

PROACTIVE FIRE TRENDS

The Journal of ProActive Fire Technologies
for Asia Pacific Building Industry Professionals

KDN PP 10803/05/2006 (UNTUK AHLI SAHAJA)
MICA (P) 173/07/2005

Volume 8, Number 2
Second Half, 2005

• New theme park employs Promat system solutions

Official opening of Hong Kong Disneyland™ delights many

A special light rail link was built to connect it to Hong Kong's main Mass Transit Railway system. New access roads were constructed and the government post office even issued a series of commemorative, gold-foiled postage stamps to mark the occasion of its official opening on 12 September 2005.

In fact, the next few months will witness yet another milestone in Hong Kong development as more than US\$4 billion worth of new tourist attractions, event venues and hotels are unveiled everywhere across the dynamic territory, from the bustling financial district in Central to outlying Lantau Island where the new Hong Kong Disneyland™ is located.

When the deal was inked in late 1999, Hong Kong Disneyland™ meant an initial investment of a HK\$22.5 billion (US\$2.9 billion) in the Special Administrative Region's then sluggish economy and certainly a huge vote of confidence in the territory's medium and long term future.

It is Disney's fifth theme park, the third outside the United States after Paris and Tokyo, and only its second in Asia. It is expected to spearhead a timely boost in Hong Kong's tourist industry.

A joint venture between the Hong Kong Government (57%) and the Walt Disney Corporation, the new park blends classic Disney with a mix of East and West fantasy and fun entertainment concepts centred around a traditional Magic Kingdom castle. Various performances are in Cantonese, Mandarin and English.

True to form, Disney's well-known signature characters loved by many worldwide are much in evidence. More than 5.5 million visitors are expected in first year of operations alone, a figure that is expected to increase substantially in the following years.

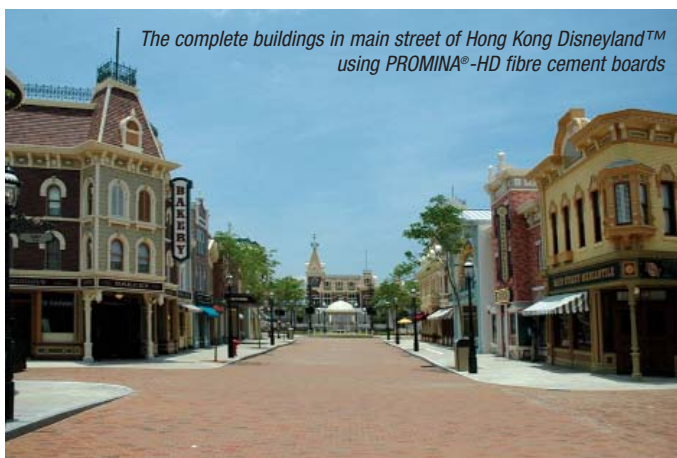
The project was estimated to create 18,000 new jobs by the time of opening, a level predicted to rise to 36,000 once the first park is finally and fully operational. A government economist estimated that the first phase of the project would generate a current economic value in excess of HK\$148 billion (US\$19 billion), mostly to the direct benefit of Hong Kong. Big theme parks are clearly good for local economies.

Sited on a 310 hectares at Penny's Bay on Lantau Island, Hong Kong Disneyland™ is just 10 minutes from the international airport at

Chek Lap Kok and a mere 30 minutes from the main downtown business district. Ease of access is assured by plentiful and frequent highway, rail and ferry transportation connections.

Behind the glitter of fantasy, a serious kind of reality

Much is demanded of any theme park, especially in view of the number of visitors and the expected heavy usage patterns. Safety and security are paramount in the minds of planners, designers, builders and developers alike.



The complete buildings in main street of Hong Kong Disneyland™ using PROMINA®-HD fibre cement boards

Being an industry leader, even more is understandably expected of Disney. Indeed, it can quite reasonably be said that Disney sets a theme park industry benchmark, anywhere in the world – and Hong Kong Disneyland™ is no exception to this rule of thumb. It is interesting to also note that it is the first theme park to recreate many of the exact designs of the original Disneyland™ in California.

Behind all the glitz and glamour of this profit-making business, is a matrix of details concerned with show business professionalism, value for money and safety issues. After all, this world of fantasy is a complicated, purpose-built environment designed to a single-minded purpose – to attract and entertain millions of satisfied customers.

While it is in fact a-world-within-a-world, the new Hong Kong Disneyland™ is also an integrated tourist and pleasure destination dedicated solely to the business of entertainment. The Phase 1 build-out alone not only features all the amusement park aspects normally associated with Disney but also 2,100 quality hotel rooms and 28,000m² of retail, dining and entertainment facilities.

There are four major theme sites – Main Street USA, Fantasyland, Adventureland and Tomorrowland - and two themed hotels, the Hong Kong Disneyland™ Hotel and the Disney's Hollywood Hotel. The hotels' ambience revolves around the elegance and romance at the turn of 20th century and the 1930s-40s Golden Era of Hollywood, respectively.

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WE HAVE MOVED HERE

THE NEW PREMISES OF PROMAT IN MALAYSIA

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THE LIGHT OF OPTIMISM

We all understand how the Internet helps us optimise productivity. It is indeed a very useful tool. Like everyone else I get a lot of email but often times this includes unwanted spam. Sifting the grain from the chaff requires patience and valuable time. Occasionally though, I'm delighted to report, a diamond turns up in the dross.

Recently I received an attachment that made an indelible impression. It featured a slide presentation about Four Candles named Peace, Faith, Love and Hope. As the story unfolds, the first three candles each explain their benefits and why they are indispensable. The commonality of their message to viewers is simple but meaningful... don't worry, we are essential to the human spirit to prosper and to life in general. They imply they will light the way ahead, without them only darkness. But they glow brightly for just a brief moment. Their light and energy are sadly extinguished well before their expected time. A cute little girl then enters the frame, wondering why these essentials of humanity – peace, faith and love – are dead? When she begins to cry, the fourth candle, Hope, comes to the rescue, saying "Don't be afraid, I am the candle Hope and when I am still burning, we can relight all the other candles".

The point is of course, quite simple. We must never give up in our efforts... as a company of people working for customer and society as a whole, or as individual people who are planning, working and hoping... for a better tomorrow. Easier said than done, you might say, because business and economic situations are constantly changing. This is the very nature of the dynamics of global AND local enterprise. When the wind inevitably shifts direction, to survive and succeed, we trim our sails accordingly and move on to a new horizon. On such a wide scale and at a detailed macro level, I interpret Hope as a general sense of optimism. As such, we must never give up on Hope for, as our story indicates, with Hope and Optimism alive and well we can and do achieve so much more.

In this issue of PFT, our 16th by the way, there is plenty of evidence of tenacity, courage and hope. On page one we feature a story about Promat's small contribution to the new Hong Kong Disneyland™, a major investment that hopes to inject added interest in to that territory's flagging tourist industry. We are convinced it will.

On page three, a broad overview of Singapore's Changi Water Reclamation Plant, part of a massive, mostly underground system designed to serve the island city state through the 21st century. We are proud that the Promat contribution is small but vital to this world class system of water reclamation, the first of four Network Reports in this issue.

Our centre page spread is without doubt a testament to the eternal optimists who quite rightly believe that today will always be better than yesterday but not quite as good as tomorrow. The page 4-5 story on the National Building Code of India overviews the latest major revision to bring the regulatory regime of this huge, fascinatingly diverse country up to international standards. It is believed that the application of some consistent standards and their enforcement will eventually make India's built environment considerably safer and a clear reflection of Promat's on-going philosophy.

Three more Network Reports round out PFT16. Page 6 features small reports on the imposing new Shanghai Telecom Tower in China and the Tatan Power Plant in Taiwan. These projects employed our PROMATECT® boards and as a result can be just a little more confident about the future. Finally, on the last page, a brief review of Promat's involvement in Hong Kong's Langham Place project. Mongkok is without doubt one of the most densely populated places on our planet, one of those slice-of-life places where the benefits of hard work and optimism of the human spirit are there for all to see.

Although business across the region continues to trend upwards, this is not the time to rest on our laurels. Our products, services and systems are tried, tested and proven. The Promat team is strong and resilient. With a common spirit of hope and optimism continuing to bond us together, we can afford to be hopeful for an even brighter future. I certainly look forward to being part of it with you.



Erik D. van Diffelen
Managing Director

Promat Asia Pacific Organisations
September 2005



Construction works in the Disneyland™ using PROMINA®-HD boards: Cladding at the roof top (right) and its view from inside (far left bottom); external wall cladding at the main street (far bottom).

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Official opening of Hong Kong Disneyland™ delights many

Continued from the cover

Built to demanding human and technical standards

A theme park like Hong Kong Disneyland™ is clearly not just another ordinary building nor even a run-of-the-mill construction site.

At one level, it incorporates the exceptionally high levels of technology necessary to make Disneyland™ a memorable occasion for even the most jaded international travelers and that usually means a broad palette of state-of-the-art technologies.

At the other end of the spectrum, amongst the mundane nuts and bolts dimensions, it's the size and scale of Hong Kong Disneyland™ that can be daunting, even difficult to grasp.

For example, although easy to walk around in just a few hours, the Hong Kong site is installed with 57 kilometers of pipeline, 11 kilometers of cable, 1000 manholes and 2 million cubic meters of topsoil to support extensive and necessary landscaping.

The huge number of expected visitors the theme park aims to attract means that Disneyland™ has been built tough and robust. It has been built to last.

Preliminary design for the theme park took place at the Walt Disney Imagineers (WDI) headquarters in California. WDI is the master planning, creative development, design, engineering, production, project management and R & D arm of the Walt Disney Company.

Design work was supported by local Hong Kong architectural firms such as RMJM and Leigh & Orange. Meinhardt Ltd was the project's partner for structural design.

One international leader looks to another

To meet WDI specifications, PROMINA®-HD is one of several Promat products and systems used extensively throughout the Hong Kong Disneyland™ theme park.

Manufactured from an homogeneous mixture of Portland cement, organic fibres and selected mineral fillers, the cement component of PROMINA®-HD acts as an hydraulic binder and matrix. The organic fibres add strength and flexibility. Mineral fillers enhance the board's typical characteristics.

PROMINA®-HD was used extensively over steel frames and large areas of external walls at Hong Kong Disneyland™. It is a proven board, robust and durable enough to easily cope with the extreme weather conditions and heavy-duty, high usage patterns expected throughout the Hong Kong Disneyland™ location.

PROMATECT® boards were also used for steel structure protection and for fire-rated compartmentation in partitions, ceilings and E&M enclosures.

PROMASEAL® fire stopping products such as fire-rated sealant and cable trunking seal were also given wide application usage throughout the Hong Kong Disneyland™ project.

In the final analysis, operators and customers alike can therefore rest assured that behind the scenes of every a fun-filled visit, Promat fire science technology is quietly but effectively at work. [PFT](#)

For a free copy of PROMINA®-HD brochure, please contact us via the Enquiry Form on page 7.

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The Promat International Asia Pacific Network spans the region with innovative proactive fire protection products, systems and solutions: Australia, China, Hong Kong, India, Malaysia, Singapore and Vietnam, with distributors in Brunei, Indonesia, Japan, New Zealand, Philippines, South Korea, Taiwan and Thailand.

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● One of the world's largest wastewater systems turns to Promat for protection

Changi Water Reclamation Plant in Singapore uses PROMATECT®-H impact resistant fire-rated ducts

Land and water are two very emotive issues. Taken individually or together, both have the unique ability to stir deep passions at the very heart of human existence. In Singapore – that insignificant “little red dot on the map” of the busy crossroads of Southeast Asia – both are precious resources and rarely taken lightly.

At one end of what is arguably a very expensive equation, the government of Singapore frequently in partnership with private sector initiatives goes to extraordinary lengths to develop new ways of sourcing, recycling and re-treating water while developing alternative catchment, storage and waste treatment facilities. Water in any of its many guises literally requires space.

Nevertheless, thanks to strenuous and continuing efforts, water quality in Singapore today is classified (according to a recent six-member panel of local and foreign experts assessing water supplied by the Public Utilities Board) as World Class. Stringent tests conducted on the dynamic city state's water supplies – including reservoir water, PUB water and Newater – showed that benchmarks set by the United States Environmental Protection Agency (EPA) Standards and the World Health Organisation (WHO) Drinking Water Guidelines were exceeded.

On the other side of the same land-water debate, ever mindful that as its population and economy continue to grow, the island republic has little choice but to optimise its shrinking land bank.

The twin issues of land and water thus seem, at times, to be at odds with themselves.

One strategically viable option is to dig deep... build downwards... to install vital support services underground, wherever and whenever possible.

One of the world's largest wastewater programmes

The Deep Tunnel Sewerage System (DTSS) will cross the island, conveying used water via a network of linked sewer tunnels to two new centralised water reclamation plants built at east-west extremities of the island.

The DTSS project, first started in 2001, was conceived as a long term solution to meet the needs for used water collection, treatment and disposal, effectively serving the ongoing development of Singapore through the 21st Century. It is a long-term project, to be carried out in planned phases.

The major components of the DTSS feature:

- A linked sewer network;
- Cross island deep tunnels;
- Water reclamation plants; and
- Deep sea effluent outfalls

At the heart of the system, two deep tunnels with diameters of up to six metres will be built at depths ranging from 20m to 50m metres below ground. A network of smaller link-sewers will also be built to connect the existing network of sewers to the new arterial tunnels. The tunnel system relies largely on gravity feed.

The DTSS will be constructed in two phases.

The first phase of the project consists of a 48 kilometre long tunnel stretching from Kranji to Changi, an 800,000 cubic metres per day water reclamation plant with a five kilometre long sea outfall at Changi and some 50 kilometres of link-sewers. Phase One is scheduled for completion in 2008.

The second phase will consist of a deep tunnel to Tuas in the west, a water reclamation plant there with sea outfall into the Straits of Singapore, link sewers and an extension to the Changi water reclamation plant. Phase Two will be implemented after the first phase when there is a requirement to handle more used water arising from the development process.

Used water from the existing sewers will flow into the deep tunnels via the link sewers. The new, deep arterial tunnels will convey the used water to two new centralised water reclamation

plants built on reclaimed land in Changi in the east and Tuas in the west. The treated effluent from the new water reclamation plants will be discharged through deep sea outfalls into the Straits of Singapore. The treated water will meet every international standard for outfall effluent discharge.

With the DTSS in place, the existing water reclamation plants and pumping stations, currently located all over the island, will be phased out eventually, freeing-up significant plots of valuable land for more economically or socially important purposes.

The Changi Water Reclamation Plant

Located on 54 hectares of reclaimed land along the eastern edge of the island, the Changi Water Reclamation Plant (CWRP) is estimated to cost a total of S\$2 billion (approximately US\$1.25 billion). Construction of the plant began in May 2001.

On a typical day of operations, after spending 12 hours in CWRP, the treated water will meet the highest international standards for discharge. It will then be pumped out and disposed in the seas off Singapore.

The plant also has the capability to further treat the waste water to a high standard so that it can be later re-used by industry, thus recovering, recycling and extending precious water resources.

In fact, CWRP is able to process 176 million gallons of used water daily. Some eight million gallons of the treated water will be further processed into clean water for use in the plant, making the reclamation plant totally self-sufficient in terms of its operational clean water needs.

The local office of the firm of CH2M HILL provides programme management, engineering design/investigations and construction management for the Changi Water Reclamation Plant as well extensive feasibility studies of reclaimed water as raw water for eventual potable use.

More importantly, CWRP also has the potential to supply millions of gallons of treated water everyday to produce ultra clean water, for use in the wafer fabrication industry as well as others who require a similar level of high quality water.

High standard water plants call for Promat standard fire protection

Due to the special environmental requirements, all air ducts of the mechanical ventilation system in CWRP are fabricated from stainless steel.

PROMATECT®-H fire rated duct system was also able to fulfil the specific impact resistance specifications in accordance to BS 5234: Part 2, a mandatory specification in the Singapore Fire Code.

To date, some 9,000m² of PROMATECT®-H duct protection have been installed throughout CWRP. The majority of the PROMATECT®-H was installed within the plant's basements, some four levels deep.

As part of the installation package, specialist installer training was conducted by the Promat Singapore Technical Team to ensure that the PROMATECT®-H ducts would be installed in strict accordance to the approved prototype details.

Only trained personnel are authorised to carry out installation work at the site. So far three specialist installers have been trained.

In addition to the fire rated ducts, the CWRP also consumed several thousand cartridges of fire rated PROMASEAL® mastic sealants to seal joints between aerated concrete walls with the main structure.

The entire plant is expected to be completed and officially commissioned by December 2006. **PFT**

For a free copy of Promat Asia Pacific technical handbook on the information of PROMATECT®-H duct systems and the complete range of PROMASEAL® fire-stopping products, please contact us via the Enquiry Form on page 7.



● **A new age for fire protection?**

Revisions to India's National Building Code for the future of standardised fire protection

India is the world's largest democracy and the second most populous. It is comprised of 25 self-governing states and seven territories. Its population is diverse and growing rapidly. Many different ethnic groups and religious beliefs divide the country.

Sweeping reforms introduced in the 1990s did much to revive a stagnant economy by encouraging growth in the financial services, manufacturing and agricultural sectors. Few of the benefits of national economic growth have yet to filter down to the bulk of its citizens.

Hindi and English are widely spoken and are usually perceived as unifying forces. However, there are also 13 other official languages and numerous dialects. Not surprisingly India's regulatory environment can be just as bewildering as the scale and contrast of its socioeconomic fabric.

The realities of India and its National Building Code (NBC) is as good an example as any other of the problems that frequently confront well-intended legislation in this country of contrasts.

Historical influences on the National Building Code of India

First introduced in 1972 and revised in 1982, uniform application of the code has always been an uphill task. Undermined by widely different interpretations, the lack of standardised implementation and uneven enforcement from one part of the country to the next, it could be said that there is little "national" commonality in the National Building Code.

Given the enormous scale of India and the sad frequency of disasters, both natural and man-made – the tragic fires at the Uphaar Cinema, Siddhartha Hotel, Vigyan Bhawan, Kirti Nagar Fire and the DLF Fire are just a few of the heart-rending examples that continue to afflict the country. Good intentions without enforcement can frequently be rendered meaningless.

The amount of time required for any regulation to reach widespread agreement and then go on to parliamentary legislation and approval at federal level also means that the developments required for modern protection technologies to take hold in India lag well behind other parts of the world.

The National Building Code of India outlines regulations across a very broad spectrum of buildings and their various uses. For example, everything from hospitals, dispensaries, construction agencies, government bodies, educational institutions, factories, municipal bodies, clinics, warehouses, departmental stores, hotels, residential houses, religious institutions and high rise buildings is addressed at some level of risk.

However, in a move seen as a good sign for future reforms, Part IV of the National Building Code has been extensively revised and is soon to be signed into reality. It is viewed by insiders and observers alike as a major step in bringing India's regulatory regime for the built environment closer to international standards.

Revision to Part IV of the National Building Code of India

Part IV of the National Building Code deals with safety from fire and explosion. It specifies classification of buildings and the necessary requirements to minimise danger to life from fire, smoke and fumes or panic before the building or area is evacuated.

The revised code also emphasises fire prevention, safety and durability aspects of structures in the built environment during natural calamities such as earthquakes and cyclones.

Changes to the code were made possible by a committee constituted under the Bureau of Indian Standards and involved numerous experts from industry and government organisations. Active participation of the private sector was particularly noticeable and an important component of the process.

More than 40 meetings of various sub-committees sought consensus on across a broad front of conditions, groups and situations. In the end, the Director-General of BIS, Mr. Nirmal Singh, was relatively optimistic that the new revisions would be strictly adhered to at the grassroots level because the revised code advocates a simplified approach to the various approvals required for building construction.

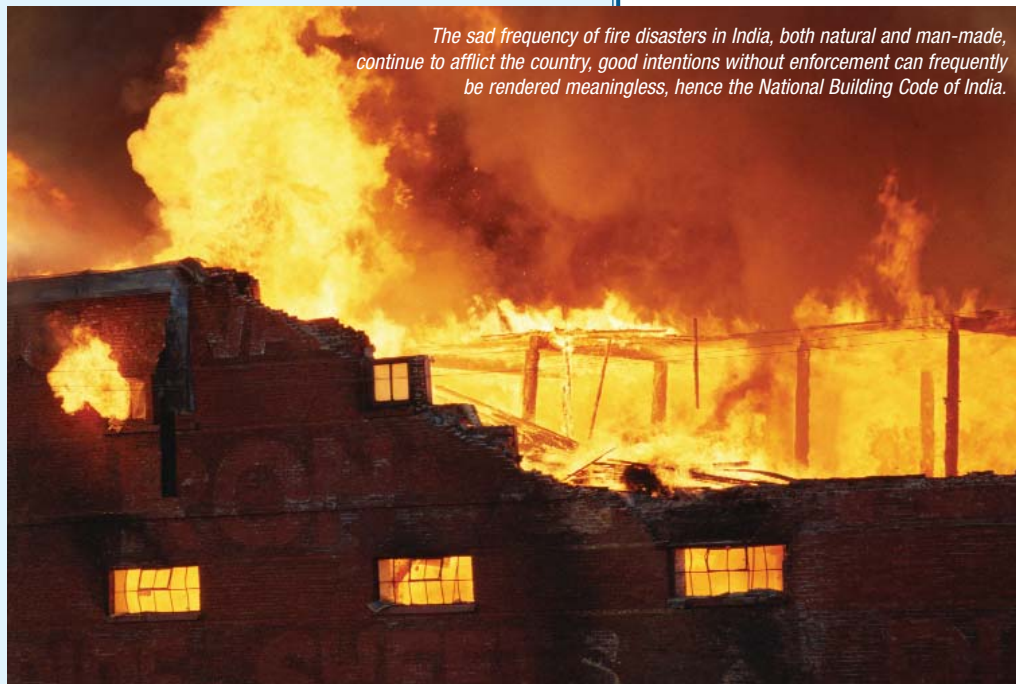
More importantly, the new revisions take into account for the first time fire technology sciences, active and passive fire protection, the principles of compartmentation, smoke and fume control and many other aspects of modern fire sciences long considered standard in other communities.

The National Building Code of India (NBC) has been formulated to serve as a model for adoption by Public Works Departments, government construction departments, local bodies and other construction agencies. It is voluntary in nature, but can be made mandatory through reference in concerned municipal bye laws or town planning acts of India's various states.

The National Building Code is a single comprehensive document in which, like a network, the information contained in various Indian Standards is woven into a pattern of continuity and cogency. The interdependent requirements of sections have been carefully analysed and are slotted in to make the whole document a single integrated volume. A continuous thread of 'preplanning' is woven which, in itself, contributes considerably to the economies in construction, particularly in building and plumbing services.

The Code also covers aspects of administrative regulations, development control rules and general building requirements, fire protection requirements; stipulations regarding materials and structural

The sad frequency of fire disasters in India, both natural and man-made, continue to afflict the country, good intentions without enforcement can frequently be rendered meaningless, hence the National Building Code of India.



“Absolute safety from fire is not attainable in practice. The objective of this part (IV of the NBC) is to specify measures that will provide a degree of safety from fire which can be reasonably achieved...”

Part IV of the NBC deals with fire protection requirements for the Indian subcontinent.

The requirements of this code will be taken as an overall guide. An engineering design approach should be adopted for ensuring a fire safe design for buildings. It would also be necessary for this purpose to associate qualified and trained fire protection engineers with planning of buildings so that adequate fire protection measures can be incorporated in the building design right from the beginning.

Absolute safety from fire is not attainable in practice. The objective of this part is to specify measures that will provide a degree of safety from fire which can be reasonably achieved. The code endeavors to avoid requirements that might involve unreasonable hardships or unnecessary inconvenience or interference with normal use and occupancy of buildings. However, the code insists upon compliance with minimum standards for fire safety necessary in public interest.

To ensure compliance of fire protection equipments/installation to the specified quality requirements, it is desirable to use such equipments/installation that is duly certified under the BIS Certification Marks Scheme.

While providing guidelines for minimising chances of occurrence of fire through passive fire protection measures, this part does not intend to cover all aspects of general fire prevention including sources of ignition. Nor does it cover the prevention of accidental personal injuries during the course of normal occupancy of buildings.

While recognising that panic in a building of fire may be uncontrollable, the code deals with the potential panic hazard through measures designed to prevent the development of panic.

“The National Building Code is a single comprehensive document in which, like a network, the information contained in various Indian Standards is woven into a pattern of continuity and cogency...”

Sanjay Pant
Joint Director

Bureau of Indian Standards

Code auger well protection

“The revised section of the NBC places emphasis directly on fire safety in terms of compartmentation...”

Experience indicates that panic seldom develops even in the presence of potential danger as long as building occupants move towards exit points which can be seen from a reasonable distance and with no obstruction or undue congestion in the path of travel.

However, any uncertainty as to the location or adequacy of the means of egress, the presence of smoke or fumes and the stoppage of travel towards the exit, such as may occur when one person stumbles and falls on stairs, may be conducive to panic.

Danger from panic increases exponentially where large numbers of people are trapped in a confined area.

Experience has shown that concealed spaces within a building such as space between ceiling and false ceiling, horizontal and vertical ducts etc, tend to act as flues/tunnels during a fire. Provision should therefore be made to provide fire stopping within such spaces.

Keeping in view the importance of life safety and fire prevention as a major philosophical change, the Part IV has now been divided into the following clauses:

1. Fire prevention – covering aspects of fire prevention pertaining to design and construction of buildings on passive protection measures, also describing the various types of building materials and their fire rating.
2. Life safety – covering life safety provisions in the event of fire and similar emergencies, also addressing construction and occupancy features that are necessary to minimise dangers of life from fire, smoke, fumes or panic.
3. Fire protection – covering the significant appurtenances and their related components and guidelines for selecting the correct type of equipment and installation meant for fire protection of the building, depending upon the classification and type of the building.

The above restructuring is likely to result in not only enormous enhancement of understanding that is technologically correct but better application of the provisions in the field.

The NBC revision will hopefully result in a major prevention of fire tragedies and, in turn, make the objective of a safe future from proper implementation of NBC regulations considerably achievable in the years to come.

S.K. Dheri
Form Chief Officer
Delhi Fire Services

“... (This) revision also address and enhanced the requirements of egress provisions, compartmentation, fire pumping system, fire water static storage etc.”

Sandeep Goel
General Manager
Spectral Services Pvt. Ltd.

The revision work of the NBC was taken up under the directive of Ministry of Home Affairs by the Bureau of Indian Standards in year 2002.

Conveners and teams of experts were appointed for respective section of the code to work on the momentous assignment of national importance.

NBC Part IV Fire Protection was last revised in January 1997 as compared to the other sections of the NBC (1983 Edition). However, it was aimed to revise & update Part IV for introducing latest concepts and practices pertaining to Life Safety of occupants and protection of the buildings. The revisions were proposed keeping in view the changes in the life style of society at large and changing trends in the real estate business.

Draft review meetings were convened under the guidance of Mr. S.K Dheri (former CFO Delhi) with active committee participation from DFS, TAC, IFE, CBRI, Ministry of Home Affairs and other experts.

Long hours of discussion and debates were conducted by the convenor. The panel members were enthusiastic and committed to delivering the revised code based on their academic and practical experiences of providing Life Safety and Fire Protection installation in buildings classified on basis of occupancy/production facility. It was of paramount importance to customise the code to suite Indian conditions of construction and societal needs and requirements.

The code was revamped and restructured to address the concept of Fire and Life Safety in a methodical structure.

The Fire Prevention section of the code identified the key elements of occupancy classification, fire zones, construction materials, smoke venting and other issues. The Life Safety section addressed the issues of egress requirement and stair case pressurisation /lighting illumination.

The Fire Protection section addressed the fire detection, protection, fighting and fire extinguishing requirements of the various buildings based on occupancy classification, area and building height.

Special design requirements were identified for multiplexes, high rise buildings, underground /elevated railway structures, hotels and assembly buildings amongst others. The revision also addressed and enhanced the requirements of egress provisions, compartmentation, passive fire protection system, fire pumping system, fire water static storage etc.

Draft copies of the code were given wide circulation by BIS. All the received comments were reviewed and discussed in committee meetings regularly held at BIS premises.

The latest draft is presently under review at the Bureau of Indian Standards and is likely to be introduced for implementation by the Ministry in the near future.

Code revision is an ever-evolving process and this revision shall surely be a milestone towards making our society safer and secure in years to come. PFT

Part IV of the National Building Code of India, dealing with fire protection, is a major change in the revision phase of the bible of Indian Building Industry.

The revised section of the NBC places emphasis directly on fire safety in terms of compartmentation. Fire prevention and life safety as the key subjects have been dealt with in separate chapters.

Implementation has been one of the major problems in the past, particularly with the code as a guide for industry. Chapter Zero has also been included and this proposes guidelines for implementation of the provisions in the code.

As a result of major fires which have taken far too many lives and caused untold damage to property, the new NBC guidelines will be helpful in providing India with a much better and a fire safe future.

A.K. Sharma
President IFE,
Deputy CFO
Delhi Fire Services

Experience has shown that concealed spaces within a building such as space between ceiling and false ceiling, horizontal and vertical ducts etc, tend to act as flues/tunnel during a fire. Provision should therefore be made to provide fire stopping within such spaces.

Read the book now!



For a free copy of Guideline To New 2005 Revised Building Code of India, please contact us via the Enquiry Form on page 7 (for request in India only).

● Shanghai Telecom Tower employs PROMATECT®

Promat built into Shanghai's striking cityscape

It may not be the capital of the world's most populous nation, but Shanghai is without a doubt China's dominant commercial and industrial metropolis. Commonly called "Hu", its short form nickname, Shanghai is located at the mouth of the great Yangtze River. Home to a population of more than 13 million, this richly textured city can comfortably and justifiably take its place amongst the biggest most dynamic urban conurbation.

Shanghai today sizzles with progress and activity. The citizens of this history-rich city are considered China's most progressive, modern and outward looking.

Although many old buildings still stand proudly in the heart of the city, one quick glance across the Huangpo River, to the once neglected area of Pudong confirms that Shanghai is again writing a new chapter in China's modern development.

Pudong now is home to some of the world's most impressive skyscrapers, the most striking of which is arguably the sphered Shanghai Telecom Tower. Originally designed to enhance television broadcast quality, the Shanghai Telecom Tower counts numerous sky hotels, a revolving restaurant and various sightseeing, shopping and entertainment opportunities amongst its many facilities. It is a magnet for tourist and proud Shanghai residents alike.

Located in Lujiazui Development Zone, the Shanghai Telecom Tower is an important component of a major development project by the Shanghai municipal government. In fact, it forms an integral, essential part of the Shanghai Information Harbor.

The building itself is designed with different function zones. These include communication equipments room, communication services, intelligent office facilities, high tech exhibition and recreational/entertainment zones etc.

With a total floor area of some 101,889m², the 201.5m high steelwork building covers a land area of 8250m². There are four floors underground and 41 floors above ground.

Shanghai Information World Ltd is the major investor and Shanghai Architecture Design Institute made significant contributions to the design process.

Promat systems built into hi-tech structure

The Shanghai Telecom Tower was intended to be and is still is considered the lead project in the area's development. Because of its importance, the owner/developer understandably paid particularly close attention to the structure's active fire extinguishing and proactive fire protection systems.

As far as active fire suppression is concerned, the entire building is equipped with hydrant and automatic sprinkler systems. Where water is not suitable, such as in the communication equipment and electric substation rooms, a gaseous extinguishing agent is employed. In the generator room, a low cost but effective fog-water spray system is installed.

On the other hand, loaded steelwork elements were designed as grade one in accordance with the building code. On different floors, the owner selected spray coating and calcium silicate board cladding systems. Contributing to outstanding overall reliability, appearance, durability and ease of maintenance, more than 4000m² of 12mm and 20mm PROMATECT® board were installed on floors 38 and 39, the headquarters of China Telecom Corporation.

Influencing the decision-making process were the well-known advantages of a PROMATECT® steelwork cladding system:

- Inert material, no harmful emissions in either normal and fire conditions.
- Good durability, usually more than 30 years.
- Excellent resistance to humidity.
- High impact resistance.
- Easy quality control working and installation process.
- Dry work, no cross pollution.
- Excellent aesthetic qualities, good appearance, ease of decoration.
- Little or no maintenance required.

Clearly, the above applications and awareness of fire science technologies have given the entire building of the Shanghai Telecom Tower an exceptionally high level of fire protection. **PFT**

For a free copy of Promat ProActive Fire Protection Boards For Buildings handbook on the information of PROMATECT® steelwork cladding system, please contact us via the Enquiry Form on page 7 (for request in China only).



● Critical installation processes specify Promat systems

New power plants to help meet Surge in Taiwan's energy needs

Taiwan's 23 million population is heavily concentrated along the island's west coast which is just 80km, at its nearest point, from mainland China. Despite some apprehension about its relationship with its giant neighbour, Taiwan has grown to become a leading economic and trading centre with one of the busiest ports in the world at Kaoshing.

The country's economy, focused on the manufacture of consumer electronic products, experienced strong growth in 2004, building on the robust results of the previous year. Growing worldwide demand, bolstered by continuing economic resurgence in the United States, as well as growing demand in mainland China for industrial goods pushed up the value of Taiwanese exports significantly. This trend is expected to continue for the foreseeable future.

However, Taiwan has very limited domestic energy resources. Oil is without doubt the dominant fuel in island's energy mix, accounting for 48% of total primary energy consumption. Coal also plays an important role at 34% of total energy consumption, followed by nuclear power 9% and natural gas 8%. Hydroelectric power accounts for less than 2% of Taiwan's energy needs.



The country's industrial sector consumes about 42% of total energy demand but this is expected to decline slightly in the future as Taiwan's economy moves toward newer, less energy-intensive industries. The transportation sector accounts for one-third of total energy demand. Not surprisingly, the island relies on imports for most of its energy requirements.

Power generation on Taiwan

The state-run Taiwan Power Company (Taipower) is responsible for production and distribution of electric power. The company's annual operating revenues are more than \$9 billion and the company employs 25,000 people.

Total installed capacity in 1999, for example, was reported at 24,206MW from 69 hydro, thermal and nuclear plants. Thermal plant accounts for more than 60% of Taiwan's current power generation capacity. Oil and coal are the primary fuels for thermal power plant.

To comply with Taiwan's energy diversification policy and to meet increasing environmental concerns, the installed capacity of LNG-fired units increased from around 8,000MW in 2001 to some 10,000MW in 2005. This includes both new Taipower plant and new Independent Power Producers (IPPs). Most of the LNG supplies come from Malaysia and Indonesia.

Promat in the new Tatan Power Plant

The new Tatan Power Plant in northern Taiwan is a good example of the country's power diversification. Located in northern Taiwan, Tatan will be built over a period of six years. Total cost of construction is estimated come in around US\$3 billion and it will be fueled solely by imported LNG.

The principal constructor for the Tatan project is Jau-Yeong Enterprise Co. Ltd., a well-known refractory constructor with considerable international expertise in the design and installation of fire protection and insulation systems.

At the Tatan Power Plant, PROMATECT®-H was prescribed to give one hour fire resistance to the plant's steel structure. Jau-Yeong installed versatile PROMATECT®-H to stringent quality control inspection processes so that the fire-rated boards meet the owners critical quality requirements.

The project's main consultant was CTCI Corporation. **PFT**

For a free copy of Promat Asia Pacific technical handbook on the information of PROMATECT®-H structural steelwork systems, please contact us via the Enquiry Form on page 7.



● 香港迪斯尼 (Hong Kong Disneyland™) 新主题公园应用保全系统解决方案

万众瞩目的香港迪斯尼乐园终于揭幕开张

为了迎接香港迪斯尼乐园的开幕，特区已专门建成一条轻轨铁路和数条快速公路与香港的现有公共交通轨道网相连。而且香港特区邮政署还发行了一系列的镀金纪念邮票，以庆祝2005年9月12日迪斯尼主题公园的正式揭幕开张。

事实上，在未来的数月内就可以见证，由于迪斯尼乐园将吸引大量游客，将为香港旅游业创造超过40亿美元的经济收入，从而也必将成为香港经济发展的一个重要里程碑。

在1999年末，香港就确立了建立迪斯尼乐园的构想，这意味着需要在香港本地注入225亿的建设资金（折合29亿美元），这表明香港对自己的中远期发展都信心十足。

这是迪斯尼在全球的第五个主题公园，也是在美国本土以外继巴黎和东京之后的第三个，和亚洲的第二个乐园。它将极大的促进香港旅游业的进一步繁荣。

香港迪斯尼乐园的投资方是香港政府（57%股份）与美国迪斯尼公司组建的合资公司，这个主题公园的设计中除了秉承经典的迪斯尼魔幻城堡娱乐外，也非常注重融合东西方的游戏创意。各种节目的表演均有广东话，普通话和英语的版本。

无需怀疑，迪斯尼乐园具有极大的娱乐魅力，吸引着世界上无数的爱好者。预计在开放的第一年就可以迎来超过50万的游客，而在接下来的几年中，这个数字还将持续扩大。

在开放之初，迪斯尼乐园就将为香港创造1万8千个工作机会，而在1期公园完全投入运营后，这个数字还可以上升到三万六千个。一个政府的经济官员预测，第一期主题公园将创造1480亿港元的收入（折合190亿美元），大部分都来自公园运营的直接获利。显然，这将极大的有利于香港的地方经济发展。

迪斯尼乐园位于港岛大屿山的竹篙湾，占地310公顷，离香港新机场仅10分钟车程，从市区中心通过便捷的高速公路，轻轨或轮渡到达这里也不过用时30分钟。

奇迹背后是一丝不苟的付出

每一个主题公园自建成之日开始就面临很多考验，尤其是考虑到大规模的客流量和建筑设施的高负荷使用。而安全和保安是迪斯尼乐园规划、设计、建造和业主最为重视的因素。

作为娱乐产业的先锋企业，迪斯尼公司对公园建设考虑的更为详尽和细致，它可以说为全世界的主题公园创立了各方面的水准线，而香港迪斯尼也毫不例外。甚至可以说香港迪斯尼是世界上第一个完全移植了迪斯尼发源地——美国加州乐园娱乐设计理念的主题公园。

迪斯尼乐园凭借其无与伦比的娱乐理念，一直都有非常好的经营业绩，而在其背后是对长期以来对演艺表演细节的苛刻要求，对金钱价值的理性理解和对安全事宜的高度重视。总而言之，在这个欢乐的世界设计只为一个单纯的目的：吸引百万计的游客，让他们获得最大的满意度。

作为一个纯正的娱乐王国，迪斯尼乐园将娱乐与度假完全进行融合，在一期已建成部分除了大量的娱乐设施，还拥有2100个酒店房间和28000平米的零售、餐饮服务。

香港迪斯尼在四大主题公园组成部分：美国大道(Main Street USA)、童话王国(Fantasy-land)、冒险乐园(Adventureland)和未来时空(Tomorrowland)。有两个主题酒店：香港迪斯尼酒店(Hong Kong Disneyland™ Hotel)和迪斯尼好莱坞酒店(Disney's Hollywood Hotel)。这两个酒店的氛围分别设计为：二十世纪初的优雅浪漫和上世纪三十、四十年代好莱坞的黄金时代。

人性化设计，高技术标准

很明显，像迪斯尼乐园这样的主题公园决不是一座平常的建筑或者耗资百万而已的工程。

首先，迪斯尼乐园拥有独一无二的艺术级水准的色彩科技，这让人难以忘怀，即便你是一个长途跋涉，疲惫不堪的国际游客，在这里也能释然开怀，愉悦无比。

其次，在这些闪亮部分的背后，如此巨大规模公园的每一处细微部分都得到精心的设计和建造，这更是普通建筑难以企及的水准。例如，尽管逛完整个公园不过数小时的时间，但是公园建设却需要消耗巨大数目的材料，比如其中有57公里长的管道，11公里长的电缆，1000个检修口和两百万立方米的填土，这一切都构成了形成建筑景观的必要基础。

由于主题公园每年都将吸引巨大数量的游客群，所以意味着迪斯尼乐园一定要有绝对可靠和耐久的建筑设施。

初步设计由位于加州的迪斯尼WDI总部来完成，WDI是迪斯尼公司的研发核心部分，是从事规划，设计，创意，工程和项目管理方面的大师。详细设计工作由香港当地建筑师事务所完成，其中有RMJM 和 Leigh & Orange。结构设计的顾问则是Meinhardt公司来完成。

业界翘楚荟萃的舞台

由于可以很好的符合迪斯尼WDI设计公司的技术要求，PROMINA®-HD板材成为在迪斯尼乐园项目建设中广泛应用的保全产品之一。

PROMINA®-HD板材采用波特兰水泥和有机纤维以及精选矿物添加剂均匀混合，其中水泥起到水凝粘结的作用，有机纤维则增强板材强度和韧性，而矿物添加剂的存在使得板材具有独特的性能。

在香港迪斯尼乐园建设中，PROMINA®-HD板材被大量的应用于轻钢骨架的大面积外墙体系。这是一种备受赞誉的板材，高强度、耐久性好，足以承受各种户外气候条件和高频率使用的考验。同时，PROMATECT®防火板也大量的应用于钢结构防火保护、防火墙、防火吊顶、电缆和管线防火包敷等系统。

诸如防火密封胶和电缆桥架束涂漆的PROMASEAL®保全防火封堵产品也在香港迪斯尼乐园项目中得到大量的应用。

可以这样说，由于有了保全产品的防火安全保障，无论是运营商还是顾客，尽可放心享受迪斯尼乐园带来的无尽乐趣。PFT

如需PROMINA®-HD的产品手册，请按照第7页的咨询表联系我们。

● 上海信息枢纽大楼 (Telecom Tower) 应用PROMATECT®

保全在上海摩天大厦背后的角色

上海坐落于中国长江口，人口1300万，是中国最重要的工商业及金融中心。上海同时是一座拥有丰富历史内涵的城市。在浦西地区，糅合了西方古典建筑风格和中国传统艺术的建筑物在向人们诉说着上海历史的沧桑。而在浦东地区，鳞次栉比的现代化摩天大厦交相辉映，表明了上海正在以崭新的姿态谱写着一部新的历史篇章。在这些新建的摩天大楼之中，最耀眼的明星之一就是上海信息枢纽大楼。

上海信息枢纽大楼是上海市政府重点工程，是信息港重要建筑物之一。大楼位于浦东陆家嘴开发区内，功能主要由信息通信机房、信息业务用房、智能化办公用房及高技术信息博览厅、体验区等组成。建筑占地面积8250m²，总建筑面积101889m²，地下4层，地上41层，建筑高度201.5米，主体结构采用全钢结构承重体系。该大楼由上海信息世界有限公司投资，上海建筑设计研究院有限公司设计。

由于该项目的重要性，无论在被动防火方面还是主动灭火方面，业主方都给予了高度重视。

在主动灭火方面，整幢大楼设有消火栓系统和自动喷淋系统，在不宜用水灭火的通讯机房、变电间等设置气体灭火系统；在发电机房、燃气溴化锂机房等处，则设置了造价便宜且灭火效果较好的水喷雾灭火系统，使整幢大楼处于全方位的消防保护状态。

在被动防火方面，该大楼的承重钢结构梁柱均为一级耐火要求，在不同的楼层，业主分别选择了喷射防火涂料和纤维增强硅酸钙防火板的保护方式。该建筑的38~39层为中国电信公司的总部办公楼，业主对结构防火系统的安全性能、装饰效果、耐久性能和日后维护保养等方面提出了苛刻的要求，保全板钢结构防火保护系统凭借其优秀的性能和良好的声誉而成为最佳选择。在该项目中，共有超过4000m²的保全防火板PROMATECT®被应用（分别为20mm厚和12mm厚）。

保全板钢结构防火保护系统的优势主要体现在以下几个方面：

- 性能稳定，通常使用环境和火灾环境中均无释放物；
- 耐久性好，应用有效期已超过30年以上；
- 防潮性能好；
- 抗冲击性能优越；
- 施工质量容易控制；
- 干式作业，不受环境影响，施工过程中无交叉污染；
- 外观整洁，容易做二次装修；
- 无需特殊维护。PFT

如需保全防火板材的建筑物预防式防火系统技术手册，请按照以下的咨询表联系我们。

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Guideline To New 2005 Revised Building Code of India (for request in India only)

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● Promat again at work in another prestigious Hong Kong project

Mega redevelopment revitalises high density area of old Kowloon



Hong Kong is known as the place with the highest population density on the face of Planet Earth. A short stay virtually anywhere in this former British colonial possession will quickly reveal that some rather unique "space engineering" is certainly required to pack six million energetic souls into these too few square miles.

But it is fact rather than fiction that the place with the densest population even by Hong Kong's cramped standards is known to be Mongkok. This slice-of-life microcosm of truly intense, energetic humanity is located on the western side of the Special Administrative Region's Kowloon peninsula.

For many people, Mongkok is typical, perhaps iconic of the "real Hong Kong". Crowded. Noisy. Sometimes colourful, always vibrant.

Some say that it is the place that locals love to hate. But for Hong Kong people, it has always been the place for good value shopping, specialist retail outlets – anything from goldfish to flowers to ladies wear – as well as traditional night markets and of course food, usually of the streetside local fast snack variety.

People jams or traffic jams? Both tend to be chaotic in Mongkok. If anywhere in Hong Kong has a vibrant street culture this is where it happens. At any time of day or night, there's always something going on in the narrow crowded streets not far from the famous, considerably more glamorous Golden Mile of Tsimshatsui.

Redevelopment comes to Mongkok

In 1988, the Urban Renewal Authority decided that the Mongkok area could do with a major revamp. Most of the area was then covered by aging buildings, most constructed in the building booms of the late 1950s and 60s.

In typical Hong Kong style, once the decision were made, the forces of redevelopment were soon busy at work. At that point in time, it was still "a borrowed place living on borrowed time", as the renowned author Han Suyin once aptly described the then British territory.

It is interesting to note that much of the same ethos, the drive to succeed and "time really is money" mindset are perpetuated in today's modern Hong Kong... life still seems to evolve just that little bit faster here than in many other Asian centres.

Above: One of the Hong Kong city's famous "Xpresscalators" in Langham Place Mall.

Right: PROMATECT®-H boards used for ventilation and smoke extraction ductwork in the carpark area.

Promat quietly at work

Fast, economical and reliable installation methods, prompt and reliable delivery and specifications certified tested to BS 476: Part 24 for 2 and 4 hours fire rating, made PROMATECT®-H boards the ideal choice for the smoke extraction ductwork in the prestigious Langham Place project.

The fact that PROMATECT®-H is well-known brand approved by the local Fire Services Department reinforced the decision-making process.

The developers are the publicly-listed Great Eagle Holdings Ltd. and the Urban Renewal Authority of Hong Kong. The architect were the Jerde Partnership together with local architectural firm, Wong and Ouyang. The Langham Place project's main contractor was Sun Fook Hong Ltd. **PFT**

For a free copy of Promat Asia Pacific technical handbook on the information of PROMATECT®-H smoke extraction ductwork, please contact us via the Enquiry Form on page 7.

The Langham place development

The building is easy to find. The steel and glass curvilinear structure stands tall above all other buildings in the area. It is already a landmark as it glints blue and elegantly sharp in the sunlight. It is believed to have cost in the vicinity of US\$1.35 billion.

Located at 8 Argyle Street in the heart of bustling Mongkok, the 1.8 million sq. ft. Langham Place features a luxury hotel, a 59-storey Grade A office tower and a luxurious, up-to-the-minute 15-storey 300-shop retail temple dedicated to the gods of consumerism and their loyal shop-to-you-drop wannabes.

The entrance and the 60-meter grand atrium is large, airy and open, giving a sense of space unusual in crowded Hong Kong. It features the city's two longest indoor escalators – called Xpresscalators – one of which whisks visiting shoppers effortlessly straight up 11 floors to the top level. The descent walkway is a continuous gentle downward spiral to the main floor with shops and restaurants along the way.

The Langham Place Mall has been described as Hong Kong's most slammin' teenage wasteland. It is however anchored by steady middle-of-the-road tenants such as Hong Kong Seibu, i.t. and Muji. The mall also houses UA Cinemas' first and very popular 6-screen cineplex in the area.

Not entirely unexpectedly, stunning new Langham Place mall attracts terminally stylish shoppers, too. People watching around the Spiral, where over 100 up-and-coming designer labels dance to the ka-ching of Young Hong Kong, adds a new dimension to the definition of Asian Kool.

Elsewhere in this new location, in a bazaar setting reminiscent of old Mongkok, local brands such as i.s.o, Salad and U.W.N. jostle for attention alongside foreign names like Super Lovers, French Connection and Miss Sixty on the lower levels. Langham Place Mall has justifiably earned a "special-quintessential" lifestyle tag.

Possibly the jewel in the crown of this stunning mall development is the Langham Place Hotel, the first new five star hotel to open in Kowloon in a decade. It has 665 rooms spread over 42 skyscraper levels.



Promat



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