



Report on Seminar on Fire Risk in Buildings

Before

Grenfell Tower Fire in UK

Fire

After

held on **29th January 2019**
at **Sri Lanka Foundation Institute, Colombo 07**



Chamber of Construction Industry Sri Lanka

Red Cross Building, 8th Floor, No.106, Anagarika, Dharmapala Mawatha, Colombo 07, Sri Lanka

Tel: +9411-2667700 | Fax: +9411-2667713

E-mail: adminsec@ccisrilanka.org

Web: www.ccisrilanka.org

CONTENTS

OPENING SESSION (01)

1.1 Welcome Address - Eng. Nissanka N. Wijeratne, Secretary General, Chamber of Construction Industry Sri Lanka

1.2 Address by Eng. Maj. Ranjith Gunatilleke, President Chamber of Construction Industry Sri Lanka

SESSION (02)

2.1 Future of Fire Safety in High Rise Buildings - Mr. David Ware, Managing Director of Fire Risk Consultancy UK

SESSION (03)

3.1 Applicable Fire Regulations and the Role of CMC Fire Brigade in Fire Disasters - Mr. P. N. R. Fernando Chief Fire Officer, CMC

3.2 The Role of CIDA in Fire Regulations – Eng. S. Amarasekara, Director CIDA

3.3 The Role of CIDA in Fire Regulations- Group Captain Kolitha Sri Nissanka CIDA

SESSION (04)

4.1 Address by Mr. Mohan Perera, Assistant Brand Manager, Sri Lanka Insurance Corporation

SESSION (05)

5.1 Future of Fire Safety in High Rise Buildings- Mr. David Ware - Managing Director of Fire Risk Consultancy UK

SESSION (06)

6.1 Mr. Sabry Samsudeen - General Manager (Projects Division) Fentons Ltd

6.2 Mr .S Srinivas - Vice President, Sri Ramco Lanka Pvt Ltd

SESSION (07)

7.1 Panel Discussion - Question and Answer Session

8. Presentation of Token of Appreciation -

9. Vote of Thanks - Capt. Lal Tennekoon

Main Sponsors	Platinum Sponsors	Gold Sponsors
 Sri Lanka Insurance Corporation	 firetech (Private) Limited. FIRE PROTECTION ENGINEERS & CONSULTANTS	  Metecho Lanka Pvt Ltd
 Fentons Ltd	 FIRE-X PROJECTS (PVT) LTD	 Kelani Cables PLC
 Sri Ramco Lanka Pvt Ltd	 Unitec Fire & Security Systems Pvt. Ltd "YOUR SAFETY IS OUR CARE"	  PENTAGON / TRAT COATINGS



In collaboration with Civil Engineering Committee of Institution of Engineers Sri Lanka

1. OPENING SESSION 01

1.1 Welcome Address by Eng. Nissanka N. Wijeratne, Secretary General Chamber of Construction Industry in Sri Lanka.

Welcoming the participants to the seminar Eng. Nissanka N. Wijeratne on the theme fire risk in buildings, said that in the recent past there have been major fires in many developed countries. The 24 story Grenfell Tower in London caught fire which resulted in 72 deaths and injuring 70 people. In December 2017 a five story apartment in the USA, caught fire killing 12 and injuring six, similarly in Australia a six story Salvation Army home caught fire.

Observing some of the major fires that occurred in buildings in developed countries, despite the strong infrastructure Eng. Wijeratne questioned Sri Lanka's position, when it comes to fire risk in high rise buildings.

Noting, that a few years back the planning restriction which limited a building to just twenty story high, has changed its course to 95 story buildings. This has posed a challenge in handling the fire risk in these buildings, especially with the fire brigade, having an aerial ladder limiting only to 18 meters. The issue of mobility of fire trucks in case of a fire hazard, experienced in Kandy recently where the fire Brigade trucks could not move in, is yet another issue which should be looked into. Comparing to developed countries when posed with a similar situation Eng. Wijeratne said that developed countries supplement by helicopters and drones. Thus the seminar on "fire risk in high rise buildings" will examine the problems and try to improve in tackling this subject, explained Eng. Wijeratne.

1.2 Opening Remarks by Eng. Maj. Ranjith Gunatilleke - President Chamber of Construction Industry in Sri Lanka.

Explaining the reason for organizing the seminar Eng. Maj. Gunatilleke said that the Industry was concerned on the rapid increase in high rise buildings in the city and its safety measures. At the outset Eng. Maj. Gunatilleke noted that in most cases in the post construction work the maintenance are not done properly. Thus in case of a fire most people are compelled to use the lifts. Very often the fire staircase has been taken up as an, additional stores facilities. The main reason being the inefficiency in monitoring by the regulatory body or the authorities.

However Eng. Maj. Gunatilleke said that this is quite different in the hotel sector. In the hotel sector every year a trade license approved by Sri Lanka Tourist Board is required. There is a condition that the fire drills have to be done and approved. However in apartments it is done in a different way. The approval of the Condominium Management Authority and the fire chief approval is needed when the building is being constructed. Renewing the license and gaining approval annually, Eng. Maj. Gunatilleke is doubtful. It is because of this they expect the Insurance companies to cover insurance only if fire drills have taken place in these apartments. It was noted that generally a single story and two story residential unit can easily get the approval owing to the fact that the fire risk is low. However a developer who needs to do single story 12 villas for a hotel is required to get Fire Chiefs approval. The irony being there might be just two people living in a villa while about ten people will live in a single story residential unit. Eng. Maj. Gunatilleke said the Chamber was very concerned on the increasing number of high rise buildings thus the need to protect not only the units but even the people living in them.

2. SESSION 2

2.1 Future in Fire Risk- Mr. David Ware - Managing Director of Fire Risk Consultancy UK

Emphasizing at the outset on the lessons learned in the Grenfell Tower fire, Mr. Ware posed the questions "how do you prevent this happening in Colombo?" With high standard in fire risk protection in London how did such disasters happen?

Giving a background to the Grenfell Towers, the social housing complex, with about 1000 homes which was built in the 1970's. It was renovated before the tragedy. The 24 story residential area with a height of 67.2 meters had only a dry riser and a dry riser at that height cannot fight a fire. Instead a wet riser was the need. Mr. Ware noted that despite a refurbishment six months prior to the disaster with new exterior cladding, windows being replaced, new heating system in use, 72 people died making one of UK's worst modern disasters, in a residential building.

The fire started, just before 1 o'clock in a kitchen behind the fridge freezer on the fourth floor. It was a shielded fire behind the fridge freezer. The resident was woken up by the smoke alarm, he called the fire brigade where four fire engines were sent to the scene and arrived within five minutes. The bridge head was set up to the building. As the fire crew started to deal with the fire they saw the fire blaze spread outside the kitchen window. The fire which spread rapid upwards across the Eastern side of the building, had started to surround itself around the building. Questioning as to how one could tackle a fire on four sides of the building as it reached the top floor within 30 minutes, Mr. Ware said that Grenfell Tower had a policy which adopted across the UK, that all residential blocks will generally have a stay put policy.

Explaining the two hour fire resistance builders are given in the UK and four hours in the UAE, Mr. Ware was of the opinion that a fire should not be let to burn for two hours in any building, so it should burn out in the room of the fire origin, only if it gets out of the flat to the next flat then time becomes critical when evacuating.

Sighting a design failure on Grenfell Towers Mr. Ware said that 300 people were evacuated when the fire brigade was going in to the building, on a single staircase 1 meter wide.

Mr. Ware queried as to at what point the stay put policy should be abandoned. Ironically The London Fire Brigade was investigated for not evacuating earlier. A policy which they have always followed. Mr. Ware gives an alternative for this by designing simultaneous evacuation, making sure that the staircase can take the number of people if they have to evacuate but still operating a stay put policy. In the case of Grenfell Mr. Ware said that residents were told to stay in their flats, they were trapped. People died basically thirty minutes after the first fire fighters arrived, Stay put policy failed and it was too late to evacuate.

Spelling out the importance of compartmenting Mr. Ware said that compartmenting is essential, not just when it is built, but all the time because that's the only philosophy that will ensure safety in case of a fire as it won't get out of that compartment.

Another issue which Mr. Ware said that Sri Lanka too should take serious note of is the importance of fire doors in residential blocks. As people are changing the doors, they should not be allowed to remove doors.

On a more positive note Mr. Ware paid high tribute to the UK Fire Service in the Grenfell tower rescue operation. The fire service rescued 65 people. They broke all their rules entering the

building. The Fire Service having a set of very strict rules broke all the rules in an effort to rescue the people risking their lives. It took 24 hours to put out the fire clearly it burnt out in the end. Said Mr. David

Focusing on the factors that led to the disaster Mr. David said that there was a change in the law where the cladding, compartmenting, firefighting facilities, gas pipes, no review, they had a single staircase, sprinklers were missing, fire doors were compromised, inspections were lacking and there were no proper fire breaks.

Focusing on the changes in the law Mr. Ware said that until 1986 the country followed the London Building Act. A significant clause in the Act was that the external wall had to have 60 minutes fire resistance. The change in the Act however lowered the fire resistance in high rise buildings. It also stated that the developer needs to show that it is safe to use different tests on claddings. However Mr. Ware warns not to rely on tests, because tests are flawed. Sighting the clause that says external walls in a building shall adequately resist the spread of fire, it does not say how to achieve it. Cladding should be of either limited combustibility or non-combustibility,' explained Mr. Ware.

Sighting cladding as one of the main failures in the Grenfell tragedies, Mr. Ware explained the reason for cladding to be installed. "Firstly it looks good, second reason is installation. There were three varieties. One had plastic, the other being more fire resisting, the cheaper one more combustion. "They are still trying to find out, if it met the regulations. There was also a cavity in the cladding, so when the flame got inside the cavity the force was more" said Mr. Ware.

Talking about compartments Mr. Ware categorically stated not to rely on high rise compartments. As it results in the failure of evacuation. Observing fire stopping, Mr. Ware said that a fire damper should be installed on the wall. Being critical on the pink foam, it was noted that pink foam is not suitable to cover the gaps in the high rise, instead pink foam is suitable only for seals. Pink Foam is not fire resistance contrary to stating it on the tin. Mr. Ware sighting a test result of Pink Foam said that despite stating three hours fire resistance, it lasted only seven minutes.

Mr. Ware further added that access and facilities is a critical area for the fire service. The facility includes dry riser and wet riser. In the UK it is said that dry riser is used for 18 meters while wet riser is used for 50 meters. Further elaborating on this Mr. Ware said that this is due to pressure problems. Although the regulation says to have access to a high rise 90 meters, can a fire service connect to 90 meters and not enter that building and need for hydrants is the answer.

Another facility the fire brigade requires is easy access to the fire. According to Mr. Ware vehicle access to the building is generally under 18 meters, to drive the fire engines around the building. However if it is over 18 meters and a fire outside the building there is no access requirement for the pumps. Mr. Ware said that this is the same around the world. If there is a fire on the external of a high rise building, there is no way to put it out.

Getting back to the Grenfell incident Mr. Ware said that sadly London Fire Brigade ladder could reach only 13 floors, quipping that The Sri Lanka Fire Brigade is better equipped than the London Fire Brigade having a ladder which could reach 18 floors.

Expressing his views on exposed gas pipes, Mr. Ware said, The UK banned exposed gas pipes on the route of escape. However it was found that Grenfell Tower had gas pipes. According to the recommendations made after the incident, it was revealed that the flats should be inspected along with the building regulations. The stay put policy was questioned, stating that it should be used if the need arises. The use of sprinklers in all high rise buildings was recommended, whereas Grenfell Tower had no sprinklers.

Posing a question to the audience Mr. Ware asked if sprinklers were installed in Grenfell would the outcome have been different. Although sprinklers can't do much it can definitely stop the fire getting back into the building. Mr. Ware sighting an example which took place in Australia, of a fire on a balcony which spread to the outside, however when it tried to come back inside, 21 sprinklers in operation, stopped the fire getting back in. Thus sprinklers would have helped Grenfell' said Mr. Ware.

Emphasizing the need to have external staircases, based on protection, compartment, limited travel distances, Mr. Ware sighted Grenfell Tower despite having compartments, the staircases were full of smoke. This highlights the importance of installing external staircases.

Mr. Ware added the importance of closing the doors at a time of evacuation during a fire. In contrary this was not so at Grenfell. The doors were changed. Firefighting lifts didn't work. People had to walk upstairs. Ironically the last inspection in Grenfell was in 2015. Following the tragedy at Grenfell it was recommend that the risk assessment and common areas should be inspected annually.

Sighting another incident at a Hotel in Shanghai, where a major fire took place. It was a cross fire similar to the Grenfell disaster. As the sprinklers were in operation a major disaster was avoided. Thus Mr. Ware was of the view that residential building should have sprinklers. "Because people don't die in sprinklers" explained Mr. Ware.

In conclusion Mr. David said 72 people died in a building with a stay put policy, as much as it is hard to forget what happened in Grenfell, the people never asked for cladding, it was social housing that put it on. Sighting a few cases involving the people who were trapped inside Grenfell, spoke of a lady trapped in a 10 story building, she threw her baby out of the window in a bid to save the baby. Another lady got her two children wrapped them in towels and threw them down the refuse shoot. She thought that's the only way she could save them, but they died.

Calling the Grenfell catastrophe a design failure, Mr. Ware praised the fire service for a job well done in the most trying conditions. "Every fire fighter that went into that fire would have thought they were going to die. They had to write their names on their helmets by chance they died inside the building, so that they would know who they were. One fire fighter found out that a ten year old girl was inside, he went thrice inside to find the girl. He could not find her" said Mr. Ware.

Ending his speech, Mr. David on a positive note spoke about the Ice Hotel. "This is a hotel with sleep in risk, do they need to have fire doors? If you think they do, do not do risk assessments" he concluded

2.2 Applicable Fire Regulations and the Role of the Colombo Municipal Council in the Fire Brigade and Fire Disasters – Mr. P. N. R. Fernando, Chief Fire Officer of the Colombo Municipal Council

At the outset Fire Chief Mr. P.N.R.Fernando explained the overall view of the fire regulations and the main function of the fire Department as mitigating fire risks.

Explaining the functions of the Fire Department Mr. Fernando said it deals in the feasible stages of buildings, in the planning stage where certain regulatory requirements are needed. Similarly in the construction stage, in the materials which are used. Fire safety features include in the nature of occupancy whether it is an apartment building, office, factory or any other occupancy.

Mr. Fernando added that it is in the maintenance stage of a building that, the fire equipment, the installation of the firefighting system is maintained under regulatory requirements. The other stage is alternations and extensions, in some cases in the construction stages, the alternations

and extensions are done in the building. Similarly if a building is to be changed from either being a hotel to an office complex there is a change in fire risks. This change brings about a change in the fire safety requirement. The other two stages takes place when a building is demolished and when a building is not occupied' said Mr. Fernando.

Further explaining the planning stage of a building Mr. Fernando said if any mistake or any lapses in the planning occurs it will have a direct effect in the fire safety measures, which will not be able to be changed.

Sighting the categories in high rise building Mr. Fernando said that up to 18 meters limiting the floor area to 800 square meters it is a low rise building, the second category is up to 18 meters with more than 800 square meters, low rise category two. Adding that the fire safety requirements may vary in these two cases. The third category medium rise building consists up to 18 to 30 meters buildings. A high rise building would be up to 32 to 60 meter in height. Mr. Fernando pointed out that beyond 60 meters it is termed as a super high rise building.

Explaining the categories, in the nature of occupancy of a building, Mr. Fernando categorized a building into three main areas are residential apartments, buildings other than residential apartments and car parks other than automated car parks. The structural requirement design takes place under these three building categories. One of the main guidelines required in the regulatory requirements in the construction stage is the installation of a fire exist at the construction site.

Elaborating further Mr. Fernando pointed out that although it is a requirement to have firefighting facilities at a construction site, The Fire Department does not expect a permanent firefighting facility. Sighting two permanent measures as Fire detection and warning equipment Mr. Fernando stressed the importance of an action plan in an event of fire and fire drills to be conducted at different stages.

3. SESSION 3

3.1 The Role of the Colombo Municipal Council in the Fire Brigade and Fire Disasters

When the need arises the Fire Department updates its code of practice and fire requirements for proposed building plans. The Department conducts Fire safety instructions for high rise buildings and offensive traders. A very important task carried out by the Department is identifying the hazardous areas of a high fire risk and recommends fire requirement measures.

Accordingly the Fire Prevention sector carries out public awareness programs in fire prevention, for the commercial sector and apartments. Sighting another important aspect the Department carries out investigations after a fire disasters occur, with the first team that attend the fire, and a report is submitted. Through the report the Department is able to mitigate the fire risk.

The Department maintains a retainer scheme for commercial purposes outside Colombo. Fire inspections are carried out on commercial premises with those who have registered with the Department. Mr. Fernando added that a certificate is issued if the fire cover is sufficient for them to extinguish the fire or control the fire until the fire brigade arrives at the scene. This scheme too has paved the way in mitigating fires.

Examining the role of mitigating fire risk, the Fire Chief said they conduct fire and rescue training programs for the staff in the Private and Government sector. Through this the workers get an

idea of curtailing the fire, evacuation within a short period. Conducting fire programs for school children is yet another scheme. Similarly classes are conducted for girl guides and scouts.

Services provided by the Colombo Fire Services Department during the year 2018 is as follows, a total of 332 fire calls, 35 rescue calls, 44 emergency calls, 27 ambulance were attended. While 169 calls pertaining to humanitarian and special services and 129 VIP calls.

In a more positive note Mr. Fernando said that compared to other countries the fire calls made in Sri Lanka is very low. This is owing to the success of the fire policy of the Fire Department. The strength of the Fire Department being 224 fire fighters and around 50 officers, which the Chief believes is sufficient to the country.

3.2. The Role of CIDA in Fire Regulations – Eng. S Amarasekara, Director CIDA

At the very outset Eng. S. Amarasekera explained that the Construction Development Authority is the APEX regulatory body in the construction industry following the enactment of the Construction Industry Development Act in 2014.

Elaborating further Director CIDA said that in the Act, there were 26 regulations to be published, out of which seven regulations were passed which was directly related to fire regulations. When it comes to the CIDA Act, the Gazette notification appeared in 2018 making it mandatory the use of regulations and it says “every contractor registered under the Construction Industry Development Act shall carry out any identified construction work under the said Act. According to the procedures and standards as specified in the first and second schedule respectively, said Eng. Amarasekera.

Explaining the procedure, of constructing a building once the permit or approval from the Urban Development Authority (UDA) or the local Municipality is obtained, they refer the developer to the Fire Service Department, in turn the Fire Service Department follow the CIDA regulations. Eng. Amarasekera said that one of the salient feature in this document is “means of escape’ it says “areas which have designated as exit staircases, firefighting lobby smoke, lobby passages escape, corridors shall not be used for any other purpose’.

Eng. Amarasekera sighted a personal experience where a fire escape passage had been used for other purposes. The incident took place at a hotel room in the early hours due to a fire in the hotel.

There was no proper rescue operation, despite the regulation stating that no equipment or any other material should be stored in the escape route, the hotel authorities had stored mattress in the adjoining room of the lift well, which caught fire.

3.3 The Role of CIDA in Fire Regulations - Gpt. Capt. Kolitha Sri Nissanka

The UDA in its 3030 plan clearly shows the country is planning massive high rise buildings. Gp. Capt. Nissanka is quick to point out that all this will focus on life safety, saving life and saving people. Giving a brief detail on the CIDA Act regulations and specifications, Gp. Capt. Nissanka, categorically states that if anyone is building or designing one is bound by these regulations. Explaining the CIDA regulations and CIDA specifications, Gp. Capt. Nissanka said that the CIDA regulations instruct a person how to operate a fire pump and the specification will inform on the kind of fire pump to install.

Gp. Capt. Nissanka said that eight chapters touch on fire regulations. In contrast to the earlier document the new document touches on apartments. Speaking further on Gp. Capt. Nissanka said that previously it was the high rise but now a new category called super high rise building which is 60 meters and above has come into effect. Yet another positive approach by CIDA is the formation of a technical and compliance five member committee for the regulations. The committee has the authority to settle any dispute between the fire brigade and the developer. Gp. Capt. Nissanka said that the committee has the authority to take accept complaints of an occupant who says that the building is not sprinkled, the regulation provides provisions and the developer is under question.

Spelling out the relevant chapters in the CIDA regulations and specifications Gp. Capt. Nissanka said that the first chapter speaks on administration. The means of an escape route, refuge court is a specification. Guidelines are given when designing the escape route the smoke free lobby. Similarly specifications are provided when painting. A very important chapter speaks of the structural precaution to prevent the spread of fire. It is noted that a refuge floor be built every ten floors, starting from the top.

Gp. Capt. Nissanka further added that there are two main requirements in super high rise buildings, namely the firemen lift and the evacuation lift. The general norm for evacuation being not to use the lift but for super high rise building the fire fighters lift and the evacuation lift is a must. Both lifts should reach the ground within 60 seconds.

The chapter on fire detection, talks about the requirement of fire detection. Gp. Capt. Nissanka reiterated the need for voice evacuation system in any high rise building or super high rise building. He further stated that for all large buildings with a 2400 square meters a voice evacuation system is a must. The fireman telephone communication should be installed in a high rise or super high rise building.

The chapter on "fire protection" states that the building should have a purpose group. Taking into consideration the height of the building, it should be specified whether the building needs a hose drill, fire extinguishers, landing wires, or sprinklers. Questions arise on the aspect of breaching, to have a breach from one rise building, in order to pump water from the sump.

Pointing out that a building under construction reaching 60 meters should have a dry riser and any building above 60 meters, a wet riser system should be intact, while the building is constructed' explained Gp. Capt. Nissanka.

Fire pumps to high rise and super high rise has been listed by a third party. Most of the builders do not use a fire pump, they use a water pump. Thus the need to carry out performance test is a must. Gp. Capt. Nissanka said that designers most often got away with certain amounts of water outputs when there were three towers. As it was 1100 litres per minute the additional water tower requires more water. CIDA specifies a positive suction, a vertical turbine pump to be installed. Being very critical on the show kitchen concept, Gp. Capt. Nissanka said most of the kitchens are not protected. Another factor over looked by the developer pointed out by Gp. Cap. Nissanka is the access for fire fighting vehicles.

Inspection and maintenance of buildings is an important feature in the CIDA regulations. Similarly the regulation states that the developer should maintain a service contract with the service provider. Documentation is utmost important, in the aftermath of a fire.

In conclusion Gp. Capt. Nissanka pointed out that one has to comply with the regulations as it is the law of our country. CIDA hopes to revise the regulations and specifications once a year and bring in amendments once in three months.

SESSION 4

Mr. Mohan Perera - Assistant Brand Manager, Sri Lanka Insurance Corporation

At the outset Mr. Perera explained that people have expectations in order to have peace of mind. However this could change in unexpected ways. These ways are mainly accidental means. When such changes takes place it could affect ones business and one's personal life.

Explaining the unforeseen events as a sudden eruption of fire, natural disasters, Mr. Perera said when everything is lost it is very difficult to rebuild it again, as one has built it through the years. Striking a positive note Mr. Perera said that it is insurance which can restore everything. However Mr. Perera said that culturally people are not ready to accept insurance thus people don't have any trust on insurance.

Mr. Perera reiterated, Sri Lanka Insurance Corporation which has been in existence since 1961, has a record of protecting the assets of individuals and assets of the country. "During the past 57 years, we have managed very dangerous and deadliest events which have engulfed Sri Lanka." We helped the people to restore their lives and their assets. Sri Lanka Insurance has been awarded for the financial strength.' said Mr. Perera.

SESSION 5

Mr. David Ware - Future of Fire Safety in High Rise Buildings

Mr. David Ware out rightly stated that with the sudden influx of people moving into the city , high rise buildings too are on the increase, showing that high rise buildings are our future. Giving a startling figure numbering 50 new high rise building coming up in the city Mr. Ware pointed out that it is important to ensure proper facilities are provided. The need for inspections on the common areas particularly prone to poor housekeeping, dry risers should be installed. Ensuring the fire service can safely attack fires in these buildings as well 'added Mr. David.

Giving a brief detail on fire safety in the UK, Mr. Ware said the UK is hoping to form a joint competent authority who will oversee buildings over 30 meters. Mr. Ware added that UK having the building control bodies, have private inspectors, giving an option to choose both. However Mr. Ware is of the opinion that private bodies should not be included because they are not doing justice to the clients.

Mr. Ware reiterated that sprinklers should be installed in all high rise buildings over 18 meters. All materials used in the external buildings got to be noncombustible or limited combustibility. Mr. Ware was of the view that an alternative should be provided to a stair way for super high rise buildings. This is largely due to the fact that despite having evacuation lifts, it is difficult to make all people use such lifts at a time of fire not only due to the capacity but the ability concerning the elderly and people on wheel chairs, as they can slow down the evacuation process.

The fact that people are scared to use lifts during a fire was further proved at the World Trade Center catastrophe. "The 9/11 is the largest evacuation carried out. Having sky bridges will definitely help because one has to be safe" said Mr. Ware.

Sighting a few reasons for people's reluctance to use a lift during a fire, the endless wait for the lift, the fear of a breakdown of the lift and the fear of the lift being discharged on to the fire. The importance of installing fire break floor to be put on every ten story building in keeping with the regulation should be adhered warned Mr. Ware. However in addition sprinklers are needed,

compartment, fire breaks, use of pump floors and the use a refuge floor is utmost important. Dismissing the platform rescue system and the vertical escape shoot, Mr. Ware was of the view that it is not the way forward. Thus the UK will definitely not adopt these two systems.

Explaining a very important feature to be included in high rise buildings is "Information way finding". It is believed that during the fire at the World Trade Center people knew where the lifts were but they didn't know where the stairs were. Thus it is important to make good signs for people to find out where the stair case is situated.

Mr. Ware added that a novel concept to be adopted by his company in partnership with The Institute of Fire Engineers, Will deal on fire combatant in general. This is largely due to the lack of knowledge in this aspect. Titled 'educating the world' the service will be provided to all countries.

Commenting on helicopter rescue method Mr. Ware was of the view that it is a good method as a large number of people can be rescued at one time but it should be as a last resort not as a primary strategy. The reasons being landing on tall buildings are very dangerous. Commenting on High rise timber frame buildings, Mr. Ware said that a test was carried out on timber frame building. It proved otherwise.

In conclusion following the many methods to fight fires in high rise buildings Mr. Ware observed that the sprinklers and mist system are the future for all types of buildings. Mist system can use tenth of the water that sprinklers use due to the droplet size and very efficient in taking out the heat of a fire' said Mr. Ware adding that the mist system could be used in Sri Lanka.

Yet another innovative and upbeat system identified as "the Fire fitting Drone". Drones are used in all kinds of fires it will be used in high rise to go up and search. It's a 1000 feet with 60 liters of water.

SESSION 6

6.1 Sponsor Presentation Mr. Sabry Samsudeen General Manager (Projects Division) Fentons Ltd

Tracing the history of Fenton's, the Company which started in 1921 has revolved diversifying plumbing at present totally handling MEP services. Fenton is associated with Hayleys. Mr. Samsudeen General Manager of Fenton's explaining that there are 10 Divisions to provide a better service to the public emphasized that the Company has a separate section for fire.

Fenton has that history and it has a history of 98 years in the making commented a proud GM Mr. Samsudeen said Fenton's has a separate section for fire. Adding that Fenton's is not just a contractor as the company does its own installations and provide after sales service, repair and maintenance.

Mr. S. Samsudeen said that, Fenton is certified and endorse by CIDA. Thus covering the entire fire range from detection, protection, suppression. In 2018 Fenton's won the best installation award for Marriot Hotels for implementing the fire systems.

6. 2 Mr.Srinivas - Vice President, Sri Ramco Lanka Pvt Ltd

Touching on a very important factor when a fire takes place, Mr. Srinivas highlighted the danger of falling debris. This is considered to be very dangerous. Touching on green rating which is the

material resources which contribute to about 20% of the building another important aspect in construction.

Interestingly Mr. Srinivas explained the four parameters which contribute in designing a fire rated system. Namely combustibility, ignitibility, surface spread of flame and fire propagation index. Mr. Srinivas was positive that if these four parameters were adhered to, the system which is designed would meet the fire parameter.

Explaining the three main aspects of functional fire rated systems, namely integrity, stability and installation. Integrity is to prevent the fire and the smoke breaching the compartment. In terms of stability, the manner in which the structure of a building is held up during a fire. Installation is the amount of heat that is generated in the area of the fire and preventing the spread of fire. These three aspects were noted by Mr. Srinivas as the most important aspects in a fire rated system.

Explaining the difference between a wet construction and dry construction, Mr. Srinivas said that one can save on sand water and timber while minimizing the use of natural resources. A wet construction would be brick and mortar. Dry construction is silicon boards, frames and installations. Apart from fire one can save close to about 90% in terms of water as against a wet construction procedure. Talking about a square meter of wet construction which consumes close to 23 liters of water where as in a dry construction it consumes about 2 liters of water.

SESSION 7

7. 1 Panel Discussion.

Panel consist of:

- Eng. Maj. Ranjith Gunethilake
- Ar. Jayantha Perera
- Eng. Nissanka N Wijeratne
- Mr. P. N. R. Fernando
- Eng. S. Amarasekara
- Mr. S Srinivas
- Gp. Capt. Kolitha Sri Nissanka

7. 2 Question

I would like to ask the Fire Chief whether it's mandatory for owners of high rise buildings to get a fire clearance certificate every year.

7. 3 Answer - Mr. P. N. R. Fernando, Fire Chief.

Certain buildings like hospitals, hotels need to get the clearance annually. The other buildings when we issue recommendation for CMC it is adequate.

7. 4 Answer - Eng. Amarasekera

According to CIDA regulation high rise and super high rise buildings need to get a certificate every three years by a competent person and the fire brigade has to inspect. This is under the regulation. Under any trade license, hotel or any other business entity has to get the approval from the fire brigade every year.

7. 5 Question

Who do you consider competent?

7. 6 Answer - Eng. Amarasekera

Authority having jurisdiction it is the fire brigade.

7. 7 Question

Isn't it possible to tie up this fire certificate to the business registration certificate to tie up annually?

7. 8 Answer - Eng. Amarasekera

Under the regulation it is a requirement for the owner to get the system certified. A competent person will issue a certificate and the fire brigade will do an inspection.

7. 9 Question

Talking from a Sri Lankan perspective as contractors, the whole construction industry is competitive with Companies from China and India coming in to Sri Lanka. Though there is a requirement, contractors go to the fire brigade and they get wavers, my question to the panel is, if wavers are given who takes the responsibility in the event of a fire, is it the fire brigade or the developer?

7. 10 Answer - Eng. Maj. Ranjith Gunatilleka

The situation at present is somewhat different as CIDA has published the CID Act. According to the CID Act any person contravening or failing to adhere to any provision of this Act or any regulation is committing an offence. This offence can be punished by a magistrate. Anybody can take any offender to Courts. Either the CIDA or even the police can take action. It is different from the earlier regulation.

There is a Committee appointed by CIDA, to look into complaints regarding any issue related to the building. If the occupier feels that the building has to be sprinkled the building is not sprinkled, the occupier can complain to the committee and action will be taken against the developer.

7. 11 Question

This is a proposal, will it be possible to issue the CIDA Act free of charge to the public?

7. 12 Answer- Eng. Amarasekera

This is not for a business. We are just covering the cost. It took about five years to complete this book, we spent a massive amount on the book. CIDA is not a profit oriented body. We have a certain formula when deciding the price.

7. 13 Question

Few clarifications, the Fire Chief said the fire requirements is only a guideline but it has been gazette, is it a regulation?

7. 14 Question

With many high rise buildings coming up outside Colombo, is there are sufficient facilities to fight a fire in these areas?

7. 15 Answer - Mr. P. N. R. Fernando Fire Chief

There might be a few lapses in the man power and equipment in other stations in the country. As told in the presentation the 300 calls we received was not only from Colombo, it was from outside Colombo too. We respond to the major fires outside Colombo. At the same time with the limited recourses we do help out.

7. 16 Question

Not many people know how to contact the Fire Brigade in an emergency, I suggest to the Fire Chief that he use the mobile network we have and send a text message for the public in case of a fire?

7. 17 Answer - Mr. P. N. R. Fernando

It's a very good proposal. We have communicated with the communication teams certain other problems... but this suggestion was not addressed. It's a good idea I will take it up with the relevant authorities for implementation.

7. 18 Question

I would like to ask Mr. David whether UK adopts a regular maintenance check on the fire equipment and installations in high rise buildings.

7. 19 Answer - Mr. David Ware

Yes, we have very strict maintenance rules for the Manager , every day he has to check the fire panels, emergency light is tested he is supposed to document it. This is done on every single building. Because the fire safety Oder is brought out by the fire service now the managers know they have to do it. The cameras are on thus he can get prosecuted and go into prison. We have the fire safety order so people know their responsibility. Generally in the UK they do it, if they don't they could go to prison. Just one thing on the number for emergency around the world is 112.

7. 20 Question

Was there any changes implemented to the fire regulation in the UK after the Grenfell Tower incident?

7.21 Answer - Mr. David Ware

Yes, since Grenfell there has been a major overhaul, on the regulations. They should have done this after the previous incidents, after Grenfell they changed the regulations. Some of the regulations have been implemented immediately which was the one with the cladding.

7. 22 Question

Are fire designers responsible for the installations of fire equipment, most often fire designers do the design but when transferring to the contractor the design is not the same, in such a situation who takes the responsibility?

7. 23 Answer -Mr. David Ware

If anything goes wrong the fire service is looking for the responsible person that can be anybody that is the person that can be the risk assessor, pick it up the designer, the designer did it wrong was, it could also be the contractor. The hardest thing for the fire service is finding that responsible person. As you can imagine there are a lot of slopping shoulders things it is not their fault well it is , to put cladding on the Outside of a building do not need any qualification in the UK, but you still be responsible. If it is fire safety then I would have thought they would have been qualified. Competencies and that is looked at. At the moment there is no real qualifications.

7. 24 Question

Is it possible for developers to be transparent in regard to complying with the regulations of CIDA when they are building condominiums?

7. 25 Answer - Eng. Maj. Ranjith Gunatilleka.

The developer has to comply with the CIDA rules and regulations. It is a rule that they have to display the names of the builder, architects, the MEP with the references. This is done for the public to get details on the building. If these details are not displayed the public can go to the relevant Council and say it is not included. Generally these details are provided when the permit issued.

7. 26 Question

The key problem when we were discussing these issues were that there is no one single body which ties up to all these aspects. I think CIDA is now looking into that aspect. Because fire regulations are there. When a building is constructed at the planning stage certain aspects are ignored. Fire is an afterthought. The structural engineers and architects have a responsibility. Although a certificate of conformity is issued by the Municipality, however the building is authorized long before the certificate is issued.

7. 27 Answer - Eng. Amarasekera

The issue of having a single authority to look after this body, in the case of fire it is the fire brigade. License issuing authority is the UDA once the authority is given. There is no single authority to see if the client is maintaining these records and tests. CIDA does not have the power to check on this. UDA has to look into it. Fire brigade is in charge of fire issues.

Before a building permit is issued clearance has to be taken in regard to fire clearance, water clearance electricity clearance, Garbage, once the clearance is done the building permit is issued. Post contract is very important.

7. 28 Question

Mr. Srinivas did not talk about the cost of the dry walls between the tradition dry walls.

7. 29 Answer – Mr. S. Srinivas

We are talking about a system solution in terms of per square feet wet wall 10% increase. You need to look at it at a very comprehensive manner, in terms of time, in terms of Labour, in terms of energy in terms of green solutions. Overall system efficiency in time.

7. 30 Question

What is the correct procedure a local fabricator of fire doors should follow to get the correct approvals which is accepted to the industry in the correct manner?

7. 31 Answer - Mr. P. N. R. Fernando

The fire doors are tested at the University of Moratuwa, this is done to ensure it meets the standard. We have to ensure life safety. This is the reason we ask those who are involved in this industry to test the product by a reputed authority in Sri Lanka.

7. 32 Question

In regard to a facility management company, our experience has shown that once the designs are approved but when it comes to the construction the end product is something different to the design drawings which had got approval from authorities. How can one overcome such a problem?

7. 33 Answer - Mr. David Ware

We have the same problem in the UK. We call it designer built. Basically they get some plan and start digging the foundation and start making the change. They need to get a completion certificate and in Scotland they have the fire service builder control. It's called the "Golden thread" one cannot change it without full approval.

8. PRESENTATION OF TAKEN OF APPRECIATION

Presentation of tokens of appreciations to presented to all speakers by Major Ranjith Gunatilleke, President Chamber of Construction Industry in Sri Lanka and Mr. Nissanka N. Wijeratne, Secretary General Chamber of Construction Industry in Sri Lanka respectively.

9. VOTE OF THANKS - Capt. Lal. Tennekoon

We have come to a conclusion of a very informative, interesting and exciting seminar. The idea of conducting such a seminar was given by Secretary General Eng. Nissanka N. Wijerathna and the staff of CCI encouraged by President of the CCI Eng. Maj. Ranjith Gunethilake and the Council of the CCI decided to have this very timely seminar. I thank you all for being present here as participants and you all have recognized the seriousness and have responsively responded by coming to this seminar. I must also thank the presenter and the guest speakers. I would humbly start with Mr. David Ware. I think all of us would agree that he was very passionate about his presentation. I thank the Chief of the Colombo Fire Department of the Colombo Municipal Council because they are the people who face the front line as rescuers and also I think they face a lot of flak apart from the fire. I wish to thank the Director Development of CIDA Eng. Amarasekera and Gp. Capt. Koliitha Sri Nissanka for that very informative presentation. Finally for Ranco for the product presentation. I wish to thank the sponsors of this seminar because by them

that we see the reality of these seminars. I thank the media who have given a lot of exposure to the seminar. The SLFI for accommodating our request. Last not the least my colleagues at the CCI who worked as a team and to Mr. Kapila Liyanarachi who made untiring efforts to make this seminar a reality.

SUMMARY

The importance of addressing Fire Hazards & Mitigating the risk was the focus of this seminar.

Broadly there appears to be 03 areas of concern that were addressed.

01. Primarily at the planning & design stage of the building - which would include structural soundness and also the fire resistant capacity of the outer skin of the building . Also into the design should be carefully integrated the fireman's lifts, evacuation lifts, external fire staircases etc. Internally the provision of lift lobbies & locations of staircases should be careful considerations at the design stages too.

Also especially into the planning & designing stages of super high rise buildings would be incorporated gathering areas, compartmentalization at every 10th floors which are absolute necessities in super high rise buildings.

02. Next the mechanical components are the choice of installation of dry risers, wet risers, smoke detectors, sprinklers, misters, adequacy of water sumps and fire sumps and fire pumps which are key decisions that have to be made with regard to the mechanical and electrical design of the building.

Once the design and construction stages are over a review of all the fire hazard migratory steps of the original design at the award of the Certificate of Conformity would be salutary.

However it is once occupancy of the building takes place (especially in non commercial use buildings such as apartments) that laxity creeps in. Since there is no regular periodic check, fire doors are removed and alterations are done and especially at refurbishment stage many parameters are violated.

To overcome these a coordinated inspection procedure akin to the annual trade license issued by the Sri Lanka Tourism Development Authority in respect of Star Class Hotels must be introduced involving regulatory and management bodies on a periodic basis.

The third area of consideration that was addressed in this seminar was about the best practices of fire hazard mitigation and also of evacuation policy etc. Whether firefighting was to be in situ with sprinklers and misters and other methods already included into the design and also of external measures such as the arrival of fire trucks and helicopter evacuation etc were discussed. A novel method was the use of drones for fire detection and dousing.

The net outcome of this seminar was the need for a coming together of all experts to arrive at various methods and best practices to meet this challenge as we continue to build vertically in the future.