

The Daily Star

ROUNDTABLE ON 'FIRE SAFETY IN OUR BUILDINGS'

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A roundtable on 'Fire Safety in our Buildings' was jointly organized by The Daily Star and Institute of Architects Bangladesh (IAB) at the conference room of The Daily Star on March 31, 2009. It was participated by eminent engineers, architects, fire brigade officials and civil society members. We publish the excerpts below.

Mahfuz Anam

As we know, there has been a major fire incident at the Bashundhara shopping mall. Now we are all discussing the matter but after a few months you will see that the issue of fire safety will no longer be in our agenda. All of us from The Daily Star and from the Institute of Architects want to give out this message that we shall stick with this problem till something is done. Perhaps there is a code of construction whether it is being implemented or not, whether it is being violated or not, we will try to find that out on behalf of the citizens.

Architect Mubasshar Hussain

In most of the modern buildings there is no sign or indication of the fire exit routes and as a result, people do not know which way to run for safety. We can start doing these works even now. I hope we shall mention such small but important steps besides bigger ones when we talk on fire safety measures.

Architect ASM Ismail

We had formulated national building code in 1993. The code clearly and explicitly tells everything about fire safety, fire resistance and fire escape routes in buildings. That code is still good enough to help people stay safe from fire in a building. Now the question is, who is responsible for the implementation of the rules and regulations? Building code is no law. It only guides us as to how we shall protect the building and the people from fire. According to law, the foremost responsibility is that of the owner of the building. The works ministry is responsible for ensuring building code only in four major cities of the country. In other districts no code is followed. In the past, once a building has been constructed, the Works Ministry had no further responsibility. But now we have started a mechanism called occupancy certificate. An owner will have to obtain the certificate from us after completion of the building.

Prof. Jamilur Reza Chowdhury

In the structural design, fire safety is actually considered indirectly, and not directly. Indirectly in the sense that there are other requirements from fire safety point of view, that all structural elements must have minimum fire resistance capacity reflected in the term - fire rating of elements. This is the term we use in structural design - fire rating. As a structural engineer my responsibility will be to ensure that all the elements have the minimum fire rating. This is mentioned in the code that both concrete and steel can withstand the fire if you ensure the minimum cover. Stairs need to be designed specially so that in case of fire these stairways cannot be the conduits for transmission of fire throughout the building. So, the doors through which people would be entering the staircase have to be designed for minimum fire rating. Normally they should be kept closed so that fire cannot pass through. As structural engineers our responsibility is to ensure that the materials that are used for enclosing the stairway and the liftways can withstand the fire for minimum number of hours.

Therefore, from structural point of view the use

of material should be relatively safer. In structural design we take into consideration various factors like wind, earthquake etc. so that if you design the structure, you provide the minimum fire rating to the elements.

Brig Gen Abu Naim

We are responsible for controlling fire, extinguishing fire and rescuing trapped people. Fire brigade has a wide field of activity. Right from the street accident, earthquake to fire incidences, we are the first responding unit. At present we have 201 fire stations all over Bangladesh and we have 50 inspectors who carry out inspection of building which includes issuing licenses to various industries or holdings. And in Dhaka only we have 13 fire stations and 15 inspectors.

Architect Bashirul Haque

I think there is a lot of responsibility that designers need to shoulder. And of course the evaluation of the fire department. Every building must be evaluated properly as per the fire code that exists in the country. We need to contain fire at the source. The materials used in the buildings need to be fire-rated. The code says something without the spirit of safety. So, we need to discuss the formulation of a code which should be much more relevant to Bangladesh and can be adopted easily.

The code here specifies 1.5 meter wide staircase. According to American standard, staircase should be of 38 inches width. And the most dangerous thing in the fire is the smoke. That is how people get killed. The smoke must not enter the stairway. It is the building that has to be designed to protect people, to save people. Another word is maintenance. All the fire fighting equipment have to be continuously maintained.

Zoinal Abedin

The code prescribes the regulations for safeguarding life and property in the use or occupancy of buildings of premises from the hazards of fire and explosions. This part includes general requirements of fire protection, precautionary requirements to resist fire, means of escape, requirements of in-built equipment, facilities required for fire fighting, and fire fighting arrangements for various occupancy groups. All the provisions laid out in this code have been enacted as act in our existing building construction rules 2008. So Rajuk has the authority to approve the plan for not only multi-storied, but also for normal residential, commercial, industrial buildings, all structures permanent or temporary in nature. This building code laid down all sorts of provisions there should be provisions to access, there should be provisions to exit from the buildings during the fire.

In the fire act 2003, there is a provision for regular fire drill. The occupants in the buildings should regularly undergo this drill. They must know where the exits are and where the fire fighting equipment are kept.

Architect Khandker Tajuddin

All the existing rules have been copied from the rules that are available in foreign countries, and they have been translated in Bengali. Basically it is

a book of 100,000 pages turned into a 10-page booklet. It is like tearing up a small portion of a big portrait and making a collage. If you notice the first fire fighting rule that has been written is not a fire prevention code. The first code is a national electrical code. The American code was formulated 100 years ago which is a combination of British and German codes. And among the 300 books, one book is dedicated to life safety, 10 for training and the rest are for specific prevention.

When I install the electric lines in the building, have I followed the electrical code? In many fire reports we get to see that the cause of the fire was electric short circuit. Has anyone ever asked the electrical engineers that question? All around the globe people have taken measures to prevent electric short circuit.

Brig Gen Abu Naim

Last year, total number of fire incidents was 9,310. Out of which 39% took place due to electric short circuit. My colleague has said that we have an electric code, which is sufficient. If that is so then for the major problems we are facing, be it transformer disorder or short circuit or other electrical problem, we have to see what kind of electric materials were used.

Architect Kazi Golam Nasir

The fire service department has the right to check the buildings and give fire safety clearance before occupancy.

Zoinal Abedin

Regarding one window plan, we had decided whoever wishes to construct a building, will apply at one place and from there we will get the approval of the rest of the departments. In total, 18 organizations were involved with us including the civil aviation authority, Titas Gas, Electricity, WASA, police, traffic etc. After receiving the requests we used to send this to different agencies. But the problem is that the other agencies did not have the capacity to provide with service at once.

Architect Mubasshar Hussain

According to the code, buildings above 10 stories are multi-storied. According to the fire fighting law it is above 6 stories. Then come the streets. The definition of street differs from traffic police to fire brigade.

Architect Tajuddin

If all the provisions for fire safety given in the code are implemented then we do not have to depend on Rajuk to go and individually inspect the building that has been given the occupation certificate based on the fire safety code.

Architect ASM Ismail

The occupancy certificate will be given once the building is made and then it will be renewed every five years. The fire brigade has the authority to send notice to the owners of the building that they have to have fire safety measures on all the floors of the building. This is mentioned in the code. This means one has to have fire warden for every floor, and there has to be fire escape and other fire safety measures in the building. Plan a regular drill. Tell people what to do when the alarm goes on. It does not matter where when the building was built. The fire department can take the initiative of sending notice to the owners of the high-rise buildings that the owners should prepare a fire safety plan and that has to be approved by the fire department.

Architect Nizamuddin Ahmed

In 2006 there was a law that said we would be able to make a 6 storied building with a single staircase. Now, in 2008 law, we see that we can make 10-storied building with one staircase. I believe it is a very dangerous proposition. And in each floor of those building there can be 4 apartments. That means 40 apartments using one staircase.

When an architect is making the design, we have to keep three things in mind. I have to think how the people will survive if there is fire. Then comes the property. And lastly, my building should not be a threat to the adjacent buildings. We architects make highrise buildings using the same grammar that is used to build a 3-4 storied building. We are giving 2 staircases for 6 storied building, and we are also giving 2 staircases for a 20 storied building as well. We have to have adequate number of stairways.

Even though an architect is giving a fire safety and escape plan, but the users are adding new things to the building like walls, doors etc. you will find in many buildings owned by educated people, where there was fire escape once, now there is a wall.

In the cinema halls we see that all the doors are closed, there is only one open door and everyone enters and exits through that door. If there is fire then my calculation is that at least 300 people will die. But we are oblivious to that.

If there is a change in design plan then I believe Rajuk has something to say. The DG fire service has the authority to go and inspect and stop. What should be done is that one should do a self-assessment and building owners should find out which buildings are safe and which ones are unsafe. It is the responsibility of the owners if his building has the fire safety measures or not.

We do not think about the fire load. There is supposed to be a rule regarding how much fire load a room can take, which I could not find in the code. The fire load is that every material is given a carbon equivalent. That value cannot exceed in a room. And if it does then I have to give extra fire safety measures to the room. We are totally oblivious of this matter. And with the help of the fire department we need to have fire volunteers. We have to send people to different offices, schools and factories. I would like to conclude putting stress on self inspection.

Engineer Manash Kumar Mitra

How does fire occur? Often electric short circuit is responsible. Then there is cigarette, gas stove, but the thing that is mostly responsible for a fire is a multipug. Everyone has that at home. One multipug is being used for so many purposes and the plug is attached to a 2 pin plug point then why won't there be a fire? If we cannot avoid multipugs in office then we will not be able to avoid fires.

In many approved buildings you will find TNT exchange centers which are not authorized. These buildings are more prone to fire. Now the question is will the fire department do the inspection? When



there is fire, how will you enter the building, how will you break the wall down and find out what chemicals are stored there? To know all these things you need to have engineers, electric and chemical engineers.

When there is fire most of us get panicky. Even if we know where the exit is but during fire we cannot find it. When a fire starts, it starts small. I can put it off with my hand, but when it becomes big then it goes out of control.

Engineer Tanvirul Huq Probal

Everyone is saying that the focus should be on inspection. The buildings that are under construction will need to have the occupancy certificate. But what about the old ones? We cannot demolish them. We should think of some system that can be adopted for those buildings. And I also think that the 5-6 storied buildings that we have here, should have fire extinguishers. And these fire extinguishers should be easily available. 20 years ago we did not know what a generator was, but today every house has a generator. I believe that every area should have shops that sell fire extinguishers. Previously, generators were tax free, but now the government charges 1.5% tax. The government should look into the matter and make the cylinders tax free. And at the same time, cylinders and smoke detectors should be tax free so that one can install one in his house.

Architect Nizamuddin Ahmed

A building becomes more dangerous when it is air-conditioned and covered by glass. These days hospitals are becoming air-conditioned and becoming enclosed. There is a rule that there has to be at least 2 fire escape doors. We did not thank the BGMEA. During the 80s and early 90s some of their buildings had experienced some fire accidents but after that they took appropriate measures. My suggestion is non dependency on fire services should be increased. The common tendency is, when there is a fire we just wait for the fire service and do nothing. We should have our built-in facilities to fight fire.

Architect Zakiul Islam

Almost 90 percent of fire hazards come from electrical equipment. So we are incorporating fire safety, sprinter design etc., in the course curricula of architecture at BUET. But other than architects there are different groups associated with a building - the clients and the government bodies who can implement. Now if the architect is aware and makes a safe building but after that there is no update, then this kind of accident will take place again and again.

Architect Mustafa Khalid

The government can involve third party insurance. This happens in the garments factories. At Bashundhara, the casualty rate was less and the casualty happened because the people tried to fight the fire themselves. In that case if we have to make a performance based design solution, then we will have to work in a team. An architect will definitely be in this team as a team leader, but at the same time there has to be a certified fire protection engineer. After the fire incident at Bashundhara mall, there have been investigations but we failed to make any case study.

I would request that the fire department have a separate unit that will work as a fire investigation unit. That unit should have a chemist, a physicist, structural engineer and even people from other fields. Since we lack the facility that is why we did not get to know how the fire took place in Bashundhara, for example, what was the temperature, where the fire originated etc. What we do know is why we failed to put off the fire. That answer is simple; we could not operate the machines.

Brig Gen Abu Naim

The garment factories installed alternative stairways. No matter how tall the building is, if necessary then there will have to be a connection between the buildings so that people can move somewhere to save themselves. Garments sector has the record of most of the compliance. They are in such pressure that their registers are checked whether there was a fire drill or not. And in 90% case there is a compliance. The other sectors are not doing so as there is no such pressure. When a

multi-national company rents space the first thing they look for is fire safety. It has been seen that in a 6 storied building someone had made a stairway with his own money. This means that people can create a force and bring about this change. Many of the fire hazards take place because of stove fire. To escape from that we can use safety doors for the kitchen door. Here is the fire statistics: 23% stove fire, 29% short circuit, 9% cigarette, 2.5% from kids playing with fire and mosquito coil and candle 5%.

Engineer Abdul Awal

We the architects are providing designs following the building code and that plan is sent to the fire department, the fire department then approves the plan. A compliance system is being installed in every building. Then why is that when there is a fire, it cannot be put out? The people are there, the fire fighting equipment are there, then why can they not put off the fire? We need to have a comprehensive understanding of the fact that we do not have a fire safety plan. We need to know the plan of the whole building. We need to know the potential source of water outside the building. We need to have a maintenance schedule of that structure for all life safety system. Check if the detectors work or not, check if water comes from the hydrant, if there is sufficient water. And the lifts need to be checked.

We also need personnel training and drills. All of this is a part of the safety plan. And this plan has to be implemented by the owners, occupants of the building and the fire department together.

It has been mentioned that the fire has to be contained at the source. If it cannot be contained at the source then it will become a huge fire which will become uncontrollable. There is a saying that the first five minutes of a fire can dictate the next five hours. It reaches upto 60 degrees Celsius within minutes. The fire has to be fought in a very short time. We will have to understand this.

Mahfuz Anam

We have had an open-ended discussion. It would be a great help if you provide us with some specific points or suggestions. Let us know what the government should do, the architects should do and what the media should do to raise the public awareness. Give us some suggestion.

From the discussion we have realized that everyone has his own responsibility. But the responsibility of the fire fighters is more than that of the ordinary people. Our responsibility lies prior to the event. But if there is an accident then the responsibility is that of the fire brigade. You said that there are only 13 fire stations in Dhaka. Till 1982 there were 11. And if I am not mistaken, it has been 11 since the Pakistan era when the population was 7 crore. What is the situation of the fire brigade in comparison to the population and area of Dhaka city today? I also see that in many cases it is impossible for the fire department vehicles to enter the exact spot of fire because the roads are so narrow. There are shops beside the roads, and if there is a building under construction then the materials are kept on the road. This makes the roads narrower and if there is a fire then the vehicle will not be able to enter. What you can do immediately is that organize a press conference in view of the Bashundhara fire incident and tell the people about the existing law; what are the responsibilities of the citizens as well as that of the building owners.

One participant has mentioned voluntary fire fighters. In this case we can involve the scouts. We all know that it is not possible to solve the entire thing in one day. But we can start to reach a solution.

Today I got to know that the REHAB is responsible for 15% of the buildings and the rest 85% is done by contractors. They have an organization called Bangladesh Association of Contractors and Engineers. Those who are responsible for 85% the buildings are not here. We would reach out to them and form a group that will be like a public watchdog. We will organize meetings from time to time and see if anything has been done or not. We are ready to provide you with a platform if you are willing to give us the intellectual input.

List of participants

- Mahfuz Anam, Editor, the Daily Star
- Ar. Mubasshar Hussain, President, Institute of Architects Bangladesh
- Brig. Abu Naim Md. Shaidullah, Director General, Fire Brigade
- Mr. Zoinal Abedin, Member, Planning, Rajdhan Unnoyon Kortripokkho (RAJUK)
- Arch. ASM Ismail, Chief Architect, Dept. of Architecture, Ministry of Housing and Public Works
- Prof. Jamilur Reza Chowdhury, Vice-Chancellor, BRAC University & Eminent Structural Engineer
- Archt. Dr. Nizamuddin Ahmed, Professor, Dept. of Architecture, BUET
- Engr. Manash Kumar Mitra, Eminent Fire Fighting System Designer
- Archt. Khandker Tajuddin, Eminent Architect
- Archt. Kazi Golam Nasir, General Secretary, IAB & Building Construction Rules Expert
- Prof. Abdullah Abu Sayeed, President, Bishwo Shahitto Kendro & Eminent Citizen
- Archt. Bashirul Haque, Eminent Architect
- Engr. Tanvirul Huq Probal, President, REHAB
- Archt. K.M. Mustapha Khalid, Eminent Architect
- Archt. Mohammad Foyez Ullah, Eminent Architect
- Archt. Dr. Zakiul Islam, Member-Education, IAB & Assistant Professor, BUET
- Engr. Abdul Awal, Former President, REHAB
- Archt. Dewan Shamsul Arif, Treasurer, IAB & Building Construction Rules Expert

Suggestions

- First of all, there should be an exit sign on every floor. Then there should be fire extinguishers. Fire drill should be given maximum priority and we have to have fire hydrants.
- During fire (The main electric and gas connection needs to be closed).
- Kitchen doors need to be fire proof.
- Try to keep at least one veranda grill free. There has to be at least one exit.
- It is better to avoid carpets, and use steel doors instead of wooden doors.
- Every building has an electric sub-station on the ground floor of the building. It has to be assessed what amount of risk that sub-station is posing.
- The existing building laws and codes need to be updated and upgraded.
- Every year, clearance certificates should be collected from building inspectors and fire department.
- People keep their gas stoves open 24 hours to save one stick of matchbox. Stop gas supply and introduce gas cylinders.
- The media has to take the responsibility of making the people aware of the fire hazards.
- A pragmatic fire safety plan has to be made for all the buildings with the help of the fire department.
- The number of people who will be using a building is far greater than the number of owners so occupants will have to be more proactive.
- If Rajuk and the fire department inspect a building and they find faults then they should give notice to the owner that the building will be closed down. Disseminate the information that if one does not follow the law then legal action will be taken against him.
- Those who live in highrise apartments can make a plan as to who will call the fire brigade, who will shut down the gas line etc.
- Along with an occupancy certificate there should be a fire safety evaluation report. That has to be submitted to the fire department.
- The definition of highrise and lowrise should be determined on the basis of fire and other services. This should be done with the help of the architects. To create public awareness, there should be more meetings like this.
- When it comes to fire safety, high-rise and low rise is not the main issue. The main issue is the risk assessment. What are the chances of the building falling into a fire hazard? Based on that we shall have to install fire fighting equipment in the building.
- We shall have to change our mentality. If it takes Tk. 2200 to make one square feet of a building, then to ensure fire safety we should spend another Tk.50.
- Even a one storied house needs to have fire safety measures. But if the building is higher than that, then it will require more safety measures.
- Fire service needs to be have digital system so that either with the help of the Internet or quick detectors they can know where the fire is and reach there as soon as possible.
- Fire extinguishers will have to be made easily available in the small shops. And these should be made tax free for import.
- These things should have refill stations like gas station for cars.
- Kitchens should have a smoke detector and a fire-proof door and an alarm.
- The related building codes of different countries need to be studied thoroughly and adopted according to our context.
- We can arrange a workshops to increase people's awareness.
- Information of the buildings that were built before the building code 2008 need to be collected. This can be done by the fire department. After sorting out all the information, the buildings have to be inspected.
- The Fire department has to be made a very powerful department.
- We need to make sure that people do not live in the commercial buildings.
- Highrise buildings will need more stairs.
- If we can make WASA to install water hydrants beside the roads that would be a great help. Either WASA or city corporations can do that.
- If there is a system of insurance then people would be forced to install fire fighting measures. It should be on the basis of "the more facility you have the less premium you have to pay. And in this case they will need certificate from the fire department.
- Measures against electrical short circuit have to be taken through ensuring quality, fire resistant electrical materials.
- If fire occurs for using faulty and low quality materials by the owner then he or she should be forced to pay compensation to the aggrieved occupants.
- Every building has to have a fire command room on the ground floor. That room must have the monitoring facility with all the floors.
- All the buildings should have proper announcement system as to how to get out of the building. One should leave the building within a certain time. Building should be designed with 2-hour fire rating doors, windows and walls.