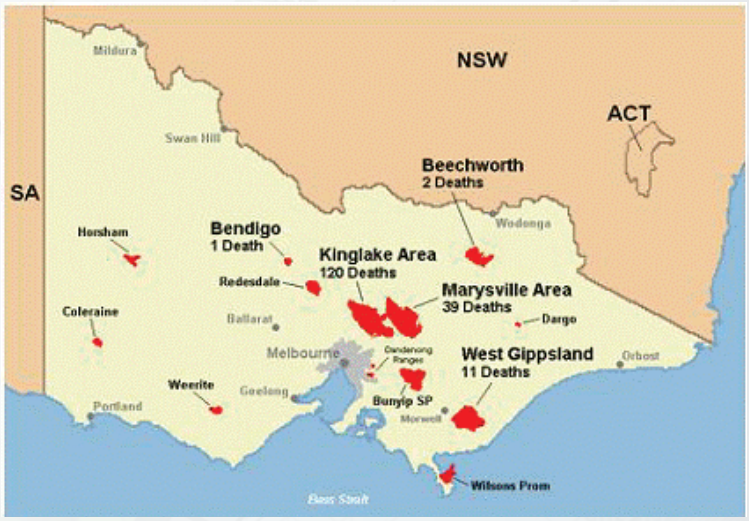

Figure 5: Map of the affected areas

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The event exposed a number of deficiencies in both the state requirements from both a planning and construction sense as well as the national requirements in the assessment of bushfire attack levels.

A Royal Commission was conducted in the aftermath of the disaster the findings of which were handed down on the 13th July 2010. The report made a considerable number of recommendations that covered a number of areas. At the time of the event the Australian Standard for construction in bushfire prone areas was undergoing a review and was about to be released. Some of the research and findings from the bushfire event were hastily incorporated in to the standard. These changes included the way in which vegetation was classified but more importantly the construction standards where linked to a more scientific basis of actual radiant heat.

One item of significant importance was the introduction of a performance standard into the BCA for private bush fire shelters. Unlike the other performance based clauses in the BCA this clause does not have matching deemed – to – satisfy criteria. Private Bush fire shelters are only associated with single dwellings and are not public shelters. The clauses explain that they are a shelter of last resort from the immediate life threatening effects if a bush fire. The provisions do not mandate requirements to install a bushfire shelter but apply if a shelter is constructed. There is still much debate on government policy on actions in response to bushfires and more work being done on the regulatory framework and Standards.

4.2. Queensland Disaster Events.

Over the period of December 2010 to February 2011 the State of Queensland suffered a number of events in series that was unprecedented. It resulted in all 73 Local Government areas in Queensland being placed on disaster activation. The event timelines were;

- Early to mid-December 2010 – Extreme rainfall and flooding in the south east and south west.
- 25 December 2010 – Tropical Cyclone Tasha
- 10 Jan 2011 – Flash flooding in Toowoomba and the Lockyer Valley
- 13 Jan 2011 – Brisbane and Ipswich flooding
- 31 Jan – 2 Feb 2011 – Tropical cyclone Anthony and severe tropical cyclone Yasi
- 28Feb – March 2011 – Monsoonal flooding

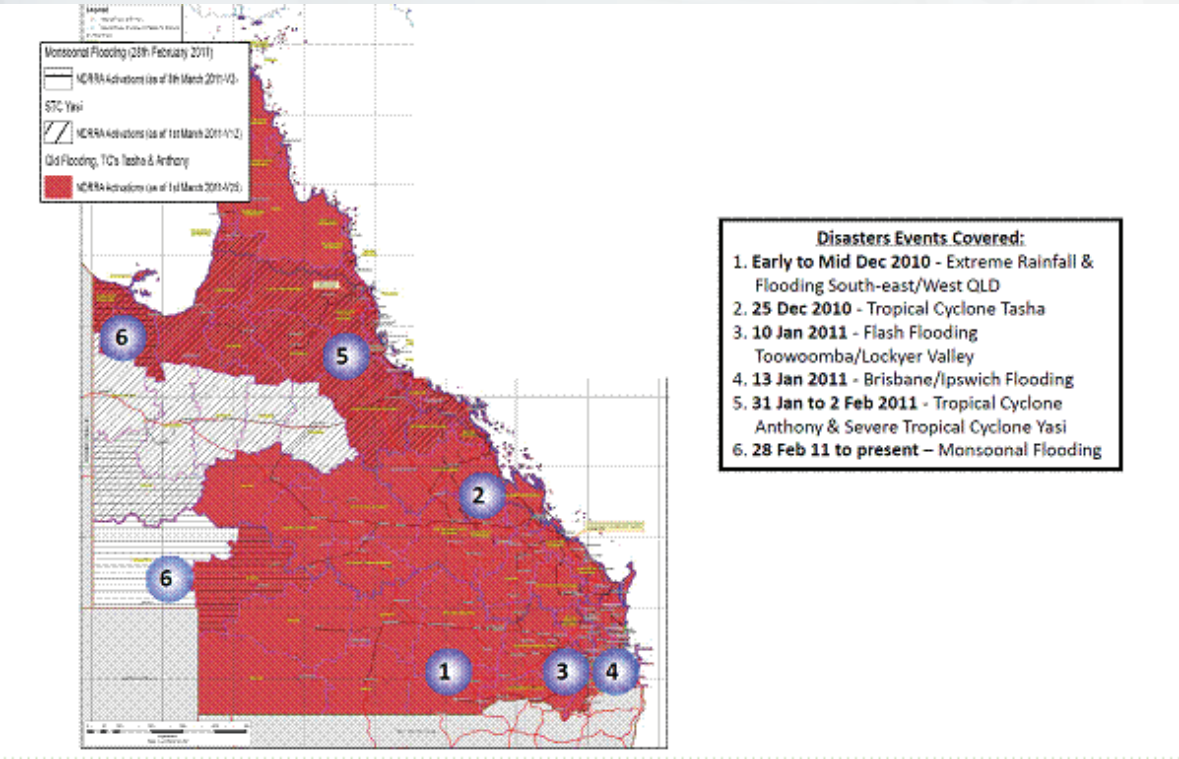

Figure 6: Affected Areas (Source Queensland Reconstruction Authority)

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MR. GEOFF MITCHELL

Over the period there were 37 fatalities which occurred principally in the Toowoomba and Lockyer Valley flash floods. Just from the State controlled assets- 27.5 % (9170 kms) of roads were affected and 29% of the rail network was damaged. 11 major port facilities and 54 of the coal mines were affected to some degree. Some 357 education facilities were affected, 1705 Government assets were affected by the flooding and 2089 government assets were affected by cyclone Yasi.
For private dwellings 2807 were declared unlivable properties with a further 1525 declared livable but needed to be vacated to undertake repairs. In all there were 96851 insurance claims up to the end of February totaling some $2.7 billion estimated value. It has been estimated there will be $4 billion in commercial losses across mining and agriculture and tourism and a further $1 billion in losses to primary producers from cyclone Yasi.

The flooding events have resulted in changes to some of the local government planning policies on allowing construction in flood prone areas and have also prompted the Queensland Government to advance the implementation of work that is currently being prepared for the BCA. It has been a realistic view that the Government cannot fully prevent people building in all flood prone areas sothere are provisions being developed to control the types of materials that must be used in areas of inundation in an effort to reduce property damage.

Following cyclone Yasi a number of studies were conducted on the damage that occurred to buildings. Since 1980 there have been relatively detailed codes for construction in cyclonic areas and the findings of the reports were that buildings built post 1980 did perform relatively well. Most damage to these building was due to projectile impact however there were instances where repairs that had been conducted on buildings from previous events had not been comprehensive enough. The previous events had the effect of weakening the fixings which in turn failed in this event. There were also issues detected in the incorrect wind classifications being allocated to sites which resulted in failure of the structures. These incorrect classifications were in two areas mainly the internal pressure design for shed structures and not applying the proper terrain category multipliers to structures situated on upper slopes.

Another major area that has not been previously addressed is that in cyclone Yasi in excess of 100 properties were affected by a storm tide. The surge pushed forward by the winds created significant damage in one beachside community and has resulted in proposals now to alter the Codes to resist this effect. The BCA post Yasi has been amended to reflect changes in the wind loading codes and the timber structures codes.

The repair work from both the flooding and cyclone Yasi is still continuing today. There are still investigations being conducted and there are a number of recommendations still to be fully researched for possible inclusion into our already burgeoning pile of regulations and codes.

SPEAKERS AND PAPERS

MR. DANIEL C. LAM, BBS, JP

Mr. Daniel C. LAM, BBS, JP
FRICS, FHKIS, FHKIArb, FCIArb, AP, RPS
Chartered Surveyor
Chartered Arbitrator

Biography

Mr. LAM is the Honorary Advisor to the DCL Consultants Limited. He is an expert in property development and construction, and is a practicing arbitrator. He was the Director-Property of Hong Kong's Kowloon-Canton Railway Corporation (2000 – 2007). He first qualified as a Chartered Building Surveyor and registered as an Authorized Person under the Buildings Ordinance of Hong Kong. He is a Fellow of the Royal Institution of Chartered Surveyors and the Hong Kong Institute of Surveyors. He has been elected as a Chartered Arbitrator and listed on the London Panel of Arbitrators of the Chartered Institute of Arbitrators. He is also listed on similar panels in Hong Kong and Vancouver, and is appointed as Arbitrator to the China International Economic Trade Arbitration Commission and the Beijing Arbitration Commission. In 1995 Mr. LAM was appointed as Non-official Justice of Peace and in 2001 awarded the Bronze Bauhinia Star.

Mr. LAM was the President of the Hong Kong Institute of Surveyors in 1986-1987. Because of Mr. LAM's professional knowledge and interest in arbitration, he has been appointed as arbitrator in a number of cases. He is a Council member of the Hong Kong International Arbitration Centre since 1993, Chairman of its Mediators Accreditation Committee (2002-2006); and a Fellow and Past Chairman of the Hong Kong Institute of Arbitrators (1997-2000).

Mr. LAM has held a number of professional and public service positions in Hong Kong, such as member of the Land & Building Advisory Committee (1986-1990), Hong Kong Housing Authority (1993-2001) and Chairman of its Building Committee (1996-2001), and member of the Construction Industry Review Committee. During 1991-1993, Mr. LAM was appointed as a consultant to the World Bank, Washington DC, and contributed to a report on China's urban land policy. Since December 2008 he has been appointed as an independent non-executive director to Hong Kong's Urban Renewal Authority.

Mr. LAM's experience in property development extends beyond Hong Kong. For a considerable period of time he had also been responsible for project developments in major overseas cities and countries including London, Tokyo, New York, Paris, Frankfurt, Malaysia, Singapore, Indonesia, Middle East, North and South America. Mr. LAM worked for the Hongkong Land Group, Hong Kong Government, the Hongkong Bank (HSBC) Group, the Sime Darby Group and China Light & Power Group, before starting his own practice in 1993. Owing to Mr. LAM's involvement with the World Bank and as the Executive Director of Tian An China Investment Company Limited, he is very familiar with project development issues in Mainland China. Since 1997 Mr. LAM was appointed an independent non-executive director to the Hong Kong publicly listed Minmetals Land Limited which is part of China's Minmetals Group.

In August 2000, Mr. LAM joined the Kowloon-Canton Railway Corporation as its Director-Property to plan and direct all property development projects, as well as operating a sizeable leasing, licensing, advertising and property management portfolio. The total gross development value of projects is HK$190 billion (US$24.4 billion)*, and the total value of the managed investments is HK$11.3 billion (US$1.45 billion)* as at the end of May 2007. He left the Corporation in December 2007.

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*Rate of exchange as at 25 May 2007 – HK$7.78 to US$1.00

SPEAKERS AND PAPERS

MR. DANIEL C. LAM, BBS, JP

Department from 1995 to 1998, and appointed as its Honorary Professor for the terms of 2006-2011. In July 2003, the HKU School of Professional and Continuing Education appointed Mr Lam as Adjunct Professor. Mr Lam was appointed as member of the Department of Building and Construction Advisory Committee, City University of Hong Kong, in 1994 and as the Chairman during 1997-1998.

Mr. Lam initiated a research on the quality of life of people living along mass transit lines whilst he was working in the railway corporation – called "Linear City". This was carried out by 4 universities jointly for 5 years (2002-2007), led by the Chinese University of Hong Kong. Mr. Lam was subsequently invited to present the research subject at the Rail Station Development Conference in London (12-14 Nov. 2007), the Asia Pacific Rail 2008 Conference in Bangkok (11-13 Mar. 2008), the MetroRail 2008 Conference in Copenhagen (1-3 Apr. 2008) and the Intersite Symposium in Johannesburg and Cape Town (8 – 13 Jun. 2008).

Abstract

Control, No Control, or Loss of Control

Mr. Daniel C. Lam, BBS, JP
FRICS, FHKIS, FHKIArb, FCIArb, AP, RPS
Chartered Surveyor
Chartered Arbitrator

Building control is generally defined as a set of rules that specify the minimum acceptable level of safety for constructed objects such as buildings and non-building structures. The main purpose of building codes is to protect public health, safety and general welfare which are related to the construction and occupancy of buildings and structures. Under the laws of Hong Kong, the Buildings Ordinance (Chapter 123) has been enacted to provide for the planning, design and construction of buildings and associated works, as well as to make provisions for the rendering safe of dangerous buildings and lands.

In Hong Kong, all private building developments are controlled by the Buildings Department (BD) through the enforcement of the Buildings Ordinance and the allied legislations. For new building works, BD will scrutinize and approve building plans, carry out audit checks on construction works and site safety, and issue occupation permits upon completion of new buildings. With regard to existing buildings, the control generally covers actions against unauthorized buildings works; issuing orders for repairs of dilapidated buildings, drainage and slopes; assessing suitability for alteration and addition works, etc. It is believed that one of the contributory factors to the success of Hong Kong in the past is that we have a set of comprehensive building regulations and an efficient administrative arm from the authority.

In recent years, we have seen our community started questioning about the control mechanism which is now wholly vested with the Government. Issues such as the provision of public facilities in private developments, the classification of "actionable" unauthorized building works, the safety implication of the existence of sub-divided flats etc., have drawn much attention from the public and induced heated debates over the effectiveness of our building control system.

In the presentation, the speaker targets to initiate a rethinking process of building control among the practitioners for the future of Hong Kong. He will first review the background and history of building control implemented in Hong Kong. Highlights will be put on the relationship between changes in the built environment and the stress developed within the authority when taking enforcement actions. An attempt to review the efficiency of our current building control system will also be made. The speaker will then take stock of the experience of other regions to see if there are any suitable directions for Hong Kong so as to continually improve our legal framework to commensurate with the needs of the industry and the public. In the conclusion, the speaker will try to depict different outcomes for the various paths going forward that we may choose for ourselves today.

SPEAKERS AND PAPERS

PROF. LIU YI SHENG

Prof. LIU Yi Sheng
Professor & Head of Construction Management Department
Beijing Jiaotong University

刘伊生 博士 北京交通大学教授、博士生导师，工程管理系主任。

主要从事工程建设管理、建筑企业管理、专案管理等方面的研究。

近年来，主持国家级、省部级科研课题20余项，编着《建设专案管理》、《建设工程全面造价管理——模式·制度·组织·队伍》，主编《建筑工程专案管理服务指南》、《建筑工程施工专案管理指南》、《工程造价管理基础理论与相关法规》等20余部，发表论文60余篇。

曾获中国建设监理创新发展20年特殊贡献奖（2008年）；获中国造价行业突出贡献奖（2010年）。

现任：中国建设监理协会理事、理论研究委员会副主任；中国建设工程造价管理协会常务理事、专家委员会副主任、教育专家组组长；中国建筑业协会专案管理委员会常务理事、专家委员会副主任；香港测量师学会（建筑测量组）会员；《建筑经济》、《工程管理学报》、《铁路工程造价管理》、《建造师》等期刊编委。

Construction Site Safety Management in China
中国内地的建设工程安全生产管理

主要包括三部分内容，即：建设工程安全生产管理相关法律法规及其主要内容；施工单位和监理单位的建设工程安全生产管理职责；建设工程生产安全事故案例。

SPEAKERS AND PAPERS

PROF. LIU YI SHENG

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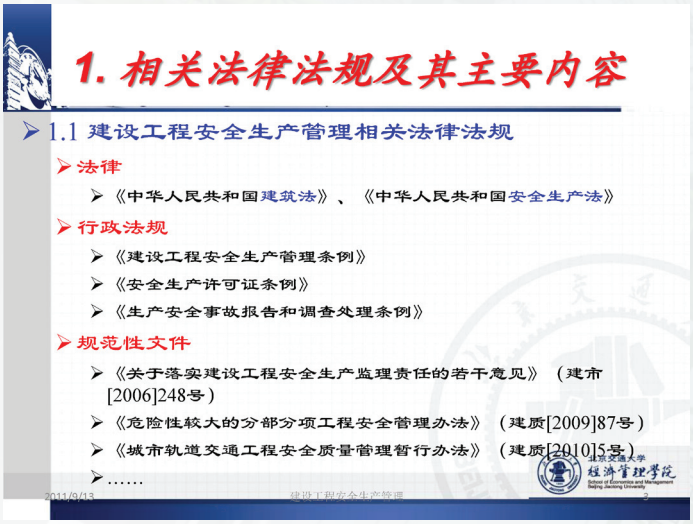

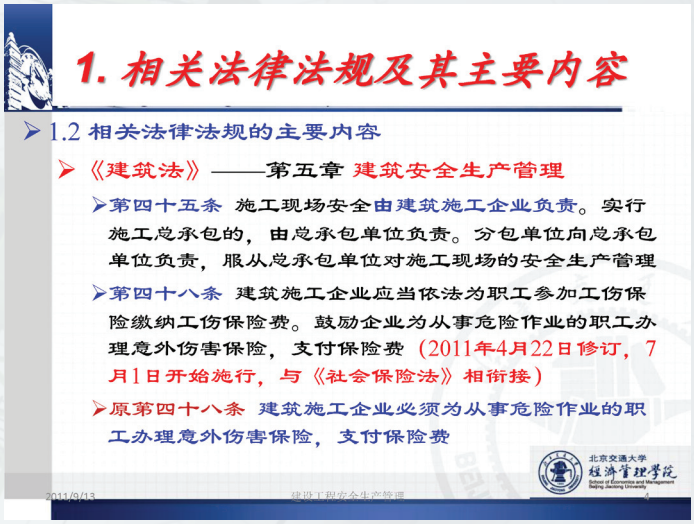

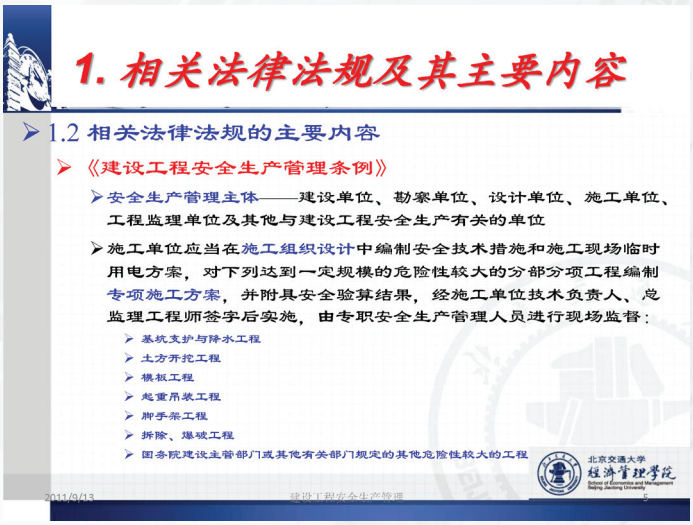

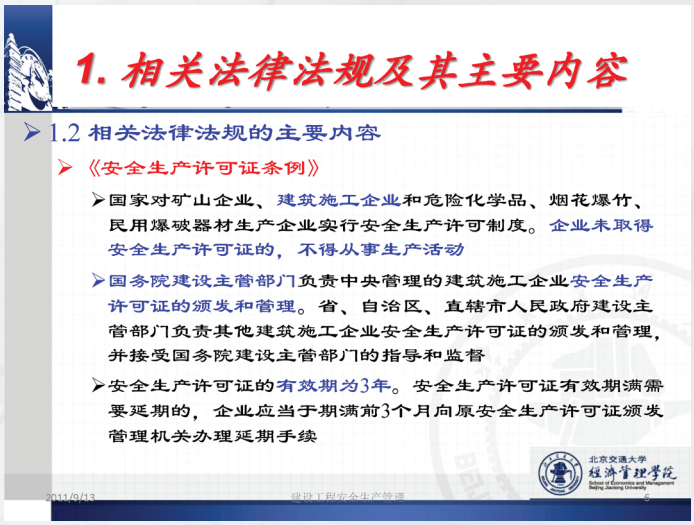

SPEAKERS AND PAPERS

PROF. LIU YI SHENG

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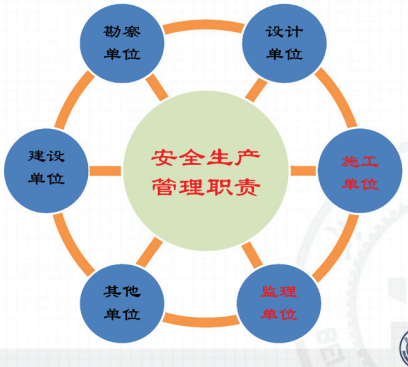
1. 相关法律法规及其主要内容

- 1.2 相关法律法规的主要内容
  - 《生产安全事故报告和调查处理条例》
    - 生产安全事故等级
      - 特别重大事故——造成30人及以上死亡，或者100人及以上重伤，或者1亿元及以上直接经济损失的事故
      - 重大事故——造成10人及以上30人以下死亡，或者50人及以上100人以下重伤，或者5000万元及以上1亿元以下直接经济损失的事故
      - 较大事故——造成3人及以上10人以下死亡，或者10人及以上50人以下重伤，或者1000万元及以上5000万元以下直接经济损失的事故
      - 一般事故——造成3人以下死亡，或者10人以下重伤，或者1000万元以下直接经济损失的事故

2. 建设工程安全生产管理职责



2. 建设工程安全生产管理职责

- 2.1 施工单位的安全生产管理职责
  - 施工单位主要负责人依法对本单位的安全生产工作全面负责。施工单位应当建立健全安全生产责任制度和安全生产教育培训制度，制定安全生产规章制度和操作规程
  - 施工单位的项目负责人应当由取得相应执业资格的人员担任，对建设工程项目的安全施工负责，落实安全生产责任制度、安全生产规章制度和操作规程
  - 施工单位应当设立安全生产管理机构，配备专职安全生产管理人员
  - 垂直运输机械作业人员、安装拆卸工、爆破作业人员、起重信号工、登高架设作业人员等特种作业人员，必须按照国家有关规定经过专门的安全作业培训，并取得特种作业操作资格证书后，方可上岗作业
  - 施工单位应当在施工组织设计中编制安全技术措施和施工现场临时用电方案
  - 对达到一定规模的危险性较大的分部分项工程编制专项施工方案，并附具安全验算结果
  - ……

2. 建设工程安全生产管理职责

- 2.1 施工单位的安全生产管理职责
  - 专项施工方案的内容
    - （一）工程概况：危险性较大的分部分项工程概况、施工平面布置、施工要求和技术保证条件
    - （二）编制依据：相关法律、法规、规范性文件、标准、规范及图纸（国标图集）、施工组织设计等
    - （三）施工计划：施工进度计划、材料与设备计划
    - （四）施工工艺技术：技术参数、工艺流程、施工方法、检查验收等
    - （五）施工安全保证措施：组织保障、技术措施、应急预案、监测监控等
    - （六）劳动力计划：专职安全生产管理人员、特种作业人员等
    - （七）计算书及相关图纸

2. 建设工程安全生产管理职责

- 2.2 监理单位的安全生产管理职责
  - 工程监理单位应当审查施工组织设计中的安全技术措施或者专项施工方案是否符合工程建设强制性标准
  - 工程监理单位在实施监理过程中，发现存在安全事故隐患的，应当要求施工单位整改；情况严重的，应当要求施工单位暂时停止施工，并及时报告建设单位。施工单位拒不整改或者不停止施工的，工程监理单位应当及时向有关主管部门报告
  - 工程监理单位和监理工程师应当按照法律、法规和工程建设强制性标准实施监理，并对建设工程安全生产承担监理责任

3. 建设工程生产安全事故案例

- 3.1 上海闵行区“莲花河畔景苑”楼宇倾倒事故
  - 2009年6月27日，一幢13层在建楼宇北侧短期内堆土高达10米，南侧正在开挖4.6米深的地下车库基坑，两侧压力差导致过大的水平力，超过了桩基的抗侧能力，造成1人死亡

SPEAKERS AND PAPERS

PROF. LIU YI SHENG

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3. 建设工程生产安全事故案例

➢3.1 上海闵行区"莲花河畔景苑"楼宇倾倒事故

➢事故发生后，专家组经过勘察、检验、复核后认为，倒覆大楼的原勘察报告、原设计结构和大楼所用的PHC（预应力高强混凝土）管桩都符合规范要求；倒覆楼宇前方的基坑设计为4.6米，也符合规范要求

➢判决结果——重大责任事故罪

➢建设单位——房地产开发公司1人

➢施工单位4人

➢监理单位1人

3. 建设工程生产安全事故案例

➢3.1 上海闵行区"莲花河畔景苑"楼宇倾倒事故

➢房地产开发公司现场负责人——有期徒刑5年

➢根据公司负责人的指令，将属于施工总承包范围内的地下车库开挖工程直接交给没有公司机构且不具备资质的人组织施工，并违规指令施工人员开挖堆土，对倒楼事故的发生负有现场管理责任

➢施工单位主要负责人——有期徒刑5年

➢违规使用他人专业资质证书投标承接工程，致使工程项目的专业管理缺位，且放任建设单位违规分包土方工程给其没有专业资质的亲属，对倒楼事故的发生负有领导和管理责任

3. 建设工程生产安全事故案例

➢3.1 上海闵行区"莲花河畔景苑"楼宇倾倒事故

➢施工单位现场负责人——有期徒刑4年

➢施工现场的安全管理是其应负的职责，但其任由工程施工在没有项目经理实施专业管理的状态下进行，且放任建设单位违规分包土方工程、违规堆土，致使工程管理脱节，对倒楼事故的发生亦负有现场管理责任

➢工程项目经理——有期徒刑3年

➢实际未从事相应管理工作，但其任由施工单位在工程投标及施工过程中以其名义充任项目经理，默许甚至配合施工单位以此应付监管部门的监督和检查，致使工程施工脱离专业管理，因而对倒楼事故的发生负有不可推卸的责任

3. 建设工程生产安全事故案例

➢3.1 上海闵行区"莲花河畔景苑"楼宇倾倒事故

➢土方开挖和堆土承包负责人——有期徒刑4年

➢没有专业施工资质违规承包工程，并盲从建设单位指令违反安全施工管理规范进行土方开挖和堆土施工，最终导致倒楼事故发生，系倒楼事故发生的直接责任人员

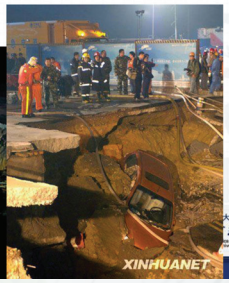
➢总监理工程师——有期徒刑3年

➢对工程项目经理名不符实的违规情况审查不严，对建设单位违规发包土方工程疏于审查，在对违规开挖、堆土提出异议未果后，未能有效制止，对倒楼事故发生负有未尽监理职责的责任

3. 建设工程生产安全事故案例

➢3.2 杭州地铁坍塌事故

➢2008年11月15日下午，杭州地铁湘湖站基坑塌方，造成萧山湘湖风情大道75米路面坍塌，并下陷15米，附近河流决堤，河水倒灌，一度水深达6米，造成21人死亡，24人受伤，直接经济损失4961万元



3. 建设工程生产安全事故案例

➢3.2 杭州地铁坍塌事故

➢事故直接原因

➢施工单位违规施工、冒险作业、基坑严重超挖；支撑体系存在严重缺陷且钢管支撑架设不及时；垫层未及时浇筑

➢监测单位挂靠，施工监测失效，施工单位没有采取有效补救措施

➢行政处罚结果

➢政府部门——杭州市政府向浙江省委、省政府深刻检查；主管副市长对事故的发生负领导责任；建委副主任行政警告处分；质检人员

➢建设单位——杭州地铁集团董事长、总经理：行政记过处分；副总经理、工程部长：行政记大过处分

➢施工单位——中国中铁向主管部门作出深刻检查；中铁四局集团董事长、总经理；中铁四局集团第六工程有限公司董事长、总经理、总工程师；安徽中铁四局设计研究院院长，分别给予行政警告、行政记过、行政记大过、行政撤职等处分

SPEAKERS AND PAPERS

PROF. LIU YI SHENG

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SPEAKERS AND PAPERS

MR. C. K. LAU, MH, JP

Mr. C. K. LAU, MH, JP
F.R.I.C.S., F.H.K.I.S., A.C.I. Arb.,
Registered Professional Surveyor
Authorized Person (List III)
Director, C. K. LAU & Associates Limited

Biography

After graduation from the Hong Kong Polytechnic in 1970, Mr. Lau started his career under training in Leigh & Orange, an architectural and engineering practice. Then, Mr. Lau was employed in the Buildings Ordinance Office (now Buildings Department) as a Student Building Surveyor. He was a Senior Building Surveyor when he left the Buildings Ordinance Office in 1981.

In 1981, Mr. Lau joined the Henderson Land Development Co. Ltd. and was the General Manager of the Project Management Department when he retired in July 2007. Over the years, he had participated in the project management of over 200 projects of different types of developments, including residential, office, commercial, hotel, industrial, hospital, marina, etc.

After retiring from the Henderson Land Group in July 2007, Mr. Lau continues to participate in the property development market and set up his own business, C.K. Lau & Associates Ltd, with major participation in a number of projects in Hong Kong and China. He also acts as the Consultant to a number of developers on various issues relating to property development on ad hoc basis, and continues to act as the Consultant to the Henderson Land Group.

Public Boards and Committees Served (Current)

- Hong Kong Institute of Surveyors
  - Member of the HKIS Disciplinary Panel (21/12/1998 to 31/12/2012)
  - Chairman of the HKIS Building Surveying Division Technical Advisory Panel (since 1996)
  - Organizer of the HKIS Building Surveying Division Test/Assessment of Professional Competence (since 1988)
- Member, Appeal Tribunal Panel, Housing, Planning and Lands Bureau (under Section 45 of the Buildings Ordinance (Cap. 123)) (1.12.2003 to 30.11.2011)
- Convener, Construction Sub-committee of The Real Estate Developers Association of Hong Kong (since 2003)
- Member, Pre-construction Task Force, Business Facilitation Advisory Committee, HKSAR Government (since 2004)
- Member, Committee on Construction Site Safety, Construction Industry Council (since July 2007)
- Member, Committee on Construction Standards for Building, Construction Industry Council
- 政协山东省委员会港澳台侨和外事委员会顾问 (自2005年12月19日)

SPEAKERS AND PAPERS

MR. C. K. LAU, MH, JP

Abstract

Control, Change, Observe - The Art of Project Management

Mr. C.K. LAU, MH, JP
Director, C. K. LAU & Associates Limited

This is no definite way to master project management, or management in general. A surveyor, or an architect, or an engineer, or even someone may not of the relevant profession, may perform equally well as a project manager in the field of property development. The success of a project manager depends very much on his character, knowledge, experience, etc. and his style of working as a leader in a given culture and environment, and with the persons in his company.

In today's world when things are moving fast and with much complexity it is necessary that a project manager, if he is to run a project with smoothness, efficiency and effectiveness, needs to be creative and rely on the support of some computer models such as Document Management System (DMS), Building Information Management (BIM), etc., all handily accessible for use or adaptation to suit the special requirement of a project. The speaker intends to borrow the words of a famous soccer manager, who emphasis that the most important qualities for leadership are control, managing change and observation. Those words apply also to a good project manager.

Paper

CONTROL, CHANGE, OBSERVE
THE ART OF PROJECT MANAGEMENT

The title of my presentation today may not appear to have much relevance to the theme of Today's conference, but I think since I am practicing as a project manager, in the field of planning and developments of building works, I am actually doing something which is well connected to the building environment, areas concerning health and safety. I feel therefore quite comfortable for me to share with you now some ideas about project management.

The words that I have chosen for the title of my presentation, i.e. Control, Change and Observe, do however give the impression that they have little to do with buildings, or the aspects of health and safety relating to buildings. I will explain the reasons why I have made this choice later.

Friends close to me know very well that I love movies. I have collected a few hundred DVD's in my home, a collection of movies of all different classifications, coming from countries in almost every corner of the world. I admire the way that people in the movie industry, all coming from different background, technical knowhow and professionalism, can get together so effectively and in a short time produce a movie, a story in 2 hours or less that led us to momentarily forget the realities in our daily lives. Managing a development project bears similarity to making a movie. We have a project manager, assigned or appointed by the client, the property investor or the owner, to oversee a group of many professionals, consultants, technicians, workers, etc to work on the completion of a development project; just as the movie producer, or the director, carrying with him a contingent of actors, script writers designers, cameramen, experts on music, lighting, costumes, actions, stunts, etc., in the making of a movie. When seeing a movie, I have the habit of continuing to stay on even after the finish to read the presentations slowly coming out on the screen to tell you who's working at the back, particularly those people at the supporting roles but play a part to make the film successful. Indeed, the same can be said for the development of a project, whether it is a mega civil or building works, or a small renovation of a shopping centre, you need to have all kinds of people working for and around you. As a project manager, it is necessary that you should possess some kind of skill and ability to work with these people all the way through the progress of the project to meet the "target" that you are assigned to. Project Management is like making a movie; it is an art and it is certainly not an easy thing to do.

Apart from seeing movie, I have had many other hobbies. One of which is soccer, and like many of you, I favor watching British soccer. Besides being a sport, soccer is a big business, and a business that needs a special kind of management. I have recently read an article of an interview of Sir Alex Ferguson, manager of Manchester United, who emphasizes with three words for how the art of management can be skillfully performed. The three words are: Control, Change, Observe. Today I would like to borrow these three words and use them for my presentation, although I would like to change their orders, like this: **Observation, Change, Control**.

SPEAKERS AND PAPERS

MR. C. K. LAU, MH, JP

Observation

Many of my mentee, or those who came to work with me as a trainee, would ask this question: what is the most important thing in project management? I always gave them the answer: observation.

But what is observation? Allow me to quote the words of Sir Alex again. They explain very well the gist of observation:-

"Spotting everything around you, analyzing what is important. Seeing dangers and opportunities that others don't see. That comes from experience and knowledge"

Very well spoken, but I wish to say that in order to make observation effective , you also need "hard working", "focus and concentration" ,"positive thinking" etc. One may carry on to think of even more words suitable.

Knowledge is indeed an important element in the becoming of a good project manager. I always say to people that anyone can perform as a project manager. It is not the monopoly of a building professional: surveyors, architects, engineers, or the likes. I have seen solicitors, accountants, financiers or someone who does not even finish a high level study, perform well as a project manager. Yet, to become a good project manager, you need to have the will to learn all kinds of knowledge as a life-time hobby. WHY? Let us take a look below:

The knowledge that are required for a project management is enormous, and will never be exhaustive.

With the advance of the internet, knowledge is something not difficult to obtain. In the old days, when resources are limited, we had to go to the library, cue and wait for the books that our teachers advised us to read. Or we might need to save our pocket money to subscribe to publications, magazines, journals, most of them from outside of Hong Kong, to supplement our limited knowledge from high school education. We did not have things like conferences, CPDs, seminars, etc. We did not have mentors to guide us. And we did not have the opportunity of seeing new developments, techniques, innovations, etc, through site visits, factory visits, exchanges etc. The world of knowledge has now become wide open.

It is therefore necessary for a good project manager to keep his eyes wide open, his mind and heart also wide open and to keep on learning, so that he will obtain the sufficient knowledge to communicate with all the people working in his team and to lead them to manage a development project with perfection.

SPEAKERS AND PAPERS

MR. C. K. LAU, MH, JP

Very different from knowledge, experience is not something you can gain from studies . It does not have any relationship with age. It is through the daily contact of the people, the things around you that you build up, bit by bit, your own understanding of the best way to handle them, through continuous learning and studies of the success stories of the others, and the mistakes made by yourself. You will learn at least not to commit the same mistakes again.

And with such learning, I believe that with much hard work and thinking intelligently, you may be able to acquire the skill to spot the dangers and opportunities that others don't see.

Change

We know in the soccer world things change rapidly. Every year we see new faces in our favorite soccer teams. There are always new players and managers. The new faces bring along new styles of playing and management. It seems that without these changes one may not be able to maintain the supreme position in the league.

In the old days we would have never dreamed of one day soccer will be run like a business. Soccer teams have now become an investment in the stock markets.

The same can be said of project management. Internet has changed the pace of people's lives, and the ways of doing business. Project management as a business is also affected. Changes become necessary, more changes bring along creativity.

In the past we have pieces of papers like letters, memos, minutes of meetings, drawings, sketches, tables, bills, etc, doing the purpose as records of the communications between different parties in the project, their agreements and disagreements, consensus, etc. These documents can easily be classified into different categories and properly stored in "files" retrievable for reference or other uses. We do maintain some of the "old" filing system today, but comes internet, it opens up our communications into a much wider, faster, and complicated perspective. Information flows much more rapidly, grows much more easily and wildly, until one day it bursts and becomes uncontrollable. With the help of the modern printing machines, the situation becomes even worse with papers flying around, some stuck in the corners of the filing cabinets, to be forgotten and never to be seen again. This is not environmentally friendly.

Changes are therefore necessary. People have spotted the problem many years ago and have advocated to turn to manage in a "paperless" manner. That's easily said than done. New systems and methods have been created, making use of the internet and the like, to try to turn the tide to achieve the goal. I agree that this is the way forward for us in order to help saving our environment, but I think it would be much appropriate at the moment to achieve the goal by doing it in the fashion of "less paper".

How can "less paper" management be done? Let me explain with a few examples:-

1. Document Management System (DMS)
   Using the internet to establish a common platform, in the example of a file station, so that everyone involved in the project can upload documents or any other information onto the platform. Effectively they can share the information and where necessary download the information "paper" for other uses. This replaces the commonly use of the "e-mail" which may be jammed or mixed up with other unrelated information.
2. Intelligent Project Management System (IPM)
   A computerized system developed purposely for a particular organization (or a group of user) to suit its special style and culture in mastering project management. Every item of information in a project management. e.g. site reports, tender and contracts, data of construction cost and material , programming, photos, etc., can be classified and categorized to suit the purpose of immediate, retrieval of information, or figures for the purpose of analyzing, assessment, reporting, and so on. An overview is made easy for the top management to keep a close contact on the progress of the development of a project.
3. Building Information Modeling (BIM)
   A 3-D model built on the basis of 2D drawings and combine the different functions presented in the drawings to help detecting problems/ clashes that may happen in future construction works. Thus avoids wastages and unnecessary changes or modification that induce additional time and cost burden to a development project. It can also be developed into a "virtual reality" for the purpose of sales and marketing promotion. The system is now advancing into a 4-D format to assist in the areas cost and time management.
4. Construction Accounting System
   The system enables the costs of each element of construction, each stage of payment for different types of contract, variation for additions or deductions, to be detected readily in a computerized internet format for easy budgetary planning and control.

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MR. C. K. LAU, MH, JP

Our usual habit of sitting down to read with papers has gradually change to click to read from the screen to do our works. We do not even have to stay in one place, but to carry with us a notebook, or a blackberry, iPhone, iPad, etc. and we can do whatever we want to manage the progress of our development through the internet anytime and anywhere, at home or travelling.

Whilst we cannot resist the change, we should take advantage of the convenience and opportunities provided by the change, to accommodate it, to make friends with it, and to create even more user-friendly systems to help us to manage our projects more efficiently and effectively.

Sometimes in the future we shall be able to achieve a really "paperless" situation for our project management.

Control

I believe that Sir Alex must have exercised a good control in his role as a manager, otherwise the soccer team Manchester United would not have performed so well in the English Premier League for so many years.

To be a good project manager, I believe it is necessary for him to exercise control in a number of ways.

Firstly there are the fundamental controls required for the management of a project on Cost, Time and Quality.

A thorough study and analysis into the many and various factors affecting the planning, the design, the construction, the implementation of certain co-ordination works, the packaging, etc. at the very early stage of a development project will help to identify the problems that will be encountered, the hurdles that need to be overcome and the irregularities that required to be taken away so as to allow a healthy budget to be prepared and a realistic time programme to be determined. This involves the talent, the knowledge and the experience of the team members. i.e. the architect, the engineer and various other consultants to be coordinated and work under the leadership of the project manager. Usually the project manager will make use of the help of, e.g. "value engineering" to map out a clear road ahead for the project. A clear picture will then be established to show a realistic cost and time control system to be followed in the future. A strict adherence to the pre-determined cost and time control system worked out in this manner and with little variation in the progress, will help to attain a reasonable level of quality for the product at the end of the day.

Secondly there is the control required for the project manager to work harmoniously with his superior and his subordinates. Upwards I call it a control of the boss and downward I call it a control of the mass. The skill required for these two controls are obviously different. You may need to be seen obedient when talking to the boss, but you should turn to be accommodating when listening your sub-ordinates of their views, suggestions and problems and offering them with the necessary assistance.

Just as the director of a movie where it is required of him to control the boss of the film production company, at the same time the actors, actress, etc. to work towards the singer goal of making the movie successful within the pre-determined time, cost and quality framework.

Lastly there is the control of the inner-self, or put it the other way: self-education, motivation, discipline, etc.

Not everyone has the quality of controlling himself and put up the will to work hard to become a leader in the field of project management, or indeed to become a successful person. Working hard is not the only element that makes a manager successful but it is a necessary element. And so what are the others? Of course they are numerous, and I am not going to elaborate on this as one can go on to talk on this topic for hours.

Before finishing with my presentation, I wish to quote three words again. These are the words of Dame Lydia Dunn, previously the head of the Swire Group and the Chairperson of the LegCo. Again, in an interview by the press, she said that the most important elements for a person to become successful are:

Health
Resilience
Sense of Humour

Apart from these, Keep an open mind and heart always, success shall not be far away!

SPEAKERS AND PAPERS

DR. S. M. LO

DR. S. M. LO
Associate Head
Department of Civil and Architectural Engineering
City University of Hong Kong

Biography

Dr SM Lo is the associate head of the Department of Civil and Architectural Engineering, City University of Hong Kong. He is a Fellow of the Hong Kong Institute of Surveyors and an Authorized Person and has been awarded a PhD in Architecture from the University of Hong Kong. He was a building official in the Buildings Department, Hong Kong Government for many years prior to joining the City University of Hong Kong as a faculty member. He has actively participated in many research works in the past decade and has successfully obtained over HK$10 million research grants including acting as principal investigator for 11 General Research Funds from the Research Grant Council (RGC) of Hong Kong Government in studying egress modeling, pedestrian flow, human behavior in fire, risk analysis, system modeling and fire safety engineering. He has published over 250 academic articles including over 110 refereed journal articles. He has been invited to give key-note presentations in many conferences including the 2006 City Security and Safety Management International Conference organized by the Beijing Government, 2008 International Crisis Management Symposium in Japan and 2011 International Conference on Mass Transit Facilities Design and Management in China. He is currently a non-official member of Fire Safety Committee, Fire Safety Advisory Committee and the Engineering Panel Member of the Research Grant Council, Hong Kong Government. In addition, Dr. Lo is the honorary visiting professor of several major universities in China, such as the Xi'an Jiaotong University, Wuhan University, Harbin Institute of Technology and Academy of Armed Police of China.

Abstract

A Study on the Crowd Flow Pattern in Mass Transit Rail Stations

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With the rapid development and increase in population in Hong Kong, the number of patrons of Hong Kong's mass transit system has rapidly increased in these few years. The mass transit stations, which have been constructed for over 30 years, may not have the setting to allow the passengers to effective move around in the stations. Some of the stations may be crowded in most of the time in a day. Revamping of existing stations, which includes the integration other associated facilities, may be required to consider. To facilitate the design and the alteration works for a station, the crowding and passenger movement pattern at normal and emergency situations should be studied. Computer simulation model which can model the passenger movement pattern has been established to evaluate the efficiency of different design alternatives. This article presents an agent-based passenger movement model which has be adopted to examine the dynamic passenger density in a station. Simulation outputs of the model for subway stations are shown.

Keywords: Mass Transit Stations, Passenger Movement Model, Simulation

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DR. S. M. LO

Paper

1. INTRODUCTION

The Hong Kong Mass Transit Railway System has been operating for more than 30 years. With the increase in population, some of the stations may be crowded in most of the time in a day. Revamping of existing stations with a view to improve the passenger movement efficiency in normal and emergency situations, which includes the integration other associated facilities, may be required to consider. To facilitate the design and the alteration works for a station, the crowding and passenger movement pattern should be studied. Computer simulation model which can model the passenger movement pattern has been established to evaluate the efficiency of different design alternatives. This article presents an agent-based pedestrian movement model which can be adopted to examine the dynamic passenger density in a station and provide valuable information to assist the designer to plan the settings of the stations.

2. PREVIOUS WORKS ON PASSENGER FLOW STUDIES

Previously, models of pedestrian movement have generally been considered at macroscopic scale based on simple flow theory [1-2]. Such approach can easily establish the overall crowd density for a region as well as the capacity of a component in the built environment. Other common historical modeling methods for pedestrian flow were simple statistical regression approaches. It used regression to determine the most important factors influencing walking volumes. The other 2 approach adopted fluid-flow analysis, in which pedestrian movement was considered as a fluid moving around obstacles [3-4]. While the said methods can show impact to pedestrian flow from a high-level perspective, they cannot fully incorporate the movement behavior of individual pedestrians.

With the advancement of computer technology, microscopic models for pedestrian movement and evacuation have recently been developed. In general, the common microscopic approach can be cellular automation (CA) [5-8], agent-based modeling [9-11] and others [12-19]. For CA models, a space is resolved into discrete cells or points. Each pedestrian under simulation will move through the space by occupying the cells and cells occupied will be avoided.

Agent-based modeling technique has been developing on the basis of Craig Reynolds' model (boids) for describing the flocking behavior of birds [20]. For such approach, each individual pedestrian is considered as an agent. The agents will be assigned unique attributes and goals and respond to the environment with respect to the attributes. The simulation may contain a large number of these agents, all acting independently. This makes agent-based modeling ideal for pedestrian flows.

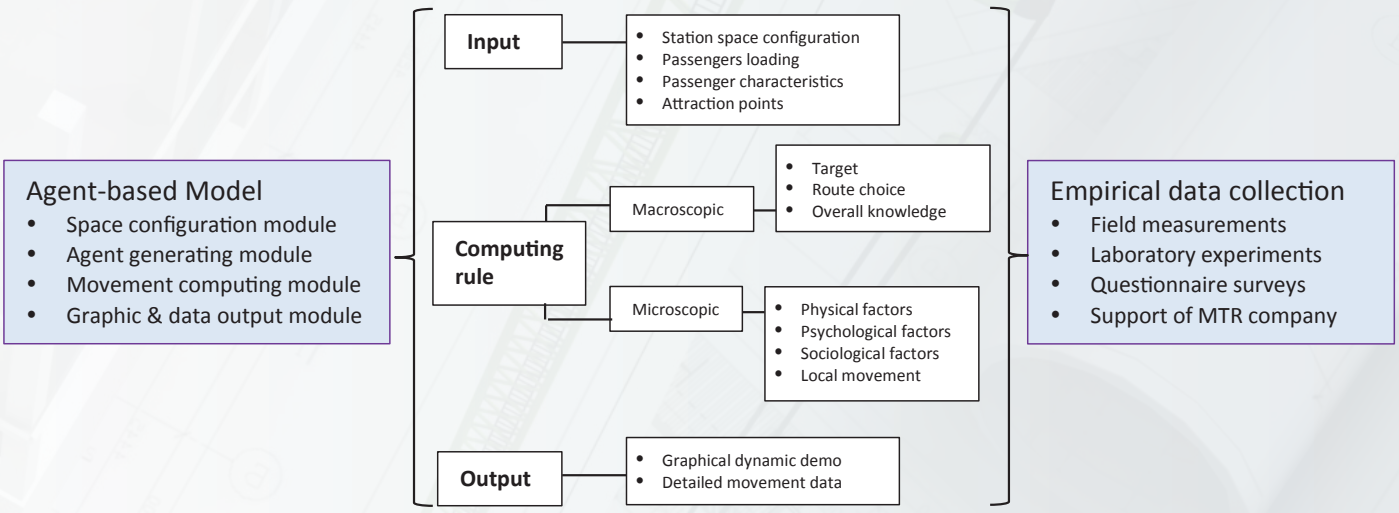

Fig 1: Outline of key components of the agent-based model

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3. AN AGENT-BASED PEDESTRIAN MOVEMENT MODEL

The model, which is shown in Fig 1, consists of four modules, namely (1) the space configuration module, (2) the agent generating module, (3) the movement computing module and (4) the graphic and data output module. In the model, every passenger can be regarded as an agent and be taken to be purposeful and have an origin and final destinations. The route choice behavior focused on 'short-term' decisions based on pre-determined origin-destination matrix. A route-choice model that aims to find the optimal route through the network of the station facilities has been established for each agent [21-22]. The basic factors affecting the route-choice are the travel distance and perceived travel time. To establish a basic framework for modeling the movement of an agent, it has been assumed that passengers always prefer to choose the route with shorter distance and few perceived travel time based on their own knowledge of the overall conditions in the station. Since the number of feasible routes will not be limited, the travel decisions can be predicted by discrete choice analysis [23].

When passengers are moving in station facilities, the choice on route is determined at the macroscopic level. At the microscopic level, the local movement in a region is modeled by the pedestrian dynamics model. In the model, the walking behavior is modeled by agent-based approach. Each pedestrian is modeled as an agent that can autonomously decide self-action through observing the environment. The walking behavior of an agent is also modeled by a discrete choice method which has considered the local movement behaviors and various factors related to the physical, psychological and sociological features of passengers. Five types of local movement behavior are considered in the model. Fig. 2 outlines the agents' characteristics:

1. To walk toward the current target point. When people are walking, they will try to approach the immediate target in an efficient way such as walking along the path with shortest distance to target.
2. To avoid potential collision with obstacles such as walls. Pedestrians will try to adjust the walking direction to keep a certain distance from the obstacles.
3. To avoid potential collision with other pedestrians. Pedestrians will try to adjust the walking direction to keep a certain distance from others.
4. To follow the "Behavior of Inertia". Pedestrians have the habit to keep the current direction unchanged since it will cost more energy to turn the walking direction.

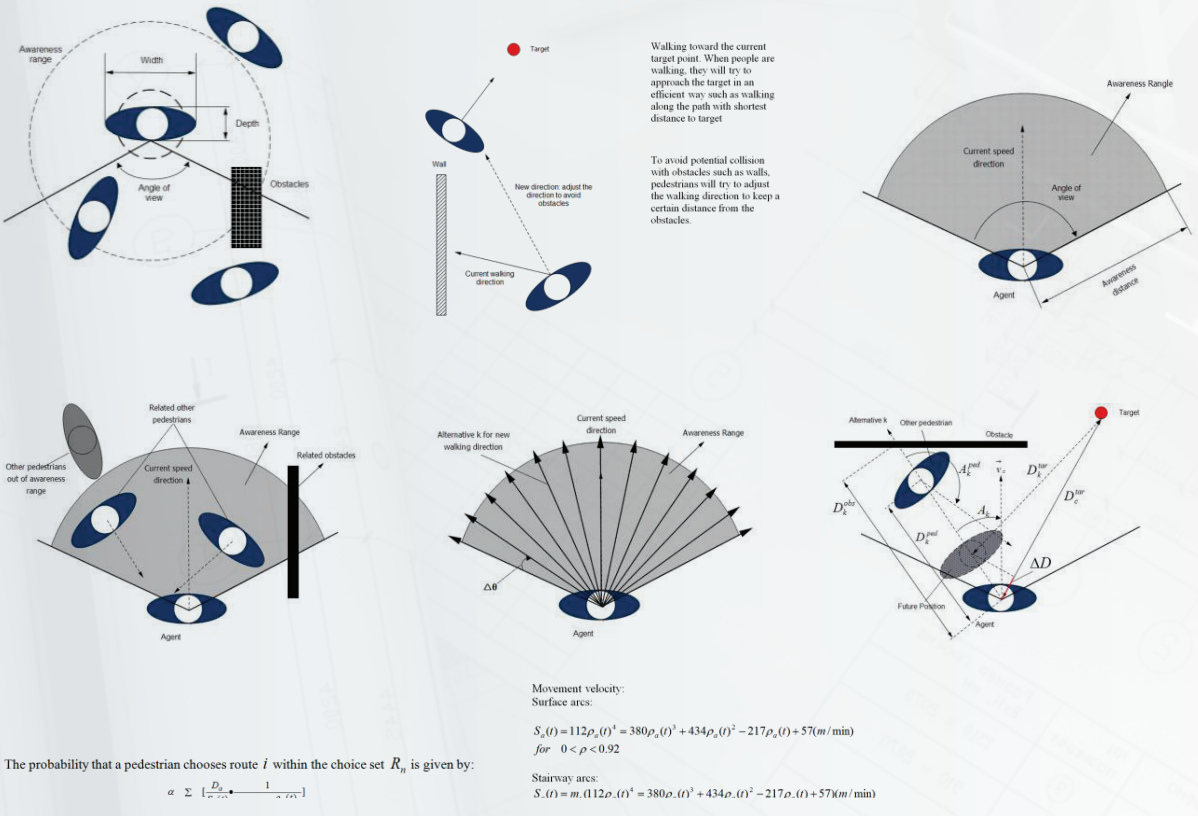

Figure 2: Some characteristics of agents

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The architecture of the model is outlined in Fig. 3.Three categories of input need to be provided for the simulation model. They are facility space configuration, passenger loading and passenger characteristics. Passenger characteristics include the anthropomorphic dimension; the awareness range and angle of view, walking speed and so on (Fig 1 and 2 refer). A "Speed and Density Rule" has been setup in the model based on the empirical data on the speed and density relationship established by Predtechenskii et al [24] and the crowd density and level of service are based on Fruin's works [25]. To macroscopically determine the route choice of passengers, a "path selection model" was established on the basis of artificial neural network (ANN) approach. Extensive data collection was performed to train the ANN model. The possibility of each possible route was established which served as an input to the flow model. The model is able to output not only the graphical dynamic demo of the passenger movement process in a station but also the detailed simulation results such as the locomotion time for every passenger, the flow rate of a passageway, the bottleneck information within the system. The output of the simulation model will be visualized by mapping to a CAD platform in accordance with the approach described in Zhi et al [26-29]. It is important for the models to reproduce known collective behaviors of the passengers such as oscillations of the direction at bottlenecks, cooperative and non-cooperative motion and other social force driven locomotion in alighting and detrainment process.

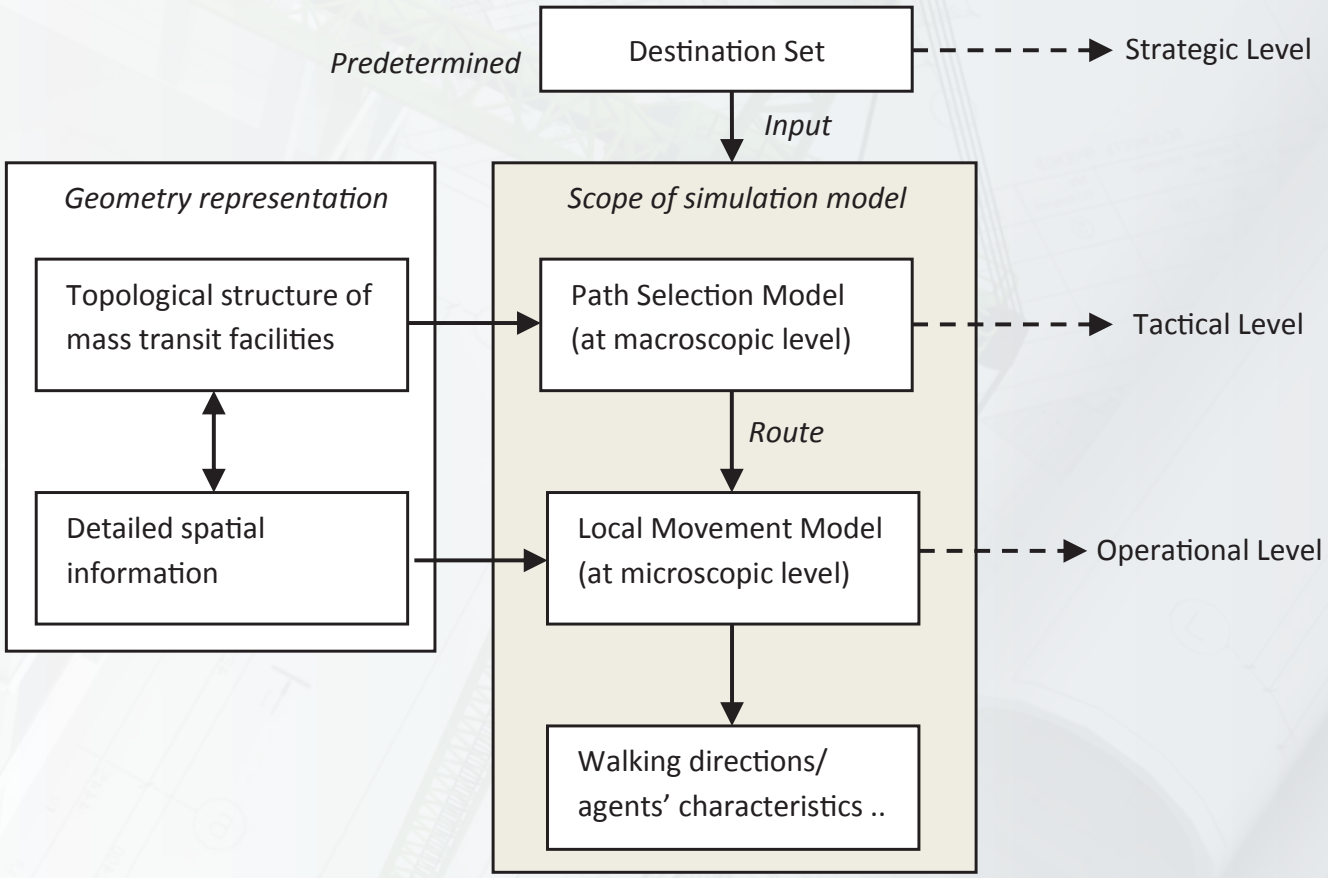

Figure 3: Architecture of the simulation model

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4. A CASE STUDY

A station was selected to examine the dynamic passenger density in order to facilitate the mass transit corporation to revamp the setting of the station. Figures 4 – 6 show the simulation outputs, which include the animations for passengers' movement pattern and dynamic crowd density contour maps for different mass transit stations.

Passenger information was collected on the basis of the records the number of passengers passing through the gates (octopus card[1] records), on site measurement, CCTV records, questionnaire surveys and etc.

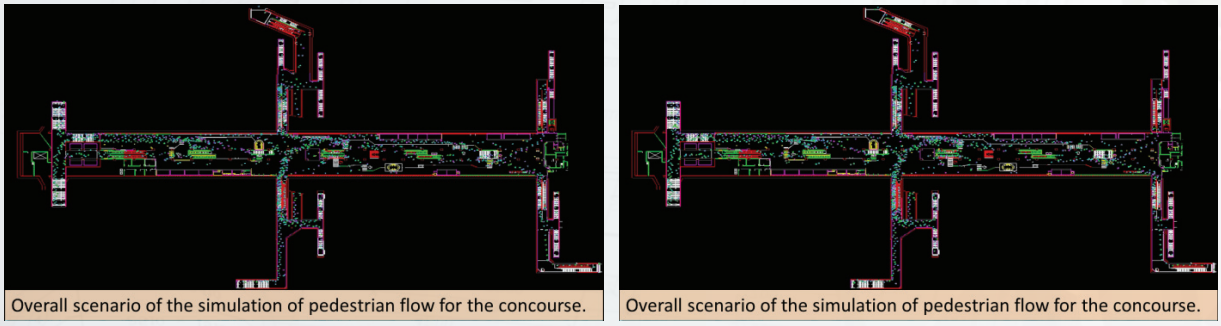

Fig 4: Simulation output for an existing station

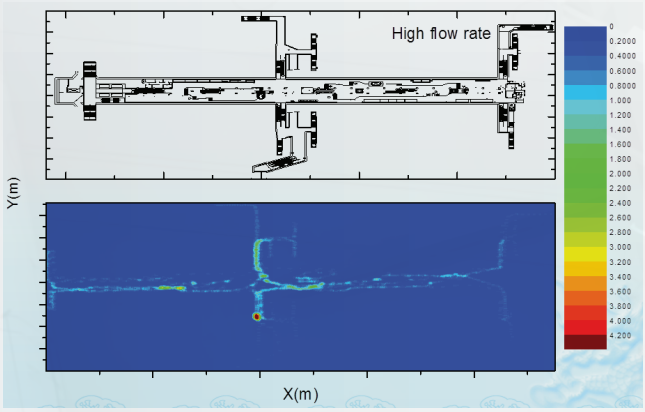

Fig 5: Crowd Density Distribution Profile

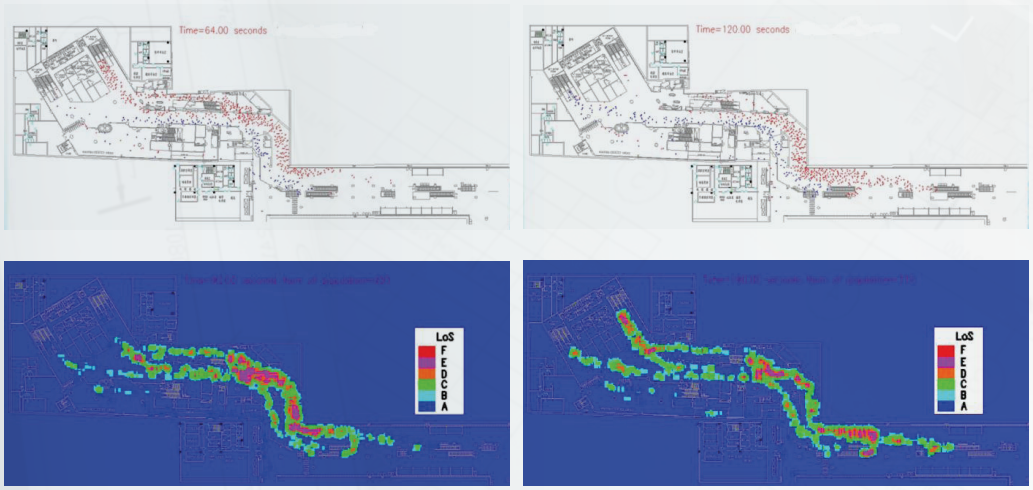

Fig 6: Crowd Flow Animation and Dynamic Crowd Density Contour

1 The Octopus card is a rechargeable contactless stored value smart card used to transfer electronic payments in online or offline systems in Hong Kong.

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The data was collected on a standard period of time (e.g. per 15-minute or hourly) basis during a working day (Figure 7 shows some records for the inflow and outflow rate in a station). On site observation and measurement were also carried out to ascertain the passenger movement behavior, especially the route choice pattern and the dynamic density of passengers in the station and at the platform. Having collected all the required information, we established the agent-based model, which was implemented on C++ language. The on-site observations can be used to compare with the simulation outputs to see if the actual passenger flow pattern can be resembled by the simulation model. The outputs of simulations have been adopted to evaluate alternative design. Figure 8 outlines the model building and evaluation process.

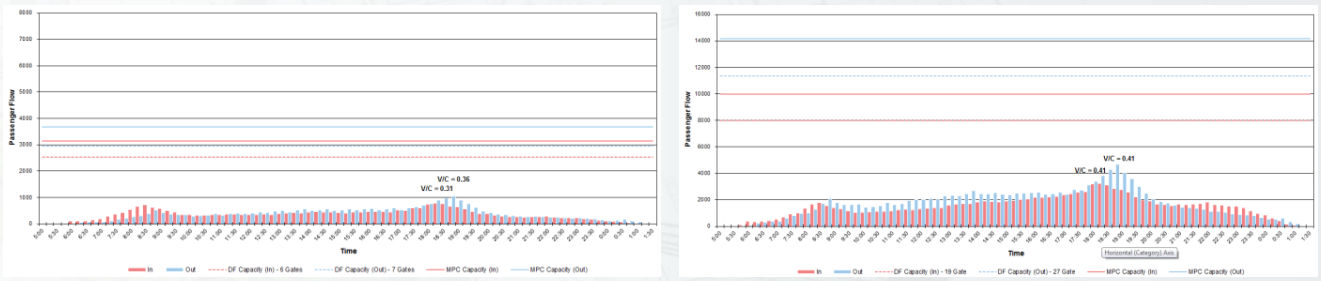

Fig 7: Some of the records for the inflow and outflow rate of the passengers in a station

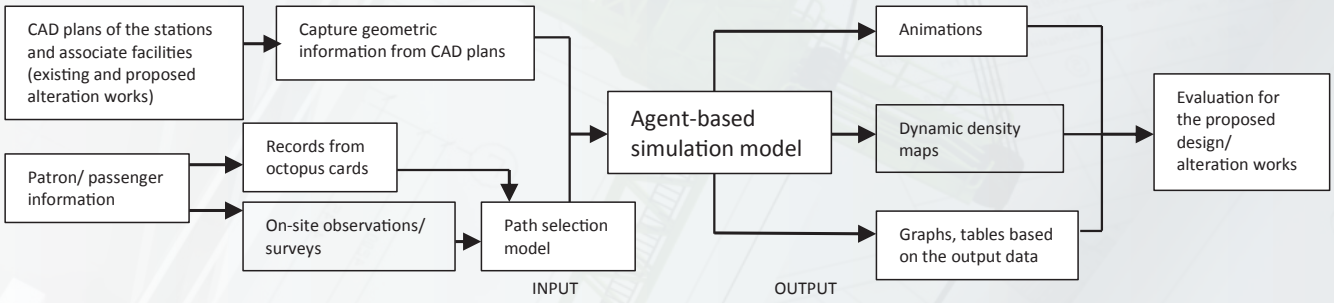

Fig 8: Process for establishing the evaluation for proposed station alteration works

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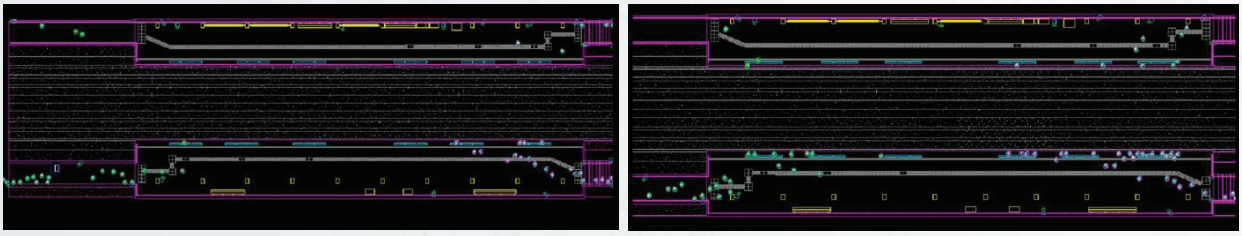
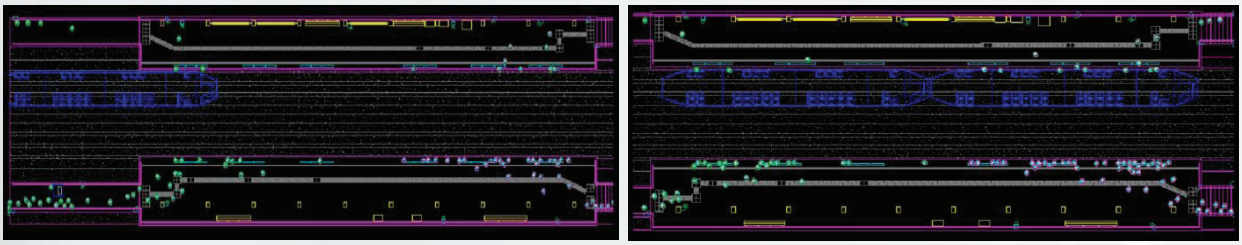
Simulations for passengers at platform level (snapshots were shown in Figures 9 – 11) were also performed for appropriate times and the dynamic passenger densities at the platform were computed (Figure 12 refers). The simulations for different design solutions (different layouts) can be evaluated. Moreover, evacuation of passengers in a station can also be simulated. Clearance time can be assessed and when integrated with other sophisticated fire models, the fire safety level of a station can be evaluated. In other words, the agent-based model can serve as a tool for performance-based fire safety engineering design in mass transit stations.



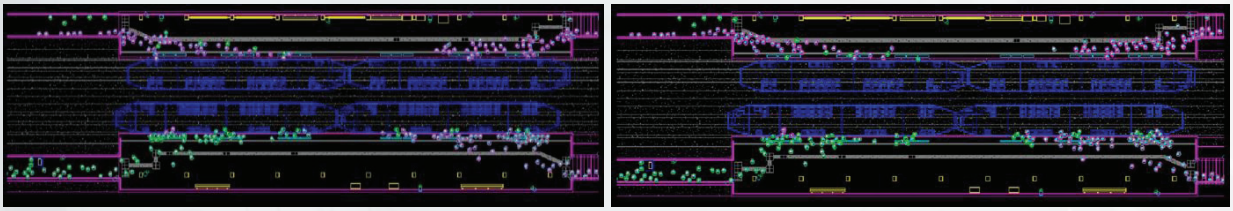
(a) (b)

Fig 9: Snapshots showing initial situations before approaching of a train



(a) (b)

Fig 10: Snapshots showing the approaching of a train



(a) (b)

Fig 11: Snapshots showing the alighting process of passengers

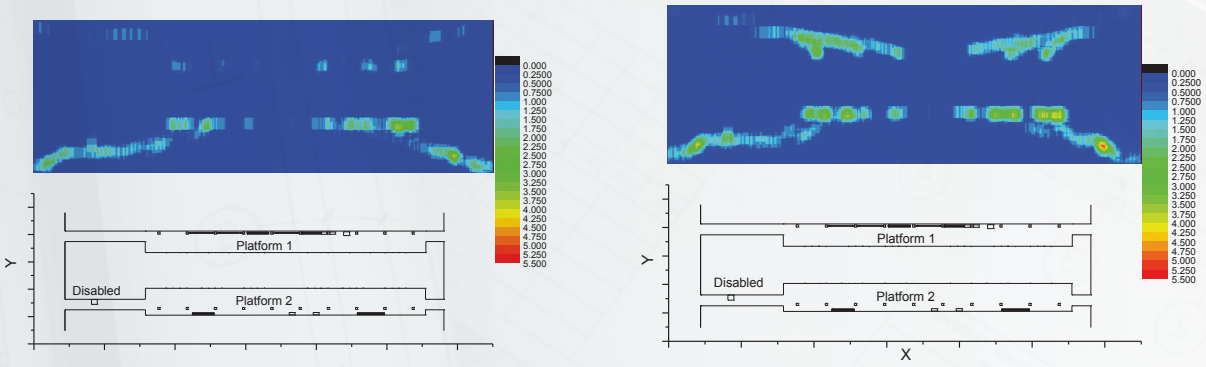


Fig 12: Dynamic density map showing crowd density at various time slots

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5. CONCLUDING REMARKS
An agent-based passenger movement model was established to model the passenger movementpattern in mass transit rail stations. Records from "octopus cards" and on site surveys provide data for building up the simulation models. The tool has been demonstrated that it is useful for evaluating the performance of different alteration proposals. In particular, the dynamic density maps can provide value insight to the designers/ architects. In a large station with multiple routes, huge volume of data should be available in order to establish an efficient simulation model. The model can simulate the passenger movement pattern in normal situations as well as in emergency situations – evacuation pattern.

ACKNOWLEDGEMENT
The work described in this paper was fully supported by a grant from the Research Grant Council, Government of the Hong Kong Administrative Region, China: No. CityU119011. The authors also acknowledge the MTRC, Hong Kong to provide the data for the modeling.

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PROF. BARNABAS H. K. CHUNG, FHKIS

Prof. Barnabas H. K. CHUNG, FHKIS

Biography

Professor Barnabas H K Chung, FHKIS, a veteran Building Surveyor with over 40 years of industrial experience. He devoted his career in the practice and research in building control. After his retirement from the civil service in 1998, he participated in a number of consultative research projects for the Buildings Department and has personally conducted a Comprehensive Review of the Buildings Ordinance and Regulations for the Buildings Department in 2003.

Prof. Chung has been the key administrator of the BS APC since its inception in 1987 and has masterminded the first 10 BS Conferences from 1987 to 1996. He was instrumental in the enactment of both the HKIS Incorporation Ordinance and the Surveyors Registration Ordinance in 1990 and was Chairman of the Surveyors Registration Board for 4 consecutive years since its inauguration.

Prof. Chung was a founding member of the HKIS and has been representing the BS Division in the General Council, the Board of Education, the Board of Professional Development, and currently the Board of Membership.

Abstract

Building Safety ⊂ Building Surveying

Prof. Barnabas H. K. CHUNG, FHKIS

The speaker will review who we are and what we do, as Building Surveyors.

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INTRODUCTION OF HKIS

The history of the surveying profession in Hong Kong goes back to 1843 with the arrival of the first Surveyor General from the United Kingdom. The first Government Land Auction then took place on 22 January 1844. Until the 1950s, most surveyors in Hong Kong were recruited from overseas, these surveyors being qualified chartered surveyors. Local educational institutes started diploma courses in surveying in the 1960s, and now there are three universities in Hong Kong offering degree courses in surveying.

The Hong Kong Institute of Surveyors (HKIS) has strong links with the Royal Institution of Chartered Surveyors (RICS). A Hong Kong Branch of the RICS (the Branch) has been in existence since 1929 (then known as The Surveyors Institution Hong Kong Branch). In 1978, the Branch set up a working group to examine the possibility of establishing a local institute of surveyors and the conclusion was positive. The Branch was only dissolved on 31 August 1997.

The HKIS was founded in 1984 and registered under the Societies Ordinance. It had 85 founder members, the number of members has now grown to around 5,259 as at 12 August 2011 – Members and Fellows - distinguished by the initials MHKIS and FHKIS. The HKIS is now incorporated by ordinance, with the passing of the Hong Kong Institute of Surveyors Ordinance in January 1990. In July 1991, there was also passed the Surveyors Registration Ordinance to set up a Registration Board to administer the registration of surveyors.

To qualify as a corporate member of the HKIS, surveyors must possess a recognised academic degree or similar qualification, followed by a minimum 2 years supervised professional experience within strict guidelines, followed by an Assessment of Professional Competence. HKIS members are also bound by a comprehensive Rules of Conduct.

The title of "Surveyor" embraces a number of disciplines involved with land and its development with buildings. Usually the first to be involved is the **Land Surveyor** who measures and sets out the site. Next follows the **Quantity**.

Surveyor who is concerned with the building contractual arrangements and cost control. The **General Practice Surveyor** is involved in the valuation, sale, leasing and management of the finished product. **Planning and Development Surveyor** advises on the possible change of zoning likely environmental impacts and make suggestion on preliminary development contents, while the **Building Surveyor** is involved in the construction and maintenance of the fabric of the building. The **Property and Facility Management Surveyor** plans, organises and manages accommodation services, supplies and other facilities relating to building occupancy.

The HKIS has reciprocal agreements with the following overseas surveying institutes:

- The Royal Institution of Chartered Surveyors
- The Australian Property Institute
- The New Zealand Property Institute
- The Singapore Institute of Surveyors and Valuers
- China Institute of Real Estate Appraisers
- China Engineering Cost Association
- China Association of Engineering Consultants
- The Australian Institute of Quantity Surveyors
- New Zealand Institute of Quantity Surveyors
- Building Surveyors Institute of Japan
- Canadian Institute of Quantity Surveyors
- Chartered Institution of Civil Engineering Surveyors

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