

The Bangladesh National Building Code: 2nd Edition Its relevance and contribution to building safety

Mahfuz Anam, Editor & Publisher, The Daily Star
As a journalist, I am aware of so many laws and code of conduct that exist in our country, but we keep on repeating mistakes and doing most horrendous things. I was wondering if there is any monitoring mechanism in the country. Without this mechanism laws are meaningless. If the violators are not punished it encourages breaking of law and corruption.

Is there any mobile court that checks whether a building, completed following the Bangladesh National Building Code (BNBC), undergoes any change of the structure afterwards violating BNBC regulations? I think engineers, architects, real estate agents and the media should work together to ensure implementation of the BNBC.

Kazi Anwar Ahmed, Head of Dhaka Corporate office, BSRM

The Rana plaza tragedy continues to haunt us. It was a classic example of regulatory failure and lack of supervision. The cogent reason could be the lack of public awareness of the code. The common people of our country have a vague notion of the building code and construction safety.

The engineering profession has the moral and civic duty to inform and educate general public about the importance and relevance of the national building code. The vital purpose of this roundtable discussion is to create awareness.

Professor Jamilur Reza Choudhury, VC, University of Asia Pacific

The updating procedure of the BNBC is taking place after a long time, twenty years, whereas in other countries they usually update national building code after three to five years.

In Bangladesh, national building code was first published in 1993 and got a legal coverage in 2006 through publication as a gadget.

I do not think that the cause behind the Rana Plaza tragedy was lack of awareness of the building code but rather the apathy of the owner towards the laws since they know 'rules are for fools' and 'money talks' are the two guiding principles in Bangladesh.

One of our major objectives should be the enforcement and implementation of existing laws. To ensure the integrity of professionals, architects and engineers who are involved in building designing, they should be informed about these subjects through formal training and education.

Dr. Md. Hossain Ali, Professor, Department of Civil Engineering, BUET and Team Leader, BNBC 2010

In 1993, BNBC was meant to provide a safe and healthy habitat by regulating planning, designing, constructing and all activities related to construction of a building. However, after making several editions of the code our status of implementation is still unpromising. The national code also provides guidance for service related facilities like electrical, mechanical, sanitary and other services.

I would like to mention some salient features of the new edition which ought to be followed to ensure safe and sound building design. First of all, the new edition of the Code consists of three volumes instead of one volume unlike the previous one, with a view to easy handling. In the first volume, the definition has been updated taking inputs from all the relevant stakeholders.

The scope of the Code remains same as the previous edition. A new organization for building code administration has been proposed which was also a proposal in the 1993 Code. We have repeated it to emphasize upon and ensure the enforcement of the Code.

We have introduced new forms of permit and inspection. In modifying the building code we have also taken account of Rajuk regulations. Classification of occupation has been changed through consulting different international codes.

Types of building construction have been broadly classified into two groups: non combustible and combustible types. Noncombustible types are further subdivided based on fire rating. Combustible type is mainly timber wood construction, which is subdivided based on the type of timber wood used in the construction.

Precautionary requirements have been modified according to revised building occupancy classification. Different designs have been considered. Specific requirement for fire protection plan has been introduced. Updated specification for building materials have been referred to.

Definition and general agreements have been updated following different international codes. Loads on buildings and structures have been updated. Earthquake load has been revised based on the Euro Code and the Indian Code. Two new chapters on bamboo construction and steel composite structures have been added. Strength specification design for concrete structure has been rationalized based on ACI 318, 2008.

A new construction technology named confined machinery has been introduced in the chapter of machinery structures. Provisions for environmental protection and high rise buildings have been introduced. Minor changes have been made regarding storage, handling practices and supply issue of fuel and gas.

We have thoroughly revised provisions on electric service and building acoustic, sanitary and water drainage and lifts, escalators like moving works. Provisions on sustainability measures have been thoroughly revised.

Guidelines for sign in urban and rural areas have been introduced. Environmental graphics and graphics for universal accessibility have been added. This is the overview of the new edition of the BNBC.

Professor Jamilur Reza Choudhury

You have mentioned Euro Code and Indian Code but the Chapter 6, regarding structural design, is based on IBC. You have used AC for wind load. AC was based on fastest mile of wind. How have you reconciled the anomaly of it? In the 1993 Code there were some mistakes in defining height and table of wind. Have you corrected these mistakes?

BSRM and The Daily Star recently organised a roundtable on "The Bangladesh National Building Code: 2nd Edition". We publish a summary of the discussions.

-- Editor



According to the legal procedure, it has to be mentioned in all the agreements between the developer and the owner that all the design and activities are in compliance with the BNBC 1993. The best suggestion to avoid any illegal complication is to consult with registered professionals. The code defines the qualifications for the qualified professionals who will be involved from designing to supervising of the construction. Involving professional in designing also reduces cost.

The design of a building starts from the roof and we go down the ground gradually through calculation of load while the construction starts from the foundation. We can start today's talk from the discussion of soil investigation. Whether the correct procedure has been followed in acquiring the data for preparing geotechnical report? We can start with loads. No change happens to dead load. The point here is the live load.

A.H. Md. Matiur Rahman, Consultant, JICA

In 1993 Code, the calculation of basic wind speed was based on the fastest mile speed. In the present Code, we have changed it to '3-second gust speed' which is about 11 percent higher than the basic wind speed. In Dhaka, previously we used 210 km per hour, which is about 236 km per hour. Wind pressure may increase about 4 to 5 percent.

Seismic design category is included in the Code. It is a vital point. It is related to the soil conditions. We have divided the whole country into 4 different zones. Every building in zones 3 and 4 should be designed as Special Moment Frames. The minimum width of the column should be 16 inches, in some cases it may be 20 inches. This is very important for the architects.

Bharat Chandra Biswas, Deputy Director (Operator & Maintenance), Bangladesh Fire Service & Civil Defense Department

In the new Code we have separated business and mercantile occupancy. We have included garage and utility service related occupancy issues also.

Tawfique Ali, Senior Reporter, The Daily Star

In 2006, when the BNBC had been made mandatory, we expected positive outcome. The Daily Star has been consistently hammering the question of proper implementation of the Code.

Apparently, the BNBC has not been implemented at all. The incident of pulling down the RANGS building by RAJUK proved that government organizations both very little about these regulations. Though BNBC defines the standards and the procedure for demolition of a construction, workers started demolishing the building manually using huge hammers and without taking any safety measure. All of us are aware of the death of 15 workers at that incident.

Updating the Code is a technical matter. As a citizen and layman, I am interested in implementation of the Code. Who is the authority to implement it? Why there was no enforcement of the Code in the past 7 years? Is there any guideline included in the Code about the removal, demolition and evacuation of a building?

Prof. Dr. Mehedi Ahmed Ansari, Dept. of Civil Engineering, BUET

We are discussing highly technical issues. But the issue regarding monitoring, which is the key point, is always being neglected. After the Rana Plaza incident, a committee was formed but it does not function.

There should be a building commission comprising four elements: advisory board, accreditation of professionals and training of professionals and updating of building code on a regular basis.

We should set up more laboratories like Housing and Building Research Institute (HBRI).

Dr. Toufiq M Seraj, Managing Director, Sheltech

Seismic zones have been divided into four categories. Most changes will occur in Chittagong and Sylhet. As a developer, we always have to face questions regarding earthquake resistance. We make analysis based upon static methods. We face the lack of necessary data and cannot bring the work beyond academic level. It should be made simple through using Richter Scale and other parameters, so that people can easily understand the strength of a building. Is there any scope in the new Code to use mechan-

ical energy absorption devices?

We should change the curriculum of the public and technical universities according to the changes in the practical field. We should emphasize upon construction management to ensure enforcement of the law. Training regarding occupational hazards is very important.

Our labourers refuse to wear helmets because of hot weather and often neglect the safety requirements. They do not want to use welding gloves since it slows work. It is just lack of awareness.

Prof. Dr. Raquib Ahasan, Dept. of Civil Engineering, BUET and Coordinator, BNBC 2010

It is clearly mentioned in the Code when to do static analysis and when to do dynamic analysis. To use EDD (Energy Dissipating Device) dynamic analysis is obvious. Since EDD mostly depends on manufacture, and data have to be collected from the manufacturer, it is not possible to include it in the code. The procedure of dynamic analysis is given in details in the Code.

Prof. AMM Safiullah, VC, Ahsanullah University of Science and Technology

Most of the soil in our country is within intermediate group. The decision of whether I shall go for an intermediate group or higher plasticity or low plasticity is very important for earthquake analysis. In the new edition, the intermediate plasticity provision is omitted.

N value should not be correlated with cohesive soil. You have used this to express capacity of pile in the new Code which is going to be a major mistake. We should have specific requirements regarding foundation in the Code.

Muhammad Abu Sadeque, Director, Housing and Building Research Institute (HBRI)

I am a member of the editorial panel in the soil part. The point that has been mentioned by Dr. Safiullah is very important. I will discuss it with the Chairman of the editorial committee, Professor Joynal Abedin. And if it has been omitted it will definitely be included.

The government has principally decided to have a body in HBRI for continuous update of building code. Two sub-centres will be set up in Chittagong and Khulna with full laboratory set up.

We are taking an initiative to register all soil testing activities.

Architect Taher Azad, Asst. Chief Architect, Department of Architecture

The reality is that 80 to 90% of the drawings submitted to RAJUK for approval are not prepared by any professional. The involvement of architects and engineers should be confirmed through creating awareness among general people. A committee has been formed to work out allowed heights for particular zones.

Engineer F R Khan, Managing director, BTI

It is quite difficult for general people to understand the National Code. Only high skilled professionals can understand the Code. So, lack of skilled manpower is a vital problem. We need knowledgeable inspectors to implement the laws. Only an independent professional and paid body, independent from other regulatory bodies, can actually monitor during the construction process.

Engineer MAK Salim, EC, REHAB

We have to involve professional engineers in every type of construction. Any design, whether it is structural, architectural or foundational, should be designed by certified architects or engineers.

Engineer Syed Azizul Hoque, Public Works Department (PWD)

Last year there was an accident in Tangail where five workers died in a safety tank. Another incident occurred where about 500 garments workers became sick drinking contaminated water. These issues are related to plumbing, and we have recognized these issues in the new Code. But we do not have certified plumbing engineers in our country. We do not have also any institution to give licenses to plumbing contractors. There are about 200 vocational training centers in our country. Among them only

four or five provide training on plumbing. I would suggest including this subject in the curriculum of our engineering universities.

Architect Muhammad Ahsanul Hoque Khan, Chief Architect, Architecture Department

We do not have any standards regarding usage of materials. It is very important to be included in the BNBC.

We are making gardens in high rises which are suitable for high rises, and constructing buildings on the lakes and ponds through filling them with piling. This is a kind of misuse.

We have to involve skilled professionals to ensure good service. There are many engineers who cannot read a design properly. Sometimes the owner change the occupancy permission of a building illegally. An office building turns into a factory with some alteration of papers as it is not very difficult in a corrupt country. We have to promote professional ethics in the construction industry.

Professor Dr. Shafiul Bari, Dept. of Civil Engineering, BUET

BNBC code should be available to engineering students so that they can learn from the real source. We should do more work on load research. We should compare the BNBC 1993 and 2010 to find what happened to wind pressure. We should hold more such seminars to aware our professional because most of them are not aware of recent updates.

Engr. Sabbir Siddique, Independent Consultant

Safety should come from practice. It should start from childhood. Safety issues should be incorporated into our education curriculum. Without practicing in everyday life, code cannot ensure safety.

Rashedul Mazid Mamun, Assistant Director, Masthead PR

I would request to simplify the BNBC code so that people can easily understand it and follow accordingly.

Mohammad Sayedul Islam, Deputy Director (Engineering), BSTI

We have made about 1000 standards on building materials. Most of them were taken from ISO. We have incorporated some of these standards in the new BNBC. If we do material test properly following the laid down standards, we can construct better buildings.

Engr. M A Sobhan, Managing Director, Design Planning & Management Consultants Ltd.

We should look towards East. They are doing innovative construction according to the environment. We should set our own standard based on our environment. Contractors and consultants should be trained on BNBC so that they can follow it properly.

Engineer Aftabuddin Ahmed, Shamsuddoha Associates Ltd.

We should increase awareness about safety issue in building industry. It very often happens that a worker suffers from serious injury and even dies due to negligence of safety code.

Engineer Syed Azizul Hoque

We should take the permission issue seriously. Permission is different from regulation. If there were a national planning authority it would be helpful in giving permission according to overall planning.

There should also be a norm that up to what amount a building can consume basic amenities like gas and electricity.

Professor Jamilur Reza Chowdhury

Legally BSTI has the authority to monitor that no substandard building material is sold in the market. There is no quality control in case of steel. We usually get steel from shipyard scrap. In case of Rana Plaza accident it was found that low quality steel was used. So I will urge BSTI to address the issue seriously.

Ensure registration of professionals of all categories down to artisan level to maintain the standard. There can be a national building authority who will supervise this issue. And this has been also suggested by the High Court. The design of the Rana Plaza was signed by an engineer who claims to be a member of Institution of Engineers. But he used a fake number. We have to check these irregularities.

Chili, after the 1960 earthquake had taken it as a mission to implement national earth quake code, and few years back, when a large scale earthquake occurred in the country it suffered very little compared to other adjoining countries. So we should take the implementation of BNBC with the same motivation and work according to that.

The media should play a critical to hammer in this issue repeatedly.

We should disseminate general regulations of the new BNBC in a simplified manner so that common can comprehend.

We have to develop a strict licensing system for all the professional services through taking examinations where the candidates have to prove themselves.

HBRI should upload the new BNBC code and do manual for it. They should also provide training on it. It should promote research rather than going for regulatory role.