iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** I **Month of publication:** January 2023

DOI: https://doi.org/10.22214/ijraset.2023.48742

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue I Jan 2023- Available at www.ijraset.com

Application & Effect of the Bylaws in Building Construction: A Case study Report

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Abstract: ***For the building and designing profession, the incalculable value of human life demands nothing less than the highest moral considerations from those who might risk it otherwise. The engineering profession since has direct effect on the lives of people, these professionals in general tend to believe that their obligations to their clients far outweigh their responsibility to others, such as public. Because of their knowledge and importance in society, engineers should have standard of conduct to answer ethical questions. The construction process involves conceptualizing, designing, managing, organizing and coordinating project requirement including time, money resources, technology and methods; these must be integrated in the most efficient manner possible to complete construction projects on schedule, within the budget, and according to the standards of quality and performance specified by the project owner or designer. There are lots of problem in building construction in Sub Metropolitan city. Most of people in this locality are illiterate about the regulation of the road width as per its importance and disobeying the rules of the Sub Metropolitan. the study had only covered with assessing the current practices of bylaws in building construction followed by engineers while preparing drawing and design as well as supervision of building construction in Nepalgunj Sub Metropolitan, Banke, Nepal***

Keywords: bylaws, Sub metropolitan city, engineering ethics, Data Analysis from field survey from Contractor & Client too etc

I. INTRODUCTION

Building bye laws are the construction norms set by the government authorities to ensure uniform development and protect buildings against internal and external hazards. The application of engineering ethics provides a consensus on the morality of engineering decisions and defines guidelines for moral conduct by all engineering professionals. Such guidelines are partially based on ethical codes developed by engineering societies, most notably the National Society of Professional Engineers, so as to maintain the aura of professionalism throughout the engineering discipline

The case was reported on Nepalgunj Sub metropolitan City. Data collection is carried out by performing primary and secondary data collection .The pilot study of the primary source of data was collected from the standard structured questionnaire. Most of the findings are generated based on the primary source of data. Structured relevant questionnaire were prepared to collect primary data. The questions therefore were developed in such a way that targeted respondents would be able to answer them. Whereas secondary data were collected from various government, non government and private organizations, research.

II. LITERATURE REVIEW

Gichure, (1997) defines ethics as 'the systematic study of human actions from the point of view of their rightness or wrongness as a means for the achievement of man's ultimate happiness'. Ethics so understood embraces universal core values such as; integrity, honest, truthfulness, accountability and transparency, fairness, justice, tolerance, citizenship which every human being is expected to have and practice.

The construction process involves conceptualizing, designing, managing, organizing and coordinating project requirements including time, money resources, technology and methods; these must be integrated in the most efficient manner possible to complete construction projects on schedule, within the budget, and according to the standards of quality and performance specified by the project owner or designer. This demand from professional engineers to possess strong fundamental knowledge of engineering design and management principles, besides knowledge of business procedures, economics, and human behavior is realistic (Cywinski, 2001).

Ethical questions raised include: what happens when professional codes and regulations lag behind technological innovations; what precautions must engineers take when trying to balance the benefits, new technologies bring against risks to public safety, often associated with engineering innovation and what are engineering and corporate responsibilities to the public for failed innovation; and should he hold the payments for the benefit of his organization (Vee and Skitmore, (2003),Bowen et al., (2007).

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Often these challenges are managed with little or no preparation or formal guidelines and sometimes with negative results. Engineering ethics is attracting interest in colleges of engineering throughout the world. Therefore, the new technology must address the human being as its central subject and has to be introduced by ethics (Johnson, 1991).

Ethics criterion for the engineer group is necessary (Vee et al., 2003). Many American engineering professional societies have prepared codes of ethics; some go back to the early decades of the twentieth century. These have been incorporated to a greater or lesser degree into the regulatory laws of various countries. The Institution of Civil Engineers (ICE) in the UK has a code of ethics incorporated into its standards of conduct.

The Canadian societies of professional engineers likewise have such codes of conduct as well. In Kenya, the code of conduct is guided by the Engineering Registration Board of Kenya (ERB).

These codes of ethics share many similarities. Engineering, however, does not have a single uniform system or standard of ethical conduct across the entire professional fields.

Professional ethics is a set of standards adopted by a professional community. Professional ethics are regulated by standards, which are often referred to as codes of ethics.

The code of ethics is very important because it gives us boundaries that we have to stay within in our professional careers (Vee and Skitmore, 2003). Engineering as a career and a profession is closely executed in line with engineering ethics, which falls within the broad scopes of ethics.

Engineering ethics is the field of applied ethics and system of moral principles that apply to the practice of engineering (ASCE, 2005). The American National Society of Professional Engineers (NSPE) (2009) say of engineers as “Engineers, in the fulfillment of their professional duties, shall hold paramount the safety, health, and welfare of the public”.

In professional ethics, professional obligations are usually summed up in a professional code of ethics. The task of a code of ethics is not to derive obligations from first principles, but to spell out what the public expects from the profession. A profession is defined primarily by its reputation, because it exists precisely to create a reputation (Vee and Skitmore, (2003), Bowen et al., (2007). Professional status normally develops around occupations in which it is hard to know that a person is incompetent until it is too late. If incompetence is immediately apparent, one can dismiss the employee before much damage is done. Engineering clearly calls for professionalism, because serious defects in an engineer's work may not become evident until years after the work is completed. For instance in Kenyan setting and background, there have been cases of buildings collapsing while being constructed and these incidences have claimed lives of many persons. Projects involving construction of roads rarely come to a successful end (Vee and Skitmore, 2003).

III. RESEARCH METHODOLOGY

Research methodology is needed because it facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time and money. Based on the literature review and other related documents, the methodology was adopted. In this chapter the detail on the theoretical concept on current practices of engineering ethics in building construction in Nepalgunj Sub Metropolitan ,Banke, Nepal was taken. The following steps were followed to conceptualize the new research problem.

1) *Methodology of Study On Data Collection:* Data collection is carried out by performing primary and secondary data collectio n.The pilot study of the primary source of data was collected from the standard structured questionnaire. Most of the findings are generated based on the primary source of data. Structured relevant questionnaire were prepared to collect primary data. The questions therefore were developed in such a way that targeted respondents would be able to answer them. Whereas secondary data were collected from various government, non-government and private organizations, research papers, news etc. Data were collected by two methods.

a) *Primary Data Sources:* The data was collected by using self-administered standard structured questionnaire after obtaining permission from the participant. Primary data were taken from field visit. Site visits were made for the inspection of reality.

b) *Secondary Data Sources*: They were collected from different sources. Those include building construction related books, journals, articles, papers, thesis report, different government ministries, internet etc.

2) *Informal Discussions:* In addition, informal discussions with clients, engineers working in construction company, contractors etc.

3) *Sample Size:* The total number of sample size was 60. The questionnaire was distributed to 15 engineer, 15 sub engineer and 15 contractors and 15 house owners. The return rate of the questionnaires was 100%.

Table No: 3.1 Model of Questionnaire survey with Engineer, sub engineer, contractors and house owners

S.N.	Category	Nos.	Questions (N)	Percentage (%)
1.	Engineers	15	7	100
2.	Sub engineers	15	7	100
3.	Contractors	15	7	100
4.	House owners	15	7	100
	Total	60	7	100

4) *Analysis of Data:* All the collected data from the study was checked for the accuracy and completeness. Any errors, incompleteness and inconsistencies in the data that affect the result was removed. The data was analyzed through the Microsoft excel and finding was presented in different tables by using descriptive statistical tools such as frequency and percentage.
5) *Report Preparation:* Based on the data and information received these information analyzed and the outcome of research and its finding compiled properly. Report was prepared by analyzing all facts and findings which are obtained from the data analysis. The report also included the description of the study area. Corrections were made on the draft final report after getting comments from the expert.

IV. DATA ANALYSIS

This section deals with Application & Effect of the Bylaws in Building Construction in the Nepalgunj Sub Metropolitan city , Banke, Nepal." For this, research questionnaire were developed and distributed to concern respondents. Questionnaires developed such that it fulfills the aim of the study. 3 set of questionnaire developed for respondents like Engineers, Sub engineers, Contractors and Houseowners and collected completely filling it. The return rate was 100%. The questionnaire survey was coded and entered into system. The data was analyzed through the Microsoft excel and finding was presented in different tables by using descriptive statistical tools such as frequency and percentage. The data were presented under the following headings.

Table No 4.1: Knowledge about building code and building laws of Nepalgunj Sub Metropolitan, Banke

S.N.	Category of Respondents	No. of queries	No. of response	Response		Percentage		Remarks
				Yes	No	Yes	No	
1	Engineers	15	15	12	3	80%	20%	
2.	Sub engineers	15	15	8	7	53.34%	46.66%	
3.	Contractors	15	15	10	5	66.66	33.34	
4	House owners	15	15	6	9	40%	60%	
5	Total	60	60	36	24	60%	40%	

Data presented on Table 7 shows that majority of the respondents 80% engineers, 53.34% sub engineers, 66.66% contractors have knowledge about building code and building by laws of Tulsipur Sub Metropolitan . In contrast 60% house owners unknown about the building code and building by laws of Nepalgunj Sub Metropolitan City.

Table No 4.2: Knowledge about legal norms of Nepalgunj Sub Metropolitan, Banke

S.N.	Category of respondents	No. of queries	No. of response	Response		Percentage		Remarks
				Yes	No	Yes	No	
1	Engineers	15	15	12	3	80%	20%	
2.	Sub engineers	15	15	8	7	53.34%	46.66%	
3.	Contractors	15	15	6	9	40%	60%	
4	House owners	15	15	6	9	40%	60%	
5	Total	60	60	32	28	53.34%	46.66%	

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Data presented on Table No 4.2 shows that majority of the respondents 80% engineers, 53.34% sub enginees have a knowledge about legal norms of Sub Metropolitan city . Whereas, 60% contractors and 60% house owners does not have knowledge about legal norms of Sub Metropolitan city.

Table No 4.3: Knowledge about rules and regulation of national building code

S.N.	Category of Respondents	No. of queries	No. of response	Response		Percentage		Remarks
				Yes	No	Yes	No	
1	Engineers	15	15	8	7	53.34%	46.66%	
2.	Sub engineers	15	15	5	10	33.34%	66.66%	
3.	Contractors	15	15	2	13	13.34%	86.66%	
4	House owners	15	15	-	15	-	100%	
5	Total	60	60	15	45	25%	75%	

Above table No 4.3 shows that majority of respondents sub engineers 66.66%, contractors 86.66% and house owner 100% do not have knowledge about rules and regulation of national building code. In contrast, 53.34% engineers have knowledge about the rules and regulation of National building code

Table No 4.4: Knowledge about process of construction of building in Nepalgunj Sub Metropolitan, Banke

S.N.	Category of Respondents	No. of queries	No. of response	Response		Percentage		Remarks
				Yes	No	Yes	No	
1	Engineers	15	15	15	-	100%	-	
2.	Sub engineers	15	15	12	3	80%	20%	
3.	Contractors	15	15	8	7	53.34%	46.66%	
4	House owners	15	15	9	6	60%	40%	
5	Total	60	60	44	16	73.34%	26.66%	

According to the above table; Majority of the respondents 100% engineers, 80% sub engineers, 53.34% contractors and 60% house owners have knowledge about process of construction of building in Sub Metropolitan .

Table No 4.5: Knowledge of Purchasing Land by Knowing Code of Conduct of Roads

S.N.	Category of Respondents	No. of queries	No. of response	Response		Percentage		Remarks
				Yes	No	Yes	No	
1	Engineers	15	15	15	-	100%	-	
2.	Sub engineers	15	15	15	-	100%	-	
3.	Contractors	15	15	9	6	60%	40%	
4	House owners	15	15	2	13	13.34%	86.66%	
5	Total	60	60	41	19	68.34%	31.66%	

According to the table no 4.5 Majority of the respondents 100% engineers, 100% sub engineer and 60% contractors purchased land by knowing code of conduct of roads. In contrast, 86.66% house owners are purchasing land without knowing the code of conduct of roads.

Table No 4.6: Safety media about building construction

S.N.	Category of Respondents	No. of queries	No. of response	Response		Percentage		Remarks
				Yes	No	Yes	No	
1	Engineers	15	15	15	-	100%	-	
2.	Sub engineers	15	15	12	3	80%	20%	
3.	Contractors	15	15	8	7	53.34%	46.66%	
4	House owners	15	15	4	11	26.66	73.34%	
5	Total	60	60	39	21	65%	35%	

Table No 4.6 shows that majority of respondents 100% engineers, 80% sub engineers receives information about safety building construction with the help of literatures, brochures, films as well as earth quake training. Whereas 53. 34 % contractors receives information about safety building construction from earth quake training, posture, brochure. In contrast 73. 34% house owners does not have knowledge about safety building construction but 26.66% house owners receives information about safety building construction with the help of films.

Table No 4.7: Constructed building as per approved sub metropolitan drawing

S.N.	Category of respondents	No. of queries	No. of response	Response		Percentage		Remarks
				Yes	No	Yes	No	
1	Engineers	15	15	15	-	100%	-	
2.	Sub engineers	15	15	12	3	80%	20%	
3.	Contractors	15	15	8	7	53.34%	46.66%	
4	House owners	15	15	9	6	60%	40%	
5	Total	60	60	44	16	73.34%	26.66%	

Above table shows that majority of respondents 100% engineers, 80% sub engineers, 53. 34% contractors and 60% house owners are constructed building as per approved sub metropolitan drawing. Whereas 46.66% contractors and 40% house owners have constructed building without following the approved sub metropolitan drawing.

V. CONCLUSION

The following conclusion were made from the study

1) With regard to the knowledge about building code; majority of the respondents 80% engineers, 53.34% sub engineers, 66.66% contractors have a knowledge about building code and building by laws of Nepalgunj Sub Metropolitan. In contrast 60% house owners unknown about the building code and building by laws of Nepalgunj Sub Metropolitan .

2) In the context of legal norms of Nepalgunj Sub Metropolitan ; majority of the respondents 80% engineers, 53.34% sub engineers have knowledge about legal norms of Sub Metropolitan . Whereas, 60% contractors and 60% house owners does not have knowledge about legal norms of Sub Metropolitan .

3) With regards to the knowledge about rules and regulation of National Building code; Majority of respondents sub engineers 66.66%, contractors 86.66% and house owner 100% do not have knowledge about rules and regulation of national building code. In contrast, 53.34% engineers have knowledge about the rules and regulation of National building code.

4) In the context of process regarding construction of building in Sub Metropolitan ; Majority of the respondents 100% engineers, 80% sub engineers, 53.34% contractors and 60% house owners have knowledge about process of construction of building in Sub Metropolitan .

5) With regard to the knowledge about process of submission of engineering drawing in sub metropolitan office; Majority of the respondents 100% engineers, 80% sub engineers, 53.34% contractors and 60% house owners have Knowledge about process of submission of engineering drawing in Sub Metropolitan office.

6) Majority of the respondents 100% engineers, 100% sub engineer and 60% contractors purchased land by knowing code of conduct of roads. In contrast, 86.66% house owners are purchasing land without knowing the code of conduct of roads.

7) Majority of respondents 100% engineers, 80% sub engineers receives information about safety building construction with the help of literatures, brochures, films as well as earth quake training. Whereas 53. 34 % contractors receive information about safety building construction from earth quake training, posture, and brochure. In contrast 73. 34% house owners does not have knowledge about safety building construction but 26.66% house owners receives information about safety building construction with the help of films.

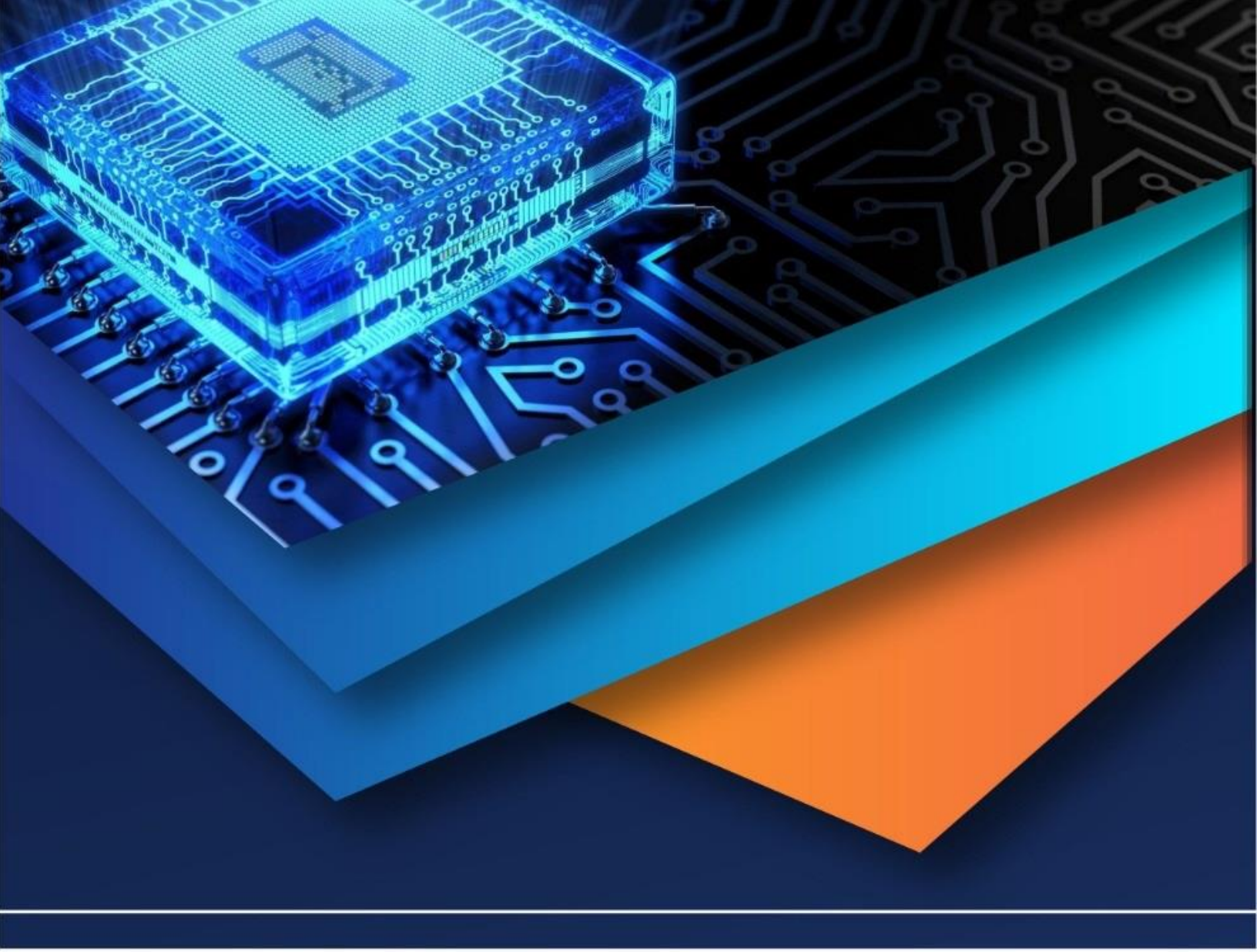
8) Majority of respondents 100% engineers, 80% sub engineers, 53. 34% contractors and 60% house owners are constructed building as per approved sub metropolitan drawing. Whereas 46.66% contractors and 40% house owners have constructed building without following the approved sub metropolitan drawing.

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The overall redemption can be carried out to curb the stated problem. In building construction the engineers, sub engineers, contractors as well as house owners also should follow the bylaws because it protects both clients and professionals, motivate and inspire practitioners, improve the ethical beliefs and behavior, minimize the chances of unethical or illegal act as well as improve the quality. The government plays the greater role to minimize unethical conduct in the construction industry by making the unethical act in criminal activity, training and programme on professional ethics, Law; regulation and enforcement by the government, Provide good system in construction process, Code of ethics in organization.

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