EVACUATION IN HIGH RISE BUILDING: A SMALL SCALE SURVEY ON BASIS OF BNBC 2020

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This Report is presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Department of Civil Engineering

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DEPARTMENT OF CIVIL ENGINEERING

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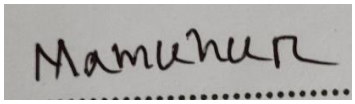
DECEMBER 2022

Declaration

We hereby declare that, this project has been done by us under the supervision of **Mardia Mumtaz, Lecturer, Department of Civil Engineering** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any for any other purpose (except for publication)



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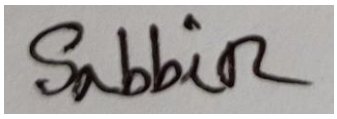

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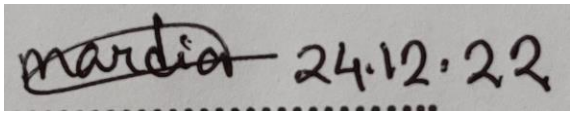
Certification of Approval

This Project titled "**Evacuation in High Rise Building**", submitted by M.M. Mamunur Rashid, ID No: 192-47-1008 and MD: Sabbir Ali Shekh, ID No: 192-47-1023 to the Department of Civil Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Department of Civil Engineering and approved as to its style and contents.



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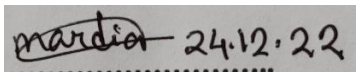

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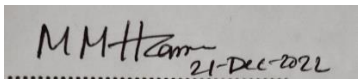

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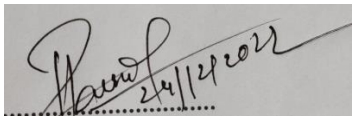

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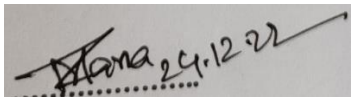

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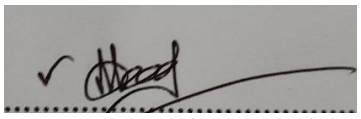

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Dedication

This research paper is dedicated to
our beloved Parents and
our Honorable Supervisor she
is my greatest inspiration

ACKNOWLEDGEMENT

First we express our heartiest thanks and gratefulness to “almighty Allah” for giving me strength for His divine blessing makes us possible to complete the final year research successfully in due time

Secondly, we really grateful and wish our profound our indebtedness to my supervisor **Mardia Mumtaz**, Department of Civil Daffodil International University, Dhaka. Her infinite patience, her intellectual advice, her thoughtful suggestions, her repeated encouragement and support, her constant and active supervision her, her positive reviews, her valuable advice at all stages made this report possible.

I would like to express our heartiest thankfulness to **Professor Dr. Mohammad Hannan Mahmud Khan and Head,** Department of Civil Daffodil International University, for his dedicated help in carrying out my research project

Finally, I must respectfully acknowledge my parents' steadfastness, support, and patience instrumental for the successful completion of this research project

ABSTRACT

This paper has been prepared by investigating various types of accident reduction and investigating technique, comprising of a literature review and utilized to achieve the investigating objectives. The required questionnaires are included in field survey taking the AB-4 Building of Daffodil International University in account. Various building data were collected and the inputs of various control systems in the building and their usage rates has been recorded. The accident prevention mechanism with strategy highlights and their personal control system given by BNBC 2020 are outlined in this paper.

সারাংশ

এই গবেষণাটি বিভিন্ন ধরণের দুর্ঘটনা হ্রাস এবং তদন্তের কৌশল অনুসন্ধান করে প্রস্তুত করা হয়েছে, একটি সাহিত্য পর্যালোচনা সমন্বিত এবং তদন্তের উদ্দেশ্যগুলি অর্জনের জন্য ব্যবহার করা হয়েছে। ড্যাফোডিল ইন্টারন্যাশনাল ইউনিভার্সিটির একাডেমিক বিল্ডিং-৪ বিল্ডিংকে বিবেচনায় নিয়ে মাঠ জরিপে প্রয়োজনীয় প্রশ্নাবলী অন্তর্ভুক্ত করা হয়েছে। বিল্ডিংয়ের বিভিন্ন তথ্য সংগ্রহ করা হয়েছিল এবং বিল্ডিংয়ের বিভিন্ন নিয়ন্ত্রণ ব্যবস্থার ইনপুট এবং তাদের ব্যবহারের হার লিপিবদ্ধ করা হয়েছে। বাংলাদেশ জাতীয় বিল্ডিং কোড-২০২০ দ্বারা প্রদত্ত কৌশল লক্ষনীয় করা এবং তাদের ব্যক্তিগত নিয়ন্ত্রণ ব্যবস্থা সহ দুর্ঘটনা প্রতিরোধ ব্যবস্থা এই গবেষণাপত্রে বর্ণিত হয়েছে।

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FIGURE

TABLE

LIST OF ABBREVIATIONS:

BNBC: Bangladesh National Building Code.

OSHA: Occupational Safety and Health Administration.

NFPA: National Fire Protection Association.

ERP: Escape Route Plan.

RSET: Required Safe Egress Time.

ASET: Available Safe Egress Time.

CHAPTER-1

INTRODUCTION

1.1 GENERAL

Emergency evacuation is the urgent egress or escape of people from a location where there is a risk to lives or property that is either immediate or ongoing. This chapter focuses on whether a building has been constructed in accordance with the fire safety code. In the event of a fire in an educational building, teachers, students, and all employees working in the building can escape safely and quickly. A detailed survey has been done on how to prevent loss of life and property by removing people quickly in case of fire in the building as a result, auditing is necessary to improve serviceability and future development potential.

1.2 BACKGROUND OF THE STUDY

There are many high-rise buildings in Bangladesh that are constructed without any consideration of fire safety, resulting in many fire deaths every year. If high rise buildings are constructed according to fire safety code such accidents can be reduced. Buildings that are already constructed should be audited and properly repaired or maintained**.** Fire safety audit is very important in high rise educational buildings to ensure proper repair or maintenance. Old high-rise educational buildings should be audited at least once a year to ensure that everything is in order for fire safety. All critical areas should be highlighted and investigated by structural audits, which should also suggest immediate corrective and preventive actions. How many people die in fire accidents in our country every year one of his surveys is presented below.

Table 1 : Fire incident in Bangladesh

Fire incident & number of deaths in last 5 years		
year	number of incidents	death
2015	17,488	68
2016	16,858	52
2017	18,105	45
2018	19,642	130
2019	24,074	184

- Japan Garden City, Mohammadpur Feb 12, 2010 building-6 on the 10th floor around 10:15 PM. There was a fire accident victims might have been trying to flee to safety on the roof. But the door to the roof was locked, and they suffocated to death.

1.3 AIM OF STUDY

The goal of this research is

- To reduce risk and save public lives
- To comprehend the building's condition
- To identify critical areas in urgent need of repair
- To abide by legal requirements

1.4 THE OBJECTIVE OF STUDY

1. To prepare a list of parameters and their standard values accoring to BNBC 2020 guideline.
2. A survey was conducted on the ability to evacuate quickly and safely from a fire in a multi -storied building in a short period of time.

1.5 RESEARCH SIGNIFICANCE

Evacuation refers to leaving a building as quickly and safely as you can. When conditions inside a building pose a danger to the health and safety of its occupants, evacuation is necessary because leaving the building is safer than staying there.

1.6 RESEARCH METHODOLOGY

First code analysis is done and they are listed as per building code audited and measurements made accordingly

Phase 1:

- General requirement [Article 3.3]
  - How many mm has the changed elevation it is measured as per BNBC 2020 code

- Occupant load [Article 3.5]
  - The occupant load per square meter is checked as per table [table 4.3.1]

- Fixed seat [Article 3.5.2]
  - For a fixed chair 500 mm for each measured as an individual

- Capacity of exit compartment [Article 3.6]
  - Checked for sprinklers in building stairways
  - Without sprinkler stairways 8 mm of space per person is checked
  - Similarly, in the case of doors, a check has been given to ensure that there is 4mm of space per person

- Corridor and passageway [Article 3.7]
  - In case of ceiling height aggress of corridor and passageway checked how many meters should not exceed
  - All corridors and passageways shall have a fire-fighting capacity of one hour or more

- Doorway [Article 3.9]
  - Checked that the width and height of the door should not be less than meter

- Revolving door [Article 3.9.7]
  - It has been checked whether there is any type of revolving door in the building

- Stairway [Article 3.10]
  - Handrail and surface inner gap is measured

- Combination of Trade & rise [Article 4.3.5]
  - Depth of trade and rise has been measured
  - Available headroom clearance of height is also measured
  - Handrail or guard height has been measured
  - The angle of flight is calculated

- Maximum width of aggress system [Article 4.3.6]

- Based on occupant load in educational institute the width of the stairway has been measured

❖ Fire escape stairs [Article 4.3.7]

- Based on occupant load measurement of clear width of stair is taken

❖ Guard rail [Article 3.10.5]

- Stairs have also been checked for guard rails

❖ Spiral stairway [Article 3.10.7.3]

- Check if spiral staircase is provided anywhere

❖ Winders [Article 3.10.7.4]

- Check if winders are provided somewhere on the stairs

❖ Ramp [Article 3.11]

- Check if ramp is provided anywhere in the building

❖ Smoke proof enclosure [Article 3.10]

- Check if there is smoke proof enclosure

❖ number of exit [Article 3.14]

- Maximum distance of dead end and the maximum distance of the travel path has been measured
- Based on occupant load check how many exits there are

❖ Travel path [Article 3.15]

- From the exit access door the maximum travel path is along the central line measured

- Determination of exit and access requirement [Article 4.3.8]
  - If unsprinklered for educational institute the measurement of the maximum travel path has been taken
  - Capacity number of occupancy per unit width of the component at grade is checked

- Graphics
  - Symbol words are at least how many mm apart along the stroke it has been checked according to the code.

- Floor level exit sign
  - How many mm to how many mm is the bottom level of the mark it has been measured

Phase 2: The AB-4 building of Daffodil International University has been chosen for this work because it is the most special and important building of this campus. The reason to select this is because it has many aspects and it is built for many people. Analyzing this building also gives an idea about the rest of the buildings

Phase 3: Firstly various types of requirements of this building have been listed up and then their measurements have been compared with CNBC 2020.

Phase 4: Based on the quantity requirement fulfilled here an attempt has been made to give recommendations regarding the level of safety of the building

CHAPTER-2

LITERATURE REVIEW

2.1 INTRODUCTION

This thesis paper examines how to quickly evacuate buildings in the event of fire through structural audits by civil engineers. Works on how to create awareness among residents and building owners. The need for structural audit is to maintain and repair existing structures that are over 30 years old to avoid breakdowns and save money, ease of construction, application and due to high cost resistance. More than ever, the construction industry is interested in improving the social, economic and environmental parameters of sustainability.

Two new ideas in fire safety engineering were introduced in 1983. The amount of time needed for building occupants to safely exit is known as the required safe egress time (RSET). It has been determined that (RSET). The most thorough definition, however, begins with the ignition of the fire and includes the times of detection, alarm activation, occupant decision to act, and travel time for the occupant to reach a safe place. The amount of time it takes for a fire to render a structure unsafe is known as the available safe egress time (ASET).

2.2 OVERVIEW OF STRUCTURAL AUDIT WORKS

2.2.1 Defining The Fire Incident

Hundreds of people have died as a result of an alarming increase in fire hazards in RMG factories in recent years. 414 workers lost their lives in 213 factories between the years of 2006 and 2009 due to fire hazards, according to data from Bangladesh Fire Service & Civil Defense (BFSCD). According to a 10-year chronology of fire hazards in

Bangladesh's RMG factories, the majority of fire incidents have occurred in the factories that are close to Dhaka and its surrounding areas. (BFSCD Annual Report, 2014)

2.2.2 Fire incidence at RMG factory in Bangladesh

According to the Bangladesh Fire Hazard Index (FRI) analysis, the FDI results show an average IRF of 2.8 on a 5.0 scale for fire hazard in our RMG sector, giving see an alarming situation. The Fire Hazard Index (FRI) is used as a flexible parameter of fire hazard for the garment industry (Wadud, Huda and Ahmed, 2014). As recently as 2015, a fire broke out at the RMG 'Next Collection' factory due to an electrical short, but thirty people were injured in a stampede as garment workers left the factory following an incident. fire. In 2013, at least 100 garment workers, mostly women, were injured in a stampede triggered by a false fire alarm, as workers rushed for their lives. In November 2012, tazreen Fashion Ltd. A massive fire injured at least 200 people and killed 117 people. witnesses reported that many workers were unable to escape through the building's narrow exit, and 12 of his victims died after jumping out of windows to escape the blaze. Escapes from this type of building took place because the factory did not have a proper emergency exit, according to the fire department.

2.2.3 Fire Drill

A fire drill is a practice for the evacuation and safety procedures. Building occupants are instructed in first aid, fire fighting, relocation, and orderly evacuation (Draft BNBC, 2015). According to BNBC, fire drills must be carried out as specified in the fire safety plan. The frequency of fire drills at RMG factories must follow the guidelines in the table below. All building occupants, building service personnel, including staff members responsible for fire safety and evacuation plans, must take part in the fire drill. According

to the NFPA, only competent individuals who are qualified to exercise leadership should be given responsibility for organizing and carrying out drills (Draft BNBC, 2015, 4-59).

2.2.4 Signs & Floor Plan

According to BNBC code, all floors must have exit signs, with a floor plan posted on the wall indicating the precise location of the stairway and the relationship between the sign and the stair. This is done to help occupants navigate the building in an emergency. According to NFPA, the lettering, arrows, and other symbols on exit signs must be written in a vernacular alphabet on a background with high contrast. The signs may be placed in any prominent location that is firmly attached to the wall's surface, such as directly above the lift's call button. The sign's top cannot rise higher than 2 meters above the ground. The code also mandates the marking and posting of signs in the corridors or passages leading to the exit discharge. to guide evacuees as provided in the Code (Draft BNBC 2015, 4-58).

Figure 1 : Fire Exit Signs

2.3 ESCAPE ROUTE PLAN (ERP) MODULE [According to OSHA code]

The development of a human escape route plan in the event of an emergency evacuation

is the aim of this sub module. The idea of an escape route plan is not new, and numerous researchers have looked into it in great detail. Recently, some commercially available software has developed tools for emergency evacuation as part of an automated escape route plan. The escape route plan module can also be integrated using the method suggested in this paper. The created script determines the best path of escape from the room doors to the designated emergency exits. The visual script created in Dynamo and made available for the generation of the portable firefighting equipment plan with an open application programming interface (API) is integrated. The dynamo script automatically extracts the level of the building as an input. The designed algorithms need few predefined conditions as inputs such as specifying circulation area, regular doors location, and emergency exits. The program deals with the corridor/lobby/stairs as a space family (Stairs are added separately as the category). Once the user defines and highlights the main exit, emergency exit, and staircases as a destination and click the evacuation path button, then the designed algorithm generates a grid on the interest region using the Dulaney triangulation grid method. The Dulaney triangulation is the alternate of the Voronoigrid logic and is used in the dynamo (a plug-in to the Revit).Eventually, the system applies the shortest walk logic from the regular doors to the nearest exit doors, which generate an appropriate fire escape plan and visualize back it in the Revit. The generated escape route plan can be seen in the case study.

2.4 REPAIR

Various measures of repairs and strengthening are carried out based on the audit's conclusions and recommendations. Structural and serviceability repairs are two types of repair. Structural repair in case of high rise building. A very expensive work. It should be avoided as much as possible. For this, service ability repair must be needed. Clearly bad design, building Poor maintenance in proper use, as a result of new environmental influences, necessitates building servicing without taking technical considerations into account. factors like the overall quality of repairs and the size of individual repairs may also have an impact on the final decision of how to repair a concrete structure. Access for

repair relative cost case of application available labor, skills, and equipment, as well as client requirements, future maintenance, and economic factors.

2.5 FREQUENCY OF STRUCTURAL AUDIT

Model byelaw no. 77 specifies Structural Audit as a mandatory (necessary and binding) requirement. It stipulates that if the age of a building is 15 to 30 years, Structural Audit must be carried out once in 5 years and for buildings older than 30 years it should be carried out once in 3 years.

2.6 STRUCTURAL AUDIT PROCEDURE

A fire safety audit, also referred to as an inspection of your business's premises and pertinent documents, is a process that fire safety inspectors use to find out how well-maintained your premises are for fire safety. In Bangladesh, EMS Engineering Technologies performs a fire safety audit. Our engineers may speak with a few of your staff members during the audit to make sure that they are as aware of fire safety as you claim they are.

CHAPTER-3

DATA COLLECTION AND ANAYSIS

3.1 INTRODUCTION

For inquiries, we first parse the BNBC (2020) code, classify the questions, and find out the questions. Then see what questions apply to what questions. In field surveys, some information can be obtained easily, some information can be found visually, and some information cannot be found. Some requests are unclear because some construction authorities have shown no interest in sharing information.

3.2 QUESTIONNAIRE

Performances of AB-4 building of Daffodil International University according to the questionnaire are presented below;

Table 2 : Questionnaire data form field work report

General Questions
1. What is the name & address of the building? 2. How many floors are in the building?

3. Is there any elevator in the building? 4. Type of the building 5. Uses of the building 6. Maintenance history of the building? 7. What are the types of the structure?
Article 3.3 [General Requirements]
8. Is there a ramp available? 9. Is the abrupt change between 60 mm and 130 mm? 10. Has the change in elevation exceeded 130 mm? 11. Does the walking surface of a stair have tread depth less than 330 mm and riser height less than 230 mm? 12. Is the change in level more than 530mm? 13. Is there any slope on the walking surface?
Article 3.5 [Occupant Load]
14. For per occupants in classroom of education institute and 2 net per square meter and whether there is 3.5 net for preschool? 15. Fixed sit without dividing arm makes 500 mm for par person is there or not?

Article 3.6 [Capacity of Exit Components]
16. Without sprinkler is there or not 8mm width for each person on the stairs And does the door have 4 mm width or not? 17. Ramp and corridor have 5 mm width or not? 18. If any sprinkler are ramps and corridors and doors 5 mm and 4 mm wide respectively in for each person?
Article 3.7 [Corridors and Passageway]
19. Is there a minimum ceiling height of 2.4 m for corridor and passageway? 20. Whether all corridors or passage way have higher resisting capacity of 1 hour?
Article3.9 [Doorway]
21. Whether the door width is higher than 1m and whether the height is higher than 2 m? 22. Is there a sliding or hanging door in the exit compartment? 23. Is the floor level the same as the travel path? 24. What is the maximum occupant load and travel distance with respect to one exit door? 25. Is there any type of revolving door?
Article 3.10 [Stairways]
31. Whether the maximum horizontal distance of landing according to the occupant is 560 mm?

32. Winders are provided? 33. Stair spiral or not? 34. Is the maximum height between landings 3.70 m? 35. Minimum headroom 2 m or not? 36. From above handrail height trade 860 mm to 960 mm whether in between? 37. Handrail peripheral diameter is more than 32mm? 38. Are Handrail graspable along their length? 39. Guard rail is provided? 40. Does the width of stairway exceed 4475 mm? 41. Is there a spiral staircase?
Article 3.11 [Ramps]
42. Is there any ramp available in the building?
Article 3.13 [Horizontal Exits]
43. Is there a smoke proof enclosure somewhere?
Article3.14 [Smoke Proof Enclosure]
44. What is the maximum dead end distance? 45. What is the maximum travel distance?

46. Maximum how many exits are there?
Article 3.16 [Means of Exit signs and Illumination]
47. Is the maximum travel path higher than 45 m in case of unsprinklered? 48. In the case of stairs and escalators, whether the unit width of the component is less than 60m? 49. Width of ramp passage and corridor is less than 915 mm? 50. Maximum dead end is less than 12190 mm? 51. Exit Signage height at last 150 mm? 52. Is the bottom of sin from floor level 150 mm to 200 mm?

Table 3 : Questions and answers according to surveys

Questions	Answer
1. What is the name & address of the building?	Academic Building-4
2. How many floors in the building?	14
3. Is there any elevator in the building?	Yes
4. Type of the building	Educational
5. Uses of the building	Study
6. Maintenance history of the building?	Unknown
7. What are the types of the structure?	R.C.C
8. Is there a ramp available?	No
9. Is the abrupt change between 60 mm and 130 mm?	Unknown
10. Has the change in elevation exceeded 130mm?	Unknown
11. Does the walking surface of a stair have tread depth less than 330 mm and riser height less than 230 mm?	Yes
12. Is the change in level more than 530mm?	No
13. Is there any slope on the walking surface?	No
14. For per occupants in classroom of education institute and 2 net per square meter and whether there is 3.5 net for preschool?	1.6 Net
15. Fixed sit without dividing arm makes 500 mm for par person is there or not?	No

16. Without sprinkler Is there or not 8mm width for each person on the stair sand does the door have 4 mm width or not?	Yes
17. Ramp and corridor have 5 mm width or not?	Unknown
18. If any sprinkler are ramps and corridors and doors 5 mm and 4 mm wide respectively in for each person?	Unknown
19. Is there a minimum ceiling height of 2.4 m for corridor and passageway?	Yes
20. Whether all corridors or passage way have higher resisting capacity of 1 hour?	Yes
21. Whether the door width is higher than 1 m and whether the height is higher than 2 m?	Yes
22. Is there a sliding or hanging door in the exit compartment?	No
23. Is the floor level the same as the travel path?	Yes
24. What is the maximum occupant load and travel distance with respect to one exit door?	55 Meter
25. Is there any type of revolving door?	No
26. Is the gap between surface and handrail more than 63.5 mm?	Yes
27. How much is the available headroom of the flight?	3480 mm
28. What is the height of the handrail?	914 mm
29. How many flights are there maximum?	14

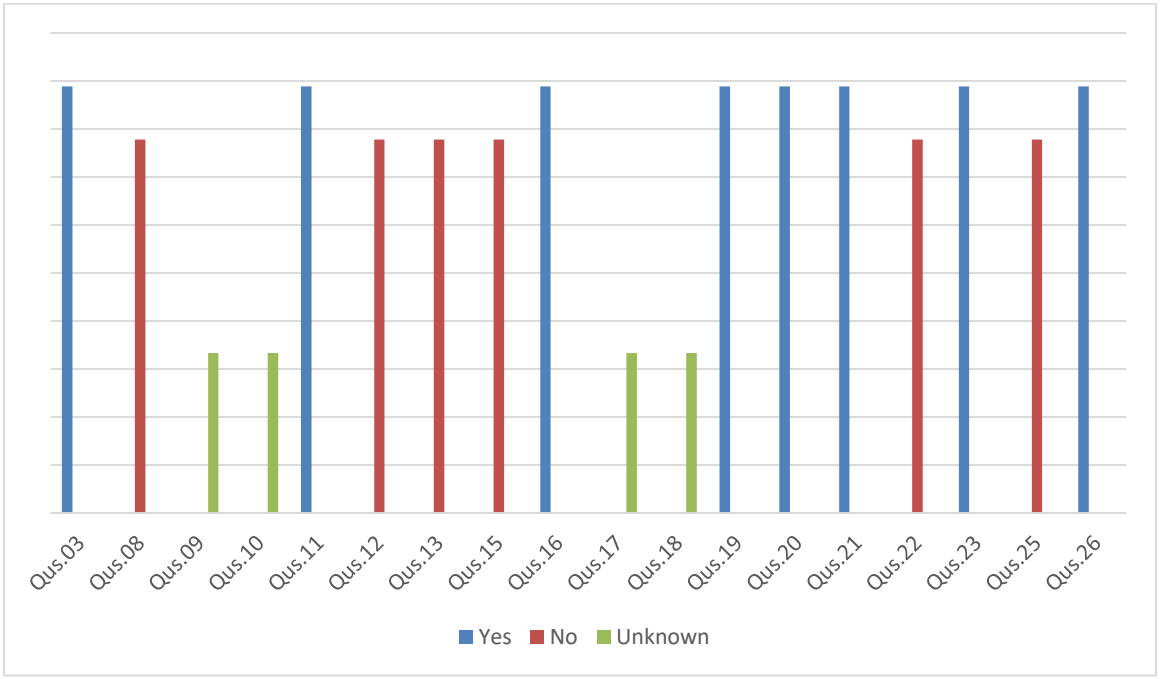
30. How many mm is the width of stairway?	3200 mm
31. Whether the maximum horizontal distance of landing according to the occupant is 560 mm?	Yes
32. Winders are provided?	No
33. Stair spiral or not?	No
34. Is the maximum height between landings 3.70 m?	Yes
35. Minimum headroom 2 m or not?	Yes
36. From above handrail height trade 860 mm to 960 mm whether in between?	Yes
37. Handrail peripheral diameter is more than 32 mm?	Yes
38. Are handrail graspable along their length?	Yes
39. Guard rail is provided?	No
40. Does the width of stairway exceed 4475 mm?	No
41. Is there a spiral staircase?	No
42. Is there any ramp available in the building?	No
43. Is there a smoke proof enclosure somewhere?	No
44. What is the maximum dead-end distance?	60 meter
45. What is the maximum travel distance?	55 meter
46. Maximum how many exits are there?	4
47. Is the maximum travel path higher than 45 m in case of unsprinklered?	Yes

48. In the case of stairs and escalators, whether the unit width of the component is less than 60 m?	Unknown
49. Width of ramp passage and corridor is less than 915 mm?	Unknown
50. Maximum dead end is less than 12190 mm?	No
51. Exit Signage height at last 150 mm?	Yes

3.3 RESULT:

- Trade measurement were found to 254 mm in the stairs it is correct according to the code.
- The width of landing is 3200 mm which is okay and the length of landing is 3429 mm.
- There is no nosing available in the staircase.
- Number of trade available in stair is 11.
- Existence available in the building is four.
- 20 seats available in a room.
- 203.2 mm diameter of a handrail.
- Gap between handrail and any surfaces 914 mm.
- Unit of floor area in meter square per occupants is 1.6 net.
- Maximum travel path is 55 m.
- Headroom is available in a flight is 3480 mm.
- Auditorium ramp length 1639 mm and width 12649 mm.
- Fixed seat length 991 mm and fixed seat available in the room 85.

3.4 ACADEMIC BUILDING-4 DATA AND ANSWERS



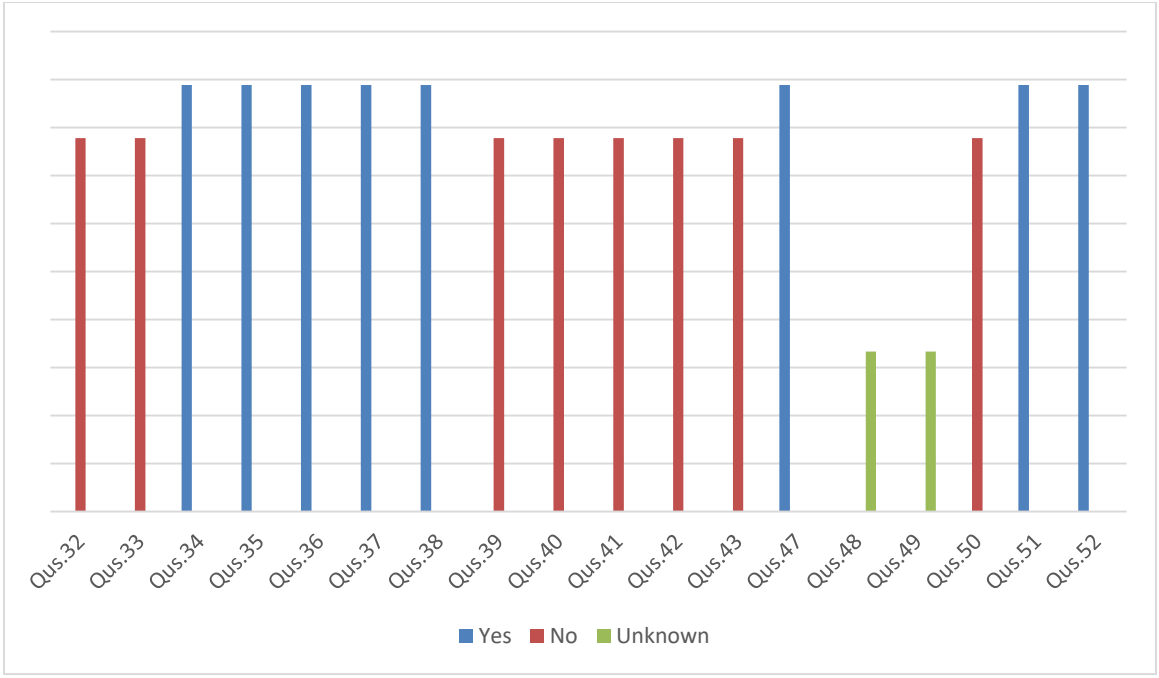


Figure 2 : Percentage of “yes” “no” and other response according to individual questions

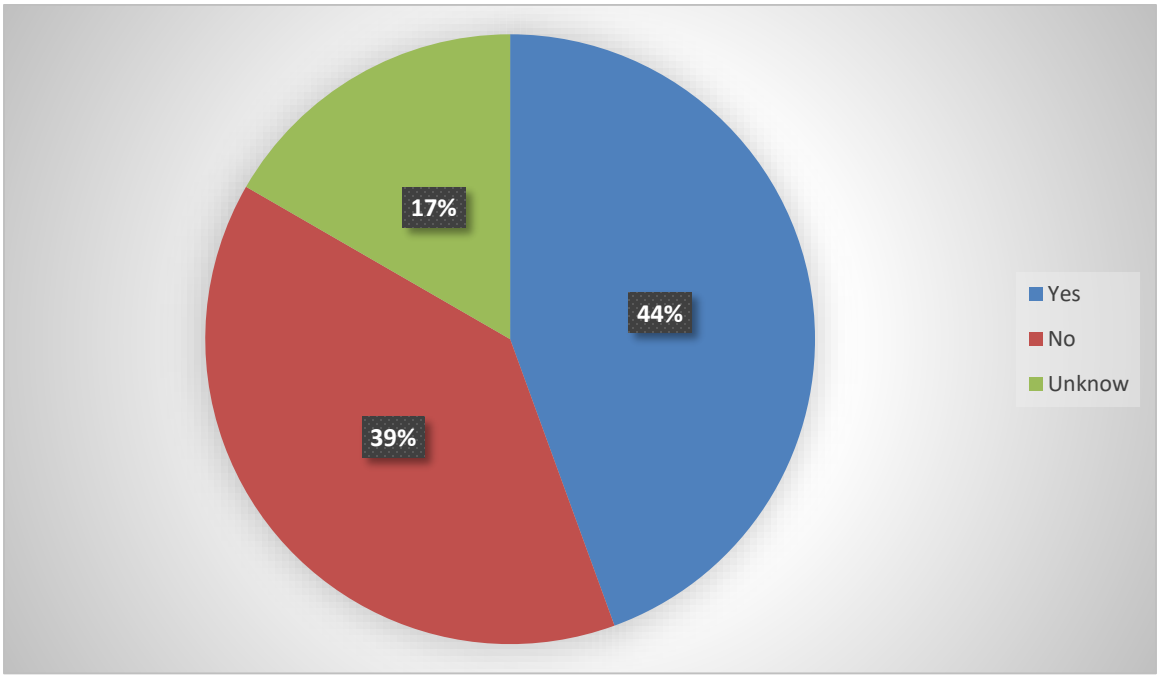


Figure 3 : Percentage of “yes” “no” and other responses

CHAPTER-4

DISCUSSION AND RECOMMENDETION

4.1 INTRODUCTION

In this study the building were assist to check whether the building do have the proper system as per the guidance of BNBC 2020 for fire evacuation. AB-4 has, theoretically, fulfilled most of the requirement. There can be some officials and periodic drills to ensure that the users are aware this system.

4.2 DISCUSSION

By analyzing the data from field survey in AB-4 building various percentage are given below. Of yes answer is 44% percentage of unknown is 17% and percentage of no is 39% percentage of yes answer is greater than the percentage of no answer and percentage of unknown answer.

Table 4 : This table provides all of those data

Building type	Percentage of yes answer	Percentage of no answer	Percentage of no data or unknown data
Educational	44%	39%	17%

It can easily be decided that AB-4 has effective fire escape capacity.

4.3 RECOMMENDATION

For the requirement of the BNBC code we suggest some information which can be useful indeed for those building for maintenance work.

4.3.1 For Educational Building

Table 5 : Recommendation for educational building

SERIAL NO	PROBLEMS	RECOMMENDATION	CHECKING
1	There is no sprinkler system anywhere in the building	The problems should be repair or maintenance sprinkler	Yearly
2	There is no sliding door available in the building	Authority should look at the building	Once
3	There is no revolving door in this building	Authority should look at the building	Once
4	No guard rail is provided in the building	Authority should look at this building	Once
5	There is no ramp available in the building	If there is Ramp available it would be for the occupants during fire Yearly escape so this problem should look at	Once
6	No smoke proof enclosure is provided	Authority should give a smoke proof enclosure in the building	Once

4.4 CONCLUSION

1. As per BNBC 2020 are details list of parameters was prepared it can be used to assist any building structure in Bangladesh.

2. Parameter at satisfactory level: Elevator, tread depth and riser height, stair width at each person, ceiling height for corridors and passageway, fire resisting capacity, door width and height, floor level same as the path, gap between handrail & surface, maximum height of landing, maximum headroom, handrail peripheral diameter, exit signage height. Parameters are not up to the mark: Ramp, changes in level, slope on walking surface, fixed seat, revolving door, winders, spiral stair, guard rail, width of stair, smoke proof enclosure maximum dead end.

From the result and discussion, the overall scenario from the present result this is clear that the overall scenario of Bangladesh cannot be reflected the present data is based on the code requirements and only one building. Hence this does not represent overall scenario of Dhaka city all other educational building of Bangladesh but this is clear that we need to have system which will continuous to monitor and assist the fire evacuating mechanism for every commercial or business purposes building to ensure this, a national monitoring system introduce.

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